MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

In the Matter of:

MDEQ Reference No.: AOC-ERD-98-002

Cone Drive Textron

Respondent:
Cone Drive Operations, Inc.,
a subsidiary of Textron, Inc.,

Traverse City, Grand Traverse County

Proceeding under Sections 20119 and 20134(1) of Part 201 and Part 31 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

AMENDMENT TO OCTOBER 28, 1998 ADMINISTRATIVE ORDER
BY CONSENT FOR RESPONSE ACTIVITY

The Parties agree to the following amendments to the October 28, 1998 Administrative Order by consent for Response Activities (AOC-ERD-98-002):

Section IV is amended to read as follows:

4.1 In entering into this Amendment to the October 28, 1998 Administrative Order by Consent for Response Activity, it is the mutual intent of the Parties to: (a) develop and implement a Supplemental Remedial Investigation ("Supplemental RI") work plan, so as to support the development of a Remedial Action Plan ("RAP") that complies with Sections 20118, 20120a, 20120b and 20120d and the Part 201 Administrative Rules; (b) implement the May 20, 2002, Surface Water Interim Response Plan as approved with modifications on July 5, 2002; (c) develop and submit a RAP to bring the Facility to closure under Part 201; (d) reimburse the State for past and future response costs as described in Section XX; (e) settle Part 31 civil penalties as defined in paragraph 21.1; and, (f) minimize litigation. This Amended AOC constitutes a full

settlement and satisfaction as to CDT for the violations prior to March 1, 2002, alleged by the MDEQ in the Part 31 Letter of Violation dated November 1, 2001, and in other MDEQ correspondence sent to CDT under the AOC.

Section V is amended as follows:

Paragraph 5.1 is deleted.

Paragraph 5.12 is added to read as follows:

5.12 "Remedial Action Plan" or "RAP" means a plan for the Facility that satisfies the requirements of Part 201, including, but not limited to, Sections 20118, 20120a, 20120b and 20120d and the Part 201 Administrative Rules.

Section VII of the Administrative Order is amended as follows:

7.5(b) is amended to read:

CDT shall implement the May 20, 2002, Surface Water Interim Response Plan, that was approved by MDEQ with modification on July 5, 2002, in accordance with the schedule contained in the approved Plan. The performance objective of the May 20, 2002, Surface Water Interim Response Plan is to cease discharges of venting groundwater to Boardman Lake above Mixing Zone adjusted GSI criteria. The May 20, 2002, Surface Water Interim Response Plan is not intended to remediate any contamination that has historically migrated or that may prospectively migrate beyond the GSI monitoring points. Sediments and the smear zone beneath Boardman Lake will require characterization and remediation under the Supplemental RI and RAP.

7.5 (c) Groundwater/Surfacewater Report

(i) At least 180 days prior to the five year anniversary of the effective date of this Order, CDT shall submit to the MDEQ for review and approval a Groundwater/Surface Water Interface Report (GSI Report). CDT shall submit subsequent GSI Reports every five (5) years thereafter for the duration of the remedial action or until CDT can demonstrate to the satisfaction of the MDEQ that monitoring of the GSI is no longer required to assure the protection of public health, safety, or welfare, or the environment. The GSI Report shall provide all information and data concerning the discharge of contaminated groundwater venting from the Facility to the surface water that is necessary to assess CDT's on-going compliance with Part 31, Water Resources Protection, of the NREPA and the administrative rules promulgated thereunder. The GSI Report shall, at a minimum, include the following information:

1. Identity of the Facility and MDEQ reference number.

2. The name (if any) of the receiving surface water body and the location of the venting groundwater contaminant plume. This information should be provided in narrative, including a quarter-quarter section description, and map form.

3. The location, nature and chemical characteristics of the past and ongoing source(s) of the groundwater contaminant plume, including a description of whether the source has been removed or is still present. In the event the source is still present, identify the type, concentration and mobility of the source contaminants, and the amount of recharge from precipitation over the source area in inches/year.

4. A summary of all GSI monitoring data collected over the previous five years. The summary shall include (i) the Chemical Abstract Service (CAS) Number, (ii)

the worst case maximum concentrations of the contaminants in the groundwater contaminant plume at the GSI, and (iii) the identification of all (light and dense) non-aqueous phase liquids, if present. If source contaminants have not yet reached the groundwater, but are expected to do so, contaminant source concentrations shall also be included. This information shall be provided in narrative, tabular, and map form that includes both a plan view showing groundwater contaminant concentration contours and a cross-sectional view at the GSI.

5. An analysis of the contaminant plume's general chemistry parameters (e.g., major cations and anions, ammonia, chemical and biological oxygen demand, chlorides and phosphorus).

6. The discharge rate in cubic feet per second (cfs) of the groundwater contaminant plume (the discharge rate of the groundwater plume shall be calculated using that portion of the contaminant plume which is or may become contaminated above the generic GSI criteria).

7. Information concerning the location of any other contaminant plumes entering the same surface water body in the vicinity of the Facility and their constituents and concentrations if such information exists and is available to Cone Drive upon request for the information from the MDEQ or other parties performing response activities involving groundwater venting to Boardman Lake.

8. If the groundwater contaminant plume contains bioaccumulative contaminants of concern, a description of the alternative to eliminate those contaminants from the discharge.

(ii) The MDEQ shall review the GSI Report and determine if the GSI performance objective specified in Paragraph 7.5(b) of this Order is being met and maintained. The MDEQ shall provide written notification of its determination to CDT.

(iii) Within thirty (30) days of a determination by CDT or a receipt of a written notification from MDEQ that implementation of additional response activities are necessary to meet and maintain the GSI performance objective specified in Paragraph 7.5(b) of this Order, CDT shall submit to the MDEQ, for review and approval, a work plan, including an implementation schedule and submittal of progress reports, of additional response activities that CDT will implement to regain compliance with the current Part 31 water quality standards and the resulting GSI criteria developed pursuant to Part 201 of the NREPA.

(iv) Upon receipt of the MDEQ's approval of the GSI additional response activity work plan, CDT shall implement the work plan as approved and/or modified by the MDEQ pursuant to Section XIV (Submissions and Approvals) and in accordance with the schedule contained therein.

Paragraphs 7.6 to 7.8 are amended to read as follows:

7.6(a) Within 60 days from the date of this amendment CDT shall submit a plan for a Supplemental Remedial Investigation ("Supplemental RI Plan") to delineate: (1) the nature and extent of the smear zone, including the smear zone below the waters of Boardman Lake that are attributable to and part of the CDT Facility, (2) the contaminated sediments of Boardman Lake that are attributable to and part of the CDT Facility, (3) any source areas on the upland portions of the CDT Facility, including free product, and (4) to obtain any other information necessary to

develop an approvable RAP. If MDEQ determines that the sediments are impacted, meaning the sediment chemical values indicate the potential for toxicity to aquatic life and/or the potential for bioaccumulation of sediment contaminants to occur, CDT shall undertake bulk sediment toxicity studies to determine if violations of water quality standards are occurring. CDT will not be required to further address impacted sediments, if CDT demonstrates, subject to MDEQ approval, that the impacted sediments are from another source area and are not attributable to the CDT Facility. The bulk sediment toxicity studies are subject to the review and approval of the MDEQ. Based on the bulk sediment toxicity studies a fish bioassay for bio-accumulative compounds may be required by MDEQ. The performance objective of the Supplemental RI Plan is to support the development of an approvable RAP that meets the requirements of Sections 20118, 20120a, 20120b and 20120d and the Part 201 Administrative Rules. Upon approval of the Supplemental RI Plan, CDT shall implement the Supplemental RI Plan in accordance with the schedule contained therein.

(b) CDT shall submit a Supplemental RI Report to MDEQ for review and approval in accordance with the schedule in the Supplemental RI Plan.

7.7 Remedial Action Plan ("RAP")

(a) Within sixty (60) days of receiving MDEQ approval of the Supplemental RI Report, CDT shall submit a RAP to the MDEQ for review and approval. The RAP shall provide for the following:

(i) All technical and administrative components required by Sections 20118, 20120a, 20120b and 20120d of the NREPA and the Part 201 Administrative Rules.

(ii) A detailed description of the specific work tasks to be conducted pursuant to the RAP, a description of how these work tasks will meet the performance objectives described in Paragraph 7.7(a)(i), and a description and supporting documentation of how the results of the remedial investigations or other response activities that have been performed at the Facility support the selection of the remedial action contained in the RAP.

(iii) Implementation schedules for conducting the response activities and for submission of progress reports and a final report.

(iv) A plan for obtaining access to any properties not owned or controlled by CDT that is needed to perform the response activities contained in the RAP. If CDT proposes to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(b)-(j) or (2) of the NREPA and that RAP provides for land and resource use restrictions, monitoring, operation and maintenance, or permanent markers as prescribed by Section 20120b(3)(a)-(d), the RAP shall include documentation from property owners or local units of government that the necessary access to these properties has been or will be obtained and that any proposed land or resource use restrictions can or will be placed or enacted.

(v) A description of the nature and amount of waste materials expected to be generated during the performance of response activities and the name and location of the facilities CDT proposes to use for the off-site transfer, storage, treatment or disposal of those waste materials.

(b) Within sixty (60) days of receiving the MDEQ's approval of the RAP, CDT shall commence performance of the RAP in accordance with the approved schedule and submit progress reports in accordance with the MDEQ-approved RAP. All technical and administrative requirements submitted to the MDEQ, which in combination constitute the MDEQ-approved

RAP, shall become incorporated into this Order and become an enforceable part of this Order. The technical and administrative components of an MDEQ-approved RAP may include, but are not limited to, the following:

(i) Notices of Approved Environmental Remediation ("NAERs")

If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(b)-(e) of the NREPA, CDT shall record or cause to be recorded any NAERs required by Section 20120b(2) and the RAP with the Grand Traverse County Register of Deeds within 21 days after MDEQ approval of the RAP or within 21 days after completion of construction of the remedial action provided for in the RAP, as appropriate to the circumstances. The form and content of the NAER must be approved by the MDEQ prior to filing it with the Register of Deeds. CDT shall provide a true copy of the recorded NAER and the liber and page to the MDEQ within fifteen (15) days of CDT's receipt of a copy from the Register of Deeds.

(ii) Restrictive Covenants

If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(f)-(j) or (2) of the NREPA and that RAP provides for the placement of restrictive covenants, CDT shall record or cause to be recorded the appropriate restrictive covenants required by the RAP with the Grand Traverse County Register of Deeds within 21 days after MDEQ approval of the RAP or within 21 days after completion of construction of the remedial action provided for in the RAP, as appropriate to the circumstances. CDT shall provide a true copy of the recorded restrictive covenant and the liber and page to the MDEQ within ten (10) days of CDT's receipt of a copy from the Register of Deeds. CDT has already filed a restrictive covenant preventing the use of groundwater underlying the property adjacent to Boardman Lake and presently owned by Boardman West L.L.C., and a Notice of Aesthetic

Impact ("NOAI"). Nothing in this Order shall invalidate the existing restrictive covenant or NOAI, or prevent CDT from supplementing the existing restrictive covenant or NOAI in regards to the groundwater. Moreover, nothing in this Order shall prevent CDT from filing additional restrictive covenants to restrict the use of groundwater underlying Boardman Lake. Cone Drive agrees, however, that any such restrictive covenants shall not restrict the public's use of, or access to, the bottomlands or surface waters of Boardman Lake or the property described in the legal description set forth in Attachment A to this Order and depicted in the survey, attached as Attachment B to this Amended Order. In entering into this Amended Order MDEQ does not concede that the language used in said restrictive covenant accurately reflects the status or content of approved work plans. Nothing in this Amended Order shall limit MDEQ's ability to require additional or different restrictive covenants as part of the RAP, or that may be necessary to protect public health, safety or welfare or the environment.

(iii) Institutional Controls

If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(f)-(j) or (2) of the NREPA and that RAP provides for the enactment of institutional controls, CDT shall arrange for the placement of institutional controls, approved by the MDEQ, in accordance with the implementation schedule in the MDEQ-approved RAP. CDT shall provide a true copy of documentation that such institutional controls have been enacted to the MDEQ within fifteen 15 days of enactment. CDT has already filed a restrictive covenant preventing the use of groundwater underlying the property adjacent to Boardman Lake and presently owned by Boardman West, L.L.C., and a Notice of Aesthetic Impact ("NOAI"). Nothing in this Order shall invalidate the existing restrictive covenant or NOAI, or prevent CDT from supplementing the existing restrictive covenant or NOAI in regards to the groundwater.

Moreover, nothing in this Order shall prevent CDT from relying on institutional controls to restrict the use of groundwater underlying Boardman Lake. Cone Drive agrees, however, that any such institutional controls shall not restrict the public's use of, or access to, the bottomlands or surface waters of Boardman Lake or the property described in the legal description set forth in Attachment A to this Order and depicted in the survey, attached as Attachment B to this Amended Order. In entering into this Amended Order MDEQ does not concede that the language used in said restrictive covenant accurately reflects the status or content of approved work plans. Nothing in this Amended Order shall limit MDEQ's ability to require additional or different restrictive covenants as part of the RAP, or that may be necessary to protect public health, safety or welfare or the environment.

