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EPA Region 5 Records Ctr.
201244

August 8, 2003

via Overnight Delivery

Eileen L. Furey
Associate Regional Counsel
U.S. Environmental Protection Agency C-14 J
77 West Jackson Boulevard
Chicago, Illinois 60604

Re: Preliminary Responses to EPA's Request for Information

Dear Ms. Furey:

On August 1, 2003, we submitted ArvinMeritor Inc.'s preliminary responses to EPA's Information Requests. Enclosed are better quality drawings for Attachment C to the response (Remedial Design Work Plan) and Attachment D to the response (Outfall Locations and Pre-removal Action Site Conditions). Please substitute these for your originals.

Very truly yours,

DYKEMA GOSSETT PLLC

J C Basta

Joseph C. Basta

Enclosures

cc: Renita Ford, U.S. Department of Justice
Robert Schroder
Linda Furlough

DYKEMA GOSSETT PLLC

400 Renaissance Center
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Kathryn J. Humphrey
Direct Dial: (313) 568-6848
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August 1, 2003

BY OVERNIGHT COURIER

Eileen L. Furey
Associate Regional Counsel
U.S. Environmental Protection Agency C-14 J
77 West Jackson Boulevard
Chicago, Illinois 60604

Re: Eaton Corporation's Preliminary Responses to U.S. EPA's Request for Information for the Allied Paper/Portage Creek/Kalamazoo River Superfund Site

Dear Ms. Furey:

Pursuant to the various emails and telephone conversations among you and my colleagues David Tripp and Joseph Basta concerning the U.S. EPA's Information Requests to Eaton and Meritor for the Allied Paper/Portage Creek/Kalamazoo River Superfund Site, enclosed are Eaton Corporation's preliminary responses to those Information Requests, as well as a table cross-indexing Eaton's proposed findings in the *Kalamazoo River* litigation, Eaton's proposed findings of fact and conclusions of law, and opinions by Judge Bell and the United States Court of Appeals for the Sixth Circuit in the Kalamazoo River litigation.

The background and context of this submission is set out in a letter dated July 31, 2003, to you from my colleague, Joseph Basta: following a telephone conversation of June 16, 2003, in which Messrs. Tripp and Basta explained the volume of information generated in the *Kalamazoo River* litigation that might be responsive to U.S. EPA's information requests, EPA agreed to permit Eaton, as it did for Meritor, to submit a table summarizing information from the litigation. The goal was to provide EPA with a summary of meaningful information which might enable EPA to assess quickly and efficiently potential PCB contamination of the Kalamazoo River from the three Eaton Corporation facilities located in Marshall, Battle Creek (Springfield) and Kalamazoo, Michigan.

In preparing the table, it became apparent to us that we needed to supplement the information in the table in order to make it more meaningful. Thus, we also prepared for your review the enclosed "preliminary responses" and their attachments.

As Dave Tripp and Joe Basta mentioned in their telephone conference with you, the advantage of the approach we are using, *i.e.*, the litigation-based information, is that this information was previously collected to the extent possible, organized and subjected to the scrutiny of the court and opposing parties. We planned to discuss with you any need for further documents after you have had a chance to review this letter and its enclosures; we can make that a part of our further discussion.

After you have had an opportunity to review the enclosed, we welcome a meeting with you to further discuss our responses and any other additional material you might need.

Very truly yours,

DYKEMA GOSSETT PLLC

Kathryn J. Humphrey

Encs.

cc: Renita Ford, U.S. Department of Justice (w/ encs)
Lynn Rogozinski, Eaton (w/ encs)

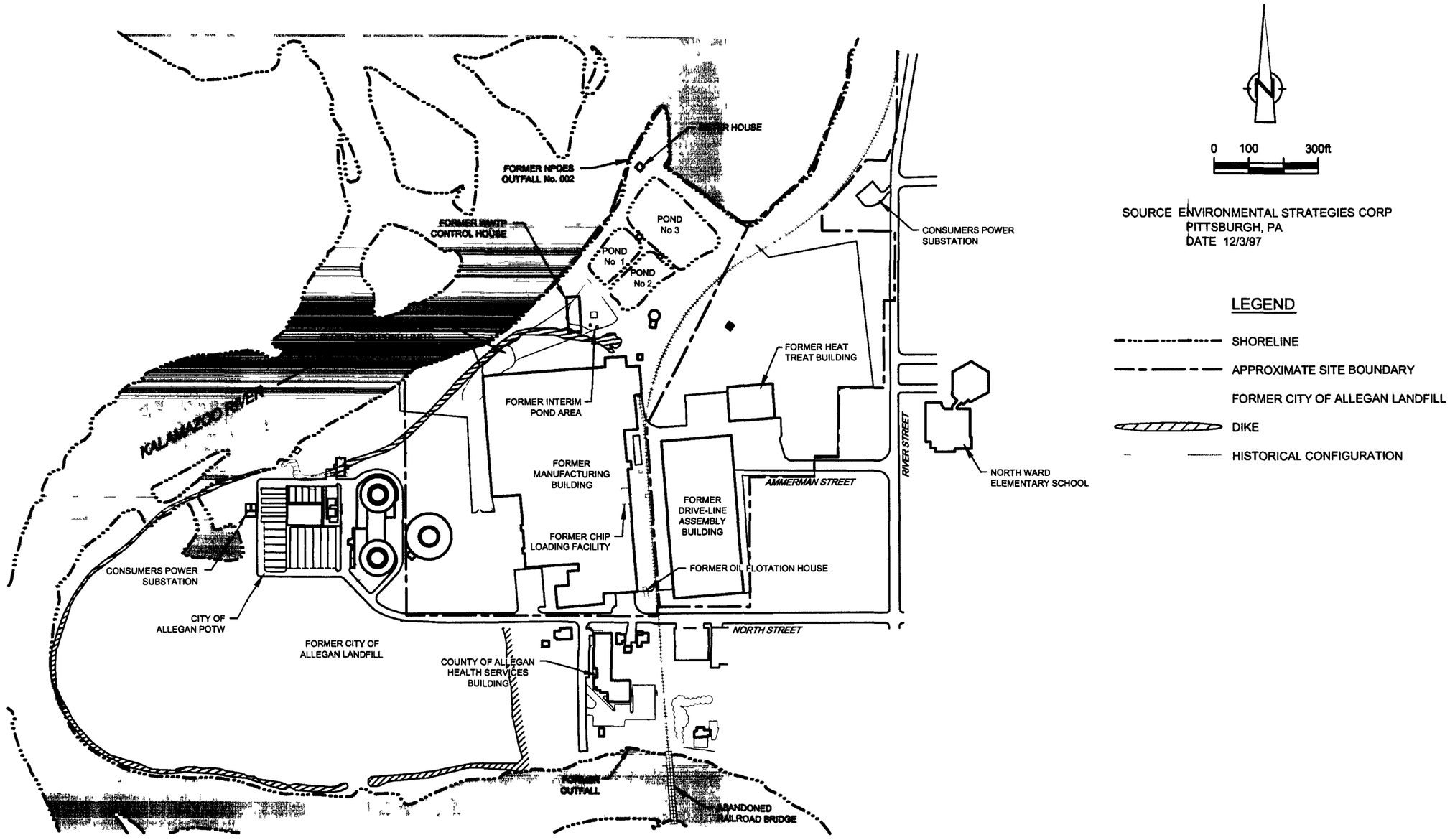


figure 2.2

SITE PLAN
REMEDIAL DESIGN WORK PLAN
FORMER ROCKWELL INTERNATIONAL CORPORATION SITE
Allegan, Michigan

13151-10(015)GN-WA012 MAR 21/2003

NO.	Revision	Date	Initial

0 40 80ft

SOURCE: ENVIRONMENTAL STRATEGIES CORP.
PITTSBURGH, PA
DATE: 12/3/97

LEGEND

- SHORELINE
- APPROXIMATE SITE BOUNDARY
- FORMER CITY OF ALLEGAN LANDFILL
- DIKE
- HISTORICAL CONFIGURATION
- MANHOLE
- CATCH BASIN

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

DRAWING STATUS

Status	Date	Initial

FORMER ROCKWELL INTERNATIONAL CORP
ALLEGAN, MICHIGAN

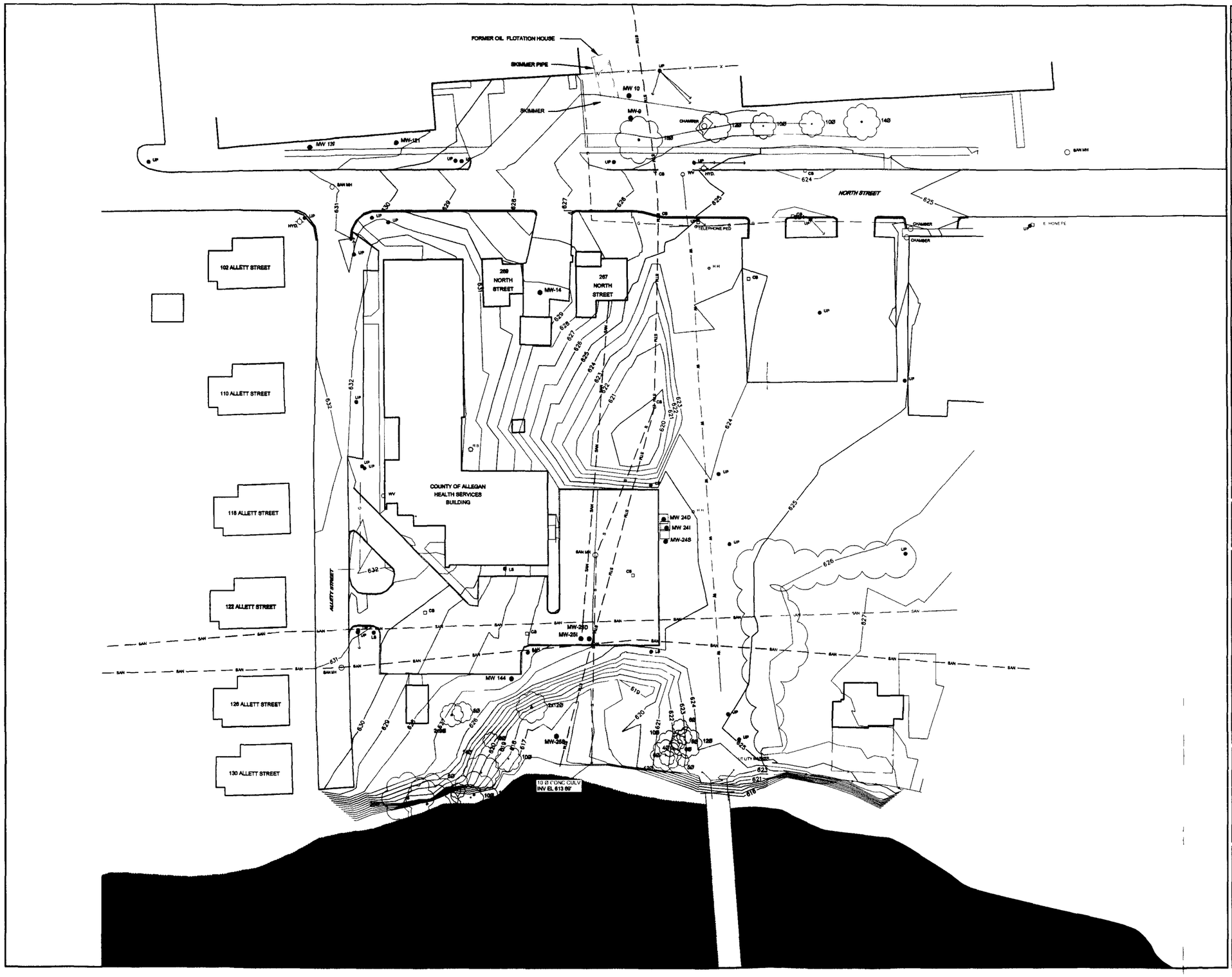
OUTFALL LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:

Project Manager:	Reviewed By:	Date:	
G. C.	S. R.	JULY 2003	
Scale: AS SHOWN	Project N°: 33572-00	Report N°: RESP001	Drawing N°: 1

33572-00\RESP001\DWG\001 JUL 14/2003



NO.	Revision	Date	Initial

0 10 30ft

LEGEND

- 625 — EXISTING CONTOUR
- x — FENCE
- MW 12 — MONITORING WELL LOCATION
- M.H. — MANHOLE
- C.B. — CATCH BASIN
- HYD — HYDRANT
- UP — UTILITY POLE
- 5Ø — TREE
- SAN — ESTIMATED ACTIVE SANITARY SEWER
- SAN — ESTIMATED ABANDONED SANITARY SEWER
- SAN — ESTIMATED SANITARY SEWER LOCATION
- STM — FORMER 4" CLAY STORM SEWER PIPE
- S — CONCRETE STORM SEWER PIPE

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL ADJUST SCALE ACCORDINGLY

Approved

DRAWING STATUS

Status	Date	Initial

FORMER ROCKWELL INTERNATIONAL SITE ALLEGAN, MICHIGAN

PRE REMOVAL ACTION SITE CONDITIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: SOURCE ENVIRONMENTAL STRATEGIES CORP PITTSBURGH PA, 12/3/97

Project Manager	Reviewed By	Date	
G CARLI	J PERZ	JULY 2003	
Scale	**Project Nº**	**Report Nº**	**Drawing Nº**
1"=30'	33572-00	RESP001	2

33572-00(RESP001)GN-WA002 JUL 14/2003

TABLE OF CONTENTS

A. Preliminary Responses of Eaton Corporation

-- with Attachments 1 - 6

B. Summary Table for Marshall Plant

C. Summary Table for Battle Creek Plant

D. Summary Table for Kalamazoo Plant

E. Findings dated August 27, 1998

F. Findings dated February 16, 2001

G. Findings dated April 15, 2002

H. Opinions:

-- June 30, 1998 (trial court)

-- December 7, 1998 (trial court)

-- October 5, 2000 (Court of Appeals)

-- May 9, 2001 (trial court)

-- August 29, 2002 (trial court)

A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

Request for Information Pursuant to Section 104(e) of CERCLA For Allied Paper/Portage Creek/Kalamazoo River Superfund Site in Kalamazoo and Allegan Counties, Michigan

_____/

PRELIMINARY RESPONSES OF EATON CORPORATION TO EPA INFORMATION REQUESTS

Eaton Corporation ("Eaton"), by its counsel, provides its Preliminary Responses to the Section 104(e) Information Request of the Environmental Protection Agency, as modified by correspondence between Eaton's counsel and U.S. EPA's counsel, to permit a response using the materials provided by Eaton to the Court in recent litigation concerning PCB contamination of the Kalamazoo River. Eaton provides this Preliminary Response and attachments, three Tables, copies of proposed Findings of Facts and Conclusions of Law submitted by Eaton to the Court, as well as the Opinions of the trial and appellate courts in certain litigation concerning the Kalamazoo River. There is one Table for each of the three Eaton plants at issue in the litigation: those located in Marshall, Battle Creek (Springfield) and Kalamazoo, Michigan.

REQUESTS

Request 1. Identify all persons consulted in the preparation of your responses to these Information Requests.

Response: Steven Fesko, Eaton's Manager of Environmental Services, and Eaton's counsel, Lynn Rogozinski and Lisa Sutton of Eaton Corporation.

Request 2. Identify all documents consulted, examined, or referred to in the preparation of your responses to these Information Requests, and provide copies of all such documents. If, in lieu of or along with a textual response to any specific Request, you refer to a document that you believe contains information responsive to that Request, you must identify the specific location (page number, paragraph number) in the document where responsive information can be located.

Response: By agreement with U.S. EPA, Eaton has prepared these Preliminary Responses by reviewing the proposed Findings of Facts and Conclusions of Law

submitted by Eaton to the United States District Court for the Western District of Michigan in connection with the bench trials of *Kalamazoo River Study Group v. Rockwell, et al.,* Case No. 1:95-CV-838, assigned to the Honorable Robert Holmes Bell. The Tables provided with these Preliminary Responses correlate particular proposed Findings and Conclusions to the various requests from U.S. EPA; the proposed Findings and Conclusions are provided to U.S. EPA here as well. The proposed Findings and Conclusions offer the best means of reviewing the evidence in Eaton's possession concerning alleged PCB contamination by Eaton of the Kalamazoo River, and they provide a ready entry into tens of thousands of pages of deposition testimony, trial exhibits and trial testimony.

Request 3. If you have reason to believe that there may be any person able to provide a more detailed or complete response to any Information Request, or who may be able to provide additional responsive documents, identify any and all such persons.

Response: The persons identified in the corresponding Findings of Fact (because their depositions were taken or their testimony offered at trial) are those from whom additional or more detailed information might be sought. Generally, the facts developed in the litigation are responsive to the requests here. There may be other persons, particularly those whose depositions are identified in the Findings and Conclusions, from whom further information – beyond that sought in the depositions – may be of use to U.S. EPA.

Request 4. Identify and generally describe each Eaton facility, as that term is defined in Attachment 3 (Definitions). For each Eaton facility, provide:

(a) the address of the facility;

(b) past and present EPA ID numbers, RCRA numbers, and NPDES numbers for the facility; and

(c) the current owner of the facility.

Response:

Marshall plant:

The plant, located at 1101 W. Hanover Street, Marshall, Michigan, is now owned by a division of Eaton Corporation.

Battle Creek plant:

The plant, located at 463 North 20th Street, City of Springfield, Michigan (mailing address Battle Creek), has been demolished. The property on which it was located is now owned by Eaton Corporation.

Kalamazoo plant:

The plant, located at 222 Mosel Avenue, Kalamazoo, Michigan, has been demolished. The property on which it was located is now in a tax foreclosure action and the present owner is not currently known.

Request 5. Identify all prior owners and operators of each facility, and their dates of ownership and/or operation.

Response: Not applicable; Eaton Corporation became the successor owner and operator for any facility that was not owned by Eaton in the first instance.

Request 6. Provide copies of all local, state, and federal environmental permits ever granted for each facility or any part thereof (e.g., RCRA permits, NPDES permits, etc.).

Response: As a part of Eaton's regular and systematic document retention policy, many of the historical permits have been discarded and are no longer available. Some historical permits may be in off-site archives and can be made available to U.S. EPA upon request.

The Marshall plant has current permits, which can be provided to U.S. EPA upon request.

The Battle Creek plant – which is no longer operating and has been demolished – has current air and ground water permits, in connection with a remedial action being conducted there, and those permits can be provided to U.S. EPA upon request.

We do not know whether any historical permits are available for the Kalamazoo plant – which is now closed – but can provide them to U.S. EPA upon request. If they can be located.

Request 7. For each facility, identify and describe all types of monitoring reports, monitoring data, and documentation sent to or received by federal or state regulatory

authorities regarding any materials containing hazardous substances used, generated, stored, treated or disposed at or from the facility.

Response: As a part of Eaton's regular and systematic document retention policy, many of the historical monitoring data may have been discarded and are no longer available; some may be available from off-site archives and can be made available to U.S. EPA upon request.

The Marshall plant has current monitoring reports, which can be provided to U.S. EPA upon request.

The Battle Creek plant – which is no longer operating and has been demolished – has current monitoring data in connection with a remedial action being conducted there, and those reports can be provided to U.S. EPA upon request.

The Kalamazoo plant – which is now closed – has current monitoring data in connection with a remedial action being conducted there, and those reports can be provided to U.S. EPA upon request.

Request 8. Identify and describe the nature of all past and current operations and production processes at each facility. Identify, if available, all current and previous SIC codes associated with each facility.

Response: See Tables provided with these Preliminary Responses.

Request 9. For each facility, identify each product produced. Further identify the mass quantity of each product produced on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 10. Identify and describe any and all activities or efforts to take production facilities out of operation, and include the dates of each such activity or effort.

Response: See Tables provided with these Preliminary Responses.

Request 11. For each facility, identify and provide any data, estimates, analyses or other information regarding any material used in the production processes that

contained or may have contained PCBs. To the extent available, provide all such data, estimates, analyses or other information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 12. For each facility, identify any data, estimates, analyses or other information regarding the concentration of PCBs in any material used in the production processes. To the extent available, provide all such data, estimates, analyses or other information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 13. To the extent not already provided in response to Request #11, provide the following information:

(a) the type and quantity, on an annual basis, of any oils or other lubricants used at each facility that are known or suspected to have contained PCBs;

(b) the number, handling and disposition of all transformers and conductors at each facility; and

(c) data, analysis and other information regarding leaks, discharges or other releases from any transformer, conductor or other equipment using oils or lubricants at each facility.

Response: See Tables provided with these Preliminary Responses.

Request 14. To the extent not already provided in response to Request # 12, identify any data, estimates, analyses or other information regarding the concentration of PCBs in the materials identified in your response to Request #13.

Response: See Tables provided with these Preliminary Responses.

Request 15. Describe the procedures used by you or anyone on your behalf to test PCB concentrations in the materials identified in your response to Requests #11 and #13, above. Include in your response test methods and dates.

Response: See Tables provided with these Preliminary Responses.

Request 16. Describe the procedures followed by you, or anyone on your behalf, to prevent, mitigate or address the release or threat of release of any material identified in your response to Requests # 11 and # 13, above.

Response: See Tables provided with these Preliminary Responses.

Request 17. Provide a figure delineating the groundwater flow direction on your property.

Response: Figures showing groundwater flow direction are attached as Attachments 1, 2 and 3, prepared by Ground Water Solutions, Inc., addressing each of the three plants.

Request 18. Identify the depth(s) to groundwater at your property.

Response: The average depth to water is shown on the figures attached as Attachments 1, 2 and 3, prepared by Ground Water Solutions, Inc., addressing each of the three plants.

Request 19. Identify the type and amount of all raw process water sources used in the production processes at each facility. To the extent available, provide such information by month of operation.

Response: Water from municipal sources was used in the Marshall and Kalamazoo plants. The Battle Creek plant had an on-site production well and the plant's raw process water came from the ground.

Request 20. For each facility, identify and describe all information about the PCB content of the raw process water used in each production process. To the extent available, provide such information by month of operation.

Response: Eaton is not aware of any information suggesting that any raw process water used by the plants in Marshall, Battle Creek or Kalamazoo contained PCBs.

Request 21. For each facility, identify and describe what type of treatment, if any, was used to treat raw process water prior to its use in each production process.

Response: For the Marshall, Battle Creek and Kalamazoo plants, Eaton does not know if additives were added to raw process water prior to use in the production process.

Request 22. For each production process at each facility, identify and describe each waste stream from its creation to final disposition.

Response: See Tables provided with these Preliminary Responses.

Request 23. For each facility, identify any data, estimates, analyses or other information about the presence of PCBs in each waste stream created. To the extent available, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 24. For each facility, Identify any data, estimates, analyses or other information about the concentration of PCBs in each waste stream created. To the extent available, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 25. For each facility, describe the procedures used by you, your predecessor(s), or anyone on behalf of you or a predecessor, to test the PCB concentration in each waste produced at, or at each waste handling process of, that facility, Include in your response test methods, media tested, and dates.

Response: See Tables provided with these Preliminary Responses.

Request 26 . For each facility, identify each off-site location at which wastes that contained or potentially contained PCBs were disposed. Further identify the dates of each such offsite disposal, and the nature, quantity and PCB concentration of any such wastes.

Response: See Tables provided with these Preliminary Responses.

Request 27. For each facility, identify and describe in detail the area(s) used by you or any predecessor for the storage, treatment or disposal of any waste generated at that facility. Include in the description of each area information concerning the nature and volume of the waste(s) stored, treated or disposed there. To the extent available, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 28. For each area identified in response to Request #27:

(a) identify the PCB concentration of any wastes stored, treated or disposed there. To the extent available, provide such information by month of operation; and

(b) describe the procedures and measures taken by you, or anyone on your behalf, to prevent, mitigate or address the release or threat of release of PCBs or other hazardous materials.

Response: See Tables provided with these Preliminary Responses.

Request 29. If any area identified in your response to Request #27 is no longer used by you to store, treat or dispose of wastes, describe in detail the current condition of the area. Further describe and provide data, estimates, analyses or other information regarding:

(a) measures taken by you, or anyone on your behalf, to treat or dispose of any wastes previously stored, treated and disposed in each such area;

(b) any residual wastes remaining in each such area; (c) measures taken by you, or anyone on your behalf, to prevent, mitigate or address the, release or threat of release of the wastes previously stored, treated or disposed of in each area.

Response: See Tables provided with these Preliminary Responses.

Request 30. For each facility, provide a figure drawn approximately to scale depicting any area used by you or a predecessor to store, treat or dispose of any waste generated at that facility. Include the location of the Kalamazoo River in your figure.

Response: The locations of on-site storage areas are shown on the figures attached as Attachments 4, 5 and 6, prepared by Ground Water Solutions, Inc., addressing each of the three plants.

Request 31. For each area identified in response to Request # 27, identify any data, estimates, analyses or other information regarding the nature and quantity of hazardous substances, including PCB's, released or threatened to be released from each such area. To the greatest extent possible, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 32. For each area identified in response to Request # 27, identify any data, estimates, analyses or other information regarding the release, or threat of release, of hazardous substances, including PCBs, to the Kalamazoo River or any other area of the Site. To the greatest extent possible, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 33. For each facility, identify any data, estimates, analyses or other information about the history of flooding from the Kalamazoo River. Further, identify any data, estimates, analyses or other information about any infiltration of water, or threat of infiltration of water, from the Kalamazoo River into the areas identified in your response to Request #27.

Response: Eaton is not aware of any flooding events from the Kalamazoo River that allowed or threatened infiltration of water from the River into the plant property.

Request 34. To the extent not provided in your response to Request #22, describe each wastewater stream, waste oil stream, and wastewater/waste oil mixture stream at each facility, from its creation in the production process to final discharge point. In your response include a complete description of the fate of any wastewater stream, waste oil stream, and wastewater/waste oil mixture stream produced at each facility (e.g. on-site treatment, discharge to a POTW, discharge to a storm sewer outfall, direct discharge to the Kalamazoo River).

Response: See Tables provided with these Preliminary Responses.

Request 35. To the extent not provided in response to Requests #22 and #34, identify the amount of all (a) wastewater, (b) waste oil, and (c) wastewater/waste oil mixture produced, on a monthly basis, from each production process at each facility.

Response: See Tables provided with these Preliminary Responses.

Request 36. To the extent not provided in response to Requests #23 and #24, identify any data, estimates, analyses or other information about the presence and/or concentration of PCBs in the wastewater, waste oil and wastewater/waste oil mixture produced from each production process at each facility. To the extent available, provide such information on a monthly basis.

Response: See Tables provided with these Preliminary Responses.

Request 37. For each facility, identify any data, estimates, analyses or other information regarding the effectiveness of the treatment system(s) at that facility, if any, to remove PCBs from each wastewater stream, waste oil stream and wastewater/waste oil mixture stream.

Response: Eaton does not treat wastes for PCBs.

Request 38. Identify any data estimates, analyses or other information regarding procedures and measures taken by you, or by anyone on your behalf, to prevent, mitigate or address the release or threat of release of PCBs from wastewater, waste oils, or wastewater/waste oil mixtures to the Kalamazoo River.

Response: See Tables provided with these Preliminary Responses.

Request 39. For any POTW identified in response to Request #34, provide, for each facility and on a monthly basis, all information regarding the amount of wastewater, waste oil, and waste, water/waste oil mixture discharged to a POTW, the concentration of PCBs in the wastewater, waste oil and wastewater/waste oil mixtures discharged to the POTW from that facility and, to the extent such information is available, the PCB concentration in the effluent from the POTW.

Response: Eaton has only limited information concerning discharges to POTWs. Discharge Monitoring Reports are available to some extent, and are located in off-site archives, and can be made available to U.S. EPA upon request.

Request 40. For each facility, identify each pipe, conduit, storm sewer, sewer line or other outfall that, directly or indirectly, terminates in the Kalamazoo River or its tributaries, past or present, into which treated, untreated or bypassed wastewater, waste oil, or any other waste (including wastewater/waste oil mixtures), from that facility was discharged. Include a figure identifying the source and location of each pipe, conduit, storm sewer, sewer line or other outfall.

Response: See Tables provided with these Preliminary Responses.

Request 41. For each pipe, conduit, storm sewer, sewer line or other outfall identified in your response to Request #40, identify dates of use and each outfall's source at the facility. Further provide, on a monthly basis, the volume of wastewater, waste oil or other waste (including wastewater/waste oil mixtures) discharged from the, facility into each pipe, conduit, storm sewer, sewer line or other outfall.

Response: See Tables provided with these Preliminary Responses.

Request 42. For each pipe, conduit, storm sewer, sewer line or other outfall identified in response to Request #40, identify all influent and effluent quality data. Include, to the extent such information is available, the PCB concentration of all influent and effluent, on a monthly basis.

Response: See Tables provided with these Preliminary Responses. Eaton does not test its influent for PCBs.

Request 43. For each pipe, conduit, storm sewer, sewer line or other outfall identified in response to Request #40, identify all bypasses or spills into the Kalamazoo River or its tributaries.

Response: Eaton is not aware of any physical bypasses of treatment to the Kalamazoo River from the Marshall, Battle Creek or Kalamazoo plants. Eaton is not aware of a spill or overflow event of oil directly discharged into the Kalamazoo River from any of these three plants, other than a discharge of oil into a ditch, discussed in the Findings indicated in the attached Table for the Kalamazoo plant..

Request 44. For each facility, identify any data, estimates, analyses or other information regarding the mass quantity of PCBs disposed into the Kalamazoo River as a result of wastewater, waste oil or wastewater/waste oil discharges from the production processes. To the extent available, provide such information on an annual basis.

Response: See Tables provided with these Preliminary Responses.

Request 45. For each facility, identify any data, analyses or other information regarding the nature and quantity of hazardous substances, including PCBs, in the sediments, soil, groundwater and surface water at that facility. Identify the concentration levels of PCBs for all samples collected at the facility or at any property abutting the facility.

Response: See Tables provided with these Preliminary Responses.

Request 46. For each facility, provide information regarding any environmental response activities involving or potentially involving PCBs or PCB-containing materials conducted at that facility, or on the Kalamazoo River, its tributaries, or other abutting property, at your direction or under your control. Indicate the date(s) on which such response activity was performed, what work was performed, the expenses incurred, the results of the response activity and, if it has not concluded, when the environmental response is expected to conclude.

Response: See Tables provided with these Preliminary Responses.

Request 47. Identify all persons who you believe may have knowledge or information about the generation, transportation, treatment, disposal, release or other handling of waste materials, including hazardous substances, at each facility.

Response: See Tables provided with these Preliminary Responses.

Request 48. Have you incurred any costs associated with the investigation, remediation or other action to address contamination at the Site or any portion thereof? If yes, identify all costs incurred by you through the date of this Information Request.

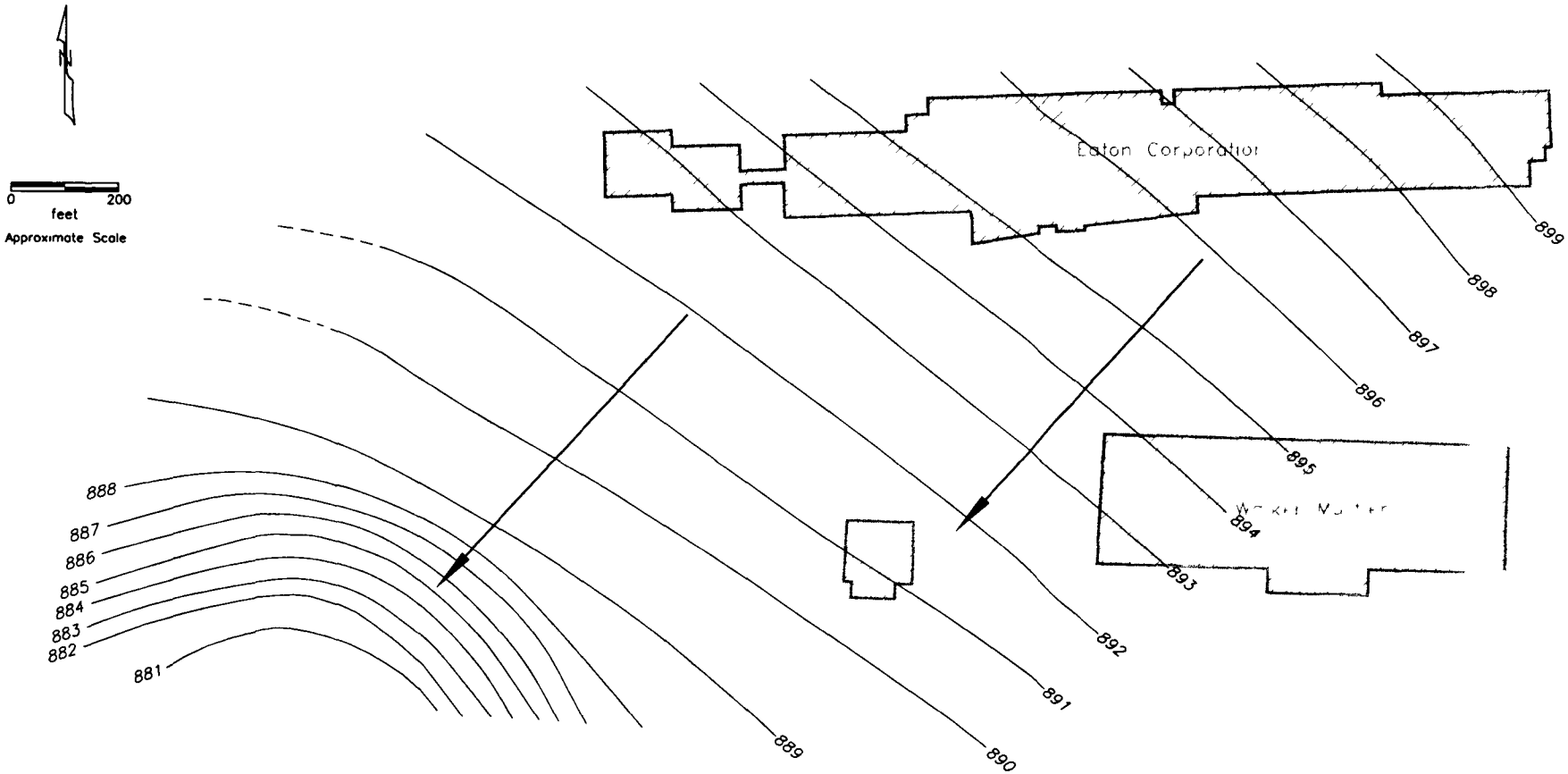
Response: See Tables provided with these Preliminary Responses.

Request 49. Identify any data, estimates, analyses or other information regarding the relative contributions of PCBs to Lake Allegan by "facilities," as that term is defined in CERCLA.

Response: See Tables provided with these Preliminary Responses.

Dated: August 1, 2003

ATTACHMENT I



Potentiometric Surface Contours
Base of Unconsolidated/ Top of
Buried Bedrock Valley

Eaton Corporation,
Torque Control Products Division
1101 W Hanover St
Marshall, MI 49068

Prepared By
Ground Water Solutions, Inc

Average Depth to Water Near Historical
Source Area is 25 Feet Below Ground Surface

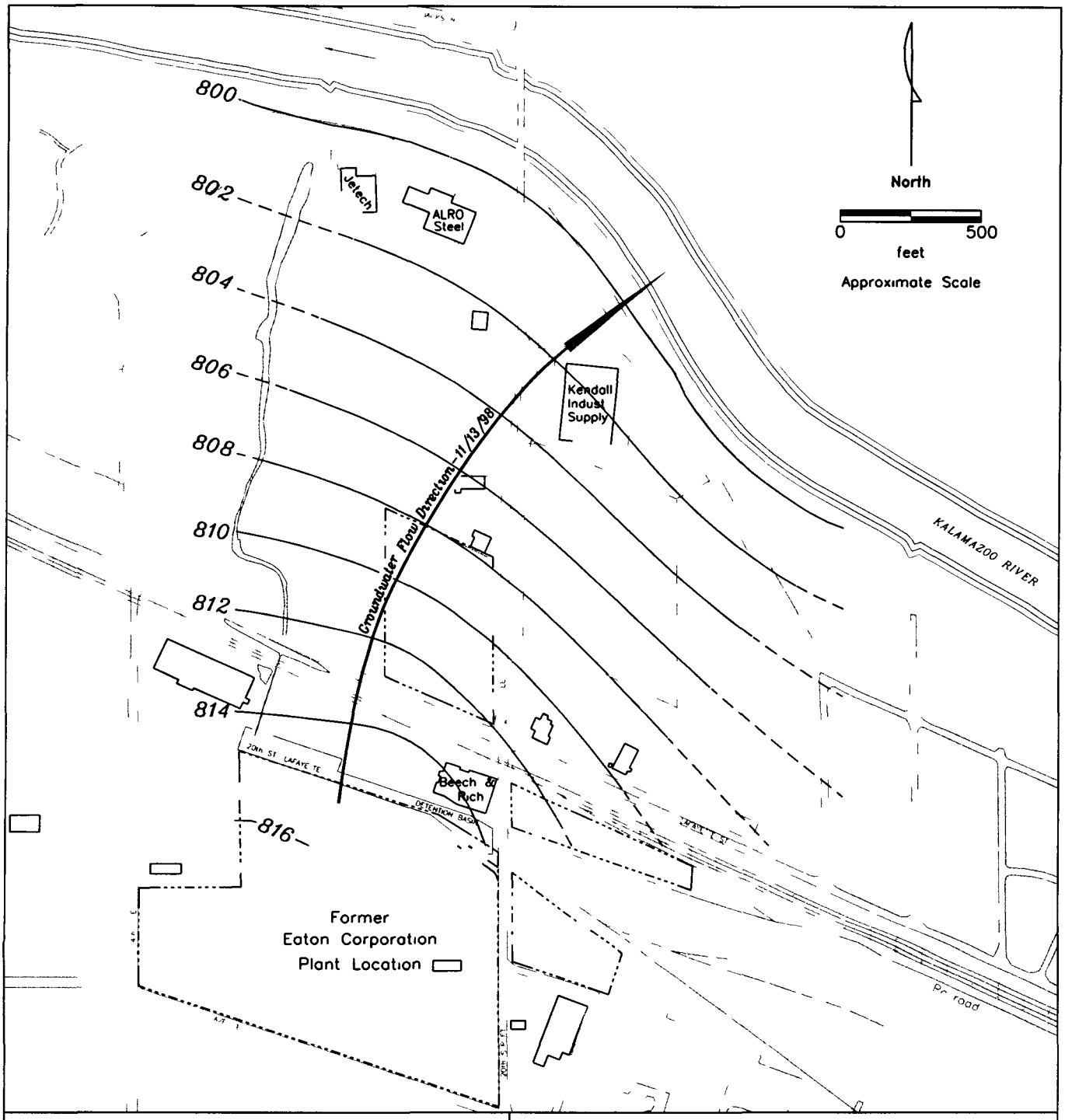
889 Potentiometric Surface Contour

Direction of Ground Water Flow

Contour Interval 1 Foot

Adapted from a Keck Consulting, Inc drawing and 1996 Calhoun County aerial photograph.

Created 3/4/99 JCF Revised 6/23/03 JCF File EMMPSTOB1098REQ



Average Depth to Water Near Historical Source Area is 12 Feet Below Ground Surface

Eaton Corporation Property Line

Potentiometric Surface Elevation Contour

Potentiometric Surface Elevation in Feet above N.G.V.D. – 11/13/98

Created.	9/13/00 JCF	Adapted from an ERM drawing-Figure 2 (1/19/98) and a NUS topographic map No S-88879 (5/88)
Revised·	6/23/03 JCF	
File	EBCGWECC62303REQ	

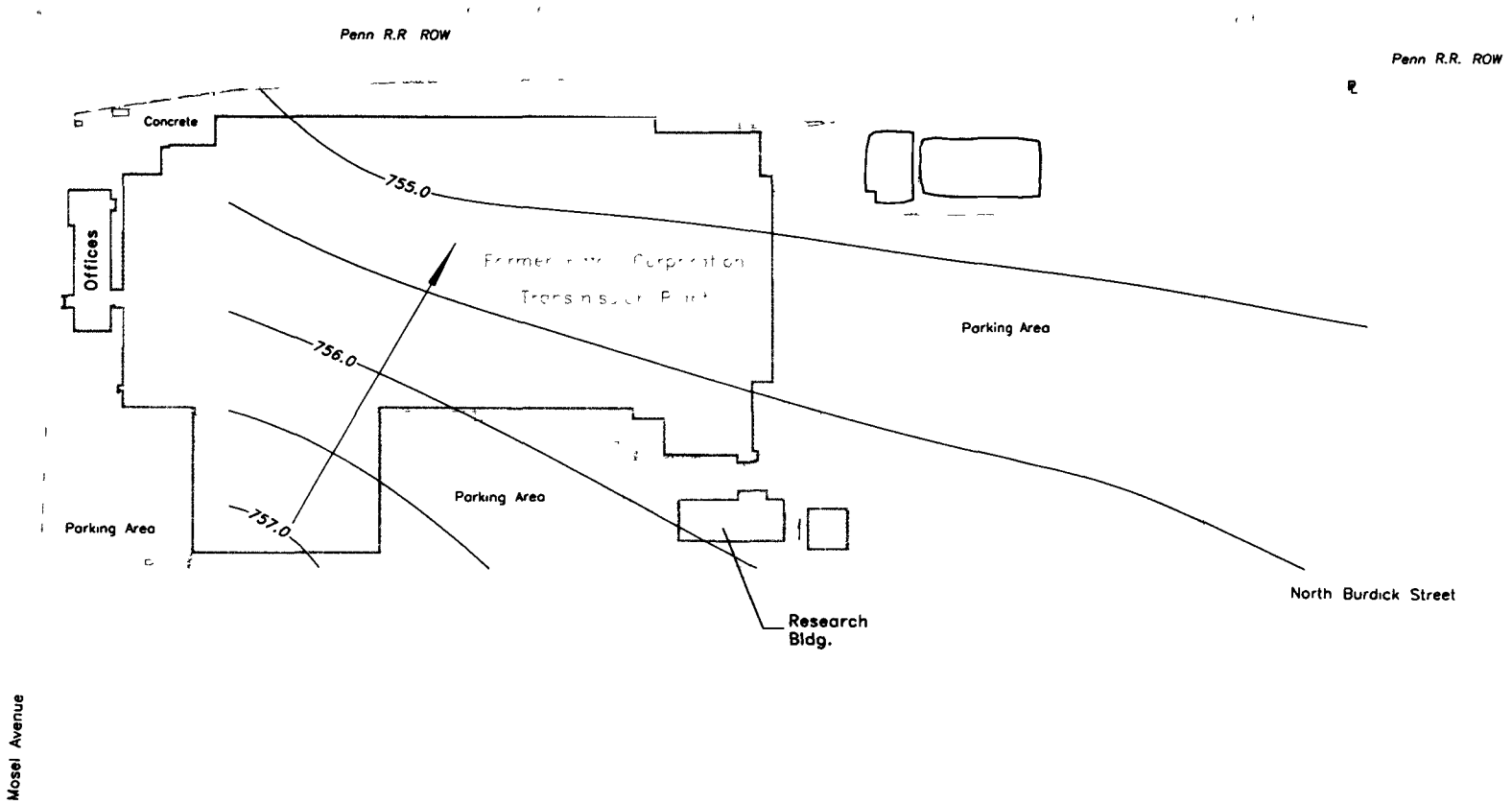
Ground Water Flow in the Deep Unconsolidated Sediments-11/13/98

Eaton Corporation,
Battle Creek Site
Springfield, Michigan

Prepared By
Ground Water Solutions, Inc.

ATTACHMENT 2

ATTACHMENT 3



Average Depth to Water Near Historical Source Area is 9 Feet Below Ground Surface

Direction of Ground Water Flow

Contour Interval: 0.5 Feet

North

0 200 feet

Prepared By:
Ground Water Solutions, Inc.

EKZGWEC5903 6/23/03 JCF | The SB/MW Locations are from new coordinate data -5/20/03 | From a drawing adapted from Harding Lawson Associates file: C48885C2 and a Prevn and Newhof Survey.

Potentiometric Surface Contours - May 9, 2003

Kalamazoo Township–
222 East Mosel Site
Kalamazoo, Michigan

ATTACHMENT 4

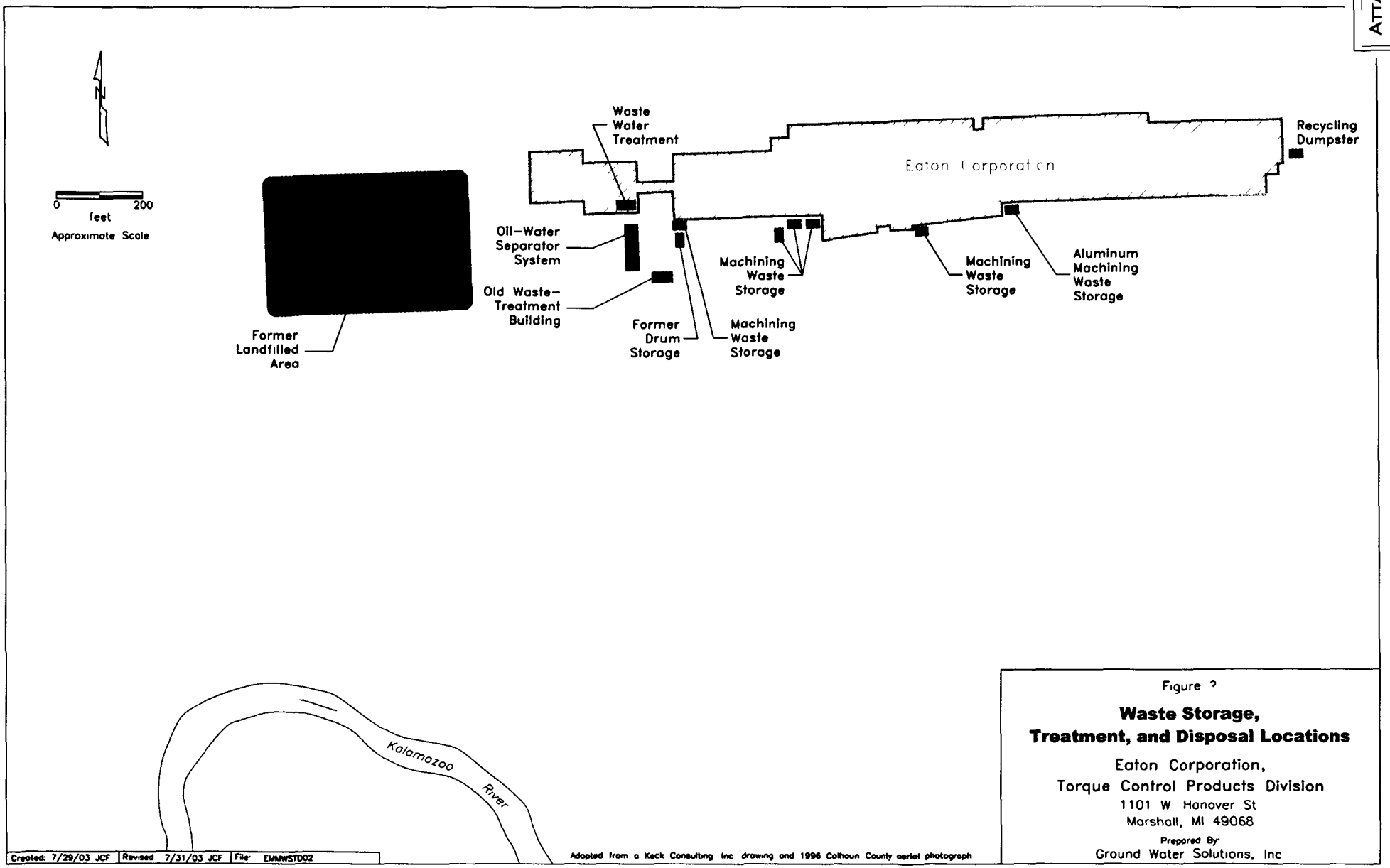


Figure 2

Waste Storage, Treatment, and Disposal Locations

Eaton Corporation,
Torque Control Products Division
1101 W Hanover St
Marshall, MI 49068

Prepared By:
Ground Water Solutions, Inc

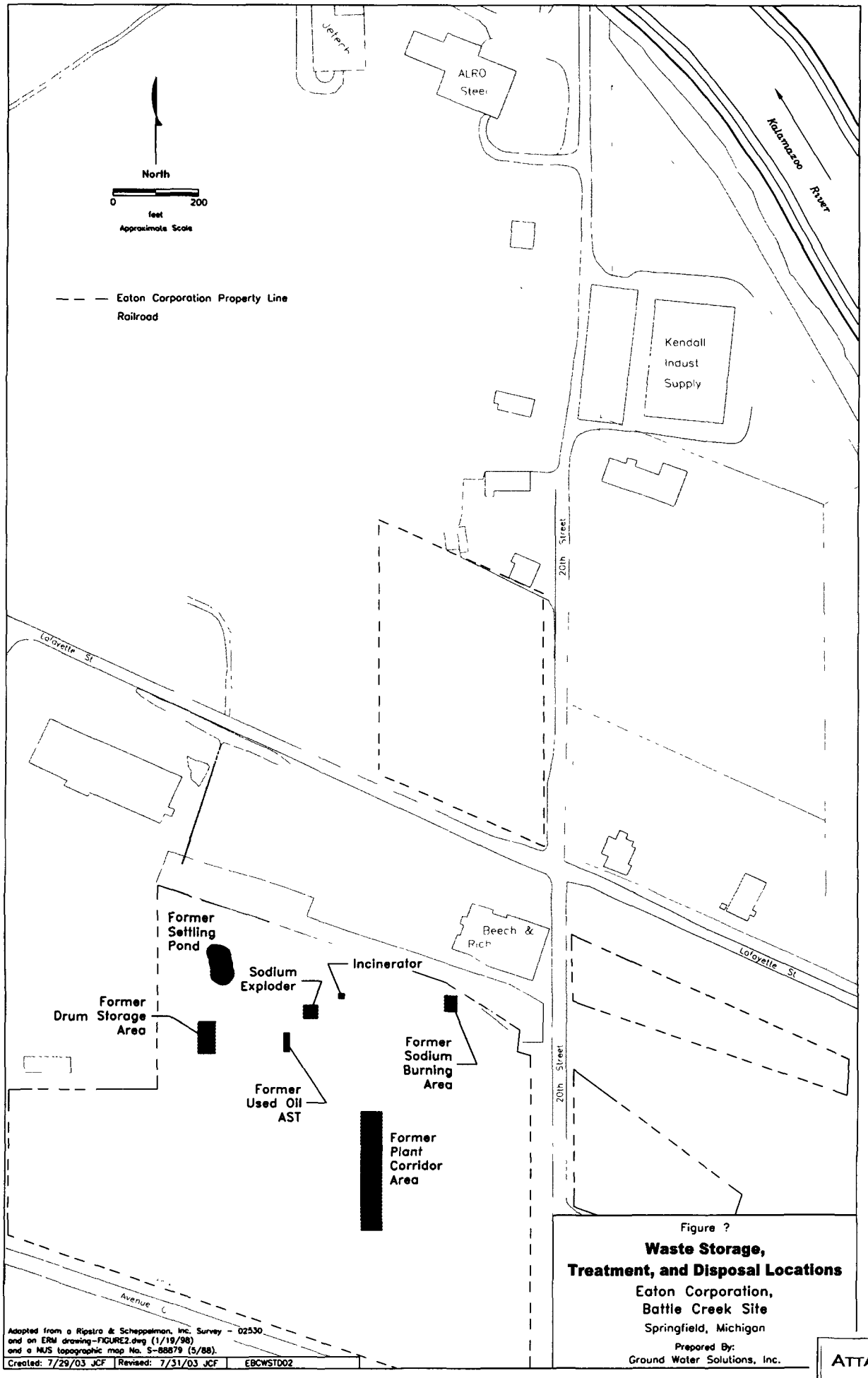


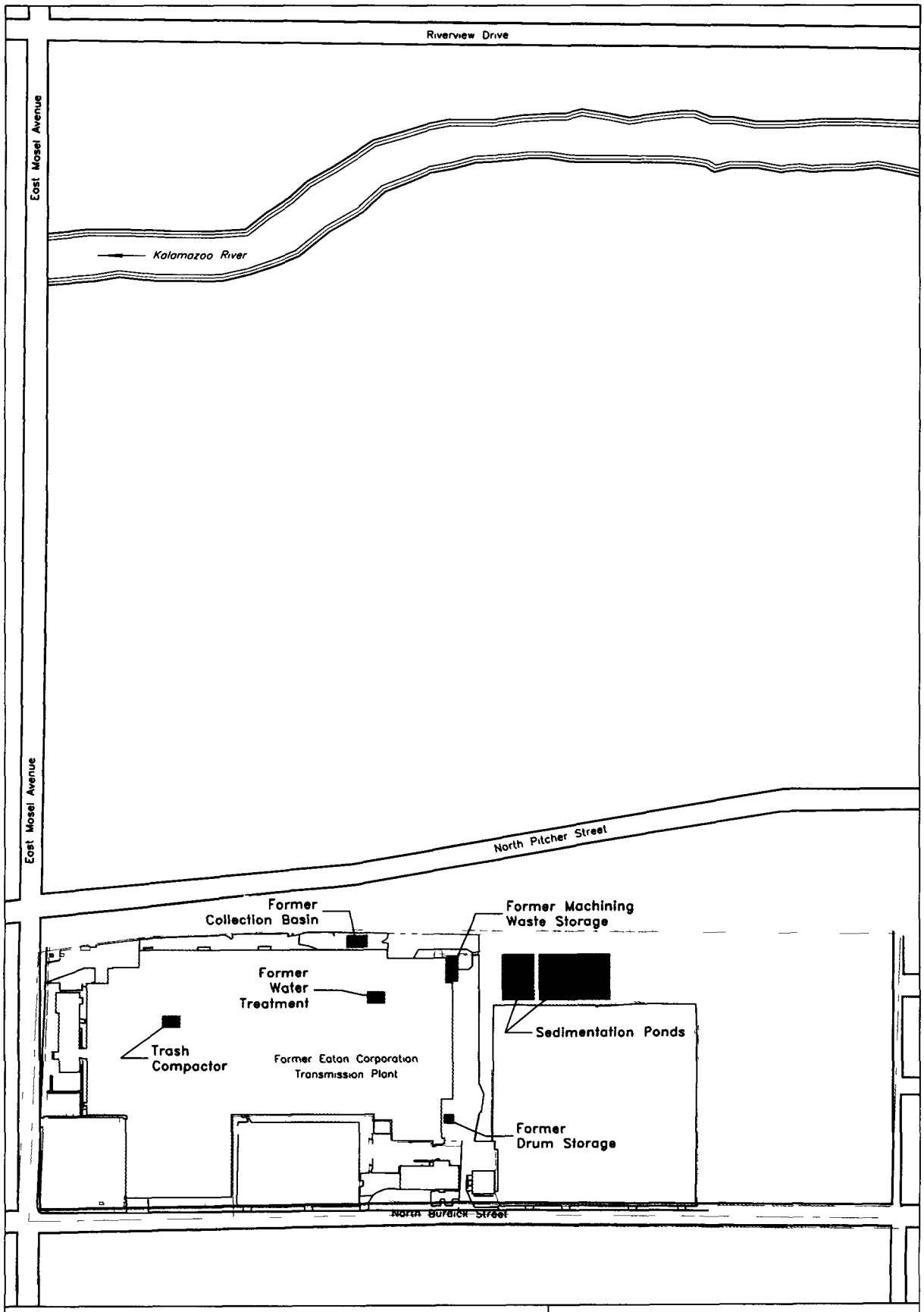
Figure ?

Waste Storage, Treatment, and Disposal Locations

Eaton Corporation,
Battle Creek Site
Springfield, Michigan

Prepared By:
Ground Water Solutions, Inc.

ATTACHMENT 5



North

0 280
feet

Prepared By
Ground Water Solutions, Inc

File:	D:\2003\002
Created:	7/30/03 JC
Revised:	7/31/03 JC

Note: Aerial Photography adapted from U.S.G.S. Imagery–NAPP 10013-32-3/27/99
Parcel Boundary Lines and Parcel Numbers adapted from Charter Township of Kalamazoo Maps

Figure 2

Waste Storage, Treatment, and Disposal Locations

Former Eaton Corporation
Transmission Plant
222 East Mosel Avenue
Kalamazoo, Michigan

ATTACHMENT 6

B

RECYCLED

EPA Information Requests Directed to Eaton Corporation:
Marshall Plant, 1101 W. Hanover Street, Marshall, Michigan

Legend:

"F-x" means Finding No. F-x filed in a proposed Findings and Conclusions document filed with the District Court for the Western District of Michigan; "L-y" means Legal Conclusion No. L-y in a proposed Findings and Conclusions document.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings & Conclusions Nos.	Col. 3 Comments and Other Documents
1		See Eaton's Preliminary Responses to EPA Information Requests
2		See Eaton's Preliminary Responses to EPA Information Requests
3		See Eaton's Preliminary Responses to EPA Information Requests
4	*Filed Feb. 16, 2001 by Eaton:* F-29 and F-30	See Eaton's Preliminary Responses to EPA Information Requests
5		See Eaton's Preliminary Responses to EPA Information Requests
6		See Eaton's Preliminary Responses to EPA Information Requests
7		See Eaton's Preliminary Responses to EPA Information Requests
8	*Filed Feb. 16, 2001 by Eaton:* F-31, F-42	
9	*Filed Feb. 16, 2001 by Eaton:* F-31	
10		Not applicable; the Marshall plant is still in operation.
11	*Filed Feb. 16, 2001 by Eaton:* F-39 through and incl. F-42	
12	*Filed Feb. 16, 2001 by Eaton:* F-39 through and incl. F-42	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings & Conclusions Nos.	Col. 3 Comments and Other Documents
13	*Filed Feb. 16, 2001 by Eaton:* F-39 through and incl. F-42 F-43 through and incl. F-47	
14	*Filed Feb. 16, 2001 by Eaton:* F-39 through and incl. F-42	
15		See Eaton's Preliminary Responses to EPA Information Requests, Response #7
16	*Filed Feb. 16, 2001 by Eaton:* F-45 through and incl. F-47	
17		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 1
18		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 1
19		See Eaton's Preliminary Responses to EPA Information Requests
20		See Eaton's Preliminary Responses to EPA Information Requests
21		See Eaton's Preliminary Responses to EPA Information Requests
22	*Filed Feb. 16, 2001 by Eaton:* F-30, F-47 and F-51	
23	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-47	
24	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-47	
25	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-47	See Eaton's Preliminary Responses to EPA Information Requests, Response #7
26	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-52	
27	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-52	
28	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-52	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings & Conclusions Nos.	Col. 3 Comments and Other Documents
29	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-52	
30		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 4.
31	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	
32	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	
33		See Eaton's Preliminary Responses to EPA Information Requests
34	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	
35	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	
36	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	
37		See Eaton's Preliminary Responses to EPA Information Requests
38	*Filed Feb. 16, 2001 by Eaton:* F-39 through and incl. F-52, especially F-43 through F-47	
39		See Eaton's Preliminary Responses to EPA Information Requests
40	*Filed Feb. 16, 2001 by Eaton:* F-34	
41	*Filed Feb. 16, 2001 by Eaton:* F-34	
42	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38	See Eaton's Preliminary Responses to EPA Information Requests
43		See Eaton's Preliminary Responses to EPA Information Requests

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings & Conclusions Nos.	Col. 3 Comments and Other Documents
44	*Filed Feb. 16, 2001 by Eaton:* F-32 through and incl. F-38 F-43 through and incl. F-47 F-48 and F-49, F-51 and F-52	
45	*Filed Feb. 16, 2001 by Eaton:* F-35 and F-37	
46	*Filed Feb. 16, 2001 by Eaton:* F-43 through and incl. F-47	
47	*Filed Feb. 16, 2001 by Eaton:* F-42, F-45	
48	*Filed April 15, 2002, by Eaton:* L-12 and L-13 F-157	
49	*Filed Feb. 16, 2001 by Eaton:* L-1 through and incl. L-20 *Filed April 15, 2002, by Eaton:* F-6 through and incl. F-11 F-12 through and incl. F-27 F- 80 and F-81 F-155 and F-156	

August 1, 2003

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C

EPA Information Requests Directed to Eaton Corporation:
Battle Creek Plant, 463 North 20th Street, Springfield, Michigan

Legend:

"F-x" means Finding No. F-x filed in a proposed Findings and Conclusions document filed with the District Court for the Western District of Michigan, in *Kalamazoo River Study Group v Rockwell et al.*, Case No. 1:95-cv-838, on the date indicated.

