# Fox River Deposit N
# Appendix to Summary Report
# April 2001

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# 1 Introduction

This report titled *Appendix to the Summary Report* provides additional supportive data for the Deposit N dredging project located on the Fox River near Kimberly, Wisconsin (Figure 1). The Deposit N *Summary Report* was published in April 2000. Following formal approval of state funds, the development of this document was authorized in November 2000.

This report presents the latest information and analytical results of the project. Additional data analyses conducted since the April 2000 Summary Report resulted in small changes, e.g., plus or minus two percent, in the estimates of the volume of sediment removed, tons landfilled and pounds of PCBs removed at Deposit N. These changes are not substantive and do not affect the conclusions of the project as presented in the April 2000 Summary Report.

Included in this document are supporting data and information for the following project work elements:

- Project start-up tests
- Pre-Design activities
- Project permitting, access agreements, bid documents and contractor mobilization
- Operational monitoring procedures
- Construction documentation records
- Project performance
  - sediment removed during the project
  - PCB mass removed during the project
  - influent and effluent data from the project water treatment system
  - air monitoring data
  - river turbidity monitoring data
- Independent project oversite reporting

## 1.1 Project Objectives

The objectives of the Deposit N Project design were as follows:

- Achieve sediment removal by hydraulic dredging.
- Minimize resuspension and off-site loss of sediment, PCBs, and other constituents.
- Protect river water quality, including the industrial water intake located immediately adjacent to the dredging area.

- Conduct on-shore sediment dewatering.
- Conduct public outreach (visitor area, interpretative signs, open house, etc.).
- Achieve treatment of carriage water (water from dewatered sediment) to meet WPDES permit conditions for discharge to the Fox River.
- Achieve project specification sediment removal goals:
  - West Lobe: average remaining sediment thickness 3 inches or less with no thickness above 6 inches.
  - East Lobe: average remaining sediment thickness 6 inches or less.

## 1.2 Project Phases

The removal operations at the Deposit N project were performed in four separate phases. Figure 2 shows the location of the dredging during each phase. The phases consisted of the following locations and time frames:

| Phase | General Location | Active Dredging Time Frame |
|---|---|---|
| I | West half of Deposit N<br>(Station 0 to Station 450) | 11/23/98 - 12/31/98 |
| II | East half of Deposit N<br>(Station 450 to Station 5096+) | 8/19/99 - 10/04/99 |
| III | West half of Deposit N<br>(Station 200 to Station 300) | 10/05/99 - 10/14/99 |
| IV | Deposit O<br>(North side of river from Deposit N) | 10/15/99 - 11/03/99 |

Phase I was the dredging performed at the start of the project, November 23, 1998 until the project was shut down due to icing conditions in the river on December 31, 1998. This area in Phase I from 0 to 450 east was dredged to the project specifications regarding sediment removal. Limited dredging also occurred from 450 to 800 and from a small section within the east lobe.

Phase II dredging was the continuation of dredging of Deposit N from 450 to the east. Upon completion of Phase II, all of Deposit N had been dredged to meet project specifications.

Phase III dredging entailed sediment removal within the boundaries of Phase I in an area previously dredged to specifications in 1998. Phase III provided an experimental opportunity to remove additional sediments, located on the bedrock surface, through a modification of the dredge.

Dredging of Deposit O, located on the north bank of the Fox River, adjacent to the on-shore treatment site was designated as Phase IV. This dredging occurred from October 15, 1999 through November 3, 1999. The dredging occurred in the approximate eastern half of Deposit O.

# 2 Pre-Design Activities

The overall objective of the Pre-Design activities was to develop an implementable remedial design, protective of human health and the environment, for the removal of disposal PCB contaminated sediment from Deposit N. In addition to the reports generated by Foth & Van Dyke, the predesign activities were also influenced by the work completed by others on the river in the 1990's.

## 2.1 Environmental Sampling Activities

Samples obtained in the Pre-Design work for laboratory analysis were generated for chemical and physical characterization of Deposit N and bench-scale studies on sediment handling, dewatering and carriage water treatment. The methods used for sampling and handling of materials are summarized below.

A detailed description of the sampling plan is provided in:

- Fox River Deposit N Removal Project Pre-Design Phase Quality Assurance Project Plan (QAPP) Draft Report (Foth & Van Dyke, 1997a)
- Appendix A to the QAPP, Fox River Deposit N Removal Project Pre-Design Phase Sampling and Analysis Plan (SAP) (Foth & Van Dyke, 1997)
- Bid Document for the Sediment Removal - Deposit N Fox River Wisconsin (Foth & Van Dyke, 1998b).

### 2.1.1 Sediment Sampling

Sediment sampling in the Pre-Design phase was completed using two primary coring techniques; deep cores and surficial cores. Deep sediment cores were completed by advancing a vibracore unit from the US EPA's R/V Mudpuppy. Surficial cores were advanced manually from above the water surface using an Eckman grab sampler.

Pre-design sediment samples were collected from six locations (N-PD01 - N-PD06) within Deposit N (Figure 3). Physical and chemical characteristics of the collected sediment are presented in Appendices C and D of the Bid document for the Sediment Removal - Deposit N Fox River Wisconsin (Foth & Van Dyke, 1998b) and are provided here in Tables 1, 2 and 3.

In addition, samples were also collected at the predetermined sample locations for use in the Pre-Design Bench Tests. This effort was completed by retrieving samples with an Eckman sampler from each of the six locations.

### 2.1.2 Water Sampling

Ten river water samples were collected immediately upstream of Deposit N for analysis of TSS and turbidity to develop background river water quality data prior to dredging. Water samples were collected, from a boat, using a Kemmerer water sampler.

In addition, 75 gallons of River water was also collected for use in the bench studies program. This water was collected in 5 gallon collapsible containers at four locations at Deposit N.

### 2.1.3 River Velocity

Based on the 1996 and 1997 records for the two nearest US Army Corps of Engineers stations (five miles upstream and 8.5 miles downstream) it appears that, as expected, flow ranges from low summer values of 2,000 cfs to peak spring flows of 11,000 cfs. Deposit N's expected 90 day low flow period is generally from mid-July through mid-October.

As an addition to the US Army Corps of Engineers data, velocity and depth measurements were also completed at the Deposit N site on December 22, 1997 (Foth & Van Dyke 1998c). The location of the measurements are provided in Figure 4 and the velocity data is provided in Table 4.

Velocity distribution conforms to what might be expected around the Deposit N site. Higher velocities and associated flows were evident in the center of the river along the main channel. Lower velocities were detected within the actual deposit, which would explain the location of sediment deposit. These velocities are likely representative of the normal conditions at the site.

River velocity is discussed with the accompanying data in Appendix B of the Bid Documents (Foth & Van Dyke, 1998b).

### 2.1.4 Underwater Inspection

In November of 1997, an underwater site inspection was completed by Superior Special Services. This survey was completed in an attempt to further delineate the sediment extent at Deposit N and to identify obvious large debris or boulders. The effort was videotaped and a transcript of the tape is provided in Appendix G of the Bid Documents (Foth & Van Dyke, 1998b).

### 2.1.5 TCLP Testing

In September of 1997, Foth & Van Dyke completed an evaluation of the TCLP for mercury of Deposit N sediments. This characterization work was done to support waste profiling activities. The memo supporting this evaluation is provided in Appendix A.

The evaluation compared three composite samples collected during the GAS RI investigation to the regulatory limit for Mercury TCLP. The regulatory limit (0.2 mg/L) is three orders of magnitude higher

than the result of the highest TCLP Mercury test (0.0002 mg/L). Therefore, it was recommended that Mercury TCLP testing was not necessary for the Fox River Deposit N project.

## 2.2 Bench Tests

The Deposit N Bench Tests, completed in the Foth & Van Dyke laboratory, focused on the following:

- Sediment settling and dewatering tests,
- Carriage water treatment tests, and
- Total Suspended Solids (TSS)/Turbidity Correlation tests.

The bench test methods and results are provided in their entirety in the Fox River Deposit N Removal Project Pre-Design Phase Sampling and Analysis Plan (Foth & Van Dyke, 1997b) and the Appendix K of the Bid Document for the Sediment Removal - Deposit N Fox River Wisconsin (Foth & Van Dyke, 1998b). Bench tests followed standard ASTM and US Army Corps of Engineers' methods. Bench test results are summarized in the following sections.

### 2.2.1 Primary Settling and Dewatering Tests

The primary settling tests were performed to evaluate the settling characteristics of the sediment after coagulant addition and to evaluate the quality of the carriage water produced after settling. Slurries were prepared and used in a series of tests to approximate the typical composition of hydraulic dredge effluent.

The results of the primary settling test suggested that cationic polymer produced the best results for decreasing the amount of suspended solids in the carriage water. However, the remaining solids failed the paint filter liquids test. As a result, a series of dewatering methods including enhanced drainage, mechanical dewatering and drying agent stabilization were tested. During these tests, unconfined compressive strength tests were also employed to further evaluate the sediments. The unconfined compressive test is used to determine the suitability of the material to be landfilled [state guidance 0.4 tons per square foot (tsf)]. Additionally, torvane shear strength tests were also used because it requires less material than an unconfined compressive strength. Typically, Torvane shear strength approximates one half the unconfined compressive strength of a material sample.

No one method of dewatering could achieve the project goals for dewatering. Therefore, combinations of methods were tested, e.g., enhanced drainage followed by solidification/ stabilization or mechanical dewatering (belt filter press) followed by solidification/stabilization. Project goals of 0.4 tsf shear strength were achieved by drying settled sediment to 150% moisture (approximate solids content achieved by belt filter press), amended with 10% by weight lime kiln dust and compacted to 100% standard Proctor compactive effort.

Additionally, sandy sediment from the eastern segment of Deposit N (PD-04) was tested to determine if dewatering standards could be met. This was achieved by washing sediment over a 100-mesh sieve

to remove fines to mimic particle separation by hydrocyclone. After a 10 minute draining period, the sediment had a moisture content of 31.4% and passed the Paint Filter Test.

### 2.2.2 Carriage Water Treatment Tests

The objective of the carriage water treatment testing program was to evaluate methods of treating the carriage water generated from the sediment dewatering activities. The main parameters of concern associated with the carriage water were suspended solids, PCB's and mercury. The goal of the tests was the selection of a treatment sequence that could remove these parameters of concern to acceptable levels.

Carriage water treatment methodologies tested were dual media filtration, carbon adsorption, and microfiltration or combinations of the three methods. The carriage water consisted of water drained from the dredge slurry settling column at 24 hours.

The results of the carriage water treatment analytical analysis are shown in Table 5. TSS in untreated carriage water was 4.4 mg/l. The dual media column further removed TSS to a level of approximately 1 mg/l. Additional treatment steps did not provide significant additional TSS removal. Effluent of the dual media column contained PCB's at 0.5 Fg/l. The carbon system removed PCBs to a level below that of detection (0.02 Fg/l). The microfiltration steps did not provide any detectable reduction in levels of indicator parameters beyond the reductions provided by the dual media and carbon columns.

Mercury was not detected in untreated carriage water above the detection limit of 9.7 ng/l. Mercury was not detected in any of the treatment samples.

### 2.2.3 Sediment Resuspension/Settling Tests

To evaluate the rate of sediment settling in the dredge containment area and for possible use in design of a settling basin, a series of water samples were taken from a disturbed dredge slurry column. Using Deposit N sediment (PD03), a 1-ft sediment layer underlying 5 ft of river was set up in a column and then agitated using forced air. The resuspended sediment was then sampled in the water column and analyzed for TSS and turbidity. Table 6 presents the results. Interface height obtained from these tests were available to the contractors to evaluate the use of a settling basin in their construction design.

### 2.2.4 Priority Pollutant Scan and Whole Effluent Toxicity Test

To support the WPDES permit, a priority pollutant scan and a test for acute whole effluent toxicity (WET) of treated carriage water generated during the carriage water testing program was conducted. The results of the priority pollutant scan are provided in Table 7.

The results of the WET test show that the effluent was not toxic to fathead minnows and was only slightly toxic toward the water flea. However, further investigations suggested that the toxicity was likely a result of the polymer rather than the effluent.

### 2.2.5 TSS/Turbidity Correlation Test

The objective of the TSS/turbidity correlation test was to develop a correlation between turbidity and TSS in the Fox River so that measurements could be taken of turbidity as a surrogate or indicator for TSS at Deposit N.

Based on the bench testing results, a correlation was shown between TSS and Turbidity. The results of the correlation are presented in Table 8. Figure 5 is a plot of TSS vs. turbidity. The regression line was defined by the equation $y=-1.127 + 1.313x$, where $x$ = turbidity and $y$ = TSS. The equation had r-squared = 0.988. These results indicate a useful correlation whereby turbidity could be measured in the field as an indicator parameter for TSS.

## 2.3 Pre-Design Engineering

### 2.3.1 Water Intake Mitigation/Dredging Containment Measures

The water intake structure for Inter Lake Papers (ILP) was located immediately adjacent to Deposit N (Figure 6). As a result, water intake mitigation alternatives were evaluated using the criteria of effectiveness, implementability, risk and cost. Seven alternatives were evaluated by the project team. A detailed description of this evaluation is discussed in the Water Intake Mitigation Evaluation Fox River Deposit N Removal Project (Foth & Van Dyke, 1998c). An overview of the alternatives explored and the selected alternative is discussed below.

The seven alternatives evaluated for protection of Inter Lake Papers' water intake at Deposit N included:

1. No-action.

2. Containment (using high density polyethylene (HDPE) curtains) of the deposit during dredging.

3. Containment enhancements (sheet piling) during dredging.

4. Extend Inter Lake Papers water intake pipeline intake.
   a. Extend pipeline north into the channel.
   b. Extend pipeline west or upstream of Deposit N.
   c. Alternative 4b plus utilize treated effluent water from the secondary treatment process.

5. Construction of a deflector barrier at the intake structure.

6. Enhance Inter Lake Papers' water plant treatment operation during site remediation.

7. Utilize village of Kimberly water for partial replacement of Fox River water.

Based on the evaluation of the alternatives, the project team concluded the following:

- Deposit N is characterized by two separate sediment segments, a western segment comprised of silty clay sediment with relatively high PCB concentrations and an eastern segment which contains sandy sediment with low PCB concentrations.

- Sandy sediment particles have less potential for resuspension during dredging.

- The water intake structure is located adjacent to the sandy sediment deposit.

- Fox River water quality is highly variable over time at this location, however, Inter Lake Papers is able to address this variability and sufficiently treat the river water.

- A screening level model developed to evaluate dredging-induced turbidity predicts that suspended solids or turbidity during dredging can be expected to be within the range of normal variability as observed in the Fox River at this location.

- Containment structures, e.g., HDPE placed around the deposit, will further minimize suspended solids impact to the river during dredging.

- Alternative No. 2, Containment (HDPE), had the overall highest score in the evaluation of alternatives and is recommended as the mitigation alternative for implementation at Deposit N.

- Protection of the water intake would also be implementable, and at a lower project cost, with an optional sediment removal scenario (only western lobe sediment removed). However, this option is in conflict with a project objective to remove as much sediment as is practicable from Deposit N.

The alternatives analysis was carried forward to the design stage of the project. Based on further discussion and review of the alternatives, a containment barrier and deflection barrier were specified for the project to protect the water intake. Section 5.3.3 provides detail on the actual barriers used during the project.

### 2.3.2 Bulkhead Stability

A steel sheet wall exists on ILP property immediately south of the western segment of Deposit N as shown in Figure 6. The sheet wall is approximately 375 ft long and is estimated to be 50 to 60 years old. The purpose of the bulkhead evaluation was to comply with a request by ILP regarding the stability of the sheet wall during sediment removal.

Bulkhead or sheet wall stability observations were completed on April 15, 1998 by a diver from Superior Special Services. The sheet wall observations are presented in their entirety in Appendix I of

the Bid Documents for the Sediment Removal (Foth & Van Dyke 1998b). The following presents an overview of that document.

The base of the sheet wall was observed in spot fashion (by probing) along most of the length of the wall. It was found that a continuous concrete toe is located at the bottom of the sheet wall, on the river side which would provide additional stability to the structure. Based on these observations, the Design Team concluded that the bulkhead was sufficiently stable and that dredging was unlikely to damage or destabilize the wall.

The river was successfully dredged adjacent to the ILP sheet wall. No damage to the sheet was recorded and no long term effect to the sheet wall is expected.

# 3 Pre-Sediment Removal Activities

## 3.1 Permitting

The Deposit N project represented the first PCB contaminated sediment removal project on the Fox River. As such, many permitting challenges and activities were completed which are unique to an initial project. This section presents the permits and/or approvals required for this project and key characteristics associated with the permit and/or approval.

### 3.1.1 Environmental Assessment

In accordance with ch. NR 150, Wis. Adm. Code, a draft Environmental Assessment (EA) was prepared by Foth & Van Dyke for the Deposit N project. The purpose of this document was to evaluate whether the proposed dredging project constitutes a major action, significantly affecting the quality of the human environment, or is a proposed course of action which involves unresolved conflicts concerning alternative uses of available resources.

The draft EA evaluated existing conditions at the site and potential environmental impacts from the project. This evaluation considered the socio-economic, physical and biological environments at the site.

The draft EA public comment period was open from June 29 through July 17, 1998. Three comment letters were received during the review time. The Department determined on September 4, 1998, that the project conformed to the Wisconsin Environmental Protection Act, complied with s.1.11, stats., and ch. NR 150, Wisconsin Administrative Code and was not a major action that would significantly affect the quality of the environment. The final EA was published in September 1998 (Foth & Van Dyke, 1998d).

### 3.1.2 Chapter 30 Permit

A Chapter 30 permit application to dredge approximately 12,000 cubic yards of PCB contaminated sediment from Deposit N was submitted to the WDNR on May 21, 1998. The permit submittal contained the following information:

- List of adjoining riparians.
- Project plans and specifications for the turbidity barriers and silt curtains and dredging.
- Site-specific velocity and flow data.
- Sediment chemical and physical characterizations of Deposit N sediment.
- State/federal application for water regulatory permits and approvals from 3500-53.

On August 3, 1998, notice was received from the WDNR that the Chapter 30 permit was granted to the Wisconsin Department of Administration (WDOA). The WDOA was the contracting authority for the state on this project. Twenty-five permit conditions were listed in the approved application. These conditions were generally within the design scheme of the project and, therefore, did not significantly alter the scope of the project. Appendix B contains a list of the Chapter 30 permit conditions.

The permit was amended twice over the duration of the project. Prior to Phase II, WDNR approved modifications to the Dredging Plan where the perimeter containment barrier and the double-walled dredge pipeline were not required. The changes were approved based on the results of river turbidity monitoring performed during Phase I.

A subsequent letter from the WDNR on October 19, 1999 amended the original permit to include dredging of approximately 2,000 cubic yards of sediment from Deposit O. Dredging of Deposit O was required to follow the conditions and terms of the original permit.

### 3.1.3 Army Corps of Engineers Nationwide Permit

On August 17, 1998, an approved Corps of Engineers (COE) nationwide permit was received which allowed the construction of a turbidity barrier and dredging of sediment from the Fox River. Three conditions listed in the approved permit were readily addressed by the overall design and implementation plans of the project. Appendix C contains a list of the COE permit conditions.

### 3.1.4 Wisconsin Pollutant Discharge Elimination System (WPDES) Permit

A WPDES permit application was submitted by Foth & Van Dyke to the WDNR on May 12, 1998. The application consisted of:

- U.S. EPA Form 1
- U.S. EPA Form 2C
- Analytical results from water treatment bench test work
- Modeling results for a Zone of Initial Dilution (ZID)
- Proposed project dredge production rates

A public information hearing was made available on August 11, 1998 to receive public comment on the intent to issue a WPDES permit for the project.

An approved WPDES permit was issued on August 17, 1998. No verbal or written comments were received pertaining to the WPDES permit. Water quality-based effluent limitations, monitoring requirements, and reporting requirements were issued in the final permit. Appendix D contains the final WPDES permit.

### 3.1.5 Solid Waste Disposal Plan Modification Approval

The construction contract required the remediation contractor to provide for hauling and disposal of all non-TSCA waste. The state assumed responsibility for disposal of TSCA waste. Under an approval granted to the state by USEPA in 1995, the state could dispose of TSCA-level waste in approved solid waste landfills that met the terms of the USEPA approval. In 1998, the state solicited bids from landfill owners for the disposal of TSCA waste from the Deposit N project and from other planned sediment cleanups. In July 1998, Browning-Ferris Industries (BFI) was selected as the low bid and was notified of intent to award. Due to public opposition, BFI withdrew the bid award in August 1998. Superior Services, as the next low bid, was notified of intent to award. However, again due to public opposition, in September 1998 Superior withdrew its bid for TSCA-level waste. Ultimately, the state decided to ship all TSCA waste out of state to Environmental Quality in Wayne, Michigan, a federally permitted PCB TSCA landfill.

The remediation contractor submitted the waste loading plan to the state in September 1998 and specified the selected subcontractor for non-TSCA waste. However, soon after the plan was submitted, the non-TSCA disposal subcontractor withdrew its bid over objections to disposal requirements. Since the remediation contractor could not obtain another disposal subcontractor, the state separately negotiated non-TSCA disposal with the Winnebago County Solid Waste Board, operators of the Winnebago County Landfill.

On November 22, 1998, the Winnebago County Solid Waste Board and the state reached agreement for disposal of non-TSCA PCB sediment from the project. The requirements for the disposal cell at the landfill are presented in Appendix E.

## 3.2 Access Agreements

Shoreland real estate and access to shoreland areas was necessary to implement Deposit N since the project sponsors, WDOA, WDNR or U.S. EPA did not own real estate adjacent to the project. Considerable project time and resources were committed to obtaining suitable access agreements for the project. Access agreements were negotiated with the following local property owners:

- The 5 acre on-shore treatment site area on the north shore of the river, owned by the Altergott Family Corporation.

- The shore-line property adjacent to the on-shore treatment site, owned by the U.S. Army Corps of Engineers and leased by the Friends of the Fox (an access agreement was obtained from both parties).

- The south shore of the river adjacent to Deposit N, owned by Inter Lake Papers (subsidiary of Consolidated Papers Inc.). This access agreement included a third-party review of plans, construction reviews, shoreline stability analysis, and an insurance

agreement to protect Inter Lake Papers from possible impacts to their paper production activities.

- The north shore access area, owned by the Bellin family.

Access agreement terms and conditions were incorporated into the contract with the remediation contractor.

Especially vital to the project was the obtainment of the access agreement with the Altergott Family Corporation for the use of a 5-acre parcel for use as the on-shore sediment dewatering, water treatment, and sediment loading area. Copies of the access agreements are located in the project's master file at WDNR, Madison, Wisconsin.

A limited site investigation consisting of 20 geoprobe borings and 2 temporary monitoring wells was conducted at the Altergott site prior to construction mobilization. The investigation was performed to evaluate pre-project conditions at the site to assist with site restoration work.

In the access agreement with Consolidated Papers, specific measures are included to ensure protection to the mill's water quality as drawn from the water intake structure located immediately adjacent to Deposit N. Protective measures agreed to in the access agreement and later implemented during project construction and operation included a sediment deflection barrier, containment barrier, turbidity monitoring, communication of project data and restoration plans. Again, considerable project resources were needed to properly implement the water intake protective measures listed in the access agreement.

Lease and access agreement will be critical components of any other sediment remediation project on the Fox River. These agreements, or lack thereof, can have a significant impact on project cost and schedule.

## 3.3 Contract Bid Documents

The WDOA was the contracting agency for the state on behalf of the WDNR and USEPA. WDOA's nation-wide invitation to bid included a two-step bid process involving first a proof of qualifications to perform the work and a subsequent cost bid with a proposed construction approach. Only qualified bids which met the qualification requirements were opened and considered for this project.

The contracting strategy centered on a performance-based contract with specific performance criteria, e.g., monitoring requirements, water discharge requirements, dredging criteria, sediment strength criteria. The performance specifications, developed by the design engineering team, allowed contractors the flexibility to propose specific construction approaches while maintaining the project performance specifications. Contractor designs were reviewed by the project design team prior to implementation in the field to verify compliance with the performance specifications.

Koester Environmental Services, Inc. of Evansville, Indiana, was selected and awarded the contract based on being the lowest cost qualified bidder. Key subcontractors included Superior Special Services, Inc. (perimeter curtain installation), Miller Engineers (surveying), and EnChem, Inc. (laboratory work).

An outline of the contract bid document is provided in Appendix F.

## 3.4 Mobilization

The overall project schedule for Deposit N is shown on Figure 7. A pre-construction meeting was held on October 14, 1998 at the Little Chute Civic Center, Little Chute, Wisconsin. Site preparation work began on October 19, 1998. Following a complete mobilization and installation of project equipment, a pilot test was conducted on November 23 and full-scale dredging and dewatering work began on November 26, 1998. This work continued until December 22 when the project was shut-down over the Christmas holiday. The project restarted on December 28 and operated until December 31, 1998 when a joint contractor/State decision was made to cease the project operation due to sustained sub-zero weather producing unacceptable ice and cold conditions.

During the winter and spring of 1999, project data were evaluated and compared to project objectives to determine the benefits of remobilization of the project. Following this evaluation, a decision was made to remobilize the project. Remobilization of Deposit N began on August 2, 1999 and sediment removal work occurred from August 19, 1999 to October 4, 1999.

Following removal of sediments at Deposit N to contract specifications, additional dredging occurred in the Fox River at Deposit N from October 5 to October 14, 1999 and at Deposit O, an adjacent sediment deposit, from October 15, 1999 through November 3, 1999.

# 4 Operational Monitoring Procedures

## 4.1 Approved QAPPs and SAP

Prior to the implementation of the pre-design phase of the project, a Quality Assurance Project Plan (QAPP) and Sampling and Analysis Plan (SAP) (Foth & Van Dyke, 1997b) were completed and submitted for review. Additionally, Koester Environmental Services submitted a QAPP for the sediment removal portion of the project (Koester, 1998a).

These documents were developed and submitted to outline procedures to be implemented for field sampling, chain-of-custody, field analysis and reporting. The procedures set forth were of known and acceptable quality and are scientifically and legally defensible. These documents were consulted and followed, with limited exceptions, throughout the predesign, implementation and closure of the Deposit N Dredging Project.

## 4.2 Environmental Media - Sampling Procedures

This section provides a discussion of the sampling procedures established for the Deposit N project. Each section is separated into three segments: Proposed Activities, which detail the plans set forth in the approved QAPPs/SAP; Implemented Sampling Procedures, which discuss the actual sampling methods used during the project; and Deviations from Proposed Activities which identify the methods employed which deviated from the specifications, permits, work plans, etc.

The results of the monitoring activities are provided in Section 6 of this report.

### 4.2.1 Air

#### 4.2.1.1 Proposed Activities

As discussed in the Deposit Bid Documents for Sediment Removal (Foth & Van Dyke, 1998b), the contractor was responsible for perimeter air monitoring for particulate dust. The monitoring was outlined to include a minimum of four mounted particulate meters, which produce real time particulate data. The meters were to be placed approximately eight feet above the ground in strategic positions around the on-shore treatment site.

#### 4.2.1.2 Implemented Sampling Procedures

During the operation of the on-site facilities in 1998, air quality particulate monitoring was conducted with four real time monitors at locations north, south, east and west of the on-shore treatment facility.

#### 4.2.1.3 Deviations From Proposed Activities

Because the 1998 results which showed no significant exceedances (Section 6.1.7), air monitoring was not required for the 1999 sediment removal work.

### 4.2.2 Surface Water

#### 4.2.2.1 Proposed Activities

Real-time monitoring was proposed for turbidity at six river locations. These six locations were designated as M1 (upstream), M2 (downstream), M3 (downstream), M4 (Inter Lake Papers process water intake), M5 (Inter Lake Papers treated water) and M6 (within containment barrier). Turbidity meters (probes) were proposed at 50% of the total water depth. The turbidity probes are capable of submitting a digital signal to a base receiving station located at the on-shore treatment site. The receiving station was capable of downloading the data into a computer and communicating these data, in a real time environment. Monitoring data collected in the base station was proposed to be stored in a data base from which daily reports will be generated. The velocity meter measures river velocity on an hourly average basis.

Hourly average turbidity values generated by the monitoring system were monitored for exceedances of the predetermined dredging turbidity threshold limits.

The turbidity probes, velocity meter and data recording instrumentation were to be installed and made operational a minimum of seven (7) calendar days before the start of the dredging operation. Continuous measurements of turbidity were to begin at each of the monitoring stations prior to any day's dredging and continue for at least one hour after the dredge is shut down at the end of a work day.

#### 4.2.2.2 Implemented Sampling Procedures

Turbidity monitors were placed in the river and also within the water intake stream of ILP. The meters produced a digital signal, which was transmitted to the on-shore treatment site, allowing river turbidity conditions to be evaluated in a real-time monitoring environment.

During Phase I of the project, turbidity meters were placed, as described in the Bid Documents for Sediment Removal (Foth & Van Dyke, 1998b), upgradient (M-1) sidegradient (M-2) and downstream (M-3) of dredging operations. Station M-4 was located in the intake stream of ILP and M-5 was at a post-water treatment location in ILP. M-6 was located inside the containment barrier.

Because of the changes in the configuration of the containment barrier, and the addition of Deposit O to the project, different configurations of turbidity monitoring were used later in the project (Figure 2).

#### 4.2.2.3 Deviations From Proposed Activities

As discussed previously, the turbidity containment barrier was not used during later stages of the dredging operation (Phases II - IV). Therefore, alterations were made to the surface water monitoring program. These alternatives were made in conjunction with the ILP, the local mill with the water intake structure located at Deposit N.

During Phases II, III, IV, a silt curtain and deflection barrier were used during the dredging work. Since no turbidity containment barrier was used during Phase II, III and IV, Station M-6, which was previously located inside the turbidity barrier, was not needed and was removed from the site. During Phase IV, Station M2 was relocated upstream of Deposit O and renamed M-7. Additionally, M3 was relocated downstream and named M8 (Figure 2).

### 4.2.3 Sediment

#### 4.2.3.1 Sediment Survey Volume

##### 4.2.3.1.1 Proposed Activities

Prior to dredging, the contractor, as discussed in the Bid Documents for Sediment Removal (Foth & Van Dyke, 1998b), was to prepare a topographic map of the river bottom in the area to be dredged. The survey was to be conducted by conventional or ultrasonic methods, but accuracy was to be within one-tenth of a foot (0.10) and contour lines shall be accurate to plus or minus one-quarter of a foot (0.25). At least one spot elevation was to be determined at each grid node on a 50 ft by 50 ft grid or better. The scale of the map was to be 1 in equals 50 ft, and the contour interval be 0.5 ft. Spot elevations were to be shown on the map. The map was to be signed and sealed by a Registered Land Surveyor. The contour map was to be used as the basis for determining the quantities of materials dredged for payment purposes.

Upon completion of dredging, the contractor was to conduct a post dredging survey and prepare a new map with equivalent specifications to the pre-dredge survey and mapping.

##### 4.2.3.1.2 Implemented Survey Procedures

The pre-dredge survey was performed by Miller Engineers and Scientists on November 19, 20 & 21, 1998 for the 1998 dredging activities. Another pre-dredge survey was performed on August 5 & 6, 1999 for the 1999 dredging work. Elevations of the river bottom were established by measuring the elevation of the Fox River about every two hours and poling on a 50 ft grid pattern over the sediment area using a boat and range pole. The depths to the top of sediment (over bottom) was recorded at each grid node (50 ft by 50 ft grid) to the nearest tenth of a foot.

Upon completion of 1998 dredging activities, sediment survey were performed on December 21, 1999, January 15, 1999, January 18, 1999, and January 19, 1999 using standard equipment described above. On January 8, 1999, surveying was performed through the ice on the river, taking direct

elevation readings on the river bottom (in lieu of measuring the depth of water). The final surveys, upon completion of 1999 dredging activities, were performed on October 4, 1999, October 5, 1999, October 25, 1999, and November 8, 1999. Standard techniques were used.

#### 4.2.3.1.3 Deviations from Proposed Activities

There were no deviations from proposed activities.

### 4.2.3.2 Sediment PCB Sampling

#### 4.2.3.2.1 Proposed Activities

Post-dredge PCB sediment cleanup concentrations were not a project objective. As such, there were no proposed sediment sampling activities and associated protocols to follow. PCB sediment sampling was, however, an objective of the Fox River Remediation Advisory Team (FRRAT). At times the Deposit N design team assisted the FRRAT with their sampling plan.

When PCB sediment sampling occurred, general sampling guidelines of the FRRAT were used to sample for PCBs with the sediment. Sample locations were identified by surveying and placing buoys at the sample locations. Divers then went to the buoyed locations and obtained the samples. The diver used a 2- or 4-in diameter CAB tube. Samples were obtained by pressing the tube vertically through the sediment at the buoyed locations. The diver capped the end of the tube and brought the tube to the work boat prior to the next sample.

#### 4.2.3.2.2 Deviations From Proposed Activities

Sediment sampling conducted by the Deposit N design team for the FRRAT, following dredging in 1999, deviated from standard sampling practices. The deviation occurred when little or no sediment was found at the buoyed sampling location, the diver then looked for nearby sediment or pushed the sampling tube horizontally through the sediment some distance to collect enough sediment to test.

## 4.2.4 Filter Cake

### 4.2.4.1 Proposed Activities

Filter cake (dewatered sediment from the dewatering press) was to be placed in temporary stockpiles which contain a maximum of 250 cubic yards of material. Stockpiles were to be sampled for total PCBs, mercury and moisture content. Sediment containing less than 50 mg/kg PCBs were to be classified as non-TSCA waste and sediment containing more than 50 mg/kg PCBs were classified as TSCA waste.

Dewatered sediment was also to be subjected to the Paint Filter Liquids Test, Method 9095 and a minimum unconfined compressive strength test (0.4 tsf) or a Tore Vane Shear Strength test.

Samples were to be analyzed as representative sample for every 250 cubic yards.

If dewatered sediment failed to meet strength requirements, the material was to be solidified/ stabilized by the addition of lime film dust, cement film dust, Portland cement or other additive selected by the contractor. Following solidification/stabilization, the material was to be resampled and analyzed.

Strength versus moisture content (percent solids) relationships of the sediment were determined during the submittal review process by the Design Team. It was determined that the maximum sediment water content that would allow compaction at the landfill to achieve strength of 0.4 tsf was 98% moisture content (or minimum of 50.5% solids). Therefore, in lieu of monitoring dewatered sediment strength, dewatered sediment percent solids was monitored.

#### 4.2.4.2 Implemented Sampling Procedures

The implemented procedures followed the techniques and methods described in the QAPP/SAP (Koester, 1998a).

Generally, filter cake material was obtained from every third drop of each press. The material was placed into one large zip lock plastic bag. Filter cake was collected until a filter cake pile was closed (finished). Piles were closed when they achieved a volume of about 250 cubic yards.

The filter cake was placed into a stainless steel pan and composited with a stainless steel spoon. A sample was taken from the composite sample and tested for PCBs, mercury and moisture content. Chain-of-custody accompanied all samples. When the results indicated that there are no free liquids, and the percent solids were greater than 50.5%, then the sediment pile was approved for shipment.

#### 4.2.4.3 Deviations From Proposed Activities

Two analytical methods were used for measuring the concentration of PCBs in the dewatered sediment; the sonication method and soxhlet method. The composited dewatered sediment samples were each split to allow for the two test methods to be performed. The sonication method, which is an accepted EPA technique for waste characterization, was used to receive results more quickly which allowed for a timely review of PCB results and shipment of dewatered sediment. The soxhlet method, approved within the QAPP, was used as a more thorough extraction approach.

### 4.2.5 Sand

#### 4.2.5.1 Proposed Activities

Sand, a coarse grained material, as with filter cake, was to be placed in temporary stockpiles which contain a maximum of 250 cubic yards of material. Stockpiles were to be sampled for total PCBs, mercury and moisture content. Sediment containing less than 50 mg/kg PCBs and more than 50 mg/kg PCBs were to be classified as non-TSCA waste and TSCA waste, respectively.

Dewatered sand, is not considered a cohesive material and therefore is exempt from the unconfined compressive strength test. However, coarse grained materials are required to pass the paint filter test and achieve a total solids content of a minimum 60%.

Samples were to be analyzed as representative sample for every 250 cubic yards

#### 4.2.5.2 Implemented Sampling Procedures

Sand and coarse-grained material were placed into the same temporary stockpiles. When the stockpiles achieved a volume of approximately 250 cubic yards, a composite sample was obtained by using a shovel and a 5-gallon bucket. Several shovels full samples were obtained by going around the pile, scraping a minimum of 6 in of exterior material off and digging into the pile at various heights around the pile. The sample was placed into a stainless steel pan and mixed with a stainless steel spoon. A sample was then bottled and sent to the laboratory and tested for PCB, mercury and moisture content determination.

#### 4.2.5.3 Deviations From Proposed Activities

There were no significant changes or deviations from proposed activities.

### 4.2.6 Effluent (Carriage Water)

#### 4.2.6.1 Proposed Activities

The contractor was directed to construct on-site, a temporary treatment plant to handle filtrate from the dredged sediments dewatering facilities, stormwater from the dewatering and sediment staging areas, decontamination station wastewaters and any leachate collected from the dewatered sediment stockpiles. The treatment plant effluent was to be released to the Fox River.

Prior to beginning full scale operations, pilot testing of the treatment plant systems were to be conducted concurrently with the sediment dewatering treatment pilot test. Samples were planned to be collected once per hour during the pilot test. These samples were to be analyzed for PCBs, mercury and TSS. If pilot test criteria were not met, sampling was to continue until the minimum requirements were met, which could include mechanical changes to the treatment plant.

Requirements for verification sampling were largely dictated in the WPDES permit No. WI-0049719-1. In general, to verify the effectiveness of the water treatment process, one 24-hour (flow proportional) composite sample was to be collected daily. This collection was designed to be automated by an ISCO programable sample.

In addition to the sampling protocols, the flow was also to be monitored and totalized on a daily basis for discharge reporting.

The effluent was also to be monitored by and in-line turbidity monitor prior to being discharged to the river. The meter is to be connected to an on-site alarm to alert site personnel that a turbidity action level has been exceeded. Corrective action was to be taken immediately.

Effluent monitoring results were faxed to the WDNR Northeast Region within 48 hours of receipt pursuant to the WPDES permit.

#### 4.2.6.2 Implemented Sampling Procedures

Prior to beginning full-scale operations, pilot testing of the treatment systems were conducted concurrently with the sediment dewatering treatment pilot test. Grab samples were collected once per hour during the pilot test. The samples were analyzed for PCBs, mercury and TSS. The pilot test criteria were met.

During 1998 dredging/water treatment activities, an ISCO sampler was used to collect flow proportional composite samples on a 24-hour basis. During 1999 dredging activities, an ISCO sampler was used to collect samples but it was manually operated on generally an hourly basis. Generally, during periods of no discharge, no samples were taken and during periods of discharge, samples were taken on an hourly basis.

#### 4.2.6.3 Deviations From Proposed Activities

A deviation to the proposed activities was the manual sampling of effluent during 1999 dredging operations to obtain a 24-hour composite sample.

# 5 Construction Documentation

A Resident Project Representative (RPR) was on-site full-time during the construction and operation phases of the project and part-time during the closure phase of the project. The WDNR retained Foth & Van Dyke to staff the RPR position.

## 5.1 Resident Project Representative Manual (RPRM)

A manual was developed to assist the RPR. The manual (RPRM) consisted of the following:

- Introduction Section: A general project description, a listing of project goals, a description of the project scope, a description of the manual organization, identification of the owner, engineer and contractor, and associated obligations of each were described.

- Project Communication Section: Description of lines of communication between the owner (State), contractor (Koester), adjacent property owner (Inter Lake Papers) and the public.

- Pre-Construction, Construction, Operation and Closure Sections: General description of activities of each phase of work, the RPR duties during each phase, monitoring (by contractor) during the operations phase, and data management during the operation phase.

Also included in the RPRM were the preconstruction meeting notes, an access agreement between the owner of the on-shore treatment site and the contractor, the access agreements between the state and nearby property owners, and copies of standard forms to be used (i.e., daily construction documentation report) during the project.

## 5.2 Pre-Construction Activities

### 5.2.1 Contractor Submittals

Prior to the start of construction, the contractor was required to develop several construction submittals that were reviewed by Foth & Van Dyke and the state prior to construction of a specific project component. The submittals are as follows:

| Submittal | Date of Original Submittal | Final Revised Submittal Date | Date Approved |
|---|---|---|---|
| **Phase I (1998)** | | | |
| Project Schedule | 09/24/98 | 09/30/98 | 11/20/98 |
| Health & Safety Plan | 09/03/98 | 09/30/98 | 11/03/98 |
| Site Plan | 09/23/98 | 10/19/98 | 10/22/98 |
| Turbidity Barrier Plan | 09/10/98 | 11/06/98 | 11/07/98 |
| Dredging Process | 09/04/98 | 09/30/98 | 11/20/98 |
| Dewatering Process | 09/02/98 | 11/16/98 | 11/19/98 |
| Carriage Water Treatment | 09/09/98 | 11/16/98 | 11/18/98 conditional |
| Quality Assurance Project Plan | 09/11/98 | 11/20/98 | 11/20/98 |
| Loading Plan | 09/11/98 | ongoing | plan review ongoing during project |
| **Phase II - IV (1999)** | | | |
| Single submittal for all items | 08/10/99 | 08/17/99 | 08/17/99 |

It should be noted that during Phase I (1998), the loading plan submittal was received but was not finally approved because the specified disposal subcontractor withdrew their bid, a key component of the submittal. Overall, the project experienced significant delays due to the loss of the disposal subcontractor specified in the original loading plan and also due to the length of time that was required for development and revision of other construction submittals.

### 5.2.2 Access Agreements

Prior to Phase I (1998) work, access agreements were obtained between the state of Wisconsin and four property owners and one leaser of a property.

| Property Owner | Deposit N - Property Use |
|---|---|
| Altergott Family | On-shore treatment facility location. |
| U.S. Army Corps of Engineers (COE) | Adjacent to Altergott's property along Fox River. Access and pipe crossing. |
| Friends of the Fox | Leaser of COE property. |
| Consolidated Papers, Inc. (Inter Lake Papers, Inc.) | Adjacent to Deposit N deposit. Limited access. |
| Bellins | Adjacent to on-shore treatment facility and adjacent to Deposit O (agreement in 1999) |

### 5.2.3 Pre-Construction Meeting (October 14, 1998)

A pre-construction meeting was held at the Civic Center in Little Chute, Wisconsin on October 14, 1998 at 10:00 a.m. Local government representatives were invited to attend. Attendees included representatives from Foth & Van Dyke (facilitators), Koester, WDNR, DOA, village of Little Chute, and Inter Lake Papers.

## 5.3 Mobilization Observations (Pre-Sediment Removal)

Initial construction observation at Deposit N began on October 19, 1998, continued through the pilot test which was held on November 23, 1998, and when the project was temporarily shut-down at the end of 1998. Construction activities in 1999 began on August 3, 1999 and ran through November 9, 1999.

### 5.3.1 Daily Meetings

Daily morning meetings were initiated on October 20, 1998, one day after the start of construction. The meetings were facilitated by the state's on-site representative, RPR, and were held at approximately 8:00 a.m. The contractor, subcontractors, the owner of the on-shore treatment facility property (Altergott), Inter Lake Papers and state representatives were invited to attend each meeting. The contractor described the progress from the previous day and the anticipated progress for the immediate future. Notes were kept of each meeting and filed.

### 5.3.2 Mobilization Observation Reports

The RPR developed a Construction Observation Report for each day or part thereof that observations took place. Observations which were recorded on the Construction Observation Report include weather conditions, contractor equipment on-site, personnel on-site and work observations and comments. A typical Construction Observation Report is contained in Appendix G.

### 5.3.3 General Mobilization Description

Standard construction equipment, two dozers CAT D6M and CAT D4C, sheepsfoot compactor CAT CP-563C, smooth drum vibrator compactor CAT CS 433C, and front-end loader CAT IT 28G were used to grade the area of the on-shore treatment facility to design elevations and to compact the soil. Erosion control consisting of silt fencing and hay bales were constructed to minimize erosion of on-site soils.

A 6-ft high fence was constructed around the entire site to control ingress/egress at the site and for general public safety.

The pad for the on-shore treatment site was constructed with a 60 mil geosynthetic liner with a 6-in sand layer and 8-oz geofabric cover. Standard construction methods of the liner were used and quality

assurance testing of the geosynthetic welds were observed (destructive peel & shear and non-destructive air tests on seams). Tests were performed by Geo-Synthetics Inc. (GSI). Sand was carefully placed over the liner on top of the geofabric.

An asphalt pavement was placed upon the sand/gravel layer using standard graders, pavers and compactors.

Silt curtains, used in the river to contain sediments potentially disturbed by construction (turbidity barrier installations) and dredging were of standard type fabric (22 ounces per square yard, nylon reinforced vinyl) and flotation (12-in diameter polystyrene).

The deflection barrier and perimeter barrier were constructed on-shore and consisted of 80 mil (nominal) HDPE. The 80 mil material was wrapped around 12-in diameter polystyrene flotation and mechanically connected to the body of the barrier with metal straps and nuts and bolts. A barge with a crane hoisted the barrier sections into place. The barriers were held in-place by steel rail fastened to the barrier on the bottom edge in the same fashion as the floats and anchored to the river bottom by 7/8-in diameter steel rods driven into the river bottom ±5 ft on center. Cables were also connected to the floats on spacings of approximately 50-ft and anchored to the bottom with 7/8-in diameter steel rods.

The on-shore equipment was standard tank/piping/press construction in a modular fashion. Units (i.e., presses, holding tanks, filter tanks) were lifted into place with a crane and connected to each other with piping and mechanical fittings.

The conveyance piping from the dredge to the on-shore treatment facility was constructed on-shore and pulled into place. The conveyance piping consisted of a double-walled pipe; an 8-in diameter HDPE interior pipe inside of an 18-in diameter HDPE outer pipe. Large floats (3-ft diameter) were spaced to support a fully loaded pipe across the river.

**The chronological listing of the mobilization milestones in 1998 follows:**

| Milestone | Dates |
|---|---|
| Contractor arrives on-site | 10/19/98 |
| Contractor completes erosion control and general site grading begins | 10/22/98 |
| Fencing construction starts | 10/26/98 |
| Observation deck construction starts and sediment marked by buoys in river | 10/27/98 |
| General grading completed, start geosynthetic liner construction on pad liner | 10/29/98 |
| Liner completed, begin placing sand layer and gravel layer over liner - fencing completed | 10/30/98 |

| Milestone | Dates |
|---|---|
| Begin paving with asphalt on pad. Begin construction of perimeter barrier (around sediment lobe) on-shore prior to placement | 11/06/98 |
| Temporary silt curtain placed at ILP water intake | 11/07/98 |
| Begin work on deflection barrier at ILP | 11/09/98 |
| Extreme wind event | 11/10/98 |
| Asphalt paving complete | 11/11/98 |
| Observation deck complete | 11/12/98 |
| On-shore equipment construction on pad begins | 11/13/98 |
| Install turbidity meters in river | 11/15/98 |
| Dredge placed into river and temporary building erection begins | 11/19/98 |
| Air meters installed | 11/19/98 |
| On-shore equipment (screens, hydrocyclones, presses, tanks, water treatment system) completed | 11/22/98 |
| Initial dredge & pilot test (6 hours treatment) | 11/23/98 |
| Dredging start-up | 11/25/98 |

Mobilization activities in 1999 consisted of reinstallation of the presses, screens, tanks, and carriage water treatment system which were removed during the temporary shut-down, moving the shaker tank on the pad, and reconstruction and placement of conveyance pipe (from dredge to on-shore equipment).

Following remobilization of the project in 1999, the turbidity containment barrier was not constructed at the site. The results of the environmental monitoring (turbidity monitoring discussed in Section 4) suggested that the containment barrier used in 1998 was not necessary for protection of the water intake structure. Therefore, the containment barrier was not deployed and instead a precautionary, movable silt curtain was used at a downstream distance of 150 feet or less from the dredge. The deflection barrier, as described above, was once again deployed adjacent to the ILP intake in 1999.

**A list of milestone during 1999 construction activities follows:**

| Milestone | Dates |
|---|---|
| Contractor arrives on-site | 8/03/99 |
| Sump clean-out | 8/05/99 |
| Water treatment system and conveyance pipe construction begins | 8/07/99 |
| Turbidity barriers checked and maintained | 8/14/99 |

| Milestone | Dates |
|---|---|
| Turbidity meters placed into river and started-up | 8/19/99 |
| Dredging begins | 8/19/99 |

## 5.4 Dredging Operation Observations

Initial dredging operation activities began on November 23, 1998 with the start-up of the dredge and the 6-hour operations pilot test and lasted until December 31, 1998 when operations were temporarily halted. Operation activities were initiated a second time on August 19, 1999 and lasted until November 3, 1999.

### 5.4.1 Daily Meetings

Daily morning meetings were continued through the dredging operations phase of the project. Meetings were facilities by the RPR. As during mobilization, the meetings were held at approximately 8:00 a.m. with generally the same attendees. The contractor described the progress from the previous day and the anticipated progress for the immediate future. Questions could be asked by and directed toward any of the meeting participants. Notes were kept of each meeting and filed.

### 5.4.2 Construction Observation Reports

The RPR developed a construction observation report for each day of work, one for the day shift and one for the night shift. One RPR would be present during the 12 hour day shift and another RPR would be present for the 12-hour night shift. At the beginning and ending of each shift, the RPRs would meet to discuss the current conditions and situations of the project.

### 5.4.3 General Operation Description

Dredging was accomplished using a DSC Moray hydraulic dredge. This dredge is a swinging ladder cutterhead dredge with a submersible pump and a shroud over the cutterhead. The dredge was 8-in (diameter) with a nominal pump capacity of 2,000 gpm. The dredge was self propelled with 3 spuds (8-in diameter).

The dredge conveyed the dredged slurry to the on-shore treatment facility through a double-walled conveyance pipe (8-in dia/18-in dia HDPE pipe). The slurry was delivered to a SWACO vibrating shaker with 3/8-in mesh. The screened (large size) material was trapped into a pile with the remaining slurry delivered to a 12,000-gallon V-bottom tank. An inclined auger at the bottom of the tank delivered the slurry to hydrocyclones where sand sized particles were portioned out of the slurry using 250 mesh and dropped into a pile. The remaining slurry was delivered to one of four 20,000-gallon mixing tanks. Each tank had three mixers. Polymer was added to the slurry and mixing occurred. After a time, the mixture was allowed to statically sit while some settlement of the solids occurred. The clear water on top was decanted off and sent to the water treatment system while the enriched slurry was pumped to the presses. During 1998, two standard plate frame presses were used and during

1999 two diaphragm presses (which used compressed air to further compress the sediment) were used. Water which was generated from the presses was delivered to the water treatment system. The pressed sediment (filter cake) was dropped out of the presses and delivered by conveyor belt to the end of the press. The filter cake was then transported to filter cake piles using a bobcat or a front-end loader.

The water treatment plant consisted of bag filters followed by sand filters to liquid phase carbon vessels. The treated water was then delivered back to the Fox River through a ZID (zone of initial dilution) outfall as specified by the WPDES permit.

The bag filters consisted of an 8 vessel bag filter using 5 micron filter bags with a total of 35.2 sq ft. The sand filters were 6 model OC 50 vessels operating in parallel. The media was 3 layered, gravel to sand with a maximum flow through of 1,500 gpm.

The final phase of treatment consisted of two PC 78 liquid phase carbon absorbers operating in parallel with a maximum flow of 750 gpm each. Each unit had a carbon capacity of 20,000 pounds reactive liquid phase carbon.

The discharge pipe was a single-walled, 8-in diameter HDPE pipe. The discharge pipe was pointed downstream and the discharge end was directed upward at a 30º angle to provide dilution in accordance with the ZID specification.

The stockpiled dewatered sediment (filter cake, gravel and sand) was lifted and conveyed by a front-end loader unto hall trucks for transport to the landfill(s). The individual piles were transported at one time allowing measurement of weight per pile. An on-site scale was used to measure the weight of the trucks for hauling while scales at the landfill(s) were used for actual weight delivered. The truck sides and tires were decontaminated on the asphalt pad after loading and prior to shipment using a jet spray washer. A tarp covered the box of the truck during shipment.

The chronological listing of milestones achieved during dredging operations in 1998 is as follows:

**Dredging Operation Milestones (1998)**

| Milestone | Date |
|---|---|
| Pilot test | 11/23/98 |
| First effluent discharged | 11/23/98 |
| Full-scale start-up of dredging | 11/25/98 |
| First shipment of dewatered sediment to landfill | 12/01/98 |
| Open house for public to view operation | 12/04-05/98 |
| Dredging curtailed due to cold weather | 12/31/98 |
| Last stockpile hauled to landfill | 01/06/99 |

Operation activities in 1999 were initiated on August 19, 1999 and continued through the dredging of a portion of Deposit "O" until November 3, 1999. The significant changes to operations were:

1. Diaphragm presses were used in lieu of the standard plate frame press.

2. No perimeter turbidity barrier was used.

3. A single-wall dredge pipe was used.

A list of operation milestones during 1999 follows:

**Dredging Operation Milestones (1999)**

| Milestone | Date |
|---|---|
| Dredging start-up | 08/19/99 |
| Winnebago County Landfill representative site visit | 08/26/99 |
| First (1999) dewatered sediment hauled to landfill | 09/07/99 |
| Site visit by Wisconsin Society of Professional Engineers (25 people) | 09/15/99 |
| EPA representatives video tape project (Roy F Weston, Inc.) | 10/05/99 |
| Samples collected from Deposit "O" by contractor for testing (mini-press) | 10/10/99 |
| Last day of dredging Deposit N | 10/14/99 |
| Start of dredging Deposit O | 10/15/99 |
| Last day of dredging Deposit O | 11/03/99 |

## 5.5 Site Closure Activities

Partial closure activities occurred at the end of the 1998 dredging and complete closure activities occurred at the end of the 1999 dredging activities.

### 5.5.1 Daily Meetings

Informal meetings between the RPR and the contractor occurred daily during closure activities. Nine formal meetings with property owners were held on an "as needed" basis during 1998 and 1999 closure activities.

### 5.5.2 Daily Closure Observation

The RPR continued to maintain a full-time presence and performed daily observation and to develop a daily construction observation report. The full-time presence became part-time near the end of both closure events (post 1998 and 1999).

### 5.5.3 General Closure Activities

Closure activities immediately after the 1998 dredging were performed to maintain the integrity of the on-shore treatment facility while removing that equipment which posed a financial burden to the project or which pose physical safety issues within the river. These closure activities included removal of the dredge, conveyance pipe, turbidity monitors, and the perimeter and deflection barriers from the river. The wastewater treatment system was decommissioned. The media landfilled and the tanks removed. The temporary building around the treatment system was decontaminated by spray washing and removed from the site. The filter presses were decontaminated by spray washing and removed from the site.

The chronological listing of milestones for post 1998 dredging closure activities follows:

**Closure Milestones (1998)**

| Milestones | Date |
|---|---|
| 1998 dredging ceases | 12/31/98 |
| Begin decontamination of on-shore treatment facility equipment | 01/01/99 |
| Filter media shipped to E.Q. Wayne County, Michigan landfill | 01/07/99 & 01/08/99 |
| Begin dismantling of temporary building | 01/09/99 |
| Begin removal of perimeter turbidity barrier, remove turbidity meters from river (except for M-2), temporary building off-site. | 01/19/99 |
| Remove M-2 turbidity meter from river | 01/27/99 |
| Remove deflection barrier from river | 01/29/99 |
| Begin to haul turbidity barrier to landfill | 02/02/99 |
| Last day of contractor presence | 02/12/99 |

The asphalt pad was left in-place along with two 20,000-gallon (van-for-rent) storage tanks to hold water pumped from the sump. The tanks were periodically tested for WPDES constituents and discharged to the river.

The closure activities after the 1999 dredging were permanent closure activities. The closure activities included those for the post 1998 dredging and also included complete removal of the asphalt pad, including the underlying protective barrier, testing the subbase material for contamination, and removal of all temporary utility structures (e.g., light poles, power poles). Pursuant to the agreement between the contractor and the on-shore treatment facility owner (Altergott), the perimeter fencing was left in-place.

The chronological list of milestones for post-1999 dredging closure activities follows:

**Closure Milestones (1999)**

| Milestone | Date |
|---|---|
| Last day of dredging | 11/03/99 |
| Begin decontamination of equipment at the treatment facility | 11/04/99 |
| Dredge removed from river | 11/17/99 |
| Core samples from asphalt and underlying sand/gravel taken | 11/19/99 |
| Begin removal of asphalt, sand/gravel, and the geosynthetic | 12/20/99 |
| Finish removal of asphalt, sand/gravel and geosynthetic | 01/17/00 |
| Revegetation established, closure activities completed | 05/31/00 |

# 6 Project Performance

Figure 1 shows the location of Deposit N in the Fox River. Hydraulically dredged sediments from Deposit N were pumped to the on-shore treatment site where the sediments were dewatered, carriage water was treated and discharged back to the Fox River, and dewatered sediments were transported off-site to approved landfills. A diagram of the treatment process used at Deposit N is presented in Figure 8.

This section presents a summary of the removal actions for each phase of the project. Section 6.5, and of course, the Summary Report (Foth & Van Dyke, April 2000) contains an overall summary of the removal work at Deposit N. Pre-project sediment thickness and volume at Deposit N is shown on Figure 9. Pre-project PCB concentrations at Deposit N are shown on Figure 10.

The project was accomplished through four distinct phases of work. These phases were determined by weather conditions, allowable time frames and by the desire to increase the information gained from this project.

Phase I was the dredging performed at the start of the project, November 23, 1998 until the project was shut down in 1998 due to icing conditions in the river on December 31, 1998. The area dredged to specifications was from 0 to 450 east. Some dredging also occurred from 450 to 800 and within a small section within the east lobe.

Phase II dredging was the continuation of dredging the rest of the Deposit N from 450 to the east. Upon completion of Phase II, all of Deposit N had been dredged to meet project specifications.

Phase III dredging entailed removal within the boundaries of Phase I in an area previously dredged in 1998 where residual PCB concentrations were higher than those of the surrounding area.

Deposit O is located on the opposite bank of the Fox River, adjacent to the on-shore treatment site. Dredging of Deposit O, Phase IV, occurred from October 15, 1999 through November 3, 1999. The dredging occurred in the approximate eastern half of the deposit. The following table summarizes the phase schedule for the project.

| Phase | General Location | Active Dredging Timeframe |
|---|---|---|
| I | West half of deposit<br>(Station 0 to Station 450) | 11/23/98 - 12/31/98 |
| II | East half of deposit<br>(Station 450 to Station 5096+) | 8/20/99 - 10/04/99 |

| Phase | General Location | Active Dredging Timeframe |
|---|---|---|
| III | West half of deposit<br>(Station 200 to Station 300) | 10/05/99 - 10/14/99 |
| IV | Deposit O<br>(North side of river from Deposit N) | 10/15/99 - 11/03/99 |

## 6.1 Phase I Operations - 1998

Site preparations, including grading, construction of the on-shore subgrade protective barrier, and mobilization and setup of equipment began on October 19, 1998. The pilot test was performed on November 23, 1998. With the exception of equipment down time, sediment was dredged and dewatered at Deposit N 24 hours a day from November 26 through December 21, 1998 and then again from December 28 through December 31, 1998. Project data, generated daily at the site, included test results from sediment, river water, treated carriage water and air at the site. Analytical procedures and methods followed those from the approved Quality Assurance Project Plan (QAPP) and as described in Section 4.

### 6.1.1 Pilot/Start-up Process

On November 23, 1998, a pilot or start-up test was conducted at Deposit N. The general intent of the pilot test was to verify that the contractor had constructed equipment and treatment systems to plans and specifications. WDNR and Foth & Van Dyke engineers and scientists observed and verified the performance of dredging, treatment, solids handling, and safety systems with respect to project permit and performance specifications. Key metrics included minimum solids content of dewatered sediment, effluent quality, dredge performance and turbidity barrier construction. Table 9 contains data from the November 23, 1998 pilot test showing a range of solids content from 38 to 51.5%. Upon review of the test data, the contractor was granted approval to start the Deposit N dredging operation on November 25, 1998.

### 6.1.2 Phase I Sediment Removed

Deposit N consisted of a silty/clay western lobe and a sandy eastern lobe, together consisting of approximately 11,000 cu yd (Figure 9). Approximately 3,788 cu yd of sediment was removed from Deposit N during the November/December time frame (Figure 11).

Project dredging specifications for the West Lobe of Deposit N (average sediment thickness 3 inches or less with no thickness above 6 inches) were met during Phase I at the 0 - 450 mark (Figure 12). A dredge specification exception was requested and granted to the contractor for a location near the far western end of the deposit where coal resided on the river bottom in thickness exceeding the dredging specification of 6 inches. This exception was granted by the design team following the review of reconnaissance data from the underwater diver surveys.

The majority of sediment removed from Deposit N during Phase I was the fine grain silty/clay material from the Western Lobe identified in the RI/FS as containing significantly higher PCB concentrations compared to the sandy Eastern Lobe sediments. For example, Western Lobe PCB concentrations were typically in 50-100 ppm range while Eastern Lobe PCB concentrations were typically in the 1-10 ppm range. Figure 13 shows PCB concentrations at Deposit N following Phase I work.

### 6.1.3 Mass of Sediment Removed

Approximately 2,537 tons of dewatered sediment were generated from Deposit N during Phase I and disposed of in either the E.Q. Landfill (TSCA sediments) or Winnebago County Landfill (non-TSCA sediments). For Phase I, total tonnage of dewatered sediment transported to E.Q. was approximately 1,632 tons and total tonnage transported to Winnebago County was approximately 905 tons.

### 6.1.4 Mass PCBs Removed

Dewatered sediment at Deposit N was segregated on-site into 250 cu yd piles. A composite sample, each consisting of 10 subsamples, obtained directly from the press as the dewatered sediment was generated, was sent to the approved laboratory for PCB analysis. Using the PCB analytical data and the solids content data of the dewatered sediment, the mass of PCBs from the 2,537 tons of dewatered sediment was developed. Approximately 95 pounds of PCBs were removed from Deposit N during Phase I dredging of the Western Lobe (Table 10).

### 6.1.5 Water Treatment Discharge Data

Analytical testing was conducted daily, in order to demonstrate compliance with the limits in the WPDES permit. Tables 11 and 12 contain a summary of the influent and effluent data from Phase I Deposit N, respectively. Sample results indicate that the water treatment plant treated the carriage water to comply with the WPDES permit.

### 6.1.6 Phase I Turbidity/Resuspension Data During Dredging

Turbidity meters were placed in the river and also within the water intake stream of Inter Lake Papers. The meters produced a digital signal, which was transmitted to the on-shore treatment site, allowing river turbidity conditions to be evaluated in a real-time monitoring environment.

Continuously throughout the project, turbidity monitoring results were generated at 15 minute intervals, resulting in a large turbidity database. During Phase I, monitoring occurred at six stations, named M-1 through M-6 (Figure 2). Station M-1 was located upstream of dredging, M-2 sidestream of dredging, and M-3 downstream of dredging. Station M-4 was located in the intake stream of Inter Lake Papers, and M-5 was at a post-water treatment location in Inter Lake Papers. Station M-6 was located inside the turbidity containment barrier.

The turbidity monitoring results for all phases are tabulated and summarized in Appendix H. The results are given as an average turbidity reading collected during one hour intervals, i.e., average of four 15-minute readings. Dredge operation is also indicated with the turbidity results. If dredging occurred at any time during the one hour interval, dredging is indicated with the results as "yes". Finally, river flow, as measured by Inter Lake Papers, is presented along with the turbidity results.

Statistical analysis of the results in Appendix H were performed to evaluate the overall effect of dredging on turbidity, taking into account wind events and river flow. The analyses performed include regression models, paired t tests, and graphical interpretations. A statistical analysis was performed separately for Phase I, and a combined analysis was performed for Phase II and III.

Bench test data, performed on sediment and river water from Deposit N, were used to develop a correlation, and ultimately conversion equation, between turbidity and total suspended solids. The conversion developed between turbidity and total suspended solids was TSS (mg/L) = -1.127 + 1.313 * turbidity (ntu). The coefficient of determination ($r^2$) for this model was 0.988, which means a large majority of the variation between TSS and turbidity is being explained. This conversion will be used to represent turbidity as TSS in the subsequent statistical analyses.

#### 6.1.6.1 Phase I Turbidity Results

Trend plots of the turbidity results measured during Phase I are presented in Appendix I. The results are also distinguished by dredging where red points indicate the occurrence of dredging, green points indicate no dredging, and black points indicate the dredge log for that particular time could not be located.

Two weeks prior to any sediment removal work in the river, a major wind event, with sustained winds over 50 mph occurred in the area on November 10, 1998. The effect of this wind event is evident in the turbidity plots of Appendix I. The turbidity measurements approached 100 ntu at stations M-1, M-2, M-3 and M-6 at the beginning of Phase I, and slowly decreased thereafter for the next three weeks. The data indicated that this wind event had a greater effect than dredging on river turbidity levels.

To further test the effect of dredging on turbidity levels during Phase I, several statistical methods, including paired t tests and regression analysis were utilized. In addition, graphical displays such as cumulative percent charts were also used to determine the effect of dredging on turbidity levels. The results of the paired t tests, regression analyses, and other graphical displays for Phase I are presented in Appendix J.

The paired t tests were performed on the difference between the upstream station (M-1), and the sidestream/downstream stations (M-2, M-3 and M-6). For example, with stations M-2 and M_1, the difference between the turbidity results at each time point were calculated, and tested to determine if overall the average difference is zero. An average difference of zero is indicative of no difference between the monitoring locations.

The paired t test analyses indicate that the turbidity readings at stations M-2, M-3 and M-6 each were generally less than the turbidity readings of M-1. This is also reflected in the cumulative percent charts of the differences, where the 50$^{th}$ percentile falls below zero, and the turbidity difference charts over time, where the majority of points are negative. Therefore, in each case, the upstream turbidity data is generally greater than the downstream and sidestream values.

In addition, the paired t tests were performed on data subsets defined by "dredging" and "no dredging" activity. During the periods of dredging, the t tests indicate that the upstream values were statistically greater than the downstream or sidestream values. During periods of "no dredging", the test on M-1 vs. M-3 again indicated that upstream values exceeded downstream values, however, no significant difference was noted for the "no dredging" periods with M-1 vs. M-2, or M-1 vs. M-6.

A possible explanation for the upstream turbidity levels exceeding sidestream and downstream levels during Phase I could stem from the combining factors of the perimeter turbidity curtain, dredging schedule, and previously discussed wind event during November of 1998. The November 1998 wind event caused the highest turbidity readings to occur at the onset of the project, before dredging took place. The turbidity curtain itself, then may have possibly shielded the sidestream and downstream meters from the elevated turbidity readings.

Finally, a regression analysis was completed for the turbidity results of M-2, M-3 and M-6, considering the factors of time and dredging. The factor of time was included to remove the variation existing in the data as a result of the extreme wind event on November 10, 1998. By removing this variation, the effect of dredging would be much more readily determined. Using a 5% critical level, the results of the regression analysis indicate that turbidity levels during periods of dredging decreased for stations M-2, M-3 and M-6. This conclusion is similar to that of the paired t tests performed on the “dredging” data subset. The estimated decrease in turbidity for these three stations during dredging is approximately 2.7, 3.0 and 3.3 ntu, respectively. Using the relationship derived from the bench test work, this would convert to TSS values of approximately 2.4, 2.8 and 3.2 mg/L.

### 6.1.7 Air Monitoring Data

Air quality monitoring, for particulates, was conducted with four real-time monitors surrounding the on-shore treatment site (Figure 14). Table 13 presents air monitoring data for Phase I. Air data show consistent compliance with the site particulate standard. The single exceedance, on December 4, 1998, was a result of a heavy ground fog occurrence which produced a false positive particulate reading.

## 6.2 Phase II Operations - 1999

Dredging for Phase II work began following site mobilization and setup work, which was initiated on August 3, 1999. With the exception of equipment down time, sediment was dredged and dewatered at Deposit N 12 hours a day from August 20 through October 14, 1999. Project data, generated daily at the site, included test results from sediment, river water, and treated carriage water. Analytical

procedures and methods followed those from the approved Quality Assurance Project Plan (QAPP) and as described in Section 4.0.

### 6.2.1 Phase II Pilot/Start-up Process

On August 19 and 20, 1999, a pilot or start-up test was conducted at Deposit N for Phase II Operations. Upon review of the test data, the contractor was granted approval to start the Phase II Deposit N sediment removal cleanup operation.

### 6.2.2 Phase II Sediment Removed

Figure 15 shows the location and volume of sediment dredged during Phase II. Approximately 2,983 cubic yards of sediment were removed during Phase II.

Project dredging specifications were met by the contractor for this area (average sediment thickness 3 inches or less with no thickness above 6 inches for the west lobe and average sediment 6 inches or less for the east lobe) Figure 16. A dredging specification exception was requested and granted to the contractor for a location adjacent to the south bulkhead where a rubble field was encountered. A multibeam sonar survey was employed to verify the presence of the rubble field and respond to the contractor's request for an exception to the specification.

### 6.2.3 Phase II Mass PCBs Removed

Using the PCB analytical data and the solids content data of the dewatered sediment, a mass of PCBs from the 2,983 tons of dewatered sediment was developed. Approximately 13 pounds of PCBs were removed from Deposit N during Phase II (Table 14).

### 6.2.4 Phase II Water Treatment Discharge Data

Analytical testing was conducted daily, in order to demonstrate compliance with the limits in the WPDES permit. Tables 15 and 16 contain a summary of the influent and effluent data, respectively, from Deposit N Phase II Operations. Sample results indicate that the water treatment plant treated the carriage water to comply with the WPDES permit.

### 6.2.5 Phase II Turbidity/Resuspension Data

During Phases II, III, and IV, the rigid turbidity containment barrier was not deployed. However, the silt curtain and deflection barrier were used during the dredging work. Stations M-1, M-2 and M-3 were located upstream, sidestream and downstream, respectively, of the dredge (Figure 2). Also, station M-4 was located in the intake stream of Inter Lake Papers and M-5 was at a post-water treatment location at Inter Lake Papers. Since no rigid turbidity barrier was used for Phases II, III and IV, a meter was not needed inside the barrier.

#### 6.2.5.1 Phase II Turbidity Results

Trend plots of the turbidity results for Phase II are presented in Appendix K. Similar to the plots of Phase I given in Appendix I, the results are classified by periods of "dredging", "no dredging" or undetermined with red, green and black symbols, respectively. In the graphs of Appendix K, Fox River flow, as measured by Inter Lake Papers, is also presented with blue symbols.

Little effect of dredging on turbidity levels can be observed in any of the plots in Appendix K. However, a small effect on turbidity levels due to increased flow is seen during the onset of phase II. Higher flow between 2500 and 3500 cfs, and correspondingly higher turbidity levels at stations M-1, M-2 and M-3, were observed through the end of August, 1999. Station M-4 had steadily decreasing turbidity levels from the onset of Phase II through the beginning of October 1999.

The effect of dredging on turbidity levels during Phases II and III was again tested using paired t tests and regression analysis. The results of the statistical analysis are presented in Appendix L. M-6 was only used for turbidity monitoring during Phase I, thus no analysis is included for this station.

Again, the paired t tests are calculated from the differences in turbidity readings at each time period. These differences are displayed graphically in the cumulative percent charts in Appendix L. As can be seen in the cumulative percent charts, for the M-2 minus M-1 differences, and M-3 minus M-1 differences, some extreme outliers exist at both ends of the data sets. By removing the lower and upper one percentiles of the data, it is easier to determine whether true statistical differences exist between the upstream and down or sidestream data.

The paired t tests for M-1 vs. M-2 and M-1 vs. M-3 each indicate that overall, during Phase II, turbidity levels were greater down and sidestream (M-3 and M-2) than upstream (M-1). The difference in overall average turbidity levels (after removal of the lower and upper one percentiles) for M-1 and M-2 was approximately 1.6 ntu (or TSS value of 1.0 mg/L). The difference in overall average turbidity levels for M-1 and M-3 was approximately 3.5 ntu (or TSS value of 3.5 mg/L). Paired t tests calculated on the subsets of data for "dredging" and "no dredging" also indicate increased levels downstream and sidestream over upstream.

Outlying values were also removed from the M-2 and M-3 turbidity data sets for the regression analysis. These outliers can be seen in the cumulative percent charts for M-2 and M-3 turbidity, given in Appendix L. The outliers removed for M-2 were the 15 values greater than 60 ntu, all occurring on September 26 and 27, 1999. The outliers removed for M-3 were the eight values greater than 400, observed on August 22, September 12 and September 13, 1999.

The regression analysis completed for M-2 and M-3 considered the factors of dredging and river flow. Through the regression analysis, it was concluded that river flow had a significant positive impact (increase) on turbidity levels for both M-2 and M-3. The estimated effect for M-2 was an approximate increase of 1 ntu for every increase in flow rate of 125 cfs. The estimated effect for M-3 was an approximate increase of 1 ntu for every increase in flow rate of 150 cfs.

For M-2, dredging also had a positive impact (increase) on turbidity levels. The estimated effect of dredging on turbidity in M-2 was an increase of approximately 2.2 ntu (or TSS value of 1.8 mg/L). For M-3, the factor of dredging was significant using a critical level of 1%, but not with a critical level of 5%. With the 1% critical level, the estimated effect of dredging on turbidity in M-3 was an increase of approximately 3.1 ntu (or TSS value of 2.9 mg/L). The estimated effects determined through the regression analysis closely match the differences previously noted in the paired t test analyses between the overall averages of M-1 vs. M-2 and M-1 vs. M-3.

The increased turbidity results for M-2 and M-3 over M-1 seem more pronounced at lower levels. Turbidity graphs of M-1 vs. M-2, and M-1 vs. M-3, and also a cumulative percent chart of M-1 and M-3 turbidity plotted separately, are also included in Appendix L. In these graphs, the increase in turbidity levels of M-2 and M-3 over M-1 are most readily seen at levels below 20 ntu. This may be due to the increasing effect from river flow at higher turbidity levels. For instance, as turbidity readings increase, the contributing factors become not only station location and dredging, but also flow. Therefore, the differences in the data as determined solely by station location become somewhat indistinguishable at higher turbidity levels.

### 6.2.6 Phase II Air Monitoring Data

Based on the results of real-time air monitoring generated during Phase I Operations, air quality monitoring was not conducted during Phase II.

## 6.3 Phase III Operations - 1999

With the exception of equipment down time, Phase III work occurred at Deposit N 12 hours a day from October 5 through October 14, 1999. Project data, generated daily at the site, included test results from sediment, river water and treated carriage water. Analytical procedures and methods followed those from the approved Quality Assurance Project Plan (QAPP).

Phase III operations consisted of additional dredging over the sediments located between Stations 200 to 300 This area was dredged to specification during Phase I. At the completion of Phase II dredging, additional funds and time (i.e., weather) were available at Deposit N to allow for a targeted removal of sediments. Phase III provided an opportunity to remove additional PCB sediments through a modification of the dredge intended to evaluate the removal of residual sediments on the bedrock surface.

### 6.3.1 Phase III Sediment Removed

Figure 17 shows the location and volume of the sediment dredged at the site during Phase III. Approximately 135 cubic yards of sediment were removed during Phase III. A low volume of sediment was removed over 12 days as very low percent solids were achieved in the dredge slurry due to dredging an area where the sediments were only a few inches in thickness.

### 6.3.2 Phase III Mass PCBs Removed

Using the PCB analytical data and the solids content data of the dewatered sediment, a mass of PCBs from the 125 tons of dewatered sediment was developed. Approximately 5 pounds of PCBs were removed from Deposit N during Phase III (Table 17). Although a low volume of sediment was dredged in Phase III, the highest ratio of PCB mass to cubic yards sediment removed, for the entire project, occurred with Phase III. Post-project PCB concentrations in sediment are shown in Figure 18.

### 6.3.3 Phase III Water Treatment Discharge Data

Analytical testing was conducted daily, in order to demonstrate compliance with the limits in the WPDES permit. Table 18 contains a summary of the influent and effluent data, respectively, from Deposit N Phase III Operations. Sample results indicate that the water treatment plant treated the carriage water to comply with the WPDES permit.

### 6.3.4 Phase III River Turbidity/Resuspension Data

Five turbidity meters were placed either in the river or inside Inter Lake Papers during Phase III (Figure 2). The meters were capable of producing a digital signal received by a base station at the on-shore treatment site. The results for Phase III are presented in Appendix K.

### 6.3.5 Phase III Air Monitoring Data

Based on the results of real-time air monitoring generated during Phase I Operations, air quality monitoring was not conducted during Phase III.

## 6.4 Phase IV Operations - 1999

With the exception of equipment down time, Phase IV work at Deposit O occurred 12 hours a day from October 15 through November 3, 1999. Project data, generated daily at the site, included test results from sediment, river water, treated carriage water and air at the site. Analytical procedures and methods followed those from the approved Quality Assurance Project Plan (QAPP).

Phase IV, or Deposit O, provided an opportunity to test rapid remobilization of the dredging contractor to a new sediment deposit location in the river, while at the same time targeting additional removal of sediment and PCBs from the river.

### 6.4.1 Phase IV Volume of Sediment Removed

Figure 2 shows the location of the sediment dredged at the site during Phase IV. Approximately 1,026 cubic yards of sediment were removed during Phase IV.

### 6.4.2 Phase IV Mass PCBs Removed

Using the PCB analytical data and the solids content data of the dewatered sediment, a mass of PCBs from the 806 tons of dewatered sediment and filter media was developed. Approximately 0.4 pounds of PCBs were removed from Deposit N during Phase IV. Table 19 shows a summary of the PCB pounds removed during Phase IV.

### 6.4.3 Phase IV Water Treatment Discharge Data

Analytical testing was conducted daily, in order to demonstrate compliance with the limits in the WPDES permit. Tables 20 and 21 contain a summary of the influent and effluent data from Phase IV, respectively. Sample results indicate that the water treatment plant adequately treated the carriage water to comply with the WPDES permit.

### 6.4.4 Phase IV River Turbidity Data

Two turbidity meters were placed in the river at Phase IV, Deposit O; M-2 was relocated to Deposit ) and renamed M-7 and M-3 was relocated and renamed M-8. The results for Phase IV are presented in Appendix K.

### 6.4.5 Phase IV Air Monitoring Data

Based on the results of real-time air monitoring generated during Phase I Operations, air quality monitoring was not conducted during Phase IV.

## 6.5 Phases I - IV Sediment Removal Summary

The Deposit N Summary Report (Foth & Van Dyke, April 2000) contained an overall summary of the project using project data and calculations available at that time. Additional data and analyses conducted for this report slightly revises the overall project removal values from those presented in the Summary Report. Overall, using current data, in 104 days of dredging, 8,175 cubic yards of sediment were removed, 6,451 tons were landfilled and 114.5 lbs of PCBs were removed from Deposit N and Deposit O. Table 22 contains a summary of the removal metrics by project phase.

## 6.6 Sediment Sampling Activities

The Deposit N project's goals, objectives and specifications did not contain any requirement to remove or cleanup sediments to a PCB cleanup criterion. As such, removal of the sediments was not designed or implemented in a manner to reach a specific PCB target or cleanup concentration. PCB sediment concentrations remaining in an aquatic ecosystem are important in the evaluation of dredging as a sediment remediation method. However, to evaluate Deposit N or the effectiveness of dredging to attain selected PCB sediment concentrations using Deposit N data, is somewhat inappropriate given that the project design did not intend to dredge to a PCB cleanup criterion.

Given the above context of the project, historical PCB sediment concentration data are presented in the table below in order to document pre- and post-project conditions at the site. As the Table illustrates, the residual or post-project volume, PCB mass and average PCB concentration of sediments decreased in comparison to pre-project conditions.

Sediment samples were obtained from the river by a certified diving contractor before and after dredging at Deposit N. Sediments at Deposit N rested on a fractured bedrock surface, preventing a dredge cut into a clean underlying layer. Therefore, it was anticipated that PCB concentrations of the sediment after dredging could be similar to pre-dredge concentrations.

| | Pre-project measurements | | | | | | Post Project |
|---|---|---|---|---|---|---|---|
| | 1989 | 1992 | 1994 | 1997 | 1997 | 1998 | 1999 |
| Volume (cu yd) | 16,010 | n/c | 8,500 | n/c | 12,000 | 11,000 | 3,840 |
| PCB mass (lbs) | 352 | n/c | 262 | n/c | n/c | 142 | 31 |
| Maximum PCB concentration (ppm) | 130 | 130 | 186 | 61 | 130 | 160 | 130 |
| Average PCB concentration (ppm) | 20 | 130 | 45 | 49 | 73 | 16 | 14 |
| Maximum surface PCB concentration (ppm) | 130 | 130 | 186 | 61 | 130 | 72 | 130 |

n/c = not calculated

The Deposit N post-project PCB sediment concentration value of 14 ppm represents the overall average PCB concentration following dredging at the three phases of Deposit N. Specifically, post-project concentrations were evaluated using January 1999 data for Phase I and October 1999 data for Phases II and III. Since PCB sediment concentration data are presented here immediately following specific phases of the project, these data better characterize post-dredging conditions at a dynamic river location where PCBs from upstream sources continually affect post-project conditions.

## 6.7 Deposit N Sediment Bed Model

During the project, sediment PCB sampling occurred of both in-situ riverbed sediments and of dredged dewatered sediments generated at the on-shore treatment site. Three in-situ riverbed sampling events occurred, corresponding to pre-project, post-Phase I, and post-project conditions. In addition to the riverbed sampling events, sediment elevation surveys were taken to define pre-project, post-Phase I, and post-project sediment thickness. Sampling of the dredged dewatered sediment on-shore was performed daily throughout the project.

The on-shore sediment and the in-situ riverbed results, can be used to estimate the total amount of PCB mass removed from the river. For example, dredged PCB mass estimates can be obtained using the shore sediment PCB results, tons removed and percent solids data. Dredged PCB mass estimates can also be obtained from the PCB sediment riverbed results by using them in conjunction with the sediment thickness survey data and in-situ density data. However, estimates of post-project PCB mass

remaining in the deposit can only be made using the riverbed sampling method. As such, the sediment bed model provided a tool to evaluate overall PCB mass removal at Deposit N.

Since the daily on-shore PCB sediment sampling data greatly exceeded the amount of riverbed sampling data, the statistical error involved in estimating dredged PCB mass will be less with the on-shore data. In essence, a relatively greater proportion of the on-shore dewatered sediment was sampled, as compared to the riverbed sediments, resulting in a greater amount of known information and less associated error with the on-shore PCB mass removal estimation. With this consideration, while the riverbed sampling data can be used to estimate remaining in-situ PCB mass, the on-shore sediment data are best used to estimate total PCB mass removal for the project.

### 6.7.1 In-Situ Riverbed Sampling Results

The most detailed sampling events performed on the riverbed sediments occurred in November 1998, January 1999, and October 1999. The PCB riverbed sediment results and bulk dry density results are summarized in Appendix M (Table M-1 for the November 1998 sampling, Table M-2 for the January 1999 sampling, and Table M-3 for the October 1999 sampling).

During November 1998 (pre-project), samples were collected at 30 locations. The core samples collected at each location were divided into discrete intervals for PCB analysis. At four of the locations, two cores were taken (S9, S12, S15 and S22), where one core was analyzed by discrete intervals, and analysis also performed on the entire core length.

The January 1999 (post-Phase I) samples were collected near the locations of the pre-project samples, with the exception of S22, as this location was outside of the dredge containment barrier. S22 was replaced with S31 (which was near S22) but located just inside the containment barrier. Transect samples were collected at nine locations (T02, T05, T08, T11, T14, T17, T20/21, T28 and T30) in which composite samples were collected at 25%, 50%, 75% and 100% of the distance along a transect.

The October 1999 (post-project) samples were collected at 30 locations, denoted PC-1 through PC-30. These samples again were located near the pre-project sample locations.

Contour maps illustrating the pre-project November 1998 PCB concentrations are illustrated in Appendix M (Figures M-1, M-2 and M-3). In each of these figures, a different contouring algorithm was used to assess the effect of the algorithm on estimated PCB mass. In Figure M-1 (Appendix M), PCB concentrations are estimated through Thiessen polygons. In Figure M-2, linear kriging was used. In Figure M-3, inverse distance weighted (IDW), with a search radius of 200 feet and power of 5, was used. Figures M-4, M-5, and M-6 (Appendix M) display the November 1998 in-situ sediment dry density results using Thiessen polygons, kriging and IDW, respectively.

Contour maps illustrating post-Phase I January 1999 PCB concentrations are illustrated in Figures M-7, M-8 and M-9 (Appendix M). Again, the contouring algorithms of Thiessen polygons, kriging and

IDW are used, respectively. The January 1999 in-situ sediment dry density results, contoured with the three algorithms, are displayed in Figures M-10, M-11 and M-12 (Appendix M).

Since the sediment sampling was performed by various methods, i.e., coring and bottle sampling, a methodology to estimate the PCB concentration at each sample location needed to be defined. The following methodology was used:

- In the November 1998 samples, if a core was sampled at intervals, a weighted average was used to represent the entire interval. For example, two intervals sampled from the core S3: one from the 0-in to 4-in interval and another from the 4-in to 1-ft interval. The total PCB results were 24 mg/kg for the 0-in to 4-in interval, and 42 mg/kg for the 4-in to 1-ft interval. The PCB concentration representing this location was therefore calculated as 24*(4/12) + 42*(8/12) = 36 mg/kg.

- In the November 1998 samples, if two core samples were taken where one covered the entire interval, and the other was sampled at intervals, the result from the core representing the entire interval was used.

- In the January 1999 samples, if both a core sample and bottle sample were collected, the core sample test result was used.

Similar to the PCB concentration results, if interval sediment sampling resulted in more than one sediment density measurement per sample location, a weighted average was used to represent the entire interval.

### 6.7.2 PCB Mass Estimates – Riverbed Contour Model

The pre- and post-Phase I PCB and density sampling results illustrated in Figures M-1 through M-12 (Appendix M) were utilized to estimate PCB mass for the area associated by Phase I dredging. Pre-Phase I (for the Phase I dredge area only) estimates were made utilizing the November 1998 sampling results (Table M-1) in conjunction with the November 1998 survey results of sediment thickness. Post-Phase I estimates (again for the Phase I dredge area only) were made utilizing the January 1999 sampling results (Table M-2) in conjunction with the January 1999 survey results. Survey data were converted from the measurement unit of feet to yards. The PCB mass estimates were made by multiplying the map data of PCB concentration (ppm), sediment density (lbs./yd$^3$) and sediment thickness (yards), and dividing by $1*10^6$, resulting in-situ PCB mass, in units of pounds.

Figure M-13 illustrates pre-project PCB pounds in sediment estimated from the pre-Phase I data using Thiessen polygons. Similarly, Figures M-14 and M-15 illustrate the pre-Phase I PCB sediment mass using kriging and IDW, respectively.

Summing the mass represented in Figures M-13, M-14 and M-15 yields the following estimates of pre-Phase I PCB mass (pre-project) for the area defined by Phase I dredging:

Thiessen Polygons: 55.8 lbs.
Kriging: 65.4 lbs.
IDW: 59.5 lbs.

Figures M-16, M-17 and M-18 (Appendix M) illustrate the post-Phase I in-situ PCB mass, again respectively utilizing Thiessen polygons, kriging, and IDW. Summing the PCB mass represented in Figures M-16, M-17 and M-18 yields the following estimates of post-Phase I or residual PCB mass in the Phase I dredge area:

Thiessen Polygons: 4.1 lbs.
Kriging: 4.4 lbs.
IDW: 4.3 lbs.

Note that with the above estimates, the calculated mass removed ranges between 51.7 pounds to 61.0 pounds of PCBs. This estimate is below the on-shore data estimate of 95 pounds for Phase I (Section 6.5). As stated previously, the shore data are judged to be a better estimate due to the increased amount of sampling performed and the homogenous nature of the on-shore sediment. The PCB mass discrepancy between the shore estimate and the riverbed estimates could be explained by several factors, the most likely of which is the non-homogeneous nature of the PCB concentrations in the river. For example, a "missed" high PCB concentration location in the riverbed PCB sampling could significantly reduce the overall mass estimate. However, since the shore sediments were well mixed by the dredging and treatment process and sampled at greater frequency, missing such a high value would be less likely.

### 6.7.3 PCB Mass Estimates – Arithmetic Averaging and Confidence Interval Method

To evaluate for the variation inherent in the PCB mass removal data, another estimation method was utilized for riverbed PCB mass. The empirical distributions of PCB concentrations and bulk dry densities were used to develop 95% confidence intervals for the PCB mass estimates. Although the spatial component of the data was omitted with this method, estimates could be made which characterized the uncertainty involved.

The data set used for the November 1998, Phase I area, was divided into two groups. This was necessary since the Phase I dredging itself was performed in two discrete areas (west lobe and east lobe), and the sediment density of the two areas is distinctly different. One data set was defined by the sample locations encompassed by the dredge boundary in the west lobe. The second data set, which represented the smaller dredge area in the east lobe, was defined by the remaining east lobe samples. These same groupings were also used for the post-Phase I estimates.

In addition to Phase I estimates, this arithmetic/confidence interval model was also used to estimate PCB mass removal estimates from Phases II and III.

The data set used to estimate pre-Phase II PCB mass consists of the January 1999 samples located within the Phase II dredge boundary, in conjunction with the August 1999 survey of sediment thickness. These were the data most closely associated with pre-Phase II conditions. Likewise, the data set used to estimate post-Phase II PCB mass consists of the October 1999 samples located within the Phase II boundary, in conjunction with the November 1999 survey.

Pre-Phase III PCB mass was estimated from the January 1999 samples and August 1999 survey results within the Phase III dredge area. Post-Phase III PCB mass was estimated from the October 1999 sample results and November 1999 survey.

The data sets were tested for normality and log-normality with normal probability plots, along with the Shapiro-Wilk's W test. Results of distributional goodness of fit tests are included in Appendix M-1. The type of confidence limit calculated was chosen according to guidance given in USEPA (1997). If the data are normally distributed, a confidence limit using the Student t distribution is calculated. If the data are not normally distributed, the guidance suggests evaluating the log-normal or non-parametric versions of the jackknife or bootstrap methods. Even if the log-normal distribution seems to provide a reasonable fit to the data, guidance suggests using the non-parametric version if there is evidence of a mixture of two or more subpopulations, or if outliers are suspected.

The calculations and resulting confidence intervals for the in-situ PCB sediment concentration and bulk dry density data sets are given in Appendix M-2. If the data sets were normally distributed, confidence limits based on the Student t distribution were used. If the data sets were not normally distributed, the non-parametric version of the jackknife method was used. Note that the confidence limits were calculated using a Type I error rate of 0.22. Since the final PCB mass estimates involve using two confidence limits, i.e., one for PCB concentration and one for density, the resulting combined Type I error rate would then be $0.22^2$, or approximately 0.05.

The PCB mass estimates for Phase I, along with the corresponding lower and upper confidence limits, are given in Table M-4. The estimates for Phases II and III are given in Tables M-5 and M-6, respectively. Post-project estimates of remaining PCB mass are given in Table M-7.

The PCB mass estimates (Tables M-4, M-5 and M-6) are calculated by multiplying the sediment volume by the in-situ estimates of PCB concentration and density, and dividing by $1x10^6$. The sediment volumes are those discussed previously in this section. For example, the average pre-Phase I PCB concentration of the west lobe samples was 21.0 ppm, the average density was 781.3 lbs per cubic yard, and the corresponding sediment volume was 4930 $yd^3$. The resulting pre-Phase I PCB mass in the west lobe is $4930 \times 21.0 \times 781.3/1x10^6 = 80.9$ lbs. Likewise, the pre-Phase I PCB mass in the small dredge area of the east lobe is 3.5 lbs. This gives a total pre-Phase I PCB mass in the dredge area of 84.4 lbs.

If the lower confidence limits for in-situ PCB concentration and density are used in replacement of the averages, the resulting pre-Phase I PCB mass is 46.1 lbs. Likewise, if the upper confidence limits are

used in replacement of the averages, the pre-Phase I PCB mass is 132.9 lbs. Therefore, the possible range, with 95% confidence, of the pre-Phase I PCB mass is 46.1 lbs. to 132.9 lbs.

As stated, the estimated pre-Phase I mass, given in Table M-4, is 84.4 lbs. with a confidence interval range of 46.1 to 132.9 lbs. The post-Phase I mass is estimated at 8.4 lbs. with a confidence interval range of 4.5 to 13.4 lbs. Using this method, the estimated PCB mass removed during Phase I is 76 pounds, with a possible range of 41.7 to 119.5 pounds. This range matches both the riverbed model results as well as the estimate made by the on-shore sediment sampling.

Since the confidence interval method most closely matched the shore data estimates, and possesses the added benefit of quantifying the uncertainty in the data, it was used instead of the riverbed model (Section 6.7.2) to estimate in-situ PCB mass removed for all phases.

Using the arithmetic/confidence limit data (Tables M-4, M-5 and M-6), along with the on-shore PCB mass data, the following estimates are made:

**Phase I PCB Mass:**

| (Average): | (Lower Confidence Limit): | (Upper Confidence Limit): |
|---|---|---|
| Post Project River Mass: 8.4 lbs. | Post Project River Mass: 4.5 lbs. | Post Project River Mass: 13.4 lbs. |
| On-Shore Measurement: 95 lbs. | On-Shore Measurement: 95 lbs. | On-Shore Measurement: 95 lbs. |
| % PCB Mass Removed: 92% | % PCB Mass Removed: 96% | % PCB Mass Removed: 88% |

**Phase II PCB Mass:**

| (Average): | (Lower Limit): | (Upper Limit): |
|---|---|---|
| Post Project River Mass: 15.7 lbs. | Post Project River Mass: 7.3 lbs. | Post Project River Mass: 25.7 lbs. |
| On-Shore Measurement: 13 lbs. | On-Shore Measurement: 13 lbs. | On-Shore Measurement: 13 lbs. |
| % PCB Mass Removed: 41% | % PCB Mass Removed: 60% | % PCB Mass Removed: 30% |

**Phase III PCB Mass:**

| (Average): | (Lower Limit): | (Upper Limit): |
|---|---|---|
| Post Project River Mass: 10.2 lbs. | Post Project River Mass: 3.8 lbs. | Post Project River Mass: 19.5 lbs. |
| On-Shore Measurement: 5.4 lbs. | On-Shore Measurement: 5.4 lbs. | On-Shore Measurement: 5.4 lbs. |
| % PCB Mass Removed: 33% | % PCB Mass Removed: 57% | % PCB Mass Removed: 20% |

It should be noted that the estimate for post-project mass for the Phase III dredge area (10.2 lbs.) actually exceeds the pre-Phase III mass (4.7 lbs.). Since the January 1999 PCB data were used to estimate pre-dredge conditions for Phase III, some actual gain in PCB mass to Deposit N is evident between January of 1999 and the October 1999 onset of Phase III dredging.

Finally, as given in Table M-7, total post-project PCB mass remaining is defined by the remaining mass in the following areas:

Remaining PCB Mass

| | | |
|---|---|---|
| Phase I area (excluding Phase III area) | = | 4.6 lbs |
| Phase II area | = | 15.7 lbs |
| Phase III area | = | 10.2 lbs |

This gives a total remaining estimate of 30.5 lbs of PCBs, coupled with a total on-shore PCB mass removed estimate of 111 pounds, results in an overall mass removal of 78% of Deposit N PCB mass.

### 6.7.4 Bed Model Summary

Several methods were evaluated for estimating in-situ riverbed PCB mass at Deposit N. These included a geographic information systems (GIS) model of the riverbed results employing three contouring algorithms, and a non-spatial arithmetic averaging method utilizing confidence intervals to quantify uncertainty in the data. The arithmetic averaging confidence interval method was selected as the preferred model since it best matched the results of the on-shore sediment sampling data. While the riverbed GIS model may have underestimated in-situ PCB mass, the results fell within the limits given in the confidence intervals.

## 6.8 Deposit Removal Summary

Sediment at Deposit N was dredged to project specifications. This includes removal of sediment in the river to the allowed post-project residual thickness, dewatering of sediment to the required solids and strength content, treatment of water to comply with the WPDES permit and effective removal of sediments to protect the intake water quality of Inter Lake Papers. A typical cross section depicting sediment removal at Deposit N is shown in Figure 19 and final project sediment thickness contours are shown in Figure 20.

Overall project removal metrics; sediment removal, dewatered tons landfilled, PCB pounds removed, and days dredged for Deposit N and Deposit O, are presented in Table 22 and Figure 21. In summary, 8,175 cubic yards of sediment were dredged over 104 days resulting in the generation of 6,451 tons of dewatered sediment and the removal of 114.4 pounds of PCBs.

Using the on-shore Phase I and III removal measurement of 100.7 lbs of PCBs, with the arithmetic bed model post-project mass of 14.8 lbs, results in a removal percentage for the West Lobe of 87%. Using the on-shore Phase II removal measurement of 13.4 lbs of PCBs, along with the arithmetic bed model post-project mass of 15.7 lbs results in a removal percentage of the East Lobe of 46%. Removal of additional percent or mass of PCBs in the Phase II area, especially in the East Lobe would have been feasible since the dredge specification allowed for a post-project sediment thickness of 6 inches. Additional removal in the West Lobe would be more difficult given that dredging occurred beyond the 3-inch specification in many areas and residual sediment remains within the multiple fractures or joints of the bedrock surface.

# 7 Restoration Activities

Closeout and restoration activities at Deposit N in the Fox River occurred in November 1999 and entailed the removal of the dredging equipment, including the perimeter turbidity barrier, silt screens, deflection barriers, and buoys.

Restoration work also occurred in December 1999 and January 2000 at the on-shore site with removal of the on-shore treatment pad (asphalt/gravel/sand/geomembrane liner/geotextile). The asphalt/gravel/sand layers were excavated prior to removing the underlying geomembrane liner/geotextile. The liner and geotextile were left in-place until the owner's representative could visually observe the subgrade for areas possibly impacted by liner breeches. The liner/geotextile were then removed (peeled back) by an excavator and PCB samples were collected at eight selected locations.

After test results were received from the laboratory, indicating all sampled subgrade soils had no detects of PCBs, the site was graded with a bulldozer to blend with surrounding grades. The asphaltic materials were hauled to an asphalt plant for recycling. The sand/gravel beneath the asphalt was used for haul road construction.

The erosion control devices, hay bales and silt fences, were left in-place at the on-shore treatment site. The affected areas of the site were scarified and were seeded in the Spring of 2000.

# 8 Project Costs

## 8.1 Costs

Project work at Deposit N and Deposit O included engineering design, public outreach, construction contracting, disposal, construction oversite, and access agreements. This section presents the actual expenses for the project, an analysis of what such a project may cost under more representative conditions (e.g., non-winter, in-state disposal), and costs for a larger scale project.

## 8.2 Deposit N and Deposit O

The total cost for design and construction at both sites was $4.3 million, which resulted in a volume removed of 8,175 cu yds of sediment for an average cost of $525/cu yd. Overall the project was performed under challenging schedule and weather conditions and incurred additional expenses for outreach and design associated with the first contaminated sediment removal project on the Fox River. For example, significant project delay occurred due to public opposition on disposal and subsequent withdrawal of bids by contractors. Project costs for winterization ($411,000) and water treatment ($27,000) for the interim period between construction seasons would not have been incurred if the project was not delayed due to disposal concerns.

A breakout of the expenses for the two deposits include:

| Site | Cost | Volume cu yd | Unit cost $/cu yd |
|---|---|---|---|
| Deposit N | $3.9 million | 7,149 | $545 |
| Deposit O | $0.4 million | 1,026 | $390 |
| Total | $4.3 million | 8,175 | $525 |

The cost for Deposit N is conservatively high because some of the cost already paid to mobilize equipment, prepare the site, develop the design and permit are assumed to be borne by Deposit N when in actuality some fraction of these costs could be apportioned to Deposit O. Table 23 presents a more detailed breakdown of project costs.

## 8.3 Future Sediment Removal Projects

The Deposit N project was performed to implement the first PCB cleanup on the Fox River and to evaluate the planning, design, dredging, monitoring, and social factors associated with sediment removal in this river. Future projects will benefit from the monitoring, technical and regulatory information obtained on this demonstration project and these projects could be performed at a significantly lower unit cost.

Lower unit costs for a similar sized future project or for a larger project (e.g., 100,000 cu yds) are feasible if proper control is maintained of key project expenses such as disposal and schedule (i.e., winter construction). Data from Deposit N show that environmental dredging can be implemented in a protective manner without many of the environmental controls and costs used at the start of the project, e.g., the full perimeter containment barrier. In addition, increased confidence was observed over time at Deposit N with environmental dredging by project stakeholders, both public and private, which could result in reduced project expenses associated with access agreements and public outreach efforts. Finally, as progress on waterway restoration increases over time, the effort and expenses for pre-design and permitting tasks such as treatability and material handling testing and criteria development are expected to decline. A projection for the cost of a similar sized future project was calculated as $250 per cu yd. Similarly, a future large-scale project (e.g., 100,000 cu yds) could be implemented for less than $200 per cu yd.

# 9 Project Conclusions

Deposit N represented the first implementation of a PCB contaminated sediment removal project on the Fox River. Starting with the initial planning stages of this project, Deposit N was approached and designed to demonstrate that environmental dredging of PCB contaminated sediment can be performed in an environmentally safe manner.

Deposit N demonstrated that the sediments could be removed from the Fox River in conformity with a planned set of objectives and specifications for a sediment removal project. These objectives and specifications were wide reaching in that they included the engineering areas of dredging, dewatering and water treatment and also non-engineering areas such as public relations and access agreements. The information learned from this project will contribute to future designs and implementations such that the planned objectives of those projects can also be realized.

Specific conclusions from the Deposit N demonstration project include:

- Sediment was effectively removed by hydraulic dredging from the river bed to meet project contract specifications, i.e., average remaining thickness of 3 inches or less in the West Lobe and 6 inches or less in the East Lobe.

- Sediment removal beyond project specifications, e.g., removal to less than 3 inches in the West Lobe, was time consuming and inefficient given that the underlying layer at Deposit N is a fractured hard bedrock which precludes a dredge cut into clean sediment. However, techniques are commercially available to perform additional removal of thin sediment layers.

- Sediment removed by hydraulic dredging could be conducted immediately adjacent to a sensitive river water intake structure without affecting the quality of the intake water used by the local paper mill.

- Sediment resuspension and transport during dredging was insignificant as in-river measurements recorded little impact to river water quality.

- A real time river turbidity monitoring and data management system provided an effective means to manage river water quality data so that the dredging could be implemented in 1999 without the use, and associated cost, of the perimeter containment barrier.

- Standard sediment dewatering technologies were capable of dewatering the sediment to meet the strength requirements of this material as required by the landfill disposal specification.

- A local landfill was able to meet the technical and regulatory requirements in order to dispose of non-TSCA PCB sediments.

- An in-state landfill was not able to meet the technical, regulatory and public concerns in order to accept PCB TSCA sediments for this project. Additional planning, considerably out in front of any project, would likely be needed to acquire in-state TSCA disposal.

- Standard water treatment technologies were capable of treating the carriage water (effluent) to WPDES permit levels necessary to protect the river.

- Daily recording, evaluation and communication between the project design and contracting teams are necessary to manage the sediment removal and dewatering production rates so they adhere to the project schedule.

- Lease and access agreements were obtainable from local industry, government units and private individuals which allowed for implementation of the project. Lease and access agreements will be critical components of any other sediment remediation project on the Fox River. These agreements can have a significant impact on project cost and schedule.

- Local public acceptance was present for the work associated with the PCB sediment removal project at Deposit N. This acceptance may have been achieved by implementation of an early project decision which sought to involve the public throughout the design process, allowing portions of the work site to be accessible to the public, and by frequent communications with the local public and officials.

- Project schedule and costs were adversely affected by winter weather conditions such that future projects should strictly schedule construction work around the cold weather conditions.

- Rapid remobilization to an adjacent sediment deposit (Deposit O) was readily achieved by the project design and contracting team.

# 10 References


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# Table 1

## Summary Data - Field Samples
## Fox River Deposit N Removal Project

| Sample | Total PCBs (Fg/kg) | Mercury (Fg/kg) | TOC (%) | Particle Size Distribution (%) | | | | Percent Solids | Specific Gravity | Atterberg Limit Results | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Gravel | Sand | Silt | Clay | | | LL | PL | PI |
| N-PD01(3)/N-PE01(4) | 68,000 | 5,000 | 2.5 | 0 | 19.8 | 41.9 | 38.3 | 18.3 | 2.15 | 222 | 63 | 159 |
| N-PD02(3) | 550 | 98 | 0.4 | 3.2 | 95.5 | 1.3 | 0 | 71.7 | 2.54 | NT | NT | NT |
| N-PD03(3)/N-PD03(4) | 82,000 | 3,900 | 3.4 | 0 | 23.8 | 48.2 | 28 | 20.3 | 2.37 | 169 | 48 | 121 |
| N-PD04(3)/N-PD04(4) | 300 | <57 | 0.34 | 1.7 | 95 | 2.1 | 1.2 | 70.3 | 2.59 | NT | NT | NT |
| N-PD05(3)/N-PD05(4) | 66,000 | 4,700 | 3.6 | 0 | 38.9 | 38.3 | 22.8 | 22 | 2.24 | 164 | 58 | 106 |
| N-PD06(3)/N-PD06(4) | 40,000 | 1,700 | 3.8 | 0 | 51.8 | 29.6 | 18.6 | 27.2 | 2.41 | 82 | 37 | 45 |

NT = Not Tested

Prepared by: JBH1
Checked by: BLA

## Table 2

## Deposit N Physical Characteristics
## Pre-Design Sampling Data

| Sample | TOC (%) | Gravel (%) | Sand (%) | Silt (%) | Clay (%) | Solids (%) |
|---|---|---|---|---|---|---|
| Pre-Design (1997) | | | | | | |
| N-PD01(2) | 2.4[1] | 0 | 8 | 42.1 | 49.9 | 22.1 |
| N-PD01(3)/N-PD01(4) | 2.5[1] | 0 | 19.8 | 41.9 | 38.3 | 18.3 |
| N-PD02(1) | 0.54[1] | 1.5 | 94.6 | 3.9 | | 76.7 |
| N-PD02(2) | | | | | | |
| N-PD02(3) | 0.4[1] | 3.2 | 95.5 | 1.3 | | 71.7 |
| N-PD03-02(1) | 3[1] | | | | | 21 |
| N-PD03-02(2) | | 0 | 4.8 | 72.5 | 22.7 | |
| N-PD03(3)/N-PD03(4) | 3.4[1] | 0 | 23.8 | 48.2 | 28 | 20.3 |
| N-PD04(3)/N-PD04(4) | 0.34[1] | 1.7 | 95 | 2.1 | 1.2 | 70.3 |
| N-PD05-02(1) | 3.1[1] | | | | | 22.8 |
| N-PD05-02(2) | | 0 | 41.7 | 39.8 | 18.5 | |
| N-PD05-02(2)FD | | | | | | |
| N-PD05(3)/N-PD05(4) | 3.6[1] | 0 | 38.9 | 38.3 | 22.8 | 22 |
| N-PD06-02(1) | 2.9[1] | | | | | 22.1 |
| N-PD06-02(1)FD | 3.2[1] | | | | | 21.8 |
| N-PD06-02(2) | | 0 | 14.8 | 60.7 | 24.5 | |
| N-PD06-02(2)FD | | 0 | 7.1 | 59.8 | 33.1 | |
| N-PD06(3)/N-PD06(4) | 3.8[1] | 0 | 51.8 | 29.6 | 18.6 | 27.2 |

[1]Reported total organic carbon (TOC) value is the average of four replicate analyses.

Prepared by: JJA1
Checked by: SJL1

## Table 3

## Deposit N Chemical Characteristics
## Pre-Design Sampling Data

| Sample | Total PCBs (Fg/kg) | Mercury (Fg/kg) | TOC (%) |
|---|---|---|---|
| Pre-Design (1997) | | | |
| N-PD01(2) | 66,000 | 8,000 | 2.4[1] |
| N-PD01(3)/N-PD01(4) | 68,000 | 5,000 | 2.5[1] |
| N-PD02(1) | 3,400 | 110 | 0.54[1] |
| N-PD02(2) | | | |
| N-PD02(3) | 550 | 98 | 0.4[1] |
| N-PD03-02(1) | 130,000 | 4,700 | 3[1] |
| N-PD03-02(2) | | | |
| N-PD03(3)/N-PD03(4) | 82,000 | 3,900 | 3.4[1] |
| N-PD04(3)/N-PD04(4) | 300 | <57 | 0.34[1] |
| N-PD05-02(1) | 130,000 | 4,400 | 3.1[1] |
| N-PD05-02(2) | | | |
| N-PD05-02(2)FD | | | |
| N-PD05(3)/N-PD05(4) | 66,000 | 4,700 | 3.6[1] |
| N-PD06-02(1) | 110,000 | 5,300 | 2.9[1] |
| N-PD06-02(1)FD | 94,000 | 4,100 | 3.2[1] |
| N-PD06-02(2) | | | |
| N-PD06-02(2)FD | | | |
| N-PD06(3)/N-PD06(4) | 40,000 | 1,700 | 3.8[1] |

[1]Reported total organic carbon (TOC) value is the average of four replicate analyses.

Prepared by: JJA1
Checked by: SJL1

## Table 4

## Velocity Data
## Fox River Deposit N Removal Project

| Measurement Location | Water Depth (ft) | 20% of Depth Velocity (ft/sec) | 80% of Depth Velocity (ft/sec) | Average Velocity (ft/sec) |
|---|---|---|---|---|
| V1 | 10.9 | 0.78 | 0.96 | 0.87 |
| V2 | 9.4 | 0.63 | 0.59 | 0.61 |
| V3 | 9.2 | 0.64 | 0.78 | 0.71 |
| V4 | 10.0 | 0.30 | 0.51 | 0.40 |
| V5 | 11.5 | 0.48 | 0.61 | 0.54 |
| V6 | 12.3 | 0.40 | 0.52 | 0.46 |
| V7 | 8.7 | 0.04 | 0.14 | 0.09 |

Velocity measurements of 12/23/97.

Prepared by: JBH1
Checked by: BLA

## Table 5

## Summary of Carriage Water Treatment Results
## Fox River Deposit N Removal Project

| Treatment Sequence | TSS (mg/l) | PCBs (Fg/l) | Mercury (ng/l) |
|---|---|---|---|
| Untreated Carriage Water [1] | 4.4 | 0.79 | <9.7 |
| | | | |
| Dual Media | 1.0 | 0.5 | <9.7 |
| Dual Media, Carbon | 1.2 | <0.02 | <9.7 |
| Dual Media, 5 Fm Microfilt., Carbon | 0.82 | <0.02 | <9.7 |
| Dual Media, Carbon, 1 Fm Microfilt. | 0.96 | <0.02 | <9.7 |
| | | | |
| Enhanced Draining Effluent | 16 | NT | NT |
| Belt Filter Press Effluent | 23 | NT | NT |

[1]Untreated carriage water is water drained from dredge slurry settling column at 24 hrs.
NT = Not Tested.

Prepared by: JJA1
Checked by: JBH1

## Table 6

## Sediment Resuspension and Settling
## (Summary TSS and Turbidity Data)
## Fox River Deposit N Removal Project

| Time (days) | Height from Sediment[1] (ft) | TSS (mg/l) | Turbidity (NTU) |
|---|---|---|---|
| Pre-Test | composite | 22 | 7.9 |
| Pre-Test | composite | 10 | 8.9 |
| Pre-Test | composite | 14 | 9.9 |
| 1 minute | 1 | 6,600 | 10,000 |
| 1 minute | 2.5 | 3,200 | 6,200 |
| 1 minute | 4 | 2,400 | 5,400 |
| 2 hours | 1 | 1,100 | 720 |
| 2 hours | 2.5 | 560 | 430 |
| 2 hours | 4 | 610 | 450 |
| 8 hours | 1 | 410 | 420 |
| 8 hours | 2.5 | 360 | 620 |
| 8 hours | 4 | 380 | 750 |
| 1 day | 1 | 230 | 420 |
| 1 day | 2.5 | 270 | 320 |
| 1 day | 4 | 160 | 320 |
| 2 days | 1 | 160 | 530 |
| 2 days | 2.5 | 150 | 450 |
| 2 days | 4 | 120 | 390 |
| 5 days | 1 | 51 | 190 |
| 5 days | 2.5 | 25 | 110 |
| 5 days | 4 | 18 | 75 |
| 7 days | 1 | 8 | 52 |
| 7 days | 2.5 | 8 | 33 |
| 7 days | 4 | 5 | 30 |

[1]Height measured from surface of sediment, water column was 5 ft in height at beginning of experiment.

Prepared by: JJA1
Checked by: JBH1

## Table 7

## Analytical Test Results
## WPDES Test Effluent Sample
## Fox River Deposit N Removal Project

| Parameter | Concentration | |
|---|---|---|
| | Result | Unit |
| Purgeable Organics (8260B) | | |
| 1,1-Dichloroethane | <0.41 | Fg/l |
| 1,1-Dichloroethene | <0.56 | Fg/l |
| 1,1-Dichloropropene | <0.35 | Fg/l |
| 1,1,1-Trichloroethane | <0.43 | Fg/l |
| 1,1,2-Trichloroethane | <0.55 | Fg/l |
| 1,1,2,2-Tetrachloroethane | <0.48 | Fg/l |
| 1,2-Dichloroethane | <0.47 | Fg/l |
| 1,2-Dichloroethene, total | <1 | Fg/l |
| 1,2-Dichloropropane | <0.74 | Fg/l |
| 2,3-Dichloropropene | <0.52 | Fg/l |
| Acrolein | <5.7 | Fg/l |
| Acrylonitrile | <2.6 | Fg/l |
| Benzene | <0.4 | Fg/l |
| Bromodichloromethane | <0.39 | Fg/l |
| Bromoform | <0.28 | Fg/l |
| Bromomethane | <0.96 | Fg/l |
| Carbon tetrachloride | <0.43 | Fg/l |
| Chlorobenzene | <0.29 | Fg/l |
| Chlorodibromomethane | <0.25 | Fg/l |
| Chloroethane | <1.1 | Fg/l |
| Chloroform | <0.5 | Fg/l |
| Chloromethane | <0.68 | Fg/l |
| *cis*-1,2-Dichloroethene | <0.47 | Fg/l |
| *cis*-1,3-Dichloropropene | <0.47 | Fg/l |
| Ethylbenzene | <0.4 | Fg/l |
| Trichlorofuoromethane | <0.51 | Fg/l |
| Methylene chloride | <0.42 | Fg/l |
| Tetrachloroethene | <0.44 | Fg/l |
| Toluene | <0.32 | Fg/l |

**Table 7** *(Continued)*

| Parameter | Concentration | |
|---|---|---|
| | Result | Unit |
| *trans*-1,3-Dichloropropene | <0.49 | Fg/l |
| Trichloroethene | <0.38 | Fg/l |
| Vinyl chloride | <0.63 | Fg/l |
| Semivolatile Organics (8270C) | | |
| 1,2-Dichlorobenzene | <2.2 | Fg/l |
| 1,2-Diphenylhydrazine | <1.3 | Fg/l |
| 1,2,4-Trichlorobenzene | <2.7 | Fg/l |
| 1,3-Dichlorobenzene | <2.6 | Fg/l |
| 1,4-Dichlorobenzene | <2.4 | Fg/l |
| 2-Chloronaphthalene | <1.8 | Fg/l |
| 2-Chlorophenol | <0.89 | Fg/l |
| 2-Nitrophenol | <0.85 | Fg/l |
| 2,4-Dichlorophenol | <0.95 | Fg/l |
| 2,4-Dimethylphenol | <1.1 | Fg/l |
| 2,4-Dinitrophenol | <1.9 | Fg/l |
| 2,4-Dinitrotoluene | <0.74 | Fg/l |
| 2,4,6-Trichlorophenol | <0.75 | Fg/l |
| 2,6-Dinitrotoluene | <0.96 | Fg/l |
| 3,3N-Dichlorobenzidine | <0.67 | Fg/l |
| 4-Bromophenyl-phenylether | <1.8 | Fg/l |
| 4-Chloro-3-methylphenol | <0.99 | Fg/l |
| 4-Chlorophenyl-phenylether | <2.1 | Fg/l |
| 4-Nitrophenol | <2.6 | Fg/l |
| 4,6-Dinitro-2-methylphenol | <0.83 | Fg/l |
| Acenaphthene | <1.4 | Fg/l |
| Acenaphthylene | <1.5 | Fg/l |
| Anthracene | <1.2 | Fg/l |
| Benzidine | <1.5 | Fg/l |
| Benzo(a)anthracene | <0.6 | Fg/l |
| Benzo(a)pyrene | <1.4 | Fg/l |
| Benzo(b)fluoranthene | <2.3 | Fg/l |
| Benzo(g,h,i)perylene | <2.0 | Fg/l |
| Benzo(k)fluoranthene | <2.4 | Fg/l |
| bis(2-Chloroethoxy)methane | <0.97 | Fg/l |

**Table 7** *(Continued)*

| Parameter | Concentration | |
|---|---|---|
| | Result | Unit |
| bis(2-Chloroethyl)ether | <1.3 | Fg/l |
| bis(2-Ethylhexyl)phthalate | 12 | Fg/l |
| bis(2-Chloroisopropyl)ether[(a)] | <2.1 | Fg/l |
| Butylbenzylphthalate | <0.57 | Fg/l |
| Chrysene | <0.46 | Fg/l |
| Di-n-butylphthalate | <0.82 | Fg/l |
| Di-n-octylphthalate | <2.4 | Fg/l |
| Dibenzo(a,h)anthracene | <2.3 | Fg/l |
| Diethylphthalate | <0.69 | Fg/l |
| Dimethylphthalate | <0.64 | Fg/l |
| Fluoranthene | <0.92 | Fg/l |
| Fluorene | <1.6 | Fg/l |
| Hexachlorobenzene | <1.7 | Fg/l |
| Hexachlorobutadiene | <2.8 | Fg/l |
| Hexachlorocyclopentadiene | <3.7 | Fg/l |
| Hexachloroethane | <2.6 | Fg/l |
| Indeno(1,2,3-cd)pyrene | <2.2 | Fg/l |
| Isophorone | <1.0 | Fg/l |
| 3-Chlorophenol | <0.71 | Fg/l |
| 4-Chlorophenol | <0.71 | Fg/l |
| 2,3-Dichlorophenol | <0.33 | Fg/l |
| 2,5-Dichlorophenol | <1.7 | Fg/l |
| 2,6-Dichlorophenol | <0.79 | Fg/l |
| 3,4-Dichlorophenol | <0.83 | Fg/l |
| 2,5-Dinitrophenol | <2.1 | Fg/l |
| 2-Methyl-4-chlorophenol | <0.87 | Fg/l |
| 3-Methyl-4-chlorophenol | <0.99 | Fg/l |
| 3-Methyl-6-chlorophenol | <0.88 | Fg/l |
| 2,3,4,6-Tetrachlorophenol | <2.9 | Fg/l |
| 2,4,5-Trichlorophenol | <1.2 | Fg/l |
| N-Nitrosodiethylamine | <1.5 | Fg/l |
| N-Nitrosodi-n-butylamine | <0.86 | Fg/l |
| N-Nitrosopyrrolidine | <2.0 | Fg/l |
| Pentachlorobenzene | <1.3 | Fg/l |

**Table 7** *(Continued)*

| Parameter | Concentration | |
|---|---|---|
| | Result | Unit |
| 1,2,4,5-Tetrachlorobenzene | <1.1 | Fg/l |
| N-Nitrosodi-n-propylamine | <0.37 | Fg/l |
| N-Nitrosodimethylamine | <1.4 | Fg/l |
| N-Nitrosodiphenylamine | <1.2 | Fg/l |
| Naphthalene | <2.1 | Fg/l |
| Nitrobenzene | <0.99 | Fg/l |
| Pentachlorophenol | <2.4 | Fg/l |
| Phenanthrene | <0.73 | Fg/l |
| Phenol | <0.51 | Fg/l |
| Pyrene | <0.69 | Fg/l |
| PAHs (8310) | | |
| Anthracene | <0.0016 | Fg/l |
| Benzo(a)anthracene | <0.0045 | Fg/l |
| Benzo(a)pyrene | <0.0039 | Fg/l |
| Benzo(b)fluoranthene | <0.011 | Fg/l |
| Benzo(g,h,i)perylene | <0.047 | Fg/l |
| Benzo(k)fluoranthene | <0.0028 | Fg/l |
| Chrysene | <0.0032 | Fg/l |
| Dibenzo(a,h)anthracene | <0.041 | Fg/l |
| Fluoranthene | <0.023 | Fg/l |
| Fluorene | <0.014 | Fg/l |
| Indeno(1,2,3-cd)pyrene | <0.022 | Fg/l |
| Phenanthrene | <0.015 | Fg/l |
| Pyrene | <0.0085 | Fg/l |
| Chlorinated Hydrocarbons (8121) | | |
| Hexachlorobenzene | <0.04 | Fg/l |
| Hexachlorobutadiene | <0.4 | Fg/l |
| Hexachlorocyclopentadiene | <0.41 | Fg/l |
| Organochlorine Pesticides (8081A) | | |
| alpha BHC | <0.0019 | Fg/l |
| gamma-BHC (Lindane) | <0.0028 | Fg/l |
| beta BHC | <0.0046 | Fg/l |
| Heptachlor | <0.0056 | Fg/l |
| delta-BHC | <0.0082 | Fg/l |

**Table 7** *(Continued)*

| Parameter | Concentration | | |
|---|---|---|---|
| | Result | Unit | |
| Aldrin | <0.006 | Fg/l | |
| Heptachlor epoxide | <0.0024 | Fg/l | |
| Chlordane, technical | <0.0039 | Fg/l | |
| Endosulfan I | <0.0017 | Fg/l | |
| BHC-Technical Grade | <1.1 | Fg/l | |
| 4,4N-DDE | <0.011 | Fg/l | |
| Dieldrin | <0.0049 | Fg/l | |
| Endrin | <0.006 | Fg/l | |
| 4,4N-DDD | <0.0067 | Fg/l | |
| Endosulfan II | <0.0057 | Fg/l | |
| 4,4N-DDT | <0.013 | Fg/l | |
| Endrin aldehyde | <0.014 | Fg/l | |
| Endosulfan sulfate | <0.011 | Fg/l | |
| Toxaphene | <0.88 | Fg/l | |
| Aroclor 1016 | <0.29 | Fg/l | |
| Aroclor 1221 | <0.42 | Fg/l | |
| Aroclor 1232 | <0.19 | Fg/l | |
| Aroclor 1242 | <0.48 | Fg/l | |
| Aroclor 1248 | <0.072 | Fg/l | |
| Aroclor 1254 | <0.052 | Fg/l | |
| Aroclor 1260 | <0.09 | Fg/l | |
| Organophosphorous Pesticides (8141) | | | |
| Chlorpyrifos | <0.078 | Fg/l | |
| Parathion-ethyl | <0.033 | Fg/l | |
| Parathion-methyl | <0.056 | Fg/l | |
| Metals by ICP (6010B) | | | |
| Aluminum | 360 | Fg/l | |
| Antimony | 8.5 | Fg/l | Q |
| Arsenic | 5.5 | Fg/l | Q |
| Beryllium | 0.59 | Fg/l | |
| Cadmium | 2.4 | Fg/l | |
| Calcium | 41,000 | Fg/l | |
| Chromium | <0.64 | Fg/l | |
| Copper | 16 | Fg/l | |

**Table 7** *(Continued)*

| Parameter | Concentration | | |
|---|---|---|---|
| | Result | Unit | |
| Lead | 3.3 | Fg/l | Q |
| Magnesium | 19,000 | Fg/l | |
| Nickel | 12 | Fg/l | Q |
| Selenium | <0.33 | Fg/l | |
| Silver | <2.4 | Fg/l | |
| Thallium | <5.6 | Fg/l | |
| Zinc | 10 | Fg/l | Q |
| Mercury (low level) | <9.7 | ng/l | |
| Hexavalent Chromium | <6.7 | Fg/l | |
| Total Phenols | <0.0085 | mg/l | X |
| Total Cyanide | <0.0034 | mg/l | |
| Cyanide Amenable to Chlorination | <0.0034 | mg/l | |
| TCDD | <0.0008 | ng/l | |
| BOD | <2 | mg/l | BB |
| COD | <4.7 | mg/l | |
| Hardness | 180 | mg/l | |
| Total Organic Carbon | 0.89 | mg/l | |
| Total Solids | 270 | mg/l | |
| Total Dissolved Solids | 210 | mg/l | |
| Total Suspended Solids | 2 | mg/l | Q |
| Turbidity | 1.1 | NTU | |
| Organic Nitrogen | 0.33 | mg/l | |
| Nitrate + Nitrite | 0.064 | mg/l | Q |
| Ammonia | 6.1 | mg/l | |
| Phosphorous | 0.15 | mg/l | Q |
| Total Kjeldahl Nitrogen | 6.4 | mg/l | |
| Chloride | 21 | mg/l | |
| pH | 9.4 | s.u. | |

[a]The proper chemical name is 2,2N-oxybis(1-chloropropane).
Q = Analyte detected between LOD and LOQ.
X = Sample was submitted in plastic rather than glass bottle as prescribed in QAPP.
BB = BOD result estimated due to BOD blank exceeding the allowable oxygen depletion.