(iv) Land Use Restrictions

If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(b)-(j) or (2) of the NREPA and that RAP provides for land use restrictions, within thirty (30) days of the MDEQ's approval of the RAP, CDT shall provide notice of the land use restrictions to the zoning authority of the local unit of government within which the Facility is located and send a copy of the notice of the land use restrictions to the MDEQ.

(v) Financial Assurance Mechanisms ("FAMs")

If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(f)-(j) or (2) of the NREPA and a FAM is a necessary component of that RAP, CDT shall establish and maintain financial assurance that will assure CDT's ability to pay for monitoring, operation and maintenance, oversight, and other costs (collectively referred to as "O&M Costs") that are determined by the MDEQ to be necessary to assure the effectiveness and

integrity of the remedial action as set forth in an MDEQ-approved RAP. The proposed FAM shall be submitted to the MDEQ with the RAP pursuant to Paragraph 7.7(a) and shall be in an amount sufficient to cover O&M Costs at the Facility for a thirty (30)-year period. If a FAM is a component of an MDEQ approved RAP, every five (5) years after the MDEQ's initial approval of the FAM, CDT shall provide to the MDEQ an update of the thirty (30) year O&M Costs estimate. The updated cost estimate shall include documentation of O&M Costs for the previous five-year period and be signed by an authorized representative of CDT who shall confirm the data. CDT shall revise the amount of funds secured by the FAM in accordance with that up-dated five-year cost estimate unless otherwise directed by the MDEQ. If at any time the MDEQ determines that the FAM does not adequately secure sufficient funds, CDT shall capitalize or revise the existing FAM or establish a new FAM acceptable to the MDEQ. After a FAM has been established, if CDT can demonstrate that the FAM provides funds in excess of those needed to cover O&M Costs for the Facility, CDT may submit a request to the MDEQ to reduce the amount of funds secured by the FAM. CDT shall maintain the FAM in perpetuity or until CDT can demonstrate to the MDEQ that such FAM is no longer necessary to protect the public health, safety, or welfare, or environment, and is no longer necessary to assure the effectiveness and integrity of the remedial action as set forth in the MDEQ-approved RAP. Any modification of a FAM will be considered to be a modification of a RAP and any such modification must be made in accordance with Section XVII (Modifications).

7.8 Public Notice and Public Meeting Requirements under Section 20120d of the NREPA

When the MDEQ determines that the proposed RAP is acceptable for public review, a public notice regarding the availability of proposed RAP will be published and those reports or

plans shall be made available for review and comment for a period of not less than thirty (30) days. The dates and length of the public comment period shall be established by the MDEQ. If the MDEQ determines there is significant public interest or the MDEQ receives a request for a public meeting, the MDEQ will hold such public meeting in accordance with Sections 20120d(1) and (3) of the NREPA. Following the public review and comment period or a public meeting, the MDEQ may refer the proposed RAP back to CDT for revision to address public comments and the MDEQ's comments. The MDEQ will prepare the final responsiveness summary document that explains the reasons for the selection or approval of a remedial action plan in accordance with the provisions of Sections 20120d(5) and (6) of the NREPA. Upon the MDEQ's request, CDT shall provide information to the MDEQ for the final responsiveness summary document or CDT shall prepare portions of the draft responsiveness summary document.

Paragraph 7.10 is added as follows:

7.10 Voidance of the MDEQ's Approval of a RAP

(a) If CDT chooses to perform a RAP that relies on the cleanup criteria established under Section 20120a(1)(f)-(j) or (2) of the NREPA and CDT allows a lapse of, or does not comply with, any of the provisions of this Order or an MDEQ-approved RAP with respect to the requirements of Section 20120b(3)(a)-(e) of the NREPA, the MDEQ's approval of the RAP is void from the time of the lapse or noncompliance unless the lapse or noncompliance is corrected to the satisfaction of the MDEQ in accordance with Paragraph 7.10(b). With respect to a land or resource use restriction, a lapse of or noncompliance with this Order or an MDEQ-approved RAP includes the following: (i) a court of competent jurisdiction determines that a land or

resource use restriction is unlawful; (ii) a land or resource use restriction is not filed or enacted in accordance with this Order or the MDEQ-approved RAP; (iii) a land or resource use restriction is violated or is not enforced by the controlling entity; or (iv) a land or resource use restriction expires or is modified or revoked without MDEQ approval.

(b) Within thirty (30) days of CDT becoming aware of a lapse or noncompliance under Paragraph 7.10(a), CDT shall provide to the MDEQ a written notification of such lapse or noncompliance. This notification shall include a description of the nature of the lapse or noncompliance, an evaluation of the impact or potential impact of the lapse or noncompliance on the effectiveness and integrity of the RAP, and one of the following:

(i) If CDT has corrected the lapse or noncompliance, a written demonstration of how and when the lapse or noncompliance was corrected;

(ii) If CDT has not yet corrected the lapse or noncompliance, a work plan and implementation schedule for addressing the lapse or noncompliance; or

(iii) If CDT believes it will not be able to correct the lapse or noncompliance, an action plan and implementation schedule outlining the response activities CDT will take to comply with the cleanup criteria of Part 201 and to assure that the Facility does not pose a threat to public health, safety, or welfare, or the environment.

The action plan and implementation schedule identified in 7.10(b)(iii) shall include provisions for the development of any response activity work plans and associated implementation schedules that are necessary to assure protection of public health, safety, and welfare, and the environment, including work plans for interim response activities, a remedial investigation to provide additional information to support the selection and approval of an alternate remedial action plan, and an approvable alternate remedial action plan that meets the

performance objectives specified in Paragraph 7.7(a)(i). CDT shall develop those response activity work plans pursuant to the requirements specified in this Order and shall submit those plans in accordance with the schedule established in an MDEQ-approved action plan. The MDEQ will review and approve any plans submitted pursuant to this Section in accordance with the procedures set forth in Section XIV (Submissions and Approvals). Upon receipt of MDEQ approval, CDT shall perform the response activities in accordance with the MDEQ-approved work plans.

(c) If CDT does not comply with all of the requirements of Paragraph 7.10(b), stipulated penalties as specified in Paragraph 21.2 shall begin to accrue the day the lapse or noncompliance under Paragraph 7.7(a) occurred and continue to accrue until the lapse or noncompliance is corrected to the satisfaction of the MDEQ, but shall not include the time period that the plan was under review by MDEQ.

Section IX is amended to provide that copies of matter pertaining to this Order shall be submitted to:

Sy Paulik
Michigan Department of Environmental Quality
Surface Water Quality Division
Cadillac District Office
120 West Chapin St.
Cadillac, MI 49601

Section XIV is amended to read as follows:

The word "Conceptual" is stricken from paragraph 14.2.

Paragraphs 14.7 and 14.8 are added as follows:

14.7 Within six (6) months of receipt of a RAP, the ERD Division Chief will make a decision regarding the RAP and will in writing: (a) approve the RAP; (b) reject the RAP as insufficient if the RAP lacks any information necessary or required by the MDEQ to make a decision regarding RAP approval; or (c) deny approval of the RAP. If the MDEQ denies approval of the RAP, it will provide CDT with a complete and specific statement of the conditions or requirements necessary to obtain approval to which the MDEQ may not add additional items after it has been issued. If the MDEQ fails to approve, reject, or deny approval of the RAP within six (6) months from the date the RAP is received, the RAP shall be considered approved. The time frame for a decision regarding the submitted RAP may be extended by the mutual consent of the Parties. Upon receipt of a notice of approval from the MDEQ, CDT shall proceed to take the actions and perform the response activities required by the MDEQ-approved RAP and submit a new cover page marked "Final."

14.8 Within sixty (60) days of receipt of a rejection or denial of approval of a RAP from the MDEQ pursuant to 14.7(b) or (c), CDT shall resubmit the RAP for MDEQ review and approval. The time frame for resubmission may be extended by the MDEQ. If the RAP is not approved upon resubmission, the MDEQ will so advise CDT. Any stipulated penalties applicable to the delivery of the RAP shall accrue during the sixty (60)-day period or other time period for CDT to submit another RAP, but shall not be payable unless the resubmitted RAP also is rejected or approval is denied. The MDEQ will review the resubmitted RAP in accordance with the procedure stated in Paragraph 14.7. If the MDEQ rejects or denies a resubmitted RAP, the MDEQ will so advise CDT and stipulated penalties shall accrue from the date of the MDEQ's disapproval of the original RAP Submission and continue to accrue until CDT delivers

an approvable RAP, but shall not include the time period the RAP or resubmitted RAP was under review by the MDEQ.

Section XVII is amended to read as follows:

17.1 This Order may only be modified according to the terms of this Section. Any Submission required by this Order, excluding the RAP, may be modified by written agreement between CDT's designated Project Coordinator or other authorized representative and the MDEQ's Project Coordinator. The RAP may only be modified by written agreement between CDT's designated Project Coordinator or other authorized representative and the ERD Division Chief or his or her authorized representative. Nothing in this Section shall preclude the MDEQ from requiring a Modification pursuant to paragraph 7.9, Section XIV (Submissions and Approvals) or Section XIX (Dispute Resolution).

17.2 Modification of any other provision of this Order shall be made by written agreement between CDT's Project Coordinator, the ERD Division Chief, and the designated representative of the Michigan Department of Attorney General.

Section XXI is amended to read as follows:

21.1 CDT shall pay $145,000.00 and undertake the Supplemental Environmental Project in the amount of $20,000, as described in Attachment C, to resolve the Part 31 and Part 201 violations that occurred prior to March 1, 2002 and that are attributable to venting groundwater monitored at the GSI wells at the Facility. This penalty does not resolve any Part 31 and Part 201 violations that are attributable to contaminated sediments. MDEQ reserves all

rights to pursue any other penalties for any other discharges to the waters of the state, and CDT reserves all rights to contest the assessment of any such penalties. The $145,000.00 penalty shall be paid as follows:

(a) Within thirty (30) days after the Effective Date of this Amended Order, CDT shall pay the MDEQ Forty-five Thousand Dollars ($45,000.00). Payment shall be paid to the Environmental Response Fund in accordance with Paragraph 9.1(B) of the October 28, 1998 Order.

(b) By December 15, 2002, CDT shall pay Fifty Thousand Dollars ($50,000.00) to the General Fund of the State of Michigan. Payment shall be made by certified check made payable to the State of Michigan and sent to the address set forth in Paragraph 9.1(B) of the October 28, 1998 Order. The CDT Facility and SWQD Account # SWQ3085 shall be identified on the check. A copy of both the transmittal letter and the check shall be provided to the Chief, Enforcement Unit, Surface Water Quality Division, P.O. Box 30273, Lansing, Michigan, 48909. Penalties paid pursuant to this sub-paragraph shall be deposited into the General Fund of the State of Michigan.

(c) By March 15, 2003, CDT shall pay Fifty Thousand Dollars ($50,000.00) to the General Fund of the State of Michigan. Payment shall be made by certified check made payable to the State of Michigan and sent to the address set forth in Paragraph 9.1(B) of the October 28, 1998 Order. The CDT Facility and SWQD Account # SWQ3085 shall be identified on the check. A copy of both the transmittal letter and the check shall be provided to the Chief, Enforcement Unit, Surface Water Quality Division, P.O. Box 30273, Lansing, Michigan, 48909. Penalties paid pursuant to this sub-paragraph shall be deposited into the General Fund of the State of Michigan.

(d) By August 31, 2003, CDT shall submit documentation to the Chief of Surface Water Quality Division that the SEP set forth in Attachment C has been fully implemented.

21.2 Except as provided by Sections XIX (Dispute Resolution) and XVII (Delays in Performance), if CDT fails or refuses to comply with paragraph 7.5(b), including the May 20, 2002 Surface Water Interim Response Plan as approved with modifications on July 5, 2002, paragraphs 7.6 - 7.7, and any submittals approved pursuant to Section VII, CDT shall pay the MDEQ penalties in the following amounts for each day for every failure or refusal to comply or conform:

Period of Delay	Penalty Amount Per Day
1st through 15th day	$1,000
16th through 30th day	$2,500
After 30 days	$10,000

21.3 Except as provided in Sections XIX (Dispute Resolution) and XVII (Delays in Performance), if CDT refuses or fails to comply with any other term or condition of this Order, CDT shall pay the MDEQ stipulated penalties of $500.00 a day for each and every failure or refusal to comply.

21.4 Stipulated penalties shall begin to accrue on the day performance was due, or other failure or refusal to comply occurred, and shall continue to accrue until the final day of correction of the noncompliance. Separate penalties shall accrue for each separate failure or refusal to comply with the terms and conditions of this Order.

21.5 Except as provided in Section XX (Reimbursement of Costs), stipulated penalties owed to the MDEQ shall be paid no later than thirty (30) days after receiving a written demand from the MDEQ. Payment shall be made in the manner provided in Paragraph 20.4. Interest shall accrue on the unpaid balance at the end of the thirty (30) day period at the rate provided for in Section 20126(4) of NREPA, MCL 324.20126(4). Failure to pay the stipulated penalties within thirty (30) days after receipt of a written demand constitute an independent violation of the terms an conditions of this Order and is subject to a penalty of $500.00 per day for each day of failure to submit payment.