"L-y" means Legal Conclusion No. L-y in a proposed Findings and Conclusions document.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
1		See Eaton's Preliminary Responses to EPA Information Requests.
2		See Eaton's Preliminary Responses to EPA Information Requests.
3		See Eaton's Preliminary Responses to EPA Information Requests.
4	*Filed Aug 27, 1998 by Eaton:* F-35 through and incl. F-43 *Filed Feb. 16, 2001 by Eaton:* F-54 and F-56 *Filed April 15, 2002 by Eaton:* F-29	See Eaton's Preliminary Responses to EPA Information Requests.
5	*Filed Aug 27, 1998 by Eaton:* F-35 through and incl. F-43 *Filed Feb. 16, 2001 by Eaton:* F-55 and F-56 *Filed April 15, 2002 by Eaton:* F-30	See Eaton's Preliminary Responses to EPA Information Requests.
6		See Eaton's Preliminary Responses to EPA Information Requests.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
7	*Filed Aug 27, 1998 by Eaton:* F-94 F-80 and F-81 *Filed Feb. 16, 2001 by Eaton:* F-88	See Eaton's Preliminary Responses to EPA Information Requests.
8	*Filed Feb. 16, 2001 by Eaton:* F-55 *Filed April 15, 2002 by Eaton:* F-30 through and incl. F-33	
9	*Filed Feb. 16, 2001 by Eaton:* F-55 *Filed April 15, 2002 by Eaton:* F-30	
10	*Filed Aug 27, 1998 by Eaton:* F-43 and F-52 *Filed Feb. 16, 2001 by Eaton:* F-57	
11	*Filed Aug 27, 1998 by Eaton:* F-46 F-49 and F-50 F-61 and F-62 F-64 and F-67 F-68 and F-74 F-75 and F-77 *Filed April 15, 2002 by Eaton:* F-31, F-39 through and incl. F-44	
12	*Filed Aug 27, 1998 by Eaton:* F-46 F-49 and F-50 F-61 and F-62 F-64 and F-67 F-68 and F-74 F-75 and F-77 *Filed April 15, 2002 by Eaton:* F-31, F-39 through and incl. F-44	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
13	*Filed Aug 27, 1998 by Eaton:* F-46 through and incl. F-51 F-71 through and incl. F-77 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63 F-70 through and incl. F-79 *Filed April 15, 2002 by Eaton:* F-31 F-32, F-39 through and incl. F-45	
14	*Filed Aug 5, 1998 by Eaton:* F-46 and F-47 F-67 F-49,77 F-61,62,64 F-53 *Filed April 15, 2002 by Eaton:* F-31, F-39 through and incl. F-44	
15	*Filed Aug 27, 1998 by Eaton:* F-46 through and incl. F-49 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63 F-70 through and incl. F-88 *Filed April 15, 2002 by Eaton:* F-51 through and incl. F-53	
16	*Filed Aug 27, 1998 by Eaton:* F-46 through and incl. F-49	
17		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 2.
18		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 2.
19		See Eaton's Preliminary Responses to EPA Information Requests.
20		See Eaton's Preliminary Responses to EPA Information Requests.
21		See Eaton's Preliminary Responses to EPA Information Requests.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
22	*Filed Aug 27, 1998 by Eaton:* F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69, F-82 *Filed April 15, 2002 by Eaton:* F-31 through and incl. F-38	
23	*Filed Aug 27, 1998 by Eaton:* F-94 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69	
24	*Filed Aug 27, 1998 by Eaton:* F-94 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69	
25	*Filed Aug 27, 1998 by Eaton:* F-50 and F-94 F-55 and F-56 F-52 and F-53 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69	
26	*Filed Aug 27, 1998 by Eaton:* F-50 and F-94 F-52 and F-53 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63	
27	*Filed Aug 27, 1998 by Eaton:* F-72 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
28	*Filed Aug 27, 1998 by Eaton:* F-72 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63 *Filed April 15, 2002 by Eaton:* F-33 and F-34	
29	*Filed Aug 27, 1998 by Eaton:* F-53 *Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63	
30		See Eaton's Preliminary Responses to EPA Information Requests and Attachment 5.
31	*Filed Aug 27, 1998 by Eaton:* F-73 and F-74	
32	*Filed Aug 27, 1998 by Eaton:* F-73 and F-74	
33		See Eaton's Preliminary Responses to EPA Information Request.
34	*Filed Aug 27, 1998 by Eaton:* F-42 and F-46 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69 F-82 *Filed April 15, 2002 by Eaton:* F-31 through and incl. F-38	
35	*Filed Aug 27, 1998 by Eaton:* F-42 and F-46 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69 *Filed April 15, 2002 by Eaton:* F-31 through and incl. F-38	

Col. 1 EPA Reqst No.	Col. 2 **Eaton's Proposed Findings and Conclusions Nos.**	Col. 3 **Comments and Other Documents**
36	*Filed Aug 27, 1998 by Eaton:* F-42 and F-46 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69	
37		See Eaton's Preliminary Responses to EPA Information Request.
38	*Filed Aug 27, 1998 by Eaton:* F-46 through and incl. F-49 *Filed April 15, 2002 by Eaton:* F-37	
39		See Eaton's Preliminary Responses to EPA Information Request.
40	*Filed Aug 27, 1998 by Eaton:* F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69 F-80 through and incl. F-82 *Filed April 15, 2002, by Eaton:* F-4 F-46 through and incl. F-58	
41	*Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69 *Filed April 15, 2002, by Eaton:* F-4 F-46 through and incl. F-58	
42	*Filed Aug 27, 1998 by Eaton:* F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-64 through and incl. F-69 F-80 through and incl. F-82 *Filed April 15, 2002, by Eaton:* F-4 F-46 through and incl. F-58	See Eaton's Preliminary Responses to EPA Information Request.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
43		See Eaton's Preliminary Responses to EPA Information Request.
44	*Filed Aug 27, 1998 by Eaton:* F-94 F-55 and F-56 *Filed Feb. 16, 2001 by Eaton:* F-58 and F-59 F-70 through and incl. F-79 F-80 through and incl. F-82 *Filed April 15, 2002, by Eaton:* F-46 through and incl. F-58	
45	*Filed Aug 27, 1998 by Eaton:* F-80 and F-81 *Filed Feb. 16, 2001 by Eaton:* F-58 and F-59 F-70 through and incl. F-79 F-80 through and incl. F-82 F-83 through and incl. F-92 *Filed April 15, 2002 by Eaton:* F-45 F-46 through and incl. F-58 F-59 through and incl. F-81	
46	*Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63	
47	*Filed Feb. 16, 2001 by Eaton:* F-60 through and incl. F-63	
48	*Filed April 15, 2002 by Eaton:* F-157, L-13	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
49	*Filed Aug 27, 1998 by Eaton:* F-1 through and incl. F-34 F-37 and F-38 F-80 and F-81 L-1 through and incl. L-4 F-95 *Filed Feb. 16, 2001 by Eaton:* F-1 through and incl. F-24 F-25 through and incl. F-28 F-83 through and incl. F-92 L-1 through and incl. L-20 *Filed April 15, 2002 by Eaton:* F-4 F-6 through and incl. F-11 F-12 through and incl. F-27 F- 80 and F-81 F-139 through and incl. F-154 F-155 and F-156	

August 1, 2003

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D

EPA Information Requests Directed to Eaton Corporation:
Kalamazoo Plant, 222 Mosel Avenue, Kalamazoo, Michigan

Legend:

"F-x" means Finding No. F-x filed in a proposed Findings and Conclusions document filed with the District Court for the Western District of Michigan; "L-y" means Legal Conclusion No. L-y in a proposed Findings and Conclusions document.

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
1		See Eaton's Preliminary Responses to EPA Information Requests
2		See Eaton's Preliminary Responses to EPA Information Requests
3		See Eaton's Preliminary Responses to EPA Information Requests
4	*Filed Aug. 27, 1998 by Eaton* F-39 *Filed Feb. 16, 2001 by Eaton:* F-93 and F-94 *Filed April 15, 2002, by Eaton:* F-83	See Eaton's Preliminary Responses to EPA Information Requests
5	*Filed Feb. 16, 2001 by Eaton:* F-93	See Eaton's Preliminary Responses to EPA Information Requests
6		See Eaton's Preliminary Responses to EPA Information Requests
7		See Eaton's Preliminary Responses to EPA Information Requests
8	*Filed Feb. 16, 2001 by Eaton:* F-93 and F-97 F-113 *Filed April 15, 2002, by Eaton:* F-83 through an incl. F-85	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
9	*Filed Feb. 16, 2001 by Eaton:* F-93 *Filed April 15, 2002, by Eaton:* F-83 through and incl. F-85	
10	*Filed Feb. 16, 2001 by Eaton:* F-93, F-101	
11	*Filed Feb. 16, 2001 by Eaton:* F-95 through and incl. F-103 F-113 *Filed April 15, 2002, by Eaton:* F-102 through and incl. F-109 F-110 through and incl. F-113 F-125 and F-126	
12	*Filed Feb. 16, 2001 by Eaton:* F-95 through and incl. F-103 *Filed April 15, 2002, by Eaton:* F-102 through and incl. F-109 F-110 through and incl. F-113 F-125 and F-126	
13	*Filed Feb. 16, 2001 by Eaton:* F-95 through and incl. F-103 F-112 and F-113 *Filed April 15, 2002, by Eaton:* F-87 through and incl. F-94 F-102 through and incl. F-109 F-110 through and incl. F-113 F-125	
14	*Filed Feb. 16, 2001 by Eaton:* F-95 through and incl. F-103 *Filed April 15, 2002, by Eaton:* F-102 through and incl. F-109 F-110 through and incl. F-113 F-125 and F-126	
15	*Filed April 15, 2002, by Eaton:* F-102 through and incl. F-109 F-110 through and incl. F-113	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
16	*Filed Feb. 16, 2001 by Eaton:* F-101, F-103, F-105, F-107, F-110 through and incl. F-119	
17		See Eaton's Preliminary Responses to EPA Information Request and Attachment 3.
18		See Eaton's Preliminary Responses to EPA Information Request and Attachment 3.
19		See Eaton's Preliminary Responses to EPA Information Requests
20		See Eaton's Preliminary Responses to EPA Information Requests
21		See Eaton's Preliminary Responses to EPA Information Requests
22	*Filed Feb. 16, 2001 by Eaton:* F-94 and F-113 F-108 and F-109 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91	
23	*Filed Feb. 16, 2001 by Eaton:* F-109 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91 F-114	
24	*Filed Feb. 16, 2001 by Eaton:* F-109 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91 F-114	
25	*Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91 F-114	
26	*Filed April 15, 2002, by Eaton:* F-95 through and incl. F-101	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
27	*Filed Feb. 16, 2001 by Eaton:* F-113 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-94	
28	*Filed Feb. 16, 2001 by Eaton:* F-113 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-94	
29	*Filed Feb. 16, 2001 by Eaton:* F-113 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-94	
30		See Eaton's Preliminary Responses to EPA Information Request and Attachment 6.
31	*Filed Feb. 16, 2001 by Eaton:* F-106 through and incl. F-119	
32	*Filed Feb. 16, 2001 by Eaton:* F-106 through and incl. F-119	
33		See Eaton's Preliminary Responses to EPA Information Requests.
34	*Filed Feb. 16, 2001 by Eaton:* F-94 and F-113 F-108 and F-109	
35	*Filed Feb. 16, 2001 by Eaton:* F-94 and F-113 F-108 and F-109 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91	
36	*Filed April 15, 2002, by Eaton:* F-114	
37		See Eaton's Preliminary Responses to EPA Information Requests

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
38	*Filed Feb. 16, 2001 by Eaton:* F-95 through and incl. F-103 *Filed April 15, 2002, by Eaton:* F-110, F-111	See Eaton's Preliminary Responses to EPA Information Requests.
39		See Eaton's Preliminary Responses to EPA Information Requests
40	*Filed Feb. 16, 2001 by Eaton:* F-94 and F-113 F-115 through and including F-119	
41	*Filed Feb. 16, 2001 by Eaton:* F-94 F-115 through and including F-119	
42	*Filed Feb. 16, 2001 by Eaton:* F-105 and F-112 F-115 through and including F-119	See Eaton's Preliminary Responses to EPA Information Requests
43		See Eaton's Preliminary Responses to EPA Information Requests
44	*Filed Feb. 16, 2001 by Eaton:* F-104 through and incl. F-119 F-115 through and including F-119	
45	*Filed Feb. 16, 2001 by Eaton:* F-104 through and incl. F-119 *Filed April 15, 2002, by Eaton:* F-84 through and incl. F-91 F-111 through and incl. F-113 F-115 through and incl. F-123 F-127 through and incl. F-138	
46	*Filed Feb. 16, 2001 by Eaton:* F-101 through and incl. F-103 *Filed April 15, 2002, by Eaton:* F-110, F- 111	
47	*Filed Feb. 16, 2001 by Eaton:* F-96 through and incl. F-98	
48	*Filed April 15, 2002 by Eaton:* F-157, L-13	

Col. 1 EPA Reqst No.	Col. 2 Eaton's Proposed Findings and Conclusions Nos.	Col. 3 Comments and Other Documents
49	*Filed Aug 27, 1998 by Eaton:* F-1 through and incl. F-34 L-1 through and incl. L-4 *Filed Feb. 16, 2001 by Eaton:* F-1 through and incl. F-28 L-1 through and incl. L-20 *Filed April 15, 2002, by Eaton:* F-6 through and incl. F-11 F-12 through and incl. F-27 F-124 through and incl. F-138 F-139 through and incl. F-154 F-155 and F-156	

August 1, 2003

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E

8-27-98

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

Kalamazoo River Study Group,

Plaintiff,

v. Civil Action No. 1:95CV838

Rockwell International, et al., Hon. Robert Holmes Bell

Defendants.

_____/

REVISED PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW
SUBMITTED BY DEFENDANTS EATON AND ROCKWELL

Defendants Eaton Corporation and Rockwell International Corporation, by their attorneys, Dykema Gossett PLLC, hereby submit Revised Proposed Findings of Fact and Conclusions of Law, superseding those submitted by defendants on August 5, 1998. These Revised Findings have been amended to conform to the proofs submitted at trial. The proofs adduced at trial for each proposed Finding are indicated in parentheses at the conclusion of each numbered paragraph.

These Findings and Conclusions are supported by:

-- **Trial testimony** (indicated by witness name, date of testimony and, in the case of witness Mark Brown, whose testimony has been transcribed, page number);

-- **Deposition testimony** (indicated by witness name and page numbers) located in Bench Books provided to the Court by the parties, containing designated excerpts of deponents;

-- **Trial exhibits** (indicated by Trial Exhibit number);

-- **Admissions** by plaintiff or its counsel (indicated by a reference to the specific pleadings and discovery documents). Frequently these admissions are contained in Plaintiff's Responses to certain undisputed facts offered by Eaton and Rockwell when defendants moved for summary judgment. The fact in question is contained in the List of Undisputed Facts accompanying the Brief in Support of Motion for Summary Judgment, filed by Eaton and Rockwell on February 2, 1998. Plaintiff's Responses are found in Exhibit A to Plaintiff's Brief in Opposition to the Motions for Summary Judgment; plaintiff's briefs are dated March 4, 1998. For the Court's convenience, a "cut-and-paste" version has been prepared, showing the pertinent factual statement from defendant's motion papers and, immediately beneath it, the admission or response by plaintiff. Those "cut-and-paste" editions are attached here as Attachments A (Eaton) and B (Rockwell).

-- **Pleadings** by the parties, cited by title or date.

-- **Uncontroverted Facts** to which the parties have stipulated. These are set out in Attachment C to the Joint Final Pretrial Order submitted to the Court on August 7, 1998.

-- **Opinions** of this Court in this case (indicated by citation to KRSG v. Rockwell, et al., and date of opinion).

Proposed findings of fact are labeled as "F-1," "F-2," etc. Proposed conclusions of law are labeled as "L-1," "L-2," etc.

I. BACKGROUND

F-1. This matter was tried to the bench from August 10, 1998 to August 17, 1998. These Findings and Conclusions are issued in accordance with Fed. R. Civ. P. 52(a). The Court has considered opening statements of counsel, written closing arguments of counsel, proposed Findings and Conclusions from both parties, the testimony of witnesses at trial, documents and photos admitted as exhibits at trial, and deposition excerpts designated by the parties in the Joint Final Pretrial Order. Some of the evidence offered by the parties is direct evidence, some is circumstantial. The Court has also considered what inferences can reasonably be drawn from the direct and circumstantial evidence, and has considered the demeanor and manner of the witnesses in assessing credibility of and weight to be accorded to the testimony of witnesses, including experts.

F-2. In August 1990, The Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site ("NPL Site") was added to the National Priorities List ("NPL") by the United States Environmental Protection Agency ("USEPA"). The NPL Site is a 35-mile length of the Kalamazoo River from the confluence of Portage Creek with the River (in the City of Kalamazoo) to the Allegan City Dam, and a three-mile portion of the Portage Creek in the City of Kalamazoo. (**Uncontroverted Facts, ¶ 2. Pleading:** Restated First Amended Complaint, ¶¶ 2 and 18; **Admission:** Plaintiff's Response to Eaton's List of Undisputed Facts for Summary Judgment, ¶ 1, hereafter "Pltf's Response to Eaton Facts, ¶_", attached to these Revised Findings as Attachment A.)

F-3. Plaintiff is an unincorporated association of four paper companies: Allied Paper Inc. ("Allied"), Georgia-Pacific Corporation ("Georgia-Pacific"), James River Paper Company

("James River"), and Simpson-Plainwell Paper Company ("Simpson"). (**Uncontroverted Facts, ¶ 1.**)

F-4. In 1990, the Michigan Department of Natural Resources (now the Michigan Department of Environmental Quality) ("MDNR" or "MDEQ") identified three paper mills -- Allied, Georgia-Pacific and Simpson -- as the principal sources of polychlorinated biphenyls ("PCBs") contaminating the NPL Site. (**Trial Exh. 8803:** Administrative Order By Consent, ¶¶ 9, 9a and 9b; **Trial Exh. 8810:** March 1997, MDEQ Briefing Report..)

F-5. Following the listing of the Site on the NPL, in December 1990, Allied, Georgia-Pacific, and Simpson entered into an Administrative Order by Consent (AOC) with MDNR to fund and conduct a Remedial Investigation/Feasibility Study of the NPL Site, including landfills and properties contiguous to the NPL Site. (**Uncontroverted Facts, ¶ 5. Trial Exh. 8803:** AOC, Attachment 1, "Statement of Work -- Remedial Investigation" at 1.)

F-6. The landfills contained within the AOC Scope of Work were used to dispose of paper making residuals or "sludges" from the KRSG members' mills and some were also identified as potential sources of continuing PCB releases to the River. The landfill operable units that are part of the Site investigation ("OUs") include: (1) Allied Paper, Inc/Bryant Mill Pond (operated by Allied); (2) Willow Boulevard/A-Site (operated by Georgia-Pacific); (3) King Highway Landfill (operated by Georgia-Pacific); and (4) the 12th Street Landfill (operated by Simpson). (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, 112-43. Trial Exh. 8912:** Map Depicting Landfills Formerly Operated by Plaintiffs.)

F-7. Although not a party to the AOC, James River has agreed to participate in the conducting and funding of the Remedial Investigation/Feasibility Study process.

(**Uncontroverted Facts, ¶ 7. Deposition:** Cornelius at 11. **Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 64.**)

F-8. Plaintiff KRSG filed this action in December 1995, seeking to recover its response costs from eight corporations, including these remaining defendants, alleging that the defendants contributed to the PCB contamination of the NPL Site. Plaintiff's claims are based upon CERCLA, 42 U.S.C. § 9601 et. seq., (specifically upon Sections 107 and 113), the Michigan Natural Resources and Environmental Protection Act ("NREPA"), M.C.L.A. § 324.20101 et seq., and various common law theories. (**Pleading:** Restated First Amended Complaint. **Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 3.)

F-9. Plaintiff has voluntarily dismissed its claims against one defendant (Hercules), has settled with another (Rock-Tenn), and the Court has granted summary judgment in favor of two others (Upjohn and Menasha) and in favor of two of the three Eaton plants alleged by plaintiff to be contributors of PCBs to the River. Only Rockwell and Eaton, for its Battle Creek plant, remain as defendants, and this trial concerned their liability.

F-10. Defendants have filed counterclaims against plaintiff and its members, alleging that plaintiff's members are responsible for the PCB contamination under Section 113 of CERCLA, NREPA, and various common law theories. (**Pleadings:** Counterclaims of Eaton and Rockwell, dated Sept. 26, 1996.) These counterclaims were also tried to the Court in the same proceeding.

F-11. The KRSG members admit that waste containing detectable levels of PCBs have been released from their paper-making facilities to either Portage Creek or the Kalamazoo River within the NPL Site. (**Admission:** Plaintiff's Responses to Eaton and Rockwell's First Set of

Requests for Admissions, dated June 3, 1997, Response Nos. 1, 2, 3, 5, 7, 9. **Admission:** Plaintiff's Responses to Pharmacia & Upjohn's First Request for Admissions, dated May 12, 1997, Responses 2 through 9. **Admission:** Plaintiff's Responses to Rock-Tenn Co., Mill Division, Inc's First Requests for Admissions, dated Aug. 11, 1997, Responses 2 through 9.)

F-12. Allied and Georgia-Pacific admit that PCBs released from their facilities have come to be located in the sediments of Portage Creek and the Kalamazoo River. Simpson and James River admit that evidence exists from which it can be inferred that PCBs released from their facilities have come to be located in the sediments of the Kalamazoo River. (**Pleadings:** Plaintiff's Responses to Eaton and Rockwell's First Set of Requests for Admissions, dated June 3, 1997, Response Nos. 12, 13, 14, 15.)

F-13. The four members of plaintiff KRSG have operated paper recycling mills conducting recycling and deinking operations, adjacent to the Kalamazoo River or Portage Creek, within the NPL Site. (**Admission:** Pltf's Response to Eaton Facts, ¶ 5, set out in Attachment A to these Revised Findings.)

F-14. Deinking is a process used by paper manufacturers to produce higher quality papers from recycled feedstock. (**Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 3.)

F-15. This Court has previously found that paper mills which practiced deinking discharged PCBs in much greater quantities than those that merely recycled paper. (**Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 3.)

F-16. Allied, James River, Georgia-Pacific and Simpson have each contributed PCBs to the NPL Site in large quantities, on a frequent basis, as a result of their deinking and paper recycling operations. (**Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 112-43.**)

F-17. The PCBs contributed by these four paper companies to the NPL Site have migrated downstream over time. (**Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 2. **Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 62. Testimony of Barrick, Aug. 13, 1998.**)

F-18. In 1997, the Michigan Department of Environmental Quality estimated that approximately 350,000 pounds of PCBs are present at the NPL Site. (**Admission:** Pltf's Response to Eaton Facts, ¶ 110, set out in Attachment A to these Revised Findings. **Trial Exh. 8810:** March 1997 MDEQ Briefing Report.)

* * * * *

L-1. The contributions of PCBs to the NPL Site by Allied, James River, Georgia-Pacific and Simpson, individually and together, are in nature, quantity and durability sufficient to require imposing the costs of response activities for the NPL Site upon each of those four parties.

L-2. Allied, James River, Georgia-Pacific and Simpson are each liable and responsible parties under Section 107 of CERCLA, 42 U.S.C. § 9607, for the PCB contamination of the NPL Site.

L-3. Plaintiff KRSG, as an unincorporated association of these four paper companies, is a liable and responsible party under Section 107 of CERCLA, 42 U.S.C. § 9607, for the PCB contamination of the NPL Site.

L-4. This Court has previously held that, because its members are liable parties under Section 107 of CERCLA, plaintiff KRSG is restricted to a claim for contribution under CERCLA Section 113 and its counterpart under Michigan's NREPA, against the remaining defendants. (**Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Jan. 16, 1998.)

II. POLYCHLORINATED BIPHENYLS

F-19. Polychlorinated biphenyls ("PCBs") were produced in the United States from the 1940s through the 1970s exclusively by Monsanto Industrial Chemicals Company ("Monsanto"), which marketed the compounds under the trade name "Aroclor." (**Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 2.)

F-20. PCBs were most commonly used in electrical components such as capacitors and transformers, but they were also used in the paper industry. Between 1957 and 1971, a type of carbonless copy paper typically referred to as "NCR paper" incorporated PCBs as an ink carrier or solvent. (**Trial Exh. 8017:** "PCBs Involvement In The Pulp and Paper Industry", p.2, Versar, Inc., Feb. 1977, at 2. **Testimony of Barrick, Aug. 13, 1998.**)

F-21. According to the Michigan Department of Natural Resources, the recycling of carbonless copy paper by the paper companies was a major source of the PCBs at the NPL Site. (**Trial Exh. 8812:** USEPA Action Memorandum. **Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 60. Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 2-3.)

F-22. Aroclor 1242, a mixture of PCBs containing an average of 42 percent chlorine, was sold by Monsanto and used in carbonless copy paper as an ink carrier or solvent during the period 1957-71. The total amount sold for this purpose was 44,162,000 pounds, approximately 28 percent of the total estimated Monsanto sales of PCBs for plasticizer applications and 6.3 percent of total Monsanto domestic sales of PCBs during 1957-71. The average content of Aroclor 1242 in the carbonless copy paper was 3.4 percent. (**Trial Exh. 8017:** "PCBs Involvement In The Pulp and Paper Industry", Versar, Inc., Feb. 1977, at 2.)

F-23. Other PCBs, primarily Aroclor 1254, were used in printing inks. (**Trial Exh. 8017:** "PCBs Involvement In The Pulp And Paper Industry", Versar, Inc. Feb. 1977, at 3. **Testimony of Barrick, Aug. 13, 1998.**)

F-24. A number of authoritative studies have concluded that Aroclor 1254 is found in paper and paperboard products, including the types which were produced and recycled by plaintiff's members' mills. (**Testimony of Barrick, Aug. 13, 1998. Testimony of Brown, Rebuttal Cross-Examination, Aug. 17, 1998, at 20-21.**)

F-25. Testing of paper residuals in the Allied Operable Unit, Georgia-Pacific's Willow Boulevard/A-Site and King Highway Landfills, and Simpson's 12th Street Landfill by KRSG's environmental consultants (Blasland, Bouck & Lee and Geraghty & Miller) confirms that each of these locations contains multiple detections of Aroclors 1254 and 1260 in addition to Aroclor 1242. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 120, 128, 130-31, 132, 133-34. Trial Exh. 8719:** Draft Tech. Memo 7, Table 3-10. **Trial Exh. 8738:** Tech. Memo 9, Table 3-11. **Trial Exh. 8725:** Tech. Memo 6, Table 3-9. **Trial Exh. 8615:** Tech. Memo 8, Table 3-8.) Testing by MDNR in 1987 of James River disclosed Aroclors 1248 and 1254 in the company's landfill residuals, and Aroclors 1242 and 1254 in its outfall to the Kalamazoo River. (**Trial Exh. 8023:** MDNR Letter re James River sampling results.)

F-26. One industry research study stated, "It has been recognized for several years that effluents from paper mills contain environmentally significant quantities of PCBs . . . . [T]he major source of process contamination by PCBs appears to be carbonless copy paper contained in recycled waste paper." (**Trial Exh. 8017:** "PCBs Involvement In The Pulp And Paper Industry," Versar, Inc., Feb. 1977, at 3.)

F-27. During the late 1950's through the 1970's, carbonless copy paper was often found in office waste paper and other categories of waste paper commonly referred to as "mixed office waste," "ledger paper" and "colored ledger paper." (**Depositions:** Hanson at 27-30: Gilman at 29-31, 105-108; Lawton at 72-75; Huisman at 24. **Trial Exh. 8012, 8013:** 1976 memos of Brown Company, the predecessor to James River.)

F-28. Aroclor 1248 is found in dielectric fluids used in electrical equipment such as capacitors. Aroclor 1254 is found, in addition to printing inks, in electrical equipment such as transformers. (**Testimony of Barrick, Aug. 13/14, 1998.)**

F-29. PCBs were about 5 to 6 times more costly than petroleum based oils, on a price per gallon basis. (**Admission:** Pltf's Response to Eaton Facts, ¶ 90, set out in Attachment A to these Revised Findings.) In 1972, mineral oil, a substitute for PCBs in low temperature applications, cost 5 to 6 times less than PCBs. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 165-67.)**

F-30. PCBs have unpleasant odors and they create an unpleasant awareness of their presence on the skin. (**Admission:** Pltf's Response to Eaton Facts, ¶ 91, set out in Attachment A to these Revised Findings.)

F-31. The experts agree that if a source of PCBs is present, PCB concentrations are higher in water containing a higher percentage of solids because of the tendency of PCBs to attach to solids. (**Testimony of Connolly, Aug. 14, 1998. Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 77-79.)**

F-32. The chemical composition of a PCB compound can be measured and analyzed by gas chromatography (in a process called "Gas Chromatograph/ Electron Capture Detection" or

"GC/ECD"), which results in a computer-generated graph depicting the constituents and levels of constituents found in the PCB sample. (**Admission:** Pltf's Response to Rockwell Facts, ¶ 26, set out in Attachment B to these Revised Findings. **Testimony of Barrick, Aug. 13/14, 1998.**) These graphs or depictions are referred to as "fingerprints."

F-33. GC/ECD graphs of PCB samples can be compared to determine whether two PCB samples are made up of the same or different Aroclors. (**Admission:** Pltf's Response to Rockwell Facts, ¶27, set out in Attachment B to these Revised Findings. **Testimony of Barrick, Aug. 13/14, 1998.**)

F-34. The GC/ECD graph of a PCB sediment sample can be compared to the graphs of PCB "standards," controlled samples whose Aroclors are known, in order to identify the particular Aroclor in the sediment sample. (**Admission:** Pltf's Response to Rockwell Facts, ¶28, set out in Attachment B to these Revised Findings. **Testimony of Barrick, Aug. 13/14, 1998.**)

III. DEFENDANT EATON

F-35. Upstream of the confluence of Portage Creek and the Kalamazoo River is a body of water called "Morrow Lake" or "Morrow Pond." (**Trial Exh. 8910:** Map of River and Facility Locations.) Morrow Lake is not within the NPL Site as defined by Plaintiff's Restated First Amended Complaint but is within the area that Plaintiff is required by the AOC to study. (**Admission:** Pltf's Response to Eaton Facts, ¶2, set out in Attachment A to these Revised Findings.)

F-36. The city of Battle Creek is located upstream of Morrow Lake. (**Trial Exh. 8910:** Map of River and Facility Locations. **Admission:** Pltf's Response to Eaton Facts, ¶3, set out in Attachment A to these Revised Findings.)

F-37. Plaintiff's expert, Dr. Mark Brown of Blasland, Bouck & Lee, estimated that 25 percent of the Kalamazoo River watershed (by water volume) is upstream of Battle Creek. This means that, to the extent PCBs were contributed by upstream sources and not deposited in sediments, those PCBs could be found in the River downstream of Battle Creek. **(Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 80-81.)**

F-38. Dr. Brown conceded that plaintiff did not investigate all industries upstream of Eaton's Battle Creek plant that may have discharged to the River. **(Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 98-99.)**

F-39. Eaton's former Valve Division plant was located at 463 North 20th Street, Battle Creek, approximately one-half mile from the Kalamazoo River. (**Uncontroverted Facts, ¶ 19. Admission:** Pltf's Response to Eaton Facts, ¶43, set out in Attachment A to these Revised Findings.)

F-40. Eaton owned no riparian rights in connection with the former Battle Creek plant. (**Uncontroverted Facts, ¶ 20.**)

F-41. The former Eaton Battle Creek plant is approximately 15 miles upstream of the upstream-most part of the NPL Site, and is not within the NPL Site as described in Plaintiff's Restated First Amended Complaint. (**Admission:** Pltf's Response to Eaton Facts, ¶45, set out in Attachment A to these Revised Findings.)

F-42. The former Eaton Battle Creek plant was located approximately one mile upstream of the Battle Creek Wastewater Treatment Plant (WWTP). (**Uncontroverted Facts, ¶ 25. Admission:** Pltf's Response to Eaton Facts, ¶46, set out in Attachment A to these Revised Findings.)

F-43. The plant structure no longer exists on the property; it was demolished after Eaton ceased operations there in 1983. (**Uncontroverted Facts, ¶ 26.**)

F-44. Plaintiff contends that PCBs were found in oils used in transformers and capacitors (electrical equipment) and in cooling and lubricating oils used in the manufacturing process (process oils). Eaton does not dispute that some of its electrical equipment contained PCB-containing oil. Plaintiff presented no evidence indicating that any PCB-containing oils from electrical equipment made their way into the Kalamazoo River from the Battle Creek plant.

F-45. Neither Eaton nor any environmental concern conducted PCB testing of soils or groundwater at the Eaton Battle Creek property, and hence there is no testing of soils or groundwater indicating the presence of PCBs on the property. (**Admission:** Pltf's Response to Eaton Facts, ¶72, set out in Attachment A to these Revised Findings.)

F-46. In 1981, Versar, an outside environmental contractor to USEPA, conducted a PCB audit of the Battle Creek plant. Versar staff visually inspected 65 of the 321 in-service PCB-containing capacitors at the plant, and found no leaks among them. (**Trial Exh. 2059:** 1981 Versar Inspection Report. **Admission:** Pltf's Response to Eaton Facts, ¶57, set out in Attachment A to these Revised Findings.)

F-47. The only other leaks in electrical equipment observed by Versar were in out-of-service transformers, but these were properly kept in storage area for transformers and capacitors, having a welded steel floor and a welded steel six-inch curb, above the 100-year flood plain, with no drains. (**Trial Exh. 2059:** 1981 Versar Inspection Report. **Admission:** Pltf's Response to Eaton Facts, ¶58, set out in Attachment A to these Revised Findings.) The PCB storage facility was inspected at least monthly beginning in December 1978. (**Trial Exh. 6009:** Inspection Logs. **Admission:** Pltf's Response to Eaton Facts, ¶59, set out in Attachment A to these Revised Findings.)

F-48. As of December 1978, transformers and capacitors were inspected monthly for leaks. (**Trial Exh. 6009:** PCB Storage Log. **Admission:** Pltf's Response to Eaton Facts, ¶60, set out in Attachment A to these Revised Findings.)

F-49. The oil in the plant's electrical switching units (or "oil breakers") was tested in 1983, and no detectable levels of PCBs were found. (**Trial Exh. 2064 / 6015:** 1983 letter, McGovern to Heindrichs. **Admission:** Pltf's Response to Eaton Facts, ¶62, set out in Attachment A to these Revised Findings.)

F-50. In June, 1998, although this Court granted summary judgment to Eaton Corporation with respect to its Marshall and Kalamazoo, Michigan, plants, the Court denied

summary judgment with respect to the Battle Creek plant. In so ruling, this Court determined that four possible indicators of PCB use in process oils precluded grant of summary judgment, and that it was necessary to consider those indicators further at trial, when evidence could be weighed. Those four possible indicators are: (1) the detection of PCBs in the wood blocks of the plant floor; (2) the detection of small amounts of PCBs in two effluent samplings in 1972; (3) the alleged purchases in 1970, 1971 and 1972, at approximately the time of the PCB detection in effluent of a small quantity of Pydraul, a PCB-containing hydraulic oil manufactured by Monsanto; and (4) the detection of a small amount of PCBs in grinding swarf from the plant in 1981.

F-51. Having weighed the evidence, this Court concludes that the evidence does not support the probability or likelihood that process oils used at the Battle Creek plant contained PCBs. None of the four possible indicators of PCB use at the plant tend to make more likely the proposition that PCBs were in fact used at the plant, nor do they do so in combination. The evidence, when weighed, indicates that it is unlikely that process oils at the plant contained PCBs.

A. The Wood Block Floor.

F-52. In 1983, after plant operations had ceased, the plant was scheduled for demolition. The wood block floor of the plant was tested for PCBs, by taking limited samples around the plant. Varying levels of PCBs were detected in the samples, not all of which were high enough to require disposal of the tested blocks as PCB-contaminated material. (**Admission:** Pltf's Response to Eaton Facts, ¶64, set out in Attachment A to these Revised Findings. **Depositions:** Heindrichs at 287, 293-94; Howard at 53-55, 75-77.)

F-53. Eaton chose to dispose of the entire floor as though it were required to be sent to a special PCB landfill, even though not all blocks sampled required such treatment under waste disposal regulations (**Admission:** Pltf's Response to Eaton Facts, ¶65, set out in Attachment A to these Revised Findings) and even though most areas of the plant were not sampled.

F-54. Out of the approximately 2,865,000 blocks on the floor, 51 blocks were tested by Howard Laboratories. **(Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 196-97.)** Seventeen of the 30 blocks sampled came from so-called "background" areas; the remaining 34 and five others were "biased" samples taken from near transformers or capacitors that were thought to have contained PCBs. There was no attempt to select blocks randomly. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 197-201. Depositions:** Heindrichs at 293-94 (directed that samples be taken from areas where capacitors were mounted overhead, and in other areas as well); Howard at 51 (may have been directed by Eaton employees to sample certain areas) **Trial Exh. 8930:** wood block analytical data and notations concerning sampling locations.) This limited testing is neither representative of the floor as a whole nor probative of

alleged PCB contamination of the rest of the floor. The wood block floor testing does not indicate use of PCBs in process oils at the plant.

B. The Detection of PCB in the Plant's Effluent.

F-55. The outfall from the Battle Creek plant to the Kalamazoo River was shared with Clark Equipment Company, which was located on adjacent property. MDNR records identify the location of the outfall as "Clark Equipment Company and Eton [sic] Valve Company." (**Trial Exh. 2027:** MDNR Industrial Effluent Records. **Admission:** Pltf's Response to Eaton Facts, ¶48, set out in Attachment A to these Revised Findings.)

F-56. In February 1972, MDNR collected a wastewater sample from the joint outfall shared with Clark Equipment company and the municipal sewers. That sample detected 1.4 ppb (expressed in the MDNR report as 1400 parts per trillion) Aroclor 1254. (**Trial Exh. 2027:** List of Industrial Effluents. **Opening Statement of Plaintiff, Aug. 10, 1998.**) Plaintiff's expert, Dr. Brown, concedes that the sample was taken at a point downstream of the Clark and Eaton discharge points (**Testimony of Brown, Aug. 10, 1998, at 39, lines 18-23**), thus indicating that the effluent cannot be attributed to Eaton as opposed to Clark.

F-57. Eaton's expert, Dr. John Connolly, reviewed the report of 1.4 ppb PCBs and testified that the testing was performed on a joint outfall, thus making it impossible to attribute the PCB detection to Eaton as opposed to Clark Equipment Company. Furthermore, he testified, the results do not contain any data regarding flow rate, which are necessary in order to draw conclusions about the amount of PCBs being discharged over time. **(Testimony of Connolly,**

Aug. 14, 1998.) Because this sample came from a "joint" outfall, this detection of PCBs cannot be ascribed to Eaton.

F-58. In September 1972, the MDNR surveyed the wastewater from the facility's storm sewer and measured PCBs at 0.24 ppb and 0.12 ppb in two separate composite samplings. (**Uncontroverted Facts, ¶ 23. Trial Exh. 2028:** 1972 Wastewater Survey Report at pages 00006467, 6471. **Admission:** Pltf's Response to Eaton Facts ¶49, set out in Attachment A to these Revised Findings.)

F-59. Dr. Connolly testified that the sampling performed in September 1972 was flawed because the storm sewer being sampled served other areas as well. Although plaintiff contends that the outfall was sampled in such a way that only Eaton's product was being tested, that conclusion is not supported by the text of the sampling report. The sampling report contains "net" results for certain other test parameters, but the portion concerning PCB sampling is different and does not indicate any means by which to determine that only Eaton's in-plant effluent was being sampled. Dr. Connolly also testified that these results were suspect because they were at the limit of detectability. (**Testimony of Connolly, Aug. 14, 1998.**) Plaintiff's expert, Dr. Brown, conceded that sampling for PCB concentrations of less than 1.0 ppb can commonly result, even today, in results that are off by a factor of one hundred percent. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 187.**)

F-60. This Court finds Dr. Connolly's testimony and analysis to be credible and persuasive, and rejects plaintiff's experts' opinions using these effluent sampling events as a basis for attributing to Eaton the release of PCBs to the River.

C. Alleged Purchases of Pydraul.

F-61. Eaton personnel testified, and Eaton records indicate, that the oils used at the plant were supplied by Shell, Arco, Texaco, Mobil, Amoco and Standard. (**Trial Exh. 2047 / 6007:** 1979 Pollution Incident Prevention Plan. **Depositions:** Roosevelt Jones at 59, 163-64; Romick at several designated portions passim.) Plaintiff has not presented any evidence to suggest that oils from any of these suppliers contained PCBs at any time.

F-62. Eaton's own records disclose no indication of having purchased any oils from Monsanto, the exclusive manufacturer of PCBs. There is no testimony from any Eaton employee indicating that process or hydraulic oils were purchased from Monsanto. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 169.**) The few witnesses who were asked expressly about Monsanto products testified that they recalled seeing no fluids at the plant from Monsanto. (**Depositions:** See, e.g., Wolf at 46; Roosevelt Jones at 187; Romick at 6-7, 17-19.) The Stockroom Supervisor at Battle Creek, William Romick, testified that in the 16 to 18 years that he served in that capacity (1965 or so to 1983), Eaton did not purchase oils from Monsanto, and did not purchase Pydraul hydraulic oil. (**Deposition:** Romick at 6-7, 17-19.) Mr. Romick's tenure included the time period during which plaintiff alleges Eaton purchased hydraulic oil from Monsanto.

F-63. Plaintiff presented at trial a custodian of records for the Michigan Department of Environmental Quality. Plaintiff offered this testimony to prove that a document, Trial Exhibit 2016, allegedly prepared by Monsanto and found in the MDEQ records, was a reliable and trustworthy record of sales of Pydraul to the Eaton Battle Creek plant in 1970, 1971 and 1972. The records custodian conceded, however, that he believed that the document may have come to

MDEQ from the USEPA (rather than from Monsanto), and that he did not know anything about who authored the document, what records were used to compile the data, or even how the document came to be located in the MDEQ files. After considering the scant and inadequate foundation provided by the witness, this Court excluded the proffered exhibit from evidence, and has rejected the records custodian's testimony concerning the alleged sale of Pydraul. Plaintiff could have presented the deposition testimony of someone from Monsanto, from USEPA, or from some other source, concerning the facts allegedly set out on the document. Plaintiff did not do so. The record is devoid of any competent and admissible evidence concerning the alleged sale of Pydraul to Eaton's Battle Creek plant.

F-64. The majority of the coolants used at the Battle Creek facility were water soluble coolants. (**Depositions:** Wolf at 22; Raiche at 71.) By the late 1970s, Eaton was using more than twice as much water soluble oil than straight oil at the Battle Creek plant. (**Deposition:** Raiche at 71.)

F-65. Water soluble oils are incompatible with PCBs because PCBs do not readily mix with water. Thus, one would not expect water soluble oil to contain PCBs. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 161-63. Testimony of Crumrine, Cross-Examination, August 13, 1998**). There is a basic incompatibility between water-soluble oils and PCBs. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, 162 line 20 through 163 line 2.**)

F-66. Any spilling of oil onto the floor of the former Eaton Battle Creek plant was incidental to the manufacturing process, because the process was one of working hard metals, not

manufacturing or processing fluids or chemicals, or of manufacturing or assembling electrical equipment.

F-67. Eaton filed Critical Materials Reports and State of Michigan wastewater surveys from at least 1979 forward. Each of these indicates that fewer than 10 lbs of PCB-containing oils were purchased by the plant annually, and this was for transformer oil. The reports also indicate that no PCB-containing oils were discharged in wastewater. (**Trial Exhs. 2054, 2056, 2057, 2061. Admission:** Pltf's Response to Eaton Facts, ¶63, set out in Attachment A to these Revised Findings.)

F-68. In 1981, Versar inspected the Battle Creek plant. Versar sampled cutting, quench and hydraulic oil in the plant and found no detectable levels of PCBs in the oils sampled. (**Trial Exh. 2059:** 1981 Versar Inspection Report. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 177. Admission:** Pltf's Response to Eaton Facts, ¶54, set out in Attachment A to these Revised Findings.)

F-69. Plaintiff concedes that Eaton's plant did not conduct die casting operations for which PCBs are ideally suited. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 158.**)

F-70. This Court finds no evidence indicating that Eaton purchased PCB-containing oils for any purpose other than use in closed electrical equipment (transformers and capacitors).

D. The Detection of PCBs in Grinding Swarf.

F-71. Grinding swarf is the sludge created by the process of grinding metal parts. It consists of small particles of the metal part being ground, small particles (usually carborundum) of the grinding wheel or tool, and small quantities of the cooling fluid used in grinding. (**Deposition:** Raiche at 44-45.)

F-72. At Eaton's Battle Creek plant, grinding swarf was deposited, through a hole in the plant's main floor, into a gondola or large trailer-sized dumpster located in the basement of the plant. (**Deposition:** Seaver at 71-72.) Outside disposal companies periodically hauled the gondola off-site. (**Deposition:** Raiche at 45.)

F-73. In 1981, Versar tested a sample of the grinding swarf at the Battle Creek plant, and detected 7 ppm PCB of unspecified Aroclor in the swarf. (**Trial Exh. 2059:** 1981 Versar Inspection Report.)

F-74. Versar's testing of the coolants used by Eaton in the grinding process found no PCBs, and thus eliminated the cutting and grinding oils as the source of PCBs in the swarf. (**Trial Exh. 2059:** 1981 Versar Inspection Report.)

F-75. No evidence exists to suggest that the metal parts being ground, or the grinding tools used, contained PCBs at the Eaton Battle Creek plant.

F-76. Plaintiff proffered, and the Court admitted, a test report from 1984, indicating the detection of 8 ppm PCB in grinding sludge or swarf from the plant. (**Trial Exh. 2072:** ATS lab report.) The only testimony provided concerning that sludge, however, came from the Eaton employee who delivered the samples to the testing lab. He had no recollection of the location from which it was taken or the circumstances under which the sludge was sampled. (**Deposition:**

Bloemer at 85-86.) The Court notes that this sampling event occurred in 1984, after the plant's operations ceased, and after the 1983 time period of wood block tests, when testimony indicates that the building was an empty shell. Demolition of the plant may have been underway; the record is not clear. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 180.**) However, it is clear that there is no testimony or evidence from which it could reasonably be inferred that the material sampled was actually attributable to Eaton's operations and process oils.

F-77. The detection of a small amount of PCBs in the grinding swarf in 1981 suggests some adulteration of the swarf gondola's contents. Eaton's Plant Engineer (later its Corporate Safety Manager), Charles Heindrichs, concluded that one likely explanation was that a plant worker, for the sake of convenience, dumped floor sweepings into the swarf dumpster. Those sweepings were generated by the floor scarifier, a large machine that ground off a small layer of the wood block floor in order to clean it. (**Deposition:** Heindrichs at 278-80.) The wood block floor contained PCBs, the source of which is in dispute; the floor sweepings scraped from those blocks would also contain PCBs.

F-78. The evidence concerning the grinding swarf, when considered in the context of the entire record, does not indicate a likelihood or probability that Eaton used PCB-containing oils. The evidence does not provide a reasonable basis for concluding that Eaton contributed measurable or detectable quantities of PCBs to the River.

E. What the River Shows.

F-79. The PCB testing in the River itself provides strong evidence, outweighing the contrary evidence and inferences, that Eaton's Battle Creek plant did not discharge PCBs to the Kalamazoo River.

F-80. In 1976, MDNR sampled sediments downstream of the Battle Creek plant. MDNR detected no PCBs until Morrow Pond, almost 15 miles downstream of the Battle Creek plant. (**Trial Exh. 2036:** Wuycheck memo and attached 1976 sampling data, referred to as the "Wuycheck data". **Trial Exh. 8928:** Illustration River sampling data.)

F-81. Sediments downstream of the former Battle Creek plant, and downstream of the Battle Creek Wastewater Treatment Plant (WWTP), were sampled by the MDNR in 1988, in reviewing the permit for the WWTP. At 10 of the 11 locations sampled, no PCBs were detected. The remaining sample resulted in a single detected value of 1 ppm, taken from a point upstream of the discharge point of the Battle Creek WWTP and downstream of Eaton's Battle Creek facility. (**Trial Exh. 6020:** 1990 MDNR Staff Report at 1. **Admission:** Pltf's Response to Eaton Facts, ¶73, set out in Attachment A to these Revised Findings. **Trial Exh. 8929:** Chart depicting relative PCB concentrations in the River.)

F-82. The 1976 Wuycheck data is useful and illuminating because it was taken close in time to the period of discharges allegedly containing PCBs. Moreover, typically PCBs will be found in fine grain sediments, in depositional areas, near their source, if indeed such a source exists. The absence of sediment data linking PCBs in Morrow Lake to Eaton means that the Battle Creek plant did not discharge PCBs to the River. (**Trial Exh. 8928:** Chart depicting River sampling data. **Testimony of Connolly, Aug. 14, 1998.**) Dr. Connolly explained that the

findings of PCBs in settleable solids are not comparable to a finding in sediment, and are not indicative of what is in the sediment. (**Testimony of Connolly, Aug. 14, 1998.**)

F-83. Plaintiff's expert, Dr. Brown, conceded that the plaintiff has not performed any testing of the sediments upstream of Morrow Lake, to determine whether there is any connection between Eaton and the PCBs found in low levels in some locations of Morrow Lake. **(Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 74-75.)**

F-84. There is a fish advisory in effect for the Kalamazoo River from Battle Creek to Morrow Lake. This advisory concerns carp only, a species which Plaintiff's expert, Dr. Brown, concedes is not a human health hazard. By contrast, the fish advisory for points downstream of Morrow Lake concerns almost every species of game fish and bottom dweller. This is because the PCBs downstream of Morrow Lake are different in quantity, nature and composition from those found upstream of Morrow Lake, where Eaton's plant is located. **(Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 65-67.)**

F-85. Plaintiff presented two experts at trial, Dr. Mark Brown and Dr. Kenneth Crumrine, concerning the alleged PCB releases by Eaton. This Court, having observed the manner and demeanor of the witnesses, and having reviewed the testimony on direct and cross examination, finds that the evidence and estimates presented by plaintiff's expert witnesses were not credible or persuasive with respect to Eaton's discharges to the River.

F-86. Dr. Brown is the project manager for the continuing investigation on behalf of the plaintiff, Kalamazoo River Study Group, and is paid by the Group. He advocates on its behalf as its spokesperson on technical matters to the State of Michigan and USEPA. He consults for a paper industry trade group, the National Council for the Paper Industry for Air and Stream

Improvement. He has advocated on behalf of paper companies to state and federal agencies regarding other PCB sites as well. He testified at trial that he has never testified against a paper company, and has never testified in favor of another entity in a case in which that entity and a paper company were facing joint and several liability at a clean-up site. (**Testimony of Brown, Questioning by the Court, Aug. 11, 1998, 218-220.**) His analysis, when weighed against that of Eaton's expert, is not persuasive.

F-87. Eaton's expert, Dr. John Connolly, presented persuasive and credible evidence indicating that Eaton did not contribute measurable or detectable quantities of PCBs to sediments of the River. His analysis is based upon data taken from sediments and settleable solids in the vicinity of the Eaton Battle Creek plant. **(Testimony of Connolly, Aug. 14, 1998.)**

F-88. Dr. Connolly's analysis of existing River data indicates that, among other things, the lack of PCB detections at a particular sampling point downstream of Eaton is significant. That location, Stringham Road, is an area of deposition in which sediments come to rest; PCBs in the water would settle out with the sediment in such a depositional area. If Eaton had discharged PCBs in measurable quantities, those PCBs would have been detected in the 1976 sampling done at the Stringham Road sampling location. No PCBs were detected at Stringham Road in either sediments or settleable solids, indicating that the River bottom and the water column did not contain measurable amounts of PCBs at that location. **(Testimony of Connolly, Aug. 14, 1998.)**

F-89. Dr. Connolly's analysis also indicates that there are sources of PCBs to the River from points upstream of Morrow Lake Dam, but that the source or sources are near Morrow Lake, not upstream in the Battle Creek region. He bases this opinion on the sediment testing of

the River that shows no detections of PCBs near Battle Creek. (**Testimony of Connolly, Aug. 14, 1998.**)

F-90. Dr. Connolly also testified persuasively that the sum total of all discharges of PCBs from all sources upstream of Morrow Lake is an insignificant and immeasurable contribution compared to what is in the Site. **(Testimony of Connolly, Aug. 14, 1998.)**

F-91. Dr. Connolly provided a confirmation that PCBs in sediments of Morrow Lake have remained there over the last 40 years. This rebuts persuasively any suggestion that sediments have been "blown out" by floods or storms affecting the River and Lake, thus sending Morrow Lake PCBs to the NPL Site, resulting in misleading low PCB levels in the Lake. Dr. Connolly performed testing in 1997 of Morrow Lake sediments at various depths. The sediments were analyzed for a form of Cesium, an element deposited by the atmospheric testing of nuclear weapons beginning in 1954. Sediments that have been slowly accumulating over the last 40 years show a pattern of no Cesium before 1954, gradually increasing amounts from 1954 to a peak of 1963, and then typically decreasing amounts again. A disruption of the sediments results in a disruption of the pattern. The sediments of Morrow Lake showed the typical pattern of pre-1954 and post-1954 Cesium levels, thus confirming for Dr. Connolly that the sediments in Morrow Lake have been accumulating and have remained virtually undisturbed since before 1954. **(Testimony of Connolly, Aug. 14, 1998. Trial Exh. 8904G:** Connolly Expert Report Figure A1-7 re Cesium concentrations.)

F-92. Dr. Connolly also provided an analysis of the PCBs from all sources that may have made their way past Morrow Lake Dam: he estimates that 2000 pounds of PCB may have gone past that Dam from 1950 to 1990. This is 40 pounds per year from all upstream sources:

industry, atmospheric fallout, surface water runoff. He concluded that 25 per cent, or 500 pounds, of that amount, was trapped in sediments of the Kalamazoo River. Dr. Connolly testified that there is no evidence suggesting that Eaton contributed any detectable or measurable quantity of PCBs to that 500 pounds. **(Testimony of Connolly, Aug. 14, 1998.)**

F-93. This 500 pound estimate represents 0.02 percentage of 2,200,000 pounds of PCBs in the River, the estimate given by Georgia-Pacific's expert, Richard Valley, 0.22 percent of 228,000 pounds of PCBs estimated by Mr. Creal of the MDNR, 0.14 percent of the 350,000 pounds estimated by Scott Cornelius, and about 0.42 percent of the 120,000 pounds estimated recently by plaintiff's expert, Dr. Brown.

F-94. When Dr. Connolly was asked to assume that the PCB levels measured during the February and September 1972 samplings were discharged consistently to the River, and that these discharges were attributable to Eaton (two assumptions he opined are faulty), he calculated that the mass discharges of PCBs would represent one percent of PCBs going over Morrow Lake Dam, an average of 0.51 pounds, or one-half pound, per year. Aggregated over a period of forty years, that represents a total of 20 pounds, an insignificant amount in light of the contribution of PCBs to the River by the plaintiff's member companies. **(Testimony of Connolly, Aug. 14, 1998.)**

F-95. Thus, even if Eaton discharged PCBs to the River, and at levels suggested by the flawed effluent reports from 1972, the aggregate of such discharges is minuscule in comparison to the releases made by plaintiff's member companies. Such a hypothetical discharge -- for which the record at trial provides an inadequate foundation -- does not justify the imposition of response costs upon Eaton.

IV. DEFENDANT ROCKWELL

F-96. Rockwell International Corporation owned property and a manufacturing plant at 1 Glass Street, Allegan. Rockwell and its predecessors operated that plant from the early 1900s until approximately 1988-89. The plant, which manufactured universal joints for the automotive industry, was located on the Kalamazoo River, downstream of the Allegan City Dam. (**Uncontroverted Facts, ¶ 28. Admission:** Pltf's Response to Rockwell Facts, ¶ 22, set out in Attachment B to these Revised Findings. **Trial Exh. 8914:** Map depicting Rockwell Facility Location.)