Prepared by: JBH1
Checked by: BLA

## Table 8

## TSS/Turbidity Correlation Results
## Fox River Deposit N Removal Project

| TSS (mg/l) | Turbidity (NTU) | Mercury (ng/l) | PCBs (Fg/l) |
|---|---|---|---|
| 6 | 2.9 | -- | -- |
| 11 | 7.7 | -- | -- |
| 15 | 8.4 | 19 | 0.36 |
| 16 | 13 | -- | |
| 21 | 13 | -- | |
| 22 | 16 | -- | |
| 26 | 18 | | |
| 27 | 22 | | |
| 25 | 24 | 79 | 1.4 |
| 37 | 26 | | |
| 42 | 30 | | |
| 35 | 28 | | |
| 39 | 30 | | |
| 42 | 37 | | |
| 45 | 35 | | |
| 46 | 44 | | |
| 54 | 45 | | |
| 63 | 48 | | |
| 70 | 56 | 210 | 3.1 |
| 67 | 58 | | |
| 76 | 58 | | |
| 82 | 66 | | |
| 98 | 72 | | |
| 92 | 70 | | |
| 89 | 73 | | |
| 120 | 92 | | |
| 130 | 100 | | |
| 180 | 130 | | |

-- = Not Tested

Prepared by: JBH1
Checked by: BLA

# Table 9

## Fox River Deposit N Removal Project
## Pilot Test Data
## Treated Water (Effluent)

| Sample ID Number | Sample Date | Arochlor 1016 (Fg/l) | Arochlor 1221 (Fg/l) | Arochlor 1232 (Fg/l) | Arochlor 1242 (Fg/l) | Arochlor 1248 (Fg/l) | Arochlor 1254 (Fg/l) | Arochlor 1260 (Fg/l) | Total Suspended Solids (mg/l) | Mercury, Low Level as Hg (ng/l) |
|---|---|---|---|---|---|---|---|---|---|---|
| N-RWO1-01 | 11/23/98 | <1.0 | < 1.4 | < 0.68 | < 0.70E | < 0.25 | < 0.19 | < 0.32 | < 8.8 | < 9.7 |
| N-RWO1-02 | 11/23/98 | < 0.96 | < 1.3 | < 0.64 | 0.23*E | < 0.24 | < 0.18 | < 0.30 | < 8.8 | < 9.7 |
| N-RWO1-03 | 11/23/98 | < 0.96 | < 1.3 | < 0.64 | 0.25*E | < 0.24 | < 0.18 | < 0.30 | < 8.8 | < 9.7 |
| N-RWO1-04 | 11/23/98 | < 1.0 | < 1.4 | < 0.67 | 0.4*E | < 0.25 | < 0.18 | < 0.31 | < 8.8 | < 9.7 |
| N-RWO1-05 | 11/23/98 | < 1.1 | < 1.5 | < 0.73 | 0.37*E | < 0.27 | < 0.20 | < 0.34 | < 8.8 | < 9.7 |

*Sample results quantitated between the Method Detection Limit and the Practical Quantitation Limit.
E = Aroclor 1242 data were qualified by Makuehl Co. as estimated based on non-compliant initial calibration.

## Pilot Test Data
## Dewatered Sediment

| Sample ID Number | Sample Date | Arochlor 1016 (Fg/kg) | Arochlor 1221 (Fg/kg) | Arochlor 1232 (Fg/kg) | Arochlor 1242 (Fg/kg) | Arochlor 1248 (Fg/kg) | Arochlor 1254 (Fg/kg) | Arochlor 1260 (Fg/kg) | Free Liquids - Paint Filter (%) | Solids (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| NR01-01 SED | 11/23/98 | NA | NA | NA | NA | NA | NA | NA | 0 | 51.5 |
| NR02-01 SED | 11/23/98 | < 13,000* | < 13,000* | < 13,000* | 110,000* | < 13,000* | < 13,000* | < 13,000* | 0 | 38.0 |
| NR03-01 SED | 11/23/98 | NA | NA | NA | NA | NA | NA | NA | 0 | 42.9 |

*Sample Results based on dilution.
NA = Not Analyzed

Prepared by: JBH1
Checked by: BLA

# Table 10

## Deposit N - Phase I
## Mass of Sediment and PCBs Removed

| Pile No. | Material Type | Date of Drops | Approximate Tons | Percent Solids | PCBs (ppm) Sonication | PCBs (ppm) Soxhlet | Pounds PCBs Removed[B] |
|---|---|---|---|---|---|---|---|
| 1 | Filter Cake | start ÷ 11/27/98 | 235.49 | 42.1 | 43 | 90 | 17.85 |
| 2 | Filter Cake | 11/28 ÷ 11/29/98 | 240.47 | 41.7 | 45 | 88 | 17.65 |
| 3 | Filter Cake | 11/30 ÷ 12/4/98 | 229.17 | 46 | 55 | 74 | 15.60 |
| 4 | Filter Cake | 12/5 ÷ 12/8/98 | 256.9 | 45.2 | 52 | 91 | 21.13 |
| 5 | Filter Cake | 12/9 ÷ 12/14//98 | 359.37 | 54.4 | 31 | 54 | 21.11 |
| 6 | Filter Cake | 12/15 ÷ 12/19/98 | 378.86 | 64.5 | 0.9 | 1.04 | 0.51 |
| 7 | Filter Cake | 12/20 ÷ 12/30/98 | 209.42 | 62.2 | 1.6 | 0.62 | 0.16 |
| Non-TSCA #1 | Sand | start ÷ 11/26/98 | 34.36 | 67.2 | 6.8 | 5.2 | 0.24 |
| Non-TSCA #2 | Sand | 11/28 ÷ 12/31/98 | 81.71 | 69.3 | <7.2 | 1.5 | 0.17 |
| Sand Pile #3 | Sand | 11/27 ÷ 12/31/98 | 380.41 | 72.5 | 1.5 | 0.89 | 0.49 |
| Filter Media | Sand/ Carbon | start ÷ end | 88.53 | 72 | 1[A] | 1[A] | 0.13 |
| Coal | Debris | start ÷ 12/8/98 | 42.29 | 76 | 6 | 4.2 | 0.27 |
| | | | | | | Sum Total | 95.31 |

[A] Filter media PCB concentration assumed to be 1 ppm.
[B] Note: Soxhlet extraction results used to compute pounds of PCBs removed.

Prepared by: JBH1
Checked by: BLA

Sample Calculation:

lbs PCB = (approx. Tons) x (percent solids) x (PCB concentration) x 2000 lb/ton x $1/10^6$

## Table 11

## Fox River Deposit N Removal Project
## Water Treatment (Influent)

| Parameter<br>Date | TSS<br>mg/l daily | O&G<br>mg/l daily | Hg<br>ng/l weekly | PCB<br>ug/l weekly | Field pH<br>std units<br>daily | Lab pH<br>std units<br>daily |
|---|---|---|---|---|---|---|
| 23-Nov-98 | | | | | | |
| 24-Nov-98 | | | | | | |
| 25-Nov-98 | | | | | | |
| 26-Nov-98 | | < 5.0 b | | | | |
| 27-Nov-98 | < 18 | < 6.5 b | | | 6.88 | |
| 28-Nov-98 | < 8.8 a | i | | | 8.86 | |
| 29-Nov-98 | < 18.0 | < 6.7 b | 53.66 | | 7.46 | |
| 30-Nov-98 | < 8.8 | < 7.7 b | | | 7.75 | |
| 01-Dec-98 | 5 | 7.2 | | | 6.38 | 7.9 |
| 02-Dec-98 | 3.0 | 8.0 e | | | 7.38 | |
| 03-Dec-98 | 2.0 | 4.0 d | | | 7.40 | 7.9 |
| 04-Dec-98 | < 1.0 | 5.9 | | | 7.20 | 7.9 |
| 05-Dec-98 | < 1.0 | 4.9 d | | | 7.56 | 7.9 |
| 06-Dec-98 | 1.0 | 2.7 d | 9.84 h | 1.3 | | |
| 07-Dec-98 | < 1.0 | 4.4 d | | | 7.54 | |
| 08-Dec-98 | < 1.0 | < 1.4 | | | 7.43 | 7.7 |
| 09-Dec-98 | < 1.0 | 1.6 d | | | 8.03 | 7.8 |
| 10-Dec-98 | 5.0 | 1.5 d | | | 9.55 | 7.8 |
| 11-Dec-98 | <1.0 | 5.7 | | | 7.66 | 7.9 |
| 12-Dec-98 | < 1.0 | 5.0 | | | 7.66 | 8.0 |
| 13-Dec-98 | < 1.0 | 4.1 d | 1.34 | | | 7.9 |
| 14-Dec-98 | 2.0 | 5.2 | | | | 7.7 |
| 15-Dec-98 | < 1.0 | 5.3 | | | | 7.2 |
| 16-Dec-98 | < 1.0 | 8.1 | | | | NA |
| 17-Dec-98 | 5.0 | < 1.4 | | | | 7.5 |
| 18-Dec-98 | 3.0 | 3.7 d | | <1.5 | | 7.6 |

**Table 11** *(Continued)*

| Parameter<br>Date | TSS<br>mg/l daily | O&G<br>mg/l daily | Hg<br>ng/l weekly | PCB<br>ug/l weekly | Field pH<br>std units<br>daily | Lab pH<br>std units<br>daily |
|---|---|---|---|---|---|---|
| 19-Dec-98 | 2.0 | 7.3 | | | | 7.6 |
| 20-Dec-98 | 2.0 | 5.1 | | | | 7.8 |
| 21-Dec-98 | 6.0 | 5.7 | 0.35 g | < 1.4 | | 8.0 |
| 22-Dec-98 | no water | no water | no water | no water | no water | |
| 23-Dec-98 | | | | | | |
| 24-Dec-98 | | | | | | |
| 25-Dec-98 | | | Project shut-down holiday period | | | |
| 26-Dec-98 | | | | | | |
| 27-Dec-98 | | | | | | |
| 28-Dec-98 | no water | no water | no water | no water | no water | no water |
| 29-Dec-98 | <1.0 | 11 f | | | | 7.5 |
| 30-Dec-98 | 1.0 | 9.9 f | | | | 7.2 |
| 31-Dec-98 | 6.0 | 26 f | | <1.0 | | 7.7 |

Footnotes:

Prepared by: JBH1
Checked by: BLA

a. Other samples collected on this day were < 18 and 110 mg/l.
b. The ongoing precision and recovery standard was high at 122%.
d. Result was greater than limit of detection but less than limit of quantitation.
e. Blank value was 1.9 mg/l.
f. Method blank was 7.6 mg/l. Both ongoing precision and recovery standards were within QC limits. Sample volume insufficient for repeat analysis.
g. QC exceeded, method blank - 0.11 ng/l.
h. Trip blank exceeded LOD.
i. Sample vessel broke during analysis.

# Table 12

## Fox River Deposit N Removal Project
## Water Treatment (Effluent)

| Parameter | FLOW | BOD5 | TSS | NH3 | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | gal daily | mg/l weekly | mg/l daily | mg/l daily | mg/l daily | ng/l weekly | ug/l weekly | ug/l weekly | std unitsdaily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | n/a | n/a | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave9.0E-9 lb/day | 6-9 std units j |
| 23-Nov-98 | 180,000 d | | < 8.8 a | | | < 9.7 b | c | | |
| 24-Nov-98 | | | | | | | | | |
| 25-Nov-98 | | | | | | | | | |
| 26-Nov-98 | 300,000 d | | < 8.8 | 22 | < 5.0 f | | | | |
| 27-Nov-98 | 300,000 d | | < 10 | 22 | 6.5 f | | | | 9.23 |
| 28-Nov-98 | 210,000 d | | < 10 | 24 | < 5.0 f | 1.59 | | | 7.84 |
| 29-Nov-98 | 300,000 d | | < 8.8 | 29 | < 5.0 f | | 0.64 | <0.0000025 | 7.27 |
| 30-Nov-98 | 413,900 | | < 8.8 | 11 | < 5.0 f | | | | 7.89 |
| 01-Dec-98 | 314,850 | | < 1.0 | 5.2 | 8.7 g | | 1.6 | | 6.84 |
| 02-Dec-98 | 200,300 | | 2.0 | 13 | 8.7 g | | | | 7.93 |
| 03-Dec-98 | 429,700 | 3.0 h | < 1.0 | 15 | 7.1 | | | | 7.80 |
| 04-Dec-98 | 328,760 | | < 1.0 | 16 | 3.5 e | | | | 7.41 |
| 05-Dec-98 | 363,996 | | 3.0 | 10 | 2.4 e | | | | 7.72 |
| 06-Dec-98 | 446,400 | <3.0 | < 3.5 | 10 | 4.8 e | < 0.1 k | 1.3 | <0.0000030 | 7.76 |
| 07-Dec-98 | 391,200 | | < 1.0 | 7.8 | 1.8 e | | | | 7.92 |
| 08-Dec-98 | 395,700 | | < 1.0 | 13 | < 1.4 | | | | 7.75 |
| 09-Dec-98 | 562,484 | | < 1.0 | 12 | 3.8 e | | | | 7.72 |
| 10-Dec-98 | 582,340 | | < 1.0 | 6.0 | < 1.4 | | | | 7.11 |
| 11-Dec-98 | 612,746 | | < 1.0 | 4.3 | < 1.4 | | | | 7.74 |
| 12-Dec-98 | 717,012 | | < 1.0 | 1.8 | 4.1 e | | | | 7.90 |
| 13-Dec-98 | 421,904 | | 3.0 | 0.64 | 5.3 | 0.49 | <1.3 | <0.0000009 | 8.1 |
| 14-Dec-98 | 391,218 | < 2.0 | < 1.0 | 1.7 | 4.6 e | | | | 7.1 |
| 15-Dec-98 | 511,397 | | 8.0 | 1.5 | 2.8 e | | | | 7.1 |
| 16-Dec-98 | 322,622 | | < 1.0 | 3.1 | < 1.4 | | | | 7.5 |
| 17-Dec-98 | 378,483 | | 3.0 | 3.1 | 4.9 e | | | | 7.5 |
| 18-Dec-98 | 367,550 | | < 1.0 | 4.8 | 3.6 e | | | | 7.8 |
| 19-Dec-98 | 36,810 | | 4.0 | 4.1 | < 1.4 | | | | 7.7 |
| 20-Dec-98 | 242,474 | | 2.0 | 4.6 | 2.8 e | | | | 7.8 |

**Table 12** *(Continued)*

| Parameter | FLOW | BOD5 | TSS | NH3 | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | gal daily | mg/l weekly | mg/l daily | mg/l daily | mg/l daily | ng/l weekly | ug/l weekly | ug/l weekly | std unitsdaily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | n/a | n/a | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave9.0E-9 lb/day | 6-9 std units j |
| 21-Dec-98 | 520,000 | 2.0 h | 3.0 | 5 | 4.0 e | 0.20 m | < 1.3 | <0.0000010 | 7.8 |
| 22-Dec-98 | 0 | | | | | | | | |
| 23-Dec-98 | 0 | | | | | | | | |
| 24-Dec-98 | 0 | | | | | | | | |
| 25-Dec-98 | 0 | | | | Project shut-down holiday period. | | | | |
| 26-Dec-98 | 0 | | | | | | | | |
| 27-Dec-98 | 0 | | | | | | | | |
| 28-Dec-98 | 0 | | | | | | | | |
| 29-Dec-98 | 71,000 | | < 1.0 | 2.5 | 7.9 i | | | | 7.5 |
| 30-Dec-98 | 210,000 | | < 1.0 | 3.0 | 11 i | | | | 7.6 |
| 31-Dec-98 | 82,000 | 363,000 | < 1.0 | 4.6 | 7.3 i | | <1.4 | | 7.7 |

Footnotes:

Prepared by: JBH1
Checked by: BLA

a. Five samples less than 8.8 mg/l (pilot test).
b. Five samples less than 9.7 ng/l (pilot test).
c Five samples collected during pilot test were <0.70, 0.23, 0.25, 0.40, 0.37 mg/l.
d. Not available from ISCO sampler/magmeter; equipment malfunction. These approximate flow values are mgd based on dredge flow calculations
e. Result was greater than LOD but less than LOQ and are within a region defined as "Less-Certain Quantitation".
f. The ongoing precision and recovery standard was high at 122%.
g. Blank value was 1.9 mg/l.
h. Results were corrected for background depletion.
i. Method blank was 7.6 mg/l. Both ongoing precision and recovery standards were within QC limits. Sample volume insufficient for repeat analysis.
j. From 11/27/98, ph values are field pH. After 12/12/98, pH values are laboratory pH.
k. Trip blank exceed LOD.
m. QC exceeded, method blank - 0.11 ng/l.

## Table 13

## Deposit N - Phase I
## Air Monitoring Data

All results are in units of Fg/cubic meter. The site standard is 96 Fg/cubic meter total particulates.

| Monitoring Location | South | | | Northwest | | | Northeast | | | East | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Average | Maximum | Minimum | Average | Maximum | Minimum | Average | Maximum | Minimum | Average | Maximum | Minimum |
| 19-Nov-98 | | | | 1.6 | 6.1 | 1.0 | 333.3 | 518.1 | 1.0 | | | |
| 20-Nov-98 | | | | 1.2 | 1.2 | 1.2 | 334.1 | 336.9 | 331.3 | | | |
| 21-Nov-98 | | | | 1.2 | 1.2 | 1.0 | 342.4 | 349.1 | 331.1 | | | |
| 22-Nov-98 | | | | 1.1 | 1.2 | 1.0 | 349.3 | 355.7 | 341.3 | | | |
| 23-Nov-98 | | | | 1.0 | 1.2 | 1.0 | 352.4 | 358.4 | 346.7 | | | |
| 24-Nov-98 | | | | 1.1 | 1.2 | 1.0 | 348.0 | 358.9 | 339.6 | | | |
| 25-Nov-98 | | | | 1.1 | 1.2 | 1.0 | 349.9 | 359.1 | 286.9 | | | |
| 26-Nov-98 | | | | 1.4 | 2.0 | 1.2 | 1.3 | 1.7 | 1.0 | | | |
| 27-Nov-98 | | | | 2.9 | 6.1 | 2.0 | 2.2 | 2.9 | 1.7 | | | |
| 28-Nov-98 | | | | 5.0 | 9.0 | 2.4 | 3.4 | 5.1 | 2.0 | | | |
| 29-Nov-98 | | | | 7.4 | 10.7 | 4.4 | 7.4 | 11.0 | 4.6 | | | |
| 30-Nov-98 | 0.3 c | 1.7 c | 0.0 c | 4.3 | 7.3 | 1.5 | 4.2 | 7.1 | 1.5 | 1 c,d | 2 c,d | 1 c,d |
| 01-Dec-98 | 0.8 | 1.2 | 0.5 | 2.7 | 3.7 | 2.2 | 2.5 | 3.9 | 2.0 | 1.9 | 2.7 | 1.5 |
| 02-Dec-98 | 1.2 | 2.2 | 0.2 | 3 d | 4 d | 2 d | 3.2 | 5.9 | 2.2 | 2.3 | 3.7 | 1.5 |
| 03-Dec-98 | 3.3 | 4.6 | 1.7 | 5.3 | 6.8 | 3.7 | 5.1 | 7.3 | 3.4 | 5.0 | 9.5 | 3.4 |
| 04-Dec-98 | 23.2 | 200.4 | 2.9 | 21.3 | 142.6 | 1.5 | 25.0 | 224.6 | 1.2 | 31.0 | 322.5 | 0.7 |
| 05-Dec-98 | 20.3 | 179.9 | 3.7 | 23.5 | 173.1 | 3.9 | 21.1 | 122.6 | 3.4 | 20.3 | 124.3 | 2.9 |
| 06-Dec-98 | 1.3 | 6.8 | 0.0 | 3.0 | 9.5 | 1.2 | 2.8 | 9.5 | 1.0 | 2.3 | 8.5 | 0.7 |
| 07-Dec-98 | 0.4 | 2.7 | 0.0 | 2.0 | 3.9 | 1.2 | 1.9 | 3.4 | 1.0 | 1.2 | 2.9 | 0.7 |
| 08-Dec-98 | 0.6 | 2.0 | 0.0 | 2.7 | 4.2 | 1.7 | 2.8 | 4.4 | 2.0 | 2.1 | 3.2 | 1.2 |
| 09-Dec-98 | 0.9 | 2.0 | 0.0 | 3.0 | 4.2 | 2.0 | 2.8 | 3.9 | 2.0 | 2.2 | 3.9 | 1.2 |
| 10-Dec-98 | 0.1 | 0.2 | 0.0 | 2.0 | 3.2 | 1.5 | 2.0 | 7.6 | 1.2 | 1.7 | 2.2 | 0.7 |
| 11-Dec-98 | 0.0 | 0.0 | 0.0 | 1.6 | 2.0 | 1.5 | 1.4 | 1.7 | 1.2 | 1.1 | 2.0 | 0.7 |
| 12-Dec-98 | 0.4 | 2.4 | 0.0 | 2.2 | 3.9 | 1.5 | 2.1 | 4.4 | 1.0 | 1.4 | 3.2 | 0.7 |
| 13-Dec-98 | 1.4 | 4.4 | 0.2 | 2.3 | 3.7 | 1.2 | 2.1 | 3.4 | 1.0 | 1.5 | 2.7 | 0.7 |

**Table 13** *(Continued)*

| Monitoring Location | South | | | Northwest | | | Northeast | | | East | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Average | Maximum | Minimum | Average | Maximum | Minimum | Average | Maximum | Minimum | Average | Maximum | Minimum |
| 14-Dec-98 | 0.9 c | 2.0 c | 0.5 c | 2.7 c | 3.7 c | 2.2 c | 2.7 c | 3.7 c | 2.0 c | 1.5 c | 2.9 c | 1.0 c |
| 15-Dec-98 | 0.1 a | 0.2 a | 0.0 a | a | a | a | 1.6 a | 2.0 a | 1.2 a | 1.1 | 2.0 | 0.7 |
| 16-Dec-98 | 3.2 | 8.5 | 0.0 | 0.7 | 0.8 | 0.4 | 5.3 | 10.3 | 1.5 | 3.3 | 7.6 | 1.0 |
| 17-Dec-98 | 6.8 | 16.8 | 3.9 | 0.9 | 2.6 | 0.4 | 8.9 | 15.4 | 6.3 | 7.0 | 12.7 | 3.9 |
| 18-Dec-98 | 14.1 | 27.3 | 4.9 | 1.9 | 3.1 | 1.2 | 22.4 | 43.2 | 10.0 | 15.6 | 31.0 | 5.4 |
| 19-Dec-98 | 7.8 | 23.9 | 2.2 | 0.7 | 2.6 | 0.3 | 8.6 | 27.1 | 4.6 | 6.3 | 24.4 | 2.2 |
| 20-Dec-98 | 13.5 | 23.7 | 2.4 | 1.0 | 2.2 | 0.3 | 9.8 | 25.1 | 4.6 | 6.8 | 21.0 | 2.9 |
| 21-Dec-98 | 7.0 | 19.8 | 4.2 | 0.8 | 1.1 | 0.7 | 10.2 | 13.2 | 7.8 | 8.3 | 11.7 | 6.1 |
| 22-Dec-98 | 5.8 | 8.1 | 3.9 | 0.8 | 1.8 | 0.7 | 10.6 | 18.1 | 8.8 | 10.5 | 19.0 | 7.3 |
| 23-Dec-98 | 5.6 | 7.3 | 4.4 | 0.8 | 0.9 | 0.7 | 9.7 | 11.2 | 8.8 | 7.4 | 9.3 | 5.4 |
| 24-Dec-98 | 4.9 | 6.8 | 3.7 | 0.7 | 0.8 | 0.5 | 8.8 | 10.5 | 7.1 | 6.9 | 8.3 | 4.6 |
| 25-Dec-98 | 6.7 | 9.8 | 4.6 | 0.9 | 1.1 | 0.7 | 10.4 | 12.9 | 9.0 | 8.0 | 10.5 | 6.6 |
| 26-Dec-98 | 7.2 | 12.7 | 3.2 | 0.9 | 1.5 | 0.5 | 10.8 | 16.8 | 6.8 | 9.8 | 35.9 | 4.6 |
| 27-Dec-98 | 15.2 | 24.4 | 7.6 | 1.7 | 2.6 | 0.9 | 18.3 | 27.1 | 11.0 | 15.5 | 23.9 | 7.8 |
| 28-Dec-98 | 19.4 | 25.9 | 11.7 | 2.2 | 3.1 | 1.4 | 24.4 | 34.2 | 15.9 | 20.6 | 29.8 | 12.2 |
| 29-Dec-98 | 10.5 | 30.3 | 2.7 | 1.3 | 4.0 | 0.4 | 18.4 | 98.4 | 6.6 | 12.6 | 33.2 | 3.9 |
| 30-Dec-98 | 10.4 | 16.1 | 5.6 | 1.4 | 2.2 | 0.8 | 16.0 | 37.6 | 10.3 | 15.2 | 22.5 | 7.8 |
| 31-Dec-98 | 8.5 | 11.2 | 6.1 | 1.1 | 1.4 | 0.8 | 12.2 | 16.1 | 8.8 | 11.4 | 14.4 | 8.8 |
| 01-Jan-99 | 7.7 | 11.7 | 4.2 | 1.0 | 1.3 | 0.8 | 9.5 b | 11.2 b | 8.5 b | 8.0 | 11.2 | 3.4 |
| 02-Jan-99 | 14.0 | 38.1 | 4.2 | 0.9 c | 1.0 c | 0.8 c | 15.2 | 36.9 | 7.6 | 26.1 | 129.9 | 3.4 |
| 03-Jan-99 | 3.4 | 5.9 | 2.0 | 0.7 | 1.5 | 0.5 | 7.3 | 14.6 | 5.1 | 4.6 | 6.6 | 2.9 |
| 04-Jan-99 | 4.7 | 11.2 | 1.7 | 0.9 | 2.1 | 0.5 | 8.8 | 20.5 | 5.1 | 7.7 | 13.2 | 5.1 |
| 05-Jan-99 | 17.8 | 27.1 | 13.4 | 2.0 | 3.3 | 1.4 | 20.2 | 33.4 | 14.4 | 17.5 | 28.8 | 12.2 |
| 06-Jan-99 | 14.4 | 22.9 | 8.3 | 1.4 | 2.3 | 0.8 | 14.4 | 22.9 | 8.3 | 13.3 | 22.5 | 6.3 |
| 07-Jan-99 | 10.1 c | 13.9 c | 7.8 c | 1.0 c | 1.4 c | 0.8 c | 10.1 c | 13.9 c | 7.8 c | 9.3 c | 14.4 c | 6.1 c |

Footnotes:

a. Meter maintenance was being performed during the day, so some or all hourly readings were not available.

b. Screen was blank so download did not finish.

c. Some or all of the hourly readings for these days were invalid.

d. Meter was set to read mg/m$^3$; results reported are original result in mg/m$^3$ x 1,000 Fg/mg.

Prepared by: JBH1
Checked by: BLA

# Table 14

## Deposit N – Phase II
## Mass of Sediment and PCBs Removed

| Sample ID | Type | Sample Date | Lab Result Receipt | Sonication ΣPCBs mg/kg | Soxhlet ΣPCBs mg/kg | Hg mg/kg | PFT % Liq | Sand % Sol | Filter Cake % Sol | S Pile Mass (tons) | Sonication Σ Mass PCBs (lbs.) | Soxhlet S Mass PCBs (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NR201F | Pilot Cake | 08/20/99 | 08/23/99 | NA | NA | NA | 0 | -- | 46.5 | -- | -- | -- |
| NR202D | Pilot Debris | 08/20/99 | 08/23/99 | NA | NA | NA | 0 | 96.8 | -- | -- | -- | -- |
| NR203F | Cake Pile | 08/30/99 | 09/02/99 | 8.3 | 6.1 | 1.4 | 0 | -- | 74[b] | 59.59 | 0.73 | 0.54 |
| NR204S | Sand Pile | 08/30/99 | 09/02/99 | <7 | 0.34 | 0.15 | 0 | 71.1 | – | 168.26 | 0.08[e] | 0.08 |
| NR205D | Sump Matl | 08/30/99 | 09/02/99 | 13 | 11 | 1.1 | 0 | 68.7 | -- | 61.56 | 1.10 | 0.93 |
| NR206S<br>NR206S-FD | Sand P4 | 09/03/99 | 09/08/99 | 0.50 | 0.86 | 0.1 | 0.99<br>0 | 76 | -- | 135.40 | 0.10 | 0.18 |
| NR207S | Sand P5 | 09/07/99 | 09/09/99 | 0.85 | 1.1 | 0.19 | 0 | 76.3 | -- | 117.67 | 0.15 | 0.20 |
| NR208F | Cake 6 | 09/07/99 | 09/09/99 | 5.4 | 17 | 1.4 | 0 | -- | 68.7% | 82.63 | 0.61 | 1.93 |
| NR209S | Sand P7 | 09/09/99 | 09/13/99 | 1.1 | 2.2 | 0.24 | 0 | 73.6 | -- | 150.78 | 0.24 | 0.49 |
| NR210F | Cake 8 | 09/13/99 | 09/15/99 | 5.9 | 6.7* | 1.5 | 0 | -- | 50.9% | 90.60 | 0.54 | 0.62 |
| NR211S | Sand P9 | 09/13/99 | 09/15/99 | 2.1 | 1.74* | 0.19 | 0 | 80.3 | -- | 256.61 | 0.87 | 0.72 |
| NR212S | Sand P10 | 09/15/99 | 09/17/99 | 1.1 | 1.2 | 0.20 | 0 | 81.9 | -- | 207.52 | 0.37 | 0.41 |
| NR213S | Sand P12 | 09/17/99 | 09/21/99 | 0.65 | 0.92 | 0.16 | 0 | 84.1 | -- | 250.14 | 0.27 | 0.39 |
| NR214S | Sand P13 | 09/20/99 | 09/22/99 | 0.20 | 0.85 | 0.16 | 0 | 80.1 | -- | 97.54 | 0.03 | 0.13 |
| NR217F | Cake 11 | 09/24/99 | 09/28/99 | 9.42 | 29 | 2.6 | 0 | -- | 54.8% | 102.71 | 1.06 | 3.26 |

**Table 14** *(Continued)*

| Sample ID | Type | Sample Date | Lab Result Receipt | Sonication ΣPCBs mg/kg | Soxhlet ΣPCBs mg/kg | Hg mg/kg | PFT % Liq | Sand % Sol | Filter Cake % Sol | S Pile Mass (tons) | Sonication Σ Mass PCBs (lbs.) | Soxhlet S Mass PCBs (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NR215S | Sand 14 | 09/22/99 | 09/24/99 | 0.92 | 1.84 | 0.21 | 0 | 81.7 | -- | 218.52 | 0.33 | 0.66 |
| NR215S-FD | Field Dup. | 09/22/99 | 09/24/99 | | | | 0 | 82.5 | -- | -- | – | -- |
| NR216S | Sand P15 | 09/24/99 | 09/28/99 | 2.1 | 0.97 | 0.19 | 0 | 84.9 | – | 269.98 | 0.96 | 0.44 |
| NR218S | Sand P17 | 09/27/99 | 09/29/99 | 0.81 | 1.30 | 0.17 | 0 | 77.4 | -- | 235.12 | 0.29 | 0.47 |
| NR219S | Sand P18 | 09/29/99 | 10/01/99 | 0.89 | 1.00 | 0.22 | 0 | 82.1 | – | 174.17 | 0.25 | 0.29 |
| NR220F | Cake 16 | 10/04/99 | 10/07/99 | 0.93 | 23 | 2.1 | 0 | -- | 56.0% | 58.96 | 0.06 | 1.52 |
| NR221S | Sand P19 | 10/05/99 | 10/07/99 | 3.1 | 0.66 | 0.15 | 0[c] | 77.0 | – | 147.95 | 0.71 | 0.15 |
| RD221S[d] | Redredge | | | | | | | | | 4.50 | | |
| RD220F [d] | Redredge | | | | | | | | | 16.81 | | |
| | | | | | | | | Total | Filter Cake | 411.30 | | |
| | | | | | | | | Total | Sand | 2434.16 | | |
| | | | | | | | | Total | Sump | 61.56 | | |
| | | | | | | | | | **Total** | **2907.02** | **8.80** | **13.41** |

NR = Data not requested by Koester
NA = Data not available from Koester

Prepared by: JBH1
Checked by: BLA

[b] The original lab results for NR203F reported a 48.3 % solids. A duplicate sample was sent in and re-tested for the value presented above.
[c] The original lab results for NR221S reported 1.5% free liquids. The replicate sample reported 0.49%. Another sample was resubmitted and was reported as 0% free liquids.
[d] The material produced on 10/13 and 10/14 was from surveyed sites that did not meet contract specifications. The material was shipped to Winnebago Landfill as part of NR220F and NR221S.
*Data averaged between sample and field duplicate

## Table 15

## Fox River Deposit N Removal Project
## Water Treatment (Influent)
## Phase II

| Parameter<br>Date | TSS mg/L<br>Daily | O&G mg/L<br>Daily | Hg ng/L<br>Weekly | PCB ug/L<br>Weekly | pH SU<br>Daily |
|---|---|---|---|---|---|
| 20-Aug-99 | 28 | 11 | -- | -- | N/A |
| 21-Aug-99 | 2.0* | 3.0* | -- | -- | 8.1 |
| 22-Aug-99 | -- | -- | -- | -- | -- |
| 23-Aug-99 | 62 | 9.3 | -- | -- | 8.1 |
| 24-Aug-99 | 25.0 | 11 | -- | -- | 8.4 |
| 25-Aug-99 | 17 | 11 | 5.95 | <0.33 | 8.3 |
| 26-Aug-99 | 3.8 | 7.0 | -- | -- | N/A |
| 27-Aug-99 | 1.0* | 9.4 | -- | -- | 8.4 |
| 28-Aug-99 | 1.1* | 13 | -- | -- | 8.2 |
| 29-Aug-99 | -- | -- | -- | -- | -- |
| 30-Aug-99 | <0.98 | 18 | -- | -- | 8.4 |
| 31-Aug-99 | <0.97 | 11 | 6.77 | <0.33 | 8.1 |
| 01-Sep-99 | <0.96 | 7.0 | -- | -- | 8.3 |
| 02-Sep-99 | <0.96 | 8.5 | -- | -- | N/A |
| 03-Sep-99 | 1.1 | 12 | -- | -- | 8.3 |
| 04-Sep-99 | 1.0* | 12 | -- | -- | 8.3 |
| 05-Sep-99 | -- | -- | -- | -- | -- |
| 06-Sep-99 | 3.7 | 13 | -- | -- | 8.3 |
| 07-Sep-99 | 3.9 | 16 | 4.51 | <0.33 | 7.8 |
| 08-Sep-99 | 2.1 | <1.4 | -- | -- | N/A |
| 09-Sep-99 | <0.99 | <1.4 | -- | -- | N/A |
| 10-Sep-99 | <1.0 | <1.4 | -- | -- | 8.5 |
| 11-Sep-99 | <0.98 | <1.4 | -- | -- | 8.5 |

**Table 15** *(Continued)*

| Parameter<br>Date | TSS mg/L<br>Daily | O&G mg/L<br>Daily | Hg ng/L<br>Weekly | PCB ug/L<br>Weekly | pH SU<br>Daily |
|---|---|---|---|---|---|
| 12-Sep-99 | -- | -- | -- | -- | -- |
| 13-Sep-99 | <0.98 | 2.9* | -- | -- | 8.6 |
| 14-Sep-99 | <8.8 | 4.8 | 1.23 | 0.22 | 8.5 |
| 15-Sep-99 | <0.91 | D | -- | -- | 8.5 |
| 16-Sep-99 | <0.91 | D | -- | -- | 8.3 |
| 17-Sep-99 | <0.93 | D | -- | -- | 8.0 |
| 18-Sep-99 | 12 | 3.4* | -- | -- | 8.1 |
| 19-Sep-99 | -- | -- | -- | -- | -- |
| 20-Sep-99 | 1.0* | 5.9 | -- | -- | 8.2 |
| 21-Sep-99 | 110 | 5.0 | 238.7 | 2.9 | 8.1 |
| 22-Sep-99 | 18 | 7.4 | -- | -- | 8.0 |
| 23-Sep-99 | <0.88 | 21 | -- | -- | 8.0 |
| 24-Sep-99 | 1.1 | 3.8* | -- | -- | 8.3 |
| 25-Sep-99 | 2.8 | 7.5 | -- | -- | 8.3 |
| 26-Sep-99 | -- | -- | -- | -- | -- |
| 27-Sep-99 | <0.88 | 2.7* | -- | -- | 8.4 |
| 28-Sep-99 | 1.5 | 4.5* | N/A | 0.44 | 8.2 |
| 29-Sep-99 | 6.4 | 5.7 | -- | -- | 8.2 |
| 30-Sep-99 | <0.91 | <1.4 | -- | -- | 8.1 |
| 01-Oct-99 | 1.7 | 3.7* | -- | -- | 8.1 |
| 02-Oct-99 | -- | -- | -- | -- | -- |
| 03-Oct-99 | -- | -- | -- | -- | -- |
| 04-Oct-99 | <0.88 | 5.1 | -- | -- | 8.3 |

*Sample results quantitated between Method Detection Limit and Practical Quantitation Limit.
D = Samples inadvertently destroyed prior to lab analysis.
N/A = Not analyzed

Prepared by: JBH1
Checked by: BLA

# Table 16

## Fox River Deposit N Removal Project
## Water Treatment (Effluent)
## Phase II

| Parameter | Flow | $BOD_5$ | TSS | $NH_3$ | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | MGD | mg/l Daily | mg/l Daily | mg/l daily | mg/l Daily | ng/l Weekly | ng/l Weekly | pg/l Weekly | SU/Daily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | | N/A | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave 9.0E-9 lb/day | 6-9 std units |
| 20-Aug-99 | 0.100 | -- | 1.0* | 1.1 | 9.1 | -- | | | N/A |
| 21-Aug-99 | 0.150 | -- | 4.6 | 1.5 | 4.2 | – | | | 8.8 |
| 22-Aug-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 23-Aug-99 | 0.150 | -- | 1.6* | 1.6 | 2.8* | -- | | | 8.8 |
| 24-Aug-99 | 0.150 | -- | 2.1* | 1.5 | 8.9 | -- | | | 8.7 |
| 25-Aug-99 | 0.144 | <2.0 | 0.94* | 0.87 | 11.0 | 4.98 | <0.33 | <1.3 | 8.9 |
| 26-Aug-99 | 0.200 | -- | 2.3* | <0.062 | 6.2 | -- | | | N/A |
| 27-Aug-99 | 0.166 | -- | 1.4* | 0.64 | 8.2 | -- | | | N/A |
| 28-Aug-99 | 0.160 | -- | 1.2* | 0.65 | 12.0 | -- | | | 8.4 |
| 29-Aug-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 30-Aug-99 | 0.190 | <3.0 | 1.5* | 1.0 | 8.0 | 3.85 | -- | <1.5 | 8.4 |
| 31-Aug-99 | | | 1.2* | 1.5 | 16.0 | | <0.33 | -- | 8.3 |
| 01-Sep-99 | 0.190 | -- | 1.3* | 0.52 | 5.9 | -- | | | 8.5 |
| 02-Sep-99 | 0.180 | -- | <0.97 | 0.68 | 7.0 | -- | | | N/A |
| 03-Sep-99 | 0.180 | -- | 2.3* | 0.4 | 2.3* | -- | | | 8.4 |
| 04-Sep-99 | 0.200 | -- | 2.1* | 0.57 | 13.0* | -- | | | 8.1 |
| 05-Sep-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 06-Sep-99 | 0.075 | -- | 2.9 | <0.87 | 18.0 | -- | | | 8.3 |
| 07-Sep-99 | 0.110 | <2.0 | <0.95 | 0.062 | 12.0 | 0.63 | <0.33 | -- | 8.1 |
| 08-Sep-99 | 0.185 | -- | 1.2* | 0.35 | <1.4 | -- | | | 8.4 |
| 09-Sep-99 | 0.209 | -- | <0.89 | 0.53 | <1.4 | -- | | | 8.6 |
| 10-Sep-99 | 0.180 | -- | <1.1 | 0.85 | 3.6* | -- | | | 8.5 |

**Table 16** *(Continued)*

| Parameter | Flow | $BOD_5$ | TSS | $NH_3$ | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | MGD | mg/l Daily | mg/l Daily | mg/l daily | mg/l Daily | ng/l Weekly | ng/l Weekly | pg/l Weekly | SU/Daily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | | N/A | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave 9.0E-9 lb/day | 6-9 std units |
| 11-Sep-99 | 0.200 | – | 1.1* | 0.86 | 1.7* | -- | | | 8.6 |
| 12-Sep-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 13-Sep-99 | 0.200 | -- | <0.88 | 0.5 | 3.9* | -- | | | 8.4 |
| 14-Sep-99 | 0.220 | <2.0 | 11* | 0.13* | 4.3* | <1.0 | <0.33 | <1.8 | 8.5 |
| 15-Sep-99 | 0.200 | – | <0.88 | -- | D | -- | | | N/A |
| 16-Sep-99 | 0.180 | -- | <0.88 | <0.062 | D | -- | | | 8.4 |
| 17-Sep-99 | 0.180 | -- | <0.92 | 0.12* | D | -- | | | 8.5 |
| 18-Sep-99 | 0.180 | -- | <0.93 | 0.31* | 2.2* | -- | | | 8.4 |
| 19-Sep-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 20-Sep-99 | 0.175 | -- | <0.88 | 0.14 | 6.0 | -- | | | 8.3 |
| 21-Sep-99 | 0.180 | <2.0 | 1.6* | 0.073* | 3.8* | 0.43 | <0.33 | <1.5 | 8.5 |
| 22-Sep-99 | 0.180 | -- | <0.88 | 0.16* | 4.1* | -- | | | 8.4 |
| 23-Sep-99 | 0.160 | -- | <0.88 | 0.11* | 9.8 | -- | | | 8.0 |
| 24-Sep-99 | 0.180 | -- | <0.88 | <0.062 | 6.2 | -- | | | 8.2 |
| 25-Sep-99 | 0.180 | -- | <0.88 | 0.19* | 1.8* | -- | | | 8.2 |
| 26-Sep-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 27-Sep-99 | 0.160 | -- | 1.5* | 0.39 | 4.3* | -- | | | 8.3 |
| 28-Sep-99 | 0.06 | -- | <0.88 | 0.12 | 4.1* | -- | | | 8.3 |
| 29-Sep-99 | 0.160 | <2.0 | <0.88 | 0.058 | <1.4 | -- | <0.33 | <1.5 | 8.2 |
| 30-Sep-99 | | -- | <0.91 | <0.062 | <1.4 | -- | | | 8.1 |
| 01-Oct-99 | | -- | 2.3 | <0.062 | 5.9 | -- | | | 8.1 |
| 02-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 03-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 04-Oct-99 | | -- | <0.88 | 0.11* | 6.7 | -- | | | 8.5 |

D - Sample destroyed by lab prior to analysis.
*Result quantitated between Method Limit of Detection and Practical Quantitation Limit.

Prepared by: JBH1
Checked by: BLA

# Table 17

## Deposit N – Phase III
## Mass of Sediment and PCBs Removed

| Sample ID | Type | Sample Date | Lab Result Receipt | **SON** S PCBs mg/kg | **SOX** S PCBs mg/kg | Hg mg/kg | PFT % Liq | Sand % Sol | Filter Cake % Sol | S Pile Mass (tons) | **SON** S Mass PCBs (lbs.) | **SOX** S Mass PCBs (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NR301F | Cake | 10/13/99 | 10/13/99 | 10 | 42 | 2.1 | 0 | -- | 60.6 | 106.9 | 1.08 | 5.44 |
| NR302S | Sand | 10/13/99 | 10/13/99 | 2.9 | 3.4 | 0.3 | 0 | 76.2 | -- | 18.70 | 0.08 | 0.10 |
| | | | | | | | | Total | Filter Cake | 106.90 | | |
| | | | | | | | | Total | Sand | 18.70 | | |
| | | | | | | | | | **Total** | **125.60** | **1.16** | **5.44** |

Prepared by: JBH1
Checked by: BLA

## Table 18

## Deposit N
## Water Treatment (Influent)
## Phase III

| Parameter<br>Date | TSS mg/L Daily | O&G mg/L<br>Daily | Hg ng/L Weekly | PCB ug/L<br>Weekly | pH SU<br>Daily |
|---|---|---|---|---|---|
| 05-Oct-99 | <1.1 | 2.6* | 0.35 | 0.50* | 8.3 |
| 06-Oct-99 | <1.0 | 2.2* | -- | -- | 7.8 |
| 07-Oct-99 | <0.98 | NA | -- | -- | 7.8 |
| 08-Oct-99 | 29 | 4.1* | -- | -- | 7.9 |
| 09-Oct-99 | <0.95 | 2.1* | -- | -- | 7.8 |
| 10-Oct-99 | -- | -- | -- | -- | -- |
| 11-Oct-99 | 1.5* | 3.4* | -- | -- | 7.8 |
| 12-Oct-99 | <0.4 | 3.8* | <0.1 | <0.49* | N/A |
| 13-Oct-99 | 1.3 | 5.6 | -- | -- | 8.3 |
| 14-Oct-99 | <0.52 | 3.1* | -- | -- | 7.9 |

*Sample results quantitated between Method Detection Limit and Practical Quantitation Limit.
NA = Not Analyzed.

Prepared by: JBH1
Checked by: BLA

## Deposit N
## Water Treatment (Effluent)
## Phase III

| Parameter | Flow | $BOD_5$ | TSS | $NH_3$ | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | MGD | mg/L<br>Daily | mg/L<br>Daily | mg/L<br>Daily | mg/L<br>Daily | ng/L<br>Weekly | ng/L<br>Weekly | pg/L<br>Weekly | SU/Daily |
| Limit | | <2 mg/l<br>weekly<br>ave | 5 mg/l<br>monthly<br>ave10 mg/l<br>daily<br>max | | N/A | 1700 ng/l<br>daily max | 1.2 ug/l 3.6E-<br>3<br>lb/day | 3.0E-9 ug/l<br>month<br>ave9.0E-9<br>lb/day | 6-9 std<br>units |
| 05-Oct-99 | | <2.0 | <0.93 | 0.15 | <1.4 | 0.88 | <0.33 | <2.6 | 8.3 |
| 06-Oct-99 | | -- | <0.96 | 0.38 | <1.4 | -- | | | 8.0 |
| 07-Oct-99 | | -- | 1.2* | 5.0 | 1.9* | -- | | | 7.8 |

**Table 18** *(Continued)*

| Parameter | Flow | $BOD_5$ | TSS | $NH_3$ | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | MGD | mg/L Daily | mg/L Daily | mg/L Daily | mg/L Daily | ng/L Weekly | ng/L Weekly | pg/L Weekly | SU/Daily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | | N/A | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave9.0E-9 lb/day | 6-9 std units |
| 08-Oct-99 | | -- | 1.4* | 6.3 | 3.0* | -- | | | 7.9 |
| 09-Oct-99 | | -- | <1.0 | -- | <1.4 | -- | -- | -- | 8.4 |
| 10-Oct-99 | -- | -- | <0.94 | 2.4 | <1.4 | -- | -- | -- | 7.7 |
| 11-Oct-99 | | -- | -- | -- | -- | -- | -- | -- | -- |
| 12-Oct-99 | | <2.0 | <0.33 | 1.0 | 1.6* | 0.71 | <0.33 | <1.2 | 7.7 |
| 13-Oct-99 | | -- | <0.21 | 1.2 | 5.7 | -- | -- | -- | 8.3 |
| 14-Oct-99 | | -- | <0.43 | 0.4 | 4.4* | -- | -- | -- | 7.8 |

*Results quantitated between Method Detection Limit and Practical Quantitation Limit.

Prepared by: JBH1
Checked by: BLA

# Table 19

## Phase IV - Deposit O
## Mass of Sediment and PCBs Removed

| Sample ID | Type | Sample Date | Lab Result Receipt | Sonication ΣPCBs mg/kg | Soxhlet ΣPCBs mg/kg | Hg mg/kg | PFT % Liq | Sand % Sol | Filter Cake % Sol | S Pile Mass (tons) | Sonication Σ Mass PCBs (lbs.) | Soxhlet S Mass PCBs (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7-Day Unit** | | | | | | | | | | | | |
| 401F | Filter Cake | 10/25/99 | 10/27/99 | 0.560 | 0.640 | 1.5 | 0 | | 58.8 | 144.13 | 0.10 | 0.11 |
| 402S | Sand | 10/25/99 | 10/27/99 | 0.262 | 0.260[A] | 0.21 | 0 | 82.0 | | 38.00 | 0.02 | 0.02 |
| **1st 5-Day Unit** | | | | | | | | | | | | |
| 403F | Filter Cake | 10/29/99 | 11/02/99 | 0.375[B] | 0.096[A] | 1.8 | 0 | | 66.3 | 289.39 | 0.14[B] | 0.04 |
| 404S | Sand | 01/29/99 | 11/02/99 | 0.130 | 0.110[A] | 0.27 | 0 | 83.6 | | 79.66 | 0.02 | 0.01 |
| **2nd 5-Day Unit** | | | | | | | | | | | | |
| 405F | Filter Cake | 11/04/99 | 11/08/99 | 0.200 | 0.600 | 2.1 | 0 | | 60.3 | 234.24 | 0.06 | 0.17 |
| 406S | Sand | 11/04/99 | 11/08/99 | 0.270 | 0.510 | 0.20 | 0 | 77.3 | | 20.15 | 0.01 | 0.01 |
| | | | | | | | | **Totals** | | **805.57** | **0.34** | **0.36** |

[A] Result is qualified by analytical laboratory - estimated value.
[B] Based on ½ reported detection limit.

Prepared by: JBH1
Checked by: BLA

## Table 20

## Fox River Deposit N Removal Project
## Phase IV - Deposit O
## Water Treatment (Influent)

| Parameter<br>Date | TSS mg/L<br>Daily | O&G mg/L<br>Daily | Hg ng/L<br>Weekly | PCB ug/L<br>Weekly | pH SU<br>Daily |
|---|---|---|---|---|---|
| 15-Oct-99 | 28 | <1.4 | -- | -- | 7.5(F) |
| 16-Oct-99 | 4.5 | 2.3* | -- | -- | 7.3(F) |
| 17-Oct-99 | -- | -- | -- | -- | -- |
| 18-Oct-99 | 21 | <1.4 | -- | -- | 7.3(F) |
| 19-Oct-99 | <0.21 | 5.3 | 1.32 | <0.33 | 7.4(F) |
| 20-Oct-99 | -- | -- | -- | -- | -- |
| 21-Oct-99 | 9.3 | 5.8 | -- | -- | 7.4(F) |
| 22-Oct-99 | 0.43* | | -- | -- | 7.9(F) |
| 23-Oct-99 | <0.43 | 2.6* | -- | -- | 7.5(F) |
| 24-Oct-99 | -- | -- | -- | -- | -- |
| 25-Oct-99 | <4.0 | 1.8* | -- | -- | 7.4(F) |
| 26-Oct-99 | 0.90* | <1.4 | 9.3 | <0.33 | 7.5(F) |
| 27-Oct-99 | 0.40* | 4.4* | -- | -- | 7.5(F) |
| 28-Oct-99 | <0.40 | 3.5* | -- | -- | 7.3(F) |
| 29-Oct-99 | <0.41 | 2.8* | -- | -- | 7.3(F) |
| 30-Oct-99 | 0.42* | 1.6* | -- | -- | 7.4(F) |
| 31-Oct-99 | -- | -- | -- | -- | -- |
| 01-Nov-99 | 1.6 | 1.5* | -- | -- | 7.5(F) |
| 02-Nov-99 | <0.40 | 3.0* | 0.70 | <0.33 | 7.5(F) |
| 03-Nov-99 | <0.41 | <1.4 | -- | -- | 7.4(F) |
| 04-Nov-99 | 29 | 3.6* | -- | -- | 8.5(F) |
| 05-Nov-99 | | | -- | -- | |
| 06-Nov-99 | | | -- | -- | |
| 09-Nov-99 | 0.60* | | -- | -- | 7.6(F) |

*Results quantitated between Method Detection Limit and Practical Quantitation Limit
(F) - Field Measurement

Prepared by: JBH1
Checked by: BLA

# Table 21

## Fox River Deposit N Removal Project
## Water Treatment (Effluent)
## Phase IV

| Parameter | Flow | $BOD_5$ | TSS | $NH_3$ | O&G | Hg | PCB | TCDD | pH |
|---|---|---|---|---|---|---|---|---|---|
| Date | MGD | mg/L Daily | mg/L Daily | mg/L Daily | mg/L Daily | ng/L Weekly | ng/L Weekly | pg/L Weekly | SU/ Daily |
| Limit | | <2 mg/l weekly ave | 5 mg/l monthly ave10 mg/l daily max | | N/A | 1700 ng/l daily max | 1.2 ug/l 3.6E-3 lb/day | 3.0E-9 ug/l month ave9.0E-9 lb/day | 6-9 std units |
| 15-Oct-99 | | -- | <0.20 | 0.57 | 4.3 | -- | | | 7.5 |
| 16-Oct-99 | | -- | <0.21 | 5.8 | 2.5* | -- | | | 7.2 |
| 17-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 18-Oct-99 | | -- | 0.50* | 6.9 | 3.4* | – | | | 7.2 |
| 19-Oct-99 | | <2.0 | <0.20 | 10 | 3.4* | | <0.33 | <4.8 | 7.5 |
| 20-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 21-Oct-99 | | -- | <0.40 | 9.8 | 1.9* | 0.58 | | | 7.5 |
| 22-Oct-99 | | -- | 0.5* | 12 | NA | -- | | | 7.3 |
| 23-Oct-99 | | -- | <0.41 | 1.2 | 1.4* | -- | | | 7.2 |
| 24-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 25-Oct-99 | | -- | <0.40 | 1.5 | 1.4* | -- | | | 7.6 |
| 26-Oct-99 | | 5.0 | 5.4 | 1.4 | 2.0* | 3.37 | <0.33 | <2.1 | 7.0 |
| 27-Oct-99 | | -- | 0.50* | 12 | 4.2* | -- | | | 7.5 |
| 28-Oct-99 | | -- | 0.53* | 1.3 | 2.8* | -- | | | 7.5 |
| 29-Oct-99 | | -- | 0.40* | 1.4 | 1.9* | -- | | | 7.5 |
| 30-Oct-99 | | -- | 0.60* | 17 | <1.4 | -- | | | 7.5 |
| 31-Oct-99 | -- | -- | -- | -- | -- | -- | | | -- |
| 01-Nov-99 | | -- | <0.40 | 15 | <1.4 | -- | | | 7.5 |
| 02-Nov-99 | | <2.0 | <0.40 | 8.7 | <1.4 | 0.68 | <0.33 | <4.6 | 7.5 |
| 03-Nov-99 | | -- | <0.40 | 10 | <1.4 | -- | | | 7.5 |
| 04-Nov-99 | | -- | <0.40 | 11 | <1.4 | -- | | | 7.4 |
| 05-Nov-99 | | -- | <0.40 | -- | | -- | | | 7.7 |
| 06-Nov-99 | | -- | | | | 0.63 | | | |
| 07-Nov-99 | | -- | | | | -- | | | |
| 10-Nov-99 | | | <0.40 | | | | | | 7.7 |

* Results quantified between Method Detection Limit and Practical Quantitation Limit.

Prepared by: JBH1
Checked by: BLA

## Table 22

## Deposit N
## Removal Summary Metrics[a]

| Phase | Sediment Removed (cubic yards) | Dewatered Sediment (tons) | PCBs Removed (pounds) | Days Dredged |
|---|---|---|---|---|
| I | 3,788 | 2,537 | 95.3 | 30 |
| II | 2,983 | 2,983 | 13.4 | 45 |
| III | 135 | 125 | 5.4 | 12 |
| IV | 1,026 | 806 | 0.4 | 17 |
| Total | [b]7,932 (8,175) | 6,451 | 114.5 | 104 |

[a] As a result of additional analyses, removal summary metrics have changed (i.e., plus or minus two percent) since publication of the April 2000 Deposit N Summary Report.

[b] Overall Deposit N removal volume Phases I, II and III was estimated as 7,149 cubic yards and 1,026 cubic yards from Phase IV or Deposit O for a total volume of 8,175 cubic yards. The small variance between the sum of individual phases and the total removal volume is due to the location and timing of the several sediment volume or poling surveys.

Prepared by: SGL
Checked by: JBH1

# Table 23
# Fox River Deposit N Removal Project
# Project Cost Summary[a]

| Work Activity | Unit | Unit Rate | Project Units | Project Cost |
|---|---|---|---|---|
| **Contractor** | | | | |
| Site Preparation | Lump Sum | 381,000.00 | 1 | $ 381,000 |
| Turbidity Barrier | Lump Sum | 525,000.00 | 1 | 525,000 |
| Environmental Monitoring | Lump Sum | 210,000.00 | 1 | 210,000 |
| Dredging Phases 1 & 2 | Cubic Yard | 20.73 | 7,014 | 145,000 |
| Dewatering Phases 1 & 2 | Cubic Yard | 41.52 | 7,014 | 291,000 |
| Water Treatment Phases 1 & 2 | Cubic Yard | 6.69 | 7,014 | 47,000 |
| Winterization | Lump Sum | 411,000.00 | 1 | 411,000 |
| Restoration | Lump Sum | 55,000.00 | 1 | 55,000 |
| ILP Turbidity Units | Lump Sum | 17,000.00 | 1 | 17,000 |
| Water Treatment (Interim Period) | Lump Sum | 27,000.00 | 1 | 27,000 |
| Phase III Removal | | 98,000.00 | 1 | 98,000 |
| Phase IV Removal [c] | | 163,000.00 | 1 | 163,000 |
| | | | Subtotal | $2,370,000 |
| **Transport & Disposal** | | | | |
| TSCA | Lump Sum | 251,000.00 | 1 | $ 251,000 |
| Non-TSCA[c,d] | Ton | 81.00 | 4,812 | 366,000 |
| | | | Subtotal | $617,000 |
| **Engineering[b]** | | | | |
| Phase I | Lump Sum | 763,000 | 1 | $ 763,000 |
| Phase II/III | Lump Sum | 111,000 | 1 | 111,000 |
| Phase IV[c] | Lump Sum | 65,000 | 1 | 65,000 |
| Post Construction | Lump Sum | 83,000 | 1 | 83,000 |
| | | | Subtotal | $1,022,000 |
| **Other** | | | | |
| Access/Lease | Lump Sum | 28,000 | 1 | $ 28,000 |
| Insurance | Lump Sum | 78,000 | 1 | 78,000 |
| DFD | Lump Sum | 117,000 | 1 | 117,000 |
| | | | Subtotal | $ 223,000 |
| | | | **Total** | **$4,232,000** |

[a] Deposit O work accounted for an additional 1,026 cubic yards of sediment removed. Combined with Deposit N, sediment removal for all four phases totals 8,175 cubic yards.
[b] Engineering costs include bench tests, permitting, field surveys, design, bid documents, project management, construction oversight and public relations.
[c] Contains Deposit O costs.
[d] Some transport and disposal costs were paid under above line items for Phase III and Phase IV Removal, the costs not covered by these items are represented here.

# Appendix A

# TCLP Evaluation Memo

# Foth & Van Dyke
# Memorandum

September 17, 1997

TO: Steve Laszewski

CC:

FR: Joe Arensdorf

RE: Fox River Deposit N - Evaluation of Need for Pre-Design Phase Mercury TCLP Testing

In the RI for Fox River Sediments prepared by GAS, 12 sediment samples from Deposit N were tested for Mercury by EPA Method SW-7471. Mercury concentrations in the 12 samples ranged from 169 ug/kg to 5,445 ug/kg.

Individual samples were not tested for TCLP mercury. However, three composite samples were tested for TCLP mercury. These same three composite sample were tested for total mercury using the EPA CLP methods for metals. Results of CLP methods are comparable to those of SW methods. A summary of the results are presented in the following table.

| Composite Sample | Total Mercury- CLP (ug/kg) | TCLP Mercury (mg/L) |
|---|---|---|
| N-R1-COMP1 (0-2) | 3,780 | <0.0002 |
| N-R1-COMP2 (0-2) | 2,560 | <0.0002 |
| N-R1-COMP3 (0-2) | 993 | <0.0002 |
| *Regulatory TCLP Concentration* | | 0.2 |

The composite sample with the highest total mercury concentration was N-RI-COMP1 with 3,780 ug/kg mercury. This concentration is 69% of the highest mercury concentration (5,445 ug/kg) in a discrete sample at Deposit N. Sample N-RI-COMP1 had a Mercury TCLP result of less than 0.0002 mg/L. The regulatory limit for Mercury TCLP is three orders of magnitude higher (0.2 mg/L). These results indicate that the Mercury TCLP regulatory concentration is unlikely to be approached by Deposit N sediment.

In view of the results discussed, it is recommended that Mercury TCLP not be included as a test parameter for sediments during pre-design phase testing.

# Appendix B

# WDNR Chapter 30 Permit

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William R. Selbig, Regional Director

Northeast Regional Headquarters
Green Bay Work Site
1125 N. Military Ave.,P.O. Box 10448
Green Bay, WI 54307-0448
Phone 920-492-5800
Fax 920-448-5129

RECEIVED
AUG 5 1998
BUREAU OF
WATERSHED MANAGEMENT

August 3, 1998

3-NE-98-0239LF

WI Department Of Administration
101 E. Wilson Street
Madison, WI 53707

Dear Sir :

We have reviewed your application for a permit to remove materials from the bed of the Fox River in the Village of Little Chute, Outagamie County. You will be pleased to know your application is approved with a few limitations.

Attached is a copy of your permit which lists the conditions that must be followed. In addition, I have included a copy of our findings of fact and conclusions of law and your rights to appeal our action. A copy of the permit must be kept for reference at the project site. Please read your permit conditions carefully so that you are fully aware of what is expected of you.

Your next step will be to notify me of the date on which you plan to start construction and again after your project is complete.

If you have any questions about your permit, please feel free to call me at 920-448-5166. And remember, your permit is not valid until you notify me of your intention to begin construction.

Good luck on your project!

Sincerely,

Michael Hanaway
Michael Hanaway
Water Management Specialist

Attach.

*Quality Natural Resources Management*
*Through Excellent Customer Service*

Printed on Recycled Paper

cc: Dick Koch - NER
Corps of Engineers - Green Bay
Warden - Amie Jarozewski
County Zoning - Outagamie County
Mike Liebman - Foth & Van Dyke, P.O. Box 19012, Green Bay, WI 54307-9012
Janet Smith - U.S. Fish and Wildlife Service, 1015 Challenger Court, Green Bay, WI 54311-8331
Rick Hermes - Village Administrator, Village of Kimberly, 515 W. Kimberly Ave., Kimberly WI 54136
Tom Lebak - Village Administrator, Village of Little Chute, 108 W. Main St., Little Chute, WI 54140
Interlake Papers, Attn: Earl Porter, 433 North Main Street, Kimberly, Wi., 54136-1490
Bill Fitzpatrick - WDNR, GEF- II

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

DREDGING PERMIT
3-NE-98-0239LF

WI Department Of Administration is hereby granted under Section 30.20, Wisconsin Statutes, a permit to remove materials from the bed of the Fox River in the Village of Little Chute, Outagamie County, in government lot 4 Section 21, Township 21 North, Range 18 East, subject to the following conditions:

## PERMIT CONDITIONS

1. You must notify Water Management Specialist Michael Hanaway, Green Bay, WI 54301 (phone 920-448-5166) before starting construction and again ***not more than*** 5 days after the project is complete.

2. You must complete the project as described on or before July 31, 2000. You may not begin or continue construction after this date unless the Department grants a new permit or permit extension in writing.

3. This permit does not authorize any work other than what you specifically describe in your application and plans, and as modified by the conditions of this permit. If you wish to alter the project or permit conditions, you must first obtain written approval of the Department.

4. You are responsible for obtaining any permit or approval that may be required for your project by local zoning ordinances or by the U.S. Army Corps of Engineers before starting your project.

5. You must allow free and unlimited access to your project site at any time to any Department employee who is investigating the project's construction, operation, or maintenance.

6. The Department may modify or revoke this permit if the project is not completed according to the terms of the permit, or if the Department determines the activity is detrimental to the public interest.

7. You must keep a copy of this permit and approved plans at the project site at all times until the project is complete.

8. Your acceptance of this permit and efforts to begin work on this project signify that you have read, understood and agreed to follow all conditions of this permit.

9. Proper erosion control measures shall be in place and maintained during the preparation phase, operation phase, and reclamation phase of the on-shore sediment dewatering, and sediment consolidation and carriage water treatment facility.

10. You must restrict the removal of vegetative cover and exposure of bare ground to the minimum amount necessary for construction. You must protect areas of exposed soil from erosion by seeding and mulching, riprap, sodding, diversion of surface runoff, installation of straw bales or silt screens, construction of settling basins, or similar methods as soon as possible after removal of the original ground cover and before construction is completed.

11. All disturbed nearshore areas shall be seeded and mulched or rip-rapped as appropriate to prevent erosion. This shall be accomplished immediately upon completion of any phase of this project.

12. No portion of the bank or upland which is altered or disturbed and, as a result, unstable may remain unprotected for more than 3 days.

13. Prior to any rain event, or if the site is to remain unoccupied for longer than 24 hours, appropriate temporary measures such as straw beds and silt fences must be put in place.

14. Final site stabilization requires re-establishment of vegetation with non-aggressive, native species and should not contain invasive species such as Reed Canary Grass (*Phalaris arundinacea*). Upon completion of the project, all nearshore areas must be restored to natural conditions using native grasses, forbes, shrubs, and trees.

15. All dredge spoils shall be disposed of within a licensed landfill. No dredging may begin until the facility is prepared to accept the spoils.

16. Dredging may only occur after the turbidity barrier has been constructed. Installation of the turbidity barrier must be according to the plans submitted. The turbidity barrier must be inspected daily to insure that it is functioning according to submitted plans and that sediment migration outside the dredge area is being prevented.

17. To monitor sediment resuspension, turbidity monitors must be installed and operational at least seven days before dredging begins.

18. This permit has been issued with the understanding that any construction equipment used is the right size to do the job, and can be brought to and removed from the project's site without unreasonable harm to vegetative cover or fish or wildlife habitat, and will not cause undue disturbance or deposition of silt in adjoining waterways.

19. The hydraulic cutterhead dredge must be operated by first starting the dredge pump with the cutterhead above the sediment. Only after the flow of water has been established by the dredge pump will the cutterhead be lowered into the sediments. To stop dredging, the cutterhead must be raised above the sediment allowing the dredge pump to pump only clear water until the entire dredge line is cleared before the pump is shut down.

20. You must not deposit or store any of the removed materials (hydraulically dredged sediments or other large debris) in any wetland or upon any part of the bed of the waterway below the ordinary high-water mark. All removed materials must be placed out of the floodway of any stream.

21. The turbidity barrier may only be removed after the suspended solids concentrations within the enclosed dredging area are equal to or less than background levels in the Fox River.

22. A map showing measurements of completed work shall be prepared and submitted within 30 days of project completion.

23. The turbidity barrier, dredging pipe, and any other permanent or temporary structures located in the water must be marked with standard US Coast Guard regulated warning devices indicating the location of the structures to boaters.

24. You must obtain and comply with any WPDES permits and solid waste permits required for the project. The Department reserves full control during the term of this contract to direct the manner in which the materials may be removed.

25. The permittee shall respond to any spills of hazardous substances or any dredge materials transport or pumping failures to the Department's project coordinator. In the event of any such spill or transport failure, you must follow all of the requirements of Chapter NR 706 of the Wisconsin Administrative Code.

**FINDINGS OF FACT** (Facts which were considered in making this decision.)

1. Wisconsin Department Of Administration has filed an application for a permit to remove materials from the bed of the Fox River in the Village of Little Chute, Outagamie County, in government lot 4, Section 21, Township 21 North, Range 18 East.

2. The project will consist of the hydraulic dredging of 12,000 cubic yards of PCB contaminated sediment from the Fox River and the construction of a HDPE membrane turbidity barrier to contain the sediment. An on-shore sediment dewatering and sediment consolidation and carriage water treatment facility will also be constructed.

3. The Department has completed an investigation of the project site and has evaluated the project as described in the application and plans.

4. The proposed project will not materially obstruct navigation and will not be detrimental to other public interests if constructed in accordance with this permit.

5. The proposed project, if constructed in accordance with this permit, will not adversely affect water quality, will not increase water pollution in surface waters and will not cause environmental pollution as defined in Section 144.01(3), Wisconsin Statutes.

6. The project has been reviewed for compliance with Chapter NR 103, Wisconsin Administrative Code. The project does not impact wetlands.

7. The Department has determined that granting or denying this permit does not constitute a major state action significantly affecting the quality of the human environment.

8. The Department of Natural Resources and the applicant have completed all procedural requirements and the project as permitted will comply with all applicable requirements of Sections 1.11, 30.20 Wisconsin Statutes and Chapters NR 102, 103, 115, 116, 117, 150, 299, and 347 of the Wisconsin Administrative Code.

9. The Department has considered the environmental analysis and comments received on it.

10. Consistent with social, economic, and other essential considerations, the Department has done all that it can to avoid or minimize environmental harm.

**CONCLUSIONS OF LAW** (These are the legal reasons why the Department can make these decisions)

1. The Department has authority under the above indicated Statutes and Administrative Codes. to issue a permit for the construction and maintenance of this project.

2. The proposed project conforms with the standards of Chapters NR 103, 115, 116, 117, 150, 299, and 347 Wisconsin Administrative Code.

**NOTICE OF APPEAL RIGHTS**

If you believe that you have a right to challenge this decision, you should know that Wisconsin Statutes and Wisconsin Administrative Rules establish time periods within which requests to review Department decisions must be filed.

To request a contested case hearing pursuant to Section 227.42, Wisconsin Statutes, you have 30 days after the decision is mailed or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. This notice is provided pursuant to Section 227.48(2), Wisconsin Statutes.

Dated at Green Bay, Wisconsin on August 3, 1998

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES
For the Secretary

By Michael Hanaway
Michael Hanaway
Water Management Specialist

# Appendix C

# US Army Corps of Engineers Permit Conditions

# Appendix C

# US Army Corps of Engineers Permit Conditions

**DEPARTMENT OF THE ARMY**
ST. PAUL DISTRICT, CORPS OF ENGINEERS
ARMY CORPS OF ENGINEERS CENTRE
190 FIFTH STREET EAST
ST. PAUL, MN 55101-1638

August 17, 1998

REPLY TO
ATTENTION OF
Construction-Operations
Regulatory (98-05587-GRK)

Mr. Mike Liebman
Foth & Van Dyke
P.O. Box 19012
Green Bay, Wisconsin 54307

Dear Mr. Liebman:

We have reviewed information about a project of the Wisconsin Department of Administration, Division of Facilities Development to construct a turbidity barrier and dredge materials from the Fox River. The project site is in the N 1/2 Sec. 27, T. 21N., R. 18E., Outagamie County, Wisconsin.

This work is authorized by a Department of the Army nationwide permit **PROVIDED THE WORK IS PERFORMED AS SHOWN IN THE ATTACHED PERMIT SKETCHES NUMBERED 1 OF 6 THROUGH 6 OF 6, AND IN ACCORDANCE WITH THE ENCLOSED NATIONWIDE PERMIT GENERAL CONDITIONS AND THE FOLLOWING SPECIAL CONDITIONS:**

a. You must obtain all necessary leases, easements or licenses required by the Real Estate Division, Detroit District, Corps of Engineers before starting your project.

b. The turbidity barrier, dredging pipe, and any other permanent or temporary structures located in the Fox River must be marked with standard U.S. Coast Guard regulated warning devices.

c. All required State, Federal, and local approval for the transportation and disposal of contaminated sediments must be obtained prior to commencement of the dredging activities.

Please notify WDNR five days prior to, and again five days following the discharge. WDNR shall be allowed access to inspect any discharge to ensure compliance with applicable state laws.

This verification of a nationwide permit is valid for two years from the date of this letter unless the nationwide permit is modified, reissued, or revoked. It is your responsibility to remain informed of changes to the nationwide permit program. A public notice announcing any changes will be issued if and when they occur. If these activities are not undertaken within the two year period, or the project specifications have changed, you must immediately notify this office to determine the need for further approval or reverification.

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It is also your responsibility to ensure that the work complies with the terms of this letter and the enclosures. The start of work authorized by nationwide permit constitutes acceptance of the above described conditions. If you are unable or unwilling to abide by these conditions you should request a review of your proposal under the Corps individual permit process.

**Receipt of this authorization does not eliminate the requirement TO OBTAIN ALL REQUIRED STATE AND LOCAL PERMITS AND APPROVALS BEFORE YOU PROCEED WITH YOUR PROJECT.**

If you have any questions, contact Gary Knapton in our Green Bay office at (920) 448-2824. In any correspondence or inquiries, please refer to the Regulatory number shown above.

Sincerely,

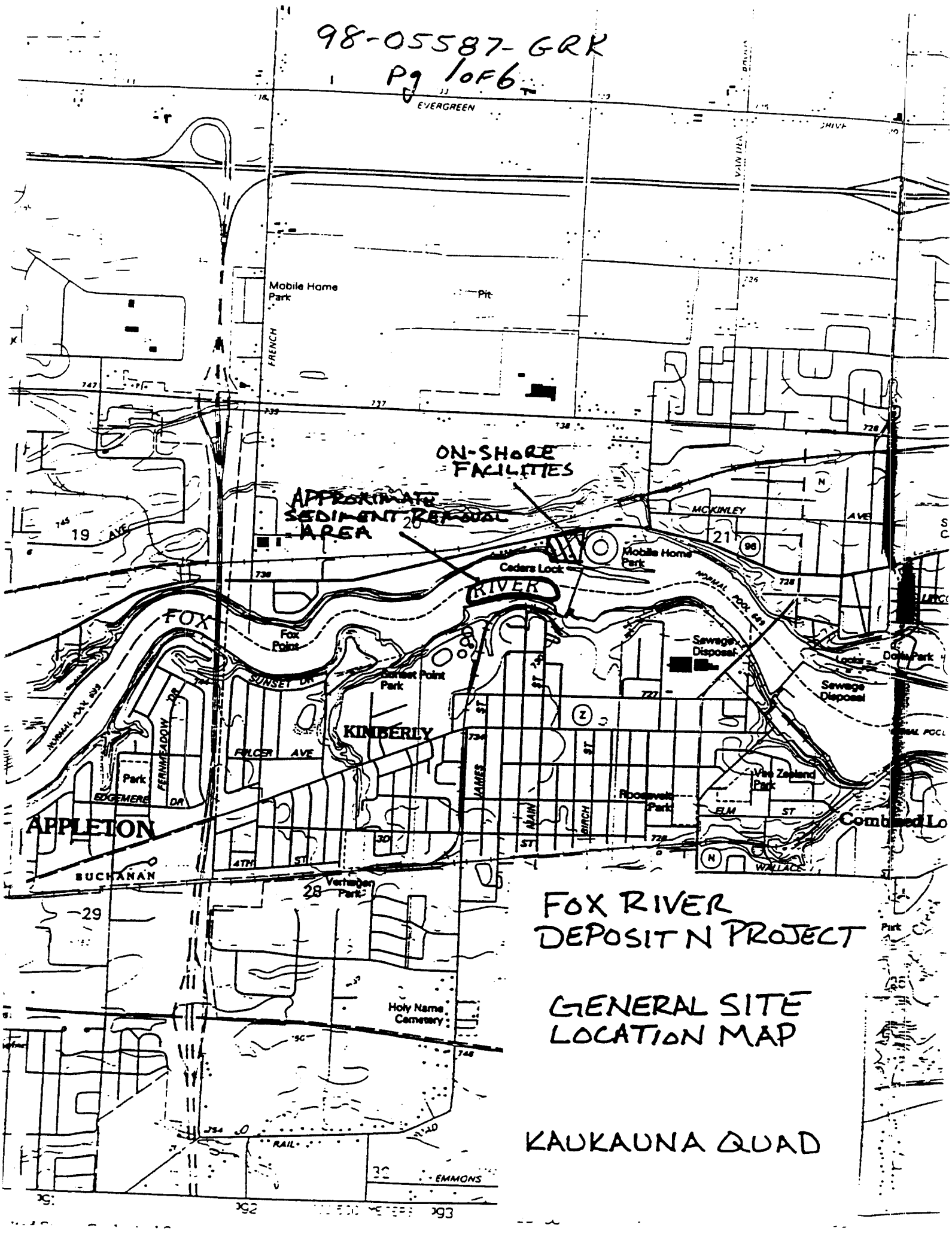
Ben A. Wopat
Chief, Regulatory Branch

Enclosures
Nationwide permit conditions

Determination: Nationwide Permit (38)

Copy furnished to:
Detroit District, Corps of Engineers
Michael Hanaway, DNR
(Reference WDNR No. 3-NE-98-0239LF)

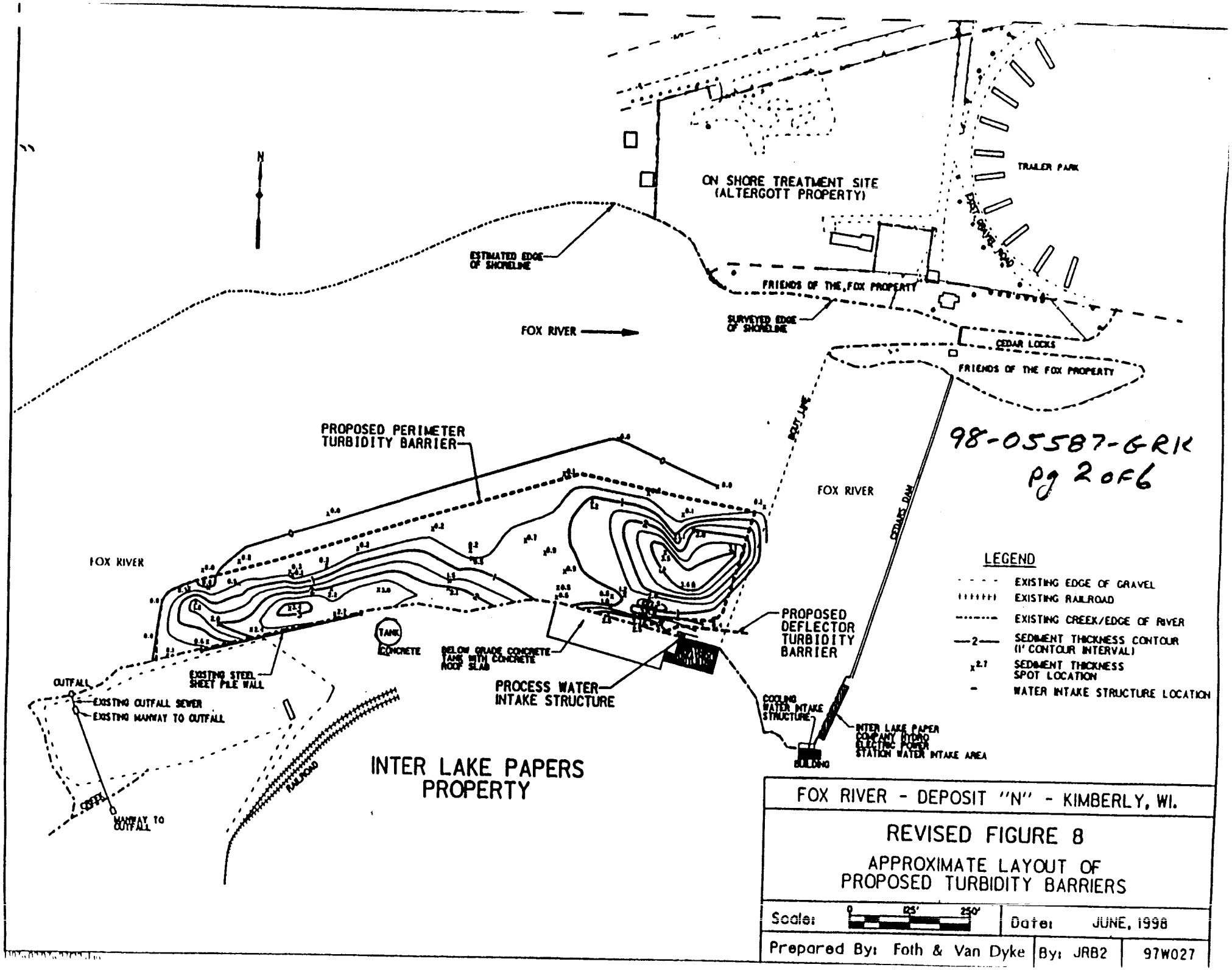
98-05587-GRK
Pg 1 of 6

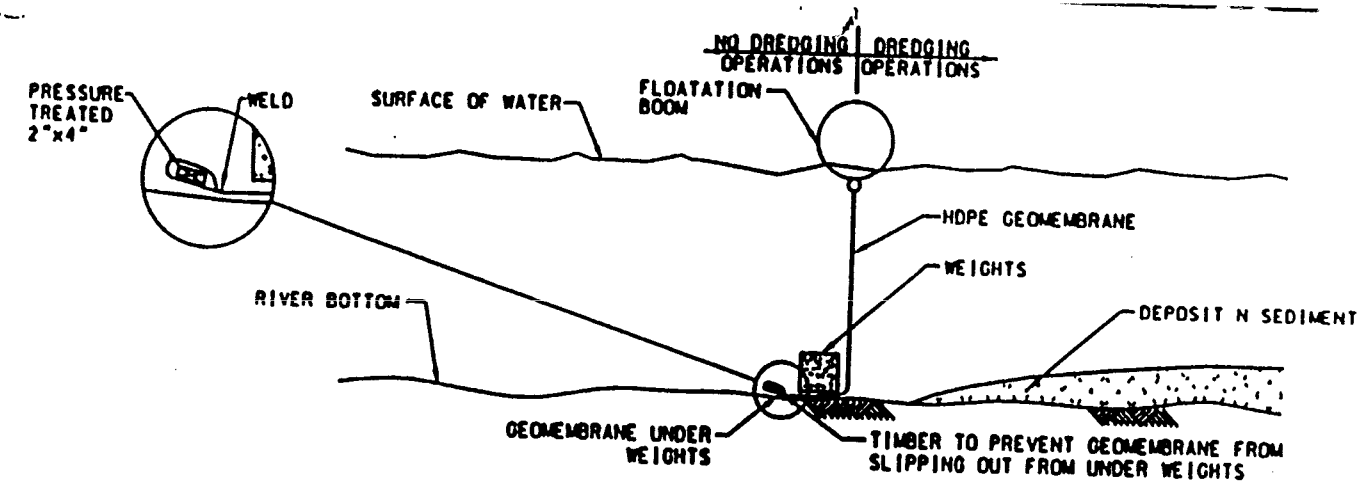



FOX RIVER DEPOSITN PROJECT

GENERAL SITE LOCATION MAP

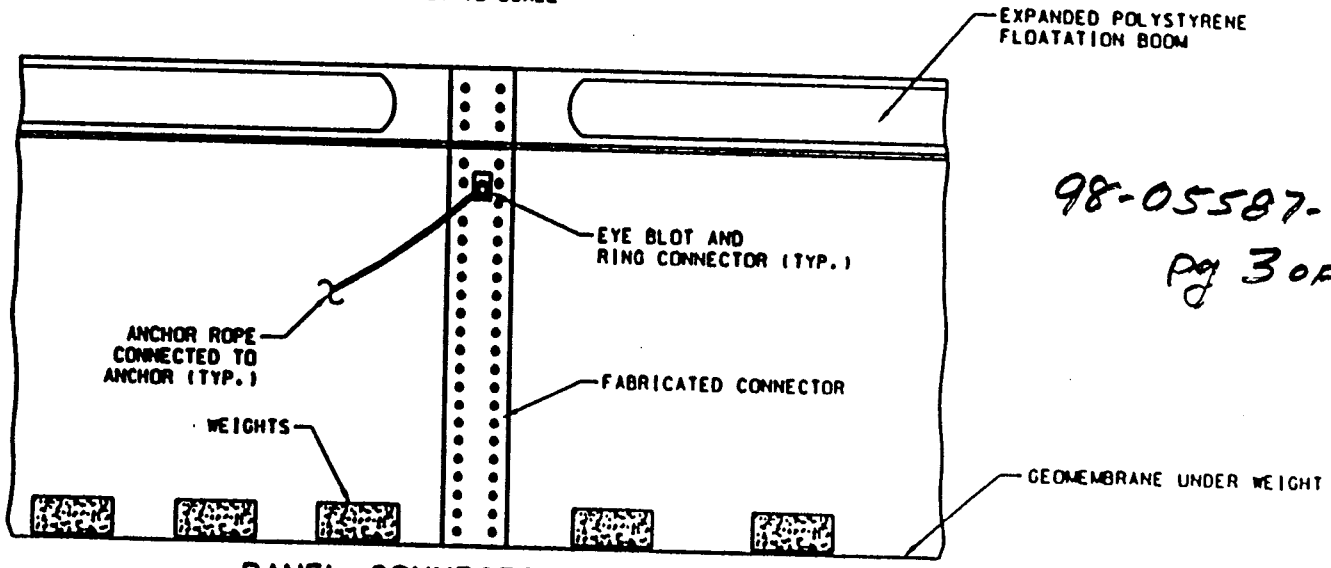
KAUKAUNA QUAD


N
ON SHORE TREATMENT SITE
(ALTERGOTT PROPERTY)
TRAILER PARK
ESTIMATED EDGE OF SHORELINE
FRIENDS OF THE FOX PROPERTY
SURVEYED EDGE OF SHORELINE
FOX RIVER
CEDAR LOCKS
FRIENDS OF THE FOX PROPERTY
PROPOSED PERIMETER TURBIDITY BARRIER
FOX RIVER
FOX RIVER
TANK
CONCRETE
BELOW GRADE CONCRETE TANK WITH CONCRETE ROOF SLAB
EXISTING STEEL SHEET PILE WALL
PROPOSED DEFLECTOR TURBIDITY BARRIER
PROCESS WATER INTAKE STRUCTURE
OUTFALL
EXISTING OUTFALL SEWER
EXISTING MANWAY TO OUTFALL
MANWAY TO OUTFALL
CREEK
RAILROAD
INTER LAKE PAPERS PROPERTY
COOLING WATER INTAKE STRUCTURE
INTER LAKE PAPER COMPANY HYDRO ELECTRIC POWER STATION WATER INTAKE AREA
BUILDING
LEGEND
EXISTING EDGE OF GRAVEL
EXISTING RAILROAD
EXISTING CREEK/EDGE OF RIVER
SEDIMENT THICKNESS CONTOUR (1' CONTOUR INTERVAL)
SEDIMENT THICKNESS SPOT LOCATION
WATER INTAKE STRUCTURE LOCATION
98-05587-GRK
pg 2 of 6
FOX RIVER - DEPOSIT "N" - KIMBERLY, WI.
REVISED FIGURE 8
APPROXIMATE LAYOUT OF PROPOSED TURBIDITY BARRIERS
Scale: 0 125' 250'
Date: JUNE, 1998
Prepared By: Foth & Van Dyke
By: JRB2
97W027




GEOMEMBRANE CONTAINMENT DETAIL

NOT TO SCALE




PANEL CONNECTION DETAIL

NOT TO SCALE

98-05587-GRK
Pg 3 of 6

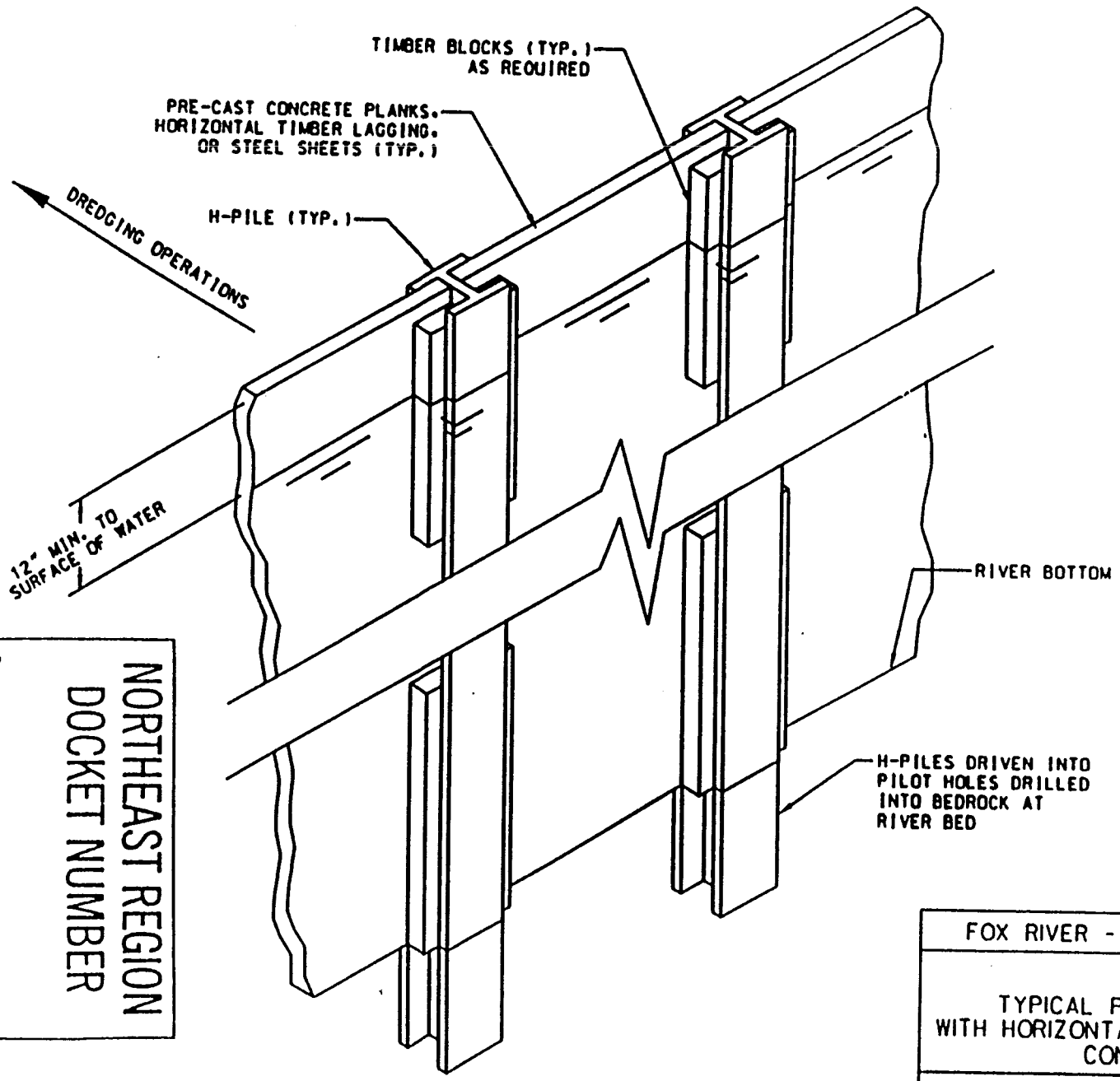
NORTHEAST REGION
DOCKET NUMBER
3-NE- 98 - 0239LF

FOX RIVER - DEPOSIT "N" - KIMBERLY, WI.

FIGURE 9
TYPICAL PERIMETER GEOMEMBRANE TURBIDITY BARRIER CONTAINMENT AND PANEL CONSTRUCTION DETAILS

| | | |
|---|---|---|
| Scale: NOT TO SCALE | Date: MAY, 1998 | |
| Prepared By: Foth & Van Dyke | By: JRB2 | 97W027 |

T:\97w027\97w27f21.dgn




98-05587-GRK
Pg 4 of 6

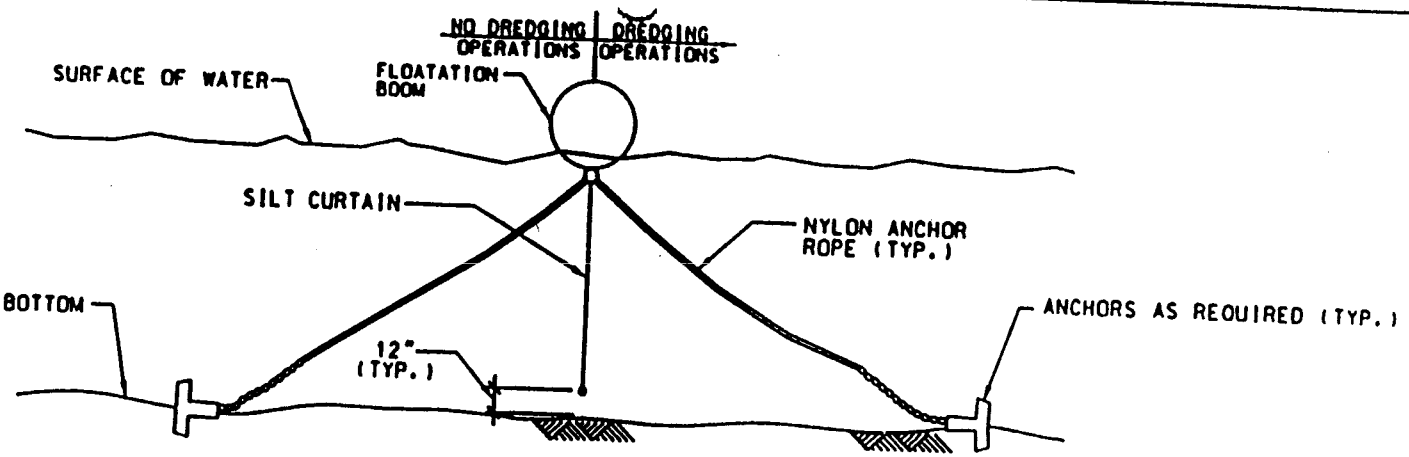
NORTHEAST REGION
DOCKET NUMBER
3-NE- 98 - 0239 LF

FOX RIVER - DEPOSIT "N" - KIMBERLY, WI.

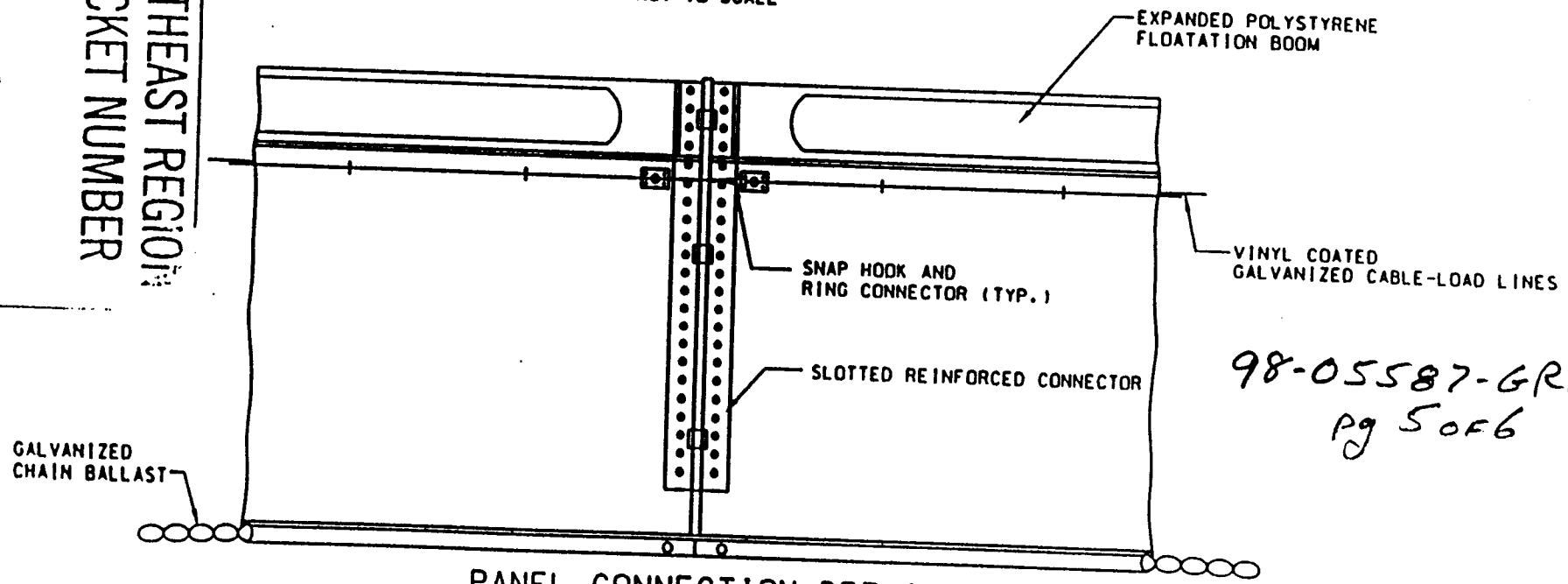
FIGURE 10
TYPICAL PERIMETER SOLDIER BEAMS
WITH HORIZONTAL LAGGING TURBIDITY BARRIER
CONSTRUCTION DETAIL

| | | |
|---|---|---|
| Scale: NOT TO SCALE | Date: MAY, 1998 | |
| Prepared By: Foth & Van Dyke | By: JRB2 | 97W027 |

\97w027\7w27f21.dgn




SILT CURTAIN DETAIL
NOT TO SCALE




PANEL CONNECTION DETAIL
NOT TO SCALE

NORTHEAST REGION
DOCKET NUMBER
3-NE- 98 - 0239LF

98-05587-GRK
pg 5 of 6

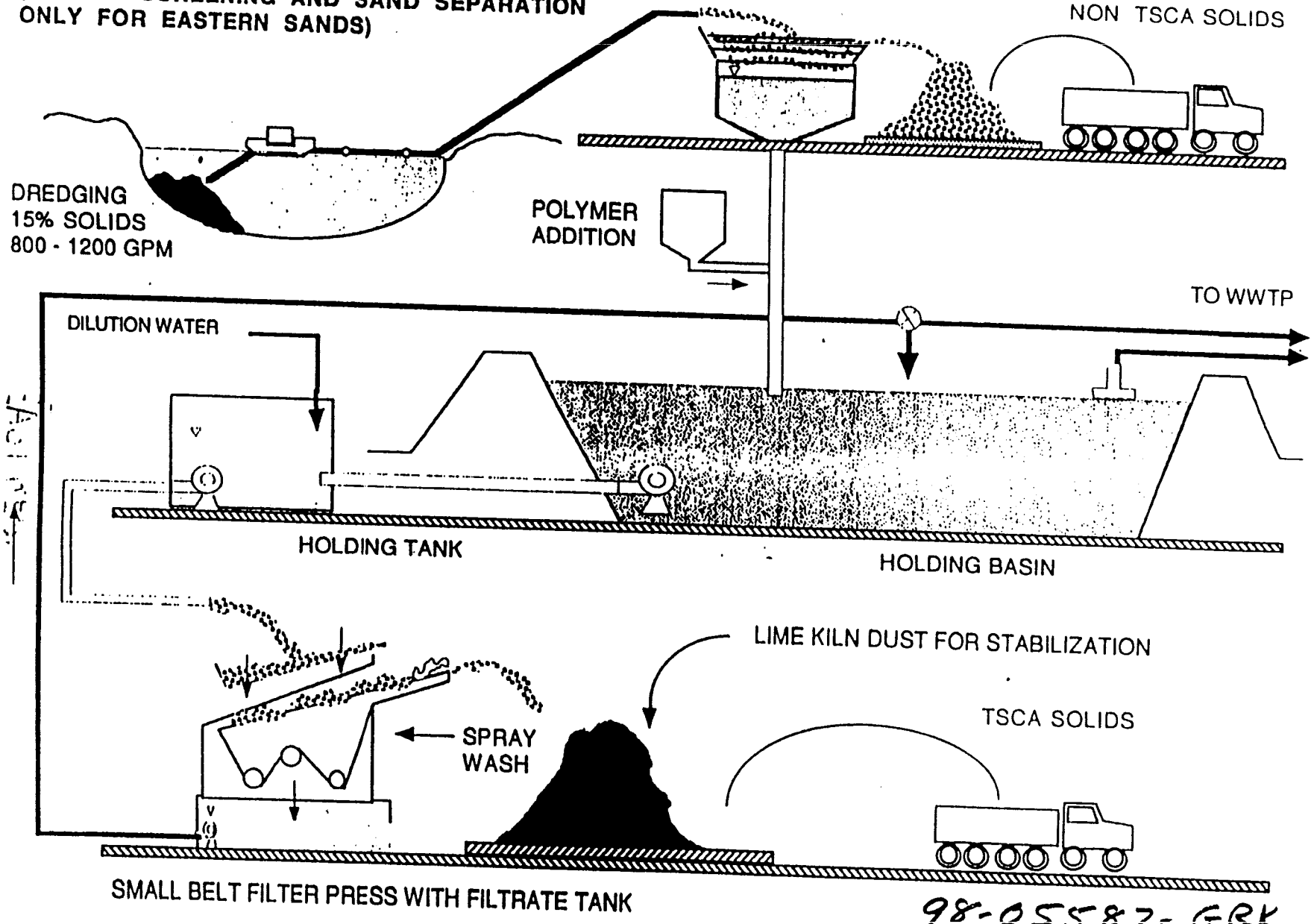
FOX RIVER - DEPOSIT "N" - KIMBERLY, WI.

FIGURE 11
TYPICAL INTERIOR SILT CURTAIN AND PANEL CONSTRUCTION DETAILS

| | | |
|---|---|---|
| Scale: NOT TO SCALE | Date: MAY, 1998 | |
| Prepared By: Foth & Van Dyke | By: JRB2 | 97W027 |

97W027\27121.dgn

DEPOSIT N REMOVAL
PROCESS/FLOW CHART FOR FINES
(COARSE SCREENING AND SAND SEPARATION ONLY FOR EASTERN SANDS)




DOCKET NUMBER
3-NE- 98 - 0239 LF

98-05587-GRK
Pg 6 of 6

# Appendix D

# WDNR WPDES Permit

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary

Box 7921
101 South Webster Street
Madison, Wisconsin 53707-7921
TELEPHONE 608-266-2621
FAX 608-267-3579
TDD 608-267-6897

BILL FITZPATRICK - PROJECT MANAGER
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
101 SOUTH WEBSTER STREET - WT/2
PO BOX 7921
MADISON, WI 53707-7921

SUBJECT: WPDES Permit No. WI-0049719-1

Dear Mr. Fitzpatrick:

Your application for issuance of a Wisconsin Pollutant Discharge Elimination System (WPDES) permit has been processed by this Department. The conditions of the attached permit number WI-0049719-1, were determined using the permit application, comments received during the public notice period, Wisconsin Administrative Codes NR 102, NR 104, NR 105, NR 106, NR 140, NR 200, NR 203, NR 205, and NR 207.

The attached WPDES permit covers the discharges from the facility located at Deposit N, Kimberly, Wisconsin into the Fox River, Plum Creek Watershed (LF03), Lower Fox River Basin. All discharges from this facility and actions or reports relating thereto shall be in accordance with the terms and conditions of this permit.

In accordance with this permit, discharge monitoring report forms are required to be submitted by you to the Department on a periodic basis. Blank copies of these report forms and instructions for completing them will be mailed to you under separate cover.

The attached permit contains water quality-based effluent limitations which are necessary to ensure that the water quality standards for the Fox River are met. You may apply for a variance from the water quality standard used to derive the limitations pursuant to s. 283.15, Wisconsin Statutes, by submitting an application to: George E. Meyer, Secretary, Department of Natural Resources, P.O. Box 7921, Madison, Wisconsin 53707 within 30 days after the date of issuance of this permit. Within 30 days of receipt of your application for variance, the Department will notify you of the specific information you must provide to complete your application. Once your application is complete, the Department will issue a public notice of receipt of your application for variance, which will include a 30 day comment period. A tentative decision on your application for variance will be issued within 120 days after receipt of the complete application. A final decision on your application will be issued within 90 days of the expiration of the 30 day comment period provided in the notice of the tentative decision.

The final decision of the Department may be to approve your request for a variance, in whole or in part, or to deny the request. In order to obtain a variance, you must demonstrate by the greater weight of the credible evidence, at least one of the following:

1. Naturally occurring pollutant concentrations prevent the attainment of the standard.

2. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the standard, unless these conditions may be compensated for by the discharge of sufficient volume of effluent without violating water conservation requirements.

3. Human caused conditions or sources of pollution prevent the attainment of the standard and cannot be remedied or would cause more environmental damage to correct than to leave in place.

4. Dams, diversions or other types of hydrologic modifications preclude the attainment of the standard, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the standard.

5. Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses.

6. The standard, as applied to the permittee, will cause substantial and widespread adverse social and economic impacts in the area where the permittee is located.

The Department has the authority under Chapters 283 and 160, Wisconsin Statutes, to establish effluent limitations, monitoring requirements, and other permit conditions for discharges to groundwater and surface waters of the State. The Department also has the authority to issue, reissue, modify, suspend or revoke WPDES permits under Chapter 283, Wisconsin Statutes and has adopted Wis. Adm. Code Chapters NR 102, NR 104, NR 105, NR 106, NR 140, NR 200, NR 203, NR 205, and NR 207 under this authority.

To challenge the reasonableness of or necessity for any term or condition of the attached permit, Section 283.63, Wis. Stats., and Chapter NR 203, Wis. Adm. Code require that you file a verified petition for review with the Secretary of the Department of Natural Resources within 60 days of the date of this letter. This notice is provided pursuant to Section 227.48, Wis. Stats., as renumbered by 1985 Wisconsin Act 182.

Sincerely,

Al Shea

Al Shea, Director
Bureau of Watershed Management

Dated: 8/17/98

enclosures
copy: Northeast Region

# *STATE OF WISCONSIN*
# *DEPARTMENT OF NATURAL RESOURCES*

## PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of Chapter 283, Wisconsin Statutes [formerly Chapter 147],

FOX RIVER DEPOSIT N SEDIMENT REMEDIATION PROJECT
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

is permitted to discharge from a facility located at

FOX RIVER: DEPOSIT N LOCATED NEAR KIMBERLY

to the

FOX RIVER, PLUM CREEK WATERSHED (LF03), LOWER FOX RIVER BASIN

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis. Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources
For the Secretary

By Al Shea pu
Al Shea, Bureau Director
Bureau of Watershed Management

8/17/98
Date of Signature

WISCONSIN
DEPT. OF NATURAL RESOURCES

EFFECTIVE DATE: DATE OF SIGNATURE

EXPIRATION DATE: DECEMBER 31, 1999

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## A. Monitoring Requirements and Effluent Limitations - Surface Water Discharge

The discharges identified in Table 1 shall comply with the limitations and be monitored as specified in Table 2.

Table 1

| OUTFALL/SAMPLE POINT NO. | LOCATION AND DESCRIPTION |
|---|---|
| 001 | Final effluent discharged from wastewater treatment system. |
| 101 | Influent prior to wastewater treatment system. |

Table 2

| EFFLUENT LIMITATIONS | | | | MONITORING REQUIREMENTS[1] | |
|---|---|---|---|---|---|
| PARAMETER | DAILY MAXIMUM (ZID = 15.9) | WEEKLY AVERAGE | MONTHLY AVERAGE | SAMPLE FREQUENCY[5] | SAMPLE TYPE |
| Outfall(s): 001 | | | | | |
| Flow (MGD) | -- | -- | -- | Daily | Continuous |
| $BOD_5$ | -- | <2 mg/L | -- | 1xWeekly | Grab |
| Total Suspended Solids | 10 mg/L | -- | 5 mg/L | Daily | Composite[4] |
| Ammonia (mg/L as N) | Monitor | -- | -- | Daily | Grab |
| Oil & Grease | Monitor | -- | -- | Daily | Grab |
| pH (s.u.) | 6.0-daily min.<br>9.0-daily max | -- | -- | Daily | Grab |
| Arsenic[6] | 5400 ug/L | 54 lbs/day | 68 lbs/day | 1xWeekly | Composite[4] |
| Cadmium[6] | 320 ug/L | 1.4 lbs/day | --- | 1xWeekly | Composite[4] |
| Chromium (+6)[6] | 250 ug/L | 3.9 lbs/day | --- | 1xWeekly | Composite[4] |
| Copper[6] | 420 ug/L | 6.4 lbs/day | --- | 1xWeekly | Composite[4] |
| Lead[6] | 3000 ug/L | 17 lbs/day | --- | 1xWeekly | Composite[4] |
| Mercury[2] | 1.7 ug/L | 0.0013 lbs/day | 2.0E-05 lbs/day | 1xWeekly | Composite[4] |
| Nickel[6] | 35,000 ug/L | 88 lbs/day | --- | 1xWeekly | Composite[4] |
| Zinc[6] | 3100 ug/L | 69 lbs/day | --- | 1xWeekly | Composite[4] |
| Pentachlorophenol[6] | 380 ug/L | 10 lbs/day | --- | 1xWeekly | Composite[4] |
| Dieldrin[6] | 0.48 ug/L | 1.6E-05 lbs/day | 1.8E-08 lbs/day | 1xWeekly | Composite[4] |
| Endrin[6] | 1.4 ug/L | 0.026 lbs/day | --- | 1xWeekly | Composite[4] |
| Chlorides[6] | 12,000 mg/L | -- | --- | 1xWeekly | Composite[4] |

| EFFLUENT LIMITATIONS | | | | MONITORING REQUIREMENTS[1] | |
|---|---|---|---|---|---|
| 4,4-DDT[6] | -- | -- | 3.3E-08 lbs/day | 1xWeekly | Composite[4] |
| Total PCBs[3] | -- | -- | 1.2 ug/L 3.6E-03 lbs/day | 1xWeekly | Composite[4] |
| 2,3,7,8-TCDD | -- | -- | 3.0E-09ug/L 9.0E-12 lbs/day | 1xWeekly | Composite[4] |
| Antimony[6] | -- | -- | Monitor | 1xWeekly | Composite[4] |
| Selenium[6] | -- | -- | Monitor | 1xWeekly | Composite[4] |
| Silver[6] | -- | -- | Monitor | 1xWeekly | Composite[4] |
| 1,2-Dichlorobenzene[6] | -- | -- | Monitor | 1xWeekly | Composite[4] |
| Fluoranthene[6] | -- | -- | 13 lbs/day | 1xWeekly | Composite[4] |
| **Sample Point:** 101 | | | | | |
| TSS | Monitor | -- | -- | Daily | Grab |
| Mercury[2] | -- | Monitor | -- | 1xWeekly | Grab |
| Total PCBs[3] | -- | Monitor | -- | 1xWeekly | Grab |
| Oil & Grease | Monitor | -- | -- | Daily | Grab |
| pH (s.u.) | Monitor | -- | -- | Daily | Grab |

(1) **MONITORING RESULTS:** Monitoring results shall be faxed to Gary Kincaid (920) 448-5129, DNR, Northeast Regional Headquarters within 48 hours of receipt from the analytical laboratory.

(2) **MERCURY MONITORING REQUIREMENTS:** The proposed EPA Method 1631 shall be used for the ultra low level analysis of mercury, with a minimum detection level of 1 ng/L.

(3) **PCB MONITORING REQUIREMENTS:** PCBs shall be analyzed using EPA Method SW-846 8081, or an equivalent method approved by the Department. The expected detection level is in the range of 0.2-0.5 ug/L.

(4) **COMPOSITE SAMPLE TYPE:** For this permit, composite sample type means composite of flow proportional samples taken every 2 hours or less during each discharge period.

(5) **MONITORING FREQUENCY:** If any of the indicated limits are exceeded, increased monitoring shall occur at a frequency of not less than once per day for a minimum five (5) days following the limit exceedance.

(6) **TERTIARY TREATMENT:** In the event that carbon adsorption treatment technology (or a similar process) is utilized, neither limitations or regular monitoring for these parameters will not be necessary.

(7) **TREATMENT SYSTEM PLAN APPROVAL:** The permittee shall require that the contractor submits final plans and specification for the wastewater treatment system for the carriage and interstitial water from the hydraulic dredging, in accordance with ch. NR 108, Wis. Adm. Code. A complete set of plans must be submitted by the contractor, with adequate time for review. Construction of the treatment system may not commence prior to Department approval. The conceptional design prepared by the engineering consultant for this project (Foth & Van Dyke), does not constitute a final plan submittal. The dredging contract identifies that the contractor is responsible for preparing the plans and specifications for the treatment system.

## B. Monitoring Requirements - Specific Toxics

EFFLUENT SAMPLING POINT: **Outfall 001.**

Sampling for the parameters identified in DNR Form 3400-150B (Priority Pollutants Chemical Analysis Form) shall be done during the first week of wastewater discharge . Those results shall be reported both to the Department within 3 days of receipt of the results and as an attachment to the monthly Discharge Monitoring Report form. Also to be included with that data submittal are the lab data sheets and any additional information which is provided by the analytical laboratory.

## C. Monitoring Requirements and Limitations - Whole Effluent Toxicity (WET)

In order to determine the potential impact of the discharge on aquatic organisms, static-renewal toxicity tests shall be performed on the effluent in accordance with the procedures specified in the *"State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, Edition 1" (PUBL-WW-033-096*, as required by NR 219.04, Table A, parameters 9 & 10, footnote 8, Wis. Adm. Code), and the clarifications listed below.

**Effluent samples shall be taken from Outfall 001, after all treatment processes as a 24-hour flow proportional Composite sample.**

**Primary Control Water:** Fox River

Receiving water samples shall not be collected from any point in contact with the permittee's mixing zone and every attempt shall be made to avoid contact with any other discharge's mixing zone.

**Test Species:** *Ceriodaphnia dubia* and the fathead minnow (*Pimephales promelas*).

**Instream Waste Concentration:** 0.28%

**MONITORING SCHEDULE:**

| Sample Period for Acute Toxicity: | Results due within 14 days of test completion but no later than: |
|---|---|
| Within first seven (7) days of discharge. | Oct. 15, 1998 |

**Chronic Dilution Series:** 100, 30, 10, 3, 1%

| Sample Period for Chronic Toxicity: | Results due within 14 days of test completion but no later than: |
|---|---|
| Within first seven (7) days of discharge. | Oct. 15, 1998 |

DETERMINATION OF POSITIVE RESULTS: An acute toxicity test shall be considered positive if the $LC_{50}$ for either species is calculated to be < 21% effluent concentration (the $LC_{50}$ is based on a zone of initial dilution factor of 15.9). A Chronic toxicity test shall be considered positive if the $IC_{25}$ for either species is calculated to be < 0.28% effluent concentration.