21.6 The amount of stipulated penalties paid pursuant to this Section by CDT for a particular violation of this Order shall be credited against any civil penalties which may be assessed by the MDEQ for the same violation.

21.7 Liability for or payment of stipulated penalties is not MDEQ's exclusive remedy in the event CDT violates this Order. MDEQ reserves the right to pursue any other remedy or remedies that it is entitled to under this Order or any applicable law for any failure or refusal of CDT to comply with the requirements of this Order, including, but not limited to, seeking civil penalties, injunctive relief, specific performance, reimbursement, exemplary damages in the amount of three (3) times the costs incurred by the State of Michigan as a result of CDT's violation of or failure to comply with this Order pursuant to Sections 20119(4) and 20137(1) of NREPA and sanctions for contempt of court, provided that the stipulated penalties set forth above shall be credited against any such civil penalties.

Section XXII is amended to read as follows:

XXII. COVENANT NOT TO SUE BY THE STATE

22.1 In consideration of the actions that will be performed and the payments that will be made by CDT under the terms of this Order, and except as specifically provided in this Section or Section XXV (Reservation of Rights), the State of Michigan hereby covenants not to sue or to take further judicial or administrative action against CDT for claims arising for:

(a) Performance of the approved response activities by CDT under the Order;

(b) Reimbursement of Past Response Activity Costs incurred by the State as set forth in Paragraph 20.1 of this Order;

(c) Payment of response activity costs incurred by the State as set forth in Paragraphs 20.2 and 20.3 of this Order; and

(d) Civil Penalties for violations of Part 31 and Part 201 as defined in Paragraph 21.1.

22.2 With respect to liability for civil penalties required to be paid pursuant to paragraph 21.1, this covenant not to sue shall take effect upon receipt by the MDEQ of the payments required by Paragraph 21.1 and funding of the SEP as set forth in Attachment C. With respect to liability for performance of response activities required to be performed under this Order the covenant not to sue shall take effect upon issuance by the MDEQ of the Approval of Performance of Response Activities in accordance with Section XXVI. With respect to liability for payment of response activity costs pursuant to Paragraphs 20.2 and 20.3 and stipulated penalties pursuant to Section XXI of this Order, the covenant not to sue shall take effect upon receipt by the MDEQ of the payments required . The covenant not to sue is conditioned upon

the complete and satisfactory performance by CDT of its obligations under this Order. The covenant not to sue extends only to CDT and does not extend to any other person.

Section XXVI is amended to read as follows:

XXVI. APPROVAL OF PERFORMANCE OF RESPONSE ACTIVITIES

26.1 Cone Drive may apply to the MDEQ for an "Approval of Performance of Response Activities" when Cone Drive has satisfactorily performed the response activities required by the MDEQ-approved RAP and any MDEQ-approved modifications to the RAP, with the exception of any long term requirements associated with the performance of the MDEQ-approved RAP. Long term requirements associated with the performance of the RAP means ensuring that any land and resource use restrictions are maintained and enforced, performing operation and maintenance and long term monitoring activities, and establishing and maintaining financial assurance and permanent markers as identified in the MDEQ-approved RAP. When Cone Drive has met the criteria stated in this Paragraph, Cone Drive may send a "Request for Approval of Performance of Response Activities" and a draft Performance Report to the MDEQ. The draft Performance Report shall summarize all response activities conducted pursuant to the MDEQ-approved RAP and shall include or reference any supporting documentation.

26.2 After receipt of the Request for Approval of Performance of Response Activities, the MDEQ will review the request and determine whether Cone Drive has met the requirements of Paragraph 26.1. The ERD Division Chief will approve, approve with modification or disapprove Cone Drive's Request. If the ERD Division Chief approves with modification, Cone Drive will make any modifications required by the ERD Division Chief, subject to Section XIX (Dispute Resolution), and deliver a final Performance Report. After receipt of a final

Performance Report the ERD Division Chief will issue an "Approval of Performance of Response Activities". The MDEQ's issuance of an Approval of Performance of Response Activities does not relieve Cone Drive of its obligations to continue to comply with this Order or to conduct response activities including the long-term requirements as defined in Paragraph 26.1.

Section XXVII is deleted.

The remainder of the October 28, 1998 AOC remains in full force and effect.

_____ Dated: _____

Kurt Gamelin, Vice President Operations
Cone Drive Operations, Inc.

Andrew Hogarth Dated: 8/15/02

Andrew Hogarth
ERD Division Chief

David A. Hamilton Dated: 8-15-02

David Hamilton
SWQ Division Chief

Kathleen L. Cavanaugh Dated: 8-15-02

Kathleen L. Cavanaugh
Assistant Attorney General

S: NR/cases/199300158T2/CDT/aoc amendment 8/6/2002

Performance Report the ERD Division Chief will issue an "Approval of Performance of Response Activities". The MDEQ's issuance of an Approval of Performance of Response Activities does not relieve Cone Drive of its obligations to continue to comply with this Order or to conduct response activities including the long-term requirements as defined in Paragraph 26.1.

Section XXVII is deleted.

The remainder of the October 28, 1998 AOC remains in full force and effect.

Kurt Gamelin

Dated: 8-15-02

Kurt Gamelin, Vice President Operations
Cone Drive Operations, Inc.

_____ Dated: _____

Andrew Hogarth
ERD Division Chief

_____ Dated: _____

David Hamilton
SWQ Division Chief

_____ Dated: _____

Kathleen L. Cavanaugh
Assistant Attorney General

S: NR/cases/199300158T2/CDT/aoc amendment 8/6/2002

Performance Report the ERD Division Chief will issue an "Approval of Performance of Response Activities". The MDEQ's issuance of an Approval of Performance of Response Activities does not relieve Cone Drive of its obligations to continue to comply with this Order or to conduct response activities including the long-term requirements as defined in Paragraph 26.1.

Section XXVII is deleted.

The remainder of the October 28, 1998 AOC remains in full force and effect.

Kurt Gamelin, Vice President Operations
Cone Drive Operations, Inc.

Dated: 8-15-02

Andrew Hogarth
ERD Division Chief

Dated: 8/15/02

David Hamilton
SWQ Division Chief

Dated: 8-15-02

Kathleen L. Cavanaugh
Assistant Attorney General

Dated: 8-15-02

S:\NR\cases\19930015\T2\CDT\aoc amendment 8/6/2002

A

PREPARED FOR BOARDMAN WEST L.L.C.

WATER FRONT EASEMENT

A 30 foot wide water front easement located in part of Section 10, T. 27N., R.11W., City of Traverse City, Grand Traverse County, Michigan, the West line of which is more fully described as follows:

Commencing at the South West corner of Lot 6, Hannah Lay & Co. 16th Addition to Traverse City;
thence South 89°46'07" East, 529.75 feet,
along the South line of said Lot 6, and to the Point of Beginning;
thence North 07°24'42" West, 88.93 feet;
thence North 56°24'37" West, 158.70 feet;
thence North 14°09'27" West, 83.14 feet;
thence North 03°40'35" East, 91.16 feet;
thence North 17°41'51" East, 76.02 feet;
thence North 09°00'58" East, 110.56 feet;
thence North 20°48'01" East, 182.37 feet;
thence North 25°27'06" East, 90.24 feet;
thence North 42°52'36" West, 94.13 feet;
thence North 18°38'40" West, 62.08 feet;
thence North 08°37'02" West, 159.45 feet,
to a point on the North line of Lot 5, Hanna Lay & Co. 16th Addition to Travèrse City and
to the Point of Ending.

The East line of said water front easement lies 30 feet Easterly from and parallel with the above described West line, and the line segments of said East line are to be extended or shortened to meet at angle points, to begin at said South line of said Lot 6 extended and to terminate at said North line of Lot 5 extended.

Subject to other easements or restrictions, if any.

gfa

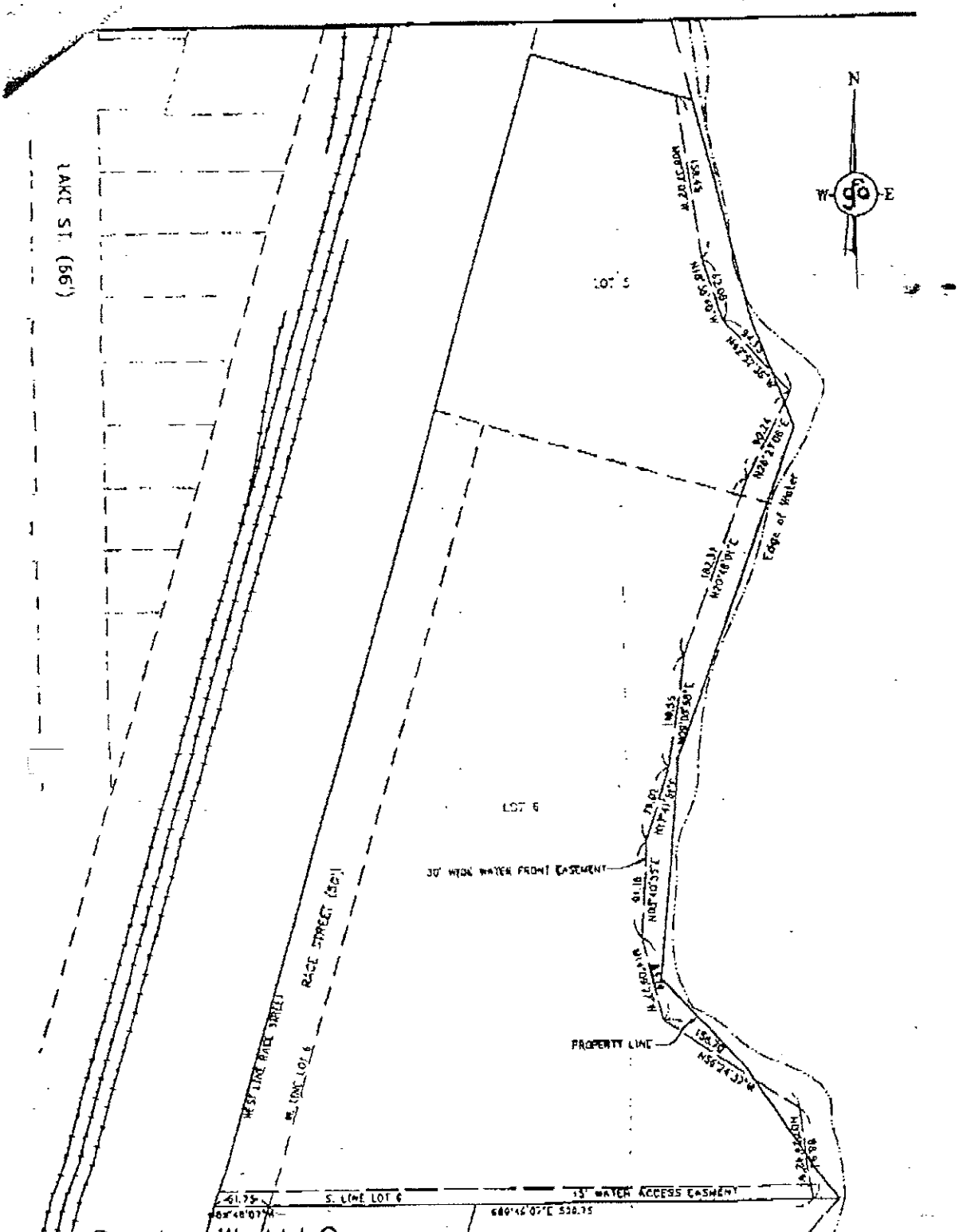
Gourdie/Fraser & Associates, Inc.

Consulting Engineers Surveyors Planners

124 West State Street
P.O. Box 627
Traverse City, MI 49684
Ph: (231) 946-5874
Fax: (231) 946-3703
Email: gfa@traverse.com

Date:	02/15/01 Rev. 4-4-02	Sheet 1 of 1
By:	MJF	
Ckd	MR	Job No. 001456

E



PREPARED FOR: Boardman West L.L.C.

DATE: 04-02-01
P.M.: MW
REVISIONS:

Gourdie/Fraser & Associates, Inc.
ENGINEERS • SURVEYORS • PLANNERS
121 West State Street • Traverse City, Michigan • 49684
PH: (231) 946-5874 Fax: (231) 941-1240 Email: gfa@gfa.com

Location:
Section 10, T27N, R11W
City of Traverse City, Grand Traverse Co., MI

DES. MJF | CHD. MW
001486
SHT 1 OF 1

C

SUPPLEMENTAL ENVIRONMENTAL PROJECT PROPOSAL
BOARDMAN LAKE WATERSHED MANAGEMENT PROJECT

Cone Drive Operations, Inc.
240 E. 12th Street
PO Box 272
Traverse City, MI 49685-0272
Phone: 231-946-8410

RE: State of Michigan, Department of Environmental Quality (MDEQ) and Cone Drive Operations, Inc. (CDO)

Summary

Cone Drive Operations, Inc. proposes a Type 2 Supplemental Environmental Project (SEP) to be completed by The Watershed Center of Grand Traverse Bay. The Watershed Center is a private non-profit 501c(3) organization devoted to the protection and enhancement of Michigan's Grand Traverse Bay and surrounding watershed through research, education and collaboration with partners. The proposed project will advance watershed management planning for the Boardman Lake through the following tasks: a) watershed delineation within built environment through storm sewer system analysis; b) historic land cover analysis (including impervious surface and wetland loss assessments); and c) identification and characterization of known or potentially contaminated shoreline properties. These tasks will complete a portion of a watershed management proposal submitted for a Coastal Zone Management grant. The proposed SEP will be completed irrespective of the successful funding or denial of the Coastal Zone Management grant application. The ultimate objective of watershed management is a cleaner environment and watershed through community involvement. This proposed SEP meets all Michigan Department of Environmental Quality SEP requirements. The project budget is $20,000 with the deliverable a project report (with associated geographical information system drawings) to be completed by July 31, 2003.