F-97. The portion of the Kalamazoo River adjacent to which the former Rockwell plant sits is not within the NPL Site as defined by the Administrative Order by Consent entered into by Allied, Georgia-Pacific and Simpson. (**Admission:** Pltf's Response to Rockwell Facts, ¶ 23, set out in Attachment B to these Revised Findings.) Even if Rockwell were found to have released PCBs to the Kalamazoo River, plaintiff's expert quite reasonably concedes that those PCBs cannot come to be located within the NPL Site because it is upstream of Rockwell.

F-98. Rockwell was not an owner of riparian land within the NPL Site as defined by the AOC entered into by Allied, Georgia-Pacific and Simpson. (**Uncontroverted Facts, ¶ 29. Admission:** Pltf's Response to Rockwell Facts, ¶ 24, set out in Attachment B to these Revised Findings.)

F-99. Except for using certain transformers and capacitors for electrical power distribution, Rockwell never conducted any operations at the former Allegan facility of the sort in which PCBs historically were used. (**Testimony of Furlough, Aug. 12, 1998.**) This Court has previously concluded, based upon uncontradicted evidence presented in connection with the

motions for summary judgment, that Rockwell conducted no forging, die casting or other extremely high temperature operations that might have benefitted from the fire-resistant qualities of PCB-containing oil. **(Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, June 30, 1998, at 8.) Plaintiff presented no contradictory evidence at trial.

F-100. Plaintiff contends that PCBs were found in oils used in transformers and capacitors (electrical equipment) and in cooling and lubricating oils used in the manufacturing process (process oils). Rockwell does not dispute the contention that some of its electrical equipment used PCB-containing oil. Plaintiff presented no evidence indicating that PCB-containing oils from Rockwell's electrical equipment made their way into the Kalamazoo River from the plant.

F-101. There are no records indicating that the Rockwell plant purchased quench oils, cutting oils or hydraulic oils containing PCBs.

F-102. There is no evidence that the machining and manufacturing operations performed at the former Rockwell plant required fire-resistant additives like PCBs to the quench oils, cutting oils or hydraulic oils used in the plant.

F-103. During opening statement, in response to a question from the Court, counsel for KRSG conceded that any oils that spilled on the floor of the former Rockwell Allegan plant were incidental to the manufacturing process, because the process was one of working hard metals, not manufacturing or processing chemicals. **(Opening Statement, Aug. 10, 1998.)**

F-104. Beginning in the 1960s, Rockwell increasingly used water-based process oils, i.e., soluble oils. (**Deposition:** Paulson at 51.)

F-105. Water soluble oils are incompatible with PCBs because PCBs do not readily mix with water. Thus, one would not expect water soluble oil to contain PCBs. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 161-63. Testimony of Crumrine, Cross-Examination, August 13, 1998**). There is a basic incompatibility between water-soluble oils and PCBs. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, 162 line 20 through 163 line 2.**)

F-106. The wastewater effluent coming from the treatment ponds at Rockwell was tested by the MDNR in wastewater surveys in 1976 and 1986. Those tests found no PCBs in Rockwell's outfall to the Kalamazoo River. (**Trial Exhs. 1124 and 5025:** 1976 and 1986 Wastewater Surveys.) These results indicate that the wastewater treatment system was working effectively, although the pond sediments may have contained PCBs. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-107. Based on the absence of any documentary record of purchases of PCB-containing process oils, the absence of any testimony of persons having personal knowledge of use of such oils at the Rockwell plant, the non-detect sampling results of plant effluent in 1976 and 1986, and the absence of any evidence from which it could be reasonably inferred that the plant's process oils intentionally or regularly contained PCBs, this Court concludes that it is more probable than not that PCBs were not intentional or regular ingredients of the Rockwell plant's process oils. The detection of some amounts of PCBs on the Rockwell property, after the plant closed, suggests that PCBs may have been released on the property for one or more incidental reasons (dielectric leaks, unintentional and occasional contamination of oil, construction-related moving of earth contaminated at other locations). To the extent PCBs are found on the former

Rockwell property, they appear to be incidental, unintentional, and sporadic. After weighing all the evidence, the Court finds that there is insufficient basis for concluding that PCBs were an intended or regular ingredient of the process oils used at the plant. Furthermore, as explained below, the Court finds it improbable and unlikely that PCBs were released to the Kalamazoo River from the former Rockwell plant in measurable or detectable quantities.

F-108. The former Rockwell Allegan facility is a Superfund Site. USEPA investigated the Rockwell property in 1984 and detected a number of hazardous substances, like metals, but not PCBs. In 1988, based in part on EPA's findings, Rockwell entered into an AOC with the EPA to undertake a remedial investigation and feasibility study of the property. (**Uncontroverted Facts, ¶ 33. Trial Exh. 1002:** Rockwell AOC.)

F-109. Rockwell's own investigation of its property, post-AOC, found some evidence of PCBs on its property. In sporadic and limited areas of the Rockwell property, low levels of PCBs have been detected in various media on the property. The detections are consistent with low level releases of PCBs from electrical equipment which migrated to waste oil treatment areas on site or trace contamination of some oils, but are not indicative of the presence of PCBs in Rockwell's process oils from regular or consistent use of PCB-containing process oils or for any significant length of time. (**Testimony of Barrick, Aug. 13/14, 1998. Trial Exh. 8916:** Chart showing detections and non-detections of PCBs on former Rockwell property. **Trial Exh. 5054:** Historical Activities Reconstruction Report, Table 1 at back of volume. **Trial Exh. 1021:** 1998 Remedial Investigation Report for Rockwell Property, Volume 1, Tables 4-9a and 4-12c.) This remedial investigation data further confirms that the PCBs on Rockwell's property are in low concentrations, localized, and not migrating to the River. As Mr. Barrick explained, the finding

of 35 ppm off of Rockwell's property, near the riverbank south of the Oil Flotation House, is an anomaly; the detections on Rockwell's property are several orders of magnitude lower. Further, even if one were to assume this single finding was characteristic of Rockwell's discharges from the Oil Flotation House for any length of time (although there is no evidence of this), one would expect to see a difference in the chemical fingerprint of River sediments downstream as a result. This has not occurred.

F-110. Where PCBs were detected on the Rockwell property, the dominant Aroclor mixture found is Aroclor 1254. (**Testimony of Barrick, Aug. 13/14, 1998. Admission:** Pltf's Response to Rockwell Facts, ¶31, set out in Attachment B to these Revised Findings.)

F-111. When PCBs have been detected in various places in the River, Aroclor 1242 is the dominant PCB mixture. Lower molecular weight Aroclors like 1242 can "weather" in the River after leaving their source and may be reported as 1248. As a result of this phenomenon, it is more appropriate to designate the pattern as "Aroclor 1242/1248." (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-112. Aroclor 1242 is the dominant PCB mixture detected both upstream and downstream of the former Rockwell plant. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-113. Aroclor 1242 is not characteristic of the PCB mixture found on the Rockwell property. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-114. The dominant PCB composition detected on the Rockwell property, Aroclor 1254, is distinct from the composition of PCBs found upstream and downstream of the Rockwell plant. (**Testimony of Barrick, Aug. 13/14, 1998. Trial Exhs. 8915, 8923, 8924, 8918, 8920**

and 8927: Illustrative exhibits depicting PCBs sampled upstream and downstreamof Rockwell and on Rockwell property.)

F-115. If the Rockwell plant discharged PCBs in oily wastewater in detectable quantities, then the sediments immediately downstream of that plant would show increased concentrations of Aroclor 1254 from the Aroclor 1254 found on the Rockwell property. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-116. The composition of PCBs found downstream of the former Rockwell plant matches the composition of PCBs found upstream of the Rockwell plant, and does not match the composition of PCBs found on Rockwell property. This indicates that PCBs detected in River sediments came from releases upstream and did not migrate from the Rockwell property. (**Testimony of Barrick, Aug. 13/14, 1998. Trial Exhs. 8920, 8924, 8927:** Illustrative exhibits comparing PCB gas chromatographic fingerprints.)

F-117. Aroclor 1254 is present in sediment samples taken from upstream of Rockwell, indicating that there is an upstream source of Aroclor 1254. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-118. Sediment sampling in Portage Creek, near the confluence of the Creek and the Kalamazoo River, and in nearby landfills of the plaintiff paper companies, shows the presence of Aroclors 1242 and 1254, as well as other Aroclors. (**Testimony of Barrick, Aug. 13/14, 1998. Trial Exhs. 8925, 8926, 8927:** Illustrative exhibits depicting congener analysis of PCBs found in Portage Creek and Lake Allegan.)

F-119. Aroclor 1242 was used in the manufacturing of carbonless paper; Aroclor 1254 was used in printing inks and, according to various authoritative studies, is frequently found in

paper and paper board products. (**Testimony of Barrick, Aug. 13/14, 1998. Testimony of Brown, Rebuttal Cross-Examination, Aug. 17, 1998.**)

F-120. If Rockwell had released PCBs to the River, those PCBs (composed of Aroclor 1254) would have increased the ratio of Aroclor 1254 to Aroclor 1242 (the dominant Aroclor) in sediments downstream of Rockwell. In sediment samples taken upstream of Rockwell and downstream of Rockwell, a comparison of the gas chromatographic "fingerprints" indicates that the ratio of Aroclor 1242 to Aroclor 1254 is relatively constant, indicating again that there was no measurable, independent release of PCBs from the Rockwell plant. (**Testimony of Barrick, Aug. 13/14, 1998. Trial Exhs. 8919, 8920, 8927:** Illustrative charts comparing PCB fingerprints.)

F-121. In addition to a consistent ratio of Aroclor 1242 to 1254 both upstream and downstream of Rockwell, there is no increase in the overall concentration of PCBs immediately downstream of Rockwell, which would be an indication that an additional source of PCBs was present. (**Testimony of Barrick, Aug. 13/14, 1998.**) The absence of an increase constitutes credible and persuasive evidence that the former Rockwell Allegan facility is not a source of PCBs to the Kalamazoo River.

F-122. The deinking operations of plaintiff's paper recycling mills, not Rockwell's operations, were likely sources of Aroclor 1254 as well as of Aroclor 1242 found in River sediments. (**Testimony of Barrick, Aug. 13/14, 1998.**)

F-123. Plaintiff presented no expert testimony to contradict the opinions of Mr. Barrick concerning the gas chromatograph or "fingerprint" analysis performed by him of PCBs in the Site. The fingerprint analysis is reliable, and Mr. Barrick's testimony concerning his findings is

credible and persuasive. Fingerprint analysis has been relied upon by other courts, see Anglado v. Leaf River Forest Prods, Inc., 1998 WL 286610 (Miss. S. Ct. 1998), and is, in this instance, supported by sound expert testimony, foundation and interpretation.

F-124. In light of the analysis by Mr. Barrick concerning the ratio of Aroclor 1242 to 1254, several admissions by plaintiff's expert, Dr. Brown, are significant. Dr. Brown conceded that Aroclors 1254 and 1260 have been detected in residuals from the paper companies' facilities. He also conceded that levels of Aroclor 1254 have been detected in fish caught in Portage Creek, and that those levels are significantly higher than the levels of 1254 in those caught in Morrow Lake. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 150-53.**) Aroclor 1254 and 1260 were detected in fish caught in the River near the Simpson-Plainwell facility location, and the concentrations of 1254 found in those downstream fish were "considerably higher," about ten times higher, than the concentrations in Morrow Lake fish. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 153-54.**) These disparities in concentration between Morrow Lake fish and downstream fish further support the conclusion that the most significant sources of PCBs to the River, including Aroclors 1254 and 1260, begin in the vicinity of plaintiff's members' mills. They also support the analysis of Mr. Barrick in interpreting the ratio between Aroclors 1254 and 1242 in the River upstream and downstream of the former Rockwell facility, and support the conclusion of Dr. Connolly that, although there may be sources of PCBs into Morrow Lake, those amounts are insignificant when compared to the massive amounts of PCBs further downstream where the paper companies are located.

F-125. Dr. Kenneth Crumrine, an expert presented at trial by plaintiff, did not present credible and persuasive evidence concerning a release of PCBs by Rockwell. Several factors lead this Court to reject his testimony:

1. Dr. Crumrine could not accurately define PCBs as a chemical compound;
2. He could not correctly recall the highest concentration of PCBs in soil on the Rockwell property;
3. He was unable to quantify the PCBs that allegedly left Rockwell;
4. His use of a 1965 wastewater treatment survey, Trial Exhibit 1064, was disingenuous. He deliberately chose from the survey the value of 270 gallons of oil per day of discharge from the oil flotation house as his basis for calculating yearly flows (and thus, by inference, the volume of PCBs reaching the River), despite the fact that the same survey showed only a five-gallon discharge of oil the next day;
5. The absence, in the testimony of Rockwell witnesses and in the Rockwell documents, of any evidence of PCB use in process oils at the facility therefore left Dr. Crumrine's testimony without foundation;
6. His impeachment by an affidavit tendered in 1983 related to litigation involving Outboard Marine Corporation, swearing under oath that PCB detections in wastewater and groundwater below 1.0 ppb during the 1983 time period were unreliable, based on technology limitations. Dr. Crumrine now holds the opposite opinion with regard to a 1972 detection of less than 1.0 ppb PCB in a stormwater drain from Eaton's plant.
7. His overreaching calculation of PCBs discharged by Eaton's Battle Creek Plant, which was wholly without foundation.

(Testimony of Crumrine, Cross-Examination, Aug. 13, 1998.)

F-126. If the Rockwell Allegan plant had not been located on the River, the nature, composition, concentration and dispersion of PCBs in the River would be exactly the same as it appears to be today, and the same remedial action would be required. This Court concludes that there was no release of measurable and detectable quantities of PCBs from the Rockwell Allegan plant and that there was, therefore, no "release" of PCBs for purposes of CERCLA.

F-127. This Court has weighed the evidence, has found Mr. Barrick's expert opinion, evidence, analysis and interpretation to be credible and persuasive, and has rejected the opinions of Dr. Crumrine as unpersuasive and not credible. This Court concludes that it is not probable or likely that the former Rockwell Allegan plant released PCBs to the Kalamazoo River in any measurable or detectable quantity.

V. LIABILITY OF DEFENDANTS EATON AND ROCKWELL

L-5. In order to establish a prima facie case of Section 113 CERCLA liability against one or more defendants, plaintiff must establish that:

a. there was a release or threatened release of a hazardous substance;

b. the Site of the release of threatened release is a "facility" as defined in 42 U.S.C. § 9601(9);

c. the release or threatened release has caused the plaintiff to incur response costs; and

d. the defendant is an owner or operator of the facility from which there was a release, or is an arranger or transporter under CERCLA § 107(a).

42 U.S.C. § 9607(a). See also Amoco Oil Co. v. Borden, Inc., 889 F.2d 664, 668 (5th Cir. 1989); Plaskon Elec. Mat'ls Inc. v. Allied-Signal, Inc., 904 F. Supp. 644, 659 (N.D. Ohio 1995); **Opinion**: KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 6-7.

L-6. In addition to the elements of a prima facie case, in order to hold one or more defendants liable, plaintiff must prove that hazardous substances traceable to the defendant are in nature, quantity and durability sufficient to satisfy a minimum standard of significance of that defendant's responsibility as a source of the hazardous substance at the site. This requires more than a *de minimis* or scintilla standard. **Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 14-15.

L-7. NREPA, M.C.L.A. § 324.20101 et seq. (formerly "MERA," the Michigan Environmental Response Act), was patterned after CERCLA, and is construed in accordance with CERCLA. Kelley v. Tiscornia, 827 F. Supp. 1315, 1318 n. 1 (W.D. Mich. 1993); Flanders

Indus., Inc. v. Michigan, 203 Mich. App. 15, 21; 512 N.W.2d 328 (1993); **Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 7.

L-8. Plaintiff's claims under Part 201 of NREPA will stand or fall under the same analysis applied to the claims under CERCLA. **Opinion:** KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Mar. 6, 1998, at 7.

L-9. This Court is not bound by the regulations of the State of Michigan concerning acceptable levels of PCBs. The Court notes that the State of Michigan apparently utilizes a standard that is far below detection limits currently available for PCB detection.

L-10. Of the two effluent samples to which plaintiff points as evidence of PCB releases from Eaton Corporation's Battle Creek plant, one was from a joint outfall, and is not competent evidence attributable to Eaton. There remains, therefore, a single test showing the detection of PCBs, and that test yielded a level of PCBs near the detection limit. A single, unrepeatable test has been rejected as the basis for a finding of chronic discharge of contaminants. In Textron Inc. v. Barber-Colman Co., 903 F. Supp. 1546, 1552 (W.D.N.C. 1995), the district court granted summary judgment to the defendant because plaintiff could not produce evidence that the single test result upon which it was relying was typical of what the defendant was discharging:

> As a result, [plaintiff's] claim rests ultimately on the test results from 1974, but absent evidence indicating those results are typical, they are not significantly probative. . . . [O]ne test is not a sufficient basis for extrapolation absent additional evidence which establishes that those results are a reliable indicator of typical discharges.

Id. at 1555. A district court in Colorado has similarly rejected a single test result as a basis for plaintiff's claim:

> It is unsound scientific practice to select one concentration measured at a single location and point in time and apply it to describe continuous releases of contamination over an 11-year period.

Renaud v. Martin Marietta Corp., 749 F. Supp. 1545, 1553 (D. Colo. 1990), aff'd, 972 F.2d 304 (10th Cir. 1992). That trial court's conclusion on this point was expressly approved on appeal:

> We agree, ourselves observing that this would seem little more than common sense . . . .

Renaud v. Martin Marietta Corp., 972 F.2d 304, 308 (10th Cir. 1992).

L-11. Science, as well as law, requires that a single test result be rejected as a reliable basis for a conclusion. "In science, *reliability* refers to reproducibility of results." D. Kaye and D. Freedman, "Reference Guide on Statistics," Reference Manual on Scientific Evidence, Federal Judicial Center, at 341 (emphasis in original). "In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity." Daubert, supra, 113 S. Ct. at 2795 n.9. This Court concludes, therefore, that even if the September 1972 effluent detections were reliable in themselves (something which Eaton's expert Dr. Connolly rejects and which plaintiff's expert Dr. Crumrine rejected in other litigation, although he now takes the opposite view), they do not provide competent evidence upon which to base a conclusion about the quality of the Battle Creek plant's effluent on a long-term basis.

L-12. There is no evidence from which to conclude reasonably that any measurable or detectable quantity of PCBs were contributed by Eaton's Battle Creek plant to the NPL Site, the Kalamazoo River or Portage Creek.

L-13. In the alternative, even if Eaton did contribute a measurable or detectable quantity of PCBs to the NPL Site, the River or the Creek, the contribution is not of sufficient quantity to justify imposing the costs of response activities for the NPL Site upon Eaton.

L-14. If Eaton did contribute a measurable or detectable quantity of PCBs to the NPL Site, the River or the Creek, the contributions are, in nature, quantity and durability, not sufficient to require imposing the costs of response activities for the NPL Site upon Eaton.

L-15. Eaton is not liable to plaintiff or any of its members under Section 113 of CERCLA, 42 U.S.C. § 9613, for the PCB contamination of the River, the Creek or the NPL Site.

L-16. There is no basis for concluding that Rockwell's former Allegan plant contributed any PCBs to the NPL Site, because the NPL Site is upstream of the Rockwell facility.

L-17. There is no competent evidence from which to conclude reasonably that any measurable or detectable quantity of PCBs were contributed by Rockwell's former Allegan plant to the Kalamazoo River.

L-18. In the alternative, even if Rockwell's former Allegan plant did contribute a measurable or detectable quantity of PCBs to the River, the contribution is not of sufficient quantity to justify imposing the costs of response activities for the NPL Site upon Rockwell.

L-19. If Rockwell's former Allegan facility did contribute a measurable or detectable quantity of PCBs to the River, the contributions are, in nature, quantity and durability, not sufficient to require imposing the costs of response activities for the NPL Site upon Rockwell.

L-20. Rockwell is not liable to plaintiff or any of its members under Section 113 of CERCLA, 42 U.S.C. § 9613, for the PCB contamination of the River or NPL Site.

L-21. Judgment shall be entered in accordance with Fed. R. Civ. P. 58 in favor of defendants Eaton Corporation and Rockwell International Corporation, and against plaintiff, on the claims of the Restated First Amended Complaint.

VI. PLAINTIFF'S MEMBER COMPANIES

F-128. Each of the mills owned by KRSG's members performed deinking or used de-inked feedstock at some point in the past. (**Opinion:** KRSG v. Rockwell, et al, Case No. 1:95-CV-838, Mar. 6, 1998, at 3.)

F-129. Each of the Plaintiff's members utilized carbonless copy paper as a component in their recycled furnish (also known as feedstock). (**Depositions:** Hanson at 27-30 (Georgia-Pacific); Gilman at 29-31, 107-108 (Allied); Huisman at 24 (James River); Lawton at 72-75 (Simpson). **Trial Exh. 8012, 8013:** Brown Company memoranda.) Georgia-Pacific and James River, at various times, used feedstock consisting entirely or largely of NCR paper. (**Opinion:** KRSG v. Rockwell, et al, Case No. 1:95-CV-838, Mar. 6, 1998, at 3.)

F-130. PCBs from plaintiff's members' mills have been detected in their residual sludges and in their effluent. (**Admission:** Pltf's Response to Rockwell Facts, ¶11, set out in Attachment B to these Revised Findings.)

F-131. An expert retained by Georgia-Pacific Corporation, Richard Valley, prepared a report in 1990, estimating amounts of PCBs discharged by the paper mills during the period from 1960 to 1979. According to the Valley Report, Allied discharged between 895,000 and 1,790,000 pounds of PCBs to the NPL Site, Georgia-Pacific discharged between 560,000 and 1,120,000 pounds, James River discharged between 512,000 and 1,025,000 pounds from one of its three facilities, and Simpson discharged between 254,000 and 507,000 pounds of PCBs to the NPL Site. (**Trial Exh. 8804:** Valley Report at KB203-00497 to -00498.)

F-132. KRSG's expert, Dr. Brown, conceded that there were substantial quantities of PCBs in the River attributable to KRSG's members. Although it is not surprising that his

estimate is more conservative than those of the MDEQ or Richard Valley. Dr. Brown recently calculated the volume of PCBs to be approximately 120,000 pounds in the riverbed from Portage Creek downstream. He also admitted that, taking into account the roughness of the estimate, the range of volume of PCBs could be from 60,000 to perhaps 240,000 pounds. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 107-108.**) Dr. Brown's estimate does not include the nearly three million cubic yards of PCBs present in KRSG's residuals in landfills and historical lagoons, many of which are a continuing source of new PCBs to the River and Creek. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 108-109.**)

F-133. The evidence presented at trial (in the form of deposition testimony, documents compiled by plaintiff's environmental consultant Blasland Bouck & Lee, expert testimony of defendants' expert Mr. Barrick, and evidence adduced from plaintiff's expert Dr. Mark Brown on cross-examination) supports in a credible and persuasive way the conclusion that plaintiff's member companies contributed massive amounts of PCBs to the NPL Site, the Kalamazoo River and Portage Creek. Plaintiff's principal expert, Dr. Mark Brown, conceded that the Michigan Department of Environmental Quality has found that the PCB contamination in the Site comes from the paper industry. He conceded that it is likely that most of the Aroclor 1242 found in the River came from the paper recycling industry. **(Testimony of Brown, Cross-Examination, Aug. 10, 1998, at 91-92.)** He also conceded that plaintiff's residuals (i.e., the PCBs containing waste in the operable units, some of which continues to erode and leak into the River today) is in excess of one million cubic yards, and "probably a little less than" three million cubic yards. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 109.**) As Dr. Brown told a

citizens group several years ago, the residuals alone would fill the Pontiac Silverdome 1½ times. **(Testimony of Brown, id.)**

F-134. Plaintiff presented no persuasive or credible evidence contradicting the conclusion that the KRSG is responsible for releasing massive quantities of PCBs to the Site.

F-135. USEPA has concluded, after investigation, that Allied's Bryant Mill Pond is the most important upstream source of PCBs to the River. (**Trial Exh. 8813:** USEPA Addendum to Action Memorandum.)

F-136. Based on the records and testimony available today, it appears that James River is the only member of plaintiff that consistently and systematically tested for PCBs in its product, waste and effluent.

F-137. Of the four KRSG members, Allied Paper was the largest manufacturer. **(Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 136-37.)** Allied and Georgia-Pacific conducted deinking and paper recycling operations on an even larger scale than did James River, but these companies did not consistently test for PCBs. (**Trial Exh. 8235:** Allied Paper Omnibus.)

F-138. Based on the presence of elevated concentrations of PCBs in the paper residuals removed from the clarifiers of Allied, Georgia-Pacific, James River and Simpson and disposed of in landfills within the NPL Site, it can be reasonably inferred that the corresponding effluent from those KRSG members' clarifiers contained PCBs attached to suspended solids within that effluent, which was discharged to the Kalamazoo River and Portage Creek. This is evidenced, for example, by a comparison of PCB levels in clarifier influent, effluent and paper residuals (vacuum filter solids) from the Brown (James River) Company clarifier. (**Testimony of**

Barrick, Aug. 13/14, 1998. Trial Exhs. 8008, 8015, and 8016: Brown Co. lab reports, comparing PCB levels in clarifier influent, effluent and paper residuals (vacuum filter solids).

F-139. Plaintiff's expert agreed at trial that a variety of Aroclors, not just Aroclor 1242, was detected in the residuals of at least three of the four paper companies. Those Aroclors include 1016, 1242, 1248, 1254, and 1260. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 120 (Allied), 128, 130-31, 133-34 (Georgia-Pacific), 132 (Simpson).**) Testing by MDNR in 1987 of the fourth company disclosed Aroclors 1248 and 1254 in the company's landfill residuals, and Aroclors 1242 and 1254 in its outfall to the Kalamazoo River. (**Trial Exh. 8023:** MDNR Letter re James River sampling results.)

A. James River Paper Company

F-140. James River Corporation and its predecessors (KVP Sutherland and Brown Company) have operated two paper-making facilities along the Kalamazoo River since 1939. One is the Specialty Papers Division located in Parchment, Michigan ("Parchment Mill"). The second is a box board manufacturing plant in Kalamazoo ("Kalamazoo Mill"). The Kalamazoo Mill also operated a deinking facility for a period of years during the 1970s. (**Uncontroverted Facts, ¶13. Deposition:** Ferguson at 14-16; Nitz at 38-39.)

F-141. The Parchment Mill comprised two paper mills, plus a parchmentizing operation. (**Uncontroverted Facts, ¶ 14. Trial Exh 8001:** 1973 MDNR Industrial Waste Survey of James River, at 2.)

F-142. Wastewater from the Parchment Mill is discharged to the Kalamazoo River. From 1939 through the mid 1970's, all effluent from Mill No. 1 operations at the Parchment Mill

was discharged directly to the Kalamazoo River without waste treatment. (**Trial Exh. 8000:** 1972 James River interoffice memo.)

F-143. Prior to the mid 1970's, Parchment Mill No. 2 wastewater was discharged to the Kalamazoo River through a river weir after passing through a series of settling lagoons. A clarifier and sludge dewatering system was implemented at the Parchment Mill in the mid to late 1970's. (**Deposition:** Ferguson at 18.)

F-144. The Kalamazoo Mill box board manufacturing plant used pulp made of 100% recycled waste paper as furnish in its operations (**Deposition:** Ferguson at 14-16).

F-145. For a period of years in the mid 1970's, the Kalamazoo Mill operated a deinking mill ("pulp mill") which supplied de-inked pulp for use at the Parchment Mill. (**Deposition:** Ferguson at 14-16; Chadderdon at 14-15.) The pulp mill used primarily office waste paper, which contained NCR paper, as furnish for its operations. (**Deposition:** Nitz at 38-39). A James River document indicates that, on at least two particular days, 100% of the furnish for James River's pulp mill was NCR paper. (**Trial Exh. 8007:** 1976 lab reports re James River effluent, at page KJ 01000022.)

F-146. Prior to the late 1960's, treated wastewater from the Kalamazoo Facility was discharged to the Kalamazoo River. After the late 1960's effluent from the Kalamazoo Mill was discharged to the Kalamazoo Water Reclamation Plant. (**Deposition:** Zinkus at 19)

F-147. Beginning in the early 1970's, as a requirement of the U.S. Food and Drug Administration, James River began testing for PCB levels in its box board used for food packaging manufactured at the Kalamazoo Mill. James River performed daily PCB testing in its

own laboratory using a gas chromatograph and a full time staff trained to perform PCB analysis. (**Deposition:** Huisman at 13, 16.)

F-148. According to Dr. Huisman, director of James River's laboratory, PCBs were detected in nearly every sample taken of James River's box board during the early 1970s to mid-1970s. (**Depositions:** Huisman at 21-22; Nitz at 30-32. **Trial Exh. 8022:** 1981 letter attaching PCB data.)

F-149. Beginning in the mid-1970's, James River tested for and confirmed the existence of PCBs in its (1) paper residuals from both the Kalamazoo and Parchment Mills (**Trial Exh. 8015:** 1976 lab report. **Trial Exh. 8016:** 1976 lab report. **Trial Exh. 8020:** 1979 letter. **Trial Exh. 8018:** 1977 memorandum) ; (2) pulp from the deinking mill (**Trial Exh. 8003:** 1975 lab reports. **Trial Exh. 8009:** 1976 lab report); (3) waste paper furnish used in box board production and the deinking mill (**Trial Exhs. 8012, 8013:** 1976 memoranda and lab reports); and (4) effluent to the Kalamazoo River at its Parchment Mill outfall (**Trial Exh. 8004:** 1975 and 1976 lab reports) and to the Kalamazoo Water Reclamation Plant from the Kalamazoo Mill (**Trial Exh. 8005:** 1975 and 1976 lab reports.)

F-150. In 1976, James River conducted a study to determine PCB concentrations in samples of white and colored ledger waste paper used as furnish in its deinking mill. Of the 24 samples taken, each contained PCBs, with levels as high as 9,605 ppm. (**Trial Exhs. 8012, 8013:** 1976 memoranda and lab reports.)

F-151. Frank Yankoviak, James River's Technical Director, stated in a memorandum describing the study of furnish for the mills: "These results indicate that there is a considerable

amount of PCB's coming in through our waste paper furnish." (**Trial Exh. 8013:** 1976 memorandum at page KJ 00900020.)

F-152. PCBs were detected in James River's paper residuals (vacuum filter solids) at levels ranging between 12.7 and 125.7 ppm. (**Trial Exh. 8015:** 1976 lab report at page KJ 01000046-48; **Trial Exh. 8016:** 1976 lab report. **Trial Exh. 8018:** 1977 memorandum. **Deposition:** Huisman at 99-101, 122-24.) The paper residuals from both the Kalamazoo Mill and the Parchment Mill were deposited in James River's landfill at the Parchment Mill located near the Kalamazoo River. In 1987, the MDNR detected PCBs in soil/sludge samples from James River's landfill. (**Trial Exh. 8023:** 1987 letter, MDNR to James River, attaching PCB sampling data.)

F-153. PCBs were detected in the pulp generated at James River's deinking mill at levels ranging from a trace up to 110 ppm. (**Trial Exh. 8009:** 1976 lab report. **Deposition:** Huisman at 53-67, 43-49, 102-106). Pulp from the deinking mill in Kalamazoo was used in James River's Parchment Mill. (**Depositions:** Ferguson at 14-16; Huisman at 54.)

F-154. On several occasions in 1975 and 1976, PCBs were detected in the James River Parchment Mill's effluent to the Kalamazoo River, measured at the river weir, at levels ranging from less than .1 up to 102.8 ppb. (**Trial Exh. 8004:** 1975 and 1976 lab reports. **Trial Exh. 8006:** Compilation of Brown Co. PCB data, including effluent data. **Deposition:** Huisman at 72-77.)

F-155. On several occasions in 1975 and 1976, PCBs were detected in the effluent from the James River Kalamazoo Mill to the City water reclamation plant, at levels ranging from less than 0.1 ppb up to 33.3 ppb. (**Trial Exh. 8005, 8008, 8011, 8010. Deposition:** Huisman at 54.)

The City discharged its effluent to the River after an additional settling process, which was the only treatment used to remove PCBs from the City's effluent.

F-156. Between 1975 and 1985, James River's engineering staff compiled a series of PCB test results documenting the high levels of PCBs in James River's production of paper products, paper residuals, pulp and effluent discharges. **Trial Exh. 8006:** compilation of PCB data. **Deposition:** Zinkus at 170-75.)

B. Allied Paper Company, Inc.

F-157. Allied operated three mills within the NPL Site: Bryant Mill, Monarch Mill and King Mill. These mills practiced deinking from the 1950s through 1971. (**Uncontroverted Facts, ¶ 15. Trial Exh. 8715:** Blasland, Bouck & Lee, Tech. Memo No. 15, p. 1-1. **Admission:** Pltf's Response to Rockwell Facts, ¶6, set out in Attachment B to these Revised Findings.)

F-158. Annual reports and other documents recounting Allied's history state that Allied's Kalamazoo facilities ran the world's largest deinking operation. (**Trial Exh. 8236:** Allied Paper Omnibus at page KA 04600438. **Deposition:** Falvey at 91). Deinking occurred at the King Mill from at least the 1940's until 1960. The Bryant Mill practiced deinking from 1957 through 1971 and the Monarch Mill from the 1940's until 1960. (**Trial Exh. 8715:** BBL Tech. Memo No. 15, Mill Investigation at 1-3 to 1-6.)

F-159. Beginning in 1953, the Monarch clarifier effluent was discharged to Portage Creek upstream of Bryant Mill Pond. (**Deposition:** Falvey at 11). Beginning in the mid-1950's, the Bryant clarifier was also discharged to Portage Creek upstream of Bryant Mill Pond, but in the early 1970's was rerouted to the City's treatment plant. (**Deposition:** Falvey at 39-40, 42-43). Throughout its operation, the King clarifier effluent was discharged to the Kalamazoo River through the King Highway storm sewer. (**Deposition:** Falvey at 27-30).

F-160. A December 31, 1958, Allied interoffice memorandum states with regard to the King Mill waste treatment system:

> "We are in flagrant violation of our Michigan Water Resources Commission Orders on the amount of waste that we may discharge into the Kalamazoo River. Presently and for some time now, we have done little or no effective settling of our mill wastes. The

> system has been in operation with the only thing happening being power usage."

With regard to the Bryant Mill, the same memorandum stated: "the main problem in operation [of the system] is the periodic bypassing of the highly loaded deinking waste directly to Portage Creek." (**Trial Exh. 8204:** 1958 Allied interoffice memo.)

F-161. An April 25, 1958, Allied interoffice memorandum states:

> "The King settling tank during the past year (1957-58) has been down from 13-20% of the operating days due to mechanical and operational trouble. During the 313 operating days, the mill effluent was not treated 31 days due to sludge pump trouble. For 30 days (for a few hours to 24 hours) the system was down due to repair and unclogging of the continuous bar grate cleaner."

(**Trial Exh. 8203:** 1958 interoffice memorandum.)

F-162. Allied waste treatment system performance data states that in 1961, Allied discharged 156,494 pounds per day of suspended solids to the Kalamazoo River and 53,494 pounds per day of suspended solids to Portage Creek. (**Trial Exh. 8232:** chart of suspended solids.) This data only reflects discharges from the clarifiers. Suspended solids in waste waters that were bypassed directly to Portage Creek or the Kalamazoo River are not included in this data.

F-163. During the entire time that deinking occurred at Allied, and afterward, Allied experienced periodic breakdowns and other problems with operation of its various waste treatment systems. Periodic bypasses of untreated waste from deinking operations occurred at each of the mills. Periodically, from the 1950's through the 1970's, MDNR staff and other witnesses observed bypasses of untreated wastes into Portage Creek and Bryant Mill Pond and

observed the Pond itself to be a milky white color. (**Trial Exhs. 8222, 8202, 8214, 8209, 8208, 8207, 8205.**)

F-164. Allied has not produced any PCB test results of effluent prior to 1971, the time period when deinking or recycling of waste paper was occurring in the Allied Mills.

F-165. In 1973, after deinking and waste paper recycling activities had ceased, the MDNR detected PCBs at a concentration of 6.9 ppb in the Bryant clarifier's effluent discharged to the City's treatment plant. (**Trial Exh. 8213:** 1973 letter, MDNR to Allied.)

F-166. PCBs were detected in Allied's Monarch clarifier discharge to Portage Creek in 1985 and 1986. (**Trial Exh. 8225:** 1987 table of PCB results.)

F-167. Allied stated in an information sheet issued to its employees, which discussed the PCB contamination in Bryant Mill Pond: "The deinking process produced waste. Unknown to Allied, at times that waste contained PCB traces from the dyes used in making carbonless copy paper. Allied sent that waste through its own in-plant wastewater treatment system, which consisted of clarifiers, or large settling tanks . . . . The only known source of PCBs in the effluent stream -- some of which escaped the clarifiers and were discharged into Portage Creek -- were the carbonless paper dyes, and perhaps a small amount from PCBs in printing inks." (**Trial Exh. 8224:** 1987 cover letter and "Backgrounder.")

F-168. Remedial Investigation data generated or gathered by plaintiff KRSG's environmental consultants shows that, in 74 surficial samples throughout the Bryant Mill Pond, the average PCB concentration is 110 ppm. In 222 subsurface samples in the pond sediments, the average PCB concentration is 63 ppm. (**Trial Exh. 8719:** Draft BBL Tech. Memo No. 7,

Allied Paper, Inc. Operable Unit, at 35. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 117-119.**)

F-169. A known release of PCBs from Bryant Mill Pond occurred in 1976 when Allied lowered the pond and the impounded water and its sediment load were permitted to escape over the dam and downstream into the Kalamazoo River. Over a three week period, Portage Creek turned a gray-black color from pond sediments that were churned up and transported over the dam during the lowering process. During this time period, Portage Creek water samples showed PCB levels ranging between 92.7 to 292 ppb in the water traveling over the Alcott Street Dam toward the Kalamazoo River. (**Trial Exh. 8216**: Letter, Allied to MDNR, at page SA 006771. **Testimony of Brown, Cross-Examination, Aug. 11, 1998 at 122.**)

F-170. When the Bryant Mill Pond was lowered in 1976, the presence of paper residuals was evident and the pond bottom was gray in color. (**Depositions:** Falvey at 135; Harvey at 133; Brooks at 97-98; Cornelius at 36-37.)

F-171. Because of the continuing risk to human health and the environment, USEPA plans to complete a time-critical removal action in situ to remove 85,000 cubic yards of PCB contaminated Bryant Mill Pond sediments within Portage Creek, which are a continuing source of PCB contamination to the remainder of the Site. (**Trial Exhs. 8812 and 8813:** USEPA Action Memorandum and Addendum re Removal Action.)

F-172. Over one million cubic yards of PCB-contaminated paper sludge are present in various disposal areas and historical sludge de-watering lagoons of the 51-acre Allied OU, located in an area adjacent to Portage Creek. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 114.**) Paper residuals in the (1) Bryant and Monarch Mill residual de-watering

lagoons, (2) Type III paper sludge landfill, (3) western disposal area, and (4) Portage Creek floodplain and sediments contain varying levels of PCBs. (**Trial Exh. 8719:** Draft BBL Tech. Memo No. 7, Allied Paper Operable Unit, at 59. **Deposition:** Cornelius at 36-37, 81.)

F-173. PCB concentrations in Allied's Type III landfill were as high as 2000 ppm. (**Trial Exh. 8719:** Draft BBL Tech. Memo No. 7, Allied Paper Operable Unit, at 34. **Deposition:** Cornelius at 74.)

F-174. PCB releases to the NPL Site have been confirmed in leachate seeps and surface water drainage within Allied's sludge disposal areas. (**Trial Exh. 8027 / 8233:** "Results of Allied Paper, Inc. Program to Monitor PCBs in the Isolated Flow Areas." **Trial Exh. 8218:** 1976 MDNR Industrial Waste Water Survey. **Deposition:** Cornelius at 97-98.)

F-175. Remedial Investigation data shows that in addition to Aroclor 1242, Aroclors 1016, 1248, 1254 and 1260 are also present in paper residuals in the various disposal areas located about the Allied Operable Unit. (**Trial Exh. 8719:** Draft BBL Tech. Memo No. 7, Allied Paper, Inc. Operable Unit, Table 3-10. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 120-21. Deposition:** Cornelius at 84-86.)

F-176. In addition to releases of PCBs caused by deinking operations, there is evidence of PCB releases from other sources at Allied. During an inspection by USEPA contractors in 1981, PCB-containing transformers were found to be leaking at the Allied facilities. As a result, Allied paid civil penalties for violations of the Toxic Substance Control Act. (**Trial Exh. 8220:** 1981 Versar Report on PCB Inspection of Allied's facility. **Trial Exh. 8221:** 1982 EPA Complaint re same.)

C. Georgia-Pacific

F-177. Georgia-Pacific's mill in Kalamazoo, located on King Highway, practiced deinking from the 1950s to the present. (**Trial Exh. 8715:** BBL Tech. Memo No. 15, p. 1-1. (**Admission:** Pltf's Response to Rockwell Facts, ¶7, set out in Attachment B to these Revised Findings.)

F-178. The Valley Report, which was commissioned by Georgia-Pacific, states that, based on company records, Georgia-Pacific de-inked up to 200 tons of waste paper per day. Georgia-Pacific ranked behind only Allied Paper in terms of the size of its deinking operations in the Kalamazoo River Valley. (**Trial Exh 8804:** Valley Report)

F-179. Carbonless copy paper was used in Georgia-Pacific's deinking operations, and bales of NCR paper were required in the formula for the de-inked and recycled pulp used for paper making. (**Deposition:** Hanson at 27-30.)

F-180. In 1954, a primary treatment clarifier was installed at the Georgia-Pacific Mill, which discharged waste water to the Kalamazoo River for 10 years until 1964. After this time, the effluent from Georgia Pacific's clarifier was sent to the Kalamazoo Waste Water Treatment Plant. (**Trial Exh. 8715:** BBL Tech. Memo 15, Mill Investigation, at 1-1 and 1-2.)

F-181. During most of the 1950's, Georgia-Pacific's paper residuals were pumped from the clarifier to adjacent sludge de-watering lagoons located along the River. In the late 1950's, the King Highway de-watering lagoons were constructed on the opposite side of the Kalamazoo River and paper sludge, at two to four percent solids, was pumped across the river via pipeline for de-watering in the unlined lagoons. (**Trial Exh. 8715:** BBL Tech. Memo 15, Mill Investigation, at 1-1 and 1-2.)

F-182. Paper sludge was periodically excavated from the de-watering lagoons and disposed of at the Willow Boulevard landfill until 1975, when the landfill reached capacity. From 1975 to 1987, the paper sludge was disposed of at the landfill known as the Willow Boulevard/A-Site (an area formerly operated by Allied as de-watering lagoons). After this time, sludges were disposed of at the King Highway Landfill, a landfill created over the top of the old Georgia-Pacific de-watering lagoons. (**Trial Exh. 8715:** BBL Tech. Memo 15, Mill Investigation, at 1-1 and 1-2.)

F-183. The Willow Boulevard/A-Site is a landfill owned and formerly operated by Georgia-Pacific located on the banks of the Kalamazoo River. The A-Site was previously a series of sludge dewatering lagoons used by Allied's King Mill before being covered over by Georgia- Pacific's paper residuals. There is no visible berm or storm water collection system at the Willow Boulevard Landfill. PCB-contaminated paper residuals have been identified in areas throughout the landfill and are present in the Kalamazoo River adjacent to the Landfill. PCB-contaminated paper residuals are present along the east and west banks of Davis Creek, which forms the boundary on the east side of the A-Site. Davis Creek flows into the Kalamazoo River. Another intermittent stream containing paper residuals bisects the Willow Boulevard Site from the A-Site and ultimately flows into the Kalamazoo River. (**Trial Exh. 8738:** BBL Tech. Memo 9, Willow Boulevard/A-Site Operable Unit. **Deposition:** Cornelius at 26-29, 102-114.)

F-184. The King Highway Landfill, located along the Kalamazoo River, is owned and operated by Georgia-Pacific. Underlying this landfill are sludge dewatering lagoons formerly utilized by Georgia-Pacific in earlier years. PCB-contaminated sludges have been identified in areas throughout the landfill. PCB-contaminated paper residuals are located in the King

Highway storm sewer on the west boundary of the landfill, and extend into the Kalamazoo River. Evidence indicates that these PCB-contaminated residuals in the river originated from Allied's King Mill which utilized the storm sewer for its waste water discharges. (**Trial Exh. 8715:** BBL Tech. Memo 15, Mill Investigation, at 2-5. **Trial Exh. 8725:** BBL Tech. Memo 6, King Highway Landfill Operable Unit, at 29 through 31, Table 3-9.) Over 1000 cubic yards of PCB-contaminated paper residuals were located in the Kalamazoo River in the vicinity of the King Highway storm sewer until being excavated recently. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 129-30**.)

F-185. In 1996, an investigation of the presence of PCBs was conducted at the Georgia-Pacific Mill. PCB concentrations up to 110 ppm were detected in the former lagoon areas next to the old Georgia-Pacific clarifier. The Aroclors detected in these paper residuals included 1016, 1242, 1248, 1254 and 1260. PCBs were also detected in sediment from Georgia-Pacific's storm water drainage system, which discharges to the Kalamazoo River. PCBs were also detected in a remnant of waste water from the old Georgia-Pacific clarifier. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 133. Trial Exh. 8715:** BBL Tech. Memo 15, Mill Investigations, at 3-1 and 3-2.)

F-186. The average concentration of PCBs in paper residuals located on the surface of the Willow Boulevard Landfill was 88 ppm. The maximum concentration was 270 ppm. (**Trial Exh. 8738:** BBL Tech. Memo 9, Willow Boulevard/A-Site Operable Unit, at 24.)

F-187. The average concentration of PCBs in subsurface samples at the A-Site was 55 ppm with a maximum of 330 ppm. (**Trial Exh. 8738:** BBL Tech. Memo 9, Willow Blvd/A-Site Operable Unit, at 24.)

F-188. PCB-contaminated paper residuals are present in the Kalamazoo River adjacent to the Willow Boulevard Landfill. (**Deposition:** Cornelius at 26, 103-104. **Testimony of Brown, Cross-Examination, Aug. 11, 1998.**)

F-189. Various Aroclors have been detected at the Willow Boulevard/A-Site including 1016, 1242, 1248, 1254, and 1260. (**Trial Exh. 8738:** BBL Tech. Memo 9, Willow Boulevard/A-Site Operable Unit, Table 3-11. **Testimony of Brown, Cross-Examination, Aug. 11, 1998**.) The King Highway landfill contains Aroclors 1254 and 1260, as well. (**Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 130-31.**)

F-190. The maximum PCB concentration in paper residuals present in the River adjacent to the Willow Boulevard Landfill is 44 ppm with an average of 11 ppm. (**Trial Exh. 8738:** BBL Tech. Memo 9, Willow Boulevard/A-Site Operable Unit, at 25. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 126.**)

F-191. There is no stormwater berm at Willow Boulevard landfill, and therefore PCB-contaminated residuals in the landfill are a continuing source of PCBs to the Kalamazoo River as evidenced by 1900 cubic yards of paper waste located in the River adjacent to the landfill. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 126, 127-28. Deposition:** Cornelius at 26. **Trial Exh. 8738:** BBL Tech. Memo 9 at 25, 39.)

F-192. Georgia-Pacific produced no effluent PCB data while deinking occurred and while effluent was discharged to the Kalamazoo River. However, the presence of PCBs in residuals in the Willow Boulevard Landfill (which received PCB-contaminated residuals during the time period when Georgia-Pacific discharged clarifier effluent to the Kalamazoo River) gives rise to the reasonable inference that PCBs were present in that effluent to the River. (**Testimony**

of Barrick, Aug. 13, 1998.) In addition. Georgia-Pacific has admitted discharging PCBs from its Kalamazoo Mill. (**Admission:** Plaintiff KRSG's Responses to Eaton and Rockwell's First Set of Requests for Admissions Directed to Plaintiff, dated June 3, 1997, Response 5.)

D. Simpson-Plainwell Paper Company

F-193. Simpson-Plainwell Paper mill practiced deinking from 1910 through 1962 at its Plainwell, Michigan, mill. During this time period and afterward, Simpson's clarifier effluent was discharged to the Kalamazoo River. (**Trial Exh. 8715:** BBL Tech. Memo No. 15, p. 1-2. **Admission:** Pltf's Response to Rockwell Facts, ¶8, set out in Attachment B to these Revised Findings.)

F-194. Various types of waste paper were recycled at the Simpson mill, including office paper. One employee conducted an internal inquiry into the use of NCR paper after the MDNR began its investigation of PCB contamination in the river. He concluded that substantial amounts of NCR paper were recycled at the mill. (**Deposition:** Lawton at 72-75.)

F-195. Deinking was conducted by Simpson on a large scale. A document summarizing waste disposal practices through 1960 refers to a range of deinking volumes of 300 to 900 tons per month with suspended solids discharges to the river averaging 14,000 to 34,000 pounds per day. (**Trial Exh. 8600:** Report on waste disposal, 1947 to 1960.)

F-196. No effluent tests for PCBs exist from the time period when deinking occurred at Simpson; however, a 1973 MDNR Industrial Waste Water Survey detected .13 ppb PCBs in the Simpson clarifier's effluent discharge to the River. This detection of PCBs occurred 10 years

after deinking operations ceased at the facility. (**Trial Exh. 8602:** 1973 Wastewater Survey at p. KS 01400001.)

F-197. Annual waste water reporting forms filled out by Simpson for the Michigan Water Resources Commission during the 1970's, which reflect estimates of discharges of critical materials from Simpson's outfalls to the Kalamazoo River, indicate annual discharges of PCBs ranging from less than 11 pounds to between 11 and 100 pounds. (**Trial Exhs. 8617 & 8619:** WRC Wastewater Outfall Reports.)

F-198. From the early 1950's through the early 1980's, Simpson used the 12th Street Landfill, located adjacent to the Plainwell Dam on the Kalamazoo River, for disposal of its paper residuals. The fill material was deposited down a hillside into a natural depression which immediately adjoined the River and a swampy area. As a result, paper residuals are currently present in the swampy area, in the floodplain of the River and in the River itself. (**Trial Exh. 8616:** MDEQ July 1997, Proposed Plan Fact Sheet, 12th Street Landfill.)

F-199. PCBs have been detected in paper residuals located in areas throughout the Twelfth Street Landfill. No consistent berm or storm water collection system existed at the landfill. At some point a berm was constructed around the perimeter of the fill area of the 12th Street Landfill. The berm is constructed of paper residuals along with sand and gravel. Some PCB-contaminated sludges have been identified on the outside of the berm, on the banks of the Kalamazoo River and into the wetland area adjacent to the landfill. (**Deposition:** Cornelius at 30-33, 119-128. **Deposition:** Lawton at 63-72. **Trial Exh. 8611:** 1989 letter re PCB testing of landfill. **Trial Exh. 8615:** Geraghty & Miller Tech. Memo 8, 12th Street Landfill Operable Unit, at 3-12 to 3-13, 6-1 to 6-2, Table 3-8. **Trial Exh. 8616:** MDEQ, July 1997, Proposed Plan

Fact Sheet. 12th Street Landfill Operable. **Testimony of Brown, Cross-Examination, Aug. 11, 1998, at 132.**)

F-200. The presence of PCBs in Simpson's paper residuals at the 12th Street Landfill gives rise to the reasonable inference that PCBs were also present in Simpson's clarifier effluent to the Kalamazoo River. (**Testimony of Barrick, Aug. 13, 1998.**)

VII. LIABILITY OF PLAINTIFF AND ITS MEMBER PAPER COMPANIES

L-22. There is ample evidence from which to conclude reasonably that significant and substantial quantities of PCBs were contributed by plaintiff's four member paper companies to the NPL Site, the Kalamazoo River and Portage Creek, and that those quantities are more than sufficient to justify imposing on plaintiff and its members the costs of response activities relating to the NPL Site, the River and the Creek.

L-23. Plaintiff and each of its members are liable to Eaton and Rockwell under Section 113 of CERCLA, 42 U.S.C. § 9613, for the PCB contamination of the River, the Creek, and the NPL Site.

L-24. Judgment shall be entered in accordance with Fed. R. Civ. P. 58 in favor of defendants Eaton Corporation and Rockwell International Corporation, and against plaintiff, on the counterclaims.

Respectfully submitted,

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Dated: August 27, 1998

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

Kalamazoo River Study Group,

Plaintiff,

v. Civil Action No. 1:95CV838

Rockwell International, et al., Hon. Robert Holmes Bell

Defendants.

_____/

PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW
SUBMITTED BY DEFENDANT EATON CORPORATION

Defendant Eaton Corporation, by its attorneys, Dykema Gossett PLLC, hereby submit Proposed Findings of Fact and Conclusions of Law.

These Findings and Conclusions are supported by:

-- **Trial testimony** (indicated by witness name, date of testimony and page number);

-- **Deposition testimony** (indicated by witness name and page numbers) located in Bench Books provided to the Court by the parties, containing designated excerpts of deponents;

-- **Trial exhibits** (indicated by Trial Exhibit number);

-- **Admissions** by plaintiff or its counsel (indicated by a reference to the specific pleadings and discovery documents). Frequently these admissions are contained in Plaintiff's Responses to certain undisputed facts offered by Eaton and Rockwell when defendants moved for summary judgment. The fact in question is contained in the List of Undisputed Facts accompanying the Brief in Support of Motion for Summary Judgment, filed by Eaton and Rockwell on February 2, 1998. Plaintiff's Responses are found in Exhibit A

to Plaintiff's Brief in Opposition to the Motions for Summary Judgment; plaintiff's briefs are dated March 4, 1998.

-- **Pleadings** by the parties, cited by title or date.

– **Stipulations** by the parties, cited by title or date.

-- **Uncontroverted Facts** to which the parties have stipulated. These are set out in the Joint Final Pretrial Order.

-- **Opinions** of this Court in this case (indicated by citation to KRSG v. Rockwell, et al., and date of opinion).

Proposed findings of fact are labeled as "F-1," "F-2," etc. Proposed conclusions of law are labeled as "L-1," "L-2," etc.

I. BACKGROUND

F-1. In its June 30, 1998 Opinion, the Court granted summary judgment on the issue of liability in favor of Eaton in connection with Eaton's Marshall and Kalamazoo facilities. The issue of Eaton's liability with regard to its Battle Creek facility was tried to the bench from August 10, 1998 to August 17, 1998. Following that trial, the Court entered judgment in favor of Eaton. KRSG appealed these decisions to the Sixth Circuit, which reversed, and remanded for a new trial on the issue of liability for all three Eaton facilities, using the standard for CERCLA liability enunciated in the Sixth Circuit's Opinion of October 5, 2000.

F-2. This Court held a bench trial on January 17, 18 and 19, 2001. The Court has considered opening statements of counsel, written closing arguments of counsel, proposed Findings and Conclusions from both parties, the testimony of witnesses at trial, documents and photos admitted as exhibits at trial, and deposition excerpts designated by the parties in the Joint Final Pretrial Order. Some of the evidence offered by the parties is direct evidence, some is circumstantial. The Court

has also considered what inferences can reasonably be drawn from the direct and circumstantial evidence, and has considered the demeanor and manner of the witnesses in assessing credibility of and weight to be accorded to the testimony of witnesses, including experts. These Findings and Conclusions are issued in accordance with Fed. R. Civ. P. 52(a).

F-3. Plaintiff is an unincorporated association of four paper companies: Allied Paper Inc. ("Allied"), Georgia-Pacific Corporation ("Georgia-Pacific"), James River Paper Company ("James River"), and Simpson-Plainwell Paper Company ("Simpson"). (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 3.)[1]

F-4. In 1990, the Michigan Department of Natural Resources (now the Michigan Department of Environmental Quality) ("MDNR" or "MDEQ") identified three paper mills -- Allied, Georgia-Pacific and Simpson -- as the principal sources of polychlorinated biphenyls ("PCBs") contaminating the NPL Site. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 4.)

F-5. Following the listing of the Site on the NPL, in December 1990, Allied, Georgia-Pacific, and Simpson entered into an Administrative Order by Consent (AOC) with MDNR to fund and conduct a Remedial Investigation/Feasibility Study of the NPL Site, including landfills and properties contiguous to the NPL Site. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 4.)

F-6. The landfills contained within the AOC Scope of Work were used to dispose of paper making residuals or "sludges" from the KRSG members' mills and some were also identified as potential sources of continuing PCB releases to the River. The landfill operable units that are part

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[1] KRSG has not appealed the findings by this Court concerning the liability of plaintiff's members. Therefore, for background matters concerning KRSG contributions to and responsibility at the Site, we cite to this Court's findings.

of the Site investigation ("OUs") include: (1) Allied Paper, Inc/Bryant Mill Pond (operated by Allied); (2) Willow Boulevard/A-Site (operated by Georgia-Pacific); (3) King Highway Landfill (operated by Georgia-Pacific); and (4) the 12th Street Landfill (operated by Simpson). (**Testimony of Brown,** Aug. 11, 1998, 112-43.)

F-7. Although not a party to the AOC, James River has agreed to participate in the conducting and funding of the Remedial Investigation/Feasibility Study process. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 4.)

F-8. The four members of the KRSG allocate costs among themselves for the investigation and remediation activities, 35 percent to Allied, 35 percent to Georgia-Pacific, 15 percent to Plainwell and 15 percent to James River. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 9.)

F-9. Plaintiff KRSG filed this action in December 1995, seeking to recover its response costs from eight corporations, including Eaton, alleging that the defendants contributed to the PCB contamination of the NPL Site. Plaintiff's claims are based upon CERCLA, 42 U.S.C. § 9601 et. seq., (specifically upon Sections 107 and 113), the Michigan Natural Resources and Environmental Protection Act ("NREPA"), M.C.L.A. § 324.20101 et seq., and various common law theories. (**Pleading:** Restated First Amended Complaint. (**Opinion:** KRSG v. Rockwell, et al., Mar. 6, 1998, at 3.)