**REPORTING:** Results shall be reported on the "Whole Effluent Toxicity Test Report Form" (page 40 of the "*State of Wisconsin Aquatic Life Toxicity Testing Methods Manual, Edition 1*"). One copy for each test shall be sent to the Biomonitoring Coordinator, WT/2, Bureau of Watershed Management, 101 S. Webster St., P.O. Box 7921, Madison, WI 53707-7921, within 45 days of completing the test.

**NOTIFICATION OF A POSITIVE RESULT AND ADDITIONAL TESTING REQUIREMENTS:** The permittee/Department shall notify the Biomonitoring Coordinator within 48 hours of test end if a test result is positive. Within 30 days of the test which showed positive results, the permittee/Department shall submit the results of at least 2 retests. The retests shall be completed in accordance with the requirements specified above for the original test.

## D. Standard Requirements

(Rev. March 5, 1998)

NR 205: The conditions in ss. NR 205.07(1) and NR 205.07(3), Wis. Adm. Code, are included by reference in this permit. The permittee shall comply with all of these requirements. Some of these requirements are outlined in the Standard Requirements section of this permit. Requirements not specifically outlined in the Standard Requirement section of this permit can be found in ss. NR 205.07(1) and NR 205.07(3).

**REPORTING AND MONITORING REQUIREMENTS:**

(1) MONITORING RESULTS: Monitoring results obtained during the previous month shall be summarized and reported on a **WPDES Discharge Monitoring Report (DMR), #3200-28**, postmarked no later than the 15th day of the month following the completed reporting period. The original and regional copies of Form #3200-28 shall be submitted to your DNR regional office. The facility copy shall be retained by the permittee.

(a) If the permittee monitors any pollutant more frequently than required by this permit, the results of such monitoring shall be included on Form #3200-28.

(b) The permittee shall comply with all limits for each parameter regardless of monitoring frequency. For example, monthly, weekly, and/or daily limits shall be met even with monthly monitoring. The permittee may monitor more frequently than required for any parameter.

(c) Monitoring reports shall be signed by a principal executive officer, a ranking elected official, or other duly authorized representative.

(2) WATER QUALITY SAMPLING AND TESTING PROCEDURES: Sampling and laboratory testing procedures shall be performed in accordance with Chapters NR 218 and NR 219, Wis. Adm. Code and shall be performed by a laboratory certified in accordance with the requirements of ch. 149. Groundwater sample collection and analysis shall be performed in accordance with ch. NR 140. The analytical methodologies used shall enable the laboratory to quantitate all substances for which monitoring is required at levels below the effluent limitation. If the required level cannot be met by any of the methods available in NR 219, then the method with the lowest limit of detection shall be selected. Additional test procedures may be specified in this permit.

**D. Standard Requirements** (cont.)

(3) REPORTING OF MONITORING RESULTS: The permittee shall use the following conventions when reporting effluent monitoring results:

(a) Effluent concentrations less than the level of detection shall be reported as less than (<) the value of the level of detection. For example, if a substance is not detected at a detection level of 0.1 mg/L, report the effluent concentration as <0.1 mg/L.

(b) Effluent concentrations equal to or greater than the level of detection, but less than the level of quantitation, shall be reported and the level of quantitation shall be specified.

(c) For the purposes of calculating an average or a mass discharge value, the permittee may substitute a 0 (zero) for any effluent concentration that is less than the level of detection. However, if the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

(4) DETERMINING COMPLIANCE WITH A WATER QUALITY-BASED EFFLUENT LIMITATION:

(a) When the water quality-based effluent limitation is less than the limit of detection, levels less than the limit of detection are in compliance with the effluent limitation.

(b) When the water quality-based effluent limitation is less than the limit of detection, effluent levels greater than the limit of detection, but less than the limit of quantitation are in compliance with the effluent limitation except when analytically confirmed and statistically confirmed by a sufficient number of analyses of multiple samples and use of appropriate statistical techniques.

(c) When the water quality-based effluent limitation is greater than the limit of detection, but less than the limit of quantitation, levels less than the limit of detection or less than the limit of quantitation are in compliance with the effluent limitation.

(d) When the water quality-based effluent limitation is expressed in the permit as a daily maximum or average mass limitation, compliance is determined according to the provisions of paragraphs (a), (b) and (c) after converting the limit of detection and limit of quantitation to mass values using appropriate conversion factors and the actual daily effluent flow (or actual average effluent flow for the averaging period).

(5) APPROPRIATE FORMULAS FOR CALCULATING AVERAGES AND MASS LIMITS: The permittee shall use the following formulas for calculating effluent results to determine compliance with average limits and mass limits:

D. Standard Requirements (cont.)

Weekly/Monthly average concentration = the sum of all daily results for that week/month, divided by the number of results during that time period.

Weekly Average Mass Discharge (lbs/day) -
(a) Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34
(b) Average the daily mass values for the week.

Monthly Average Mass Discharge (lbs/day) -
(a) Daily mass = daily concentration (mg/L) x daily flow (MGD) x 8.34
(b) Average the daily mass values for the month.

(6) RECORDING OF RESULTS: For each effluent measurement or sample taken, the permittee shall record the following information.

(a) The date, exact place, method and time of sampling or measurements;
(b) The individual who performed the sampling or measurements;
(c) The date the analysis was performed;
(d) The individual who performed the analysis;
(e) The analytical techniques or methods used; and
(f) The results of the analysis.

(7) RECORDS RETENTION: The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit for a period of at least 3 years from the date of the sample, measurement, report or application, except for sludge management forms and records, which shall be kept for a period of at least 5 years.

(8) OTHER INFORMATION: Where the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the department, it shall promptly submit such facts or correct information to the department.

**SYSTEM OPERATING REQUIREMENTS:**

(9) NONCOMPLIANCE NOTIFICATION:

(a) The permittee shall report the following types of noncompliance by a telephone call to the Department's regional office within 24 hours after becoming aware of the noncompliance.

1) Any noncompliance which may endanger health or the environment.
2) Any violation of an effluent limitation resulting from an unanticipated bypass.
3) Any violation of an effluent limitation resulting from an upset.
4) Any violation of a discharge limitation for any of the pollutants listed by the department in the permit.

**D. Standard Requirements** (cont.)

(b) A written report describing the noncompliance reported in (a) shall be submitted to the Department's regional office within 5 days after the permittee becoming aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

(c) The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(10) SPILL REPORTING: The permittee shall notify the Department in accordance with ch. NR 158, in the event that a spill or accidental release of any material or substance results in the discharge of pollutants to the waters of the state at a rate or concentration greater than the effluent limitations established in this permit, or the spill or accidental release of the material is unregulated in this permit, unless the spill or release of pollutants has been reported to the Department in accordance with s. NR 205.07 (1)(s).

(11) PLANNED CHANGES: In accordance with ss. 283.31(4)(b) and 283.59, Stats., the permittee shall report to the Department any facility expansion, production increase or process modifications which will result in new, different or increased discharges of pollutants. The report shall either be a new permit application, or if the new discharge will not violate the effluent limitations of this permit, a written notice of the new, different or increased discharge. The notice shall contain a description of the new activities, an estimate of the new, different or increased discharge of pollutants and a description of the effect of the new or increased discharge on existing waste treatment facilities. Following receipt of this report, the Department may modify this permit to specify and limit any pollutants not previously regulated in the permit.

(12) DUTY TO HALT OR REDUCE ACTIVITY: Upon failure or impairment of treatment facility operation, the permittee shall, to the extent necessary to maintain compliance with its permit, curtail production or wastewater discharges or both until the treatment facility operations are restored or an alternative method of treatment is provided.

(13) PROPER OPERATION AND MAINTENANCE: The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with the conditions of this permit. The wastewater treatment facility shall be under the direct supervision of a state certified operator as required in s. NR 108.06(2). Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training as required in ch. NR 114 and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

D. Standard Requirements (cont.)

(14) UNSCHEDULED BYPASSING Any unscheduled diversion or bypass of wastewater at the treatment work or collection system is prohibited except in the following cases:

(a) An inadvertent bypass resulting from equipment damage or temporary power interruption;
(b) An unavoidable bypass necessary to prevent loss of life or severe property damage; or
(c) A bypass of excessive storm drainage or runoff which would damage any facilities necessary for compliance with the effluent limitations and prohibitions of the permit.

In the event of an unscheduled bypass, the permittee shall immediately notify the department district office by telephone within 24 hours after an occurrence. In addition, the permittee shall notify the department by letter within 5 days after each such unscheduled diversion or unscheduled bypass. The written notification shall at a minimum include reasons for such unscheduled bypass including dates, length of bypass and steps taken or planned to correct and eliminate such occurrences.

(15) SCHEDULED BYPASSING Any construction or normal maintenance which results in a bypass of wastewater from a treatment system is prohibited unless authorized by the department in writing . If the department determines that there is significant public interest in the proposed action, the department may schedule a public hearing or notice a proposal to approve the bypass. Each request shall specify the following minimum information:

(a) Proposed date of bypass;
(b) Estimated duration of the bypass;
(c) Alternatives to bypassing; and
(d) Measures to mitigate environmental harm caused by the bypass.

SURFACE WATER DISCHARGE REQUIREMENTS:

(16) VISIBLE OR FLOATING SOLIDS: There shall be no discharge of visible or floating solids in other than trace amounts.

(17) WHOLE EFFLUENT TOXICITY IDENTIFICATION: In the event of serious or repeated toxicity, the permittee may obtain approval from the Department to postpone retests in order to investigate the source(s) of toxicity. In order to postpone these tests, the permittee must provide the following information to the Department in writing, within 21 days of the end of the test which showed a positive result:

(a) A description of the investigation to be used to identify potential sources of toxicity. Treatment efficiency, housekeeping practices, and chemicals used in operation of the facility should be included in the investigation.

(b) Who will conduct a toxicity identification evaluation (TIE), if required.

Once the above investigation has been completed, the permittee must conduct the postponed test(s) to demonstrate that toxicity has been reduced/eliminated.

## Appendix A: Summary of Reports Due

FOR INFORMATIONAL PURPOSES ONLY

| Report | Date | Page |
|---|---|---|
| DNR Form 3400-150B (Priority Pollutants Chemical Analysis Report Form) | with the first Discharge Monitoring Report | 2 |
| Acute WET Results | Oct. 15, 1998 | 3 |
| Chronic WET Results | Oct. 15, 1998 | 3 |
| WPDES Discharge Monitoring Report (DMR), #3200-28 | no later than the 15th day of the month following the completed reporting period | 5 |

All reports and submittals required by this permit except compliance schedule reports, whole effluent toxicity test results and sludge reports shall be sent to the Northeast Regional Headquarters. Compliance schedule reports, whole effluent toxicity test results and all sludge reports shall be sent to the Bureau of Watershed Management. The addresses are:

WI Department of Natural Resources
Northeast Regional Office
1125 North Military
P.O. Box 10448
Green Bay, WI 54307-0448

WI Department of Natural Resources
Bureau of Watershed Management
P.O. Box 7921
Madison WI, 53707-7921

# Appendix E

# Landfill Design and Operational Considerations

# DESIGN AND OPERATIONAL CONSIDERATIONS FOR LANDFILLS PROPOSING TO ACCEPT DREDGED MATERIALS CONTAMINATED WITH PCBs AT LEVELS BELOW 50 PPM

1. The dredged material should be dewatered and solidified, as necessary, to pass the paint filter test prior to disposal at the site.

2. The dredged material should not be used as daily cover or otherwise dispersed over the landfill surface.

3. The dredged material placed in the site should not be commingled with any potentially incompatible waste. Potentially incompatible wastes are those wastes that have the capacity to mobilize PCBs.

4. The dredged material should be segregated in the site in the following manner:

   a. The dredged material should be placed as a monofill, rather than mixed directly with other waste. The dredged material should be placed as close as practical to the final cover to minimize the amount of commingling with other wastes and the amount of waste materials placed above it.

   b. The monofill should be underlain by a sand and geotextile to prevent migration of particles from the dredged material. The monofill should be confined and covered by sand, foundry sand, bottom ash or other material acceptable to the Department.

   c. The monofill should have adequate stability to support it's own weight and the weight of any materials placed over it without slumping and be able to maintain stable slopes.

   d. The dredged material should be placed at the greatest density practical. At a minimum, the dredged material should be compacted in 6 to 12 inch lifts. The dredged material should be covered with sand drainage and vent layers at 3 to 10 foot lift spacing depending on the strength of the dredged materials. Intermediate layers may not be necessary for small volumes of dredged materials.

   e. The location of the dredged material should be identified by survey, and records maintained. The disturbance of the dredged material should be minimized once they are placed in the site (as in drilling of gas extraction wells, or during remedial actions).

   f. The dredged material should be disposed of in a manner which prevents wind-blown dust exposure. The Department may require periodic soil cover or other means of preventing fugitive dust.

   g. The dredged material should be placed in such a way to facilitate water movement around it rather than through it.

5. Measures should be taken to contain the dredged material to the specified disposal area. This would include a vehicle wash for cleaning equipment as necessary. Wash water should either be collected and treated as leachate or allowed to seep into the waste mass.

6. Health and safety considerations for the disposal project should be addressed with a site-specific health and safety plan.

7. Initial testing of the landfill's leachate for PCBs should be performed prior to accepting dredged material. The specific analytical method is defined as method 8080 found in "Test Methods for Evaluating Solid Waste", SW-846, U.S. EPA, 3rd edition, November, 1986. If testing of the leachate for PCBs has been done in the past, that testing will be sufficient to establish baseline.

8. Annual PCB testing of the leachate should be performed and should continue through the active life and long-term care period of the site. The Department should be notified of detectable levels of PCBs in the leachate within 60 days of sampling. Should significant change in the levels of PCBs detected in the leachate occur, the Department may modify the monitoring schedule.

9. If there is a significant change in the levels of PCBs detected in the leachate, PCBs should be added to the groundwater monitoring program for the Subtitle D wells.

10. The established long-term care financial responsibility should be modified, if necessary, to reflect the additional cost associated with PCB leachate monitoring. If PCBs are added to the groundwater monitoring program the long-term care costs should be modified at that time.

# Appendix F

# Contract Bid Document Outline

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# Appendix G

# Typical Construction Observation Report

**Foth & Van Dyke**
consultants · engineers · scientists

Client: WDNR DFD # 97746 Scope ID: 97W027
Project: SEDIMENT REMOVAL - Dep N Page: 12
Prepared By: REP Date: 11/1/98
SUN.

# CONSTRUCTION OBSERVATION REPORT

| WEATHER | Temp (° F) Low | Temp (° F) High | Sky Cond. | Precip. (in.) | | | Site Conditions (describe) | |
|---|---|---|---|---|---|---|---|---|
| | | | Clear | | Rain | Snow | Dry | Muddy |
| WIND 5-10 MPH From N.E | 50 | 55 | Pt. Cldy | None | | | | |
| | | | Cloudy | | | | | |

REP ON SITE 3.0 Hrs

**Location** ON SHORE TREATMENT (ALTERGOTT Property)

**Contractors on site** *(include no. of personnel per contractor)*

KOESTER ENVIRONMENTAL SERVICES (KES)
1) FRONT END LOADER CAT IT 286 G
1) DOZER CAT D4C
AJ. SHAFER OF KES ON SITE

GEO-SYNTHETICS (GSI)
5) GSI PERSONNEL

| *Other personnel on site* | *Purpose* |
|---|---|
| Harry Jr & Sr. ALTERGOTT | SITE VISIT |

**Work observation report, comments:** 0700 REP ON SITE W/ KES & GSI PERSONNEL - GSI ON SITE TO PATCH, EXTRUDE & TEST VARIOUS AREAS OF THE 60 MIL HDPE LINER - REP OBSERVES AIR TESTS AT SEAMS 8/9 & 9/10, EXTRUDING AND PATCHING - 0910 H. ALTERGOTT SR. ON SITE - GSI'S LINER INSTALLATION & REPAIRS ARE COMPLETED - 0930 GSI CLEANS UP LINER SCRAPS AND LOADS TRAILER, KES ASSISTS LOADING W/ THE FRONT END LOADER - KES GRADE A SMALL PORTION OF SAND AGAINST THE EAST LINED BERM IN THE TRUCK DECON AREA - 0945 GSI OFFSITE - H. ALTERGOTT JR ON SITE - A.J SCHAFER OF KES RECIEVED LINER WELD SAMPLES FROM JIM SMITH OF GSI - KES & REP OFFSITE AT 1000 -
- VIDEO TAPE WAS TAKEN OF LINER & LINER REPAIRING -