Introduction

This proposal is submitted as a SEP for partial settlement of violations of Parts 31 and 201 as set forth in the attached Amendment to the October 28, 1998 Administrative Order by Consent for Response Activities ("Amended AOC").

Description of the Project

CDO proposes a Type 2 (using a third party vendor) SEP. CDO proposes to pay The Watershed Center of Grand Traverse Bay (TWC) to undertake portions of a watershed planning process in conjunction and coordinated with a Boardman Lake watershed management program. This would occur within the jurisdictions of City of Traverse City, Garfield Township, East Bay Township and Grand Traverse County.

This SEP is directly related to a proposal submitted in March 22, 2002 for a Coastal Zone Management (CZM) grant for the overall Boardman Lake watershed management planning

effort ("CZM Project"). Appendix A provides the CZM grant application along with a project area map and references. The proposed SEP will be completed irrespective of the successful funding or denial of the CZM grant application made by TWC to the MDEQ Coastal Zone Management program for overall Boardman Lake Watershed Management Planning.

Any products, including but not limited to a watershed management plan, educational/outreach materials, training and assistance materials for local units of government, etc. created in this project will comply with the MDEQ SEP publicity requirements.

Project Objective

The objective of the CZM Project is to advance watershed management planning for the Boardman Lake. This watershed management planning process will include the following tasks: a) watershed delineation within built environment through storm sewer system analysis; b) historic land cover analysis (including impervious surface and wetland loss assessments); c) identification and characterization of known or potentially contaminated shoreline properties; d) urban roof top runoff and storm water quality assessment; e) macrophyte study; f) nutrient sampling; g) macroinvertebrate study; h) wildlife habitat assessment; i) geographic information system (GIS) products and mapping; j) community outreach; and k) direct assistance to local units of government. The project envisioned by this SEP will complete tasks a, b and c, as further described below.

Task a) consists of TWC and its agents working closely with engineers, planners, and staff of the City of Traverse City, Grand Traverse County, Garfield Township, and East Bay Township to define the watershed of Boardman Lake through an analysis and evaluation of stormwater and groundwater interflow/surface water runoff to Boardman Lake. This task has not been undertaken to date by local or state governmental officials or others in this watershed. Further, the potential contribution of roof runoff to stormwater quality in downtown Traverse City will be evaluated. This task will examine stormwater system maps, the results of Traverse City's ongoing 2002 illicit storm drain hook-up study, and dye tests where appropriate. The end product will be a GIS map and description of the Boardman Lake watershed. The watershed delineation can be used by all basin local units of government in land use planning within the watershed to assess, evaluate, and improve the long-term water quality of Boardman Lake.

Task b) consists of TWC and its agents examining historic aerial photos at the Center for Remote Sensing, Michigan State University and historic maps kept by the City of Traverse City, Grand Traverse County, Garfield Township, and East Bay Township to assess and map historic wetland fill within the Boardman Lake watershed. Secondly, 2000 aerial photographs and land cover analyses by Grand Traverse County will be used to assess the percentage of impervious surface within the Boardman Lake watershed. This estimated percentage of impervious cover will be compared to the 12% watershed threshold of impervious cover shown in Mitchell Watershed and similar studies to result in decreased surface water quality. This task has not been undertaken to date by local or state governmental officials or others within the Boardman Lake watershed. The end product will

be a report and GIS map of historic wetland loss and impervious surface within the Boardman Lake watershed. The land cover analysis can be used by basin local units of government in land use planning to assess, evaluate, and improve the long-term water quality of Boardman Lake.

Task c) involves the use of a commercial data base search (such as Environmental Data Resources, EDR), review of records within state and local governmental agencies, interviews with state and local officials and long-term residents, aerial photograph interpretation, and ground-truthing etc. by TWC to identify and characterize known or potential sites of contamination within the Boardman Lake watershed. This task will assess groundwater flow direction and velocity, chemical of concern fate and transport, etc. to assess and characterize potentially contaminated groundwater interflow and water quality contribution to Boardman Lake. End products will include a GIS map of the Boardman Lake watershed with known and potential sources of surface and/or groundwater contamination. Identification and characterization of known or potentially contaminated shoreline properties can be used by all local units of government in land use planning within the watershed to assess, evaluate, and improve the long term watershed land use and the water quality of Boardman Lake.

TWC will complete project work in association with local units of government, non-profits, and contractors. The ultimate objective of the CZM Project is a cleaner environment and watershed through education and community involvement. Community involvement cannot be achieved without meaningful educational outreach. The CZM Project appears to be one of the best methods, if not the optimal method, to provide such critically important information and education on proper and environmentally sound use of storm drains and land uses within the Boardman Lake watershed.

Plan Implementation and Verification

The TWC will contractually assume full responsibility for implementation and oversight of the proposed project. Appendix B provides a copy of the proposed professional service contract between CDO and TWC. Appendix C provides a copy of TWC's proposed line item budget for a total of $20,000, which includes both staff time and materials. Task a) (described above) will be completed within 6 months of project initiation; Task b) completed within 12 months of project initiation; and Task c) completed within 4 months of project initiation. TWC will deliver a project report (with associated geographical information system drawings) by July 31, 2003. CDO will be able to verify progress on the project through its own project involvement, observations, and photographs, etc.

Project Coordinator

This project will be fully coordinated and implemented by the third party contractor, the TWC. The individual at the TWC primarily responsible for implementation of the project is TWC Executive Director, Ann Braise, 232 E. Front St., Suite 4, Traverse City, Michigan 49684; (231) 935-1514 and fax (231) 935-3829.

TWC is a private non-profit 501c(3) organization founded in 1990, and devoted to the protection and enhancement of Michigan's Grand Traverse Bay and surrounding watershed through research, education and collaboration with partners. Its services include hands-on citizen education, technical assistance in policy development and water quality protection projects. In 1994, TWC formalized its management structure by organizing a Board of Directors, opening an office, hiring its first full-time staff, and seeking nonprofit status. In 2000 the board adopted the current logo and name.

Research undertaken by TWC serves the scientific community as well as policymakers, private businesses, shoreline property owners, citizens and others who are concerned that sustained regional population growth may have negative impacts on existing environmental, economic or recreational values associated with Grand Traverse Bay and connecting waterways. Much of the education component of TWC programming is directed toward youth, shoreline landowners and local governmental officials. A fundamental concept of watershed protection is cooperation across political jurisdictions in the protection of land and water resources. TWC maintains an aggressive program of collaboration on watershed programs with partner resource organizations through monthly information exchanges and speakers at Brown Bag Luncheons organized by TWC.

The fundamental principles that guide TWC are:

- Encourage locally based and managed projects.
- Foster responsible behavior on the part of all residents and visitors.
- Focus on pollution prevention and resource protection now, rather than costly future clean-up.

Applying these principles, since 1990 the partnership has undertaken approximately 55 projects, which balance economic growth and environmental protection. Membership in the TWC is voluntary for municipalities and businesses located within the Grand Traverse Bay watershed and individuals. The City of Traverse City, Garfield Township and Grand Traverse County are, but not CDO, are members of the TWC.

Additional valuable information about the TWC, its history, qualifications may be found at the TWC website at - www.traverse.com/nonprof/gtbwi/gtbwi.

Significantly, the TWC has successfully planned, organized and implemented such projects in the past and, as noted, is presently engaged in an overall water quality data base for Grand Traverse Bay and its connecting waterways.

MDEQ Criteria

This proposed SEP meets all MDEQ SEP criteria. Specifically, this SEP:

1. **Provides additional environmental enhancement.** Through this SEP, TWC will undertake the preliminary steps for watershed management of Boardman Lake. Proper watershed management will enhance the water quality of Boardman Lake.

2. **Is primarily beneficial to the environment.** Watershed management is primarily beneficial to the environment and the Grand Traverse community as a whole. This project does not provide significant benefit to CDO individually.

3. **Is a project that CDO has not historically undertaken.** CDO has not historically funded watershed management projects nor is the proposed project an activity required of CDO.

4. **Is a project that has a relationship to the alleged violations leading to the Amended AOC.** This project provides a means to assess threats to water quality within the Boardman Lake watershed. This corresponds with water quality violations for Boardman Lake, as alleged by the MDEQ in the Amended AOC.

5. **Does not involve the purchase of equipment or supplies for normal CDO operations.**

Additionally, as to MDEQ SEP criteria, this proposal serves as CDO's acknowledgment that any expenses incurred by MDEQ in performing oversight of the SEP will be assumed by CDO.

Conclusion

This proposed SEP meets applicable MDEQ SEP criteria. Additionally, the proposal has a clearly stated objective - to improve the long-term water quality of Boardman Lake through watershed management planning; a specific plan of implementation including an implementation schedule; and detailed information regarding plan costs and expenses. This proposed SEP will be undertaken as a stand-alone project, or in conjunction with a larger watershed management plan as proposed to CZM, if funded. If the CZM grant is not funded, the project proposed within this SEP will be undertaken and completed as proposed in this SEP. With this submission, CDO has provided necessary information regarding administration and management of the project including the name, title, address and telephone number of the project coordinator. Further, there is a reliable and objective means by which to verify that the SEP has been completed satisfactorily. Finally, a copy of the proposed contract with the third party vendor, the TWC, has been provided along with sample project materials.

DATE August 15, 2002

Respectfully submitted,

CONE DRIVE OPERATIONS, INC.

By: Kurt Gamelin

Kurt Gamelin
Vice President Operations

CDO SEP 080802 po.doc

Appendix A

The Existing Watershed Center March 22, 2002 proposal to Coastal Zone Management

Proposal Area Map
Proposal References

The Watershed Center
GRAND TRAVERSE BAY
232 EAST FRONT STREET TRAVERSE CITY, MI 49684 TEL (231) 935-1514 FAX (231) 935-3829 WWW.GTBAY.ORG

March 22, 2002

Catherine Cunningham
Michigan Coastal Management Program
Constitution Hall
525 West Allegon Street
Lansing, MI 48909-7958

Dear Catherine:

The Watershed Center Grand Traverse Bay is pleased for this opportunity to submit the enclosed project proposal titled, Boardman Lake Watershed Management Planning Project for consideration of funding from the Michigan Coastal Management Program. As noted in the Traverse City Record Eagle editorial dated February 2, 2002, Boardman Lake is enjoying a renaissance.

Funding from the Coastal Management Program has significantly increased the recreational access, use, and enjoyment of Boardman Lake. The proposal to extend the TART Trail along the eastern shoreline of Boardman Lake will now become reality in the coming year. The purpose of this proposal is to continue and build upon the community momentum and investment which is occurring around Boardman Lake and along the Boardman River in downtown Traverse City.

The City of Traverse City is undertaking significant improvements in the city's waste-water collection system along the downtown river, and is addressing illicit cross-connections of storm water drains from roof-tops to sanitary sewers. During rain events, the carrying capacity of the sewer collection system becomes exceeded due to infiltration from storm water. The City's engineering studies and infrastructure improvements will be incorporated as match for this project. The project will include educational outreach to business owners and stakeholders along the river to inform them about the infrastructure improvements and solicit support from stakeholders to help protect the river. The project will recruit active support and participation from the City of Traverse City, Grand Traverse County, and Garfield Township to coordinate water quality protection measures. All the GIS data layers developed for this project will be provided to the governmental planning commissions.

Thank you for giving this proposal your fullest consideration. We look forward to hearing from you.

Sincerely,

C Wright

Christopher Wright, Executive Director

DRAFT DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND AND WATER MANAGEMENT DIVISION

MICHIGAN COASTAL MANAGEMENT PROGRAM GRANT APPLICATION

Authorized by the Federal Coastal Zone Management Act, PL 92-583 of 1972, as amended.

Application must be completed for project to be considered for funding.