F-10. Plaintiff has voluntarily dismissed its claims against one defendant (Hercules), has settled with two others (Menasha and Rock-Tenn), and the Court has granted summary judgment in favor of two others (Upjohn and Benteler). Following a trial in November 1999 on the issue of Rockwell's allocation, the Court determined Rockwell's fair share of response costs to be zero. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 3.) Eaton, for its Marshall, Battle Creek, and

Kalamazoo plants, remains as a Defendant, following the Sixth Circuit's reversal for a determination of liability.

F-11. Eaton and Rockwell filed counterclaims against plaintiff and its members, alleging that plaintiff's members are responsible for the PCB contamination under Section 113 of CERCLA, NREPA, and various common law theories. (**Pleading:** Counterclaim of Eaton, Sept. 26, 1996.) The issue of KRSG's liability in these counterclaims was also tried to the Court in the Phase I trial. The Court concluded that the "contributions of PCBs to the NPL Site by Allied, James River, Georgia-Pacific and Simpson, individually and together, are in nature, quantity and durability sufficient to require imposing the costs of response activities for the NPL Site upon each of those four parties." As a result of the Phase I trial, this Court entered judgment on the counterclaim in favor of Eaton and Rockwell and against the KRSG on liability. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 12.)

II. POLYCHLORINATED BIPHENYLS

F-12. This Court has already made extensive findings concerning polychlorinated biphenyls ("PCBs") in the United States. PCBs were originally produced in the United States in the late 1920s. They were manufactured almost exclusively by Monsanto Corporation and were marketed under the trade name "Aroclor." (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 11. KRSG v. Rockwell, et al., Mar. 6, 1998, at 2.)

F-13. PCBs were used in a variety of applications, including in dielectric fluids in capacitors and transformers, in hydraulic fluids, in cutting and soluble oils, and in quench oils. The Aroclors pertinent to this case are Aroclor 1242, 1248, 1254 and 1260. The last two numbers signifies the

percentage of chlorine within the mixture; the higher the number, the greater the molecular weight of the Aroclor. PCB Aroclor 1242 is predominantly associated with paper recycling operations, including the recycling operations undertaken by the paper mills operated by Plaintiff's members. Aroclor 1242 was used in carbonless copy paper products as an ink carrier or solvent from 1957 to 1971. Over 44 million pounds of PCBs were used for this purpose, accounting for 28 percent of the total estimated Monsanto sales for plasticizer applications and 6.3 per cent of Monsanto domestic sales of PCBs during 1957 to 1971. The average content of Aroclor 1242 in the carbonless copy paper was 3.4 percent. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 12..)

F-14. PCB Aroclor 1254 was used in several applications, including quench oils, hydraulic oils, and cutting oils. Aroclor 1254 was also used to a limited extent in printing inks beginning in 1968. The total usage in this application is estimated at 50,000 pounds. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 13.)

F-15. A number of authoritative studies have concluded that Aroclor 1254 is found in paper and paperboard products, including the types which were produced and recycled by plaintiff's members' mills. (**Testimony of Barrick**, Aug. 13, 1998. **Testimony of Brown**, Aug. 17, 1998, at 20-21.)

F-16. Testing of paper residuals in landfills and residuals operated by the Plaintiff's member paper companies confirms that each of these locations contains multiple detections of Aroclors 1254 and 1260 in addition to Aroclor 1242. (**Testimony of Brown,** Aug. 11, 1998, at 120, 128, 130-31, 132, 133-34.)

F-17. The chemical composition of a PCB compound can be measured and analyzed by gas chromatography (in a process called "Gas Chromatograph/ Electron Capture Detection" or

"GC/ECD"), which results in a computer-generated graph depicting the constituents and levels of constituents found in the PCB sample. GC/ECD graphs of PCB samples can be compared to determine whether two PCB samples are made up of the same or different Aroclors. The GC/ECD graph of a PCB sediment sample can be compared to the graphs of PCB "standards," controlled samples whose Aroclors are known, in order to identify the particular Aroclor in the sediment sample. (**Testimony of Barrick**, Aug. 13/14, 1998, 41-50.)

F-18. These depictions are referred to as "fingerprints." They represent the overall picture of Aroclor distributions and the relationship between Aroclors. (**Testimony of Barrick**, Nov. 10, 1999, at 47.)

F-19. Despite the ability to distinguish among Aroclors, the MDEQ regulates PCBs with regard to the total concentration of PCBs and does not, for example, regulate Aroclor 1242 any differently than Aroclor 1254 or any other PCB Aroclor or congener. (**Opinion:** KRSG v. Rockwell, et al., June 3, 2000, at 43-44.) (**Testimony of Barrick**, Nov. 10, 1999, at 87-88.)

F-20. Both Aroclors 1242 and 1254 contain a number of the most toxic congeners and, therefore, are not regulated differently by regulatory agencies. (**Testimony of Barrick**, Nov. 10, 1999, at 87-88.)

F-21. In 1972, mineral oil, a substitute for PCBs in low temperature applications, cost about five times less than PCBs. (**Testimony of Brown**, Aug. 11, 1998, at 165-67; **Testimony of Wharton**, Jan 18, 2001 at 385).

F-22. The experts agree that if a source of PCBs is present, PCB concentrations are higher in those waters containing a higher percentage of solids because of the tendency of PCBs to attach to solids. (**Testimony of Connolly**, Aug. 14, 1998. **Testimony of Brown**, Aug. 10, 1998, at 77-79.)

F-23. PCBs in oil will stay with the oils when they meet water. They are most similar chemically to the oil, and have only a very low solubility in water. PCBs will preferentially adhere to soils and are generally not transportable in groundwater. (**Testimony of Barrick**, Nov. 10, 1999, at 98-99.)

F-24. The higher the concentration of PCBs in oil, the heavier the oil, and the more likely the oil will not float a great distance and allow the PCBs to be transported a great distance. (**Testimony of Barrick**, Nov. 10, 1999, at 27-28.)

III. THE RIVER

F-25. Upstream of the confluence of Portage Creek and the Kalamazoo River is a body of water called "Morrow Lake" or "Morrow Pond." Morrow Lake is not within the NPL Site as defined by Plaintiff's Restated First Amended Complaint, but is within the area that Plaintiff is required by the AOC to study. The cities of Marshall and Battle Creek are located upstream of Morrow Lake. (**Trial Exh. 8910 and 6306:** Map of River and Facility Locations.)

F-26. The Marshall plant is farthest upstream, 30 miles above the Superfund Site. Fifteen miles downstream from Marshall is the Battle Creek plant. The Kalamazoo plant is the farthest downstream of the three. The Kalamazoo and Battle Creek plants are both one-half mile from the River, and Eaton's Marshall plant is located one-quarter mile away from the River bank.

F-27. Plaintiff's expert, Dr. Mark Brown of Blasland, Bouck & Lee, estimated that 25 percent of the Kalamazoo River watershed (by water volume) is upstream of Battle Creek. This means that, to the extent PCBs were contributed by upstream sources and not deposited in sediments,

those PCBs could be found in the River downstream of Battle Creek. (**Testimony of Brown**, Aug. 10, 1998, at 80-81.)

F-28. Plaintiff did not investigate all industries upstream of Eaton's plants that may have discharged to the River. (**Testimony of Brown**, Aug. 11, 1998, at 98-99.)

IV. MARSHALL PLANT

F-29. Eaton's Torque Control Division is located in Marshall, Michigan, approximately one-quarter mile from the Kalamazoo River. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 10-11.)

F-30. The Eaton Marshall plant is approximately 30 miles upstream of the upstream-most part of the Site and is not within the Site as described in Plaintiff's Restated First Amended Complaint. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 10-11.)

F-31. The Marshall facility machines, grinds, heat-treats and assembles components for the transportation industry. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11.)

A. What the Testing at Marshall Shows.

F-32. Wastewater from the Marshall plant was sampled and tested for PCBs by the MDNR in 1973, and no detectable levels of PCBs were found. (**Trial Exh. 6105**.)

F-33. Wastewater from the Marshall plant was sampled and tested for PCBs by the MDNR in 1980, and no detectable levels of PCBs were found at one of the two outfalls from the plant. (**Trial Exh. 6101**.)

F-34. The only sample of water or soil in which PCBs were ever detected at the Marshall plant was a single reading of 0.82 ppb total PCBs in 1980, from one of the two Eaton outfalls. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11. **Trial Exh. 6101**.)

F-35. The 1980 detection of PCBs from the Marshall plant could never be repeated, despite additional sampling. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11.) Wastewater from the Marshall plant was sampled and tested for PCBs by ERG Labs in 1981, and no detectable levels of PCBs were found. (**Trial Exh. 6102:** ERG Lab Report.) Wastewater from the Marshall plant was sampled and tested for PCBs by the MDNR in 1983, and no detectable levels of PCBs were found. (**Trial Exh. 6106 & 6107**.)

F-36. Plaintiff's expert has testified that single results, inconsistent with a greater pattern, should not be credited:

> "[Y]ou're looking for a pattern of many peaks rather than just one single peak where you might kid yourself, you know, or fool yourself. You use two columns. You typically – I say two columns, you use sort of two independent methods of analysis known as chromatography, and you look at the peaks on both columns to convince yourself that indeed PCBs are there. So the detection is typically, you know, good confirmation that in fact PCBs were in the discharge."

(**Testimony of Brown,** Jan. 17, 2001, at 165-66.)

F-37. Other than the one 1980 sample, no PCBs were found in wastewater tested in 1973, 1980, 1981 and 1983. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11.)

F-38. The single finding from the Marshall effluent, unable to be replicated and inconsistent with all other testing, is not scientifically reliable and is not credible.

B. Process Oils at Marshall.

F-39. An inventory of incoming products at the Marshall plant, conducted in 1981, found none containing PCBs. (**Trial Exh. 6103**.)

F-40. As a result of the inventory and his conclusion that the Marshall plant did not use PCBs, an official of the Michigan Department of Natural Resources agreed that no further PCB monitoring was necessary at the Marshall plant. (**Trial Exh. 6104**.)

F-41. Quench oil, hydraulic oil and waste oil at the Marshall plant was later tested by the MDNR in 1985, and no detectable levels of PCBs were found. (**Trial Exh. 6108. Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11.)

F-42. Former MDNR Engineer, Thomas Newell's opinion that the PCBs in the Marshall Plant's effluent likely came from PCB-containing process oils was based on his inaccurate assumption that Eaton had a die casting operation. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 18.) (**Deposition**: Newell at 45.) Eaton did not conduct die casting operations at its Marshall facility. (**Testimony of Brown,** Jan. 17, 2001, at 169.)

C. Electrical Equipment at Marshall.

F-43. Eaton does not dispute that its electrical equipment used PCB-containing oils at the Marshall plant.

F-44. There are no reports of any leaks at the Marshall plant from transformers or capacitors.

F-45. As of 1977, all capacitors had trays installed under them to catch leaks and drips, whether the capacitor was near a drain or not. (**Deposition:** Swalwell dep. at 112-113.)

F-46. In 1985, the Marshall plant was inspected by the MDNR and no leaking transformers were found. An outside contractor also inspected the electrical equipment and noted no leaks or poor conditions. (**Trial Exh. 6108.**)

F-47. There is no evidence that any transformer or capacitor oil traveled from the Marshall plant to the Kalamazoo River - - even if a leak had occurred. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 15.)

D. What the River Shows.

F-48. Riverbed sediments in impoundment areas downstream of the Eaton Marshall plant, where PCBs would be expected to be deposited, were sampled by the MDNR in 1976 and 1987. No PCBs were detected. (**Trial Exh. 6110. Trial Exh. 8808:** BBL "Description of the Current Situation," at pp. 4-76.)

F-49. Riverbed sediments immediately downstream of Marshall's discharge were sampled in 1993 by an outside environmental consultant (ASTI) hired by Eaton and no PCBS were detected. (**Testimony of Connolly,** Jan. 19, 2001 at 480. **Trial Exh. 6111.**)

F-50. KRSG has conducted no testing of River sediments downstream of the Marshall plant and upstream of Morrow Lake. (**Testimony of Connolly,** Jan. 19, 2001 at 481.)

F-51. Sampling of river sediments and settleable solids for almost 20 miles downstream of Marshall are free of PCBs; the first detection was approximately two miles downstream from a municipal wastewater treatment plant located in Battle Creek. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 11. **Trial Exh. 6110.**)

F-52. The historical and more recent water column samples, surface water samples and fish tissue data testified to by Eaton's expert John Connolly (and detailed in these Findings in the section

concerning the Eaton Battle Creek facility) also support the conclusion that detectable sources of PCBs have not reached the Kalamazoo River from the Marshall plant. (**Testimony of Connolly,** Jan. 19, 2001, at 454-458.)

V. BATTLE CREEK PLANT

F-53. The Court's December 7, 1998 Opinion following the August 10-17, 1998 bench trial set forth this Court's Findings of Fact related to Eaton's Battle Creek facility. The Court's specific Findings of Fact, reafirmed here, are listed below, with reference to where such findings are found in the Opinion.

F-54. Eaton's former Valve Division plant was located at 463 North 20th Street, Battle Creek, approximately one-half mile from the Kalamazoo River. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 15. **Uncontroverted Facts** ¶ 19 to Joint Final Pretrial Order, August 12, 1998.)

F-55. Eaton's Battle Creek plant manufactured internal combustion engine valves and gears at the Battle Creek plant from the 1940's until 1983 when operations ceased. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 15.)

F-56. The former Eaton Battle Creek plant was located approximately one mile upstream of the Battle Creek Wastewater Treatment Plant (WWTP). (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 25. **Uncontroverted Facts** ¶ 25 to Joint Final Pretrial Order, August 12, 1998.)

F-57. The Eaton Battle Creek plant structure no longer exists on the property; it was demolished after Eaton ceased operations there in 1983. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 17. **Uncontroverted Facts** ¶ 26 to Joint Final Pretrial Order, August 12, 1998.)

F-58. Eaton does not dispute that some of its electrical equipment contained PCB-containing oil; however Plaintiff presented no evidence indicating that any PCB-containing oils from electrical equipment made their way into the Kalamazoo River from the Battle Creek plant. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 19.)

F-59. There is no testing of soils or groundwater indicating the presence of PCBs in these media on the Eaton Battle Creek property.

A. The Wood Block Floor.

F-60. In 1983, after plant operations had ceased, the plant was scheduled for demolition. Howard Laboratories tested the wood block floor of the plant for PCBs by taking limited samples around the plant. Varying levels of PCBs were detected in the samples, but only 20% of the blocks contained PCBs at levels requiring disposal as PCB-contaminated material. (**Depositions:** Heindrichs at 287, 293-94; Howard at 53-55, 75-77.)

F-61. Eaton disposed of the entire floor as though it were required to be sent to a special PCB landfill, even though not all blocks sampled required such treatment under waste disposal regulations (**Admission:** Pltf's Response to Eaton Facts, ¶65), and even though most areas of the plant were not sampled.

F-62. After reviewing the evidence related to Howard Laboratories' testing, the Court determined that the PCB contamination of wood floor blocks indicated contamination from leaking capacitors, transformers and hydraulic oils containing Aroclor 1248. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 19.)

Out of the approximately 2,865,000 blocks on the floor, 51 blocks were tested by Howard Laboratories. (**Testimony of Brown**, Aug. 11, 1998, at 196-97.) Seventeen of the 30 blocks

sampled came from so-called "background" areas; the remaining 34 and five others were "biased" samples taken from near transformers or capacitors that were thought to have contained PCBs. There was no attempt to select blocks randomly. (**Testimony of Brown**, Aug. 11, 1998, at 197-201. **Depositions:** Heindrichs at 293-94 (directed that samples be taken from areas where capacitors were mounted overhead, and in other areas as well); Howard at 51 (may have been directed by Eaton employees to sample certain areas). **Trial Exh. 8930**: wood block analytical data and notations concerning sampling locations.) This limited testing is neither representative of the floor as a whole nor probative of alleged PCB contamination of the rest of the floor. The wood block floor testing does not indicate use of PCBs in process oils at the plant.

F-63. With regard to the improbability of release of PCBs to the river from such sources, the Court stated: "If the PCBs used by Eaton were simply in the di-electric and hydraulic fluids, there is insufficient evidence that those PCBs also made their way to the river one-half mile away. Transformers and capacitors are closed systems. Although there is evidence that they leaked on occasion, it was not a regular occurrence, and the leaks would be soaked up by the floor or swept up with the floor dry. Hydraulic operations are nominally closed operations. Although hydraulic fluid would leak and would have to be replenished, the testimony of Eaton employees indicates that the hydraulic machines leaked into drip pans that were not connected to the sewers. Hydraulic oil spilled when machines were cleaned and one employee recalled an instance where a hydraulic line completely ruptured. There is no evidence, however, that hydraulic oils were routinely flushed from the hydraulic equipment into the drains. The testimony is that hydraulic oils that spilled onto the floor were either absorbed into the wood block floors or were absorbed with a dry absorbent, swept

up and discarded with the non-liquid wastes rather than with the waste water." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 19-20.)

B. The Detection of PCBs in Joint Outfalls.

F-64. The outfall from the Battle Creek plant to the Kalamazoo River was shared to an unknown extent with Clark Equipment Company, which was located on adjacent property. MDNR records identify the location of the outfall as "Clark Equipment Company Battle Creek and Eton [sic] Valve Company Battle Creek." (**Trial Exh. 2027:** MDNR List of Industrial Effluents.)

F-65. In February 1972, MDNR collected a wastewater sample from the joint outfall shared with Clark Equipment Company and the municipal sewers. That sample detected 1.4 ppb (expressed in the MDNR report as 1400 parts per trillion) Aroclor 1254. (**Trial Exh. 2027:** MDNR List of Industrial Effluents. **Opening Statement of Plaintiff,** Aug. 10, 1998.) Plaintiff's expert, Dr. Brown, concedes that the sample was taken at a point downstream of the Clark and Eaton discharge points (**Testimony of Brown,** Aug. 10, 1998, at 39, lines 18-23), thus indicating that the effluent cannot be attributed to Eaton as opposed to Clark. With regard to this sample, the Court determined: "Because the sample was taken from a joint outfall, it is impossible to attribute the PCB detection to Eaton as opposed to Clark Equipment Company." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 22.) This sample was collected at a weir which is located nearly one-third of a mile from the Kalamazoo River. (**Trial Exh. 2027. Testimony of McLaughlin**, Jan.18, 2001, at 281-282, 285, 316.) Even if the PCBs in the sample could be attributed to Eaton as opposed to Clark, Plaintiffs presented no evidence that the storm sewer's discharge to the river would have contained PCBs because any PCBs in the storm sewer wastewater would have preferentially adhered to soils

along the 1500-1600 foot route through the ditch prior to discharge. (See generally **Testimony of Barrick,** Jan. 19, 2001, at 500-509.)

F-66. In September 1972, the MDNR tested the wastewater from the Battle Creek facility's storm sewer and measured PCBs at 0.24 ppb and 0.12 ppb in two separate composite samplings. (**Uncontroverted Facts,** ¶ 23, to Joint Final Pretrial Order, Aug. 12, 1998. **Trial Exh. 2028:** 1972 Wastewater Survey Report at pages 00006467, 6471.) With regard to these samples, the Court determined: "Because the storm sewer lines did not originate at Eaton and served areas outside of the plant, these test results were also inconclusive regarding the presence of PCBs in Eaton's effluent. This test is also somewhat suspect because the results were at the limit of detectability." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 22-23. **See Testimony of Connolly, Aug. 14, 1998. See Testimony of Brown,** Aug. 11, 1998, at 187.) These samples were also taken at the weir located nearly one-third of a mile from the outfall to the Kalamazoo River. (**Trial Exh. 2027. Testimony of McLaughlin,** Jan. 18, 2001, at 281-282, 285, 316.)

F-67. With regard to 1980 testing of Eaton Battle Creek's effluent, the Court determined: "In 1980 MDNR conducted a survey for a 24 hour period. The results showed no traces of PCB. The detection limit was .1 ppb. Exh. 6011. As a result of this test, the MDNR stopped testing Eaton's effluent for PCBs as a requirement for the NPDES permit." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 23.)

F-68 At the January 2001 trial, plaintiff presented testimony suggesting that the majority of the Clark Equipment Company property was serviced by a different sewer, referred to at trial as "the yellow line." Plaintiff sought to prove that the "red line" used by Eaton had no other industrial

contributors, thus limiting to one the possible sources for the low levels of PCBs detected in February and September 1972. However, a witness presented by plaintiff, Mr. Mattson, who is the Director of Public Works for the City of Springfield, Michigan, testified that Clark's Research and Development building (Buildings 11 and 12) straddled the "red line" and he confirmed that Clark manufactured forklift trucks, hydraulically operated machinery. (**Testimony of Mattson**, Jan. 17, 2001, at 57-59.)

F-69. Although it may be possible that nothing was discharged from Clark to the joint outfall or to the storm sewer, the evidence at trial does not permit the conclusion that Eaton was the only source of waste to the outfall and sewer.

C. Oils Used in the Battle Creek Plant.

F-70. With regard to Eaton Battle Creek's process oils, the Court noted that: "Former employees at Eaton's Battle Creek facility recalled a number of oils that had been purchased by the plant over the years, but none of the employees recalled any purchases of oils containing PCBs." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 17.) The parties have stipulated that certain Monsanto records show that in 1970-1971 the Battle Creek facility purchased 2,585 pounds of Pydraul A200 oil, an hydraulic oil which is composed solely of PCBs. (**Stipulation,** Jan. 5, 2001.) That amount (2,585 pounds) represents four drums of oil. (**Testimony of Wharton,** Jan. 18, 2001, at 395.) There was no evidence presented as to how, or whether, that hydraulic oil was used and disposed of at the Battle Creek plant.

F-71. Eaton has no records of having purchased any oils from Monsanto, the exclusive manufacturer of PCBs. There is no testimony from any Eaton employee indicating that process or hydraulic oils were purchased from Monsanto. (**Testimony of Brown,** Aug. 11, 1998, at 169.) The

few witnesses who were asked expressly about Monsanto products testified that they recalled seeing no fluids from Monsanto at the plant. (**Depositions:** See, e.g., Wolf at 46; Roosevelt Jones at 187; Romick at 6-7, 17-19.) The Stockroom Supervisor at Battle Creek, William Romick, testified that in the 16 to 18 years that he served in that capacity (1965 or so to 1983), Eaton did not purchase oils from Monsanto, and did not purchase Pydraul hydraulic oil. (**Deposition:** Romick at 6-7, 17-19.) Mr. Romick's tenure included the time period during which certain Monsanto records reflect limited purchases of hydraulic oil from Monsanto.

F-72. Eaton personnel testified, and Eaton records indicate, that the oils used at the plant were supplied by Shell, Arco, Texaco, Mobil, Amoco and Standard. (**Trial Exh. 2047 / 6007:** 1979 Pollution Incident Prevention Plan. **Depositions:** Roosevelt Jones at 59, 163-64; Romick at 17, 28, 37, 38, 40, 41.) Plaintiff has not presented any evidence to suggest that oils from any of these suppliers contained PCBs at any time.

F-73. In 1981, Versar inspected the Battle Creek plant. Versar sampled cutting, quench and hydraulic oil in the plant and found no detectable levels of PCBs in the oils sampled. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 20. **Trial Exh. 2059:** 1981 Versar Inspection Report. **Testimony of Brown,** Aug. 11, 1998, at 177.)

F-74. In 1981, Versar tested a sample of the grinding swarf at the Battle Creek plant, and detected 7 ppm PCB of unspecified Aroclor in the swarf. (**Trial Exh. 2059:** 1981 Versar Inspection Report.)

F-75. Versar's testing of the coolants used by Eaton in the grinding process, and of the quench oils, found no PCBs, and thus eliminated the cutting, grinding and quench oils as the source of PCBs in the swarf. (**Trial Exh. 2059:** 1981 Versar Inspection Report.) Unlike hydraulic

systems, which are closed, quenching is an open system that can release oils to the plant. (**Testimony of Wharton**, Jan. 18, 2001, at 367-368, 386-387.)

F-76. With regard to the detection of PCBs in the grinding swarf, the Court did not determine that this was evidence of PCBs in cutting oils used at Eaton or that would indicate a source of PCBs to the river: "Because Versar did not find PCBs in the process oils, Eaton personnel, after investigating, concluded that the PCBs in the grinding swarf were most likely attributable to floor scrapings from the floor scarifier being mixed with the grinding swarf." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 21. **Deposition:** Heindrichs at 277-279.)

F-77. With regard to Eaton's process oils, the Court stated: "In order to show that Eaton released PCBs to the Site in any measurable quantity, plaintiff would have to show that the PCBs were found in oils used in open systems, such as the quenching, or cutting operations." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 21.) Plaintiff provided no evidence, either direct or circumstantial, to indicate that PCBs were present in such oils. (**Id. 17-22.**)

F-78. The majority of the coolants used at the Battle Creek facility were water soluble coolants. (**Depositions:** Wolf at 22; Raiche at 71.) By the late 1970s, Eaton was using more than twice as much water soluble oil than straight oil at the Battle Creek plant. (**Deposition:** Raiche at 71.)

F-79. Water soluble oils are incompatible with PCBs because PCBs do not readily mix with water. Thus, one would not expect water soluble oil to contain PCBs. (**Testimony of Brown,** Aug. 11, 1998, at 161-63. **Testimony of Crumrine,** Aug. 13, 1998). There is a basic incompatibility between water-soluble oils and PCBs. (**Testimony of Brown,** Aug. 11, 1998, 162-163.)

E. The Sampling Conducted by Plaintiffs' Expert Fails to Prove that PCBs from Eaton Were Discharged to the River.

F-80. Plaintiffs' expert, Mr. McLaughlin, sampled sediments for PCBs in the drainage ditch leading from the Eaton Battle Creek and Clark Equipment Company facilities. These samples, B-1, B-2, and B-3, all were located within approximately 100 feet from each other, contained 12 ppm, 7.1 ppm and 18.8 ppm PCB respectively. These samples were all taken from a public right of way, to which anyone had access. The area also was subject to runoff from the nearby railroad tracks and Lafayette Avenue. Mr. McLaughlin could not tell with certainty when the PCBs were deposited in the culvert, and the Aroclors detected are commonly associated with dielectric fluids. These samples are inconsequential for a number of reasons. (**Testimony of McLaughlin,** Jan. 18, 2001, at 307-310.) All three samples are located 1500 or 1600 feet (or approximately one-third mile) from the Kalamazoo River. (**Testimony of McLaughlin,** Jan. 18, 2001 at 316.)

F-81. Mr. McLaughlin did not sample any portion of the ditch between sample B-3 and the Kalamazoo River, which is 1500 to 1600 feet away. (**Testimony of McLaughlin,** Jan. 18, 2001 at 285, 316-317.)

F-82. Even assuming for the sake of argument that the PCBs in samples B-1, B-2, and B-3 originated from Eaton, Plaintiffs have failed to provide evidence that any such PCBs were actually transported to the Kalamazoo River due to the significant distance (one-third mile) between sample B-3 and the river. The lack of evidence of PCBs in the river sediments immediately downstream of the ditch's discharge to the river confirms this fact.

F. What the River Shows.

F-83. The PCB testing in the River itself provides strong evidence that Eaton's Battle Creek plant did not discharge PCBs to the Kalamazoo River. In its December 7, 1998 Opinion, the Court stated: "Given the evidence that Eaton was discharging large quantities of cutting oils and quench oils into sewer lines which were discharged into the river, if those oils contained PCBs, those PCBs should be present in the ditch and the river. Plaintiff, however, has offered no substantial evidence that Eaton was responsible for discharging PCBs to the Kalamazoo River." (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 24.)

F-84. In 1976, MDNR sampled sediments downstream of the Battle Creek plant. MDNR detected no PCBs until Morrow Pond, almost 15 miles downstream of the Battle Creek plant. (**Trial Exh. 2036:** Wuycheck memo and attached 1976 sampling data, referred to as the "Wuycheck data." **Trial Exh. 8928:** Illustration River sampling data.)

F-85. Sediments downstream of the former Battle Creek plant, and downstream of the Battle Creek Wastewater Treatment Plant (WWTP), were sampled by the MDNR in 1988 in connection with reviewing the permit for the WWTP. At 10 of the 11 locations sampled, no PCBs were detected. The remaining sample resulted in a single detected value of 1 ppm, taken from a point upstream of the discharge point of the Battle Creek WWTP and downstream of Eaton's Battle Creek facility. (**Trial Exh. 6020:** 1990 MDNR Staff Report at 1. **Trial Exh. 8929:** Chart depicting relative PCB concentrations in the River.)

F-86. The 1976 Wuycheck data is useful and illuminating because it was taken close in time to the period of discharges allegedly containing PCBs. Moreover, typically PCBs will be found in fine grain sediments, in depositional areas, near their source, if indeed such a source exists. The

absence of sediment data linking PCBs in Morrow Lake to Eaton means that the Battle Creek plant did not discharge PCBs to the River. (**Trial Exh. 8928:** Chart depicting River sampling data. **Testimony of Connolly,** Aug. 14, 1998; Jan. 19, 2001, at 450-451, 457-458.) Dr. Connolly explained that the findings of PCBs in settleable solids are not comparable to a finding in sediment, and are not indicative of what is in the sediment. (**Testimony of Connolly,** Aug. 14, 1998.)

F-87. In the December 7, 1998 Opinion, the Court further stated:

> The discharge point from the Eaton plant to the Kalamazoo River was approximately 15 miles upstream from the most upstream boundary of the NPL Site, but still within the Site that plaintiff is required by the AOC to study. The experts are in agreement that PCBs in the water tend to settle out with the sediment in depositional areas. There are numerous depositional zones in the 15 miles between Eaton's Battle Creek facility and Morrow Lake. If PCBs had been released from Eaton they would have shown up in these depositional zones.
>
> KRSG has made no study of the storm sewer ditch to locate PCBs. KRSG has not sampled either sediments or settleable solids immediately adjacent to the discharge point from the Eaton sewer to the Kalamazoo River. In fact, KRSG has not taken any sediment samples in the entire 15 mile stretch of the river downstream of Eaton's Battle Creek plant. Instead, for that portion of the Kalamazoo River from Battle Creek to the Morrow Dam, plaintiff relies on a 1971 MDNR study, the 1976 Wuycheck study, and a 1988 MDNR study.

The Court determined that none of the studies relied upon by Plaintiff indicate a contribution of PCBs to the Site by the Eaton Battle Creek facility. The Court stated:

> The Court is struck by the lack of evidence regarding PCBs at or near the outfall of the drain from Eaton to the river. As the party with the burden of proof in this matter, the Court would have expected KRSG to have presented some evidence of river contamination close to the Eaton Battle Creek plant. . . . the oils that reached the river from Eaton appear to have been oils that did not contain PCBs. . . . there is insufficient evidence of a detectable or measurable discharge of PCBs from Eaton's Battle Creek plant into the Kalamazoo River to hold Eaton liable under CERCLA, the NREPA, or any of the common law theories plaintiff alleges.

(**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 28-31.)

F-88. This conclusion is confirmed by more data recently made available to the parties. The MDEQ collected water column samples from several locations in the Kalamazoo River in September and October 1999 as part of the long-term monitoring plan for the river. Water column samples were collected from each of two background locations: one at a bridge downstream of the Ceresco Dam (upstream of Eaton's Battle Creek and Marshall facilities) and one at the 35th Street Bridge located immediately upstream of Morrow Lake (downstream of Eaton's Battle Creek and Marshall facilities). The PCB levels measured at these locations were similar, and are similar to PCB levels measured in rain collected in the Great Lakes region during the late 1980s and 1990s. Moreover, the lack of a substantive increase in water column PCB concentrations between these sampling locations indicates that detectable sources of PCBs do not exist over this reach of the river. (**Testimony of Connolly,** Jan. 19, 2001 at 449-453, 457-458.)

F-89. In March 2000, the KRSG initiated a Surface Water Sampling Program to further evaluate PCBs in the Kalamazoo River. Sampling locations included one station located downstream of Eaton's Marshall and Battle Creek facilities. A total of 11 water column samples were collected from this station between March 2 and July 25, 2000. PCBs were not detected in any of the 11 samples collected during this survey. Water column samples were also collected at this location between April 21 and May 1, 2000 during a period of elevated flow in the river. PCBs were not detected in any of the 10 samples collected during this survey. (**Testimony of Connolly,** Jan. 19, 2001 at 454-455.)

F-90. Three fish sampling surveys were conducted in the Kalamazoo River by the KRSG in the years 1993, 1997 and 1999. PCB concentrations in fish tissue samples collected near Battle Creek in 1993 and 1997 are lower than fish tissue concentrations observed throughout the rest of the

Kalamazoo River and are in the range of levels measured in fish samples from sites with no known PCB sources other than the atmosphere. (**Testimony of Connolly,** Jan. 19, 2001 at 455-457.)

F-91. The water column and fish tissue data show that detectable PCB releases to the Kalamazoo River from potential upstream sources, including Eaton's Marshall and Battle Creek facilities, could not have occurred. Had either of the Eaton facilities contributed detectable quantities of PCBs to the river, some portion of those releases would have been retained in the river sediments and would have been identifiable in the sediment, water and biota sampling that has been conducted over the last twenty-five years. The low level PCB contamination that has been found in some samples is due most likely to atmospheric sources. (**Testimony of Connolly,** Jan. 19, 2001 at 457-458.)

F-92. KRSG has itself conducted no sampling of River sediments in the vicinity of Eaton's Battle Creek plant. (**Opinion:** **KRSG v. Rockwell, et al.,** Dec. 7, 1998, at 28-31. **Testimony of Connolly**, Jan. 19, 2001, at 481.)

VI. KALAMAZOO PLANT

F-93. The Eaton Corporation Transmission Division is located at 222 Mosel Avenue, Kalamazoo, Michigan. Eaton manufactured truck transmissions at the Kalamazoo facility from the mid-1950's until January 1984 when the plant was shut down. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 13.)

F-94. The plant was located approximately one-half mile from the Kalamazoo River. Waste water from the Kalamazoo plant was discharged into the Zantman Drain. The Zantman Drain is an open culvert draining upstream farmlands and is accessible to several industrial properties near Eaton. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 13. **Deposition:** Brown, Jan. 8, 1998

at 209-210.) Prior to 1974, when the Zantman Drain was relocated and cleared to allow flow to the River, in the portion of the Zantman Drain north of the Upjohn warehouse buildings to the River, water barely moved as a 2 or 3 inch "trickle" because the drain was overgrown with vegetation. Moreover, that portion of the drain located north of Mosel Avenue consisted of a marshy area with no distinguishable water course. Id. at 89. (**Testimony of Snell**, Jan. 17, 2001, at 83-85.)

A. Process Oils at Kalamazoo

F-95. No PCBs have ever been detected as a constituent of the process oils used at the Kalamazoo plant.

F-96. In 1970, Eaton provided to MDNR a list of trade names of hydraulic oils, lubricating oils, greases and other fluids used at the Kalamazoo plant. None of the trade names or suppliers identified in that list indicates that PCBs were a constituent of the oils used. (**Trial Exh. 6117:** Letter from Dahmer to MDNR)

F-97. Workers at the Kalamazoo plant performed machining and grinding of steel and iron. Those operations did not require anything other than conventional cutting and grinding fluids. (**Testimony of Wharton**, Jan. 18, 2001, at 366-369, 383.)

F-98. Nothing in the Eaton Kalamazoo plant's manufacturing processes required PCBs as an additive to the process oils or hydraulic oils used at the plant. (**Testimony of Wharton**, Jan. 18, 2001, at 382-385.)

F-99. PCBs made a poor additive to cutting fluids because the chlorine in the PCBs is not sufficiently free to assist in the cutting process. (**Testimony of Wharton**, Jan 18, 2001, at 383.)

F-100. PCBs were about five times more costly than petroleum based oils, on a price per gallon basis. (**Testimony of Wharton**, Jan. 18, 2001, at 385.)

F-101. When the Kalamazoo plant was sold in 1985, an environmental due diligence investigation was performed by an environmental consultant, GZA, retained by the purchaser. The only PCBs located at the Kalamazoo plant were those found in the wood block flooring. Eaton's expert, Dr. Lennard Wharton, has indicated that the PCBs in the flooring were localized in areas of the plant where PCB-containing electrical power distribution equipment had been located. There were no significant concentrations of PCBs in the vicinity of the quench baths or the machine tool areas where cutting fluids would have been used. (**Testimony of Wharton**, Jan. 18, 2001, at 370-374, 377-382, 385-388.)

F-102. With regard to the evidence regarding Eaton's process oils, the Court stated:

> "There is no testimony from anyone with personal knowledge that Eaton ever used PCB-containing oils in its processes. There is no evidence of any test results showing the presence of PCBs in the fluids used in the Eaton plant. There is no testimony that Eaton engaged in activities that required PCB additives. PCBs are most commonly found in the oils used in die casting operations. Eaton did not have a die casting operation. The evidence is uncontroverted that Eaton had no incentive for using PCBs in its process oils because the PCBs would have added unnecessary costs, without any corresponding benefit. In fact, there was a disincentive for using PCBs because they were poorer in performance than other cutting oils, had unpleasant odors, and were irritating to the skin."

(**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 15-16.) In light of the proofs at trial, these findings remain correct and compelling.

F-103. Wood block and concrete samples taken by the MDEQ in August 2000 inside the Eaton buildings are consistent with the patterns from samples taken in 1985, and similarly indicate that PCBs were not used in open systems. (**Testimony of Wharton,** Jan. 18, 2001, at 363-364.)

B. Kalamazoo Plant Testing

F-104. At the time of the Court's January 30, 1998 Opinion granting summary judgment to Eaton with regard to the Kalamazoo plant, there was no testing or sampling indicating detectable levels of PCBs anywhere along the Zantman Drain between the Eaton facility and the River. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 14.)

F-105. During two sampling events in 1973 and in 1976, the MDNR tested the Kalamazoo plant's waste water effluent for the presence of PCBs. No PCBs were detected in any waste water sample from the Kalamazoo facility. (**Trial Exh. 6113 & 6114:** 1973, 1976 MDNR reports. **Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 13.) There is no evidence in the record of any sample of water, soil or waste water effluent which has ever detected PCBs on Eaton's property at the Kalamazoo plant. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 13.)

F-106. The only feeder into the Zantman Drain from the Eaton Kalamazoo plant was the outlet of the DNR settling Pond. The south yard drains from the plant fed the settling pond. The effluent of the DNR settling pond was PCB-free from the outset, according to testing done on behalf of the Michigan DNR. (**Trial Exh. 6113 and 6114.**)

F-107. Soil cores sampled from the DNR pond were all non-detect for PCBs except one. That one sample shows the presence of Aroclor 1242 at a shallow depth. (**Testimony of Wharton**, Jan. 18, 2001, at 390-391; **Testimony of Barrick**, Jan. 19, 2001, at 492-493.) This is likely attributable to the fact that paper mill sludge was used as a liner for the pond, a lining method approved by the MDNR. (**Trial Exh. 6145:** letter from MDNR approving sludge liner.)

F-108. Prior to approximately 1973 when it was reconstructed, the Zantman drain was inoperative as a conduit to the Kalamazoo River: the drain was obstructed and waste water ponded

in a wetland area north of Mosel Avenue. (**Testimony of Snell**, Jan. 17, 2001, at 83-84, 88-89.) Mr. Snell, the engineer for the Kalamazoo County Drain Commission described the drain north of Mosel Avenue as follows:

> It was pretty obvious that the area between Mosel and the – to the north to that pipeline were pretty well grown over. There was just a big weed patch and marsh area in there, and the water had to filter through that. I suspect if we'd ever found the end of that pipe, it would have had a big mass of weeds in the end of it. So there wasn't a great deal of flow unless there was a head buildup on the downstream side.

(**Id. at p. 89.**)

F-109. After approximately 1973, any water-soluble oil discharges from Eaton's Kalamazoo facility flowed through a treatment system and then into a covered section of the Zantman Drain, which was reported to be "very clean" by inspectors. (**Trial Exh. 2202, 2203.**) Surface water runoff from outside the Eaton Facility had no effect on the Zantman Drain after this time, because the Drain was enclosed.

F-110. In August 2000, MDEQ sampled groundwater from under and around the Eaton Kalamazoo buildings. All were non-detect for PCBs. (**Testimony of Barrick,** Jan. 19, 2001, at 489-490.)

F-111. The general pattern of soil samples shows that PCB concentrations, when found above detectable limits, were generally not correlated from one place to another. Thus PCB concentrations did not equalize over these distances, typically 50 to 100 feet away from each other, over time. This demonstrates that PCBs did not move these distances through the soils, and thus did not move to the Kalamazoo River, 2000 feet away from these sample locations. (**Testimony of Wharton,** Jan. 18, 2001, at 388-394.)

F-112. Because of the stagnant nature of the flow in the Zantman Drain, if PCBs were present in Eaton's process oils and effluent, such PCBs would have been present in high concentrations throughout the drain due to preferential adherence to soils and vegetation in the ditch; these conditions were not found based on the limited sampling conducted by Plaintiffs. (**Testimony of Barrick,** Jan. 19, 2001, at 500-509.)

F-113. The low detections of Aroclors 1254 and 1260 in soil samples collected by Plaintiffs' expert, Mr. McLaughlin, from the Zantman Drain are of speculative origin. For example, Sample K-3 appears to have been collected in a section of the old Zantman Drain that would have received not only wastewater from Eaton, but also unknown waste from other upstream sources into the drain. Moreoever, that sample, K-3, was almost one-mile from the River. Sample K-4 contained no PCBs and was taken immediately north of Mosel Avenue at the point where the new Zantman Drain emerges from a culvert into an open ditch. (**Testimony of Barrick,** Jan. 19, 2001, at 504-505.) The detection of Aroclor 1260 is consistent with the use of dielectrics, and it did not match the PCBs found on the former Eaton property outside the plant. Most significantly, Mr. McLaughlin could not explain the absence of any PCBs detected by MDEQ in the chip storage area, where process oils would have drained off the metal chips into the soils. (**Testimony of McLaughlin,** Jan. 18, 2001, at 331-334.)

F-114. The types of processes (metal quench and cutting operations) that Plaintiffs claim are the source of PCBs from the Eaton Plant remained unchanged both before and after the opening of the new Zantman Drain; therefore, the absence of PCBs in sample K-4 – located in the channel of the new Zantman Drain – indicates that Eaton did not discharge PCBs from its Kalamazoo facility at any time. (**Testimony of Barrick,** Jan. 19, 2001, at 505-506.)

F-115. Contrary to Plaintiffs' assertions, PCBs could not be transported in floating oils through the Zantman Drain to the Kalamazoo River without leaving significant concentrations of PCBs in ditch sediments along the entire length of the drain; the PCB sampling conducted by Plaintiffs in the Zantman Drain did not reveal this type of pattern. (**Testimony of Barrick,** Jan. 19, 2001, at 500-509.)

F-116. Plaintiffs sampled only once any significant distance along the Zantman Drain north of Mosel Avenue to the River. That sample, K-4, was non-detect for PCBs. There is, therefore, no definitive evidence that Eaton's Kalamazoo facility discharged PCBs through the Zantman/Richardson Drain all the way to the Kalamazoo River. This conclusion is verified by the lack of evidence in the river sediments of any discharge of PCBs from the Zantman/Richardson Drain to the River. (**Testimony of Barrick,** Jan. 19, 2001, at 511.)

F-117. Because the highest concentrations of PCBs are found close to their source, if the Zantman drain had been a significant source of PCBs to the River, evidence of PCBs would still exist in nearby downstream river sediments. There is no such evidence. (**Testimony of Barrick,** Jan. 19, 2001, at 516-517.) By contract, a significant discharge of PCBs, including Aroclors 1254 and 1260, can be traced to the Fort James and Kalamazoo Water Reclamation Plant outfalls located upstream of the Zantman Drain. Thus, if a significant quantity of PCBs were released from the Zantman Drain, it would be detectable in the samples taken in that area of the River. (**Testimony of Barrick,** Jan. 19, 2001, at 516-520.)

F-118. Samples with high concentrations of Aroclors 1254 and 1260 exist upstream of the Zantman/Richardson Drain as well as downstream; therefore, there is no evidence that any detectable volume of PCBs was discharged from the Zantman/Richardson Drain. Moreover, one does not see

a distribution of Aroclors like that found in Mr. McLaughlin's sample K-3 elsewhere in samples from the River sediment. (**Testimony of Barrick,** Jan. 19, 2001, at 517-520.)

F-119. The characteristic PCB fingerprint in sediments of the Kalamazoo River is not changed in any way that would reflect an addition of PCBs showing the fingerprint of recent samples collected by Plaintiffs from the Zantman Drain. (**Testimony of Barrick,** Jan. 19, 2001, at 517-522.)

VII. NON-LIABILITY OF DEFENDANT EATON

L-1. In order to establish a prima facie case for cost recovery under CERCLA § 107a, plaintiff must establish that:

a. there was a release or threatened release of a hazardous substance;
b. the Site of the release of threatened release is a "facility" as defined in 42 U.S.C. § 9601(9);
c. the release or threatened release has caused the plaintiff to incur response costs; and
d. the defendant is an owner or operator of the facility from which there was a release, or is an arranger or transporter under CERCLA § 107(a).

42 U.S.C. § 9607(a). Centerior Serv. Co. v. Acme Scrap Iron & Metal Corp., 153 F.3d 344, 347-48 (6th Cir. 1998); Kalamazoo River Study Group v. Menasha Corp., 228 F.3d 648, 652 (6th Cir. 2000); **Opinion**: KRSG v. Rockwell, et al., Mar. 6, 1998, at 6-7.

L-2. Parties seeking contribution under CERCLA § 113 must look to § 107 to establish the basis and elements of liability of the defendants. Centerior, 153 F.3d at 350; KRSG, 228 F.3d at 653.

L-3. Proof of causation of the incurrence of response costs or contribution of a threshold volume of hazardous substances to the Site are not required for the imposition of liability under

CERCLA § 113; however, failure to prove such causation and contribution of a threshold volume of hazardous substances by defendants are relevant factors to consider when allocating response costs under CERCLA § 113. KRSG, supra, 228 F.3d at 654-56.

L-4. In a "two-site" case, where hazardous substances are released at one site and allegedly traveled to a second site through a ditch, in order to make out a prima facie case of liability in a response cost recovery action under CERCLA, the plaintiff must establish a causal connection between the defendant's release of hazardous substances and the plaintiff's response costs incurred in cleaning them up. Kalamazoo River Study Group v. Menasha Corp., 171 F.3d at 1068. In other words, plaintiffs must affirmatively prove that, even assuming PCBs were discharged to various drainage ditches connected to the Eaton facilities (which also must be affirmatively proven), those PCBs migrated to the river causing contamination at that second site. Id.

L-5. NREPA, M.C.L.A. § 324.20101 et seq. (formerly "MERA," the Michigan Environmental Response Act), was patterned after CERCLA, and is construed in accordance with CERCLA. Kelley v. Tiscornia, 827 F. Supp. 1315, 1318 n. 1 (W.D. Mich. 1993); Flanders Indus., Inc. v. Michigan, 203 Mich. App. 15, 21; 512 N.W.2d 328 (1993); **Opinion:** KRSG v. Rockwell, et al., Mar. 6, 1998, at 7.

L-6. Plaintiff's claims under Part 201 of NREPA will stand or fall under the same analysis applied to the claims under CERCLA. (**Opinion:** KRSG v. Rockwell, et al., Mar. 6, 1998, at 7.)

L-7. This Court is not bound by the regulations of the State of Michigan concerning acceptable levels of PCBs. The Court notes that the State of Michigan apparently utilizes a standard that is far below detection limits currently available for PCB detection.

Marshall Facility

L-8. In its October 5, 2000 Opinion, the Sixth Circuit determined that there was a question of fact as to the liability of Eaton for its Marshall facility due to the single 1980 wastewater survey finding 0.82 ppb PCBs in its wastewater.

L-9. A single detection of PCBs in Marshall's wastewater is not a sufficient basis on which to premise liability, particularly where, as here, the single positive test result is not supported by evidence of PCBs in the sediment downstream of the Marshall plant. "[o]ne test is not a sufficient basis for extrapolation absent additional evidence which establishes that those results are a reliable indicator of typical discharges." Textron, Inc. v. Barber-Colman Co., 903 F. Supp. 1546, 1555 (W.D. NC 1995).

L-10. Science, as well as law, requires that a single test result be rejected as a reliable basis for a conclusion. "In science, *reliability* refers to reproducibility of results." D. Kaye and D. Freedman, "Reference Guide on Statistics," Reference Manual on Scientific Evidence, Federal Judicial Center, at 341 (emphasis in original). "In a case involving scientific evidence, evidentiary reliability will be based upon scientific validity." Daubert, supra, 113 S. Ct. at 2795 n.9. This Court concludes, therefore, that the September 1972 effluent detections at Marshall were not reliable.

L-11. Based on the lack of evidence of PCBs in process oils at the Marshall plant and the unreliability of only a single detection of PCBs in Marshall's wastewater effluent in 1980, the lack of PCBs in sediments downstream of Marshall, and the low PCB levels in fish, consistent with atmospheric deposits of PCBs, Plaintiff has failed to carry its burden of affirmatively establishing that any detectable amount of PCBs were discharged to the River from Eaton's Marshall facility.

Battle Creek Facility

L-12. This Court has previously made a finding of fact that, because the PCB sampling of wastewater in connection with the Eaton Battle Creek facility was from joint outfalls and from a common storm sewer line servicing areas outside of the Eaton plant, there is no competent evidence of a discharge of PCBs by Eaton to the River from such effluent. (**Opinion:** KRSG v. Rockwell, et al., Dec. 7, 1998, at 22- 23.) The testimony and evidence presented during the January, 2001, trial confirms the conclusion that substances found in that common line cannot reliably be attributed to Eaton.

L-13. Even assuming for the sake of argument that PCBs were released from Eaton's Battle Creek Plant, Plaintiffs failed to provide persuasive evidence that such PCBs traveled the entire length of the ditch to the Kalamazoo River. The last sample taken by Plaintiffs in the ditch leading from the Eaton facility was one-third mile from the River. Plaintiffs failed to "connect the dots" to prove a release to the Kalamazoo River, and Eaton cannot be held liable based on incomplete evidence. See, KRSG, 171 F.3d at 1068.

L-14. Based on evidence from the plant itself, Plaintiff has failed to carry its burden affirmatively establishing that any detectable amount of PCBs were discharged to the River from Eaton's Battle Creek facility. The evidence of sampling from the Kalamazoo River sediments, water and fish supports this conclusion. The Court cannot reasonably conclude that any measurable or detectable quantity of PCBs were contributed by Eaton's Battle Creek plant to the NPL Site, the Kalamazoo River or Portage Creek.

Kalamazoo Facility

L-15. The Sixth Circuit reversed the Order Granting Summary Judgment to Eaton regarding its Kalamazoo facility because it found there was a question of fact with regard to whether PCBs were present in the quench oils at the Kalamazoo plant. The Sixth Circuit's decision was based on the testimony of Stewart Lightfoot, Eaton's Director of Environmental Engineering, who testified that he suspected that a possible source of the PCB contamination in floor blocks was a dripping spigot on an internal wet transformer, and a heat treat oil quench operation. The Sixth Circuit's decision was also based on the testimony of Thomas Newell, a former MDNR engineer, who expressed a belief that PCBs may occasionally be in the oils used at the plant at trace contaminant levels. Newell based this opinion on his general knowledge that many of the oils used in the automotive industry were recycled and were contaminated with PCBs. KRSG v. Rockwell et al., 228 F.3d at 660.

L-16. Mr. Newell's and Mr. Lightfoot's testimony regarding PCBs in Eaton's process oils is unreliable for the following reasons. Mr. Lightfoot presumed that the quench oils contained PCBs because the Kalamazoo facility heat treating department did not have an automatic fire extinguisher. (**Deposition:** Lightfoot at 173-175.) Mr. Lightfoot qualified his assumption by stating that it was his best "guesstimate." (**Id. at p. 179.**) Mr. Lightfoot also interjected that there were other fire-retardant methods in quench oils besides PCB, and no investigation had been done to determine which methods were used. (**Id. at p. 197.**) Mr. Newell's testimony about his general knowledge of PCBs in the automobile industry was not related to any specific knowledge about the oils used at the Eaton facility. Newell's general knowledge about the automobile parts manufacturing industry is not probative of what occurred at Eaton. (**Opinion:** KRSG v. Rockwell, et al., June 30, 1998, at 18.)

L-17. The limited PCB sampling conducted by Plaintiffs in the Zantman Drain cannot be the basis for a determination of liability related to Eaton's Kalamazoo facility. Plaintiffs' sample K-4, which was non-detect for PCBs, is still over 1,000 feet from the Kalamazoo River. Even if it were assumed that the Zantman/Richardson Drain was not obstructed and was a viable pathway for PCBs to reach the Kalamazoo River, Plaintiffs have failed to sample the entire length of the drain and, therefore, cannot connect the dots to show a release of PCBs from Eaton's facility. See, KRSG, 171 F.3d at 1068.

L-18. Based on the lack of evidence of: (1) PCBs in process oils used in the Kalamazoo plant; (2) PCBs in waste water effluent from the Kalamazoo facility; (3) PCBs in the discharge of the Zantman Drain; and (4) PCBs in the River downstream of the Zantman Drain's discharge point, Plaintiff has failed to carry its burden of affirmatively establishing that any detectable amount of PCBs were discharged to the River from Eaton's Kalamazoo facility.

L-19. Plaintiff has failed to carry its burden affirmatively establishing that any detectable amounts of PCBs were discharged from the Eaton Marshall, Battle Creek or Kalamazoo facilities.

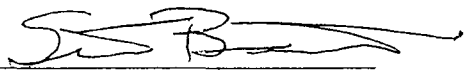
L-20. Eaton is not liable to plaintiff or any of its members under Section 113 of CERCLA, 42 U.S.C. § 9613, for the PCB contamination of the River, the Creek or the NPL Site.

L-21. Judgment shall be entered in accordance with Fed. R. Civ. P. 58 in favor of defendant Eaton Corporation, and against plaintiff, on the claims of the Restated First Amended Complaint, with respect to each of the three Eaton facilities.

Respectfully submitted,

DYKEMA GOSSETT PLLC

Dated: February 16, 2001

By: 

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Proposed Findings of Fact/Conclusions of Law
Submitted by Def Eaton Corp

2-16

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

KALAMAZOO RIVER STUDY GROUP,

Plaintiff,

Civil Action No. 1:95CV838

v.

Hon. Robert Holmes Bell

ROCKWELL INTERNATIONAL, et al.,

Defendants.

/

PROOF OF SERVICE

STATE OF MICHIGAN)
) ss
COUNTY OF KENT)

Kristi L. Arndts, being first duly sworn, deposes and says that on the 16th day of February, 2001, she served copies of **Proposed Findings of Fact and Conclusions of Law Submitted by Defendant Eaton Corporation** and **Defendant Eaton's Closing Argument**, by first class U.S. Mail with postage fully prepaid, upon the following:

James L. Moeller
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Kristi L. Arndts
Kristi L. Arndts

Subscribed and sworn to before me
this 16th day of February, 2001.

Kinda J. Mass
Notary Public

Barry County, MI

My Commission Expires: 1-6-02

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

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Kalamazoo River Study Group,

Plaintiff,

v. Civil Action No. 1:95CV838

Rockwell International, et al., Hon. Robert Holmes Bell

Defendants.

_____/

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW SUBMITTED BY DEFENDANT EATON CORPORATION FOLLOWING TRIAL ON ALLOCATION ISSUES

Defendant Eaton Corporation, by its attorneys, Dykema Gossett PLLC, hereby submits Proposed Findings of Fact and Conclusions of Law.

These Findings and Conclusions are supported by:

- **Trial testimony** (indicated by witness name, date of testimony and page number);
- **Deposition testimony** (indicated by witness name and page numbers) located in Bench Books provided to the Court by the parties, containing designated excerpts of deponents;
- **Trial exhibits** (indicated by Trial Exhibit number);
- **Admissions** by plaintiff or its counsel (indicated by a reference to the specific pleadings and discovery documents).
- **Pleadings** by the parties, cited by title or date.
- **Stipulations** by the parties, cited by title or date.
- **Uncontroverted Facts** to which the parties have stipulated. These are set out in the Joint Final Pretrial Order.

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-- **Opinions** of this Court in this case (indicated by citation to *KRSG v. Rockwell, et al.*, and date of opinion).

Proposed findings of fact are labeled as "F-1," "F-2," etc. Proposed conclusions of law are labeled as "L-1," "L-2," etc.

I. BACKGROUND

F-1. This Court held a bench trial on February 4-6, 2002. The Court has considered opening statements of counsel, written closing arguments of counsel, proposed findings and conclusions from both parties, the testimony of witnesses at trial, documents and photographs admitted as exhibits at trial, and deposition excerpts designed by the parties in the Revised Joint Final Pre-Trial Order. Some of the evidence offered by the parties is direct evidence, some is circumstantial. The Court has also considered what inferences can reasonably be drawn from the direct and circumstantial evidence, and has considered the demeanor and manner of the witnesses in assessing credibility of and weight to be accorded to the testimony of witnesses, including experts. These findings and conclusions are issued in accordance with Federal Rule of Civil Procedure 52.

L-1. The Court has heard testimony and received evidence from both sides with regard to Eaton Corporation in both the liability and allocation phases of the trial. The evidence offered by both parties is detailed, well-developed, and more than sufficient to allow the Court to determine with finality the allocation issues before it. The factual record with regard to Eaton's potential contribution of PCBs to the Site is hereby closed, and will not be re-opened except by Court order.

F-2. In its May 9, 2001 Opinion, following the January 17-19, 2001 trial on liability issues, the Court examined the facts related to Eaton's Battle Creek and Kalamazoo manufacturing

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facilities in light of the liability standard enunciated by the Sixth Circuit in *Kalamazoo River Study Group v. Menasha Corp.* ("*KRSG v. Menasha*"), 228 F.3d 648, 650 (6th Cir. 2000). Under that standard, KRSG was not required to show any direct causal link between the PCBs Eaton allegedly discharged to the Site and the environmental harm in the River. (*KRSG v. Menasha*, 228 F.3d at 655-56.) The Sixth Circuit further advised that consideration of causation and other equitable contribution factors is proper only in allocating response costs, not in determining liability. ***(Id.*** at 656). Thus, for purposes of the liability determination, the only relevant inquiry was whether Eaton discharged any PCBs to the Site, regardless of quantity. ***(Id.*** at 658; **May 9, 2001 Opinion**, at p. 2.)