*For additional comments, include additional sheets.*

# Appendix H

# Turbidity Monitoring Results Summarized Hourly

# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 11/26/98 7:00 AM | 11/26/98 8:00 AM | Yes | | | 71.176 | 56.4755 | 49.12575 | 2.3555 | 71.301 | | |
| Phase I | 11/26/98 8:00 AM | 11/26/98 9:00 AM | Yes | | 73.451 | 71.251 | 68.52575 | 49.8025 | 2.1495 | 66.801 | | |
| Phase I | 11/26/98 9:00 AM | 11/26/98 10:00 AM | Yes | | 73.376 | 70.526 | 60.3005 | 49.43125 | 2.03225 | 69.126 | | |
| Phase I | 11/26/98 10:00 AM | 11/26/98 11:00 AM | No | | 71.151 | 72.301 | 74.776 | 52.403 | 2.02875 | 71.351 | | |
| Phase I | 11/26/98 11:00 AM | 11/26/98 12:00 PM | Yes | | 71.576 | 71.076 | 71.57575 | 51.564 | 2.0785 | 71.001 | | |
| Phase I | 11/26/98 12:00 PM | 11/26/98 1:00 PM | No | | 72.251 | 69.001 | 61.376 | 51.8545 | 2.0465 | 65.601 | | |
| Phase I | 11/26/98 1:00 PM | 11/26/98 2:00 PM | No | | 67.776 | 68.376 | 59.0005 | 51.9065 | 2.17925 | 70.501 | | |
| Phase I | 11/26/98 2:00 PM | 11/26/98 3:00 PM | No | | 71.101 | 68.451 | 69.27575 | 50.147 | 2.097 | 64.426 | | |
| Phase I | 11/26/98 3:00 PM | 11/26/98 4:00 PM | Yes | | 69.276 | 69.076 | 73.9255 | 48.2025 | 2.043 | 67.601 | | |
| Phase I | 11/26/98 4:00 PM | 11/26/98 5:00 PM | No | | 71.851 | 69.201 | 63.6505 | 47.64775 | 2.16375 | 72.576 | | |
| Phase I | 11/26/98 5:00 PM | 11/26/98 6:00 PM | Yes | | 71.626 | 67.326 | 55.25 | 49.487 | 2.3725 | 71.901 | | |
| Phase I | 11/26/98 6:00 PM | 11/26/98 7:00 PM | Yes | | 67.426 | 68.151 | 60.6755 | 48.73525 | 1.9565 | 64.601 | | |
| Phase I | 11/26/98 7:00 PM | 11/26/98 8:00 PM | No | | 78.176 | 67.676 | 58.601 | 48.244 | 1.88825 | 66.551 | | |
| Phase I | 11/26/98 8:00 PM | 11/26/98 9:00 PM | Yes | | 92.526 | 67.801 | 57.52525 | 49.7995 | 1.87025 | 67.251 | | |
| Phase I | 11/26/98 9:00 PM | 11/26/98 10:00 PM | Yes | | 66.97575 | 68.401 | 56.70025 | 47.9575 | 1.91525 | 65.35075 | | |
| Phase I | 11/26/98 10:00 PM | 11/26/98 11:00 PM | Yes | | 80.726 | 66.526 | 66.0005 | 48.3145 | 1.9465 | 60.87525 | | |
| Phase I | 11/26/98 11:00 PM | 11/27/98 12:00 AM | Yes | | 68.15075 | 67.476 | 56.75 | 48.976 | 1.78875 | 65.001 | | |
| Phase I | 11/27/98 12:00 AM | 11/27/98 1:00 AM | No | | 65.726 | 66.226 | 59.85075 | 47.911 | 1.8245 | 62.3 | | |
| Phase I | 11/27/98 1:00 AM | 11/27/98 2:00 AM | Yes | | 57.82525 | 65.826 | 68.576 | 47.4045 | 1.8165 | 61.85075 | | |
| Phase I | 11/27/98 2:00 AM | 11/27/98 3:00 AM | Yes | | 69.50075 | 66.026 | 66.801 | 48.774 | 1.954 | 65.651 | | |
| Phase I | 11/27/98 3:00 AM | 11/27/98 4:00 AM | Yes | | 58.7505 | 65.401 | 66.176 | 46.94975 | 1.97775 | 68.651 | | |
| Phase I | 11/27/98 4:00 AM | 11/27/98 5:00 AM | Yes | | 59.926 | 65.701 | 66.601 | 48.48175 | 1.814 | 65.801 | | |
| Phase I | 11/27/98 5:00 AM | 11/27/98 6:00 AM | Yes | | 61.1005 | 65.10075 | 67.501 | 47.099 | 1.772 | 59.201 | | |
| Phase I | 11/27/98 6:00 AM | 11/27/98 7:00 AM | Yes | | 61.701 | 64.70075 | 62.92525 | 48.344 | 1.902 | 65.351 | | |
| Phase I | 11/27/98 7:00 AM | 11/27/98 8:00 AM | No | | 54.95025 | 63.426 | 64.02525 | 46.2 | 1.8285 | 64.801 | | |
| Phase I | 11/27/98 8:00 AM | 11/27/98 9:00 AM | Yes | | 53.02525 | 60.57525 | 61.87575 | 46.915 | 1.8205 | 60.576 | | |
| Phase I | 11/27/98 9:00 AM | 11/27/98 10:00 AM | No | | 51.52525 | 59.851 | 60.92525 | 47.2905 | 1.82125 | 55.701 | | |
| Phase I | 11/27/98 10:00 AM | 11/27/98 11:00 AM | Yes | | 50.875 | 59.62525 | 59.00025 | 45.1875 | 1.721 | 61.8 | | |
| Phase I | 11/27/98 11:00 AM | 11/27/98 12:00 PM | Yes | | 53.07525 | 58.90025 | 92.50075 | 43.7945 | 1.74125 | 57.525 | | |
| Phase I | 11/27/98 12:00 PM | 11/27/98 1:00 PM | No | | 53.22575 | 60.60025 | 58.075 | 43.6245 | 1.72925 | 54.55 | | |
| Phase I | 11/27/98 1:00 PM | 11/27/98 2:00 PM | Yes | | 50.65075 | 58.3755 | 61.87575 | 45.163 | 1.91425 | 53.30025 | | |
| Phase I | 11/27/98 2:00 PM | 11/27/98 3:00 PM | No | | 53.551 | 57.67525 | 58.176 | 44.109 | 1.716 | 40.65075 | | |
| Phase I | 11/27/98 3:00 PM | 11/27/98 4:00 PM | No | | 50.92525 | 57.07525 | 59.9255 | 45.3505 | 1.83025 | 56.401 | | |
| Phase I | 11/27/98 4:00 PM | 11/27/98 5:00 PM | Yes | | 43.85025 | 55.875 | 56.7505 | 46.00275 | 1.774 | 55.876 | | |
| Phase I | 11/27/98 5:00 PM | 11/27/98 6:00 PM | Yes | | 52.175 | 56.40075 | 64.1255 | 43.37125 | 1.76375 | 55.701 | | |
| Phase I | 11/27/98 6:00 PM | 11/27/98 7:00 PM | No | | 47.72525 | 53.226 | 56.45025 | 43 | 1.8405 | 54.5005 | | |
| Phase I | 11/27/98 7:00 PM | 11/27/98 8:00 PM | Yes | | 44.9755 | 53.95025 | 54.6255 | 43.8895 | 1.7655 | 52.225 | | |
| Phase I | 11/27/98 8:00 PM | 11/27/98 9:00 PM | Yes | | 46.95025 | 52.42525 | 54.0505 | 45.43075 | 1.777 | 49 | | |
| Phase I | 11/27/98 9:00 PM | 11/27/98 10:00 PM | Yes | | 46.575 | 52.62525 | 55.55025 | 42.41225 | 1.75825 | 52.701 | | |
| Phase I | 11/27/98 10:00 PM | 11/27/98 11:00 PM | Yes | | 47.025 | 51.15 | 51.2255 | 41.1345 | 1.66825 | 49.851 | | |
| Phase I | 11/27/98 11:00 PM | 11/28/98 12:00 AM | Yes | | 42.4255 | 50.5005 | 52.25075 | 39.3535 | 1.9505 | 48.051 | | |
| Phase I | 11/28/98 12:00 AM | 11/28/98 1:00 AM | Yes | | 42.325 | 50.976 | 51.77525 | 38.92175 | 1.70025 | 47.02575 | | |
| Phase I | 11/28/98 1:00 AM | 11/28/98 2:00 AM | Yes | | 57.62575 | 51.65025 | 42.57525 | 39.7685 | 1.6605 | 46.5 | | |
| Phase I | 11/28/98 2:00 AM | 11/28/98 3:00 AM | Yes | | 53.876 | 50.5005 | 41.3 | 38.62425 | 1.711 | 50.5 | | |
| Phase I | 11/28/98 3:00 AM | 11/28/98 4:00 AM | Yes | | 51.22525 | 51.375 | 40.0005 | 37.2615 | 1.8955 | 47.95 | | |
| Phase I | 11/28/98 4:00 AM | 11/28/98 5:00 AM | Yes | | 55.67575 | 50.70075 | 39.2505 | 44.7785 | 1.81575 | 48.0005 | | |
| Phase I | 11/28/98 5:00 AM | 11/28/98 6:00 AM | Yes | | 53.8505 | 51.82575 | 43.1505 | 37.792 | 1.6355 | 49.151 | | |
| Phase I | 11/28/98 6:00 AM | 11/28/98 7:00 AM | Yes | | 50.40025 | 50.5755 | 45.57575 | 40.03225 | 1.747 | 49.901 | | |
| Phase I | 11/28/98 7:00 AM | 11/28/98 8:00 AM | | | 51.301 | 50.95 | 42.47525 | 38.8015 | 1.69475 | 56.201 | | |
| Phase I | 11/28/98 8:00 AM | 11/28/98 9:00 AM | | | 51.65075 | 49.70075 | 40.7755 | 37.763 | 2.562 | 52.826 | | |
| Phase I | 11/28/98 9:00 AM | 11/28/98 10:00 AM | | | 53.52575 | 49.401 | 47.10025 | 38.74525 | 1.83225 | 55.20025 | | |
| Phase I | 11/28/98 10:00 AM | 11/28/98 11:00 AM | | | 51.5505 | 49.0505 | 46.175 | 40.85075 | 1.6975 | 46.1 | | |
| Phase I | 11/28/98 11:00 AM | 11/28/98 12:00 PM | | | 49.3255 | 49.77525 | 40.97575 | 38.215 | 1.6715 | 46.3 | | |
| Phase I | 11/28/98 12:00 PM | 11/28/98 1:00 PM | | | 51.15075 | 49.075 | 38.7005 | 37.63825 | 1.672 | 49.3 | | |
| Phase I | 11/28/98 1:00 PM | 11/28/98 2:00 PM | | | 50.40025 | 48.20025 | 42.82525 | 37.11475 | 1.76475 | 46.1005 | | |
| Phase I | 11/28/98 2:00 PM | 11/28/98 3:00 PM | | | 46.72525 | 47.7005 | 35.57525 | 37.491 | 1.63075 | 44.25075 | | |
| Phase I | 11/28/98 3:00 PM | 11/28/98 4:00 PM | | | 49.25025 | 47.77525 | 44.60025 | 35.77625 | 1.83725 | 51.3 | | |
| Phase I | 11/28/98 4:00 PM | 11/28/98 5:00 PM | | | 48.55 | 47.27575 | 45.625 | 35.65275 | 1.79375 | 46 | | |
| Phase I | 11/28/98 5:00 PM | 11/28/98 6:00 PM | | | 48.6005 | 46.00075 | 44.2755 | 37.67625 | 1.825 | 42.77575 | | |
| Phase I | 11/28/98 6:00 PM | 11/28/98 7:00 PM | | | 51.4255 | 46.1505 | 43.6755 | 39.46975 | 1.71775 | 39.801 | | |
| Phase I | 11/28/98 7:00 PM | 11/28/98 8:00 PM | No | | 46.42525 | 45.225 | 42.5755 | 38.11925 | 1.752 | 39.901 | | |
| Phase I | 11/28/98 8:00 PM | 11/28/98 9:00 PM | Yes | | 45.5005 | 46.17525 | 43.8255 | 37.9015 | 1.7305 | 45.901 | | |
| Phase I | 11/28/98 9:00 PM | 11/28/98 10:00 PM | Yes | | 48.80075 | 45.30025 | 38.9505 | 36.418 | 1.94125 | 44.401 | | |
| Phase I | 11/28/98 10:00 PM | 11/28/98 11:00 PM | Yes | | 48.0755 | 45.0755 | 38.50025 | 36.59375 | 1.99425 | 40.276 | | |
| Phase I | 11/28/98 11:00 PM | 11/29/98 12:00 AM | Yes | | 46.575 | 45.4 | 36.50075 | 35.39275 | 1.8205 | 42.1005 | | |
| Phase I | 11/29/98 12:00 AM | 11/29/98 1:00 AM | No | | 41.87575 | 44.80075 | 39.50025 | 35.222 | 1.754 | 45.32525 | | |
| Phase I | 11/29/98 1:00 AM | 11/29/98 2:00 AM | Yes | | 43.52525 | 44.4755 | 43.57525 | 34.1595 | 1.948 | 45.401 | | |
| Phase I | 11/29/98 2:00 AM | 11/29/98 3:00 AM | Yes | | | 44.1005 | 34.90025 | 33.429 | 1.848 | 43.701 | | |
| Phase I | 11/29/98 3:00 AM | 11/29/98 4:00 AM | Yes | | | 43.82525 | 40.1005 | 35.66475 | 1.68875 | 42.05025 | | |
| Phase I | 11/29/98 4:00 AM | 11/29/98 5:00 AM | Yes | | | 42.62525 | 36.75 | 34.654 | 1.77425 | 49.3505 | | |
| Phase I | 11/29/98 5:00 AM | 11/29/98 6:00 AM | Yes | | | 43.0255 | 32.77525 | 34.95475 | 1.725 | 53.451 | | |
| Phase I | 11/29/98 6:00 AM | 11/29/98 7:00 AM | Yes | | | 42.5505 | 33.82525 | 34.59975 | 1.682 | 42.201 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 11/29/98 7:00 AM | 11/29/98 8:00 AM | No | | | 41.575 | 32.6255 | 34.53875 | 1.7395 | 39.201 | | |
| Phase I | 11/29/98 8:00 AM | 11/29/98 9:00 AM | No | | | 39.77575 | 36.80025 | 34.92375 | 2.1965 | 37.851 | | |
| Phase I | 11/29/98 9:00 AM | 11/29/98 10:00 AM | No | | | 40.126 | 35.42575 | 34.5935 | 1.66625 | 37.401 | | |
| Phase I | 11/29/98 10:00 AM | 11/29/98 11:00 AM | Yes | | | 39.72525 | 36.82575 | 31.67275 | 1.819 | 43.151 | | |
| Phase I | 11/29/98 11:00 AM | 11/29/98 12:00 PM | Yes | | | 39.1005 | 39.02575 | 33.014 | 1.74875 | 60.401 | | |
| Phase I | 11/29/98 12:00 PM | 11/29/98 1:00 PM | No | | | 38.6 | 37.17575 | 33.54225 | 1.718 | 39.1 | | |
| Phase I | 11/29/98 1:00 PM | 11/29/98 2:00 PM | Yes | | | | 32.475 | 35.12075 | 1.79225 | | | |
| Phase I | 11/29/98 2:00 PM | 11/29/98 3:00 PM | Yes | | | | 34.6005 | 33.911 | 1.66475 | | | |
| Phase I | 11/29/98 3:00 PM | 11/29/98 4:00 PM | No | | | | 37.92525 | 31.3655 | 1.713 | | | |
| Phase I | 11/29/98 4:00 PM | 11/29/98 5:00 PM | Yes | | 37.2 | | 36.85 | 34.8795 | 1.96775 | | | |
| Phase I | 11/29/98 5:00 PM | 11/29/98 6:00 PM | No | | 36.4505 | | 32.2005 | 33.60125 | 1.88925 | | | |
| Phase I | 11/29/98 6:00 PM | 11/29/98 7:00 PM | No | | 36.85025 | | 33.02525 | 34.0215 | 1.79575 | | | |
| Phase I | 11/29/98 7:00 PM | 11/29/98 8:00 PM | Yes | | 38.95075 | | 31.02525 | 33.59275 | 1.79575 | | | |
| Phase I | 11/29/98 8:00 PM | 11/29/98 9:00 PM | No | | 37.45025 | | 29.10075 | 30.653 | 1.8 | | | |
| Phase I | 11/29/98 9:00 PM | 11/29/98 10:00 PM | Yes | | 37.9255 | | 28.87525 | 30.647 | 1.8445 | | | |
| Phase I | 11/29/98 10:00 PM | 11/29/98 11:00 PM | Yes | | 37.47525 | | 29.8005 | 27.90575 | 1.83125 | | | |
| Phase I | 11/29/98 11:00 PM | 11/30/98 12:00 AM | Yes | | 39.9005 | | 29.276 | 28.91225 | 1.91325 | | | |
| Phase I | 11/30/98 12:00 AM | 11/30/98 1:00 AM | Yes | | 39.95 | | 26.05025 | 30.371 | 1.93175 | | | |
| Phase I | 11/30/98 1:00 AM | 11/30/98 2:00 AM | Yes | | 35.15075 | | 29.8 | 31.8765 | 2.01 | | | |
| Phase I | 11/30/98 2:00 AM | 11/30/98 3:00 AM | Yes | | 37.02525 | | 25.65025 | 30.613 | 2.1155 | | | |
| Phase I | 11/30/98 3:00 AM | 11/30/98 4:00 AM | Yes | | 34.6005 | | 25.6255 | 28.7265 | 2.0075 | | | |
| Phase I | 11/30/98 4:00 AM | 11/30/98 5:00 AM | Yes | | 37.8505 | | 25.07525 | 30.4695 | 2.2175 | | | |
| Phase I | 11/30/98 5:00 AM | 11/30/98 6:00 AM | No | | 34.17575 | | 27.175 | 29.335 | 1.9925 | | | |
| Phase I | 11/30/98 6:00 AM | 11/30/98 7:00 AM | Yes | | 34.92525 | | 28.4255 | 28.256 | 2.09825 | | | |
| Phase I | 11/30/98 7:00 AM | 11/30/98 8:00 AM | No | | 34.8505 | | 29.5755 | 26.63525 | 3.50975 | | | |
| Phase I | 11/30/98 8:00 AM | 11/30/98 9:00 AM | No | | 42.775 | | 26.7755 | 27.79275 | 5.13375 | | | |
| Phase I | 11/30/98 9:00 AM | 11/30/98 10:00 AM | No | | 34.12575 | | 30.325 | 27.67575 | 4.41475 | | | |
| Phase I | 11/30/98 10:00 AM | 11/30/98 11:00 AM | No | | 35.65025 | | 29.0755 | 27.087 | 3.77525 | | | |
| Phase I | 11/30/98 11:00 AM | 11/30/98 12:00 PM | No | | 33.7255 | | 29.42575 | 26.9505 | 3.19125 | | | |
| Phase I | 11/30/98 12:00 PM | 11/30/98 1:00 PM | No | | 38.12525 | | 30.9005 | 27.70525 | 3.474 | | | |
| Phase I | 11/30/98 1:00 PM | 11/30/98 2:00 PM | No | | 46.10033 | | 35.85 | 28.596 | 2.79675 | | | |
| Phase I | 11/30/98 2:00 PM | 11/30/98 3:00 PM | No | | 36.9505 | | 37.5005 | 30.21425 | 2.5795 | | | |
| Phase I | 11/30/98 3:00 PM | 11/30/98 4:00 PM | No | | 37.97525 | | 34.6 | 28.9635 | 2.654 | | | |
| Phase I | 11/30/98 4:00 PM | 11/30/98 5:00 PM | No | | 37.87525 | | 33.4755 | 28.39475 | 2.65075 | | | |
| Phase I | 11/30/98 5:00 PM | 11/30/98 6:00 PM | No | | 41.65025 | | 36.02575 | 28.33425 | 2.36875 | | | |
| Phase I | 11/30/98 6:00 PM | 11/30/98 7:00 PM | No | | 40.9255 | | 36.0505 | 28.8145 | 1.9445 | | | |
| Phase I | 11/30/98 7:00 PM | 11/30/98 8:00 PM | No | | 38.95075 | | 33.1505 | 30.1305 | 1.5985 | | | |
| Phase I | 11/30/98 8:00 PM | 11/30/98 9:00 PM | No | | 40.175 | | 32.45025 | 30.24425 | 1.80225 | | | |
| Phase I | 11/30/98 9:00 PM | 11/30/98 10:00 PM | No | | 42.65025 | | 38.60025 | 29.9715 | 1.7045 | | | |
| Phase I | 11/30/98 10:00 PM | 11/30/98 11:00 PM | No | | 44 | | 39.52525 | 30.1875 | 1.671 | | | |
| Phase I | 11/30/98 11:00 PM | 12/1/98 12:00 AM | No | | 41.45 | | 37.9505 | 30.3355 | 2.00525 | | | |
| Phase I | 12/1/98 12:00 AM | 12/1/98 1:00 AM | No | | 45.8505 | | 38.45025 | 30.281 | 1.9805 | | | |
| Phase I | 12/1/98 1:00 AM | 12/1/98 2:00 AM | No | | 46.1 | | 37.27525 | 30.90575 | 1.974 | | | |
| Phase I | 12/1/98 2:00 AM | 12/1/98 3:00 AM | No | | 42.3005 | | 36.4505 | 30.4735 | 2.1685 | | | |
| Phase I | 12/1/98 3:00 AM | 12/1/98 4:00 AM | Yes | | 43.7005 | | 31.025 | 30.089 | 1.898 | | | |
| Phase I | 12/1/98 4:00 AM | 12/1/98 5:00 AM | Yes | | 40.57525 | | 29.45025 | 30.24775 | 1.8215 | | | |
| Phase I | 12/1/98 5:00 AM | 12/1/98 6:00 AM | Yes | | 48.02575 | | 31.6255 | 30.56725 | 1.75625 | | | |
| Phase I | 12/1/98 6:00 AM | 12/1/98 7:00 AM | Yes | | 45.325 | | 31.90075 | 30.484 | 1.6845 | | | |
| Phase I | 12/1/98 7:00 AM | 12/1/98 8:00 AM | No | | 46.62575 | | 29.425 | 31.174 | 1.62275 | | | |
| Phase I | 12/1/98 8:00 AM | 12/1/98 9:00 AM | Yes | | 41.7505 | | 29.10075 | 31.047 | 1.7355 | | | |
| Phase I | 12/1/98 9:00 AM | 12/1/98 10:00 AM | Yes | | 43.7255 | | 34.075 | 31.63625 | 1.7905 | | | |
| Phase I | 12/1/98 10:00 AM | 12/1/98 11:00 AM | No | | 50.0005 | | 35.30075 | 31.24925 | 1.94175 | | | |
| Phase I | 12/1/98 11:00 AM | 12/1/98 12:00 PM | No | | 47.37525 | | 34.75025 | 31.44425 | 1.996 | | | |
| Phase I | 12/1/98 12:00 PM | 12/1/98 1:00 PM | Yes | | 43.05 | | 76.3755 | 31.32375 | 1.854 | | | |
| Phase I | 12/1/98 1:00 PM | 12/1/98 2:00 PM | Yes | | 66.77525 | | 36.57575 | 31.1575 | 1.4975 | | | |
| Phase I | 12/1/98 2:00 PM | 12/1/98 3:00 PM | Yes | | 42.7255 | | 34.9 | 31.69525 | 1.7095 | 2 | | |
| Phase I | 12/1/98 3:00 PM | 12/1/98 4:00 PM | Yes | | 47.37575 | | 36.475 | 32.45 | 1.8335 | | | |
| Phase I | 12/1/98 4:00 PM | 12/1/98 5:00 PM | Yes | | 47.3755 | 46.767 | 36.325 | 31.204 | 1.778 | | | |
| Phase I | 12/1/98 5:00 PM | 12/1/98 6:00 PM | Yes | | 45.12525 | 43.401 | 33.70025 | 32.1215 | 2.3305 | 39.8 | | |
| Phase I | 12/1/98 6:00 PM | 12/1/98 7:00 PM | Yes | | 47.72525 | 40.8755 | 36.8755 | 32.09175 | 1.832 | 39.425 | | |
| Phase I | 12/1/98 7:00 PM | 12/1/98 8:00 PM | Yes | | 40.80025 | 37.12525 | 35.85025 | 31.634 | 1.97475 | 41.775 | | |
| Phase I | 12/1/98 8:00 PM | 12/1/98 9:00 PM | Yes | | 40.5255 | 40.45075 | 37.9255 | 31.2495 | 1.60175 | 40.65 | | |
| Phase I | 12/1/98 9:00 PM | 12/1/98 10:00 PM | Yes | | 42.275 | 40.50025 | 42.6005 | 32.986 | 6.54375 | 39.325 | | |
| Phase I | 12/1/98 10:00 PM | 12/1/98 11:00 PM | Yes | | 42.20025 | 40.225 | 37.526 | 31.0745 | 1.59525 | 37.95 | | |
| Phase I | 12/1/98 11:00 PM | 12/2/98 12:00 AM | Yes | | 39.9505 | 39.75075 | 36.35025 | 32.405 | 1.78975 | 38.6 | | |
| Phase I | 12/2/98 12:00 AM | 12/2/98 1:00 AM | Yes | | 51.22575 | 43.50075 | 34.5505 | 35.37475 | 2.23675 | 43.8 | | |
| Phase I | 12/2/98 1:00 AM | 12/2/98 2:00 AM | Yes | | 48.72525 | | 31.1005 | 31.17625 | 2.24225 | 37.425 | | |
| Phase I | 12/2/98 2:00 AM | 12/2/98 3:00 AM | Yes | | 47.476 | | 31.975 | 30.77925 | 1.81425 | 38.625 | | |
| Phase I | 12/2/98 3:00 AM | 12/2/98 4:00 AM | No | | 38.50075 | | 29.25075 | 30.9765 | 1.95975 | 40.075 | | |
| Phase I | 12/2/98 4:00 AM | 12/2/98 5:00 AM | Yes | | 43.30075 | | 27.47525 | 30.53125 | 1.5885 | 37.125 | | |
| Phase I | 12/2/98 5:00 AM | 12/2/98 6:00 AM | Yes | | 40.9755 | | 29.4005 | 31.26375 | 1.57675 | 38.05 | | |
| Phase I | 12/2/98 6:00 AM | 12/2/98 7:00 AM | Yes | | 41.27575 | | 31.2 | 30.4765 | 1.92525 | 37.925 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/2/98 7:00 AM | 12/2/98 8:00 AM | No | | 45.1255 | | 33.37575 | 30.79275 | 2.20125 | 37.3 | | |
| Phase I | 12/2/98 8:00 AM | 12/2/98 9:00 AM | Yes | | 42.90075 | | 31.6755 | 31.96075 | 1.92775 | 38.45 | | |
| Phase I | 12/2/98 9:00 AM | 12/2/98 10:00 AM | Yes | | 42.075 | | 33.52525 | 32.90575 | 1.859 | 35.85 | | |
| Phase I | 12/2/98 10:00 AM | 12/2/98 11:00 AM | Yes | | 44.0005 | | 31.075 | 32.48925 | 2.1905 | 41.2 | | |
| Phase I | 12/2/98 11:00 AM | 12/2/98 12:00 PM | No | | 42.35025 | | 36.8755 | 36.2285 | 1.97975 | 40.475 | | |
| Phase I | 12/2/98 12:00 PM | 12/2/98 1:00 PM | No | | 42.65025 | | 41.9005 | 35.157 | 2.30825 | 41.15 | | |
| Phase I | 12/2/98 1:00 PM | 12/2/98 2:00 PM | No | | 41.02575 | | 34.57575 | 32.97 | 2.04625 | 37.1 | | |
| Phase I | 12/2/98 2:00 PM | 12/2/98 3:00 PM | No | | 47.92575 | | 34.12575 | 32.06075 | 2.5355 | 39.4755 | | |
| Phase I | 12/2/98 3:00 PM | 12/2/98 4:00 PM | Yes | | 41.3755 | 40.45025 | 30.6 | 31.0895 | 2.6895 | 41.0255 | | |
| Phase I | 12/2/98 4:00 PM | 12/2/98 5:00 PM | Yes | | 42.15025 | 41.9255 | 30.85025 | 31.33725 | 2.36325 | 37.2505 | | |
| Phase I | 12/2/98 5:00 PM | 12/2/98 6:00 PM | Yes | | 42.275 | 43.4755 | 33.95075 | 35.2595 | 2.2675 | 36.1255 | | |
| Phase I | 12/2/98 6:00 PM | 12/2/98 7:00 PM | No | | 39.9755 | 39.6255 | 34.32575 | 35.52875 | 1.8535 | 37.20075 | | |
| Phase I | 12/2/98 7:00 PM | 12/2/98 8:00 PM | Yes | | 52.40075 | 41.8255 | 31.80025 | 36.4355 | 2.00075 | 45.3255 | | |
| Phase I | 12/2/98 8:00 PM | 12/2/98 9:00 PM | Yes | | 42.0505 | 40.67525 | 28.17525 | 32.2285 | 2.045 | 38.70025 | | |
| Phase I | 12/2/98 9:00 PM | 12/2/98 10:00 PM | Yes | | 40.6255 | 42.40025 | 31.5005 | 31.669 | 2.5595 | 39.7505 | | |
| Phase I | 12/2/98 10:00 PM | 12/2/98 11:00 PM | Yes | | 43.05075 | 44.27525 | 29.17525 | 31.18675 | 3.157 | 38.5505 | | |
| Phase I | 12/2/98 11:00 PM | 12/3/98 12:00 AM | Yes | | 44.97525 | 39.70025 | 32.17575 | 30.5875 | 3.06 | 38.32525 | | |
| Phase I | 12/3/98 12:00 AM | 12/3/98 1:00 AM | Yes | | 41.85 | 44.20025 | 27.6755 | 32.0955 | 2.85425 | 41.32575 | | |
| Phase I | 12/3/98 1:00 AM | 12/3/98 2:00 AM | Yes | | 40.175 | 40.95025 | 28.3255 | 32.001 | 2.45375 | 45.57525 | | |
| Phase I | 12/3/98 2:00 AM | 12/3/98 3:00 AM | Yes | | 38.60025 | 38.5255 | 32.45075 | 31.985 | 2.02375 | 39.82525 | | |
| Phase I | 12/3/98 3:00 AM | 12/3/98 4:00 AM | Yes | | 40.6755 | 41.6505 | 25.82525 | 32.40025 | 2.003 | 36.67575 | | |
| Phase I | 12/3/98 4:00 AM | 12/3/98 5:00 AM | Yes | | 41.22525 | 40.22575 | 29.27525 | 30.65575 | 2.1025 | 45.75075 | | |
| Phase I | 12/3/98 5:00 AM | 12/3/98 6:00 AM | Yes | | 38.90025 | 38.4505 | 29.2255 | 30.84025 | 2.0605 | 34.47575 | | |
| Phase I | 12/3/98 6:00 AM | 12/3/98 7:00 AM | Yes | | 47.726 | 38.97525 | 30.75025 | 31.7115 | 1.9945 | 36.92575 | | |
| Phase I | 12/3/98 7:00 AM | 12/3/98 8:00 AM | Yes | | 41.35025 | 42.2755 | 33.55025 | 31.05525 | 2.13425 | 39.051 | | |
| Phase I | 12/3/98 8:00 AM | 12/3/98 9:00 AM | Yes | | 40.075 | 38.9505 | 33.0505 | 31.5865 | 1.99625 | 36.101 | | |
| Phase I | 12/3/98 9:00 AM | 12/3/98 10:00 AM | Yes | | 40.35025 | 40.85025 | 37.65075 | 34.881 | 2.336 | 35.27525 | | |
| Phase I | 12/3/98 10:00 AM | 12/3/98 11:00 AM | Yes | | 41.65075 | 38.7255 | 27.60025 | 32.8635 | 2.7295 | 37.47525 | | |
| Phase I | 12/3/98 11:00 AM | 12/3/98 12:00 PM | No | | 41.4755 | 40.02525 | 36.40075 | 32.8595 | 2.453 | 38.92525 | | |
| Phase I | 12/3/98 12:00 PM | 12/3/98 1:00 PM | No | | 45.25 | 35.4255 | 32.4005 | 32.5115 | 2.1105 | 40.301 | | |
| Phase I | 12/3/98 1:00 PM | 12/3/98 2:00 PM | No | | 47.8755 | 39.3505 | 44.52575 | 31.42375 | 2.238 | 38.801 | | |
| Phase I | 12/3/98 2:00 PM | 12/3/98 3:00 PM | Yes | | 40.7255 | 38.201 | 33.75025 | 30.12125 | 2.03525 | 34.77525 | | |
| Phase I | 12/3/98 3:00 PM | 12/3/98 4:00 PM | No | | 39.00025 | 37.75075 | 34.8505 | 32.6905 | 2.105 | 34.1005 | | |
| Phase I | 12/3/98 4:00 PM | 12/3/98 5:00 PM | Yes | | 39.15075 | 36.5 | 28.7505 | 30.542 | 1.85025 | 33.65 | | |
| Phase I | 12/3/98 5:00 PM | 12/3/98 6:00 PM | Yes | | 36.97575 | 38.95 | 32.2005 | 26.3325 | 1.9595 | 34.401 | | |
| Phase I | 12/3/98 6:00 PM | 12/3/98 7:00 PM | Yes | | 38.975 | 37.1755 | 32.25 | 21.9905 | 2.2215 | 35.6505 | | |
| Phase I | 12/3/98 7:00 PM | 12/3/98 8:00 PM | No | | 34.35075 | 41.0005 | 30.30025 | 19.8425 | 1.94475 | 39.20025 | | |
| Phase I | 12/3/98 8:00 PM | 12/3/98 9:00 PM | Yes | | 38.10075 | 37.0255 | 29.80075 | 20.92975 | 1.761 | 36.3005 | | |
| Phase I | 12/3/98 9:00 PM | 12/3/98 10:00 PM | Yes | | 42.901 | 36.6005 | 32.65075 | 19.12775 | 1.50325 | 34.4505 | | |
| Phase I | 12/3/98 10:00 PM | 12/3/98 11:00 PM | Yes | | 39.075 | 37.72525 | 27.87525 | 28.33125 | 1.489 | 32.97525 | | |
| Phase I | 12/3/98 11:00 PM | 12/4/98 12:00 AM | No | | 39.87525 | 39.40075 | 29.375 | 29.643 | 2.3245 | 33.1005 | | |
| Phase I | 12/4/98 12:00 AM | 12/4/98 1:00 AM | Yes | | 39.77525 | 38.55025 | 33.47525 | 29.86075 | 3.203 | 33.8505 | | |
| Phase I | 12/4/98 1:00 AM | 12/4/98 2:00 AM | Yes | | 39.67525 | 36.77525 | 30.601 | 29.11175 | 3.43975 | 34.7505 | | |
| Phase I | 12/4/98 2:00 AM | 12/4/98 3:00 AM | Yes | | 39.9755 | 38.0005 | 30.8505 | 28.6285 | 2.93825 | 37.77575 | | |
| Phase I | 12/4/98 3:00 AM | 12/4/98 4:00 AM | No | | 38.25025 | 36.52525 | 34.15025 | 28.871 | 2.39575 | 32.0755 | | |
| Phase I | 12/4/98 4:00 AM | 12/4/98 5:00 AM | Yes | | 42.8005 | 38.27525 | 30.9505 | 28.893 | 2.68225 | 33.77575 | | |
| Phase I | 12/4/98 5:00 AM | 12/4/98 6:00 AM | Yes | | 40.9505 | 38.57525 | 30.92575 | 28.5065 | 2.69225 | 32.75025 | | |
| Phase I | 12/4/98 6:00 AM | 12/4/98 7:00 AM | Yes | | 44.52575 | 36.55025 | 33.5755 | 28.2465 | 3.54275 | 32.6755 | | |
| Phase I | 12/4/98 7:00 AM | 12/4/98 8:00 AM | No | | 36.47575 | 36.52525 | 35.50075 | 28.83225 | 2.853 | 32.7255 | | |
| Phase I | 12/4/98 8:00 AM | 12/4/98 9:00 AM | No | | 37.62525 | 45.77525 | 32.9255 | 28.8705 | 3.89525 | 32.05025 | | |
| Phase I | 12/4/98 9:00 AM | 12/4/98 10:00 AM | No | | 38.50025 | 38.0755 | 37.25025 | 28.913 | 4.08425 | 36.4505 | | |
| Phase I | 12/4/98 10:00 AM | 12/4/98 11:00 AM | No | | 35.4255 | 35.10025 | 34.15025 | 29.78675 | 6.755 | 32.42575 | | |
| Phase I | 12/4/98 11:00 AM | 12/4/98 12:00 PM | Yes | | 37.425 | 38.5505 | 38.02575 | 28.50225 | 2.1645 | 32.22525 | | |
| Phase I | 12/4/98 12:00 PM | 12/4/98 1:00 PM | Yes | | 35.0755 | 33.325 | 31.15025 | 27.6945 | 1.61675 | 37.9505 | | |
| Phase I | 12/4/98 1:00 PM | 12/4/98 2:00 PM | Yes | | 35.0005 | 33.40075 | 31.125 | 28.3155 | 2.191 | 32.6005 | | |
| Phase I | 12/4/98 2:00 PM | 12/4/98 3:00 PM | No | | 34.75025 | 34.82575 | 32.27575 | 28.81025 | 1.7255 | 33.85 | | |
| Phase I | 12/4/98 3:00 PM | 12/4/98 4:00 PM | Yes | | 34.90033 | 35.0255 | 34.60025 | 29.604 | 1.723 | 31.67525 | | |
| Phase I | 12/4/98 4:00 PM | 12/4/98 5:00 PM | Yes | | 33.926 | 35.6255 | 32.40025 | 30.0285 | 1.5065 | 33.9255 | | |
| Phase I | 12/4/98 5:00 PM | 12/4/98 6:00 PM | Yes | | 34.65 | 36.376 | 31.92525 | 29.22075 | 1.77225 | 31.82525 | | |
| Phase I | 12/4/98 6:00 PM | 12/4/98 7:00 PM | Yes | | 34.12525 | 33.2755 | 33.0505 | 28.4045 | 1.6995 | 28.925 | | |
| Phase I | 12/4/98 7:00 PM | 12/4/98 8:00 PM | Yes | | 34.17525 | 33.0755 | 36.2 | 28.47425 | 1.7155 | 32.7505 | | |
| Phase I | 12/4/98 8:00 PM | 12/4/98 9:00 PM | Yes | | 35.3505 | 31.625 | 30.57525 | 27.5095 | 1.9245 | 31 | | |
| Phase I | 12/4/98 9:00 PM | 12/4/98 10:00 PM | Yes | | 32.77525 | 32.0005 | 31.8505 | 26.72875 | 1.703 | 30.125 | | |
| Phase I | 12/4/98 10:00 PM | 12/4/98 11:00 PM | Yes | | 33.0755 | 33.875 | 32.4755 | 27.33225 | 1.62325 | 30.401 | | |
| Phase I | 12/4/98 11:00 PM | 12/5/98 12:00 AM | Yes | | 34.0255 | 33.7755 | 39.5255 | 28.08675 | 2.2805 | 31.3755 | | |
| Phase I | 12/5/98 12:00 AM | 12/5/98 1:00 AM | No | | 34.32525 | 33.925 | 35.475 | 27.38025 | 2.86325 | 31.47575 | | |
| Phase I | 12/5/98 1:00 AM | 12/5/98 2:00 AM | No | | 31.601 | 31.9005 | 33.151 | 27.06675 | 2.78325 | 28.65 | | |
| Phase I | 12/5/98 2:00 AM | 12/5/98 3:00 AM | Yes | | 34.95075 | 31.2255 | 31.3005 | 26.46025 | 2.762 | 34.9255 | | |
| Phase I | 12/5/98 3:00 AM | 12/5/98 4:00 AM | Yes | | 34.9255 | 31.9255 | 32.27575 | 25.54025 | 2.38225 | 31.3255 | | |
| Phase I | 12/5/98 4:00 AM | 12/5/98 5:00 AM | No | | 31.0505 | 29.37525 | 32.201 | 25.56825 | 2.467 | 29.20025 | | |
| Phase I | 12/5/98 5:00 AM | 12/5/98 6:00 AM | No | | 33.52525 | 27.8755 | 31.55025 | 25.7935 | 2.30525 | 29.60025 | | |
| Phase I | 12/5/98 6:00 AM | 12/5/98 7:00 AM | No | | 30.9755 | 30.3755 | 34.2505 | 25.2025 | 2.0205 | 31.10025 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/5/98 7:00 AM | 12/5/98 8:00 AM | No | | 28.95025 | 29.75025 | 28.9755 | 25.3975 | 2.1165 | 28.87525 | | |
| Phase I | 12/5/98 8:00 AM | 12/5/98 9:00 AM | No | | 31.07525 | 27.97575 | 28.70025 | 24.453 | 1.98475 | 29.75 | | |
| Phase I | 12/5/98 9:00 AM | 12/5/98 10:00 AM | No | | 28.3005 | 41.9755 | 27.82525 | 23.9605 | 2.02925 | 29.20025 | | |
| Phase I | 12/5/98 10:00 AM | 12/5/98 11:00 AM | Yes | | 27.42525 | 27.60025 | 27.00025 | 23.864 | 2.27625 | 27.50075 | | |
| Phase I | 12/5/98 11:00 AM | 12/5/98 12:00 PM | Yes | | 27.42575 | 25.601 | 26.45025 | 23.6755 | 2.159 | 28.87525 | | |
| Phase I | 12/5/98 12:00 PM | 12/5/98 1:00 PM | Yes | | 28.17525 | | 26.05 | 23.22175 | 2.08775 | 43.97525 | | |
| Phase I | 12/5/98 1:00 PM | 12/5/98 2:00 PM | Yes | | 27.40025 | | 28.2005 | 22.96375 | 2.17125 | 27.42525 | | |
| Phase I | 12/5/98 2:00 PM | 12/5/98 3:00 PM | No | | 26.57525 | | 27.32525 | 23.54375 | 2.12125 | 24.2505 | | |
| Phase I | 12/5/98 3:00 PM | 12/5/98 4:00 PM | Yes | | 26.3755 | | 24.2755 | 23.0915 | 2.01625 | 26.1755 | | |
| Phase I | 12/5/98 4:00 PM | 12/5/98 5:00 PM | Yes | | 24.8005 | 23.967 | 24.57525 | 23.07875 | 1.99225 | 24.2505 | | |
| Phase I | 12/5/98 5:00 PM | 12/5/98 6:00 PM | Yes | | 24.22525 | 23.6255 | 25.1755 | 22.56275 | 1.7865 | 25.37525 | | |
| Phase I | 12/5/98 6:00 PM | 12/5/98 7:00 PM | Yes | | 26.5505 | 23.80025 | 22.6755 | 21.56625 | 1.979 | 23.875 | | |
| Phase I | 12/5/98 7:00 PM | 12/5/98 8:00 PM | | | 26.97525 | 23.22525 | 30.05 | 21.23 | 1.9855 | 25.52525 | | |
| Phase I | 12/5/98 8:00 PM | 12/5/98 9:00 PM | | | 24.00025 | 22.70025 | 20.2755 | 20.74025 | 3.66125 | 23.1505 | | |
| Phase I | 12/5/98 9:00 PM | 12/5/98 10:00 PM | | | 23.801 | 25.6255 | 21.07525 | 20.44525 | 2.49075 | 23.8255 | | |
| Phase I | 12/5/98 10:00 PM | 12/5/98 11:00 PM | | | 21.40025 | 23.55075 | 19.25075 | 21.013 | 2.27975 | 21.625 | | |
| Phase I | 12/5/98 11:00 PM | 12/6/98 12:00 AM | | | 23.32575 | 23.37575 | 21.30025 | 20.037 | 3.3055 | 21.8755 | | |
| Phase I | 12/6/98 12:00 AM | 12/6/98 1:00 AM | | | 26.57575 | 27.55025 | 18.15025 | 19.61325 | 3.931 | 22.75075 | | |
| Phase I | 12/6/98 1:00 AM | 12/6/98 2:00 AM | | | 23.37525 | 30.5755 | 19.151 | 19.64775 | 2.02675 | 22.9755 | | |
| Phase I | 12/6/98 2:00 AM | 12/6/98 3:00 AM | | | 24.0505 | 21.626 | 18.80075 | 19.6075 | 2.178 | 21.72525 | | |
| Phase I | 12/6/98 3:00 AM | 12/6/98 4:00 AM | | | 29.77575 | 33.50025 | 18.85075 | 19.9995 | 3.5655 | 24.6505 | | |
| Phase I | 12/6/98 4:00 AM | 12/6/98 5:00 AM | | | 23.82575 | 21.75025 | 18.6755 | 19.5795 | 4.34775 | 23.3255 | | |
| Phase I | 12/6/98 5:00 AM | 12/6/98 6:00 AM | | | 26.87525 | 20.90025 | 16.70025 | 19.994 | 4.38125 | 19.9755 | | |
| Phase I | 12/6/98 6:00 AM | 12/6/98 7:00 AM | | | 23.8005 | 20.07525 | 18.67525 | 19.525 | 2.7895 | 20.90025 | | |
| Phase I | 12/6/98 7:00 AM | 12/6/98 8:00 AM | Yes | | 22.47575 | 24.62525 | 22.47525 | 19.14325 | 1.964 | 21.2505 | | |
| Phase I | 12/6/98 8:00 AM | 12/6/98 9:00 AM | Yes | | | 21.85025 | 18.87575 | 18.9695 | 1.752 | 23.17575 | | |
| Phase I | 12/6/98 9:00 AM | 12/6/98 10:00 AM | No | | | 20.80075 | 17.2505 | 18.68725 | 2.78375 | 21.8005 | | |
| Phase I | 12/6/98 10:00 AM | 12/6/98 11:00 AM | No | | | 21.60025 | 17.77525 | 19.17775 | 2.937 | 21.70025 | | |
| Phase I | 12/6/98 11:00 AM | 12/6/98 12:00 PM | No | | | 18.801 | 17.77575 | 18.757 | 2.63025 | 21.0255 | | |
| Phase I | 12/6/98 12:00 PM | 12/6/98 1:00 PM | No | | | 20.5 | 15.57525 | 18.5975 | 2.76875 | 18.57525 | | |
| Phase I | 12/6/98 1:00 PM | 12/6/98 2:00 PM | Yes | | | 20.575 | 15.52525 | 17.64175 | 3.1265 | 19 | | |
| Phase I | 12/6/98 2:00 PM | 12/6/98 3:00 PM | Yes | | | 19.6505 | 14.85025 | 17.18075 | 3.15 | 22.101 | | |
| Phase I | 12/6/98 3:00 PM | 12/6/98 4:00 PM | Yes | | 19.4505 | 18.90075 | 15.52525 | 17.11325 | 3.40975 | 18.1 | | |
| Phase I | 12/6/98 4:00 PM | 12/6/98 5:00 PM | Yes | | 21.05 | 18.77525 | 14.62525 | 16.6705 | 3.78675 | 20.275 | | |
| Phase I | 12/6/98 5:00 PM | 12/6/98 6:00 PM | Yes | | 21.62525 | 17.85025 | 16.3505 | 17.07275 | 2.399 | 17.5005 | | |
| Phase I | 12/6/98 6:00 PM | 12/6/98 7:00 PM | Yes | | 21.625 | 19.92575 | 15.8255 | 16.7985 | 1.758 | 18.20025 | | |
| Phase I | 12/6/98 7:00 PM | 12/6/98 8:00 PM | Yes | | 18.80025 | 17.8755 | 17.92525 | 16.5755 | 1.99575 | 17.775 | | |
| Phase I | 12/6/98 8:00 PM | 12/6/98 9:00 PM | Yes | | 22.3005 | 18.92575 | 17.40025 | 16.529 | 2.25975 | 27.3255 | | |
| Phase I | 12/6/98 9:00 PM | 12/6/98 10:00 PM | No | | 42.0255 | 18.60075 | 15.9755 | 16.496 | 2.319 | 19.47575 | | |
| Phase I | 12/6/98 10:00 PM | 12/6/98 11:00 PM | Yes | | 21.0255 | 19.65025 | 23.25 | 16.3295 | 2.344 | 18.62575 | | |
| Phase I | 12/6/98 11:00 PM | 12/7/98 12:00 AM | Yes | | 18.3255 | 19.67525 | 15.27525 | 16.555 | 2.2855 | 17.6755 | | |
| Phase I | 12/7/98 12:00 AM | 12/7/98 1:00 AM | Yes | | 21.72575 | 19.07575 | 16.07525 | 16.46425 | 2.68375 | 17.20025 | | |
| Phase I | 12/7/98 1:00 AM | 12/7/98 2:00 AM | Yes | | 21.1505 | 19.0005 | 18.6755 | 16.1345 | 2.19975 | 18.60025 | | |
| Phase I | 12/7/98 2:00 AM | 12/7/98 3:00 AM | Yes | | 24.60025 | 18.375 | 17.5755 | 16.14625 | 1.7785 | 17.42525 | | |
| Phase I | 12/7/98 3:00 AM | 12/7/98 4:00 AM | Yes | | 17.90025 | 18.55075 | 17.05025 | 16.44725 | 2.37525 | 17.1005 | | |
| Phase I | 12/7/98 4:00 AM | 12/7/98 5:00 AM | Yes | | 20.0255 | 19.05025 | 15.375 | 16.51275 | 2.81975 | 17.275 | | |
| Phase I | 12/7/98 5:00 AM | 12/7/98 6:00 AM | Yes | | 19.625 | 19.2505 | 22.45 | 16.01575 | 2.02525 | 18.6505 | | |
| Phase I | 12/7/98 6:00 AM | 12/7/98 7:00 AM | Yes | | 19.32575 | 42.1255 | 15.9255 | 15.8955 | 1.992 | 16.25 | | |
| Phase I | 12/7/98 7:00 AM | 12/7/98 8:00 AM | No | | 17.32525 | 19.45025 | 14.275 | 15.622 | 3.302 | 19.05025 | | |
| Phase I | 12/7/98 8:00 AM | 12/7/98 9:00 AM | No | | 19 | 17.3755 | 15.95025 | 15.8105 | 4.008 | 19.7255 | | |
| Phase I | 12/7/98 9:00 AM | 12/7/98 10:00 AM | Yes | | 18.175 | 17.65025 | 17.1 | 16.31675 | 2.2595 | 16.75025 | | |
| Phase I | 12/7/98 10:00 AM | 12/7/98 11:00 AM | Yes | | 19.92525 | 17.3005 | 16.77525 | 16.2685 | 2.4505 | 17.0505 | | |
| Phase I | 12/7/98 11:00 AM | 12/7/98 12:00 PM | Yes | | 17.325 | 18.0505 | 13.67525 | 21.932 | 5.282 | 16.97525 | | |
| Phase I | 12/7/98 12:00 PM | 12/7/98 1:00 PM | Yes | | 16.57525 | 16.4005 | 14.60025 | 15.013 | 4.20325 | 17.65025 | | |
| Phase I | 12/7/98 1:00 PM | 12/7/98 2:00 PM | No | | 16.42525 | 18.7755 | 12.8 | 14.86825 | 2.265 | 16.075 | | |
| Phase I | 12/7/98 2:00 PM | 12/7/98 3:00 PM | No | | 16.87525 | 16.1755 | 12.925 | 14.4555 | 2.43425 | 18.87525 | | |
| Phase I | 12/7/98 3:00 PM | 12/7/98 4:00 PM | No | | 17.075 | 15.7505 | 14.72525 | 14.757 | 3.2655 | 15.85025 | | |
| Phase I | 12/7/98 4:00 PM | 12/7/98 5:00 PM | Yes | | 14.80025 | 20.47525 | 13.825 | 14.169 | 3.51175 | 23.10025 | | |
| Phase I | 12/7/98 5:00 PM | 12/7/98 6:00 PM | Yes | | 14.95 | 14.95025 | 11.225 | 13.83975 | 2.759 | 15.30075 | | |
| Phase I | 12/7/98 6:00 PM | 12/7/98 7:00 PM | No | | 18.40025 | 14.45025 | 11.45025 | 14.774 | 2.71 | 15.70025 | | |
| Phase I | 12/7/98 7:00 PM | 12/7/98 8:00 PM | No | | 14.80075 | 15.7505 | 12.0755 | 14.26475 | 2.2195 | 15.75025 | | |
| Phase I | 12/7/98 8:00 PM | 12/7/98 9:00 PM | Yes | | 16.55 | 14.85025 | 15.1005 | 15.026 | 1.82575 | 14.52525 | | |
| Phase I | 12/7/98 9:00 PM | 12/7/98 10:00 PM | Yes | | 15.8 | 13.95 | 14.25 | 14.155 | 2.301 | 25.0755 | | |
| Phase I | 12/7/98 10:00 PM | 12/7/98 11:00 PM | Yes | | 15.45 | 14.07525 | 11.475 | 13.59525 | 1.9135 | 14.85 | | |
| Phase I | 12/7/98 11:00 PM | 12/8/98 12:00 AM | Yes | | 15.8755 | 16.8 | 12.27525 | 13.7515 | 1.902 | 27.425 | | |
| Phase I | 12/8/98 12:00 AM | 12/8/98 1:00 AM | Yes | | 16.3255 | 14.9005 | 12.4755 | 13.67675 | 1.84025 | 16.45 | | |
| Phase I | 12/8/98 1:00 AM | 12/8/98 2:00 AM | Yes | | 17.77525 | 14.45025 | 14.8255 | 13.681 | 2.2725 | 15.2755 | | |
| Phase I | 12/8/98 2:00 AM | 12/8/98 3:00 AM | Yes | | 15.82525 | 15.525 | 12.95 | 14.45975 | 2.63725 | 13.57525 | | |
| Phase I | 12/8/98 3:00 AM | 12/8/98 4:00 AM | Yes | | 15.3005 | 15.725 | 11.40025 | 13.3965 | 2.64025 | 13.9005 | | |
| Phase I | 12/8/98 4:00 AM | 12/8/98 5:00 AM | Yes | | 14.325 | 16.52525 | 12.45 | 13.18275 | 2.091 | 14.90025 | | |
| Phase I | 12/8/98 5:00 AM | 12/8/98 6:00 AM | Yes | | 14.92525 | 15.3755 | 12.675 | 13.2505 | 1.73275 | 14 | | |
| Phase I | 12/8/98 6:00 AM | 12/8/98 7:00 AM | Yes | | 15.30075 | 13.8005 | 13.025 | 13.60775 | 2.20575 | 14.175 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/8/98 7:00 AM | 12/8/98 8:00 AM | Yes | | 13.95 | 15.65025 | 11.925 | 13.4855 | 3.584 | 14.7505 | | |
| Phase I | 12/8/98 8:00 AM | 12/8/98 9:00 AM | Yes | | 14.55025 | 13.9005 | 10.7755 | 13.167 | 2.92175 | 13.27525 | | |
| Phase I | 12/8/98 9:00 AM | 12/8/98 10:00 AM | No | | 14.375 | 13.55025 | 10.50025 | 13.131 | 1.81525 | 14.1005 | | |
| Phase I | 12/8/98 10:00 AM | 12/8/98 11:00 AM | No | | 14.17525 | 15.25025 | 9.80025 | 13.339 | 2.20825 | 18.6005 | | |
| Phase I | 12/8/98 11:00 AM | 12/8/98 12:00 PM | No | | 68.7505 | 12.62525 | 10.10025 | 13.18975 | 2.067 | 12.17525 | | |
| Phase I | 12/8/98 12:00 PM | 12/8/98 1:00 PM | No | | 15.07525 | 12.825 | 10.1005 | 12.592 | 2.5345 | 30.8255 | | |
| Phase I | 12/8/98 1:00 PM | 12/8/98 2:00 PM | No | | 12.975 | 13.7255 | 9.3505 | 12.3315 | 2.92325 | 12.70025 | | |
| Phase I | 12/8/98 2:00 PM | 12/8/98 3:00 PM | Yes | | 15.6755 | 13.275 | 10.9755 | 12.2045 | 2.58825 | 13.05025 | | |
| Phase I | 12/8/98 3:00 PM | 12/8/98 4:00 PM | No | | 13.57525 | 12.97525 | 12.975 | 12.25725 | 2.021 | 13.95025 | | |
| Phase I | 12/8/98 4:00 PM | 12/8/98 5:00 PM | Yes | | 14.5 | 12.75025 | 12.0255 | 13.34575 | 2.74425 | 14.17525 | | |
| Phase I | 12/8/98 5:00 PM | 12/8/98 6:00 PM | Yes | | 13.025 | 12.175 | 12.65 | 17.68775 | 2.705 | 14.00075 | | |
| Phase I | 12/8/98 6:00 PM | 12/8/98 7:00 PM | Yes | | 32.075 | 14.6005 | 10.675 | 18.80225 | 2.1735 | 14.80025 | | |
| Phase I | 12/8/98 7:00 PM | 12/8/98 8:00 PM | Yes | | 14.175 | 12.0255 | 9.0005 | 15.00825 | 2.0025 | 13.35025 | | |
| Phase I | 12/8/98 8:00 PM | 12/8/98 9:00 PM | Yes | | 13.25025 | 14.2 | 9.15025 | 13.954 | 1.7655 | 14.125 | | |
| Phase I | 12/8/98 9:00 PM | 12/8/98 10:00 PM | Yes | | 14.65025 | 13.375 | 10.45 | 12.96225 | 1.757 | 12.3255 | | |
| Phase I | 12/8/98 10:00 PM | 12/8/98 11:00 PM | Yes | | 14.5 | 12.475 | 9.2505 | 12.70775 | 2.2215 | 11.975 | | |
| Phase I | 12/8/98 11:00 PM | 12/9/98 12:00 AM | Yes | | 11.42525 | 10.85025 | 8.67525 | 12.517 | 2.733 | 10.75025 | | |
| Phase I | 12/9/98 12:00 AM | 12/9/98 1:00 AM | Yes | | 12.05 | 12.05025 | 9.70075 | 11.99975 | 2.46675 | 12.601 | | |
| Phase I | 12/9/98 1:00 AM | 12/9/98 2:00 AM | No | | 10.9755 | 11.65025 | 9.5 | 11.895 | 2.71725 | 11.87525 | | |
| Phase I | 12/9/98 2:00 AM | 12/9/98 3:00 AM | No | | 12.25 | 11.90025 | 9.9005 | 12.226 | 2.702 | 10.4255 | | |
| Phase I | 12/9/98 3:00 AM | 12/9/98 4:00 AM | Yes | | 12.72525 | 12.97525 | 10.05075 | 12.088 | 3.02675 | 34.8005 | | |
| Phase I | 12/9/98 4:00 AM | 12/9/98 5:00 AM | Yes | | 11.425 | 11.75025 | 8.7755 | 11.26225 | 2.33375 | 11.50025 | | |
| Phase I | 12/9/98 5:00 AM | 12/9/98 6:00 AM | No | | 12.9 | 10.25025 | 9.3 | 11.48975 | 2.545 | 11.02525 | | |
| Phase I | 12/9/98 6:00 AM | 12/9/98 7:00 AM | Yes | | 12.6 | 10.95075 | 9.2005 | 12.84375 | 2.376 | 10.55 | | |
| Phase I | 12/9/98 7:00 AM | 12/9/98 8:00 AM | Yes | | 12.50025 | 15.55075 | 12.9255 | 13.72425 | 2.43675 | 12.10025 | | |
| Phase I | 12/9/98 8:00 AM | 12/9/98 9:00 AM | Yes | | 25.8505 | 10.42525 | 8.57575 | 12.81575 | 2.00525 | 12.851 | | |
| Phase I | 12/9/98 9:00 AM | 12/9/98 10:00 AM | Yes | | 11.4755 | 9.30025 | 12.6255 | 13.273 | 2.99825 | 12.17525 | | |
| Phase I | 12/9/98 10:00 AM | 12/9/98 11:00 AM | Yes | | 10.15025 | 10.425 | 7.97575 | 11.509 | 4.06075 | 10.55 | | |
| Phase I | 12/9/98 11:00 AM | 12/9/98 12:00 PM | Yes | | 11.725 | 9.45025 | 9.05025 | 12.273 | 2.521 | 12.47525 | | |
| Phase I | 12/9/98 12:00 PM | 12/9/98 1:00 PM | No | | 10.82525 | 11.45025 | 9.25025 | 12.5545 | 2.5665 | 10.9 | | |
| Phase I | 12/9/98 1:00 PM | 12/9/98 2:00 PM | Yes | | 11.55025 | 10.07525 | 8.8255 | 12.62825 | 2.354 | 10.3005 | | |
| Phase I | 12/9/98 2:00 PM | 12/9/98 3:00 PM | Yes | | 10.375 | 10.35 | 10.201 | 13.243 | 2.015 | 9.85 | | |
| Phase I | 12/9/98 3:00 PM | 12/9/98 4:00 PM | Yes | | 21.02525 | 11.3005 | 9.05 | 12.231 | 3.0005 | 10.20075 | | |
| Phase I | 12/9/98 4:00 PM | 12/9/98 5:00 PM | Yes | | 13.65025 | 13.1255 | 15.40025 | 12.7595 | 2.64925 | 10.92525 | | |
| Phase I | 12/9/98 5:00 PM | 12/9/98 6:00 PM | Yes | | 12.325 | 11.25 | 10.57525 | 12.9065 | 2.0145 | 10.0255 | | |
| Phase I | 12/9/98 6:00 PM | 12/9/98 7:00 PM | No | | 13.475 | 13.5005 | 10.52575 | 13.8835 | 2.1945 | 10 | | |
| Phase I | 12/9/98 7:00 PM | 12/9/98 8:00 PM | Yes | | 12.4255 | 12.67525 | 10.47525 | 12.55525 | 2.0395 | 10.40025 | | |
| Phase I | 12/9/98 8:00 PM | 12/9/98 9:00 PM | Yes | | 14.5505 | 11.90025 | 8.2755 | 13.3745 | 2.0565 | 10.8505 | | |
| Phase I | 12/9/98 9:00 PM | 12/9/98 10:00 PM | Yes | | 12.8 | 13.65075 | 8.8505 | 12.70325 | 1.72825 | 10.8 | | |
| Phase I | 12/9/98 10:00 PM | 12/9/98 11:00 PM | Yes | | 13.4505 | 12.62525 | 10.45025 | 11.69775 | 1.7325 | 10.72525 | | |
| Phase I | 12/9/98 11:00 PM | 12/10/98 12:00 AM | Yes | | 14.75025 | 12.40025 | 11.6505 | 11.77275 | 2.22925 | 13.1255 | | |
| Phase I | 12/10/98 12:00 AM | 12/10/98 1:00 AM | No | | 12.6505 | 11.22525 | 10.12525 | 11.4065 | 2.9065 | 11.40075 | | |
| Phase I | 12/10/98 1:00 AM | 12/10/98 2:00 AM | Yes | | 11.7 | 11.62525 | 8.70025 | 11.721 | 7.354 | 10.97525 | | |
| Phase I | 12/10/98 2:00 AM | 12/10/98 3:00 AM | Yes | | 13.55 | 11.10025 | 13.17575 | 11.1825 | 2.8805 | 13.95025 | | |
| Phase I | 12/10/98 3:00 AM | 12/10/98 4:00 AM | Yes | | 12.32525 | 13 | 9.0255 | 10.74725 | 2.65 | 11.8755 | | |
| Phase I | 12/10/98 4:00 AM | 12/10/98 5:00 AM | Yes | | 12.05025 | 13.57525 | 13.70025 | 10.8545 | 2.5195 | 15.52525 | | |
| Phase I | 12/10/98 5:00 AM | 12/10/98 6:00 AM | Yes | | 11.60025 | 11.875 | 9.8005 | 10.6485 | 2.70225 | 11.17525 | | |
| Phase I | 12/10/98 6:00 AM | 12/10/98 7:00 AM | Yes | | 17.9 | 10.3505 | 10.02525 | 11.106 | 2.862 | 11.45025 | | |
| Phase I | 12/10/98 7:00 AM | 12/10/98 8:00 AM | Yes | | | 15.07575 | 11.1005 | 11.1495 | 2.195 | 11.32525 | | |
| Phase I | 12/10/98 8:00 AM | 12/10/98 9:00 AM | Yes | | | 11.00025 | 8.75025 | 11.01825 | 2.67925 | 14.4 | | |
| Phase I | 12/10/98 9:00 AM | 12/10/98 10:00 AM | Yes | | | 10.65025 | 9.20025 | 12.38475 | 2.336 | 13.07525 | | |
| Phase I | 12/10/98 10:00 AM | 12/10/98 11:00 AM | Yes | | | 11.30025 | 14.32525 | 11.99 | 2.04725 | 11.82525 | | |
| Phase I | 12/10/98 11:00 AM | 12/10/98 12:00 PM | No | | | 11.775 | 9.02575 | 12.1425 | 2.66975 | 10.925 | | |
| Phase I | 12/10/98 12:00 PM | 12/10/98 1:00 PM | No | | | 10.10025 | 8.60025 | 11.4015 | 3.57 | 13.35025 | | |
| Phase I | 12/10/98 1:00 PM | 12/10/98 2:00 PM | No | | | 11.50025 | 9.5255 | 11.83625 | 2.1515 | 10.47525 | | |
| Phase I | 12/10/98 2:00 PM | 12/10/98 3:00 PM | No | | | 10.8755 | 9.1 | 11.01625 | 1.782 | 10.25 | | |
| Phase I | 12/10/98 3:00 PM | 12/10/98 4:00 PM | No | | 12.05 | 13.225 | 11.15 | 10.411 | 2.02175 | 10.9255 | | |
| Phase I | 12/10/98 4:00 PM | 12/10/98 5:00 PM | No | | 13.4 | 12.22575 | 8.425 | 10.237 | 2.65675 | 10.475 | | |
| Phase I | 12/10/98 5:00 PM | 12/10/98 6:00 PM | Yes | | 11.375 | 11.17525 | 6.826 | 10.102 | 2.41375 | 11.05 | | |
| Phase I | 12/10/98 6:00 PM | 12/10/98 7:00 PM | No | | 13.42525 | 14.1005 | 7.176 | 9.91 | 2.58825 | 10.27525 | | |
| Phase I | 12/10/98 7:00 PM | 12/10/98 8:00 PM | No | | 12.27525 | 13.67525 | 8.1505 | 9.73125 | 2.263 | 11.2 | | |
| Phase I | 12/10/98 8:00 PM | 12/10/98 9:00 PM | Yes | | 13 | 12.7005 | 10.60025 | 9.7905 | 2.25525 | 13.8 | | |
| Phase I | 12/10/98 9:00 PM | 12/10/98 10:00 PM | Yes | | 12.925 | 14.0505 | 8.47525 | 10.21925 | 2.39025 | 10.85025 | | |
| Phase I | 12/10/98 10:00 PM | 12/10/98 11:00 PM | Yes | | 20.57525 | 12.15075 | 9.7255 | 10.07675 | 2.5455 | 11.2505 | | |
| Phase I | 12/10/98 11:00 PM | 12/11/98 12:00 AM | Yes | | 12.95 | 13.4755 | 11.625 | 10.536 | 2.6395 | 12.25025 | | |
| Phase I | 12/11/98 12:00 AM | 12/11/98 1:00 AM | No | | 13.22525 | | | | | | | |
| Phase I | 12/11/98 1:00 AM | 12/11/98 2:00 AM | Yes | | 13.15025 | 12.72525 | 10.3255 | 10.82325 | 2.455 | 11.25025 | | |
| Phase I | 12/11/98 2:00 AM | 12/11/98 3:00 AM | Yes | | 13.7755 | 13.50025 | 9.675 | 10.45625 | 2.74025 | 11.07525 | | |
| Phase I | 12/11/98 3:00 AM | 12/11/98 4:00 AM | No | | 14.50025 | 13.675 | 10.85025 | 10.2815 | 2.767 | 11.3005 | | |
| Phase I | 12/11/98 4:00 AM | 12/11/98 5:00 AM | Yes | | 13.225 | 13.05025 | 12.32575 | 10.5225 | 2.84475 | 11.47525 | | |
| Phase I | 12/11/98 5:00 AM | 12/11/98 6:00 AM | No | | 14.52525 | 13.9 | 11.825 | 10.683 | 2.9595 | 12.62575 | | |
| Phase I | 12/11/98 6:00 AM | 12/11/98 7:00 AM | Yes | | 15.5005 | 12.30025 | 11.4255 | 10.65025 | 3.32825 | 11.45025 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/11/98 7:00 AM | 12/11/98 8:00 AM | Yes | | 14.075 | 12.20025 | 10.35 | 10.9995 | 3.23625 | 12.575 | | |
| Phase I | 12/11/98 8:00 AM | 12/11/98 9:00 AM | Yes | | 13.1505 | 13.0505 | 20.85025 | 11.73475 | 2.86675 | 12.975 | | |
| Phase I | 12/11/98 9:00 AM | 12/11/98 10:00 AM | Yes | | 13.175 | 14.72525 | 13.2755 | 12.32475 | 2.66075 | 12.55 | | |
| Phase I | 12/11/98 10:00 AM | 12/11/98 11:00 AM | No | | 13.07525 | 13.12525 | 12.67525 | 13.016 | 3.121 | 22.45 | | |
| Phase I | 12/11/98 11:00 AM | 12/11/98 12:00 PM | Yes | | 14.025 | 13.20025 | 11.60025 | 13.1295 | 2.6405 | 12.9 | | |
| Phase I | 12/11/98 12:00 PM | 12/11/98 1:00 PM | No | | 14.82575 | 12.25025 | 10.80025 | 12.137 | 2.69 | 14.02525 | | |
| Phase I | 12/11/98 1:00 PM | 12/11/98 2:00 PM | Yes | | 17.05 | 12.55 | 10.8505 | 12.47175 | 3.249 | 13.47525 | | |
| Phase I | 12/11/98 2:00 PM | 12/11/98 3:00 PM | Yes | | 14.7255 | 18.67525 | 13.3 | 12.473 | 3.0335 | 13.025 | | |
| Phase I | 12/11/98 3:00 PM | 12/11/98 4:00 PM | Yes | | 14.27525 | 13.20025 | 12.02525 | 12.93375 | 2.4905 | 14.375 | | |
| Phase I | 12/11/98 4:00 PM | 12/11/98 5:00 PM | Yes | | 18.425 | 12.17525 | 11.775 | 12.8425 | 2.9865 | 15.05 | | |
| Phase I | 12/11/98 5:00 PM | 12/11/98 6:00 PM | Yes | | 14.175 | 12.92525 | 10.42575 | 13.7795 | 4.0525 | 12.45 | | |
| Phase I | 12/11/98 6:00 PM | 12/11/98 7:00 PM | Yes | | 13.825 | 14.45 | 12.22525 | 14.66 | 2.44325 | 16.125 | | |
| Phase I | 12/11/98 7:00 PM | 12/11/98 8:00 PM | Yes | | 13.9755 | 12.87525 | 12.7755 | 13.1645 | 4.027 | 15.0755 | | |
| Phase I | 12/11/98 8:00 PM | 12/11/98 9:00 PM | Yes | | 14.30025 | 11.975 | 11.4255 | 12.57325 | 2.9715 | 13.175 | | |
| Phase I | 12/11/98 9:00 PM | 12/11/98 10:00 PM | Yes | | 13.525 | 14.1 | 11.10025 | 11.423 | 3.44775 | 11.95025 | | |
| Phase I | 12/11/98 10:00 PM | 12/11/98 11:00 PM | Yes | | 15.9505 | 11.92525 | 13.15025 | 11.48225 | 8.47425 | 12.525 | | |
| Phase I | 12/11/98 11:00 PM | 12/12/98 12:00 AM | Yes | | 13.775 | 13.0505 | 10.175 | 11.38425 | 5.17825 | 18.27525 | | |
| Phase I | 12/12/98 12:00 AM | 12/12/98 1:00 AM | Yes | | | 13.2505 | 11.32525 | 11.51825 | 3.966 | 15.40025 | | |
| Phase I | 12/12/98 1:00 AM | 12/12/98 2:00 AM | No | | 13.75025 | 13.475 | 9.97525 | 10.896 | 3.71875 | 12.30025 | | |
| Phase I | 12/12/98 2:00 AM | 12/12/98 3:00 AM | Yes | | 15.2 | 12.2 | 12.7 | 11.04025 | 2.5055 | 11.3005 | | |
| Phase I | 12/12/98 3:00 AM | 12/12/98 4:00 AM | Yes | | 13.4755 | 12.825 | 12.1755 | 10.6305 | 2.32175 | 12.475 | | |
| Phase I | 12/12/98 4:00 AM | 12/12/98 5:00 AM | Yes | | 15.52525 | 11.475 | 9.15 | 10.79175 | 2.53175 | 12.225 | | |
| Phase I | 12/12/98 5:00 AM | 12/12/98 6:00 AM | Yes | | 14.175 | 13.3255 | 9.6005 | 11.03825 | 2.6535 | 11.50075 | | |
| Phase I | 12/12/98 6:00 AM | 12/12/98 7:00 AM | Yes | | 12.725 | 13.5005 | 14.50025 | 11.138 | 2.238 | 12.42525 | | |
| Phase I | 12/12/98 7:00 AM | 12/12/98 8:00 AM | | | 13.60025 | 14.30025 | 11.875 | 11.4055 | 4.195 | 12.6005 | | |
| Phase I | 12/12/98 8:00 AM | 12/12/98 9:00 AM | | | 12.77575 | 12.7 | 9.47525 | 11.609 | 2.60725 | 14.7 | | |
| Phase I | 12/12/98 9:00 AM | 12/12/98 10:00 AM | | | 12.50025 | 11.52525 | 16.2755 | 12.10925 | 3.30275 | 15.3 | | |
| Phase I | 12/12/98 10:00 AM | 12/12/98 11:00 AM | | | 12.92525 | 12.02525 | 9.15025 | 11.92975 | 2.7445 | 11.35025 | | |
| Phase I | 12/12/98 11:00 AM | 12/12/98 12:00 PM | | | 12.37525 | 11.575 | 10.75 | 11.87475 | 2.96475 | 12.1505 | | |
| Phase I | 12/12/98 12:00 PM | 12/12/98 1:00 PM | | | 16.075 | 11.90025 | 12.17525 | 8.19175 | 2.7155 | 10.95025 | | |
| Phase I | 12/12/98 1:00 PM | 12/12/98 2:00 PM | | | 12.15025 | 12.70025 | 12.7 | 6.1255 | 2.486 | 10.875 | | |
| Phase I | 12/12/98 2:00 PM | 12/12/98 3:00 PM | | | 12.57525 | 11.825 | 8.9505 | 5.61 | 2.46425 | 11.675 | | |
| Phase I | 12/12/98 3:00 PM | 12/12/98 4:00 PM | | | 15.25 | 13.425 | 10.45025 | 5.2 | 2.34625 | 12.05 | | |
| Phase I | 12/12/98 4:00 PM | 12/12/98 5:00 PM | | | 13.5 | 12.3 | 9.225 | 5.19225 | 1.90675 | 11.05 | | |
| Phase I | 12/12/98 5:00 PM | 12/12/98 6:00 PM | | | 12.125 | 12.32525 | 11.95 | 5.28925 | 1.80275 | 11.67525 | | |
| Phase I | 12/12/98 6:00 PM | 12/12/98 7:00 PM | | | 13.6255 | 13.7255 | 10.77525 | 5.261 | 1.56675 | 12.075 | | |
| Phase I | 12/12/98 7:00 PM | 12/12/98 8:00 PM | Yes | | 13.425 | 12.425 | 11.75025 | 5.15475 | 1.7565 | 14.1 | | |
| Phase I | 12/12/98 8:00 PM | 12/12/98 9:00 PM | Yes | | 13.625 | 12.40025 | 11.0255 | 5.09875 | 1.8035 | 12.72525 | | |
| Phase I | 12/12/98 9:00 PM | 12/12/98 10:00 PM | Yes | | 14.77525 | 14.07525 | 17.025 | 5.06825 | 1.61475 | 13.07525 | | |
| Phase I | 12/12/98 10:00 PM | 12/12/98 11:00 PM | Yes | | 13.075 | 14.525 | 10.57525 | 4.96775 | 1.57675 | 14.20025 | | |
| Phase I | 12/12/98 11:00 PM | 12/13/98 12:00 AM | Yes | | 15.17525 | 13.42525 | 14.20075 | 4.82975 | 1.988 | 15.82525 | | |
| Phase I | 12/13/98 12:00 AM | 12/13/98 1:00 AM | Yes | | 13.52525 | 11.62525 | 11.67525 | 4.716 | 1.70575 | 11.45 | | |
| Phase I | 12/13/98 1:00 AM | 12/13/98 2:00 AM | Yes | | 12.2 | 12.95 | 13.22525 | 4.6225 | 1.802 | 12.25025 | | |
| Phase I | 12/13/98 2:00 AM | 12/13/98 3:00 AM | Yes | | 13.37525 | 12.225 | 11.72525 | 4.52 | 1.63975 | 13.62525 | | |
| Phase I | 12/13/98 3:00 AM | 12/13/98 4:00 AM | Yes | | 12.10025 | 13.25 | 12.42575 | 4.47125 | 1.5925 | 13.9755 | | |
| Phase I | 12/13/98 4:00 AM | 12/13/98 5:00 AM | Yes | | 13.9755 | 12.425 | 12.65025 | 4.55125 | 1.68675 | 25.9255 | | |
| Phase I | 12/13/98 5:00 AM | 12/13/98 6:00 AM | Yes | | 13.97525 | 11.9505 | 11.8 | 4.595 | 1.69275 | 15.05025 | | |
| Phase I | 12/13/98 6:00 AM | 12/13/98 7:00 AM | Yes | | 30.95025 | 12.77525 | 13.52525 | 4.73425 | 1.69675 | 14.3755 | | |
| Phase I | 12/13/98 7:00 AM | 12/13/98 8:00 AM | Yes | | 14.125 | 12.4 | 13.675 | 4.5705 | 1.724 | 13.45 | | |
| Phase I | 12/13/98 8:00 AM | 12/13/98 9:00 AM | Yes | | 13.1 | 12.20025 | 12.95 | 13.23125 | 1.787 | 12.6 | | |
| Phase I | 12/13/98 9:00 AM | 12/13/98 10:00 AM | Yes | | 12.475 | 12.50075 | 12.3 | 18.56675 | 2.064 | 14.4 | | |
| Phase I | 12/13/98 10:00 AM | 12/13/98 11:00 AM | Yes | | 13.3505 | 12.7 | 14.9005 | 11.3275 | 1.80425 | 13.175 | | |
| Phase I | 12/13/98 11:00 AM | 12/13/98 12:00 PM | Yes | | 13.6755 | 13.3 | 14.225 | 8.9365 | 1.821 | 13.4505 | | |
| Phase I | 12/13/98 12:00 PM | 12/13/98 1:00 PM | Yes | | 14.2255 | 13.4755 | 13.15025 | 8.1535 | 1.7045 | 13.92525 | | |
| Phase I | 12/13/98 1:00 PM | 12/13/98 2:00 PM | Yes | | 15.45 | 17.22525 | 13.95025 | 8.004 | 1.82975 | 12.95 | | |
| Phase I | 12/13/98 2:00 PM | 12/13/98 3:00 PM | Yes | | 14.05 | 13.05 | 13.925 | 7.53675 | 1.8245 | 12.95075 | | |
| Phase I | 12/13/98 3:00 PM | 12/13/98 4:00 PM | Yes | | 12.5255 | 13.15 | 14.8 | 6.945 | 1.784 | 11.90025 | | |
| Phase I | 12/13/98 4:00 PM | 12/13/98 5:00 PM | No | | 13.90025 | 14.77525 | 16.025 | 6.5115 | 1.72275 | 14.6755 | | |
| Phase I | 12/13/98 5:00 PM | 12/13/98 6:00 PM | Yes | | 13.6 | 17.1755 | 11.1255 | 6.15875 | 1.83225 | 14.825 | | |
| Phase I | 12/13/98 6:00 PM | 12/13/98 7:00 PM | Yes | | 12.7005 | 13.52525 | 13.07525 | 5.9575 | 1.7485 | 13.575 | | |
| Phase I | 12/13/98 7:00 PM | 12/13/98 8:00 PM | Yes | | 15.05 | 13.675 | 12.25 | 5.754 | 1.902 | 13.2255 | | |
| Phase I | 12/13/98 8:00 PM | 12/13/98 9:00 PM | Yes | | 13.47525 | 14.67525 | 12.27525 | 5.52675 | 1.60375 | 12.275 | | |
| Phase I | 12/13/98 9:00 PM | 12/13/98 10:00 PM | Yes | | 13.75 | 15.1 | 11.575 | 5.3255 | 1.68625 | 11.60025 | | |
| Phase I | 12/13/98 10:00 PM | 12/13/98 11:00 PM | Yes | | 13.92525 | 19.47525 | 12.45 | 5.19025 | 1.6715 | 12.80025 | | |
| Phase I | 12/13/98 11:00 PM | 12/14/98 12:00 AM | Yes | | 14.35 | 14.45 | 12.80025 | 5.024 | 1.86475 | 12.0255 | | |
| Phase I | 12/14/98 12:00 AM | 12/14/98 1:00 AM | Yes | | 13.85 | 14.32525 | 12.0005 | 4.8855 | 1.7395 | 11.425 | | |
| Phase I | 12/14/98 1:00 AM | 12/14/98 2:00 AM | Yes | | 16.75 | 14.0255 | 12.8255 | 4.73875 | 1.7845 | 11.77525 | | |
| Phase I | 12/14/98 2:00 AM | 12/14/98 3:00 AM | Yes | | 15.175 | 14.55025 | 12.175 | 4.62475 | 1.7105 | 13.75025 | | |
| Phase I | 12/14/98 3:00 AM | 12/14/98 4:00 AM | Yes | | 16.22525 | 17.22525 | 11.37525 | 4.496 | 1.718 | 17.90025 | | |
| Phase I | 12/14/98 4:00 AM | 12/14/98 5:00 AM | Yes | | 15.6005 | 15.13333 | 11.42525 | 4.281 | 1.7165 | 11.725 | | |
| Phase I | 12/14/98 5:00 AM | 12/14/98 6:00 AM | Yes | | 15.5005 | | 12.12525 | 4.31 | 1.80325 | 14.27525 | | |
| Phase I | 12/14/98 6:00 AM | 12/14/98 7:00 AM | Yes | | 15.525 | | 12.6505 | 4.27675 | 2.14575 | 13.775 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/14/98 7:00 AM | 12/14/98 8:00 AM | No | | 20.35 | | 12.95 | 4.24225 | 1.87225 | 13.65025 | | |
| Phase I | 12/14/98 8:00 AM | 12/14/98 9:00 AM | Yes | | 15.45 | 15.85025 | 12.325 | 4.0165 | 1.865 | 12.975 | | |
| Phase I | 12/14/98 9:00 AM | 12/14/98 10:00 AM | Yes | | 18.275 | 16.9005 | 13.07525 | 4.06775 | 2.054 | 13 | | |
| Phase I | 12/14/98 10:00 AM | 12/14/98 11:00 AM | No | | 18.5505 | 16.82525 | 13.725 | 4.406 | 2.17125 | 14.95 | | |
| Phase I | 12/14/98 11:00 AM | 12/14/98 12:00 PM | No | | 15.9005 | 17.175 | 12.62525 | 4.81725 | 2.36 | 14.825 | | |
| Phase I | 12/14/98 12:00 PM | 12/14/98 1:00 PM | No | | 19.15025 | 15.7 | 14.15025 | 4.3345 | 2.19075 | 14.47575 | | |
| Phase I | 12/14/98 1:00 PM | 12/14/98 2:00 PM | No | | 16.07525 | 13.82525 | 12.12525 | 4.07175 | 2.445 | 13.475 | | |
| Phase I | 12/14/98 2:00 PM | 12/14/98 3:00 PM | Yes | | 14.8 | 13.725 | 12.9255 | 4.4695 | 2.25575 | 14.825 | | |
| Phase I | 12/14/98 3:00 PM | 12/14/98 4:00 PM | Yes | | 15.2755 | 18.55 | 12.05 | 4.45425 | 1.8045 | 14.2755 | | |
| Phase I | 12/14/98 4:00 PM | 12/14/98 5:00 PM | Yes | | 16.15025 | 14.30025 | 15.07525 | 4.42675 | 1.8765 | 16.27525 | | |
| Phase I | 12/14/98 5:00 PM | 12/14/98 6:00 PM | Yes | | 15.25 | 13.9755 | 12.325 | 4.385 | 1.7365 | 14.375 | | |
| Phase I | 12/14/98 6:00 PM | 12/14/98 7:00 PM | Yes | | 15.5005 | 13.425 | 13.3505 | 4.543 | 1.73125 | 13.6005 | | |
| Phase I | 12/14/98 7:00 PM | 12/14/98 8:00 PM | No | | 17.65 | 15.1755 | 14.6255 | 4.63075 | 1.7395 | 16.17525 | | |
| Phase I | 12/14/98 8:00 PM | 12/14/98 9:00 PM | No | | 14.851 | 14.175 | 12.7005 | 4.5495 | 1.6645 | 16.27525 | | |
| Phase I | 12/14/98 9:00 PM | 12/14/98 10:00 PM | Yes | | 14.22525 | 23.80025 | 12.1505 | 4.6755 | 1.832 | 14.7005 | | |
| Phase I | 12/14/98 10:00 PM | 12/14/98 11:00 PM | Yes | | 15.6 | 15.25025 | 14.2 | 4.6255 | 1.71125 | 14.97525 | | |
| Phase I | 12/14/98 11:00 PM | 12/15/98 12:00 AM | No | | 17.65025 | 17.225 | 13.725 | 4.4785 | 1.60925 | 15.825 | | |
| Phase I | 12/15/98 12:00 AM | 12/15/98 1:00 AM | No | | 17.6 | 16.325 | 14.5505 | 4.599 | 1.7305 | 14.02525 | | |
| Phase I | 12/15/98 1:00 AM | 12/15/98 2:00 AM | No | | 15.67525 | 14.95 | 12.625 | 4.66825 | 1.74 | 15.2505 | | |
| Phase I | 12/15/98 2:00 AM | 12/15/98 3:00 AM | Yes | | 21.17525 | 14.6005 | 15.8505 | 4.4415 | 1.788 | 15.175 | | |
| Phase I | 12/15/98 3:00 AM | 12/15/98 4:00 AM | Yes | | 15.07525 | 15.225 | 12.47525 | 4.263 | 1.735 | 16.40025 | | |
| Phase I | 12/15/98 4:00 AM | 12/15/98 5:00 AM | Yes | | 15.7255 | 14.13367 | 15.20025 | 4.24425 | 1.6855 | 16.8255 | | |
| Phase I | 12/15/98 5:00 AM | 12/15/98 6:00 AM | Yes | | 14.4255 | | 15.6 | 4.096 | 1.74325 | 13.72525 | | |
| Phase I | 12/15/98 6:00 AM | 12/15/98 7:00 AM | Yes | | 15.17525 | | 17.22525 | 4.14 | 1.598 | 14.52525 | | |
| Phase I | 12/15/98 7:00 AM | 12/15/98 8:00 AM | No | | 15.02525 | | 13.27575 | 4.1045 | 1.62775 | 14.80025 | | |
| Phase I | 12/15/98 8:00 AM | 12/15/98 9:00 AM | Yes | | 27.67525 | 14.367 | 13.225 | 4.1295 | 1.7645 | 13.82525 | | |
| Phase I | 12/15/98 9:00 AM | 12/15/98 10:00 AM | Yes | | 22.8505 | 15.50025 | 12.80025 | 4.1035 | 1.976 | 13.85 | | |
| Phase I | 12/15/98 10:00 AM | 12/15/98 11:00 AM | No | | 16.07525 | 15.925 | 14.70075 | 4.66175 | 1.896 | 14.62575 | | |
| Phase I | 12/15/98 11:00 AM | 12/15/98 12:00 PM | Yes | | 15.17525 | 14.95025 | 14.22525 | 5.39975 | 1.94725 | 13.3 | | |
| Phase I | 12/15/98 12:00 PM | 12/15/98 1:00 PM | Yes | | 15.2255 | 14.7255 | 14.975 | 4.335 | 2.955 | 15.45025 | | |
| Phase I | 12/15/98 1:00 PM | 12/15/98 2:00 PM | No | | 16.32575 | 15.5005 | 15.07525 | 4.578 | 2.71 | 17.67575 | | |
| Phase I | 12/15/98 2:00 PM | 12/15/98 3:00 PM | Yes | | 15.851 | 16.45025 | 13.05025 | 4.2845 | 3.6355 | 14.95025 | | |
| Phase I | 12/15/98 3:00 PM | 12/15/98 4:00 PM | Yes | | 16.5755 | 17.1255 | 13.9 | 4.41275 | 2.84825 | 14.97525 | | |
| Phase I | 12/15/98 4:00 PM | 12/15/98 5:00 PM | Yes | | 16.65 | 19.92575 | 15.20075 | 4.48525 | 2.88525 | 12.9005 | | |
| Phase I | 12/15/98 5:00 PM | 12/15/98 6:00 PM | Yes | | 18.22525 | 18.02525 | 17.2 | 4.26875 | 2.9595 | 13.62525 | | |
| Phase I | 12/15/98 6:00 PM | 12/15/98 7:00 PM | Yes | | 23.7005 | 19.62575 | 17.05 | 4.3405 | 2.18075 | 16.375 | | |
| Phase I | 12/15/98 7:00 PM | 12/15/98 8:00 PM | Yes | | 17.12525 | 17.72525 | 17.95025 | 4.14475 | 2.4535 | 15.42525 | | |
| Phase I | 12/15/98 8:00 PM | 12/15/98 9:00 PM | Yes | | 20.276 | 20.2255 | 18.3005 | 4.13175 | 2.411 | 15.82575 | | |
| Phase I | 12/15/98 9:00 PM | 12/15/98 10:00 PM | No | | 19.5 | 20.275 | 17.75075 | 3.93075 | 2.44825 | 16.05 | | |
| Phase I | 12/15/98 10:00 PM | 12/15/98 11:00 PM | Yes | | 20.60075 | 20.50075 | 16.55025 | 3.8455 | 2.293 | 15.45 | | |
| Phase I | 12/15/98 11:00 PM | 12/16/98 12:00 AM | Yes | | 22.07525 | 21.3255 | 16.1255 | 3.62875 | 2.6785 | 16.87525 | | |
| Phase I | 12/16/98 12:00 AM | 12/16/98 1:00 AM | Yes | | 22.4005 | 19.37575 | 19.1755 | 14.12775 | 2.89775 | 16.7755 | | |
| Phase I | 12/16/98 1:00 AM | 12/16/98 2:00 AM | Yes | | 20.9255 | 19.5255 | 18.5505 | 15.153 | 2.512 | 17.15 | | |
| Phase I | 12/16/98 2:00 AM | 12/16/98 3:00 AM | Yes | | 22.30025 | 21.526 | 18.72575 | 14.59325 | 2.22875 | 18.57525 | | |
| Phase I | 12/16/98 3:00 AM | 12/16/98 4:00 AM | Yes | | 22.175 | 21.97575 | 18.475 | 15.0685 | 2.0735 | 18.65025 | | |
| Phase I | 12/16/98 4:00 AM | 12/16/98 5:00 AM | Yes | | 22.85 | 20.17525 | 17.15 | 14.3605 | 2.13175 | 18.47575 | | |
| Phase I | 12/16/98 5:00 AM | 12/16/98 6:00 AM | Yes | | 20.3005 | | 18.47525 | 13.84975 | 2.26225 | 17.32575 | | |
| Phase I | 12/16/98 6:00 AM | 12/16/98 7:00 AM | Yes | | 20.85025 | | 20.9005 | 14.878 | 2.49825 | 18.62525 | | |
| Phase I | 12/16/98 7:00 AM | 12/16/98 8:00 AM | Yes | | 21.57525 | | 18.4005 | 15.29175 | 2.39975 | 17.95025 | | |
| Phase I | 12/16/98 8:00 AM | 12/16/98 9:00 AM | Yes | | 20.075 | | 19.0005 | 15.1815 | 2.727 | 18.5505 | | |
| Phase I | 12/16/98 9:00 AM | 12/16/98 10:00 AM | No | | 21.0255 | 19.434 | 20.10025 | 14.7615 | 3.35475 | 17.70075 | | |
| Phase I | 12/16/98 10:00 AM | 12/16/98 11:00 AM | No | | 21.5755 | 20.07575 | 19.37575 | 15.45725 | 3.2525 | 18.0505 | | |
| Phase I | 12/16/98 11:00 AM | 12/16/98 12:00 PM | Yes | | 20.275 | 18.875 | 18.57525 | 14.13575 | 3.82375 | 17.9005 | | |
| Phase I | 12/16/98 12:00 PM | 12/16/98 1:00 PM | Yes | | 20.025 | 18.9505 | 19.776 | 13.27575 | 2.88125 | 18.95025 | | |
| Phase I | 12/16/98 1:00 PM | 12/16/98 2:00 PM | Yes | | 20.725 | 20.57525 | 17.10025 | 13.75925 | 2.50875 | 19.30075 | | |
| Phase I | 12/16/98 2:00 PM | 12/16/98 3:00 PM | No | | 20.62575 | 20.25075 | 19.825 | 15.3225 | 2.55625 | 18.95025 | | |
| Phase I | 12/16/98 3:00 PM | 12/16/98 4:00 PM | Yes | | 18.5255 | 19 | 18.151 | 15.92275 | 2.94275 | 20.12525 | | |
| Phase I | 12/16/98 4:00 PM | 12/16/98 5:00 PM | Yes | | 19.525 | 21.60075 | 18.25 | 14.46575 | 2.5585 | 18.1005 | | |
| Phase I | 12/16/98 5:00 PM | 12/16/98 6:00 PM | Yes | | 22.70025 | | 18.35 | 14.413 | 2.199 | 17.62525 | | |
| Phase I | 12/16/98 6:00 PM | 12/16/98 7:00 PM | Yes | | 19.10075 | | 16.80025 | 14.08225 | 2.1275 | 18.35025 | | |
| Phase I | 12/16/98 7:00 PM | 12/16/98 8:00 PM | No | | 18.5755 | | 16.12525 | 13.72475 | 2.57 | 21.57575 | | |
| Phase I | 12/16/98 8:00 PM | 12/16/98 9:00 PM | No | | 21.225 | | 17.00025 | 14.52725 | 2.795 | 16.07525 | | |
| Phase I | 12/16/98 9:00 PM | 12/16/98 10:00 PM | Yes | | 17.95025 | | 14.15 | 12.87625 | 3.29425 | 16.37525 | | |
| Phase I | 12/16/98 10:00 PM | 12/16/98 11:00 PM | Yes | | 19.92525 | | 13.6 | 12.6405 | 7.68225 | 16.27525 | | |
| Phase I | 12/16/98 11:00 PM | 12/17/98 12:00 AM | Yes | | 24.5755 | | 12.775 | 12.2205 | 7.8485 | 17.25025 | | |
| Phase I | 12/17/98 12:00 AM | 12/17/98 1:00 AM | Yes | | 18.8005 | | 11.25025 | 12.47175 | 10.7385 | 16.2505 | | |
| Phase I | 12/17/98 1:00 AM | 12/17/98 2:00 AM | No | | 18.8755 | | 11.62525 | 12.36375 | 7.79075 | 16.0255 | | |
| Phase I | 12/17/98 2:00 AM | 12/17/98 3:00 AM | Yes | | 19.20075 | | 13.575 | 13.04325 | 3.059 | 16.825 | | |
| Phase I | 12/17/98 3:00 AM | 12/17/98 4:00 AM | Yes | | 18.125 | | 14.3005 | 12.22275 | 3.12175 | 14.45 | | |
| Phase I | 12/17/98 4:00 AM | 12/17/98 5:00 AM | Yes | | 19.60075 | | 13.97525 | 11.98825 | 2.67425 | 16.35 | | |
| Phase I | 12/17/98 5:00 AM | 12/17/98 6:00 AM | No | | 19.6505 | | 14.92525 | 12.73125 | 2.72275 | 15.97525 | | |
| Phase I | 12/17/98 6:00 AM | 12/17/98 7:00 AM | No | | 17.675 | | 17.50025 | 13.26175 | 3.35175 | 14.82525 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/17/98 7:00 AM | 12/17/98 8:00 AM | Yes | | 19.95 | | 14.35 | 12.58875 | 3.031 | 15.475 | | |
| Phase I | 12/17/98 8:00 AM | 12/17/98 9:00 AM | Yes | | 18.6255 | 18.0005 | 13.62525 | 11.94525 | 2.738 | 15.3505 | | |
| Phase I | 12/17/98 9:00 AM | 12/17/98 10:00 AM | No | | 19.12525 | 17.9005 | 16.72575 | 12.68875 | 3.21275 | 17.47525 | | |
| Phase I | 12/17/98 10:00 AM | 12/17/98 11:00 AM | Yes | | 18.95 | 21.6005 | 17.52525 | 13.576 | 3.22425 | 19.025 | | |
| Phase I | 12/17/98 11:00 AM | 12/17/98 12:00 PM | Yes | | 18.9255 | 19.35025 | 16.57525 | 15.1885 | 3.83875 | 19.2755 | | |
| Phase I | 12/17/98 12:00 PM | 12/17/98 1:00 PM | Yes | | 18.82525 | 17.2505 | 16.05025 | 15.1185 | 4.8045 | 19.075 | | |
| Phase I | 12/17/98 1:00 PM | 12/17/98 2:00 PM | Yes | | 19.22575 | 17.77525 | 17.65025 | 15.843 | 3.4255 | 18.37575 | | |
| Phase I | 12/17/98 2:00 PM | 12/17/98 3:00 PM | Yes | | 19.1505 | 17.4755 | 16.17525 | 15.51175 | 2.29075 | 17.526 | | |
| Phase I | 12/17/98 3:00 PM | 12/17/98 4:00 PM | Yes | | 19.6255 | 17.60075 | 15.25025 | 14.749 | 2.1635 | 19.07575 | | |
| Phase I | 12/17/98 4:00 PM | 12/17/98 5:00 PM | Yes | | 18.25025 | 19.2005 | 16.52575 | 13.91625 | 1.95425 | 19.376 | | |
| Phase I | 12/17/98 5:00 PM | 12/17/98 6:00 PM | Yes | | 19.20075 | 16.9755 | 15.6005 | 14.7935 | 1.62075 | 19.42525 | | |
| Phase I | 12/17/98 6:00 PM | 12/17/98 7:00 PM | Yes | | 18.37525 | 16.9255 | 17.75 | 12.5705 | 2.65025 | 17.425 | | |
| Phase I | 12/17/98 7:00 PM | 12/17/98 8:00 PM | Yes | | 18.5255 | 17.5505 | 15.05025 | 13.0405 | 1.7925 | 19.07575 | | |
| Phase I | 12/17/98 8:00 PM | 12/17/98 9:00 PM | Yes | | 18.4255 | 17.775 | 19.025 | 13.184 | 1.81775 | 22.3 | | |
| Phase I | 12/17/98 9:00 PM | 12/17/98 10:00 PM | No | | 18.92525 | 15.70025 | 17.87525 | 12.79875 | 7.58225 | 18.15025 | | |
| Phase I | 12/17/98 10:00 PM | 12/17/98 11:00 PM | Yes | | 18.325 | 17.40025 | 15.67525 | 13.1345 | 9.38825 | 17.77575 | | |
| Phase I | 12/17/98 11:00 PM | 12/18/98 12:00 AM | Yes | | 17.2505 | 17.1005 | 15.575 | 12.4095 | 4.496 | 17.20075 | | |
| Phase I | 12/18/98 12:00 AM | 12/18/98 1:00 AM | No | | 18.6005 | 16.601 | 15.7505 | 12.07575 | 2.35625 | 17.7255 | | |
| Phase I | 12/18/98 1:00 AM | 12/18/98 2:00 AM | Yes | | 17.3 | | 15.35 | 12.80825 | 2.23125 | 16.82525 | | |
| Phase I | 12/18/98 2:00 AM | 12/18/98 3:00 AM | Yes | | 19 | | 13.976 | 12.23075 | 2.09225 | 17.12525 | | |
| Phase I | 12/18/98 3:00 AM | 12/18/98 4:00 AM | No | | 18.2255 | | 18.3755 | 12.4325 | 2.00375 | 16.57575 | | |
| Phase I | 12/18/98 4:00 AM | 12/18/98 5:00 AM | Yes | | 20.15075 | | 18.45025 | 13.0665 | 2.33 | 17.9005 | | |
| Phase I | 12/18/98 5:00 AM | 12/18/98 6:00 AM | Yes | | 45.05075 | | 15.37525 | 11.86575 | 2.14 | 17.9005 | | |
| Phase I | 12/18/98 6:00 AM | 12/18/98 7:00 AM | Yes | | 18 | | 16.80025 | 12.5945 | 2.08525 | 18.77525 | | |
| Phase I | 12/18/98 7:00 AM | 12/18/98 8:00 AM | Yes | | 18.7505 | | 19.7255 | 12.68725 | 1.952 | 17.07575 | | |
| Phase I | 12/18/98 8:00 AM | 12/18/98 9:00 AM | Yes | | 18.5505 | | 17.3 | 12.26775 | 3.8605 | 18.60025 | | |
| Phase I | 12/18/98 9:00 AM | 12/18/98 10:00 AM | Yes | | 18.2755 | 16.73333 | 16.57525 | 13.36875 | 12.61875 | 24.52525 | | |
| Phase I | 12/18/98 10:00 AM | 12/18/98 11:00 AM | Yes | | 18.20075 | 17.67525 | 15.95075 | 14.17025 | 4.077 | 18.25075 | | |
| Phase I | 12/18/98 11:00 AM | 12/18/98 12:00 PM | Yes | | 17.97575 | 17.3755 | 16.1255 | 15.69 | 1.59575 | 17.30025 | | |
| Phase I | 12/18/98 12:00 PM | 12/18/98 1:00 PM | No | | 17.20075 | 17.52525 | 13.825 | 14.99525 | 1.747 | 18.85025 | | |
| Phase I | 12/18/98 1:00 PM | 12/18/98 2:00 PM | Yes | | 17.325 | 17.2 | 15.375 | 15.56525 | 2.7425 | 17.175 | | |
| Phase I | 12/18/98 2:00 PM | 12/18/98 3:00 PM | Yes | | 17.7755 | 16.1005 | 14.25 | 15.003 | 0.4425 | 18.8005 | | |
| Phase I | 12/18/98 3:00 PM | 12/18/98 4:00 PM | Yes | | 17.57575 | | 13.95075 | 15.804 | 0.791 | 17.176 | | |
| Phase I | 12/18/98 4:00 PM | 12/18/98 5:00 PM | Yes | | 17.57575 | | 13.475 | 15.726 | 1.699 | 17.3 | | |
| Phase I | 12/18/98 5:00 PM | 12/18/98 6:00 PM | Yes | | 16.625 | | 13.0505 | 14.63675 | 1.22725 | 17.97525 | | |
| Phase I | 12/18/98 6:00 PM | 12/18/98 7:00 PM | Yes | | 15.1505 | | 14.4255 | 12.879 | 0.6665 | 16.975 | | |
| Phase I | 12/18/98 7:00 PM | 12/18/98 8:00 PM | No | | 16.625 | | 11.8 | 13.0515 | 3.20825 | 14.8005 | | |
| Phase I | 12/18/98 8:00 PM | 12/18/98 9:00 PM | No | | 14.30025 | | 14.12525 | 16.501 | 3.0685 | 16.32525 | | |
| Phase I | 12/18/98 9:00 PM | 12/18/98 10:00 PM | Yes | | 13.85025 | | 11.275 | 14.05525 | 2.51875 | 14.70025 | | |
| Phase I | 12/18/98 10:00 PM | 12/18/98 11:00 PM | Yes | | 15.5 | | 8.87525 | 11.8785 | 2.337 | 15.72525 | | |
| Phase I | 12/18/98 11:00 PM | 12/19/98 12:00 AM | Yes | | 16.65075 | | 9.70025 | 12.06425 | 1.94375 | 15.45 | | |
| Phase I | 12/19/98 12:00 AM | 12/19/98 1:00 AM | Yes | | 14.87525 | | 9.50025 | 11.89775 | 1.62025 | 13.42525 | | |
| Phase I | 12/19/98 1:00 AM | 12/19/98 2:00 AM | Yes | | 14.95025 | | 7.8005 | 10.832 | 0.93625 | 14.5755 | | |
| Phase I | 12/19/98 2:00 AM | 12/19/98 3:00 AM | Yes | | 15.77525 | | 9.85025 | 10.98075 | 0.94375 | 14.325 | | |
| Phase I | 12/19/98 3:00 AM | 12/19/98 4:00 AM | Yes | | 14.4 | | 9.20025 | 10.5205 | 1.26275 | 13.675 | | |
| Phase I | 12/19/98 4:00 AM | 12/19/98 5:00 AM | Yes | | 16.35025 | | 10.4505 | 10.09825 | 1.436 | 14.77525 | | |
| Phase I | 12/19/98 5:00 AM | 12/19/98 6:00 AM | Yes | | 17.92525 | | 10.2 | 10.18325 | 1.18175 | 14.8755 | | |
| Phase I | 12/19/98 6:00 AM | 12/19/98 7:00 AM | Yes | | 19.47525 | | 13.85 | 11.011 | 0.75825 | 14.92525 | | |
| Phase I | 12/19/98 7:00 AM | 12/19/98 8:00 AM | No | | 20.9005 | | 11.125 | 8.72525 | 0.97975 | 17.2755 | | |
| Phase I | 12/19/98 8:00 AM | 12/19/98 9:00 AM | Yes | | 17.925 | | 11.6 | 11.66375 | 0.658 | 15.90025 | | |
| Phase I | 12/19/98 9:00 AM | 12/19/98 10:00 AM | Yes | | 18.4255 | | 13.175 | 11.4355 | 0.5885 | 16.8 | | |
| Phase I | 12/19/98 10:00 AM | 12/19/98 11:00 AM | No | | 17.1505 | 16.8 | 11.4005 | 11.5985 | 0.64 | 17.0505 | | |
| Phase I | 12/19/98 11:00 AM | 12/19/98 12:00 PM | Yes | | 17.32575 | 19.3005 | 13.10025 | 13.152 | 0.5125 | 19.10025 | | |
| Phase I | 12/19/98 12:00 PM | 12/19/98 1:00 PM | No | | 19.375 | 19.6505 | 11.77525 | 12.33675 | 0.29125 | 18.6505 | | |
| Phase I | 12/19/98 1:00 PM | 12/19/98 2:00 PM | Yes | | 20.92575 | 21.60025 | 13.475 | 12.744 | 0.7885 | 18.025 | | |
| Phase I | 12/19/98 2:00 PM | 12/19/98 3:00 PM | Yes | | 20.1505 | 22.425 | 12.3 | 12.60725 | 0.95375 | 19.125 | | |
| Phase I | 12/19/98 3:00 PM | 12/19/98 4:00 PM | No | | 23.9755 | 24.10025 | 14.3 | 13.9335 | 0.9735 | 17.7255 | | |
| Phase I | 12/19/98 4:00 PM | 12/19/98 5:00 PM | No | | 22.77525 | 25.1755 | 13.225 | 14.821 | 0.7005 | 19.2505 | | |
| Phase I | 12/19/98 5:00 PM | 12/19/98 6:00 PM | Yes | | 24.85075 | 25.95025 | 14.0505 | 13.44475 | 0.7215 | 20.87525 | | |
| Phase I | 12/19/98 6:00 PM | 12/19/98 7:00 PM | Yes | | 25.65025 | 25.6255 | 21.625 | 13.382 | 1.26425 | 19.6505 | | |
| Phase I | 12/19/98 7:00 PM | 12/19/98 8:00 PM | Yes | | 25.125 | 27.77525 | 22.65025 | 13.85525 | 1.4535 | 19.97575 | | |
| Phase I | 12/19/98 8:00 PM | 12/19/98 9:00 PM | Yes | | 25.1755 | 29.32525 | 22.726 | 14.39975 | 1.3265 | 21.30025 | | |
| Phase I | 12/19/98 9:00 PM | 12/19/98 10:00 PM | Yes | | 25.37525 | 26.6755 | 20.7505 | 14.48925 | 0.47625 | 22.20025 | | |
| Phase I | 12/19/98 10:00 PM | 12/19/98 11:00 PM | No | | 26.9 | 28.7755 | 25.65 | 15.5015 | 0.77325 | 22.5005 | | |
| Phase I | 12/19/98 11:00 PM | 12/20/98 12:00 AM | No | | | 24.42525 | 20.40025 | 15.63525 | 0.74125 | 24.25025 | | |
| Phase I | 12/20/98 12:00 AM | 12/20/98 1:00 AM | No | | | 26.35075 | 23.95075 | 15.68575 | 0.712 | 21.75025 | | |
| Phase I | 12/20/98 1:00 AM | 12/20/98 2:00 AM | Yes | | | 28.725 | 22.9 | 15.41075 | 0.3105 | 23.1255 | | |
| Phase I | 12/20/98 2:00 AM | 12/20/98 3:00 AM | Yes | | | 25.77575 | 25.37525 | 15.577 | 0.2875 | 25.47575 | | |
| Phase I | 12/20/98 3:00 AM | 12/20/98 4:00 AM | No | | | 28.7255 | 21.65025 | 15.60125 | 0.275 | 26.375 | | |
| Phase I | 12/20/98 4:00 AM | 12/20/98 5:00 AM | No | | | 26.8005 | 22.5255 | 16.10025 | 0.29625 | 24.20025 | | |
| Phase I | 12/20/98 5:00 AM | 12/20/98 6:00 AM | Yes | | | 28.9005 | 22.55075 | 16.193 | 0.307 | 25.10025 | | |
| Phase I | 12/20/98 6:00 AM | 12/20/98 7:00 AM | No | | | 25.4255 | 21.5005 | 15.9305 | 0.295 | 24.37575 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/20/98 7:00 AM | 12/20/98 8:00 AM | No | | | 26.55 | 21.0255 | 15.8075 | 0.31175 | 21.2255 | | |
| Phase I | 12/20/98 8:00 AM | 12/20/98 9:00 AM | No | | | 30.72525 | 22.2005 | 15.83275 | 0.2945 | 29.52525 | | |
| Phase I | 12/20/98 9:00 AM | 12/20/98 10:00 AM | Yes | | 26 | 25.001 | 23.4005 | 15.5425 | 0.548 | 23.775 | | |
| Phase I | 12/20/98 10:00 AM | 12/20/98 11:00 AM | No | | 25.12525 | 23.95 | 19.95025 | 15.4235 | 0.41925 | 26.3755 | | |
| Phase I | 12/20/98 11:00 AM | 12/20/98 12:00 PM | Yes | | 27.35075 | 23.6005 | 22.22525 | 15.91775 | 0.4215 | 24.60075 | | |
| Phase I | 12/20/98 12:00 PM | 12/20/98 1:00 PM | Yes | | 24.92525 | 24.9505 | 21.67525 | 16.109 | 1.08975 | 23.30025 | | |
| Phase I | 12/20/98 1:00 PM | 12/20/98 2:00 PM | No | | 24.82525 | 25.17575 | 20.8 | 15.76775 | 1.001 | 24.55 | | |
| Phase I | 12/20/98 2:00 PM | 12/20/98 3:00 PM | No | | 31.82525 | 24.2255 | 21.90025 | 15.786 | 0.65525 | 22.275 | | |
| Phase I | 12/20/98 3:00 PM | 12/20/98 4:00 PM | Yes | | 25.22575 | 24.0505 | 20.9005 | 15.71725 | 0.495 | 22.0505 | | |
| Phase I | 12/20/98 4:00 PM | 12/20/98 5:00 PM | No | | 25.551 | 27.70025 | 21.07525 | 15.155 | 1.40725 | 24.425 | | |
| Phase I | 12/20/98 5:00 PM | 12/20/98 6:00 PM | Yes | | 23.72525 | 23.1 | 19.40025 | 14.95875 | 1.32075 | 23.85025 | | |
| Phase I | 12/20/98 6:00 PM | 12/20/98 7:00 PM | No | | 23.82525 | 24.95025 | 20.4505 | 15.452 | 1.18125 | 24.20025 | | |
| Phase I | 12/20/98 7:00 PM | 12/20/98 8:00 PM | Yes | | 25.22575 | 23.2755 | 19.57525 | 15.12775 | 1.88575 | 27.6005 | | |
| Phase I | 12/20/98 8:00 PM | 12/20/98 9:00 PM | Yes | | 25.07525 | 24.62575 | 21.37575 | 15.264 | 0.70025 | 23.2755 | | |
| Phase I | 12/20/98 9:00 PM | 12/20/98 10:00 PM | Yes | | 23.82575 | 26.02525 | 16.9005 | 15.21475 | 0.53675 | 24.9755 | | |
| Phase I | 12/20/98 10:00 PM | 12/20/98 11:00 PM | Yes | | 35.1505 | 28.6255 | 17.25 | 14.61975 | 0.7175 | 27.7255 | | |
| Phase I | 12/20/98 11:00 PM | 12/21/98 12:00 AM | No | | 24.9505 | 25.5505 | 15.37525 | 14.38075 | 0.66025 | 23.25075 | | |
| Phase I | 12/21/98 12:00 AM | 12/21/98 1:00 AM | Yes | | 31.10025 | 23.45025 | 15.02525 | 14.83225 | 0.6085 | 22.37575 | | |
| Phase I | 12/21/98 1:00 AM | 12/21/98 2:00 AM | Yes | | 29.42525 | 22.625 | 16.25 | 14.8055 | 0.663 | 24.775 | | |
| Phase I | 12/21/98 2:00 AM | 12/21/98 3:00 AM | No | | 29.25075 | 24.0005 | 16.75 | 14.317 | 0.54875 | 22.90025 | | |
| Phase I | 12/21/98 3:00 AM | 12/21/98 4:00 AM | No | | 24.02575 | 29.25025 | 16.47525 | 14.3675 | 0.344 | 22.6505 | | |
| Phase I | 12/21/98 4:00 AM | 12/21/98 5:00 AM | Yes | | 24.675 | 24.7755 | 16.72525 | 14.0855 | 0.3475 | 23.10075 | | |
| Phase I | 12/21/98 5:00 AM | 12/21/98 6:00 AM | No | | 23.60025 | 22.025 | 16.05 | 14.1055 | 0.56925 | 23.40025 | | |
| Phase I | 12/21/98 6:00 AM | 12/21/98 7:00 AM | No | | 21.65 | 23.87525 | 18.6505 | 14.29125 | 0.7295 | 22.02525 | | |
| Phase I | 12/21/98 7:00 AM | 12/21/98 8:00 AM | Yes | | 20.27575 | 21.77525 | 17.3755 | 14.575 | 0.477 | 23.7505 | | |
| Phase I | 12/21/98 8:00 AM | 12/21/98 9:00 AM | Yes | | 23.67525 | 22.47525 | 20.5255 | 14.0845 | 1.85575 | 23.35025 | | |
| Phase I | 12/21/98 9:00 AM | 12/21/98 10:00 AM | Yes | | 22.375 | 20.35025 | 20.475 | 16.0535 | 1.7515 | 24.15075 | | |
| Phase I | 12/21/98 10:00 AM | 12/21/98 11:00 AM | Yes | | 22.4255 | 20.4755 | 20.4005 | 15.61425 | 2.413 | 23.05025 | | |
| Phase I | 12/21/98 11:00 AM | 12/21/98 12:00 PM | No | | 21.6255 | 20 | 19.92575 | 15.668 | 3.5835 | 22.52525 | | |
| Phase I | 12/21/98 12:00 PM | 12/21/98 1:00 PM | Yes | | 22.85025 | 21.1755 | 18.87575 | 14.91925 | 4.16675 | 22.05 | | |
| Phase I | 12/21/98 1:00 PM | 12/21/98 2:00 PM | No | | 23.07575 | 19.65 | 19.32525 | 14.1785 | 5.52525 | 22.525 | | |
| Phase I | 12/21/98 2:00 PM | 12/21/98 3:00 PM | No | | 21.4255 | 20.6005 | 19.3505 | 15.9015 | 2.8015 | 22.4255 | | |
| Phase I | 12/21/98 3:00 PM | 12/21/98 4:00 PM | No | | 21.8755 | 23.87525 | 17.12525 | 15.19475 | 3.59775 | 22.3005 | | |
| Phase I | 12/21/98 4:00 PM | 12/21/98 5:00 PM | No | | 22.55 | 24.0255 | 17.75025 | 13.5475 | 3.183 | 24.575 | | |
| Phase I | 12/21/98 5:00 PM | 12/21/98 6:00 PM | Yes | | 20.1255 | 18.30025 | 18.25025 | 13.37425 | 2.26825 | 23.1 | | |
| Phase I | 12/21/98 6:00 PM | 12/21/98 7:00 PM | Yes | | 19.3505 | 21.525 | 19.2255 | 14.39525 | 1.61325 | 21.75025 | | |
| Phase I | 12/21/98 7:00 PM | 12/21/98 8:00 PM | No | | 20.2505 | 18.82575 | 16.8505 | 15.136 | 1.1745 | 22.475 | | |
| Phase I | 12/21/98 8:00 PM | 12/21/98 9:00 PM | No | | 20.1755 | 19.375 | 17.3505 | 15.41475 | 1.0535 | 21.90075 | | |
| Phase I | 12/21/98 9:00 PM | 12/21/98 10:00 PM | Yes | | 19.42525 | 18.12525 | 17.22575 | 13.081 | 1.01175 | 21.37575 | | |
| Phase I | 12/21/98 10:00 PM | 12/21/98 11:00 PM | No | | 19.25025 | 19.5005 | 18.3755 | 13.653 | 1.0025 | 21.90025 | | |
| Phase I | 12/21/98 11:00 PM | 12/22/98 12:00 AM | Yes | | 20.40025 | 20.05025 | 17.7755 | 14.02575 | 1.03925 | 20.4255 | | |
| Phase I | 12/22/98 12:00 AM | 12/22/98 1:00 AM | Yes | | 19.70025 | 19.3255 | 18.45 | 13.438 | 1.096 | 21.55025 | | |
| Phase I | 12/22/98 1:00 AM | 12/22/98 2:00 AM | No | | 21.3005 | 21.826 | 18.3255 | 13.8085 | 1.04625 | 21.80025 | | |
| Phase I | 12/22/98 2:00 AM | 12/22/98 3:00 AM | Yes | | 21.60025 | 17.3505 | 17.2505 | 14.15675 | 0.99475 | 22.10025 | | |
| Phase I | 12/22/98 3:00 AM | 12/22/98 4:00 AM | No | | 19.85 | | 17.35025 | 13.783 | 1.13075 | 21.00075 | | |
| Phase I | 12/22/98 4:00 AM | 12/22/98 5:00 AM | No | | 20.125 | | 18.67575 | 13.91425 | 0.9105 | 21.0255 | | |
| Phase I | 12/22/98 5:00 AM | 12/22/98 6:00 AM | No | | 22.40025 | | | 12.96675 | 1.17125 | 20.7005 | | |
| Phase I | 12/22/98 6:00 AM | 12/22/98 7:00 AM | Yes | | 17.9255 | | | 12.96525 | 1.83175 | 22.7755 | | |
| Phase I | 12/22/98 7:00 AM | 12/22/98 8:00 AM | No | | 18.1505 | | | 12.22125 | 2.48775 | 19.37525 | | |
| Phase I | 12/22/98 8:00 AM | 12/22/98 9:00 AM | No | | 16.375 | | | 12.3015 | 0.891 | 22.4005 | | |
| Phase I | 12/22/98 9:00 AM | 12/22/98 10:00 AM | No | | 17.25 | | 13.1505 | 12.7175 | 0.8575 | 21.675 | | |
| Phase I | 12/22/98 10:00 AM | 12/22/98 11:00 AM | No | | 17.7755 | | 15.07525 | 11.90975 | 1.18875 | 20.425 | | |
| Phase I | 12/22/98 11:00 AM | 12/22/98 12:00 PM | No | | 18.95025 | | 13.42525 | 12.72425 | 1.13025 | 23.47525 | | |
| Phase I | 12/22/98 12:00 PM | 12/22/98 1:00 PM | No | | 18.3255 | | 15.1 | 15.47725 | 1.499 | 25.35 | | |
| Phase I | 12/22/98 1:00 PM | 12/22/98 2:00 PM | No | | 28.425 | | 16.15 | 15.155 | 1.8885 | 22.6255 | | |
| Phase I | 12/22/98 2:00 PM | 12/22/98 3:00 PM | No | | 18.20025 | | 15.8755 | 14.848 | 2.82675 | 20.15 | | |
| Phase I | 12/22/98 3:00 PM | 12/22/98 4:00 PM | No | | 20.22525 | | 15.5505 | 13.03975 | 2.33725 | 17.9255 | | |
| Phase I | 12/22/98 4:00 PM | 12/22/98 5:00 PM | No | | 18.651 | | 15.67525 | 12.13 | 1.80675 | 18.526 | | |
| Phase I | 12/22/98 5:00 PM | 12/22/98 6:00 PM | No | | 17.3255 | | 13.75025 | 12.135 | 1.75425 | 18.45 | | |
| Phase I | 12/22/98 6:00 PM | 12/22/98 7:00 PM | No | | 17.25025 | | 11.875 | 11.56625 | 1.97875 | 18.6255 | | |
| Phase I | 12/22/98 7:00 PM | 12/22/98 8:00 PM | No | | 16.875 | | 11.6005 | 11.5025 | 2.33425 | 17.35025 | | |
| Phase I | 12/22/98 8:00 PM | 12/22/98 9:00 PM | No | | 17.025 | | 12.325 | 11.2195 | 2.2645 | 16.8255 | | |
| Phase I | 12/22/98 9:00 PM | 12/22/98 10:00 PM | No | | 17.8255 | | 10.9505 | 11.107 | 2.418 | 17.225 | | |
| Phase I | 12/22/98 10:00 PM | 12/22/98 11:00 PM | No | | 16.67525 | | 11.65025 | 10.82725 | 2.64475 | 17.05025 | | |
| Phase I | 12/22/98 11:00 PM | 12/23/98 12:00 AM | No | | 16.20075 | | 12.22525 | 10.977 | 2.034 | 16.72525 | | |
| Phase I | 12/23/98 12:00 AM | 12/23/98 1:00 AM | No | | 17.40025 | | 11.05025 | 10.96625 | 2.64425 | 16.2005 | | |
| Phase I | 12/23/98 1:00 AM | 12/23/98 2:00 AM | No | | 17.1255 | | 12.55025 | 10.6275 | 3.63275 | 17.47525 | | |
| Phase I | 12/23/98 2:00 AM | 12/23/98 3:00 AM | No | | 16 | | 8.500333 | 10.564 | 3.8375 | 17.0255 | | |
| Phase I | 12/23/98 3:00 AM | 12/23/98 4:00 AM | No | | 15.72575 | | | 10.51225 | 6.9595 | 16.57525 | | |
| Phase I | 12/23/98 4:00 AM | 12/23/98 5:00 AM | No | | 16.6755 | | | 10.399 | 3.96 | 18.7755 | | |
| Phase I | 12/23/98 5:00 AM | 12/23/98 6:00 AM | No | | 18.62525 | | | 10.632 | 3.1745 | 18.30025 | | |
| Phase I | 12/23/98 6:00 AM | 12/23/98 7:00 AM | No | | 16.475 | | | 10.51525 | 7.71175 | 16.42525 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/23/98 7:00 AM | 12/23/98 8:00 AM | No | | 17.3755 | | | 10.7565 | 5.50225 | 19.32525 | | |
| Phase I | 12/23/98 8:00 AM | 12/23/98 9:00 AM | No | | 16.22525 | | | 10.38575 | 0.67975 | 17.525 | | |
| Phase I | 12/23/98 9:00 AM | 12/23/98 10:00 AM | No | | 14.65025 | | 12 | 9.97675 | 0.29975 | 16.02525 | | |
| Phase I | 12/23/98 10:00 AM | 12/23/98 11:00 AM | No | | 14.15025 | | 11.30025 | 10.023 | 0.22475 | 15.875 | | |
| Phase I | 12/23/98 11:00 AM | 12/23/98 12:00 PM | No | | 15.67525 | | 11.1 | 10.83575 | 0.2225 | 14.875 | | |
| Phase I | 12/23/98 12:00 PM | 12/23/98 1:00 PM | No | | 14.60025 | | 12.2255 | 10.3475 | 0.27 | 14.625 | | |
| Phase I | 12/23/98 1:00 PM | 12/23/98 2:00 PM | No | | 15.55025 | | 10.975 | 10.88875 | 0.283 | 15.32525 | | |
| Phase I | 12/23/98 2:00 PM | 12/23/98 3:00 PM | No | | 14.325 | | 12.45 | 10.99025 | 0.30075 | 14.5 | | |
| Phase I | 12/23/98 3:00 PM | 12/23/98 4:00 PM | No | | 14.4 | | 11.70025 | 10.064 | 0.35425 | 16.275 | | |
| Phase I | 12/23/98 4:00 PM | 12/23/98 5:00 PM | No | | 14.42525 | | 13.3505 | 11.4285 | 0.30475 | 20.67525 | | |
| Phase I | 12/23/98 5:00 PM | 12/23/98 6:00 PM | No | | 14.175 | | 11.97525 | 11.40975 | 0.2585 | 15.35025 | | |
| Phase I | 12/23/98 6:00 PM | 12/23/98 7:00 PM | No | | 17.55025 | | 12.0505 | 9.619 | 0.25325 | 14.05 | | |
| Phase I | 12/23/98 7:00 PM | 12/23/98 8:00 PM | No | | 13.8005 | | 11.7005 | 11.37525 | 0.2225 | 16.55 | | |
| Phase I | 12/23/98 8:00 PM | 12/23/98 9:00 PM | No | | 14.8755 | | 11.57575 | 11.31875 | 0.2455 | 13.9755 | | |
| Phase I | 12/23/98 9:00 PM | 12/23/98 10:00 PM | No | | 14.00025 | | 10.7755 | 9.5385 | 0.26375 | 14.925 | | |
| Phase I | 12/23/98 10:00 PM | 12/23/98 11:00 PM | No | | 13.3505 | | 11.775 | 10.9005 | 0.251 | 81.7505 | | |
| Phase I | 12/23/98 11:00 PM | 12/24/98 12:00 AM | No | | 15.15 | | 13.82525 | 11.882 | 0.22225 | 13.65025 | | |
| Phase I | 12/24/98 12:00 AM | 12/24/98 1:00 AM | No | | 14.9005 | | 11.35 | 10.95625 | 0.24775 | 14.1005 | | |
| Phase I | 12/24/98 1:00 AM | 12/24/98 2:00 AM | No | | 13.075 | | 10.35 | 12.0655 | 0.34725 | 15.57525 | | |
| Phase I | 12/24/98 2:00 AM | 12/24/98 3:00 AM | No | | 12.75025 | | | 10.672 | 0.3705 | 12.825 | | |
| Phase I | 12/24/98 3:00 AM | 12/24/98 4:00 AM | No | | 13.275 | | | 6.81575 | 0.50775 | 14.20025 | | |
| Phase I | 12/24/98 4:00 AM | 12/24/98 5:00 AM | No | | 13.3255 | | | 5.9455 | 0.88 | 13.05025 | | |
| Phase I | 12/24/98 5:00 AM | 12/24/98 6:00 AM | No | | 12.77525 | | | 5.96675 | 0.414 | 15.375 | | |
| Phase I | 12/24/98 6:00 AM | 12/24/98 7:00 AM | No | | 12.1 | | | 6.01125 | 0.55975 | 13.25025 | | |
| Phase I | 12/24/98 7:00 AM | 12/24/98 8:00 AM | No | | 12.55075 | | | 6.05725 | 0.25925 | 12.12525 | | |
| Phase I | 12/24/98 8:00 AM | 12/24/98 9:00 AM | No | | 12.22525 | | | 6.0305 | 0.2175 | 12.0755 | | |
| Phase I | 12/24/98 9:00 AM | 12/24/98 10:00 AM | No | | 12.42525 | | | 6.008 | 0.195 | 12.225 | | |
| Phase I | 12/24/98 10:00 AM | 12/24/98 11:00 AM | No | | 12.42525 | | | 5.6855 | 0.18925 | 12.65025 | | |
| Phase I | 12/24/98 11:00 AM | 12/24/98 12:00 PM | No | | 12.52575 | | | 5.42775 | 0.19675 | 12.90025 | | |
| Phase I | 12/24/98 12:00 PM | 12/24/98 1:00 PM | No | | 13.15025 | | | 5.34825 | 0.18925 | 11.575 | | |
| Phase I | 12/24/98 1:00 PM | 12/24/98 2:00 PM | No | | 12.4 | | | 5.70475 | 0.17825 | 12.1755 | | |
| Phase I | 12/24/98 2:00 PM | 12/24/98 3:00 PM | No | | 12.2255 | | 9.6 | 5.8515 | 0.17625 | 11.27525 | | |
| Phase I | 12/24/98 3:00 PM | 12/24/98 4:00 PM | No | | 12.875 | | 8.82525 | 5.87375 | 0.18 | 9.976 | | |
| Phase I | 12/24/98 4:00 PM | 12/24/98 5:00 PM | No | | 10.90025 | | 8.67525 | 5.6755 | 0.1705 | 11.42525 | | |
| Phase I | 12/24/98 5:00 PM | 12/24/98 6:00 PM | No | | 10.575 | | 10.7005 | 5.615 | 0.18025 | 11.77525 | | |
| Phase I | 12/24/98 6:00 PM | 12/24/98 7:00 PM | No | | 11.175 | | | 5.3865 | 0.21625 | 11 | | |
| Phase I | 12/24/98 7:00 PM | 12/24/98 8:00 PM | No | | 10.8255 | | | 5.287 | 0.1885 | 11.82575 | | |
| Phase I | 12/24/98 8:00 PM | 12/24/98 9:00 PM | No | | 10.65 | | | 5.18725 | 0.17175 | 11.02525 | | |
| Phase I | 12/24/98 9:00 PM | 12/24/98 10:00 PM | No | | 10.5505 | | | 5.05925 | 0.1835 | 11.15 | | |
| Phase I | 12/24/98 10:00 PM | 12/24/98 11:00 PM | No | | 10.75025 | | | 4.831 | 0.1815 | 10.20025 | | |
| Phase I | 12/24/98 11:00 PM | 12/25/98 12:00 AM | No | | 10.3005 | | | 4.28325 | 0.19 | 12.9 | | |
| Phase I | 12/25/98 12:00 AM | 12/25/98 1:00 AM | No | | 11.225 | | | 4.13875 | 0.17775 | 10.1005 | | |
| Phase I | 12/25/98 1:00 AM | 12/25/98 2:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 2:00 AM | 12/25/98 3:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 3:00 AM | 12/25/98 4:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 4:00 AM | 12/25/98 5:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 5:00 AM | 12/25/98 6:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 6:00 AM | 12/25/98 7:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 7:00 AM | 12/25/98 8:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 8:00 AM | 12/25/98 9:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 9:00 AM | 12/25/98 10:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 10:00 AM | 12/25/98 11:00 AM | No | | | | | | | | | |
| Phase I | 12/25/98 11:00 AM | 12/25/98 12:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 12:00 PM | 12/25/98 1:00 PM | No | | | | 9.101 | | | | | |
| Phase I | 12/25/98 1:00 PM | 12/25/98 2:00 PM | No | | | | 5.801 | | | | | |
| Phase I | 12/25/98 2:00 PM | 12/25/98 3:00 PM | No | | | | 6.476 | | | | | |
| Phase I | 12/25/98 3:00 PM | 12/25/98 4:00 PM | No | | | | 6.726 | | | | | |
| Phase I | 12/25/98 4:00 PM | 12/25/98 5:00 PM | No | | | | 6.167667 | | | | | |
| Phase I | 12/25/98 5:00 PM | 12/25/98 6:00 PM | No | | | | 5.801 | | | | | |
| Phase I | 12/25/98 6:00 PM | 12/25/98 7:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 7:00 PM | 12/25/98 8:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 8:00 PM | 12/25/98 9:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 9:00 PM | 12/25/98 10:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 10:00 PM | 12/25/98 11:00 PM | No | | | | | | | | | |
| Phase I | 12/25/98 11:00 PM | 12/26/98 12:00 AM | No | | | | 4.934 | | | | | |
| Phase I | 12/26/98 12:00 AM | 12/26/98 1:00 AM | No | | | | | | | | | |
| Phase I | 12/26/98 1:00 AM | 12/26/98 2:00 AM | No | | 8.02525 | | | 1.46825 | 0.15825 | 7.7755 | | |
| Phase I | 12/26/98 2:00 AM | 12/26/98 3:00 AM | No | | 7.7755 | | | 1.4965 | 0.251 | 7.426 | | |
| Phase I | 12/26/98 3:00 AM | 12/26/98 4:00 AM | No | | 7.60075 | | | 1.43025 | 0.16175 | 7.07575 | | |
| Phase I | 12/26/98 4:00 AM | 12/26/98 5:00 AM | No | | 7.301 | | | 1.45875 | 0.15725 | 7.101 | | |
| Phase I | 12/26/98 5:00 AM | 12/26/98 6:00 AM | No | | 6.901 | | | 1.50875 | 0.163 | 8.62575 | | |
| Phase I | 12/26/98 6:00 AM | 12/26/98 7:00 AM | No | | 7.801 | | | 1.4555 | 0.15675 | 8.85075 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/26/98 7:00 AM | 12/26/98 8:00 AM | No | | | | | 1.4925 | 0.152 | 8.95025 | | |
| Phase I | 12/26/98 8:00 AM | 12/26/98 9:00 AM | No | | 6.401 | | | 1.45075 | 0.152 | 7.076 | | |
| Phase I | 12/26/98 9:00 AM | 12/26/98 10:00 AM | No | | 7.626 | | | 1.504 | 0.1575 | 7.251 | | |
| Phase I | 12/26/98 10:00 AM | 12/26/98 11:00 AM | No | | 6.976 | | | 1.46875 | 0.154 | 7.27575 | | |
| Phase I | 12/26/98 11:00 AM | 12/26/98 12:00 PM | No | | 7.42575 | | | 1.476 | 0.152 | 7.62525 | | |
| Phase I | 12/26/98 12:00 PM | 12/26/98 1:00 PM | No | | 7.201 | | | 1.44175 | 0.1725 | 6.676 | | |
| Phase I | 12/26/98 1:00 PM | 12/26/98 2:00 PM | No | | 6.501 | | | 1.5185 | 0.25 | 6.526 | | |
| Phase I | 12/26/98 2:00 PM | 12/26/98 3:00 PM | No | | 6.901 | | | 1.70925 | 0.24725 | 6.301 | | |
| Phase I | 12/26/98 3:00 PM | 12/26/98 4:00 PM | No | | 6.701 | | | 1.57225 | 0.19 | 6.426 | | |
| Phase I | 12/26/98 4:00 PM | 12/26/98 5:00 PM | No | | 6.651 | | | 1.641 | 0.177 | 6.401 | | |
| Phase I | 12/26/98 5:00 PM | 12/26/98 6:00 PM | No | | 6.651 | | | 1.66675 | 0.17675 | 6.126 | | |
| Phase I | 12/26/98 6:00 PM | 12/26/98 7:00 PM | No | | 6.926 | | | 1.63975 | 0.2415 | 6.151 | | |
| Phase I | 12/26/98 7:00 PM | 12/26/98 8:00 PM | No | | 6.726 | | | 1.778 | 0.4155 | 6.226 | | |
| Phase I | 12/26/98 8:00 PM | 12/26/98 9:00 PM | No | | 7.101 | | | 1.743 | 0.2455 | 6.151 | | |
| Phase I | 12/26/98 9:00 PM | 12/26/98 10:00 PM | No | | 7.10075 | | | 1.713 | 0.169 | 6.426 | | |
| Phase I | 12/26/98 10:00 PM | 12/26/98 11:00 PM | No | | 7.101 | | | 1.62275 | 0.19575 | 5.551 | | |
| Phase I | 12/26/98 11:00 PM | 12/27/98 12:00 AM | No | | | | | 1.73425 | 0.1825 | 5.901 | | |
| Phase I | 12/27/98 12:00 AM | 12/27/98 1:00 AM | No | | | | | 1.60475 | 0.16175 | 5.951 | | |
| Phase I | 12/27/98 1:00 AM | 12/27/98 2:00 AM | No | | | | | 1.646 | 0.18775 | 5.876 | | |
| Phase I | 12/27/98 2:00 AM | 12/27/98 3:00 AM | No | | | | | 1.75825 | 0.224 | 6.601 | | |
| Phase I | 12/27/98 3:00 AM | 12/27/98 4:00 AM | No | | | | | 1.78475 | 0.301 | 6.75075 | | |
| Phase I | 12/27/98 4:00 AM | 12/27/98 5:00 AM | No | | | | | 1.7455 | 0.2215 | 5.576 | | |
| Phase I | 12/27/98 5:00 AM | 12/27/98 6:00 AM | No | | | | | 1.7025 | 0.175 | 5.951 | | |
| Phase I | 12/27/98 6:00 AM | 12/27/98 7:00 AM | No | | 6.126 | | | 1.781 | 0.1595 | 5.751 | | |
| Phase I | 12/27/98 7:00 AM | 12/27/98 8:00 AM | No | | 6.451 | | | 1.825 | 0.2165 | 5.401 | | |
| Phase I | 12/27/98 8:00 AM | 12/27/98 9:00 AM | No | | 5.676 | | | 1.947 | 0.20875 | 6.001 | | |
| Phase I | 12/27/98 9:00 AM | 12/27/98 10:00 AM | No | | 6.426 | | | 1.922 | 0.193 | 5.951 | | |
| Phase I | 12/27/98 10:00 AM | 12/27/98 11:00 AM | No | | 6.451 | | 6.351 | 1.96025 | 0.212 | 5.751 | | |
| Phase I | 12/27/98 11:00 AM | 12/27/98 12:00 PM | No | | 5.851 | | 5.751 | 1.9475 | 0.486 | 5.601 | | |
| Phase I | 12/27/98 12:00 PM | 12/27/98 1:00 PM | No | | 6.076 | | 4.97575 | 2.0675 | 0.21875 | 5.126 | | |
| Phase I | 12/27/98 1:00 PM | 12/27/98 2:00 PM | No | | 5.626 | | 4.35075 | 2.0195 | 0.15325 | 5.001 | | |
| Phase I | 12/27/98 2:00 PM | 12/27/98 3:00 PM | No | | 5.151 | | 4.551 | 2.123 | 0.165 | 5.951 | | |
| Phase I | 12/27/98 3:00 PM | 12/27/98 4:00 PM | No | | 5.501 | | 4.126 | 2.2325 | 0.1985 | 5.676 | | |
| Phase I | 12/27/98 4:00 PM | 12/27/98 5:00 PM | No | | 5.076 | | 3.70075 | 2.09725 | 0.1885 | 6.27575 | | |
| Phase I | 12/27/98 5:00 PM | 12/27/98 6:00 PM | No | | 5.676 | | 3.8255 | 1.96975 | 0.178 | 4.976 | | |
| Phase I | 12/27/98 6:00 PM | 12/27/98 7:00 PM | No | | 5.151 | | 3.6005 | 2.30125 | 0.18175 | 4.676 | | |
| Phase I | 12/27/98 7:00 PM | 12/27/98 8:00 PM | No | | 5.051 | | 3.80025 | 2.15 | 0.17625 | 4.676 | | |
| Phase I | 12/27/98 8:00 PM | 12/27/98 9:00 PM | No | | 5.001 | | 3.95075 | 2.06675 | 0.467 | 5.051 | | |
| Phase I | 12/27/98 9:00 PM | 12/27/98 10:00 PM | No | | | | | 2.261 | 0.17425 | 4.476 | | |
| Phase I | 12/27/98 10:00 PM | 12/27/98 11:00 PM | No | | | | | 2.003 | 0.1865 | 4.801 | | |
| Phase I | 12/27/98 11:00 PM | 12/28/98 12:00 AM | No | | | | | 2.23675 | 0.142 | 4.651 | | |
| Phase I | 12/28/98 12:00 AM | 12/28/98 1:00 AM | No | | | | | 2.11675 | 0.17975 | 7.37575 | | |
| Phase I | 12/28/98 1:00 AM | 12/28/98 2:00 AM | No | | | | | 2.13325 | 0.2105 | 4.826 | | |
| Phase I | 12/28/98 2:00 AM | 12/28/98 3:00 AM | No | | | | | 2.25375 | 0.206 | 4.251 | | |
| Phase I | 12/28/98 3:00 AM | 12/28/98 4:00 AM | No | | | | | 2.13725 | 0.138 | 5.226 | | |
| Phase I | 12/28/98 4:00 AM | 12/28/98 5:00 AM | No | | | | | 2.11175 | 0.202 | 5.001 | | |
| Phase I | 12/28/98 5:00 AM | 12/28/98 6:00 AM | No | | | | | 2.125 | 0.178 | 4.301 | | |
| Phase I | 12/28/98 6:00 AM | 12/28/98 7:00 AM | No | | | | | 2.19175 | 0.23425 | 4.576 | | |
| Phase I | 12/28/98 7:00 AM | 12/28/98 8:00 AM | No | | | | | 2.17175 | 0.16675 | 4.301 | | |
| Phase I | 12/28/98 8:00 AM | 12/28/98 9:00 AM | No | | | | | 2.18825 | 0.15975 | 4.526 | | |
| Phase I | 12/28/98 9:00 AM | 12/28/98 10:00 AM | No | | | | | 2.25375 | 0.3425 | 4.351 | | |
| Phase I | 12/28/98 10:00 AM | 12/28/98 11:00 AM | No | | | | | 3.21275 | 0.1855 | 5.276 | | |
| Phase I | 12/28/98 11:00 AM | 12/28/98 12:00 PM | No | | | | | 2.9355 | 0.1595 | 4.926 | | |
| Phase I | 12/28/98 12:00 PM | 12/28/98 1:00 PM | No | | | | | 2.62725 | 0.15975 | 5.301 | | |
| Phase I | 12/28/98 1:00 PM | 12/28/98 2:00 PM | No | | 4.601 | | | 2.63175 | 0.181 | 8.351 | | |
| Phase I | 12/28/98 2:00 PM | 12/28/98 3:00 PM | No | | 5.226 | | 4.801 | 2.99175 | 0.2825 | 5.301 | | |
| Phase I | 12/28/98 3:00 PM | 12/28/98 4:00 PM | No | | 4.876 | | 5.751 | 3.58925 | 0.18525 | 4.776 | | |
| Phase I | 12/28/98 4:00 PM | 12/28/98 5:00 PM | No | | 5.101 | | 4.801 | 3.407 | 0.14875 | 5.226 | | |
| Phase I | 12/28/98 5:00 PM | 12/28/98 6:00 PM | No | | 4.676 | | 6.5505 | 2.97125 | 0.15075 | 5.076 | | |
| Phase I | 12/28/98 6:00 PM | 12/28/98 7:00 PM | No | | | | 5.026 | 2.871 | 0.14775 | 4.601 | | |
| Phase I | 12/28/98 7:00 PM | 12/28/98 8:00 PM | No | | | | 5.734333 | 2.9375 | 0.15225 | 4.251 | | |
| Phase I | 12/28/98 8:00 PM | 12/28/98 9:00 PM | No | | | | | 2.97 | 0.214 | 4.501 | | |
| Phase I | 12/28/98 9:00 PM | 12/28/98 10:00 PM | No | | | | | 2.541 | | 4.676 | | |
| Phase I | 12/28/98 10:00 PM | 12/28/98 11:00 PM | No | | | | | 2.848 | | 4.851 | | |
| Phase I | 12/28/98 11:00 PM | 12/29/98 12:00 AM | No | | | | | 2.95025 | | 4.901 | | |
| Phase I | 12/29/98 12:00 AM | 12/29/98 1:00 AM | No | | | | | 3.11375 | | 6.001 | | |
| Phase I | 12/29/98 1:00 AM | 12/29/98 2:00 AM | No | | | | | 3.069 | 0.2055 | 5.351 | | |
| Phase I | 12/29/98 2:00 AM | 12/29/98 3:00 AM | Yes | | | | | 3.33875 | 0.189 | 4.851 | | |
| Phase I | 12/29/98 3:00 AM | 12/29/98 4:00 AM | No | | | | | 3.41025 | 0.17325 | 4.976 | | |
| Phase I | 12/29/98 4:00 AM | 12/29/98 5:00 AM | Yes | | | | | 3.31075 | 0.16525 | 4.876 | | |
| Phase I | 12/29/98 5:00 AM | 12/29/98 6:00 AM | Yes | | | | | 3.26375 | 0.15475 | 5.151 | | |
| Phase I | 12/29/98 6:00 AM | 12/29/98 7:00 AM | No | | | | | 3.3145 | 0.149 | 6.101 | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase I | 12/29/98 7:00 AM | 12/29/98 8:00 AM | Yes | | | | | 3.2275 | 0.2235 | 4.851 | | |
| Phase I | 12/29/98 8:00 AM | 12/29/98 9:00 AM | Yes | | | | | 3.74125 | 0.1595 | 5.226 | | |
| Phase I | 12/29/98 9:00 AM | 12/29/98 10:00 AM | Yes | | | | | 3.39925 | 0.15 | 4.801 | | |
| Phase I | 12/29/98 10:00 AM | 12/29/98 11:00 AM | Yes | | | | | 3.80225 | 0.1715 | 4.276 | | |
| Phase I | 12/29/98 11:00 AM | 12/29/98 12:00 PM | Yes | | | | 4.6755 | 3.34775 | 0.1795 | 4.651 | | |
| Phase I | 12/29/98 12:00 PM | 12/29/98 1:00 PM | No | | | | 5.251 | 3.27175 | 0.1595 | 5.401 | | |
| Phase I | 12/29/98 1:00 PM | 12/29/98 2:00 PM | No | | | | 7.126 | 3.356 | 0.16 | 5.401 | | |
| Phase I | 12/29/98 2:00 PM | 12/29/98 3:00 PM | Yes | | | | 5.001 | 3.99125 | 0.16125 | 6.276 | | |
| Phase I | 12/29/98 3:00 PM | 12/29/98 4:00 PM | Yes | | | | 8.3005 | 3.67525 | 0.15125 | 4.57575 | | |
| Phase I | 12/29/98 4:00 PM | 12/29/98 5:00 PM | Yes | | | | | 3.597 | 0.147 | 5.476 | | |
| Phase I | 12/29/98 5:00 PM | 12/29/98 6:00 PM | No | | | | | 3.7815 | 0.15775 | 7.726 | | |
| Phase I | 12/29/98 6:00 PM | 12/29/98 7:00 PM | Yes | | | | | 3.5665 | 0.15525 | 5.001 | | |
| Phase I | 12/29/98 7:00 PM | 12/29/98 8:00 PM | Yes | | | | | 3.8625 | 0.15025 | 4.901 | | |
| Phase I | 12/29/98 8:00 PM | 12/29/98 9:00 PM | No | | | | | 3.69975 | 0.163 | 5.176 | | |
| Phase I | 12/29/98 9:00 PM | 12/29/98 10:00 PM | No | | | | | 3.692 | 0.1925 | 4.201 | | |
| Phase I | 12/29/98 10:00 PM | 12/29/98 11:00 PM | No | | | | | 4.27875 | 0.154 | 4.00075 | | |
| Phase I | 12/29/98 11:00 PM | 12/30/98 12:00 AM | Yes | | | | | 4.21625 | 0.2585 | 4.17575 | | |
| Phase I | 12/30/98 12:00 AM | 12/30/98 1:00 AM | Yes | | | | | 3.84975 | 0.2245 | 18.60025 | | |
| Phase I | 12/30/98 1:00 AM | 12/30/98 2:00 AM | Yes | | | | | 6.66125 | 0.2715 | 9.60075 | | |
| Phase I | 12/30/98 2:00 AM | 12/30/98 3:00 AM | Yes | | | | | 7.88475 | 0.236 | 9.101 | | |
| Phase I | 12/30/98 3:00 AM | 12/30/98 4:00 AM | Yes | | | | | 8.825 | 0.22675 | 7.351 | | |
| Phase I | 12/30/98 4:00 AM | 12/30/98 5:00 AM | Yes | | | | | 9.80925 | 0.1895 | 6.351 | | |
| Phase I | 12/30/98 5:00 AM | 12/30/98 6:00 AM | Yes | | | | | 8.18525 | 0.206 | 6.426 | | |
| Phase I | 12/30/98 6:00 AM | 12/30/98 7:00 AM | Yes | | | | | 5.69275 | 0.2475 | 7.32575 | | |
| Phase I | 12/30/98 7:00 AM | 12/30/98 8:00 AM | No | | | | | 7.76575 | 0.293 | 5.176 | | |
| Phase I | 12/30/98 8:00 AM | 12/30/98 9:00 AM | No | | | | | 5.633 | 0.33725 | 4.601 | | |
| Phase I | 12/30/98 9:00 AM | 12/30/98 10:00 AM | No | | | | | 4.7275 | 0.395 | 5.501 | | |
| Phase I | 12/30/98 10:00 AM | 12/30/98 11:00 AM | No | | | | | 4.5375 | 0.46625 | 5.501 | | |
| Phase I | 12/30/98 11:00 AM | 12/30/98 12:00 PM | No | | | | | 4.309 | 0.35275 | 4.501 | | |
| Phase I | 12/30/98 12:00 PM | 12/30/98 1:00 PM | Yes | | | | | 4.75775 | 0.29375 | 8.02575 | | |
| Phase I | 12/30/98 1:00 PM | 12/30/98 2:00 PM | Yes | | | | | 7.406 | 0.25625 | 13.02525 | | |
| Phase I | 12/30/98 2:00 PM | 12/30/98 3:00 PM | Yes | | | | | 7.75125 | 1.284 | 6.551 | | |
| Phase I | 12/30/98 3:00 PM | 12/30/98 4:00 PM | Yes | | | | | 6.022 | 0.97625 | 6.551 | | |
| Phase I | 12/30/98 4:00 PM | 12/30/98 5:00 PM | No | | | | | 5.61025 | 1.21175 | 8.1755 | | |
| Phase I | 12/30/98 5:00 PM | 12/30/98 6:00 PM | Yes | | | | | 6.4635 | 2.03175 | 6.776 | | |
| Phase I | 12/30/98 6:00 PM | 12/30/98 7:00 PM | Yes | | | | | 7.3565 | 1.2395 | 5.126 | | |
| Phase I | 12/30/98 7:00 PM | 12/30/98 8:00 PM | No | | | | | 6.50325 | 0.8835 | 5.501 | | |
| Phase I | 12/30/98 8:00 PM | 12/30/98 9:00 PM | No | | | | | 5.24375 | 0.86475 | 6.6505 | | |
| Phase I | 12/30/98 9:00 PM | 12/30/98 10:00 PM | No | | | | | 4.911 | 0.843 | 6.32575 | | |
| Phase I | 12/30/98 10:00 PM | 12/30/98 11:00 PM | No | | | | | 5.792 | 0.90925 | 6.601 | | |
| Phase I | 12/30/98 11:00 PM | 12/31/98 12:00 AM | No | | | | | 5.2375 | 0.8925 | | | |
| Phase I | 12/31/98 12:00 AM | 12/31/98 1:00 AM | No | | | | | 5.40825 | 0.867 | | | |
| | 12/31/98 1:00 AM | 12/31/98 2:00 AM | No | | | | | 4.58775 | 0.849 | | | |
| | 12/31/98 2:00 AM | 12/31/98 3:00 AM | No | | | | | 4.89125 | 0.745 | | | |
| | 12/31/98 3:00 AM | 12/31/98 4:00 AM | No | | | | | 4.79925 | 0.64975 | | | |
| | 12/31/98 4:00 AM | 12/31/98 5:00 AM | No | | | | | 4.2975 | 0.60025 | | | |
| | 12/31/98 5:00 AM | 12/31/98 6:00 AM | No | | | | | 4.211 | 0.54175 | | | |
| | 12/31/98 6:00 AM | 12/31/98 7:00 AM | No | | | | | 4.07725 | 0.5845 | | | |
| | 12/31/98 7:00 AM | 12/31/98 8:00 AM | No | | | | | 4.15775 | 0.574 | | | |
| | 12/31/98 8:00 AM | 12/31/98 9:00 AM | No | | | | | 4.102 | 0.5015 | | | |
| | 12/31/98 9:00 AM | 12/31/98 10:00 AM | No | | | | | 4.27925 | 0.45825 | | | |
| | 12/31/98 10:00 AM | 12/31/98 11:00 AM | No | | | | | 4.2565 | 0.43975 | | | |
| | 12/31/98 11:00 AM | 12/31/98 12:00 PM | No | | | | | 4.34625 | 0.4155 | | | |
| | 12/31/98 12:00 PM | 12/31/98 1:00 PM | No | | | | | 5.838 | 0.46025 | | | |
| | 12/31/98 1:00 PM | 12/31/98 2:00 PM | No | | | | | 7.053 | 0.542 | | | |
| | 12/31/98 2:00 PM | 12/31/98 3:00 PM | No | | | | | 8.0315 | 0.48875 | | | |
| | 12/31/98 3:00 PM | 12/31/98 4:00 PM | No | | | | | 7.51125 | 0.454 | | | |
| | 12/31/98 4:00 PM | 12/31/98 5:00 PM | No | | | | | 5.65125 | 0.43275 | | | |
| | 12/31/98 5:00 PM | 12/31/98 6:00 PM | No | | | | | 4.84775 | 0.4545 | | | |
| | 12/31/98 6:00 PM | 12/31/98 7:00 PM | No | | | | | 4.45225 | 0.444 | | | |
| | 12/31/98 7:00 PM | 12/31/98 8:00 PM | No | | | | | 4.18225 | 0.515 | | | |
| | 12/31/98 8:00 PM | 12/31/98 9:00 PM | No | | | | | 3.95375 | 0.54175 | | | |
| | 12/31/98 9:00 PM | 12/31/98 10:00 PM | No | | | | | 4.05325 | 0.48175 | | | |
| | 12/31/98 10:00 PM | 12/31/98 11:00 PM | No | | | | | 4.2255 | 0.47625 | | | |
| | 12/31/98 11:00 PM | 1/1/99 12:00 AM | No | | | | | 4.68825 | 0.4595 | | | |
| | 1/1/99 12:00 AM | 1/1/99 1:00 AM | No | | | | | 5.119 | 0.47975 | | | |
| | 1/1/99 1:00 AM | 1/1/99 2:00 AM | No | | | | | 5.34275 | 0.5125 | | | |
| | 1/1/99 2:00 AM | 1/1/99 3:00 AM | No | | | | | 5.42675 | 0.538 | | | |
| | 1/1/99 3:00 AM | 1/1/99 4:00 AM | No | | | | | 5.05025 | 0.60275 | | | |
| | 1/1/99 4:00 AM | 1/1/99 5:00 AM | No | | | | | 4.811 | 0.78775 | | | |
| | 1/1/99 5:00 AM | 1/1/99 6:00 AM | No | | | | | 4.2025 | 1.1155 | | | |
| | 1/1/99 6:00 AM | 1/1/99 7:00 AM | No | | | | | 4.06475 | 1.617 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/1/99 7:00 AM | 1/1/99 8:00 AM | No | | | | | 3.79575 | 1.7935 | | | |
| | 1/1/99 8:00 AM | 1/1/99 9:00 AM | No | | | | | 3.92725 | 1.46225 | | | |
| | 1/1/99 9:00 AM | 1/1/99 10:00 AM | No | | | | | 3.71175 | 2.0785 | | | |
| | 1/1/99 10:00 AM | 1/1/99 11:00 AM | No | | | | | 3.3605 | 0.5045 | | | |
| | 1/1/99 11:00 AM | 1/1/99 12:00 PM | No | | | | | 3.3875 | 0.50625 | | | |
| | 1/1/99 12:00 PM | 1/1/99 1:00 PM | No | | | | | 5.82675 | 0.5135 | | | |
| | 1/1/99 1:00 PM | 1/1/99 2:00 PM | No | | | | | 5.341 | 0.5025 | | | |
| | 1/1/99 2:00 PM | 1/1/99 3:00 PM | No | | | | | 4.56425 | 0.51925 | | | |
| | 1/1/99 3:00 PM | 1/1/99 4:00 PM | No | | | | | 5.22625 | 0.49125 | | | |
| | 1/1/99 4:00 PM | 1/1/99 5:00 PM | No | | | | | 4.66325 | 0.4585 | | | |
| | 1/1/99 5:00 PM | 1/1/99 6:00 PM | No | | | | | 3.844 | 0.43875 | | | |
| | 1/1/99 6:00 PM | 1/1/99 7:00 PM | No | | | | | 3.591 | 0.43375 | | | |
| | 1/1/99 7:00 PM | 1/1/99 8:00 PM | No | | | | | 3.414 | 0.429 | | | |
| | 1/1/99 8:00 PM | 1/1/99 9:00 PM | No | | | | | 3.309 | 0.49125 | | | |
| | 1/1/99 9:00 PM | 1/1/99 10:00 PM | No | | | | | 3.512 | 0.49175 | | | |
| | 1/1/99 10:00 PM | 1/1/99 11:00 PM | No | | | | | 3.6225 | 0.42475 | | | |
| | 1/1/99 11:00 PM | 1/2/99 12:00 AM | No | | | | | 3.598 | 0.40475 | | | |
| | 1/2/99 12:00 AM | 1/2/99 1:00 AM | No | | | | | 3.3005 | 0.47 | | | |
| | 1/2/99 1:00 AM | 1/2/99 2:00 AM | No | | | | | 3.48925 | 0.46775 | | | |
| | 1/2/99 2:00 AM | 1/2/99 3:00 AM | No | | | | | 3.1355 | 0.4715 | | | |
| | 1/2/99 3:00 AM | 1/2/99 4:00 AM | No | | | | | 3.45875 | 0.468 | | | |
| | 1/2/99 4:00 AM | 1/2/99 5:00 AM | No | | | | | 3.27025 | 0.5015 | | | |
| | 1/2/99 5:00 AM | 1/2/99 6:00 AM | No | | | | | 3.74775 | 0.5875 | | | |
| | 1/2/99 6:00 AM | 1/2/99 7:00 AM | No | | | | | 3.25025 | 0.6235 | | | |
| | 1/2/99 7:00 AM | 1/2/99 8:00 AM | No | | | | | 3.388 | 0.60075 | | | |
| | 1/2/99 8:00 AM | 1/2/99 9:00 AM | No | | | | | 3.52325 | 0.60175 | | | |
| | 1/2/99 9:00 AM | 1/2/99 10:00 AM | No | | | | | 3.45175 | 0.70175 | | | |
| | 1/2/99 10:00 AM | 1/2/99 11:00 AM | No | | | | | 3.398 | 0.5705 | | | |
| | 1/2/99 11:00 AM | 1/2/99 12:00 PM | No | | | | | 3.18 | 0.525 | | | |
| | 1/2/99 12:00 PM | 1/2/99 1:00 PM | No | | | | | 3.17425 | 0.45725 | | | |
| | 1/2/99 1:00 PM | 1/2/99 2:00 PM | No | | | | | 3.105 | 0.4285 | | | |
| | 1/2/99 2:00 PM | 1/2/99 3:00 PM | No | | | | | 3.16925 | 0.42025 | | | |
| | 1/2/99 3:00 PM | 1/2/99 4:00 PM | No | | | | | 3.45475 | 0.46275 | | | |
| | 1/2/99 4:00 PM | 1/2/99 5:00 PM | No | | | | | 3.0205 | 0.441 | | | |
| | 1/2/99 5:00 PM | 1/2/99 6:00 PM | No | | | | | 2.992 | 0.413 | | | |
| | 1/2/99 6:00 PM | 1/2/99 7:00 PM | No | | | | | 2.98525 | 0.423 | | | |
| | 1/2/99 7:00 PM | 1/2/99 8:00 PM | No | | | | | 3.01425 | 0.439 | | | |
| | 1/2/99 8:00 PM | 1/2/99 9:00 PM | No | | | | | 3.008 | 0.4655 | | | |
| | 1/2/99 9:00 PM | 1/2/99 10:00 PM | No | | | | | 2.9975 | 0.5035 | | | |
| | 1/2/99 10:00 PM | 1/2/99 11:00 PM | No | | | | | 2.9255 | 0.49725 | | | |
| | 1/2/99 11:00 PM | 1/3/99 12:00 AM | No | | | | | 3.20475 | 0.483 | | | |
| | 1/3/99 12:00 AM | 1/3/99 1:00 AM | No | | | | | 3.0375 | 0.47425 | | | |
| | 1/3/99 1:00 AM | 1/3/99 2:00 AM | No | | | | | 3.1355 | 0.48375 | | | |
| | 1/3/99 2:00 AM | 1/3/99 3:00 AM | No | | | | | 3.14675 | 0.4705 | | | |
| | 1/3/99 3:00 AM | 1/3/99 4:00 AM | No | | | | | 3.40975 | 0.50525 | | | |
| | 1/3/99 4:00 AM | 1/3/99 5:00 AM | No | | | | | 3.456 | 0.5265 | | | |
| | 1/3/99 5:00 AM | 1/3/99 6:00 AM | No | | | | | 3.72125 | 0.523 | | | |
| | 1/3/99 6:00 AM | 1/3/99 7:00 AM | No | | | | | 3.96925 | 0.46675 | | | |
| | 1/3/99 7:00 AM | 1/3/99 8:00 AM | No | | | | | 3.648 | 0.46725 | | | |
| | 1/3/99 8:00 AM | 1/3/99 9:00 AM | No | | | | | 3.4855 | 0.47825 | | | |
| | 1/3/99 9:00 AM | 1/3/99 10:00 AM | No | | | | | 3.1845 | 0.4875 | | | |
| | 1/3/99 10:00 AM | 1/3/99 11:00 AM | No | | | | | 3.35375 | 0.5625 | | | |
| | 1/3/99 11:00 AM | 1/3/99 12:00 PM | No | | | | | 3.148 | 0.47425 | | | |
| | 1/3/99 12:00 PM | 1/3/99 1:00 PM | No | | | | | 3.33325 | 0.429 | | | |
| | 1/3/99 1:00 PM | 1/3/99 2:00 PM | No | | | | | 3.672 | 0.42375 | | | |
| | 1/3/99 2:00 PM | 1/3/99 3:00 PM | No | | | | | 3.233 | 0.41625 | | | |
| | 1/3/99 3:00 PM | 1/3/99 4:00 PM | No | | | | | 3.135 | 0.436 | | | |
| | 1/3/99 4:00 PM | 1/3/99 5:00 PM | No | | | | | 2.934 | 0.46475 | | | |
| | 1/3/99 5:00 PM | 1/3/99 6:00 PM | No | | | | | 3.0445 | 0.422 | | | |
| | 1/3/99 6:00 PM | 1/3/99 7:00 PM | No | | | | | 3.0395 | 0.39675 | | | |
| | 1/3/99 7:00 PM | 1/3/99 8:00 PM | No | | | | | 3.09125 | 0.42625 | | | |
| | 1/3/99 8:00 PM | 1/3/99 9:00 PM | No | | | | | 3.13125 | 0.418 | | | |
| | 1/3/99 9:00 PM | 1/3/99 10:00 PM | No | | | | | 2.96575 | 0.42975 | | | |
| | 1/3/99 10:00 PM | 1/3/99 11:00 PM | No | | | | | 2.989 | 0.478 | | | |
| | 1/3/99 11:00 PM | 1/4/99 12:00 AM | No | | | | | 3.05975 | 0.45175 | | | |
| | 1/4/99 12:00 AM | 1/4/99 1:00 AM | No | | | | | 3.06975 | 0.40675 | | | |
| | 1/4/99 1:00 AM | 1/4/99 2:00 AM | No | | | | | 2.89625 | 0.4185 | | | |
| | 1/4/99 2:00 AM | 1/4/99 3:00 AM | No | | | | | 2.95725 | 0.423 | | | |
| | 1/4/99 3:00 AM | 1/4/99 4:00 AM | No | | | | | 2.90775 | 0.416 | | | |
| | 1/4/99 4:00 AM | 1/4/99 5:00 AM | No | | | | | 2.87575 | 0.46325 | | | |
| | 1/4/99 5:00 AM | 1/4/99 6:00 AM | No | | | | | 3.01475 | 0.42775 | | | |
| | 1/4/99 6:00 AM | 1/4/99 7:00 AM | No | | | | | 2.846 | 0.41275 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/4/99 7:00 AM | 1/4/99 8:00 AM | No | | | | | 2.93325 | 0.42125 | | | |
| | 1/4/99 8:00 AM | 1/4/99 9:00 AM | No | | | | | 2.9335 | 0.40325 | | | |
| | 1/4/99 9:00 AM | 1/4/99 10:00 AM | No | | | | | 3.0845 | 0.43675 | | | |
| | 1/4/99 10:00 AM | 1/4/99 11:00 AM | No | | | | | 3.1345 | 0.43075 | | | |
| | 1/4/99 11:00 AM | 1/4/99 12:00 PM | No | | | | | 3.1095 | 0.4065 | | | |
| | 1/4/99 12:00 PM | 1/4/99 1:00 PM | No | | | | | 2.87375 | 0.3735 | | | |
| | 1/4/99 1:00 PM | 1/4/99 2:00 PM | No | | | | | 3.0075 | 0.353 | | | |
| | 1/4/99 2:00 PM | 1/4/99 3:00 PM | No | | | | | 2.7595 | 0.36425 | | | |
| | 1/4/99 3:00 PM | 1/4/99 4:00 PM | No | | | | | 3.184 | 0.37375 | | | |
| | 1/4/99 4:00 PM | 1/4/99 5:00 PM | No | | | | | 2.9855 | 0.3965 | | | |
| | 1/4/99 5:00 PM | 1/4/99 6:00 PM | No | | | | | 2.93975 | 0.41225 | | | |
| | 1/4/99 6:00 PM | 1/4/99 7:00 PM | No | | | | | 3.1605 | 1.046 | | | |
| | 1/4/99 7:00 PM | 1/4/99 8:00 PM | No | | | | | 2.9085 | 0.702 | | | |
| | 1/4/99 8:00 PM | 1/4/99 9:00 PM | No | | | | | 2.879 | 0.57025 | | | |
| | 1/4/99 9:00 PM | 1/4/99 10:00 PM | No | | | | | 2.92175 | 0.54475 | | | |
| | 1/4/99 10:00 PM | 1/4/99 11:00 PM | No | | | | | 3.01525 | 0.629 | | | |
| | 1/4/99 11:00 PM | 1/5/99 12:00 AM | No | | | | | 2.79025 | 0.614 | | | |
| | 1/5/99 12:00 AM | 1/5/99 1:00 AM | No | | | | | 2.935 | 0.6295 | | | |
| | 1/5/99 1:00 AM | 1/5/99 2:00 AM | No | | | | | 2.86725 | 0.6755 | | | |
| | 1/5/99 2:00 AM | 1/5/99 3:00 AM | No | | | | | 3.14575 | 0.507 | | | |
| | 1/5/99 3:00 AM | 1/5/99 4:00 AM | No | | | | | 2.90225 | 0.404 | | | |
| | 1/5/99 4:00 AM | 1/5/99 5:00 AM | No | | | | | 2.9635 | 0.44225 | | | |
| | 1/5/99 5:00 AM | 1/5/99 6:00 AM | No | | | | | 3.14125 | 0.47525 | | | |
| | 1/5/99 6:00 AM | 1/5/99 7:00 AM | No | | | | | 2.99975 | 0.46025 | | | |
| | 1/5/99 7:00 AM | 1/5/99 8:00 AM | No | | | | | 2.749 | 0.393 | | | |
| | 1/5/99 8:00 AM | 1/5/99 9:00 AM | No | | | | | 2.7465 | 0.4035 | | | |
| | 1/5/99 9:00 AM | 1/5/99 10:00 AM | No | | | | | 2.832 | 0.445 | | | |
| | 1/5/99 10:00 AM | 1/5/99 11:00 AM | No | | | | | 2.7295 | 0.46825 | | | |
| | 1/5/99 11:00 AM | 1/5/99 12:00 PM | No | | | | | 2.8015 | 0.55075 | | | |
| | 1/5/99 12:00 PM | 1/5/99 1:00 PM | No | | | | | 2.84575 | 0.49275 | | | |
| | 1/5/99 1:00 PM | 1/5/99 2:00 PM | No | | | | | 2.8655 | 0.44225 | | | |
| | 1/5/99 2:00 PM | 1/5/99 3:00 PM | No | | | | | 2.782 | 0.49775 | | | |
| | 1/5/99 3:00 PM | 1/5/99 4:00 PM | No | | | | | 2.71825 | 0.49975 | | | |
| | 1/5/99 4:00 PM | 1/5/99 5:00 PM | No | | | | | 2.75575 | 0.453 | | | |
| | 1/5/99 5:00 PM | 1/5/99 6:00 PM | No | | | | | 2.6895 | 0.496 | | | |
| | 1/5/99 6:00 PM | 1/5/99 7:00 PM | No | | | | | 2.938 | 0.43525 | | | |
| | 1/5/99 7:00 PM | 1/5/99 8:00 PM | No | | | | | 2.8235 | 0.424 | | | |
| | 1/5/99 8:00 PM | 1/5/99 9:00 PM | No | | | | | 2.994 | 0.4225 | | | |
| | 1/5/99 9:00 PM | 1/5/99 10:00 PM | No | | | | | 2.96125 | 0.41375 | | | |
| | 1/5/99 10:00 PM | 1/5/99 11:00 PM | No | | | | | 2.83525 | 0.4215 | | | |
| | 1/5/99 11:00 PM | 1/6/99 12:00 AM | No | | | | | 2.995 | 0.46925 | | | |
| | 1/6/99 12:00 AM | 1/6/99 1:00 AM | No | | | | | 2.74775 | 0.473 | | | |
| | 1/6/99 1:00 AM | 1/6/99 2:00 AM | No | | | | | 2.80575 | 0.47075 | | | |
| | 1/6/99 2:00 AM | 1/6/99 3:00 AM | No | | | | | 3.13025 | 0.6205 | | | |
| | 1/6/99 3:00 AM | 1/6/99 4:00 AM | No | | | | | 3.0835 | 0.5975 | | | |
| | 1/6/99 4:00 AM | 1/6/99 5:00 AM | No | | | | | 3.13 | 0.58425 | | | |
| | 1/6/99 5:00 AM | 1/6/99 6:00 AM | No | | | | | 2.9955 | 0.58375 | | | |
| | 1/6/99 6:00 AM | 1/6/99 7:00 AM | No | | | | | 3.047 | 0.55525 | | | |
| | 1/6/99 7:00 AM | 1/6/99 8:00 AM | No | | | | | 2.7255 | 0.60775 | | | |
| | 1/6/99 8:00 AM | 1/6/99 9:00 AM | No | | | | | 3.31875 | 0.57575 | | | |
| | 1/6/99 9:00 AM | 1/6/99 10:00 AM | No | | | | | 2.77175 | 0.5635 | | | |
| | 1/6/99 10:00 AM | 1/6/99 11:00 AM | No | | | | | 2.83725 | 0.5965 | | | |
| | 1/6/99 11:00 AM | 1/6/99 12:00 PM | No | | | | | 3.08225 | 0.57275 | | | |
| | 1/6/99 12:00 PM | 1/6/99 1:00 PM | No | | | | | 2.80225 | 0.5825 | | | |
| | 1/6/99 1:00 PM | 1/6/99 2:00 PM | No | | | | | 2.97975 | 0.47825 | | | |
| | 1/6/99 2:00 PM | 1/6/99 3:00 PM | No | | | | | 3.15675 | 0.4305 | | | |
| | 1/6/99 3:00 PM | 1/6/99 4:00 PM | No | | | | | 4.11325 | 0.51475 | | | |
| | 1/6/99 4:00 PM | 1/6/99 5:00 PM | No | | | | | 4.15525 | 0.489 | | | |
| | 1/6/99 5:00 PM | 1/6/99 6:00 PM | No | | | | | 3.89875 | 0.4285 | | | |
| | 1/6/99 6:00 PM | 1/6/99 7:00 PM | No | | | | | 3.7765 | 0.407 | | | |
| | 1/6/99 7:00 PM | 1/6/99 8:00 PM | No | | | | | 3.569 | 0.377 | | | |
| | 1/6/99 8:00 PM | 1/6/99 9:00 PM | No | | | | | 3.49325 | 0.3705 | | | |
| | 1/6/99 9:00 PM | 1/6/99 10:00 PM | No | | | | | 3.662 | 0.33575 | | | |
| | 1/6/99 10:00 PM | 1/6/99 11:00 PM | No | | | | | 3.653 | 0.338 | | | |
| | 1/6/99 11:00 PM | 1/7/99 12:00 AM | No | | | | | 3.66025 | 0.3235 | | | |
| | 1/7/99 12:00 AM | 1/7/99 1:00 AM | No | | | | | 3.8035 | 0.32475 | | | |
| | 1/7/99 1:00 AM | 1/7/99 2:00 AM | No | | | | | 3.514 | 0.3365 | | | |
| | 1/7/99 2:00 AM | 1/7/99 3:00 AM | No | | | | | 3.7385 | 0.32525 | | | |
| | 1/7/99 3:00 AM | 1/7/99 4:00 AM | No | | | | | 4.00175 | 0.31775 | | | |
| | 1/7/99 4:00 AM | 1/7/99 5:00 AM | No | | | | | 3.7255 | 0.32725 | | | |
| | 1/7/99 5:00 AM | 1/7/99 6:00 AM | No | | | | | 4.0735 | 0.3565 | | | |
| | 1/7/99 6:00 AM | 1/7/99 7:00 AM | No | | | | | 3.9065 | 0.356 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging[1] | Flow[2] (cfs) | m1[3] | m2[3] | m3[3] | m4[3] | m5[3] | m6[3] | m7[3] | m8[3] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1/7/99 7:00 AM | 1/7/99 8:00 AM | No | | | | | 3.71725 | 0.365 | | | |
| | 1/7/99 8:00 AM | 1/7/99 9:00 AM | No | | | | | 3.5575 | 0.39525 | | | |
| | 1/7/99 9:00 AM | 1/7/99 10:00 AM | No | | | | | 3.7625 | 0.40825 | | | |
| | 1/7/99 10:00 AM | 1/7/99 11:00 AM | No | | | | | 3.807 | 0.437 | | | |
| | 1/7/99 11:00 AM | 1/7/99 12:00 PM | No | | | | | 4.2975 | 0.45525 | | | |
| | 1/7/99 12:00 PM | 1/7/99 1:00 PM | No | | | | | 4.364 | 0.57475 | | | |
| | 1/7/99 1:00 PM | 1/7/99 2:00 PM | No | | | | | 4.0905 | 0.57975 | | | |
| | 1/7/99 2:00 PM | 1/7/99 3:00 PM | No | | | | | 3.877333 | 0.679333 | | | |
| Phase II | 8/19/99 7:00 AM | 8/19/99 8:00 AM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 8:00 AM | 8/19/99 9:00 AM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 9:00 AM | 8/19/99 10:00 AM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 10:00 AM | 8/19/99 11:00 AM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 11:00 AM | 8/19/99 12:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 12:00 PM | 8/19/99 1:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 1:00 PM | 8/19/99 2:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 2:00 PM | 8/19/99 3:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 3:00 PM | 8/19/99 4:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 4:00 PM | 8/19/99 5:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 5:00 PM | 8/19/99 6:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 6:00 PM | 8/19/99 7:00 PM | Yes | 2870 | | | | | | | | |
| Phase II | 8/19/99 7:00 PM | 8/19/99 8:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 8:00 PM | 8/19/99 9:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 9:00 PM | 8/19/99 10:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 10:00 PM | 8/19/99 11:00 PM | No | 2870 | | | | | | | | |
| Phase II | 8/19/99 11:00 PM | 8/20/99 12:00 AM | No | 2870 | | | | | | | | |
| Phase II | 8/20/99 12:00 AM | 8/20/99 1:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 1:00 AM | 8/20/99 2:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 2:00 AM | 8/20/99 3:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 3:00 AM | 8/20/99 4:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 4:00 AM | 8/20/99 5:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 5:00 AM | 8/20/99 6:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 6:00 AM | 8/20/99 7:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 7:00 AM | 8/20/99 8:00 AM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 8:00 AM | 8/20/99 9:00 AM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 9:00 AM | 8/20/99 10:00 AM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 10:00 AM | 8/20/99 11:00 AM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 11:00 AM | 8/20/99 12:00 PM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 12:00 PM | 8/20/99 1:00 PM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 1:00 PM | 8/20/99 2:00 PM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 2:00 PM | 8/20/99 3:00 PM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 3:00 PM | 8/20/99 4:00 PM | Yes | 2873 | | | | | | | | |
| Phase II | 8/20/99 4:00 PM | 8/20/99 5:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 5:00 PM | 8/20/99 6:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 6:00 PM | 8/20/99 7:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 7:00 PM | 8/20/99 8:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 8:00 PM | 8/20/99 9:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 9:00 PM | 8/20/99 10:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 10:00 PM | 8/20/99 11:00 PM | No | 2873 | | | | | | | | |
| Phase II | 8/20/99 11:00 PM | 8/21/99 12:00 AM | No | 2873 | | | | | | | | |
| Phase II | 8/21/99 12:00 AM | 8/21/99 1:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 1:00 AM | 8/21/99 2:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 2:00 AM | 8/21/99 3:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 3:00 AM | 8/21/99 4:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 4:00 AM | 8/21/99 5:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 5:00 AM | 8/21/99 6:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 6:00 AM | 8/21/99 7:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 7:00 AM | 8/21/99 8:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 8:00 AM | 8/21/99 9:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 9:00 AM | 8/21/99 10:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 10:00 AM | 8/21/99 11:00 AM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 11:00 AM | 8/21/99 12:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 12:00 PM | 8/21/99 1:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 1:00 PM | 8/21/99 2:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 2:00 PM | 8/21/99 3:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 3:00 PM | 8/21/99 4:00 PM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 4:00 PM | 8/21/99 5:00 PM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 5:00 PM | 8/21/99 6:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 6:00 PM | 8/21/99 7:00 PM | Yes | 1835 | | | | | | | | |
| Phase II | 8/21/99 7:00 PM | 8/21/99 8:00 PM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 8:00 PM | 8/21/99 9:00 PM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 9:00 PM | 8/21/99 10:00 PM | No | 1835 | | | | | | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 8/21/99 10:00 PM | 8/21/99 11:00 PM | No | 1835 | | | | | | | | |
| Phase II | 8/21/99 11:00 PM | 8/22/99 12:00 AM | No | 1835 | | | | | | | | |
| Phase II | 8/22/99 12:00 AM | 8/22/99 1:00 AM | No | 1824 | 31.075 | 27.45 | 25.35075 | 34.21875 | 2.85525 | | | |
| Phase II | 8/22/99 1:00 AM | 8/22/99 2:00 AM | No | 1824 | 34.20075 | 23.55025 | 29.2755 | 32.08575 | 2.8095 | | | |
| Phase II | 8/22/99 2:00 AM | 8/22/99 3:00 AM | No | 1824 | 34.15025 | 31.3255 | 35.37525 | 44.6695 | 2.474 | | | |
| Phase II | 8/22/99 3:00 AM | 8/22/99 4:00 AM | No | 1824 | 30.2755 | 32.27525 | 30.0755 | 34.0955 | 2.4555 | | | |
| Phase II | 8/22/99 4:00 AM | 8/22/99 5:00 AM | No | 1824 | 32.65 | 29.8505 | 32.42525 | 32.96325 | 2.76775 | | | |
| Phase II | 8/22/99 5:00 AM | 8/22/99 6:00 AM | No | 1824 | 28.975 | 29.0005 | 1636.376 | 34.197 | 2.65075 | | | |
| Phase II | 8/22/99 6:00 AM | 8/22/99 7:00 AM | No | 1824 | 29.47525 | 21.7 | 432.7755 | 35.242 | 2.5045 | | | |
| Phase II | 8/22/99 7:00 AM | 8/22/99 8:00 AM | No | 1824 | 31.126 | 24.90025 | 29.67525 | 38.04825 | 2.81425 | | | |
| Phase II | 8/22/99 8:00 AM | 8/22/99 9:00 AM | No | 1824 | 25.20075 | 19.90025 | 31.725 | 40.44375 | 2.9375 | | | |
| Phase II | 8/22/99 9:00 AM | 8/22/99 10:00 AM | No | 1824 | 43.30075 | 29.30075 | 25.8755 | 38.334 | 2.939 | | | |
| Phase II | 8/22/99 10:00 AM | 8/22/99 11:00 AM | No | 1824 | 31.60075 | 50.12525 | 32.7255 | 35.91575 | 2.93675 | | | |
| Phase II | 8/22/99 11:00 AM | 8/22/99 12:00 PM | No | 1824 | 29.725 | 35.25025 | 32.37525 | 35.27175 | 2.89025 | | | |
| Phase II | 8/22/99 12:00 PM | 8/22/99 1:00 PM | No | 1824 | 25.8505 | 36.72575 | 31.675 | 35.07425 | 2.8565 | | | |
| Phase II | 8/22/99 1:00 PM | 8/22/99 2:00 PM | No | 1824 | 32.70025 | 47.0755 | 36.70025 | 35.816 | 3.002 | | | |
| Phase II | 8/22/99 2:00 PM | 8/22/99 3:00 PM | No | 1824 | 35.62525 | 24.60075 | 48.60075 | 36.8865 | 3.048 | | | |
| Phase II | 8/22/99 3:00 PM | 8/22/99 4:00 PM | No | 1824 | 36.95025 | 27.27525 | 36.3255 | 36.1595 | 2.989 | | | |
| Phase II | 8/22/99 4:00 PM | 8/22/99 5:00 PM | No | 1824 | 33.4 | 36.20075 | 36.77525 | 37.229 | 2.899 | | | |
| Phase II | 8/22/99 5:00 PM | 8/22/99 6:00 PM | No | 1824 | 32.55025 | 27.07525 | 28.775 | 36.0925 | 3.00375 | | | |
| Phase II | 8/22/99 6:00 PM | 8/22/99 7:00 PM | No | 1824 | 47.65075 | 21.9505 | 37.15075 | 36.3725 | 2.95675 | | | |
| Phase II | 8/22/99 7:00 PM | 8/22/99 8:00 PM | No | 1824 | 27.00025 | 30.0255 | 30.201 | 36.72275 | 2.8605 | | | |
| Phase II | 8/22/99 8:00 PM | 8/22/99 9:00 PM | No | 1824 | 29.02525 | 28.7755 | 27.05025 | 32.6275 | 2.81075 | | | |
| Phase II | 8/22/99 9:00 PM | 8/22/99 10:00 PM | No | 1824 | 28.40025 | 39.1255 | 26.62575 | 33.513 | 2.783 | | | |
| Phase II | 8/22/99 10:00 PM | 8/22/99 11:00 PM | No | 1824 | 33.2255 | 35.9505 | 38.80075 | 33.4045 | 2.76825 | | | |
| Phase II | 8/22/99 11:00 PM | 8/23/99 12:00 AM | No | 1824 | 33.62525 | 35.9755 | 37.32525 | 33.20475 | 2.79375 | | | |
| Phase II | 8/23/99 12:00 AM | 8/23/99 1:00 AM | No | 2180 | 29.10025 | 27.325 | 39.57525 | 35.7595 | 2.7565 | | | |
| Phase II | 8/23/99 1:00 AM | 8/23/99 2:00 AM | No | 2180 | 29.8 | 22.825 | 29.5255 | 32.508 | 2.63 | | | |
| Phase II | 8/23/99 2:00 AM | 8/23/99 3:00 AM | No | 2180 | 28.12525 | 24.8505 | 27.7755 | 35.1335 | 2.8105 | | | |
| Phase II | 8/23/99 3:00 AM | 8/23/99 4:00 AM | No | 2180 | 29.47525 | 38.07525 | 30.42525 | 31.9905 | 2.8215 | | | |
| Phase II | 8/23/99 4:00 AM | 8/23/99 5:00 AM | No | 2180 | 40.1505 | 28.95075 | 48.3255 | 34.22325 | 2.92675 | | | |
| Phase II | 8/23/99 5:00 AM | 8/23/99 6:00 AM | No | 2180 | 32.47575 | 29.62575 | 25.625 | 33.30075 | 2.76 | | | |
| Phase II | 8/23/99 6:00 AM | 8/23/99 7:00 AM | No | 2180 | 31.92575 | 33.92525 | 30.0005 | 33.80975 | 2.761 | | | |
| Phase II | 8/23/99 7:00 AM | 8/23/99 8:00 AM | Yes | 2180 | 35.02525 | 28.25025 | 30.3505 | 32.32175 | 2.8885 | | | |
| Phase II | 8/23/99 8:00 AM | 8/23/99 9:00 AM | Yes | 2180 | 47.45075 | 28.55075 | 26.6005 | 32.958 | 3.0735 | | | |
| Phase II | 8/23/99 9:00 AM | 8/23/99 10:00 AM | Yes | 2180 | 31.95075 | 37.7255 | 26.20025 | 31.1905 | 3.11675 | | | |
| Phase II | 8/23/99 10:00 AM | 8/23/99 11:00 AM | Yes | 2180 | 55.25075 | 31.45075 | 26.1755 | 33.51575 | 3.278 | | | |
| Phase II | 8/23/99 11:00 AM | 8/23/99 12:00 PM | Yes | 2180 | 26.97575 | 30.97525 | 28.2005 | 30.9125 | 3.361 | | | |
| Phase II | 8/23/99 12:00 PM | 8/23/99 1:00 PM | Yes | 2180 | 27.4755 | 24.70025 | 34.8755 | 30.38275 | 3.105 | | | |
| Phase II | 8/23/99 1:00 PM | 8/23/99 2:00 PM | No | 2180 | 41.4255 | 26.20025 | 36.87575 | 29.74275 | 2.9035 | | | |
| Phase II | 8/23/99 2:00 PM | 8/23/99 3:00 PM | No | 2180 | 21.6255 | 23.15025 | 25 | 30.729 | 2.6145 | | | |
| Phase II | 8/23/99 3:00 PM | 8/23/99 4:00 PM | Yes | 2180 | 27.62575 | 34.6255 | 22.00025 | 32.06475 | 2.627 | | | |
| Phase II | 8/23/99 4:00 PM | 8/23/99 5:00 PM | Yes | 2180 | 33.77575 | 29.2005 | 26.27525 | 28.89625 | 3.2585 | | | |
| Phase II | 8/23/99 5:00 PM | 8/23/99 6:00 PM | Yes | 2180 | 32.25025 | 29.9755 | 29.4005 | 29.247 | 6.4395 | | | |
| Phase II | 8/23/99 6:00 PM | 8/23/99 7:00 PM | Yes | 2180 | 36.27525 | 30.775 | 27.8505 | 30.0255 | 3.645 | | | |
| Phase II | 8/23/99 7:00 PM | 8/23/99 8:00 PM | No | 2180 | 31.02575 | 27.5755 | 18.85025 | 29.27525 | 0.348 | | | |
| Phase II | 8/23/99 8:00 PM | 8/23/99 9:00 PM | No | 2180 | 28.4505 | 34.97575 | 25.10025 | 30.64425 | 0.31275 | | | |
| Phase II | 8/23/99 9:00 PM | 8/23/99 10:00 PM | No | 2180 | 41.4755 | 23.47575 | 20.52525 | 28.9615 | 0.311 | | | |
| Phase II | 8/23/99 10:00 PM | 8/23/99 11:00 PM | No | 2180 | 69.65075 | 25.50025 | 26.77525 | 29.30875 | 0.35175 | | | |
| Phase II | 8/23/99 11:00 PM | 8/24/99 12:00 AM | No | 2180 | 25.67525 | 24.60025 | 24.8 | 29.73775 | 0.292 | | | |
| Phase II | 8/24/99 12:00 AM | 8/24/99 1:00 AM | No | 1916 | 18.07525 | 47.12525 | 20.22525 | 29.65075 | 0.304 | | | |
| Phase II | 8/24/99 1:00 AM | 8/24/99 2:00 AM | No | 1916 | 17.6755 | 25.9005 | 19.15 | 32.04875 | 0.35525 | | | |
| Phase II | 8/24/99 2:00 AM | 8/24/99 3:00 AM | No | 1916 | 22.62525 | 23.45075 | 27.22575 | 28.332 | 0.2685 | | | |
| Phase II | 8/24/99 3:00 AM | 8/24/99 4:00 AM | No | 1916 | 52.9255 | 15.80025 | 20.97575 | 28.60975 | 0.24025 | | | |
| Phase II | 8/24/99 4:00 AM | 8/24/99 5:00 AM | No | 1916 | 41.57575 | 31.125 | 27.125 | 27.298 | 0.22325 | | | |
| Phase II | 8/24/99 5:00 AM | 8/24/99 6:00 AM | No | 1916 | 27.55025 | 21.1505 | 21.65025 | 28.30175 | 0.20925 | | | |
| Phase II | 8/24/99 6:00 AM | 8/24/99 7:00 AM | No | 1916 | 25.47525 | 22.25 | 17.30025 | 30.893 | 0.248 | | | |
| Phase II | 8/24/99 7:00 AM | 8/24/99 8:00 AM | No | 1916 | 33.83367 | 21.85075 | 20.77575 | 29.95025 | 0.27625 | | | |
| Phase II | 8/24/99 8:00 AM | 8/24/99 9:00 AM | Yes | 1916 | 30.50025 | 55.87575 | 23.40075 | 29.378 | 0.23825 | | | |
| Phase II | 8/24/99 9:00 AM | 8/24/99 10:00 AM | Yes | 1916 | 25.12525 | 18.45 | 19.55 | 29.9105 | 0.193 | | | |
| Phase II | 8/24/99 10:00 AM | 8/24/99 11:00 AM | Yes | 1916 | 23.875 | 18.6255 | 20.02575 | 28.10275 | 0.181 | | | |
| Phase II | 8/24/99 11:00 AM | 8/24/99 12:00 PM | Yes | 1916 | 25.12525 | 22.30075 | 24.62525 | 31.0335 | 0.2065 | | | |
| Phase II | 8/24/99 12:00 PM | 8/24/99 1:00 PM | Yes | 1916 | 20.67575 | 28.00075 | 21.4755 | 29.3855 | 0.227 | | | |
| Phase II | 8/24/99 1:00 PM | 8/24/99 2:00 PM | Yes | 1916 | 32.62575 | 19.07525 | 19.62575 | 27.39075 | 0.2975 | | | |
| Phase II | 8/24/99 2:00 PM | 8/24/99 3:00 PM | Yes | 1916 | 29.1755 | 29.7755 | 20.025 | 29.804 | 2.263 | | | |
| Phase II | 8/24/99 3:00 PM | 8/24/99 4:00 PM | Yes | 1916 | 20.8755 | 27.62525 | 22.60075 | 27.38275 | 0.428 | | | |
| Phase II | 8/24/99 4:00 PM | 8/24/99 5:00 PM | Yes | 1916 | 20.50075 | 16.0255 | 23.92525 | 28.65475 | 2.195333 | | | |
| Phase II | 8/24/99 5:00 PM | 8/24/99 6:00 PM | No | 1916 | 23.82575 | 32.77525 | 20.7505 | 31.74075 | 2.200267 | | | |
| Phase II | 8/24/99 6:00 PM | 8/24/99 7:00 PM | No | 1916 | 19.975 | 22.10025 | 22.00075 | 26.27075 | 2.729333 | | | |
| Phase II | 8/24/99 7:00 PM | 8/24/99 8:00 PM | No | 1916 | 20.50025 | 20.5255 | 26.2005 | 30.19575 | 1.919 | | | |
| Phase II | 8/24/99 8:00 PM | 8/24/99 9:00 PM | No | 1916 | 21.5755 | 36.6255 | 19.72525 | 31.97 | 1.79225 | | | |
| Phase II | 8/24/99 9:00 PM | 8/24/99 10:00 PM | No | 1916 | 24.2505 | 24.925 | 26.1005 | 31.265 | 1.73875 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 8/24/99 10:00 PM | 8/24/99 11:00 PM | No | 1916 | 16.87525 | 21.2255 | 20.77525 | 29.0535 | 1.69675 | | | |
| Phase II | 8/24/99 11:00 PM | 8/25/99 12:00 AM | No | 1916 | 28.50075 | 30.40025 | 22.475 | 25.285 | 1.67375 | | | |
| Phase II | 8/25/99 12:00 AM | 8/25/99 1:00 AM | No | 1704 | 23.50025 | 23.525 | 27.9755 | 27.31375 | 1.63225 | | | |
| Phase II | 8/25/99 1:00 AM | 8/25/99 2:00 AM | No | 1704 | 24.95025 | 24.32525 | 22.1505 | 28.31525 | 1.59075 | | | |
| Phase II | 8/25/99 2:00 AM | 8/25/99 3:00 AM | No | 1704 | 28.8005 | 24.05075 | 23.67525 | 28.771 | 1.5345 | | | |
| Phase II | 8/25/99 3:00 AM | 8/25/99 4:00 AM | No | 1704 | 27.9505 | 28.8505 | 22.5505 | 28.852 | 1.5145 | | | |
| Phase II | 8/25/99 4:00 AM | 8/25/99 5:00 AM | No | 1704 | 26.7755 | 22.75025 | 27.50025 | 28.34925 | 1.54275 | | | |
| Phase II | 8/25/99 5:00 AM | 8/25/99 6:00 AM | No | 1704 | 33.37525 | 34.15025 | 27.15075 | 30.5015 | 1.50475 | | | |
| Phase II | 8/25/99 6:00 AM | 8/25/99 7:00 AM | No | 1704 | 21.32525 | 22.55025 | 22.6 | 28.5445 | 1.4735 | | | |
| Phase II | 8/25/99 7:00 AM | 8/25/99 8:00 AM | No | 1704 | 24.52525 | 24.60025 | 42.6255 | 31.8865 | 1.481 | | | |
| Phase II | 8/25/99 8:00 AM | 8/25/99 9:00 AM | No | 1704 | 26.225 | 33.90075 | 20.82575 | 32.21625 | 1.47075 | | | |
| Phase II | 8/25/99 9:00 AM | 8/25/99 10:00 AM | No | 1704 | 23.12525 | 19.251 | 20.72575 | 27.46625 | 1.46525 | | | |
| Phase II | 8/25/99 10:00 AM | 8/25/99 11:00 AM | No | 1704 | 21.8 | 24.60025 | 27.32525 | 28.03175 | 2.5575 | | | |
| Phase II | 8/25/99 11:00 AM | 8/25/99 12:00 PM | No | 1704 | | 30.25025 | 18.0005 | 27.10025 | 3.6565 | | | |
| Phase II | 8/25/99 12:00 PM | 8/25/99 1:00 PM | Yes | 1704 | | 18.4 | 24.30075 | 25.40375 | 3.27525 | | | |
| Phase II | 8/25/99 1:00 PM | 8/25/99 2:00 PM | Yes | 1704 | | 16.77525 | 20.52525 | 28.2925 | 3.212 | | | |
| Phase II | 8/25/99 2:00 PM | 8/25/99 3:00 PM | Yes | 1704 | | 18.925 | 25.9005 | 25.9425 | 2.97625 | | | |
| Phase II | 8/25/99 3:00 PM | 8/25/99 4:00 PM | Yes | 1704 | | 19.75025 | 20.20025 | 26.8515 | 2.8025 | | | |
| Phase II | 8/25/99 4:00 PM | 8/25/99 5:00 PM | Yes | 1704 | 24.026 | 27.3505 | 22.3005 | 31.79225 | 2.42125 | | | |
| Phase II | 8/25/99 5:00 PM | 8/25/99 6:00 PM | Yes | 1704 | 29.1755 | 19.35 | 17.90025 | 31.99925 | 2.1045 | | | |
| Phase II | 8/25/99 6:00 PM | 8/25/99 7:00 PM | No | 1704 | 26.47525 | 15.50025 | 28.975 | 26.6305 | 2.02625 | | | |
| Phase II | 8/25/99 7:00 PM | 8/25/99 8:00 PM | No | 1704 | 29.17525 | 22 | 22.12525 | 31.256 | 1.975 | | | |
| Phase II | 8/25/99 8:00 PM | 8/25/99 9:00 PM | No | 1704 | 24.65025 | 21.6 | 25.87525 | 31.5005 | 1.90825 | | | |
| Phase II | 8/25/99 9:00 PM | 8/25/99 10:00 PM | No | 1704 | 19.2755 | 19.9755 | 26.15025 | 33.678 | 1.857 | | | |
| Phase II | 8/25/99 10:00 PM | 8/25/99 11:00 PM | No | 1704 | 26.075 | 23.42525 | 20.6755 | 30.262 | 1.804 | | | |
| Phase II | 8/25/99 11:00 PM | 8/26/99 12:00 AM | No | 1704 | 24.8255 | 26.75075 | 22.32525 | 31.1985 | 2.603 | | | |
| Phase II | 8/26/99 12:00 AM | 8/26/99 1:00 AM | No | 2200 | 26.25 | 22.95025 | 30.15025 | 30.2835 | 3.02825 | | | |
| Phase II | 8/26/99 1:00 AM | 8/26/99 2:00 AM | No | 2200 | 29.35075 | 27.8505 | 24.9255 | 31.06825 | 2.5295 | | | |
| Phase II | 8/26/99 2:00 AM | 8/26/99 3:00 AM | No | 2200 | 20.45025 | 31.22575 | 26.30075 | 31.668 | 2.487 | | | |
| Phase II | 8/26/99 3:00 AM | 8/26/99 4:00 AM | No | 2200 | 20.4505 | 25.35 | 27.72575 | 34.07475 | 2.44925 | | | |
| Phase II | 8/26/99 4:00 AM | 8/26/99 5:00 AM | No | 2200 | 25.4 | 29.1505 | 29.17575 | 32.31475 | 2.359 | | | |
| Phase II | 8/26/99 5:00 AM | 8/26/99 6:00 AM | No | 2200 | 24.32525 | 33.6255 | 20.67575 | 37.04075 | 2.2405 | | | |
| Phase II | 8/26/99 6:00 AM | 8/26/99 7:00 AM | No | 2200 | 16.75 | 24.3005 | 26.0255 | 34.6165 | 2.196 | | | |
| Phase II | 8/26/99 7:00 AM | 8/26/99 8:00 AM | No | 2200 | 22.1255 | 35.0255 | 29.4005 | 34.2195 | 2.10075 | | | |
| Phase II | 8/26/99 8:00 AM | 8/26/99 9:00 AM | Yes | 2200 | 25.07575 | 49.95025 | 30.87575 | 32.83625 | 2.10375 | | | |
| Phase II | 8/26/99 9:00 AM | 8/26/99 10:00 AM | Yes | 2200 | 20.9505 | 35.2755 | 27.37525 | 31.86625 | 2.21275 | | | |
| Phase II | 8/26/99 10:00 AM | 8/26/99 11:00 AM | Yes | 2200 | 37.9005 | 29.1 | 28.9755 | 33.12775 | 2.914 | | | |
| Phase II | 8/26/99 11:00 AM | 8/26/99 12:00 PM | Yes | 2200 | 37.7005 | 29.4505 | 40.1505 | 32.4825 | 2.9995 | | | |
| Phase II | 8/26/99 12:00 PM | 8/26/99 1:00 PM | Yes | 2200 | 26.77575 | 27.15 | 67.5005 | 35.0405 | 2.74575 | | | |
| Phase II | 8/26/99 1:00 PM | 8/26/99 2:00 PM | Yes | 2200 | 25.85025 | 29.95025 | 29.27575 | 31.189 | 2.407 | | | |
| Phase II | 8/26/99 2:00 PM | 8/26/99 3:00 PM | Yes | 2200 | 35.25 | 40.8505 | 28.7005 | 33.464 | 1.93275 | | | |
| Phase II | 8/26/99 3:00 PM | 8/26/99 4:00 PM | Yes | 2200 | 33.8255 | 36.60025 | 29.87525 | 33.61175 | 2.22825 | | | |
| Phase II | 8/26/99 4:00 PM | 8/26/99 5:00 PM | No | 2200 | 58.17525 | 28.72525 | 26.9005 | 34.28925 | 2.24425 | | | |
| Phase II | 8/26/99 5:00 PM | 8/26/99 6:00 PM | No | 2200 | 27.75075 | 31.05 | 32.32525 | 33.351 | 2.15075 | | | |
| Phase II | 8/26/99 6:00 PM | 8/26/99 7:00 PM | No | 2200 | 31.4505 | 32.72575 | 33.1255 | 35.74625 | 2.181 | | | |
| Phase II | 8/26/99 7:00 PM | 8/26/99 8:00 PM | No | 2200 | 30.9255 | 34.92525 | 34.676 | 35.1565 | 2.45125 | | | |
| Phase II | 8/26/99 8:00 PM | 8/26/99 9:00 PM | No | 2200 | 25.20025 | 27.70075 | 33.101 | 33.82075 | 2.2745 | | | |
| Phase II | 8/26/99 9:00 PM | 8/26/99 10:00 PM | No | 2200 | 26.30025 | 36.675 | 33.575 | 34.43425 | 2.44375 | | | |
| Phase II | 8/26/99 10:00 PM | 8/26/99 11:00 PM | No | 2200 | 30.6255 | 25.4 | 43.8005 | 33.85625 | 2.25475 | | | |
| Phase II | 8/26/99 11:00 PM | 8/27/99 12:00 AM | No | 2200 | 50.87575 | 32.22525 | 32.8505 | 31.53525 | 2.13225 | | | |
| Phase II | 8/27/99 12:00 AM | 8/27/99 1:00 AM | No | 3478 | 25.6755 | 28.3505 | 32.92525 | 37.97575 | 1.97075 | | | |
| Phase II | 8/27/99 1:00 AM | 8/27/99 2:00 AM | No | 3478 | 32.15025 | 35.8255 | 29.80025 | 34.8325 | 1.93125 | | | |
| Phase II | 8/27/99 2:00 AM | 8/27/99 3:00 AM | No | 3478 | 29.82525 | 29.6 | 29.15075 | 32.601 | 1.9505 | | | |
| Phase II | 8/27/99 3:00 AM | 8/27/99 4:00 AM | No | 3478 | 30.42525 | 33.9005 | 29.27525 | 34.074 | 1.8915 | | | |
| Phase II | 8/27/99 4:00 AM | 8/27/99 5:00 AM | No | 3478 | 26.875 | 36.4755 | 28.8005 | 34.1625 | 1.77075 | | | |
| Phase II | 8/27/99 5:00 AM | 8/27/99 6:00 AM | No | 3478 | 43.02575 | 28.225 | 31.726 | 31.5665 | 1.70275 | | | |
| Phase II | 8/27/99 6:00 AM | 8/27/99 7:00 AM | No | 3478 | 26.3505 | 33.37525 | 38.9255 | 36.64975 | 1.66575 | | | |
| Phase II | 8/27/99 7:00 AM | 8/27/99 8:00 AM | Yes | 3478 | 33.525 | 33.4 | 32.57525 | 33.845 | 1.62875 | | | |
| Phase II | 8/27/99 8:00 AM | 8/27/99 9:00 AM | Yes | 3478 | 28.6505 | 33.9755 | 33.30025 | 34.29775 | 1.60875 | | | |
| Phase II | 8/27/99 9:00 AM | 8/27/99 10:00 AM | Yes | 3478 | 26.925 | 27.42525 | 42.95025 | 34.98675 | 1.61 | | | |
| Phase II | 8/27/99 10:00 AM | 8/27/99 11:00 AM | Yes | 3478 | 29.02525 | 33.85075 | 36.20025 | 32.7975 | 1.59125 | | | |
| Phase II | 8/27/99 11:00 AM | 8/27/99 12:00 PM | Yes | 3478 | 27.3505 | 33.4505 | 28.92525 | 33.86475 | 1.5655 | | | |
| Phase II | 8/27/99 12:00 PM | 8/27/99 1:00 PM | No | 3478 | 33.72525 | 38.7505 | 32.42575 | 34.1705 | 1.55625 | | | |
| Phase II | 8/27/99 1:00 PM | 8/27/99 2:00 PM | Yes | 3478 | 64.57575 | 35.4255 | 32.2755 | 30.38375 | 1.557 | | | |
| Phase II | 8/27/99 2:00 PM | 8/27/99 3:00 PM | Yes | 3478 | 24.7755 | 31.65075 | 37.5755 | 31.54975 | 1.51875 | | | |
| Phase II | 8/27/99 3:00 PM | 8/27/99 4:00 PM | Yes | 3478 | 33.3755 | 35.5005 | 33.4755 | 34.13175 | 1.50975 | | | |
| Phase II | 8/27/99 4:00 PM | 8/27/99 5:00 PM | Yes | 3478 | 25.5505 | 30.7005 | 29.7005 | 32.92525 | 1.482 | | | |
| Phase II | 8/27/99 5:00 PM | 8/27/99 6:00 PM | Yes | 3478 | 36.6255 | 32.65075 | 28.47525 | 34.5195 | 14.3405 | | | |
| Phase II | 8/27/99 6:00 PM | 8/27/99 7:00 PM | Yes | 3478 | 27.42575 | 31.575 | 31.1505 | 32.6615 | 13.2105 | | | |
| Phase II | 8/27/99 7:00 PM | 8/27/99 8:00 PM | No | 3478 | 32.10075 | 27.70075 | 31.90025 | 36.3025 | 14.2235 | | | |
| Phase II | 8/27/99 8:00 PM | 8/27/99 9:00 PM | No | 3478 | 32.7505 | 30.0255 | 37.97525 | 32.9615 | 7.5595 | | | |
| Phase II | 8/27/99 9:00 PM | 8/27/99 10:00 PM | No | 3478 | 25.77525 | 24.7505 | 34.825 | 33.5115 | 6.37975 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 8/27/99 10:00 PM | 8/27/99 11:00 PM | No | 3478 | 24.07575 | 32.42575 | 32.10025 | 33.9435 | 5.829 | | | |
| Phase II | 8/27/99 11:00 PM | 8/28/99 12:00 AM | No | 3478 | 22.32575 | 31.651 | 32.4005 | 33.27875 | 5.477 | | | |
| Phase II | 8/28/99 12:00 AM | 8/28/99 1:00 AM | No | 3412 | 43.9255 | 30.3755 | 42.02525 | 33.66475 | 5.24025 | | | |
| Phase II | 8/28/99 1:00 AM | 8/28/99 2:00 AM | No | 3412 | 23.82525 | 30.10025 | 41.6005 | 33.60275 | 5.02025 | | | |
| Phase II | 8/28/99 2:00 AM | 8/28/99 3:00 AM | No | 3412 | 32.27525 | 34.32575 | 46.47525 | 32.829 | 4.83925 | | | |
| Phase II | 8/28/99 3:00 AM | 8/28/99 4:00 AM | No | 3412 | 54.75075 | 33.2255 | 30.50025 | 34.92525 | 4.687 | | | |
| Phase II | 8/28/99 4:00 AM | 8/28/99 5:00 AM | No | 3412 | 24.2755 | 39.72525 | 37.57525 | 33.0585 | 4.536 | | | |
| Phase II | 8/28/99 5:00 AM | 8/28/99 6:00 AM | No | 3412 | 31.90025 | 35.5255 | 29.37575 | 34.87375 | 4.40175 | | | |
| Phase II | 8/28/99 6:00 AM | 8/28/99 7:00 AM | No | 3412 | 31.62525 | 31.1755 | 41.4505 | 35.475 | 4.2995 | | | |
| Phase II | 8/28/99 7:00 AM | 8/28/99 8:00 AM | Yes | 3412 | 34.37575 | 35.42525 | 39.02525 | 34.3375 | 4.21175 | | | |
| Phase II | 8/28/99 8:00 AM | 8/28/99 9:00 AM | Yes | 3412 | 24.8005 | 43.27525 | 43.45075 | 33.28125 | 4.1535 | | | |
| Phase II | 8/28/99 9:00 AM | 8/28/99 10:00 AM | Yes | 3412 | 25.10025 | 31.2755 | 35.07575 | 37.344 | 4.091 | | | |
| Phase II | 8/28/99 10:00 AM | 8/28/99 11:00 AM | Yes | 3412 | 22.8255 | 39.8505 | 28.95075 | 31.99475 | 4.015 | | | |
| Phase II | 8/28/99 11:00 AM | 8/28/99 12:00 PM | Yes | 3412 | 30.3 | 32.82525 | 37.6755 | 30.3505 | 3.06675 | | | |
| Phase II | 8/28/99 12:00 PM | 8/28/99 1:00 PM | Yes | 3412 | 27.37575 | 35.6755 | 32.10025 | 32.7765 | 0.44325 | | | |
| Phase II | 8/28/99 1:00 PM | 8/28/99 2:00 PM | Yes | 3412 | 40.55025 | 29.9255 | 53.3755 | 32.69975 | 5.65475 | | | |
| Phase II | 8/28/99 2:00 PM | 8/28/99 3:00 PM | Yes | 3412 | 29.22525 | 31.25075 | 33.22525 | 34.94625 | 0.57125 | | | |
| Phase II | 8/28/99 3:00 PM | 8/28/99 4:00 PM | Yes | 3412 | 34.2005 | 35.45025 | 34.5 | 34.534 | 0.57175 | | | |
| Phase II | 8/28/99 4:00 PM | 8/28/99 5:00 PM | Yes | 3412 | 39.97525 | 35.5505 | 27.825 | 31.986 | 0.5715 | | | |
| Phase II | 8/28/99 5:00 PM | 8/28/99 6:00 PM | Yes | 3412 | 46.15025 | 37.20075 | 45.47525 | 34.07225 | 0.57125 | | | |
| Phase II | 8/28/99 6:00 PM | 8/28/99 7:00 PM | Yes | 3412 | 33.2005 | 40.60075 | 29.05 | 36.47625 | 0.5715 | | | |
| Phase II | 8/28/99 7:00 PM | 8/28/99 8:00 PM | No | 3412 | 35.0005 | 28.87525 | 41.3755 | 35.69075 | 0.57175 | | | |
| Phase II | 8/28/99 8:00 PM | 8/28/99 9:00 PM | No | 3412 | 26.8505 | 36.75 | 27.8 | 32.13 | 0.572 | | | |
| Phase II | 8/28/99 9:00 PM | 8/28/99 10:00 PM | No | 3412 | | | | | | | | |
| Phase II | 8/28/99 10:00 PM | 8/28/99 11:00 PM | No | 3412 | | | | | | | | |
| Phase II | 8/28/99 11:00 PM | 8/29/99 12:00 AM | No | 3412 | | | | | | | | |
| Phase II | 8/29/99 12:00 AM | 8/29/99 1:00 AM | No | 2942 | 62.35075 | 31.575 | 31.675 | 36.1815 | 0.60175 | | | |
| Phase II | 8/29/99 1:00 AM | 8/29/99 2:00 AM | No | 2942 | 61.2255 | 33.0505 | 33.6 | 31.82925 | 0.601 | | | |
| Phase II | 8/29/99 2:00 AM | 8/29/99 3:00 AM | No | 2942 | 98.25025 | 141.6758 | 29.425 | 34.03975 | 0.59925 | | | |
| Phase II | 8/29/99 3:00 AM | 8/29/99 4:00 AM | No | 2942 | 40.02575 | 35.62525 | 30.426 | 32.5455 | 0.6 | | | |
| Phase II | 8/29/99 4:00 AM | 8/29/99 5:00 AM | No | 2942 | 36.8505 | 35.525 | 35.90025 | 34.96825 | 0.5995 | | | |
| Phase II | 8/29/99 5:00 AM | 8/29/99 6:00 AM | No | 2942 | 32.80025 | 32.05 | 29.22575 | 34.20975 | 0.59975 | | | |
| Phase II | 8/29/99 6:00 AM | 8/29/99 7:00 AM | No | 2942 | 28.9255 | 31.77575 | 28.75025 | 33.9245 | 0.59875 | | | |
| Phase II | 8/29/99 7:00 AM | 8/29/99 8:00 AM | No | 2942 | 30.90025 | 36.82525 | 30.67525 | 33.6305 | 0.59875 | | | |
| Phase II | 8/29/99 8:00 AM | 8/29/99 9:00 AM | No | 2942 | 22.62575 | 30.75025 | 28.87575 | 30.30075 | 0.598 | | | |
| Phase II | 8/29/99 9:00 AM | 8/29/99 10:00 AM | No | 2942 | 20.5255 | 28.4755 | 29.9755 | 33.62425 | 0.59825 | | | |
| Phase II | 8/29/99 10:00 AM | 8/29/99 11:00 AM | No | 2942 | 24.25075 | 30.9255 | 33.6755 | 33.48075 | 0.59825 | | | |
| Phase II | 8/29/99 11:00 AM | 8/29/99 12:00 PM | No | 2942 | 31.87525 | 30.67525 | 29.55 | 30.98825 | 0.5995 | | | |
| Phase II | 8/29/99 12:00 PM | 8/29/99 1:00 PM | No | 2942 | 25.9505 | 29.875 | 28.32525 | 31.35075 | 0.60025 | | | |
| Phase II | 8/29/99 1:00 PM | 8/29/99 2:00 PM | No | 2942 | 34.22575 | 27.80075 | 24.00025 | 29.03425 | 0.60025 | | | |
| Phase II | 8/29/99 2:00 PM | 8/29/99 3:00 PM | No | 2942 | 35.02525 | 27.25 | 27.7755 | 28.5385 | 0.60025 | | | |
| Phase II | 8/29/99 3:00 PM | 8/29/99 4:00 PM | No | 2942 | 30.50025 | 31.8755 | 27.1255 | 28.30375 | 0.6005 | | | |
| Phase II | 8/29/99 4:00 PM | 8/29/99 5:00 PM | No | 2942 | 27.25075 | 34.675 | 25.0255 | 28.9045 | 0.6005 | | | |
| Phase II | 8/29/99 5:00 PM | 8/29/99 6:00 PM | No | 2942 | 27.5505 | 27.97525 | 26.0505 | 26.37225 | 0.60075 | | | |
| Phase II | 8/29/99 6:00 PM | 8/29/99 7:00 PM | No | 2942 | 31.07525 | 34.22525 | 28.225 | 27.2045 | 0.60125 | | | |
| Phase II | 8/29/99 7:00 PM | 8/29/99 8:00 PM | No | 2942 | 22.77525 | 30.95 | 27.47575 | 27.71875 | 0.60025 | | | |
| Phase II | 8/29/99 8:00 PM | 8/29/99 9:00 PM | No | 2942 | 32.5005 | 36.95075 | 25.5505 | 29.1705 | 0.60075 | | | |
| Phase II | 8/29/99 9:00 PM | 8/29/99 10:00 PM | No | 2942 | 23.0255 | 30.25075 | 53.12575 | 29.41925 | 0.60025 | | | |
| Phase II | 8/29/99 10:00 PM | 8/29/99 11:00 PM | No | 2942 | 32.2755 | 30.10075 | 29.55025 | 26.8365 | 0.599 | | | |
| Phase II | 8/29/99 11:00 PM | 8/30/99 12:00 AM | No | 2942 | 27.72525 | 28.9505 | 34.40075 | 27.99925 | 0.58925 | | | |
| Phase II | 8/30/99 12:00 AM | 8/30/99 1:00 AM | No | 3134 | 23.70025 | 31.12525 | 29.97575 | 27.879 | 0.56125 | | | |
| Phase II | 8/30/99 1:00 AM | 8/30/99 2:00 AM | No | 3134 | 22.95025 | 34.05 | 35.2505 | 29.417 | 0.5605 | | | |
| Phase II | 8/30/99 2:00 AM | 8/30/99 3:00 AM | No | 3134 | 30.15025 | 41.3505 | 26.47525 | 31.76 | 0.56 | | | |
| Phase II | 8/30/99 3:00 AM | 8/30/99 4:00 AM | No | 3134 | 49.82525 | 30.5255 | 23.6505 | 28.90025 | 0.5585 | | | |
| Phase II | 8/30/99 4:00 AM | 8/30/99 5:00 AM | No | 3134 | 33.4755 | 31.076 | 25.0255 | 31.21575 | 0.55775 | | | |
| Phase II | 8/30/99 5:00 AM | 8/30/99 6:00 AM | No | 3134 | 28.97525 | 30.40025 | 26.00025 | 29.2435 | 0.55825 | | | |
| Phase II | 8/30/99 6:00 AM | 8/30/99 7:00 AM | No | 3134 | 26.87525 | 33.17525 | 29.125 | 30.4635 | 0.558 | | | |
| Phase II | 8/30/99 7:00 AM | 8/30/99 8:00 AM | Yes | 3134 | 64.626 | 30.62575 | 27.00075 | 32.04925 | 0.58625 | | | |
| Phase II | 8/30/99 8:00 AM | 8/30/99 9:00 AM | Yes | 3134 | 26.30075 | 33.95075 | 30.30025 | 31.65 | 0.595 | | | |
| Phase II | 8/30/99 9:00 AM | 8/30/99 10:00 AM | Yes | 3134 | 40.1005 | 41.22575 | 32.97525 | 29.053 | 0.58575 | | | |
| Phase II | 8/30/99 10:00 AM | 8/30/99 11:00 AM | Yes | 3134 | 33.1505 | 28.2255 | 29.15 | 31.1045 | 0.5605 | | | |
| Phase II | 8/30/99 11:00 AM | 8/30/99 12:00 PM | Yes | 3134 | 28.55025 | 48.1005 | 32 | 33.3555 | 0.56175 | | | |
| Phase II | 8/30/99 12:00 PM | 8/30/99 1:00 PM | Yes | 3134 | 29.1005 | 32.77575 | 28.27525 | 31.1065 | 0.563 | | | |
| Phase II | 8/30/99 1:00 PM | 8/30/99 2:00 PM | Yes | 3134 | 29.95075 | 29.75025 | 30.4005 | 29.874 | 0.5725 | | | |
| Phase II | 8/30/99 2:00 PM | 8/30/99 3:00 PM | Yes | 3134 | 57.40075 | 30.95025 | 27.87575 | 34.03175 | 8.6725 | | | |
| Phase II | 8/30/99 3:00 PM | 8/30/99 4:00 PM | Yes | 3134 | 30.55 | 33.97525 | 33.101 | 32.582 | 1.65625 | | | |
| Phase II | 8/30/99 4:00 PM | 8/30/99 5:00 PM | Yes | 3134 | 30.62575 | 27.8755 | 47.70025 | 28.72075 | 1.49525 | | | |
| Phase II | 8/30/99 5:00 PM | 8/30/99 6:00 PM | Yes | 3134 | 27.05025 | 36.72575 | 34.97575 | 31.6115 | 1.40625 | | | |
| Phase II | 8/30/99 6:00 PM | 8/30/99 7:00 PM | Yes | 3134 | 40.025 | 28.70075 | 26.82525 | 29.9075 | 1.33325 | | | |
| Phase II | 8/30/99 7:00 PM | 8/30/99 8:00 PM | No | 3134 | 34.1 | 32.47525 | 31.8505 | 27.7565 | 1.27425 | | | |
| Phase II | 8/30/99 8:00 PM | 8/30/99 9:00 PM | No | 3134 | 36.5005 | 30.87525 | 32.0255 | 28.98075 | 1.2265 | | | |
| Phase II | 8/30/99 9:00 PM | 8/30/99 10:00 PM | No | 3134 | 33.20075 | 28.1755 | 26.7755 | 28.38775 | 1.17875 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 8/30/99 10:00 PM | 8/30/99 11:00 PM | No | 3134 | 32.6755 | 27.3755 | 42.35075 | 26.40075 | 1.14875 | | | |
| Phase II | 8/30/99 11:00 PM | 8/31/99 12:00 AM | No | 3134 | 27.4755 | 40.2505 | 28.951 | 30.5015 | 1.1295 | | | |
| Phase II | 8/31/99 12:00 AM | 8/31/99 1:00 AM | No | 3081 | 26.125 | 30.45025 | 26.52525 | 28.30825 | 1.12825 | | | |
| Phase II | 8/31/99 1:00 AM | 8/31/99 2:00 AM | No | 3081 | 65.97575 | 29.4005 | 42.27575 | 30.09075 | 1.09225 | | | |
| Phase II | 8/31/99 2:00 AM | 8/31/99 3:00 AM | No | 3081 | 22.9005 | 26.8755 | 41.10075 | 29.07775 | 1.092 | | | |
| Phase II | 8/31/99 3:00 AM | 8/31/99 4:00 AM | No | 3081 | 30.47575 | 29.7755 | 90.37525 | 27.389 | 1.09225 | | | |
| Phase II | 8/31/99 4:00 AM | 8/31/99 5:00 AM | No | 3081 | 27.75025 | 35.02525 | 26.5 | 29.70825 | 1.06375 | | | |
| Phase II | 8/31/99 5:00 AM | 8/31/99 6:00 AM | No | 3081 | 41.90025 | 32.6255 | 29.92525 | 27.8005 | 1.05425 | | | |
| Phase II | 8/31/99 6:00 AM | 8/31/99 7:00 AM | No | 3081 | 34.3505 | 28.75025 | 30.75075 | 27.0705 | 1.0535 | | | |
| Phase II | 8/31/99 7:00 AM | 8/31/99 8:00 AM | Yes | 3081 | 31.40075 | 29.85025 | 24.5005 | 26.22925 | 1.05475 | | | |
| Phase II | 8/31/99 8:00 AM | 8/31/99 9:00 AM | Yes | 3081 | 21.6505 | 26.95 | 25.825 | 28.017 | 1.05475 | | | |
| Phase II | 8/31/99 9:00 AM | 8/31/99 10:00 AM | Yes | 3081 | 23.17525 | 34.02525 | 24.7 | 32.92975 | 1.018 | | | |
| Phase II | 8/31/99 10:00 AM | 8/31/99 11:00 AM | Yes | 3081 | 22.3255 | 35.15 | 51.82575 | 26.30225 | 1.01925 | | | |
| Phase II | 8/31/99 11:00 AM | 8/31/99 12:00 PM | Yes | 3081 | 25.97575 | 42.07575 | 34.9755 | 23.28525 | 1.01925 | | | |
| Phase II | 8/31/99 12:00 PM | 8/31/99 1:00 PM | Yes | 3081 | 27.75025 | 31.80075 | 30.7 | 24.741 | 1.001 | | | |
| Phase II | 8/31/99 1:00 PM | 8/31/99 2:00 PM | No | 3081 | 37.4 | 32.5755 | 39.5 | 22.444 | 0.98175 | | | |
| Phase II | 8/31/99 2:00 PM | 8/31/99 3:00 PM | Yes | 3081 | 22.9755 | 26.72525 | 26.92525 | 24.6195 | 0.9825 | | | |
| Phase II | 8/31/99 3:00 PM | 8/31/99 4:00 PM | Yes | 3081 | 34.07525 | 28.00025 | 35.725 | 25.1845 | 0.98225 | | | |
| Phase II | 8/31/99 4:00 PM | 8/31/99 5:00 PM | Yes | 3081 | 24.90025 | 26.85075 | 26.9255 | 28.674 | 0.9835 | | | |
| Phase II | 8/31/99 5:00 PM | 8/31/99 6:00 PM | Yes | 3081 | 16.0755 | 30.5505 | 26.2005 | 25.95275 | 0.98375 | | | |
| Phase II | 8/31/99 6:00 PM | 8/31/99 7:00 PM | Yes | 3081 | 29.67575 | 27.45075 | 33.825 | 23.49525 | 0.984 | | | |
| Phase II | 8/31/99 7:00 PM | 8/31/99 8:00 PM | No | 3081 | 47.30025 | 26.201 | 21.9255 | 27.81525 | 0.983 | | | |
| Phase II | 8/31/99 8:00 PM | 8/31/99 9:00 PM | No | 3081 | 26.25025 | 29.1005 | 35.40075 | 28.2015 | 0.95425 | | | |
| Phase II | 8/31/99 9:00 PM | 8/31/99 10:00 PM | No | 3081 | 25.1755 | 25.85 | 38.42525 | 26.46975 | 0.9435 | | | |
| Phase II | 8/31/99 10:00 PM | 8/31/99 11:00 PM | No | 3081 | 32.0255 | 26.00025 | 29.45 | 27.055 | 0.94325 | | | |
| Phase II | 8/31/99 11:00 PM | 9/1/99 12:00 AM | No | 3081 | 34.02575 | 31.075 | 30.375 | 27.629 | 0.943 | | | |
| Phase II | 9/1/99 12:00 AM | 9/1/99 1:00 AM | No | 1688 | 26.15025 | 23.70075 | 39.3755 | 27.38525 | 0.942 | | | |
| Phase II | 9/1/99 1:00 AM | 9/1/99 2:00 AM | No | 1688 | 26.5755 | 28.4505 | 25.12525 | 26.65725 | 0.94 | | | |
| Phase II | 9/1/99 2:00 AM | 9/1/99 3:00 AM | No | 1688 | 28.40025 | 30.7755 | 23.925 | 28.093 | 0.93975 | | | |
| Phase II | 9/1/99 3:00 AM | 9/1/99 4:00 AM | No | 1688 | 27.57575 | 35.85025 | 28.07575 | 27.78175 | 0.9395 | | | |
| Phase II | 9/1/99 4:00 AM | 9/1/99 5:00 AM | No | 1688 | 28.2 | 32.85075 | 29.35025 | 27.03675 | 0.91925 | | | |
| Phase II | 9/1/99 5:00 AM | 9/1/99 6:00 AM | No | 1688 | 31.25025 | 28.25075 | 88.0005 | 25.472 | 0.91825 | | | |
| Phase II | 9/1/99 6:00 AM | 9/1/99 7:00 AM | No | 1688 | 29.42525 | 40.27525 | 31.52575 | 29.44575 | 0.9185 | | | |
| Phase II | 9/1/99 7:00 AM | 9/1/99 8:00 AM | Yes | 1688 | 32.325 | 34.6005 | 33.0005 | 28.0575 | 0.909 | | | |
| Phase II | 9/1/99 8:00 AM | 9/1/99 9:00 AM | Yes | 1688 | 31.57525 | 30.52575 | 29.9505 | 25.23425 | 0.89975 | | | |
| Phase II | 9/1/99 9:00 AM | 9/1/99 10:00 AM | No | 1688 | 30.175 | 27.6255 | 21.8 | 24.524 | 0.9015 | | | |
| Phase II | 9/1/99 10:00 AM | 9/1/99 11:00 AM | Yes | 1688 | 22.17575 | 36.97525 | 41.72575 | 24.71075 | 0.902 | | | |
| Phase II | 9/1/99 11:00 AM | 9/1/99 12:00 PM | Yes | 1688 | 42.75025 | 26.525 | 27.9005 | 27.87275 | 0.90175 | | | |
| Phase II | 9/1/99 12:00 PM | 9/1/99 1:00 PM | Yes | 1688 | 32.27525 | 31.60075 | 32.27525 | 25.53675 | 0.8745 | | | |
| Phase II | 9/1/99 1:00 PM | 9/1/99 2:00 PM | Yes | 1688 | 29.951 | 34.77525 | 36.225 | 22.594 | 0.86675 | | | |
| Phase II | 9/1/99 2:00 PM | 9/1/99 3:00 PM | Yes | 1688 | 24.80025 | 38.42575 | 22.6505 | 23.0625 | 1.30325 | | | |
| Phase II | 9/1/99 3:00 PM | 9/1/99 4:00 PM | Yes | 1688 | 26.42575 | 33.7255 | 26.82525 | 27.62525 | 1.958 | | | |
| Phase II | 9/1/99 4:00 PM | 9/1/99 5:00 PM | Yes | 1688 | 18.6755 | 50.0755 | 27.45025 | 26.898 | 1.44925 | | | |
| Phase II | 9/1/99 5:00 PM | 9/1/99 6:00 PM | Yes | 1688 | 36.5 | 29.4755 | 24.275 | 25.65025 | 1.362 | | | |
| Phase II | 9/1/99 6:00 PM | 9/1/99 7:00 PM | Yes | 1688 | 31.72525 | 30.65025 | 28.35075 | 25.05725 | 1.32875 | | | |
| Phase II | 9/1/99 7:00 PM | 9/1/99 8:00 PM | No | 1688 | 25.475 | 31.3255 | 26.2255 | 25.90025 | 1.28825 | | | |
| Phase II | 9/1/99 8:00 PM | 9/1/99 9:00 PM | No | 1688 | 24.57525 | 25.6505 | 25.77525 | 25.46925 | 1.228 | | | |
| Phase II | 9/1/99 9:00 PM | 9/1/99 10:00 PM | No | 1688 | 29.95075 | 25.12525 | 29.5005 | 26.154 | 1.16275 | | | |
| Phase II | 9/1/99 10:00 PM | 9/1/99 11:00 PM | No | 1688 | 24.77525 | 27.85025 | 25.151 | 26.0385 | 1.13125 | | | |
| Phase II | 9/1/99 11:00 PM | 9/2/99 12:00 AM | No | 1688 | 28.0755 | 26.92525 | 23.0005 | 24.4795 | 1.06825 | | | |
| Phase II | 9/2/99 12:00 AM | 9/2/99 1:00 AM | No | 1882 | 33.8 | 24.82525 | 26.5255 | 23.866 | 1.05725 | | | |
| Phase II | 9/2/99 1:00 AM | 9/2/99 2:00 AM | No | 1882 | 25.2255 | 26.32525 | 27.15025 | 23.43925 | 1.059 | | | |
| Phase II | 9/2/99 2:00 AM | 9/2/99 3:00 AM | No | 1882 | 41.725 | 27.5505 | 30.05075 | 24.0575 | 1.05775 | | | |
| Phase II | 9/2/99 3:00 AM | 9/2/99 4:00 AM | No | 1882 | 29.95025 | 27.7255 | 31.5005 | 26.2765 | 1.0575 | | | |
| Phase II | 9/2/99 4:00 AM | 9/2/99 5:00 AM | No | 1882 | 32.10025 | 31.7 | 27.37575 | 26.151 | 1.02775 | | | |
| Phase II | 9/2/99 5:00 AM | 9/2/99 6:00 AM | No | 1882 | 34.8255 | 26.875 | 24.3005 | 24.50525 | 1.0195 | | | |
| Phase II | 9/2/99 6:00 AM | 9/2/99 7:00 AM | No | 1882 | 30.60025 | 30.8255 | 27.7505 | 24.693 | 1.01875 | | | |
| Phase II | 9/2/99 7:00 AM | 9/2/99 8:00 AM | Yes | 1882 | 32.0255 | 29.17525 | 37.2255 | 24.4025 | 1.00725 | | | |
| Phase II | 9/2/99 8:00 AM | 9/2/99 9:00 AM | Yes | 1882 | 30.2 | 27.325 | 36.401 | 22.8415 | 1.0015 | | | |
| Phase II | 9/2/99 9:00 AM | 9/2/99 10:00 AM | Yes | 1882 | 25.0005 | 27.52525 | 31.9505 | 20.0885 | 0.99225 | | | |
| Phase II | 9/2/99 10:00 AM | 9/2/99 11:00 AM | Yes | 1882 | 37.1505 | 31.65025 | 25.8255 | 18.12725 | 0.98375 | | | |
| Phase II | 9/2/99 11:00 AM | 9/2/99 12:00 PM | Yes | 1882 | 29.40025 | 34.6755 | 28.12525 | 20.9225 | 0.965 | | | |
| Phase II | 9/2/99 12:00 PM | 9/2/99 1:00 PM | Yes | 1882 | 20.825 | 26.25 | 36.32575 | 24.009 | 0.946 | | | |
| Phase II | 9/2/99 1:00 PM | 9/2/99 2:00 PM | Yes | 1882 | 22.65025 | 34.7005 | 28.40025 | 26.294 | 2.1995 | | | |
| Phase II | 9/2/99 2:00 PM | 9/2/99 3:00 PM | Yes | 1882 | 39.32575 | 30.07525 | 27.376 | 30.5675 | 2.9975 | | | |
| Phase II | 9/2/99 3:00 PM | 9/2/99 4:00 PM | Yes | 1882 | 23.7505 | 34.5255 | 29.0255 | 27.56125 | 2.353 | | | |
| Phase II | 9/2/99 4:00 PM | 9/2/99 5:00 PM | Yes | 1882 | 25.0755 | 29.17525 | 26.62525 | 26.25175 | 2.1525 | | | |
| Phase II | 9/2/99 5:00 PM | 9/2/99 6:00 PM | Yes | 1882 | 30.1755 | 54.6255 | 34.675 | 25.3815 | 2.1255 | | | |
| Phase II | 9/2/99 6:00 PM | 9/2/99 7:00 PM | Yes | 1882 | 20.07525 | 48.2005 | 30.7505 | 25.30725 | 2.06825 | | | |
| Phase II | 9/2/99 7:00 PM | 9/2/99 8:00 PM | No | 1882 | 29.42525 | 42.02575 | 35.2005 | 25.35325 | 1.984 | | | |
| Phase II | 9/2/99 8:00 PM | 9/2/99 9:00 PM | No | 1882 | 28.225 | 24.97525 | 30.8005 | 26.0175 | 1.90425 | | | |
| Phase II | 9/2/99 9:00 PM | 9/2/99 10:00 PM | No | 1882 | 38.8505 | 23.82525 | 25.35025 | 27.10525 | 1.829 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/2/99 10:00 PM | 9/2/99 11:00 PM | No | 1882 | 28.5005 | 26.47525 | 29.25075 | 28.395 | 1.771 | | | |
| Phase II | 9/2/99 11:00 PM | 9/3/99 12:00 AM | No | 1882 | 34.57525 | 28.0255 | 22.75025 | 28.618 | 1.69575 | | | |
| Phase II | 9/3/99 12:00 AM | 9/3/99 1:00 AM | No | 1784 | 28.2755 | 26.12525 | 28.35025 | 25.49275 | 1.66725 | | | |
| Phase II | 9/3/99 1:00 AM | 9/3/99 2:00 AM | No | 1784 | 48.2255 | 24.75075 | 28.2 | 26.42375 | 1.63775 | | | |
| Phase II | 9/3/99 2:00 AM | 9/3/99 3:00 AM | No | 1784 | 31.1255 | 29.7505 | 23.45025 | 25.743 | 1.62875 | | | |
| Phase II | 9/3/99 3:00 AM | 9/3/99 4:00 AM | No | 1784 | 29.6755 | 27.2005 | 25.50075 | 26.0835 | 1.6195 | | | |
| Phase II | 9/3/99 4:00 AM | 9/3/99 5:00 AM | No | 1784 | 38.00075 | 23.97525 | 33.82525 | 27.44875 | 1.59 | | | |
| Phase II | 9/3/99 5:00 AM | 9/3/99 6:00 AM | No | 1784 | 28.12525 | 23.60025 | 25.17525 | 29.55225 | 1.5725 | | | |
| Phase II | 9/3/99 6:00 AM | 9/3/99 7:00 AM | No | 1784 | 31.05025 | 26.1 | 38.551 | 28.7855 | 1.55425 | | | |
| Phase II | 9/3/99 7:00 AM | 9/3/99 8:00 AM | Yes | 1784 | 28.02525 | 27.6505 | 29.7505 | 28.24 | 1.5525 | | | |
| Phase II | 9/3/99 8:00 AM | 9/3/99 9:00 AM | Yes | 1784 | 24.75025 | 32.77525 | 25.32525 | 27.88475 | 1.53475 | | | |
| Phase II | 9/3/99 9:00 AM | 9/3/99 10:00 AM | Yes | 1784 | 25.8505 | 29.3505 | 22.20075 | 29.312 | 3.82575 | | | |
| Phase II | 9/3/99 10:00 AM | 9/3/99 11:00 AM | Yes | 1784 | 24.5505 | 57.801 | 31.051 | 29.08475 | 2.90975 | | | |
| Phase II | 9/3/99 11:00 AM | 9/3/99 12:00 PM | Yes | 1784 | 29.9255 | 25.37525 | 33.225 | 24.84775 | 2.62725 | | | |
| Phase II | 9/3/99 12:00 PM | 9/3/99 1:00 PM | Yes | 1784 | 24.2255 | 33.92525 | 26.47525 | 25.90625 | 2.42575 | | | |
| Phase II | 9/3/99 1:00 PM | 9/3/99 2:00 PM | Yes | 1784 | 21.775 | 36.175 | 26.7005 | 23.96925 | 2.23925 | | | |
| Phase II | 9/3/99 2:00 PM | 9/3/99 3:00 PM | Yes | 1784 | 24.97525 | 28.375 | 26.8755 | 23.7195 | 2.041 | | | |
| Phase II | 9/3/99 3:00 PM | 9/3/99 4:00 PM | Yes | 1784 | 23.5005 | 23.35075 | 26.175 | 23.84475 | 2.0925 | | | |
| Phase II | 9/3/99 4:00 PM | 9/3/99 5:00 PM | No | 1784 | 37.90025 | 21.0005 | 21.8755 | 23.38625 | 2.28725 | | | |
| Phase II | 9/3/99 5:00 PM | 9/3/99 6:00 PM | Yes | 1784 | 36.3 | 25.3255 | 26.3755 | 22.433 | 2.33725 | | | |
| Phase II | 9/3/99 6:00 PM | 9/3/99 7:00 PM | Yes | 1784 | 29.02525 | 27.9755 | 26.1 | 24.5305 | 2.3735 | | | |
| Phase II | 9/3/99 7:00 PM | 9/3/99 8:00 PM | No | 1784 | 32.0755 | 28.551 | 21.7755 | 22.885 | 2.37275 | | | |
| Phase II | 9/3/99 8:00 PM | 9/3/99 9:00 PM | No | 1784 | 25.85025 | 33.0255 | 27.425 | 26.12575 | 2.20625 | | | |
| Phase II | 9/3/99 9:00 PM | 9/3/99 10:00 PM | No | 1784 | 33.0255 | 25.4255 | 22.92525 | 21.77225 | 2.38 | | | |
| Phase II | 9/3/99 10:00 PM | 9/3/99 11:00 PM | No | 1784 | 32.425 | 23.35 | 20.125 | 21.6955 | 2.339 | | | |
| Phase II | 9/3/99 11:00 PM | 9/4/99 12:00 AM | No | 1784 | 30.82525 | 25.3255 | 24.07525 | 21.1675 | 2.466 | | | |
| Phase II | 9/4/99 12:00 AM | 9/4/99 1:00 AM | No | 1896 | 25.35075 | 24.426 | 29.80075 | 22.95625 | 2.13125 | | | |
| Phase II | 9/4/99 1:00 AM | 9/4/99 2:00 AM | No | 1896 | 32.02525 | 25.05 | 25.22525 | 24.90775 | 2.19625 | | | |
| Phase II | 9/4/99 2:00 AM | 9/4/99 3:00 AM | No | 1896 | 31.42525 | 23.9505 | 23.7255 | 21.88775 | 2.27975 | | | |
| Phase II | 9/4/99 3:00 AM | 9/4/99 4:00 AM | No | 1896 | 22.4505 | 39.8255 | 19.0005 | 20.412 | 2.5555 | | | |
| Phase II | 9/4/99 4:00 AM | 9/4/99 5:00 AM | No | 1896 | 29.675 | 24.72575 | 27.525 | 20.55825 | 2.14075 | | | |
| Phase II | 9/4/99 5:00 AM | 9/4/99 6:00 AM | No | 1896 | 22.5255 | 26.1505 | 20.25025 | 22.38225 | 2.00875 | | | |
| Phase II | 9/4/99 6:00 AM | 9/4/99 7:00 AM | No | 1896 | 37.3755 | 30.30025 | 27.7755 | 21.7655 | 2.03275 | | | |
| Phase II | 9/4/99 7:00 AM | 9/4/99 8:00 AM | No | 1896 | 45.50025 | 28.0005 | 22.2505 | 23.501 | 2.189 | | | |
| Phase II | 9/4/99 8:00 AM | 9/4/99 9:00 AM | Yes | 1896 | 29.2005 | 40.976 | 25.55025 | 21.419 | 2.2205 | | | |
| Phase II | 9/4/99 9:00 AM | 9/4/99 10:00 AM | Yes | 1896 | 30.425 | 36.126 | 22.976 | 21.322 | 2.304 | | | |
| Phase II | 9/4/99 10:00 AM | 9/4/99 11:00 AM | Yes | 1896 | 29.5255 | 25.225 | 28.22525 | 23.44025 | 2.04625 | | | |
| Phase II | 9/4/99 11:00 AM | 9/4/99 12:00 PM | Yes | 1896 | 35.7 | 31.00025 | 28.9505 | 23.16525 | 2.14925 | | | |
| Phase II | 9/4/99 12:00 PM | 9/4/99 1:00 PM | Yes | 1896 | 31.15025 | 27.05 | 31.82525 | 26.2315 | 2.22125 | | | |
| Phase II | 9/4/99 1:00 PM | 9/4/99 2:00 PM | No | 1896 | 25.55025 | 26.6255 | 23.35025 | 19.47325 | 2.185 | | | |
| Phase II | 9/4/99 2:00 PM | 9/4/99 3:00 PM | Yes | 1896 | 24.8255 | 34.725 | 25.6755 | 21.03125 | 2.0715 | | | |
| Phase II | 9/4/99 3:00 PM | 9/4/99 4:00 PM | Yes | 1896 | 23.85025 | 30.1005 | 28.90025 | 20.856 | 1.98725 | | | |
| Phase II | 9/4/99 4:00 PM | 9/4/99 5:00 PM | Yes | 1896 | 46.4005 | 24.92575 | 21.25075 | 20.38225 | 2.04875 | | | |
| Phase II | 9/4/99 5:00 PM | 9/4/99 6:00 PM | Yes | 1896 | 47.4755 | 26.9505 | 27.80025 | 22.89175 | 2.1885 | | | |
| Phase II | 9/4/99 6:00 PM | 9/4/99 7:00 PM | No | 1896 | 33.8255 | 23.8255 | 23.5255 | 22.5145 | 2.15825 | | | |
| Phase II | 9/4/99 7:00 PM | 9/4/99 8:00 PM | No | 1896 | 33.25025 | 25.85075 | 18.87525 | 23.3195 | 2.2885 | | | |
| Phase II | 9/4/99 8:00 PM | 9/4/99 9:00 PM | No | 1896 | 30.225 | 25.20075 | 18.82525 | 20.16025 | 2.07 | | | |
| Phase II | 9/4/99 9:00 PM | 9/4/99 10:00 PM | No | 1896 | 27.07575 | 26.75 | 26.525 | 19.65675 | 2.2595 | | | |
| Phase II | 9/4/99 10:00 PM | 9/4/99 11:00 PM | No | 1896 | 26.35025 | 30.9505 | 19.675 | 20.46625 | 2.17825 | | | |
| Phase II | 9/4/99 11:00 PM | 9/5/99 12:00 AM | No | 1896 | 20.275 | 24.7005 | 22.07525 | 22.16075 | 2.1725 | | | |
| Phase II | 9/5/99 12:00 AM | 9/5/99 1:00 AM | No | 1772 | 24.15 | 41.17575 | 21.8505 | 22.0125 | 1.98225 | | | |
| Phase II | 9/5/99 1:00 AM | 9/5/99 2:00 AM | No | 1772 | 35.47575 | 25.9005 | 21.80025 | 24.5465 | 2.02875 | | | |
| Phase II | 9/5/99 2:00 AM | 9/5/99 3:00 AM | No | 1772 | 24.20025 | 44.6505 | 32.0505 | 22.268 | 2.128 | | | |
| Phase II | 9/5/99 3:00 AM | 9/5/99 4:00 AM | No | 1772 | 36.4505 | 28.45 | 26.375 | 20.73825 | 2.138 | | | |
| Phase II | 9/5/99 4:00 AM | 9/5/99 5:00 AM | No | 1772 | 32.175 | 23.8755 | 24.05025 | 21.29675 | 2.038 | | | |
| Phase II | 9/5/99 5:00 AM | 9/5/99 6:00 AM | No | 1772 | 22.4005 | 30.3005 | 26.351 | 21.05925 | 2.02825 | | | |
| Phase II | 9/5/99 6:00 AM | 9/5/99 7:00 AM | No | 1772 | 24.5505 | 28.37525 | 22.875 | 21.481 | 2.00975 | | | |
| Phase II | 9/5/99 7:00 AM | 9/5/99 8:00 AM | No | 1772 | 22.925 | 30.67525 | 18.0505 | 24.58225 | 1.957 | | | |
| Phase II | 9/5/99 8:00 AM | 9/5/99 9:00 AM | No | 1772 | 23.125 | 24.1505 | 19.9755 | 23.12625 | 2.00875 | | | |
| Phase II | 9/5/99 9:00 AM | 9/5/99 10:00 AM | No | 1772 | 24.6505 | 25.8755 | 22.32525 | 28.13575 | 2.3995 | | | |
| Phase II | 9/5/99 10:00 AM | 9/5/99 11:00 AM | No | 1772 | 17.9 | 24.82525 | 26.07525 | 24.6055 | 2.05125 | | | |
| Phase II | 9/5/99 11:00 AM | 9/5/99 12:00 PM | No | 1772 | 37.0505 | 29.9255 | 26.47525 | 21.207 | 2.183 | | | |
| Phase II | 9/5/99 12:00 PM | 9/5/99 1:00 PM | No | 1772 | 35.8505 | 30.9255 | 25.2 | 22.58025 | 2.113 | | | |
| Phase II | 9/5/99 1:00 PM | 9/5/99 2:00 PM | No | 1772 | 43.22525 | 25.05025 | 29.85 | 23.52625 | 1.95675 | | | |
| Phase II | 9/5/99 2:00 PM | 9/5/99 3:00 PM | No | 1772 | 25.0255 | 24.401 | 21.1255 | 25.25425 | 1.9935 | | | |
| Phase II | 9/5/99 3:00 PM | 9/5/99 4:00 PM | No | 1772 | 25.82525 | 26.7 | 25.80025 | 21.077 | 1.93625 | | | |
| Phase II | 9/5/99 4:00 PM | 9/5/99 5:00 PM | No | 1772 | 20.07575 | 28.675 | 26.0755 | 22.794 | 2.06325 | | | |
| Phase II | 9/5/99 5:00 PM | 9/5/99 6:00 PM | No | 1772 | 22.47525 | 23.7 | 24.47575 | 24.502 | 2.39525 | | | |
| Phase II | 9/5/99 6:00 PM | 9/5/99 7:00 PM | No | 1772 | 25.95025 | 23.60075 | 63.40025 | 19.24375 | 2.227 | | | |
| Phase II | 9/5/99 7:00 PM | 9/5/99 8:00 PM | No | 1772 | 36.02525 | 24.67575 | 25.4005 | 23.43075 | 2.399 | | | |
| Phase II | 9/5/99 8:00 PM | 9/5/99 9:00 PM | No | 1772 | 26.05025 | 22.85025 | 20.7755 | 21.41375 | 2.206 | | | |
| Phase II | 9/5/99 9:00 PM | 9/5/99 10:00 PM | No | 1772 | 20.10025 | 24.325 | 26.57525 | 21.181 | 2.17575 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/5/99 10:00 PM | 9/5/99 11:00 PM | No | 1772 | 21.2005 | 24.8005 | 24.27575 | 19.57825 | 2.0165 | | | |
| Phase II | 9/5/99 11:00 PM | 9/6/99 12:00 AM | No | 1772 | 24.2255 | 30.3755 | 24.5255 | 20.549 | 2.09275 | | | |
| Phase II | 9/6/99 12:00 AM | 9/6/99 1:00 AM | No | 1517 | 26.62525 | 29.25025 | 20.7505 | 23.666 | 2.0335 | | | |
| Phase II | 9/6/99 1:00 AM | 9/6/99 2:00 AM | No | 1517 | 90.625 | 24.30025 | 21.3755 | 19.71975 | 2.0265 | | | |
| Phase II | 9/6/99 2:00 AM | 9/6/99 3:00 AM | No | 1517 | 22.80025 | 26.82525 | 26.67525 | 18.97525 | 1.889 | | | |
| Phase II | 9/6/99 3:00 AM | 9/6/99 4:00 AM | No | 1517 | 21.90025 | 32.55075 | 25.12525 | 20.48125 | 1.916 | | | |
| Phase II | 9/6/99 4:00 AM | 9/6/99 5:00 AM | No | 1517 | 18.5505 | 43.9255 | 22.22525 | 20.63175 | 2.0055 | | | |
| Phase II | 9/6/99 5:00 AM | 9/6/99 6:00 AM | No | 1517 | 26.12575 | 32.3255 | 62.101 | 19.4155 | 2.10925 | | | |
| Phase II | 9/6/99 6:00 AM | 9/6/99 7:00 AM | No | 1517 | 32.62525 | 32.5255 | 32.1755 | 21.223 | 1.9945 | | | |
| Phase II | 9/6/99 7:00 AM | 9/6/99 8:00 AM | | 1517 | 32.10025 | 36.2005 | 27.625 | 20.95975 | 1.99475 | | | |
| Phase II | 9/6/99 8:00 AM | 9/6/99 9:00 AM | | 1517 | 22.75025 | 33.87525 | 26.37525 | 21.7465 | 2.039 | | | |
| Phase II | 9/6/99 9:00 AM | 9/6/99 10:00 AM | | 1517 | 17.60025 | 30.7005 | 17.97525 | 19.3655 | 2.04175 | | | |
| Phase II | 9/6/99 10:00 AM | 9/6/99 11:00 AM | | 1517 | 18.6505 | 26.25 | 24.75025 | 20.83375 | 2.0455 | | | |
| Phase II | 9/6/99 11:00 AM | 9/6/99 12:00 PM | | 1517 | 30.4005 | 24.22525 | 19.226 | 23.1505 | 2.1295 | | | |
| Phase II | 9/6/99 12:00 PM | 9/6/99 1:00 PM | | 1517 | 25.32525 | 33.35025 | 23.50075 | 19.58125 | 1.87125 | | | |
| Phase II | 9/6/99 1:00 PM | 9/6/99 2:00 PM | | 1517 | 25.1505 | 45.32575 | 24.8005 | 20.23875 | 1.8635 | | | |
| Phase II | 9/6/99 2:00 PM | 9/6/99 3:00 PM | | 1517 | 46.3505 | 30.60075 | 39.676 | 20.077 | 2.071 | | | |
| Phase II | 9/6/99 3:00 PM | 9/6/99 4:00 PM | | 1517 | 40.45075 | 28.9755 | 22.52525 | 20.774 | 1.84775 | | | |
| Phase II | 9/6/99 4:00 PM | 9/6/99 5:00 PM | | 1517 | 36.15075 | 36.9755 | 21.52525 | 23.04125 | 1.84925 | | | |
| Phase II | 9/6/99 5:00 PM | 9/6/99 6:00 PM | | 1517 | 27.7505 | 29.32525 | 21.62525 | 20.975 | 1.8465 | | | |
| Phase II | 9/6/99 6:00 PM | 9/6/99 7:00 PM | | 1517 | 23.47525 | 34.625 | 27.22525 | 22.2765 | 1.8695 | | | |
| Phase II | 9/6/99 7:00 PM | 9/6/99 8:00 PM | No | 1517 | 25.7755 | 29.75 | 26.20025 | 24.04325 | 2.04625 | | | |
| Phase II | 9/6/99 8:00 PM | 9/6/99 9:00 PM | No | 1517 | 22.62525 | 23.92525 | 22.95075 | 23.3025 | 2.0775 | | | |
| Phase II | 9/6/99 9:00 PM | 9/6/99 10:00 PM | No | 1517 | 21.275 | 23.85 | 17.10025 | 23.9435 | 2.104 | | | |
| Phase II | 9/6/99 10:00 PM | 9/6/99 11:00 PM | No | 1517 | 38.6255 | 30.50025 | 23.05025 | 22.34675 | 2.131 | | | |
| Phase II | 9/6/99 11:00 PM | 9/7/99 12:00 AM | No | 1517 | 26.7 | 26.5255 | 28.15 | 22.1885 | 2.08175 | | | |
| Phase II | 9/7/99 12:00 AM | 9/7/99 1:00 AM | No | 1479 | 15.92525 | 27.95 | 26.85025 | 21.37 | 2.08575 | | | |
| Phase II | 9/7/99 1:00 AM | 9/7/99 2:00 AM | No | 1479 | 26.0755 | 29.4755 | 24.72525 | 24.4865 | 2.623 | | | |
| Phase II | 9/7/99 2:00 AM | 9/7/99 3:00 AM | No | 1479 | 25.15075 | 27.001 | 22.3755 | 26.89625 | 2.36375 | | | |
| Phase II | 9/7/99 3:00 AM | 9/7/99 4:00 AM | No | 1479 | 15.7505 | 31.975 | 24.65 | 26.1255 | 2.18775 | | | |
| Phase II | 9/7/99 4:00 AM | 9/7/99 5:00 AM | No | 1479 | 13.2255 | 34.025 | 28.45025 | 21.4065 | 2.36275 | | | |
| Phase II | 9/7/99 5:00 AM | 9/7/99 6:00 AM | No | 1479 | 63.725 | 26.02525 | 28.65075 | 22.0015 | 2.5295 | | | |
| Phase II | 9/7/99 6:00 AM | 9/7/99 7:00 AM | No | 1479 | 22.75025 | 27.3255 | 26.17525 | 22.177 | 2.251 | | | |
| Phase II | 9/7/99 7:00 AM | 9/7/99 8:00 AM | Yes | 1479 | 33.50025 | 29.90025 | 24.17525 | 23.8695 | 2.37625 | | | |
| Phase II | 9/7/99 8:00 AM | 9/7/99 9:00 AM | Yes | 1479 | 26.65025 | 32.02525 | 32.2005 | 24.85425 | 2.413 | | | |
| Phase II | 9/7/99 9:00 AM | 9/7/99 10:00 AM | Yes | 1479 | 24.275 | 38.6 | 32.9505 | 27.41325 | 2.42075 | | | |
| Phase II | 9/7/99 10:00 AM | 9/7/99 11:00 AM | Yes | 1479 | 25.50075 | 33.02575 | 28.3005 | 22.8375 | 2.36225 | | | |
| Phase II | 9/7/99 11:00 AM | 9/7/99 12:00 PM | Yes | 1479 | 19.47525 | 34.10025 | 29.851 | 23.16425 | 2.365 | | | |
| Phase II | 9/7/99 12:00 PM | 9/7/99 1:00 PM | Yes | 1479 | 22.975 | 30.50075 | 28.52525 | 24.08025 | 2.241 | | | |
| Phase II | 9/7/99 1:00 PM | 9/7/99 2:00 PM | Yes | 1479 | 24.3 | 30.62575 | 24.6755 | 23.182 | 2.20525 | | | |
| Phase II | 9/7/99 2:00 PM | 9/7/99 3:00 PM | Yes | 1479 | 27.82575 | 31.0755 | 33.8005 | 20.5185 | 2.38175 | | | |
| Phase II | 9/7/99 3:00 PM | 9/7/99 4:00 PM | Yes | 1479 | 33.37525 | 50.3255 | 38.15075 | 21.643 | 3.073 | | | |
| Phase II | 9/7/99 4:00 PM | 9/7/99 5:00 PM | Yes | 1479 | 23.0505 | 31.6255 | 31.00025 | 21.7215 | 2.8815 | | | |
| Phase II | 9/7/99 5:00 PM | 9/7/99 6:00 PM | Yes | 1479 | 31.12525 | 31.27525 | 27.47575 | 23.0295 | 2.91725 | | | |
| Phase II | 9/7/99 6:00 PM | 9/7/99 7:00 PM | Yes | 1479 | 42.27575 | 29.3005 | 29.5505 | 25.94575 | 2.998 | | | |
| Phase II | 9/7/99 7:00 PM | 9/7/99 8:00 PM | No | 1479 | 28.2255 | 37.35075 | 32.6755 | 23.291 | 2.815 | | | |
| Phase II | 9/7/99 8:00 PM | 9/7/99 9:00 PM | No | 1479 | 26.55 | 26.72525 | 30.15025 | 22.74725 | 2.6725 | | | |
| Phase II | 9/7/99 9:00 PM | 9/7/99 10:00 PM | No | 1479 | 19.67525 | 28.8005 | 28.426 | 21.50825 | 2.545 | | | |
| Phase II | 9/7/99 10:00 PM | 9/7/99 11:00 PM | No | 1479 | 16.175 | 25.07525 | 28.20025 | 20.6755 | 2.6665 | | | |
| Phase II | 9/7/99 11:00 PM | 9/8/99 12:00 AM | No | 1479 | 22.32525 | 29.9005 | 29.62525 | 24.6525 | 2.77125 | | | |
| Phase II | 9/8/99 12:00 AM | 9/8/99 1:00 AM | No | 1803 | 16.95075 | 29.57525 | 23.97575 | 22.97575 | 3.04025 | | | |
| Phase II | 9/8/99 1:00 AM | 9/8/99 2:00 AM | No | 1803 | 23.42575 | 26.87575 | 27.45025 | 23.69275 | 2.93675 | | | |