Project Type: (Check One) ☒Design or Study ☐ Construction ☐ Design and Construction ☐GIS		
Project Title: **Boardman Lake Watershed Management Planning Project**		
Project Location: Grand Traverse Bay	County: Grand Traverse	
Great Lake or Connecting Waterway: Lake Michigan		
Congressional District: 1	State Senate District: 36	State House District: 104
Amount of Grant Applied for : $ 45,637 Amount of Match: $ 45,637 Estimated Total Project Cost: $ 91,274		
Applicant Name: Watershed Center Grant Traverse Bay		Federal ID#: 38-3198787
Street Address: 232 E. Front Street		City: Traverse City
State: MI	Zip Code: 49686	Telephone: 616-935-1514
Authorized Representative Name: Christopher Wright		Title: Executive Director
Does your community have a separate zoning district for the shoreline: (Check one) ☐ Yes ☒ No ☐ Not Sure		
Certification: I certify that all statements in this application, including all requested supplemental information, are true, complete and accurate to the best of my knowledge. Applicant Representative Signature _____ Date: 3/22/02		

MAIL COMPLETED APPLICATION WITH NECESSARY ATTACHMENTS TO:

COASTAL MANAGEMENT PROGRAM
LAND AND WATER MANAGEMENT DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30458
LANSING MI 48909-7958

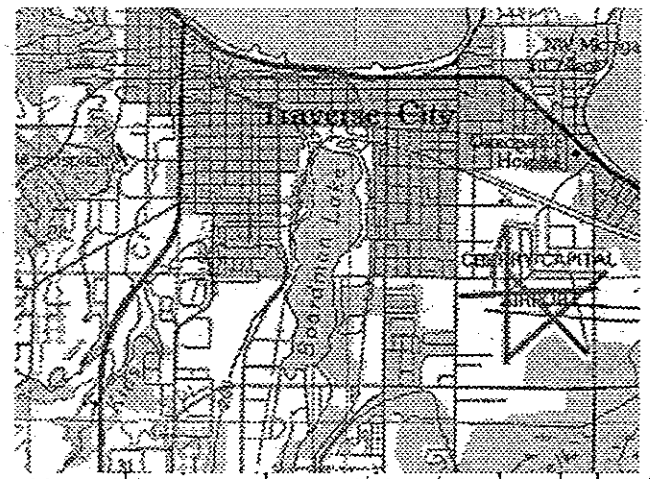
Boardman Lake Watershed Management Planning Project

Introduction

As local units of government plan for the development, rehabilitation and increased recreational use of the shores of Boardman Lake, The Watershed Center in association with a wide spectrum of partners seeks to begin to plan for the maintenance and improvement of water quality and increased public use and enjoyment of Boardman Lake.

Seen by many as a previously hidden gem of the Traverse region, Boardman Lake has been the focus of numerous ongoing private investments and public improvements such as the Traverse City Library and Children's Garden, Hull Park Boathouse and Launch, plans for the enhancement of wastewater quality treatment at the City Wastewater Treatment Plant, Grand Traverse County Nature Center at the Grand Traverse County Natural Education Reserve, Traverse Area Community Sailing school, residential and commercial development including revitalized "brownfield" sites, recreational trail development, and the investigation and cleanup of shoreline contamination sites - among others.

The Boardman Lake Watershed Management Plan Project Team seeks the support of local units of government and others to pursue a grant from the Michigan Coastal Management Program, Michigan Department of Environmental Quality to develop a watershed management plan for Boardman Lake. Potential Watershed Management Plan components include a land use inventory (including historic and existing contamination sites, historic wetlands converted to other uses); an assessment of impervious surface (i.e. roof tops and pavement); a storm water and pollutant input assessment; the compilation of existing water and sediment sample data; and a comprehensive and energetic outreach and education component to local decision-makers, riparian landowners and the public. Areas of concern will be identified and prioritized in terms of water quality impacts and/or impediments to enhanced public access and recreational use of the lake.



A diverse group of project partners and contributors will include the City of Traverse City (Department of Public Services, Wastewater Treatment Plant, Planning Department, *etc.*), Grand Traverse County (Department of Public Works, Planning Department, Drain Commissioner, Control, Parks & Recreation), Garfield Township, The Watershed Center Grand Traverse Bay,

Bay Keeper, Grand Traverse Conservation District/Boardman River Project, Northern Michigan Environmental Action Council, Ball Environmental Associates, Meridian Geographics, Grand Traverse Regional Land Conservancy, Great Lakes Environmental Center, MSU Extension/Sea Grant, corporate partners and lakeshore landowners.

Once the management plan is completed, it will be incorporated into the MDEQ-approved Boardman Valley Management Plan and project partners will qualify to apply for additional state grants to implement watershed improvement recommendations, local governmental outreach/ordinance development, and education projects. Watershed improvement projects may include storm water system modifications; the identification, evaluation and restoration of under-utilized or potentially contaminated parcels; the correction of nutrient/sediment contribution sites; the restoration of wetlands and other sensitive resources; the protection of significant groundwater discharge/recharge areas; an assessment of and recommendations for historic site preservation and/or redevelopment.

Essential Elements of the Project

Land Use

The land use component of this project will address four general areas of potential influence on Boardman Lake and its surrounding watershed. First, Ball Environmental Associates will research local, county, state and federal databases and interview regulatory officials regarding sites of known or potential contamination, including historic fill and waste disposal sites, leaking underground storage tanks, and other general sources. Second, using historic aerial photographs, soil surveys and National Wetland Inventory maps, Ball Environmental will determine historic wetland acreage and type and the percentage of historic wetland loss for the study area. Third, Ball Environmental together with Traverse City and Garfield Township officials and Meridian Geographics, Inc. will determine storm water sewer infrastructure and assess storm water contributions to Boardman Lake. This investigation will also help define the sub-watershed of Boardman Lake within the subject area. Finally, Ball Environmental together with Meridian Geographics will determine impervious surface percentage within the sub-watershed, and make recommendations for assessments including rooftop runoff within the City of Traverse City. All four of these components along with the natural resource and biological assessment baseline data will be incorporated into a Geographic Information Systems. Ball Environmental and Meridian Geographics will produce and provide maps and GIS data bases (usable data in the form of cover layers) for local units of government via the Grand Traverse Watershed Center website and other media.

Project GIS

Meridian Geographics will deliver the GIS (Geographic Information System) mapping component of the CZM funded Boardman Lake Watershed Management Plan. A series of digital map layers will be combined into a project GIS that will support quantifying, analyzing, and illustrating environmental trends and conditions in the watershed. As part of Meridian's expanding roster of environmental and watershed planning projects in Northwest Michigan, the Boardman Lake project will benefit by employing the most current, accurate, and meaningful GIS data and methods. This proposed

project's GIS design will emphasize accessibility and flexibility, in keeping with the concept of a "living" watershed management plan that will keep up with the times.

The project team has specified sourcing and building the following essential map layers for the project GIS. Following the layer description are sources in italics:

1. Storm Drain Lines, Outfalls, and Catchment Buffers – Traverse City, MDOT, Garfield, Private, Others.
2. New Sub-Watershed Boundaries
3. Study Field Data (Habitat and Chemistry Data)
4. Land Use - GT County 1990, Garfield Township, City of Traverse City
5. Environmental Sites - Ball Environmental Assoc., EPA, State of Michigan, GT County,
6. Composite 10 meter Digital Elevation Model – USGS, Meridian Geographics
7. Impervious Surfaces
8. DOQ Aerials - GT County 1997/MDNR 1998, City of Traverse City
9. Soils/Hydric Soils - GT County/MDNR
10. Hydrography – Watershed Center Enhanced Hydrography, Meridian Geographics
11. Parcels and Zoning - GT County
12. Base Layers: Streets, Political Boundaries, Recreational Trails - Meridian Geographics
13. Wetlands – NWMCOG 2001 SWAMP Project
14. Historical Aerials– MSU Landscan Archives, GT County Conservation District

Of principal importance to this project will be the production of a digitized storm drain system to include lines, outfalls, diameters, and catchment zones. The City of Traverse City's storm sewer plan was scanned and geo-referenced and partially digitized under the 2001 MDEQ CZM Grand Traverse Bay Storm Water and Tributary study (GTBWI, GLEC, Meridian Geographics). The same scanned imagery will be digitized to complete lines and outfall data for the project area. Storm sewer catchment zones, when combined with impervious surface analysis, soils, slope, precipitation, flow rates, and other GIS-based variables will help measure environmental impacts within the watershed. Another important outcome of the project will be the creation of "sub-sub" watershed boundaries within the defined USGS sub-watershed boundary (USGS HUC14: 4060105020070, Basin 9, Sub-Basin 7). The project team will analyze USGS 10 Meter DEM models with Vertical Mapper® to delineate large scale watershed boundaries around tributaries/lakes associated with Boardman Lake. Similar work has only been completed for the Mitchell Creek, Acme Creek, and Long Lake sub-watersheds within the greater Grand Traverse Bay area. Creation of sub-sub watershed boundaries will not only enhance the project analysis process, but will also greatly assist area planners, developers, conservationists and other stakeholders with an improved understanding of this important watershed.

The inclusion of historical aerials, local trail systems, and parcel data vis à vis land use zoning, and planning will emphasize Boardman's Lakes importance as a community resource. Historical and recent aerials, combined with environmental and land use data, will efficiently illustrate the realities of the resources evolution and prospects. Habitat survey and water quality sampling data will be geo-referenced and linked to the project GIS for analysis and display. These results will help provide a baseline foundation for future data-gathering and mapping towards meaningful trends analysis.

At the project conclusion, a series of report size and large format map plots, data-rich HTML web maps, and digital images will be available for public outreach and report conclusions. The project GIS will be constructed using Meridian Geographics GIS workstations running MapInfo® v.7, ArcView® v8, and Vertical Mapper v3. Resultant files and projects will be available on an open GIS format basis and easily accessible to future users and investigators.

Water Quality Monitoring

Nutrients and bacteria concentrations from tributary and principal storm water discharges to the Boardman River from Sabin Dam north to West Grand Traverse Bay will be monitored quarterly. The storm water discharges will be located and identified using municipal storm sewer engineering maps and by visually locating storm water out-falls to the river and Boardman Lake. The position of each storm water outfall will be recorded using Global Position System (GPS) technology and the storm water positions will be mapped.

The urban contribution of nutrients and fecal contaminants to the Boardman River will be assessed by sampling at 10 sites. The use of the Boardman River to estimate urban nonpoint source pollution is ideal because the urban boundary is clearly delineated from the South Airport road crossing to the bay. Samples will be collected at the South Airport road crossing (non-urban ambient conditions) and at selected sites along the fives miles of river before its mouth at the bay (urban impact).

Sample Stations

Mouth of Miller Creek at the Boardman River
Boardman River upstream at South Airport Road
Boardman River at 8th Street
Boardman River at Union Street
Mouth of Kids Creek at the Boardman River
Five selected storm drains

Water Quality Assessment Methods

Baseline water quality data will be collected from storm water drains and each tributary at their discharge point into the Boardman River during base flow time periods and during a selected high flow time period (storm event with rainfall exceeding 1 inch during 24 hours period). Parameters that will be recorded consist of total phosphorus, nitrate/nitrite nitrogen, and E. coli. All samples collected for the analysis of the above parameters will be collected and analyzed following the EPA approved standard procedures and analyses at a certified environmental laboratory. Parameters that will be recorded using field equipment consist of: pH, temperature, dissolved oxygen (DO), conductivity and total suspended solids (TSS). Selected samples will be collected to sample for mercury, lead, and cadmium. The Watershed Center will be responsible for compilation of historical and current water quality data.

Coordination with other Studies

This project will be coordinated with the following studies and planning projects:

1. The City of Traverse City completed a Parks and Recreation Plan for 1999 - 2004. Based upon recreational surveys and citizen comments, Goal 2 of the plan recommends developing Boardman Lake and river as a natural resource promoting passive and water related recreational opportunities. The objectives are:

a. Provide quiet, natural open spaces that promote passive activities.
b. Develop bike and hiking trails that connect downtown to the south end of Boardman Lake.
c. Encourage private land owners to accommodate a bike trail with easements of land purchase
d. Design future river-walks that will allow for fluctuations in the water levels.
e. Provide pedestrian lighting along the river front in the Central Business District area.
f. Promote water related recreation use of Boardman Lake which is currently not utilized to its potential.

2. Garfield Township completed an Environmental Assessment of the Miller Creek Watershed. The Grand Traverse County Conservation District conducted a non-point source pollution inventory of the habitat conditions of Miller and Jack Creek. The study identified the following environmental problems:

a. Four perched culverts block migration of fish upstream.
b. Culverts are undersized for storm water flows.
c. There are 22 stream bank erosion sites on Miller Creek. The amount of sediment from stream bank erosion in Miller Creek is relatively minor when compared to sediment delivered from other land-use activities.
d. A recommendation of the study is to develop a comprehensive monitoring program in Miller Creek to determine current nutrient levels.

3. The City of Traverse City completed an engineering study of the wastewater collection system along the Boardman River in downtown Traverse City and west side neighborhood. The west side interceptor receives wastewater from Garfield Township and all of the Elmwood Township sewer service area. The study includes an assessment of infiltration/inflow to the sewer system from groundwater and illicit storm water connections. This portion of the study will involve large amounts of interaction with the public and downtown business owners. One recommendation is to have an organized approach to involve the public and educate the public about expectations during the project. The Boardman Lake Watershed Management Planning Project can assist the city with developing a unified and consistent public education outreach program to promote water quality protection for the Boardman River and tributary streams.