F-3. Applying the Sixth Circuit's liability standard, the Court, in its May 9, 2001 Opinion, found Eaton liable for both its Battle Creek and Kalamazoo facilities. This Court held that, based primarily on PCB detections in sediments found in portions of the ditches leading from both Eaton facilities, it was "more likely than not that some very small quantity of PCBs probably found their way to the Kalamazoo River" from the Battle Creek facility (**May 9, 2001 Opinion** at 28) and "more probable than not that some of the PCBs from the floor of the Kalamazoo facility were washed down the drain and into the Kalamazoo River . . . ." (**May 9, 2001 Opinion** at 53.)

F-4. With regard to the Battle Creek facility, the Court's determination of liability was based, in part, upon what is now known to be erroneous testimony by Thomas Mattson, Public Works Director for the City of Springfield, related to the storm sewer effluent discharge of Clark Equipment Company ("Clark"). (See ¶ F-46, below; **Tr. Ex. 6490-6497.**) Based on previously undiscovered documentary evidence, and acknowledged by Plaintiff's expert, Mr. McLaughlin,

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it is now known that Clark discharged effluent from its manufacturing operations to the Eaton/Clark ditch prior to 1978. (See ¶ F-46 below.)

F-5. This Court has made clear that it has made findings of fact on a number of issues in earlier opinions in this matter and that these issues will not be relitigated. (**Trial Transcript**, February 4, 2002, p. 12.) New evidence was introduced in this allocation phase of the trial, comprising primarily additional sediment sampling in the ditches leading from the Eaton facilities and at the outfalls of those ditches to the River. Other evidence introduced at trial related to other potential sources of PCBs in the vicinities of both the Eaton Battle Creek and Kalamazoo facilities. To the extent this new evidence does not materially affect the earlier findings of this Court, the Court's previous factual findings should not be disturbed and should be applied to this allocation phase of the trial.

A. Allocation Principles

L-2. Section 113(f) of CERCLA provides that "in resolving contribution claims, the court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate . . . ." 42 U.S.C. § 9613(f). Thus, under Section 113(F), the Court may consider any factor it deems in the interest of justice in allocating response costs in a contribution action. A non-exhaustive list of such factors, commonly referred to as the "Gore factors," includes: (1) the ability of the parties to demonstrate that their contribution to a discharge, release or disposal of a hazardous waste can be distinguished; (2) the amount of the hazardous waste involved; (3) the degree of toxicity of the hazardous waste involved; (4) the degree of involvement by the parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste; (5) the degree of care exercised by the parties with respect to the hazardous waste

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concerned, taking into account the characteristics of such hazardous waste; and (6) the degree of cooperation by the parties with the federal, state or local officials to prevent any harm to the public health or environment. *KRSG v. Rockwell*, 107 F. Supp.2d 817, 822 (2000) (citing *Centerior Service Co. v. Acme Scrap Iron & Metal Corp.*, 153 F.3d 344, 354 (6th Cir. 1998) (citing *United States v. Colorado & Eastern R.R.*, 50 F.3d 1530, 1536 n. 5 (10th Cir. 1995)); *see also United States v. R. W. Meyer, Inc.*, 932 F.2d 568, 571 (6th Cir. 1991). The Gore factors enable the Court to take into account more varying circumstances than does the law of common law contribution. *R. W. Meyer*, 932 F.2d at 573.

L-3. Because one of the primary goals of CERCLA is to encourage timely cleanup of hazardous waste sites, and because CERCLA seeks to place the cost of that response on those responsible for creating or maintaining the hazardous condition, the most important factors in the allocation phase are harm to the environment and the degree of care exercised by the parties. *KRSG v. Rockwell*, 107 F. Supp.2d at 822 (citing *Control Data Corp. v. SCSC Corp.*, 53 F.3d 930, 935-36 (8th Cir. 1995). Because the harm to the environment factor is a product of volume and toxicity, the most relevant Gore factors in this allocation phase are volume of discharge, toxicity, and cooperation with governmental authorities.

L-4. There is zero evidence in the record which would indicate that Eaton Corporation has been uncooperative with governmental authorities. Neither the MDEQ nor the U. S. EPA considers Eaton to be a PRP at this Site. In addition, because the regulatory agencies regulate PCBs without regard to specific Aroclors due to the presence of toxic congeners in all Aroclors, the "toxicity" Gore factor is not relevant to this allocation. The MDEQ has made clear that all regulatory decisions and response costs required related to the RI/FS or other Site investigation

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activities have not been driven by the presence of any specific Aroclor at the Site, but, rather, are driven solely by the presence or concentration of total PCBs. Moreover, any decision related to a required remedial action would be based on the concentrations of total PCBs and not on the presence of any specific Aroclor. (**von Gunten Dep.**, at pp. 22-24.) Therefore, the most relevant Gore factor with regard to this allocation is the volume of PCBs released to the Site by each party.

L-5. Courts are not required to make meticulous findings as to the precise causative contribution each of the parties have made to a hazardous site, as in many cases such a finding would be literally impossible. *KRSG v. Rockwell*, 107 F. Supp.2d at 822 (citing *R. W. Meyer*, 932 F.2d at 573-74.) Similarly, the plaintiff in a contribution action may seek reimbursement even though it cannot make a meticulous factual showing as to the causal contribution of each defendant. (*Id.*) Although the CERCLA plaintiff is not required to prove its case with scientific certainty, it still has the burden of proving its case by a preponderance of the evidence. *KRSG v. Rockwell*, 107 F. Supp.2d at 822 (citing *B. F. Goodrich v. Betkoski*, 99 F.3d at 505, 526 (2nd Cir. 1996)).

L-6. In an appropriate set of circumstances, a tortfeasor's fair share of the response costs may be zero. *KRSG v. Rockwell,* 274 F.3d 1043, 1047 (6th Cir. 2001); *KRSG v. Rockwell*, 107 F. Supp.2d at 822 (citing *Acushnet Co. v. Mohasco Corp.*, 191 F.3d 69, 78 (1st Cir. 1999); *PMC, Inc. v. Sherwin-Williams Co.*, 151 F.3d 610, 616 (7th Cir. 1998)). In *PMC*, the Seventh Circuit held that even though PMC conceded it had dumped toxic waste at the site, it was not unreasonable for the district court to allocate zero to PMC where PMC's spills were "too inconsequential to affect the cost of cleaning up significantly." 151 F.3d at 616. As the First Circuit observed in *Acushnet*,

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"there is nothing to suggest that Congress intended to impose far-reaching liability on every party who is responsible for only trace levels of waste." 191 F.3d at 78.

L-7. In its December 18, 2001 Opinion, the Sixth Circuit affirmed this Court's zero allocation to Rockwell with regard to this Site. The Sixth Circuit held that the district court did not abuse its discretion under CERCLA by declining to allocate a portion of the response costs for the Site investigation and cleanup to Rockwell, even though the court had initially determined that Rockwell had released a sufficient amount of PCBs to be held liable for response costs. The court further held that a finding of liability does not obligate the court to allocate response costs to a PRP, especially where the PRP is responsible for only a minuscule percentage of the PCBs in the River. *KRSG v. Rockwell*, 274 F.3d 1043, 1047 (6th Cir. 2001).

B. <u>Site Administrative History</u>

F-6. In August 1990, a 35-mile length of the Kalamazoo River from the confluence of Portage Creek with the River (in the City of Kalamazoo) downstream to the Allegan City Dam, and a 3-mile portion of Portage Creek upstream of its confluence with the Kalamazoo River, was added to the National Priorities List ("NPL") by the United States Environmental Protection Agency ("EPA") pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605. The Site is known as the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site ("NPL Site"). *KRSG v. Rockwell*, 107 F. Supp. 2d at 818.

F-7. The MDNR identified three paper mills – Allied, Georgia-Pacific and Simpson – as the principal sources of PCBs contaminating the NPL Site due to past business operations involving the recycling of paper, including de-inking, during the period of 1950-1975. *KRSG v. Rockwell*, 107 F. Supp. 2d at 820.

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F-8. In December 1990, following the listing of the NPL Site, three members of the KRSG (Allied, Georgia-Pacific and Simpson) entered into an Administrative Order by Consent ("AOC") with the MDNR to fund and conduct a remedial investigation/feasibility study ("RI/FS") of the NPL Site. James River subsequently joined the KRSG, but did not sign the AOC. James River has nevertheless participated in the RI/FS process. *KRSG v. Rockwell*, 107 F. Supp. 2d at 820.

F-9. The AOC defines the geographic dimensions of the Site as it is defined on the NPL. (**Tr. Ex. 8803** at ¶ 2.) The Court has reviewed the testimony of the MDEQ Project Manager for the NPL Site, Mr. Brian von Gunten, who has explained the Agency's requirements for the investigation to be performed by the KRSG. According to the MDEQ, under the AOC, the areas that the KRSG are required to investigate in the RI/FS include the NPL Site and any other areas as directed by the MDEQ based on findings during the investigation. (**von Gunten Dep.** at pp. 133-134, 226-227; **AOC** at ¶ 13, **Tr. Ex. 8803**.)

F-10. Under the AOC, the MDEQ has required the KRSG to conduct the RI/FS in the area extending from downstream of Morrow Lake at the Morrow Lake Dam through Lake Allegan. (**von Gunten Dep.** at pp. 18-20, 133-134.) In addition, in a separate study, the MDEQ has required that the KRSG investigate sediments in the area between Lake Allegan Dam and Lake Michigan at Saugatuck. (***Id.***) With the exception of limited biota sampling for background purposes, the MDEQ has not authorized the KRSG to perform RI/FS activities or to evaluate remedial alternatives for Morrow Lake or other upstream reaches of the River extending past Battle Creek. (*Id*; **January 24, 2002 Stipulation concerning compliance with the NCP**, attachment D-1 to Revised Final Pretrial Order.) Therefore, except to the extent specifically authorized by the MDEQ, investigation work conducted by the KRSG upstream of Morrow Lake Dam is not

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required by the AOC. (**von Gunten Dep.** at pp. 18-20, 133-134, 226-227.) Moreover, Mr. von Gunten and the MDEQ believe much of the work performed by the KRSG upstream of Morrow Lake Dam to be *unnecessary* and unrelated to the KRSG's responsibility to perform an RI/FS within the NPL Site. (***Id.***) The activities that the MDEQ has authorized the KRSG to perform upstream of Morrow Lake Dam are related to background biota and other sampling and would have been required whether or not Eaton released PCBs to the Site. (***Id.***)

L-8. The significance of MDEQ's determination that much of the work done upstream of Morrow Lake Dam is unauthorized and unnecessary leads to two important issues. First, it requires careful inquiry into whether the response costs expended in this area are reasonable, necessary and consistent with the NCP. Second, and more importantly, it means that a release of PCBs to this upstream portion of the River is <u>not a release to the Site</u>. To show that a release occurred to the Site, the KRSG must prove that measurable amounts of PCBs discharged from Eaton Battle Creek were transported an additional 15 miles <u>over</u> the Morrow Lake Dam to the NPL Site. *KRSG v. Benteler*, 171 F.3d 1065, 1068 (6th Cir. 1999).

F-11. With regard to other Site factual background information, the history of the NPL Site, and the nature of PCBs, refer to this Court's previous opinions and the Sixth Circuit Court Opinion in *KRSG v Menasha*. (**12/7/98 Opinion**, Docket No. 849; **6/3/2000 Opinion**, Docket No. 942; **May 9, 2001 Opinion** at 4. Also see **Proposed Findings of Facts and Conclusions of Law submitted by Defendant Eaton Corporation**, February 16, 2001, ¶¶ F-3 through F-28.)

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II. GENERAL PRINCIPLES RELATED TO PCBs

F-12. This Court has already made extensive findings concerning polychlorinated biphenyls (PCBs) in the United States. We repeat only those facts necessary or helpful to an understanding of the allocation issues in this portion of the case. PCBs were originally produced in the United States in the late 1920's. They were manufactured almost exclusively by Monsanto Corporation and were marketed under the trade name "Aroclor." (**Opinion:** ***KRSG v. Rockwell, et al*****, June 3, 2000** at p. 11.)

F-13. PCBs were used in a variety of applications, including in dielectric fluids in capacitors and transformers, and in hydraulic fluids. PCBs were also used to a limited extent in some cutting and soluble oils, and in quench oils. The Aroclors pertinent to this case are Aroclor 1242, 1248, 1254 and 1260. PCB Aroclor 1242 is predominantly associated with paper recycling operations, including the recycling operations undertaken by the paper mills operated by Plaintiff's members. Aroclor 1242 was used in carbonless copy paper products as an ink carrier or solvent from 1957 to 1971. Over 44 million pounds of PCBs were used for this purpose, accounting for 28% of the total estimated Monsanto sales for plasticizer applications and 6.3% of Monsanto domestic sales of PCBs during 1957 to 1971. The average content of Aroclor 1242 in the carbonless copy paper was 3.4%. (**Opinion:** ***KRSG v. Rockwell, et al*****, June 3, 2000**, at p. 12.)

F-14. A number of authoritative studies have concluded that Aroclor 1254 is found in paper and paper board products, including the types which were produced and recycled by Plaintiff's members' mills. (**Trial Testimony, Barrick**, August 13, 1998); (**Trial Testimony, Brown**, August 17, 1998, at pp. 20-21.)

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F-15. The testing of paper residuals in landfills and residuals operated by the Plaintiff's member paper companies confirms that each of these locations contains multiple detections of Aroclors 1254 and 1260, in addition to Aroclor 1242. (**Trial Testimony, Brown**, August 11, 1998, at pp. 120-128, 130-131, 132, 133-134.)

F-16. Despite the ability to distinguish among Aroclors, the MDEQ regulates PCBs with regard to the total concentration of PCBs and does not, for example, regulate Aroclor 1242 any differently than Aroclor 1254 or any other PCB Aroclor or congener. (**Opinion, *KRSG v. Rockwell, et al*, June 3, 2000**, at pp. 43-44.) (**Trial Testimony, Barrick**, November 10, 1999, at pp. 87-88.) (**von Gunten Dep.**, pp. 23-24.)

F-17. Both Aroclors 1242 and 1254 contain a number of the most toxic congeners and, therefore, are not regulated differently by regulatory agencies. (**Trial Testimony, Barrick**, November 10, 1999, at pp. 87-88.) (**von Gunten Dep.**, pp. 61-62, 207-209.) Aroclor 1242 contains congener 77, which is particularly toxic. (**Trial Testimony, Brown**, 11/9/99, at pp 70-71).

F-18. The experts agree that if a source of PCBs is present, PCB concentrations are higher in those areas containing a higher percentage of fine-grain sediments because of the tendency of PCBs to attach to fine-grain sediments. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 392-393.) (**Trial Testimony, Brown**, August 10, 1998, at pp. 77-79.)

F-19. The experts further agree that PCBs will preferentially adhere to organic material, either in sediments or in suspension. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 392-393.) (**Trial Testimony, Brown**, August 10, 1998 at pp. 77-79.)

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F-20. Because PCBs have such a strong affinity for organic matter, the best and most appropriate way to normalize PCB data to remove variability caused by different sediment types is to express the data in terms of parts per million on an organic-carbon basis (abbreviated as "ppm oc"). For example, because PCBs are not normally found on sandy sediments as opposed to silty or clay-rich sediments, expressing the PCB data in terms of total organic carbon takes away the variability related to the sediment type. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 390-393, 500.) Looking at it another way, a 5 ppm detection in sandy sediments is much more significant than a 5 ppm in mucky organic rich sediments. To convert PCB data on a dry-weight basis to an organic-carbon basis one divides the dry-weight PCB data by the total organic-carbon ("TOC") value for the sample expressed as a percentage. For example, if the dry-weight data for PCBs is 5 ppm and the TOC for the sample is 20% (very mucky organic rich sediments), the concentration after normalization is 25 ppm oc (5 divided by .2). On the other hand, if the TOC value is only 2% (silty or sandy sediments), the concentration after normalization jumps up to 250 ppm oc (5 divided by .02.) (***Id.***)

F-21. If a sediment has greater than 5% organic-carbon content, it is considered to be a mucky/muddy material characteristic of a depositional environment. (**Trial Testimony, Connolly**, February 5, 2002, at p. 410.)

F-22. The higher the organic carbon content of sediments in a river, the easier it is to detect PCBs if PCBs are present. The concept is similar to a carbon filter placed on a drinking water tap. The filter concentrates the contaminants; therefore, if there is a source of PCBs in a particular area that has a high organic-carbon content in the sediments, PCBs will be present and will be detected in those sediments. (**Trial Testimony, Connolly**, February 5, 2002, at p. 525.)

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F-23. The typical pattern of contamination downstream from a single-source PCB site is that of a PCB gradient. PCB concentrations tend to be highest closest to the source of the PCBs. A gradient occurs when the PCB concentrations increasingly diminish as one moves away from that source. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 392-394; **Tr. Ex.** 6562.)

F-24. If there are multiple sources of PCBs to a river, the concentrations of PCBs will "spike up" as new sources enter the river, and concentrations will drop down or diminish with distance downstream. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 395-396.) The "up and down" PCB concentration pattern typical of multiple PCB sources is exemplified by the NPL Site portion of the Kalamazoo River, downstream of the KRSG members. (**Trial Testimony, Connolly**, February 5, 2002, at p. 435.)

F-25. PCB concentrations decrease as one moves away from a source due to a number of factors. First, PCBs will preferentially attached to sediments close to the source, especially if there are organic-rich sediments close to the source. In areas close to the source, the PCBs precipitate out of solution as they attach to organic-rich sediments and fall to the bottom of the river. Those sediments with attached PCBs that do move downstream become diluted due to the influx of clean sediments and clean water. Moving further downstream, what is typically seen is a drop in PCB density in the water column. In these downstream areas, there are fewer PCBs both dissolved in the water and on the particles. (**Trial Testimony, Connolly, February 5, 2002**, at pp. 395-396.)

F-26. PCBs are present in places where there are no known PCB sources other than the atmosphere. Thus, there is a background level of PCBs at every site. A typical background level applicable to the Kalamazoo River is 5 ppm oc (normalized on an organic-carbon basis). (**Trial Testimony, Connolly**, February 5, 2002, at pp. 407-408.)

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F-27. At trial, Eaton's expert, Dr. John Connolly, used as examples other PCB sites where it is known that the PCB contamination results from only a single source. In each of those sites, the data show a gradient of high PCB concentrations close to the source with diminishing concentrations away from the source. Those sites discussed by Dr. Connolly are: (1) the Grasse River in New York State (**Tr. Ex. 6569**); (2) the Hudson River (**Tr. Ex. 6570**); and (3) the Housatonic River in Massachusetts (**Tr. Ex. 6571**). All of these PCB-contaminated rivers show a PCB gradient of high to low concentrations – even in the Housatonic, which resembles the Kalamazoo River in terms of geography because of the presence of an impoundment. In the Housatonic, there is a PCB gradient present along the entire channel of the River extending all the way to the Woods Hole impoundment.

III. EATON'S BATTLE CREEK FACILITY

F-28. This Court made findings of fact related to the Eaton Battle Creek facility in its December 7, 1998 Opinion following the first trial in this matter. Additional findings of fact are found in the Court's May 9, 2001 Opinion following the January 2001 bench trial. The Court's specific findings of fact, reaffirmed here, are listed below, with reference to where such findings are found in the Opinion.

A. Plant Operations

F-29. Prior to its demolition in 1984, the Eaton Battle Creek facility was located at 463 North 20th Street, Battle Creek, Michigan. The plant was approximately one-half mile from the Kalamazoo River, approximately 15 miles upstream of the NPL Site. (**May 9, 2001 Opinion** at p. 5.)

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F-30. The Battle Creek facility was in operation from the early 1940's until 1983. At this facility, Eaton manufactured parts for the automotive industry, including internal combustion engine valves and gears. During the 1950's, Eaton also ran an aircraft division at the Battle Creek facility. Manufacturing processes at the Battle Creek facility included heat treating, forging, welding and machining. These processes involved the use of quench oils, cutting or grinding oils, and hydraulic oils. Some of the heat treating involved temperatures as high as 2,500 degrees Fahrenheit. (**May 9, 2001 Opinion** at p. 5.)

F-31. There were no floor drains at the Battle Creek plant. Because the wood floors would swell and buckle if wet, Eaton took great care to keep water off the floor. The process oils were collected in drip pans under the machines and under the conveyor belts. Still, residual quench and cutting oils on parts and waste metals dripped down to the floors, and the floors became oily. While the machinery was in use, it was common for the cutting, quenching, and water soluble oil to splash or splatter onto the floor, and for there to be oil standing on the floor at the base of the machines. Oil pipes leading to the machines would sometimes leak, and it was recalled that on one occasion a high-pressure hydraulic line burst. (**May 9, 2001 Opinion** at p. 6.)

F-32. Hydraulic operations are nominally closed systems. The hydraulic systems had filters that kept the oils clean, so these oils were not disposed of. Nevertheless, in the normal life of a machine that used hydraulics, the hydraulic lines would need maintenance or would leak from time to time. (**May 9, 2001 Opinion** at p. 6.)

F-33. Oils that spilled onto the floor either absorbed into the wood block floors or absorbed with a dry absorbent material such as "Floor Dry" or "Speedy-Dry," which was swept up and discarded with the non-liquid waste rather than with the wastewater. The floors in the large aisles

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and open areas were also cleaned periodically with a scarifying machine that scraped up the oil residue on the floors. Spills of process oils were common enough that the Battle Creek facility purchased 2,000 to 4,000 pounds of dry absorbent material each month to keep any spillage from leaking out from around the machines onto the floors. (**May 9, 2001 Opinion** at p. 7.)

F-34. The oils that collected in the pans beneath the manufacturing machines were pumped out and taken to the mud room where waste metals and sludges were separated. The waste oil was collected in a tank, and the effluent was discharged to the sanitary sewer. Eaton's plant manager from 1968-1973 testified that some of the drip pans were piped directly to either the sanitary sewer or the storm sewer. (**May 9, 2001 Opinion** at p. 7.)

F-35. Prior to the late 1960's, Eaton had no wastewater treatment system other than a settling weir to settle out the grinding mud from the water soluble oils. The Eaton facility discharged its wastewater to the City of Springfield sanitary sewer system and the City of Springfield storm sewer system. Prior to the mid-1960's, both the storm sewer and the sanitary sewer discharged to a ditch which led to the Kalamazoo River. It was not until the mid-1960's that the Springfield sanitary sewer system was connected to the Battle Creek sanitary sewer system. (**May 9, 2001 Opinion** at p. 8.)

F-36. The effluent that was being discharged into the storm sewer ran through a concrete pipe under Eaton's property, and then entered an open ditch that led from Eaton's property to the Kalamazoo River. In 1967, the Michigan Water Resources Commission conducted a wastewater survey of the Eaton Battle Creek plant and determined that the plant was discharging 2,220 pounds of oil per day to the Kalamazoo River via the storm sewers and the ditch. Although the wastewater problem primarily related to the discharge of soluble oil in solution into the storm sewer and on

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into the Kalamazoo River, some straight oils were released to the River. (**May 9, 2001 Opinion** at p. 9.)

F-37. In the late 1960's, modifications to the oil disposal room eliminated up to 1,500 to 2,000 pounds of oil per day to the River. These lubricants and cutting oils were collected in storage tanks which were removed by a licensed industrial waste hauler for off-site disposal. In 1973, Eaton constructed an oil skimming pond to skim oil from its wastewater prior to discharge to the Kalamazoo River. (**May 9, 2001 Opinion** at p. 9-10.) These improvements did not remove all oil from Eaton discharge.

F-38. Based upon the evidence presented, there is no question that over the years, Eaton discharged significant quantities of oil to the Kalamazoo River. The discharge of oils to the River, however, does not answer the key question of whether those oils contain PCBs. (**May 9, 2001 Opinion** at p. 10.)

F-39. Eaton did not retain documents dating back to the 1940's with respect to what oils were purchased at the Battle Creek facility. No former employee at Eaton's Battle Creek facility, including its stock room supervisor from 1965-1983, recalls any purchases of Monsanto oils. The only oils Eaton employees recall being used in the plant were supplied by Shell, Arco, Texaco, Mobil, Amoco and Standard. There is no evidence to suggest that oils from any of these suppliers contained PCBs at any time. (**May 9, 2001 Opinion** at p. 10-11.)

F-40. Based on certain documentary evidence from Monsanto Corporation, the parties have stipulated that the Battle Creek facility purchased 1,940 pounds of Pydraul A-200 from Monsanto in 1970 and an additional 645 pounds of Pydraul A-200 from Monsanto in 1971. These

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two purchases amounted to approximately five 55-gallon drums of PCBs. (**May 9, 2001 Opinion** at p. 11.)

F-41. These two purchases of a limited amount of Pydraul A-200 is the only record of PCB containing hydraulic oils used in the Eaton Battle Creek plant. Correspondence from Solutia, Inc. (successor to Monsanto) provides that Pydraul A-200 was comprised of only Aroclor 1242 (33.3%) and Aroclor 1248 (66.6%). (**Tr. Ex.** 6473.) Although this correspondence indicates there are other formulations of Pydraul which contained other Aroclors, there is no evidence that Eaton purchased any formulation of Pydraul other than Pydraul A-200. (See **Trial Testimony, McLaughlin,** February 4, 2002, at p. 157.)

B. <u>PCB Sampling in the Eaton Battle Creek Plant</u>

F-42. In 1981, Versar, an outside environmental contractor to the U. S. EPA, inspected the Battle Creek plant to document Eaton's compliance with PCB marking and disposal regulations. Versar found several slight leaks from transformers, but no leaks from the in-service capacitors. Versar sampled the cutting, quench and hydraulic oils from various tanks and machines in the plant and found no detectible levels of PCBs in those oils. (**May 9, 2001 Opinion** at p. 16.)

F-43. During the 1981 testing, Versar detected Aroclor 1242 at a concentration of 7 ppm in Eaton's grinding swarf. Grinding swarf is the sludge created by the process of grinding metal parts. It usually consists of small particles or the metal part being ground, the grinding wheel or tool, and the cooling fluid used in the grinding. Because Versar did not find PCBs in the process oils, Eaton personnel, after investigating, concluded that the PCBs in the grinding swarf likely were attributable to floor scrapings from the floor scarifier being mixed with the grinding swarf. (**May 9, 2001 Opinion** at p. 16.)

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F-44. When the Eaton Battle Creek facility was demolished in 1983-1984, the MDNR requested that Eaton test its wood block floors for PCBs. Eaton hired Howard Laboratories to do the testing. Howard tested 55 of the approximately 2.8 million wood blocks on the floor: 27 samples from under capacitors in Building C, 11 samples for background in Building C, 6 samples for background in Building A, 7 samples from the heat treating area in Building B, and 4 additional blocks. All 55 samples showed the presence of PCBs in the range of 3.1 ppm to 155 ppm. The dominant Aroclors found in these samples were 1248 (58% of detections) and 1254 (34% of detections). Also detected were minor amounts of Aroclor 1242 (3% of detections) and Aroclor 1260 (5% of detections). (**May 9, 2001 Opinion** at p. 14; **Trial Testimony, McLaughlin**, p. 161.)

F-45. In August 1984, Eaton sent four soil samples to the Anspec Company, Inc. for PCB analysis. No PCBs were found in the soil samples from the north clay beneath sludge, the south clay beneath sludge, or the north sludge. PCB Aroclor 1254, at 8 ppm, was found in the south sludge. (**May 9, 2001 Opinion** at p. 17.)

C. Clark's Discharges to the Eaton/Clark Ditch

F-46. The Court's determination of liability with regard to the Eaton Battle Creek facility was based, in part, upon what is now known to be erroneous testimony by Thomas Mattson, Public Works Director for the City of Springfield. Mr. Mattson previously testified that Clark Equipment Company ("Clark") did not discharge effluent to the Eaton ditch except from two non-manufacturing related buildings located on the east side of 24th Street. (**May 9, 2001 Opinion** at p. 12.) This erroneous testimony, in part, led to a conclusion by the Court that the PCBs detected in the ditch were more likely than not attributable to Eaton as opposed to any other source. (**May 9, 2001 Opinion** at p. 13.) However, based on uncontroverted documentary evidence

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(**Tr. Ex. 6490-6497**) and the admissions of Plaintiff's expert, Mr. McLaughlin, it is now known that Clark discharged effluent from its manufacturing facilities located west of 24th Street to the Eaton ditch from the beginning of its operations up until 1978. (**Trial Testimony, McLaughlin**, February 4, 2002, p. 170.) After 1978, Clark's storm water discharge system was rerouted to another ditch located just west of the Eaton ditch. (**Tr. Exs. 6490-6497.**) Plaintiff's expert, Mr. McLaughlin, admitted that the Clark effluent discharge joined the Eaton/Clark ditch upstream of where he sampled sediments in the Eaton/Clark ditch. (***Id.* at 170.**) Mr. McLaughlin further admitted that the PCBs that he attributed to Eaton in the Eaton/Clark ditch could have originated from Clark if Clark's effluent contained PCBs. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 177.)

F-47. Although Plaintiff argues that Clark's discharge to the Eaton/Clark ditch was purely uncontaminated "non-contact" cooling water, such a finding is not supported by the evidence. The MWRC found oil in Clark's discharge to the drain, and Clark acknowledged that some of its employees improperly disposed of oil which got into Clark's discharge. (**Tr. Exs. 6479, 6481, 6483).** Prior to 1978, Clark installed an oil skimmer on its discharge to remove large amounts of oil discharged to the Eaton/Clark ditch. (**Tr. Ex 6482)** Correspondence to the MDNR from a neighbor located between Clark's discharge and the River indicates that in the 1960's and 1970's Clark's discharges to the Eaton/Clark ditch and its Helmer Road ditch contained large amounts of oil. (**Tr. Exs. 6553, 6555).** It can also be inferred from the documentary evidence that Clark's floor drains were plumbed to the storm sewer that led to the Eaton/Clark drain. As an example, fluorescein dye from Clark's metal working operations was apparently discharged to a floor drain which led to the storm sewer. (**Tr. Ex. 6559.**)

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F-48. Clark's facility contained a number of PCB-containing transformers and capacitors. (**Tr. Exs. 6487-6488.**) In addition, Clark manufactured forklifts, which could have used PCB-containing hydraulic fluids. (**May 9, 2001 Opinion**, at p. 13.)

D. Effluent Sampling from the Eaton/Clark Ditch

F-49. PCBs were detected in the joint Eaton/Clark effluent outfall on two occasions. In February 1972, the Michigan Water Resources Commission ("MWRC") found 1.4 ppb of Aroclor 1254 in the joint effluent. In September 1972, the MWRC conducted a wastewater survey of the Eaton/Clark effluent sampled near the weir and found .24 ppb and .12 ppb of Aroclor 1254. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 445-447.) Because in 1972, the Eaton/Clark ditch received effluent from both Clark and Eaton, it cannot be concluded that the PCBs in these effluent tests originated from Eaton as opposed to Clark.

F-50. In 1980, the MDNR monitored Eaton's wastewater discharge for a 24-hour period. The results showed no traces of PCB. The detection limit used was .1 ppb. (**Tr. Exs. 6011-6012.**) (**May 9, 2001 Opinion** at p. 13.) This test occurred two years after the Clark Equipment Company effluent was diverted away from the Eaton ditch. (**Tr. Exs. 6490-6497.**) As a result of this test, the MDNR stopped testing Eaton's effluent for PCBs as a requirement for the NPDES permit. (**May 9, 2001 Opinion** at pp. 13-14.) These facts give rise to the inference that the PCBs detected in 1972 may have been entirely attributable to Clark, and not at all to Eaton.

E. Plaintiff's Sampling in the Eaton/Clark Ditch

F-51. In November 2000, Plaintiff's expert, Mr. McLaughlin, took three samples of sediment from the drainage ditch leading from the Eaton Battle Creek and Clark facilities. The

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three samples, B-1, B-2, and B-3, were within 100 feet of each other. Sample B-1, which was taken from ditch between the railroad tracks and Lafayette Avenue, contained Aroclor 1254 at a concentration of 12 ppm. Sample B-2, which was taken 15-20 feet north of B-1, contained Aroclor 1254 at 4.7 ppm and Aroclor 1260 at 2.4 ppm. Sample B-3, which was taken on the north side of Lafayette Avenue, contained Aroclor 1254 at 14 ppm and Aroclor 1260 at 4.8 ppm. Although in November 2000 Mr. McLaughlin wished to take samples near the junction of the ditch and the River, he was unable to locate the ditch along the river bank. Samples B-1, B-2, and B-3 were all taken from a public right-of-away, and were subject to runoff from the nearby railroad tracks, Lafayette Avenue, and surface streets in the residential neighborhood south of the Eaton facility. Mr. McLaughlin could not state with any degree of certainty when the PCBs were deposited in the drain in the vicinity of locations B-1, B-2, or B-3. (**May 9, 2001 Opinion** at pp. 17-18.)

F-52. In August 2001, Mr. McLaughlin returned to the Battle Creek facility to take additional samples in the Eaton/Clark ditch between Sample B-3 and the intervening one-third mile to the Kalamazoo River (Samples B-5 and B-6), as well as samples in the River immediately adjacent to the outfall of the ditch to the current river channel (Samples B-7 and B-8). Mr. McLaughlin also took samples in what he believed to be the former river channel of the Kalamazoo River in a series of oxbows, which was cut off from the main channel of the River in 1957 by an Army Corps. of Engineers river-straightening project. These sample locations were B-9, B-11, BOT1, B-4, BOT2, and B-10 (moving from upstream to downstream, or east to west, respectively). (**Tr. Ex. 2144-B**; **Trial Testimony, McLaughlin**, February 4, 2002, pp. 32-42.)

F-53. Sample B-9 was taken from what Mr. McLaughlin believed to be the old channel of the Eaton/Clark drainage ditch which led to the oxbows. Only .022 ppm Aroclor 1254 was

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found at B-9. Mr. McLaughlin is now unsure if he found the correct location within the channel to the oxbow. (**Trial Testimony, McLaughlin**, February 4, 2002, pp. 33, 42.) Sample B-9 is also in the vicinity of the outfall to the Clark ditch ("Middle Clark Ditch") which is located just west of the Eaton/Clark ditch. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 42.) Sample B-11 is the next sample in the oxbow downstream of the Middle Clark Ditch and the Eaton/Clark ditch. Aroclor 1254 (5.6 ppm) and Aroclor 1260 (1.3 ppm) were found in Sample B-11. (***Id.* at 42-43**.) The next samples downstream in the oxbow were taken in a transect across the width of the oxbow, at location BOT1. The four samples in BOT1 showed lower levels of total PCBs ranging from .079 ppm to .570 ppm, all containing mixtures of Aroclor 1254 and 1260. (***Id.* at 44**.) The next downstream location, B-4, was sampled twice, finding 1 ppm and .560 ppm Aroclor 1254. (***Id.* at 43**.) The next downstream location, BOT2, is another transect across the oxbow. All four samples in the BOT2 transect were non-detect for PCBs. (***Id.* at 44-45**.) Clark's Helmer Road ditch outfall intersects the oxbow further to the west, just upstream of or in the vicinity of the last downstream oxbow sample, B-10. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 174.) B-10 contained .170 ppm Aroclor 1254 and .046 ppm Aroclor 1242. (***Id.* at 44**.)

F-54. At trial, Mr. McLaughlin admitted that, because no Aroclor 1248 was detected, the Aroclors found in the Eaton/Clark ditch (primarily Aroclor 1254 with some 1260) do not match the pattern or combination of Aroclors found in the Eaton Battle Creek plant floor blocks – (primarily Aroclor 1248 with significant amounts of 1254). (**Trial Testimony, McLaughlin**, February 4, 2002, at 161-164.) Mr. McLaughlin conceded that the pattern of 1254 and 1260 in the ditch is consistent with the primary types of Aroclors found in di-electric fluids. (***Id.* at 164**). Moreover, Mr. McLaughlin has admitted that there are no constituents of Pydraul A-200

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(containing only Aroclors 1248 and 1242) in the Eaton/Clark ditch. Pydraul A-200 is the only PCB containing hydraulic oil known to be purchased by Eaton. (***Id.* at 163**). Mr. McLaughlin further admitted that, if Clark had discharged PCBs in its effluent, the PCBs found in the ditch could just have likely have originated from Clark as from Eaton. (***Id.* at 177**.)

F. <u>Dr. Connolly's Review of Data From the Eaton/Clark Ditch</u>

F-55. The Court found persuasive the credentials of Eaton's expert witness, Dr. John Connolly. In addition to the training and background to which he testified in past trials, Dr. Connolly has recently been called to testify before and advise a Congressional subcommittee investigating contaminated sediment issues and providing oversight to the U. S. EPA. (**Trial Testimony, Connolly**, February 5, 2002, at p. 389.) The Court finds his expertise and independence to be reliable, finds his explanations and analysis to be clear and supported by the evidence, and accepts his conclusions in this case.

F-56. Dr. Connolly reviewed the data acquired by Mr. McLaughlin from the Eaton/Clark ditch, in the old river channel oxbow system, and at the outfall of the Eaton/Clark ditch to the current river channel. Dr. Connolly analyzed the McLaughlin data after normalizing it for carbon content (on a ppm oc basis). Dr. Connolly testified persuasively to several conclusions from those data. First, because both Eaton and Clark discharged to the ditch, it is impossible to know if the PCBs in the ditch originated from Eaton or from Clark. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 442.) Second, there is no evidence that PCBs from Eaton's Pydraul A-200 hydraulic oil was discharged to the ditch or the River. Pydraul A-200 was comprised of only Aroclors 1242 and 1248, and neither of these Aroclors have been found in the Eaton/Clark ditch. It would be highly unlikely for the slow-moving organic-rich ditch to have transported Aroclors 1242 and 1248

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to the River and have left no signature in the ditch sediments. (**Trial Testimony, Connolly**, February 5, 2002, at p. 444.) Third, although it appears that relatively low amounts of Aroclors 1254 and 1260 were transported to the former river channel oxbows through the Eaton/Clark ditch, after exiting the oxbow and entering the main former river channel, the PCBs quickly attached themselves to organic matter in the former channel and settled out of the water column. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 452-453, 470, 472.) This phenomena is evidenced by the rapid drop off of PCB concentrations between Sample location B-11 (6.9 ppm total PCBs found in the natural oxbow close to the ditch discharge) and Sample locations BOT1 (up to .570 ppm), B-4 (up to 1 ppm), and BOT2 (non-detect), all in the main former river channel. (***Id.* at 452-53, 470, 472.**) PCBs coming from the Eaton/Clark ditch (or the Middle Clark ditch) do not appear to have contaminated sediments more than one mile downstream in the former channel or any further downstream than Samples BOT2 or possibly B-10, which is downstream of Clark's Helmer Road ditch. (***Id.* at 452-53, 470, 472.**)

F-57. The PCBs found at Sample locations B-7 and B-8 are located directly adjacent to the outfall of the Eaton/Clark ditch to the current river channel and, according to Dr. Connolly, are not characteristic of what is found in the intervening 13 miles from Eaton down to Morrow Lake. Dr. Connolly testified that, because these samples were taken just outside the outfall, the samples were taken within the influence of the outfall plume prior to mixing with the rest of the river flow, and are more characteristic of what is in the ditch than what would be found in the River just downstream of the outfall plume of the ditch. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 453-454.)

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F-58. There are other potential sources of PCBs located upstream of Eaton's Battle Creek facility that could have contributed to the PCBs found in the former channel and current channel of the Kalamazoo River near the Eaton/Clark ditch. The 1971 Hesse study of the Kalamazoo River, undertaken by John Hesse for the MDNR, found that, based upon levels of PCBs in settleable solids, the most significant source of PCBs to the Kalamazoo River upstream of Battle Creek was from the Battle Creek River. A number of potential sources, including the Kellogg Company, discharge effluent to the Battle Creek River, which joins the Kalamazoo River upstream of Eaton Battle Creek. (**Tr. Ex. 6411.**) Trial Exhibit 6534 shows that, in 1972, Aroclor 1254 was found in the effluent of the Michigan Carton Company (operated by Waldorf Paper Co.) and the Grand Trunk Railroad facility at levels of 160 and 360 ppb respectively. Both of these sources are upstream of Eaton. Other potential downstream sources include the Battle Creek Wastewater Treatment Plant, Benteler and Consumers Power (see Paragraph F-78). Nevertheless, at this allocation trial, Plaintiff took the position that there are no other significant sources of PCBs, other than Eaton, to the River upstream of the Morrow Lake Dam. The Court rejects this black-and-white, and apparently unsupportable, contention.

G. <u>What the River Shows</u>

F-59. In its May 9, 2001 Opinion, the Court stated the following: "The experts are in agreement that PCBs in the water tend to settle out with the sediment in depositional areas. There are numerous depositional areas in the 15 miles between Eaton's Battle Creek facility and Morrow Lake. If PCBs had been released from Eaton, they would have shown up in these depositional zones.... [Except for those samples taken immediately adjacent to the Eaton/Clark ditch outfall], KRSG has not taken any sediment samples in the entire 15-mile stretch of River downstream of

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Eaton's Battle Creek plant. The closest sediment sample was taken in Morrow Lake, approximately 15 miles downstream of the Battle Creek facility. Instead, for evidence of PCBs in the Kalamazoo River from Battle Creek to the Morrow Dam, Plaintiff relies on a 1971 MDNR study, the 1976 Wuycheck study, a 1988 MDNR study, and a 1999 MDEQ study." (**May 9, 2001 Opinion** at pp. 18-19.)

F-60. In its May 9, 2001 Opinion, the Court undertook an extensive review, study by study, of the available PCB data in the River between Battle Creek and Morrow Lake. With respect to the 1971 MDNR study, the Court stated the following:

> In a July 1971 study of the Kalamazoo River, one water sample downstream of the Battle Creek facility, near Augusta, Michigan, indicated a total PCB concentration of .1 ppb. Because Plaintiff has not attempted to rule out other industries upstream as potential sources of the PCBs, there is insufficient evidence to attribute this finding to Eaton's Battle Creek plant. According to Plaintiff's expert, Dr. Mark Brown, Blasland, Bouck & Lee ("BBL"), approximately 25% of the Kalamazoo River watershed (by volume) is upstream of Battle Creek. Moreover, the sample could have reflected effluent from the Battle Creek wastewater treatment plant which was located approximately one mile downstream from Eaton's Battle Creek plant.

(***Id.* at p. 19.**)

F-61. With regard to the 1976 Wuycheck data, the Court stated the following:

> For purposes of this Court's determination of Eaton's contribution to PCBs in the river, the Wuycheck data is perhaps the most relevant because it was undertaken in the mid 1970's, close in time to when PCBs were being used in industry. If PCBs had been released by Eaton as alleged by Plaintiff, they should have been detected in the Wuycheck tests. In 1976, John Wuycheck, an employee in the biological section of the MDNR conducted an "intensive" survey of both sediment and settleable solids (also known as suspended solids) in the Kalamazoo River. Of the six locations tested between the Battle Creek plant and Morrow Lake, the only positive sediment samples came from 35th Street in Galesburg (K-12), where he detected Aroclor 1254 at 1190 ppb, in Morrow Pond at Rosemont Street (K-13), where he detected Aroclor 1254 at 3,140 ppb. These sites are approximately 13 and 15 miles downstream of Eaton's Battle Creek facility. The sediment sample

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from the site closest to the Eaton Battle Creek plant, Stringham Road (K-8), was non-detect for PCBs.

The Wuycheck study also detected no PCBs in the suspended solids from the Stringham Road (K-8) site. It did detect PCBs at a level of 1,140 ppb in suspended solids at Custer Road (K-9), approximately 5-1/2 miles downstream of the Battle Creek facility and at a level of 810 ppb at 38th Street in Galesburg (K-11), approximately 11 miles downstream of the Battle Creek facility. The detection of PCBs in the water column over 5 miles downstream of the Eaton Battle Creek facility also tells little to nothing about the Eaton Battle Creek facility. Since almost 25% of the water shed for the Kalamazoo River is upstream of Battle Creek, PCBs in the water column could be from unknown point sources, runoff, and air pollution. The Custer Road collection point was also within the plume of the Battle Creek wastewater plant. Furthermore, even though the settleable solids test is useful for determining the presence of PCBs in the water column, it is not helpful in determining the source, quantity or concentration of PCBs. In a settleable solids test, the collection bottles are suspended in the water for a period of time during which particles from the water and organic film accumulates in the bottle and collects PCBs from the water column. Because the organic materials in the bottle tend to attract PCBs, the test may indicate an artificially high reading of PCBs.

(**May 9, 2001 Opinion**, at pp. 19-21.)

F-62. With regard to the 1988 MDNR study, the Court stated the following:

In 1988 the MDNR tested the sediment at 11 locations between Battle Creek and Morrow Lake. Only 1 of the 11 sediment samples tested positive for PCBs. PCBs at a concentration level of 1000 ppb of Aroclor 1254 were detected at one location downstream of the Battle Creek facility and .3 kilometers upstream of the discharge point of the Battle Creek wastewater treatment plant. The sediment tests from the remaining 10 locations were all non-detect for PCBs.

(**May 9, 2001 Opinion**, at p. 21.)

F-63. In previous trials, Plaintiff KRSG has contended that the lack of positive tests for PCBs in the 1988 MDNR study is misleading and should not be relied upon to show the absence of PCBs in the River because the MDNR used a high detection limit of 1 ppm. The Court addressed this argument in its May 9, 2001 Opinion:

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> Plaintiff's argument ignores the burden of proof. This Court will not guess what the use of lower detection limits may have shown. Plaintiff bears the burden of proof on the issue of Eaton's contribution to the PCBs in the river. If Plaintiff was dissatisfied with the available studies, Plaintiff could have done its own studies of this portion of the river.

(**May 9, 2001 Opinion, at p. 1.**) In this most recent allocation trial, KRSG also added the argument that non-detects are meaningless because testing downstream of KRSG member paper mills sometimes yields non-detects. KRSG argued that, in a portion of the River known to contain PCBs in sediment, some non-detects are not dispositive. Therefore, Plaintiff argues, the non-detects yielded by the 1988 sampling downstream of Eaton should likewise be viewed with skepticism. The difference, however, is that the non-detects downstream of KRSG facilities are peppered among numerous, consistent and high detections of PCBs. The samples taken downstream of the Eaton facility are predominantly non-detects, and the few PCB detections are extremely low in concentration. Therefore, Plaintiff's continued argument on this issue is not persuasive, and this Court places great significance in the non-detections in the 1988 MDNR study.

F-64. The lack of a release of PCBs from Eaton is also confirmed by more recent data. The MDEQ collected water column samples from several locations in the Kalamazoo River in September and October 1999 as part of the long-term monitoring plan for the River. Water column samples were collected from each of two background locations: One at a bridge downstream of the Ceresco Dam (upstream of Eaton's Battle Creek and Marshall, Michigan facilities) and one at the 35th Street bridge located immediately upstream of Morrow Lake (downstream of both Eaton facilities). The PCB levels measured at these locations were similar, and are similar to background levels of PCB measured in rain collected in the Great Lakes region during the late 1980's and 1990's. Moreover, the lack of a substantive increase in water column PCB concentrations between

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these two sampling locations indicates that detectible sources of PCBs do not exist over this reach of the River. (**Trial Testimony, Connolly**, January 19, 2001, at pp. 449-453, 457-458.) (**May 9, 2001 Opinion**, at p. 22.)

F-65. In March 2000, the KRSG initiated a surface water sampling program to further evaluate PCBs in the Kalamazoo River. Sampling locations included one station located downstream of Eaton's Battle Creek facility. A total of 11 water column samples were collected from this station between March 2 and July 25, 2000. PCBs were not detected in any of the 11 samples collected during this survey. Water column samples were also collected at this location between April 21 and May 1, 2000 during a period of elevated flow in the River. PCBs were not detected in any of the 10 samples collected during this survey. (**Trial Testimony, Connolly**, January 19, 2001, at pp. 454-455.) (**May 9, 2001 Opinion**, at p. 23.)

F-66. Three fish sampling surveys were conducted on the Kalamazoo River by the KRSG in the years 1993, 1997 and 1999. PCB concentrations in fish tissue samples collected near Battle Creek in 1993 and 1997 are lower than fish tissue concentrations observed through the rest of the Kalamazoo River and are in the range of background levels measured in fish sampled from sites with no known PCB sources other than the atmosphere. (**Trial Testimony of Connolly**, January 19, 2001, at pp. 455-457.) (**May 9, 2001 Opinion**, at p. 23.)

F-67. The water column and fish tissue data show that detectible PCB releases to the Kalamazoo River from potential upstream sources, including Eaton's Battle Creek facility, did not occur. Had the Eaton facility contributed detectible quantities of PCBs to the River, some portions of those releases would have been retained in the river sediments and would have been identifiable in the sediment, water and biota sampling that has been conducted over the last 25 years. The low

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level PCB contamination that has been found in some samples is due most likely to atmospheric sources. (**Trial Testimony, Connolly**, January 19, 2001, at pp. 457-458.)

F-68. Dr. Connolly reviewed all the available organic-content data related to the Kalamazoo River between Battle Creek and Lake Allegan. He found that the highest levels of organic material are present in the stretch of River upstream of the Morrow Lake Dam to Battle Creek. Within the NPL Site, organic-carbon levels are generally lower (due to sandier sediments) in the channels, but are relatively higher in the impoundment areas behind dams such as at Plainwell, Otsego, and Trowbridge. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 408-409; **Tr. Ex. 6566.**) In general, there are more meanders in the River upstream of Morrow Lake, which translates into more depositional areas and higher organic-carbon levels. (***Id.* at 412.**)

F-69. The organic-carbon levels in the sediments upstream of Morrow Lake range from 9 to 20 percent, which are extremely high levels. Dr. Connolly testified that there are two reasons why the organic-carbon levels are so high in this area. First, this section of the River received fairly high organic loading, from such sources as the Battle Creek WWTP, leading to a high organic matter content in the particles suspended in the water column. Second, the high number of meanders indicates an increased number of depositional environments and isolated quiescent areas where fine organic particles may settle out. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 411-412.)

F-70. Because of the extremely high organic-carbon levels in this area, if PCBs were discharged to the River between Battle Creek and Morrow Lake, the PCBs would be easily detected in these areas. (**Trial Testimony, Connolly**, February 5, 2002, at p. 413.) Moreover, because of the slow flow and high organic content, the PCBs would tend to sorb onto (or adhere

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onto) the organic-rich sediments in the depositional areas, and would have less of a tendency to migrate downstream in the dissolved phase, as compared to what occurs in a stretch of river that had sandy soils and lower organic content. *(Id.)*

F-71. Dr. Connolly examined the 1976 Wuycheck sediment data and found that neither Aroclor 1254 or any other Aroclor was detected between the Battle Creek facility and the next 13-mile stretch of River extending to Morrow Lake. The 1976 Wuycheck suspended solids data is consistent with the sediment data in that it does not reveal a measurable or otherwise significant source of Aroclor 1254 upstream of Morrow Lake. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 414-416.)

F-72. Dr. Connolly testified that due to the high organic content of the River in this area, if the Eaton Battle Creek facility were a source of PCBs to the River in the 1950's, 1960's and 1970's, he would expect to see detectible PCB concentrations in the 13-mile stretch of River between the plant and Morrow Lake. He also would expect to see a gradient with the highest concentrations of PCBs in the vicinity of Eaton and declining concentrations as one moved downstream throughout this 13-mile stretch of River. (**Trial Testimony, Connolly**, February 5, 2002, at p. 417.) Conversely, in the 1976 Wuycheck data, despite the high organic-carbon content of the sediments, PCBs were never detected in the sediment data and were detected upstream of Morrow Lake in only one suspended solids sample. *(Id.* **at 417-418**.)

F-73. Dr. Connolly prepared and explained Trial Exhibit 6565, which plots Aroclor 1254 data on an organic-carbon normalized basis in the River from Battle Creek through the NPL Site to Lake Allegan. This exhibit clearly shows no gradient of PCB concentrations originating from the Eaton Battle Creek facility. Moreover, contrary to Plaintiff's arguments, Exhibit 6565 clearly

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shows that Morrow Lake is not a primary source of Aroclor 1254 to the NPL Site. If that were the case, one would expect to see Morrow Lake Aroclor 1254 levels as the highest levels found, with concentrations getting progressively lower as you move down through the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at p. 420.) To the contrary, Trial Exhibit 6565 shows that the NPL Site has a multiple source pattern for Aroclor 1254 indicating various Aroclor 1254 sources within the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 420-421; **Tr. Ex. 6565**.) As indicated by the carbon normalized data, the most significant source of Aroclor 1254 to the NPL Site appears to enter the River at mile 7, in the vicinity of Georgia-Pacific and its Willow Blvd./A-Site landfills. (**Trial Testimony, Connolly**, February 5, 2002, at p. 434; **Tr. Ex. 6574**.)

F-74. Trial Exhibit 6574 shows the organic-carbon normalized data for Aroclor 1254 for the area extending from the upstream portion of Morrow Lake through Lake Allegan. Similar to Exhibit 6565, this exhibit shows that, when analyzed on a carbon-normalized basis, the levels of Aroclor 1254 found in Morrow Lake are, in fact, *lower* than the Aroclor 1254 levels found downstream in the NPL Site. This *reverse* gradient pattern is the opposite of the gradient found in the vicinity of PCB sources, and indicates that Morrow Lake is neither a primary source, nor even a significant source, of Aroclor 1254 to the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at p. 434.)

F-75. Trial Exhibit 6574 shows that the carbon-normalized Aroclor 1254 data in the vicinity of the Willow Blvd./A-Site are higher than those found in Morrow Lake by almost a factor of 10. (**Trial Testimony, Connolly**, February 5, 2002, at p. 435.) Downstream of the Willow Blvd./A-Site, the carbon-normalized Aroclor 1254 concentrations show an up-and-down pattern

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indicating multiple sources of Aroclor 1254 to the Kalamazoo River within the NPL Site from the various KRSG facilities. *(Id.* **at 435.**)

F-76. According to Dr. Connolly, the pattern of Aroclor 1254 detection seen on Exhibits 6565 and 6574 could not have resulted from a single source of Aroclor 1254 originating from the Eaton Battle Creek plant. *(Id.* **at 436.**) Evidence indicating that the Willow Blvd. landfill is a significant source of Aroclor 1254 to the River is consistent with other evidence indicating that the Willow Blvd. landfill contained relatively high levels of Aroclor 1254, and that the Willow Blvd. landfill was created by placing paper sludge directly into the River. (**von Gunten Dep.**, at pp. 61-65; **Cornelius Dep.**, October 12, 1999, at pp. 26-31.) Because there was no berm or stormwater collection system at Willow Blvd. landfill, PCB-contaminated residuals eroded directly into the River and are present in the River adjacent to the landfill. (**Cornelius Dep.**, September 8, 1997, at pp. 26-29, 102-114; **Cornelius Dep.**, October 12, 1999, at pp. 26-31.)

F-77. To the extent Morrow Lake may be a source of Aroclor 1254 to the NPL Site, Dr. Connolly testified that the evidence strongly supports the conclusion that the PCBs found in Morrow Lake originated from a source close or proximate to Morrow Lake as opposed to a source 15 miles upstream of Morrow Lake. (**Trial Testimony, Connolly**, February 5, 2002, at p. 438.) This conclusion is supported by the lack of PCB detections in the sediments between Battle Creek and Morrow Lake, and the lack of a PCB gradient originating from the Eaton Battle Creek plant. It is also supported by data taken from Morrow Lake itself. Samples taken at the most upstream portion of Morrow Lake had very low PCB levels. Three of the four stations along the most upstream transect had PCB levels so low as to be consistent with background. Because the entrance of Morrow Lake is a sediment depositional area, if the PCBs in Morrow Lake were

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sourced from upstream, there would have been elevated PCB levels in these first transect samples. Moving downstream through the lake, the PCB levels increase and begin to spread out as indicated by the detection of PCBs at multiple stations across the lake transects. The highest PCB levels tended to be found furthest into the lake. This indicates to Dr. Connolly that the PCBs in Morrow Lake originate very near Morrow Lake. (**Trial Testimony, Connolly**, February 5, 2002, at p. 438.)

F-78. Dr. Connolly identified two potential sources of PCBs located close to Morrow Lake. The first is Benteler Industries, which discharged effluent to a ditch entering Morrow Lake approximately one-half mile west of the upstream end of the lake. The second is the Consumers Power B.E. Morrow Power Plant, which discharged effluent through an outfall to the far end of Morrow Lake near Morrow Lake Dam. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 436-437.) Following Benteler's release from this litigation in 1997, B, B & L took additional samples in the ditch leading from Benteler to Morrow Lake and found PCBs (primarily Aroclor 1254 with some Aroclor 1260) in every sample taken in the ditch to within 50 feet of the entrance to Morrow Lake. (**Tr. Ex. 6515.**) On the strength of this data, the KRSG requested that the MDEQ evaluate Benteler as an additional PRP at the Site. ***(Id.)*** In 1990, the Benteler facility floors were found to contaminated with PCBs (**Tr. Ex. 6516**). The documentary evidence further indicates that Benteler and its predecessors (Hydreco, Inc. and New York Air Brake, Inc.) had long-term problems related to discharges of process oils to the ditch leading to Morrow Lake. (**Tr. Exs. 6517-6533.**) In this connection, in 1960, MWRC correspondence stated that oil from the New York Air Brake (Benteler) facility ditch was found to be discharging to Morrow Lake. (**Tr. Ex. 6517.**) Although Mark Brown testified at trial that he had changed his mind about the

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significance of Benteler as a source of PCBs to Morrow Lake, Plaintiffs have not withdrawn their request that the MDEQ evaluate Benteler as a PRP at the Site. (**Trial Testimony, Brown**, February 5, 2002, at pp. 336-339, 372.) Although Consumers Powers' effluent into Morrow Lake was never tested for PCBs, it is known that its outfall required the installation of an oil skimmer to treat oily wastewaters coming from various "metal cleaning operations" within the power plant. (**Tr. Exs. 6500-6514**, related to Consumers Power Outfall 003.) Moreover, Dr. Connolly stated that, although there were no known leaks from PCB transformers and capacitors within the Consumers facility, he does not have enough information to rule out Consumers Power as a source of PCBs to Morrow Lake. (**Trial Testimony, Connolly**, February 5, 2002, at p. 436.)