| Phase II | 9/8/99 2:00 AM | 9/8/99 3:00 AM | No | 1803 | 22.85025 | 36.15025 | 78.05075 | 22.26325 | 2.58775 | | | |
| Phase II | 9/8/99 3:00 AM | 9/8/99 4:00 AM | No | 1803 | 22.97525 | 31.125 | 51.1755 | 22.3655 | 2.59275 | | | |
| Phase II | 9/8/99 4:00 AM | 9/8/99 5:00 AM | No | 1803 | 19.52525 | 27.55025 | 40.40075 | 24.4435 | 2.30275 | | | |
| Phase II | 9/8/99 5:00 AM | 9/8/99 6:00 AM | No | 1803 | 22.80075 | 38.2005 | 36.1 | 23.5355 | 2.3345 | | | |
| Phase II | 9/8/99 6:00 AM | 9/8/99 7:00 AM | No | 1803 | 31.72575 | 26.6255 | 27.2505 | 26.6025 | 2.442 | | | |
| Phase II | 9/8/99 7:00 AM | 9/8/99 8:00 AM | Yes | 1803 | 32.9755 | 29.1255 | 35.625 | 26.3145 | 2.4825 | | | |
| Phase II | 9/8/99 8:00 AM | 9/8/99 9:00 AM | Yes | 1803 | 23.6755 | 44.05075 | 39.85 | 25.75475 | 2.6845 | | | |
| Phase II | 9/8/99 9:00 AM | 9/8/99 10:00 AM | Yes | 1803 | 30.3255 | 32.6505 | 35.175 | 26.3675 | 2.9265 | | | |
| Phase II | 9/8/99 10:00 AM | 9/8/99 11:00 AM | Yes | 1803 | 26.8755 | 32.77575 | 39.82525 | 25.002 | 3.47575 | | | |
| Phase II | 9/8/99 11:00 AM | 9/8/99 12:00 PM | Yes | 1803 | 19.925 | 35.475 | 40.02525 | 24.201 | 3.6825 | | | |
| Phase II | 9/8/99 12:00 PM | 9/8/99 1:00 PM | Yes | 1803 | 33.90025 | 30.7505 | 40.27525 | 24.5635 | 3.6705 | | | |
| Phase II | 9/8/99 1:00 PM | 9/8/99 2:00 PM | Yes | 1803 | 36.2255 | 32.2505 | 41.17525 | 26.37675 | 3.416 | | | |
| Phase II | 9/8/99 2:00 PM | 9/8/99 3:00 PM | Yes | 1803 | 34.9 | 39.7255 | 79.80075 | 25.20575 | 8.62825 | | | |
| Phase II | 9/8/99 3:00 PM | 9/8/99 4:00 PM | Yes | 1803 | 34.551 | 38.27525 | 56.2005 | 22.71875 | 2.88325 | | | |
| Phase II | 9/8/99 4:00 PM | 9/8/99 5:00 PM | Yes | 1803 | 27.1505 | 41.70075 | 34.9255 | 24.38525 | 2.866 | | | |
| Phase II | 9/8/99 5:00 PM | 9/8/99 6:00 PM | Yes | 1803 | 27.9505 | 39.87525 | 29.1755 | 24.82225 | 2.7225 | | | |
| Phase II | 9/8/99 6:00 PM | 9/8/99 7:00 PM | Yes | 1803 | 24.45025 | 51.3005 | 29.15 | 25.57375 | 2.4155 | | | |
| Phase II | 9/8/99 7:00 PM | 9/8/99 8:00 PM | No | 1803 | 33.575 | 32.70025 | 34.22525 | 23.14125 | 2.488 | | | |
| Phase II | 9/8/99 8:00 PM | 9/8/99 9:00 PM | No | 1803 | 18.17575 | 28.35025 | 37.7255 | 21.18225 | 2.593 | | | |
| Phase II | 9/8/99 9:00 PM | 9/8/99 10:00 PM | No | 1803 | 20.75025 | 32.0755 | 27.37525 | 21.8105 | 2.255 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/8/99 10:00 PM | 9/8/99 11:00 PM | No | 1803 | 35.0005 | 32.07525 | 38.97525 | 21.939 | 2.26475 | | | |
| Phase II | 9/8/99 11:00 PM | 9/9/99 12:00 AM | No | 1803 | 29.47525 | 28.42525 | 27.47575 | 21.00825 | 1.9435 | | | |
| Phase II | 9/9/99 12:00 AM | 9/9/99 1:00 AM | No | 1517 | 33.45025 | 26.7 | 31.4755 | 21.60475 | 2.125 | | | |
| Phase II | 9/9/99 1:00 AM | 9/9/99 2:00 AM | No | 1517 | 36.4255 | 29.3005 | 30.1755 | 21.72875 | 2.5175 | | | |
| Phase II | 9/9/99 2:00 AM | 9/9/99 3:00 AM | No | 1517 | 29.7 | 36.22525 | 53.25 | 20.391 | 2.19025 | | | |
| Phase II | 9/9/99 3:00 AM | 9/9/99 4:00 AM | No | 1517 | 23.65075 | 41.90025 | 32.0005 | 21.31925 | 2.26825 | | | |
| Phase II | 9/9/99 4:00 AM | 9/9/99 5:00 AM | No | 1517 | 19.42525 | 29.9255 | 36.8 | 22.511 | 2.11075 | | | |
| Phase II | 9/9/99 5:00 AM | 9/9/99 6:00 AM | No | 1517 | 22.1255 | 33.4755 | 31.151 | 22.27 | 2.0815 | | | |
| Phase II | 9/9/99 6:00 AM | 9/9/99 7:00 AM | No | 1517 | 31.6005 | 32.4255 | 34.0255 | 24.3755 | 2.90575 | | | |
| Phase II | 9/9/99 7:00 AM | 9/9/99 8:00 AM | Yes | 1517 | 31.55025 | 33.77525 | 36.92525 | 23.539 | 2.95925 | | | |
| Phase II | 9/9/99 8:00 AM | 9/9/99 9:00 AM | Yes | 1517 | 32.5005 | 38.12525 | 38.55025 | 22.7035 | 2.81325 | | | |
| Phase II | 9/9/99 9:00 AM | 9/9/99 10:00 AM | Yes | 1517 | 32.1505 | 46.1005 | 37.8505 | 23.1755 | 2.51125 | | | |
| Phase II | 9/9/99 10:00 AM | 9/9/99 11:00 AM | Yes | 1517 | 37.2255 | 31.92575 | 42.17525 | 24.12625 | 2.24125 | | | |
| Phase II | 9/9/99 11:00 AM | 9/9/99 12:00 PM | Yes | 1517 | 27.9505 | 36.97525 | 42.15025 | 22.26375 | 2.16525 | | | |
| Phase II | 9/9/99 12:00 PM | 9/9/99 1:00 PM | Yes | 1517 | 31.07575 | 37.00025 | 51.67525 | 23.48975 | 2.35375 | | | |
| Phase II | 9/9/99 1:00 PM | 9/9/99 2:00 PM | Yes | 1517 | 36.0755 | 30.476 | 49.45075 | 21.35975 | 2.158 | | | |
| Phase II | 9/9/99 2:00 PM | 9/9/99 3:00 PM | Yes | 1517 | 29.37525 | 44.2005 | 60.8755 | 23.024 | 2.0095 | | | |
| Phase II | 9/9/99 3:00 PM | 9/9/99 4:00 PM | Yes | 1517 | 46.3505 | 32.8005 | 90.351 | 22.688 | 1.81325 | | | |
| Phase II | 9/9/99 4:00 PM | 9/9/99 5:00 PM | Yes | 1517 | 39.25075 | 30.52525 | 110.001 | 26.3345 | 2.0415 | | | |
| Phase II | 9/9/99 5:00 PM | 9/9/99 6:00 PM | Yes | 1517 | 38.35025 | 32.47525 | 119.701 | 27.186 | 2.30975 | | | |
| Phase II | 9/9/99 6:00 PM | 9/9/99 7:00 PM | No | 1517 | 26.0255 | 41.7255 | 101.576 | 20.81425 | 2.38 | | | |
| Phase II | 9/9/99 7:00 PM | 9/9/99 8:00 PM | No | 1517 | 26.7755 | 30.55025 | 65.0755 | 24.36775 | 2.263 | | | |
| Phase II | 9/9/99 8:00 PM | 9/9/99 9:00 PM | No | 1517 | 30.525 | 29.5 | 31.775 | 24.6705 | 2.04925 | | | |
| Phase II | 9/9/99 9:00 PM | 9/9/99 10:00 PM | No | 1517 | 34.30075 | 34.5755 | 37.50075 | 23.809 | 2.0035 | | | |
| Phase II | 9/9/99 10:00 PM | 9/9/99 11:00 PM | No | 1517 | 32.7505 | 30.02575 | 43.22525 | 22.04325 | 1.99 | | | |
| Phase II | 9/9/99 11:00 PM | 9/10/99 12:00 AM | No | 1517 | 29.4255 | 31.37525 | 29.62525 | 23.752 | 1.83625 | | | |
| Phase II | 9/10/99 12:00 AM | 9/10/99 1:00 AM | No | 1570 | 37.0505 | 30.6 | 34.30025 | 22.436 | 1.70625 | | | |
| Phase II | 9/10/99 1:00 AM | 9/10/99 2:00 AM | No | 1570 | 21.37525 | 36.00025 | 45.4755 | 25.063 | 1.946 | | | |
| Phase II | 9/10/99 2:00 AM | 9/10/99 3:00 AM | No | 1570 | 18.425 | 31.8755 | 41.3255 | 27.82825 | 2.198 | | | |
| Phase II | 9/10/99 3:00 AM | 9/10/99 4:00 AM | No | 1570 | 26.9005 | 27.7505 | 27.975 | 26.824 | 2.089 | | | |
| Phase II | 9/10/99 4:00 AM | 9/10/99 5:00 AM | No | 1570 | 26.825 | 57.55075 | 33.47525 | 23.82375 | 1.732 | | | |
| Phase II | 9/10/99 5:00 AM | 9/10/99 6:00 AM | No | 1570 | 34.55025 | 39.275 | 40.22525 | 22.87325 | 1.71 | | | |
| Phase II | 9/10/99 6:00 AM | 9/10/99 7:00 AM | No | 1570 | 28.95075 | 32.1505 | 34.37575 | 21.44 | 1.802 | | | |
| Phase II | 9/10/99 7:00 AM | 9/10/99 8:00 AM | Yes | 1570 | 31.35025 | 28.77525 | 39.25 | 23.1755 | 1.69575 | | | |
| Phase II | 9/10/99 8:00 AM | 9/10/99 9:00 AM | Yes | 1570 | 30.50025 | 37.05 | 34.67525 | 24.9175 | 1.896 | | | |
| Phase II | 9/10/99 9:00 AM | 9/10/99 10:00 AM | Yes | 1570 | 38.65025 | 31.8 | 49.60025 | 29.2215 | 2.492 | | | |
| Phase II | 9/10/99 10:00 AM | 9/10/99 11:00 AM | Yes | 1570 | 46.00025 | 34.27575 | 60.85025 | 25.71925 | 2.47975 | | | |
| Phase II | 9/10/99 11:00 AM | 9/10/99 12:00 PM | Yes | 1570 | 35.02525 | 34.52575 | 97.876 | 22.605 | 2.6995 | | | |
| Phase II | 9/10/99 12:00 PM | 9/10/99 1:00 PM | Yes | 1570 | 38.15025 | 37.95 | 101.376 | 22.1545 | 2.72625 | | | |
| Phase II | 9/10/99 1:00 PM | 9/10/99 2:00 PM | Yes | 1570 | 46.4255 | 38.75075 | 83.926 | 22.15725 | 2.869 | | | |
| Phase II | 9/10/99 2:00 PM | 9/10/99 3:00 PM | Yes | 1570 | 47.7255 | 31.925 | 76.9505 | 23.47825 | 2.84675 | | | |
| Phase II | 9/10/99 3:00 PM | 9/10/99 4:00 PM | No | 1570 | 33.776 | 32.9005 | 80.67575 | 22.667 | 2.3935 | | | |
| Phase II | 9/10/99 4:00 PM | 9/10/99 5:00 PM | Yes | 1570 | 42.0255 | 40.90075 | 78.226 | 23.1735 | 2.05525 | | | |
| Phase II | 9/10/99 5:00 PM | 9/10/99 6:00 PM | Yes | 1570 | 36.40025 | 42.825 | 85.226 | 21.51025 | 1.98975 | | | |
| Phase II | 9/10/99 6:00 PM | 9/10/99 7:00 PM | Yes | 1570 | 35.35075 | 49.5005 | 72.951 | 21.43275 | 2.0765 | | | |
| Phase II | 9/10/99 7:00 PM | 9/10/99 8:00 PM | No | 1570 | 54.4505 | 31.30025 | 50.80025 | 20.838 | 1.89 | | | |
| Phase II | 9/10/99 8:00 PM | 9/10/99 9:00 PM | No | 1570 | 37.1755 | 32.90025 | 62.876 | 20.187 | 2.12725 | | | |
| Phase II | 9/10/99 9:00 PM | 9/10/99 10:00 PM | No | 1570 | 40.87525 | 31.02525 | 60.9505 | 22.562 | 1.86175 | | | |
| Phase II | 9/10/99 10:00 PM | 9/10/99 11:00 PM | No | 1570 | 25.4005 | 52.97575 | 55.47575 | 24.3755 | 1.8135 | | | |
| Phase II | 9/10/99 11:00 PM | 9/11/99 12:00 AM | No | 1570 | 28.2755 | 28.27525 | 43.175 | 22.60075 | 1.8905 | | | |
| Phase II | 9/11/99 12:00 AM | 9/11/99 1:00 AM | No | 1459 | 26.6505 | 35.401 | 37.9255 | 22.6085 | 1.954 | | | |
| Phase II | 9/11/99 1:00 AM | 9/11/99 2:00 AM | No | 1459 | 30.276 | 33.2755 | 30.3005 | 21.49175 | 1.8365 | | | |
| Phase II | 9/11/99 2:00 AM | 9/11/99 3:00 AM | No | 1459 | 30.95025 | 32.47525 | 33.00025 | 23.15625 | 1.914 | | | |
| Phase II | 9/11/99 3:00 AM | 9/11/99 4:00 AM | No | 1459 | 22.26667 | 35.7255 | 28.7005 | 22.81975 | 2.3635 | | | |
| Phase II | 9/11/99 4:00 AM | 9/11/99 5:00 AM | No | 1459 | 30.0005 | 28.5255 | 36.90075 | 21.629 | 2.013 | | | |
| Phase II | 9/11/99 5:00 AM | 9/11/99 6:00 AM | No | 1459 | 33.075 | 38.2755 | 37.85075 | 24.32675 | 1.90625 | | | |
| Phase II | 9/11/99 6:00 AM | 9/11/99 7:00 AM | No | 1459 | 37.025 | 32.77525 | 28.5755 | 23.66675 | 1.801 | | | |
| Phase II | 9/11/99 7:00 AM | 9/11/99 8:00 AM | Yes | 1459 | 18.8 | 35.52525 | 39.12525 | 22.274 | 1.7585 | | | |
| Phase II | 9/11/99 8:00 AM | 9/11/99 9:00 AM | Yes | 1459 | 28.3255 | 32.8755 | 32.80075 | 21.27775 | 1.82775 | | | |
| Phase II | 9/11/99 9:00 AM | 9/11/99 10:00 AM | Yes | 1459 | 28.0505 | 31.1755 | 38.97525 | 24.05525 | 1.8765 | | | |
| Phase II | 9/11/99 10:00 AM | 9/11/99 11:00 AM | Yes | 1459 | 29.15 | 31.775 | | 30.61225 | 3.6575 | | | |
| Phase II | 9/11/99 11:00 AM | 9/11/99 12:00 PM | No | 1459 | 28.77525 | 30.52525 | | 24.609 | 2.71525 | | | |
| Phase II | 9/11/99 12:00 PM | 9/11/99 1:00 PM | Yes | 1459 | 30.87525 | 35.0755 | 29.6 | 22.2865 | 2.059 | | | |
| Phase II | 9/11/99 1:00 PM | 9/11/99 2:00 PM | Yes | 1459 | 32.5255 | 36.45025 | 29.77575 | 22.5115 | 1.8605 | | | |
| Phase II | 9/11/99 2:00 PM | 9/11/99 3:00 PM | Yes | 1459 | 37.90075 | 27.45075 | 47.7255 | 23.40675 | 1.8245 | | | |
| Phase II | 9/11/99 3:00 PM | 9/11/99 4:00 PM | Yes | 1459 | 27.37575 | 32.85025 | 31.4505 | 24.813 | 1.76825 | | | |
| Phase II | 9/11/99 4:00 PM | 9/11/99 5:00 PM | Yes | 1459 | 23.825 | 30.9505 | 31.40025 | 24.7035 | 1.72075 | | | |
| Phase II | 9/11/99 5:00 PM | 9/11/99 6:00 PM | Yes | 1459 | 35.3755 | 41.02575 | 30.75025 | 24.27575 | 1.665 | | | |
| Phase II | 9/11/99 6:00 PM | 9/11/99 7:00 PM | Yes | 1459 | 41.751 | 28.75 | 29.0255 | 25.574 | 1.61875 | | | |
| Phase II | 9/11/99 7:00 PM | 9/11/99 8:00 PM | No | 1459 | 30.8 | 33.5505 | 34.85 | 28.3025 | 1.5925 | | | |
| Phase II | 9/11/99 8:00 PM | 9/11/99 9:00 PM | No | 1459 | 27.97575 | 31.026 | 34.925 | 25.8635 | 1.5445 | | | |
| Phase II | 9/11/99 9:00 PM | 9/11/99 10:00 PM | No | 1459 | 35.45 | 30.3255 | 28.15025 | 27.545 | 1.515 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/11/99 10:00 PM | 9/11/99 11:00 PM | No | 1459 | 30.00025 | 31.40025 | 29.27525 | 23.07025 | 1.496 | | | |
| Phase II | 9/11/99 11:00 PM | 9/12/99 12:00 AM | No | 1459 | 29.125 | 26.8755 | 28.5505 | 25.38725 | 1.475 | | | |
| Phase II | 9/12/99 12:00 AM | 9/12/99 1:00 AM | No | 1441 | 25.95 | 40.2505 | 39.8255 | 27.517 | 1.446 | | | |
| Phase II | 9/12/99 1:00 AM | 9/12/99 2:00 AM | No | 1441 | 61.6755 | 30.17525 | 27.5005 | 23.49625 | 1.416 | | | |
| Phase II | 9/12/99 2:00 AM | 9/12/99 3:00 AM | No | 1441 | 30.00025 | 30.40025 | 32.60025 | 24.62125 | 1.39725 | | | |
| Phase II | 9/12/99 3:00 AM | 9/12/99 4:00 AM | No | 1441 | 37.6255 | 27.97525 | 72.2505 | 24.32225 | 1.39725 | | | |
| Phase II | 9/12/99 4:00 AM | 9/12/99 5:00 AM | No | 1441 | 32.80025 | 35.75 | 35.875 | 23.2745 | 1.36875 | | | |
| Phase II | 9/12/99 5:00 AM | 9/12/99 6:00 AM | No | 1441 | 31.25075 | 28.2755 | 80.4755 | 23.56525 | 1.3515 | | | |
| Phase II | 9/12/99 6:00 AM | 9/12/99 7:00 AM | No | 1441 | 26.10075 | 29.10075 | 57.9505 | 23.97175 | 1.32525 | | | |
| Phase II | 9/12/99 7:00 AM | 9/12/99 8:00 AM | No | 1441 | 34.07525 | 39.5505 | 120.0758 | 26.6075 | 1.326 | | | |
| Phase II | 9/12/99 8:00 AM | 9/12/99 9:00 AM | No | 1441 | 43.401 | 31.1755 | 115.2505 | 28.62725 | 1.3065 | | | |
| Phase II | 9/12/99 9:00 AM | 9/12/99 10:00 AM | No | 1441 | 35.80075 | 34.30025 | 31.35025 | 26.0025 | 1.297 | | | |
| Phase II | 9/12/99 10:00 AM | 9/12/99 11:00 AM | No | 1441 | 49.02525 | 32.00075 | 66.826 | 25.10825 | 1.28775 | | | |
| Phase II | 9/12/99 11:00 AM | 9/12/99 12:00 PM | No | 1441 | 28.6 | 29.27575 | 175.0508 | 25.63 | 1.289 | | | |
| Phase II | 9/12/99 12:00 PM | 9/12/99 1:00 PM | No | 1441 | 27.00025 | 29.3005 | 105.1755 | 26.9745 | 1.25875 | | | |
| Phase II | 9/12/99 1:00 PM | 9/12/99 2:00 PM | No | 1441 | 28.2755 | 26.62525 | 28.37525 | 25.856 | 1.24825 | | | |
| Phase II | 9/12/99 2:00 PM | 9/12/99 3:00 PM | No | 1441 | 26.2005 | 28.35025 | 36.27575 | 25.58025 | 1.249 | | | |
| Phase II | 9/12/99 3:00 PM | 9/12/99 4:00 PM | No | 1441 | 29.60025 | 44.57525 | 225.2255 | 26.131 | 1.209 | | | |
| Phase II | 9/12/99 4:00 PM | 9/12/99 5:00 PM | No | 1441 | 29.42575 | 31.0005 | 76.701 | 25.84125 | 1.2095 | | | |
| Phase II | 9/12/99 5:00 PM | 9/12/99 6:00 PM | No | 1441 | 28.0505 | 30.5 | 415.8505 | 25.244 | 1.21 | | | |
| Phase II | 9/12/99 6:00 PM | 9/12/99 7:00 PM | No | 1441 | 39.12525 | 31.72525 | 564.9005 | 25.2445 | 1.2095 | | | |
| Phase II | 9/12/99 7:00 PM | 9/12/99 8:00 PM | No | 1441 | 30.9 | 26.7005 | 76.1255 | 24.016 | 1.18075 | | | |
| Phase II | 9/12/99 8:00 PM | 9/12/99 9:00 PM | No | 1441 | 22.5255 | 33.9255 | 78.4505 | 24.207 | 1.17175 | | | |
| Phase II | 9/12/99 9:00 PM | 9/12/99 10:00 PM | No | 1441 | 19.35025 | 26.0005 | 100.8503 | 23.0095 | 1.17175 | | | |
| Phase II | 9/12/99 10:00 PM | 9/12/99 11:00 PM | No | 1441 | 18.30025 | 27.225 | 445.4255 | 23.416 | 1.172 | | | |
| Phase II | 9/12/99 11:00 PM | 9/13/99 12:00 AM | No | 1441 | 26.8005 | 27.651 | 42.62575 | 23.3475 | 1.14175 | | | |
| Phase II | 9/13/99 12:00 AM | 9/13/99 1:00 AM | No | 1488 | 28.7755 | 29.0005 | 582.3258 | 22.61875 | 1.13325 | | | |
| Phase II | 9/13/99 1:00 AM | 9/13/99 2:00 AM | No | 1488 | 30.07525 | 29.47575 | 666.1255 | 22.801 | 1.13225 | | | |
| Phase II | 9/13/99 2:00 AM | 9/13/99 3:00 AM | No | 1488 | 18.70025 | 49.97525 | 37.07525 | 23.1555 | 1.13175 | | | |
| Phase II | 9/13/99 3:00 AM | 9/13/99 4:00 AM | No | 1488 | 24.55025 | 31.95075 | 439.4508 | 22.83375 | 1.13125 | | | |
| Phase II | 9/13/99 4:00 AM | 9/13/99 5:00 AM | No | 1488 | 25.87575 | 43.22525 | 136.0008 | 22.12125 | 1.1315 | | | |
| Phase II | 9/13/99 5:00 AM | 9/13/99 6:00 AM | No | 1488 | 23.9505 | 33.1005 | 272.6255 | 22.6225 | 1.13075 | | | |
| Phase II | 9/13/99 6:00 AM | 9/13/99 7:00 AM | No | 1488 | 24.4 | 28.8755 | 193.6508 | 22.41725 | 1.12875 | | | |
| Phase II | 9/13/99 7:00 AM | 9/13/99 8:00 AM | | 1488 | 27.95025 | 24.9005 | 214.0503 | 22.4605 | 1.12675 | | | |
| Phase II | 9/13/99 8:00 AM | 9/13/99 9:00 AM | | 1488 | 30.60075 | 27.4755 | 470.5503 | 22.33975 | 1.127 | | | |
| Phase II | 9/13/99 9:00 AM | 9/13/99 10:00 AM | | 1488 | 67.2755 | 30.1255 | 168.7255 | 22.75525 | 1.50975 | | | |
| Phase II | 9/13/99 10:00 AM | 9/13/99 11:00 AM | | 1488 | 28.42525 | 24.4255 | 57.07525 | 20.39375 | 2.327 | | | |
| Phase II | 9/13/99 11:00 AM | 9/13/99 12:00 PM | | 1488 | 25.725 | 30.20075 | 30.4255 | 21.024 | 2.23925 | | | |
| Phase II | 9/13/99 12:00 PM | 9/13/99 1:00 PM | | 1488 | 31.40025 | 24.32575 | 29.0505 | 20.7825 | 2.1035 | | | |
| Phase II | 9/13/99 1:00 PM | 9/13/99 2:00 PM | | 1488 | 27.22575 | 23.55025 | 48.82575 | 21.04975 | 2.14025 | | | |
| Phase II | 9/13/99 2:00 PM | 9/13/99 3:00 PM | | 1488 | 29.7005 | 28.701 | 43.5755 | 21.0865 | 2.32125 | | | |
| Phase II | 9/13/99 3:00 PM | 9/13/99 4:00 PM | | 1488 | 35.1505 | 27.1505 | 27.4505 | 19.97625 | 2.2155 | | | |
| Phase II | 9/13/99 4:00 PM | 9/13/99 5:00 PM | | 1488 | 31.9005 | 25.20025 | 27.75025 | 20.001 | 2.05525 | | | |
| Phase II | 9/13/99 5:00 PM | 9/13/99 6:00 PM | | 1488 | 30.70025 | 27.75025 | 32.85 | 20.83175 | 2.0485 | | | |
| Phase II | 9/13/99 6:00 PM | 9/13/99 7:00 PM | | 1488 | 39.25025 | 26.8755 | 27.67525 | 22.412 | 2.04125 | | | |
| Phase II | 9/13/99 7:00 PM | 9/13/99 8:00 PM | No | 1488 | 38.22525 | 25.8255 | 28.3005 | 23.396 | 2.201 | | | |
| Phase II | 9/13/99 8:00 PM | 9/13/99 9:00 PM | No | 1488 | 28.75075 | 26.87525 | 24.00025 | 21.30425 | 2.09575 | | | |
| Phase II | 9/13/99 9:00 PM | 9/13/99 10:00 PM | No | 1488 | 26.45 | 29.5255 | 22.9005 | 22.40325 | 1.99425 | | | |
| Phase II | 9/13/99 10:00 PM | 9/13/99 11:00 PM | No | 1488 | 22.8005 | 28.9505 | 23.6755 | 23.7265 | 2.00725 | | | |
| Phase II | 9/13/99 11:00 PM | 9/14/99 12:00 AM | No | 1488 | 31.125 | 26.57525 | 25.65025 | 22.95875 | 2.0275 | | | |
| Phase II | 9/14/99 12:00 AM | 9/14/99 1:00 AM | No | 1428 | 86.52575 | 23.15025 | 21.5505 | 21.8025 | 2.12125 | | | |
| Phase II | 9/14/99 1:00 AM | 9/14/99 2:00 AM | No | 1428 | 24.62525 | 23.75025 | 28.55025 | 21.2625 | 2.1205 | | | |
| Phase II | 9/14/99 2:00 AM | 9/14/99 3:00 AM | No | 1428 | 30.82575 | 25.50025 | 23.275 | 19.89925 | 2.26075 | | | |
| Phase II | 9/14/99 3:00 AM | 9/14/99 4:00 AM | No | 1428 | 29.7255 | 20.75025 | 23.37525 | 19.4445 | 2.1815 | | | |
| Phase II | 9/14/99 4:00 AM | 9/14/99 5:00 AM | No | 1428 | 38.2005 | 29.4005 | 23.95025 | 19.574 | 1.9305 | | | |
| Phase II | 9/14/99 5:00 AM | 9/14/99 6:00 AM | No | 1428 | 55.0505 | 24.151 | 28.32525 | 20.63625 | 1.91075 | | | |
| Phase II | 9/14/99 6:00 AM | 9/14/99 7:00 AM | No | 1428 | 50.77575 | 49.67575 | 31.67525 | 20.1455 | 2.14375 | | | |
| Phase II | 9/14/99 7:00 AM | 9/14/99 8:00 AM | Yes | 1428 | 69.4505 | 27.3 | 34.4 | 18.93325 | 2.185 | | | |
| Phase II | 9/14/99 8:00 AM | 9/14/99 9:00 AM | Yes | 1428 | 56.92575 | 29.3505 | 35.3005 | 20.299 | 2.1845 | | | |
| Phase II | 9/14/99 9:00 AM | 9/14/99 10:00 AM | Yes | 1428 | 60.57525 | 30.9755 | 27.4755 | 20.97925 | 2.17075 | | | |
| Phase II | 9/14/99 10:00 AM | 9/14/99 11:00 AM | Yes | 1428 | 42.95075 | 28.6755 | 25.22575 | 22.30525 | 2.2055 | | | |
| Phase II | 9/14/99 11:00 AM | 9/14/99 12:00 PM | Yes | 1428 | 64.32575 | 30.27575 | 31.9755 | 24.139 | 2.4925 | | | |
| Phase II | 9/14/99 12:00 PM | 9/14/99 1:00 PM | Yes | 1428 | 43.526 | 26.8255 | 25.70025 | 20.83475 | 2.381 | | | |
| Phase II | 9/14/99 1:00 PM | 9/14/99 2:00 PM | Yes | 1428 | 44.82575 | 23.45025 | 30.10025 | 20.64225 | 2.47775 | | | |
| Phase II | 9/14/99 2:00 PM | 9/14/99 3:00 PM | Yes | 1428 | 61.5255 | 25.67525 | 29.67525 | 19.63525 | 2.32325 | | | |
| Phase II | 9/14/99 3:00 PM | 9/14/99 4:00 PM | Yes | 1428 | 61.351 | 33.30075 | 28.52525 | 19.851 | 2.2225 | | | |
| Phase II | 9/14/99 4:00 PM | 9/14/99 5:00 PM | Yes | 1428 | 43.725 | 24.35025 | 25.10025 | 20.3955 | 2.3025 | | | |
| Phase II | 9/14/99 5:00 PM | 9/14/99 6:00 PM | Yes | 1428 | 53.27575 | 24.80075 | 151.1755 | 20.54275 | 2.297 | | | |
| Phase II | 9/14/99 6:00 PM | 9/14/99 7:00 PM | No | 1428 | 41.95075 | 29.30025 | 23.40025 | 21.2615 | 2.379 | | | |
| Phase II | 9/14/99 7:00 PM | 9/14/99 8:00 PM | No | 1428 | 47.95025 | 21.17575 | 25.42525 | 21.0045 | 2.7615 | | | |
| Phase II | 9/14/99 8:00 PM | 9/14/99 9:00 PM | No | 1428 | 50.7005 | 27.7255 | 23.60025 | 20.76425 | 2.73 | | | |
| Phase II | 9/14/99 9:00 PM | 9/14/99 10:00 PM | No | 1428 | 37.2505 | 23.32575 | 29.87525 | 21.14625 | 2.40525 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/14/99 10:00 PM | 9/14/99 11:00 PM | No | 1428 | 44.9255 | 25.0005 | 24.4255 | 20.37675 | 2.72275 | | | |
| Phase II | 9/14/99 11:00 PM | 9/15/99 12:00 AM | No | 1428 | 57.5755 | 25.20075 | 22.4755 | 19.35725 | 2.153 | | | |
| Phase II | 9/15/99 12:00 AM | 9/15/99 1:00 AM | No | 1271 | 100.3758 | 34.1755 | 23.87525 | 20.30325 | 2.3525 | | | |
| Phase II | 9/15/99 1:00 AM | 9/15/99 2:00 AM | No | 1271 | 58.751 | 26.7755 | 25.401 | 19.40475 | 2.1355 | | | |
| Phase II | 9/15/99 2:00 AM | 9/15/99 3:00 AM | No | 1271 | 98.201 | 25.9255 | 29.4255 | 19.66425 | 2.27625 | | | |
| Phase II | 9/15/99 3:00 AM | 9/15/99 4:00 AM | No | 1271 | 76.926 | 26.07525 | 25.05025 | 17.45425 | 2.53075 | | | |
| Phase II | 9/15/99 4:00 AM | 9/15/99 5:00 AM | No | 1271 | 46.6255 | 26.47525 | 26.20025 | 19.01425 | 2.425 | | | |
| Phase II | 9/15/99 5:00 AM | 9/15/99 6:00 AM | No | 1271 | 69.10075 | 26.3255 | 30.0255 | 19.50875 | 2.3735 | | | |
| Phase II | 9/15/99 6:00 AM | 9/15/99 7:00 AM | No | 1271 | 158.1005 | 31.35075 | 24.57575 | 21.2595 | 2.40225 | | | |
| Phase II | 9/15/99 7:00 AM | 9/15/99 8:00 AM | Yes | 1271 | 97.226 | 24.10025 | 23.9255 | 22.90875 | 2.37975 | | | |
| Phase II | 9/15/99 8:00 AM | 9/15/99 9:00 AM | Yes | 1271 | 118.4758 | 21.50025 | 37.50075 | 22.59025 | 2.57675 | | | |
| Phase II | 9/15/99 9:00 AM | 9/15/99 10:00 AM | Yes | 1271 | 158.001 | 24.3505 | 29.8755 | 21.1185 | 2.72725 | | | |
| Phase II | 9/15/99 10:00 AM | 9/15/99 11:00 AM | Yes | 1271 | 169.6753 | 25.8 | 27.7755 | 20.6055 | 2.54975 | | | |
| Phase II | 9/15/99 11:00 AM | 9/15/99 12:00 PM | Yes | 1271 | 93.176 | 24.20025 | 82.45025 | 19.64125 | 2.39125 | | | |
| Phase II | 9/15/99 12:00 PM | 9/15/99 1:00 PM | Yes | 1271 | 95.526 | 21.17525 | 27.4755 | 20.2365 | 2.51825 | | | |
| Phase II | 9/15/99 1:00 PM | 9/15/99 2:00 PM | Yes | 1271 | 105.676 | 26.7255 | 42.8505 | 21.27725 | 2.48825 | | | |
| Phase II | 9/15/99 2:00 PM | 9/15/99 3:00 PM | Yes | 1271 | 91.226 | 26.001 | 281.8258 | 20.93075 | 2.71025 | | | |
| Phase II | 9/15/99 3:00 PM | 9/15/99 4:00 PM | Yes | 1271 | 84.26767 | 26.5755 | 22.7255 | 20.6865 | 2.10675 | | | |
| Phase II | 9/15/99 4:00 PM | 9/15/99 5:00 PM | Yes | 1271 | 193.6554 | 35.2505 | 46.8005 | 20.16025 | 2.17475 | | | |
| Phase II | 9/15/99 5:00 PM | 9/15/99 6:00 PM | Yes | 1271 | | 30.825 | 24.4255 | 19.0345 | 2.03575 | | | |
| Phase II | 9/15/99 6:00 PM | 9/15/99 7:00 PM | Yes | 1271 | | 23.8505 | 66.101 | 20.4135 | 2.06425 | | | |
| Phase II | 9/15/99 7:00 PM | 9/15/99 8:00 PM | No | 1271 | | 21.5 | 21.85025 | 19.2935 | 2.03075 | | | |
| Phase II | 9/15/99 8:00 PM | 9/15/99 9:00 PM | No | 1271 | | 26.40025 | 30.62525 | 21.143 | 2.042 | | | |
| Phase II | 9/15/99 9:00 PM | 9/15/99 10:00 PM | No | 1271 | | 33.9755 | 22.27575 | 19.96525 | 1.95175 | | | |
| Phase II | 9/15/99 10:00 PM | 9/15/99 11:00 PM | No | 1271 | | 20.52525 | 27.10025 | 19.261 | 1.94575 | | | |
| Phase II | 9/15/99 11:00 PM | 9/16/99 12:00 AM | No | 1271 | | 40.2255 | 37.451 | 20.6225 | 2.0095 | | | |
| Phase II | 9/16/99 12:00 AM | 9/16/99 1:00 AM | No | 1218 | | 21.62575 | 22.4505 | 20.2045 | 1.97725 | | | |
| Phase II | 9/16/99 1:00 AM | 9/16/99 2:00 AM | No | 1218 | | 25.67575 | 20.7505 | 19.84675 | 1.9995 | | | |
| Phase II | 9/16/99 2:00 AM | 9/16/99 3:00 AM | No | 1218 | | 29.27525 | 21.4755 | 19.81275 | 1.97475 | | | |
| Phase II | 9/16/99 3:00 AM | 9/16/99 4:00 AM | No | 1218 | | 44.57575 | 23.10025 | 17.54175 | 1.96075 | | | |
| Phase II | 9/16/99 4:00 AM | 9/16/99 5:00 AM | No | 1218 | | 23.5255 | 31.47575 | 18.2425 | 2.083 | | | |
| Phase II | 9/16/99 5:00 AM | 9/16/99 6:00 AM | No | 1218 | | 27.97525 | 20.85025 | 18.07275 | 2.05675 | | | |
| Phase II | 9/16/99 6:00 AM | 9/16/99 7:00 AM | No | 1218 | | 22.1255 | 23.82525 | 17.547 | 1.81775 | | | |
| Phase II | 9/16/99 7:00 AM | 9/16/99 8:00 AM | Yes | 1218 | | 20.8755 | 25.70075 | 18.16525 | 1.81675 | | | |
| Phase II | 9/16/99 8:00 AM | 9/16/99 9:00 AM | Yes | 1218 | | 25.52575 | 24.6505 | 18.74 | 1.823 | | | |
| Phase II | 9/16/99 9:00 AM | 9/16/99 10:00 AM | Yes | 1218 | 255.5412 | 23.3005 | 32.06667 | 20.85975 | 2.0795 | | | |
| Phase II | 9/16/99 10:00 AM | 9/16/99 11:00 AM | Yes | 1218 | 233.7968 | 24.57575 | 34.8755 | 19.8445 | 2.19975 | | | |
| Phase II | 9/16/99 11:00 AM | 9/16/99 12:00 PM | No | 1218 | | 23.65075 | 25.5255 | 20.4645 | 2.02375 | | | |
| Phase II | 9/16/99 12:00 PM | 9/16/99 1:00 PM | Yes | 1218 | | 40.62525 | 32.77525 | 18.76625 | 2.194 | | | |
| Phase II | 9/16/99 1:00 PM | 9/16/99 2:00 PM | Yes | 1218 | | 30.82525 | 97.07525 | 18.2645 | 2.2665 | | | |
| Phase II | 9/16/99 2:00 PM | 9/16/99 3:00 PM | Yes | 1218 | | 28.67575 | 49.2505 | 20.3835 | 2.14075 | | | |
| Phase II | 9/16/99 3:00 PM | 9/16/99 4:00 PM | Yes | 1218 | | 25.57575 | 26.42525 | 20.94 | 2.1415 | | | |
| Phase II | 9/16/99 4:00 PM | 9/16/99 5:00 PM | Yes | 1218 | | 23.55025 | 36.4 | 19.5445 | 2.0615 | | | |
| Phase II | 9/16/99 5:00 PM | 9/16/99 6:00 PM | No | 1218 | | 21.60075 | 27.1755 | 18.90375 | 1.957 | | | |
| Phase II | 9/16/99 6:00 PM | 9/16/99 7:00 PM | No | 1218 | | 25.7255 | 17.17525 | 20.41425 | 1.9365 | | | |
| Phase II | 9/16/99 7:00 PM | 9/16/99 8:00 PM | No | 1218 | | 22.65025 | 20.12525 | 20.27875 | 1.872 | | | |
| Phase II | 9/16/99 8:00 PM | 9/16/99 9:00 PM | No | 1218 | | 18.62525 | 22.5505 | 21.826 | 2.2325 | | | |
| Phase II | 9/16/99 9:00 PM | 9/16/99 10:00 PM | No | 1218 | | 23.47525 | 16.85075 | 20.64675 | 1.64425 | | | |
| Phase II | 9/16/99 10:00 PM | 9/16/99 11:00 PM | No | 1218 | 14.3 | 23.1505 | 19.8255 | 19.3645 | 1.61475 | | | |
| Phase II | 9/16/99 11:00 PM | 9/17/99 12:00 AM | No | 1218 | 19.3 | 23.4755 | 16.42525 | 18.43975 | 1.8065 | | | |
| Phase II | 9/17/99 12:00 AM | 9/17/99 1:00 AM | No | 1287 | 16.75 | 19.3005 | 16.2 | 17.47125 | 1.61025 | | | |
| Phase II | 9/17/99 1:00 AM | 9/17/99 2:00 AM | No | 1287 | 11.8755 | 18.675 | 16.97525 | 18.819 | 1.715 | | | |
| Phase II | 9/17/99 2:00 AM | 9/17/99 3:00 AM | No | 1287 | 16.4505 | 19.2 | 20.8255 | 17.9435 | 1.64675 | | | |
| Phase II | 9/17/99 3:00 AM | 9/17/99 4:00 AM | No | 1287 | 16.1755 | 17.47575 | 21.35 | 17.67925 | 1.696 | | | |
| Phase II | 9/17/99 4:00 AM | 9/17/99 5:00 AM | No | 1287 | 15.45 | 32.55 | 21.50075 | 18.048 | 1.6465 | | | |
| Phase II | 9/17/99 5:00 AM | 9/17/99 6:00 AM | No | 1287 | 11.2 | 23.00025 | 21.20025 | 16.00325 | 1.57225 | | | |
| Phase II | 9/17/99 6:00 AM | 9/17/99 7:00 AM | No | 1287 | 25.70075 | 22.125 | 24.375 | 17.59275 | 1.59225 | | | |
| Phase II | 9/17/99 7:00 AM | 9/17/99 8:00 AM | Yes | 1287 | 15.8 | 22.22575 | 22.52525 | 16.33075 | 1.67125 | | | |
| Phase II | 9/17/99 8:00 AM | 9/17/99 9:00 AM | Yes | 1287 | 24.1755 | 21.70025 | 135.4 | 17.02725 | 1.68425 | | | |
| Phase II | 9/17/99 9:00 AM | 9/17/99 10:00 AM | Yes | 1287 | 25.22575 | 22.525 | 146.1503 | 17.15525 | 1.8855 | | | |
| Phase II | 9/17/99 10:00 AM | 9/17/99 11:00 AM | Yes | 1287 | 19.7005 | 28.00025 | 58.50075 | 19.23425 | 1.696 | | | |
| Phase II | 9/17/99 11:00 AM | 9/17/99 12:00 PM | Yes | 1287 | 17.20075 | 18.35 | 22.52525 | 16.6595 | 1.73975 | | | |
| Phase II | 9/17/99 12:00 PM | 9/17/99 1:00 PM | Yes | 1287 | 16.72525 | 26.475 | 25.0255 | 16.79175 | 1.6685 | | | |
| Phase II | 9/17/99 1:00 PM | 9/17/99 2:00 PM | Yes | 1287 | 18.1755 | 25.90025 | 91.0505 | 15.54625 | 1.68225 | | | |
| Phase II | 9/17/99 2:00 PM | 9/17/99 3:00 PM | Yes | 1287 | 25.85025 | 17.4755 | 23.3 | 16.18025 | 1.5245 | | | |
| Phase II | 9/17/99 3:00 PM | 9/17/99 4:00 PM | Yes | 1287 | 21.9 | 25.87525 | 39.77525 | 19.061 | 1.52275 | | | |
| Phase II | 9/17/99 4:00 PM | 9/17/99 5:00 PM | Yes | 1287 | 13.60025 | 36.6005 | 48.92575 | 15.9805 | 1.60675 | | | |
| Phase II | 9/17/99 5:00 PM | 9/17/99 6:00 PM | Yes | 1287 | 15.5755 | 21.625 | 32.70025 | 19.11875 | 1.69425 | | | |
| Phase II | 9/17/99 6:00 PM | 9/17/99 7:00 PM | Yes | 1287 | 20.275 | 20.95025 | 18.97575 | 17.815 | 1.833 | | | |
| Phase II | 9/17/99 7:00 PM | 9/17/99 8:00 PM | No | 1287 | 12.45025 | 14.25 | 18.17525 | 19.9045 | 1.75525 | | | |
| Phase II | 9/17/99 8:00 PM | 9/17/99 9:00 PM | No | 1287 | 19.45 | 23.5255 | 20.3005 | 17.4115 | 1.81125 | | | |
| Phase II | 9/17/99 9:00 PM | 9/17/99 10:00 PM | No | 1287 | 15.75025 | 21.35025 | 17.80025 | 19.82 | 1.55125 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/17/99 10:00 PM | 9/17/99 11:00 PM | No | 1287 | 22.12525 | 16.35025 | 17.67525 | 21.013 | 1.4735 | | | |
| Phase II | 9/17/99 11:00 PM | 9/18/99 12:00 AM | No | 1287 | 20.67575 | 17.0505 | 18.1255 | 19.64475 | 1.38625 | | | |
| Phase II | 9/18/99 12:00 AM | 9/18/99 1:00 AM | No | 1371 | 9.65 | 18.775 | 17.42525 | 18.4435 | 1.416 | | | |
| Phase II | 9/18/99 1:00 AM | 9/18/99 2:00 AM | No | 1371 | 30.0505 | 16.8 | 14.65025 | 18.765 | 1.3685 | | | |
| Phase II | 9/18/99 2:00 AM | 9/18/99 3:00 AM | No | 1371 | 21.95025 | 20.7 | 17.025 | 18.2005 | 1.30825 | | | |
| Phase II | 9/18/99 3:00 AM | 9/18/99 4:00 AM | No | 1371 | 27.625 | 17.15025 | 17.1255 | 18.79375 | 1.4145 | | | |
| Phase II | 9/18/99 4:00 AM | 9/18/99 5:00 AM | No | 1371 | 18.77525 | 30.1005 | 15.7255 | 16.78675 | 1.359 | | | |
| Phase II | 9/18/99 5:00 AM | 9/18/99 6:00 AM | No | 1371 | 15.30025 | 17.4 | 15.97525 | 17.0015 | 1.44275 | | | |
| Phase II | 9/18/99 6:00 AM | 9/18/99 7:00 AM | No | 1371 | 12.05025 | 19.4005 | 25.47525 | 18.1365 | 1.40475 | | | |
| Phase II | 9/18/99 7:00 AM | 9/18/99 8:00 AM | Yes | 1371 | 17.2005 | 18.87575 | 24.0255 | 17.8045 | 1.29775 | | | |
| Phase II | 9/18/99 8:00 AM | 9/18/99 9:00 AM | Yes | 1371 | 17.17525 | 21.1755 | 19.1505 | 16.81825 | 1.4175 | | | |
| Phase II | 9/18/99 9:00 AM | 9/18/99 10:00 AM | Yes | 1371 | 16.9005 | 20.3 | 25.47575 | 18.062 | 1.417 | | | |
| Phase II | 9/18/99 10:00 AM | 9/18/99 11:00 AM | Yes | 1371 | 20.60025 | 27.72575 | 22.7505 | 17.93 | 1.382 | | | |
| Phase II | 9/18/99 11:00 AM | 9/18/99 12:00 PM | No | 1371 | 13.6005 | 20.8 | 41.95025 | 16.13475 | 1.36225 | | | |
| Phase II | 9/18/99 12:00 PM | 9/18/99 1:00 PM | Yes | 1371 | 13.3505 | 17.8005 | 88.30025 | 17.051 | 1.31425 | | | |
| Phase II | 9/18/99 1:00 PM | 9/18/99 2:00 PM | Yes | 1371 | 15.45025 | 30.75025 | 36.001 | 16.628 | 1.38075 | | | |
| Phase II | 9/18/99 2:00 PM | 9/18/99 3:00 PM | No | 1371 | 11.6 | 24.45 | 55.70075 | 18.04875 | 1.3335 | | | |
| Phase II | 9/18/99 3:00 PM | 9/18/99 4:00 PM | Yes | 1371 | 11.47525 | 19.4255 | 18.80025 | 18.903 | 1.25125 | | | |
| Phase II | 9/18/99 4:00 PM | 9/18/99 5:00 PM | Yes | 1371 | 10.12525 | 16.62525 | 41.80075 | 19.024 | 1.07025 | | | |
| Phase II | 9/18/99 5:00 PM | 9/18/99 6:00 PM | Yes | 1371 | 12.5005 | 14.5255 | 28.2005 | 18.15525 | 0.98525 | | | |
| Phase II | 9/18/99 6:00 PM | 9/18/99 7:00 PM | Yes | 1371 | 15.475 | 19.00025 | 27.75075 | 16.5675 | 1.18725 | | | |
| Phase II | 9/18/99 7:00 PM | 9/18/99 8:00 PM | No | 1371 | 10.05075 | 19.67525 | 15.8005 | 19.94175 | 1.391 | | | |
| Phase II | 9/18/99 8:00 PM | 9/18/99 9:00 PM | No | 1371 | 6.776 | 24 | 18.126 | 19.55775 | 1.2845 | | | |
| Phase II | 9/18/99 9:00 PM | 9/18/99 10:00 PM | No | 1371 | 15.2255 | 21.55025 | 15.55 | 18.96275 | 1.25 | | | |
| Phase II | 9/18/99 10:00 PM | 9/18/99 11:00 PM | No | 1371 | 10.1255 | 16.17525 | 19.20025 | 19.74275 | 1.20125 | | | |
| Phase II | 9/18/99 11:00 PM | 9/19/99 12:00 AM | No | 1371 | 7.37575 | 18.42525 | 14.52525 | 18.345 | 1.17075 | | | |
| Phase II | 9/19/99 12:00 AM | 9/19/99 1:00 AM | No | 1367 | 9.32525 | 21.5505 | 22.2005 | 18.034 | 1.285 | | | |
| Phase II | 9/19/99 1:00 AM | 9/19/99 2:00 AM | No | 1367 | 13.25025 | 17.6255 | 17.95025 | 17.35875 | 1.19925 | | | |
| Phase II | 9/19/99 2:00 AM | 9/19/99 3:00 AM | No | 1367 | 18.5 | 18.60025 | 16.1505 | 17.00375 | 1.1335 | | | |
| Phase II | 9/19/99 3:00 AM | 9/19/99 4:00 AM | No | 1367 | 17.6005 | 18.52525 | 17.65 | 15.874 | 1.10475 | | | |
| Phase II | 9/19/99 4:00 AM | 9/19/99 5:00 AM | No | 1367 | 15.37525 | 29.12575 | 19.85 | 16.802 | 1.11475 | | | |
| Phase II | 9/19/99 5:00 AM | 9/19/99 6:00 AM | No | 1367 | 11.65 | 20.4755 | 19.17525 | 19.4085 | 1.343 | | | |
| Phase II | 9/19/99 6:00 AM | 9/19/99 7:00 AM | No | 1367 | 14.4005 | 18.45025 | 16.85 | 17.39825 | 1.259 | | | |
| Phase II | 9/19/99 7:00 AM | 9/19/99 8:00 AM | No | 1367 | 18.50025 | 16.75025 | 19.00025 | 19.2835 | 1.1915 | | | |
| Phase II | 9/19/99 8:00 AM | 9/19/99 9:00 AM | No | 1367 | 12.8 | 30.50025 | 16.3 | 17.30625 | 1.119 | | | |
| Phase II | 9/19/99 9:00 AM | 9/19/99 10:00 AM | No | 1367 | 18.85025 | 18.5 | 19.82525 | 18.4425 | 1.1055 | | | |
| Phase II | 9/19/99 10:00 AM | 9/19/99 11:00 AM | No | 1367 | 18.00025 | 18.3 | 19.7505 | 20.484 | 1.22 | | | |
| Phase II | 9/19/99 11:00 AM | 9/19/99 12:00 PM | No | 1367 | 27.30025 | 20.9005 | 16.575 | 19.19 | 1.249 | | | |
| Phase II | 9/19/99 12:00 PM | 9/19/99 1:00 PM | No | 1367 | 23.1505 | 19.6755 | 17.126 | 28.16425 | 1.165 | | | |
| Phase II | 9/19/99 1:00 PM | 9/19/99 2:00 PM | No | 1367 | 20.65025 | 15.6755 | 22.5755 | 19.698 | 1.36425 | | | |
| Phase II | 9/19/99 2:00 PM | 9/19/99 3:00 PM | No | 1367 | 22.57525 | 35.6505 | 17.525 | 16.77325 | 1.389 | | | |
| Phase II | 9/19/99 3:00 PM | 9/19/99 4:00 PM | No | 1367 | 15.47525 | 16.72525 | 20.05025 | 16.46375 | 1.28925 | | | |
| Phase II | 9/19/99 4:00 PM | 9/19/99 5:00 PM | No | 1367 | 10.45075 | 18.70075 | 17.45025 | 15.69375 | 1.28875 | | | |
| Phase II | 9/19/99 5:00 PM | 9/19/99 6:00 PM | No | 1367 | 12.475 | 17.025 | 21.22525 | 15.45575 | 1.2755 | | | |
| Phase II | 9/19/99 6:00 PM | 9/19/99 7:00 PM | No | 1367 | 9.1505 | 24.67525 | 16.675 | 16.25875 | 1.26375 | | | |
| Phase II | 9/19/99 7:00 PM | 9/19/99 8:00 PM | No | 1367 | 12.85025 | 19.60025 | 14.1755 | 16.24 | 1.25425 | | | |
| Phase II | 9/19/99 8:00 PM | 9/19/99 9:00 PM | No | 1367 | 20.55 | 19.37525 | 41.87525 | 17.9995 | 1.312 | | | |
| Phase II | 9/19/99 9:00 PM | 9/19/99 10:00 PM | No | 1367 | 17.3755 | 18.425 | 17.45 | 14.633 | 1.50225 | | | |
| Phase II | 9/19/99 10:00 PM | 9/19/99 11:00 PM | No | 1367 | 8.62575 | 22.4005 | 17.4005 | 15.009 | 1.38775 | | | |
| Phase II | 9/19/99 11:00 PM | 9/20/99 12:00 AM | No | 1367 | 24.65025 | 18.95025 | 18.30025 | 15.5525 | 1.187 | | | |
| Phase II | 9/20/99 12:00 AM | 9/20/99 1:00 AM | No | 1250 | 15.9005 | 16.2 | 16.0255 | 16.28375 | 1.103 | | | |
| Phase II | 9/20/99 1:00 AM | 9/20/99 2:00 AM | No | 1250 | 28.6755 | 17.17525 | 16.72525 | 17.562 | 1.084 | | | |
| Phase II | 9/20/99 2:00 AM | 9/20/99 3:00 AM | No | 1250 | 33.32575 | 15.45025 | 14.17525 | 15.90675 | 1.035 | | | |
| Phase II | 9/20/99 3:00 AM | 9/20/99 4:00 AM | No | 1250 | 24.7505 | 17.25025 | 20.5005 | 16.048 | 0.9875 | | | |
| Phase II | 9/20/99 4:00 AM | 9/20/99 5:00 AM | No | 1250 | 30.00075 | 15.42525 | 18.67575 | 15.50325 | 0.956 | | | |
| Phase II | 9/20/99 5:00 AM | 9/20/99 6:00 AM | No | 1250 | 22.92525 | 15.6505 | 15.55025 | 16.88975 | 0.93525 | | | |
| Phase II | 9/20/99 6:00 AM | 9/20/99 7:00 AM | No | 1250 | 23.65025 | 19.32575 | 15.55025 | 17.2815 | 0.906 | | | |
| Phase II | 9/20/99 7:00 AM | 9/20/99 8:00 AM | Yes | 1250 | 19.25 | 16.77525 | 19.2505 | 17.885 | 0.89525 | | | |
| Phase II | 9/20/99 8:00 AM | 9/20/99 9:00 AM | Yes | 1250 | 19.52525 | 15.65025 | 18.45025 | 16.93 | 0.89575 | | | |
| Phase II | 9/20/99 9:00 AM | 9/20/99 10:00 AM | Yes | 1250 | 18.8005 | 15.77525 | 21.05075 | 15.429 | 0.8965 | | | |
| Phase II | 9/20/99 10:00 AM | 9/20/99 11:00 AM | Yes | 1250 | 18.95025 | 18.85 | 21.551 | 15.32025 | 1.54225 | | | |
| Phase II | 9/20/99 11:00 AM | 9/20/99 12:00 PM | Yes | 1250 | 16.4505 | 18.27525 | 20.651 | 15.1345 | 1.858 | | | |
| Phase II | 9/20/99 12:00 PM | 9/20/99 1:00 PM | Yes | 1250 | 14.3005 | 16.65025 | 17 | 16.0615 | 1.82475 | | | |
| Phase II | 9/20/99 1:00 PM | 9/20/99 2:00 PM | Yes | 1250 | 13.60025 | 22.10025 | 20.97575 | 14.0845 | 1.645 | | | |
| Phase II | 9/20/99 2:00 PM | 9/20/99 3:00 PM | Yes | 1250 | 13.475 | 17.7255 | 17.2255 | 14.98425 | 1.6085 | | | |
| Phase II | 9/20/99 3:00 PM | 9/20/99 4:00 PM | Yes | 1250 | 17.5005 | 14.75 | 16.77525 | 14.2505 | 1.63725 | | | |
| Phase II | 9/20/99 4:00 PM | 9/20/99 5:00 PM | Yes | 1250 | 10.8005 | 17.87525 | 17.10025 | 14.43975 | 1.479 | | | |
| Phase II | 9/20/99 5:00 PM | 9/20/99 6:00 PM | Yes | 1250 | 12.77525 | 17.82525 | 23.07525 | 16.62275 | 1.653 | | | |
| Phase II | 9/20/99 6:00 PM | 9/20/99 7:00 PM | Yes | 1250 | 12.175 | 12.2 | 15.1 | 14.42875 | 1.98875 | | | |
| Phase II | 9/20/99 7:00 PM | 9/20/99 8:00 PM | No | 1250 | 10.30025 | 17.9255 | 14.875 | 13.481 | 1.8755 | | | |
| Phase II | 9/20/99 8:00 PM | 9/20/99 9:00 PM | No | 1250 | 7.75075 | 18.025 | 18.42525 | 14.74025 | 1.64225 | | | |
| Phase II | 9/20/99 9:00 PM | 9/20/99 10:00 PM | No | 1250 | 10.5 | 19.2505 | 28.9005 | 14.94925 | 1.53075 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/20/99 10:00 PM | 9/20/99 11:00 PM | No | 1250 | 14.4255 | 19.82525 | 15.37525 | 14.1365 | 1.4975 | | | |
| Phase II | 9/20/99 11:00 PM | 9/21/99 12:00 AM | No | 1250 | 12.076 | 17.25 | 18.57525 | 14.49175 | 1.591 | | | |
| Phase II | 9/21/99 12:00 AM | 9/21/99 1:00 AM | No | 1083 | 8.226 | 20.67525 | 15.325 | 13.4105 | 1.4875 | | | |
| Phase II | 9/21/99 1:00 AM | 9/21/99 2:00 AM | No | 1083 | 13.5505 | 16.1005 | 12.42525 | 14.9985 | 1.46175 | | | |
| Phase II | 9/21/99 2:00 AM | 9/21/99 3:00 AM | No | 1083 | 21.22525 | 14.7505 | 12.525 | 13.74075 | 1.40325 | | | |
| Phase II | 9/21/99 3:00 AM | 9/21/99 4:00 AM | No | 1083 | 12.77525 | 23.125 | 16.175 | 13.97675 | 1.47375 | | | |
| Phase II | 9/21/99 4:00 AM | 9/21/99 5:00 AM | No | 1083 | 13.62525 | 23.4255 | 12.975 | 14.351 | 1.5805 | | | |
| Phase II | 9/21/99 5:00 AM | 9/21/99 6:00 AM | No | 1083 | 18.32525 | 16.02575 | 14.25 | 12.8845 | 1.49325 | | | |
| Phase II | 9/21/99 6:00 AM | 9/21/99 7:00 AM | No | 1083 | 8.9755 | 23.4005 | 15.175 | 14.0195 | 1.5415 | | | |
| Phase II | 9/21/99 7:00 AM | 9/21/99 8:00 AM | | 1083 | 28.42575 | 14.2005 | 13.47525 | 13.60225 | 1.9255 | | | |
| Phase II | 9/21/99 8:00 AM | 9/21/99 9:00 AM | | 1083 | 26.826 | 14.55075 | 16.70025 | 14.45825 | 1.83375 | | | |
| Phase II | 9/21/99 9:00 AM | 9/21/99 10:00 AM | | 1083 | 21.67525 | 15.47525 | 16.1 | 14.3435 | 1.8925 | | | |
| Phase II | 9/21/99 10:00 AM | 9/21/99 11:00 AM | | 1083 | 13.35025 | 14.62525 | 30.52525 | 13.89075 | 1.8765 | | | |
| Phase II | 9/21/99 11:00 AM | 9/21/99 12:00 PM | | 1083 | 16.65075 | 17.6755 | 21.82525 | 13.71125 | 1.676 | | | |
| Phase II | 9/21/99 12:00 PM | 9/21/99 1:00 PM | | 1083 | 15.55025 | 28.47525 | 24.55025 | 15.08675 | 1.91475 | | | |
| Phase II | 9/21/99 1:00 PM | 9/21/99 2:00 PM | | 1083 | 13.32525 | 16.72575 | 20.02525 | 15.0235 | 1.672 | | | |
| Phase II | 9/21/99 2:00 PM | 9/21/99 3:00 PM | | 1083 | 10.8755 | 16.85025 | 18.87525 | 15.58225 | 1.93125 | | | |
| Phase II | 9/21/99 3:00 PM | 9/21/99 4:00 PM | | 1083 | 13.60075 | 44.72575 | 23.05025 | 16.014 | 1.82875 | | | |
| Phase II | 9/21/99 4:00 PM | 9/21/99 5:00 PM | | 1083 | 11.1 | 20.4755 | 31.15025 | 15.9785 | 1.84425 | | | |
| Phase II | 9/21/99 5:00 PM | 9/21/99 6:00 PM | | 1083 | 12.57575 | 16.0005 | 22.901 | 17.8665 | 1.85625 | | | |
| Phase II | 9/21/99 6:00 PM | 9/21/99 7:00 PM | | 1083 | 11.30025 | 27.92525 | 16.6755 | 15.87675 | 2.085 | | | |
| Phase II | 9/21/99 7:00 PM | 9/21/99 8:00 PM | No | 1083 | 15.72525 | 19.6255 | 33.6755 | 17.13725 | 2.11475 | | | |
| Phase II | 9/21/99 8:00 PM | 9/21/99 9:00 PM | No | 1083 | 18.30025 | 15.00025 | 15.001 | 15.82025 | 1.792 | | | |
| Phase II | 9/21/99 9:00 PM | 9/21/99 10:00 PM | No | 1083 | 12.90025 | 16.7505 | 18.3 | 15.37475 | 1.49425 | | | |
| Phase II | 9/21/99 10:00 PM | 9/21/99 11:00 PM | No | 1083 | 14.00075 | 16.825 | 17.62575 | 15 | 1.4685 | | | |
| Phase II | 9/21/99 11:00 PM | 9/22/99 12:00 AM | No | 1083 | 10.00025 | 13.85025 | 16.47575 | 14.28525 | 1.42125 | | | |
| Phase II | 9/22/99 12:00 AM | 9/22/99 1:00 AM | No | 1398 | 36.8255 | 17.334 | 21.9505 | 15.381 | 1.68 | | | |
| Phase II | 9/22/99 1:00 AM | 9/22/99 2:00 AM | No | 1398 | 13.47525 | | 12.925 | 14.786 | 1.74525 | | | |
| Phase II | 9/22/99 2:00 AM | 9/22/99 3:00 AM | No | 1398 | 15.77525 | | 15.92525 | 16.0195 | 1.61725 | | | |
| Phase II | 9/22/99 3:00 AM | 9/22/99 4:00 AM | No | 1398 | 8.10025 | | 19.6755 | 15.911 | 1.65825 | | | |
| Phase II | 9/22/99 4:00 AM | 9/22/99 5:00 AM | No | 1398 | 8.7755 | | 15.3005 | 16.0855 | 1.868 | | | |
| Phase II | 9/22/99 5:00 AM | 9/22/99 6:00 AM | No | 1398 | 11.00025 | | 14.45 | 15.38975 | 1.676 | | | |
| Phase II | 9/22/99 6:00 AM | 9/22/99 7:00 AM | No | 1398 | 20.30025 | | 15.72525 | 16.81625 | 1.64625 | | | |
| Phase II | 9/22/99 7:00 AM | 9/22/99 8:00 AM | Yes | 1398 | 13.35 | 26.15 | 13.5755 | 15.62775 | 1.781 | | | |
| Phase II | 9/22/99 8:00 AM | 9/22/99 9:00 AM | Yes | 1398 | 11.90025 | 34.301 | 13.6 | 15.1655 | 1.635 | | | |
| Phase II | 9/22/99 9:00 AM | 9/22/99 10:00 AM | Yes | 1398 | 8.97525 | 14.5 | 16.125 | 15.362 | 1.50875 | | | |
| Phase II | 9/22/99 10:00 AM | 9/22/99 11:00 AM | Yes | 1398 | 8.57575 | 20.0005 | 21.07525 | 17.30375 | 1.6345 | | | |
| Phase II | 9/22/99 11:00 AM | 9/22/99 12:00 PM | Yes | 1398 | 10.40025 | 18.5005 | 19.87525 | 15.60625 | 1.69 | | | |
| Phase II | 9/22/99 12:00 PM | 9/22/99 1:00 PM | Yes | 1398 | 9.95025 | 31.02525 | 13.4255 | 17.3215 | 1.7345 | | | |
| Phase II | 9/22/99 1:00 PM | 9/22/99 2:00 PM | Yes | 1398 | 11.17525 | 12.70025 | 16.5255 | 16.345 | 1.62875 | | | |
| Phase II | 9/22/99 2:00 PM | 9/22/99 3:00 PM | Yes | 1398 | 11.05 | 15.25 | 18.325 | 15.837 | 1.62075 | | | |
| Phase II | 9/22/99 3:00 PM | 9/22/99 4:00 PM | Yes | 1398 | 10.87525 | 16.62525 | 15.75075 | 14.2495 | 1.7305 | | | |
| Phase II | 9/22/99 4:00 PM | 9/22/99 5:00 PM | Yes | 1398 | 15.95025 | 25.7255 | 14.07525 | 15.19075 | 1.89225 | | | |
| Phase II | 9/22/99 5:00 PM | 9/22/99 6:00 PM | Yes | 1398 | 8.9005 | 22.725 | 13.77575 | 14.63875 | 1.6645 | | | |
| Phase II | 9/22/99 6:00 PM | 9/22/99 7:00 PM | Yes | 1398 | 11.85025 | 25.25075 | 16.9755 | 16.70025 | 1.60925 | | | |
| Phase II | 9/22/99 7:00 PM | 9/22/99 8:00 PM | No | 1398 | 7.7255 | 13.775 | 16.775 | 16.23375 | 1.684 | | | |
| Phase II | 9/22/99 8:00 PM | 9/22/99 9:00 PM | No | 1398 | 10.076 | 16.82525 | 17.85025 | 15.0575 | 1.53 | | | |
| Phase II | 9/22/99 9:00 PM | 9/22/99 10:00 PM | No | 1398 | 10.17525 | 13.05 | 14 | 13.49275 | 1.5425 | | | |
| Phase II | 9/22/99 10:00 PM | 9/22/99 11:00 PM | No | 1398 | 10.37575 | 15.05025 | 16.325 | 13.89 | 1.5335 | | | |
| Phase II | 9/22/99 11:00 PM | 9/23/99 12:00 AM | No | 1398 | 7.22575 | 26.35075 | 30.70025 | 14.16425 | 1.6545 | | | |
| Phase II | 9/23/99 12:00 AM | 9/23/99 1:00 AM | No | 1340 | 9.0755 | 17.20075 | 13.62575 | 13.6795 | 1.539 | | | |
| Phase II | 9/23/99 1:00 AM | 9/23/99 2:00 AM | No | 1340 | 7.82575 | 22.276 | 30.12575 | 12.8625 | 1.59275 | | | |
| Phase II | 9/23/99 2:00 AM | 9/23/99 3:00 AM | No | 1340 | 10.3255 | 16.02525 | 17.70025 | 15.21075 | 1.676 | | | |
| Phase II | 9/23/99 3:00 AM | 9/23/99 4:00 AM | No | 1340 | 14.4755 | 16.225 | 13.62525 | 12.794 | 1.7375 | | | |
| Phase II | 9/23/99 4:00 AM | 9/23/99 5:00 AM | No | 1340 | 13.10025 | 19.4255 | 16.60025 | 14.1165 | 1.816 | | | |
| Phase II | 9/23/99 5:00 AM | 9/23/99 6:00 AM | No | 1340 | 88.72575 | 17.62575 | 14.90025 | 17.895 | 1.74975 | | | |
| Phase II | 9/23/99 6:00 AM | 9/23/99 7:00 AM | No | 1340 | 8.1255 | 14.5755 | 25.4 | 15.448 | 1.7315 | | | |
| Phase II | 9/23/99 7:00 AM | 9/23/99 8:00 AM | Yes | 1340 | 8.1255 | 25.52525 | 14.30025 | 16.228 | 1.56325 | | | |
| Phase II | 9/23/99 8:00 AM | 9/23/99 9:00 AM | Yes | 1340 | 13.07575 | 14.35 | 16.075 | 15.36425 | 1.6715 | | | |
| Phase II | 9/23/99 9:00 AM | 9/23/99 10:00 AM | Yes | 1340 | 10.8755 | 16.55 | 13.475 | 16.73575 | 1.66275 | | | |
| Phase II | 9/23/99 10:00 AM | 9/23/99 11:00 AM | No | 1340 | 9.825 | 14.55025 | 16.3255 | 18.6365 | 1.59 | | | |
| Phase II | 9/23/99 11:00 AM | 9/23/99 12:00 PM | Yes | 1340 | 7.50075 | 14.0755 | 16.92525 | 17.06575 | 1.58625 | | | |
| Phase II | 9/23/99 12:00 PM | 9/23/99 1:00 PM | Yes | 1340 | 18.5255 | 19.40025 | 24.80075 | 17.325 | 1.59875 | | | |
| Phase II | 9/23/99 1:00 PM | 9/23/99 2:00 PM | Yes | 1340 | 7.77575 | 12.275 | 18.725 | 17.02325 | 1.579 | | | |
| Phase II | 9/23/99 2:00 PM | 9/23/99 3:00 PM | Yes | 1340 | 11.72575 | 15.7755 | 15.80025 | 17.85475 | 1.50425 | | | |
| Phase II | 9/23/99 3:00 PM | 9/23/99 4:00 PM | Yes | 1340 | 11.77525 | 15.0255 | 17.07525 | 16.734 | 1.40575 | | | |
| Phase II | 9/23/99 4:00 PM | 9/23/99 5:00 PM | Yes | 1340 | 12.62525 | 18.77525 | 14.95025 | 16.03325 | 1.46425 | | | |
| Phase II | 9/23/99 5:00 PM | 9/23/99 6:00 PM | Yes | 1340 | 13.80025 | 14.97525 | 12.825 | 15.13175 | 1.378 | | | |
| Phase II | 9/23/99 6:00 PM | 9/23/99 7:00 PM | No | 1340 | 12.05025 | 15.35 | 14.575 | 17.71 | 1.427 | | | |
| Phase II | 9/23/99 7:00 PM | 9/23/99 8:00 PM | No | 1340 | 7.67575 | 17.5255 | 15.92525 | 15.02925 | 1.4245 | | | |
| Phase II | 9/23/99 8:00 PM | 9/23/99 9:00 PM | No | 1340 | 10.0255 | 11.075 | 14.42525 | 14.867 | 1.467 | | | |
| Phase II | 9/23/99 9:00 PM | 9/23/99 10:00 PM | No | 1340 | 7.32575 | 12.97525 | 13.975 | 14.204 | 1.3525 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/23/99 10:00 PM | 9/23/99 11:00 PM | No | 1340 | 41.10075 | 13.92575 | 14.70025 | 14.954 | 1.31925 | | | |
| Phase II | 9/23/99 11:00 PM | 9/24/99 12:00 AM | No | 1340 | 8.55025 | 15.25025 | 16.175 | 15.58375 | 1.5715 | | | |
| Phase II | 9/24/99 12:00 AM | 9/24/99 1:00 AM | No | 1089 | 11.9755 | 19.85 | 12.77525 | 14.3295 | 1.401 | | | |
| Phase II | 9/24/99 1:00 AM | 9/24/99 2:00 AM | No | 1089 | 7.6005 | 13.525 | 15.65025 | 12.84225 | 1.43075 | | | |
| Phase II | 9/24/99 2:00 AM | 9/24/99 3:00 AM | No | 1089 | 8.42525 | 12.3255 | 20.125 | 13.00775 | 1.503 | | | |
| Phase II | 9/24/99 3:00 AM | 9/24/99 4:00 AM | No | 1089 | 9.4755 | 17.40025 | 23.32525 | 13.944 | 1.5035 | | | |
| Phase II | 9/24/99 4:00 AM | 9/24/99 5:00 AM | No | 1089 | 13.60025 | 13.925 | 17.22525 | 14.041 | 1.606 | | | |
| Phase II | 9/24/99 5:00 AM | 9/24/99 6:00 AM | No | 1089 | 11.4005 | 17.25025 | 16.2505 | 14.8965 | 1.55375 | | | |
| Phase II | 9/24/99 6:00 AM | 9/24/99 7:00 AM | No | 1089 | 10.20075 | 17.7255 | 17.05075 | 14.9515 | 1.588 | | | |
| Phase II | 9/24/99 7:00 AM | 9/24/99 8:00 AM | Yes | 1089 | 11.8005 | 19.6005 | 17.425 | 15.5805 | 1.577 | | | |
| Phase II | 9/24/99 8:00 AM | 9/24/99 9:00 AM | Yes | 1089 | 9.77575 | 16.8505 | 16.0005 | 16.206 | 1.5885 | | | |
| Phase II | 9/24/99 9:00 AM | 9/24/99 10:00 AM | Yes | 1089 | 7.87575 | 17.1255 | 14.02525 | 16.6455 | 1.72775 | | | |
| Phase II | 9/24/99 10:00 AM | 9/24/99 11:00 AM | Yes | 1089 | 73.076 | 29.67575 | 15.07525 | 15.75525 | 1.79 | | | |
| Phase II | 9/24/99 11:00 AM | 9/24/99 12:00 PM | Yes | 1089 | 11.07525 | 29.201 | 18.07525 | 16.17575 | 1.80875 | | | |
| Phase II | 9/24/99 12:00 PM | 9/24/99 1:00 PM | Yes | 1089 | 8.70025 | 18.9 | 16.85025 | 18.16825 | 1.74 | | | |
| Phase II | 9/24/99 1:00 PM | 9/24/99 2:00 PM | Yes | 1089 | 10.8005 | 19.32575 | 15.475 | 16.831 | 1.78225 | | | |
| Phase II | 9/24/99 2:00 PM | 9/24/99 3:00 PM | Yes | 1089 | 10.32575 | 15.60025 | 17.0005 | 18.0185 | 1.71075 | | | |
| Phase II | 9/24/99 3:00 PM | 9/24/99 4:00 PM | Yes | 1089 | 8.87575 | 18.45075 | 14.975 | 15.51975 | 1.73225 | | | |
| Phase II | 9/24/99 4:00 PM | 9/24/99 5:00 PM | Yes | 1089 | 8.35025 | 24.55025 | 14.52525 | 13.72425 | 1.72425 | | | |
| Phase II | 9/24/99 5:00 PM | 9/24/99 6:00 PM | No | 1089 | 7.05075 | 24.8255 | 15.3755 | 15.50575 | 1.859 | | | |
| Phase II | 9/24/99 6:00 PM | 9/24/99 7:00 PM | Yes | 1089 | 9.4755 | 16.17575 | 16.32525 | 17.83375 | 1.93775 | | | |
| Phase II | 9/24/99 7:00 PM | 9/24/99 8:00 PM | No | 1089 | 6.5505 | 17.57525 | 11.72525 | 15.30125 | 1.90875 | | | |
| Phase II | 9/24/99 8:00 PM | 9/24/99 9:00 PM | No | 1089 | 6.57575 | 27.77525 | 18.22525 | 14.86 | 2.216 | | | |
| Phase II | 9/24/99 9:00 PM | 9/24/99 10:00 PM | No | 1089 | 8.2005 | 29.57575 | 19.52575 | 15.20625 | 1.8955 | | | |
| Phase II | 9/24/99 10:00 PM | 9/24/99 11:00 PM | No | 1089 | 5.201 | 41.07525 | 13.72525 | 17.47275 | 1.9215 | | | |
| Phase II | 9/24/99 11:00 PM | 9/25/99 12:00 AM | No | 1089 | 7.65075 | 31.45025 | 17 | 16.01225 | 1.86375 | | | |
| Phase II | 9/25/99 12:00 AM | 9/25/99 1:00 AM | No | 1164 | 9.72525 | 60.97575 | 16.15025 | 16.39975 | 1.7525 | | | |
| Phase II | 9/25/99 1:00 AM | 9/25/99 2:00 AM | No | 1164 | 17.1505 | 40.5505 | 15.675 | 16.0295 | 1.68975 | | | |
| Phase II | 9/25/99 2:00 AM | 9/25/99 3:00 AM | No | 1164 | 11.12575 | 39.67575 | 15.575 | 15.11425 | 2.0155 | | | |
| Phase II | 9/25/99 3:00 AM | 9/25/99 4:00 AM | No | 1164 | 8.17575 | 31.9505 | 14.7005 | 13.75625 | 1.77925 | | | |
| Phase II | 9/25/99 4:00 AM | 9/25/99 5:00 AM | No | 1164 | 5.75075 | 20.87575 | 18.55025 | 15.03025 | 1.7215 | | | |
| Phase II | 9/25/99 5:00 AM | 9/25/99 6:00 AM | No | 1164 | 7.42575 | 21.60075 | 21.60025 | 14.1195 | 1.799 | | | |
| Phase II | 9/25/99 6:00 AM | 9/25/99 7:00 AM | No | 1164 | 9.3755 | 38.60025 | 17.7 | 15.23025 | 1.80025 | | | |
| Phase II | 9/25/99 7:00 AM | 9/25/99 8:00 AM | Yes | 1164 | 12.45075 | 55.0005 | 13.42525 | 14.52825 | 1.848 | | | |
| Phase II | 9/25/99 8:00 AM | 9/25/99 9:00 AM | Yes | 1164 | 13.20025 | 45.00025 | 26.275 | 14.8255 | 1.8555 | | | |
| Phase II | 9/25/99 9:00 AM | 9/25/99 10:00 AM | Yes | 1164 | 10.9755 | 38.05 | 18.95 | 14.76125 | 1.78025 | | | |
| Phase II | 9/25/99 10:00 AM | 9/25/99 11:00 AM | Yes | 1164 | 6.9755 | 40.226 | 17.85 | 15.35975 | 5.37675 | | | |
| Phase II | 9/25/99 11:00 AM | 9/25/99 12:00 PM | Yes | 1164 | 11.9755 | 47.2755 | 17.35025 | 18.07775 | 2.2225 | | | |
| Phase II | 9/25/99 12:00 PM | 9/25/99 1:00 PM | Yes | 1164 | 9.6255 | 25.4755 | 26.22525 | 18.088 | 2.18375 | | | |
| Phase II | 9/25/99 1:00 PM | 9/25/99 2:00 PM | Yes | 1164 | 6.27575 | 50.90075 | 18.6255 | 15.868 | 2.1725 | | | |
| Phase II | 9/25/99 2:00 PM | 9/25/99 3:00 PM | Yes | 1164 | 9.07525 | 33.05075 | 19.7505 | 15.576 | 2.04275 | | | |
| Phase II | 9/25/99 3:00 PM | 9/25/99 4:00 PM | Yes | 1164 | 8.9505 | 28.4255 | 20.82575 | 15.04575 | 1.89675 | | | |
| Phase II | 9/25/99 4:00 PM | 9/25/99 5:00 PM | Yes | 1164 | 5.301 | 32.576 | 23.6255 | 14.80367 | 1.891 | | | |
| Phase II | 9/25/99 5:00 PM | 9/25/99 6:00 PM | Yes | 1164 | | 18.25025 | 25.275 | 19.67875 | 2.20275 | | | |
| Phase II | 9/25/99 6:00 PM | 9/25/99 7:00 PM | Yes | 1164 | | 22.67525 | 18.0255 | 19.62075 | 1.976 | | | |
| Phase II | 9/25/99 7:00 PM | 9/25/99 8:00 PM | No | 1164 | | 38.27525 | 43.00075 | 17.6885 | 2.033 | | | |
| Phase II | 9/25/99 8:00 PM | 9/25/99 9:00 PM | No | 1164 | | 42.50075 | 17.1 | 17.534 | 2.564 | | | |
| Phase II | 9/25/99 9:00 PM | 9/25/99 10:00 PM | No | 1164 | | 37.10025 | 18.4505 | 15.84825 | 2.1745 | | | |
| Phase II | 9/25/99 10:00 PM | 9/25/99 11:00 PM | No | 1164 | | 28.725 | 14.975 | 15.1295 | 2.33625 | | | |
| Phase II | 9/25/99 11:00 PM | 9/26/99 12:00 AM | No | 1164 | | 28.87575 | 14.37525 | 14.51275 | 1.98675 | | | |
| Phase II | 9/26/99 12:00 AM | 9/26/99 1:00 AM | No | 1382 | 5.601 | 37.85 | 15.72525 | 13.87675 | 1.853 | | | |
| Phase II | 9/26/99 1:00 AM | 9/26/99 2:00 AM | No | 1382 | 7.02575 | 35.2005 | 15.1755 | 12.772 | 1.816 | | | |
| Phase II | 9/26/99 2:00 AM | 9/26/99 3:00 AM | No | 1382 | 10.77525 | 39.67525 | 12.6 | 12.75975 | 1.81775 | | | |
| Phase II | 9/26/99 3:00 AM | 9/26/99 4:00 AM | No | 1382 | 13.05025 | 88.97575 | 15.0255 | 14.45825 | 1.90825 | | | |
| Phase II | 9/26/99 4:00 AM | 9/26/99 5:00 AM | No | 1382 | 13.7505 | 79.501 | 16.10075 | 13.44025 | 1.97775 | | | |
| Phase II | 9/26/99 5:00 AM | 9/26/99 6:00 AM | No | 1382 | 16.0255 | 78.9505 | 19.7755 | 12.61475 | 1.85625 | | | |
| Phase II | 9/26/99 6:00 AM | 9/26/99 7:00 AM | No | 1382 | 12.1505 | 116.8505 | 18.1005 | 13.92475 | 1.844 | | | |
| Phase II | 9/26/99 7:00 AM | 9/26/99 8:00 AM | No | 1382 | 4.95025 | 91.47575 | 19.025 | 14.803 | 1.80675 | | | |
| Phase II | 9/26/99 8:00 AM | 9/26/99 9:00 AM | No | 1382 | 14.6005 | 65.525 | 21.70075 | 15.7255 | 1.79175 | | | |
| Phase II | 9/26/99 9:00 AM | 9/26/99 10:00 AM | No | 1382 | 8.5755 | 24.77575 | 17.47525 | 16.59575 | 2.03625 | | | |
| Phase II | 9/26/99 10:00 AM | 9/26/99 11:00 AM | No | 1382 | 9.57525 | 27.67525 | 18.4505 | 15.8085 | 1.88025 | | | |
| Phase II | 9/26/99 11:00 AM | 9/26/99 12:00 PM | No | 1382 | 11.325 | 18.72525 | 18.57525 | 16.15825 | 1.99 | | | |
| Phase II | 9/26/99 12:00 PM | 9/26/99 1:00 PM | No | 1382 | 11.975 | 17.45025 | 18.5 | 15.50225 | 2.0285 | | | |
| Phase II | 9/26/99 1:00 PM | 9/26/99 2:00 PM | No | 1382 | 10.17525 | 22.75 | 19.4005 | 18.74525 | 2.16175 | | | |
| Phase II | 9/26/99 2:00 PM | 9/26/99 3:00 PM | No | 1382 | 7.351 | 18.6505 | 15.8505 | 16.92525 | 2.42675 | | | |
| Phase II | 9/26/99 3:00 PM | 9/26/99 4:00 PM | No | 1382 | 12.05 | 22.6 | 17.125 | 16.17075 | 2.1005 | | | |
| Phase II | 9/26/99 4:00 PM | 9/26/99 5:00 PM | No | 1382 | 10.2255 | 26.20025 | 17.0755 | 15.51625 | 2.02125 | | | |
| Phase II | 9/26/99 5:00 PM | 9/26/99 6:00 PM | No | 1382 | 8.15075 | 25.7505 | 22.625 | 14.49425 | 2.102 | | | |
| Phase II | 9/26/99 6:00 PM | 9/26/99 7:00 PM | No | 1382 | 12.1005 | 141.7508 | 21.175 | 14.65525 | 1.8965 | | | |
| Phase II | 9/26/99 7:00 PM | 9/26/99 8:00 PM | No | 1382 | 8.10075 | 63.60075 | 18.075 | 15.5105 | 2.11325 | | | |
| Phase II | 9/26/99 8:00 PM | 9/26/99 9:00 PM | No | 1382 | 9.35075 | 81.9755 | 15.90025 | 15.59225 | 2.043 | | | |
| Phase II | 9/26/99 9:00 PM | 9/26/99 10:00 PM | No | 1382 | 12.62525 | 51.92575 | 17.7505 | 15.69775 | 1.85075 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/26/99 10:00 PM | 9/26/99 11:00 PM | No | 1382 | 8.1755 | 75.476 | 134.5758 | 15.1335 | 1.8185 | | | |
| Phase II | 9/26/99 11:00 PM | 9/27/99 12:00 AM | No | 1382 | 6.55075 | 134.9258 | 20.42575 | 13.7795 | 1.7855 | | | |
| Phase II | 9/27/99 12:00 AM | 9/27/99 1:00 AM | No | 1390 | 8.951 | 173.776 | 20.12525 | 14.22575 | 1.862 | | | |
| Phase II | 9/27/99 1:00 AM | 9/27/99 2:00 AM | No | 1390 | 5.80075 | 39.425 | 32.45 | 12.832 | 1.84625 | | | |
| Phase II | 9/27/99 2:00 AM | 9/27/99 3:00 AM | No | 1390 | 8.3005 | 79.676 | 17.87525 | 13.717 | 1.77975 | | | |
| Phase II | 9/27/99 3:00 AM | 9/27/99 4:00 AM | No | 1390 | 27.47525 | 117.151 | 22.9755 | 13.19225 | 1.7975 | | | |
| Phase II | 9/27/99 4:00 AM | 9/27/99 5:00 AM | No | 1390 | 79.40075 | 85.8755 | 16.7 | 12.92125 | 1.69675 | | | |
| Phase II | 9/27/99 5:00 AM | 9/27/99 6:00 AM | No | 1390 | 9.75025 | 39.6255 | 16.4255 | 14.38325 | 1.85725 | | | |
| Phase II | 9/27/99 6:00 AM | 9/27/99 7:00 AM | No | 1390 | 11.55 | 49.90025 | 31.4505 | 14.53375 | 1.754 | | | |
| Phase II | 9/27/99 7:00 AM | 9/27/99 8:00 AM | Yes | 1390 | 10.37525 | | 21.57575 | 15.5775 | 1.75975 | | | |
| Phase II | 9/27/99 8:00 AM | 9/27/99 9:00 AM | Yes | 1390 | 16.77525 | 36.3505 | 24.27525 | 15.66575 | 1.7575 | | | |
| Phase II | 9/27/99 9:00 AM | 9/27/99 10:00 AM | Yes | 1390 | 15.12575 | 21.8755 | 20.95025 | 12.693 | 1.83425 | | | |
| Phase II | 9/27/99 10:00 AM | 9/27/99 11:00 AM | Yes | 1390 | 10.2005 | 30.20025 | 21.6255 | 11.73375 | 2.07575 | | | |
| Phase II | 9/27/99 11:00 AM | 9/27/99 12:00 PM | Yes | 1390 | 10.8505 | 31.27575 | 18.0755 | 14.612 | 2.29375 | | | |
| Phase II | 9/27/99 12:00 PM | 9/27/99 1:00 PM | Yes | 1390 | 9.90025 | 16.625 | 21.3255 | 12.547 | 3.053 | | | |
| Phase II | 9/27/99 1:00 PM | 9/27/99 2:00 PM | Yes | 1390 | 8.22525 | 21.85 | 25.20025 | 7.273 | 3.51775 | | | |
| Phase II | 9/27/99 2:00 PM | 9/27/99 3:00 PM | Yes | 1390 | 82.56733 | 59.3505 | 18.9755 | 5.049333 | 3.78 | | | |
| Phase II | 9/27/99 3:00 PM | 9/27/99 4:00 PM | Yes | 1390 | 40.0255 | 39.1005 | | 7.039 | 3.49175 | | | |
| Phase II | 9/27/99 4:00 PM | 9/27/99 5:00 PM | Yes | 1390 | | 30.9005 | | 10.55075 | 2.76275 | | | |
| Phase II | 9/27/99 5:00 PM | 9/27/99 6:00 PM | Yes | 1390 | | 23.37525 | | 12.8545 | 2.47975 | | | |
| Phase II | 9/27/99 6:00 PM | 9/27/99 7:00 PM | No | 1390 | | 19.425 | | 12.47975 | 2.2705 | | | |
| Phase II | 9/27/99 7:00 PM | 9/27/99 8:00 PM | No | 1390 | | 14.2 | | 14.9205 | 2.328 | | | |
| Phase II | 9/27/99 8:00 PM | 9/27/99 9:00 PM | No | 1390 | | 11.67525 | | 13.41825 | 2.10125 | | | |
| Phase II | 9/27/99 9:00 PM | 9/27/99 10:00 PM | No | 1390 | | 12.55 | | 13.464 | 2.12025 | | | |
| Phase II | 9/27/99 10:00 PM | 9/27/99 11:00 PM | No | 1390 | | 11.575 | | 12.77975 | 1.9645 | | | |
| Phase II | 9/27/99 11:00 PM | 9/28/99 12:00 AM | No | 1390 | | 12.1005 | | 12.46275 | 2.171 | | | |
| Phase II | 9/28/99 12:00 AM | 9/28/99 1:00 AM | No | 1362 | | 9.15 | | 12.0495 | 2.013 | | | |
| Phase II | 9/28/99 1:00 AM | 9/28/99 2:00 AM | No | 1362 | | 11.6 | | 13.94425 | 2.07575 | | | |
| Phase II | 9/28/99 2:00 AM | 9/28/99 3:00 AM | No | 1362 | | 11.1505 | | 13.311 | 2.23875 | | | |
| Phase II | 9/28/99 3:00 AM | 9/28/99 4:00 AM | No | 1362 | | 10.325 | | 14.45425 | 2.19075 | | | |
| Phase II | 9/28/99 4:00 AM | 9/28/99 5:00 AM | No | 1362 | | 9.17525 | | 12.8475 | 2.5155 | | | |
| Phase II | 9/28/99 5:00 AM | 9/28/99 6:00 AM | No | 1362 | | 9.12525 | | 13.90425 | 2.32025 | | | |
| Phase II | 9/28/99 6:00 AM | 9/28/99 7:00 AM | No | 1362 | | 8.52575 | | 14.41125 | 2.1155 | | | |
| Phase II | 9/28/99 7:00 AM | 9/28/99 8:00 AM | Yes | 1362 | | 9.02525 | | 13.23375 | 2.14575 | | | |
| Phase II | 9/28/99 8:00 AM | 9/28/99 9:00 AM | No | 1362 | | 7.65075 | | 17.1935 | 2.3455 | | | |
| Phase II | 9/28/99 9:00 AM | 9/28/99 10:00 AM | No | 1362 | 12.40067 | 11.9 | | 14.27625 | 2.08425 | | | |
| Phase II | 9/28/99 10:00 AM | 9/28/99 11:00 AM | Yes | 1362 | 13.29703 | | | 12.6965 | 1.91175 | | | |
| Phase II | 9/28/99 11:00 AM | 9/28/99 12:00 PM | Yes | 1362 | 12.12533 | | | 12.81725 | 1.87675 | | | |
| Phase II | 9/28/99 12:00 PM | 9/28/99 1:00 PM | Yes | 1362 | 11.0505 | 8.600333 | | 13.34625 | 1.93625 | | | |
| Phase II | 9/28/99 1:00 PM | 9/28/99 2:00 PM | No | 1362 | 12.925 | 12.9755 | | 11.9 | 1.9235 | | | |
| Phase II | 9/28/99 2:00 PM | 9/28/99 3:00 PM | No | 1362 | 23.87525 | 7.201 | | 12.46775 | 1.745 | | | |
| Phase II | 9/28/99 3:00 PM | 9/28/99 4:00 PM | No | 1362 | 15 | 9.4005 | | 12.521 | 1.73475 | | | |
| Phase II | 9/28/99 4:00 PM | 9/28/99 5:00 PM | Yes | 1362 | 23.70033 | | 22.43333 | 13.2815 | 1.62225 | | | |
| Phase II | 9/28/99 5:00 PM | 9/28/99 6:00 PM | Yes | 1362 | 13.20025 | 6.667667 | 19.57525 | 12.6445 | 1.5935 | | | |
| Phase II | 9/28/99 6:00 PM | 9/28/99 7:00 PM | Yes | 1362 | 13.70025 | 6.30075 | 17.27525 | 14.52025 | 1.81075 | | | |
| Phase II | 9/28/99 7:00 PM | 9/28/99 8:00 PM | No | 1362 | 15.8 | 6.00075 | 17.875 | 13.1155 | 1.612 | | | |
| Phase II | 9/28/99 8:00 PM | 9/28/99 9:00 PM | No | 1362 | 11.4755 | 4.12575 | 19.60025 | 14.493 | 1.56875 | | | |
| Phase II | 9/28/99 9:00 PM | 9/28/99 10:00 PM | No | 1362 | 12.45025 | 5.151 | 17.9 | 12.9575 | 1.534 | | | |
| Phase II | 9/28/99 10:00 PM | 9/28/99 11:00 PM | No | 1362 | 13.25025 | 4.701 | 16.1 | 12.22875 | 1.48775 | | | |
| Phase II | 9/28/99 11:00 PM | 9/29/99 12:00 AM | No | 1362 | 12.15 | 5.251 | 19.22525 | 12.86175 | 1.685 | | | |
| Phase II | 9/29/99 12:00 AM | 9/29/99 1:00 AM | No | 1187 | 8.72575 | 3.8255 | 19.225 | 13.2705 | 1.51025 | | | |
| Phase II | 9/29/99 1:00 AM | 9/29/99 2:00 AM | No | 1187 | 13.45 | 3.3755 | 20.425 | 11.679 | 1.47125 | | | |
| Phase II | 9/29/99 2:00 AM | 9/29/99 3:00 AM | No | 1187 | 10.27525 | 4.401 | 15.7255 | 11.316 | 1.577 | | | |
| Phase II | 9/29/99 3:00 AM | 9/29/99 4:00 AM | No | 1187 | 11.4005 | 4.751 | 14.3505 | 11.8585 | 1.6075 | | | |
| Phase II | 9/29/99 4:00 AM | 9/29/99 5:00 AM | No | 1187 | 9.45025 | 4.2505 | 13.62525 | 11.65575 | 1.44 | | | |
| Phase II | 9/29/99 5:00 AM | 9/29/99 6:00 AM | No | 1187 | 9.0505 | 10.1755 | 17.625 | 11.3085 | 1.48475 | | | |
| Phase II | 9/29/99 6:00 AM | 9/29/99 7:00 AM | No | 1187 | 11.2505 | 3.70075 | 14.7 | 11.8615 | 1.59575 | | | |
| Phase II | 9/29/99 7:00 AM | 9/29/99 8:00 AM | Yes | 1187 | 9.92525 | 6.4005 | 17.90025 | 12.39375 | 1.42325 | | | |
| Phase II | 9/29/99 8:00 AM | 9/29/99 9:00 AM | Yes | 1187 | 10.65025 | 8.151 | 15.00025 | 12.5485 | 1.38975 | | | |
| Phase II | 9/29/99 9:00 AM | 9/29/99 10:00 AM | Yes | 1187 | 9.0505 | 5.8505 | 29.4755 | 12.00325 | 1.585 | | | |
| Phase II | 9/29/99 10:00 AM | 9/29/99 11:00 AM | Yes | 1187 | 9.5755 | 9.55025 | 16.225 | 11.91975 | 1.46775 | | | |
| Phase II | 9/29/99 11:00 AM | 9/29/99 12:00 PM | Yes | 1187 | 9.52525 | 7.50075 | 14.8755 | 11.69525 | 1.40025 | | | |
| Phase II | 9/29/99 12:00 PM | 9/29/99 1:00 PM | Yes | 1187 | 11.67525 | 7.1005 | 16.72575 | 11.73425 | 1.48575 | | | |
| Phase II | 9/29/99 1:00 PM | 9/29/99 2:00 PM | Yes | 1187 | 10.02525 | 6.02575 | 16.4 | 12.25325 | 1.5945 | | | |
| Phase II | 9/29/99 2:00 PM | 9/29/99 3:00 PM | Yes | 1187 | 10.80025 | 9.35025 | 18.4 | 11.7875 | 1.62175 | | | |
| Phase II | 9/29/99 3:00 PM | 9/29/99 4:00 PM | Yes | 1187 | 9.37575 | 15.075 | 20.1255 | 11.32725 | 1.74525 | | | |
| Phase II | 9/29/99 4:00 PM | 9/29/99 5:00 PM | Yes | 1187 | 14.00025 | 12.82525 | 13.3505 | 10.892 | 1.55875 | | | |
| Phase II | 9/29/99 5:00 PM | 9/29/99 6:00 PM | Yes | 1187 | 10.45 | 11.1505 | 17.42525 | 12.2765 | 1.639 | | | |
| Phase II | 9/29/99 6:00 PM | 9/29/99 7:00 PM | Yes | 1187 | 13.05075 | 10.425 | 42.7755 | 12.1255 | 1.6125 | | | |
| Phase II | 9/29/99 7:00 PM | 9/29/99 8:00 PM | No | 1187 | 33.10025 | 9.35 | 13.22525 | 11.8965 | 1.66875 | | | |
| Phase II | 9/29/99 8:00 PM | 9/29/99 9:00 PM | No | 1187 | 30.02525 | 13.5255 | 19.07575 | 12.625 | 1.77 | | | |
| Phase II | 9/29/99 9:00 PM | 9/29/99 10:00 PM | No | 1187 | 9.62525 | 16.4505 | 20.02575 | 11.9875 | 1.5255 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 9/29/99 10:00 PM | 9/29/99 11:00 PM | No | 1187 | 10.6005 | 10.0755 | 15.9005 | 10.79775 | 1.484 | | | |
| Phase II | 9/29/99 11:00 PM | 9/30/99 12:00 AM | No | 1187 | 11.65025 | 9.70025 | 15.3505 | 11.027 | 1.464 | | | |
| Phase II | 9/30/99 12:00 AM | 9/30/99 1:00 AM | No | 1326 | 13.75 | 9.4755 | 16.22525 | 10.43825 | 1.41875 | | | |
| Phase II | 9/30/99 1:00 AM | 9/30/99 2:00 AM | No | 1326 | 8.3755 | 12.475 | 11.35025 | 11.408 | 1.7145 | | | |
| Phase II | 9/30/99 2:00 AM | 9/30/99 3:00 AM | No | 1326 | 11.25025 | 10.7255 | 12.57525 | 11.96 | 1.56125 | | | |
| Phase II | 9/30/99 3:00 AM | 9/30/99 4:00 AM | No | 1326 | 11.7505 | 9.1255 | 13.9755 | 10.41825 | 1.53475 | | | |
| Phase II | 9/30/99 4:00 AM | 9/30/99 5:00 AM | No | 1326 | 10.9505 | 11.02525 | 12.45 | 10.91975 | 1.59425 | | | |
| Phase II | 9/30/99 5:00 AM | 9/30/99 6:00 AM | No | 1326 | 11.9005 | 12.6255 | 12.22525 | 10.6955 | 1.404 | | | |
| Phase II | 9/30/99 6:00 AM | 9/30/99 7:00 AM | No | 1326 | 10.7505 | 12.40075 | 22.20075 | 11.19025 | 1.4605 | | | |
| Phase II | 9/30/99 7:00 AM | 9/30/99 8:00 AM | No | 1326 | 16.8505 | 11.5 | 14.5255 | 11.31325 | 1.59725 | | | |
| Phase II | 9/30/99 8:00 AM | 9/30/99 9:00 AM | No | 1326 | 18.0005 | 10.925 | 14.50025 | 11.71875 | 1.4605 | | | |
| Phase II | 9/30/99 9:00 AM | 9/30/99 10:00 AM | Yes | 1326 | 11.525 | 40.5005 | 18.35025 | 11.67925 | 1.4655 | | | |
| Phase II | 9/30/99 10:00 AM | 9/30/99 11:00 AM | Yes | 1326 | 12.60025 | 15.57575 | 32.80075 | 12.65075 | 1.56875 | | | |
| Phase II | 9/30/99 11:00 AM | 9/30/99 12:00 PM | Yes | 1326 | 10.9255 | 17.97525 | 14.90025 | 13.5795 | 1.5235 | | | |
| Phase II | 9/30/99 12:00 PM | 9/30/99 1:00 PM | Yes | 1326 | 14.7 | 14.85 | 14.75025 | 12.32625 | 1.66025 | | | |
| Phase II | 9/30/99 1:00 PM | 9/30/99 2:00 PM | Yes | 1326 | 11.25025 | 14.825 | 16.72525 | 11.67175 | 1.541 | | | |
| Phase II | 9/30/99 2:00 PM | 9/30/99 3:00 PM | Yes | 1326 | 12.45075 | 17.32525 | 11.87525 | 11.33525 | 1.5025 | | | |
| Phase II | 9/30/99 3:00 PM | 9/30/99 4:00 PM | Yes | 1326 | 17.20025 | 19.5255 | 15.47525 | 12.247 | 1.59425 | | | |
| Phase II | 9/30/99 4:00 PM | 9/30/99 5:00 PM | Yes | 1326 | 18.9505 | 23.2005 | 19.2505 | 12.88275 | 1.57875 | | | |
| Phase II | 9/30/99 5:00 PM | 9/30/99 6:00 PM | Yes | 1326 | 19.65025 | 35.97575 | 17.2 | 12.322 | 1.72125 | | | |
| Phase II | 9/30/99 6:00 PM | 9/30/99 7:00 PM | Yes | 1326 | 16.875 | 14.4 | 19.30025 | 11.5905 | 1.6355 | | | |
| Phase II | 9/30/99 7:00 PM | 9/30/99 8:00 PM | No | 1326 | 10.3005 | 12.2755 | 21.8005 | 11.11625 | 1.58775 | | | |
| Phase II | 9/30/99 8:00 PM | 9/30/99 9:00 PM | No | 1326 | 10.3005 | 11.575 | 16.92525 | 11.10825 | 1.72475 | | | |
| Phase II | 9/30/99 9:00 PM | 9/30/99 10:00 PM | No | 1326 | 11.35025 | 13.15075 | 10.72525 | 11.06225 | 1.65275 | | | |
| Phase II | 9/30/99 10:00 PM | 9/30/99 11:00 PM | No | 1326 | 13.17525 | 14.92525 | 12.92525 | 11.82875 | 1.5495 | | | |
| Phase II | 9/30/99 11:00 PM | 10/1/99 12:00 AM | No | 1326 | 14.7005 | 20.1 | 13.70025 | 13.68625 | 1.554 | | | |
| Phase II | 10/1/99 12:00 AM | 10/1/99 1:00 AM | No | 1599 | 13.00025 | 13.225 | 13.77525 | 11.0335 | 2.035 | | | |
| Phase II | 10/1/99 1:00 AM | 10/1/99 2:00 AM | No | 1599 | 12.92525 | 11.725 | 15.4 | 11.14425 | 2.0765 | | | |
| Phase II | 10/1/99 2:00 AM | 10/1/99 3:00 AM | No | 1599 | 9.47525 | 12.8255 | 12.075 | 11.174 | 1.69575 | | | |
| Phase II | 10/1/99 3:00 AM | 10/1/99 4:00 AM | No | 1599 | 11.90025 | 11.8505 | 19.32525 | 11.06025 | 1.83625 | | | |
| Phase II | 10/1/99 4:00 AM | 10/1/99 5:00 AM | No | 1599 | 8.9505 | 11.65025 | 15.275 | 10.60625 | 1.7155 | | | |
| Phase II | 10/1/99 5:00 AM | 10/1/99 6:00 AM | No | 1599 | 7.70075 | 18.40025 | 14.675 | 11.14975 | 1.5705 | | | |
| Phase II | 10/1/99 6:00 AM | 10/1/99 7:00 AM | No | 1599 | 12.25025 | 13.2755 | 15.825 | 11.1785 | 1.50725 | | | |
| Phase II | 10/1/99 7:00 AM | 10/1/99 8:00 AM | Yes | 1599 | 11.125 | 16.15025 | 13.7255 | 11.33075 | 1.58525 | | | |
| Phase II | 10/1/99 8:00 AM | 10/1/99 9:00 AM | Yes | 1599 | 12.20025 | 16.32525 | 14.1755 | 12.0015 | 1.77975 | | | |
| Phase II | 10/1/99 9:00 AM | 10/1/99 10:00 AM | Yes | 1599 | 11.35025 | 15.15075 | 14.70025 | 11.97725 | 1.6675 | | | |
| Phase II | 10/1/99 10:00 AM | 10/1/99 11:00 AM | Yes | 1599 | 13.20025 | 15.40025 | 15.30025 | 11.756 | 1.63775 | | | |
| Phase II | 10/1/99 11:00 AM | 10/1/99 12:00 PM | Yes | 1599 | 11.70025 | 17.2505 | 12.525 | 11.744 | 1.55125 | | | |
| Phase II | 10/1/99 12:00 PM | 10/1/99 1:00 PM | Yes | 1599 | 16.05 | 17.47525 | 13.65025 | 11.3655 | 1.5205 | | | |
| Phase II | 10/1/99 1:00 PM | 10/1/99 2:00 PM | Yes | 1599 | 11.8 | 17.37525 | 16.55025 | 11.876 | 1.661 | | | |
| Phase II | 10/1/99 2:00 PM | 10/1/99 3:00 PM | Yes | 1599 | 15.575 | 26.5005 | 22.275 | 11.87025 | 1.7075 | | | |
| Phase II | 10/1/99 3:00 PM | 10/1/99 4:00 PM | Yes | 1599 | 14.3505 | 12.90025 | 17.625 | 12.651 | 1.67025 | | | |
| Phase II | 10/1/99 4:00 PM | 10/1/99 5:00 PM | Yes | 1599 | 14.40075 | 18.5005 | 16.80025 | 12.7715 | 1.7555 | | | |
| Phase II | 10/1/99 5:00 PM | 10/1/99 6:00 PM | Yes | 1599 | 15.72575 | 13.05 | 15.32525 | 12.00475 | 1.68075 | | | |
| Phase II | 10/1/99 6:00 PM | 10/1/99 7:00 PM | Yes | 1599 | 15.92525 | 20.35025 | 16.32575 | 12.26975 | 1.679 | | | |
| Phase II | 10/1/99 7:00 PM | 10/1/99 8:00 PM | No | 1599 | 13.1755 | 13.92575 | 15.4755 | 11.62875 | 1.841 | | | |
| Phase II | 10/1/99 8:00 PM | 10/1/99 9:00 PM | No | 1599 | 10.5 | 12.1 | 14.1 | 11.12875 | 1.78425 | | | |
| Phase II | 10/1/99 9:00 PM | 10/1/99 10:00 PM | No | 1599 | 12.9255 | 20.42575 | 15.52525 | 10.51775 | 1.6905 | | | |
| Phase II | 10/1/99 10:00 PM | 10/1/99 11:00 PM | No | 1599 | 11.125 | 12.775 | 13.675 | 11.41875 | 1.69675 | | | |
| Phase II | 10/1/99 11:00 PM | 10/2/99 12:00 AM | No | 1599 | 11.7 | 17.6005 | 13.12525 | 10.6695 | 1.6335 | | | |
| Phase II | 10/2/99 12:00 AM | 10/2/99 1:00 AM | No | 1418 | 8.7755 | 12.775 | 15.6255 | 10.60575 | 1.8555 | | | |
| Phase II | 10/2/99 1:00 AM | 10/2/99 2:00 AM | No | 1418 | 9.1755 | 12.37525 | 17.95075 | 10.66225 | 1.78625 | | | |
| Phase II | 10/2/99 2:00 AM | 10/2/99 3:00 AM | No | 1418 | 11.5255 | 11.35025 | 14.0505 | 9.9085 | 1.75525 | | | |
| Phase II | 10/2/99 3:00 AM | 10/2/99 4:00 AM | No | 1418 | 11.00025 | 18.15 | 12.72525 | 10.04425 | 1.7075 | | | |
| Phase II | 10/2/99 4:00 AM | 10/2/99 5:00 AM | No | 1418 | 11.85 | 14.4505 | 15.6005 | 10.02775 | 2.19275 | | | |
| Phase II | 10/2/99 5:00 AM | 10/2/99 6:00 AM | No | 1418 | 11.2005 | 12.8505 | 15.40025 | 10.54425 | 2.00725 | | | |
| Phase II | 10/2/99 6:00 AM | 10/2/99 7:00 AM | No | 1418 | 10.1005 | 15.2505 | 15.12525 | 10.414 | 1.81825 | | | |
| Phase II | 10/2/99 7:00 AM | 10/2/99 8:00 AM | | 1418 | 11.375 | 16.625 | 13.8 | 10.7215 | 1.78575 | | | |
| Phase II | 10/2/99 8:00 AM | 10/2/99 9:00 AM | | 1418 | 11.4 | 14.77525 | 13.65025 | 11.0315 | 1.7635 | | | |
| Phase II | 10/2/99 9:00 AM | 10/2/99 10:00 AM | | 1418 | 11.97525 | 15.075 | 12.82525 | 10.91 | 1.7855 | | | |
| Phase II | 10/2/99 10:00 AM | 10/2/99 11:00 AM | | 1418 | 11.9255 | 12.95075 | 14.025 | 10.68425 | 1.906 | | | |
| Phase II | 10/2/99 11:00 AM | 10/2/99 12:00 PM | | 1418 | 10.32525 | 11.175 | 13.8255 | 10.51275 | 1.864 | | | |
| Phase II | 10/2/99 12:00 PM | 10/2/99 1:00 PM | | 1418 | 15.4255 | 10.6505 | 13.77525 | 10.88975 | 1.895 | | | |
| Phase II | 10/2/99 1:00 PM | 10/2/99 2:00 PM | | 1418 | 13.17525 | 11.0005 | 13.22525 | 9.926 | 1.8575 | | | |
| Phase II | 10/2/99 2:00 PM | 10/2/99 3:00 PM | | 1418 | 13 | 10.5255 | 12.05 | 9.71825 | 1.70725 | | | |
| Phase II | 10/2/99 3:00 PM | 10/2/99 4:00 PM | | 1418 | 11.675 | 21.10025 | 18.3 | 9.29525 | 1.84525 | | | |
| Phase II | 10/2/99 4:00 PM | 10/2/99 5:00 PM | | 1418 | 9.55025 | 14.65025 | 13.70025 | 8.9125 | 1.7545 | | | |
| Phase II | 10/2/99 5:00 PM | 10/2/99 6:00 PM | | 1418 | 10.65 | 15.425 | 13.3505 | 9.4485 | 1.624 | | | |
| Phase II | 10/2/99 6:00 PM | 10/2/99 7:00 PM | | 1418 | 8.076 | 10.9 | 15.5755 | 9.80325 | 1.67525 | | | |
| Phase II | 10/2/99 7:00 PM | 10/2/99 8:00 PM | No | 1418 | 9.45025 | 10.8755 | 13.95025 | 9.64225 | 1.7635 | | | |
| Phase II | 10/2/99 8:00 PM | 10/2/99 9:00 PM | No | 1418 | 11.85025 | 11.95075 | 14.675 | 9.77225 | 1.70025 | | | |
| Phase II | 10/2/99 9:00 PM | 10/2/99 10:00 PM | No | 1418 | 9.92525 | 14.22525 | 15.57525 | 9.536 | 1.7935 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | 10/2/99 10:00 PM | 10/2/99 11:00 PM | No | 1418 | 9.77525 | 9.9 | 13.126 | 9.116 | 1.68375 | | | |
| Phase II | 10/2/99 11:00 PM | 10/3/99 12:00 AM | No | 1418 | 10.35025 | 12.57525 | 14.90075 | 8.821 | 1.582 | | | |
| Phase II | 10/3/99 12:00 AM | 10/3/99 1:00 AM | No | 1226 | 9.5505 | 11.725 | 12.8755 | 8.465 | 1.67075 | | | |
| Phase II | 10/3/99 1:00 AM | 10/3/99 2:00 AM | No | 1226 | 9.15075 | 11.65025 | 14.00025 | 8.59625 | 1.63675 | | | |
| Phase II | 10/3/99 2:00 AM | 10/3/99 3:00 AM | No | 1226 | 7.426 | 13.25025 | 12.05025 | 8.6985 | 1.64475 | | | |
| Phase II | 10/3/99 3:00 AM | 10/3/99 4:00 AM | No | 1226 | 10.17575 | 14.95025 | 11.825 | 8.315 | 1.64575 | | | |
| Phase II | 10/3/99 4:00 AM | 10/3/99 5:00 AM | No | 1226 | 9.72525 | 11.35075 | 17.8005 | 8.538 | 1.64625 | | | |
| Phase II | 10/3/99 5:00 AM | 10/3/99 6:00 AM | No | 1226 | 9.17575 | 12.625 | 14.7005 | 8.59325 | 1.587 | | | |
| Phase II | 10/3/99 6:00 AM | 10/3/99 7:00 AM | No | 1226 | 11.50025 | 15.62525 | 13.92525 | 8.561 | 1.5805 | | | |
| Phase II | 10/3/99 7:00 AM | 10/3/99 8:00 AM | No | 1226 | 11.15 | 11.4 | 15.47525 | 7.81725 | 1.70325 | | | |
| Phase II | 10/3/99 8:00 AM | 10/3/99 9:00 AM | No | 1226 | 10.57525 | 13.3 | 15.25 | 8.574 | 1.72825 | | | |
| Phase II | 10/3/99 9:00 AM | 10/3/99 10:00 AM | No | 1226 | 11.5255 | 11.42525 | 12.60025 | 9.029 | 1.66425 | | | |
| Phase II | 10/3/99 10:00 AM | 10/3/99 11:00 AM | No | 1226 | 13.72525 | 18.625 | 52.9255 | 8.78725 | 1.684 | | | |
| Phase II | 10/3/99 11:00 AM | 10/3/99 12:00 PM | No | 1226 | 9.4005 | 13.4255 | 21.25 | 9.128 | 1.645 | | | |
| Phase II | 10/3/99 12:00 PM | 10/3/99 1:00 PM | No | 1226 | 9.4755 | 14.5005 | 28.275 | 9.805 | 1.77475 | | | |
| Phase II | 10/3/99 1:00 PM | 10/3/99 2:00 PM | No | 1226 | 12.17525 | 14.75 | 16.05025 | 9.42975 | 1.771 | | | |
| Phase II | 10/3/99 2:00 PM | 10/3/99 3:00 PM | No | 1226 | 9.525 | 14.1005 | 15.075 | 8.93475 | 1.66025 | | | |
| Phase II | 10/3/99 3:00 PM | 10/3/99 4:00 PM | No | 1226 | 7.951 | 11.47575 | 14.15025 | 8.8095 | 1.618 | | | |
| Phase II | 10/3/99 4:00 PM | 10/3/99 5:00 PM | No | 1226 | 11.0755 | 10.2755 | 12.30025 | 8.31975 | 1.47625 | | | |
| Phase II | 10/3/99 5:00 PM | 10/3/99 6:00 PM | No | 1226 | 9.17525 | 10.22525 | 13.1505 | 8.064 | 1.45125 | | | |
| Phase II | 10/3/99 6:00 PM | 10/3/99 7:00 PM | No | 1226 | 8.97525 | 10.2255 | 16.6755 | 7.69075 | 1.611 | | | |
| Phase II | 10/3/99 7:00 PM | 10/3/99 8:00 PM | No | 1226 | 9.2255 | 12.05025 | 16.825 | 7.7555 | 1.58475 | | | |
| Phase II | 10/3/99 8:00 PM | 10/3/99 9:00 PM | No | 1226 | 11.30025 | 10.25025 | 14.77525 | 7.24425 | 1.60575 | | | |
| Phase II | 10/3/99 9:00 PM | 10/3/99 10:00 PM | No | 1226 | 10.5755 | 16.525 | 11.95 | 7.56225 | 1.703 | | | |
| Phase II | 10/3/99 10:00 PM | 10/3/99 11:00 PM | No | 1226 | 10.4255 | 12.35 | 12.47525 | 7.8395 | 1.62 | | | |
| Phase II | 10/3/99 11:00 PM | 10/4/99 12:00 AM | No | 1226 | 8.5505 | 10.37525 | 10.35025 | 8.0385 | 1.597 | | | |
| Phase II | 10/4/99 12:00 AM | 10/4/99 1:00 AM | No | 1253 | 7.6255 | 15.17525 | 12.37575 | 8.15975 | 1.59425 | | | |
| Phase II | 10/4/99 1:00 AM | 10/4/99 2:00 AM | No | 1253 | 10.75 | 10.30025 | 13.45025 | 8.2125 | 1.58325 | | | |
| Phase II | 10/4/99 2:00 AM | 10/4/99 3:00 AM | No | 1253 | 7.90075 | 8.42575 | 14.225 | 8.123 | 1.67225 | | | |
| Phase II | 10/4/99 3:00 AM | 10/4/99 4:00 AM | No | 1253 | 7.90075 | 10.75 | 12.525 | 8.13425 | 1.6215 | | | |
| Phase II | 10/4/99 4:00 AM | 10/4/99 5:00 AM | No | 1253 | 8.75075 | 11.25025 | 10.35 | 7.838 | 1.6735 | | | |
| Phase II | 10/4/99 5:00 AM | 10/4/99 6:00 AM | No | 1253 | 8.0005 | 10.6255 | 12.35 | 7.96425 | 1.588 | | | |
| Phase II | 10/4/99 6:00 AM | 10/4/99 7:00 AM | No | 1253 | 11.3255 | 8.60025 | 12.475 | 7.141 | 1.47375 | | | |
| Phase II | 10/4/99 7:00 AM | 10/4/99 8:00 AM | Yes | 1253 | 8.77575 | 10.57525 | 14.225 | 8.05275 | 1.44475 | | | |
| Phase II | 10/4/99 8:00 AM | 10/4/99 9:00 AM | Yes | 1253 | 10.3755 | 14.20025 | 28.4505 | 7.90575 | 1.45675 | | | |
| Phase II | 10/4/99 9:00 AM | 10/4/99 10:00 AM | Yes | 1253 | 8.8505 | 10.45025 | 19.07575 | 8.559 | 1.515 | | | |
| Phase II | 10/4/99 10:00 AM | 10/4/99 11:00 AM | Yes | 1253 | 9.426 | 10.775 | 11.6 | 8.37125 | 1.7015 | | | |
| Phase II | 10/4/99 11:00 AM | 10/4/99 12:00 PM | Yes | 1253 | 7.17575 | 8.4755 | 15.92525 | 8.07925 | 1.65575 | | | |
| Phase II | 10/4/99 12:00 PM | 10/4/99 1:00 PM | Yes | 1253 | 9.0255 | 6.851 | 16.65025 | 7.775 | 1.521 | | | |
| Phase II | 10/4/99 1:00 PM | 10/4/99 2:00 PM | Yes | 1253 | 8.60075 | 11.40075 | 19.30025 | 6.9655 | 1.4985 | | | |
| Phase II | 10/4/99 2:00 PM | 10/4/99 3:00 PM | Yes | 1253 | 10.45 | 12.37525 | 10.70025 | 9.54375 | 2.1845 | | | |
| Phase II | 10/4/99 3:00 PM | 10/4/99 4:00 PM | Yes | 1253 | 9.37525 | 10.37525 | 12.275 | 7.29475 | 2.13475 | | | |
| Phase II | 10/4/99 4:00 PM | 10/4/99 5:00 PM | No | 1253 | 12.77525 | 10.10025 | 13.45025 | 7.1145 | 2.09525 | | | |
| Phase II | 10/4/99 5:00 PM | 10/4/99 6:00 PM | Yes | 1253 | 11.40025 | 10.55025 | 16.30025 | 7.1685 | 2.07775 | | | |
| Phase II | 10/4/99 6:00 PM | 10/4/99 7:00 PM | Yes | 1253 | 11.37525 | 9.3505 | 11.92525 | 7.076 | 2.04875 | | | |
| Phase III | 10/4/99 7:00 PM | 10/4/99 8:00 PM | No | 1253 | 8.1755 | 13.90025 | 10.6 | 6.98475 | 2.0075 | | | |
| Phase III | 10/4/99 8:00 PM | 10/4/99 9:00 PM | No | 1253 | 8.27575 | 11.52525 | 11.17525 | 6.9505 | 2.2425 | | | |
| Phase III | 10/4/99 9:00 PM | 10/4/99 10:00 PM | No | 1253 | 8.651 | 7.6255 | 9.2505 | 6.94825 | 2.145 | | | |
| Phase III | 10/4/99 10:00 PM | 10/4/99 11:00 PM | No | 1253 | 13.97575 | 10.95025 | 12.27525 | 6.96775 | 2.145 | | | |
| Phase III | 10/4/99 11:00 PM | 10/5/99 12:00 AM | No | 1253 | 6.97575 | 9.95 | 11.45025 | 6.98525 | 1.98325 | | | |
| Phase III | 10/5/99 12:00 AM | 10/5/99 1:00 AM | No | 1416 | 9.0755 | 11.87525 | 11.875 | 6.861 | 2.0785 | | | |
| Phase III | 10/5/99 1:00 AM | 10/5/99 2:00 AM | No | 1416 | 9.3755 | 9.52525 | 13.9005 | 7.118 | 2.209 | | | |
| Phase III | 10/5/99 2:00 AM | 10/5/99 3:00 AM | No | 1416 | 7.7505 | 8.1255 | 9.77525 | 7.32875 | 2.26675 | | | |
| Phase III | 10/5/99 3:00 AM | 10/5/99 4:00 AM | No | 1416 | 8.2755 | 9.15025 | 10.4755 | 7.0385 | 2.288 | | | |
| Phase III | 10/5/99 4:00 AM | 10/5/99 5:00 AM | No | 1416 | 7.9005 | 9.77525 | 11.9 | 6.6705 | 2.16375 | | | |
| Phase III | 10/5/99 5:00 AM | 10/5/99 6:00 AM | No | 1416 | 8.8755 | 8.25025 | 11.50025 | 6.89575 | 2.1155 | | | |
| Phase III | 10/5/99 6:00 AM | 10/5/99 7:00 AM | No | 1416 | 9.30075 | 16.475 | 10.3 | 6.616 | 2.107 | | | |
| Phase III | 10/5/99 7:00 AM | 10/5/99 8:00 AM | Yes | 1416 | 8.9005 | 12.4755 | 10.25 | 6.57725 | 2.09625 | | | |
| Phase III | 10/5/99 8:00 AM | 10/5/99 9:00 AM | Yes | 1416 | 9.75025 | 15.27525 | 12.67525 | 6.8905 | 2.0765 | | | |
| Phase III | 10/5/99 9:00 AM | 10/5/99 10:00 AM | Yes | 1416 | 7.85075 | 7.9255 | 10.0505 | 7.633 | 2.2135 | | | |
| Phase III | 10/5/99 10:00 AM | 10/5/99 11:00 AM | Yes | 1416 | 7.4755 | 13.35 | 9.8005 | 7.61075 | 2.25425 | | | |
| Phase III | 10/5/99 11:00 AM | 10/5/99 12:00 PM | No | 1416 | 10.00025 | 13.20025 | 9.20025 | 7.3855 | 2.35325 | | | |
| Phase III | 10/5/99 12:00 PM | 10/5/99 1:00 PM | Yes | 1416 | 10.4 | 11.225 | 10.65025 | 7.13925 | 2.14275 | | | |
| Phase III | 10/5/99 1:00 PM | 10/5/99 2:00 PM | Yes | 1416 | 8.7505 | 16.4 | 10.1255 | 7.17725 | 2.12925 | | | |
| Phase III | 10/5/99 2:00 PM | 10/5/99 3:00 PM | Yes | 1416 | 7.851 | 16.975 | 10.65075 | 6.96225 | 2.06475 | | | |
| Phase III | 10/5/99 3:00 PM | 10/5/99 4:00 PM | Yes | 1416 | 8.60025 | 12.10025 | 11.47525 | 7.0215 | 2.11275 | | | |
| Phase III | 10/5/99 4:00 PM | 10/5/99 5:00 PM | Yes | 1416 | 10.57575 | 11.875 | 10.6 | 6.85425 | 2.31325 | | | |
| Phase III | 10/5/99 5:00 PM | 10/5/99 6:00 PM | Yes | 1416 | 8.65025 | 17.95 | 13.00025 | 6.9375 | 1.7765 | | | |
| Phase III | 10/5/99 6:00 PM | 10/5/99 7:00 PM | Yes | 1416 | 9.50025 | 14.4005 | 7.37575 | 6.985 | 1.6065 | | | |
| Phase III | 10/5/99 7:00 PM | 10/5/99 8:00 PM | No | 1416 | 12.175 | 13.90025 | 10.15075 | 7.1575 | 1.93775 | | | |
| Phase III | 10/5/99 8:00 PM | 10/5/99 9:00 PM | No | 1416 | 8.05075 | 12.9255 | 7.90075 | 7.213 | 1.6745 | | | |
| Phase III | 10/5/99 9:00 PM | 10/5/99 10:00 PM | No | 1416 | 8.3505 | 11.45025 | 10.77525 | 7.119 | 1.6205 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase III | 10/5/99 10:00 PM | 10/5/99 11:00 PM | No | 1416 | 7.8755 | 10.5005 | 11.85075 | 6.79275 | 1.86125 | | | |
| Phase III | 10/5/99 11:00 PM | 10/6/99 12:00 AM | No | 1416 | 9.92525 | 10.025 | 10.425 | 6.67875 | 1.7085 | | | |
| Phase III | 10/6/99 12:00 AM | 10/6/99 1:00 AM | No | 1341 | 9.10075 | 9.45025 | 8.32575 | 6.8885 | 1.56675 | | | |
| Phase III | 10/6/99 1:00 AM | 10/6/99 2:00 AM | No | 1341 | 10.9755 | 9.40075 | 11.425 | 6.9455 | 1.57675 | | | |
| Phase III | 10/6/99 2:00 AM | 10/6/99 3:00 AM | No | 1341 | 9.3755 | 11.275 | 10.7255 | 6.86775 | 1.642 | | | |
| Phase III | 10/6/99 3:00 AM | 10/6/99 4:00 AM | No | 1341 | 16.82575 | 7.4005 | 11.75025 | 7.092 | 1.83725 | | | |
| Phase III | 10/6/99 4:00 AM | 10/6/99 5:00 AM | No | 1341 | 12.4505 | 8.0755 | 11.1 | 6.99725 | 1.84225 | | | |
| Phase III | 10/6/99 5:00 AM | 10/6/99 6:00 AM | No | 1341 | 9.87525 | 11.1755 | 10.3 | 6.8165 | 1.71225 | | | |
| Phase III | 10/6/99 6:00 AM | 10/6/99 7:00 AM | No | 1341 | 9.6755 | 8.95 | 9.32525 | 6.846 | 1.54475 | | | |
| Phase III | 10/6/99 7:00 AM | 10/6/99 8:00 AM | Yes | 1341 | 9.0005 | 9.92525 | 11.2005 | 7.22725 | 1.695 | | | |
| Phase III | 10/6/99 8:00 AM | 10/6/99 9:00 AM | Yes | 1341 | 6.65075 | 8.8005 | 10.90025 | 7.6655 | 1.77425 | | | |
| Phase III | 10/6/99 9:00 AM | 10/6/99 10:00 AM | Yes | 1341 | 7.476 | 13.70025 | 10.92525 | 7.4625 | 1.91875 | | | |
| Phase III | 10/6/99 10:00 AM | 10/6/99 11:00 AM | Yes | 1341 | 8.87525 | 24.37525 | 9.72525 | 7.042 | 1.82975 | | | |
| Phase III | 10/6/99 11:00 AM | 10/6/99 12:00 PM | No | 1341 | 8.42525 | 13.3755 | 13.22525 | 7.00675 | 3.11325 | | | |
| Phase III | 10/6/99 12:00 PM | 10/6/99 1:00 PM | No | 1341 | 10.2755 | 23.475 | 12.1 | 7.059 | 4.042 | | | |
| Phase III | 10/6/99 1:00 PM | 10/6/99 2:00 PM | No | 1341 | 9.45075 | 10.875 | 10.30075 | 7.16925 | 3.6805 | | | |
| Phase III | 10/6/99 2:00 PM | 10/6/99 3:00 PM | Yes | 1341 | 13.70025 | 17.92525 | 11.30025 | 7.56675 | 3.26275 | | | |
| Phase III | 10/6/99 3:00 PM | 10/6/99 4:00 PM | Yes | 1341 | 7.05075 | 9.77525 | 12.62525 | 7.494 | 2.5475 | | | |
| Phase III | 10/6/99 4:00 PM | 10/6/99 5:00 PM | Yes | 1341 | 13.225 | 9.5505 | 12.55 | 7.44075 | 2.2305 | | | |
| Phase III | 10/6/99 5:00 PM | 10/6/99 6:00 PM | Yes | 1341 | 12.3 | 10.4755 | 10.07525 | 7.32125 | 2.17125 | | | |
| Phase III | 10/6/99 6:00 PM | 10/6/99 7:00 PM | Yes | 1341 | 12.07525 | 9.75025 | 9.5505 | 7.72275 | 2.00575 | | | |
| Phase III | 10/6/99 7:00 PM | 10/6/99 8:00 PM | No | 1341 | 11.95075 | 11.35 | 10.9 | 7.44325 | 2.11875 | | | |
| Phase III | 10/6/99 8:00 PM | 10/6/99 9:00 PM | No | 1341 | 10.47525 | 19.0005 | 10.4 | 7.14575 | 2.0075 | | | |
| Phase III | 10/6/99 9:00 PM | 10/6/99 10:00 PM | No | 1341 | 12.50025 | 8.07575 | 10.35 | 6.98725 | 1.7875 | | | |
| Phase III | 10/6/99 10:00 PM | 10/6/99 11:00 PM | No | 1341 | 10.925 | 8.32575 | 8.70025 | 7.0335 | 1.8925 | | | |
| Phase III | 10/6/99 11:00 PM | 10/7/99 12:00 AM | No | 1341 | 11.37525 | 10.0505 | 10.251 | 6.913 | 1.91125 | | | |
| Phase III | 10/7/99 12:00 AM | 10/7/99 1:00 AM | No | 1282 | 9.9 | 10.45025 | 19.20025 | 6.78625 | 1.779 | | | |
| Phase III | 10/7/99 1:00 AM | 10/7/99 2:00 AM | No | 1282 | 17.00025 | 7.4255 | 10.025 | 6.681 | 1.75925 | | | |
| Phase III | 10/7/99 2:00 AM | 10/7/99 3:00 AM | No | 1282 | 15.151 | 8.05025 | 10.1255 | 6.749 | 1.78975 | | | |
| Phase III | 10/7/99 3:00 AM | 10/7/99 4:00 AM | No | 1282 | 7.57575 | 8.5505 | 8.85075 | 6.50025 | 2.3805 | | | |
| Phase III | 10/7/99 4:00 AM | 10/7/99 5:00 AM | No | 1282 | 8.8255 | 4.576 | 12.17525 | 6.32675 | 2.21275 | | | |
| Phase III | 10/7/99 5:00 AM | 10/7/99 6:00 AM | No | 1282 | 7.6255 | 6.9755 | 10.92525 | 6.25975 | 1.85375 | | | |
| Phase III | 10/7/99 6:00 AM | 10/7/99 7:00 AM | No | 1282 | 8.2505 | 9.125 | 11.175 | 6.5255 | 1.8885 | | | |
| Phase III | 10/7/99 7:00 AM | 10/7/99 8:00 AM | Yes | 1282 | 8.15025 | 8.9255 | 11.32525 | 6.74725 | 1.892 | | | |
| Phase III | 10/7/99 8:00 AM | 10/7/99 9:00 AM | Yes | 1282 | 9.25025 | 10.00025 | 9.87525 | 6.67075 | 1.61075 | | | |
| Phase III | 10/7/99 9:00 AM | 10/7/99 10:00 AM | Yes | 1282 | 8.87575 | 9.85025 | 9.575 | 6.71425 | 1.54375 | | | |
| Phase III | 10/7/99 10:00 AM | 10/7/99 11:00 AM | Yes | 1282 | 7.351 | 12.55 | 10.85025 | 6.84075 | 1.7475 | | | |
| Phase III | 10/7/99 11:00 AM | 10/7/99 12:00 PM | Yes | 1282 | 9.5505 | 14.8505 | 11.5005 | 6.7405 | 1.87425 | | | |
| Phase III | 10/7/99 12:00 PM | 10/7/99 1:00 PM | No | 1282 | 8.67575 | 10.4755 | 10.375 | 6.80425 | 2.2525 | | | |
| Phase III | 10/7/99 1:00 PM | 10/7/99 2:00 PM | Yes | 1282 | 8.85 | 9.17525 | 11.1755 | 6.716 | 1.86525 | | | |
| Phase III | 10/7/99 2:00 PM | 10/7/99 3:00 PM | Yes | 1282 | 9.50025 | 25.6005 | 10.1755 | 6.7075 | 1.72225 | | | |
| Phase III | 10/7/99 3:00 PM | 10/7/99 4:00 PM | Yes | 1282 | 7.05075 | 9.4505 | 12.00025 | 7.059 | 1.65325 | | | |
| Phase III | 10/7/99 4:00 PM | 10/7/99 5:00 PM | Yes | 1282 | 8.9505 | 11.35 | 12.0755 | 7.08675 | 1.74725 | | | |
| Phase III | 10/7/99 5:00 PM | 10/7/99 6:00 PM | Yes | 1282 | 8.02575 | 9.6255 | 10.45025 | 6.8905 | 1.77475 | | | |
| Phase III | 10/7/99 6:00 PM | 10/7/99 7:00 PM | Yes | 1282 | 7.7005 | 9.20075 | 14.2755 | 6.95025 | 1.836 | | | |
| Phase III | 10/7/99 7:00 PM | 10/7/99 8:00 PM | No | 1282 | 10.00025 | 9.5005 | 10.3505 | 6.87825 | 1.779 | | | |
| Phase III | 10/7/99 8:00 PM | 10/7/99 9:00 PM | No | 1282 | 6.976 | 17.2505 | 9.1755 | 6.51825 | 1.76925 | | | |
| Phase III | 10/7/99 9:00 PM | 10/7/99 10:00 PM | No | 1282 | 7.87525 | 8.0005 | 11.82525 | 6.673 | 2.06375 | | | |
| Phase III | 10/7/99 10:00 PM | 10/7/99 11:00 PM | No | 1282 | 10.3 | 10.70025 | 11.7755 | 6.5225 | 2.2375 | | | |
| Phase III | 10/7/99 11:00 PM | 10/8/99 12:00 AM | No | 1282 | 8.80075 | 9.6505 | 10.475 | 6.42425 | 2.0915 | | | |
| Phase III | 10/8/99 12:00 AM | 10/8/99 1:00 AM | No | 1445 | 6.951 | 9.40025 | 10.9505 | 6.4795 | 1.8725 | | | |
| Phase III | 10/8/99 1:00 AM | 10/8/99 2:00 AM | No | 1445 | 10.27525 | 10.025 | 16.20025 | 6.43275 | 2.05575 | | | |
| Phase III | 10/8/99 2:00 AM | 10/8/99 3:00 AM | No | 1445 | 9.22525 | 9.82525 | 10.75025 | 6.42325 | 2.16625 | | | |
| Phase III | 10/8/99 3:00 AM | 10/8/99 4:00 AM | No | 1445 | 9.275 | 11.6755 | 10.40025 | 6.25175 | 2.358 | | | |
| Phase III | 10/8/99 4:00 AM | 10/8/99 5:00 AM | No | 1445 | 9.2755 | 9.8005 | 11.2255 | 6.3675 | 1.845 | | | |
| Phase III | 10/8/99 5:00 AM | 10/8/99 6:00 AM | No | 1445 | 11.30025 | 9.87525 | 10.775 | 6.388 | 1.70375 | | | |
| Phase III | 10/8/99 6:00 AM | 10/8/99 7:00 AM | No | 1445 | 9.40025 | 9.77575 | 9.95 | 6.3505 | 1.57125 | | | |
| Phase III | 10/8/99 7:00 AM | 10/8/99 8:00 AM | No | 1445 | 7.7005 | 10.1505 | 8.77525 | 6.335 | 1.63675 | | | |
| Phase III | 10/8/99 8:00 AM | 10/8/99 9:00 AM | No | 1445 | 10.4255 | 8.90025 | 7.501 | 6.584 | 1.7035 | | | |
| Phase III | 10/8/99 9:00 AM | 10/8/99 10:00 AM | No | 1445 | 9.6005 | 9.6755 | 9.37525 | 6.507 | 1.87125 | | | |
| Phase III | 10/8/99 10:00 AM | 10/8/99 11:00 AM | No | 1445 | 9.95075 | 9.3505 | 10.05 | 6.3995 | 1.94125 | | | |
| Phase III | 10/8/99 11:00 AM | 10/8/99 12:00 PM | Yes | 1445 | 11.5755 | 10.57525 | 9.5005 | 6.86025 | 2.386 | | | |
| Phase III | 10/8/99 12:00 PM | 10/8/99 1:00 PM | Yes | 1445 | 12.2505 | 20.6255 | 10.7005 | 6.485 | 1.8965 | | | |
| Phase III | 10/8/99 1:00 PM | 10/8/99 2:00 PM | Yes | 1445 | 10.8755 | 15.3755 | 11.00025 | 7.02025 | 2.0625 | | | |
| Phase III | 10/8/99 2:00 PM | 10/8/99 3:00 PM | Yes | 1445 | 7.85075 | 10.25025 | 9.55 | 6.74825 | 1.75925 | | | |
| Phase III | 10/8/99 3:00 PM | 10/8/99 4:00 PM | Yes | 1445 | 9.27525 | 17.6755 | 10.475 | 6.8485 | 1.80875 | | | |
| Phase III | 10/8/99 4:00 PM | 10/8/99 5:00 PM | Yes | 1445 | 9.67525 | 10.2755 | 10.60025 | 6.98125 | 2.406 | | | |
| Phase III | 10/8/99 5:00 PM | 10/8/99 6:00 PM | Yes | 1445 | 9.4005 | 12.0755 | 11.55 | 7.2585 | 1.93425 | | | |
| Phase III | 10/8/99 6:00 PM | 10/8/99 7:00 PM | No | 1445 | 39.2005 | 11.32525 | 10.425 | 7.08125 | 2.122 | | | |
| Phase III | 10/8/99 7:00 PM | 10/8/99 8:00 PM | No | 1445 | 11.1005 | 10.1005 | 10.0255 | 6.90625 | 1.9975 | | | |
| Phase III | 10/8/99 8:00 PM | 10/8/99 9:00 PM | No | 1445 | 8.3755 | 10.55025 | 11.125 | 6.8685 | 1.885 | | | |
| Phase III | 10/8/99 9:00 PM | 10/8/99 10:00 PM | No | 1445 | 9.77525 | 8.95075 | 10.575 | 6.9205 | 1.6665 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase III | 10/8/99 10:00 PM | 10/8/99 11:00 PM | No | 1445 | 11.35 | 9.00075 | 10.80075 | 6.77425 | 1.50775 | | | |
| Phase III | 10/8/99 11:00 PM | 10/9/99 12:00 AM | No | 1445 | 12.3005 | 8.1255 | 13.1 | 6.9865 | 1.6285 | | | |
| Phase III | 10/9/99 12:00 AM | 10/9/99 1:00 AM | No | 1388 | 8.72525 | 7.9755 | 21.425 | 6.74575 | 1.553 | | | |
| Phase III | 10/9/99 1:00 AM | 10/9/99 2:00 AM | No | 1388 | 7.15075 | 8.8755 | 10.90025 | 6.8785 | 1.48925 | | | |
| Phase III | 10/9/99 2:00 AM | 10/9/99 3:00 AM | No | 1388 | 9.17525 | 9.52525 | 12.725 | 6.95725 | 1.50475 | | | |
| Phase III | 10/9/99 3:00 AM | 10/9/99 4:00 AM | No | 1388 | 9.65025 | 8.67525 | 10.325 | 7.01175 | 1.665 | | | |
| Phase III | 10/9/99 4:00 AM | 10/9/99 5:00 AM | No | 1388 | 8.92525 | 8.2505 | 11.8505 | 7.436 | 1.761 | | | |
| Phase III | 10/9/99 5:00 AM | 10/9/99 6:00 AM | No | 1388 | 14.975 | 15.07525 | 13.60025 | 7.476 | 1.706 | | | |
| Phase III | 10/9/99 6:00 AM | 10/9/99 7:00 AM | No | 1388 | 11.42525 | 10.70025 | 12.3755 | 7.465 | 1.7175 | | | |
| Phase III | 10/9/99 7:00 AM | 10/9/99 8:00 AM | Yes | 1388 | 11.2755 | 11.3505 | 13.5 | 7.48375 | 1.69325 | | | |
| Phase III | 10/9/99 8:00 AM | 10/9/99 9:00 AM | Yes | 1388 | 10.75 | 12.1505 | 13.80075 | 7.386 | 1.78475 | | | |
| Phase III | 10/9/99 9:00 AM | 10/9/99 10:00 AM | No | 1388 | 10.7755 | 17.9005 | 11.72525 | 7.34625 | 1.801 | | | |
| Phase III | 10/9/99 10:00 AM | 10/9/99 11:00 AM | Yes | 1388 | 9.926 | 14.22525 | 15.025 | 7.719 | 1.76025 | | | |
| Phase III | 10/9/99 11:00 AM | 10/9/99 12:00 PM | Yes | 1388 | 13.6255 | 27.6755 | 13.525 | 7.90825 | 1.71275 | | | |
| Phase III | 10/9/99 12:00 PM | 10/9/99 1:00 PM | No | 1388 | 9.57525 | 13.275 | 11.1755 | 7.46925 | 1.5955 | | | |
| Phase III | 10/9/99 1:00 PM | 10/9/99 2:00 PM | No | 1388 | 12.12525 | 13.95025 | 11.57525 | 7.4735 | 2.2855 | | | |
| Phase III | 10/9/99 2:00 PM | 10/9/99 3:00 PM | Yes | 1388 | 8.20075 | 13.2005 | 11.925 | 7.94125 | 1.78275 | | | |
| Phase III | 10/9/99 3:00 PM | 10/9/99 4:00 PM | Yes | 1388 | 10.9755 | 24.17525 | 11.05 | 7.6585 | 1.6485 | | | |
| Phase III | 10/9/99 4:00 PM | 10/9/99 5:00 PM | Yes | 1388 | 12.25025 | 8.8 | 12.7 | 7.24725 | 1.60025 | | | |
| Phase III | 10/9/99 5:00 PM | 10/9/99 6:00 PM | Yes | 1388 | 10.85025 | 19.10025 | 12.9755 | 7.76175 | 1.4755 | | | |
| Phase III | 10/9/99 6:00 PM | 10/9/99 7:00 PM | No | 1388 | 13.175 | 10.8755 | 13.7005 | 7.8625 | 1.57725 | | | |
| Phase III | 10/9/99 7:00 PM | 10/9/99 8:00 PM | No | 1388 | 10.3005 | 15.17575 | 13.35025 | 7.974 | 1.677 | | | |
| Phase III | 10/9/99 8:00 PM | 10/9/99 9:00 PM | No | 1388 | 8.8505 | 11.55025 | 11.25025 | 7.8985 | 1.57475 | | | |
| Phase III | 10/9/99 9:00 PM | 10/9/99 10:00 PM | No | 1388 | 8.07575 | 9.87525 | 10.4505 | 8.31625 | 1.59125 | | | |
| Phase III | 10/9/99 10:00 PM | 10/9/99 11:00 PM | No | 1388 | 9.00075 | 12.15025 | 11.7 | 8.62775 | 1.57325 | | | |
| Phase III | 10/9/99 11:00 PM | 10/10/99 12:00 AM | No | 1388 | 8.92525 | 12.72525 | 11.1505 | 8.41225 | 1.43875 | | | |
| Phase III | 10/10/99 12:00 AM | 10/10/99 1:00 AM | No | 1314 | 8.7255 | 12.55025 | 11.3005 | 8.847 | 1.3795 | | | |
| Phase III | 10/10/99 1:00 AM | 10/10/99 2:00 AM | No | 1314 | 8.82525 | 10.2 | 12.825 | 8.552 | 1.51525 | | | |
| Phase III | 10/10/99 2:00 AM | 10/10/99 3:00 AM | No | 1314 | 12.05025 | 16.9005 | 29.0255 | 8.1435 | 1.48475 | | | |
| Phase III | 10/10/99 3:00 AM | 10/10/99 4:00 AM | No | 1314 | 9.40025 | 12.0255 | 14.45 | 7.67125 | 1.48975 | | | |
| Phase III | 10/10/99 4:00 AM | 10/10/99 5:00 AM | No | 1314 | 11.00025 | 8.4505 | 15.075 | 8.325 | 1.5495 | | | |
| Phase III | 10/10/99 5:00 AM | 10/10/99 6:00 AM | No | 1314 | 9.5505 | 10.15 | 15.025 | 8.724 | 1.3145 | | | |
| Phase III | 10/10/99 6:00 AM | 10/10/99 7:00 AM | No | 1314 | 9.9505 | 11.40025 | 12.95 | 8.74775 | 1.37175 | | | |
| Phase III | 10/10/99 7:00 AM | 10/10/99 8:00 AM | No | 1314 | 9.0505 | 10.5505 | 12.07575 | 9.22475 | 1.38325 | | | |
| Phase III | 10/10/99 8:00 AM | 10/10/99 9:00 AM | No | 1314 | 10.72525 | 14.625 | 14.9755 | 10.046 | 1.33675 | | | |
| Phase III | 10/10/99 9:00 AM | 10/10/99 10:00 AM | No | 1314 | 16.8005 | 9.42525 | 11.525 | 9.973 | 1.24325 | | | |
| Phase III | 10/10/99 10:00 AM | 10/10/99 11:00 AM | No | 1314 | 9.55025 | 12.07525 | 15.72525 | 9.649 | 1.27175 | | | |
| Phase III | 10/10/99 11:00 AM | 10/10/99 12:00 PM | No | 1314 | 6.676 | 11.05025 | 13.40025 | 10.182 | 1.34225 | | | |
| Phase III | 10/10/99 12:00 PM | 10/10/99 1:00 PM | No | 1314 | 7.97525 | 9.55025 | 13.17525 | 8.71575 | 1.237 | | | |
| Phase III | 10/10/99 1:00 PM | 10/10/99 2:00 PM | No | 1314 | 10.4 | 14.1 | 11.7 | 8.93 | 1.27325 | | | |
| Phase III | 10/10/99 2:00 PM | 10/10/99 3:00 PM | No | 1314 | 15.8505 | 13.35 | 13.1 | 8.83175 | 1.2085 | | | |
| Phase III | 10/10/99 3:00 PM | 10/10/99 4:00 PM | No | 1314 | 10.62525 | 9.25075 | 12.57525 | 10.1845 | 1.237 | | | |
| Phase III | 10/10/99 4:00 PM | 10/10/99 5:00 PM | No | 1314 | 8.95025 | 12.30025 | 12.52525 | 10.3325 | 1.43075 | | | |
| Phase III | 10/10/99 5:00 PM | 10/10/99 6:00 PM | No | 1314 | 8.9505 | 13.10025 | 11.57525 | 9.35425 | 1.26875 | | | |
| Phase III | 10/10/99 6:00 PM | 10/10/99 7:00 PM | No | 1314 | 10.3255 | 11.1755 | 11.87575 | 9.83175 | 1.17125 | | | |
| Phase III | 10/10/99 7:00 PM | 10/10/99 8:00 PM | No | 1314 | 10.70075 | 11.65 | 13.57525 | 9.66475 | 1.171 | | | |
| Phase III | 10/10/99 8:00 PM | 10/10/99 9:00 PM | No | 1314 | 11.5755 | 11.8755 | 14.1255 | 9.47375 | 1.21625 | | | |
| Phase III | 10/10/99 9:00 PM | 10/10/99 10:00 PM | No | 1314 | 8.17525 | 11.35025 | 11.1255 | 9.238 | 1.29325 | | | |
| Phase III | 10/10/99 10:00 PM | 10/10/99 11:00 PM | No | 1314 | 12.40075 | 12.05075 | 10.7755 | 8.74225 | 1.3285 | | | |
| Phase III | 10/10/99 11:00 PM | 10/11/99 12:00 AM | No | 1314 | 13.92575 | 11.30025 | 11.125 | 8.70925 | 1.29225 | | | |
| Phase III | 10/11/99 12:00 AM | 10/11/99 1:00 AM | No | 1254 | 11.05025 | 12.32525 | 13.1 | 8.6835 | 1.399 | | | |
| Phase III | 10/11/99 1:00 AM | 10/11/99 2:00 AM | No | 1254 | 9.80075 | 10.5 | 14.50025 | 9.04925 | 1.37575 | | | |
| Phase III | 10/11/99 2:00 AM | 10/11/99 3:00 AM | No | 1254 | 9.0005 | 11.625 | 12.525 | 9.79875 | 1.4055 | | | |
| Phase III | 10/11/99 3:00 AM | 10/11/99 4:00 AM | No | 1254 | 12.5005 | 11.175 | 13.3255 | 8.90925 | 1.4815 | | | |
| Phase III | 10/11/99 4:00 AM | 10/11/99 5:00 AM | No | 1254 | 10.85025 | 12.9 | 18.12525 | 9.0545 | 1.37225 | | | |
| Phase III | 10/11/99 5:00 AM | 10/11/99 6:00 AM | No | 1254 | 10.0005 | 11.7255 | 11.37525 | 9.302 | 1.55575 | | | |
| Phase III | 10/11/99 6:00 AM | 10/11/99 7:00 AM | No | 1254 | 9.50025 | 11.47525 | 11.90025 | 8.90575 | 1.356 | | | |
| Phase III | 10/11/99 7:00 AM | 10/11/99 8:00 AM | Yes | 1254 | 11.45075 | 12.825 | 13.37525 | 9.89225 | 1.26275 | | | |
| Phase III | 10/11/99 8:00 AM | 10/11/99 9:00 AM | Yes | 1254 | 18.65025 | 16.5005 | 12.3255 | 9.215 | 1.23475 | | | |
| Phase III | 10/11/99 9:00 AM | 10/11/99 10:00 AM | Yes | 1254 | 10.625 | 18.0755 | 14.97525 | 10.0765 | 1.28175 | | | |
| Phase III | 10/11/99 10:00 AM | 10/11/99 11:00 AM | No | 1254 | 14.20025 | 22.75025 | 10.95025 | 10.564 | 1.309 | | | |
| Phase III | 10/11/99 11:00 AM | 10/11/99 12:00 PM | Yes | 1254 | 12.25025 | 21.35075 | 12.37525 | 10.29675 | 1.265 | | | |
| Phase III | 10/11/99 12:00 PM | 10/11/99 1:00 PM | Yes | 1254 | 13.07525 | 12.225 | 14.22575 | 10.6085 | 1.2975 | | | |
| Phase III | 10/11/99 1:00 PM | 10/11/99 2:00 PM | Yes | 1254 | 11.77525 | 11.6 | 11.57525 | 10.7535 | 1.51975 | | | |
| Phase III | 10/11/99 2:00 PM | 10/11/99 3:00 PM | Yes | 1254 | 12.40025 | 12.775 | 15.40025 | 9.74625 | 1.38075 | | | |
| Phase III | 10/11/99 3:00 PM | 10/11/99 4:00 PM | Yes | 1254 | 7.7255 | 13.42525 | 12.20025 | 10.10525 | 1.62925 | | | |
| Phase III | 10/11/99 4:00 PM | 10/11/99 5:00 PM | Yes | 1254 | 10.55025 | 13.55025 | 12.5255 | 9.57525 | 1.87425 | | | |
| Phase III | 10/11/99 5:00 PM | 10/11/99 6:00 PM | Yes | 1254 | 10.02575 | 12.5755 | 13.35025 | 9.717 | 1.70375 | | | |
| Phase III | 10/11/99 6:00 PM | 10/11/99 7:00 PM | Yes | 1254 | 10.8755 | 13.30075 | 11.97525 | 10.399 | 1.601 | | | |
| Phase III | 10/11/99 7:00 PM | 10/11/99 8:00 PM | No | 1254 | 10.875 | 15.22525 | 16.3005 | 8.89675 | 1.51775 | | | |
| Phase III | 10/11/99 8:00 PM | 10/11/99 9:00 PM | No | 1254 | 37.10025 | 13.8 | 13.80025 | 9.21275 | 1.55825 | | | |
| Phase III | 10/11/99 9:00 PM | 10/11/99 10:00 PM | No | 1254 | 16.30075 | 13.3005 | 13.5 | 10.1575 | 1.21775 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase III | 10/11/99 10:00 PM | 10/11/99 11:00 PM | No | 1254 | 9.30075 | 11.07575 | 14.0005 | 9.5055 | 1.141 | | | |
| Phase III | 10/11/99 11:00 PM | 10/12/99 12:00 AM | No | 1254 | 11.12525 | 13.30025 | 12.92525 | 9.92225 | 1.29275 | | | |
| Phase III | 10/12/99 12:00 AM | 10/12/99 1:00 AM | No | 1287 | 11.30025 | 12.975 | 12.12575 | 10.13675 | 1.3075 | | | |
| Phase III | 10/12/99 1:00 AM | 10/12/99 2:00 AM | No | 1287 | 9.3505 | 12.0755 | 13.0255 | 11.7945 | 1.282 | | | |
| Phase III | 10/12/99 2:00 AM | 10/12/99 3:00 AM | No | 1287 | 12.75 | 11.775 | 15.7 | 9.4255 | 1.25625 | | | |
| Phase III | 10/12/99 3:00 AM | 10/12/99 4:00 AM | No | 1287 | 15.45025 | 17.7005 | 14.7255 | 9.06125 | 1.2455 | | | |
| Phase III | 10/12/99 4:00 AM | 10/12/99 5:00 AM | No | 1287 | 10.5755 | 13.075 | 14.32525 | 9.64775 | 1.26675 | | | |
| Phase III | 10/12/99 5:00 AM | 10/12/99 6:00 AM | No | 1287 | 10.5005 | 14.6255 | 16.07525 | 9.7095 | 1.814 | | | |
| Phase III | 10/12/99 6:00 AM | 10/12/99 7:00 AM | No | 1287 | 11.85 | 12.45025 | 16.62525 | 9.79675 | 1.54525 | | | |
| Phase III | 10/12/99 7:00 AM | 10/12/99 8:00 AM | Yes | 1287 | 12.8755 | 25.1755 | 14.97525 | 10.31675 | 1.3005 | | | |
| Phase III | 10/12/99 8:00 AM | 10/12/99 9:00 AM | Yes | 1287 | 13.0005 | 12.275 | 14.05025 | 11.29175 | 1.182 | | | |
| Phase III | 10/12/99 9:00 AM | 10/12/99 10:00 AM | Yes | 1287 | 17.0005 | 11.20025 | 18.37575 | 11.19175 | 1.24575 | | | |
| Phase III | 10/12/99 10:00 AM | 10/12/99 11:00 AM | Yes | 1287 | 14.25075 | 15.97525 | 14.92575 | 11.364 | 1.35075 | | | |
| Phase III | 10/12/99 11:00 AM | 10/12/99 12:00 PM | Yes | 1287 | 19.12575 | 15.35 | 18.92525 | 11.626 | 1.5795 | | | |
| Phase III | 10/12/99 12:00 PM | 10/12/99 1:00 PM | Yes | 1287 | 14.57525 | 17.47525 | 18.7755 | 10.22375 | 1.65675 | | | |
| Phase III | 10/12/99 1:00 PM | 10/12/99 2:00 PM | Yes | 1287 | 10.50025 | 24.67575 | 16.75025 | 11.12 | 1.3545 | | | |
| Phase III | 10/12/99 2:00 PM | 10/12/99 3:00 PM | Yes | 1287 | 11.0005 | 13.20025 | 15.5 | 10.76525 | 1.39625 | | | |
| Phase III | 10/12/99 3:00 PM | 10/12/99 4:00 PM | No | 1287 | 14.55075 | 18.47525 | 14.025 | 11.6695 | 1.69575 | | | |
| Phase III | 10/12/99 4:00 PM | 10/12/99 5:00 PM | Yes | 1287 | 16.87525 | 22.97525 | 13.20025 | 10.76525 | 1.4485 | | | |
| Phase III | 10/12/99 5:00 PM | 10/12/99 6:00 PM | Yes | 1287 | 10.40025 | 17.2005 | 14.7255 | 12.08675 | 1.428 | | | |
| Phase III | 10/12/99 6:00 PM | 10/12/99 7:00 PM | Yes | 1287 | 13.52525 | 16.32575 | 14.45025 | 10.19625 | 1.49675 | | | |
| Phase III | 10/12/99 7:00 PM | 10/12/99 8:00 PM | No | 1287 | 8.10075 | 13.80025 | 11.12525 | 9.73175 | 1.6295 | | | |
| Phase III | 10/12/99 8:00 PM | 10/12/99 9:00 PM | No | 1287 | 9.50075 | 11.75025 | 12.12525 | 10.2495 | 1.5335 | | | |
| Phase III | 10/12/99 9:00 PM | 10/12/99 10:00 PM | No | 1287 | 13.925 | 11.9255 | 13.85 | 10.27425 | 1.44 | | | |
| Phase III | 10/12/99 10:00 PM | 10/12/99 11:00 PM | No | 1287 | 10.7755 | 16.4505 | 11.8 | 9.84775 | 1.228 | | | |
| Phase III | 10/12/99 11:00 PM | 10/13/99 12:00 AM | No | 1287 | 10.5005 | 12.475 | 13.025 | 10.9925 | 1.09575 | | | |
| Phase III | 10/13/99 12:00 AM | 10/13/99 1:00 AM | No | 1295 | 11.3255 | 14.52575 | 17.525 | 10.24675 | 1.3335 | | | |
| Phase III | 10/13/99 1:00 AM | 10/13/99 2:00 AM | No | 1295 | 13.65025 | 17.27575 | 16.5505 | 10.67975 | 1.44 | | | |
| Phase III | 10/13/99 2:00 AM | 10/13/99 3:00 AM | No | 1295 | 11.90025 | 9.92525 | 15.30025 | 9.38875 | 1.3425 | | | |
| Phase III | 10/13/99 3:00 AM | 10/13/99 4:00 AM | No | 1295 | 13.42525 | 12.2755 | 14.07525 | 9.51025 | 1.1985 | | | |
| Phase III | 10/13/99 4:00 AM | 10/13/99 5:00 AM | No | 1295 | 11.10025 | 13.25 | 17.35 | 9.78275 | 1.093 | | | |
| Phase III | 10/13/99 5:00 AM | 10/13/99 6:00 AM | No | 1295 | 10.50025 | 11.45025 | 13.925 | 9.74975 | 1.17025 | | | |
| Phase III | 10/13/99 6:00 AM | 10/13/99 7:00 AM | No | 1295 | 11.95025 | 11.825 | 16.35 | 10.00875 | 1.40625 | | | |
| Phase III | 10/13/99 7:00 AM | 10/13/99 8:00 AM | Yes | 1295 | 13.30025 | 9.95025 | 13.80025 | 9.87325 | 1.626 | | | |
| Phase III | 10/13/99 8:00 AM | 10/13/99 9:00 AM | Yes | 1295 | 14.07525 | 15.12525 | 13.25025 | 11.98425 | 1.4055 | | | |
| Phase III | 10/13/99 9:00 AM | 10/13/99 10:00 AM | Yes | 1295 | 13.125 | 20.80075 | 23.75 | 11.60325 | 1.62325 | | | |
| Phase III | 10/13/99 10:00 AM | 10/13/99 11:00 AM | Yes | 1295 | 12.90025 | 26.55025 | 15.9755 | 11.71775 | 1.6795 | | | |
| Phase III | 10/13/99 11:00 AM | 10/13/99 12:00 PM | No | 1295 | 12.65025 | 19.62575 | 14.4 | 12.77325 | 1.79725 | | | |
| Phase III | 10/13/99 12:00 PM | 10/13/99 1:00 PM | Yes | 1295 | 13.175 | 20.525 | 17.62525 | 11.9945 | 1.7105 | | | |
| Phase III | 10/13/99 1:00 PM | 10/13/99 2:00 PM | Yes | 1295 | 14.125 | 15.12525 | 18.22525 | 12.2035 | 1.5385 | | | |
| Phase III | 10/13/99 2:00 PM | 10/13/99 3:00 PM | No | 1295 | 14.5005 | 23.7755 | 13.92525 | 11.49475 | 1.98525 | | | |
| Phase III | 10/13/99 3:00 PM | 10/13/99 4:00 PM | Yes | 1295 | 14.55025 | 15.32525 | 16.8005 | 11.11775 | 1.82075 | | | |
| Phase III | 10/13/99 4:00 PM | 10/13/99 5:00 PM | Yes | 1295 | 11.22525 | 16.32575 | 14.8255 | 12.772 | 1.6685 | | | |
| Phase III | 10/13/99 5:00 PM | 10/13/99 6:00 PM | Yes | 1295 | 13.02575 | 30.151 | 14.7755 | 12.343 | 1.6605 | | | |
| Phase III | 10/13/99 6:00 PM | 10/13/99 7:00 PM | Yes | 1295 | 12.77525 | 21.3755 | 14.45025 | 11.282 | 2.0255 | | | |
| Phase III | 10/13/99 7:00 PM | 10/13/99 8:00 PM | No | 1295 | 11.875 | 19.87575 | 12.17575 | 10.57475 | 1.778 | | | |
| Phase III | 10/13/99 8:00 PM | 10/13/99 9:00 PM | No | 1295 | 9.82525 | 16.5255 | 12.85 | 12.122 | 1.39475 | | | |
| Phase III | 10/13/99 9:00 PM | 10/13/99 10:00 PM | No | 1295 | 11.62525 | 21.025 | 12.8 | 10.984 | 1.2045 | | | |
| Phase III | 10/13/99 10:00 PM | 10/13/99 11:00 PM | No | 1295 | 14.42525 | 17.9005 | 13.72525 | 10.31875 | 1.33175 | | | |
| Phase III | 10/13/99 11:00 PM | 10/14/99 12:00 AM | No | 1295 | 12.8505 | 14.925 | 13.375 | 10.56125 | 1.3455 | | | |
| Phase III | 10/14/99 12:00 AM | 10/14/99 1:00 AM | No | 1293 | 17.225 | 15.4255 | 10.62575 | 10.1135 | 1.44175 | | | |
| Phase III | 10/14/99 1:00 AM | 10/14/99 2:00 AM | No | 1293 | 10.77575 | 14.575 | 10.77525 | 11.772 | 1.3745 | | | |
| Phase III | 10/14/99 2:00 AM | 10/14/99 3:00 AM | No | 1293 | 11.80025 | 20.57525 | 9.7005 | 11.32275 | 1.3745 | | | |
| Phase III | 10/14/99 3:00 AM | 10/14/99 4:00 AM | No | 1293 | 11.07525 | 20.225 | 11.875 | 11.43025 | 1.4985 | | | |
| Phase III | 10/14/99 4:00 AM | 10/14/99 5:00 AM | No | 1293 | 13.8 | 17.5005 | 12.72525 | 11.2435 | 1.56075 | | | |
| Phase III | 10/14/99 5:00 AM | 10/14/99 6:00 AM | No | 1293 | 14.20025 | 16.97525 | 12.5505 | 12.0775 | 1.9395 | | | |
| Phase III | 10/14/99 6:00 AM | 10/14/99 7:00 AM | No | 1293 | 13.7505 | 16.85025 | 12.525 | 11.6165 | 1.781 | | | |
| Phase III | 10/14/99 7:00 AM | 10/14/99 8:00 AM | | 1293 | 14.2755 | 37.73367 | 15.17525 | 11.28175 | 1.91325 | | | |
| Phase III | 10/14/99 8:00 AM | 10/14/99 9:00 AM | | 1293 | 10.2255 | 15.075 | 14.925 | 10.4005 | 1.8955 | | | |
| Phase III | 10/14/99 9:00 AM | 10/14/99 10:00 AM | | 1293 | 10.82575 | 25.526 | 15.00025 | 10.751 | 1.754 | | | |
| Phase III | 10/14/99 10:00 AM | 10/14/99 11:00 AM | | 1293 | 11.625 | 26.55075 | 13.80025 | 11.2175 | 1.6155 | | | |
| Phase III | 10/14/99 11:00 AM | 10/14/99 12:00 PM | | 1293 | 14.35025 | 29.6755 | 15.5505 | 12.52125 | 1.5485 | | | |
| Phase III | 10/14/99 12:00 PM | 10/14/99 1:00 PM | | 1293 | 13.77525 | 15.425 | 12.47525 | 10.76325 | 1.4635 | | | |
| Phase III | 10/14/99 1:00 PM | 10/14/99 2:00 PM | | 1293 | 12.8505 | 12.25025 | 35.4255 | 10.48875 | 1.38875 | | | |
| Phase III | 10/14/99 2:00 PM | 10/14/99 3:00 PM | | 1293 | 11.625 | 21.5505 | 14.9255 | 11.3365 | 1.35175 | | | |
| Phase III | 10/14/99 3:00 PM | 10/14/99 4:00 PM | | 1293 | 13.375 | 14.72525 | 12.725 | 11.37925 | 1.29775 | | | |
| Phase III | 10/14/99 4:00 PM | 10/14/99 5:00 PM | | 1293 | 9.6255 | 10.57525 | 14.75025 | 10.714 | 1.322 | | | |
| Phase III | 10/14/99 5:00 PM | 10/14/99 6:00 PM | | 1293 | 10.72525 | 12.10025 | 13.2505 | 10.69 | 1.3115 | | | |
| Phase III | 10/14/99 6:00 PM | 10/14/99 7:00 PM | | 1293 | 10.3505 | 9.70025 | 11.775 | 11.94525 | 1.16925 | | | |
| Phase III | 10/14/99 7:00 PM | 10/14/99 8:00 PM | No | 1293 | 10.25025 | 10.2755 | 10.07525 | 10.09825 | 1.2455 | | | |
| Phase III | 10/14/99 8:00 PM | 10/14/99 9:00 PM | No | 1293 | 15.20025 | 8.0505 | 12.62525 | 10.13225 | 1.13175 | | | |
| Phase III | 10/14/99 9:00 PM | 10/14/99 10:00 PM | No | 1293 | 12.525 | 9.02575 | 15.72525 | 9.96575 | 1.13275 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase III | 10/14/99 10:00 PM | 10/14/99 11:00 PM | No | 1293 | 9.62575 | 10.325 | 9.4755 | 10.92775 | 1.11725 | | | |
| Phase III | 10/14/99 11:00 PM | 10/15/99 12:00 AM | No | 1293 | 25.15025 | 6.67575 | 11.07525 | 10.2855 | 1.162 | | | |
| Phase III | 10/15/99 12:00 AM | 10/15/99 1:00 AM | No | 1401 | 10.57525 | | | 10.9845 | 1.27475 | | 8.02575 | 20.65025 |
| Phase III | 10/15/99 1:00 AM | 10/15/99 2:00 AM | No | 1401 | 21.65075 | | | 10.9145 | 1.2485 | | 10.3755 | 14.07525 |
| Phase III | 10/15/99 2:00 AM | 10/15/99 3:00 AM | No | 1401 | 12.87525 | | | 10.13375 | 1.3775 | | 11.05025 | 11.27525 |
| Phase III | 10/15/99 3:00 AM | 10/15/99 4:00 AM | No | 1401 | 10.1505 | | | 10.88875 | 1.27875 | | 12.30025 | 12.35025 |
| Phase III | 10/15/99 4:00 AM | 10/15/99 5:00 AM | No | 1401 | 11.75025 | | | 9.97725 | 1.26425 | | 9.62525 | 11.52525 |
| Phase III | 10/15/99 5:00 AM | 10/15/99 6:00 AM | No | 1401 | 10.75025 | | | 10.136 | 1.39275 | | 8.5505 | 13.05025 |
| Phase III | 10/15/99 6:00 AM | 10/15/99 7:00 AM | No | 1401 | 10.60025 | | | 9.86875 | 1.5225 | | 9.151 | 13.6255 |
| Phase III | 10/15/99 7:00 AM | 10/15/99 8:00 AM | | 1401 | 12.55075 | | | 10.21775 | 1.322 | | 11.525 | 12.9005 |
| Phase III | 10/15/99 8:00 AM | 10/15/99 9:00 AM | | 1401 | 11.12525 | | | 10.44825 | 1.39425 | | 20.22575 | 21.27525 |
| Phase III | 10/15/99 9:00 AM | 10/15/99 10:00 AM | | 1401 | 12 | | | 10.784 | 1.3865 | | 17.201 | 15.72525 |
| Phase III | 10/15/99 10:00 AM | 10/15/99 11:00 AM | | 1401 | 11.975 | | | 10.39825 | 1.3405 | | 11.1 | 17.026 |
| Phase III | 10/15/99 11:00 AM | 10/15/99 12:00 PM | | 1401 | 11.075 | | | 9.764 | 1.38875 | | 9.85025 | 12.80025 |
| Phase III | 10/15/99 12:00 PM | 10/15/99 1:00 PM | | 1401 | 20.97525 | | | 10.09875 | 1.10325 | | 11.3005 | 14.2255 |
| Phase III | 10/15/99 1:00 PM | 10/15/99 2:00 PM | | 1401 | 15.851 | | | 9.92725 | 1.0755 | | 10.42525 | 15.575 |
| Phase III | 10/15/99 2:00 PM | 10/15/99 3:00 PM | | 1401 | 15.07525 | | | 10.467 | 1.13325 | | 12.775 | 14.95025 |
| Phase III | 10/15/99 3:00 PM | 10/15/99 4:00 PM | | 1401 | 14.32525 | | | 10.53175 | 2.493 | | 11.3505 | 19.10025 |
| Phase III | 10/15/99 4:00 PM | 10/15/99 5:00 PM | | 1401 | 12.80075 | | | 10.30525 | 1.49175 | | 12.00025 | 9.67525 |
| Phase III | 10/15/99 5:00 PM | 10/15/99 6:00 PM | | 1401 | 14.5005 | | | 10.36975 | 1.4475 | | 11.35 | 18.00025 |
| Phase III | 10/15/99 6:00 PM | 10/15/99 7:00 PM | | 1401 | 13.6755 | | | 9.37325 | 1.4315 | | 18.35 | 32.9505 |
| Phase III | 10/15/99 7:00 PM | 10/15/99 8:00 PM | | 1401 | 11.65 | | | 9.28125 | 1.381 | | 12.4255 | 10.45075 |
| Phase III | 10/15/99 8:00 PM | 10/15/99 9:00 PM | | 1401 | 10.02525 | | | 9.5205 | 1.48575 | | 14.07525 | 14.9255 |
| Phase III | 10/15/99 9:00 PM | 10/15/99 10:00 PM | | 1401 | 12.40075 | | | 10.014 | 1.62825 | | 9.8255 | 14.27525 |
| Phase III | 10/15/99 10:00 PM | 10/15/99 11:00 PM | | 1401 | 12.60025 | | | 9.89025 | 1.49575 | | 10.225 | 15.07525 |
| Phase III | 10/15/99 11:00 PM | 10/16/99 12:00 AM | | 1401 | 11.87525 | | | 10.237 | 1.50525 | | 15.45025 | 9.20075 |
| Phase III | 10/16/99 12:00 AM | 10/16/99 1:00 AM | | 1333 | 12.2505 | | | 10.011 | 1.44475 | | 13.2255 | 7.701 |
| Phase III | 10/16/99 1:00 AM | 10/16/99 2:00 AM | | 1333 | 10.02525 | | | 9.87575 | 1.47125 | | 15.2255 | 9.92525 |
| Phase III | 10/16/99 2:00 AM | 10/16/99 3:00 AM | | 1333 | 16.72525 | | | 10.51675 | 1.612 | | 12.42525 | 12.275 |
| Phase III | 10/16/99 3:00 AM | 10/16/99 4:00 AM | | 1333 | 11.7755 | | | 10.784 | 1.654 | | 16.65025 | 12.40025 |
| Phase III | 10/16/99 4:00 AM | 10/16/99 5:00 AM | | 1333 | 10.17525 | | | 11.43725 | 1.86725 | | 13.775 | 10.4755 |
| Phase III | 10/16/99 5:00 AM | 10/16/99 6:00 AM | | 1333 | 15.2005 | | | 11.65925 | 1.57575 | | 14.3755 | 14.075 |
| Phase III | 10/16/99 6:00 AM | 10/16/99 7:00 AM | | 1333 | 16.975 | | | 12.062 | 1.56775 | | 15.7255 | 12.325 |
| Phase IV | 10/16/99 7:00 AM | 10/16/99 8:00 AM | Yes | 1333 | 13.12525 | | | 12.169 | 1.6535 | | 13.52525 | 10.50075 |
| Phase IV | 10/16/99 8:00 AM | 10/16/99 9:00 AM | Yes | 1333 | 14.27525 | | | 12.87475 | 1.67425 | | 14.35025 | 17.7255 |
| Phase IV | 10/16/99 9:00 AM | 10/16/99 10:00 AM | Yes | 1333 | 12.32525 | | | 11.99825 | 2.50725 | | 17.55 | 20.22525 |
| Phase IV | 10/16/99 10:00 AM | 10/16/99 11:00 AM | Yes | 1333 | 10.95025 | | | 12.255 | 1.7975 | | 9.67525 | 24.50025 |
| Phase IV | 10/16/99 11:00 AM | 10/16/99 12:00 PM | Yes | 1333 | 13.90025 | | | 11.25625 | 1.624 | | 11.0505 | 19.42575 |
| Phase IV | 10/16/99 12:00 PM | 10/16/99 1:00 PM | Yes | 1333 | 11.175 | | | 12.77925 | 1.624 | | 13.77525 | 21.75025 |
| Phase IV | 10/16/99 1:00 PM | 10/16/99 2:00 PM | Yes | 1333 | 11.775 | | | 11.15725 | 1.654 | | 15.10025 | 13.00025 |
| Phase IV | 10/16/99 2:00 PM | 10/16/99 3:00 PM | Yes | 1333 | 12.95025 | | | 12.424 | 1.709 | | 13.92525 | 19.2755 |
| Phase IV | 10/16/99 3:00 PM | 10/16/99 4:00 PM | No | 1333 | 31.7505 | | | 11.629 | 1.657 | | 11.625 | 17.1255 |
| Phase IV | 10/16/99 4:00 PM | 10/16/99 5:00 PM | Yes | 1333 | 33.9005 | | | 11.926 | 1.688 | | 12.20025 | 14.4005 |
| Phase IV | 10/16/99 5:00 PM | 10/16/99 6:00 PM | Yes | 1333 | 26.52525 | | | 11.74775 | 1.6295 | | 12.60025 | 13.07525 |
| Phase IV | 10/16/99 6:00 PM | 10/16/99 7:00 PM | Yes | 1333 | 11.22525 | | | 11.62225 | 1.62525 | | 12.0755 | 13.167 |
| Phase IV | 10/16/99 7:00 PM | 10/16/99 8:00 PM | No | 1333 | 11.2755 | | | 12.936 | 1.53275 | | 14.101 | |
| Phase IV | 10/16/99 8:00 PM | 10/16/99 9:00 PM | No | 1333 | 14.7005 | | | 12.2385 | 1.565 | | 12.775 | |
| Phase IV | 10/16/99 9:00 PM | 10/16/99 10:00 PM | No | 1333 | 14.15025 | | | 12.82525 | 1.57925 | | 10.3005 | |
| Phase IV | 10/16/99 10:00 PM | 10/16/99 11:00 PM | No | 1333 | 12.3 | | | 12.75525 | 1.54075 | | 10.0255 | |
| Phase IV | 10/16/99 11:00 PM | 10/17/99 12:00 AM | No | 1333 | 13.62525 | | | 13.464 | 1.6615 | | 9.10025 | |
| Phase IV | 10/17/99 12:00 AM | 10/17/99 1:00 AM | No | 1113 | 11.25025 | | | 13.10325 | 1.79375 | | 9.2255 | |
| Phase IV | 10/17/99 1:00 AM | 10/17/99 2:00 AM | No | 1113 | 12.67525 | | | 13.6895 | 1.5685 | | 14.725 | |
| Phase IV | 10/17/99 2:00 AM | 10/17/99 3:00 AM | No | 1113 | 15.22525 | | | 12.98275 | 1.61125 | | 12.825 | |
| Phase IV | 10/17/99 3:00 AM | 10/17/99 4:00 AM | No | 1113 | 12.8505 | | | 12.5155 | 1.5865 | | 14.87525 | |
| Phase IV | 10/17/99 4:00 AM | 10/17/99 5:00 AM | No | 1113 | 13.17525 | | | 12.7235 | 1.8845 | | 21.1755 | |
| Phase IV | 10/17/99 5:00 AM | 10/17/99 6:00 AM | No | 1113 | 26.2005 | | | 12.89725 | 1.73525 | | 15.05025 | |
| Phase IV | 10/17/99 6:00 AM | 10/17/99 7:00 AM | No | 1113 | 10.87575 | | | 13.46 | 1.63525 | | 14.72525 | |
| Phase IV | 10/17/99 7:00 AM | 10/17/99 8:00 AM | No | 1113 | 14.17525 | | | 13.4005 | 1.62475 | | 16.0505 | |
| Phase IV | 10/17/99 8:00 AM | 10/17/99 9:00 AM | No | 1113 | 10.40025 | | | 13.776 | 1.788 | | 13.8 | |
| Phase IV | 10/17/99 9:00 AM | 10/17/99 10:00 AM | No | 1113 | 12.92525 | | | 13.45025 | 1.9635 | | 14.15025 | |
| Phase IV | 10/17/99 10:00 AM | 10/17/99 11:00 AM | No | 1113 | 13.05075 | | | 12.3795 | 1.839 | | 15.17525 | 14.175 |
| Phase IV | 10/17/99 11:00 AM | 10/17/99 12:00 PM | No | 1113 | 16.825 | | | 12.95775 | 1.87825 | | 12.42525 | 13.95025 |
| Phase IV | 10/17/99 12:00 PM | 10/17/99 1:00 PM | No | 1113 | 13.55025 | | | 12.39575 | 1.8015 | | 12.07525 | 12.15025 |
| Phase IV | 10/17/99 1:00 PM | 10/17/99 2:00 PM | No | 1113 | 14.0505 | | | 12.035 | 1.75375 | | 43.25 | 16.3255 |
| Phase IV | 10/17/99 2:00 PM | 10/17/99 3:00 PM | No | 1113 | 12.75025 | | | 12.92325 | 1.76425 | | 16.27525 | 14 |
| Phase IV | 10/17/99 3:00 PM | 10/17/99 4:00 PM | No | 1113 | 9.7005 | | | 11.788 | 1.73975 | | 14.8005 | |
| Phase IV | 10/17/99 4:00 PM | 10/17/99 5:00 PM | No | 1113 | 14.92525 | | | 12.71925 | 1.693 | | 13.4 | |
| Phase IV | 10/17/99 5:00 PM | 10/17/99 6:00 PM | No | 1113 | 12.32525 | | | 12.4295 | 1.665 | | 10.025 | |
| Phase IV | 10/17/99 6:00 PM | 10/17/99 7:00 PM | No | 1113 | 13.05025 | | | 11.32875 | 1.72175 | | 12.65025 | |
| Phase IV | 10/17/99 7:00 PM | 10/17/99 8:00 PM | No | 1113 | 9.5005 | | | 11.465 | 1.669 | | 12.47525 | |
| Phase IV | 10/17/99 8:00 PM | 10/17/99 9:00 PM | No | 1113 | 9.525 | | | 11.6375 | 1.645 | | 10.37525 | |
| Phase IV | 10/17/99 9:00 PM | 10/17/99 10:00 PM | No | 1113 | 41.62525 | | | 11.69025 | 1.55775 | | 11.05025 | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 10/17/99 10:00 PM | 10/17/99 11:00 PM | No | 1113 | 9.02525 | | | 11.1675 | 1.59925 | | 13.6505 | |
| Phase IV | 10/17/99 11:00 PM | 10/18/99 12:00 AM | No | 1113 | 8.30075 | | | 11.7065 | 1.584 | | 15.92525 | |
| Phase IV | 10/18/99 12:00 AM | 10/18/99 1:00 AM | No | 1321 | 13.55025 | | | 10.596 | 1.60975 | | 15.125 | |
| Phase IV | 10/18/99 1:00 AM | 10/18/99 2:00 AM | No | 1321 | 11.30025 | | | 12.04875 | 1.734 | | 14.57525 | |
| Phase IV | 10/18/99 2:00 AM | 10/18/99 3:00 AM | No | 1321 | 9.82525 | | | 11.649 | 1.571 | | 11.80025 | |
| Phase IV | 10/18/99 3:00 AM | 10/18/99 4:00 AM | No | 1321 | 13.82525 | | | 10.73 | 1.534 | | 10.00025 | |
| Phase IV | 10/18/99 4:00 AM | 10/18/99 5:00 AM | No | 1321 | 12.325 | | | 11.68825 | 1.8145 | | 13.62525 | |
| Phase IV | 10/18/99 5:00 AM | 10/18/99 6:00 AM | No | 1321 | 11.3255 | | | 11.60375 | 1.518 | | 14.70075 | |
| Phase IV | 10/18/99 6:00 AM | 10/18/99 7:00 AM | No | 1321 | 8.800333 | | | 11.135 | 1.66 | | 15.35025 | |
| Phase IV | 10/18/99 7:00 AM | 10/18/99 8:00 AM | Yes | 1321 | | | | 11.3595 | 1.64725 | | 13.4 | 13.934 |
| Phase IV | 10/18/99 8:00 AM | 10/18/99 9:00 AM | Yes | 1321 | 11.91929 | | | 12.09625 | 1.56825 | | 13.375 | 14.17525 |
| Phase IV | 10/18/99 9:00 AM | 10/18/99 10:00 AM | Yes | 1321 | 12.45357 | | | 11.90425 | 1.55575 | | 14.325 | 15.75 |
| Phase IV | 10/18/99 10:00 AM | 10/18/99 11:00 AM | Yes | 1321 | 16.17357 | | | 11.46775 | 1.53275 | | 14.0005 | 14.05 |
| Phase IV | 10/18/99 11:00 AM | 10/18/99 12:00 PM | Yes | 1321 | 14.3935 | | | 11.507 | 1.642 | | 13.35 | 11.35 |
| Phase IV | 10/18/99 12:00 PM | 10/18/99 1:00 PM | Yes | 1321 | 13.2036 | | | 11.68625 | 1.57675 | | 16.92525 | 12.30025 |
| Phase IV | 10/18/99 1:00 PM | 10/18/99 2:00 PM | Yes | 1321 | 17.93037 | | | 12.21975 | 1.56475 | | 20.1505 | 14.25075 |
| Phase IV | 10/18/99 2:00 PM | 10/18/99 3:00 PM | Yes | 1321 | 12.90713 | | | 11.06225 | 1.5715 | | 11.87525 | 15.67525 |
| Phase IV | 10/18/99 3:00 PM | 10/18/99 4:00 PM | Yes | 1321 | 10.97525 | | | 10.515 | 1.4795 | | 14.65075 | 15.90025 |
| Phase IV | 10/18/99 4:00 PM | 10/18/99 5:00 PM | Yes | 1321 | 12.95 | | | 10.612 | 1.4535 | | 15.3 | 17.5505 |
| Phase IV | 10/18/99 5:00 PM | 10/18/99 6:00 PM | Yes | 1321 | 19.97575 | | | 10.6215 | 1.56375 | | 13.05075 | 19.30075 |
| Phase IV | 10/18/99 6:00 PM | 10/18/99 7:00 PM | Yes | 1321 | 15.375 | | | 10.81075 | 1.6235 | | 18.45025 | 15.7255 |
| Phase IV | 10/18/99 7:00 PM | 10/18/99 8:00 PM | No | 1321 | 12.8 | | | 10.38 | 1.679 | | 14.625 | 18.1005 |
| Phase IV | 10/18/99 8:00 PM | 10/18/99 9:00 PM | No | 1321 | | | | 10.252 | 1.53375 | | 14.625 | 16.77525 |
| Phase IV | 10/18/99 9:00 PM | 10/18/99 10:00 PM | No | 1321 | | | | 11.4925 | 1.52825 | | 31.6005 | 13.87525 |
| Phase IV | 10/18/99 10:00 PM | 10/18/99 11:00 PM | No | 1321 | | | | 11.94475 | 1.54975 | | 14.5 | 11.25025 |
| Phase IV | 10/18/99 11:00 PM | 10/19/99 12:00 AM | No | 1321 | | | | 11.07825 | 1.531 | | 12.9255 | 15.92525 |
| Phase IV | 10/19/99 12:00 AM | 10/19/99 1:00 AM | No | 1367 | | | | 12.19275 | 1.5315 | | 18.87525 | 14.4755 |
| Phase IV | 10/19/99 1:00 AM | 10/19/99 2:00 AM | No | 1367 | | | | 12.22825 | 1.60475 | | 15.72525 | 13.0755 |
| Phase IV | 10/19/99 2:00 AM | 10/19/99 3:00 AM | No | 1367 | | | | 11.697 | 1.666 | | 17.9755 | 12.15075 |
| Phase IV | 10/19/99 3:00 AM | 10/19/99 4:00 AM | No | 1367 | | | | 11.67375 | 1.70975 | | 14.5505 | 11.42525 |
| Phase IV | 10/19/99 4:00 AM | 10/19/99 5:00 AM | No | 1367 | | | | 10.38025 | 1.75 | | 13.625 | 16.25 |
| Phase IV | 10/19/99 5:00 AM | 10/19/99 6:00 AM | No | 1367 | | | | 11.026 | 1.655 | | 14.1 | 13.7505 |
| Phase IV | 10/19/99 6:00 AM | 10/19/99 7:00 AM | No | 1367 | | | | 9.85625 | 1.72275 | | 15.60025 | 11.97525 |
| Phase IV | 10/19/99 7:00 AM | 10/19/99 8:00 AM | | 1367 | | | | 10.94275 | 1.75075 | | 15.525 | 11.9 |
| Phase IV | 10/19/99 8:00 AM | 10/19/99 9:00 AM | | 1367 | | | | 11.755 | 1.85225 | | 14.42575 | 16.55075 |
| Phase IV | 10/19/99 9:00 AM | 10/19/99 10:00 AM | | 1367 | 11.77525 | | | 11.53375 | 2.293 | | 15.82525 | 12.37525 |
| Phase IV | 10/19/99 10:00 AM | 10/19/99 11:00 AM | | 1367 | 12.2755 | | | 11.6815 | 1.831 | | 17.026 | 14.32525 |
| Phase IV | 10/19/99 11:00 AM | 10/19/99 12:00 PM | | 1367 | 11.625 | | | 10.45575 | 1.8515 | | 16.92525 | 15.575 |
| Phase IV | 10/19/99 12:00 PM | 10/19/99 1:00 PM | | 1367 | 11.90025 | | | 10.958 | 1.74675 | | 18.12525 | 15.42525 |
| Phase IV | 10/19/99 1:00 PM | 10/19/99 2:00 PM | | 1367 | 15.2005 | | | 11.196 | 1.861 | | 18.60025 | 12.925 |
| Phase IV | 10/19/99 2:00 PM | 10/19/99 3:00 PM | | 1367 | 13.55 | | | 11.325 | 1.73025 | | 14.12525 | 16.0255 |
| Phase IV | 10/19/99 3:00 PM | 10/19/99 4:00 PM | | 1367 | 12.05025 | | | 10.6265 | 1.72625 | | 13.55 | 14.22525 |
| Phase IV | 10/19/99 4:00 PM | 10/19/99 5:00 PM | | 1367 | 14.875 | | | 10.922 | 1.65275 | | 15.62525 | 14.97575 |
| Phase IV | 10/19/99 5:00 PM | 10/19/99 6:00 PM | | 1367 | 11.80025 | | | 10.796 | 1.70925 | | 13.375 | 16.15075 |
| Phase IV | 10/19/99 6:00 PM | 10/19/99 7:00 PM | | 1367 | 13.55025 | | | 11.157 | 1.84975 | | 13.1255 | 14.05025 |
| Phase IV | 10/19/99 7:00 PM | 10/19/99 8:00 PM | No | 1367 | 18.07525 | | | 11.026 | 1.7345 | | 15.8505 | 14.275 |
| Phase IV | 10/19/99 8:00 PM | 10/19/99 9:00 PM | No | 1367 | 11.15025 | | | 11.07275 | 1.6765 | | 9.97525 | 16.02575 |
| Phase IV | 10/19/99 9:00 PM | 10/19/99 10:00 PM | No | 1367 | 10.92525 | | | 11.63725 | 1.5755 | | 14.27575 | 13.075 |
| Phase IV | 10/19/99 10:00 PM | 10/19/99 11:00 PM | No | 1367 | 12.1255 | | | 11.7825 | 1.6235 | | 17.9755 | 14.7 |
| Phase IV | 10/19/99 11:00 PM | 10/20/99 12:00 AM | No | 1367 | 13.75025 | | | 11.343 | 1.5845 | | 12.32525 | 13.10025 |
| Phase IV | 10/20/99 12:00 AM | 10/20/99 1:00 AM | No | 1272 | 10.6255 | | | 11.35 | 1.74925 | | 20.2255 | 11.32525 |
| Phase IV | 10/20/99 1:00 AM | 10/20/99 2:00 AM | No | 1272 | 11.8755 | | | 11.49175 | 1.585 | | 14.50025 | 12.17525 |
| Phase IV | 10/20/99 2:00 AM | 10/20/99 3:00 AM | No | 1272 | 12.22525 | | | 11.38775 | 1.6035 | | 15.50025 | 10.3755 |
| Phase IV | 10/20/99 3:00 AM | 10/20/99 4:00 AM | No | 1272 | 10.25025 | | | 11.2675 | 1.59725 | | 12.6005 | 9.4505 |
| Phase IV | 10/20/99 4:00 AM | 10/20/99 5:00 AM | No | 1272 | 13.175 | | | 11.16925 | 1.61125 | | 15.35075 | 11.32525 |
| Phase IV | 10/20/99 5:00 AM | 10/20/99 6:00 AM | No | 1272 | 11.15025 | | | 11.22775 | 1.6465 | | 18.00025 | 10.4 |
| Phase IV | 10/20/99 6:00 AM | 10/20/99 7:00 AM | No | 1272 | 11.1255 | | | 11.769 | 1.5875 | | 15.70025 | 9.2255 |
| Phase IV | 10/20/99 7:00 AM | 10/20/99 8:00 AM | | 1272 | 11.35025 | | | 10.4575 | 1.60225 | | 15.07525 | 10.20025 |
| Phase IV | 10/20/99 8:00 AM | 10/20/99 9:00 AM | | 1272 | 13.1255 | | | 10.73925 | 1.57725 | | 16.5255 | 11.475 |
| Phase IV | 10/20/99 9:00 AM | 10/20/99 10:00 AM | | 1272 | 13.65 | | | 10.20325 | 1.86775 | | 13.95 | 9.6255 |
| Phase IV | 10/20/99 10:00 AM | 10/20/99 11:00 AM | | 1272 | 10.25025 | | | 9.8645 | 2.928 | | 12.85 | 14.60025 |
| Phase IV | 10/20/99 11:00 AM | 10/20/99 12:00 PM | | 1272 | 14.3005 | | | 10.7415 | 5.061 | | 12.725 | 14.85 |
| Phase IV | 10/20/99 12:00 PM | 10/20/99 1:00 PM | | 1272 | 11.0255 | | | 11.3305 | 2.58875 | | 13.525 | 14.9505 |
| Phase IV | 10/20/99 1:00 PM | 10/20/99 2:00 PM | | 1272 | 12.4505 | | | 10.8805 | 2.22325 | | 11.85 | 19.27525 |
| Phase IV | 10/20/99 2:00 PM | 10/20/99 3:00 PM | | 1272 | 12.75 | | | 9.93875 | 1.908 | | 11.175 | 13.05 |
| Phase IV | 10/20/99 3:00 PM | 10/20/99 4:00 PM | | 1272 | 8.9005 | | | 10.35625 | 2.06475 | | 13.45025 | 14.7 |
| Phase IV | 10/20/99 4:00 PM | 10/20/99 5:00 PM | | 1272 | 9.80025 | | | 9.55325 | 2.08375 | | 12.3 | 13.87525 |
| Phase IV | 10/20/99 5:00 PM | 10/20/99 6:00 PM | | 1272 | 15.3755 | | | 10.5425 | 1.7725 | | 12.1005 | 12.32525 |
| Phase IV | 10/20/99 6:00 PM | 10/20/99 7:00 PM | | 1272 | 11.05025 | | | 9.889 | 1.413 | | 12.975 | 11.525 |
| Phase IV | 10/20/99 7:00 PM | 10/20/99 8:00 PM | No | 1272 | 9.5005 | | | 10.1015 | 1.1945 | | 16.8255 | 9.3255 |
| Phase IV | 10/20/99 8:00 PM | 10/20/99 9:00 PM | No | 1272 | 10.2005 | | | 10.605 | 1.136 | | 8.82575 | 10.55025 |
| Phase IV | 10/20/99 9:00 PM | 10/20/99 10:00 PM | No | 1272 | 9.97525 | | | 10.56575 | 1.09975 | | 11.75025 | 11.425 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 10/20/99 10:00 PM | 10/20/99 11:00 PM | No | 1272 | 9.225 | | | 9.2725 | 1.0815 | | 14.875 | 14.1255 |
| Phase IV | 10/20/99 11:00 PM | 10/21/99 12:00 AM | No | 1272 | 10.95025 | | | 9.30225 | 1.05375 | | 13.95 | 11.57525 |
| Phase IV | 10/21/99 12:00 AM | 10/21/99 1:00 AM | No | 1599 | 13.275 | | | 10.182 | 1.05375 | | 15.9005 | 10.7 |
| Phase IV | 10/21/99 1:00 AM | 10/21/99 2:00 AM | No | 1599 | 11.85025 | | | 9.3855 | 1.24175 | | 13.82525 | 12.675 |
| Phase IV | 10/21/99 2:00 AM | 10/21/99 3:00 AM | No | 1599 | 10.175 | | | 9.18875 | 1.11725 | | 19.175 | 16.77575 |
| Phase IV | 10/21/99 3:00 AM | 10/21/99 4:00 AM | No | 1599 | 9.85025 | | | 9.569 | 1.39675 | | 17.3755 | 12.42525 |
| Phase IV | 10/21/99 4:00 AM | 10/21/99 5:00 AM | No | 1599 | 9.17525 | | | 9.14575 | 1.307 | | 12.95075 | 13.375 |
| Phase IV | 10/21/99 5:00 AM | 10/21/99 6:00 AM | No | 1599 | 10.0005 | | | 8.874 | 1.79075 | | 17.925 | 12.7 |
| Phase IV | 10/21/99 6:00 AM | 10/21/99 7:00 AM | No | 1599 | 12.25025 | | | 8.96375 | 1.65975 | | 16.55075 | 13.32575 |
| Phase IV | 10/21/99 7:00 AM | 10/21/99 8:00 AM | | 1599 | 10.151 | | | 8.57725 | 1.703 | | 15.5005 | 13.05025 |
| Phase IV | 10/21/99 8:00 AM | 10/21/99 9:00 AM | | 1599 | 11.875 | | | 9.0155 | 1.6035 | | 21.82525 | 12.15025 |
| Phase IV | 10/21/99 9:00 AM | 10/21/99 10:00 AM | | 1599 | 9.851 | | | 9.556 | 1.401 | | 15.7 | 13.02525 |
| Phase IV | 10/21/99 10:00 AM | 10/21/99 11:00 AM | | 1599 | 9.7755 | | | 9.6495 | 1.1855 | | 14.95 | 12.10025 |
| Phase IV | 10/21/99 11:00 AM | 10/21/99 12:00 PM | | 1599 | 11.87525 | | | 9.6485 | 3.9505 | | 10.87525 | 12.45025 |
| Phase IV | 10/21/99 12:00 PM | 10/21/99 1:00 PM | | 1599 | 12.55025 | | | 8.93775 | 1.576 | | 13.4 | 14.75025 |
| Phase IV | 10/21/99 1:00 PM | 10/21/99 2:00 PM | | 1599 | 10.40025 | | | 8.817 | 1.5135 | | 13.45 | 14.42525 |
| Phase IV | 10/21/99 2:00 PM | 10/21/99 3:00 PM | | 1599 | 10.10025 | | | 8.95275 | 1.39875 | | 14.6505 | 19.95 |
| Phase IV | 10/21/99 3:00 PM | 10/21/99 4:00 PM | | 1599 | 11.67525 | | | 9.40925 | 1.28325 | | 14.375 | 13.325 |
| Phase IV | 10/21/99 4:00 PM | 10/21/99 5:00 PM | | 1599 | 10.67525 | | | 9.19275 | 1.342 | | 18.45025 | 14.42525 |
| Phase IV | 10/21/99 5:00 PM | 10/21/99 6:00 PM | | 1599 | 15.625 | | | 9.21525 | 1.44175 | | 16.62525 | 15.7505 |
| Phase IV | 10/21/99 6:00 PM | 10/21/99 7:00 PM | | 1599 | 17.47575 | | | 9.709 | 1.424 | | 14.4755 | 21.325 |
| Phase IV | 10/21/99 7:00 PM | 10/21/99 8:00 PM | No | 1599 | 15.975 | | | 10.25775 | 1.3775 | | 19.175 | 14.4755 |
| Phase IV | 10/21/99 8:00 PM | 10/21/99 9:00 PM | No | 1599 | 9.20025 | | | 9.801 | 1.29725 | | 18.42525 | 18.125 |
| Phase IV | 10/21/99 9:00 PM | 10/21/99 10:00 PM | No | 1599 | 10.15025 | | | 9.7565 | 1.35125 | | 13.85 | 13 |
| Phase IV | 10/21/99 10:00 PM | 10/21/99 11:00 PM | No | 1599 | 10.55025 | | | 10.0905 | 1.3405 | | 15.6005 | 12.55025 |
| Phase IV | 10/21/99 11:00 PM | 10/22/99 12:00 AM | No | 1599 | 10.4755 | | | 9.39075 | 1.329 | | 18.77525 | 13.70075 |
| Phase IV | 10/22/99 12:00 AM | 10/22/99 1:00 AM | No | 1112 | 11.12525 | | | 9.90275 | 1.285 | | 13.80025 | 11.75 |
| Phase IV | 10/22/99 1:00 AM | 10/22/99 2:00 AM | No | 1112 | 8.9755 | | | 9.87175 | 1.25275 | | 17.82575 | 12.45 |
| Phase IV | 10/22/99 2:00 AM | 10/22/99 3:00 AM | No | 1112 | 6.676 | | | 10.543 | 1.43075 | | 22.825 | 11.45 |
| Phase IV | 10/22/99 3:00 AM | 10/22/99 4:00 AM | No | 1112 | 10.5 | | | 10.3825 | 1.38025 | | 17.4755 | 14.55025 |
| Phase IV | 10/22/99 4:00 AM | 10/22/99 5:00 AM | No | 1112 | 13.55 | | | 9.71875 | 1.42025 | | 17.9755 | 14.45025 |
| Phase IV | 10/22/99 5:00 AM | 10/22/99 6:00 AM | No | 1112 | 12.65075 | | | 9.009 | 1.40975 | | 13.10025 | 11.875 |
| Phase IV | 10/22/99 6:00 AM | 10/22/99 7:00 AM | No | 1112 | 10.25025 | | | 9.0485 | 1.28625 | | 25.40025 | 14.42525 |
| Phase IV | 10/22/99 7:00 AM | 10/22/99 8:00 AM | Yes | 1112 | 9.10025 | | | 8.95925 | 1.22925 | | 21.001 | 14.15025 |
| Phase IV | 10/22/99 8:00 AM | 10/22/99 9:00 AM | Yes | 1112 | 8.45075 | | | 8.97075 | 1.23 | | 23.97525 | 13.0005 |
| Phase IV | 10/22/99 9:00 AM | 10/22/99 10:00 AM | Yes | 1112 | 9.75025 | | | 8.697 | 1.4315 | | 19.525 | 13.1255 |
| Phase IV | 10/22/99 10:00 AM | 10/22/99 11:00 AM | Yes | 1112 | 10.425 | | | 9.2965 | 2.1485 | | 15.325 | 15.95025 |
| Phase IV | 10/22/99 11:00 AM | 10/22/99 12:00 PM | Yes | 1112 | 10.775 | | | 9.05475 | 2.521 | | 17.5505 | 13.20025 |
| Phase IV | 10/22/99 12:00 PM | 10/22/99 1:00 PM | Yes | 1112 | 17.5505 | | | 9.79875 | 2.473 | | 16.3 | 15.32525 |
| Phase IV | 10/22/99 1:00 PM | 10/22/99 2:00 PM | Yes | 1112 | 11.30075 | | | 9.38925 | 2.4005 | | 18.35 | 12.325 |
| Phase IV | 10/22/99 2:00 PM | 10/22/99 3:00 PM | Yes | 1112 | 13.8505 | | | 9.42925 | 2.4535 | | 21.20075 | 12.82525 |
| Phase IV | 10/22/99 3:00 PM | 10/22/99 4:00 PM | Yes | 1112 | 10.325 | | | 9.39275 | 2.3115 | | 35.62575 | 13.90025 |
| Phase IV | 10/22/99 4:00 PM | 10/22/99 5:00 PM | Yes | 1112 | 10.5005 | | | 9.66175 | 2.234 | | 29.42525 | 11.7005 |
| Phase IV | 10/22/99 5:00 PM | 10/22/99 6:00 PM | Yes | 1112 | 12.275 | | | 10.27375 | 1.79 | | 16.70025 | 17.45 |
| Phase IV | 10/22/99 6:00 PM | 10/22/99 7:00 PM | Yes | 1112 | 10.8255 | | | 10.112 | 1.57725 | | 16.65 | 20.52575 |
| Phase IV | 10/22/99 7:00 PM | 10/22/99 8:00 PM | No | 1112 | 11.0755 | | | 10.52675 | 1.66975 | | 16.7505 | 19.725 |
| Phase IV | 10/22/99 8:00 PM | 10/22/99 9:00 PM | No | 1112 | 11.05025 | | | 10.14175 | 1.818 | | 24.8005 | 19.42525 |
| Phase IV | 10/22/99 9:00 PM | 10/22/99 10:00 PM | No | 1112 | 13.05 | | | 9.898 | 1.7885 | | 18.3755 | 15.90025 |
| Phase IV | 10/22/99 10:00 PM | 10/22/99 11:00 PM | No | 1112 | 13.125 | | | 9.77475 | 1.5665 | | 19.0255 | 15.35025 |
| Phase IV | 10/22/99 11:00 PM | 10/23/99 12:00 AM | No | 1112 | 10.8505 | | | 9.484 | 1.481 | | 22.95075 | 17.80025 |
| Phase IV | 10/23/99 12:00 AM | 10/23/99 1:00 AM | No | 852 | 12.725 | | | 9.2845 | 1.58625 | | 20.32525 | 11.65 |
| Phase IV | 10/23/99 1:00 AM | 10/23/99 2:00 AM | No | 852 | 9.72525 | | | 9.26325 | 1.73625 | | 28.65075 | 14.00025 |
| Phase IV | 10/23/99 2:00 AM | 10/23/99 3:00 AM | No | 852 | 8.6255 | | | 9.441 | 1.69625 | | 19.9755 | 16.6005 |
| Phase IV | 10/23/99 3:00 AM | 10/23/99 4:00 AM | No | 852 | 10.2005 | | | 8.10275 | 1.61375 | | 18.35 | 12.42525 |
| Phase IV | 10/23/99 4:00 AM | 10/23/99 5:00 AM | No | 852 | 9.15075 | | | 9.6835 | 1.56775 | | 23.3755 | 12.5 |
| Phase IV | 10/23/99 5:00 AM | 10/23/99 6:00 AM | No | 852 | 9.4505 | | | 9.19275 | 1.51275 | | 21.40075 | 11.82525 |
| Phase IV | 10/23/99 6:00 AM | 10/23/99 7:00 AM | No | 852 | 13.17525 | | | 9.52725 | 1.56225 | | 25.675 | 11.87525 |
| Phase IV | 10/23/99 7:00 AM | 10/23/99 8:00 AM | Yes | 852 | 16.62525 | | | 9.4465 | 1.469 | | 25.47575 | 12.025 |
| Phase IV | 10/23/99 8:00 AM | 10/23/99 9:00 AM | Yes | 852 | 10.07525 | | | 8.90675 | 1.42925 | | 31.52525 | 11.77525 |
| Phase IV | 10/23/99 9:00 AM | 10/23/99 10:00 AM | Yes | 852 | 8.10075 | | | 8.91325 | 1.38125 | | 34.35 | 12.15025 |
| Phase IV | 10/23/99 10:00 AM | 10/23/99 11:00 AM | Yes | 852 | 9.60025 | | | 9.14825 | 1.457 | | 24.9005 | 14.4 |
| Phase IV | 10/23/99 11:00 AM | 10/23/99 12:00 PM | No | 852 | 9.9005 | | | 8.764 | 1.5545 | | 23.40025 | 12.77525 |
| Phase IV | 10/23/99 12:00 PM | 10/23/99 1:00 PM | Yes | 852 | 12.22525 | | | 8.70825 | 1.4315 | | 22.25 | 13.15 |
| Phase IV | 10/23/99 1:00 PM | 10/23/99 2:00 PM | Yes | 852 | 12.8 | | | 8.63725 | 1.408 | | 47.1 | 11.5 |
| Phase IV | 10/23/99 2:00 PM | 10/23/99 3:00 PM | Yes | 852 | 10.47525 | | | 9.0565 | 1.41225 | | 19.85025 | 12.07525 |
| Phase IV | 10/23/99 3:00 PM | 10/23/99 4:00 PM | Yes | 852 | 8.4005 | | | 8.7995 | 2.01925 | | 39.55075 | 12.15025 |
| Phase IV | 10/23/99 4:00 PM | 10/23/99 5:00 PM | Yes | 852 | 11.15075 | | | 8.65475 | 1.41025 | | 39.42575 | 14.87525 |
| Phase IV | 10/23/99 5:00 PM | 10/23/99 6:00 PM | Yes | 852 | 8.3755 | | | 8.8005 | 1.43275 | | 39.05025 | 13.75025 |
| Phase IV | 10/23/99 6:00 PM | 10/23/99 7:00 PM | No | 852 | 9.5755 | | | 9.038 | 1.351 | | 31.22575 | 14.72525 |
| Phase IV | 10/23/99 7:00 PM | 10/23/99 8:00 PM | No | 852 | 8.20025 | | | 9.525 | 1.27575 | | 67.00075 | 17.175 |
| Phase IV | 10/23/99 8:00 PM | 10/23/99 9:00 PM | No | 852 | 10.475 | | | 8.659 | 1.2135 | | 57.57525 | 12.92525 |
| Phase IV | 10/23/99 9:00 PM | 10/23/99 10:00 PM | No | 852 | 10.22525 | | | 8.70975 | 1.199 | | 57.8755 | 11.27525 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 10/23/99 10:00 PM | 10/23/99 11:00 PM | No | 852 | 9.3505 | | | 9.30725 | 1.1605 | | 59.4755 | 12.35 |
| Phase IV | 10/23/99 11:00 PM | 10/24/99 12:00 AM | No | 852 | 13.5 | | | 9.1205 | 1.198 | | 57.45 | |
| Phase IV | 10/24/99 12:00 AM | 10/24/99 1:00 AM | No | 1128 | 15.4005 | | | 9.054 | 1.069 | | 51.12575 | |
| Phase IV | 10/24/99 1:00 AM | 10/24/99 2:00 AM | No | 1128 | 15.20025 | | | 9.28025 | 1.13075 | | 37.1005 | |
| Phase IV | 10/24/99 2:00 AM | 10/24/99 3:00 AM | No | 1128 | 12.2 | | | 9.71125 | 1.03 | | 49.82525 | |
| Phase IV | 10/24/99 3:00 AM | 10/24/99 4:00 AM | No | 1128 | 10.725 | | | 9.65 | 1.1455 | | 48.875 | |
| Phase IV | 10/24/99 4:00 AM | 10/24/99 5:00 AM | No | 1128 | 14.0005 | | | 9.15675 | 1.01425 | | 52.20025 | |
| Phase IV | 10/24/99 5:00 AM | 10/24/99 6:00 AM | No | 1128 | 15.20025 | | | 9.1135 | 1.0235 | | 56.175 | |
| Phase IV | 10/24/99 6:00 AM | 10/24/99 7:00 AM | No | 1128 | 10.6005 | | | 9.20225 | 1.04375 | | 72.30075 | |
| Phase IV | 10/24/99 7:00 AM | 10/24/99 8:00 AM | No | 1128 | 13.62525 | | | 9.0065 | 1.064 | | 55.6505 | 14.2 |
| Phase IV | 10/24/99 8:00 AM | 10/24/99 9:00 AM | No | 1128 | 14.15 | | | 9.36725 | 1.0785 | | 71.876 | 9.27525 |
| Phase IV | 10/24/99 9:00 AM | 10/24/99 10:00 AM | No | 1128 | 15.125 | | | 9.6115 | 1.0635 | | 78.776 | 10.75025 |
| Phase IV | 10/24/99 10:00 AM | 10/24/99 11:00 AM | No | 1128 | 14.90025 | | | 10.11425 | 1.135 | | 67.2005 | 12.5 |
| Phase IV | 10/24/99 11:00 AM | 10/24/99 12:00 PM | No | 1128 | 16.625 | | | 11.354 | 1.09875 | | 46.30075 | 10.95025 |
| Phase IV | 10/24/99 12:00 PM | 10/24/99 1:00 PM | No | 1128 | 22.32525 | | | 11.741 | 1.189 | | 74.701 | 12.55025 |
| Phase IV | 10/24/99 1:00 PM | 10/24/99 2:00 PM | No | 1128 | 20.2255 | | | 13.95875 | 1.22225 | | 35.62575 | 11.82525 |
| Phase IV | 10/24/99 2:00 PM | 10/24/99 3:00 PM | No | 1128 | 21.10075 | | | 14.699 | 1.107 | | 69.5755 | 11.57525 |
| Phase IV | 10/24/99 3:00 PM | 10/24/99 4:00 PM | No | 1128 | 21.7755 | | | 13.62075 | 0.9955 | | 55.926 | 12.42525 |
| Phase IV | 10/24/99 4:00 PM | 10/24/99 5:00 PM | No | 1128 | 23.90025 | | | 13.99025 | 1.0635 | | 39.6505 | 12 |
| Phase IV | 10/24/99 5:00 PM | 10/24/99 6:00 PM | No | 1128 | 27.00025 | | | 15.95625 | 1.14425 | | 78.30075 | 12.62525 |
| Phase IV | 10/24/99 6:00 PM | 10/24/99 7:00 PM | No | 1128 | 30.17525 | | | 16.5305 | 1.35675 | | 99.676 | 11.4 |
| Phase IV | 10/24/99 7:00 PM | 10/24/99 8:00 PM | No | 1128 | 31.67575 | | | 15.606 | 1.0775 | | 101.5258 | 11.00025 |
| Phase IV | 10/24/99 8:00 PM | 10/24/99 9:00 PM | No | 1128 | 37.051 | | | 13.28575 | 0.93025 | | 75.17575 | 11.62525 |
| Phase IV | 10/24/99 9:00 PM | 10/24/99 10:00 PM | No | 1128 | 34.65025 | | | 15.877 | 0.96875 | | 98.176 | 12.32525 |
| Phase IV | 10/24/99 10:00 PM | 10/24/99 11:00 PM | No | 1128 | 36.4505 | | | 12.03225 | 0.8445 | | 128.1255 | 12.625 |
| Phase IV | 10/24/99 11:00 PM | 10/25/99 12:00 AM | No | 1128 | 38.8755 | | | 15.66225 | 0.78975 | | 116.6008 | 8.133667 |
| Phase IV | 10/25/99 12:00 AM | 10/25/99 1:00 AM | No | 1550 | 35.62525 | | | 15.369 | 0.7115 | | 87.826 | |
| Phase IV | 10/25/99 1:00 AM | 10/25/99 2:00 AM | No | 1550 | 62.22575 | | | 14.77325 | 0.67425 | | 118.901 | |
| Phase IV | 10/25/99 2:00 AM | 10/25/99 3:00 AM | No | 1550 | 34.4255 | | | 13.4485 | 0.6745 | | 149.7508 | |
| Phase IV | 10/25/99 3:00 AM | 10/25/99 4:00 AM | No | 1550 | 87.0755 | | | 13.69225 | 0.6455 | | 140.8508 | |
| Phase IV | 10/25/99 4:00 AM | 10/25/99 5:00 AM | No | 1550 | 31.87575 | | | 12.18925 | 0.637 | | 162.026 | |
| Phase IV | 10/25/99 5:00 AM | 10/25/99 6:00 AM | No | 1550 | 40.30025 | | | 14.0245 | 0.636 | | 144.1005 | |
| Phase IV | 10/25/99 6:00 AM | 10/25/99 7:00 AM | No | 1550 | 50.97575 | | | 14.66875 | 0.63575 | | 87.50075 | |
| Phase IV | 10/25/99 7:00 AM | 10/25/99 8:00 AM | Yes | 1550 | 75.67575 | | | 13.62575 | 0.60675 | | 66.47575 | |
| Phase IV | 10/25/99 8:00 AM | 10/25/99 9:00 AM | Yes | 1550 | 30.50025 | | | 15.72075 | 0.5965 | | 165.4505 | 22 |
| Phase IV | 10/25/99 9:00 AM | 10/25/99 10:00 AM | Yes | 1550 | 25.9255 | | | 19.8935 | 2.0305 | | 148.626 | 15.5005 |
| Phase IV | 10/25/99 10:00 AM | 10/25/99 11:00 AM | Yes | 1550 | 11.425 | | | 11.9545 | 1.9755 | | 82.30075 | 15.07525 |
| Phase IV | 10/25/99 11:00 AM | 10/25/99 12:00 PM | Yes | 1550 | 13.325 | | | 13.19175 | 2.001 | | 15.3255 | 13.125 |
| Phase IV | 10/25/99 12:00 PM | 10/25/99 1:00 PM | Yes | 1550 | 12.20025 | | | 11.72425 | 2.03225 | | 17.65025 | 13.22525 |
| Phase IV | 10/25/99 1:00 PM | 10/25/99 2:00 PM | Yes | 1550 | 11.925 | | | 14.05025 | 2.17375 | | 16.65 | 18.32525 |
| Phase IV | 10/25/99 2:00 PM | 10/25/99 3:00 PM | Yes | 1550 | 11.075 | | | 14.60825 | 2.3765 | | 37.62575 | 17.8755 |
| Phase IV | 10/25/99 3:00 PM | 10/25/99 4:00 PM | Yes | 1550 | 15.45 | | | 14.50075 | 2.17325 | | 15.5 | 14.55025 |
| Phase IV | 10/25/99 4:00 PM | 10/25/99 5:00 PM | Yes | 1550 | 15.0255 | | | 15.1915 | 2.213 | | 66.3 | 14.375 |
| Phase IV | 10/25/99 5:00 PM | 10/25/99 6:00 PM | Yes | 1550 | 13.25 | | | 17.47325 | 2.40525 | | 42.17525 | 21.8005 |
| Phase IV | 10/25/99 6:00 PM | 10/25/99 7:00 PM | Yes | 1550 | 11.52525 | | | 17.038 | 2.072 | | 29.0505 | 22.00025 |
| Phase IV | 10/25/99 7:00 PM | 10/25/99 8:00 PM | No | 1550 | 12.90025 | | | 17.587 | 2.1545 | | 42.1505 | 11.45 |
| Phase IV | 10/25/99 8:00 PM | 10/25/99 9:00 PM | No | 1550 | 9.72575 | | | 19.688 | 2.17675 | | 25.225 | 14.925 |
| Phase IV | 10/25/99 9:00 PM | 10/25/99 10:00 PM | No | 1550 | 15.82575 | | | 18.72475 | 2.25375 | | 74.10075 | 13.12525 |
| Phase IV | 10/25/99 10:00 PM | 10/25/99 11:00 PM | No | 1550 | 10.97525 | | | 17.2415 | 2.16325 | | 180.651 | 12.825 |
| Phase IV | 10/25/99 11:00 PM | 10/26/99 12:00 AM | No | 1550 | 10.8 | | | 15.09525 | 2.2275 | | 49.90025 | 11.40025 |
| Phase IV | 10/26/99 12:00 AM | 10/26/99 1:00 AM | No | 1271 | 11.07525 | | | 14.77375 | 2.23175 | | 14.30025 | 13.10025 |
| Phase IV | 10/26/99 1:00 AM | 10/26/99 2:00 AM | No | 1271 | 9.85025 | | | 14.3195 | 2.3645 | | 42.12575 | 12.6005 |
| Phase IV | 10/26/99 2:00 AM | 10/26/99 3:00 AM | No | 1271 | 11.8505 | | | 14.73025 | 2.2695 | | 123.1005 | 10.77525 |
| Phase IV | 10/26/99 3:00 AM | 10/26/99 4:00 AM | No | 1271 | 9.50025 | | | 16.27375 | 2.33375 | | 1487.225 | 14.77525 |
| Phase IV | 10/26/99 4:00 AM | 10/26/99 5:00 AM | No | 1271 | 9.625 | | | 13.828 | 2.31725 | | 761.1503 | 9.67525 |
| Phase IV | 10/26/99 5:00 AM | 10/26/99 6:00 AM | No | 1271 | 11.07525 | | | 15.9415 | 2.32625 | | 34.726 | 12.35025 |
| Phase IV | 10/26/99 6:00 AM | 10/26/99 7:00 AM | No | 1271 | 11.7255 | | | 13.328 | 2.41775 | | 51.9505 | 10.925 |
| Phase IV | 10/26/99 7:00 AM | 10/26/99 8:00 AM | Yes | 1271 | 11.72525 | | | 14.946 | 2.49175 | | 79.7755 | 11.82525 |
| Phase IV | 10/26/99 8:00 AM | 10/26/99 9:00 AM | Yes | 1271 | 9.7755 | | | 15.867 | 2.49575 | | 33.25 | 12.475 |
| Phase IV | 10/26/99 9:00 AM | 10/26/99 10:00 AM | Yes | 1271 | 9.57525 | | | 15.22625 | 2.411 | | 45.1005 | 14.2 |
| Phase IV | 10/26/99 10:00 AM | 10/26/99 11:00 AM | No | 1271 | 11.50025 | | | 13.789 | 2.579 | | 43.42525 | 14.47525 |
| Phase IV | 10/26/99 11:00 AM | 10/26/99 12:00 PM | Yes | 1271 | 9.15025 | | | 15.11375 | 2.5835 | | 34.02575 | 12.95025 |
| Phase IV | 10/26/99 12:00 PM | 10/26/99 1:00 PM | Yes | 1271 | 10.775 | | | 14.82475 | 2.58375 | | 23.47525 | 11.5 |
| Phase IV | 10/26/99 1:00 PM | 10/26/99 2:00 PM | Yes | 1271 | 13.0255 | | | 15.2135 | 2.6585 | | 20.1755 | 13.97525 |
| Phase IV | 10/26/99 2:00 PM | 10/26/99 3:00 PM | Yes | 1271 | 11.10025 | | | 14.45325 | 2.63 | | 51.57575 | 13.90025 |
| Phase IV | 10/26/99 3:00 PM | 10/26/99 4:00 PM | Yes | 1271 | 18.82525 | | | 15.73375 | 2.699 | | 28.82525 | 13.02525 |
| Phase IV | 10/26/99 4:00 PM | 10/26/99 5:00 PM | Yes | 1271 | 11.2255 | | | 15.34675 | 3.034 | | 99.22575 | 13.60025 |
| Phase IV | 10/26/99 5:00 PM | 10/26/99 6:00 PM | Yes | 1271 | 11.92525 | | | 16.01175 | 3.47375 | | 157.6005 | 17.0505 |
| Phase IV | 10/26/99 6:00 PM | 10/26/99 7:00 PM | Yes | 1271 | 9.2005 | | | 14.60025 | 3.6865 | | 656.1005 | 13.4005 |
| Phase IV | 10/26/99 7:00 PM | 10/26/99 8:00 PM | No | 1271 | 9.30025 | | | 16.1885 | 3.74425 | | 190.0258 | 12.57525 |
| Phase IV | 10/26/99 8:00 PM | 10/26/99 9:00 PM | No | 1271 | 13.025 | | | 17.42625 | 3.6835 | | 86.9505 | 13.05 |
| Phase IV | 10/26/99 9:00 PM | 10/26/99 10:00 PM | No | 1271 | 10.2 | | | 15.90525 | 3.60825 | | 66.301 | 13 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 10/26/99 10:00 PM | 10/26/99 11:00 PM | No | 1271 | 9.6255 | | | 14.797 | 3.70125 | | 30.4255 | 12.925 |
| Phase IV | 10/26/99 11:00 PM | 10/27/99 12:00 AM | No | 1271 | 11.10025 | | | 15.08825 | 3.76925 | | 25.75 | 11.975 |
| Phase IV | 10/27/99 12:00 AM | 10/27/99 1:00 AM | No | 1265 | 8.5505 | | | 15.954 | 3.83425 | | 23.0005 | 11.9505 |
| Phase IV | 10/27/99 1:00 AM | 10/27/99 2:00 AM | No | 1265 | 12.00025 | | | 14.3685 | 3.98725 | | 31.67575 | 10.3255 |
| Phase IV | 10/27/99 2:00 AM | 10/27/99 3:00 AM | No | 1265 | 10.07575 | | | 13.62775 | 4.08225 | | 29.5255 | 14.42525 |
| Phase IV | 10/27/99 3:00 AM | 10/27/99 4:00 AM | No | 1265 | 10.2505 | | | 14.13 | 4.32575 | | 43.85075 | 11.12525 |
| Phase IV | 10/27/99 4:00 AM | 10/27/99 5:00 AM | No | 1265 | 10.55025 | | | 14.1745 | 4.27725 | | 30.07575 | 13.0005 |
| Phase IV | 10/27/99 5:00 AM | 10/27/99 6:00 AM | No | 1265 | 9.7755 | | | 14.564 | 4.41225 | | 27.22525 | 8.7005 |
| Phase IV | 10/27/99 6:00 AM | 10/27/99 7:00 AM | No | 1265 | 10.3005 | | | 14.74575 | 4.443 | | 34.3255 | 9.05075 |
| Phase IV | 10/27/99 7:00 AM | 10/27/99 8:00 AM | Yes | 1265 | 10.47525 | | | 14.1245 | 4.51825 | | 27.925 | 10.525 |
| Phase IV | 10/27/99 8:00 AM | 10/27/99 9:00 AM | Yes | 1265 | 12.1005 | | | 14.02775 | 4.638 | | 28.45025 | 12.65025 |
| Phase IV | 10/27/99 9:00 AM | 10/27/99 10:00 AM | No | 1265 | 10.80025 | | | 13.08225 | 4.989 | | 1122.25 | 15.75 |
| Phase IV | 10/27/99 10:00 AM | 10/27/99 11:00 AM | Yes | 1265 | 9.2005 | | | 15.42775 | 4.9715 | | 1488.376 | 14.60075 |
| Phase IV | 10/27/99 11:00 AM | 10/27/99 12:00 PM | Yes | 1265 | 10.2255 | | | 16.29925 | 4.8315 | | 768.4008 | 11.675 |
| Phase IV | 10/27/99 12:00 PM | 10/27/99 1:00 PM | Yes | 1265 | 8.80075 | | | 15.45975 | 4.85725 | | 27.90075 | 12.75 |
| Phase IV | 10/27/99 1:00 PM | 10/27/99 2:00 PM | Yes | 1265 | 8.651 | | | 11.66225 | 12.57975 | | 20.25025 | 11.0505 |
| Phase IV | 10/27/99 2:00 PM | 10/27/99 3:00 PM | Yes | 1265 | 11.2 | | | 11.16325 | 1.505 | | 18.8005 | 14.7255 |
| Phase IV | 10/27/99 3:00 PM | 10/27/99 4:00 PM | Yes | 1265 | 12.6 | | | 12.87425 | 1.23475 | | 1125.9 | 13.575 |
| Phase IV | 10/27/99 4:00 PM | 10/27/99 5:00 PM | Yes | 1265 | 14.52575 | | | 10.33875 | 1.2 | | 989.6255 | 13.40025 |
| Phase IV | 10/27/99 5:00 PM | 10/27/99 6:00 PM | Yes | 1265 | 8.55075 | | | 10.28725 | 1.207 | | 11.05 | 15.40025 |
| Phase IV | 10/27/99 6:00 PM | 10/27/99 7:00 PM | Yes | 1265 | 10.575 | | | 8.8645 | 1.14475 | | 9.87525 | 16.7755 |
| Phase IV | 10/27/99 7:00 PM | 10/27/99 8:00 PM | No | 1265 | 8.4755 | | | 8.43525 | 1.14025 | | 9.1505 | 16.40025 |
| Phase IV | 10/27/99 8:00 PM | 10/27/99 9:00 PM | No | 1265 | 6.551 | | | 8.34275 | 1.135 | | 10.8005 | 12.80025 |
| Phase IV | 10/27/99 9:00 PM | 10/27/99 10:00 PM | No | 1265 | 8.72525 | | | 9.3765 | 1.05275 | | 9.75025 | 13.9005 |
| Phase IV | 10/27/99 10:00 PM | 10/27/99 11:00 PM | No | 1265 | 8.85075 | | | 8.8115 | 1.01975 | | 8.3005 | 13.8 |
| Phase IV | 10/27/99 11:00 PM | 10/28/99 12:00 AM | No | 1265 | 8.2755 | | | 8.92175 | 1.07675 | | 7.32575 | 14.175 |
| Phase IV | 10/28/99 12:00 AM | 10/28/99 1:00 AM | No | 1377 | 9.32525 | | | 10.32625 | 1.16375 | | 10.07525 | 13.97525 |
| Phase IV | 10/28/99 1:00 AM | 10/28/99 2:00 AM | No | 1377 | 9.1755 | | | 7.758 | 1.14625 | | 8.95025 | 12.82525 |
| Phase IV | 10/28/99 2:00 AM | 10/28/99 3:00 AM | No | 1377 | 6.3005 | | | 8.78075 | 1.112 | | 9.52575 | 13.8 |
| Phase IV | 10/28/99 3:00 AM | 10/28/99 4:00 AM | No | 1377 | 8.1255 | | | 8.36925 | 1.10125 | | 7.67575 | 13.425 |
| Phase IV | 10/28/99 4:00 AM | 10/28/99 5:00 AM | No | 1377 | 5.501 | | | 8.427 | 1.199 | | 10.7 | 11.1005 |
| Phase IV | 10/28/99 5:00 AM | 10/28/99 6:00 AM | No | 1377 | 7.45075 | | | 8.7745 | 1.19875 | | 11.8255 | 8.75025 |
| Phase IV | 10/28/99 6:00 AM | 10/28/99 7:00 AM | No | 1377 | 7.326 | | | 8.854 | 1.18875 | | 10.4005 | 10.85025 |
| Phase IV | 10/28/99 7:00 AM | 10/28/99 8:00 AM | | 1377 | 8.12525 | | | 8.757 | 1.07725 | | 6.45075 | 11.7505 |
| Phase IV | 10/28/99 8:00 AM | 10/28/99 9:00 AM | | 1377 | 9.87525 | | | 9.05525 | 1.0485 | | 7.6755 | |
| Phase IV | 10/28/99 9:00 AM | 10/28/99 10:00 AM | | 1377 | 8.2755 | | | 9.83625 | 1.05725 | | 8.0755 | 31.80033 |
| Phase IV | 10/28/99 10:00 AM | 10/28/99 11:00 AM | | 1377 | 8.7755 | | | 10.74025 | 1.1795 | | 8.57525 | 27.325 |
| Phase IV | 10/28/99 11:00 AM | 10/28/99 12:00 PM | | 1377 | 6.70075 | | | 13.954 | 1.18 | | 9.12525 | 16.60025 |
| Phase IV | 10/28/99 12:00 PM | 10/28/99 1:00 PM | | 1377 | 7.151 | | | 11.4365 | 1.1715 | | 10.2255 | 9.27575 |
| Phase IV | 10/28/99 1:00 PM | 10/28/99 2:00 PM | | 1377 | 11.1505 | | | 10.394 | 1.0745 | | 9.075 | 8.101 |
| Phase IV | 10/28/99 2:00 PM | 10/28/99 3:00 PM | | 1377 | 10.7255 | | | 12.1385 | 1.029 | | 7.3505 | 10.35 |
| Phase IV | 10/28/99 3:00 PM | 10/28/99 4:00 PM | | 1377 | 9.6005 | | | 14.07075 | 1.02975 | | 9.45075 | 8.50075 |
| Phase IV | 10/28/99 4:00 PM | 10/28/99 5:00 PM | | 1377 | 9.6505 | | | 13.26875 | 1.065 | | 8.8755 | 5.15075 |
| Phase IV | 10/28/99 5:00 PM | 10/28/99 6:00 PM | | 1377 | 11.0505 | | | 10.94825 | 1.05775 | | 9.17575 | 5.90075 |
| Phase IV | 10/28/99 6:00 PM | 10/28/99 7:00 PM | | 1377 | 11.075 | | | 10.84675 | 0.963 | | 8.9755 | 15.30025 |
| Phase IV | 10/28/99 7:00 PM | 10/28/99 8:00 PM | No | 1377 | 11.2 | | | 12.838 | 0.94225 | | 8.32575 | 4.8255 |
| Phase IV | 10/28/99 8:00 PM | 10/28/99 9:00 PM | No | 1377 | 7.2505 | | | 10.88825 | 0.97175 | | 8.22575 | 6.301 |
| Phase IV | 10/28/99 9:00 PM | 10/28/99 10:00 PM | No | 1377 | 8.12575 | | | 9.98425 | 0.98275 | | 8.6505 | 7.3505 |
| Phase IV | 10/28/99 10:00 PM | 10/28/99 11:00 PM | No | 1377 | 9.32575 | | | 9.44525 | 0.95475 | | 9.75025 | 4.22575 |
| Phase IV | 10/28/99 11:00 PM | 10/29/99 12:00 AM | No | 1377 | 9.10025 | | | 8.99725 | 0.96375 | | 8.3755 | 4.0255 |
| Phase IV | 10/29/99 12:00 AM | 10/29/99 1:00 AM | No | 1321 | 8.4255 | | | 9.5695 | 0.924 | | 7.5255 | 6.72575 |
| Phase IV | 10/29/99 1:00 AM | 10/29/99 2:00 AM | No | 1321 | 10.0255 | | | 10.256 | 0.97575 | | 8.37575 | 9.00075 |
| Phase IV | 10/29/99 2:00 AM | 10/29/99 3:00 AM | No | 1321 | 8.92575 | | | 10.1785 | 0.99 | | 7.851 | 7.67525 |
| Phase IV | 10/29/99 3:00 AM | 10/29/99 4:00 AM | No | 1321 | 9.50075 | | | 11.007 | 1.02725 | | 6.47575 | 4.701 |
| Phase IV | 10/29/99 4:00 AM | 10/29/99 5:00 AM | No | 1321 | 7.95075 | | | 11.70575 | 1.017 | | 7.75075 | 4.501 |
| Phase IV | 10/29/99 5:00 AM | 10/29/99 6:00 AM | No | 1321 | 9.0755 | | | 12.21525 | 1.046 | | 8.351 | 4.92575 |
| Phase IV | 10/29/99 6:00 AM | 10/29/99 7:00 AM | No | 1321 | 8.37525 | | | 12.82 | 1.0525 | | 9.9505 | 3.9255 |
| Phase IV | 10/29/99 7:00 AM | 10/29/99 8:00 AM | Yes | 1321 | 9.0755 | | | 13.9375 | 1.02375 | | 13.52525 | 10.2755 |
| Phase IV | 10/29/99 8:00 AM | 10/29/99 9:00 AM | Yes | 1321 | 9.70025 | | | 16.1525 | 0.9945 | | 14.4005 | 8.8255 |
| Phase IV | 10/29/99 9:00 AM | 10/29/99 10:00 AM | Yes | 1321 | 10.22525 | | | 15.4675 | 1.0505 | | 12.4 | 8.4255 |
| Phase IV | 10/29/99 10:00 AM | 10/29/99 11:00 AM | Yes | 1321 | 9.9255 | | | 12.898 | 1.406 | | 10.7 | 6.401 |
| Phase IV | 10/29/99 11:00 AM | 10/29/99 12:00 PM | No | 1321 | 9.6005 | | | 22.96425 | 1.78475 | | 21.60025 | 2.72525 |
| Phase IV | 10/29/99 12:00 PM | 10/29/99 1:00 PM | Yes | 1321 | 9.95 | | | 14.93675 | 2.0845 | | 9.82575 | 6.0755 |
| Phase IV | 10/29/99 1:00 PM | 10/29/99 2:00 PM | Yes | 1321 | 8.001 | | | 12.59325 | 1.834 | | 9.6255 | 7.12575 |
| Phase IV | 10/29/99 2:00 PM | 10/29/99 3:00 PM | Yes | 1321 | 10.0005 | | | 16.84525 | 1.96775 | | 8.4505 | 13.20025 |
| Phase IV | 10/29/99 3:00 PM | 10/29/99 4:00 PM | Yes | 1321 | 8.5755 | | | 20.54825 | 2.0445 | | 9.0005 | 11.07525 |
| Phase IV | 10/29/99 4:00 PM | 10/29/99 5:00 PM | Yes | 1321 | 7.55075 | | | 25.16475 | 1.619 | | 11.775 | 10.20075 |
| Phase IV | 10/29/99 5:00 PM | 10/29/99 6:00 PM | Yes | 1321 | 11.1005 | | | 15.47425 | 1.35475 | | 8.52575 | 12.451 |
| Phase IV | 10/29/99 6:00 PM | 10/29/99 7:00 PM | Yes | 1321 | 8.97525 | | | 15.20375 | 1.12425 | | 9.67525 | 5.50075 |
| Phase IV | 10/29/99 7:00 PM | 10/29/99 8:00 PM | No | 1321 | 10.85 | | | 11.42225 | 1.022 | | 10.25025 | 8.6755 |
| Phase IV | 10/29/99 8:00 PM | 10/29/99 9:00 PM | No | 1321 | 14.30025 | | | 11.289 | 0.9895 | | 10.95075 | 7.75 |
| Phase IV | 10/29/99 9:00 PM | 10/29/99 10:00 PM | No | 1321 | 9.60075 | | | 11.52475 | 0.89925 | | 9.7505 | 7.40075 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 10/29/99 10:00 PM | 10/29/99 11:00 PM | No | 1321 | 9.57525 | | | 11.66 | 0.94575 | | 8.80025 | 14.3505 |
| Phase IV | 10/29/99 11:00 PM | 10/30/99 12:00 AM | No | 1321 | 8.4505 | | | 11.19275 | 1.23575 | | 9.3755 | 6.201 |
| Phase IV | 10/30/99 12:00 AM | 10/30/99 1:00 AM | No | 1267 | 8.3505 | | | 12.555 | 1.05025 | | 10.275 | 6.226 |
| Phase IV | 10/30/99 1:00 AM | 10/30/99 2:00 AM | No | 1267 | 7.5755 | | | 13.329 | 0.966 | | 11.95 | 8.32525 |
| Phase IV | 10/30/99 2:00 AM | 10/30/99 3:00 AM | No | 1267 | 11.8255 | | | 12.2225 | 0.91725 | | 24.95 | 9.37525 |
| Phase IV | 10/30/99 3:00 AM | 10/30/99 4:00 AM | No | 1267 | 8.9255 | | | 12.88 | 1.278 | | 11.25025 | 8.451 |
| Phase IV | 10/30/99 4:00 AM | 10/30/99 5:00 AM | No | 1267 | 9.95025 | | | 11.674 | 1.04075 | | 11.52525 | 7.80075 |
| Phase IV | 10/30/99 5:00 AM | 10/30/99 6:00 AM | No | 1267 | 7.5505 | | | 11.743 | 0.90625 | | 11.925 | 4.651 |
| Phase IV | 10/30/99 6:00 AM | 10/30/99 7:00 AM | No | 1267 | 11.65075 | | | 12.55675 | 0.90775 | | 10.425 | 6.50075 |
| Phase IV | 10/30/99 7:00 AM | 10/30/99 8:00 AM | Yes | 1267 | 12.175 | | | 12.3335 | 0.931 | | 8.5255 | 6.801 |
| Phase IV | 10/30/99 8:00 AM | 10/30/99 9:00 AM | Yes | 1267 | 10.0505 | | | 12.7035 | 0.9365 | | 9.50025 | 6.85025 |
| Phase IV | 10/30/99 9:00 AM | 10/30/99 10:00 AM | Yes | 1267 | 10.07575 | | | 13.56425 | 0.985 | | 8.8255 | 7.87575 |
| Phase IV | 10/30/99 10:00 AM | 10/30/99 11:00 AM | Yes | 1267 | 8.5505 | | | 14.32025 | 1.2395 | | 9.97525 | 10.325 |
| Phase IV | 10/30/99 11:00 AM | 10/30/99 12:00 PM | Yes | 1267 | 8.0005 | | | 16.453 | 1.042 | | 9.3755 | 10.3255 |
| Phase IV | 10/30/99 12:00 PM | 10/30/99 1:00 PM | Yes | 1267 | 10.4255 | | | 17.0325 | 1.02225 | | 8.8255 | 10.85025 |
| Phase IV | 10/30/99 1:00 PM | 10/30/99 2:00 PM | Yes | 1267 | 10.3005 | | | 21.258 | 1.014 | | 11.325 | 13.40025 |
| Phase IV | 10/30/99 2:00 PM | 10/30/99 3:00 PM | Yes | 1267 | 12.25025 | | | 17.934 | 1.15675 | | 10.20025 | 11.6005 |
| Phase IV | 10/30/99 3:00 PM | 10/30/99 4:00 PM | Yes | 1267 | 14.00025 | | | 19.98625 | 1.0215 | | 10.4005 | 18.92525 |
| Phase IV | 10/30/99 4:00 PM | 10/30/99 5:00 PM | Yes | 1267 | 9.17575 | | | 16.30475 | 0.955 | | 10.42525 | 20.95 |
| Phase IV | 10/30/99 5:00 PM | 10/30/99 6:00 PM | Yes | 1267 | 11.97525 | | | 13.82925 | 1.007 | | 11.4 | 10.4005 |
| Phase IV | 10/30/99 6:00 PM | 10/30/99 7:00 PM | Yes | 1267 | 10.0255 | | | 14.9855 | 0.946 | | 10.2255 | 9.2255 |
| Phase IV | 10/30/99 7:00 PM | 10/30/99 8:00 PM | No | 1267 | 8.82525 | | | 15.76825 | 1.046 | | 11.90025 | 7.52525 |
| Phase IV | 10/30/99 8:00 PM | 10/30/99 9:00 PM | No | 1267 | 10.401 | | | 16.80625 | 0.94575 | | 10.725 | 9.8005 |
| Phase IV | 10/30/99 9:00 PM | 10/30/99 10:00 PM | No | 1267 | 11.9255 | | | 14.436 | 0.92525 | | 11.15 | 11.20025 |
| Phase IV | 10/30/99 10:00 PM | 10/30/99 11:00 PM | No | 1267 | 11.4005 | | | 12.56425 | 0.89475 | | 15.65 | 11.27525 |
| Phase IV | 10/30/99 11:00 PM | 10/31/99 12:00 AM | No | 1267 | 8.80075 | | | 12.094 | 0.89325 | | 11.4 | 8.57575 |
| Phase IV | 10/31/99 12:00 AM | 10/31/99 1:00 AM | No | 1412 | 9.55025 | | | 14.2095 | 0.961 | | 10.9 | 4.1505 |
| Phase IV | 10/31/99 1:00 AM | 10/31/99 2:00 AM | No | 1412 | 8.42525 | | | 12.63225 | 0.90175 | | 12.3255 | 5.60075 |
| Phase IV | 10/31/99 2:00 AM | 10/31/99 3:00 AM | No | 1412 | 11.3255 | | | 13.13125 | 0.8875 | | 17.275 | 27.4505 |
| Phase IV | 10/31/99 3:00 AM | 10/31/99 4:00 AM | No | 1412 | 10.00075 | | | 14.56375 | 0.9695 | | 10.35025 | 3.77575 |
| Phase IV | 10/31/99 4:00 AM | 10/31/99 5:00 AM | No | 1412 | 9.70025 | | | 15.7585 | 0.9225 | | 10.27525 | 6.9755 |
| Phase IV | 10/31/99 5:00 AM | 10/31/99 6:00 AM | No | 1412 | 10.65 | | | 13.67375 | 1.03625 | | 17.35 | 6.82575 |
| Phase IV | 10/31/99 6:00 AM | 10/31/99 7:00 AM | No | 1412 | 10.57525 | | | 14.489 | 1.005 | | 10.225 | 5.52575 |
| Phase IV | 10/31/99 7:00 AM | 10/31/99 8:00 AM | No | 1412 | 11.02525 | | | 14.95625 | 0.93525 | | 10.57575 | 5.7255 |
| Phase IV | 10/31/99 8:00 AM | 10/31/99 9:00 AM | No | 1412 | 9.7255 | | | 15.4155 | 0.941 | | 18.00025 | 5.1505 |
| Phase IV | 10/31/99 9:00 AM | 10/31/99 10:00 AM | No | 1412 | 10.2005 | | | 18.1745 | 0.909 | | 29.7255 | 5.17575 |
| Phase IV | 10/31/99 10:00 AM | 10/31/99 11:00 AM | No | 1412 | 11.60025 | | | 19.32925 | 0.94675 | | 10.75025 | 6.2005 |
| Phase IV | 10/31/99 11:00 AM | 10/31/99 12:00 PM | No | 1412 | 11.95075 | | | 20.7715 | 1.17825 | | 37.12525 | 8.3005 |
| Phase IV | 10/31/99 12:00 PM | 10/31/99 1:00 PM | No | 1412 | 8.8255 | | | 17.178 | 0.93925 | | 12.175 | 7.451 |
| Phase IV | 10/31/99 1:00 PM | 10/31/99 2:00 PM | No | 1412 | 13.60025 | | | 16.6805 | 1.0465 | | 15.20025 | 5.476 |
| Phase IV | 10/31/99 2:00 PM | 10/31/99 3:00 PM | No | 1412 | 9.2755 | | | 21.3765 | 0.97175 | | 24.4505 | 5.82575 |
| Phase IV | 10/31/99 3:00 PM | 10/31/99 4:00 PM | No | 1412 | 12.25025 | | | 20.433 | 0.98225 | | 12.1005 | 6.6505 |
| Phase IV | 10/31/99 4:00 PM | 10/31/99 5:00 PM | No | 1412 | 10.375 | | | 21.42675 | 1.14275 | | 12.0755 | 6.826 |
| Phase IV | 10/31/99 5:00 PM | 10/31/99 6:00 PM | No | 1412 | 13.10025 | | | 19.23925 | 1.01125 | | 28.4505 | 7.8755 |
| Phase IV | 10/31/99 6:00 PM | 10/31/99 7:00 PM | No | 1412 | 10.3 | | | 19.60025 | 1.0015 | | 37.42575 | 10.4255 |
| Phase IV | 10/31/99 7:00 PM | 10/31/99 8:00 PM | No | 1412 | 10.10025 | | | 20.04575 | 0.99425 | | 32.70025 | 10.10025 |
| Phase IV | 10/31/99 8:00 PM | 10/31/99 9:00 PM | No | 1412 | 8.15075 | | | 16.65 | 0.99 | | 87.4505 | 4.10075 |
| Phase IV | 10/31/99 9:00 PM | 10/31/99 10:00 PM | No | 1412 | 8.55075 | | | 17.0325 | 1.092 | | 13.67525 | 5.6505 |
| Phase IV | 10/31/99 10:00 PM | 10/31/99 11:00 PM | No | 1412 | 8.5005 | | | 18.06925 | 1.019 | | 32.25025 | 6.05 |
| Phase IV | 10/31/99 11:00 PM | 11/1/99 12:00 AM | No | 1412 | 10.97525 | | | 18.8445 | 0.96625 | | 57.25075 | 5.501 |
| Phase IV | 11/1/99 12:00 AM | 11/1/99 1:00 AM | No | | 12.025 | | | 17.53025 | 0.989 | | 10.25 | 7.95075 |
| Phase IV | 11/1/99 1:00 AM | 11/1/99 2:00 AM | No | | 10.70025 | | | 16.53375 | 1.1135 | | 24.72575 | 6.201 |
| Phase IV | 11/1/99 2:00 AM | 11/1/99 3:00 AM | No | | 10.45 | | | 16.8925 | 1.138 | | 14.875 | 6.676 |
| Phase IV | 11/1/99 3:00 AM | 11/1/99 4:00 AM | No | | 10.97525 | | | 17.9885 | 1.06425 | | 37.42575 | 4.601 |
| Phase IV | 11/1/99 4:00 AM | 11/1/99 5:00 AM | No | | 9.07575 | | | 17.76175 | 1.07075 | | 12.4 | 5.70075 |
| Phase IV | 11/1/99 5:00 AM | 11/1/99 6:00 AM | No | | 12.15025 | | | 16.90625 | 0.9405 | | 11.6005 | 5.1505 |
| Phase IV | 11/1/99 6:00 AM | 11/1/99 7:00 AM | No | | 9.8505 | | | 17.02275 | 0.939 | | 11.62525 | 5.65075 |
| Phase IV | 11/1/99 7:00 AM | 11/1/99 8:00 AM | No | | 11.05 | | | 17.9785 | 1.007 | | 11.7 | 11.30075 |
| Phase IV | 11/1/99 8:00 AM | 11/1/99 9:00 AM | Yes | | 9.80025 | | | 17.9865 | 1.01025 | | 48.9005 | 5.15075 |
| Phase IV | 11/1/99 9:00 AM | 11/1/99 10:00 AM | Yes | | 13.17525 | | | 18.6925 | 1.0005 | | 12.30025 | 10.05025 |
| Phase IV | 11/1/99 10:00 AM | 11/1/99 11:00 AM | Yes | | 10.45025 | | | 19.0215 | 1.0585 | | 10.45 | 11.5005 |
| Phase IV | 11/1/99 11:00 AM | 11/1/99 12:00 PM | No | | 8.90025 | | | 20.98025 | 1.0775 | | 9.2755 | 17.10025 |
| Phase IV | 11/1/99 12:00 PM | 11/1/99 1:00 PM | Yes | | 10.72525 | | | 19.538 | 1.134 | | 9.27525 | 15.07525 |
| Phase IV | 11/1/99 1:00 PM | 11/1/99 2:00 PM | Yes | | 8.87525 | | | 18.30175 | 1.05075 | | 9.9755 | 29.175 |
| Phase IV | 11/1/99 2:00 PM | 11/1/99 3:00 PM | Yes | | 8.7005 | | | 18.008 | 1.13525 | | 8.6255 | 18.525 |
| Phase IV | 11/1/99 3:00 PM | 11/1/99 4:00 PM | Yes | | 8.67525 | | | 16.4015 | 1.01425 | | 9.15075 | 11.9 |
| Phase IV | 11/1/99 4:00 PM | 11/1/99 5:00 PM | Yes | | 9.75 | | | 8.949 | 1.249 | | 13.725 | 12.9 |
| Phase IV | 11/1/99 5:00 PM | 11/1/99 6:00 PM | No | | 9.65025 | | | 10.3535 | 1.43625 | | 18.051 | 11.80025 |
| Phase IV | 11/1/99 6:00 PM | 11/1/99 7:00 PM | No | | 13.1005 | | | 10.3775 | 1.03025 | | 14.2255 | 13.475 |
| Phase IV | 11/1/99 7:00 PM | 11/1/99 8:00 PM | No | | 8.6255 | | | 9.997 | 1.0305 | | 13.45025 | 14.3255 |
| Phase IV | 11/1/99 8:00 PM | 11/1/99 9:00 PM | No | | 8.72575 | | | 10.5985 | 1.28475 | | 9.37575 | 13.97525 |
| Phase IV | 11/1/99 9:00 PM | 11/1/99 10:00 PM | No | | 10.75025 | | | 9.792 | 1.344 | | 11.525 | 14.42525 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase IV | 11/1/99 10:00 PM | 11/1/99 11:00 PM | No | | 529.2755 | | | 9.91625 | 1.45225 | | 12.075 | 14 |
| Phase IV | 11/1/99 11:00 PM | 11/2/99 12:00 AM | No | | 358.7258 | | | 9.98975 | 1.478 | | 9.47525 | 11.7255 |
| Phase IV | 11/2/99 12:00 AM | 11/2/99 1:00 AM | No | | 9.775 | | | 10.8055 | 1.443 | | 9.45025 | 10 |
| Phase IV | 11/2/99 1:00 AM | 11/2/99 2:00 AM | No | | 9.575 | | | 9.97225 | 1.5215 | | 10.5255 | 12.02525 |
| Phase IV | 11/2/99 2:00 AM | 11/2/99 3:00 AM | No | | 14.40025 | | | 9.5295 | 1.53025 | | 9.9755 | 8.4005 |
| Phase IV | 11/2/99 3:00 AM | 11/2/99 4:00 AM | No | | 9.3255 | | | 11.43425 | 1.57675 | | 11.7 | 22.6755 |
| Phase IV | 11/2/99 4:00 AM | 11/2/99 5:00 AM | No | | 6.9255 | | | 9.7595 | 1.77875 | | 9.80025 | 10.3505 |
| Phase IV | 11/2/99 5:00 AM | 11/2/99 6:00 AM | No | | 6.576 | | | 9.32325 | 1.7405 | | 9.375 | 6.4505 |
| Phase IV | 11/2/99 6:00 AM | 11/2/99 7:00 AM | No | | 7.7005 | | | 9.78075 | 1.43825 | | 10.75025 | 8.5005 |
| Phase IV | 11/2/99 7:00 AM | 11/2/99 8:00 AM | Yes | | 10.37525 | | | 9.9405 | 1.85925 | | 8.92525 | |
| Phase IV | 11/2/99 8:00 AM | 11/2/99 9:00 AM | Yes | | 6.32575 | | | 10.131 | 1.79525 | | 10.9 | |
| Phase IV | 11/2/99 9:00 AM | 11/2/99 10:00 AM | Yes | | 10.15025 | | | 10.661 | 1.64125 | | 9.9255 | 9.266667 |
| Phase IV | 11/2/99 10:00 AM | 11/2/99 11:00 AM | Yes | | 8.1005 | | | 9.53025 | 1.39525 | | 12.1 | 9.12525 |
| Phase IV | 11/2/99 11:00 AM | 11/2/99 12:00 PM | Yes | | 9.0505 | | | 9.171 | 1.48275 | | 13.05 | 9.00075 |
| Phase IV | 11/2/99 12:00 PM | 11/2/99 1:00 PM | Yes | | 10.30025 | | | 10.4385 | 1.49175 | | 8.77575 | 5.75075 |
| Phase IV | 11/2/99 1:00 PM | 11/2/99 2:00 PM | No | | 8.1505 | | | 10.381 | 1.47075 | | 11.70075 | 8.82575 |
| Phase IV | 11/2/99 2:00 PM | 11/2/99 3:00 PM | Yes | | | | | 11.61425 | 1.646 | | 9.47575 | 8.55025 |
| Phase IV | 11/2/99 3:00 PM | 11/2/99 4:00 PM | Yes | | | | | 10.356 | 28.15425 | | 9.15025 | 10.72525 |
| Phase IV | 11/2/99 4:00 PM | 11/2/99 5:00 PM | No | | | | | 10.278 | 1.4435 | | 10.7505 | 7.27575 |
| Phase IV | 11/2/99 5:00 PM | 11/2/99 6:00 PM | Yes | | 7.7005 | | | 10.83975 | 1.468 | | 11.57525 | |
| Phase IV | 11/2/99 6:00 PM | 11/2/99 7:00 PM | Yes | | 9.2755 | | | 10.37525 | 1.3595 | | 11.65025 | |
| Phase IV | 11/2/99 7:00 PM | 11/2/99 8:00 PM | No | | 10.27525 | | | 9.27425 | 1.3895 | | 11.37525 | |
| Phase IV | 11/2/99 8:00 PM | 11/2/99 9:00 PM | No | | 9.5755 | | | 9.867 | 1.5665 | | 12.4 | |
| Phase IV | 11/2/99 9:00 PM | 11/2/99 10:00 PM | No | | 12.4005 | | | 10.581 | 1.38625 | | 8.8755 | |
| Phase IV | 11/2/99 10:00 PM | 11/2/99 11:00 PM | No | | 13.52575 | | | 8.99675 | 1.323 | | 12.2255 | |
| Phase IV | 11/2/99 11:00 PM | 11/3/99 12:00 AM | No | | 16.37525 | | | 8.299 | 1.3245 | | 13.52525 | |
| Phase IV | 11/3/99 12:00 AM | 11/3/99 1:00 AM | No | | 8.8755 | | | 8.20875 | 1.423 | | 11.95025 | |
| Phase IV | 11/3/99 1:00 AM | 11/3/99 2:00 AM | No | | 9.62525 | | | 9.15925 | 1.462 | | 10.85025 | |
| Phase IV | 11/3/99 2:00 AM | 11/3/99 3:00 AM | No | | 9.97525 | | | 8.037 | 1.451 | | 11.60025 | |
| Phase IV | 11/3/99 3:00 AM | 11/3/99 4:00 AM | No | | 10.12525 | | | 9.27775 | 1.44925 | | 16.3505 | |
| Phase IV | 11/3/99 4:00 AM | 11/3/99 5:00 AM | No | | 7.9255 | | | 8.018 | 1.43125 | | 9.1005 | |
| Phase IV | 11/3/99 5:00 AM | 11/3/99 6:00 AM | No | | 11.775 | | | 7.75875 | 1.52325 | | 12.42525 | |
| Phase IV | 11/3/99 6:00 AM | 11/3/99 7:00 AM | No | | 7.9255 | | | 7.461 | 1.4125 | | 15.05025 | |
| Phase IV | 11/3/99 7:00 AM | 11/3/99 8:00 AM | Yes | | 8.8505 | | | 6.98175 | 1.46275 | | 11.90075 | 10.20067 |
| Phase IV | 11/3/99 8:00 AM | 11/3/99 9:00 AM | Yes | | 9.0755 | | | 8.1735 | 1.3915 | | 15.67525 | 6.7505 |
| Phase IV | 11/3/99 9:00 AM | 11/3/99 10:00 AM | No | | 9.9505 | | | 8.5 | 1.447 | | 13.0255 | 4.701 |
| Phase IV | 11/3/99 10:00 AM | 11/3/99 11:00 AM | No | | 8.6505 | | | 8.69475 | 1.49625 | | 11.2755 | 4.476 |
| Phase IV | 11/3/99 11:00 AM | 11/3/99 12:00 PM | Yes | | 8.6755 | | | 8.3085 | 1.5015 | | 22.55025 | 2.87525 |
| Phase IV | 11/3/99 12:00 PM | 11/3/99 1:00 PM | No | | 9.42525 | | | 7.8835 | 1.601 | | 13.0755 | 5.62575 |
| Phase IV | 11/3/99 1:00 PM | 11/3/99 2:00 PM | Yes | | 8.951 | | | 8.58375 | 1.8945 | | 13.45025 | 6.4005 |
| Phase IV | 11/3/99 2:00 PM | 11/3/99 3:00 PM | Yes | | 9.90025 | | | 8.9695 | 1.95375 | | 11.80025 | 3.70075 |
| Phase IV | 11/3/99 3:00 PM | 11/3/99 4:00 PM | No | | 9.67525 | | | 8.39675 | 2.045 | | 22.775 | 3.7005 |
| Phase IV | 11/3/99 4:00 PM | 11/3/99 5:00 PM | Yes | | 7.9005 | | | 8.93475 | 2.44875 | | 10.12525 | 4.77575 |
| Phase IV | 11/3/99 5:00 PM | 11/3/99 6:00 PM | No | | 10.67525 | | | 8.552 | 2.25075 | | 10.201 | 6.7755 |
| Phase IV | 11/3/99 6:00 PM | 11/3/99 7:00 PM | No | | 8.7755 | | | 8.299 | 2.09475 | | 6.95075 | 3.35075 |
| Phase IV | 11/3/99 7:00 PM | 11/3/99 8:00 PM | No | | 9.45025 | | | 8.17125 | 2.15875 | | 8.17575 | 3.37575 |
| Phase IV | 11/3/99 8:00 PM | 11/3/99 9:00 PM | No | | 9.7005 | | | 7.597 | 2.498 | | 10.37575 | 2.15025 |
| Phase IV | 11/3/99 9:00 PM | 11/3/99 10:00 PM | No | | 10.15025 | | | 6.89025 | 2.45525 | | 6.801 | 3.0755 |
| Phase IV | 11/3/99 10:00 PM | 11/3/99 11:00 PM | No | | 11 | | | 7.7295 | 2.32675 | | 6.60075 | 3.40025 |
| Phase IV | 11/3/99 11:00 PM | 11/4/99 12:00 AM | No | | 9.675 | | | 7.89425 | 2.364 | | 5.701 | 1.525 |
| Phase IV | 11/4/99 12:00 AM | 11/4/99 1:00 AM | No | | 8.52525 | | | 8.18375 | 2.354 | | 7.60025 | 1.825 |
| Phase IV | 11/4/99 1:00 AM | 11/4/99 2:00 AM | No | | 9.57525 | | | 7.834 | 2.31275 | | 9.75025 | 25.1505 |
| Phase IV | 11/4/99 2:00 AM | 11/4/99 3:00 AM | No | | 9.90025 | | | 8.15025 | 2.68075 | | 4.776 | 2.05025 |
| Phase IV | 11/4/99 3:00 AM | 11/4/99 4:00 AM | No | | 10.02525 | | | 7.5695 | 2.32725 | | 8.0505 | 2.12525 |
| Phase IV | 11/4/99 4:00 AM | 11/4/99 5:00 AM | No | | 10 | | | 7.485 | 2.22525 | | 6.20075 | 3.3755 |
| Phase IV | 11/4/99 5:00 AM | 11/4/99 6:00 AM | No | | 8.95 | | | 7.456 | 2.35575 | | 7.2505 | 4.47575 |
| Phase IV | 11/4/99 6:00 AM | 11/4/99 7:00 AM | No | | 9.675 | | | 7.733 | 2.2785 | | 5.126 | 3.8505 |
| | 11/4/99 7:00 AM | 11/4/99 8:00 AM | No | | 10.17525 | | | 8.7455 | 2.34425 | | 5.57575 | 3.80075 |
| | 11/4/99 8:00 AM | 11/4/99 9:00 AM | No | | 12.2755 | | | 11.5675 | 2.4595 | | 5.676 | 5.0255 |
| | 11/4/99 9:00 AM | 11/4/99 10:00 AM | No | | 11.37575 | | | 9.39725 | 1.93225 | | 8.92525 | 4.0755 |
| | 11/4/99 10:00 AM | 11/4/99 11:00 AM | No | | 11.2 | | | 9.57325 | 2.415 | | 8.601 | 6.226 |
| | 11/4/99 11:00 AM | 11/4/99 12:00 PM | No | | 12.25025 | | | 8.46075 | 3.01975 | | 6.651 | 2.35025 |
| | 11/4/99 12:00 PM | 11/4/99 1:00 PM | No | | 9.1505 | | | 10.48425 | 3.25775 | | 6.801 | 2.77525 |
| | 11/4/99 1:00 PM | 11/4/99 2:00 PM | No | | 10.02525 | | | 10.9405 | 3.57375 | | 7.5005 | 3.05075 |
| | 11/4/99 2:00 PM | 11/4/99 3:00 PM | No | | 9.95 | | | 10.202 | 3.11475 | | 7.30075 | 4.5755 |
| | 11/4/99 3:00 PM | 11/4/99 4:00 PM | No | | 10.6255 | | | 10.62275 | 3.597 | | 6.201 | 2.75075 |
| | 11/4/99 4:00 PM | 11/4/99 5:00 PM | No | | 8.97525 | | | 13.07575 | 3.29 | | 7.6005 | 5.276 |
| | 11/4/99 5:00 PM | 11/4/99 6:00 PM | No | | 9.22525 | | | 11.23425 | 31.98625 | | 7.35075 | 4.95075 |
| | 11/4/99 6:00 PM | 11/4/99 7:00 PM | No | | 9.07525 | | | 10.70625 | 26.5375 | | 6.326 | 3.476 |
| | 11/4/99 7:00 PM | 11/4/99 8:00 PM | No | | 9.27525 | | | 11.34825 | 1.67325 | | 6.97575 | 4.7255 |
| | 11/4/99 8:00 PM | 11/4/99 9:00 PM | No | | 8.7755 | | | 8.33725 | 1.81025 | | 8.05075 | 4.601 |
| | 11/4/99 9:00 PM | 11/4/99 10:00 PM | No | | 11.0005 | | | 7.9515 | 1.59625 | | 6.601 | 7.62575 |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