4. The United State Geological Survey recently issued a report on pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams. The Boardman River was one of 139 streams included in the study. The Boardman Lake Watershed Management Planning Project will be coordinated with Dr. Sheridan Haack, USGS Water Quality Specialist, who conducted the study of non-traditional water quality parameters for the Boardman River.

5. The proposed project will also be coordinated with the Watershed Center's Grand Traverse Bay Watershed Protection Plan. This is a two project from September 2001 to December 2003. The purpose of the project is to update existing watershed protection plans and incorporate them into a single plan for the entire 1,000 square mile basin. The Boardman Lake Watershed Management Planning project will focus attention and increase local awareness for water quality concerns specific to Boardman Lake and the downtown portion of the river. The results from a macro invertebrate monitoring project being conducted by Water Watch students on Kids Creek will be included in this study.

Natural Resource and Biological Assessment

A significant component of the proposed Boardman Lake Watershed Management planning process includes the assessment of the watershed's natural resources and biological condition. Ball Environmental Associates, together with Great Lakes Environmental Center of Traverse City, will develop and perform aquatic and terrestrial biological surveys within the Boardman Lake Watershed to collect baseline data on the biological conditions. This baseline assessment will further aid in development of a long-term monitoring program for future assessment of the impacts to plants, wildlife and water and habitat quality. Great Lakes Environmental Center will perform benthic macro invertebrate and macrophyte surveys. This would be accomplished using the state of Michigan's Procedure #51 for Wadable Rivers method. Ball Environmental will perform a terrestrial plant survey, a breeding bird survey, and an inventory to determine herptefauna and mammal abundance in the study area starting spring 2003. This will involve surveying randomly chosen plots within the unpopulated sections of the study area from South Airport Road to Sabin Dam (the southern boundary of the study area). The breeding bird survey will be conducted on land as well as the entire length of the study area from the water by boat. A thorough and complete investigation for threatened, endangered, of special concern, and exotic/invasive species will be accomplished in conjunction with all biological surveys. Ball Environmental will review all existing fish survey data available to identify and evaluate any areas of concern related to the aquatic system.

A) Macrophyte Survey Method

Great Lakes Environmental Center would conduct a macrophyte (rooted aquatic plants) survey of twelve sites, and a benthic macro invertebrate survey of three sites located within the Boardman River Watershed. The locations of each of the sampling sites will be determined after discussions with the Watershed Center and Ball Associates to coordinate the surveys with other sampling events that will be conducted in addition to this survey.

The objective of the macrophyte surveys to be performed in the Boardman River watershed is to characterize macrophyte growth areas at selected sites in the watershed. A list of species present and their relative densities will be provided for each of the sampling locations. Each location will be described by field observations, field notes with locations marked on a bathymetric map of the waterbody in addition to earth coordinates (GPS latitude and longitude).

Ideally, vegetation should be sampled three times during a growing season (early, middle and late season). Although one survey late in the year can suffice depending on the data requirements, we typically recommend at least two surveys during a single growing season because plants that grow early in the season may not be present later in the growing season. However, for the purposes of this study, a late summer/early fall survey would provide good preliminary information as well as provide information on the late season plant species at the time of maximum plant biomass, or growth. In

addition, late season surveys provide the best information on nuisance aquatic plant growth, as many of these invasive species reach their maximum biomass at the end of the growing season.

The survey method used to characterize the vegetation at the 12 pre-selected locations will be a line-intercept sampling method, following Great Lakes Environmental Center's (GLEC) Standard Operating Procedure (SOP) for conducting an aquatic plant survey (attached). GLECs SOP is based on methods described in APHA, Standard Methods for the Examination of Water and Wastewater, Method 10400 C Macrophyton - Vegetation Mapping, 2000, in addition to the other sources listed in the SOP.

At each section, at least one survey transect will be established perpendicular to the shore and used to survey each selected station. For deep water areas, a weed rake will be used to retrieve plants at designated intervals along the transect. The intervals will be based on the lake bottom contours and on the density of the vegetation and the size of the littoral zone. In shallow areas (or in small streams) a weighted line with evenly spaced increments marked on the line will be used to mark the sampling points. The intervals sampled along the transect will be determined by the density of the vegetation and the length of the transect. Plant identification will be made in the field where possible, and voucher specimens will be collected for verification and/or identification at GLECs laboratory in Traverse City, Michigan. The data will be recorded on field maps and data sheets. The information collected will be used to estimate the frequency and density of individual plant species present at the survey sites.

B) Benthic Macro invertebrate Sampling

Benthic macro invertebrate sampling will be conducted according to the Michigan Department of Environmental Quality's "Procedure #51", Qualitative Biological and Habitat Survey Protocols for Wadable Streams and Rivers. The protocol is a relatively quick and easy to use survey tool. A 100 organism sub-sample will be obtained from each site and identified to the family level. The macro invertebrate community is scored in comparison to reference sites in the same eco-region. It is recommended that the sampling occur between June 1 and September 30 at time of low or moderate flow. The data will include a spreadsheet of the organisms listed and enumerated by family. In addition, scoring ranks will be provided for each site.

Final Report, Outreach and Training

Four public meeting will be conducted during the project period. The first two meetings will be held to obtain stakeholder participation and input in identifying historic dump sites which may posse a potential source of groundwater contamination. Antidotal information is available on abandoned public dumps and landfills along the lake and river shoreline. A steering committee of stakeholders and business owners will be formed to oversee the project. Quarterly progress meetings will be held.

Two meetings will be held at the conclusion of project to report out findings and obtain in-put on the project's recommendations for protecting the water quality of the Boardman River and Boardman Lake. The Watershed Center and Northern Michigan Environmental Action Council (NMEAC) will host and facilitate the stakeholder meetings. One meeting will include representatives from the City of Traverse City, Grand Traverse County, and Garfield Township to present project findings and identify future opportunities for local governmental units to protect water quality.

Ball Environmental will provide methods and findings to local units of government in easily interpretable and visual format through face to face training, and provide copies of sample ordinances to promote future water quality protection through planning and zoning. Ball Environmental will prepare a final report of findings and conclusions from the land use and biological inventories with a detailed bibliography, tables and graphics of sample methods and make recommendations for future study and long-term monitoring.

Project findings will be included in the Boardman River Protection Project and Watershed Center Grand Traverse Bay newsletter and website. Total dissemination of newsletters is approximately 1,800 stakeholders. The final report will be presented in draft format at the stakeholder meetings to solicit input and guidance in developing recommendations. The final report will be in a power point format for presentations to stakeholders. The report will be a blue-print for guiding future water quality protection efforts for Boardman Lake and the downtown segment of the Boardman River.

Detailed Project Budget

Task	CZM Grant	Match	Total
Land Use (Researcher 85 hrs @ $55 per hr.) (Technician 85 hrs @ $45 per hr.)	 $ 4,675 $ 3,825		 $ 4,675 $ 3,825
Project GIS (GIS Specialist 195 hrs @ $60 per hr)	 $ 11,700		 $11,700
Water Quality Monitoring (Technician 120 hrs @ $25 per hr.)	 $ 3,000		 $ 3,000
Natural Resource and Biological Assessment (Researcher 35 hrs@$55 per hr.) (Technician 35 hrs@ $45 per hr.) (Field Technician 40hrs @ $50 per hr)	 $1,925 $1,575 $2,000		 $1,925 $1,575 $2,000
Educational Outreach (Researcher 40 hours @ $55) (Technician 25 hours @ $45) (Facilitation of stakeholder meetings)	 $2,200 $1,125 $1,500		 $2,200 $1,125 $1,500
Laboratory Analysis 45 Total Phosphorus samples 45 Nitrogen samples 150 E.coli samples Selected metals	 $900 $810 $1,800 $1,000		 $900 $810 $1,800 $1,000
Supplies (GIS plots, newsletters, educational brochures)	$2,000		$2,000
Travel (300 miles @ .34 per mile)	$ 102		$ 102
Final Report (Researcher 30 hours @ $55) (Technician 30 hours @ $45)	 $1,650 $1,350		 $1,650 $1,350
Project Coordination (Project Manager 100 hours @ $25)	 $2,500		 $2,500
City of Traverse City (Infrastructure improvements to reduce nonpoint source pollution and identify illicit cross-connections of storm drain and sanitary sewer collection systems)		$45,637	$45,637
Total	$45,637	$45,637	$91,274

Time Schedule

	2002 Oct-Dec			2003 Jan-Mar			2003 Apr-Jun			2003 Jul-Sep			2003 Oct-Dec			2004 Jan-Mar		
TASK	**O**	**N**	**D**	**J**	**F**	**M**	**A**	**M**	**J**	**J**	**A**	**S**	**O**	**N**	**D**	**J**	**F**	**M**
Land Inventory	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Water Quality Monitoring					X			X			X			X				
Natural Resource Assessment				X	X		X	X	X	X	X	X						
Educational Outreach				X	X	X		X			X			X	X	X	X	
Steering Committee meetings		X			X			X			X			X			X	
Quarterly Report				X			X			X			X			X		
Final Report																	X	X

Support Letters

The City of Traverse City

OFFICE OF THE CITY MANAGER

GOVERNMENTAL CENTER
400 Boardman Avenue
P.O. Box 592
Traverse City, Michigan
49685-0592

March 18, 2002

Catherine Cunningham
Michigan Coastal Management Program
Constitution Hall
525 West Allegon Street
Lansing, MI 48909-7958

Dear Catherine:

The City of Traverse City supports the Watershed Center Grand Traverse Bay's grant application, titled **Boardman Lake Watershed Management Planning Project**, for consideration of funding under the Michigan Coastal Management Program. The purpose of the project is to develop a watershed management plan for a five mile segment of the Boardman River that flows through a predominantly urban environment to West Grand Traverse Bay. This segment of the river has experienced significant changes throughout the historical development of our region.

As noted in the Traverse City Record Eagle editorial of February 2, 2002, the Boardman Lake watershed is experiencing a renaissance. The City of Traverse City is implementing capital investment in infrastructure improvements to storm drain and sanitary sewer systems along the downtown segment of the Boardman River. This investment will significantly contribute to water quality protection and reduce the occurrence of non-point source pollution entering the river. The improvements will also contribute to enhancing the recreational value of the riverfront.

The Watershed Center's partnership approach to managing the proposed project will serve as a catalyst to build upon current efforts to protect this unique water resource. The City of Traverse City will actively participate on the project steering committee and provide in-house staff resources, as appropriate, to assist with data collection, planning, and analysis. GIS data layers developed for this project include delineation of the Boardman Lake basin, mapping storm water collection systems and discharge locations, impervious cover, and land use inventory. The GIS data layers developed by this project will be useful to the City Planning Department.

On behalf of the City of Traverse City, thank you for giving this proposal your fullest consideration. Please contact me if you need additional information or have any questions.

Sincerely,

Richard I. Lewis
City Manager
(231) 922-4440

RIL/dll

GRAND TRAVERSE COUNTY
COUNTY ADMINISTRATION
400 BOARDMAN AVENUE
TRAVERSE CITY, MI 49684-2577

Dennis Aloia, ADMINISTRATOR 231/922-4780 daloia@co.grand-traverse.mi.us
Michael J. McClelland, DEPUTY ADMINISTRATOR 231/922-4622 mmcclell@co.grand-traverse.mi.us
BOARD OF COMMISSIONERS 231/922-4797 Administration FAX 231/922-4427

March 15, 2002

Catherine Cunningham
Michigan Coastal Management Program
525 West Allegan Street
Lansing, MI 48909-7958

Dear Cathy:

On behalf of the Grand Traverse County Board of Commissioners, I would like to express our support for The Watershed Center's grant application titled ***Boardman Lake Watershed Management Planning Project*** for consideration of funding under the Michigan Coastal Management Program. The purpose of the project is to develop a watershed management plan for a five mile segment of the Boardman River that flows through a predominately urban environment to West Grand Traverse Bay. This segment of the river has experienced significant changes throughout the historical development of our region.

The Boardman Lake watershed is experiencing a renaissance, thanks to investments by the Traverse Area District Library for the new library and the City of Traverse City for improvements to Hull Park, funded with the support of the Coastal Management Program, and private investment in the Boardman Banks project, assisted by the Grand Traverse County Brownfield Redevelopment Authority and the State Brownfield Grant program of MDEQ.

The CMP assisted Boardman Lake Trail Design Project will lay the groundwork for a major, non-motorized trail around the Lake. Continued investment by the City of Traverse City in infrastructure improvements to storm drain and sanitary sewer systems along the downtown segment of the Boardman River will significantly contribute to water quality protection and reduce the occurrence of non-point source pollution entering the river.

The watershed management plan proposed by the Watershed Center will be critical to continue and intensify this renaissance and protect the water resource and we fully support the project.

Thank you for giving this proposal your fullest consideration.

Sincerely,

Richard F. Thomas, Chairman
Board of Commissioners
Grand Traverse County

RFT/cjc

Traverse City Record Eagle Article and Editorial

TRAVERSE CITY RECORD-EAGLE

February 2, 2002

Lake needs a commitment to offset decades of abuse

Boardman Lake is enjoying a renaissance. Traverse City residents and their elected leaders are showing an interest in the little lake in town that is too often forgotten.