F-79. Dr. Connolly also reviewed data from the 1971 fish sampling program conducted by John Hesse (**Tr. Ex. 6411**). This study analyzed fish in two separate regions of the River – between Morrow Lake and Augusta, and between Augusta and Battle Creek. The average PCB concentrations in the fish between Morrow Lake and Augusta were five times higher than the average PCB concentrations in the fish between Augusta and Battle Creek. Dr. Connolly testified that this data may indicate a potential source of PCBs located between Augusta and Morrow Lake, but does not support a conclusion that a source of PCBs exists at Battle Creek or from the Eaton Battle Creek facility. (**Trial Testimony, Connolly**, February 5, 2002, at p. 439.) On the other hand, the fish data may also reflect the migration of fish from Morrow Lake (where PCB concentrations are higher) upstream to the Augusta area – and possibly further upstream to Battle Creek, similar to the phenomenon observed on the Grass River in New York. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 429-430.)

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H. Conclusions Drawn from Data Relevant to Eaton's Battle Creek Facility

F-80. In its May 9, 2001 Opinion, this Court made a finding of fact that the evidence supported the conclusion that any PCBs released from Eaton's Battle Creek facility were minimal in quantity and were in the form of di-electric fluids only:

> Upon reconsideration of the evidence produced at the first trial in light of the new evidence Plaintiff has produced at this trial, this Court abides by its initial determination that the evidence does not support a finding that the PCBs at the Battle Creek facility were related to cutting and quenching oils. Plaintiff has not shown that PCBs were necessary to Eaton's cutting and quenching processes. Plaintiff has not shown that Eaton purchased PCB-containing quench or cutting oils. Plaintiff has not shown PCBs in the river that would indicate the use of PCBs in open systems. Because Plaintiff is the party with the burden of proof, and because the PCBs at Eaton's Battle Creek facility can all be explained by reference to leaks from hydraulic and di-electric equipment, the Court finds that the PCB contamination at Eaton's Battle Creek facility is not attributable to the use of PCBs in quench and cutting oils. Rather, this Court finds that the PCBs at the plant are attributable to leaking transformers, capacitors and hydraulic systems.
>
> Because di-electric and hydraulic systems are closed or nominally closed systems, the Court finds that the quantity of PCBs released in the waste oils was minimal.

(**May 9, 2001 Opinion**, at p. 27.) Plaintiff has provided no persuasive, credible, or reliable new evidence which would undermine the Court's prior determination that any releases of PCBs from Eaton's Battle Creek facility were minimal and in the form of di-electric fluids only. In addition, the Court's prior finding is further supported by the new evidence that Clark discharged effluent to the Eaton/Clark ditch prior to 1978, and that the PCB detections in effluent to the ditch ceased when Clark ceased discharging to that ditch in 1978. (See **Tr. Exs. 6011-6012**.).

F-81. Although Dr. Connolly admitted that some *de micromis* amount of PCBs from the Eaton/Clark ditch may have traveled to Morrow Lake and then may have traveled over the Morrow Lake Dam to the NPL Site, Dr. Connolly opined that Eaton's Battle Creek facility did not release a measurable amount of PCBs to Morrow Lake or the NPL Site. (**Trial Testimony, Connolly,**

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February 5, 2002, at pp. 391, 455.) In an attempt to quantify the highest release that one could argue may have occurred from Eaton, Dr. Connolly performed a calculation using the results from the 1972 MWRC effluent test, .12 ppb and .24 ppb, PCBs. For this calculation, Dr. Connolly assumed that the PCBs found in that effluent came from Eaton as opposed to Clark. Based on the higher PCB effluent value, .24 ppb, and a flow of one million gallons per day, Dr. Connolly calculated a maximum discharge of approximately .7 pounds of PCBs discharged to the Kalamazoo River in one year. Using the lower PCB value, .12 ppb, and the same daily flow, Dr. Connolly calculated a discharge of approximately .3 pounds of PCBs discharged in one year. Over a 30-year period, these discharges would amount to 20 and 10 pounds of PCBs respectively. The average of these numbers yields a total contribution from Eaton Battle Creek of 15 pounds of PCBs to the Kalamazoo River, at a location 15 miles upstream of the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at pp. 445-449.) Dr. Connolly testified that a fraction of this volume may have reached Morrow Lake and that an even lesser fraction of that volume may have gone over the dam to the NPL Site. (***Id.* at 455.**) Nevertheless, this *de micromis* amount would not be measurable above normal background levels of PCBs. (***Id.* at 455.**)

IV. KALAMAZOO PLANT

A. Plant Operations

F-82. The Court's May 9, 2001 Opinion following the January 2001 bench trial set forth this Court's findings of fact related to Eaton's Kalamazoo facility. The Court's specific findings of fact, reaffirmed here following the February 2002 trial, are listed below, with reference to where such findings are found in the Opinion.

F-83. Eaton manufactured truck transmissions at the Eaton Transmission Division located on Mosel Avenue in Kalamazoo, Michigan, from the mid 1950's until January 1984, when the

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plant was closed. Eaton was the sole occupant of the building. The plant was serviced by city sewer and water. The Kalamazoo facility was located approximately one-half mile from the Kalamazoo River. (**May 9, 2001 Opinion**, at pp. 29-30.)

F-84. The plant's processes included machining (cutting, turning and hobbing), heat treating and polishing transmission parts such as gears, shafts and housings, and assembling those parts into truck transmissions. These operations required the use of water soluble cutting oils, synthetic cutting compounds, and quench oils. There were no diecasting or forging operations at the plant. (**May 9, 2001 Opinion**, at p. 30.)

F-85. Parts that went through the heat treat furnaces were cooled in a quench oil bath, and then were washed. When the plant engineer at Eaton's Kalamazoo facility from the 1960's to the mid-1980's first started at Eaton, the sewer lines from the heat treat department and from some of the manufacturing areas discharged to a catch basin. (**May 9, 2001 Opinion**, at p. 30.)

F-86. Effluent from the catch basin was pumped to the Zantman Drain. The oils that went into the drains that led to the catch basin were primarily water soluble oils. (**May 9, 2001 Opinion**, at p. 30.) The Zantman Drain was a ditch, mostly open, leading in the direction of the Kalamazoo River. (*Id.*)

F-87. Parts were also washed after machining operations in other areas of the plant. Prior to the late 1960's, the wastewater from those operations, including waste oils, were passed through a decanter system, then discharged to the catch basin, the city's sanitary sewers or the city's storm sewers. The catch basin and some of the storm sewers discharged to the Zantman Drain. Other sewer lines discharged to the municipal sanitary system or the municipal storm water system. Prior to the late 1960's, the catch basin removed some oils, but other than that, there was no

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treatment before the water, mixed with oils, was discharged to the Zantman Drain, the sanitary sewer, or the storm sewer system. (**May 9, 2001 Opinion**, at pp. 30-31.)

F-88. During the manufacturing process, cutting oils, hydraulic oils and oil-based coolants commonly spilled onto the wood block floors. After a part was manufactured by a machine, it would be placed on a spindle or cart. There was a pan under the cart, but oil did splash and drip onto the floor. Most of the oil was lost while a machine part was in transit from one manufacturing area to another. Enough oil dripped on the floor to require the use of large quantities of Floor Dry or Oil Dry absorbent material. Waste from the scarifier used to clean the floors was placed into one of several trash compactors, and fluids from some of the compactors would run into floor drains. Until the mid 1970's, the floor drains at the Kalamazoo facility led to either the Zantman Drain, the storm sewer, or the sanitary sewer. (**May 9, 2001 Opinion**, at pp. 31.)

F-89. Because oil was expensive, it was generally recycled and reused. Straight oils were recycled or picked up by waste haulers. One employee, who started working at Eaton Corporation in the 1950's, testified that quench oil in particular was continually reused, and he did not recall any spills of quench oils. Hydraulic oils were filtered and reused. Although hydraulic lines would break periodically with a loss of two or three gallons of oil at a time, most spills of hydraulic oil went right into the cutting oil reservoir and were, therefore, recycled. (**May 9, 2001 Opinion**, at p. 32.)

F-90. Metal shavings and trimmings were dumped into a collection pit outside of the plant. Oils that drained from the trimmings pooled on the ground under and around the pile. Periodically, the shavings were lifted off by a magnet separator, and the oil was pumped out of the collection pit and hauled away. (**May 9, 2001 Opinion**, at p. 33.)

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F-91. The catch basin did not prevent all the oil from entering the Zantman Drain. In March 1965, the MWRC tested the water in the Zantman Drain and found that it contained oil in concentrations of 41 and 51.2 ppm. The MWRC advised that Eaton was responsible for the excessive quantities of oil in the Zantman Drain, and for the oil pooling in the swampy area north of Mosel Avenue. The MWRC further advised that "[t]he amount of oil being lost to the drain would undoubtedly create oil pollution problems in the Kalamazoo River were this drain to be cleaned out to the river." (**Tr. Ex. 2213.**) The MWRC advised Eaton that it had to improve its waste control methods to control the contamination of the Zantman Drain and groundwater. Eaton acknowledged that as a result of the practice of emptying its metal shavings coating with cutting oil outside, "a great deal of oil accumulates in our yard which seeps into and at times of substantial rainfall washes into the drainage ditch." (**Tr. Ex. 6302.**) (**May 9, 2001 Opinion**, at pp. 33-34.)

F-92. The 1967 wastewater survey showed that Eaton was releasing oil at concentrations of 373 ppm, for an estimated release of 1,332 pounds of oil per day. The MWRC noted that heavy deposits of oil had accumulated along the banks of the Zantman Drain and around the periphery of the waste ponding area. According to the MWRC, the major source of this oil is from parts washers in the heat treating department. The MWRC was also concerned that the oil pooled around the scrap metal pile could be washed overland into the Zantman Drain during times of heavy precipitation. (**May 9, 2001 Opinion**, at p. 34.)

F-93. Eaton responded to the MWRC's concerns by making changes in its waste disposal system. A concrete pit was constructed to catch oil drippings from the scrap metal pile. A free-oil skimmer was installed at the outlet of the collection basin. By the early 1970's, most of the floor drains were plugged to prevent the active disposal or accidental drainage of water and oil into the floor drains. (**May 9, 2001 Opinion**, at p. 34.).

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F-94. In early 1974, Eaton advised the MWRC that it had completed construction of a retention pond for oil removal. An oil skimmer was installed on the lagoon to keep the oil from being discharged to the Zantman Drain. Free-flowing oils were skimmed and collected in a holding tank. Water from the retention pond was pumped into the Zantman Drain. The waste from the holding tank was pumped through a decantering system, with the wastewater going to the sanitary sewer and the oil being hauled away by commercial waste haulers. Despite the installation of the oil skimmer on the pond in the early 1970's, the skimmer did not prevent oils from reaching the Zantman Drain. (**May 9, 2001 Opinion**, at p. 35.)

B. <u>The Zantman/Richardson Drain</u>

F-95. The Zantman Drain is a county drain under the jurisdiction of the Kalamazoo Drain Commission. Prior to approximately 1973 when it was reconstructed, the "old" Zantman Drain was an open culvert that began west of the Eaton facility, traversed the southern boundary of the Eaton facility, then turned north where it tied into the Richardson Drain. The Richardson Drain went through a culvert under Mosel Avenue, after which it ponded into a wetland, which drained through a 24-inch pipe under the Upjohn building, then into an open ditch before discharging into the Kalamazoo River. (**May 9, 2001 Opinion**, at pp. 35-36; **Trial Testimony, Snell**, January 17, 2001, at pp. 81-84.)

F-96. There was not much contribution to the old Zantman Drain from upstream of the Eaton facility. There was little evidence of a water course west of Burdick Street. Most of the land west of the Eaton facility was agricultural, so there was little industrial development that would have contributed to the Zantman Drain. (**May 9, 2001 Opinion**, at p. 36.)

F-97. In the 1960's and early 1970's, there was concern that the Zantman Drain was inoperative due to construction over the drains, improper grading, debris, and plant growth. The

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obstruction caused wastewater to pond in a marshy area and to back up on the properties just north of Mosel Avenue. There was not much flow in the drain north of Mosel Avenue. There was only a trickle from the 24-inch pipe underneath the Upjohn buildings through to the ditch on the north side of the Upjohn property. The minimal flow through the drain to the Kalamazoo River, however, would have increased during a heavy rain. (**May 9, 2001 Opinion**, at p. 36.)

F-98. In 1973, the Zantman Drain was improved and relocated. The entire section of the drain between the Eaton facility and Mosel Avenue was enclosed in a corrugated metal pipe. The portion of the "new" drain north of Mosel Avenue was an open ditch, east of the former channel. The new drain ran north from Mosel past the Southon Paper Company, then east across the back part of Southon's property, then north along the railroad tracks to the River. More than 15,000 cubic yards of dirt were excavated for the open drain north of Mosel Avenue. That dirt was not hauled away, but was left on the banks or spread on neighboring property. (**May 9, 2001 Opinion**, at pp. 36-37.)

F-99. In 1965 and 1968 studies, Eaton was found to be discharging 433,000 gallons and 459,000 gallons, respectively, of wastewater per day to the Zantman Drain. Given this magnitude of flow on a daily basis, Dr, Brown opined that it would be difficult to contain all the wastewater in the marshy area north of Mosel Avenue without some of that water flowing through the drain to the Kalamazoo River. Heavy rains would also have carried water through the drain to the River. (**May 9, 2001 Opinion**, at p. 37.)

F-100. There is no dispute that once the Zantman Drain was improved in 1973, effluent discharged by Eaton through the Zantman Drain did reach the Kalamazoo River. There is also no question that some oils were carried from the Eaton facility to the River. The NPDES permit itself allowed a daily maximum release of 10 mg/l of oil from the Eaton Kalamazoo facility to the

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Kalamazoo River via the Zantman drain. In a 1973 letter to Eaton, the Kalamazoo County Drain Commissioner stated that in his "recent inspection and observation of the Zantman Drain, there seems to be an oil film on the water as it escapes into the Kalamazoo River. In 1974 and 1975, an engineering company noted that after a physical inspection of the Zantman Drain, it found a collection of oil on the water surface in adjoining banks where the water level has fluctuated." (**May 9, 2001 Opinion**, at pp. 37-38.)

F-101. Even after the improvement project in 1973, the Zantman Drain is still a stagnant, slow-moving and organic-rich ditch. Because of the high water table in the area, the majority of water in the ditch north of Mosel appears to be groundwater. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 580-582, 593-595.)

C. Process Oils at Kalamazoo

F-102. No PCBs have ever been detected as a constituent of the process oils used at the Kalamazoo plant. (**May 9, 2001 Opinion**, at p. 38.)

F-103. In 1970, Eaton provided to MDNR a list of trade names of hydraulic oils, lubricating oils, greases and other fluids used at the Kalamazoo plant. None of the trade names or suppliers identified in that list indicates that PCBs were a constituent of the oils used. (**Tr. Ex. 6117**: Letter from Dahmer to MDNR.)

F-104. Workers at the Kalamazoo plant performed machining and grinding of steel and iron. Those operations did not require anything other than conventional cutting and grinding fluids. (**Trial Testimony, Wharton**, January 18, 2001, at pp. 366-369, 383.)

F-105. Nothing in the Eaton Kalamazoo plant's manufacturing processes required PCBs as an additive to the process oils or hydraulic oils used at the plant. (**Trial Testimony, Wharton**, January 18, 2001, at pp. 382-385.)

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F-106. PCBs made a poor additive to cutting fluids because the chlorine in the PCBs is not sufficiently free to assist in the cutting process. (**Trial Testimony, Wharton**, January 18, 2001, at p. 383.)

F-107. PCBs were about five times more costly than petroleum-based oils, on a price-per-gallon basis. (**Trial Testimony, Wharton**, January 18, 2001, at p. 385.)

F-108. With regard to the evidence regarding Eaton's process oils, this Court has previously stated:

> There is no testimony from anyone with personal knowledge that Eaton ever used PCB-containing oils in its processes. There is no evidence of any test results showing the presence of PCBs in the fluids used in the Eaton plant. There is no testimony that Eaton engaged in activities that required PCB additives. PCBs are most commonly found in the oils used in diecasting operations. Eaton did not have a diecasting operation. The evidence is uncontroverted that Eaton had no incentive for using PCBs in its process oils because the PCBs would have added unnecessary costs, without any corresponding benefit. In fact, there was a disincentive for using PCBs because they were poorer in performance than other cutting oils, had unpleasant odors, and were irritating to the skin.

(**Opinion:** ***KRSG v. Rockwell, et al.*****, June 30, 1998**, at pp. 15-16.) In light of the proofs at trial, these findings remain correct and compelling.

F-109. During the recent sampling conducted by the MDEQ prior to the demolition of the Eaton Kalamazoo facility, trace levels of PCBs were found in one oil sample from a "product" dispenser in the plant. Concentrations found were 3.2 ppb Aroclor 1248 and 2.1 ppb Aroclor 1260. At trial, Plaintiff's expert, Mr. McLaughlin, overstated the significance of this finding, testifying that finding PCBs in an oil dispenser was significant because PCB oils were removed from the market over 30 years ago. To the contrary, it cannot be inferred from this one sample that pure PCBs or even oils with high concentrations of PCBs were used in product dispensers based on this one trace level finding of PCBs. Moreover, a trace level detection in one sample is not an

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indication that any other oils in the plant contain PCBs, and, in fact, supports the conclusion that the detection is related to isolated incidental contamination. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 548-549.)

D. Wood Block Testing at the Kalamazoo Facility

F-110. In 1984, in connection with Eaton's sale of the Kalamazoo facility to Liberty Properties, Eaton retained a consultant which tested 70 samples from the wood block floors. PCBs were found in the wood flooring in levels ranging from non-detect to 743 ppm. No distinction was made in the study between the various Aroclors. The floor map indicates where the samples were taken, and whether they were taken from the aisle, background, capacitors, or transformers. Of the 69 samples taken, 28 samples were below the detection limit. Only four samples contained PCBs in excess of 20 ppm, and all four of these samples were from locations near transformers or capacitors. (**May 9, 2001 Opinion**, at p. 39.)

F-111. In 2000, the MDEQ conducted Aroclor-specific testing at the Kalamazoo facility. PCBs were detected in soil, concrete, floor blocks and wipe samples. In contrast to the testing of a limited number of blocks from strategic areas at the Battle Creek facility, the testing at the Kalamazoo facility was done in a variety of areas throughout the facility. Very few PCBs were detected in soils, and no PCBs were detected in the groundwater. The MDEQ's 2000 data shows a predominance of Aroclors 1254 and 1260. Aroclor 1260 was detected primarily in wipe samples. It was not detected in any of the soil samples under or adjacent to the facility. Except for the trace levels in one "product" dispenser, only one other sample from within the building contained Aroclor 1248. Aroclor 1242 is not detected anywhere in the plant or on the adjoining property, other than in one isolated sediment sample from the former settling pond. (**May 9, 2001 Opinion**, at p. 41.)

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F-112. This Court has made the following finding of the fact with regard to the PCBs at the Kalamazoo facility:

> The Court does not agree with Plaintiff's assertion that the predominant Aroclors found at the Kalamazoo facility, Aroclors 1254 and 1260, are more likely to be attributable to PCBs in cutting or quench oil than to the oils from the di-electric equipment. Aroclors 1254 and 1260 are the same Aroclors one would expect to find in electrical equipment. Dr. Brown conceded that the evidence of PCBs in the wood block floor at the Kalamazoo plant could be consistent with periodic leaks from transformers and capacitors. He also acknowledged that the presence of PCBs at depth can be explained by the use of detergents which would bring the PCBs down into the soil. Mr. McLaughlin was unable to explain the absence of any PCBs detected in the chip storage area, where process oils would have drained off the metal chips into the soils.
>
> Testing of the Eaton Kalamazoo facility in 1984 and again in 2000 revealed that the PCB concentrations were primarily of a low level, either non-detect or up to a few parts per million, in a sporadic pattern throughout the facility. The highest concentrations of PCBs were found near the electrical equipment areas. The lower levels of PCBs were found in the aisles and the background. There was no significant concentrations of PCBs in the vicinity of the quench baths or the machine tool areas where cutting fluids would have been used. According to Eaton's experts, Dr. Lennard Wharton and Robert Barrick, the nature and dispersion of PCBs reflected the use of PCBs in capacitors and transformers. They testified that the patchy pattern of limited PCB contamination is consistent with tracking the PCBs from the electrical equipment areas, and that it was inconsistent with the use of process oils containing PCBs in open systems such as cutting and quenching operations.
>
> The MDEQ detected no PCBs in soil samples taken from the vicinity of the outdoor quench oil storage tanks. Neither did the MDEQ find any PCBs in the chip storage area on the southeast corner of the building where one would expect to find them if PCB-containing process oils dripped from the metal chips. The closest PCB detection to the chip storage area was a single detection north of the chip pile at the level of .53 ppm.

(**May 9, 2001 Opinion**, at pp. 43-44.)

F-113. Based on this evidence, the Court rejected the KRSG's contention that the Eaton Kalamazoo plant used PCBs in the open systems of quench and cutting oils:

> This Court finds that given the relatively low level PCB detections, their concentration around the electrical equipment, the lack of PCB concentrations in

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> the machining and heat treat areas, the lack of PCBs in the area of the chip pile, the fact that PCBs have never been detected as a constituent of the process oils used at the Eaton Kalamazoo facility, and Dr. Brown's concession that the distribution of the PCBs was consistent with leaks from electrical equipment, it is unlikely that the PCBs found at Eaton's Kalamazoo facility were part of the open systems.

(**May 9, 2001 Opinion**, at p. 45.) No evidence was introduced at the February 2002 trial that would undermine these findings.

E. Effluent Testing at the Kalamazoo Facility

F-114. The MWRC conducted an industrial wastewater survey for the Kalamazoo facility in 1973. No PCBs were detected in the Kalamazoo facility's effluent. (**Tr. Ex. 6113**, 1973 MWRC Industrial Wastewater Survey.) A second industrial wastewater survey conducted in 1976 similarly detected no PCBs in Eaton's effluent. (**Tr. Ex. 6114**, MDNR 1976 Industrial Wastewater Survey.)

F. Plaintiff's Sediment Sampling of the Zantman/Richardson Drain

F-115. This Court has thoroughly examined the Zantman Drain sediment data collected by Mr. McLaughlin in December 2000. Based on this review, the Court made the following findings of fact in its May 9, 2001 Opinion:

> On December 7, 2000, Plaintiff's expert, Michael McLaughlin, sampled four locations in the vicinity of the former Eaton facility in Kalamazoo. He sampled two areas, K-1 and K-2, immediately southeast of the plant, as close as he could get to the location of the chip storage pile without trespassing on Eaton's former property. He described the location as being just east of the chip pile, and in the drainage swale between Eaton and the railroad tracks. In Sample K-1, he found Aroclor 1260 at the level of 20 ppb. In Sample K-2, nearby, he found Aroclor 1260 at the level of 370 ppb.
>
> Mr. McLaughlin attempted to test the Zantman drain in two locations. Sample K-3, was taken from the exit of an abandoned concrete culvert under the railroad tracks, a location he believed was near the outfall from Eaton's plant to the old Zantman drain. At this location, almost one-half mile from the river, he found Aroclor 1254 at the level of 2000 ppb. Based upon the historical documents and his observations

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in the field, Mr. McLaughlin opined that there were no other sources for this PCB detection other than the Eaton facility.

Mr. McLaughlin also sampled an area north of Mosel Avenue, because he believed that if Eaton discharged PCBs, they would likely be present in the marshy area described in the historical documents. He could not find the marshy area. He did not know if the marshy area had been obliterated by the 1973 improvements to the Zantman drain or whether he could just not locate it. He took Sample K-4 from a culvert which he believed to be where the old Zantman drain went under Mosel. No PCBs were detected at this location. Mr. McLaughlin now opines that he must have been in the discharge of the new Zantman drain.

(**May 9, 2001 Opinion**, at pp. 46-47.)

F-116. The Court made the following additional findings of fact regarding Eaton's expert's review of the McLaughlin data collected in December 2000:

Eaton's expert witness, Robert Barrick, testified that Mr. McLaughlin's detection of low levels of Aroclor 1260 in the sediments at K-1 and K-2 was of little significance. The 20 ppb detection at K-1, in particular, was a low concentration near the detection limits for many routine analyses. The detections of Aroclor 1260 at K-1 and K-2 also failed to match any of the MDEQ's soil samples from outside the facility. The MDEQ did not detect any Aroclor 1260 on the property immediately outside the plant. Aroclor 1254 was the predominant Aroclor found in the plant. The MDEQ also did not detect any PCBs in the chip storage area where one would expect to find them if they were in the cutting or quench oils. Mr. McLaughlin could not account for this discrepancy between his findings and the findings of the MDEQ. The area the samples were taken from could have included material from many places other than Eaton, including upstream sources on the Zantman drain, or the highway. According to Mr. Barrick, in light of this negative and contradictory evidence, it would not be reasonable from a scientific standpoint to associate the PCB detections at K-1 and K-2 with the Eaton facility.

Mr. Barrick acknowledged that the PCBs found in Sample K-3 could be associated with the Eaton facility, although there is also the possibility that it could have come from another source, such as the railroad tracks. Mr. McLaughlin acknowledged that there was runoff from the railroad tracks and that there are reports of PCB contamination associated with railroad tracks. He stated, however, that PCBs were not generally on collector lines like the one at issue, but were rather associated with maintenance facilities and electric locomotives.

According to Mr. Barrick, the non-detection of PCBs at K-4 is of particular significance. Even assuming K-4 was taken where the new Zantman drain emerges from under Mosel Avenue, rather than where the old Zantman drain used to

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> emerge, it would have been one of the first collection points for sediment or other oil from the plant. Because this is a slow-moving, organic-rich system with a lot of vegetation, it would have absorbed many of the PCBs if they had been present. Accordingly, if PCBs had been used in the cutting oils or in the heat treat areas of the plant, the plant would have been a continuing source of PCBs, and one would expect to find them in the culvert. The lack of PCBs at K-4 tends to indicate that PCBs were not a part of the process oils used in the open systems at the Eaton Kalamazoo facility.

(**May 9, 2001 Opinion**, at pp. 47-48.)

F-117. In August 2001, Mr. McLaughlin returned to the Zantman/Richardson drain to collect additional data between Sample K-4 and the Kalamazoo River and at the outfall of the drain system to the River. Based on prior testimony by the Kalamazoo County Drain Commission's engineer, Mr. Snell, Mr. McLaughlin attempted to find the open portion of the Richardson drain located on the north side of the former Upjohn warehouse buildings. This northernmost former Upjohn building is currently occupied by Mall City Containers, Inc. The southernmost building is occupied by Goodwill Industries. (**Trial Testimony, McLaughlin**, February 4, 2002, at pp. 52-55.)

F-118. Mr. McLaughlin took Samples K-5 and K-6 at different depths within a drain swale located north of the current Mall City building. (***Id.* at 55.**) No PCBs were found in either of these samples. At a later date, Mr. McLaughlin returned to this location with Mr. Snell to confirm that he was in the location where the Richardson Drain flowed north from under the Upjohn buildings. This was confirmed by Mr. Snell. (***Id.***) Mr. McLaughlin then took a deeper sample (K-8) in the same location as the previous two samples. Aroclor 1260 at .05 ppm (50 ppb) was detected in Sample K-8. (***Id.***)

F-119. The next sample to the north, K-6, was taken at a location near where Mr. McLaughlin believed would be the junction of the old Richardson Drain and the new Zantman

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Drain (created in 1973). Mr. McLaughlin admitted that the "drainage feature" of the old Richardson Drain was very overgrown and difficult to follow. ***(Id.* at 53.)** Aroclor 1260 was detected at sample location K-6 at a concentration of .320 ppm (320 ppb). ***(Id.* at 55.)**

F-120. Just north of Sample K-6, the current Zantman Drain joins the Lesterhouse Drain prior to discharging to the Kalamazoo River. Mr. McLaughlin took Sample K-9 at the outfall of the Zantman/Lesterhouse Drain located in a small cove that opens to the larger river. The results of Sample K-9 showed .140 ppm (140 ppb) Aroclor 1242, .085 ppm (85 ppb) Aroclor 1254, and .120 ppm (120 ppb) Aroclor 1260. Mr. McLaughlin took Sample K-7 approximately 50 feet down river from the outfall of the Zantman/Lesterhouse Drain; that sample had .042 ppm (42 ppb) Aroclor 1254.

F-121. Mr. McLaughlin admits that the combination of Aroclors found in the Eaton Kalamazoo plant (primarily Aroclors 1254 and 1260, with some 1248) are not found in the Zantman/Richardson Drain. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 210.) Aroclor 1254 was found in only one sample in the drain near the Eaton plant, K-3, and was not found in any other sediment sample in the half mile stretch to the River. ***(Id.* at 209.)** Aroclors 1248 and 1242 were not found in any sediment sample in the Zantman/Richardson drain. ***(Id.* at 209.)** The primary Aroclor found in the drain was low levels of Aroclor 1260. Aroclor 1260, by Plaintiff's own admission, is the least significant contaminant found in the NPL Site. ***(Id.* at 128.)** In fact, Mr. McLaughlin's "allocation" indicates that there is only a total of 180 pounds of Aroclor 1260 in sediments in the River (or .3% of the total PCBs believed to be located within the Site) as estimated by B, B & L. ***(Id.* at 128.)** It is also undisputed that Aroclor 1260 has been detected in Plaintiff's landfills and is found in the River upstream of the Zantman's outfall.

F-122. Mr. McLaughlin could not provide any support in the literature for Plaintiff's theory that Eaton's Kalamazoo facility could be a source of Aroclors 1254 and 1248 to the River, yet leave no signature of detections of these Aroclors in the slow-moving, organic-rich Zantman/Richardson Drain. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 211.)

F-123. Mr. McLaughlin also concedes that there is no gradient of Aroclor 1260 near the Eaton Kalamazoo plant (high to lower concentrations moving away from the plant). (**Trial Testimony, McLaughlin**, February 4, 2002, at pp. 209-210.) In fact, the pattern in the drain is much more erratic (Aroclor 1260 present in some places and absent in others), which would be indicative of either a multiple-source pattern for the low-level Aroclor 1260 contamination found in the Zantman/Richardson Drain or background contamination of PCBs from the atmosphere. (**Trial Testimony, Barrick**, February 4, 2002, at pp. 586-587.)

F-124. Eaton's expert, Robert Barrick, opined that Eaton's Kalamazoo plant has contributed no PCBs to the Kalamazoo River Superfund Site. The bases for this opinion include conditions at the plant and the surrounding grounds, the environment of the Zantman/Richardson Drain system, the data collected by Mr. McLaughlin in the drain, and a detailed examination of the data in the River both upstream and downstream of the Zantman Drain outfall. (**Trial Testimony, Barrick**, February 6, 2002, at p. 535.)

F-125. Consistent with his earlier opinions in this matter, Mr. Barrick testified that PCBs detected in the plant, primarily Aroclors 1254 and 1260, are consistent with leaks of di-electric fluids from electrical equipment. In addition, because of the large amounts of oil still found in the plant's walkways, conditions were and are ripe for cross-contamination and tracking of PCBs throughout the plant, including on the plant walls and columns. These conditions are the most likely cause of the positive PCB detections on vertical surfaces in wipe samples. (**Trial**

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Testimony, Barrick, February 6, 2002, at pp. 546-548.) According to Mr. Barrick, the wipe samples are not indicative of PCB-containing process oils in the plant but indicate trace PCB contamination from electrical systems that has been tracked around in an oily environment. (***Id.* at 548**.) Moreover, Mr. Barrick opined that the trace-level PCB contamination (2.1 and 3.2 ppb) in the "product" spigot is not indicative of residual contamination from earlier-used PCB oils, but is merely incidental contamination from some unknown source. (***Id.* at 549**.)

F-126. Mr. Barrick concluded that the lack of PCB detections in soil near the metal chip pile outside the Eaton facility is significant because a considerable amount of oil drained from these chips and contaminated the surrounding soil. If there had been PCBs in the process oils coating the chips, they would have been readily detected in soils near the chip pile. In addition, a floating oil layer, or LNAPL (light non-aqueous phase liquid) is present on top of the groundwater table in this area. No PCBs were detected in the LNAPL, which is strong evidence that Eaton's process oils did not contain PCBs. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 559-560.)

F-127. In the February 2002 trial, Mr. Barrick reaffirmed his earlier opinion that the detections of Aroclor 1260 at sample locations K-1 and K-2 are not associated with the Eaton Kalamazoo facility. This is based on evidence indicating that, although Aroclor 1260 is found in the Eaton building, it is not found anywhere in the soil surrounding the building or in soils between Samples K-1, K-2 and the building. There is no established pathway from the building to the samples at K-1 and K-2. Moreover, Samples K-1 and K-2 were taken off of the Eaton property and are **upgradient** of the discharge point from the collection basin. Moreover, no Aroclor 1260 was found at location K-3, which would be downstream of the collection basin's discharge to the Zantman Drain. Mr. Barrick believes that the Aroclor 1260 in these samples represents

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background concentrations of PCBs from a potentially unknown source. (**Trial Testimony, Barrick**, February 6, 2002, at p. 562.)

F-128. Mr. Barrick testified that, prior to the reopening of the Zantman Drain in 1973, the gradient of the Zantman/Richardson Drain was very flat. The purpose of the drain was to hold and distribute water for irrigation related to celery farming. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 567-569.) At times, water in the drain did not flow at all – and it was subject to ponding north of Mosel Avenue. This slow-moving, organic-rich environment would act as sink for any PCBs discharged to the system. (***Id.* at 569.**) Although Mr. McLaughlin observed the Zantman/Richardson Drain and reviewed historical documents related to it, he seemed to have a fundamental misunderstanding related to how the drain system operated. (**Trial Testimony, McLaughlin**, February 5, 2002, at pp. 219-220, 225-226, 228.)

F-129. With regard to other potential sources of PCBs in the area of Eaton's Battle Creek facility, Mr. Barrick identified Checker Motors (to the south and east of Eaton) and various industries located along Burdick Street parallel to the Lesterhouse drain, including Rowan & Blair Electrical Supply, which stored electrical transformers in its yard. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 571-572.) Although Checker Motors did not discharge effluent to the Zantman Drain, Checker had a spill of Aroclor 1260 and a later cleanup action in this area on the north end of its production facility. (***Id.* at 573.**) (**Tr. Exs. 6412-6423.**) The Zantman Drain did traverse through Checker's test track area for its vehicles, which extended north to Mosel Avenue. (***Id.* at 593.**)

F-130. The Zantman and Lesterhouse Drains joined together before discharging to the River. Plaintiffs did not take samples in the Lesterhouse to determine if it was a source of PCBs. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 571, 574-575.) Mr. Barrick testified that

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because of Plaintiff's failure to sample the Lesterhouse, it cannot be ruled out that PCBs found at Samples K-9 and K-7 originated from the Lesterhouse Drain, or from upstream in the Kalamazoo River. (***Id.* at 575.**)

F-131. Mr. Barrick prepared and explained Trial Exhibit 6589. This exhibit shows the PCB concentrations found in the Zantman/Richardson Drain on an organic-carbon basis. Assuming that the background levels of PCBs is approximately 5 ppm oc (normalized for organic carbon), all of the Aroclor 1260 detections in the drain system fall within the range of background. The only PCB detection in the drain system that is above background levels on an organic-carbon basis is Sample K-3, where Aroclor 1254 was found very close to the Eaton facility. Aroclor 1254 was not found at any other sample location in the drain. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 586-587.) Based on this analysis, the PCB detections at K-1, K-2, K-8, and K-6 can be disregarded as background, and are not useful in determining a source of PCBs to the Kalamazoo River. In fact, these background detections are evidence that the Zantman/Richardson Drain was not a source of PCBs to the River. (***Id.* at 587.**)

F-132. In addition, Mr. Barrick testified that the non-detect samples at locations K-4 and K-5 are significant because these are supposedly in the pathway where concentrated PCB waste would have traveled to get to the River. A non-detect for PCBs in these locations is a good indication that, even if there may have been oil being transported, there were no PCBs. (**Trial Testimony, Barrick**, February 6, 2002, at p. 588.) Moreover, there is no PCB gradient in the vicinity of the Eaton plant for Aroclor 1260, and a PCB detection at K-3 represents a gradient consisting of only one sample with regard to Aroclor 1254. In essence, the gradient for Aroclor 1254 starts and stops at this location. (***Id.* at 589.**)

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F-133. The lack of PCB detections in the Zantman/Richardson Drain is underscored by the fact that – due to its slow-moving, organic-rich nature – if PCBs were discharged in oils from Eaton, PCBs would certainly be found in the drain, and in high concentrations. (**Trial Testimony, Barrick**, February 6, 2002, at p. 589.)

F-134. Mr. Barrick opined that the lack of detections of Aroclors 1254 and 1260 in combination in the drain system was significant because the drain system did not reflect the combination of Aroclors (primarily Aroclors 1254 and 1260) found in the Eaton plant. Oil does not distinguish between Aroclors – when one Aroclor is transported in oil, they both should be. Therefore, over time, whether there was a variable episodic discharge or not, one would expect to find both of these Aroclors in the drain, if they were present in the source material. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 590-591.)

F-135. Contrary to Mr. McLaughlin's position, episodic releases of PCBs could not account for a lack of detection of some types of Aroclors in the ditch because of the cumulative effect caused by organic-rich sediments in the ditch. (***Id.* at 591.**) There is also no support in the literature for Plaintiff's position on this issue. (***Id.* at 592.**)

F-136. Based on a review of the chromatograms, the Aroclor 1254 found at location K-3 (near Eaton) looks nothing like the Aroclor 1254 found at Sample K-7 (50 feet down river from the outfall of the Zantman/Lesterhouse drain). The chromatogram peaks of the K-3 sample are highly weathered, while the K-7 sample does not appear weathered. This is exactly the opposite of what one would expect to find if the Aroclor 1254 at K-7 had been exposed to the elements while traveling through the slow-moving drain system. This, compounded by the compelling evidence that no Aroclor 1254 was found between K-3 and the outfall of the drain system, indicates that Eaton Kalamazoo was not a source of Aroclor 1254 to the River. (**Trial Testimony,**

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Barrick, February 6, 2002, at pp. 599-600.) Based on further review of the chromatograms, the Aroclor 1254 at K-7 appears similar to other Aroclor 1254 found upstream in the River at location KPT-23. (***Id.* at 600**.)

F-137. There is no source gradient of Aroclor 1260 in the drain system leading from Eaton. In addition, Aroclor 1260 levels at location K-8 to K-6 to K-9 (in the River) range from low to high, which is a reverse gradient. Evidence indicates that the Aroclor 1260 at K-9 is being sourced from upstream. In fact, 80% of the Aroclor 1260 detections above .5 ppm (500 ppb) are upstream of the Zantman/Lesterhouse drain. Another possibility is that the Lesterhouse drain is a source of Aroclor 1260 to Sample K-9. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 603-605.)

F-138. Aroclor 1260 is the least significant PCB contaminant in the River in terms of volume. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 128.) The fact that the same concentrations of Aroclor 1260 are found upstream as well as downstream of the Zantman/Lesterhouse outfall indicates that the drain system is not a significant source of Aroclor 1260 to the River. (**Trial Testimony, Barrick,** February 6, 2002, at pp. 608-610.) Even if the Zantman drain system is a minor source of Aroclor 1260, there is no compelling evidence to indicate that Eaton is the source of that Aroclor 1260, the for the reasons stated above. (***Id.***)

V. MR. MCLAUGHLIN'S KEY OPINIONS AND HIS "ALLOCATION" ARE UNSUPPORTED BY THE EVIDENCE.

F-139. Mr. McLaughlin's practice of comparing the 76 ppm PCB detection at Sample B-6 in the Eaton/Clark ditch (as well as other samples from the ditch) to all other River and operable unit (OU) samples is misleading for several reasons. First, the comparison ignores that a sample taken from the Eaton/Clark ditch is not a sample taken from the Site. (**von Gunten Dep.**, pp. 18-

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20, 101, 105-106, 139.) This comparison further ignores the fact that there are virtually no PCB detections for a 13-mile stretch between Eaton and Morrow Lake, and that Plaintiffs cannot "connect the dots" between Eaton Battle Creek and the NPL Site. Second, the McLaughlin comparisons attempt to confuse a high PCB concentration in a small volume area (ditch) with vastly larger volume areas thoroughly contaminated by PCBs (Plaintiff's landfills, and other NPL Site sediments). The McLaughlin comparisons ignore the sheer volume of PCB contamination discharged by Plaintiff. For example, the volume of PCB-contaminated residuals in Plaintiff's landfills totals up to three million cubic yards, or enough to fill the Pontiac Silverdome over 1-1/2 times. (**Trial Testimony, Brown**, August 11, 1998, at p. 109.) In addition to releases from their landfills to the River, which have certainly occurred and continue to occur, each of Plaintiff's members was a direct discharger of PCBs via their effluent to the River. *KRSG v. Rockwell*, 107 F. Supp.2d at 835 ("this Court concludes that PCBs were present in Plaintiff's members' effluent to the Kalamazoo River"). The paper sludge disposed of at Plaintiff's landfills, which was removed from their clarifiers, is an indication of the PCBs which were discharged from the clarifier effluent to the River. (**Trial Testimony, Barrick**, August 13/14, 1998, at pp. 118-21; **Tr. Exs. 8008, 8015, 8016**: Brown Co. (James River) lab reports, comparing PCB levels in clarifier influent, effluent, and paper residuals.) These long-term effluent discharges released massive amounts of PCBs to the Site. (**Tr. Ex. 8804**; Valley Report.) Therefore, even if there are isolated samples of high PCB concentrations in the Eaton/Clark ditch, there is simply no comparing the relatively insignificant volume of sediment (and PCB volume) in the ditch (which is not part of the Site) to the millions of cubic yards of contaminated sediment and paper residuals caused and created by Plaintiff, which are part of the Site.

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F-140. As discussed above, Mr. McLaughlin's practice of comparing samples from the Eaton ditches to samples taken from the River within the NPL Site, even if the River samples are adjacent to suspected sources, is misleading and is not helpful to the Court. (**Trial Testimony, McLaughlin**, February 4, 2002, at pp. 104, 113.) This argument compares apples to oranges, because the McLaughlin ditch samples are of sediments within discharge routes (drains and ditches) before they are subject to dilution caused by the effect of higher flows in the River and additional clean sediment.

F-141. Mr. McLaughlin and Plaintiff are asking the Court to make an incorrect inference from **Trial Exhibit 2111-N**. This exhibit is a manipulation of total PCB data averaged across the transects in the NPL Site. The logical inference from this exhibit is that the Zantman/Lesterhouse drain is a significant source of PCBs to the River due to the jump in average total PCB concentrations between river transects 24 and 25 (because the drain enters the River between these transect locations); however, what Mr. McLaughlin and Plaintiff fail to identify is that **Trial Exhibit 2111-N** shows data for total PCBs, including Aroclors 1242, 1248, 1254 and 1260. There is absolutely no evidence to support the inference that the Zantman/Richardson Drain is a significant source of Aroclors 1242, 1248, or 1254 to the River because none of these Aroclors are found in the slow-moving drain sediments. There is some evidence that the drain may be a slight source of Aroclor 1260 (from an unknown source, not Eaton); however, an increase in average Aroclor 1260 concentrations between transects 24 and 25 is not shown in **Exhibit 2111-N.** For this reason, this trial exhibit is of no use to the Court. (**Trial Testimony, McLaughlin**, February 4, 2002, at pp. 85-92.)

F-142. In addition to his role as a PCB expert related to the investigations in and around the Eaton plants, Plaintiff utilized Mr. McLaughlin as an "allocation expert." Although from "time

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to time" Mr. McLaughlin has "estimated volumes [of contaminants] that have been released for a variety of purposes" (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 125), Mr. McLaughlin has never previously performed an allocation or worked as an allocation expert at an NPL Site related to PCB contamination in a river environment. (***Id.* at p. 138.**)

F-143. The use of Mr. McLaughlin as an "allocation expert" damages his credibility as an objective expert witness regarding the presence of PCBs at the Site and their origins. Mr. McLaughlin's testimony about the origin of PCBs in the drainage ditches near the Eaton plants, as well as testimony about releases from these ditches to the NPL Site, may be skewed or tainted to accommodate Mr. McLaughlin's allocation percentages or vice versa.

F-144. In any event, the Court has reviewed Plaintiff's and Mr. McLaughlin's "allocation" as to Eaton and finds it to be without basis or support. Mr. McLaughlin admitted that he does not have the type of data usually relied upon to make mass calculations to estimate a PCB volume contributed by Eaton. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 126.) Nevertheless, Mr. McLaughlin performed such a mass calculation using the following method:

> What I really did was go through and estimate on an Aroclor-by-Aroclor basis how much mass must have come from where. That's what I did, and then back-checked that number against the Eaton – the few facts that we do know about Eaton's wastewater flows and concentrations and so forth.

(***Id.* at 126.**)

F-145. Based on this "scientific method," Mr. McLaughlin estimated that Eaton's contribution was in the range of 18-20% of the total PCBs released to the Site. (***Id.* at 127.**) When asked the basis for this opinion, Mr. McLaughlin stated the following:

> Well, I guess we know that the Eaton releases are as significant as the – and may be more significant than the other sources we just looked at a few moments ago on some of the other charts. And so perhaps intuitively we have a sense that, you know, it is, you know, 20% or more, I suppose, by that yard stick. But what I did

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> was take the mass of the PCB Aroclors in the river system and try to segregate them based on what we know about where those Aroclors seems to predominate and sum up those totals.

(*Id.* **at 127.**)

F-146. Using the above-described method as a framework, Mr. McLaughlin attempted to allocate volumes of different types of Aroclors to either Eaton, the paper company Plaintiffs, or to an unidentified group of "orphan" PRPs. In the end, Mr. McLaughlin placed Eaton on a plane with Allied Paper, the PRP that caused the contamination in Bryant Mill Pond, the area the regulators determined to be the single most important source of PCB contamination to the NPL Site. (**Tr. Exs. 8812, 8813.**) Interestingly, Mr. McLaughlin did not include data from Bryant Mill pond in any of his comparisons of site data to data near the Eaton facilities. (**Trial Testimony, McLaughlin**, February 5, 2002, at p. 230.) The Court finds that Mr. McLaughlin's allocation is unsupported by the evidence, as more thoroughly set forth below.

F-147. With regard to Morrow Lake, despite evidence that – (1) there is no discernible PCB gradient between Eaton and Morrow Lake; and (2) there are a significant number of other PRPs that may have caused PCB contamination in Morrow Lake, including two PRPs that discharged directly to the lake – Mr. McLaughlin allocated 90% of the responsibility for PCBs in Morrow Lake to Eaton. In addition to flawed logic regarding the origin of releases to Morrow Lake, Mr. McLaughlin ignores the fact that Morrow Lake is not a part of the NPL Site, and the agencies have no plans to remediate Morrow Lake or even require that Morrow Lake be included within the vast majority of RI/FS studies. (**von Gunten Dep.**, at pp. 18-20, 101, 105-106, 139.)

F-148. Mr. McLaughlin next applied his allocation principles to the 58,280 pounds of PCB that B, B & L estimated are present in the river sediments of the NPL Site. (Consisting of 48,800 pounds of Aroclor 1242, 1200 pounds of Aroclor 1248, 6,500 pounds of Aroclor 1254, and 180

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pounds of Aroclor 1260.) (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 128.) It is important to note that the B, B & L estimate of PCB volume in the river sediments does not include the volume of PCBs in sediments in impoundment areas left exposed following the lowering of the Plainwell, Trowbridge and Otsego Dams. (**Trial Testimony, McLaughlin**, February 4, 2002, at p. 137.) The B, B& L estimate also does not include PCBs that have traveled the full length of the Site into Lake Michigan. (***Id.* at 137.**) The effect of omitting this other PCB volume is to "lower the denominator" in an attempt to make any alleged contribution by Eaton seem more significant in terms of percentages.

F-149. Mr. McLaughlin began his allocation by allocating 90% of the Aroclor 1242 in the River (43,950 pounds) to paper companies, which would include KRSG members. (***Id.* at p. 129.**) He allocated 10% of Aroclor 1242 to orphan PRPs and none to Eaton. The Court agrees that no responsibility for Aroclor 1242 in the River should be allocated to Eaton.

F-150. Next, with regard to Aroclor 1248, despite no detections of Aroclor 1248 in either the Eaton/Clark ditch or the Zantman/Richardson Drain, Mr. McLaughlin allocated 25% of the Aroclor 1248 in the River to Eaton. Mr. McLaughlin admitted that it was "very difficult to say where that Aroclor 1248 came from." (***Id.* at 132.**) On the other hand, Aroclor 1248 has been found in all of the Plaintiff's members' landfills. Moreover, Plaintiff's other expert, Dr. Brown, has testified that Aroclor 1248 is a common weathering product of Aroclor 1242, which was principally derived from paper waste. In fact, Dr. Brown lumps together Aroclors 1242 and 1248 detections as coming from the same sources due to this weathering phenomenon. (**Trial Testimony, Brown**, February 5, 2002, at p. 288.) Based on this contradictory evidence, the Court finds that there is no basis on which to allocate Aroclor 1248 in the River to Eaton.

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F-151. Next, with regard to Aroclor 1254, Mr. McLaughlin states that Eaton is the primary source of all Aroclor 1254 in the Kalamazoo River and, therefore, allocates 80% of the responsibility for the 6,500 pounds of Aroclor 1254 in the River to Eaton. Mr. McLaughlin allocates only 10% of this volume to other orphan PRPs and only 10% of Aroclor 1254 to paper companies. (***Id.* at 130-131.**) Mr. McLaughlin does not attempt to clarify which Eaton plant he believes is responsible for releases of Aroclor 1254. He arrives at his Aroclor 1254 allocation simply by utilizing the estimate provided by B, B & L that Aroclor 1254 makes up approximately 1.5% of the mass of PCBs in the Plaintiff's landfills (43,950 pounds of Aroclor 1242 times 1.5% equals 650 pounds, or 10% of the 6,500 pounds of Aroclor 1254 in the River). Thus, after allocating 10% to the KRSG, Mr. McLaughlin simply allocated the remainder of the Aroclor 1254 to Eaton with the exception of a 10% orphan share.

F-152. Mr. McLaughlin's allocation related to Aroclor 1254 is unsupportable for several reasons. First, there is no evidence that the percentage of the mass of Aroclor 1254 in Plaintiff's landfills is equivalent to the mass of Aroclor 1254 discharged to the River in Plaintiff's effluent. (**von Gunten Dep.**, at pp. 196-198.) Plaintiff's effluent may have contained a much higher percentage of 1254 than is seen in the landfills. (***Id.* at 196-198.**) Secondly, the volume of PCBs in Plaintiff's landfills has no relationship to the volume of PCBs discharged to the River in effluent. For example, even taking the lower range of PCB volume estimated by Richard Valley to have been discharged to the Site by the KRSG (895,000 pounds by Allied, 560,000 pounds by Georgia-Pacific, 512,000 by James River, and 234,000 by Simpson Plainwell, for a total of 2,221,000 pounds of PCBs), and multiplying that number by 1.5%, leads to 33,315 pounds of Aroclor 1254 discharged to the River by the KRSG. This is obviously enough Aroclor 1254 to justify allocating all of the Aroclor 1254 currently in River sediments (6,500 pounds) to the KRSG.

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(**Tr. Ex. 8804**.) Third, based on Dr. Connolly's examination of the carbon-normalized PCB data, the most significant source of Aroclor 1254 in the River is in the vicinity of Georgia-Pacific. There are also a number of other Aroclor 1254 sources within the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at p. 435.)

F-153. Lastly, Plaintiff has utterly failed to establish that Eaton is a source of Aroclor 1254 to the River. Except for one sample near the Eaton Kalamazoo plant (K-3), there was no Aroclor 1254 detected in the Zantman/Richardson Drain sediment; therefore, Plaintiff has failed to show that Eaton Kalamazoo is a source of Aroclor 1254 to the River. Moreover, there is no PCB gradient between the Eaton Battle Creek plant and Morrow Lake; based on this and other evidence discussed above, Eaton Battle Creek is not a measurable source of Aroclor 1254 to Morrow Lake or the NPL Site. (**Trial Testimony, Connolly**, February 5, 2002, at 434-435.) The Court finds that there is no basis on which to allocate responsibility for Aroclor 1254 in the River to Eaton.

F-154. With regard to Aroclor 1260, despite the fact that this Aroclor is present in all of Plaintiff's landfills and 80% of the Aroclor 1260 detections above 500 ppb are upstream of the Zantman/Lesterhouse Drain outfall, Mr. McLaughlin allocated 90% of the 180 pounds of Aroclor 1260 in the River to Eaton. The remaining 10% was allocated to the orphan share. The Court finds that even if the Zantman/Lesterhouse Drain is a small source of Aroclor 1260 to the River, based on the evidence discussed above, Plaintiff has failed to show that Eaton Kalamazoo is the source of that Aroclor 1260. (**Trial Testimony, Barrick**, February 6, 2002, at pp. 586-587.) Therefore, the Court finds that there is no basis on which to allocate to Eaton the Aroclor 1260 in the River.

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VI. PLAINTIFF'S MEMBER COMPANIES

F-155. This Court has previously made findings of fact related to the KRSG members' discharges of PCBs to the River in its June 3, 2000 Opinion. *KRSG v. Rockwell, et al*, 107 F. Supp.2d 817, 828-839 (W.D. Mich. 2000). There is no reason to re-plow this ground, as Plaintiff has never contested that they are liable for discharging massive amounts of PCBs to the Kalamazoo River. With regard to these issues, the Court previously stated:

> The evidence is uncontradicted that Plaintiff's members de-inked or recycled large quantities of NCR carbonless copy paper, and that as a result of that activity PCBs entered their waste streams. Based upon the presence of high concentrations of PCBs in all of Plaintiff's members' landfills, lagoons, clarifiers, and Plaintiff's members' practice of discharging effluents with suspended solids directly to the Kalamazoo River, this Court concludes that PCBs were present in Plaintiff's members' effluent to the Kalamazoo River. This Court also concludes that this history, together with the current volume of PCBs in the river, and the ongoing erosion of PCBs from the landfills located on the edge of the river, supports the conclusion Plaintiff's members contributed massive amounts of PCBs to the NPL Site, the Kalamazoo River and Portage Creek. Based upon the limited evidence presented, this Court cannot begin to arrive at a precise figure regarding the volume of PCBs contributed by KRSG members that are still in the river. Nevertheless, based upon the Valley report, the MDNR estimates, and Plaintiff's failure to present any evidence on the quantity of its members' PCB contributions to the river, the Court concludes that Plaintiff's members are responsible for hundreds of thousands of pounds of PCBs in the river.

KRSG v. Rockwell, 107 F. Supp.2d at 835; *also see* **Rockwell's Proposed Findings of Fact and Conclusions of Law submitted after Phase II trial,** filed December 3, 1999, ¶¶ F-72 through F-153.

F-156. In reaching its allocation decision with regard to Rockwell in this matter, the Court stated that "the PCB releases by Plaintiff's members are more than sufficient to justify imposing on Plaintiff the entire cost of response activities relating to the NPL Site." *KRSG v. Rockwell*, 107 F. Supp.2d at 840.

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VII. ALLOCATION FACTORS

L-8. This Court concludes that, as between Eaton and the KRSG members, the most important allocation factor is the volume of PCBs contributed to the NPL Site by each party. There is no evidence of any other aggregating factors that would militate against Eaton Corporation.

L-9. Toxicity is not a factor of particular relevance to this case. This Court has already made a finding that it will following the lead of the regulatory agencies and will not distinguish among Aroclors based upon toxicity or any other factor:

> The MDEQ establishes regulatory criteria and fish advisories based upon the presence of total PCBs. It does not distinguish between Aroclors, such as Aroclor 1242, Aroclor 1254 and Aroclor 1260. The regulatory bodies have apparently decided that because toxic congeners are found in each of the Aroclors, there was no basis for distinguishing among the Aroclors. New evidence was presented on the relative toxicity between the higher weight 1254 and the concerns associated with congener 77 which are more prevalent in Aroclor 1242, leaving this Court without the ability to weigh these two competing toxicity factors. Accordingly, this Court will follow the regulatory bodies and will treat all PCBs on an equal basis. The Court will not weigh any particular Aroclors higher than others.

(**KRSG v. Rockwell, 107 F. Supp. 2d at 836; Trial Testimony, Brown,** 11/9/99, at pp. 70-71). Plaintiff has provided no new evidence that would cause the Court to undermine this previous finding.

L-10. As to Eaton, cooperation with government authorities is also not a factor of particular relevance to this case. Eaton has not been identified as a PRP at the Site by any regulatory agency. Therefore, there is no evidence that Eaton has been uncooperative with government agencies related to the Site. Moreover, Eaton has cooperated with government agencies in all respects with regard to its own facilities. On the other hand, if government cooperation is evaluated as to the KRSG members, there are a number of examples of non-

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cooperation with respect to the river investigation and the operable units (landfills). As the court has previously noted in its June 3, 2000 opinion, in June 1999 the MDEQ advised that the river sediment data submitted by KRSG was insufficient to develop an appropriate understanding of contaminant distribution across the study area. The MDEQ expressed concern that KRSG's sampling techniques may have introduced bias into the results by sampling more in free-flowing reaches of the river where PCB concentrations are low, and less in impounded areas where PCB concentrations are higher. The MDEQ stated that it currently did not have "sufficient information regarding sediment volume and PCB mass from the Site to develop appropriate remedial options." (***KRSG v. Rockwell,* 107 F. Supp. 2d at 839**). Also, when viewed as a whole, the KRSG has dragged out the investigation of the Site over nearly a 20-year period and have spent an inordinate amount of time and money chasing other PRPs on scant evidence, which effort could have been more efficiently focused on investigation and cleanup. As a final note, it should be kept in mind that over a 30 year period, the KRSG members literally devastated the ecology of the Kalamazoo River by failing to control the discharge of millions of pounds of PCB-containing paper fibers in their effluent, which literally turned the water gray. Many of these discharges were in the form of unpermited "bypasses" of the KRSG members waste treatment facilities.