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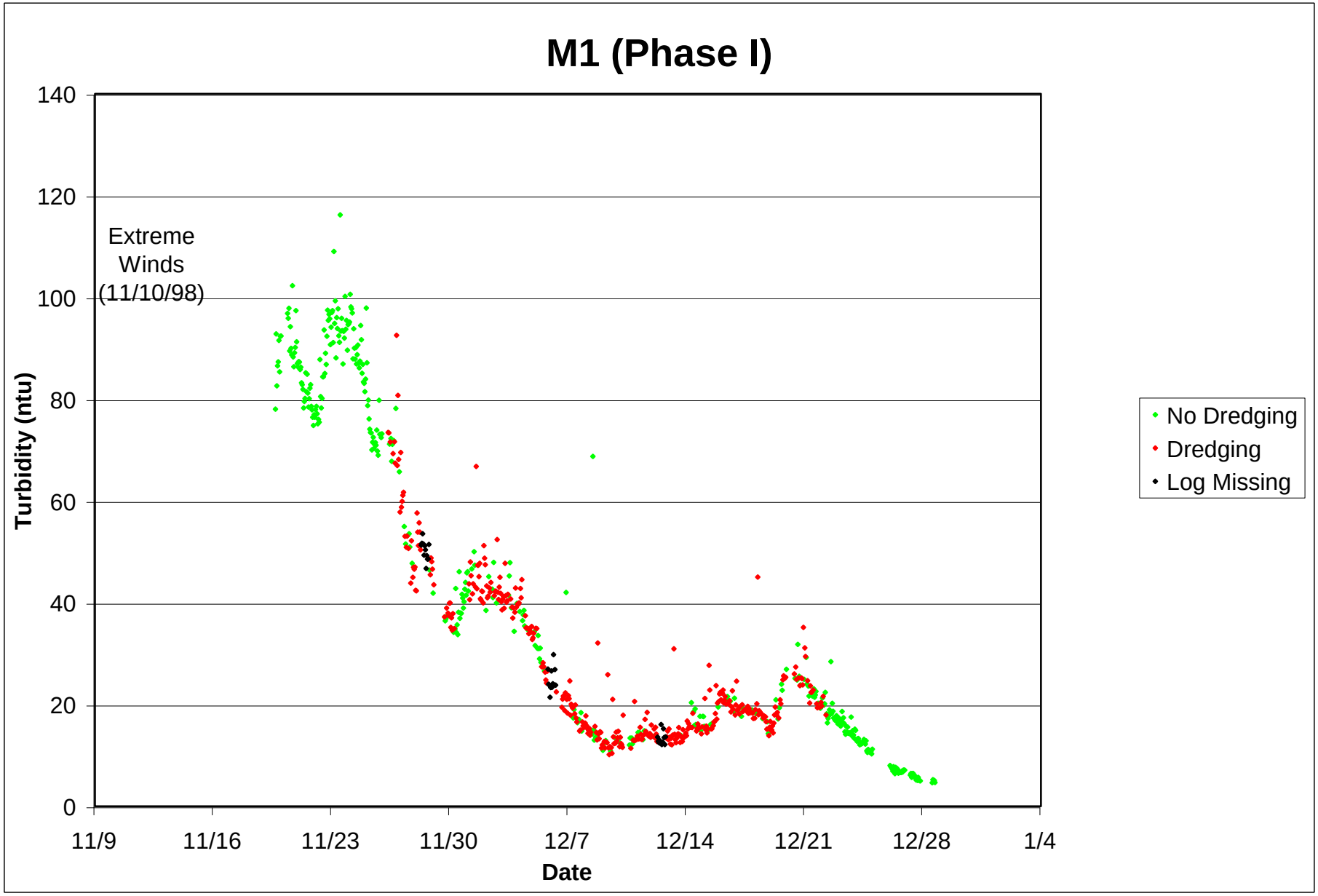
# Turbidity and Flow Results