But decades of industrial pollution have spoiled this diamond in the rough. So while environmental lawsuits may grab headlines, marshal public opinion and act as incentive, a long-term commitment is necessary to ensure the lake's resurgence. A healthier Boardman Lake affords many advantages.

The lake, now, is looked upon by many as a scourge. Home of the sewer plant, land of the cyanide, cadmium, chromium and copper. Since the late 19th century industries have lined the shore of Boardman Lake, making lumber and dishes and chairs and canned food and pies and gears and, history would later show, an environmental mess.

Only recently have we begun to clean it up. It took a dozen years of negotiations to reach an agreement for the Sara Lee plant, formerly Chef Pierre, to discharge the wash water from its plant into the city's sewer system instead of piping it into Boardman Lake.

More recently, Cone Drive has been cleaning up contaminated soil at its gear manufacturing plant on 13th street near the shore of Boardman Lake. The slow pace of the cleanup, however, prompted the Northern Michigan Environmental Action Council and the city to file a lawsuit against the company. An agreement allows the company to continue with its current cleanup, but if that proves unsuccessful, another method will be pursued.

The city has even agreed to pony up nearly $7,000 to pay for additional testing beyond what the

state performs, to ensure the area is cleaned up sufficiently.

City leaders deserve applause for pushing its interest in the Cone Drive site, but the public should expect more. Cone Drive is a comparatively easy task compared to what else remains to be done.

The city's responsibility only begins at Cone Drive.

Consider: The city-built regional wastewater treatment plant is the last remaining source of direct pollution into the lake, according to the Department of Environmental Quality. City and county officials are moving ahead with a plant overhaul and new treatment system to address that problem.

Consider: A contaminated site east of Cass Street in Garfield Township was a city dump in the '50s. Now privately owned, the land is a pending brownfield site, where cleanup costs would be used against future tax liability.

Consider: A contaminated site on Keystone Road in Garfield Township was a city dump in the '60s and '70s. Tests show no significant contamination seeping into the lake.

Compounded with the industrial pollution of decades ago, contamination of Boardman Lake is too widespread and too unknown to be completely removed. It would be a monumental task because it would be virtually impossible to identify the responsible parties to pay for the cleanup.

So what are Traverse City officials, as well as officials in Garfield Township and Grand Traverse County, expected to do?

Complete a comprehensive water quality study, for starters. The state has urged the three municipalities to pursue such an initiative, a baseline assessment to gauge the lake's water quality and to identify any new contamination problems. If money can be found for traffic plans it is reasonable to expect some can be found for water studies.

It's foolish to think Boardman Lake will eventually become another of northern Michigan's pristine beauties. It was abused for too long.

But much still can be done. The city already has invested $700,000 into Hull Park at the north end of the lake. The Traverse Area District Library is nearby. Talk continues of building a recreation trail near the shoreline.

Better assurances on the health of the lake would

promote even further resurgence. Think more housing, more parks, more public use of the water.

Boardman Lake is right in town. It ought not to be ignored.

TRAVERSE CITY RECORD-EAGLE

January 20, 2002

Boardman Lake fights to get clean

Industrial past, lack of water quality testing hampers effort to return lake to pristine condition.

"All accounts agree in the statement that before so-called improvements of civilization had marred the adornments of nature, this was a most beautiful spot. The waters of Boardman Lake were clear as crystal."
—from the book "The Traverse Region" published in 1884

By BILL O'BRIEN
Record-Eagle staff writer

TRAVERSE CITY — Pushed into a hallway at a state office in Cadillac is a box filled with documents on a contaminated site on Boardman Lake.

And another box. And another one. There are in fact more than a dozen boxes filled with documents about the various pollution spots along Boardman Lake — one of the reasons why state officials chuckle when they hear complaints about nothing being done to address long-neglected pollution problems along the 339-acre Grand Traverse County lake.

The lake is an enigma in the community. It is snubbed because of its industrial past yet welcomed because of its proximity to town and calm waters. It warrants attention to get it clean but is ignored on matters to keep it that way. In an area lauded for the beauty of its natural lakes, it remains largely unnoticed.

It was not always so. Boardman Lake was the economic engine that drove the early industrial development of Traverse City. Mills and factories had lined its shore but after the early 1900s they either closed or moved on, leaving arsenic, lead and mercury as their legacy.

Boardman Lake is unlikely to ever receive an unqualified clean bill of health from environmental regulators. The state is aware of at least 10 contamination sites around the lake and Boardman River, and Department of Environmental Quality officials say there may be others they are unaware of.

Despite such a history of contamination, some of those who have monitored the lake's condition for years say they would not hesitate to boat, fish or swim in Boardman Lake today.

"There may not even be a problem at all in the lake, other than the very localized impacts," says Dan Darnell, head of the environmental response division in Cadillac for the DEQ. "The perception is there is a problem, but there may not be that much of a problem."

Mike Wills of Traverse City has enjoyed the lake for years. He sails there, and his family has fished for bass for years.

"It's ideal in that it's right smack in the middle of town and people can walk or ride their bikes to get there," Wills said. "I think Boardman Lake in the future is going to be much more of a community resource than it has been in the past."

The past

Of all of the industrial and manufacturing sites in the Grand Traverse region, the shores of Boardman Lake and the north end of Boardman River were home to some of the earliest, dating back more than 150 years.

It began in 1847 when a thrifty farmer named Captain Boardman from Napierville, Ill., bought a tract of land from the federal government on the mouth of the Boardman River. Boardman later turned the land over to his son, Horace, who arrived in June 1847 with a small work crew that built a lumber mill and some neighboring homes.

In 1851 Boardman sold the property to the fledgling Chicago partnership of Hannah, Lay and Co., which paid $4,500 for the mill and surrounding buildings.

The Traverse City Iron Works foundry followed in 1874 on the Boardman River, now the River's Edge residential and commercial development built on a state brownfield site.

Then the city's largest employer, the Oval Wood Dish Co., operated on Boardman Lake starting in 1892 until it moved to upstate New York in 1916. A chair factory, canneries and industrial factories also dotted the lake's shoreline, including Cone Drive which opened in 1950.

"It's similar to Manistee Lake or Muskegon Lake in that it was totally surrounded by industrial activity at one time," Darnell said.

Shoreline property was valuable for factories and mills, which provided needed job opportunities enabling the small towns to grow.

"Almost everybody did it that way up here," said Chris Grobbel, an environmental researcher who has studied Boardman Lake for the Northern Michigan Environmental Action Council. "(The companies) needed the water for their processes."

Making a comeback

DEQ officials are careful not to speak in definitive terms when discussing the water quality of Boardman Lake, but they will say that the change in land-use activity around the lake and the cleanup measures that have taken place are making a positive impact.

The water quality isn't a problem for groups like the Traverse Area Community Sailing club, which teaches about 250 children how to sail each summer. Wills, the group's organizer, said Boardman Lake is "ideal" for sailing instruction because the water is warmer and calmer than Grand Traverse Bay, with less boat traffic.

The sailing lessons occur away from the known contamination areas, Wills said.

"The DEQ has assured us that what we're doing there is safe and there's nothing to be concerned about," Wills said.

The sailing group reminds parents as much by posting a letter on its Web site from the DEQ.

In recent years area leaders also have shown an affinity for the lake.

Traverse City invested about $700,000 into Hull Park, the former site of the Oval Wood Dish Co. where the sailing lessons are now held. Besides new docks, a pavilion and other improvements, the money paid for the removal of contaminated soil or its "encapsulation" by paving over roads and parking areas.

Similar soil work will probably be needed for moving ahead with a long-discussed plan to build a recreational trail along the western shore. The trail is in the early planning stages.

"Anything you want to get into there you have to look at any potential environmental problems," city manager Richard Lewis said. "And if you find something you have to be able to get rid of it or work around it."

Still some problem areas

One of the more-extensive studies on the lake's condition was done in the summer of 1997. The DEQ and the Environmental Protection Agency sampled lake bottom sediments at 14 locations around the lake's perimeter and at three sites in the river south of the Union Street dam.

Results showed the most-significant amounts of chemicals to be at the three sites on the river between the wastewater treatment plant and the dam. It found elevated levels of arsenic, iron, mercury and other hydrocarbons about 200 yards downstream of the sewer plant. On either side of the former Iron Works plant in the river researchers found elevated levels of copper, mercury, lead and other material.

The state has no standards for determining safe levels of sediment contamination, though contamination is generally not considered a health risk if a lake bottom remains undisturbed. Sediment data is valuable because it's a longer-term indicator of a lake's condition.

At two test sites in the lake just east of Cone Drive and the former Stromberg-Carlson plant on 16th Street, testing showed solvent- and metal degreasing-type of compounds in the sediments, which officials said could be from contaminated groundwater venting into the lake.

The other major hot spot was found in the northern middle of the lake. More than 60 feet down researchers found sediments with elevated levels of cyanide, cadmium, chromium and copper. They speculate that the depth of the site probably makes it a settling point for other contamination problems south of there.

So many companies have come and gone over the past century and some of the lakefront land has changed hands so many times that it's difficult for state regulators to clearly identify who's responsible for cleaning up contaminated land.

"Most of the other properties are owned by somebody who didn't cause the contamination," said John Vanderhoof, an environmental quality analyst for the DEQ.

What's being done

Part of the delay in implementing a long-sought cleanup around Cone Drive, the subject of a pending lawsuit involving NMEAC and the city, was the finger-pointing state officials say took place in the '80s between the gear plant, the former CSX railroad company that had a rail yard there and the state Department of Transportation, which owns the railroad tracks on either side of the lake.

State regulators say the blame game is a typical problem they encounter when trying to order cleanup work and is one of the reasons cleanups can drag on.

"It was a long struggle to get Cone Drive just to admit the problem was theirs," Darnell said.

While Cone Drive has been criticized by environmentalists and city officials for the pace of its remediation work, DEQ officials note that it's the only site on the lake where cleanup is under way.

In fact, the last remaining source of direct pollution into the lake is the city-built regional wastewater treatment plant, DEQ officials said.

"Personally, that would be my biggest concern if I lived at that end of the river," Vanderhoof said.

City and county officials are addressing that problem. Plans are moving ahead for a nearly $30 million plant overhaul this year to increase treatment capacity by about 40 percent while improving the discharge to what officials describe as close to drinking-water standards.

State officials also note it took a dozen years of negotiations to reach an agreement for the Sara Lee plant, formerly Chef Pierre, to discharge the wash water from its plant into the city's sewer system instead of piping it into Boardman Lake.

Other contamination sites include a site east of Cass Street that was a city dump in the 1950s. The Garfield Township property is now privately owned. A brownfield designation, where cleanup costs can be used against future tax liability, is pending to allow construction of a warehouse and offices.

A second city dump site used in the 1960s and '70s on Keystone Road in Garfield Township also warrants continued monitoring, DEQ officials said. They are unaware of any significant contamination seeping into the lake.

The future

The waters of Boardman Lake will probably never return to their pristine condition written about in the 1850s. The experts say that remnants of industrial activity can linger for decades and that cleaning up all of the known contamination spots on the lake — much less the unknown ones — would be a monumental task because it would be virtually impossible to identify responsible parties to pay for the cleanup costs.

But with the mills and factories that once lined the lake's north end now a distant memory and with the improvements to the city sewer plant and other cleanup measures ongoing, regulators say the condition of the lake should continue to improve.

"The face of Boardman Lake is changing. It's getting better," said Mike Stifler of the DEQ's surface water quality division. "Environmentally, in general I think it's fine."

One item that both the state and environmental groups agree on is the need for more water-quality monitoring in the lake. While there are several initiatives to track the water quality of Grand Traverse Bay and popular inland waters such as Long Lake and Lake Leelanau, experts say there is a dearth of water quality information on Boardman Lake — somewhat of an oddity in that there are reams of documents about the contamination problems.

"Some of our lakes up here have been very well studied and we have a lot of data, but a lot of them haven't," Grobbel said. "Unfortunately Boardman Lake is one of the latter."

Inland water quality studies are typically spearheaded by groups of residents who live on the lake, but Boardman Lake lacks such a group. The DEQ says its water testing funds have been reduced over the past 15 years and it lacks the money to study the lake.

The state has called on the city, Grand Traverse County and Garfield Township to consider such an initiative — if the lake's condition is as important to the community as officials say it is.