L-11. This Court concludes that the amounts of PCBs contributed by Eaton to the Kalamazoo River, if any, are of such a small quantity as to be negligible. There is no credible and persuasive evidence indicating that such contributions rise above the background level of PCBs already in the River; the Court is persuaded by the evidence presented by Eaton indicating that no discharges from Eaton can be identified or detected in Morrow Lake or the NPL Site portion of the River. For this reason and for the reasons articulated in this Opinion, this Court has concluded

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that the equitable share that should be allocated to Defendant Eaton for the Kalamazoo River Site is zero.

VIII. MANY OF THE COSTS INCURRED BY KRSG UPSTREAM OF MORROW LAKE DAM ARE NOT RECOVERABLE

L-12. The Court need not address the issue of recoverability of the KRSG's costs unless more than zero percent of Plaintiff's response costs are allocated to Eaton.

F-157. Dr. Brown testified that $231,560 out of $622,615.79 total costs incurred by the KRSG related to work by the KRSG upstream of Morrow Lake that was not authorized by the MDEQ. Dr. Brown further testified that there was a total of $730,000 in costs related to the entire Site, which corresponded to work that was not authorized by the MDEQ. (**Trial Testimony, Brown**, February 6, 2002, at p. 323.)

L-13. The Court holds that the unauthorized costs expended by the KRSG are not necessary costs of response as required by CERCLA § 107(a)(4)(B) and are, therefore, not recoverable against Eaton. Specifically, the costs are not recoverable for the following reasons:

- The costs incurred by KRSG were not required by the Administrative Consent Order ("AOC") or otherwise requested by the MDEQ and its site project manager, Brian von Gunten (**von Gunten Dep.**, pp. 18-20, 101, 105-106, 139.)

- KRSG incurred the costs as part of this litigation in an attempt to prove the liability of Eaton, and not in furtherance of the Site remediation or investigation. *Dedham Water co. v. Cumberland Farms Dairy*, 972 F.2d 453, 461 (1st Cir. 1992); *Sealy Connecticut, Inc. v. Litton Indus., Inc.*, 93 F. Supp.2d 177, 194 (D.C. Conn. 2000).

- The costs incurred by KRSG were not to address a recognized threat to public health or the environment as determined by the MDEQ, and are therefore not recoverable. *Yellow Freight Sys., Inc. v. ACF Indus., Inc.*, 909 F. Supp. 1290, 1299 (E.D. Mo. 1995); (**von Gunten Dep.**, pp. 18-20, 101, 105-106, 139.)

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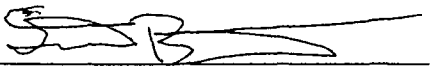
Respectfully submitted,

DYKEMA GOSSETT PLLC

Dated: April 15, 2002

By: 

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

KALAMAZOO RIVER STUDY GROUP,

Plaintiff,

vs.

EATON CORPORATION, et al,

Defendants.

Case No. 1:95CV838

Hon. Robert Holmes Bell

PROOF OF SERVICE

STATE OF MICHIGAN)
) ss.
COUNTY OF KENT)

Bernadine Kloska, being first duly sworn, deposes and says that on the 15th day of April, 2002 she served a copy of **Proposed Findings of Fact and Conclusions of Law Submitted by Defendant Eaton Corporation Following Trial on Allocation Issues and Eaton's Closing Argument After Allocation Trial** on the attorneys for Plaintiff by First-Class mail, postage prepaid and addressed to them at their respective business addresses as follows:

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Further deponent saith not.

Bernadine Kloska

Bernadine Kloska

Subscribed and sworn to before
me this 15th day of April, 2002.

Margery A. Macykeya

Notary Public for
Kent County, Michigan.
My commission expires: 5/27/05

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United States District Court, W.D. Michigan.

KALAMAZOO RIVER STUDY GROUP, Plaintiff,
v.
ROCKWELL INTERNATIONAL, et al., Defendants.

No. 1:95-CV-838.

June 30, 1998.

Alan C. Bennett, Law, Weathers & Richardson, Bridgewater Pl., Grand Rapids, MI, Kent, Jerome T. Wolf, James Lee Moeller, Sonnenschein Nath & Rosenthal, Kansas City, MO, for Kalamazoo River Study Group, pltf.

Joseph C. Basta, Dykema Gossett, PLLC, Detroit, MI, Wayne, for Rockwell International Corporation, deft.

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Joseph C. Basta, Dykema Gossett, PLLC, Detroit, MI, Wayne, for Rockwell International Corporation, counter-claimant.

Alan C. Bennett, Law, Weathers & Richardson, for Kalamazoo River Study Group, counterdeft.

OPINION

BELL, J.

***1** This matter comes before the Court on cross-motions for summary judgment on the issue of liability filed by Plaintiff Kalamazoo River Study Group ("KRSG") and Defendants Rockwell International and Eaton Corporation.

I.

Plaintiff KRSG filed this action under sections 107(a) and 113(f) of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9607(a) & 9613(f), seeking relief from eight corporations for the study and remediation of polychlorinated biphenyl ("PCB") contamination at the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (the "Site").

In a previous opinion issued in this case this Court determined that CERCLA does not permit a § 107 claim by one potentially responsible party ("PRP") against other PRPs for joint and several liability. [FN1] In another opinion addressing cross-motions for summary judgment filed by Plaintiff and Defendants Menasha Corporation, Pharmacia and Upjohn Company, and Rock-Tenn Company, Mill Division, Inc., [FN2] this Court outlined the background of this case and set forth the legal standards that would be applied in evaluating Plaintiff KRSG's claims. In that opinion, which is incorporated herein by reference, this Court articulated the standard it would apply for testing the liability of the defendants in this action as the "threshold of significance" standard: is the evidence of defendant's release of PCBs of sufficient significance to justify holding defendant liable for response costs?

FN1. Opinion dated January 16, 1998, Docket # 642.

FN2. Opinion dated March 6, 1998, Docket # 689.

II.

Under Rule 56(c) of the Federal Rules of Civil

Procedure, summary judgment is proper if there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. "In assessing the record to determine whether there is any genuine issue of material fact, the court must resolve all ambiguities and draw all factual inferences in favor of the non- moving party." *Wathen v. General Elec. Co.,* 115 F.3d 400, 403 (6th Cir.1997) (citing *Anderson v. Liberty Lobby, Inc.,* 477 U.S. 242, 255 (1986)). The mere existence of a scintilla of evidence in support of Plaintiff's position is not sufficient to create a genuine issue of material fact. *Anderson v. Liberty Lobby, Inc.,* 477 U.S. 242, 252 (1986). The nonmoving party must do more than show that there is some metaphysical doubt as to the material facts. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.,* 475 U.S. 574, 586 (1986). The mere possibility of a factual dispute is not enough. *Hartsel v. Keys,* 87 F.3d 795, 799 (6th Cir.1996). The non-moving party must present evidence on which the trier of fact could reasonably find in its favor. *Id.*

III.

Plaintiff KRSG has moved for summary judgment on the issue of Defendant Rockwell's liability. In support of this motion KRSG relies on evidence that Rockwell has a history of releasing oily wastes into the Kalamazoo River, and evidence that PCBs have been found in all of the oil handling areas.

***2** Defendant Rockwell opposes KRSG's motion and moves for summary judgment in its own favor. Rockwell contends that the evidence is insufficient to support a finding of liability as a matter of law. Defendant Rockwell does not deny the presence of PCBs on its site. Neither does it deny the release of oily wastes into the Kalamazoo River. Rockwell contends, however, that there is no evidence that it has released any PCBs into the River, much less that it released sufficient quantities of PCBs to meet the threshold of significance.

The underlying evidence is not contested. Since 1914 Defendant Rockwell International has owned property and a manufacturing plant at 1 Glass Street, Allegan. The property is on the Kalamazoo River downstream from the National Priorities List ("NPL") Site, but within the 95-mile stretch of the Kalamazoo River that KRSG has agreed to study pursuant to the Administrative Order by Consent ("AOC").

From 1953 through 1988 Rockwell manufactured automotive parts at the Allegan plant, including universal joints and driveline parts for heavy trucks and construction equipment. The manufacturing process (forging, machining and heat treating metal parts) involved the use of straight cutting oils, water soluble oils, quench oils, cooling oils, and hydraulic oils. Rockwell's manufacturing process generated thousands of gallons of oil-containing wastes.

Prior to 1945, Rockwell discharged its process wastewater with little or no treatment directly into the Kalamazoo River. In 1945, in response to concerns raised by the Michigan Department of Conservation, Rockwell built the Oil Floatation House, also referred to as the "Hog House", to separate oils from the plant's process wastewater before it was discharged into storm drains and into the Kalamazoo River.

In 1960 Rockwell began discharging industrial wastewater into a new, unlined collection pond known as the Soluble Oil Separation ("SOS") Pond. The SOS Pond was 15 feet from the Kalamazoo River. In 1965 the Michigan Water Resources Commission ("MWRC") survey concluded that Rockwell's oil was reaching the river as a result of leaching from the SOS Pond and as a result of discharges from the Oil Floatation House. By 1970 Rockwell acknowledged that ponds constructed of dirt dikes were unsatisfactory due to saturation of the dike walls and sub- soil seepage. In 1974 the SOS Pond was filled in.

Due to continued complaints from the MWRC, in 1971 Rockwell constructed a wastewater treatment plant ("WWTP") consisting of six underground storage tanks and three treatment ponds located next to the River. In 1973 oils appeared to be seeping into the river through the banks of the new treatment ponds. Oil booms were installed across the width of ponds # 1 and # 2. In the mid-1970's Rockwell installed two oil booms in the river to control continued seepage problems.

The EPA's testing of the area in 1984 revealed the presence of lead, arsenic, cyanide, and solvents in the ground water near the oil recovery wells and lead in the water being discharged into the river. In 1987 the EPA added the Rockwell facility to the National Priorities List as a Superfund Site. Rockwell signed an AOC in 1988, and agreed to conduct a Remedial Investigation/Feasibility Study ("RI/FS") at the site.

*3 Rockwell's wastewater effluent was tested by the Michigan Department of Natural Resources in 1976 and 1986, and both tests were negative for PCBs. However, in 1990 and 1992, in the course of conducting its RI/FS, Rockwell's environmental consultants, Environmental Strategies Corporation ("ESC") detected PCBs in ground water, light non-aqueous phase liquid ("LNAPL"), soil and sediment, taken from the areas of the Oil Floatation House, the SOS Pond, and the WWTP Ponds Nos. 1, 2, and 3. The samples showed PCB concentrations as high as 1600 parts per billion ("ppb"), 900 ppb, 620 ppb, and 440 ppb. [FN3]

> FN3. In order to give some meaning to the levels discussed in this opinion, the Court makes note of the testimony of Plaintiff's expert, Dr. Brown, that certain background levels of PCBs (roughly 10 ppb for sediments and 1 ppb for soil) can be expected due to the atmospheric deposition process.

In October 1996, Rockwell's consultant took a soil sample from the river bank at the end of the former discharge line from the Oil Floatation House which confirmed the presence of PCBs at 35 ppm (35,000 ppb). This sampling result, found within a foot or two of the River's edge, was described by the EPA as a high level of PCB contamination. The pattern of PCBs found at this location was not consistent with the PCBs upstream or downstream. Rockwell's consultant, Robert C. Barrick, concluded that the River was not a source of the PCBs at this location; instead, these PCBs were most likely associated with the outfall pipe from the Oil Floatation House.

Defendant Rockwell notes that PCBs were only found in 13 out of 111 soil samples. Plaintiff, however, has come forward with evidence that PCB contamination was found in all of Rockwell's oil handling areas.

Although there is ample evidence of PCBs on Rockwell's property, no one with personal knowledge has been able to pinpoint the origin of the PCBs. Some of the possible sources of the PCBs include dielectric fluids in Rockwell's electrical equipment, fill dirt from a nearby landfill, or PCBs in the oils used by Rockwell.

The release of PCBs associated with electrical equipment or fill dirt are arguably incidental, and no effort has been made to trace the PCBs from such sources to the Kalamazoo River. The focus in this case has accordingly been directed to the issue of whether Rockwell used PCBs in its process oils.

There is no direct evidence that Rockwell used any oils containing PCBs as additives. There is no evidence that Rockwell purchased PCB-containing oils, and none of the Rockwell employees had any recollection of using PCB-containing oils. Rockwell asserts that it did not conduct any operations at the facility which historically have been associated with PCBs, and had no incentive to use oils with PCBs. Rockwell conducted no forging, die casting or other extremely high temperature operations that might have benefitted from the fire-resistant qualities of PCB-containing oil. Moreover, oils with PCBs were more expensive, had an unpleasant odor, and were irritating to the workers' skin. According to Rockwell, if there were PCBs in the process oils, they are only attributable to unintentional trace contamination.

Rockwell has also presented evidence developed through gas chromatography that the "fingerprint" of PCBs detected on the Rockwell property does not match the "fingerprint" of the PCBs found in the Kalamazoo River. The dominant Aroclor mixture found on Rockwell's property is Aroclor 1254, while the dominant Aroclor mixture found in the River, both upstream and downstream of the Rockwell facility, is Aroclor 1242.

*4 Despite the lack of direct evidence that Rockwell used PCB-containing process oils, PCBs have been found in the subsurface waste oils (LNAPL) floating on the groundwater in the vicinity of Rockwell's oil treatment areas. Rockwell's consultants have described the LNAPL as a mixture of Rockwell's cutting oils and hydraulic oils.

Viewing the facts in the light most favorable to Plaintiff KRSG, there is evidence in the record to support Plaintiff's contention that the steady release of PCBs to the River can be inferred from the fact that for the past 10 years environmental samples taken by Rockwell and its consultants have confirmed PCB contamination in those areas where Rockwell's oily wastewaters were handled, treated and discharged to the river.

Viewing the facts in the light most favorable to Defendant Rockwell, the Court finds some merit to

Rockwell's contention that there is insufficient evidence of its use of PCB-containing oils to support a reasonable inference that it discharged PCBs in its oily wastes to the Kalamazoo River, at least not in any measurable quantity or with any regularity.

Upon review of all the evidence presented on these cross-motions for summary judgment, the Court concludes that whether the PCBs found at Rockwell's Allegan facility indicate only incidental PCB contamination from discrete sources, or whether they indicate that Rockwell made regular use of PCB-containing oils in its process oils that were released with its wastewater into the Kalamazoo River, is a question of fact that merits further development at trial. This is not an issue that is appropriate for resolution on summary judgment. Accordingly, the cross-motions for summary judgment as to liability filed by Plaintiff KRSG and by Defendant Rockwell will be denied.

IV.

Also before this Court is a motion for summary judgment on the issue of liability filed by Defendant Eaton Corporation. Eaton contends that there is no evidence to support Plaintiff's contention that Eaton is responsible for PCB contamination of the Kalamazoo River.

Plaintiff KRSG opposes Eaton's motion and moves for summary judgment in its own favor. Plaintiff contends that there is no question that Eaton used process oils containing PCBs at each of its facilities and that wastewaters containing those oils for a considerable period of time were discharged directly into storm and sanitary sewers that further discharged directly to the Kalamazoo River.

Eaton manufactures parts for the automotive industry. Three Eaton facilities are at issue in this motion: the Marshall, Battle Creek, and Kalamazoo facilities. None of these three facilities is located next to the River.

A.

The Eaton Torque Control Products Division plant is located in Marshall, Michigan, approximately 30 miles upstream of the most upstream part of the Site. It is located approximately one-quarter mile from the Kalamazoo River. The Marshall facility machines, grinds, heat-treats and assembles components for the transportation industry. It is still in operation.

*5 There is evidence that in 1980 PCBs were detected in a single sample of the effluent from the Marshall facility at a level of 0.82 ppb. Despite additional sampling, no further PCBs were detected. In 1981 Eaton inventoried all incoming products at the Marshall plant for PCBs. No PCBs were found. The MDNR agreed that no further PCB monitoring was necessary because the Marshall plant did not use PCBs.

Other than the one 1980 sample, no PCBs were found in wastewater tested in 1973, 1980, 1981 and 1983. The quench oils, hydraulic oils and waste oils at the Marshall plant were tested by the MDNR in 1985, and no detectable levels of PCBs were found.

Sampling of riverbed sediments and settleable solids for almost 20 miles downstream of the Marshall plant have not revealed any detectable levels of PCBs.

B.

Eaton's former Valve Division plant was located at 463 North 20th Street, Battle Creek, approximately one-half mile from the Kalamazoo River, and approximately 15 miles upstream of the Site. Eaton manufactured internal combustion engine valves and gears at the Battle Creek plant from the 1940s until 1983 when operations were ceased.

The outfall from the Battle Creek plant to the Kalamazoo River was shared with Clark Equipment Company and three municipal storm sewers. In February 1972 a wastewater sample from the joint outfall revealed PCBs of 1400 ppb. A September 1972 study of the wastewater at Eaton's facility found PCBs at 0.24 ppb and 0.12 ppb. The samples were taken from a storm sewer that drained areas outside of the Eaton facility as well as areas within the Eaton facility.

In 1981 VERSAR, an environmental consultant, inspected the Battle Creek plant to determine compliance with PCB disposal and marking regulations. VERSAR found some PCBs leaking from transformers. VERSAR also found PCBs in the swarf (grinding sludge) at a level of 7 ppm. VERSAR sampled cutting, quench and hydraulic oil in the plant, however, and found no detectable levels of PCBs in any of those oils.

In 1983, after the plant was shut down, the wood block floor was tested for PCBs. PCBs were found to be present in all wood block sampled. Approximately 20 percent of the samples had PCB levels of greater than 50 ppm, the level at which the EPA requires special disposal.

The MDNR tested sediments downstream of the former Battle Creek plant in 1988. Of the eleven sampling stations, all but one were non-detect for PCBs, and the remaining one was at the detection limit of 1 ppm. That single detection occurred more than a mile downstream of the Battle Creek plant.

A Monsanto document found in the MDNR files indicates Monsanto sales of Pydraul, a PCB-containing hydraulic oil, to a number of customers, including Eaton's Battle Creek plant. The document indicates that Monsanto sold Eaton 1940 pounds of Pydraul in 1970, 645 pounds in 1971, and 1080 pounds in 1972.

C.

The Eaton Corporation Transmission division plant is located at 222 Mosel Avenue, Kalamazoo, Michigan. Eaton manufactured truck transmissions at the Kalamazoo facility from the mid-1950's until January 1984, when the plant was shut down. The plant was located approximately one-half mile from the Kalamazoo River.

***6** The wastewater from the Kalamazoo plant was tested by the MDNR in 1973 and 1976. No PCBs were detected. There is no evidence in the record of any sample of water, soil or wastewater effluent which has detected PCBs at the Kalamazoo plant.

Wastewater from the Kalamazoo plant was discharged via the Zantman Drain to the Kalamazoo River. [FN4] The Zantman Drain is an open culvert draining upstream farmlands and is accessible to several industrial properties near Eaton. There is no testing or sampling indicating detectable levels of PCBs anywhere along the Zantman Drain between the Eaton facility and the River.

FN4. Until the early 1960's the Zantman Drain discharged directly into the Kalamazoo River through the Richardson Drain. No oils were removed from Eaton's discharge to the Zantman Drain until the late 1960s, when an oil skimmer was installed. From the mid-1960s to early 1970s the Zantman Drain terminated in a marshy area. In the early 1970s the Zantman Drain's connection to the Kalamazoo River was reestablished.

When the Kalamazoo plant was sold in 1985, an environmental due diligence investigation was performed by an environmental consultant, GZA, retained by the purchaser. The only PCBs located at the Kalamazoo plant were those found in the wood block flooring. Eaton's expert, Dr. Lennard Wharton, has indicated that the PCBs in the flooring were localized in four areas of the floor where PCB-containing electrical power distribution equipment had been located. There were no significant concentrations in the vicinity of the quench baths or the machine tool areas where cutting fluids would have been used.

V.

Plaintiff boldly asserts that the evidence conclusively demonstrates that the process oils used by Eaton contained PCBs, and that those PCB-containing process oils were discharged to the Kalamazoo River in "huge quantities" until the late 1960s or early 1970s.

Defendant Eaton does not deny that there were PCBs in the electrical equipment at each of the three plants. There is no evidence, however, of PCB leaks from the electrical equipment at the Marshall plant and there is no evidence that any PCB leaks from the electrical equipment at the Battle Creek and Kalamazoo plants made their way into wastewater or outside soil and from there to the Kalamazoo River.

Plaintiff KRSG does not attempt to show that leaks from electrical equipment resulted in PCB contamination of the River. Plaintiff focuses instead on its claim that there were PCBs in Eaton's process oils (quench, hydraulic and cutting oils). Defendant Eaton does not deny that process oils likely escaped in wastewater and may have been discharged to the River. Therefore, the central issue raised by these cross-motions for summary judgment is whether, viewing the evidence in the light most favorable to Plaintiff, and drawing all reasonable inferences in Plaintiff's favor, a trier of fact could reasonably conclude that Eaton's process oils contained PCBs.

There is no testimony from anyone with personal

knowledge that Eaton ever used PCB-containing oils in its processes. There is no evidence of any test results showing the presence of PCBs in the fluids used in the Eaton plants. There is no testimony that Eaton engaged in activities that required PCB additives. PCBs are most commonly found in the oils used in die casting operations. Eaton did not have a die casting operation. The evidence is uncontroverted that Eaton had no incentive for using PCBs in its process oils because the PCBs would have added unnecessary costs, without any corresponding benefit. In fact, there was a disincentive for using PCBs because they were poorer in performance than other cutting oils, had unpleasant odors, and were irritating to the skin.

*7 Despite the lack of direct evidence of PCBs in Eaton's process oils, Plaintiff's expert, Dr. Kenneth Crumrine, has opined that "PCBs were present in at least one or more of the cutting oils, hydraulic oils and quench oils" used by Eaton. Dr. Crumrine's opinion is built largely on the statements of Eaton's environmental engineers, the statements of a former MDNR engineer, EPA studies regarding the types of oils used in the industry, and the PCB contamination of Eaton's wood block floors.

Plaintiff argues that Eaton has "admitted" that its process oils contained PCBs because its director of environmental engineering testified that some process oils "in fact" contained PCBs. Plaintiff overstates the evidence.

Stuart Lightfoot, Eaton's director of environmental engineering, testified that he suspected that the sources of the PCB contamination at the Battle Creek facility were leaking capacitors and transformers, and possibly a heat treat oil quench operation. "Possibly heat treat quench oil, if there was any used. We had no knowledge there was any PCBs in the quench oils but, I mean, it could be." Lightfoot dep. p. 153.

Ken Manchen, one of Eaton's environmental engineers, speculated that the PCB contamination at the Battle Creek facility was attributable to PCB-containing hydraulic oils used during the war years. Manchen did not have any independent knowledge that PCB-containing hydraulic oils had been used. As Manchen testified, in forming his opinion he relied on a theory voiced by Lightfoot. Manchen dep. pp. 73-74.

With respect to the Kalamazoo facility, Mr. Lightfoot testified that he thought the cause of the PCB contamination on the floors was a dripping spigot on an internal wet transformer, and a heat treat oil quench operation. *Id.* at 173 -75. Because the Kalamazoo facility heat treat department did not have automatic fire extinguishers on it, Lightfoot presumed the facility had built- in fire extinguishers in the PCB oils. *Id.* at 175. That was his best "guesstimate". *Id.* at 179. Lightfoot interjected, however, that there were other fire retardant methods in quench oil besides PCB, and no investigation had been done to determine which methods were used. *Id.* at 197.

Thomas Newell, a former MDNR engineer, noted that PCBs were commonly contained in the oils used in the automobile parts manufacturing industry. He testified that based upon his experience many of the oils used in the industry are recycled, and recycled oils may tended to contain trace PCB contaminants, even into the 1980s. Newell, however, did not have any specific knowledge about the oils used at any of Eaton's facilities. Moreover, his opinion that the PCBs in the Marshall plant's effluent likely came from PCB-containing process oils was based upon his inaccurate assumption that Eaton had a die casting operation. Newell's general knowledge about the automobile parts manufacturing industry is not probative of what occurred at Eaton.

*8 In his affidavit Dr. Crumrine indicates that his opinion "is also based on the type of oils used at the facilities as documented by the Environmental Protection Agency, whose studies determined that such oils contain PCBs."

Plaintiff's expert did not base his opinion on an EPA report documenting the oils used at Eaton's facilities. Neither did he base his opinion on any personal knowledge about the oils used by Eaton or on a report about what was standard in the automobile parts manufacturing industry. He apparently relied on the May 1972 Interdepartmental Task Force on PCBs report on Polychlorinated Biphenyls and the Environment. That report notes that PCBs are found in hydraulic fluids, but cautions that "[n]o definite knowledge is available that PCBs are present in commercial hydraulic fluids. Since composition specifications of these fluids are usually not available to the public, PCB content should be established by chemical composition." *Id.* at 53. The report also notes that some of the "more interesting and non-conventional

uses" of PCBs are as a metal quencher, or as an aid to fusion cutting of stacked metallic plates. *Id.* at 65-66.

There is no general report indicating that PCBs were necessarily or even probably used in the process oils at facilities like Eaton's. Without further corroborating evidence, the general report that PCBs could sometimes be found in cutting, quenching and hydraulic oils, is of little probative value on the issue of what process oils were used by Eaton. At most it supports the possibility that PCBs could have been found in Eaton's process oils. It does not support a probability that Eaton's process oils contained PCBs. In the absence of some corroborating evidence or a high degree of statistical certainty, a general study such as the EPA report cannot be used to draw conclusions in specific cases. *See Textron Inc. v. Barber-Colman Co.,* 903 F.Supp. 1546, 1557 (W.D.N.C.1995).

Plaintiff contends that the distribution pattern of PCBs in the wood block floors from the Battle Creek and Kalamazoo facilities demonstrates that there were PCBs in the process oils used at these facilities.

Dr. Wharton has charted the location and levels of the PCBs found in the wood block floor at the Kalamazoo plant. He observed that the only places where PCBs were found at concentrations of 50 ppm or more were where there was known placement of PCB containing electrical power distribution equipment. If there had been PCBs in the quench, cutting or hydraulic oils, high concentrations of PCBs would have been found in the areas where those operations were carried out. Instead, he found only insignificant PCB concentrations in those areas.

Plaintiff's expert, Dr. Mark Brown, concedes that there appears to be a correlation at least with the highest PCB levels and the location of transformers. Brown dep. 1/8/98 pp. 192-93. Dr. Brown testified that the distribution of PCBs in the wood block flooring "suggests that there are as likely alternate hypotheses to the hypotheses that distribution simply reflects people tracking around and operations tracking around PCBs that lead from transformers and capacitors." *Id.* at 192. However, he was unable to conclude that the PCBs in the floor more likely came from process oils than from transformers or capacitors. In his opinion they were "equally plausible hypotheses." *Id.*

***9** The wood floor from the Battle Creek plant showed more widespread contamination than the floor from the Kalamazoo plant. Dr. Crumrine testified that in his experience with PCB releases from electrical equipment such as capacitors and transformers, he had never seen floor patterns of contamination like that found at the Battle Creek plant. In Dr. Crumrine's opinion, such pervasive contamination of an area cannot be attributed to leaks from electrical equipment, and therefore must be associated with PCB-containing process oils.

Dr. Crumrine's conclusion that PCBs were used in the process oils at the Battle Creek plant is also based on some additional factors that were not present at the other two Eaton plants. At the Battle Creek plant there is evidence of the purchase of Pydraul, a PCB-containing hydraulic oil, in 1970, 1971 and 1972, and a contemporaneous detection of PCBs in the wastewater. There is also evidence of PCBs in the grinding sludge in 1981.

Upon consideration of all the evidence, the Court concludes that Plaintiff has not come forward with sufficient probative evidence to show that the Marshall plant released PCBs to the Kalamazoo River. The only evidence Plaintiff has come forward with for the Marshall plant is a single test result of effluent that could not be repeated. A single detection of PCBs in Marshall's wastewater is not a sufficient basis on which to premise liability, particularly where, as here, the single positive test result is not supported by any evidence of PCBs in the sediment downstream of the Marshall plant. "[O]ne test is not a sufficient basis for extrapolation absent additional evidence which establishes that those results are a reliable indicator of typical discharges." *Textron, Inc. v. Barber-Colman Co.,* 903 F.Supp. 1546, 1555 (W.D.N.C.1995). "It is unsound scientific practice to select one concentration measured at a single location and point in time and apply it to describe continuous releases of contamination of any 11-year period." *Renaud v. Martin Marietta Corp.,* 749 F.Supp. 1545, 1553 (D.Colo.1990), *aff'd,* 972 f.2d 304 (10th Cir.1992).

The Court also concludes that Plaintiff has not come forward with sufficient probative evidence to show that the Kalamazoo plant released PCBs to the Kalamazoo River. There is no more than a scintilla of evidence that there were PCBs in the process oils at the Kalamazoo facility. The evidence is limited to

the speculation of Eaton employees regarding the possibility that PCBs were added to the quench oils, and the opinion of Dr. Brown that PCBs in process oils was an "equally plausible" explanation for the PCBs in the wood floor. Plaintiff carries the burden of proving liability in this case. Plaintiff has not presented sufficient evidence with respect to the Kalamazoo facility from which the trier of fact could reasonably find in its favor.

Eaton's motion for summary judgment with respect to the Marshall and Kalamazoo facilities will be granted.

***10** The Battle Creek facility presents the Court with a more difficult question. Plaintiff's evidence of the use of PCBs in the process oils at the Battle Creek facility is undoubtedly slim. The evidence is mostly speculative and conjectural. Nevertheless, viewing the evidence in the light most favorable to Plaintiff, and drawing all inferences in Plaintiff's favor, the Court is constrained to conclude that Plaintiff has come forward with sufficient evidence to create an issue of material fact for trial. However, it would appear to this Court at this juncture that this evidence, without more, is not likely to be sufficient at trial where the Court will be in a position to weigh the evidence to determine whether Plaintiff has shown, by a preponderance of the evidence, that Eaton has released PCBs to the Kalamazoo River and that its release was of sufficient significance to justify holding Eaton liable for response costs. Eaton's motion for summary judgment with respect to the Battle Creek facility will be denied. KRSG's cross-motion for summary judgment will also be denied.

VI.

For the reasons stated above, Rockwell and KRSG's cross-motions for summary judgment will be denied. Eaton's motion for summary judgment will be granted as to the Marshall and Kalamazoo facilities, and will be denied as to the Battle Creek facility. KRSG's cross-motion regarding Eaton will be denied.

An order consistent with this opinion will be entered.

ORDER

In accordance with the opinion entered this date,

IT IS HEREBY ORDERED that Plaintiff Kalamazoo River Study Group's motions for summary judgment as to Defendants Rockwell International and Eaton Corporation (Docket # 's 650 & 662) are DENIED.

IT IS FURTHER ORDERED that Defendant Rockwell International's motion for summary judgment (Docket # 654) is DENIED.

IT IS FURTHER ORDERED that Defendant Eaton Corporation's motion for summary judgment (Docket # 656) is GRANTED IN PART and DENIED IN PART. Eaton's motion for summary judgment is granted with respect to the Marshall and Kalamazoo facilities and is denied with respect to the Battle Creek facility.

1998 WL 2016507 (W.D.Mich.)

END OF DOCUMENT

12-7-98

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

DEC -8 PM 12:18

KALAMAZOO RIVER STUDY GROUP,

Plaintiff,

v.

ROCKWELL INTERNATIONAL, et al.,

Defendants.

File No. 1:95-CV-838

HON. ROBERT HOLMES BELL

ORDER AND PARTIAL JUDGMENT

In accordance with the opinion entered this date,

IT IS HEREBY ORDERED that JUDGMENT is entered in favor of Defendant Eaton Corporation.

IT IS FURTHER ORDERED that JUDGMENT AS TO LIABILITY ONLY is entered in favor of Plaintiff Kalamazoo River Study Group and against Defendant Rockwell International.

IT IS FURTHER ORDERED that JUDGMENT AS TO LIABILITY is entered in favor of Defendants Eaton and Rockwell and against Plaintiff KRSG on Defendants' counterclaims.

Date: December 7, 1998

Robert Holmes Bell
ROBERT HOLMES BELL
UNITED STATES DISTRICT JUDGE

RECEIVED JUL 16 2002

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

KALAMAZOO RIVER STUDY GROUP,

Plaintiff,

v.

ROCKWELL INTERNATIONAL, et al.,

Defendants.

File No. 1:95-CV-838

HON. ROBERT HOLMES BELL

O P I N I O N

This matter was tried to the bench from August 10, 1998 to August 17, 1998. The Court has considered opening statements of counsel, written closing arguments of counsel, proposed Findings and Conclusions from both parties, the testimony of witnesses at trial, documents and photos admitted as exhibits at trial, and deposition excerpts designated by the parties. The Court has considered what inferences can reasonably be drawn from the direct and circumstantial evidence, and has considered the demeanor and manner of the witnesses who testified at trial in assessing the credibility of and weight to be accorded the testimony of those witnesses. This opinion contains the Court's

849

findings of fact and conclusions of law, in accordance with FED. R. CIV. P. 52(a).

I. Background Facts

Plaintiff Kalamazoo River Study Group ("KRSG") is an unincorporated association of four paper companies duly existing under and by virtue of the laws of the State of Michigan. Its members are Millennium Holdings, Inc. (formerly HM Holdings, Inc./Allied Paper Inc.), a Delaware corporation ("Allied"); Georgia-Pacific Corporation, a Georgia corporation ("Georgia-Pacific"); Fort James Operating Company, Inc. (formerly James River Paper Company, Inc.), a Virginia corporation ("James River"); and Plainwell Inc. (formerly Simpson-Plainwell Paper Company and Plainwell Paper Company, respectively), a Michigan corporation ("Simpson"). The four members of Plaintiff KRSG have the legal capacity to bring the claims in this lawsuit.

Defendant Eaton Corporation is an Ohio corporation. Eaton is a covered person under CERCLA Section 107(a), 42 U.S.C. § 9607(a), and has the legal capacity to bring its counterclaim in this lawsuit.

Defendant Meritor Automotive (the successor to the Automotive Division of Rockwell International, Inc.)("Rockwell") is a Delaware corporation. Rockwell is a covered person under

CERCLA § 107(a), 42 U.S.C. § 9607(a), and has the legal capacity to bring its counterclaim in this lawsuit.

In August 1990 a 35-mile length of the Kalamazoo River from the confluence of Portage Creek with the River (in the City of Kalamazoo) downstream to the Allegan City Dam, and a three-mile portion of Portage Creek upstream of its confluence with the Kalamazoo River was added to the National Priorities List ("NPL") by the United States Environmental Protection Agency ("USEPA") pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605. The NPL Site is known as the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site ("NPL Site").

The Michigan Department of Natural Resources (now the Michigan Department of Environmental Quality) ("MDNR" or "MDEQ") and the United States Environmental Protection Agency ("EPA") determined that the NPL Site is contaminated with hazardous substances, including polychlorinated biphenyls ("PCBs"). PCBs are hazardous substances as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). In 1990, the MDNR and the EPA signed a Cooperative Agreement authorizing the MDNR to conduct an Endangerment/Risk Assessment for the NPL site.

The MDNR identified three paper mills -- Allied, Georgia-Pacific and Simpson -- as the principal sources of PCBs

contaminating the NPL Site due to past business operations involving the recycling of paper, including deinking, during the period of 1950-1975.

Following the listing of the Site on the NPL, in December 1990, 3 members of KRSG (Allied, Georgia-Pacific, and Simpson) entered into an Administrative Order by Consent ("AOC") with the Michigan Department of Natural Resources ("MDNR") to fund and conduct a Remedial Investigation/Feasibility Study ("RI/FS") of the NPL Site. James River subsequently joined the KRSG, but did not sign the AOC. James River has nevertheless participated in the conducting and funding of the RI/FS process.

Under the RI/FS Plaintiff's members are required to extend their investigation upstream and downstream of the NPL site to include a 95 mile stretch of the Kalamazoo River and 4 Operable Units ("OUs")[1] consisting of 5 disposal areas. Accordingly, the Site for purposes of this litigation extends from upstream of the Eaton Battle Creek facility to downstream of the Rockwell facility.

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[1]The OUs are the Allied Paper Property/Bryant Mill Pond Area, the Willow Boulevard Site and A-Site, the King Highway Landfill and the 12th Street Landfill.

Although Plaintiff's members have neither admitted to liability nor been adjudged legally liable for conditions at the NPL Site, Plaintiff has incurred substantial past costs for its performance of the RI/FS activities at the NPL Site and will incur additional substantial costs in the future in connection with those activities and remediation of the NPL Site.

The AOC does not purport to include all persons that may have caused or contributed to the disposal of PCBs or other hazardous substances at the Site.

Plaintiff KRSG filed this action in December 1995, seeking to recover its response costs from eight corporations. KRSG alleged in its complaint that the defendants contributed to the PCB contamination of the NPL Site and are liable for response costs under CERCLA, 42 U.S.C. § 9601 et seq, the Michigan Natural Resources and Environmental Protection Act ("NREPA"), M.C.L.A. § 324.20101 et seq., and various common law theories.

Two corporations (Hercules and Rock-Tenn) have been dismissed from this action on stipulation. Summary judgment has been entered in favor of 3 corporations (Benteler, Upjohn and Menasha) and in favor of two of the three Eaton plants. With respect to Plaintiff's claims, only the liability of Defendants

Rockwell and Eaton, for its Battle Creek plant, were at issue in this trial.

Defendants have filed counterclaims against Plaintiff and its members, alleging that Plaintiff's members are responsible for the PCB contamination under CERCLA, NREPA and various common law theories. These counterclaims were also tried to the Court.

II. PCBs

Polychlorinated biphenyls ("PCBs"), are synthetic compounds containing chlorine, hydrogen and carbon. Each molecule contains a varying number of chlorine atoms (between 1 and 10) attached to two aromatic rings.

PCBs were first manufactured in the 1920s. In the United States, PCBs were manufactured almost exclusively by Monsanto Corporation under the trade name "Aroclor" followed by a number designation. The Aroclors pertinent to this case are Aroclors 1242, 1248, 1254, and 1260. The last two digits represent the percentage of chlorine by weight in the mixture. The higher the number, the greater the molecular weight of the Aroclor.

According to Monsanto literature, "the excellent electrical properties, fire resistance and inertness of the Aroclors make them useful in many applications," including "the electrical insulating field and in such widely differing applications as

nonflammable hydraulic media, high-temperature and high-pressure lubricants, heat-transfer and expansion media, sealing compounds, adhesives and protective coatings, including plastics, pigments, lacquers, paints and varnishes." Exh. 1372 & 2030. PCBs were particularly useful in oils used in high heat operations such as die casting and forging because of their fire retardant qualities.

Aroclor 1242 was used in carbonless copy paper produced by NCR as an ink carrier or solvent during the period 1957-1971. Monsanto sold over 44 million pounds of Aroclor 1242 for this purpose. Essentially all of the Aroclor 1242 used in carbonless paper has been released to the environment. The recycling of NCR carbonless copy paper constitutes the major source of PCBs into the paper industry. Exh. 8017, p. 27. Other PCBs, primarily Aroclor 1254, were used to a limited extent in flexographic printing inks. The total usage in this application is estimated at 50,000 pounds, primarily in the 1968-71 time frame. Exh. 8017, p. 3.

Although Aroclor 1242 is the Aroclor predominantly associated with waste paper recycling operations, according to the EPA's 1977 report on PCB involvement in the pulp and paper industry, paper mills also utilized PCB Aroclors other than

Aroclor 1242 in transformers and capacitors, hydraulic or heat transfer systems, lubricants and paints. Exh. 8017, p. 27. Aroclor 1254 has been found in many recycled papers, including bond paper, newsprints and paperboard produced by the paper industry and in the paper industry by-products.

It was not until the early 1970s that scientists and governmental regulators became aware of the environmental and public health concerns associated with PCBs. In 1971 Monsanto ceased selling PCBs for use in all but closed electrical systems such as capacitors and transformers. Although PCBs stopped being manufactured, they still appeared in waste streams due to the recycling of oils and paper products, and due to their presence in the soil, water, air, and landfills.[2]

PCBs have an affinity for organic particles. They tend to attach to fine-grain particles and to accumulate in organically rich areas. In rivers, PCBs attach to muck and slime. Because of their affinity for fine sediments, PCBs typically will be found in greatest concentration in sediments in depositional zones (quiescent areas of the river where sediments accumulate) near the source. Farther downstream from the source one can

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[2]As late as the 1980s Rockwell was on the alert for PCBs in cutting oils, hydraulic oils and tooling wax. Exh. 5019 & 5020.

expect a decline in the concentrations of PCBs from a given source due to dilution, settling into the sediment, and volatilizing into the atmosphere.

Based upon studies conducted between 1972 and 1989, the MDNR estimated in 1990 that there were about 220,000 pounds of PCBs in the sediments in and adjacent to Portage Creek and the Kalamazoo River. In a March 1997 briefing Report the MDEQ estimated that river sediments contain "well over 350,000 pounds of PCBs and the paper companies' five unconfined disposal areas situated on the river banks contain millions of cubic yards of PCB-contaminated waste."

The ratio of Aroclor 1242 to 1254 in river sediments is approximately 4:1 throughout the Site. The PCBs in fish generally reflect the PCBs in sediments where they feed. Fish samples taken from Bryant Mill Pond, where PCBs would be expected to be primarily from paper mill sources, show a significant presence of Aroclor 1242. Fish samples taken from Morrow Lake, upstream of the paper mills, and near Trowbridge Dam, downstream of the mills, show a higher percentage of Aroclor 1254 than Aroclor 1242. Fish bioaccumulate higher molecular weight Aroclor mixtures at much higher levels than lower molecular weight

Aroclor mixtures.[3] The fish advisory in effect for the Kalamazoo River from Battle Creek downstream to Morrow Lake is for carp only. The fish advisory downstream of Morrow Lake concerns not only bottom dwelling carp, but almost every species of game fish as well, indicating a higher level of PCBs downstream of Morrow Lake.

III. KRSG's Members

Although Plaintiff's members stated in the AOC that their execution of the AOC was the product of settlement negotiations, and did not constitute an admission of liability, in this action Plaintiff's members have not contested their liability as PRPs. PCB use and release of PCBs to landfills and to the River by the Plaintiff paper companies is well documented in the 8000 series of the Exhibits introduced at trial.

Each of KRSG's members operate or operated paper mills adjacent to Portage Creek or the Kalamazoo River. Each of KRSG's members, for varying periods of time, used recycled office paper as a source of pulp in their papermaking operations. The recycled office paper contained some amounts of carbonless copy

[3]If there were equal amounts of Aroclor 1254 and 1242, fish would bioaccumulate 3 to 4 times more Aroclor 1254 than Aroclor 1242.

paper which was manufactured with PCB Aroclor 1242. Plaintiff's expert, Dr. Brown, conceded that most of the Aroclor 1242 found adjacent to or downstream of the Plaintiff's companies came from the recycling or deinking of carbonless copy paper. The paper companies have a long history of releasing PCBs to the Site, either directly through their effluent or indirectly through sludge disposal practices in landfills adjacent to Portage Creek or the Kalamazoo River. The EPA has concluded that the Bryant Mill Pond Area is the most important upstream source of PCB-contamination at the Site. Exh. 8813. Allied, James River, Georgia-Pacific and Simpson have each contributed PCBs to the NPL Site in large quantities as a result of their deinking and paper recycling operations. PCBs released from the Plaintiff's members' facilities have come to be located in the sediments of Portage Creek and the Kalamazoo River.

The PCBs in the wastewater streams of paper mills are generally more similar to Aroclor 1242 than to the other Aroclors or to PCBs found in the general environment. However, Aroclor 1254 has also been found in the paper residuals from Plaintiff's members in some cases at high levels. The Technical Memoranda submitted by Plaintiff to the MDNR reveal that each of the landfills associated with Plaintiff's members contain multiple

detections of Aroclors 1254 and 1260 in addition to Aroclor 1242. At the Allied Paper Operable Unit there were over 30 detections of Aroclor 1254. Exh. 8719, Table 3-10. There were also multiple detections of Aroclor 1254 at the Willow Boulevard/A-Site Landfill, the King Highway Landfill and the 12th Street Landfill Operable Units. Exh. 8738, Table 3-11, Exh. 8725, Table 3-9, Exh. 8615, Table 3-8. Accordingly, the presence of Aroclor 1254 in the river cannot necessarily be attributed to sources other than the paper mills.

PCBs continue to migrate from the Plaintiff's members' plants and landfills into the environment due to the effects of erosion along the river banks, the surface runoff from the disposal areas, and groundwater flow.

The contributions of PCBs to the NPL Site by Allied, James River, Georgia-Pacific and Simpson, individually and together, are in nature, quantity and durability sufficient to require imposing the costs of response activities for the NPL Site upon each of those four parties.

Allied, James River, Georgia-Pacific and Simpson are each liable and responsible parties under Section 107 of CERCLA, 42 U.S.C. § 9607, for the PCB contamination of the NPL Site.

IV. Defendants' Liability

KRSG's members do not dispute their responsibility for the bulk of the Aroclor 1242 found at the Site. Their theory of liability against Defendants Eaton and Rockwell is directed primarily at contributions of Aroclor 1254.

As this Court has previously held, because KRSG's members are liable parties under Section 107 of CERCLA, Plaintiff KRSG's claims against the remaining defendants are restricted to a claim for contribution under CERCLA Section 113(f)[4] and its counterpart under Michigan's NREPA. (Opinion, KRSG v. Rockwell, et al., Case No. 1:95-CV-838, Jan. 16, 1998). See also Centerior Service Co. v. Acme Scrap Iron & Metal Corp., 153 F.3d 344, 356 (6th Cir. 1998)("[P]arties who themselves are PRPs, potentially liable under CERCLA and compelled to initiate a hazardous waste site cleanup, may not bring an action for joint and several cost recovery, but are limited to actions for contribution governed by the mechanisms set forth in CERCLA § 113(f).").

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[4]"In actions seeking contribution, unlike those for joint and several cost recovery, the burden is placed on the plaintiff to establish the defendant's equitable share of response costs. Liability is not joint and several, but merely several." Centerior Serv. Co. v. Acme Scrap Iron & Metal Corp, 153 F.3d 344, 348 (6th Cir. 1998)(citations omitted).

It is not unusual in a case involving historical use of chemicals for a plaintiff to be unable to produce direct evidence of the release of hazardous substances by a particular defendant. Because of the passage of time, documentary evidence of products used in the industry may no longer exist. PCB use poses a particularly difficult case because PCBs were not known to pose an environmental hazard until some 30 or more years after they began to be used in various industries. Accordingly, the presence of PCBs was not necessarily documented on the products, and users may not have been aware when they were using products containing PCBs. Until the 1970's there was no requirement that industries monitor their effluent for the presence of PCBs.

Plaintiff's case against Rockwell and Eaton stretches back more than 50 years. During a substantial portion of this time, companies did not monitor their use of PCB-containing products and did not test their discharges for PCBs. Thus it is not surprising that there is a lack of direct evidence regarding the use of PCBs at any of the industrial plants along the Kalamazoo River. Direct evidence, however, is not necessary. Plaintiff may prove its case by circumstantial evidence. See e.g., Reichhold Chemicals v. Textron, 888 F. SUPP. 1116, 1128 (N.D.

Fla. 1995)(consideration of circumstantial evidence regarding disposal of hazardous substances from 1939-54).

As this court has previously held in its opinion dated March 6, 1998, Docket # 689, the standard that will be applied for testing the liability of the defendants in this action is the "threshold of significance" standard: is the evidence of defendant's release of PCBs of sufficient significance to justify holding defendant liable for response costs?

V. Eaton

Prior to its demolition in 1983-84, the Eaton Battle Creek facility was located at 463 North 20th Street, Battle Creek, Michigan. The plant was approximately one-half mile from the Kalamazoo River.

At this facility Eaton manufactured parts for the automotive industry, including internal combustion engine valves and gears. Manufacturing processes at the Battle Creek facility used oils such as straight and water soluble cutting oils, hydraulic oils, and quench oils.

The evidence regarding Eaton's treatment of process oils prior to the late 1960s was far from clear. It appears that oil collected in pans under the machines did not drain into anything. Oils were sumped out of these pans and taken to the mud room

where waste metals and sludges were separated. Some of the drip pans under the conveyor belts, where process oils would regularly drip off, however, were piped directly into the sewer lines. (Galen p. 92-93). Process wastewaters from machining operations were disposed of into the closest available sewer line.

Residual oils on parts regularly dripped onto the floors. There were no floor drains at the plant. Because of the wood floors which would swell and buckle if wet, Eaton took great care to keep water off the floor. (Galen dep. p. 22). Significant quantities of dry absorbent such as "Floor Dry" or "Speedy-Dry" were maintained to keep the wood block floors dry.

In 1967 the Michigan Water Resources Commission conducted a waste water survey of the Eaton Battle Creek Plant and determined that the plant was discharging 2220 pounds of oil a day to the Kalamazoo River via the storm sewers.

In the late 1960s Plant Engineer Clifford Galen focused his attention on the problem of oils in Eaton's effluent. The effluent was being discharged into two sewers, the storm sewer and the sanitary sewer, both of which discharged directly to the Kalamazoo River. The storm sewer was a concrete pipe that ran under Eaton's property, and then became an open ditch between Eaton's property and the River. (Galen dep p. 16). The ditch

had dark stains from oils. In the late 1960s the sanitary sewer was connected to the waste water treatment Plant. By December 1969 the amount of oil discharged in the Eaton plant effluent was reduced to 177 pounds a day. Exh. 2018.

There is no question that over the years, particularly before 1970, Eaton discharged large quantities of oil to the Kalamazoo River, and that the discharge of those oils was of concern to the DNR. The discharge of oils to the River, however, does not answer the key question of whether those oils contained PCBs. There is no evidence that Eaton ever purchased any oils containing PCBs. Former employees at Eaton's Battle Creek facility recalled a number of oils that had been purchased by the plant over the years, but none of the employees recalled any purchases of oils containing PCBs. Plaintiff's attempt to show that Eaton purchased Pydraul, a hydraulic oil containing PCBs, from Monsanto was excluded from the evidence.

Yet, PCBs have been found on the Eaton Battle Creek property. When the Eaton Battle Creek facility was demolished in 1983-1984, the MDNR requested Eaton to test the wood block floors for PCBs. Eaton hired Howard Laboratories to do the testing. Howard tested 55 of the approximately 2.8 million wood blocks on the floor: 27 samples from under capacitors in Building C, 11

samples for background in Building C, 6 samples for background in Building A, 7 samples from the heat treat area in Building B, and 4 additional blocks. All 55 samples tested showed the presence of PCBs in the range of 3.1 mg/kg(ppm) (3100 ppb) to 155 mg/kg(ppm) (155,000 ppb). The dominant Aroclors were 1248 and 1254.

Aroclor 1248 was found in 6 out of 6 samples in Building A, in 9 out of 11 samples in Building C (background), in 24 out of 27 samples in Building C (under capacitors) and in 7 out of 7 samples in Building B. Aroclor 1254 was found in 6 out of 6 samples in Building A, in 9 out of 11 samples in Building C (background), in 23 out of 27 samples in Building C (under capacitors) and in 3 out of 7 samples in Building B. Aroclor 1242 was found in only 4 samples and Aroclor 1260 was found in only 3 samples. Exh. 2067.

Aroclor 1254 was expected to be found in conjunction with the capacitors. Exh. 2065. However, in light of the wide distribution of Aroclor 1248 in the wood block flooring, the PCBs cannot all be explained by leaking capacitors and transformers. Monsanto literature does not indicate that Aroclor 1248 was ever used in capacitors and transformers. Exh. 2023 & 2030. Because Aroclor 1248 was not known to be used in di-electric equipment

such as capacitors and transformers, its presence in the flooring is circumstantial evidence that PCBs were used in some of the other oils at Eaton.

Despite the evidence that Eaton used some PCB-containing oil, that evidence does not necessarily mean that those oils were discharged into the River. Whether those PCBs were discharged into the River depends on which oils those PCBs were used in.

Kenneth Manchen, an environmental engineer at Eaton, testified that because he did not observe any definable pattern to the PCBs in the wood flooring, he concluded that in all probability the PCBs must have come from hydraulic fluids used during the war years. Both Aroclor 1248 and Aroclor 1254 have been associated with hydraulic oils.

If the PCBs used by Eaton were simply in the di-electric and hydraulic fluids, there is insufficient evidence that those PCBs also made their way to the River ½ mile away. Transformers and capacitors are closed systems. Although there is evidence that they leaked on occasion, it was not a regular occurrence, and the leaks would be soaked up by the floor or swept up with floor dry. Hydraulic operations are nominally closed operations. Although hydraulic fluid would leak and would have to be replenished, the testimony of Eaton employees indicates that the hydraulic

machines leaked into drip pans that were not connected to the sewers. Hydraulic oil spilled when machines were cleaned and one employee recalled an instance where a hydraulic line completely ruptured. There is no evidence, however, that hydraulic oils were routinely flushed from the hydraulic equipment into the drains. The testimony is that hydraulic oils that spilled onto the floor were either absorbed into the wood block floors or were absorbed with a dry absorbent, swept up and discarded with the non-liquid wastes rather than with the wastewater. The floors were cleaned periodically with a scarifying machine that scraped up the oil residue on the floors.

In 1981, VERSAR, an outside environmental contractor to USEPA, inspected the Battle Creek plant to document Eaton's compliance with PCB marking and disposal regulations. VERSAR found several slight leaks from transformers, but no leaks in the in-service capacitors. VERSAR sampled the cutting, quench and hydraulic oils from various tanks and machines in the plant and found no detectable levels of PCBs in those oils. Exh. 2059. VERSAR did detect Aroclor 1242 at a concentration of level of 7 ppm in the grinding swarf (sludge). Grinding swarf is the sludge created by the process of grinding metal parts. It usually consists of small particles of the metal part being ground, the

grinding wheel or tool, and the cooling fluid used in grinding. Because VERSAR did not find PCBs in the process oils, Eaton personnel, after investigating, concluded that the PCBs in the grinding swarf were most likely attributable to floor scrapings from the floor scarifier being mixed with the grinding swarf. (Heindrichs dep. ¶ 277-79).

In order to show that Eaton released PCBs to the Site in any measurable quantity, Plaintiff would have to show that the PCBs were found in the oils used in the open systems, such as the quenching, or cutting operations. Plaintiff suggests that because Aroclor 1254 has been associated with cutting oils and quench oils in the literature and in some heavy industries, it likely was used in this manner at Eaton. The wastewater problem at the Eaton plant, however, was described in an Eaton memorandum of May 10, 1968, as being primarily concerned with the discharge of soluble oil in solution into the storm sewer and then into the Kalamazoo River. Exh. 2013. The majority of the coolants used by Eaton at the Battle Creek facility were water soluble coolants. Soluble oils did not usually contain PCBs because PCBs do not readily mix with water. Monsanto literature states that "[a]ll Aroclors are insoluble in water." Exh. 1372, p. 9. The Court is aware of only one reference in Monsanto literature to

the use of Aroclors in water soluble oils. This document notes the commercial use of Aroclors in high quality cutting oils of the "soluble oil" type. Exh. 1372, p. 17. This passing reference to Aroclors in water soluble oils appears to be an atypical use of PCBs. Moreover, because higher weight Aroclors are more hydrophobic (less soluble) than lower weight Aroclors, there is little likelihood that Aroclor 1254 would be found in soluble oils.

Plaintiff has offered no evidence of PCBs in Eaton's effluent except a couple inconclusive studies by the Michigan Water Resources Commission ("MWRC"). In February 1972, the MWRC conducted a study of industrial effluents into various rivers of the state. The sample taken from the joint outfall from Eaton's Battle Creek facility and Clark Equipment Company showed 1.4 ppb of PCBs based on an Aroclor 1254 standard. Because the sample was taken from a joint outfall, it is impossible to attribute the PCB detection to Eaton as opposed to Clark Equipment Company. Exh. 2027.

In September 1972 the MDNR tested the storm sewer as it left Eaton's property and found .24 ppb and .12 ppb of PCBs. Exh. 2028. Because the storm sewer lines did not originate at Eaton and served areas outside of the plant, these test results were

also inconclusive regarding the presence of PCBs in Eaton's effluent. This test is also somewhat suspect because the results were at the limit of detectability.

In 1980 the MDNR conducted a survey which monitored Eaton's wastewater discharge for a 24 hour period. The results showed no traces of PCB. The detection limit used was .1 ppb. Exh. 6011. As a result of this test, the MDNR stopped testing Eaton's effluent for PCBs as a requirement for the NPDES permit. The MDNR determined that while occasional PCB's may be in the oils used in the plant, they only appeared at trace contaminant levels. Exh. 6012.

Based upon the evidence from the plant itself, it appears to this Court that very little, if any, of the PCBs from the Eaton plant found their way into the sewer system and on to the Kalamazoo River. The evidence from the Kalamazoo River supports this conclusion. Given the evidence that Eaton was discharging large quantities of cutting and quench oils into the sewer lines which were discharged into the river, if those oils contained PCBs, those PCBs should be present in the ditch and the river. Plaintiff, however, has offered no substantial evidence that Eaton was responsible for discharging PCBs to the Kalamazoo River.

The discharge point from the Eaton plant into the Kalamazoo River was approximately 15 miles upstream from the most upstream boundary of the NPL Site, but still within the Site that Plaintiff is required by the AOC to study. The experts are in agreement, that PCBs in the water tend to settle out with the sediment in depositional areas. There are numerous depositional zones in the 15 miles between Eaton's Battle Creek facility and Morrow Lake. If PCBs had been released from Eaton they would have shown up in these depositional zones.

KRSG has made no study of the storm sewer ditch to locate PCBs. KRSG has not sampled either sediments or settleable solids immediately adjacent to the discharge point from the Eaton sewer to the Kalamazoo River. In fact, KRSG has not taken any sediment samples in the entire 15 mile stretch of the River downstream of Eaton's Battle Creek plant. Instead, for that portion of the Kalamazoo River from Battle Creek to the Morrow Dam, Plaintiff relies on a 1971 MDNR study, the 1976 Wuycheck study, and a 1988 MDNR study.

In July 1971, a Kalamazoo River water sample downstream of the Battle Creek facility near Augusta, Michigan, indicated a total PCB concentration of 0.1 ppb. There is insufficient evidence to attribute this finding to Eaton's Battle Creek plant.