| Phase | Time Period Beginning | Ending | Dredging(1) | Flow(2) (cfs) | m1(3) | m2(3) | m3(3) | m4(3) | m5(3) | m6(3) | m7(3) | m8(3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11/4/99 10:00 PM | 11/4/99 11:00 PM | No | | 9.52525 | | | 7.3985 | 1.4455 | | 7.27575 | 5.87575 |
| | 11/4/99 11:00 PM | 11/5/99 12:00 AM | No | | 9.225 | | | 7.742 | 1.476 | | 6.4005 | 4.676 |
| | 11/5/99 12:00 AM | 11/5/99 1:00 AM | No | | 11.05075 | | | 7.2075 | 1.39675 | | 6.32575 | 5.701 |
| | 11/5/99 1:00 AM | 11/5/99 2:00 AM | No | | 12.25025 | | | 7.28025 | 1.357 | | 5.851 | 2.60025 |
| | 11/5/99 2:00 AM | 11/5/99 3:00 AM | No | | 10.775 | | | 7.44125 | 1.39875 | | 5.376 | 5.376 |
| | 11/5/99 3:00 AM | 11/5/99 4:00 AM | No | | 11.62575 | | | 7.162 | 1.5395 | | 7.8005 | 4.17575 |
| | 11/5/99 4:00 AM | 11/5/99 5:00 AM | No | | 9.5 | | | 6.93975 | 1.63 | | 4.37575 | 3.65075 |
| | 11/5/99 5:00 AM | 11/5/99 6:00 AM | No | | 10.325 | | | 6.753 | 1.49075 | | 6.976 | 4.9005 |
| | 11/5/99 6:00 AM | 11/5/99 7:00 AM | No | | 8.97525 | | | 6.54125 | 1.3775 | | 7.2255 | 2.3005 |
| | 11/5/99 7:00 AM | 11/5/99 8:00 AM | No | | 9.27525 | | | 7.49825 | 1.36525 | | 4.3005 | 4.701 |
| | 11/5/99 8:00 AM | 11/5/99 9:00 AM | No | | 12.76667 | | | 8.96375 | 1.36225 | | 6.22575 | 11.6755 |
| | 11/5/99 9:00 AM | 11/5/99 10:00 AM | No | | 110.5677 | | | 9.94775 | 1.47625 | | 119.601 | 29.15025 |
| | 11/5/99 10:00 AM | 11/5/99 11:00 AM | No | | | | | 9.37175 | 1.52275 | | | 17.5 |
| | 11/5/99 11:00 AM | 11/5/99 12:00 PM | No | | | | | 12.49433 | 1.4535 | | | |

(1) Indicates dredging during time period.
(2) Obtained from Interlake Paper Co.
(3) Average of turbidity results taken during time period.

# Appendix I

# Phase I Turbidity Trend Graphs

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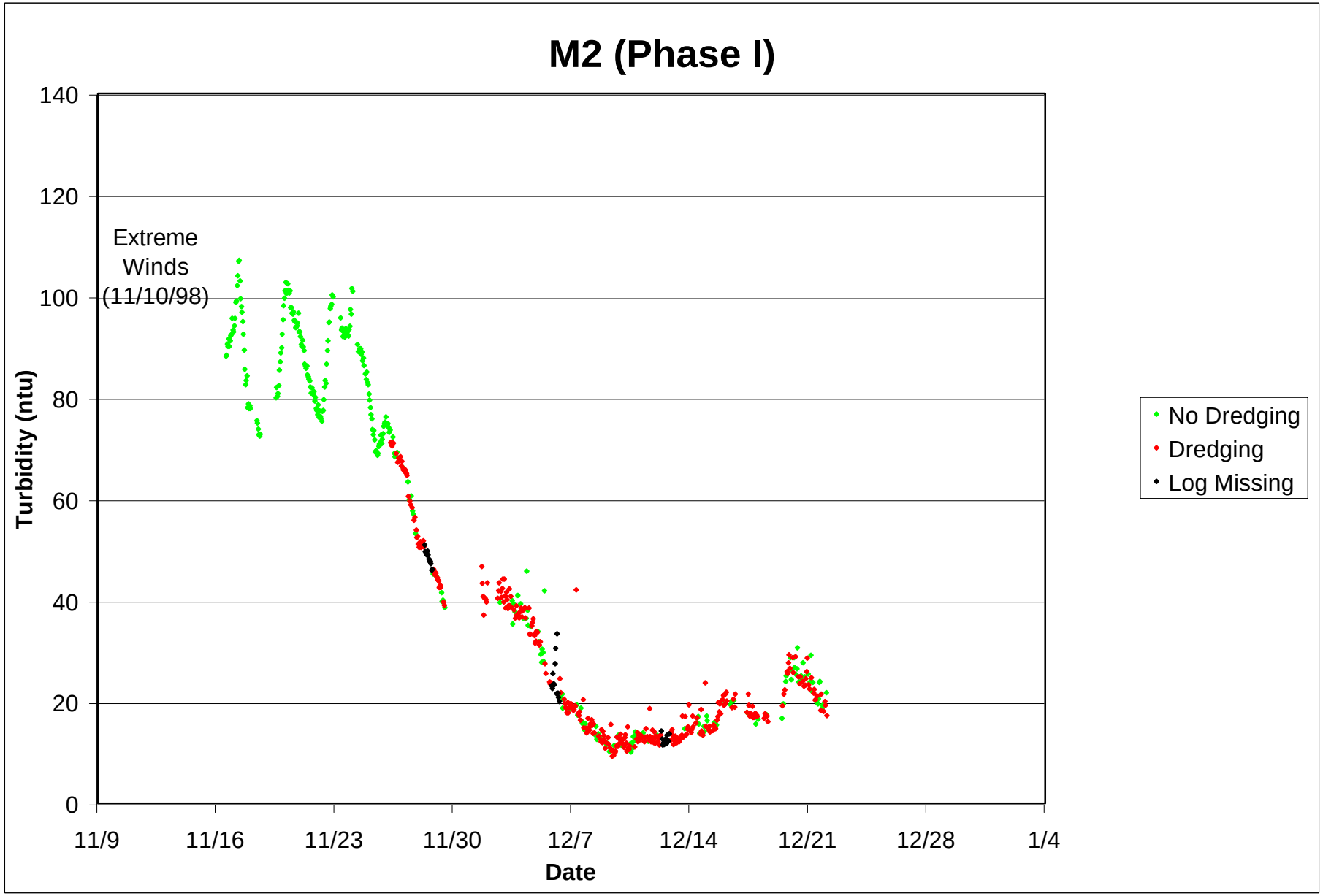


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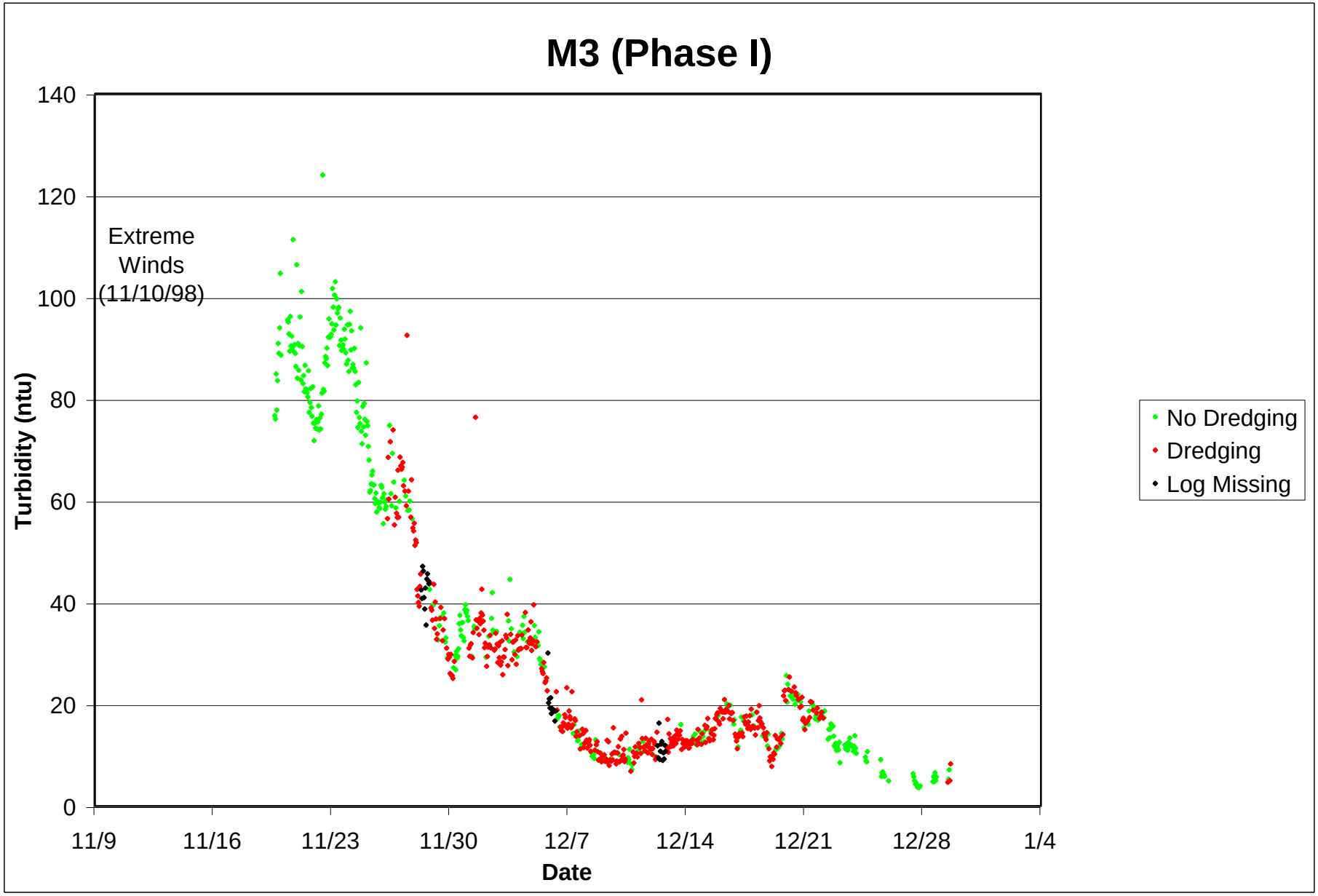


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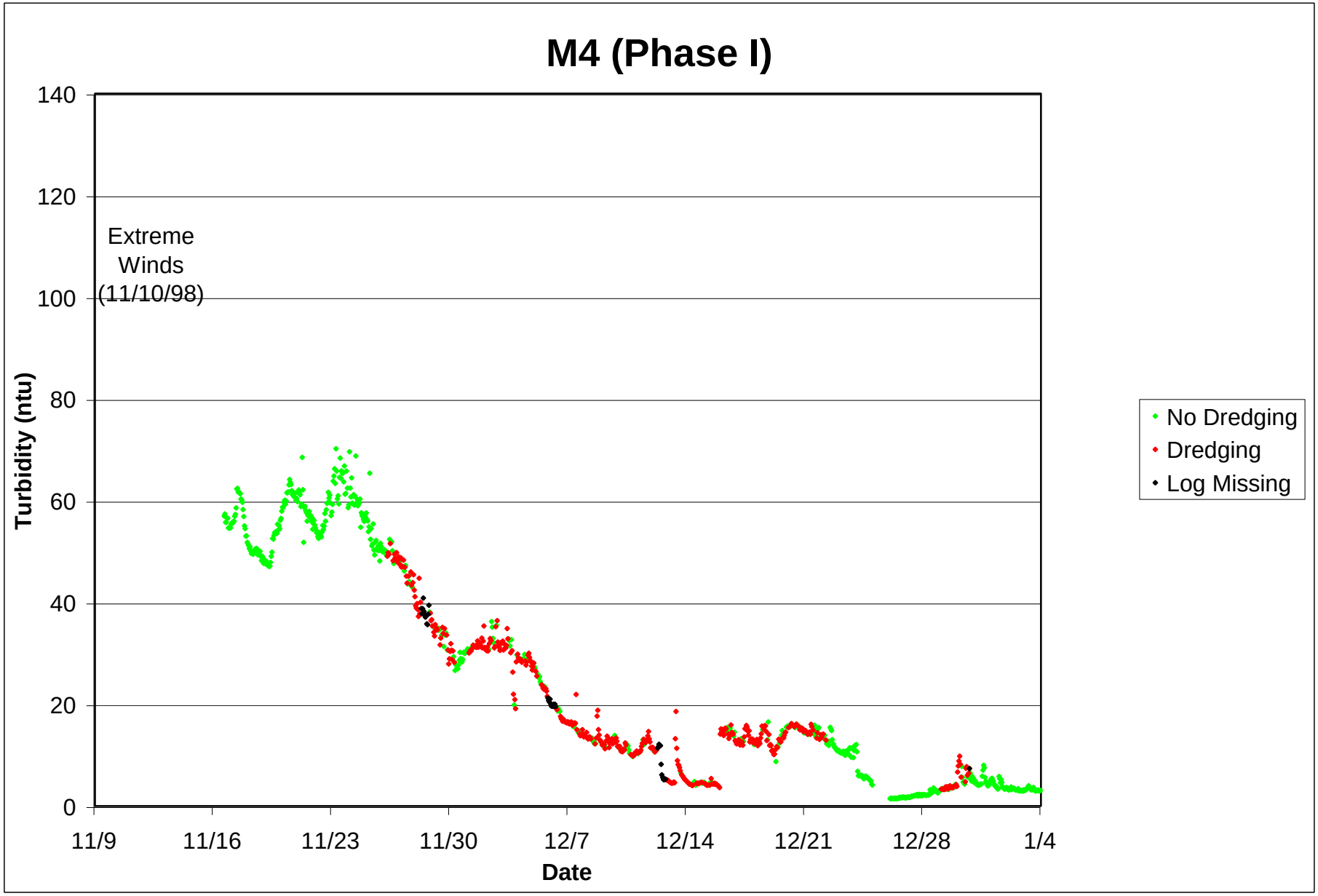


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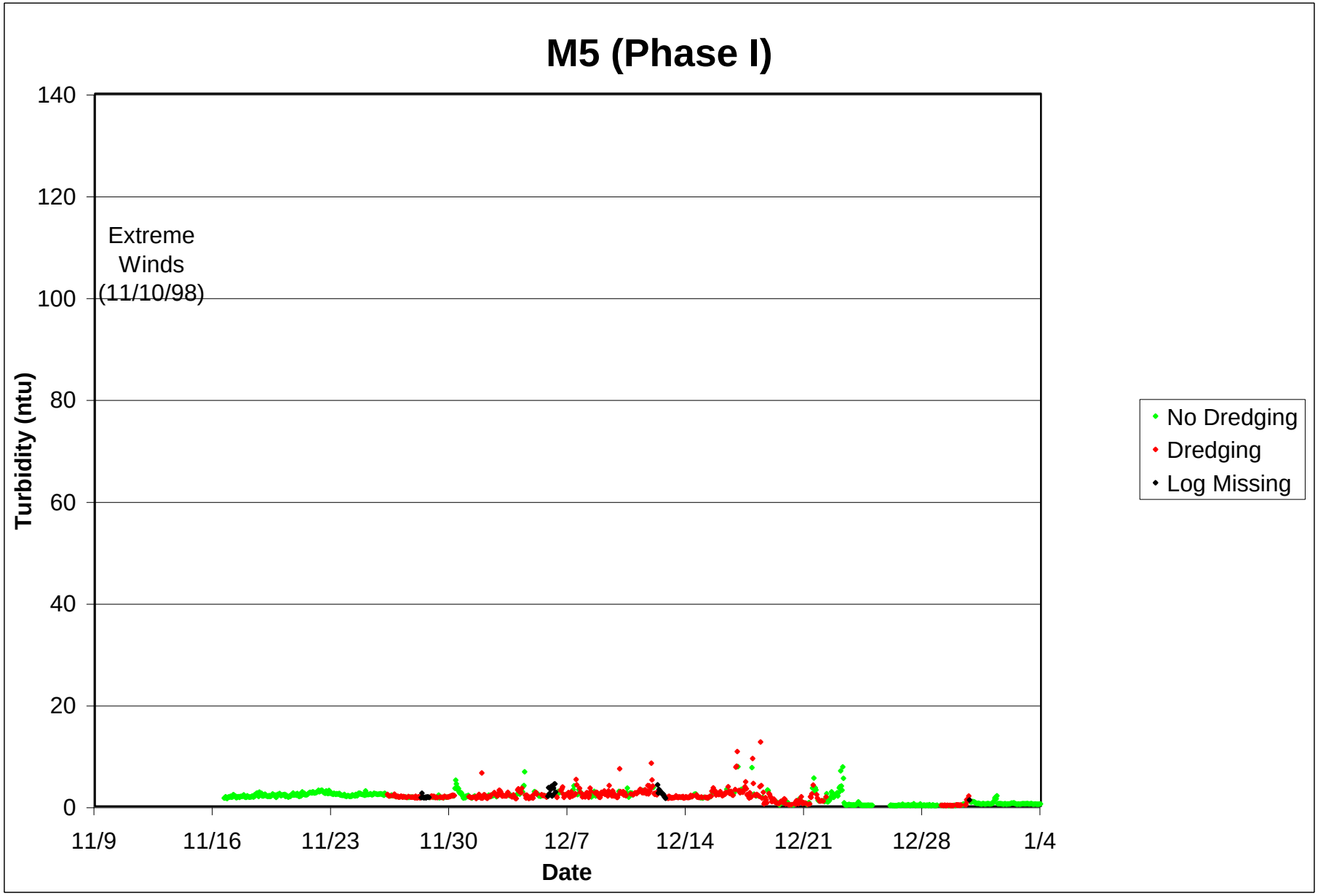


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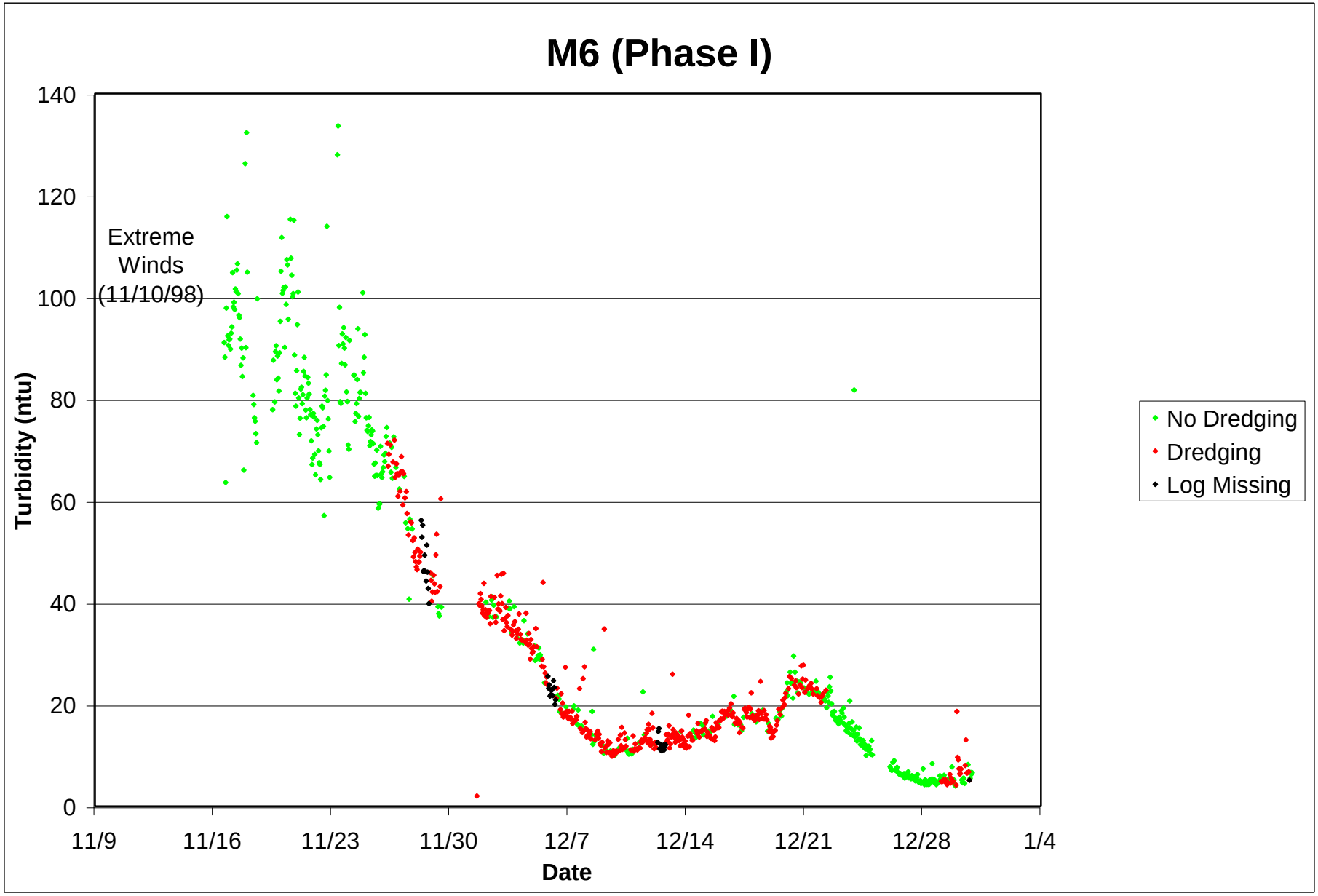


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# Appendix J

# Phase I Statistical Analysis

Phase I
t-Test: Paired Two Sample for Means - All Data

| | *m2* | *m1* |
|---|---|---|
| Mean | 26.21757 | 27.06052 |
| Variance | 249.154 | 248.6894 |
| Observations | 460 | 460 |
| Pearson Correlation | 0.955796 | |
| Hypothesized Mean Difference | 0 | |
| df | 459 | |
| t Stat | -3.853914 | |
| P(T<=t) one-tail | 6.64E-05 | |
| t Critical one-tail | 1.648179 | |
| P(T<=t) two-tail | 0.000133 | |
| t Critical two-tail | 1.965145 | |

Phase I
t-Test: Paired Two Sample for Means - No Dredging

| | *m2* | *m1* |
|---|---|---|
| Mean | 27.25507 | 28.11875 |
| Variance | 267.3076 | 269.2836 |
| Observations | 109 | 109 |
| Pearson Correlation | 0.916457 | |
| Hypothesized Mean Difference | 0 | |
| df | 108 | |
| t Stat | -1.346707 | |
| P(T<=t) one-tail | 0.090447 | |
| t Critical one-tail | 1.659087 | |
| P(T<=t) two-tail | 0.180894 | |
| t Critical two-tail | 1.982171 | |

Phase I
t-Test: Paired Two Sample for Means - Dredging

| | *m2* | *m1* |
|---|---|---|
| Mean | 25.59823 | 26.41962 |
| Variance | 244.7066 | 241.6967 |
| Observations | 315 | 315 |
| Pearson Correlation | 0.967017 | |
| Hypothesized Mean Difference | 0 | |
| df | 314 | |
| t Stat | -3.638668 | |
| P(T<=t) one-tail | 0.00016 | |
| t Critical one-tail | 1.649721 | |
| P(T<=t) two-tail | 0.00032 | |
| t Critical two-tail | 1.967546 | |

Regression Analysis: M2 (Phase I)
SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.713902611 |
| R Square | 0.509656937 |
| Adjusted R Square | 0.507520366 |
| Standard Error | 10.97317064 |
| Observations | 462 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 57445.34687 | 28722.67 | 238.5397 | 9.32735E-72 |
| Residual | 459 | 55268.40753 | 120.4105 | | |
| Total | 461 | 112713.7544 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 55501.85101 | 2542.1277 | 21.83283 | 5.36E-73 | 50506.20095 | 60497.50106 | 50506.20095 | 60497.50106 |
| Dredging | -2.731124721 | 1.143266473 | -2.388879 | 0.017303 | -4.977809346 | -0.4844401 | -4.977809346 | -0.484440096 |
| date | -1.535021844 | 0.070342067 | -21.82225 | 6.01E-73 | -1.673254219 | -1.39678947 | -1.673254219 | -1.396789469 |

Phase I
t-Test: Paired Two Sample for Means - All Data

| | *m3* | *m1* |
|---|---|---|
| Mean | 22.37034 | 26.55774 |
| Variance | 210.6035 | 230.1926 |
| Observations | 634 | 634 |
| Pearson Correlation | 0.915885 | |
| Hypothesized Mean Difference | 0 | |
| df | 633 | |
| t Stat | -17.223 | |
| P(T<=t) one-tail | 4.17E-55 | |
| t Critical one-tail | 1.647263 | |
| P(T<=t) two-tail | 8.34E-55 | |
| t Critical two-tail | 1.963717 | |

Phase I
t-Test: Paired Two Sample for Means - No Dredging

| | *m3* | *m1* |
|---|---|---|
| Mean | 21.56098 | 25.64219 |
| Variance | 210.6586 | 234.0109 |
| Observations | 210 | 210 |
| Pearson Correlation | 0.927449 | |
| Hypothesized Mean Difference | 0 | |
| df | 209 | |
| t Stat | -10.322 | |
| P(T<=t) one-tail | 9.46E-21 | |
| t Critical one-tail | 1.652177 | |
| P(T<=t) two-tail | 1.89E-20 | |
| t Critical two-tail | 1.97138 | |

Phase I
t-Test: Paired Two Sample for Means - Dredging

| | *m3* | *m1* |
|---|---|---|
| Mean | 22.59666 | 26.78359 |
| Variance | 212.62 | 226.331 |
| Observations | 388 | 388 |
| Pearson Correlation | 0.904242 | |
| Hypothesized Mean Difference | 0 | |
| df | 387 | |
| t Stat | -12.6916 | |
| P(T<=t) one-tail | 2.12E-31 | |
| t Critical one-tail | 1.6488 | |
| P(T<=t) two-tail | 4.24E-31 | |
| t Critical two-tail | 1.966114 | |

Regression Analysis: M3 (Phase I)
SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.749599579 |
| R Square | 0.561899529 |
| Adjusted R Square | 0.560551528 |
| Standard Error | 9.555920357 |
| Observations | 653 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 76127.81202 | 38063.91 | 416.839 | 3.2468E-117 |
| Residual | 650 | 59355.14902 | 91.31561 | | |
| Total | 652 | 135482.961 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 46089.66861 | 1600.601097 | 28.79522 | 3.6E-118 | 42946.69341 | 49232.6438 | 42946.69341 | 49232.64382 |
| Dredging | -2.974823638 | 0.792345383 | -3.75445 | 0.000189 | -4.530690305 | -1.418957 | -4.5306903 | -1.41895697 |
| date | -1.274644363 | 0.04428589 | -28.7822 | 4.3E-118 | -1.361605103 | -1.1876836 | -1.3616051 | -1.18768362 |

Phase I
t-Test: Paired Two Sample for Means - All Data

| | *m6* | *m1* |
|---|---|---|
| Mean | 22.765555 | 24.10276 |
| Variance | 210.92676 | 226.8766 |
| Observations | 641 | 641 |
| Pearson Correlation | 0.9280763 | |
| Hypothesized Mean Difference | 0 | |
| df | 640 | |
| t Stat | -6.0076 | |
| P(T<=t) one-tail | 1.58E-09 | |
| t Critical one-tail | 1.6472382 | |
| P(T<=t) two-tail | 3.159E-09 | |
| t Critical two-tail | 1.9636764 | |

Phase I
t-Test: Paired Two Sample for Means - No Dredging

| | *m6* | *m1* |
|---|---|---|
| Mean | 19.916481 | 20.49718 |
| Variance | 197.28565 | 210.0023 |
| Observations | 237 | 237 |
| Pearson Correlation | 0.8887906 | |
| Hypothesized Mean Difference | 0 | |
| df | 236 | |
| t Stat | -1.325753 | |
| P(T<=t) one-tail | 0.0931017 | |
| t Critical one-tail | 1.6513354 | |
| P(T<=t) two-tail | 0.1862033 | |
| t Critical two-tail | 1.9700656 | |

Phase I
t-Test: Paired Two Sample for Means

| | *m6* | *m1* |
|---|---|---|
| Mean | 24.12392 | 25.90034 |
| Variance | 208.49158 | 222.4029 |
| Observations | 368 | 368 |
| Pearson Correlation | 0.9432385 | |
| Hypothesized Mean Difference | 0 | |
| df | 367 | |
| t Stat | -6.860943 | |
| P(T<=t) one-tail | 1.46E-11 | |
| t Critical one-tail | 1.6490162 | |
| P(T<=t) two-tail | 2.92E-11 | |
| t Critical two-tail | 1.9664503 | |

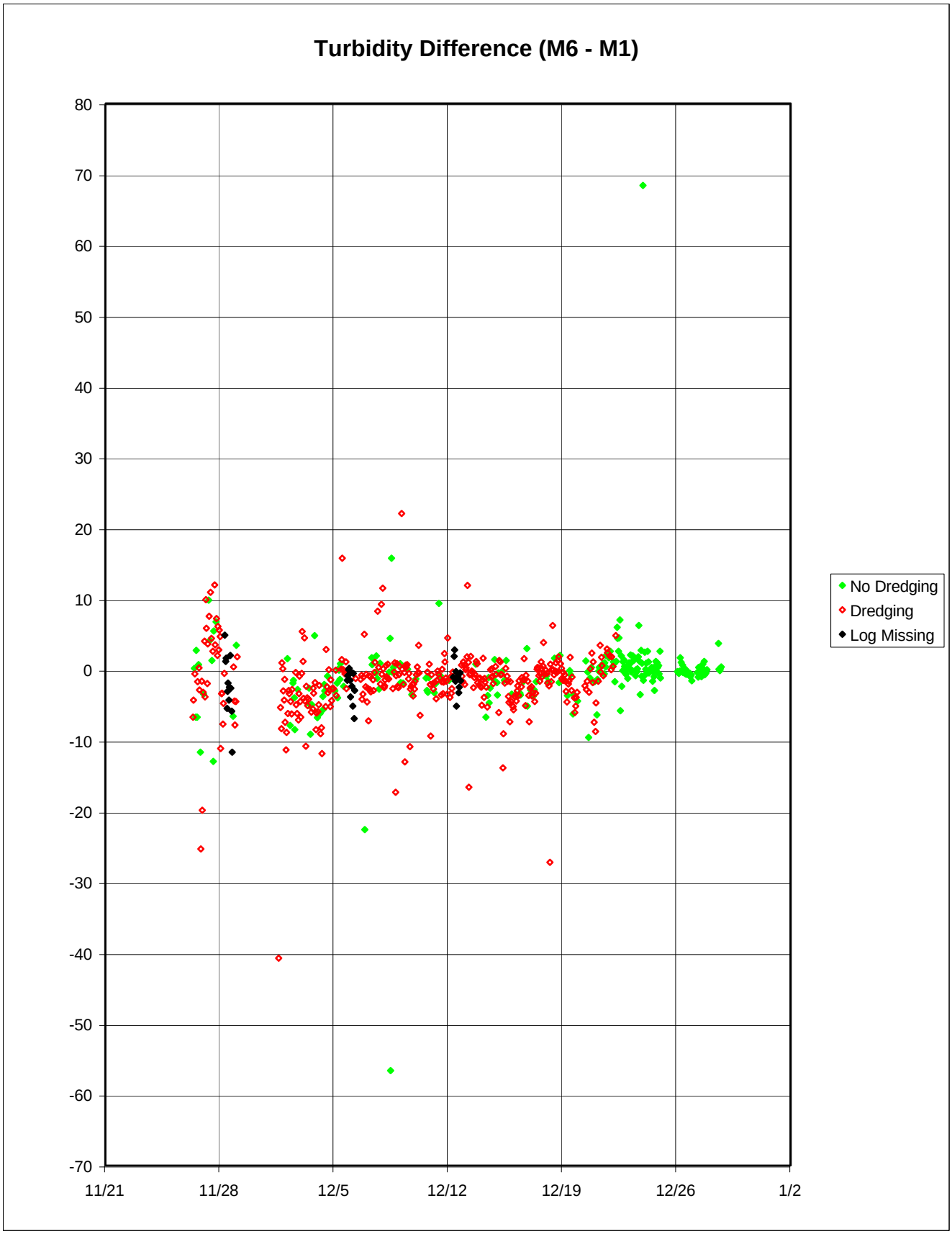
Regression Analysis: M6 (Phase I)
SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.76520393 |
| R Square | 0.58553706 |
| Adjusted R Square | 0.58438096 |
| Standard Error | 9.46258676 |
| Observations | 720 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 90700.06259 | 45350.03 | 506.4748 | 7.3897E-138 |
| Residual | 717 | 64200.57304 | 89.54055 | | |
| Total | 719 | 154900.6356 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 43926.1491 | 1422.924156 | 30.87034 | 9.1E-134 | 41132.55595 | 46719.742 | 41132.55595 | 46719.74219 |
| Dredging | -3.3216411 | 0.769245274 | -4.31805 | 1.8E-05 | -4.83188207 | -1.8114002 | -4.83188207 | -1.81140021 |
| date | -1.2146912 | 0.039364107 | -30.8578 | 1.1E-133 | -1.291973819 | -1.1374086 | -1.291973819 | -1.13740859 |

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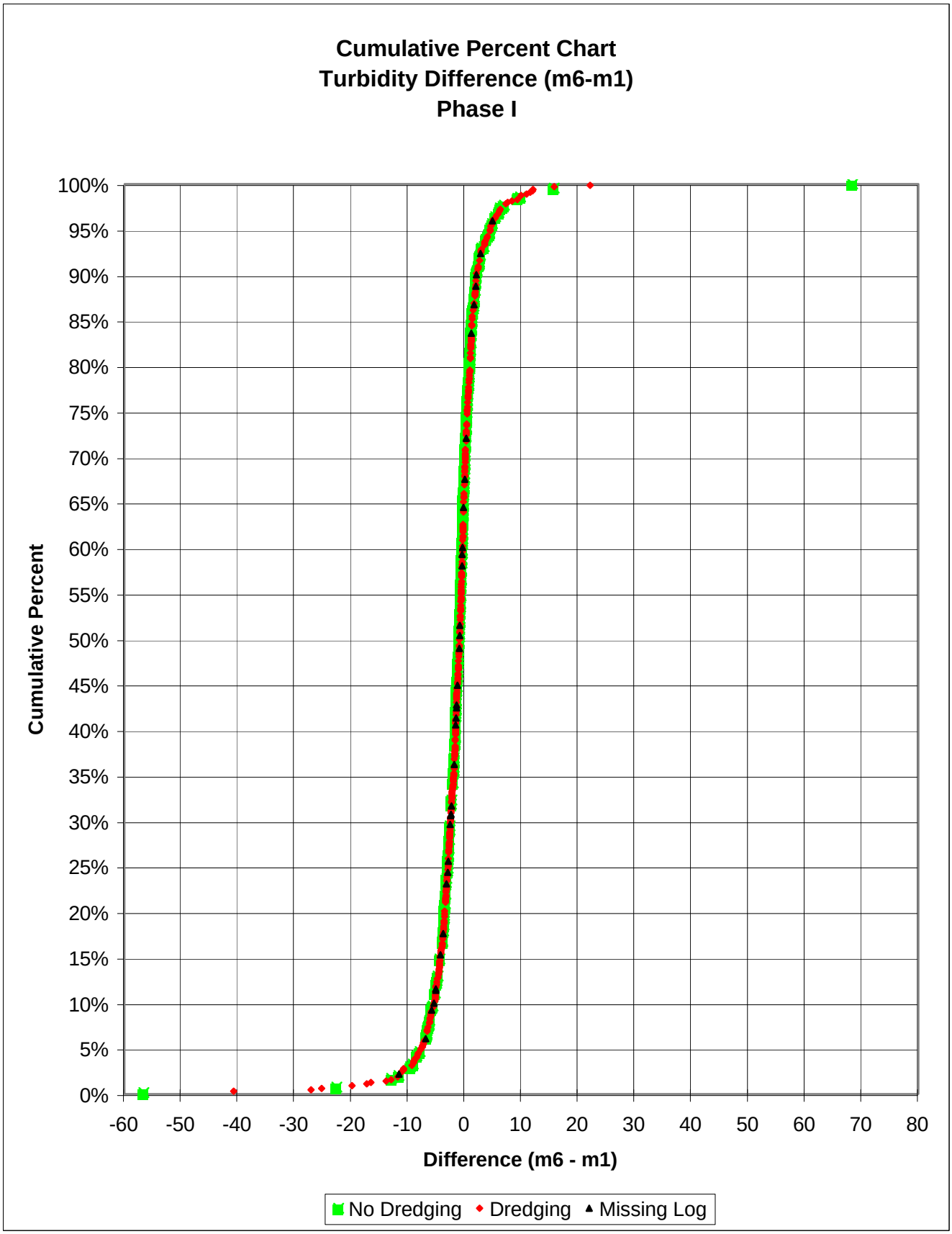


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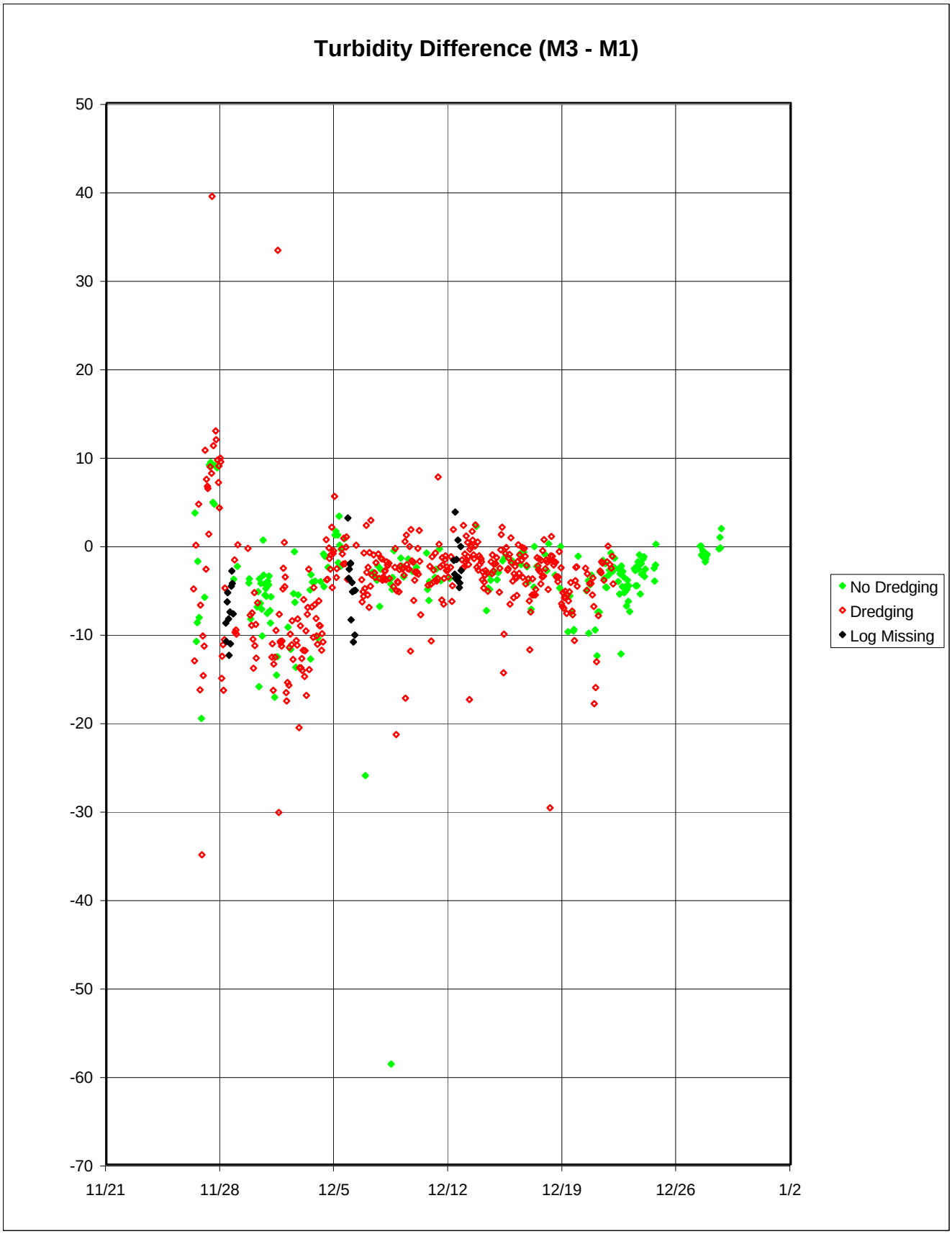


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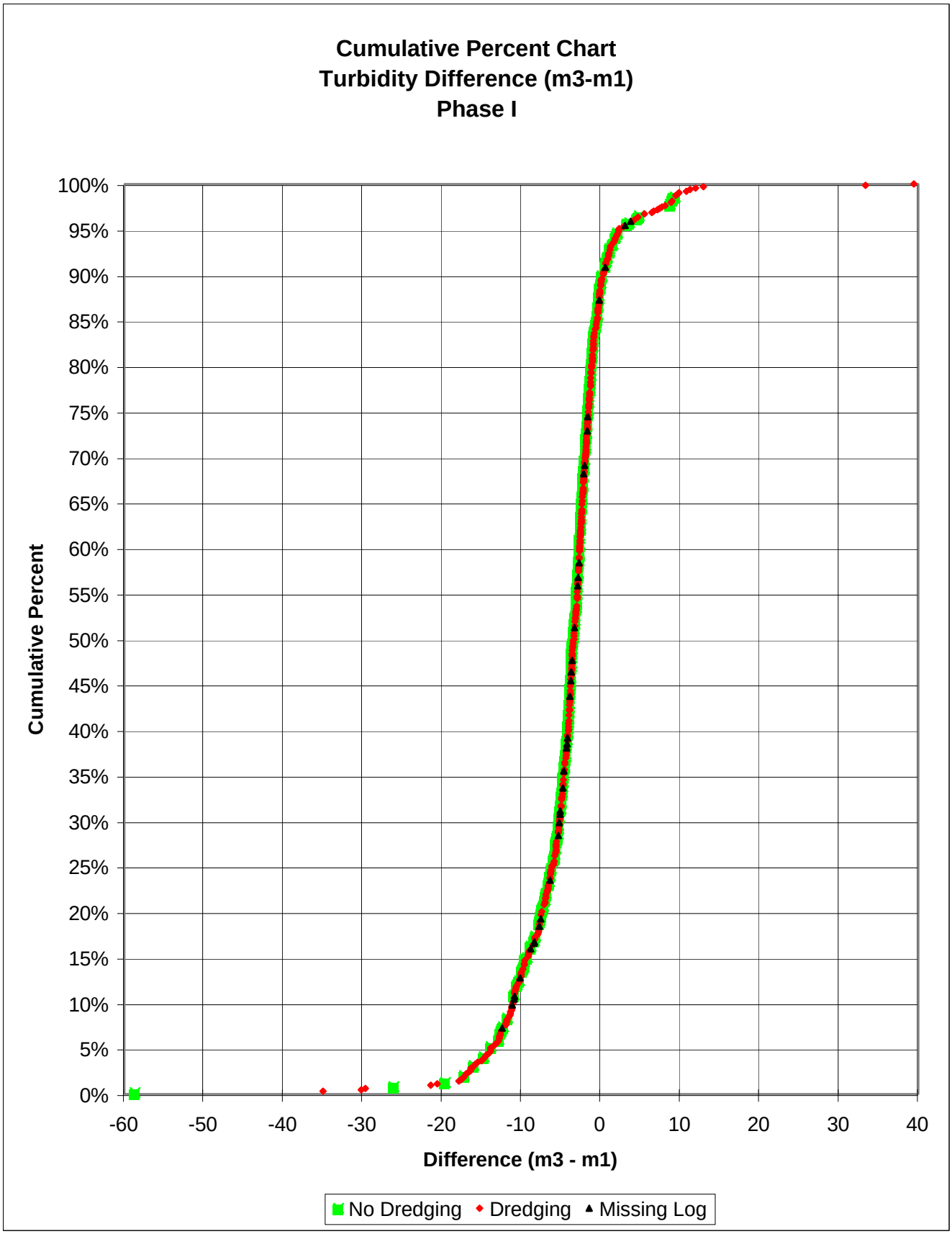


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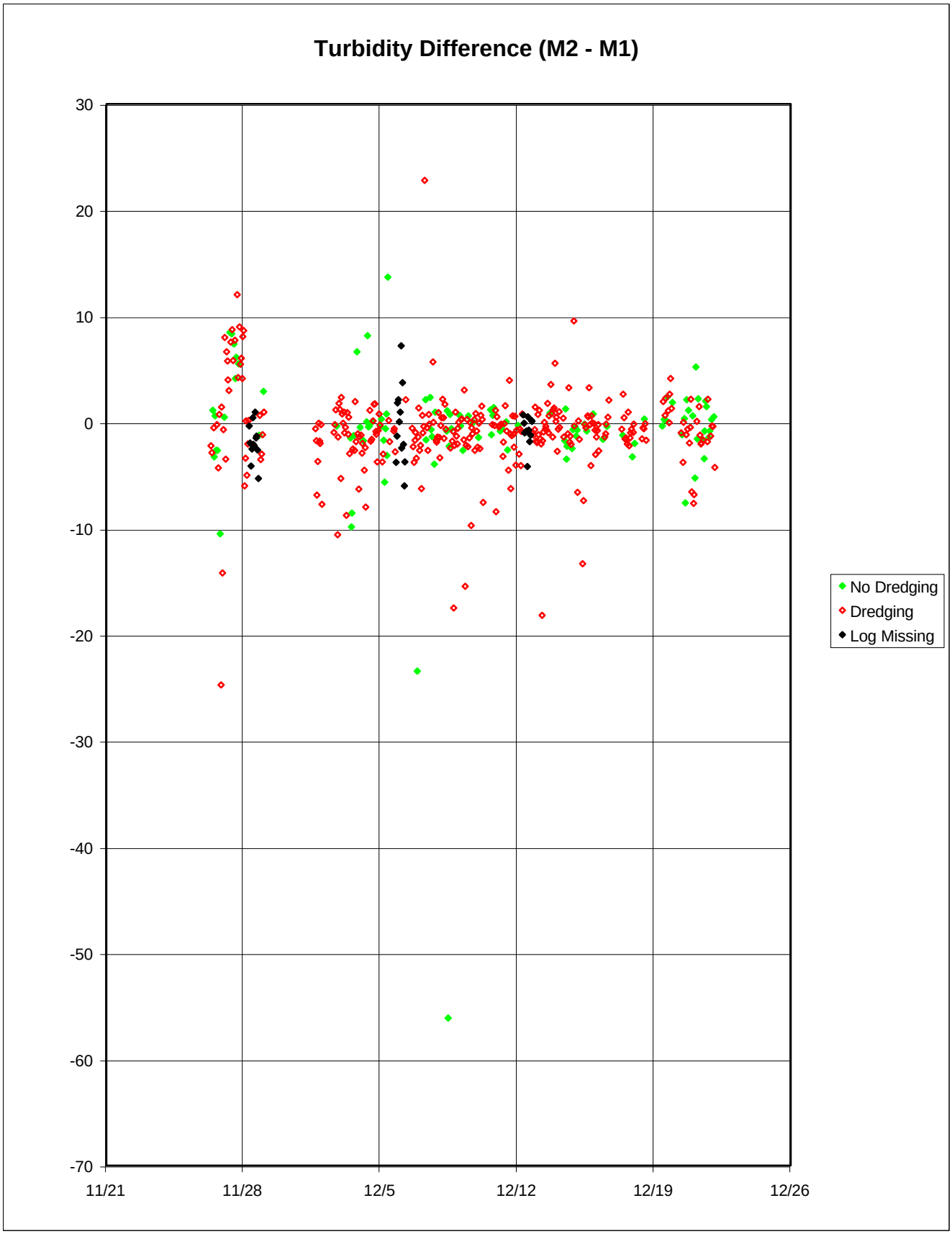


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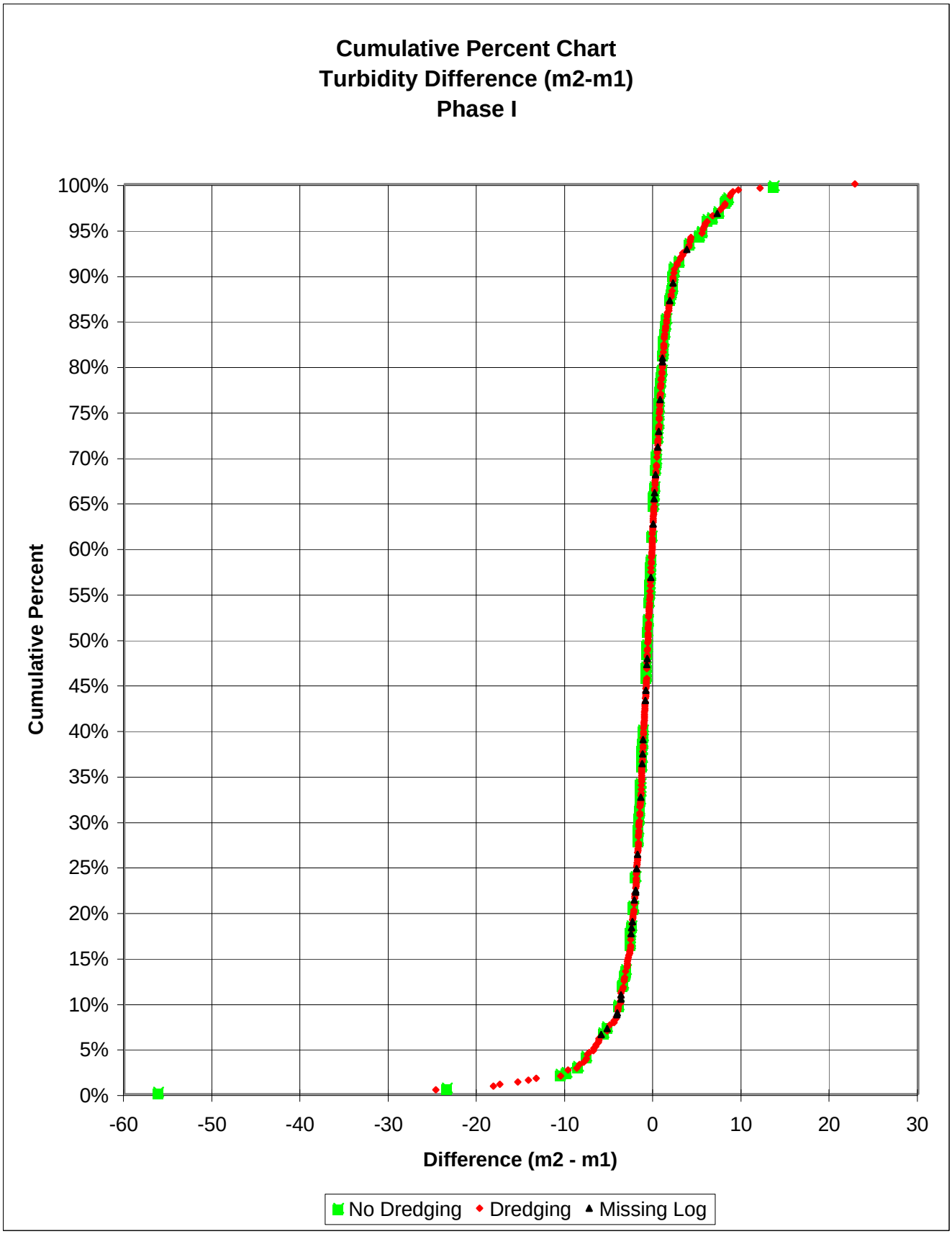


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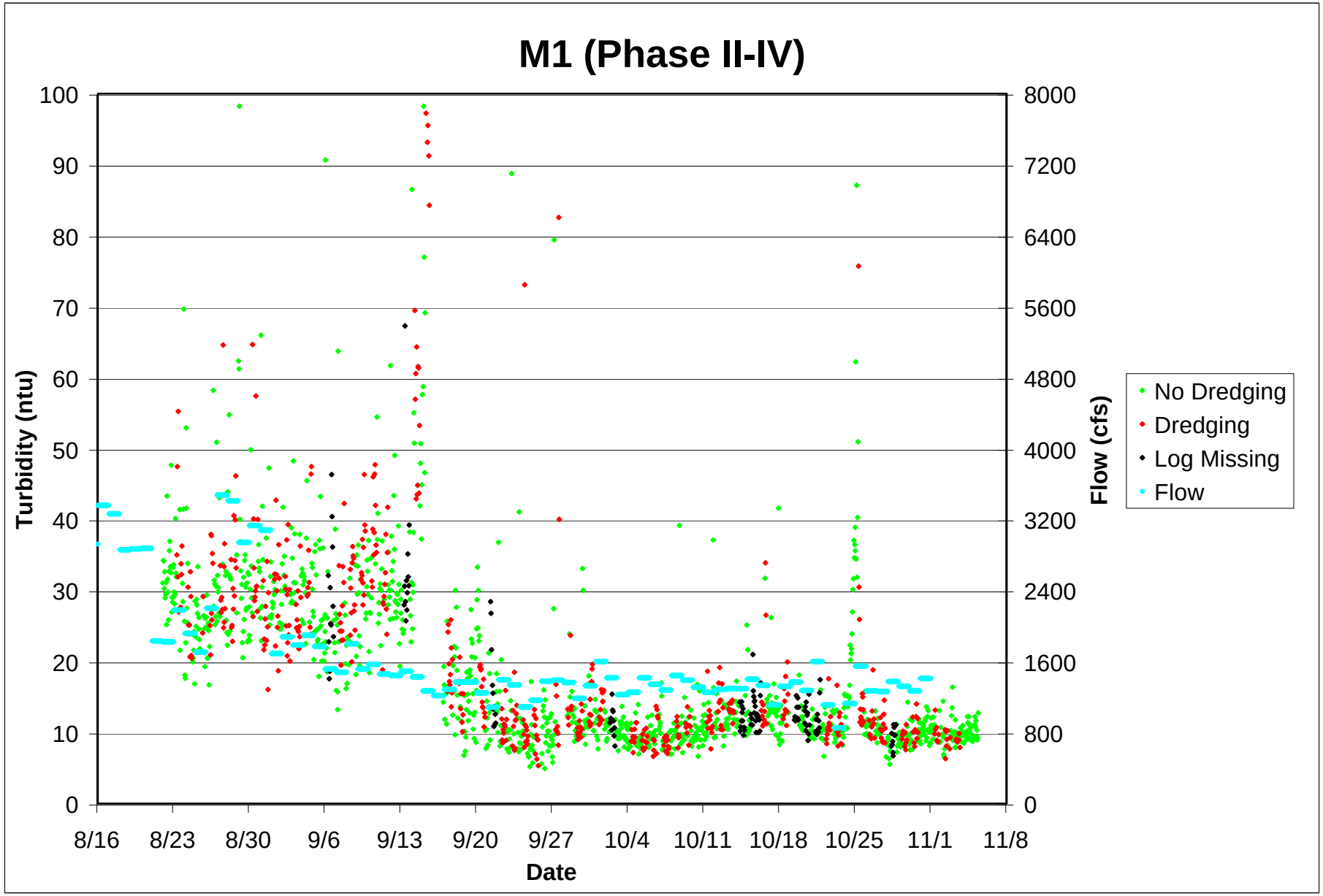
# Appendix K

# Phases II-IV Turbidity Trend Graphs

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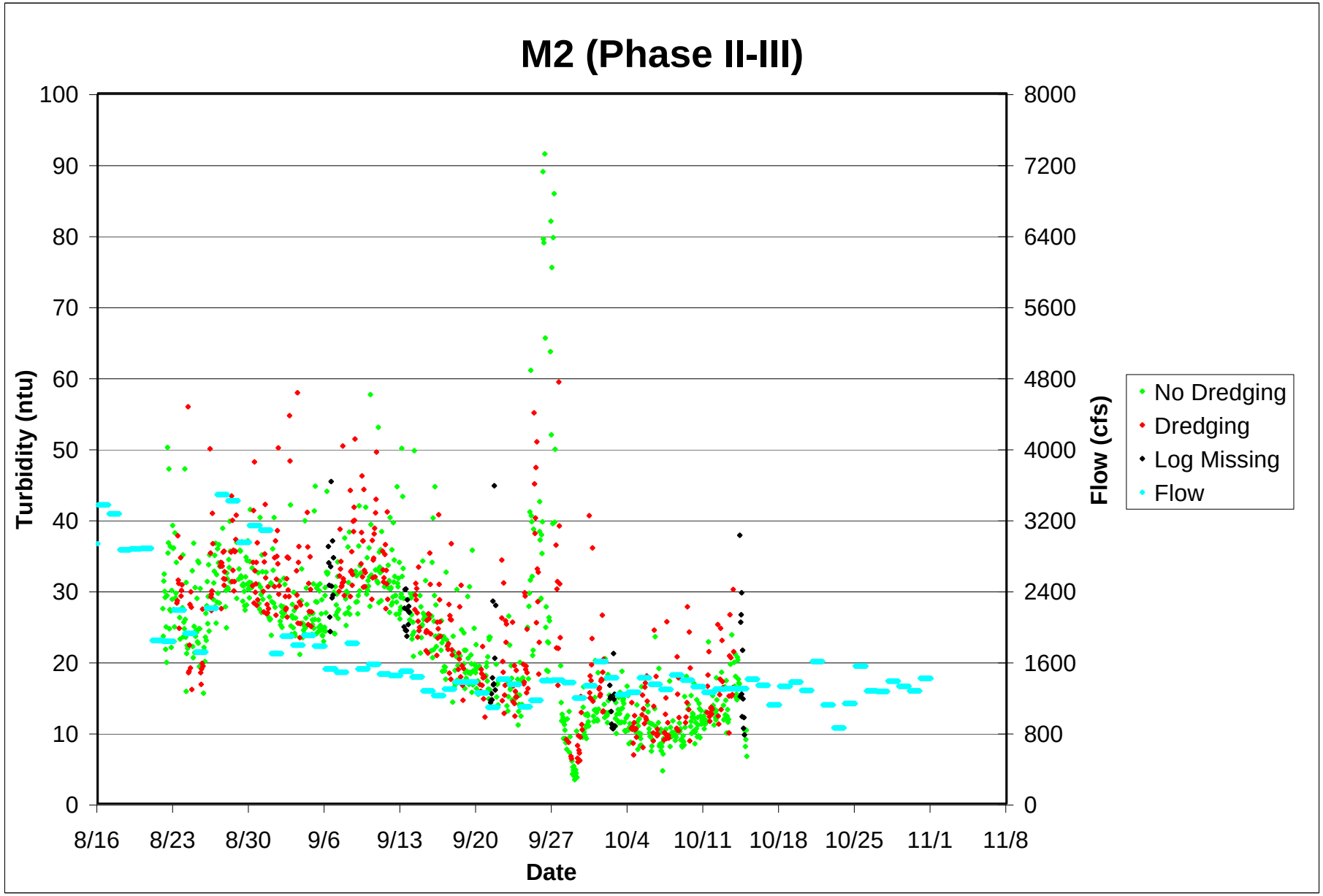