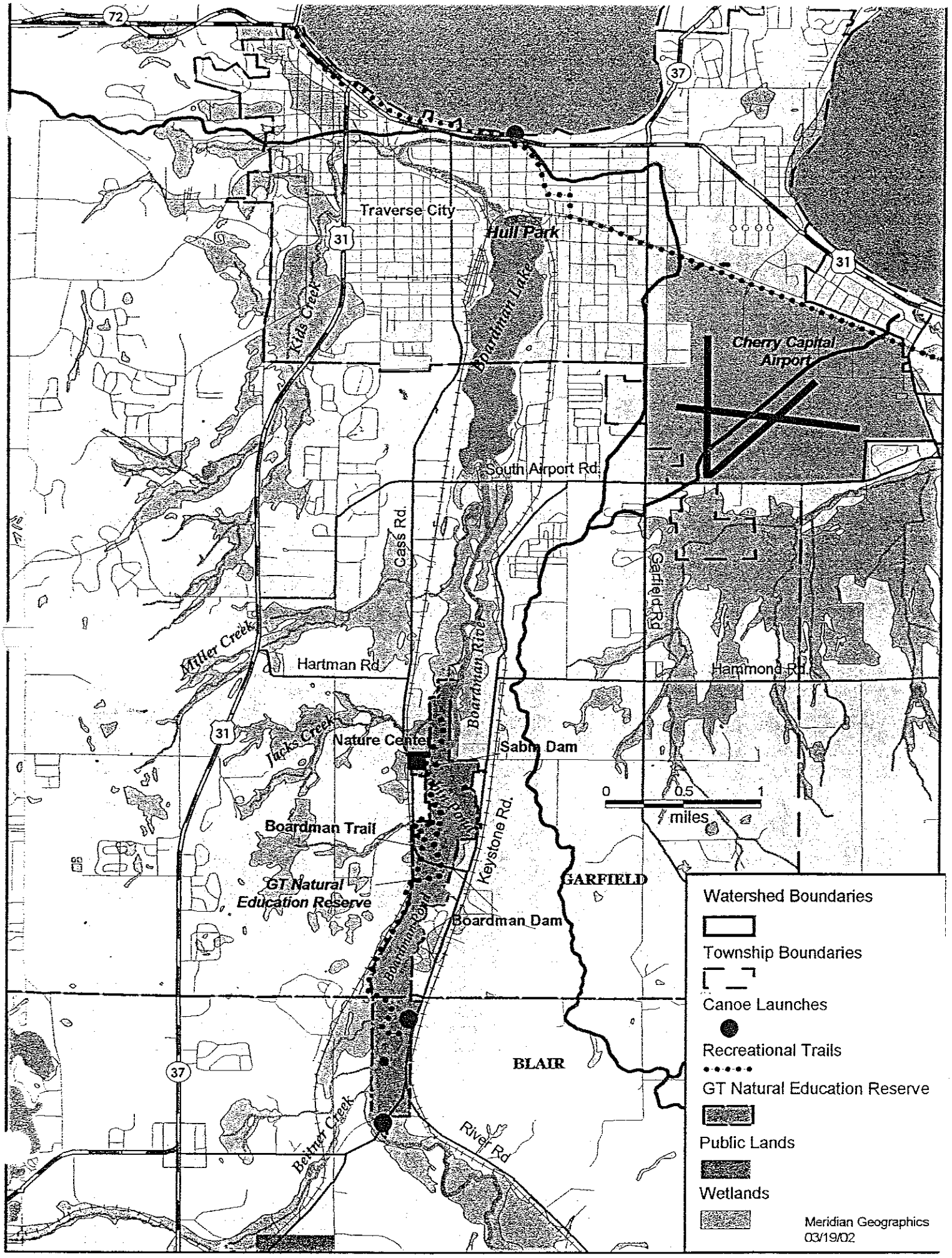
"There are other sites where I'd like to see more work done," Darnell said.

Environmentalists say it's important to begin compiling water quality data both to monitor the lake's condition and to identify any new contamination problems that could surface.

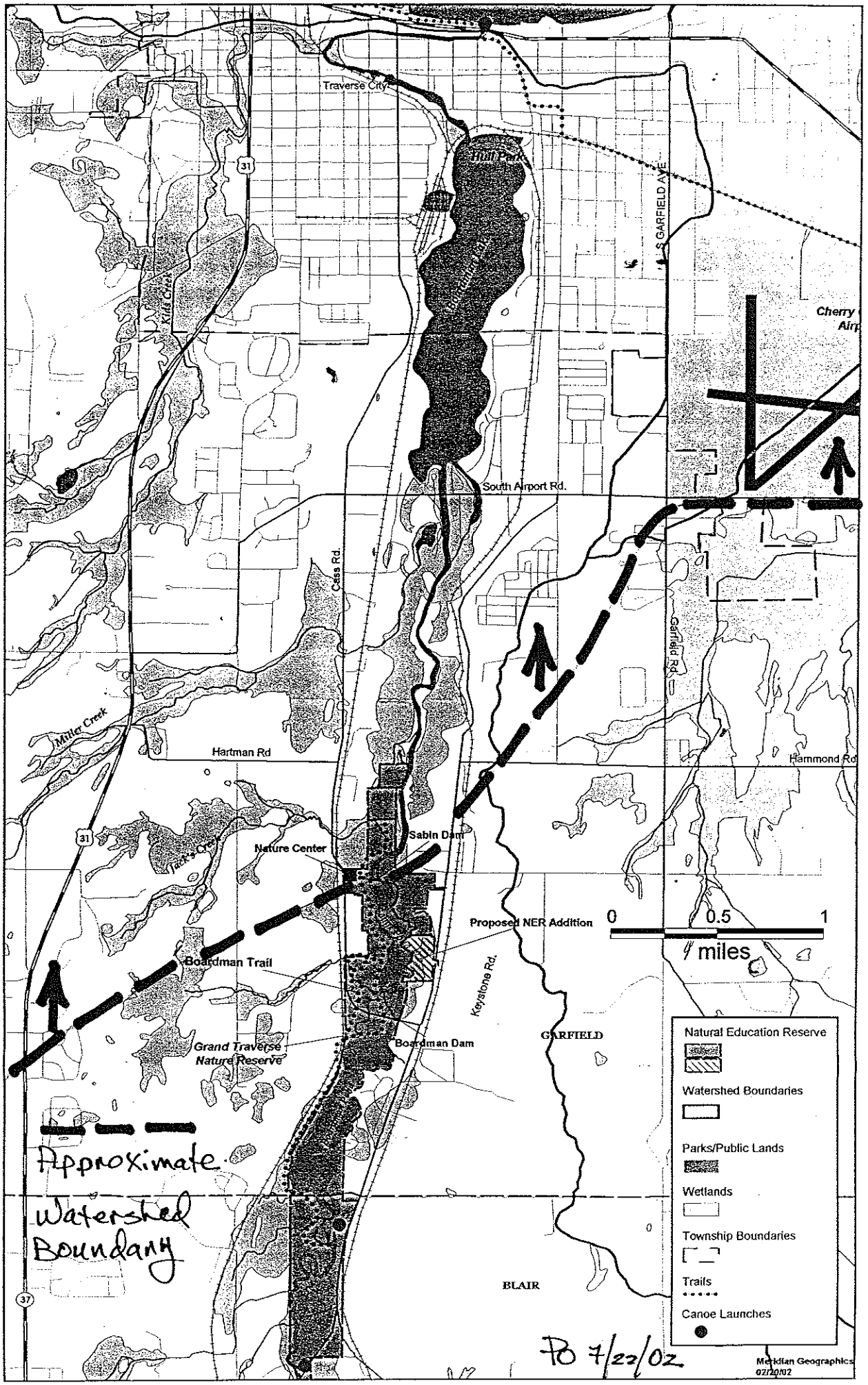
"It's time to look at a master plan and overall planning process for the waters of the Boardman," Grobbel said. "It's time to take a 'big picture' view of the lake."

Bill O'Brien is the reporter for Grand Traverse County. He can be reached at (231) 933-1477 or bobrien@record-eagle.com

Project Location Map


72
37
31
Traverse City
Hull Park
Kids Creek
Boardman Lake
Cherry Capital Airport
South Airport Rd.
Cass Rd.
Garfield Rd.
Miller Creek
Hartman Rd.
Hammond Rd.
Jacks Creek
Nature Center
Boardman River
Sabin Dam
0
0.5
1
miles
Boardman Trail
Keystone Rd.
GT Natural Education Reserve
GARFIELD
Boardman Dam
Boardman Creek
BLAIR
Bertrer Creek
River Rd
Watershed Boundaries
Township Boundaries
Canoe Launches
Recreational Trails
GT Natural Education Reserve
Public Lands
Wetlands
Meridian Geographics
03/19/02

Approximate Watershed Study Area – Boardman Lake Watershed Management Project



Michigan Coastal Zone Management Program Grant Application
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Appendix B

Professional Service Contract
Cone Drive Operation, Inc and The Watershed Center of Grand Traverse Bay

This agreement is made this 15th day of August 2002 by Cone Drive Operation, Inc. (CDO), 240 E. 12th Street, Traverse City, Michigan 49685-0272, and The Watershed Center of Grand Traverse Bay (The Watershed Center), 232 E. Front St., Suite 4, Traverse City, Michigan 49684.

In consideration of the promises below, the parties mutually agree as follows:

ARTICLE I – SCOPE OF SERVICES

The Watershed Center will provide services as described in the Statement of Work (Supplemental Environmental Project Proposal with more details in Coastal Zone Management Program Grant Application – Boardman Lake Watershed Management Planning Project – March 22, 2002).

ARTICLE II – COMPENSATION

For services provided, the CDO will pay The Watershed Center twenty thousand dollars and zero cents ($20,000.00) within thirty (30) days after the effective date of the Amended AOC. The Watershed Center will invoice CDO for full payment at the beginning of the project.

ARTICLE III – REPORTING OF CONSULTANT

Section 1 - The Watershed Center is to coordinate activities with CDO and will cooperate and confer with individuals as necessary to ensure satisfactory work.

Section 2 – Upon project completion, The Watershed Center will submit a final report to CDO.

ARTICLE IV - TERM

The contract begins on August 15, 2002 and ends on July 31, 2003.

ARTICLE V – PERSONNEL

The parties agree that The Watershed Center is neither an employee nor an agent of CDO for any purposes.

ARTICLE VI – INSURANCE REQUIREMENTS

The Watershed Center will maintain at its own expense during the term of this contract, the following insurance:

1. Worker's Compensation Insurance with Michigan statutory limits and Employers Liability Insurance with a minimum limit of $100,000 each accident for any employee.
2. Comprehensive/Commercial General Liability Insurance with a combined single limit of $1,000,000 each occurrence for bodily injury and property damage.
3. The Watershed Center will indemnify CDO and its officers, employees and agents from all liability of any sort that may result from injury or death to any person or loss or damage to any property in the performance of any services funded in whole or in part under this Agreement.

ARTICLE VIII – COMPLIANCE WITH LAWS AND REGULATIONS

The Watershed Center will comply with all federal, state and local regulations, including but not limited to all applicable OSHA/MIOSHA requirements and the American Disabilities Act.

ARTICLE IX – EQUAL EMPLOYMENT OPPORTUNITY

The Watershed Center will not discriminate against any employee or applicant for employment because of race, color, sex, sexual orientation, national origin, physical handicap, age, height, weight, marital status, veteran status, religion and political belief (except as it relates to *bona fide* occupational qualification reasonably necessary to the normal operation of business).

The Watershed Council will take affirmative action to eliminate discrimination on race, sex, or a handicap in the hiring and the treatment of employees. Affirmative action will include, but not be limited to: employment; upgrading, demotion or transfer; recruitment advertisement; layoff or termination; rates of pay or other forms of compensation; selection for training, including internship and apprenticeship.

The Watershed Center agrees to post notices containing this policy against discrimination in conspicuous places available to applicants for employment and employees. All solicitations or advertisements for employees, placed by or on behalf of the Watershed Center, will state that all qualified applicants will receive consideration for employment without regard to race, color, sex, sexual orientation, national origin, physical handicap, age, height, weight, marital status, religion or political belief.

ARTICLE X – ASSIGNS AND SUCCESSORS

This contract is binding on CDO and The Watershed Center, their successors and assigns. Neither CDO nor The Watershed Center will assign or transfer its interest in this contract without the written consent of the other.

ARTICLE XI – EQUAL ACCESS

The Watershed Center shall provide the services set forth in the Statement of Work without discrimination on the bases of race, color, religion, national origin, sex sexual orientation, marital status, physical handicap or age.

ARTICLE XII – OWNERSHIP OF DOCUMENTS AND PUBLICATIONS

All documents developed as a result of this contract will be freely available to the public.

ARTICLE XIII– PAYROLL TAXES

The Watershed Center is responsible for all applicable state and federal social security benefits and unemployment taxes and agrees to indemnify and protect CDO against such liability.

ARTICLE XIV – CHANGES IN SCOPE OR SCHEDULE OR SERVICES

Changes mutually agreed upon by CDO and The Watershed Center will be incorporated into this contract by written amendments signed by both parties.

Cone Drive Operations, Inc.

By: Kurt Gamelin 8-15-02
Kurt Gamelin (date)
Vice President Operations

The Watershed Center of Grand Traverse Bay

By: _____
Anne Braise (date)
Executive Director 8/15/2002

Appendix C

Cone Drive Operations Supplemental Environmental Project Proposal Budget
Boardman Lake Watershed Management Project
The Watershed Center of Grand Traverse Bay
August 2002

Watershed Planning	
Task 1: Land Inventory	Staff and Materials
Historic fill/wetland loss assessment	$2,500
Known or potential sites of contamination identification and characterization	$2,500
Storm water infrastructure study/sub-watershed delineation	$3,000
Impervious surface assessment	$2,000
Roof-top runoff assessment – downtown Traverse City	$5,000
GIS applications and mapping	$5,000
Total Supplemental Environmental Project:	**$20,000**