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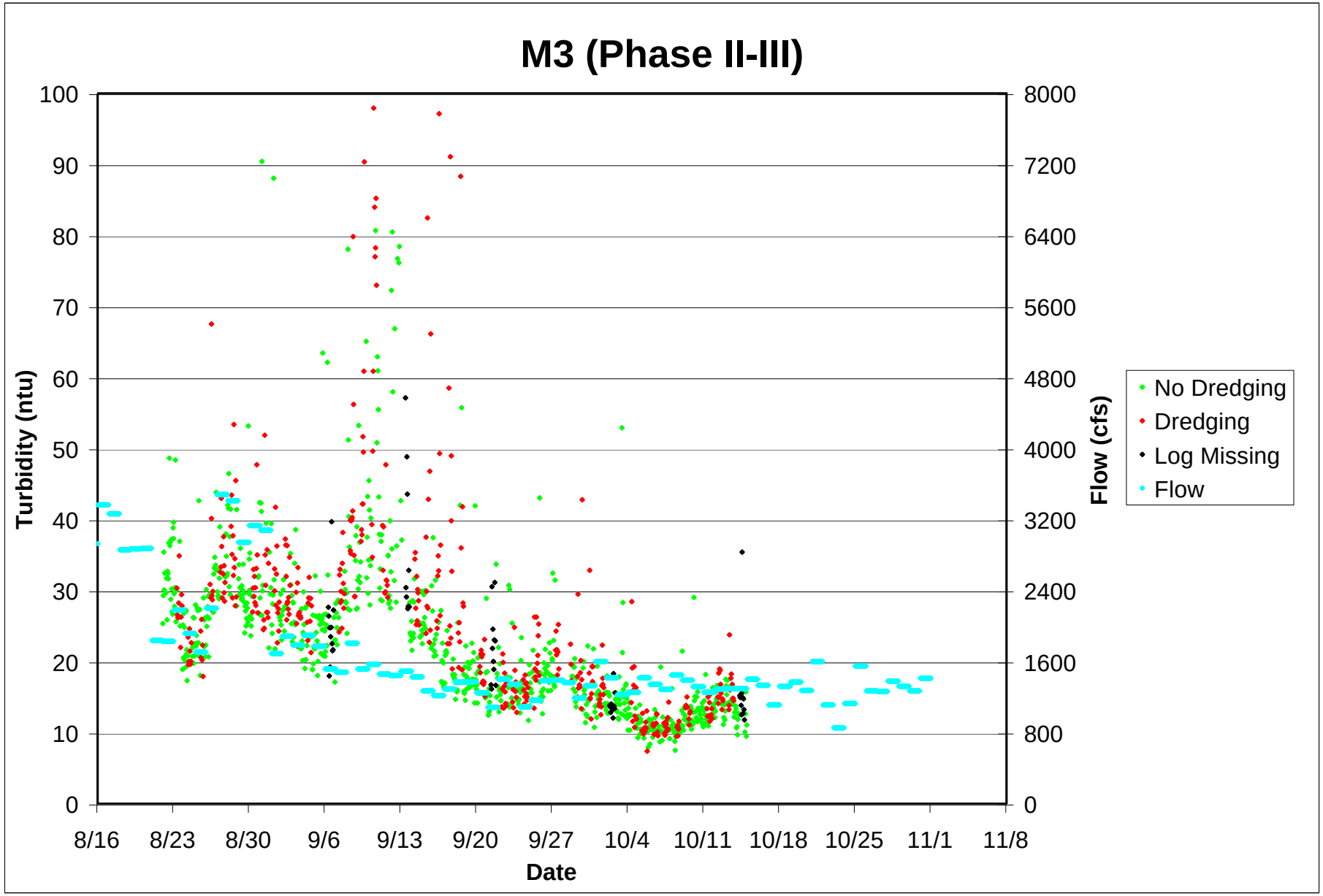


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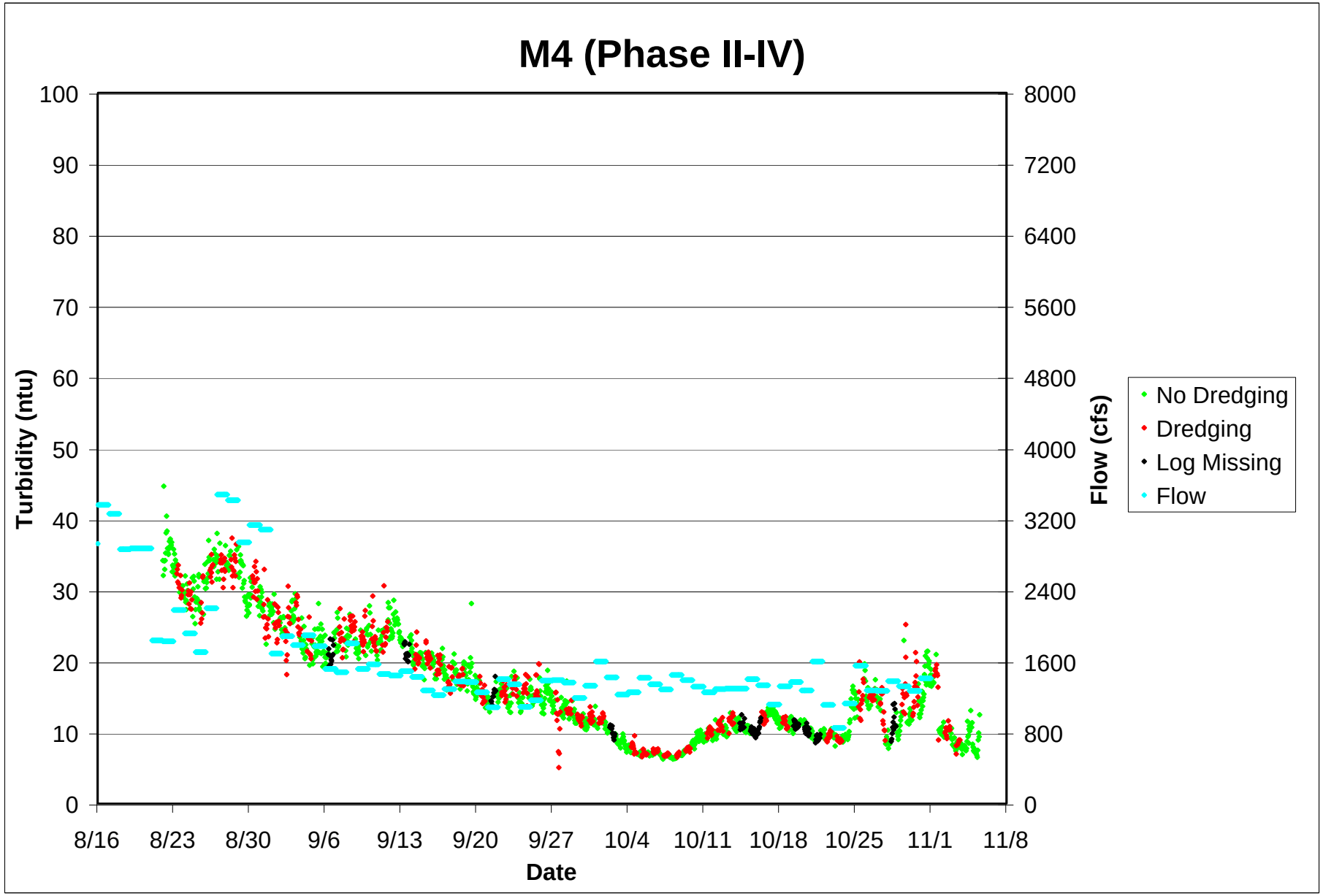


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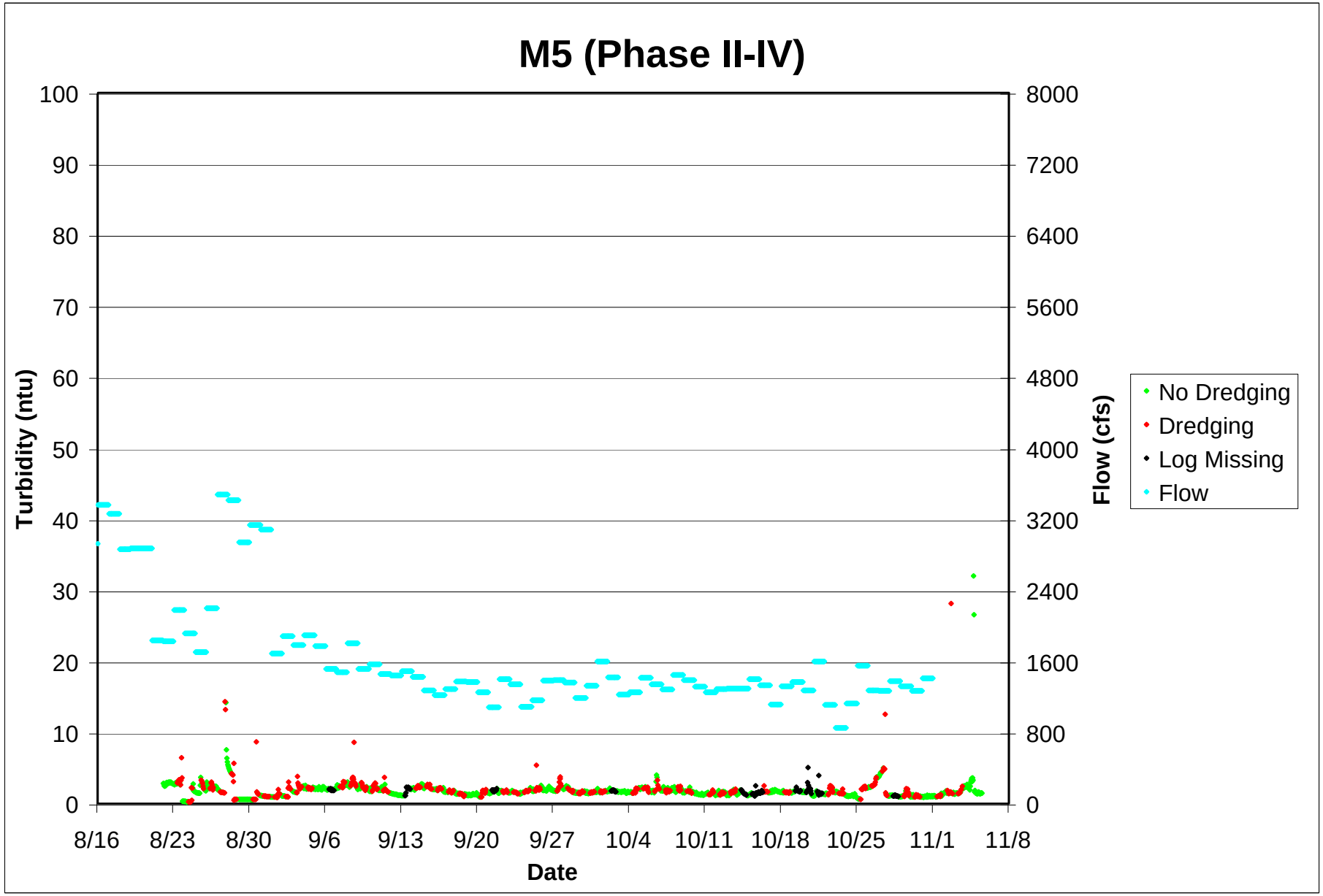


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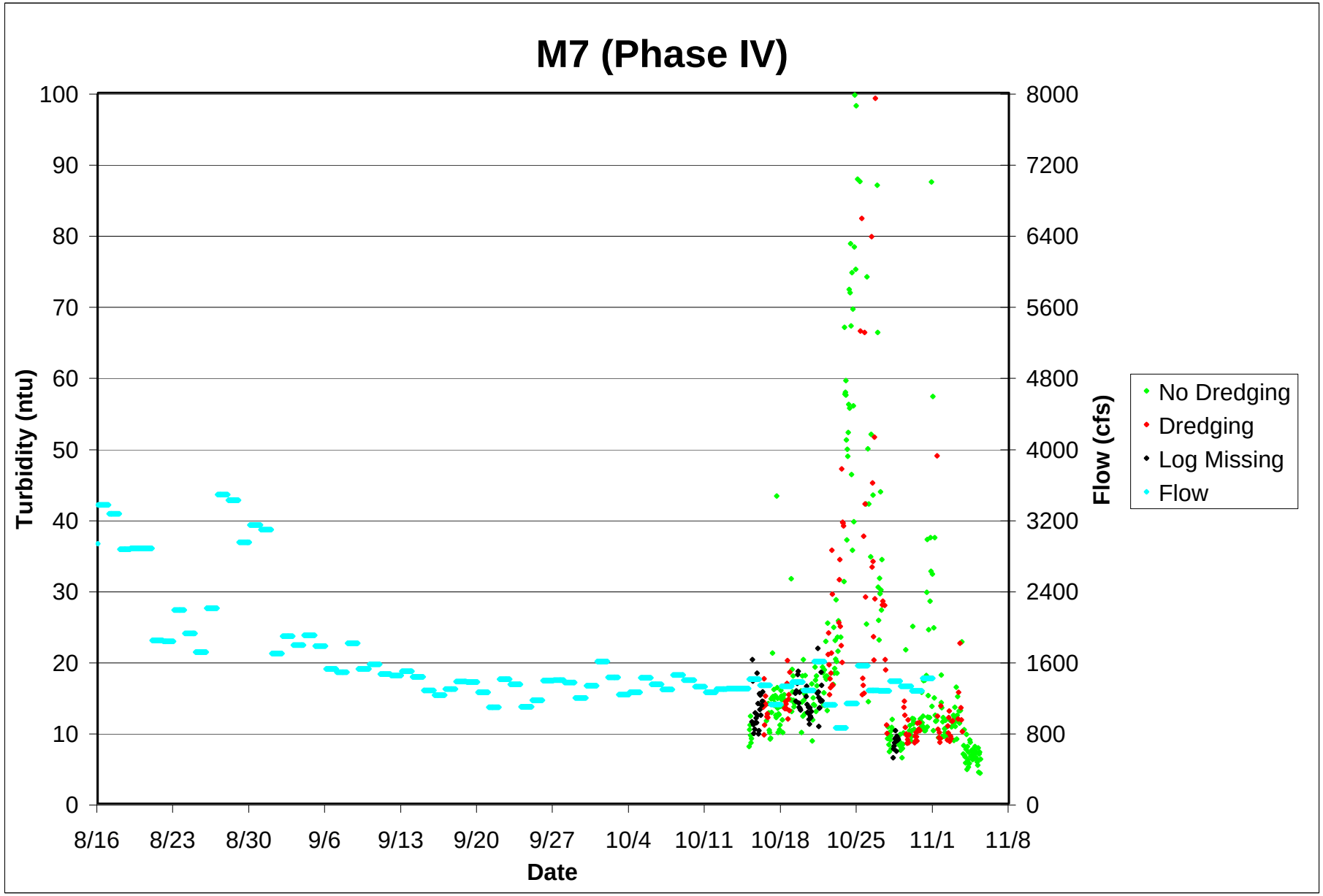


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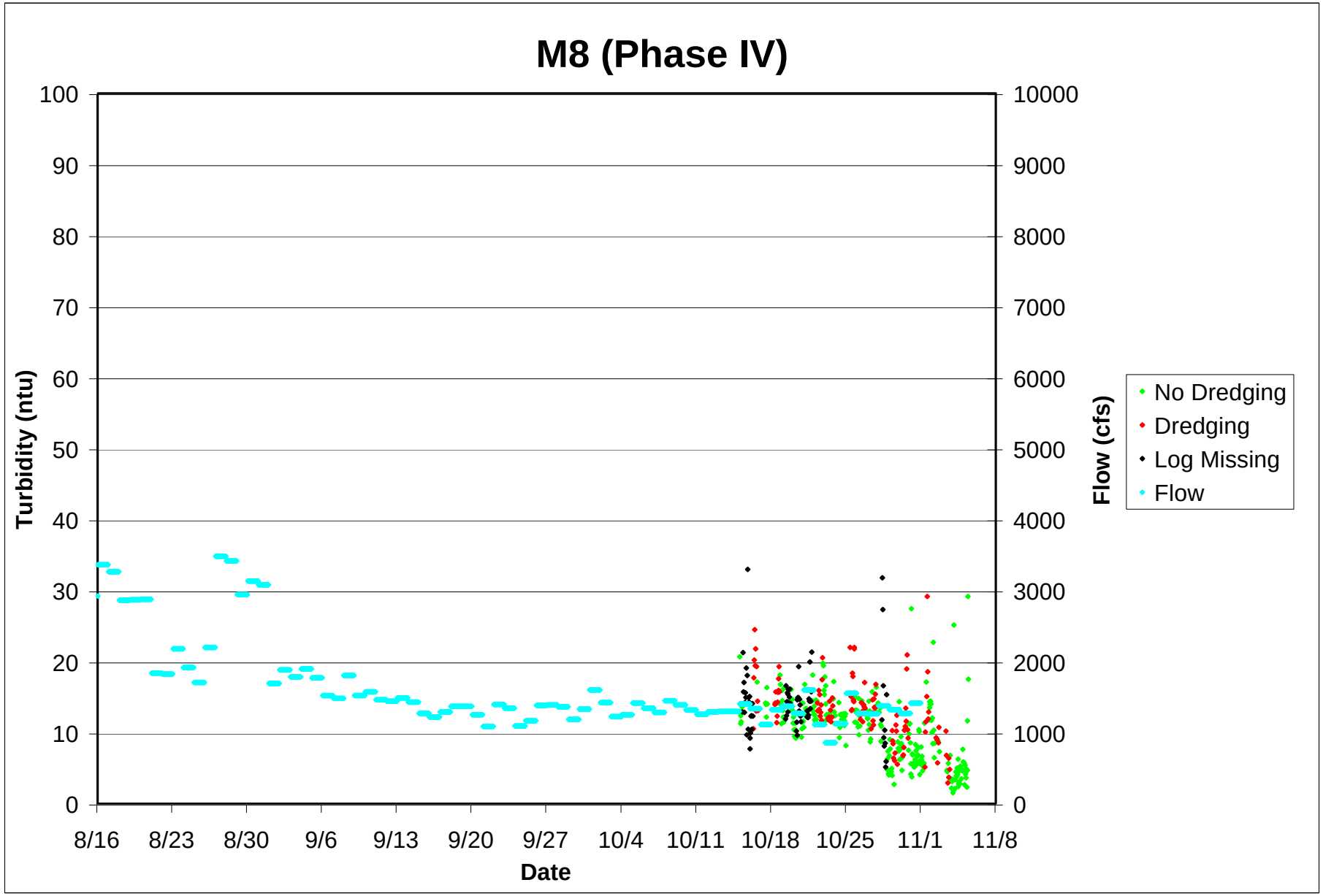


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# Appendix L

# Phases II-III Statistical Analysis

Phase II-III
t-Test: Paired Two Sample for Means - All Data

| | *m2* | *m1* |
|---|---|---|
| Mean | 24.34291 | 22.99503 |
| Variance | 192.3196 | 362.0209 |
| Observations | 1227 | 1227 |
| Pearson Correlation | 0.279774 | |
| Hypothesized Mean Difference | 0 | |
| df | 1226 | |
| t Stat | 2.341205 | |
| P(T<=t) one-tail | 0.009691 | |
| t Critical one-tail | 1.646097 | |
| P(T<=t) two-tail | 0.019381 | |
| t Critical two-tail | 1.961898 | |

Phase II-III
t-Test: Paired Two Sample for Means
Excluding Upper and Lower 1st Percentiles

| | *m2* | *m1* |
|---|---|---|
| Mean | 23.49666 | 21.87468 |
| Variance | 119.832 | 181.405 |
| Observations | 1202 | 1202 |
| Pearson Correlation | 0.55712 | |
| Hypothesized Mean Difference | 0 | |
| df | 1201 | |
| t Stat | 4.805169 | |
| P(T<=t) one-tail | 8.71E-07 | |
| t Critical one-tail | 1.646124 | |
| P(T<=t) two-tail | 1.74E-06 | |
| t Critical two-tail | 1.961939 | |

Phase II-III
t-Test: Paired Two Sample for Means - No Dredging

| | *m2* | *m1* |
|---|---|---|
| Mean | 24.06945 | 21.82411 |
| Variance | 242.9158 | 210.3845 |
| Observations | 758 | 758 |
| Pearson Correlation | 0.310507 | |
| Hypothesized Mean Difference | 0 | |
| df | 757 | |
| t Stat | 3.494671 | |
| P(T<=t) one-tail | 0.000251 | |
| t Critical one-tail | 1.64687 | |
| P(T<=t) two-tail | 0.000502 | |
| t Critical two-tail | 1.963103 | |

Phase II-III
t-Test: Paired Two Sample for Means - No Dredging
Excluding Upper and Lower 1st Percentiles

| | *m2* | *m1* |
|---|---|---|
| Mean | 22.70304 | 21.629 |
| Variance | 122.9282 | 173.4948 |
| Observations | 742 | 742 |
| Pearson Correlation | 0.578146 | |
| Hypothesized Mean Difference | 0 | |
| df | 741 | |
| t Stat | 2.5904 | |
| P(T<=t) one-tail | 0.004887 | |
| t Critical one-tail | 1.646913 | |
| P(T<=t) two-tail | 0.009775 | |
| t Critical two-tail | 1.963172 | |

Phase II-III
t-Test: Paired Two Sample for Means - Dredging

| | *m2* | *m1* |
|---|---|---|
| Mean | 25.10893 | 25.5338 |
| Variance | 114.2809 | 668.7336 |
| Observations | 409 | 409 |
| Pearson Correlation | 0.292991 | |
| Hypothesized Mean Difference | 0 | |
| df | 408 | |
| t Stat | -0.3448 | |
| P(T<=t) one-tail | 0.365212 | |
| t Critical one-tail | 1.648596 | |
| P(T<=t) two-tail | 0.730424 | |
| t Critical two-tail | 1.965795 | |

Phase II-III
t-Test: Paired Two Sample for Means - Dredging
Excluding Upper and Lower 1st Percentiles

| | *m2* | *m1* |
|---|---|---|
| Mean | 25.10694 | 22.53938 |
| Variance | 116.5088 | 203.7368 |
| Observations | 400 | 400 |
| Pearson Correlation | 0.527393 | |
| Hypothesized Mean Difference | 0 | |
| df | 399 | |
| t Stat | 4.088692 | |
| P(T<=t) one-tail | 2.62E-05 | |
| t Critical one-tail | 1.648682 | |
| P(T<=t) two-tail | 5.25E-05 | |
| t Critical two-tail | 1.965927 | |

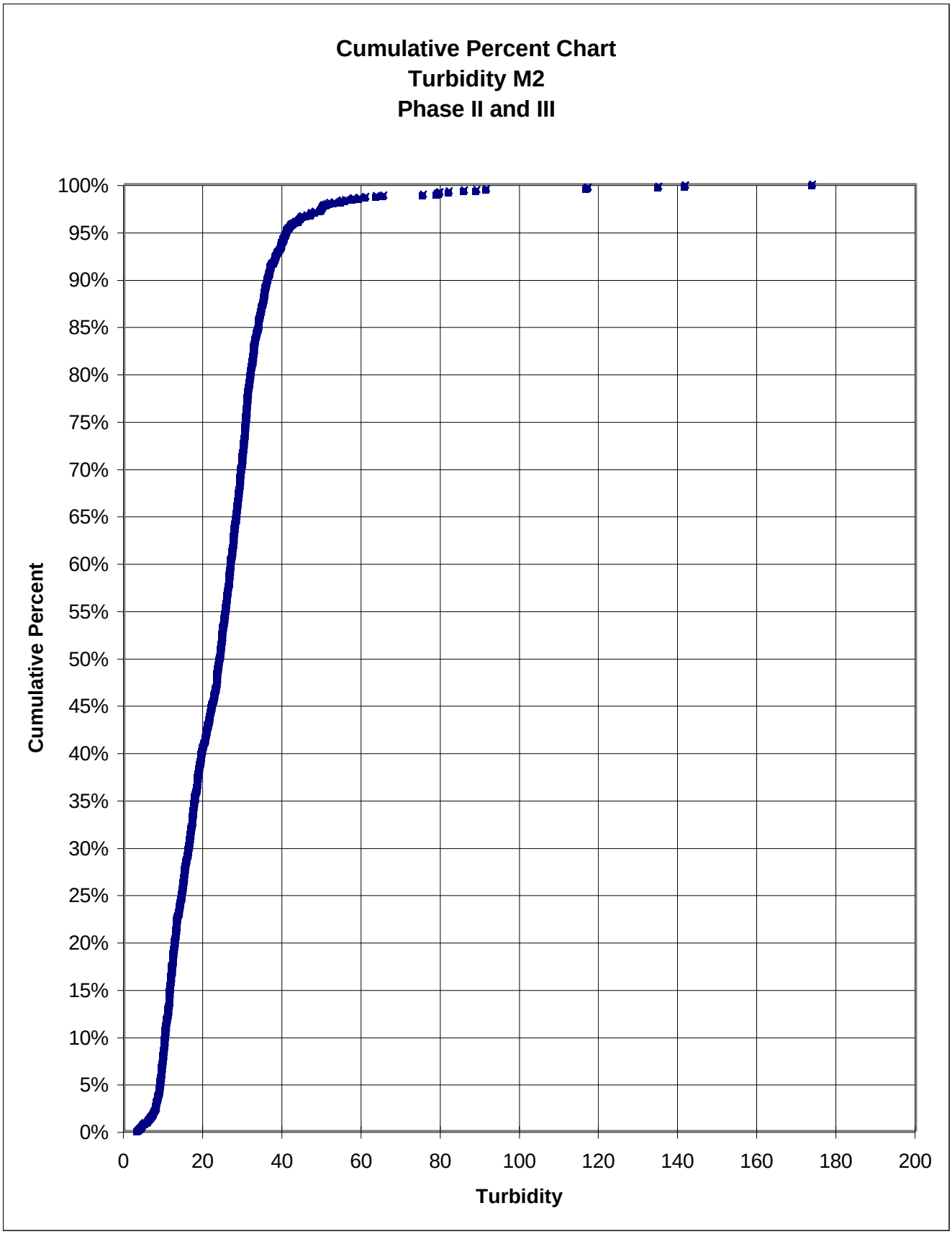
Regression Analysis: M2 (Phase II & III)
Omitting the 15 values > 60 ntu collected on 9/26 and 9/27
SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.449026143 |
| R Square | 0.201624477 |
| Adjusted R Square | 0.200299372 |
| Standard Error | 9.580738446 |
| Observations | 1208 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 27933.22339 | 13966.61 | 152.1574 | 1.20184E-59 |
| Residual | 1205 | 110607.6118 | 91.79055 | | |
| Total | 1207 | 138540.8351 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 9.293772543 | 0.855986121 | 10.85739 | 2.89E-26 | 7.614383682 | 10.9731614 | 7.614383682 | 10.9731614 |
| Dredging | 2.222804648 | 0.576875926 | 3.853176 | 0.000123 | 1.091011759 | 3.35459754 | 1.091011759 | 3.354597536 |
| Flow | 0.008133499 | 0.000481484 | 16.89256 | 1.28E-57 | 0.007188858 | 0.00907814 | 0.007188858 | 0.009078139 |

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Phase II-III
t-Test: Paired Two Sample for Means - All Data

| | *m3* | *m1* |
|---|---|---|
| Mean | 30.289 | 22.94474 |
| Variance | 4106.022 | 362.0962 |
| Observations | 1227 | 1227 |
| Pearson Correlation | 0.124946 | |
| Hypothesized Mean Difference | 0 | |
| df | 1226 | |
| t Stat | 3.986991 | |
| P(T<=t) one-tail | 3.54E-05 | |
| t Critical one-tail | 1.646097 | |
| P(T<=t) two-tail | 7.09E-05 | |
| t Critical two-tail | 1.961898 | |

Phase II-III
t-Test: Paired Two Sample for Means
Excluding Upper and Lower 1st Percentiles

| | *m3* | *m1* |
|---|---|---|
| Mean | 25.09994 | 21.59742 |
| Variance | 323.4594 | 179.4536 |
| Observations | 1202 | 1202 |
| Pearson Correlation | 0.431706 | |
| Hypothesized Mean Difference | 0 | |
| df | 1201 | |
| t Stat | 7.071322 | |
| P(T<=t) one-tail | 1.3E-12 | |
| t Critical one-tail | 1.646124 | |
| P(T<=t) two-tail | 2.6E-12 | |
| t Critical two-tail | 1.961939 | |

Phase II-III
t-Test: Paired Two Sample for Means - No Dredging

| | *m3* | *m1* |
|---|---|---|
| Mean | 31.26628 | 21.77487 |
| Variance | 6021.868 | 210.5231 |
| Observations | 759 | 759 |
| Pearson Correlation | 0.116474 | |
| Hypothesized Mean Difference | 0 | |
| df | 758 | |
| t Stat | 3.384237 | |
| P(T<=t) one-tail | 0.000375 | |
| t Critical one-tail | 1.646868 | |
| P(T<=t) two-tail | 0.00075 | |
| t Critical two-tail | 1.963099 | |

Phase II-III
t-Test: Paired Two Sample for Means - No Dredging
Excluding Upper and Lower 1st Percentiles

| | *m3* | *m1* |
|---|---|---|
| Mean | 24.10736 | 21.11583 |
| Variance | 289.3563 | 159.8441 |
| Observations | 744 | 744 |
| Pearson Correlation | 0.388768 | |
| Hypothesized Mean Difference | 0 | |
| df | 743 | |
| t Stat | 4.859265 | |
| P(T<=t) one-tail | 7.19E-07 | |
| t Critical one-tail | 1.646908 | |
| P(T<=t) two-tail | 1.44E-06 | |
| t Critical two-tail | 1.963163 | |

Phase II-III
t-Test: Paired Two Sample for Means - Dredging

| | *m3* | *m1* |
|---|---|---|
| Mean | 27.8062 | 25.48327 |
| Variance | 515.8841 | 669.8834 |
| Observations | 408 | 408 |
| Pearson Correlation | 0.316144 | |
| Hypothesized Mean Difference | 0 | |
| df | 407 | |
| t Stat | 1.644503 | |
| P(T<=t) one-tail | 0.050422 | |
| t Critical one-tail | 1.648605 | |
| P(T<=t) two-tail | 0.100845 | |
| t Critical two-tail | 1.965809 | |

Phase II-III
t-Test: Paired Two Sample for Means - Dredging
Excluding Upper and Lower 1st Percentiles

| | *m3* | *m1* |
|---|---|---|
| Mean | 27.07571 | 22.69894 |
| Variance | 362.6146 | 221.7282 |
| Observations | 400 | 400 |
| Pearson Correlation | 0.455968 | |
| Hypothesized Mean Difference | 0 | |
| df | 399 | |
| t Stat | 4.849907 | |
| P(T<=t) one-tail | 8.87E-07 | |
| t Critical one-tail | 1.648682 | |
| P(T<=t) two-tail | 1.77E-06 | |
| t Critical two-tail | 1.965927 | |

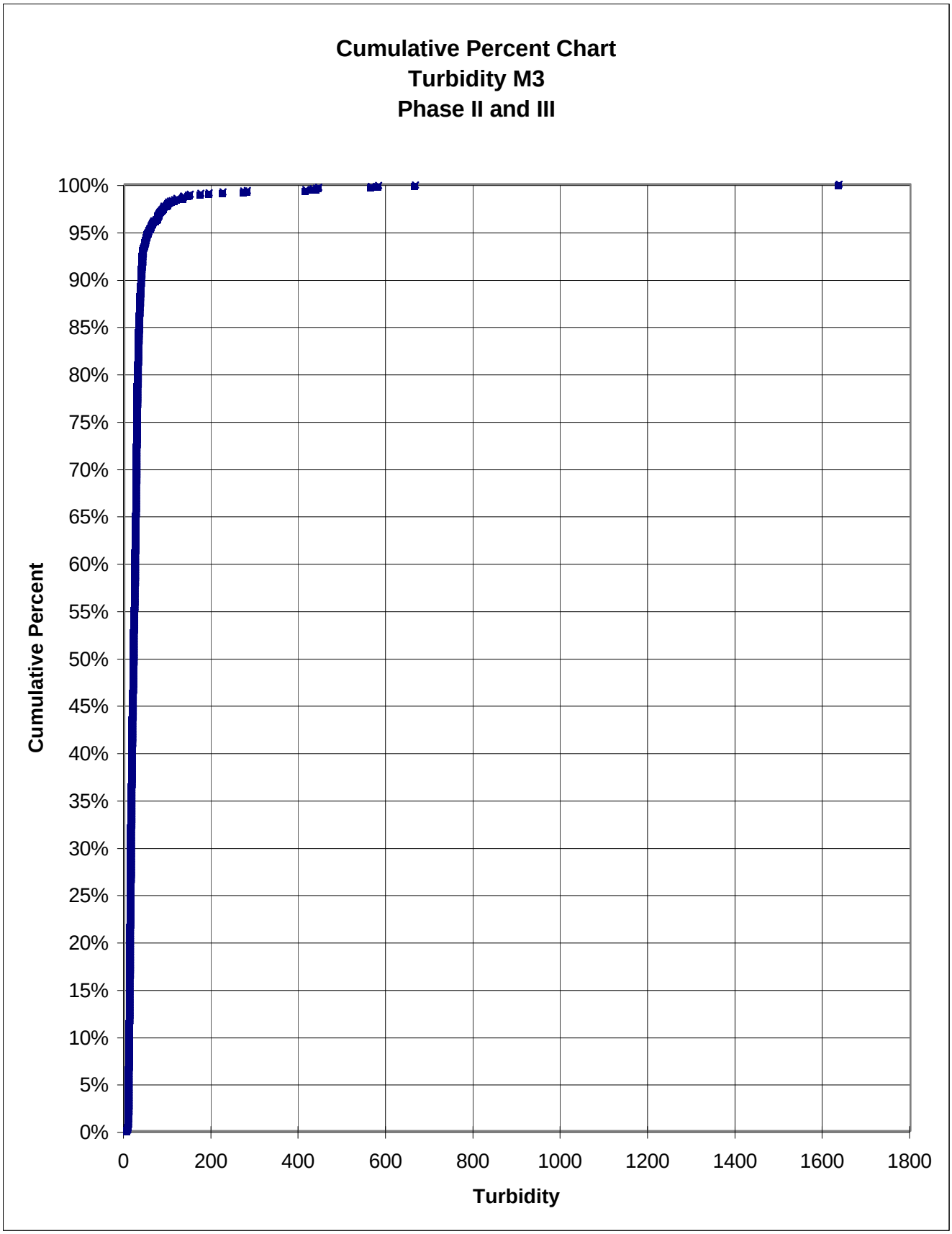
Regression Analysis: M3 (Phase II and III)
Excluding the 8 values > 400 from 8/22, 9/12 and 9/13
SUMMARY OUTPUT

| *Regression Statistics* | |
|---|---|
| Multiple R | 0.191682175 |
| R Square | 0.036742056 |
| Adjusted R Square | 0.035129909 |
| Standard Error | 20.83172625 |
| Observations | 1198 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 2 | 19780.59197 | 9890.296 | 22.79076 | 1.93287E-10 |
| Residual | 1195 | 518583.1779 | 433.9608 | | |
| Total | 1197 | 538363.7699 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 14.08374112 | 1.863841665 | 7.556297 | 8.22E-14 | 10.4269716 | 17.74051063 | 10.4269716 | 17.7405106 |
| Dredging | 3.146221117 | 1.259920286 | 2.497159 | 0.012653 | 0.674316888 | 5.618125346 | 0.67431689 | 5.61812535 |
| Flow | 0.006486696 | 0.001047617 | 6.191859 | 8.16E-10 | 0.004431321 | 0.008542071 | 0.00443132 | 0.00854207 |




j:\scopes\97w027\turbidity\regression\paired&regr.xls

# Appendix M

# Sediment Bed Model

**M-1 Goodness of Fit Tests**
**M-2 Confidence Interval Calculations**

# Table M-1

## Deposit N
## November 1998 Sample Results
## (FRRAT Data)

| Sample | ID | In-Place Density g/cm$^3$ | Aroclor 1016 ug/kg | Aroclor 1221 ug/kg | Aroclor 1232 ug/kg | Aroclor 1242 ug/kg | Aroclor 1248 ug/kg | Aroclor 1254 ug/kg | Aroclor 1260 ug/kg |
|---|---|---|---|---|---|---|---|---|---|
| 9 | S1.0-6 | 0.32 | 0 | 0 | 0 | 6900 | 0 | 0 | 0 |
| 19 | S2-POG | 0.86 | 0 | 0 | 0 | 3000 | 0 | 0 | 0 |
| 5 | S3.0-4 | 0.32 | 0 | 0 | 0 | 24000 | 0 | 0 | 0 |
| 6 | S3.4-12 | 0.34 | 0 | 0 | 0 | 42000 | 0 | 0 | 0 |
| 10 | S4.0-4 | 0.34 | 0 | 0 | 0 | 7700 | 0 | 0 | 0 |
| 11 | S4.4-13 | 0.3 | 0 | 0 | 0 | 27000 | 0 | 0 | 0 |
| 20 | S5.0-6 | 0.62 | 0 | 0 | 0 | 10000 | 0 | 0 | 0 |
| 13 | S6.0-4 | 0.37 | 0 | 0 | 0 | 38000 | 0 | 0 | 0 |
| 22 | S6.12-21 | 0.3 | 0 | 0 | 0 | 32000 | 0 | 0 | 0 |
| 21 | S6.4-12 | 0.32 | 0 | 0 | 0 | 30000 | 0 | 0 | 0 |
| 1 | S7.0-4 | 0.55 | 0 | 0 | 0 | 2000 | 0 | 0 | 0 |
| 24 | S7.12-22 | 0.27 | 0 | 0 | 0 | 13000 | 0 | 0 | 0 |
| 23 | S7.4-12 | 0.25 | 0 | 0 | 0 | 2400 | 0 | 0 | 0 |
| 30 | S8.0-5 | 0.33 | 0 | 0 | 0 | 10000 | 0 | 0 | 0 |
| 27 | S9.0-21 | 0.28 | 0 | 0 | 0 | 24000 | 0 | 0 | 0 |
| 15 | S9.0-4 | 0.34 | 0 | 0 | 0 | 13000 | 0 | 0 | 0 |
| 26 | S9.12-21 | 0.31 | 0 | 0 | 0 | 40000 | 0 | 0 | 0 |
| 25 | S9.4-12 | 0.33 | 0 | 0 | 0 | 28000 | 0 | 0 | 0 |
| 3 | S10.0-4 | 0.57 | 0 | 0 | 0 | 34000 | 0 | 0 | 0 |
| 31 | S10.24-33 | 0.28 | 0 | 0 | 0 | 32000 | 0 | 0 | 0 |
| 28 | S10.4-12 | 0.31 | 0 | 0 | 0 | 15000 | 0 | 0 | 0 |
| 29 | S10-12-24 | 0.3 | 0 | 0 | 0 | 24000 | 0 | 0 | 0 |
| 34 | S11.0-3 | 0.73 | 0 | 0 | 0 | 2600 | 0 | 0 | 0 |
| 37 | S12.0-24 | 0.29 | 0 | 0 | 0 | 24000 | 0 | 0 | 0 |
| 7 | S12.0-4 | 0.39 | 0 | 0 | 0 | 29000 | 0 | 0 | 0 |
| 36 | S12.12-24 | 0.31 | 0 | 0 | 0 | 26000 | 0 | 0 | 0 |
| 35 | S12.4-12 | 0.3 | 0 | 0 | 0 | 32000 | 0 | 0 | 0 |
| 38 | S13.0-4 | 0.31 | 0 | 0 | 0 | 18000 | 0 | 0 | 0 |
| 41 | S13.12-24 | 0.28 | 0 | 0 | 0 | 35000 | 0 | 0 | 0 |
| 43 | S13.24-35 | 0.24 | 0 | 0 | 0 | 53000 | 0 | 0 | 0 |
| 39 | S13.4-12 | 0.33 | 0 | 0 | 0 | 13000 | 0 | 0 | 0 |
| 66 | S14-POG | - | 0 | 0 | 0 | 750 | 0 | 0 | 0 |
| 49 | S15.0-12 | 0.29 | 0 | 0 | 0 | 72000 | 0 | 0 | 0 |
| 17 | S15.0-4 | 0.35 | 0 | 0 | 0 | 21000 | 0 | 0 | 0 |

**Table M-1** *(Continued)*

| Sample | ID | In-Place Density g/cm$^3$ | Aroclor 1016 ug/kg | Aroclor 1221 ug/kg | Aroclor 1232 ug/kg | Aroclor 1242 ug/kg | Aroclor 1248 ug/kg | Aroclor 1254 ug/kg | Aroclor 1260 ug/kg |
|---|---|---|---|---|---|---|---|---|---|
| 18 | S15.4-11 | 0.31 | 0 | 0 | 0 | 34000 | 0 | 0 | 0 |
| 44 | S16.0-4 | 0.27 | 0 | 0 | 0 | 72000 | 0 | 0 | 0 |
| 47 | S16.12-22 | 0.36 | 0 | 0 | 0 | 31000 | 0 | 0 | 0 |
| 45 | S16.4-12 | 0.29 | 0 | 0 | 0 | 160000 | 0 | 0 | 0 |
| 50 | S17.0-4 | 1.29 | 0 | 0 | 0 | 770 | 0 | 290 | 0 |
| 67 | S19-POG | - | 0 | 0 | 0 | 3600 | 0 | 0 | 0 |
| 51 | S20.0-4 | 0.66 | 0 | 0 | 0 | 770 | 0 | 0 | 0 |
| 52 | S20.4-11 | 0.66 | 0 | 0 | 0 | 36 | 0 | 0 | 0 |
| 53 | S21.0-3 | 1.18 | 0 | 0 | 0 | 520 | 0 | 0 | 0 |
| 54 | S22.0-24 | 1.18 | 0 | 0 | 0 | 13000 | 0 | 0 | 0 |
| 55 | S23.0-12 | 1.01 | 0 | 0 | 0 | 23000 | 0 | 0 | 0 |
| 56 | S24.0-3 | 0.87 | 0 | 0 | 0 | 320 | 0 | 0 | 0 |
| 57 | S25.0-4 | 1.08 | 0 | 0 | 0 | 560 | 0 | 0 | 0 |
| 60 | S26.0-20 | 1.21 | 0 | 0 | 0 | 8500 | 0 | 0 | 0 |
| 58 | S26.4-12 | 1.12 | 0 | 0 | 0 | 5600 | 0 | 0 | 0 |
| 62 | S27.0-23 | 0.92 | 0 | 0 | 0 | 8400 | 0 | 0 | 0 |
| 63 | S28.0-23 | 1.2 | 0 | 0 | 0 | 10000 | 0 | 0 | 0 |
| 64 | S29.0-28 | 1.2 | 0 | 0 | 0 | 1800 | 0 | 0 | 0 |
| 65 | S30.0-13 | 1.18 | 0 | 0 | 0 | 7600 | 0 | 2200 | 0 |

Prepared by: SGL
Checked by: JBH1

# Table M-2

## Deposit N
## January 1999 Sample Results
## (FRRAT Data)

| ID | In-Place Density g/cm$^3$ | Aroclor 1016 ug/kg | Aroclor 1221 ug/kg | Aroclor 1232 ug/kg | Aroclor 1242 ug/kg | Aroclor 1248 ug/kg | Aroclor 1254 ug/kg | Aroclor 1260 ug/kg |
|---|---|---|---|---|---|---|---|---|
| S01-BOT | - | 0 | 0 | 0 | 1300 | 0 | 0 | 0 |
| S02-BOT | - | 0 | 0 | 0 | 920 | 0 | 0 | 0 |
| S03_0-8 | 0.37 | 0 | 0 | 0 | 27000 | 0 | 0 | 0 |
| S03-BOT | 0.19 | 0 | 0 | 0 | 19000 | 0 | 0 | 0 |
| S04-BOT | - | 0 | 0 | 0 | 20000 | 0 | 0 | 0 |
| S05_0-8 | 0.4 | 0 | 0 | 0 | 18000 | 0 | 0 | 0 |
| S05-BOT | - | 0 | 0 | 0 | 20000 | 0 | 0 | 0 |
| S06_0-9 | 0.24 | 0 | 0 | 0 | 43000 | 0 | 0 | 0 |
| S06-BOT | - | 0 | 0 | 0 | 27000 | 0 | 0 | 0 |
| S07-BOT | - | 0 | 0 | 0 | 4800 | 0 | 0 | 0 |
| S08-BOT | - | 0 | 0 | 0 | 27000 | 0 | 0 | 0 |
| S09_0-8 | 0.25 | 0 | 0 | 0 | 19000 | 0 | 0 | 0 |
| S09-BOT | - | 0 | 0 | 0 | 35000 | 0 | 0 | 0 |
| S10_0-13 | 0.28 | 0 | 0 | 0 | 12000 | 0 | 0 | 0 |
| S10_0-13_TD | - | 0 | 0 | 0 | 14000 | 0 | 0 | 0 |
| S10-BOT | 0.42 | 0 | 0 | 0 | 8800 | 0 | 0 | 0 |
| S12_0-9 | - | 0 | 0 | 0 | 37000 | 0 | 0 | 0 |
| S13-BOT | - | 0 | 0 | 0 | 1300 | 0 | 0 | 0 |
| S14-BOT | - | 0 | 0 | 0 | 3600 | 0 | 0 | 0 |
| S15-BOT | - | 0 | 0 | 0 | 12000 | 0 | 0 | 0 |
| S16_0-9 | 0.67 | 0 | 0 | 0 | 11000 | 0 | 0 | 0 |
| S17-BOT | - | 0 | 0 | 0 | 4400 | 0 | 0 | 0 |
| S18_0-6 | 0.41 | 0 | 0 | 0 | 2800 | 0 | 0 | 0 |
| S18_0-6MS | - | 0 | 0 | 0 | 3800 | 0 | 1400 | 0 |
| S18_0-6MSD | - | 0 | 0 | 0 | 3800 | 0 | 820 | 0 |
| S19-BOT | - | 0 | 0 | 0 | 3800 | 0 | 0 | 0 |
| S20-BOT | - | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| S20-BOT_SD | - | 0 | 0 | 0 | 83 | 0 | 0 | 0 |
| S21-BOT | - | 0 | 0 | 0 | 440 | 0 | 80 | 0 |
| S23_0-11 | - | 0 | 0 | 0 | 660 | 0 | 0 | 0 |
| S24_0-8 | 1.25 | 0 | 0 | 0 | 0 | 0 | 0 | 2100 |
| S25_0-6 | - | 0 | 0 | 0 | 1000 | 0 | 0 | 0 |
| S26_0-17 | 0.88 | 0 | 0 | 0 | 1800 | 0 | 0 | 0 |
| S27_0-24 | 1.03 | 0 | 0 | 0 | 1700 | 0 | 0 | 0 |

**Table M-2** *(Continued)*

| ID | In-Place Density g/cm$^3$ | Aroclor 1016 ug/kg | Aroclor 1221 ug/kg | Aroclor 1232 ug/kg | Aroclor 1242 ug/kg | Aroclor 1248 ug/kg | Aroclor 1254 ug/kg | Aroclor 1260 ug/kg |
|---|---|---|---|---|---|---|---|---|
| S27_0-24_TD | - | 0 | 0 | 0 | 1400 | 0 | 380 | 0 |
| S28_0-16 | 1.13 | 0 | 0 | 0 | 1600 | 0 | 0 | 0 |
| S29_0-19 | 1.28 | 0 | 0 | 0 | 360 | 0 | 84 | 0 |
| S29_0-19_SD | - | 0 | 0 | 0 | 320 | 0 | 130 | 0 |
| S30_0-5 | 1.52 | 0 | 0 | 0 | 180 | 0 | 0 | 0 |
| S31_0-17 | 1.22 | 0 | 0 | 0 | 2500 | 0 | 0 | 0 |
| T02-BOT | - | 0 | 0 | 0 | 1000 | 0 | 0 | 0 |
| T05-BOT | - | 0 | 0 | 0 | 1700 | 0 | 0 | 0 |
| T08-BOT | - | 0 | 0 | 0 | 960 | 0 | 0 | 0 |
| T11-BOT | - | 0 | 0 | 0 | 2300 | 0 | 0 | 0 |
| T14-BOT | - | 0 | 0 | 0 | 3300 | 0 | 0 | 0 |
| T14-BOTMS | - | 0 | 0 | 0 | 4000 | 0 | 0 | 0 |
| T14-BOTMSD | - | 0 | 0 | 0 | 3500 | 0 | 0 | 0 |
| T17-BOT | - | 0 | 0 | 0 | 1400 | 0 | 0 | 0 |
| T20/21-BOT | - | 0 | 0 | 0 | 180 | 0 | 0 | 0 |
| T28-BOT | 1.44 | 0 | 0 | 0 | 62 | 0 | 0 | 0 |
| T30-BOT | 1.33 | 0 | 0 | 0 | 81 | 0 | 0 | 0 |

Prepared by: SGL
Checked by: JBH1

# Table M-3

## Deposit N
## October 1999 Sampling Results

| Sample ID | Total PCB[1,2] ppm | Mercury[2] mg/kg | Solids % | TOC[4] % | Sediment Thickness[5] ft |
|---|---|---|---|---|---|
| N-PC-1-0-3 | 85 | 5.6 | 16.4 | 5.6 | 0.67 |
| N-PC-2-0-1 | 0.65 | 0.19 | 62.1 | 3.2 | 0.0 |
| N-PC-3-0-12 | 75 | 5.2 | 17.5 | 5 | 0.1 |
| N-PC-4-0-6 | 49 | 2.8 | 19.4 | 6 | 1.42 |
| N-PC-5-0-3.5 | 1.8 | 0.33 | 58.2 | 3.9 | 0.34 |
| N-PC-6-0-8 | 130 | 4.1 | 16.6 | 4.4 | 0.87 |
| N-PC-7-0-9 | 15 | 1.6 | 20 | 6.7 | 0.21 |
| N-PC-8-0 | 18 | 0.91 | 32.3 | 6.7 | 0.46 |
| N-PC-9-0-6 | 94 | 3.7 | 16.9 | 7.1 | 0.48 |
| N-PC-10-0-15 | 78 | 3.3 | 18.1 | 5 | 0.20 |
| N-PC-11-0-4 | 2.3 | 0.31 | 57 | 8.6 | 0.0 |
| N-PC-12-0 | 17 | 1.2 | 28.2 | 8.3 | 0.23 |
| N-PC-13-0-6.5 | 30 | 1.7 | 32.3 | 8.1 | 0.0 |
| N-PC-14-0-1.5 | 1.3 | 0.18 | 62.9 | 1.6 | 0.23 |
| N-PC-15-0-4 | 7 | 0.42 | 41.3 | 5.5 | 0.64 |
| N-PC-16-0-2 | 14 | 0.8 | 33.3 | 6.4 | 0.0 |
| N-PC-17-0 | 0.51 | 0.1 | 73.5 | 3.3 | 0.24 |
| N-PC-18-0-1 | 0.27 | 0.13 | 67.5 | 2.4 | 0.35 |
| N-PC-19-0-4 | 2.3 | 0.45 | 43.6 | 4 | 0.15 |
| N-PC-20-0-14 | 0.37 | 0.36 | 38.6 | 3.6 | 0.57 |
| N-PC-21-0-4 | 0.26 | 0.18 | 68.3 | 2.8 | 0.43 |
| N-PC-22-0-6.5 | 0.15 | 0.098 | 73.7 | 0.94 | 0.50 |
| N-PC-23-0-6 | 1.1 | 0.38[3] | 67.9 | 1.8 | 0.0 |
| N-PC-24-0-4.5 | 0.098 | 0.23 | 56 | 4.5 | 0.72 |
| N-PC-25-0-5 | 14 | 0.58 | 57.2 | 2.4 | 0.25 |
| N-PC-26-0-7 | 2.9 | 0.24 | 64.3 | 2.7 | 0.0 |
| N-PC-27-0-10 | 0.65 | 0.16 | 71.2 | 2.3 | 0.0 |
| N-PC-28-0 | 0.15 | 0.11 | 75.7 | 0.74 | 0.0 |
| N-PC-29-0-10 | 3 | 0.35 | 67.3 | 1.2 | 0.03 |
| N-PC-30-0-6 | 0.42 | 0.16 | 71 | 0.83 | 0.79 |

[1] PCB Samples were analyzed following SW-846 Method 8082.

[2] Reported in dry weight

[3] Spiked sample recovery not within control limits; post digestion spike recovery accepted.

[4] Reported value is an average of four replicates

[5] Sediment thickness (in tenths) reported as a result of the November 8, 1999 Miller Engineer's survey.

Prepared by: SGL
Checked by: JBH1

# Table M-4
## PCB Mass Estimates - Phase 1

| Phase 1 Predredge[1] | | | | Phase 1 Postdredge[2] | | | | |
|---|---|---|---|---|---|---|---|---|
| West Lobe[3] | | East Lobe[4] | | West Lobe[3] | | East Lobe[4] | | |
| Sediment Volume (cu. yds.) | 4930 | Sediment Volume (cu. yds.) | 250 | Sediment Volume (cu. yds.) | 1327.5 | Sediment Volume (cu. yds.) | 122.5 | |
| Avg. PCB Concentration (ppm) | 21.0 | Avg. PCB Concentration (ppm) | 7.6 | Avg. PCB Concentration (ppm) | 10.4 | Avg. PCB Concentration (ppm) | 1.1 | |
| Avg. Density (lbs./cu. yd.) | 781.3 | Avg. Density (lbs./cu. yd.) | 1859.1 | Avg. Density (lbs./cu. yd.) | 587.5 | Avg. Density (lbs./cu. yd.) | 2075.1 | |
| Total PCB Mass (lbs.) | 80.9 | Total PCB Mass (lbs.) | 3.5 | Total PCB Mass (lbs.) | 8.1 | Total PCB Mass (lbs.) | 0.3 | |
| 95% C.L. (Lower)[5] | 44.1 | 95% C.L. (Lower)[5] | 2.0 | 95% C.L. (Lower)[5] | 4.3 | 95% C.L. (Lower)[5] | 0.17 | |
| 95% C.L. (Upper)[5] | 127.7 | 95% C.L. (Upper)[5] | 5.2 | 95% C.L. (Upper)[5] | 13.1 | 95% C.L. (Upper)[5] | 0.37 | |
| | | Phase 1 Predredge (Combined): | | | | Phase 1 Postdredge (Combined): | | |
| | | Total PCB Mass (lbs.) | 84.4 | | | Total PCB Mass (lbs.) | 8.4 | 76.0 |
| | | 95% C.L. (Lower) | 46.1 | | | 95% C.L. (Lower) | 4.5 | 41.7 |
| | | 95% C.L. (Upper) | 132.9 | | | 95% C.L. (Upper) | 13.4 | 119.5 |

[1] Results from November, 1998 Miller survey and FRRAT sediment PCB sampling.
[2] Results from January, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results between gridlines 0 and 800.
[4] Results east of gridline 800.
[5] Calculated with Type I error rate of 0.22 for both PCB concentration and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

## Table M-5
## PCB Mass Estimates - Phase 2
## Confidence Limit Method

| Phase 2 Predredge[1] | | Phase 2 Postdredge[2] | |
|---|---|---|---|
| Sediment Volume (cu. yds.) | 5585 | Sediment Volume (cu. yds.) | 2834 |
| Avg. PCB Concentration (ppm)[3] | 2.8 | Avg. PCB Concentration (ppm)[3] | 3.0 |
| Avg. Density (lbs./cu. yd.)[3] | 1863.3 | Avg. Density (lbs./cu. yd.)[3] | 1851.8 |
| Total PCB Mass (lbs.) | 29.1 | Total PCB Mass (lbs.) | 15.7 |
| 95% C.L. (Lower)[4] | 16.7 | 95% C.L. (Lower)[4] | 7.3 |
| 95% C.L. (Upper)[4] | 42.8 | 95% C.L. (Upper)[4] | 25.7 |

[1] Results from July, 1999 Miller survey and January, 1999 FRRAT sediment PCB sampling.
[2] Results from November, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results within Phase 2 dredge boundary.
[4] Calculated with Type I error rate of 0.22 for both PCB concentration and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

## Table M-6
## PCB Mass Estimates - Phase 3
## Confidence Limit Method

| Phase 3 Predredge[1] | | Phase 3 Postdredge[2] | |
|---|---|---|---|
| Sediment Volume (cu. yds.) | 426 | Sediment Volume (cu. yds.) | 318 |
| Avg. PCB Concentration (ppm)[3] | 28.8 | Avg. PCB Concentration (ppm)[3] | 55.0 |
| Avg. Density (lbs./cu. yd.)[3] | 382.1 | Avg. Density (lbs./cu. yd.)[3] | 582.4 |
| Total PCB Mass (lbs.) | 4.7 | Total PCB Mass (lbs.) | 10.2 |
| 95% C.L. (Lower)[4] | 3.3 | 95% C.L. (Lower)[4] | 3.8 |
| 95% C.L. (Upper)[4] | 6.4 | 95% C.L. (Upper)[4] | 19.5 |

[1] Results from July, 1999 Miller survey and January, 1999 FRRAT sediment PCB sampling.
[2] Results from November, 1999 Miller survey and FRRAT sediment PCB sampling.
[3] Results within Phase 3 dredge boundary.
[4] Calculated with Type I error rate of 0.22 for both PCB concentration. and sediment density, resulting in a combined Type I error rate of 0.05.

Prepared by: SGL
Checked by: JBH1

# Table M-7
# PCB Mass Estimates - Postproject Remaining

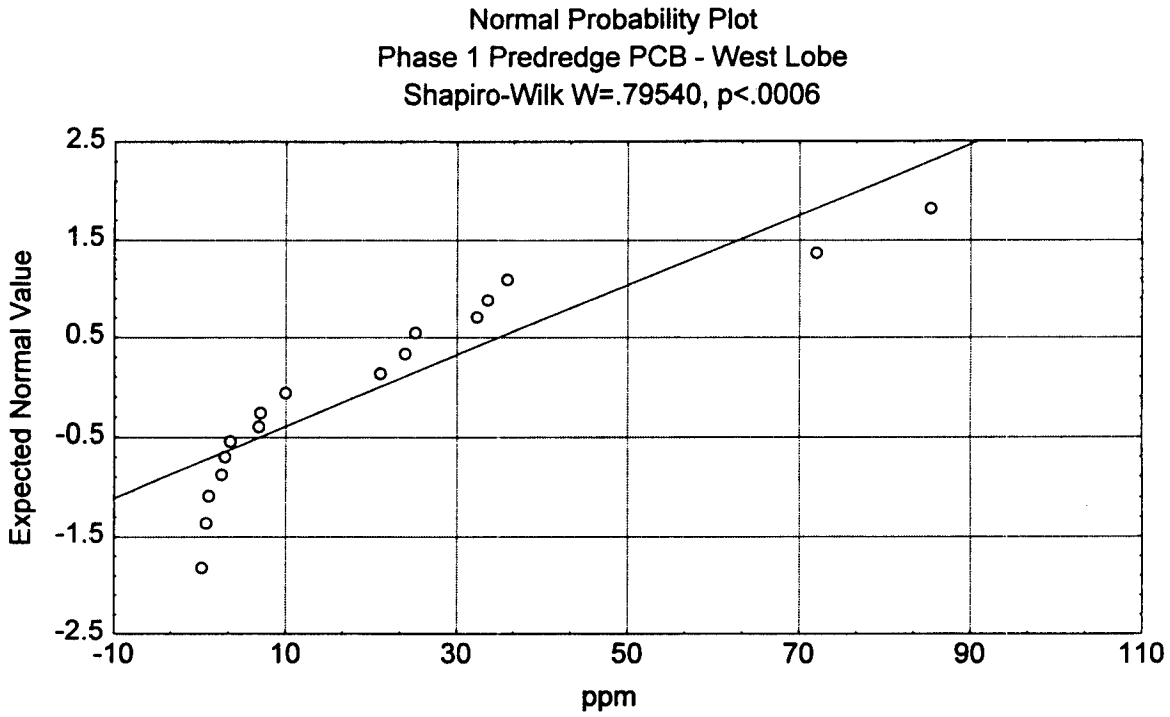
| Dredging Phase | Estimate |
|---|---|
| **West Lobe (Excluding Phase 3 Area)** | |
| Sediment Volume (cu. yds.) | 1256.6 |
| Avg. PCB Concentration (ppm)[3] | 4.6 |
| Avg. Density (lbs./cu. yd.)[3] | 741.6 |
| Total PCB Mass Remaining (lbs.) | 4.3 |
| **West Lobe (Phase 3 Area)** | |
| Total PCB Mass Remaining (lbs.) | 10.2 |
| **East Lobe (Phase 1 Area)** | |
| Total PCB Mass Remaining (lbs.) | 0.3 |
| **East Lobe (Phase 2 Area)** | |
| Total PCB Mass Remaining (lbs.) | 15.7 |
| Total of All Areas (lbs.): | 30.5 |

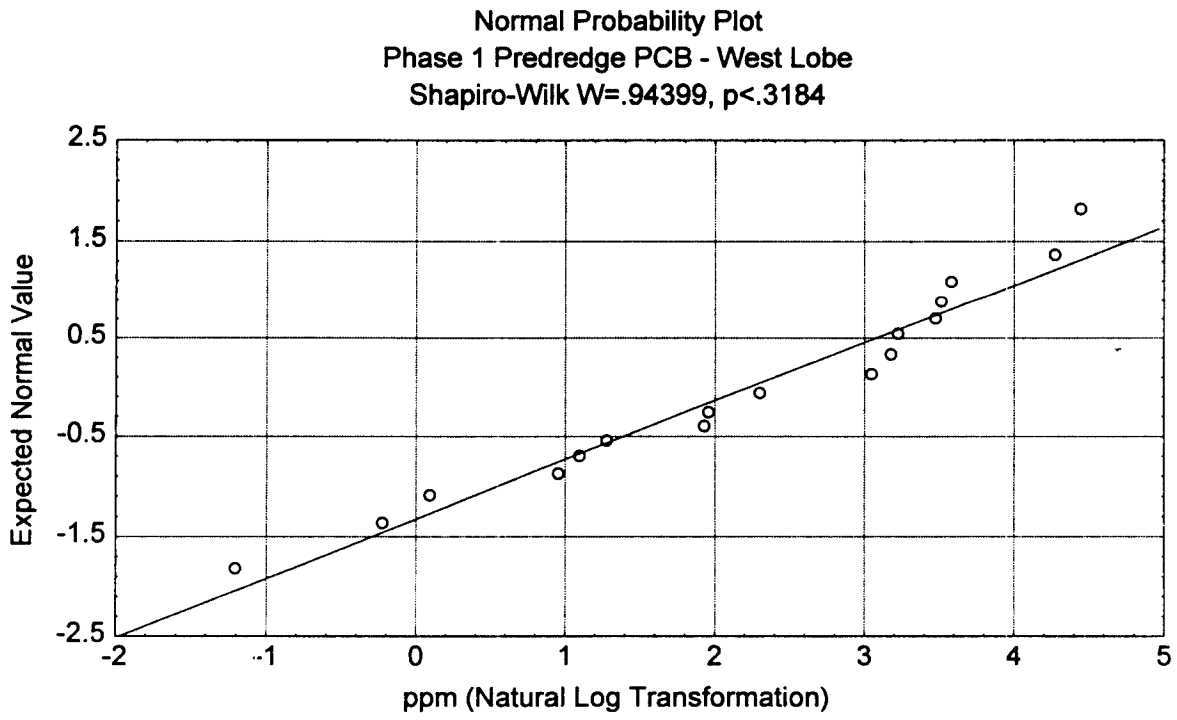
Prepared by: SGL

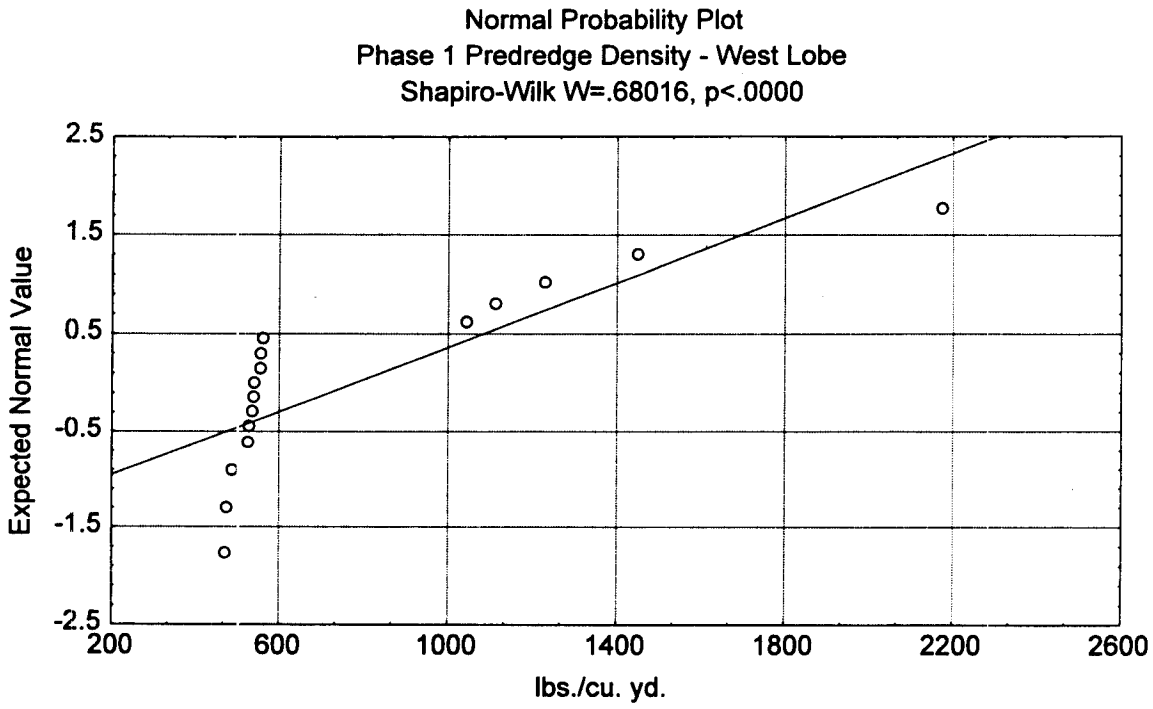
Checked by: JBH1

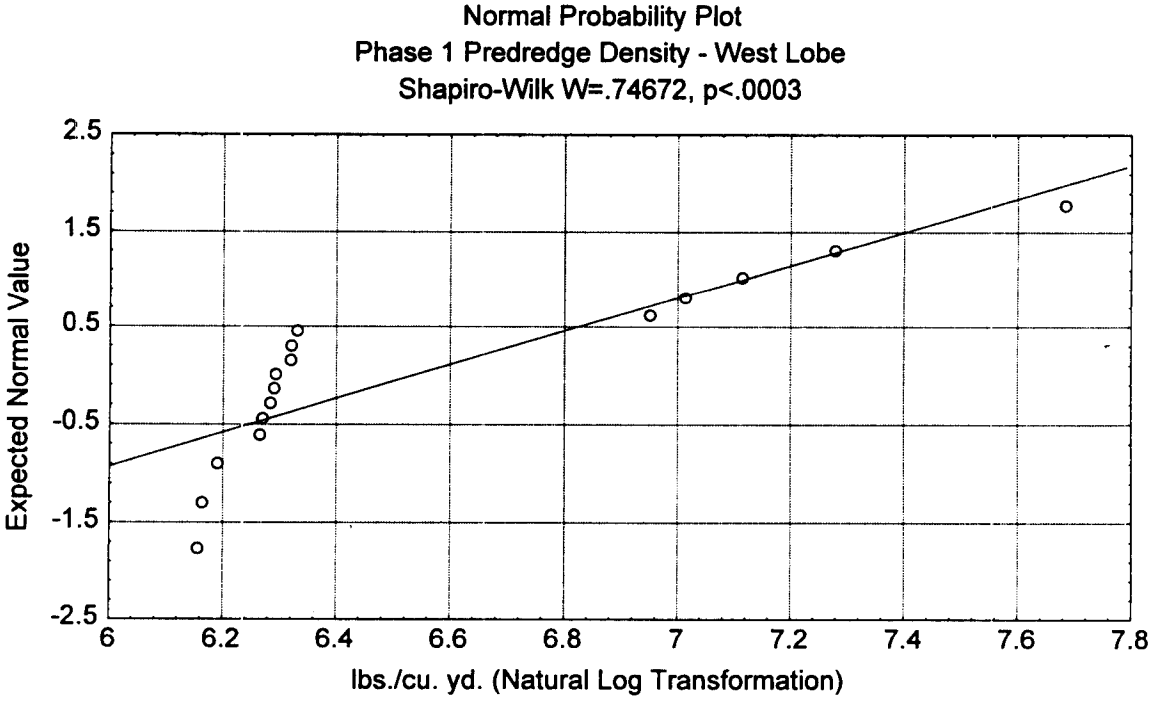
# M-1

## Goodness of Fit Tests

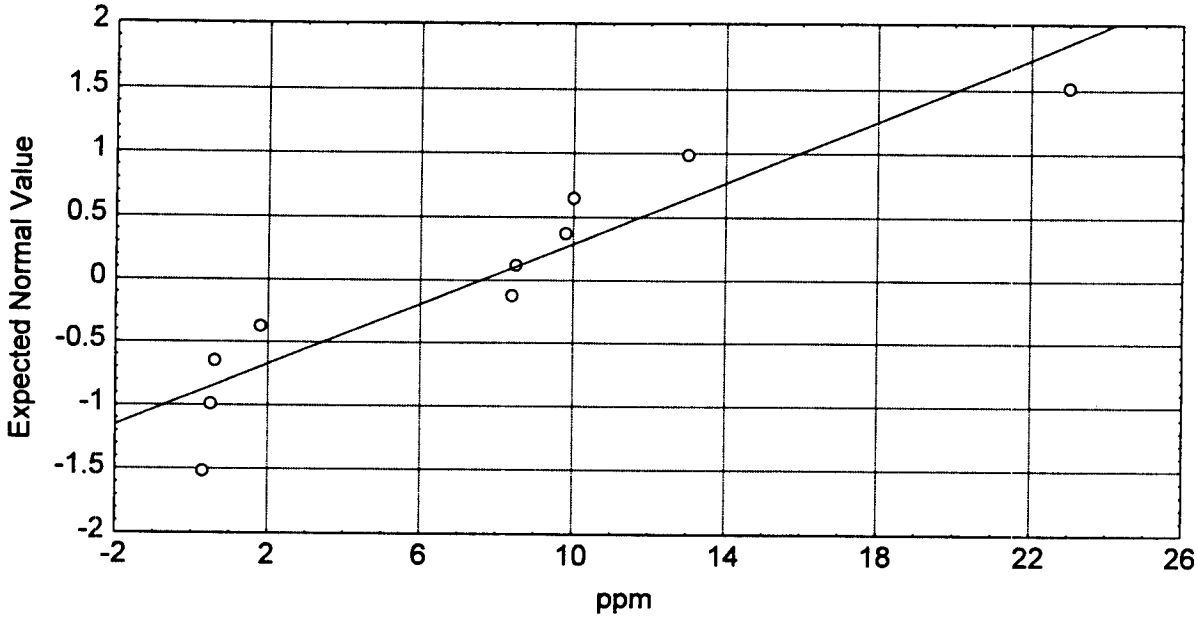

Normal Probability Plot
Phase 1 Predredge PCB - West Lobe
Shapiro-Wilk W=.79540, p<.0006
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-10
10
30
50
70
90
110
ppm


Normal Probability Plot
Phase 1 Predredge PCB - West Lobe
Shapiro-Wilk W=.94399, p<.3184
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-2
-1
0
1
2
3
4
5
ppm (Natural Log Transformation)

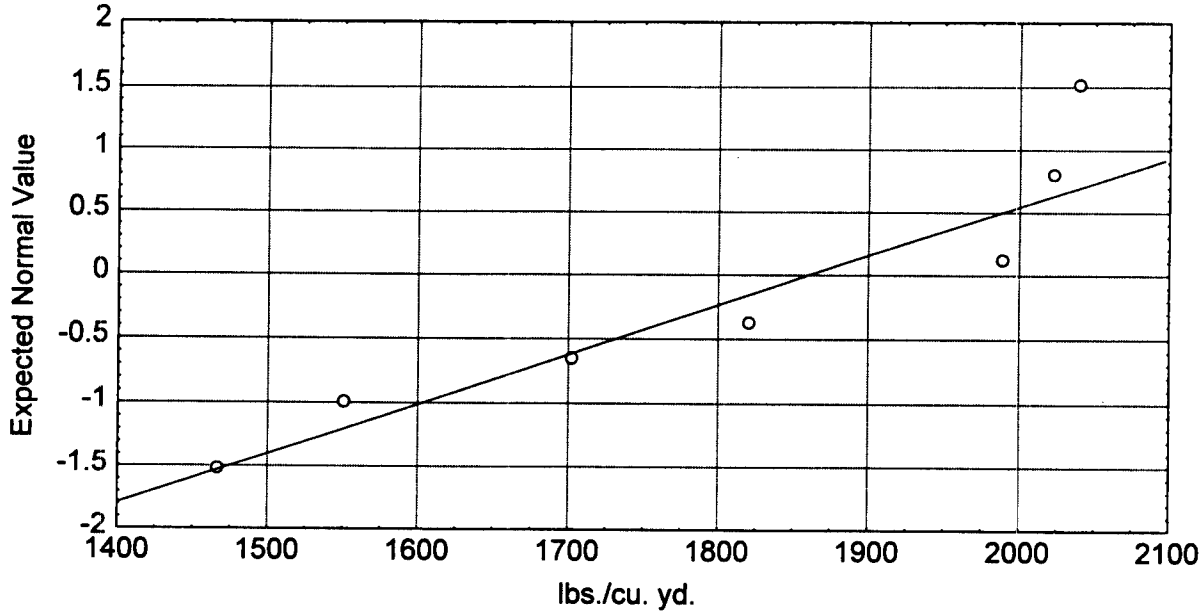

Normal Probability Plot
Phase 1 Predredge Density - West Lobe
Shapiro-Wilk W=.68016, p<.0000
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
200
600
1000
1400
1800
2200
2600
lbs./cu. yd.

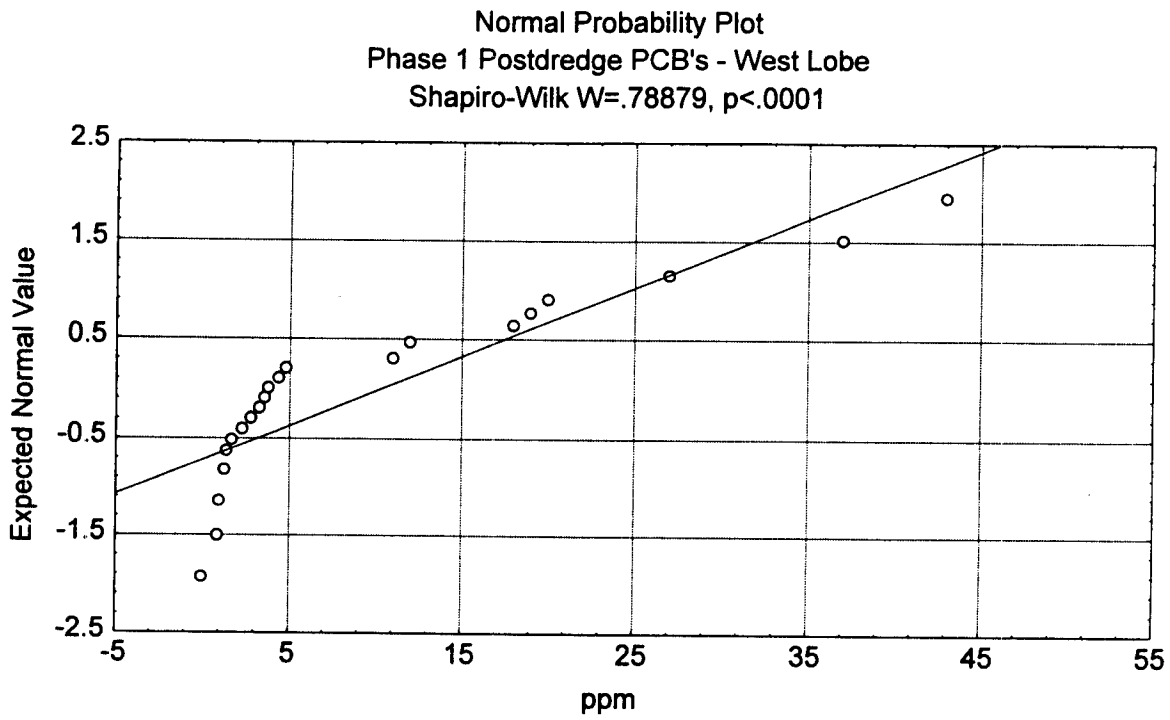

Normal Probability Plot
Phase 1 Predredge Density - West Lobe
Shapiro-Wilk W=.74672, p<.0003
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
6
6.2
6.4
6.6
6.8
7
7.2
7.4
7.6
7.8
lbs./cu. yd. (Natural Log Transformation)

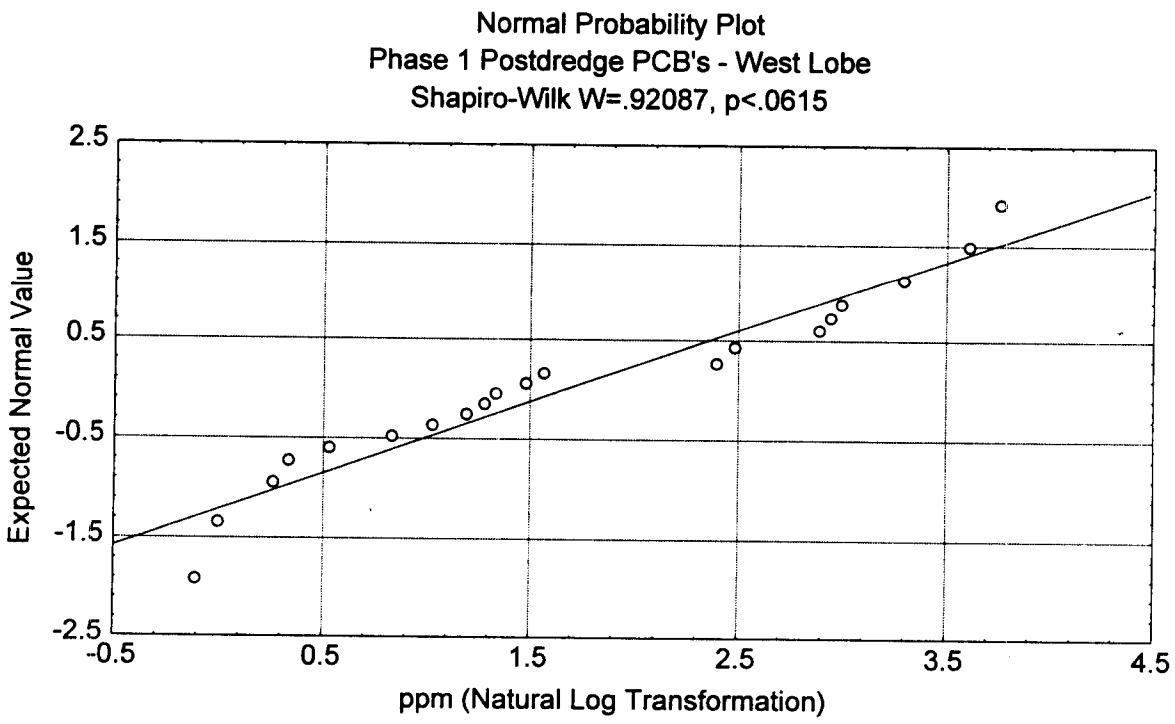
Normal Probability Plot
Phase 1 Predredge PCB - East Lobe
Shapiro-Wilk W=.87308, p<.1037

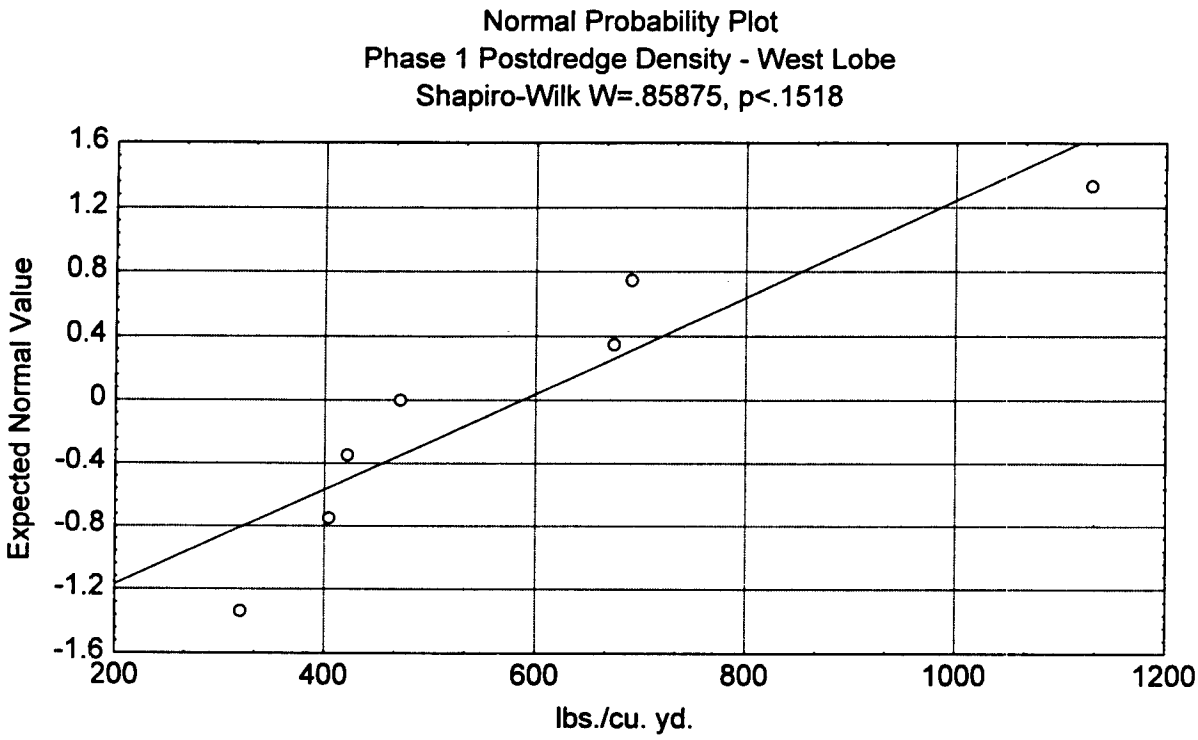


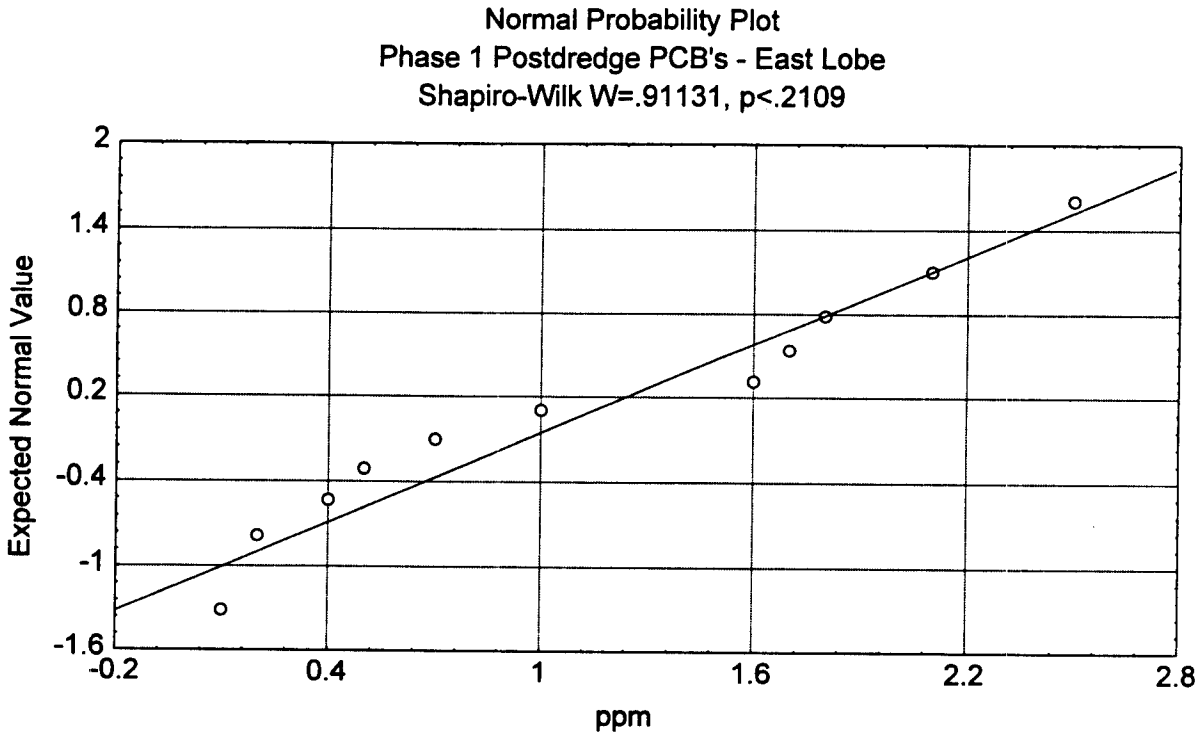
Normal Probability Plot
Phase 1 Predredge Density - East Lobe
Shapiro-Wilk W=.80108, p<.0151



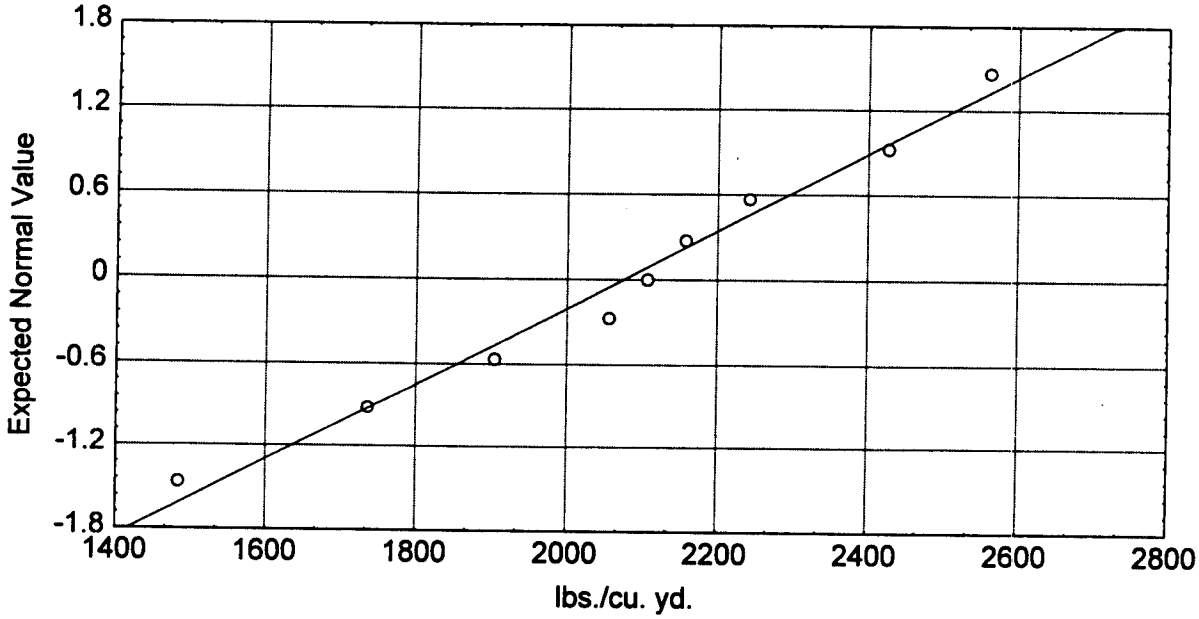

Normal Probability Plot
Phase 1 Postdredge PCB's - West Lobe
Shapiro-Wilk W=.78879, p<.0001
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-5
5
15
25
35
45
55
ppm

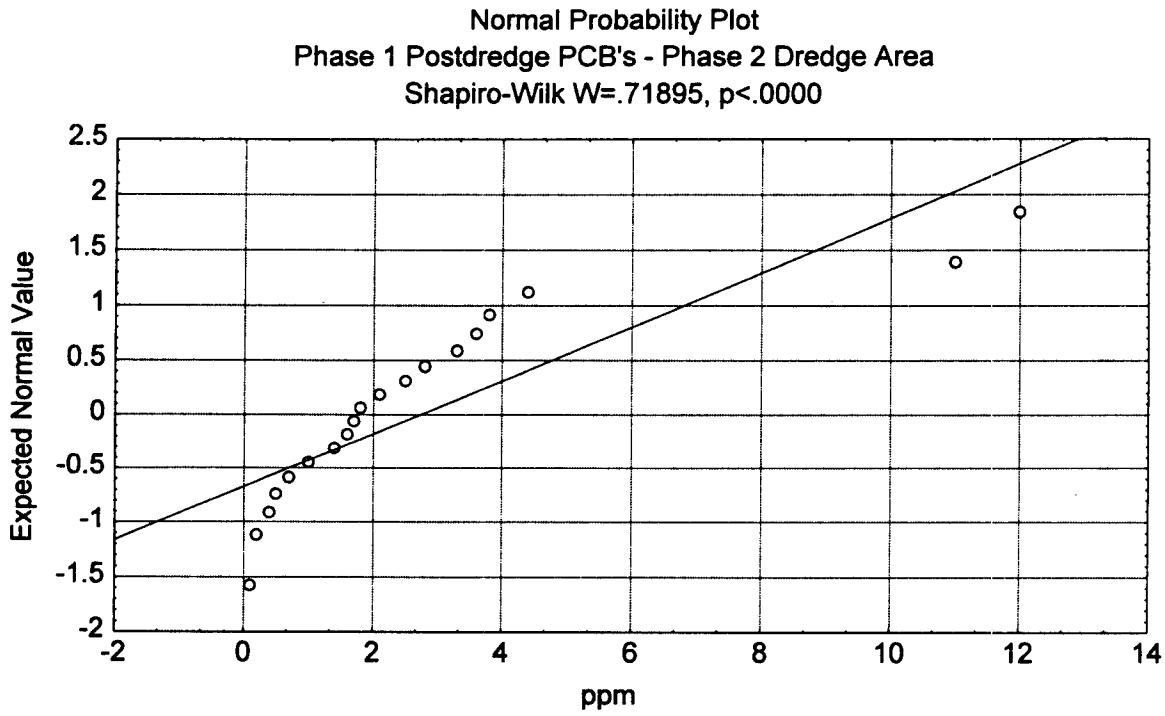

Normal Probability Plot
Phase 1 Postdredge PCB's - West Lobe
Shapiro-Wilk W=.92087, p<.0615
Expected Normal Value
2.5
1.5
0.5
-0.5
-1.5
-2.5
-0.5
0.5
1.5
2.5
3.5
4.5
ppm (Natural Log Transformation)

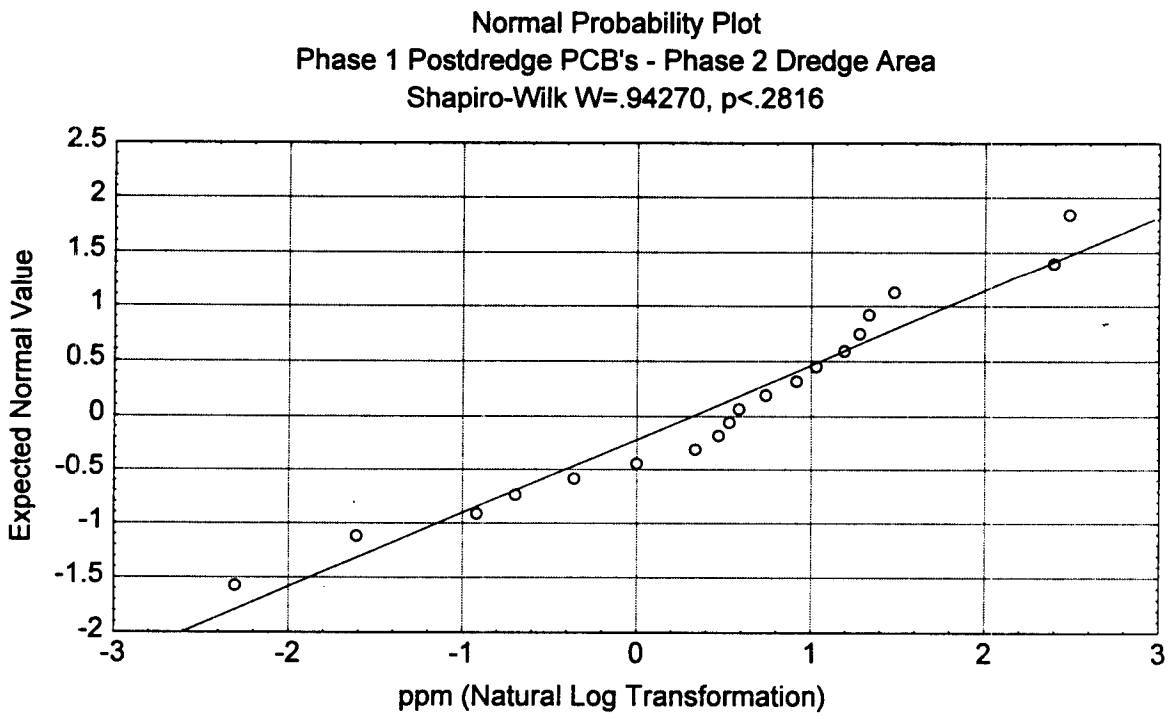

Normal Probability Plot
Phase 1 Postdredge Density - West Lobe
Shapiro-Wilk W=.85875, p<.1518
Expected Normal Value
1.6
1.2
0.8
0.4
0
-0.4
-0.8
-1.2
-1.6
200
400
600
800
1000
1200
lbs./cu. yd.


Normal Probability Plot
Phase 1 Postdredge PCB's - East Lobe
Shapiro-Wilk W=.91131, p<.2109
Expected Normal Value
2
1.4
0.8
0.2
-0.4
-1
-1.6
-0.2
0.4
1
1.6
2.2
2.8
ppm

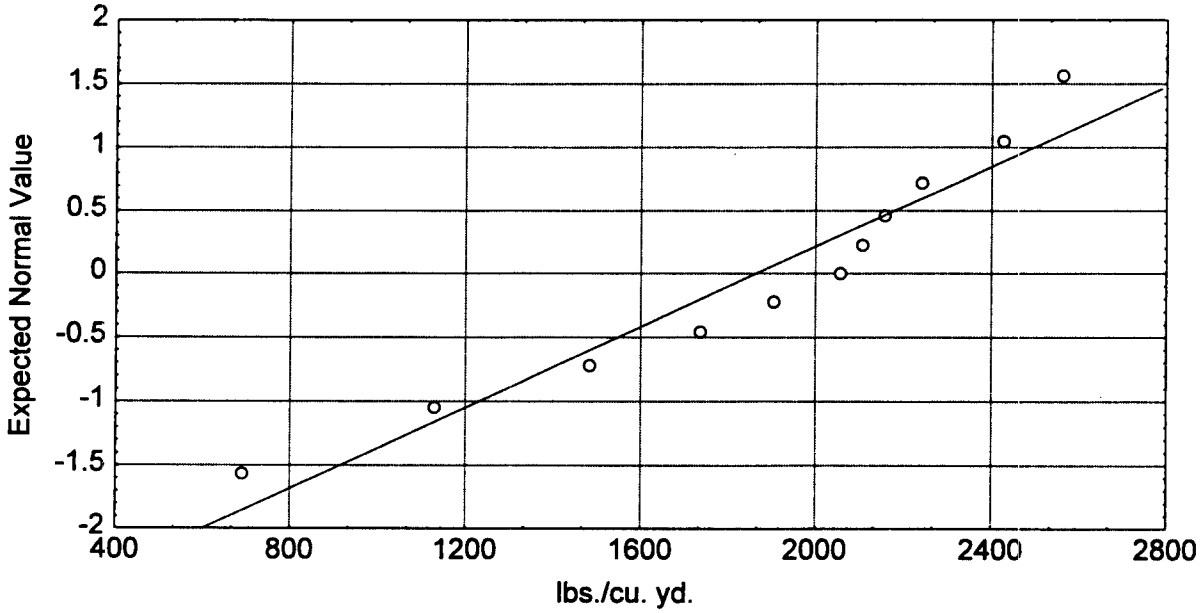
Normal Probability Plot
Phase 1 Postdredge Density - East Lobe
Shapiro-Wilk W=.98242, p<.9726

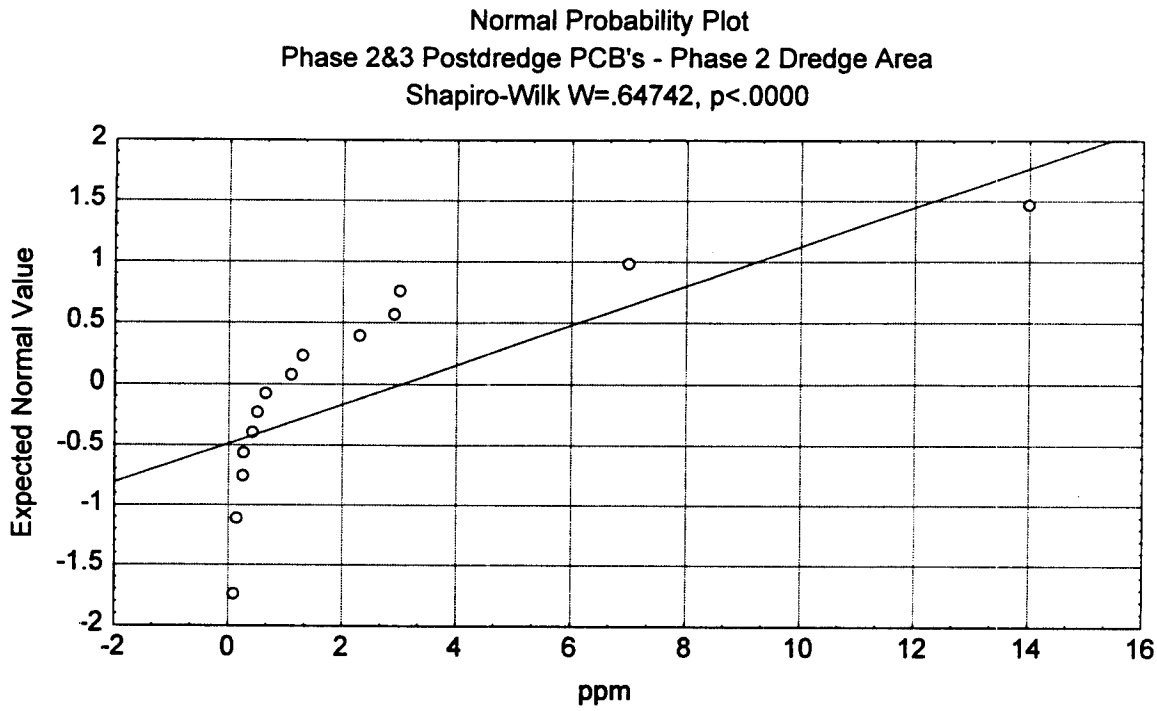


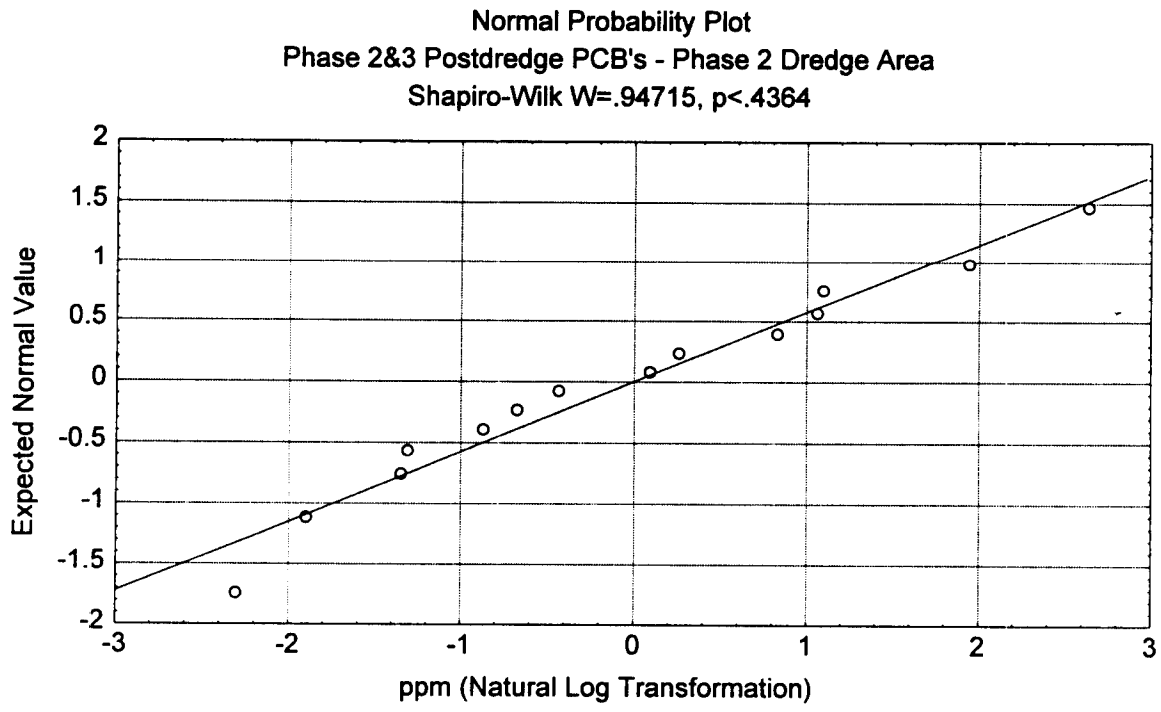

Normal Probability Plot
Phase 1 Postdredge PCB's - Phase 2 Dredge Area
Shapiro-Wilk W=.71895, p<.0000
Expected Normal Value
ppm
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2
0
2
4
6
8
10
12
14


Normal Probability Plot
Phase 1 Postdredge PCB's - Phase 2 Dredge Area
Shapiro-Wilk W=.94270, p<.2816
Expected Normal Value
ppm (Natural Log Transformation)
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-3
-2
-1
0
1
2
3

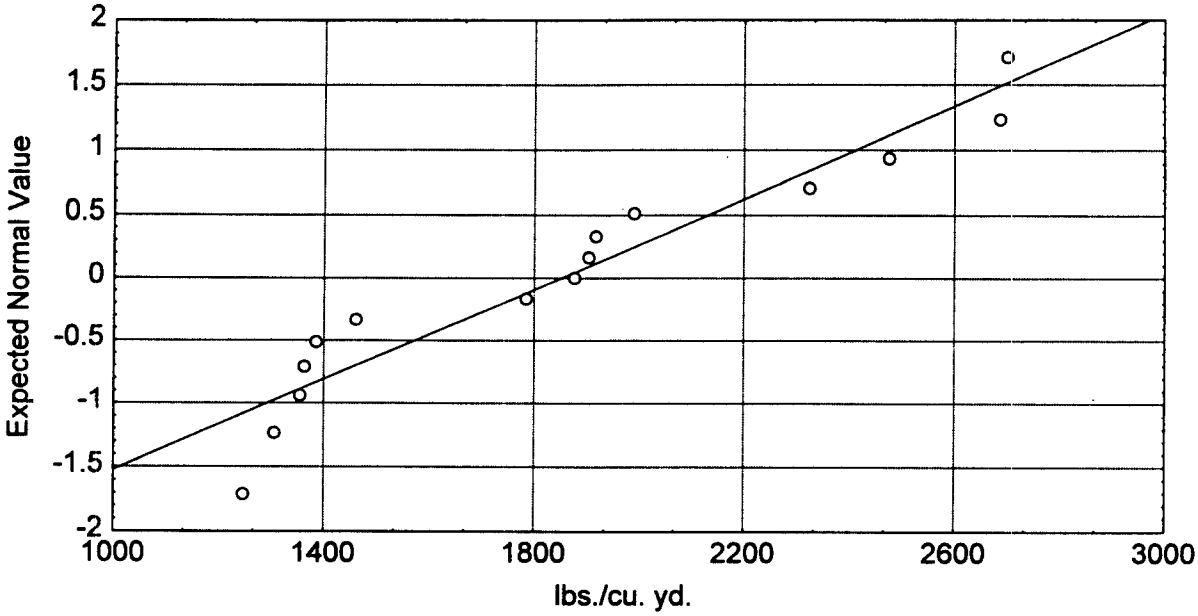
Normal Probability Plot
Phase 1 Postdredge Density - Phase 2 Dredge Area
Shapiro-Wilk W=.92697, p<.3636



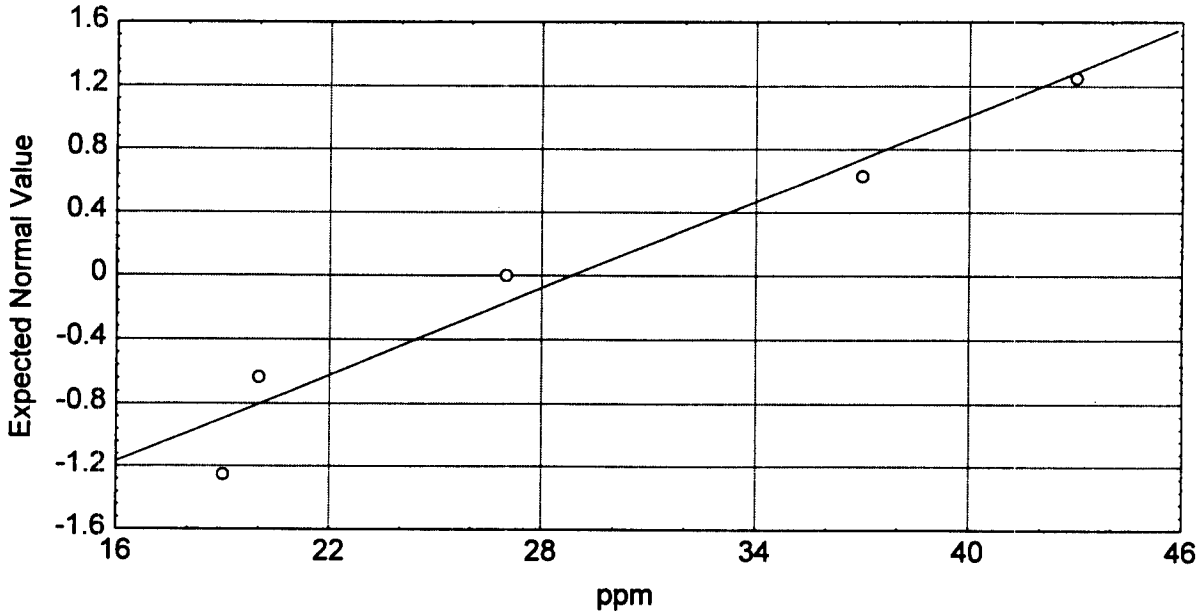

Normal Probability Plot
Phase 2&3 Postdredge PCB's - Phase 2 Dredge Area
Shapiro-Wilk W=.64742, p<.0000
Expected Normal Value
ppm
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2
0
2
4
6
8
10
12
14
16


Normal Probability Plot
Phase 2&3 Postdredge PCB's - Phase 2 Dredge Area
Shapiro-Wilk W=.94715, p<.4364
Expected Normal Value
ppm (Natural Log Transformation)
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-3
-2
-1
0
1
2
3

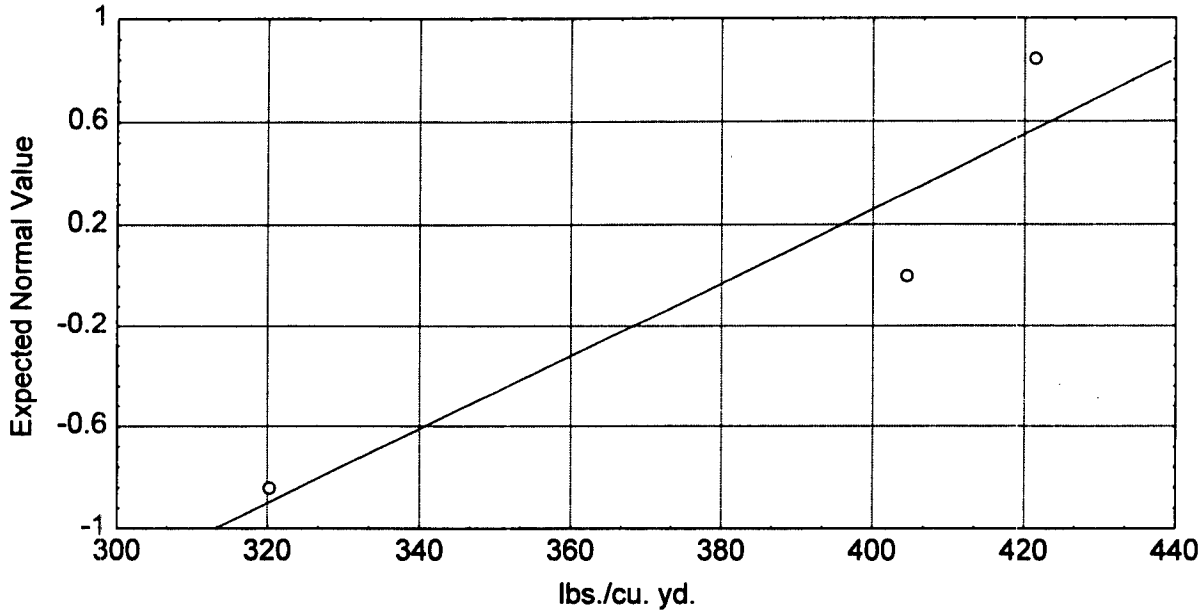
Normal Probability Plot
Phase 2&3 Postdredge Density - Phase 2 Dredge Area
Shapiro-Wilk W=.89931, p<.0938



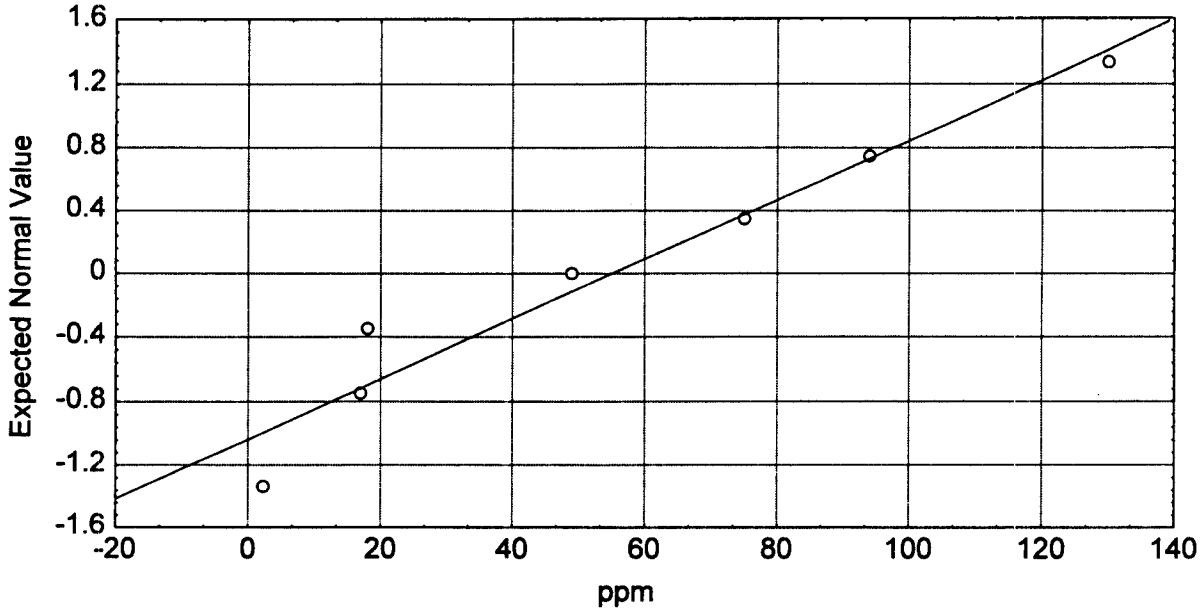
Normal Probability Plot
Phase 1 Postdredge PCB's - Phase 3 Dredge Area
Shapiro-Wilk W=.90953, p<.4163



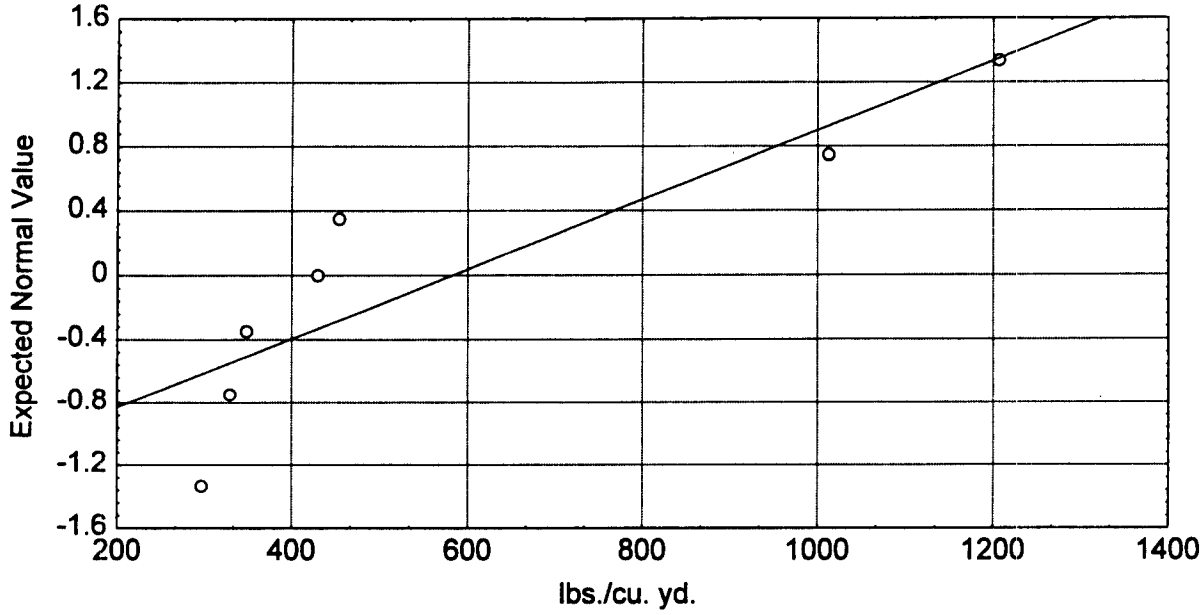
Normal Probability Plot
Phase 1 Postdredge Density - Phase 3 Dredge Area
Shapiro-Wilk W=.87187, p<.3008



Normal Probability Plot
Phase 2&3 Postdredge PCB's - Phase 3 Dredge Area
Shapiro-Wilk W=.93225, p<.5887



Normal Probability Plot
Phase 2&3 Postdredge Density - Phase 3 Dredge Area
Shapiro-Wilk W=.76144, p<.0163



# M-2

# Confidence Interval Calculations

| Phase | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Time | Predredge | Predredge | Predredge | Predredge | Postdredge | Postdredge | Postdredge | Postdredge | Predredge | Predredge | Postdredge | Postdredge | Predredge | Predredge | Postdredge | Postdredge |
| Area | West | West | East | East | West | West | East | East | | | | | | | | |
| Parameter | PCB | Density | PCB | Density | PCB | Density | PCB | Density | PCB | Density | PCB | Density | PCB | Density | PCB | Density |
| | 6.9 | 539.46 | 0.5 | 1988.82 | 1.3 | 320.22 | 0.5 | 2106.81 | 3.6 | 1129.41 | 1.3 | 1784.7 | 27 | 320.22 | 75 | 329.4 |
| | 3.0 | 1449.63 | 13.0 | 1988.82 | 0.9 | 674.19 | 0.7 | 1483.38 | 12.0 | 690.93 | 7 | 1306.8 | 20 | 404.46 | 49 | 453.6 |
| | 36.0 | 561.87 | 23.0 | 1702.35 | 27 | 404.46 | 2.1 | 1736.1 | 11.0 | 2106.81 | 14 | 1355.4 | 43 | 421.47 | 130 | 297 |
| | 21.1 | 526.5 | 0.3 | 1466.37 | 20 | 421.47 | 1 | 1904.58 | 4.4 | 1483.38 | 0.51 | 1876.5 | 27 | | 18 | 1012.5 |
| | 10.0 | 1044.9 | 0.6 | 1820.34 | 18 | 471.69 | 1.8 | 2157.57 | 2.8 | 1736.1 | 0.27 | 1385.1 | 19 | | 94 | 348.3 |
| | 32.4 | 541.08 | 8.5 | 2039.58 | 43 | 1129.41 | 1.7 | 2562.03 | 3.8 | 1904.58 | 2.3 | 1903.5 | 37 | | 2.3 | 1206.9 |
| | 7.1 | 528.66 | 8.4 | 1550.61 | 4.8 | 690.93 | 1.6 | 2427.03 | 0.5 | 2157.57 | 0.26 | 2475.9 | | | 17 | 429.3 |
| | 10.0 | 556.2 | 10.0 | 2022.57 | 27 | | 0.4 | 2241.81 | 0.7 | 2562.03 | 0.15 | 2324.7 | | | | |
| | 24.0 | 471.96 | 1.8 | 2022.57 | 19 | | 0.2 | 2056.32 | 2.1 | 2427.03 | 1.1 | 1247.4 | | | | |
| | 25.2 | 555.66 | 9.8 | 1988.82 | 12 | | 0.1 | | 1.0 | 2241.81 | 0.1 | 1363.5 | | | | |
| | 2.6 | 1230.39 | | | 37 | | 0.1 | | 1.8 | 2056.32 | 14 | 1989.9 | | | | |
| | 24.0 | 488.7 | | | 1.3 | | 2.5 | | 1.7 | | 2.9 | 1460.7 | | | | |
| | 33.7 | 475.74 | | | 3.6 | | | | 1.6 | | 0.65 | 2686.5 | | | | |
| | 0.8 | 488.7 | | | 12 | | | | 0.4 | | 0.15 | 1917 | | | | |
| | 72.0 | 536.22 | | | 11 | | | | 0.2 | | 3 | 2700 | | | | |
| | 85.4 | 2174.31 | | | 4.4 | | | | 3.3 | | 0.42 | | | | | |
| | 1.1 | 1112.4 | | | 2.8 | | | | 1.4 | | | | | | | |
| | 3.6 | | | | 3.8 | | | | 0.1 | | | | | | | |
| | 0.3 | | | | 0 | | | | 0.1 | | | | | | | |
| | | | | | 1 | | | | 2.5 | | | | | | | |
| | | | | | 1.7 | | | | | | | | | | | |
| | | | | | 1 | | | | | | | | | | | |
| | | | | | 2.3 | | | | | | | | | | | |
| | | | | | 3.3 | | | | | | | | | | | |
| | | | | | 1.4 | | | | | | | | | | | |
| mean | 21.0 | 781.3 | 7.6 | 1859.1 | 10.4 | 587.5 | 1.1 | 2075.1 | 2.8 | 1863.3 | 3.0 | 1851.8 | 28.8 | 382.1 | 55.0 | 582.4 |
| st. dev. | 23.72544 | 473.2179 | 7.185703 | 213.9511 | 12.21197 | 276.2244 | 0.845801 | 333.736 | 3.264724 | 566.3658 | 4.640357 | 505.5657 | 9.474527 | 54.21759 | 46.85488 | 368.6191 |
| st. err. | 5.442989 | 114.7722 | 2.272319 | 67.65727 | 2.442394 | 104.403 | 0.244162 | 111.2453 | 0.730014 | 170.7657 | 1.160089 | 130.5365 | 3.86796 | 31.30254 | 17.70948 | 139.3249 |
| n | 19 | 17 | 10 | 10 | 25 | 7 | 12 | 9 | 20 | 11 | 16 | 15 | 6 | 3 | 7 | 7 |
| Lower CL | 14.09391 | 634.811 | 4.594645 | 1769.9 | 7.308071 | 444.5415 | 0.740789 | 1927.048 | 1.824098 | 1639.835 | 1.522003 | 1684.237 | 23.41264 | 326.8717 | 30.79651 | 391.6765 |
| Upper CL | 27.92715 | 927.822 | 10.58536 | 1948.27 | 13.45993 | 730.4214 | 1.375877 | 2223.092 | 3.675902 | 2086.705 | 4.491747 | 2019.443 | 34.25403 | 437.2283 | 79.2892 | 773.1807 |

Confidence limits calculated with a Type I error rate of 0.22