Approximately 25 percent of the Kalamazoo River watershed is upstream of Battle Creek. The sample could have reflected effluent from the Battle Creek Wastewater Treatment Plant which was located approximately one mile downstream from Eaton's Battle Creek plant. Moreover, Plaintiff has not attempted to rule out other industries upstream as potential sources of the PCBs.

For purposes of this Court's determination of Eaton's contribution to PCBs in the River, the Wuycheck data is perhaps the most relevant. The Wuycheck study was undertaken in the mid-1970s, close in time to when PCBs were being used in industry. If PCBs had been released by Eaton as alleged by Plaintiff, they should have been detected in the Wuycheck tests.

In 1976, John Wuycheck, an employee in the Biology Section of the MDNR, conducted an "intensive" survey of the Kalamazoo River. Exh. 2036. Wuycheck tested both sediment and settleable solids (also known as suspended solids) in the Kalamazoo River. Of the 6 locations tested between the Battle Creek plant and Morrow Lake, the only positive sediment samples came from 35th Street in Galesburg (Aroclor 1254 at 1190 ppb) and Morrow Lake at Rosemont St. (Aroclor 1254 at 3140 ppb). These sites are approximately 13 and 15 miles downstream of Eaton's Battle Creek facility. The test from the site closest to Eaton's plant,

Stringham Road, was non-detect for PCBs. If Eaton had discharged PCBs in measurable quantities, those PCBs would have been detected in the 1976 sampling done at the Stringham Road sampling location. No PCBs were detected at Stringham Road in either sediments or settleable solids.

The Wuycheck study detected PCBs in suspended solids at Custer Road, approximately 5½ miles downstream of the Battle Creek facility (1140 ppb) and at 38th Street in Galesburg, approximately 11 miles downstream of the Battle Creek facility (810 ppb). The settleable solids test is useful for determining the presence of PCBs in the water column, but not for determining the source, quantity or concentration of PCBs. In a settleable solids test the collection bottles are suspended in the water for approximately 4 weeks. During that time period particles from the water and organic film accumulates in the bottle and collects PCBs from the water column. Because the organic materials in the bottle tend to attract PCBs, the test may indicate an artificially high reading of PCBs. The detection of PCBs in the water column over 5 miles downstream of the Eaton Battle Creek facility also tells little to nothing about the Eaton Battle Creek facility. Since almost 25 percent of the watershed for the Kalamazoo River is upstream of Battle Creek, PCBs in the water

column could be from unknown point sources, runoff, and air pollution. The Custer Road collection point was also within the plume of the Battle Creek Wastewater Plant.

In 1988 the MDNR tested the sediment at 11 locations between Battle Creek and Morrow Lake. Only one of the 11 sediment samples tested positive for PCBs. PCBs at a concentration level of 1000 ppb of Aroclor 1254 were detected at one location downstream of the Battle Creek facility and upstream of the discharge point of the Battle Creek Wastewater Treatment Plant. (Exh. 6020). The sediment tests from the remaining 10 locations were non-detect for PCBs.

Plaintiff KRSG contends that the lack of positive tests for PCBs in the 1988 study is deceptive and should not be relied upon to show the absence of PCBs in the River because the MDNR used a high detection limit of one part per million (1000 ppb). Plaintiff's argument ignores the burden of proof. This Court will not guess what the use of lower detection limits might have shown. Plaintiff bears the burden of proof on the issue of Eaton's contribution to the PCBs in the River. If Plaintiff was dissatisfied with the available studies, Plaintiff could have done its own studies of this portion of the River.

If, as the evidence shows, Eaton was discharging a ton of oil per day in the 1960s, then, if those oils contained PCBs, one would expect them to show up in the River sediments near or immediately downstream of the plant. The evidence does not support Plaintiff's suggestion that Aroclors 1248 and 1254 were used by Eaton in its quench and cutting oils. If they had been, they would have shown up in the River. It appears that the PCBs used in Eaton's Battle Creek facility were only found in the transformers and capacitors and the hydraulic fluids, and those fluids were not released to the River in any regular or measurable manner.

The Court is struck by the lack of evidence regarding PCBs at or near the outfall of the drain from Eaton to the River. As the party with the burden of proof in this matter, the Court would have expected KRSG to have presented some evidence of River contamination close to Eaton's Battle Creek plant. The Court is also struck by the complete lack of evidence of Aroclor 1248 in the River upstream of Morrow Lake. Since Aroclors 1254 and 1248 were both in the floor of Eaton's plant, then if the Aroclor 1254 from the floor reached the River, presumably the Aroclor 1248 would have reached the River as well. Yet Plaintiff has come

forward with no evidence of Aroclor 1248 in the River downstream of Eaton and upstream of Plaintiff's members.

Plaintiff's expert, Dr. Mark Brown, acknowledged that Morrow Lake is a large depositional area. The highest level of PCBs in Morrow Lake, however, is 3.1 ppm. This figure is quite striking when contrasted to the high level of PCBs detected below Morrow Lake. In the vicinity of Plaintiff's members downstream of Morrow Lake and above the confluence with Portage Creek there are PCB concentrations of 9.9 ppm, 0.7 ppm, 7 ppm, 44 ppm, 42 ppm, 15 ppm, 106 ppm, and 86 ppm. Exh. 8929.

The Court cannot accept Eaton's suggestion that the PCBs, while not found in the River near the Battle Creek plant, somehow ended up in the NPL Site downstream of Morrow Dam. Under Plaintiff's theory, the PCBs from Eaton would have traveled on the surface of the River without leaving a trace, and then accumulated in the sediment just downstream of Morrow Lake. This theory is not consistent with any of the experts' testimony regarding river transport of PCBs and sediments. The experts were in agreement that the PCBs would be found in greatest concentration in depositional areas closest to the source.

Plaintiff would like the Court to infer that the sediments might have been disturbed or blown out by floods or the removal

of dams on the River. This theory finds no support in the evidence. Defendants' expert, Dr. Connolly, sampled the sediment in Morrow Lake for a form of Cesium, an element deposited by the atmospheric testing of nuclear weapons beginning in 1954. The Cesium analysis revealed that Morrow Lake sediments have remained virtually undisturbed since before 1954. The sediments in Morrow Lake are accordingly a reliable source of information on PCBs that were historically released to the River.

Based upon the evidence presented at trial, this Court concludes that there were PCBs in Eaton's di-electrical equipment (capacitors and transformers) and in some of Eaton's hydraulic oils. The PCBs in the di-electrical equipment were in closed systems. Although those systems did occasionally leak, the Court concludes that the leaks were absorbed by the wood floors or cleaned up with oil dry. The hydraulic systems were semi-closed systems. Although there would be more leakage from the hydraulic systems than from the di-electrical systems, those leaks would also have been primarily absorbed by the wood block flooring or swept up with oil dry. The Court does not find that either of these systems resulted in the loss of oils through the sewer systems and into the River. The oils that reached the River from Eaton appear to have been oils that did not contain PCBs.

Because the concentrations of PCBs upstream of Plaintiff's members are low, their incidence is sporadic, and they have not been located close to the Eaton facility, the Court concludes that Plaintiff KRSG has not met its burden of demonstrating that any PCBs released from Eaton's Battle Creek facility have added to the PCB contamination of the Kalamazoo River. There is insufficient evidence of a detectable or measurable discharge of PCBs from Eaton's Battle Creek plant into the Kalamazoo River to hold Eaton liable under CERCLA, NREPA, or any of the common law theories.Plaintiff alleges. Judgment will be entered in favor of Eaton.

VI. Rockwell

From the early 1900s until approximately 1988-89, Rockwell and its predecessors operated a manufacturing plant on a 30.4 acre property at 1 Glass Street, Allegan. The plant was located on the Kalamazoo River, downstream of the Allegan City Dam. The property is bounded immediately on the north side by the Kalamazoo River, and is located on a portion of the Kalamazoo River that KRSG has agreed to study pursuant to the AOC.

Since at least 1953 Rockwell manufactured universal joints and driveline parts for heavy trucks and construction equipment

at its Allegan facility. Operations included machining, part hardening through heat treating and assembly.

Prior to 1960 Rockwell discharged its industrial wastewater directly into the Kalamazoo River. The wastewater contained sludge, heavy metals, process wastes, and oil. Exh. 1004. Rockwell's wastes included machine coolants, oily wastewaters, and spent cutting oils. There are no records indicating that the Rockwell plant purchased quench oils, cutting oils or hydraulic oils containing PCBs. There is also no evidence that Rockwell conducted forging, die casting or other extremely high temperature operations that might have benefitted from the fire-resistant qualities of PCB-containing oil. From the early 1960s onward, Rockwell began making increasing use of water-based process oils, i.e. water-soluble oils. Since PCBs do not readily mix with water, they are an unlikely additive to water soluble oils. In 1978 Rockwell advised its oil waste hauler that information obtained from OSHA Material Safety Data sheets and its suppliers indicated that Rockwell's waste oil did not contain any PCBs. Exh. 8931. The wastewater effluent from Rockwell's treatment ponds was tested by the MDNR in 1976 and 1986. Those tests found no PCBs in Rockwell's outfall to the Kalamazoo River. Exh. 5012, 5014, 5025 & 5027.

Notwithstanding the lack of direct evidence of PCB use by Rockwell, there is ample circumstantial evidence that there were PCBs in its process oils.

In 1987, the EPA added the Rockwell site to the National Priorities List ("NPL"), making the Rockwell site a national priority for study and clean-up based upon the presence of contaminants other than PCBs. Those contaminants included lead, arsenic, cyanide, chromium and solvents. Exh. 1004. In 1988 Rockwell and the EPA signed an Administrative Order by Consent, by which Rockwell agreed to conduct a remedial investigation and feasibility study ("RI/FS") at the site. Id.

To fulfill its obligations under the AOC, Rockwell hired environmental consultants, including Environmental Strategies Corporation ("ESC"), to perform testing of the soil and groundwater at the Rockwell site. Those tests revealed the presence of PCBs in the soil, groundwater, and the light non-aqueous phase liquid ("LNAPL") that lies beneath the surface at the Rockwell Site.

Due to the presence of PCBs in all the oil handling areas at Rockwell, this Court concludes that Rockwell used PCB-containing oils in its industrial processes. Because PCB-containing oils were used, the Court must consider how the oils were handled at

Rockwell and whether the PCB-containing oils were released to the River.

Prior to 1945 Rockwell disposed of its waste effluents through drains leading directly to the Kalamazoo River. From 1945 until the mid-1960s, Rockwell operated a very crude oil separation system in the Oil Floatation House. The Oil Floatation House was an above ground waste oil storage tank and containment house designed to remove insoluble oil from the plant. Exh. 1006. The Oil Floatation House had a weir that would separate some of the oils. When the oil had accumulated to a large quantity, outside agencies would pump the oil off for road oiling and other uses. The effluent from the Oil Floatation House emptied through a pipe directly into the Kalamazoo River. Although some oils were caught in the weir, the weir was not very efficient at removing oils. The effluent discharged to the river contained oils. Overflows were not uncommon.

The release of substantial quantities of oils from the Oil Floatation House into the River caught the attention of the MDNR. Between 1965 and 1968, the MDNR contacted Rockwell on numerous occasions complaining about the oil discharges to the Kalamazoo River. Exh. 1064-68.

Because of the oil discharges from the Oil Floatation House to the Kalamazoo River, the MDNR forced Rockwell to consider an alternative oil handling system. In the early 1960s the plant began using water-soluble oils and coolants. Exh. 1006. In the mid-1960s Rockwell constructed the Soluble Oil Separation Pond ("SOS Pond"), an unlined pond on the bank of the Kalamazoo River, for its oils and oily waste waters. As oil collected on the surface of the pond it would be burned off, creating large amounts of black smoke. The practice was discontinued in 1965 due to complaints from the Allegan County Health Department. Exh. 1004. By 1965 the pond was already leaking oil into the Kalamazoo River. The MWRC noted after a March 9-11, 1965 survey that the pond was located only about fifteen feet from the Kalamazoo River, and that "[w]hile there is no outlet from the pond, there was a certain amount of oil reaching the river from the area. It is the opinion of the writer that the ground has become saturated with oil and oil is now leaching into the Kalamazoo River." Exh. 1064.

The MWRC noted in November 20, 1968, that although it had solicited a program to improve the oil removal facilities three years earlier, Rockwell had not yet done anything to address the problem. Exh. 1068. In March 1969 the Water Resources

Commission noted that on February 27, 1969, its representative discovered that substantial amounts of oil were being lost to the River, the most significant loss from Rockwell that the MWRC had observed thus far. Exh. 1069.

Finally, in July 1970 the Rockwell plant engineer prepared a preliminary report noting the failure of the SOS Pond and recommending a more comprehensive waste disposal system:

> It was assumed that ponds constructed of dirt dikes would be satisfactory for containment and disposal of our water soluble wastes. This method of disposal has been proven to be unsatisfactory due to saturation of the dike walls and sub-soil seepage.

Exh. 1278.

In the early 1970s Rockwell created three new ponds, Pond Nos. 1, 2 and 3, to use in connection with a new wastewater treatment building. The SOS Pond, with the sludge still in it, was filled in and built over. Exh. 1004. Pond Nos. 1, 2 and 3 were used for waste disposal from the early 1970s until the plant closed. The banks of these ponds also became saturated with oil, and oil from these ponds also began leaking into the Kalamazoo River. William Sebright, Rockwell's Environmental Control Technician, advised the MDNR in 1976 that there had been a seepage problem in the bank between Pond #1 and the Kalamazoo River since at least February 1974 when he became involved with

waste control at Rockwell. Exh. 1039. There was enough seepage to cause a slight oil sheen on the River surface. In an effort to halt the seepage Rockwell installed a clay barrier between the pond and the River. Although it was effective for a while, a year later the oil sheen reappeared. Exh. 1039. Oil booms were installed on the ponds, and then in the River itself to try to trap some of the oil floating on the surface of the ponds and the River.

Oil sheens were commonly observed on the Kalamazoo River adjacent to Rockwell's facility from the 1960s on. Based upon the testimony of Mary Schafer and Martha Fleming that they saw oil seeps from the area of the former SOS Pond, the Court finds that the former SOS Pond continued to seep into the River as recently as 1996. To this date, walking on the riverbank or poking a stick into the riverbank is sufficient to release an oily sheen onto the River. The banks are clearly saturated with oil and continue to release these oils into the River.

The Court finds that the discharges of oil were neither minor nor insignificant. They were of sufficient significance that the MWRC demanded first that the Oil Floatation House be replaced, and later that the SOS Pond be replaced with more effective water treatment systems.

PCBs were found in every area on the Rockwell Site where oils were historically handled. Not every sediment or soil sample taken from the oil handling areas contained PCBs. Not every LNAPL sample contained PCBs. Nevertheless, the presence of PCBs shows more than sporadic use.

PCBs were found in the vicinity of the former Oil Floatation House. Groundwater samples taken in 1990 from the vicinity of the former Oil Floatation House had Aroclor 1254 in concentrations of 1.4 ppb and 1.2 ppb. Exh 1257. In 1996 Aroclor 1254 was detected in the groundwater at an average concentration of 0.3 ppb. Exh. 1114 & 5040. In 1996 Aroclor 1254 was detected in the LNAPL at an average estimated concentration of 3.3 ppm. Exh. 1012, 1114 & 5040.

PCB Aroclor 1254 was also found at the outfall from the Oil Floatation House to the River. Despite the fact that 30 years had elapsed since the Oil Floatation House was last used, the river sediment still contained PCBs at a level of 35 ppm (35,000 ppb). Rockwell's own expert, Mr. Barrick acknowledged that this sample had the same chromatogram, or fingerprint, as those PCBs found at the Rockwell site. Based upon the location from which this sample was taken and its Aroclor fingerprint, Mr. Barrick concluded that the PCBs detected in this sample came from the

outfall from Rockwell's Oil Floatation House and could not be attributed to PCBs in the River itself.

Rockwell's sampling in the area of the former SOS Pond in the 1990s found PCB Aroclor 1254 in the oil/LNAPL as well as in the groundwater and soil. Soil samples from the vicinity of the former SOS Pond contained Aroclor 1254 at concentrations of 1.6 ppm, .62 ppm, and 0.34 ppm. Exh. 1179. Surface soil samples from the edge of the Kalamazoo River next to the SOS Pond showed Aroclor 1260 at an estimated level of 900 ppb and 55 ppb. Groundwater samples collected in 1990 from the vicinity of the SOS Pond had Aroclor 1254 at concentrations of 3.5 ppb and 1.7 ppb. Exh. 1257. Groundwater samples collected in this area in 1993 and 1996 had Aroclor 1254 in concentrations of 3.4 ppb and 0.9 ppb. Exh. 1012. An LNAPL sample from the vicinity of the former SOS Pond had Aroclor 1254 at a concentration of 7.1 ppm. Exh. 1012 & 1114.

Aroclor 1254 was found in each of the three ponds at the surface and also at depth within the sediment. Aroclor 1254 was detected in one of six surface grab samples from Pond 1 at a concentration of 0.33 ppm, in 4 of 6 grab samples from Pond 3 at an average of 0.41 ppm, and from Pond 2 at an average concentration ranging from 0.58-24 ppm. In Pond 3, 5 of 6

subsurface samples had an average concentration of PCBs of 0.44 ppm. Exh. 1114. The sludge and sediment samples confirm that PCBs were present in the waste oils that were handled in Ponds 1, 2 and 3. No other credible explanation of their source was presented.

Not all of the oil that seeped into the River from the Rockwell plant contained PCBs. In fact, the bulk of Rockwell's oil releases probably did not involve the release of PCBs. Had PCBs been present in the majority of Rockwell's oils, they would have been present in greater concentrations and in more of the samples collected.

Rockwell's release of PCBs also probably decreased in the 1960s as Rockwell began using more water soluble oils and as Rockwell improved its oil waste handling techniques. The amount of PCBs used would have decreased further in the 1970s after PCBs stopped being sold for use in open systems.

During the course of the trial the question was raised as to whether PCBs in the groundwater and LNAPL had migrated or were migrating to the River. Mr. Barrick testified that the PCBs would not tend to migrate because of their adherence to organic compounds in the soil. Based upon the evidence presented, the Court is convinced that at least some of the PCBs in the

groundwater and LNAPL would be removed by the soil before reaching the River. Exh. 5042.

The dominant PCB found on the Rockwell property is 1254. Aroclor 1242 is the dominant PCB mixture detected both upstream and downstream of the Rockwell plant. Mr. Barrick testified that the gas chromatograph or fingerprint of PCB concentrations both upstream and downstream of Rockwell is similar. He contends that this evidence indicates that Rockwell's introduction of Aroclor 1254 to the River had no impact.

There is insufficient evidence of the sampling techniques used by Mr. Barrick to conclude that the sampling was taken from depositional areas where PCBs from Rockwell's oils would be expected to have come to rest. Moreover, while the gas chromatograph may be evidence that Rockwell's contribution of PCBs to the River was insignificant compared to that of the Plaintiff's members and others upstream, it does not conclusively demonstrate that Rockwell's release of PCBs to the River was not regular, or more than incidental.

In light of the high concentration of PCBs found at the outfall of the Oil Floatation House, and the presence of PCBs in all of the oil handling areas on the Rockwell property, the Court must conclude that Rockwell's release of PCBs to the River was

more than incidental or sporadic. The evidence is sufficient to enable the Court to conclude that PCBs were regular ingredients of the Rockwell plant's process oils, at least for a period of time, and that they were released to the Kalamazoo River in measurable or detectable quantities.

At this stage of the proceedings the Court is not called upon to quantify Rockwell's release of PCBs to the River. While the evidence tends to show that the release was minimal in comparison to the release of PCBs by Plaintiff's members, the Court is satisfied that the release was above the threshold of significance. Accordingly, the Court finds in favor of Plaintiff on the issue of Rockwell's liability for the release of PCBs to the Site.

An order and partial judgment consistent with this opinion will be entered.

Date: December 7, 1998

ROBERT HOLMES BELL
UNITED STATES DISTRICT JUDGE

KALAMAZOO RIVER STUDY GROUP, Plaintiff-Appellant, v MENASHA CORPORATION, EATON CORPORATION, Defendants-Appellees, ROCKWELL INTERNATIONAL CORPORATION, et al , Defendants
No 99-1197

UNITED STATES COURT OF APPEALS FOR THE SIXTH CIRCUIT

228 F 3d 648, 2000 U S App LEXIS 24886, 2000 FED App 0355P (6th Cir), 54 Fed R Evid Serv (Callaghan) 1150, 51 ERC (BNA) 1353, 31ELR 20169

June 15, 2000, Argued
October 5, 2000, Decided
October 5, 2000, Filed

PRIOR HISTORY [**1] Appeal from the United States District Court for the Western District of Michigan at Grand Rapids No 95-00838 Robert Holmes Bell, District Judge

DISPOSITION REVERSED and REMANDED

CASE SUMMARY

PROCEDURAL POSTURE Plaintiff appealed from the judgment of the United States District Court for the Western District of Michigan at Grand Rapids, in favor of defendants on plaintiff's claims under the contribution provision of the Comprehensive Environmental Response, Compensation, and Liability Act, *42 U S C S § 9601* et seq Plaintiff also appealed an evidentiary ruling

OVERVIEW Plaintiff sought to recover costs incurred in the investigation and remediation of river contamination and sued defendants, pursuant to the contribution provision of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), *42 U S C S § 9601* et seq The district court granted summary judgment in favor of the defendants with regard to certain of its facilities, and it ruled in favor of one of the defendants with regard to another facility after a bench trial, concluding that, in a contribution action, the court should ask whether a particular defendant's release was of sufficient significance to justify holding it liable for the response costs Plaintiff appealed, arguing that the "causation" element of required a plaintiff to prove only that it incurred response costs as a result of a release, not as a result of each particular defendant's release The defendants argued that plaintiff was required to prove that a particular defendant caused the plaintiff to incur response costs The court held that a § 9613(f)(1) plaintiff need not prove causation in order to establish a defendant's liability The court also upheld an evidentiary ruling

OUTCOME Because district court applied incorrect legal standard for determining liability under Comprehensive Environmental Response, Compensation, and Liability Act, judgments reversed Contribution plaintiff need not prove causation in order to establish defendant's liability Case remanded for determination of defendants' liability for their respective facilities Ruling regarding exclusion of certain evidence upheld

CORE TERMS site, causation, contamination, hazardous, equitable, summary judgment, waste, incurrence, oil, discharged, cleanup, threshold, causal, disposal, quench, hazardous waste, environmental, wastewater, plant, responsible parties, contributed, arranged, effluent, incur, generator, ancient documents, costs incurred, hearsay rule, nexus, mill

LexisNexis (TM) HEADNOTES - Core Concepts

Civil Procedure Summary Judgment
Civil Procedure Appeals Standards of Review De Novo Review
[HN1] The appellate court reviews de novo a district court's grant of summary judgment

Civil Procedure Summary Judgment Summary Judgment Standard
[HN2] Summary judgment is proper only when there is no dispute as to a material question of fact and one party is entitled to a judgment as a matter of law Fed R Civ P 56(c) Viewing all facts and inferences drawn

therefrom in the light most favorable to the nonmovant, the appellate court must determine whether the evidence presented is such that a reasonable jury could find for that party

Civil Procedure Appeals Standards of Review Clearly Erroneous Review
Civil Procedure Appeals Standards of Review De Novo Review
[HN3] The appellate court reviews the legal conclusions of the district court de novo, but it reviews the district court's factual findings following a bench trial for clear error

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN4] See *42 U S C S § 9607*(a)

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN5] In order to establish a prima facie case for cost recovery under *42 U S C S § 9607*(a), a plaintiff must prove four elements (1) the site is a "facility", (2) a release or threatened release of hazardous substance has occurred, (3) the release has caused the plaintiff to incur "necessary costs of response", and (4) the defendant falls within one of the four categories of responsible parties Liability under *42 U S C S § 9607*(a) is generally joint and several on any defendant regardless of fault

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN6] See *42 U S C S § 9613*(f)(1)

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN7] Parties seeking contribution under *42 U S C S § 9613*(f)(1) must look to *42 U S C S § 9607*(a) to establish the basis and elements of the liability of the defendants Unlike with § 9607(a), however, liability under § 9613(f)(1) is not joint and several, but several only

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN8] *42 U S C S § 9613*(f)(1) grants the district court discretion to allocate response costs among liable parties

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN9] *42 U S C S § 9607*(a) does not require a plaintiff to show that a particular defendant caused either the release or the incurrence of response costs in order to prove liability

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN10] In the absence of a proximate causation requirement, Comprehensive Environmental Response, Compensation, and Liability Act, *42 U S C S § 9601* et seq , imposes liability on a generator of hazardous waste at a particular facility even though that generator's acts may not directly have caused or contributed to the contamination, or even where their waste may have comprised only a small portion of the waste present at the site

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN11] *42 U S C S § 9607*(a) requires only that a plaintiff prove that the defendant's hazardous substances were deposited at the site from which there was a release and that the release caused the incurrence of response costs

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN12] The liability standard under Comprehensive Environmental Response, Compensation, and Liability Act, *42 U S C S § 9601* et seq , for contribution claims is the same as the standard for cost recovery claims

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN13] Any person may seek contribution from any other person who is liable or potentially liable under *42 U S C S 9607*(a) *42 U S C S 9613*(f)(1)

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN14] The equitable contribution principles of *42 U S C S § 9613*(f)(1) permit a district court to consider causation However, consideration of causation is proper only in allocating response costs, not in determining liability

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN15] Recovery of response costs by a private party under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), *42 U S C S § 9601* et seq , is a two-step process Initially, a plaintiff must prove that the defendant is liable under CERCLA Once that is accomplished, the defendant's share of liability is apportioned in an equitable manner

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN16] Responsible parties, pursuant to *42 U S C S § 9607*(a)(3), include any person who by contract, agreement, or otherwise arranged for disposal or

treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances

Environmental Law Hazardous Wastes & Toxic Substances CERCLA & Superfund Amendments
[HN17] To establish liability under *42 USCS § 9613*(f), one discharge is sufficient to support liability, there is no requirement that the generator typically discharge waste to the site

Civil Procedure Appeals Standards of Review De Novo Review
Civil Procedure Appeals Standards of Review Abuse of Discretion
Evidence Procedural Considerations Rulings on Evidence
[HN18] The appellate court reviews factual components of a district court's evidentiary determinations under an "abuse of discretion" standard, and reviews its legal conclusions de novo

Evidence Hearsay Rule & Exceptions Ancient Documents
[HN19] Fed R Evid 803(16) provides an exception to the hearsay rule for "statements in a document in existence 20 years or more the authenticity of which is established "

Evidence Writings & Real Evidence Authentication
[HN20] Fed R Evid 901(a) provides that the requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient to support a finding that the matter in question is what its proponent claims

Evidence Hearsay Rule & Exceptions Ancient Documents
[HN21] Under the ancient documents provision of Fed R Evid 901(b)(8), a document is authentic if it (A) is in such condition as to create no suspicion concerning its authenticity, (B) was in a place where it, if authentic, would likely be, and (C) has been in existence 20 years or more at the time it is offered

Evidence Writings & Real Evidence Authentication
[HN22] The point of a Fed R Evid 901(b)(8) inquiry is to determine whether the documents in question are, in fact, what they appear to be Although the rule requires that the document be free of suspicion, that suspicion does not go to the content of the document but rather to whether the document is what it purports to be Questions as to the documents' content and completeness bear upon the weight to be accorded the evidence and do not affect the threshold question of authenticity The determination that a set of documents are, indeed, prima facie authentic in no way precludes counsel from challenging the content of the documents or from arguing that missing documents subject the contents to a different interpretation

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JUDGES Before JONES, MOORE, and GILMAN, Circuit Judges

OPINIONBY KAREN NELSON MOORE

OPINION [***2]

[*650] KAREN NELSON MOORE, Circuit Judge Plaintiff-appellant Kalamazoo River Study Group ("KRSG") is an unincorporated association of paper manufacturers seeking to recover costs incurred in the investigation[**2] and remediation of contamination by polychlorinated biphenyls (PCBs) in the Kalamazoo River KRSG brought suit against eight corporate defendants, including defendants-appellees Menasha Corporation and Eaton Corporation, pursuant to the contribution provision of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), *42 USC § 9601* et seq The district court granted summary judgment in favor of Menasha and in favor of Eaton with regard to its Kalamazoo and Marshall facilities, and it ruled in favor of Eaton with regard to its Battle Creek facility after a bench trial Because the district court applied an incorrect [***3] liability standard for CERCLA contribution actions, we

REVERSE the judgments and REMAND for further proceedings

I BACKGROUND

We set forth the relevant facts underlying this dispute in a previous opinion

In 1990, after nearly 20 years of investigating polychorinated [sic] biphenyl (PCB) contamination in the Kalamazoo River, the Michigan Department of Natural Resources ("MDNR") determined that a three-mile portion of Portage Creek from Cork Street to the Kalamazoo River, [**3] and a 35-mile portion of the Kalamazoo River from this confluence downstream to the Allegan City Dam (the "Site") were heavily concentrated with PCBs Consequently, the MDNR listed the Site as an environmental contamination site under the Michigan Environmental Response Act, and the United States Environmental Protection Agency ("EPA") listed the Site on the National Priority List ("NPL") as a Superfund Site pursuant to CERCLA § 105 The MDNR and the EPA authorized the MDNR to conduct an Endangerment/Risk Assessment (E/RA) for the Site

Following the E/RA, MDNR identified three paper mills -- HM Holdings, Inc , Georgia-Pacific Corporation and Simpson Plainwell Paper Company -- with facilities located on or near the Kalamazoo River as potentially responsible parties ("PRPs") for the PCB contamination All three companies entered into an Administrative Order by Consent ("AOC") which required them to perform a Remedial Investigation and Feasibility Study ("RI/FS") at the Site Subsequently, James River Company, which voluntarily agreed to pay a portion of the RI/FS costs, joined with the other three companies to form an unincorporated association called the Kalamazoo River Study[**4] Group ("KRSG") [***4]

*Kalamazoo River Study Group v Rockwell Int'l Corp , 171 F 3d 1065, 1066-67 [*651](6th Cir 1999)* (footnotes and citations omitted) n1 Under the RI/FS, KRSG is required to extend its investigation upstream and downstream of the NPL site to include a ninety-five-mile stretch of the Kalamazoo River

----------Footnotes----------

n1 In that opinion, we affirmed the district court's grant of summary judgment to defendant Benteler Industries

----------End Footnotes----------

Although none of KRSG's member corporations have admitted liability nor have they been adjudged legally liable for the contamination at the NPL site, KRSG has incurred significant costs for its performance of the RI/FS at the NPL site and will continue to incur substantial costs in connection with those activities as well as remediation of the NPL site KRSG filed this action in the United States District Court for the Western District of Michigan in December of 1995, seeking to recover its response costs from eight other corporations n2 that allegedly contributed[**5] to the contamination at the NPL site KRSG's suit was based on CERCLA, the Michigan Natural Resources and Environmental Protection Act, Mich Comp Laws Ann § 324 20101 et seq , and various common law theories In its first case management order, the district court bifurcated the trial of this case into two phases liability and allocation of damages All of the district court's rulings thus far have gone to liability Only the district court's judgments respecting two of the defendants -- Eaton and Menasha -- are at issue in this appeal

----------Footnotes----------

n2 The defendants named in the complaint were Rockwell International, Eaton Corporation, Wells Aluminum Corporation, Hercules, Inc , Benteler Industries, Inc , Menasha Corporation, Upjohn Company, and Rock-Tenn Company, Mill Division, Inc

----------End Footnotes----------

On March 6, 1998, the district court granted summary judgment on the issue of liability to defendant Menasha See *Kalamazoo River Study Group v Rockwell Int'l, 3 F Supp 2d 799, 814 (W D Mich 1998)* It was in[**6] this opinion that the district court articulated the liability standard that is [***5] challenged by KRSG in this appeal The parties disputed whether CERCLA requires a plaintiff to show causation in the sense that a particular

defendant's release caused the plaintiff to incur costs After examining the issue, the district court concluded that in a contribution action, the court should ask whether a particular defendant's release was of sufficient significance to justify holding it liable for the response costs Applying this "threshold of significance standard," *id at 807,* the court concluded that defendant Menasha was entitled to summary judgment

In an opinion dated June 30, 1998, the court applied the threshold of significance standard in ruling on cross-motions for summary judgment as to liability filed by KRSG and Eaton The court found a material question of fact with regard to Eaton's liability for its facility at Battle Creek However, the court granted summary judgment in favor of Eaton with regard to its facilities at Marshall and Kalamazoo

From August 10 to August 17, 1998, the district court presided over a bench trial on the issue of Eaton's[**7] liability with regard to the Battle Creek facility In an opinion dated December 7, 1998, the district court entered judgment in favor of Eaton, explaining that "because the concentrations of PCBs upstream of Plaintiff's members are low, their incidence is sporadic, and they have not been located close to the Eaton facility, the Court concludes that Plaintiff KRSG has not met its burden of demonstrating that any PCBs released from Eaton's Battle Creek facility have added to the PCB contamination of the Kalamazoo River " J A at 346 (D Ct Op 12/7/98)

On February 3, 1999, the district court granted KRSG's motion to certify its March 6, June 30, and December 7 orders with respect to Eaton and Menasha as final and appealable pursuant to Federal Rule of Civil Procedure 54(b) We therefore [*652] have jurisdiction pursuant to *28 U S C § 1291* [***6]

II ANALYSIS

The district court granted summary judgment on the issue of liability to Menasha, and to Eaton with regard to its Kalamazoo and Marshall facilities [HN1] We review de novo a district court's grant of summary judgment See *Ercegovich v Goodyear Tire & Rubber Co , 154 F 3d 344, 349 (6th Cir 1998)* [**8] [HN2] Summary judgment is proper only when there is no dispute as to a material question of fact and one party is entitled to a judgment as a matter of law Fed R Civ P 56(c) Viewing all facts and inferences drawn therefrom in the light most favorable to the nonmovant, we must determine whether the evidence presented is such that a reasonable jury could find for that party See *Matsushita Elec Indus Co v Zenith Radio Corp , 475 U S 574, 587, 89 L Ed 2d 538, 106 S Ct 1348 (1986)*

The district court granted judgment in favor of Eaton with regard to its Battle Creek facility after a bench trial on the issue of liability [HN3] We review the legal conclusions of the district court de novo, but we review the district court's factual findings following a bench trial for clear error See *Schroyer v Frankel, 197 F 3d 1170 1173 (6th Cir 1999)*

A The Proper Standard for CERCLA Contribution Actions

CERCLA is a statute designed "to facilitate the prompt cleanup of hazardous waste sites by placing the ultimate financial responsibility for cleanup on those responsible for hazardous wastes " *KRSG, 171 F 3d at 1068* (quotation [**9]omitted), see also *B F Goodrich v Betkoski, 99 F 3d 505, 514 (2d Cir 1996)* (noting that the purposes of CERCLA include "facilitating efficient responses to environmental harm, holding responsible parties liable for the costs of the cleanup, and encouraging settlements that reduce the inefficient expenditure of public funds on lengthy litigation" (citation omitted)), cert denied, *524 U S 926 (1998)*

Once a site has been cleaned up, CERCLA provides two causes of action for a party to recover the costs incurred as a [***7] result of the cleanup effort The first is a recovery action governed by § 107(a), *42 U S C § 9607*(a) That section provides

Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section--

(1) the owner and operator of a vessel or a facility,

(2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,

(3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with[**10] a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances, and

(4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities, incineration vessels or sites selected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance, shall be liable for--

(A) all costs of removal or remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan,

(B) any other necessary costs of response incurred by any other person [*653]consistent with the national contingency plan,

(C) damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release, and

(D) the costs of any health assessment or health effects study carried out under section 9604(i) of this[**11] title [***8]

[HN4]
42 U S C § 9607(a) " [HN5] In order to establish a prima facie case for cost recovery under § 107(a), a plaintiff must prove four elements (1) the site is a 'facility', (2) a release or threatened release of hazardous substance has occurred, (3) the release has caused the plaintiff to incur 'necessary costs of response', and (4) the defendant falls within one of the four categories of PRPs " *Centerior Serv Co v Acme Scrap Iron & Metal Corp , 153 F 3d 344, 347-48 (6th Cir 1998)* Liability under § 107(a) is generally joint and several on any defendant regardless of fault See *id at 348*

In 1986 Congress amended CERCLA by enacting the Superfund Amendments and Reauthorization Act of 1986 ("SARA"), which explicitly provides for a right of contribution for private parties to recover costs associated with hazardous waste cleanup See id Section 113(f) states in relevant part

Any person may seek contribution from any other person who is liable or potentially liable under section 9607(a) of this title, during or following any civil action under section 9606 of this title or under section[**12] 9607(a) of this title Such claims shall be brought in accordance with this section and the Federal Rules of Civil Procedure, and shall be governed by Federal law In resolving contribution claims, the court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate Nothing in this subsection shall diminish the right of any person to bring an action for contribution in the absence of a civil action under section 9606 of this title or section 9607 of this title

[HN6] *42 U S C § 9613*(f)(1) The text of this provision instructs that [HN7] parties seeking contribution under § 113 must look to § 107 to establish the basis and elements of the liability of the defendants See *Centerior 153 F 3d at 350* Unlike with § 107, however, liability under § 113 is not joint and several, [***9] but several only, see *id at 348* n3 [HN8] the provision grants the district court discretion to allocate response costs among liable parties

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n3 In *Carter-Jones Lumber Co v Dixie Distributing Co , 166 F 3d 840 (6th Cir 1999),* this court reaffirmed this general principle See *id at 847* (citing Centerior for the proposition that "it is correct that unrelated defendants are to be made severally liable only, rather than jointly and severally liable, in an action for contribution under CERCLA") The Carter-Jones court reversed the district court's determination that in a CERCLA contribution action the liability of a corporation and its sole shareholder must be several as a matter of law, but it did so on state law grounds The court explained "Section 113(f) of CERCLA, the section governing contribution actions, in no way addresses issues of corporate liability, and it should not therefore be presumed to alter state laws governing the liability of corporations vis a vis their officers and owners " Id (footnote omitted)

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[**13]

1 The District Court's March 6 Opinion

At the summary judgment stage, the district court was called upon to resolve a fundamental disagreement between the parties regarding KRSG's burden of proof on the issue of causation The defendants argued that a CERCLA plaintiff was required to prove that a particular defendant caused the plaintiff to incur response costs KRSG disagreed, explaining that the "causation" element of the statute required a plaintiff to prove only that it incurred response costs as a result of a release, not as a result of each particular defendant's release KRSG contended that a defendant should be held liable if a plaintiff proved that a release caused the incurrence of [*654] response costs and that the defendant fell into one of the four categories of responsible parties, regardless of the amount of hazardous substances that the particular defendant discharged or the harm it caused The district court explained

This Court agrees that in a multi-generator context such as this, Plaintiff cannot be required to trace or fingerprint the waste from each PRP The Court will not require the Plaintiff to prove that a particular defendant [***10] caused[**14] Plaintiff to incur response costs On the other hand, this Court does not agree with Plaintiff's contention that a defendant's release of any quantity, even the slightest, of hazardous substances is enough to support a judgment against that defendant for an undetermined extent in a contribution action brought by an admittedly responsible party

KRSG, 3 F Supp 2d at 804

The district court went on to draw a distinction between cost recovery actions brought by innocent parties pursuant to § 107 and contribution actions brought by one PRP against another PRP pursuant to § 113 The court explained that the two provisions have different statutes of limitations and that there is also a difference as to whether liability will be several or joint See *id at 805* Most importantly, the court noted that contribution actions, unlike cost recovery actions, are governed by the equitable contribution principles set forth in § 113(f) "These equitable contribution principles permit the court to consider whether or to what degree the defendant caused the response costs in a § 113(f) contribution action" Id In support of this contention, [**15] the district court cited two cases from the Fifth Circuit, but it relied primarily on a decision from the United States District Court for the District of Massachusetts

In *Acushnet Co v Coaters, Inc , 948 F Supp 128 (D Mass 1996),* aff'd, *191 F 3d 69 (1st Cir 1999),* the district court reasoned that § 113(f) authorizes an equitable approach to determining liability

The "equitable factors" mandate is appropriately interpreted as at least authorizing, if not mandating for this case, making comparisons between plaintiffs in a contribution action and defendants whom they allege to be potentially responsible parties, by considering evidence before the court (and jury, if one is used) for the purpose of determining whether the nature and extent of [***11] their respective ties to the hazards to persons, property, and the environment make it fair and reasonable to order that a defendant, or defendants grouped together for good reason, reimburse the plaintiffs in some amount or some share of "contribution", allocated on an equitable basis reasoned from evidence concerning all the "equitable factors" for the application of which in[**16] this case some evidentiary basis exists

Id at 135-36 Articulating what has come to be known as the "threshold of significance standard," the district court in Acushnet held that "plaintiffs must proffer sufficient evidence as to a particular defendant to satisfy a minimum standard of significance of that defendant's responsibility as a source of one or more hazardous substances deposited at the site" *Id at 136* The Acushnet decision, which has been criticized by commentators as a deviation from prior CERCLA case law, n4 was plainly driven by the court's concern for the expense that CERCLA litigation imposes on defendants who have been only small contributors to the environmental harm See *id at 136* ("It is inequitable to put the defendant to the burden of defending itself when the predictable outcome as to the claim for allocation of an equitable share of contribution, in [*655]the event of an outcome as favorable to plaintiffs as can be reasoned from evidence, would be a share so small that the public interest in remediation of hazardous waste sites would have been disserved because of the commitment of [**17]public and private resources to litigation over that alleged share of contribution ")

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n4 See, e g, Lisa C Goodheart & Karen A McGuire, Revisiting the Issue of Causation in CERCLA Contribution Litigation, *82 Mass L Rev 315, 319 (1998),* Lemuel M Srolovic & Pamela R Esterman, Fold or Fight The Changing Settlement Calculus in CERCLA Enforcement Actions, *9 Fordham Envtl L J 469, 480-81 (1998)*

----------End Footnotes----------

In the instant case, the district court found the Acushnet court's reasoning persuasive After noting that it was not aware of any Sixth Circuit case law discussing causation [***12] under CERCLA, the district court held that in a contribution action a court should apply a test "that asks whether a particular defendant's responsibility was of sufficient significance to justify the response costs " *KRSG, 3 F Supp 2d at 807* Therefore, the court explained, "in reviewing the cross-motions for summary judgment, this Court will apply the threshold[**18] of significance standard is the evidence of defendant's release of sufficient significance to justify holding defendant liable for response costs?" Id

2 Analysis of District Court's Opinion

We begin our analysis of the district court's opinion by examining the liability standard for cost recovery actions under § 107 It is clear from the text, structure, and legislative history of § 107 that the [HN9] provision does not require a plaintiff to show that a particular defendant caused either the release or the incurrence of response costs in order to prove liability See *United States v Township of Brighton, 153 F 3d 307, 329 (6th Cir 1998)* (Moore, J, concurring in the result) (" [HN10] In the absence of a proximate causation requirement, CERCLA imposes liability on a generator of hazardous waste at a particular facility even though that generator's acts may not directly have caused or contributed to the contamination, or even where their waste may have comprised only a small portion of the waste present at the site " (citations omitted)) First, the text of § 107 imposes no such causation requirement on its face Rather, [HN11] the text requires only that a plaintiff[**19] prove "that the defendant's hazardous substances were deposited at the site from which there was a release and that the release caused the incurrence of response costs " *United States v Alcan Aluminum Corp, 964 F 2d 252, 266 (3d Cir 1992)* ("Alcan I") Second, the structure of § 107 suggests this conclusion As the Second Circuit has observed, "interpreting section 9607(a)(1) as including a causation requirement makes superfluous the affirmative defenses provided in section 9607(b), each of which carves out from liability an exception based on causation " *New York v Shore Realty Corp, 759 F 2d 1032, 1044 (2d Cir 1985)* "Finally, [***13] the legislative history supports the absence of a causation requirement, as the final version of the bill ultimately passed by Congress deleted the requirement that liability be imposed only on those who 'caused or contributed to the release or threatened release' contained in the earlier version passed by the House of Representatives " *Township of Brighton, 153 F 3d at 328* (Moore, J, concurring in the result) (quotation omitted) Moreover, other circuits have held[**20] that § 107 does not require a plaintiff to show any direct causal link between the waste each defendant sent to the site and the environmental harm See, e g, *United States v Alcan Aluminum Corp, 990 F 2d 711, 721 (2d Cir 1993)* ("Alcan II") ("What is not required [by § 107] is that the government show that a specific defendant's waste caused incurrence of clean-up costs "), *Amoco Oil Co v Borden, 889 F 2d 664, 670 n 8 (5th Cir 1989)* ("In cases involving multiple sources of contamination, a plaintiff need not prove a specific causal link between costs incurred and an individual generator's waste "), *Alcan I, 964 F 2d at 266* ("Decisions rejecting a causation requirement between the defendant's waste and the release or the incurrence of response costs are well-reasoned, consistent with the plain language of the statute and consistent with the legislative history [*656] of CERCLA "), *United States v Monsanto Co, 858 F 2d 160, 169 (4th Cir 1988)* (explaining that a CERCLA plaintiff need not prove a nexus between a defendant's waste and the resulting environmental harm), cert denied, *490 U S 1106, 104 L Ed 2d 1019, 109 S Ct 3156 (1989)* [**21]

The district court in the instant case suggested, however, that CERCLA contribution actions may be subjected to a different liability standard than cost recovery actions brought solely under § 107 Rather than holding that causation is an element of liability under § 107, therefore, the district court seems to have "fashioned the 'threshold of significance' standard to impose a causation requirement only on parties seeking contribution under Section 113(f) " Br of Appellant at 37 [***14]

The district court's imposition of a requirement that plaintiffs in contribution actions show causation in order to establish a defendant's liability was erroneous [HN12] The liability standard for contribution claims is the same as the standard for cost recovery claims This conclusion is clear from the plain language of § 113, which states that [HN13] any person may seek contribution "from any other person who is liable or potentially liable under section 9607(a) of this title " *42 U S C 9613*(f)(1) (emphasis added) As we have explained, "parties seeking contribution under § 113(f) must look to § 107 to establish the basis and elements of the liability of the defendants [**22]" *Centerior, 153 F 3d at 350,* see also *Redwing Carriers, Inc v Saraland Apartments, 94 F 3d 1489, 1496 (11th Cir 1996)* ("Whether [a plaintiff] brings its claims under § 107(a) or § 113(f) does not matter insofar as establishing the [defendant's] liability The elements of a claim under both sections are the same " (footnote omitted)) Because causation is not an element of liability under § 107, and because § 107 defines the liability standard applicable in actions brought pursuant to § 113, then a § 113 plaintiff need not prove causation in order to establish a defendant's liability n5 [***15]

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n5 Although the district court relied on two Fifth Circuit cases in addition to the Acushnet decision to support its causation requirement, those cases are inapposite In *Amoco Oil Co v Borden, Inc, 889 F 2d 664 (5th Cir 1989),* Amoco sought a declaratory judgment that Borden, from which

Amoco had purchased contaminated industrial property, was liable for response cost damages under CERCLA Borden argued that it should not be held liable because the release that occurred was not sufficiently hazardous to justify any response costs, it thus argued that Amoco failed to prove the requisite causal nexus between the release and response costs The Fifth Circuit agreed with Borden that use of a "standard of justification" was acceptable for determining whether a release caused the incurrence of response costs "The question of whether a release has caused the incurrence of response costs should rest upon a factual inquiry into the circumstances of a case and the relevant factual inquiry should focus on whether the particular hazard justified any response actions " *Id at 670* The Amoco case was concerned with the statutory causation requirement (a causal nexus between the release and the incurrence of response costs), not the type of causation requirement urged by the defendants in the instant case (a causal nexus between a specific defendant's release and the incurrence of response costs) In fact, the Amoco court specifically distinguished the case before it from a case "involving multiple sources of contamination," in which "a plaintiff need not prove a specific causal link between costs incurred and an individual generator's waste " *Id at 670 n 8* The Fifth Circuit's decision in *Licciardi v Murphy Oil USA, Inc, 111 F 3d 396 (5th Cir 1997)* (per curiam), simply applied the principles set forth in Amoco

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[**23]

It is true that the [HN14] equitable contribution principles of § 113(f) permit a district court to consider causation However, consideration of causation is proper only in allocating response costs, not in determining liability See *42 USC § 9613*(f)(1) ("In resolving contribution claims, the court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate " (emphasis added)) As the Eighth Circuit has noted " [HN15] Recovery of response costs by a private party under CERCLA is a two-step process Initially, a plaintiff must prove that the defendant is [*657] liable under CERCLA Once that is accomplished, the defendant's share of liability is apportioned in an equitable manner " *Control Data Corp v SCSC Corp, 53 F 3d 930, 934 (8th Cir 1995)* (footnote omitted), see also *Tosco Corp v Koch Indus, Inc, 216 F 3d 886, 891 (10th Cir 2000)* ("The plaintiff in a CERCLA response cost recovery action involving multiple potentially responsible persons need not prove a specific causal link between costs incurred and an individual responsible person's waste To establish[**24] liability under § 9613(f), it is sufficient for the plaintiff to establish a connection between a particular defendant and the incurred response costs vis a vis the defendant's identification as a responsible person as defined in § 9607(a) " (citation omitted))

Indeed, the introduction of a causation element into the liability standard for contribution actions could have the effect of thwarting CERCLA's central purpose -- facilitating the prompt cleanup of hazardous waste CERCLA's scheme of strict liability for responsible parties in conjunction with [***16] the availability of contribution actions employing the same liability standard and contribution protection for parties who have settled with the government serves to encourage parties to clean up the site quickly and then litigate later to sort out the specifics of who should pay As commentators have explained, this format provides "the inevitable handful of PRPs selected by the government to remediate a site or reimburse the government's cleanup costs [with] powerful incentives to invest their resources in spreading the costs to other PRPs rather than fighting a losing battle against the government " Srolovic[**25] & Esterman, supra n 4, at 469-70 The district court's imposition of a threshold causation requirement for parties seeking contribution under § 113 could discourage parties from voluntary cleanup efforts and from settlement See Goodheart & McGuire, supra n 4, at 332 ("Instead of a presumption of shared liability and a focus on respective fair shares of the cleanup costs, contribution plaintiffs now face the prospect of being required to establish that a particular defendant in fact contributed at least a minimally significant share of the wastes at issue -- a burden which courts have routinely explained is far too great to impose on government plaintiffs in cost recovery actions As a result, some PRPs may find it undesirable to pay as much as they previously would have to settle governmental claims, and may even eschew settlement altogether ")

In the instant case, it has been suggested that the district court's decision could be affirmed on the basis that the court's "threshold of significance standard," rather than reflecting a determination as to liability, may simply have been a determination based on the exercise of its equitable powers under § 113(f) that, [**26] even if the defendants were liable, they should nevertheless bear a zero allocation of costs On review of the Acushnet decision, the First Circuit, although disapproving of the district court's decision "to the extent that [it] may be interpreted to incorporate into CERCLA a causation standard that would require a polluter's waste to meet a

minimum quantitative threshold," nevertheless affirmed on the different ground that the result was justified [***17] under the equitable allocation principles of § 113(f) *Acushnet Co v Mohasco Corp , 191 F 3d 69, 72 (1st Cir 1999)* The First Circuit explained "While the judge was not making specific allocations, it is plain to us he was holding that, in light of the equitable factors he would apply should he make explicit findings, plaintiffs' evidence showed too little pollution to justify compelling defendants to take on any meaningful share of the response costs We read him to say that if he had to make an allocation for [these three defendants], the evidence dictated that each of their shares for response costs would be zero " *Id at 81* Unlike in Acushnet, however, this was only[**27] the liability phase of a bifurcated trial Because, as we have explained, a district court may not consider causation in making a liability determination, any exercise of its equitable [*658] powers at this first stage of a bifurcated trial would have been improper n6

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n6 Moreover, it is far from clear that the two analyses -- liability and cost allocation -- may properly be conflated even in a trial that is not bifurcated The First Circuit in Acushnet reasoned that "allowing a CERCLA defendant to prevail on issues of fair apportionment, even at the summary judgment stage, is consistent with Congress's intent that joint and several liability not be imposed mechanically in all cases," and that "the costs and inherent unfairness in saddling a party who has contributed only trace amounts of hazardous waste with joint and several liability for all costs incurred outweigh the public interest in requiring full contribution from de minimis polluters " *Acushnet, 191 F 3d at 78-79* However, we have stated that liability under § 113 is ordinarily not joint and several, but several only See *Centerior, 153 F 3d at 348* There is therefore no possibility that a de minimis defendant will be saddled at the apportionment stage with costs for which it is not responsible

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B The District Court's Determination of Liability with Regard to Each Defendant

The district court erroneously required KRSG to show, as part of its prima facie case of liability, that each defendant's discharge of PCBs was causally linked to KRSG's incurrence of response costs Under the correct standard, which includes no specific causation requirement, a plaintiff must prove [***18](1) that the site is a "facility", (2) that a release of hazardous substances has occurred, (3) that the release caused it to incur "necessary costs of response", and (4) that each defendant is a PRP See *Centerior, 153 F 3d at 347-48*

KRSG has proceeded on a theory that Menasha and Eaton are [HN16] responsible parties pursuant to *42 U S C § 9607*(a)(3), which includes "any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances " KRSG contends [**29]that the two defendants fall into this category because each discharged hazardous substances (PCBs) into the Kalamazoo River (the site) J A at 1320 (Pl 's Mot for Summ J Against Def Menasha), J A at 2559 (Pl 's Mot for Partial Summ J Against Def Eaton), see *New Jersey Turnpike Auth v PPG Indus , Inc , 197 F 3d 96, 104 (3d Cir 1999)* ("In order to prove a case where a CERCLA plaintiff asserts that a PRP has 'arranged' for the transportation or disposal of hazardous substances, our prior case law is clear that such a plaintiff 'must simply prove that the defendant's hazardous substances were deposited at the site from which there was a release and that the release caused the incurrence of response costs '" (quoting *Alcan I, 964 F 2d at 266)),* see also *Alcan II, 990 F 2d at 721* ("CERCLA § 9607(a) imposes strict liability on 'any person who by contract, agreement, or otherwise arranged for disposal or treatment' of hazardous substances 'from which there is a release, or a threatened release which causes the incurrence of response costs ' The plain meaning of this language dictates that the government need only prove [**30](1) there was a release or threatened release, which (2) caused incurrence of response costs, and (3) that the defendant generated hazardous waste at the clean-up site " (quotations omitted)) The relevant inquiry in this case is therefore whether each defendant discharged PCBs to the site -- not [***19]whether it discharged PCBs to the site in sufficient quantity to have justified KRSG's incurrence of response costs

1 Menasha

Defendant Menasha owns and operates a recycled paper mill located in Otsego, Michigan, and adjacent to

the Kalamazoo River within the site. As the district court explained, between 1957 and 1971, a type of carbonless copy paper --typically referred to as "NCR" paper -- was manufactured; this paper incorporated Aroclor [*659] 1242, which contains PCBs, as a solvent. See *KRSG, 3 F. Supp. 2d at 802.* Although Menasha never used NCR paper in its feedstock, it did use secondary fibers known as double-lined kraft ("DLK") and old corrugated containers ("OCC"), both of which could have contained small levels of PCBs. J.A. at 575 (Schell Aff.) ("As a result of the intensive recycling efforts which started in the mid-1970s and continue on a large [**31]scale basis even today, these PCBs which originated in the NCR paper have slowly infiltrated a large portion of the world's paper stock, albeit in a steadily decreasing concentration. Thus, in theory, any mill that uses even small quantities of post-consumer paper as furnish could have inadvertently introduced minute quantities of PCBs into the production line.").

KRSG presented evidence that on two occasions the finished product coming off the rolls at the Otsego mill tested positive for PCBs. There was also testimony that during the pulping process, wastewater that may contain these recycled secondary fibers is lost to the mill's wastewater treatment system and eventually discharged to the Kalamazoo River. J.A. at 803 (Roys Dep.). To support its theory that the PCBs used in Menasha's pulping process were eventually discharged into the Kalamazoo River, KRSG presented evidence that Menasha's effluent tested positive for low levels of PCBs on four separate occasions. [***20]

In response, Menasha argues that the wastewater discharge test results submitted by KRSG were unreliable. Specifically, Menasha's expert testified that the test results from the 1970s were "highly unreliable[**32] because the reported analytical detection limits were unachievable using the technology available at that time." J.A. at 572 (Schell Aff.). Additionally, Menasha argues that because it used contaminated water from the Kalamazoo River in its wastewater treatment and cooling water systems, each of the effluent samples identified as containing PCBs could simply have reflected that fact rather than proving that PCBs were discharged as a result of Menasha's processes. J.A. at 571 (Schell Aff.).

Applying the correct standard, it is clear that summary judgment in favor of Menasha was inappropriate. KRSG has presented direct evidence that Menasha discharged PCBs into the Kalamazoo River. Although Menasha contests the reliability of KRSG's test results and proffers an alternative hypothesis for the presence of PCBs in its effluent, there is at least a genuine issue of material fact as to whether Menasha contributed to the contamination at the site.

2. Eaton

At all relevant times, Eaton owned three automotive manufacturing facilities near the Kalamazoo River. Although PCBs were admittedly present in the electrical equipment at each of the three plants, there was no evidence of any leaks[**33] from the electrical equipment that could have resulted in PCBs being discharged into the Kalamazoo River. Instead, KRSG's theory of liability is that there were PCBs in Eaton's process oils (quench, hydraulic, and cutting oils), which were discharged into the Kalamazoo River. Eaton does not contest that process oils were likely discharged into the Kalamazoo River; it argues instead that its process oils did not contain PCBs. [***21]

a. Kalamazoo Facility

Eaton's Kalamazoo plant, which manufactured transmissions until it was sold in 1985, is located about one-half mile from the Kalamazoo River. Wastewater from the Kalamazoo Plant was discharged into the Zantman Drain, which emptied into the Kalamazoo River. Eaton does not contest that limited amounts of process oils escaped in wastewater.

The wood floors from the Kalamazoo plant were tested in a PCB survey, and these tests revealed PCB contamination. This contamination was primarily concentrated [*660] around the electrical equipment, although PCBs were also found in other areas. Eaton's expert concluded, based on the fact that the contamination was largely localized, that the contamination resulted from limited leakage from the[**34] electrical equipment. J.A. at 1921 (Wharton Letter).

KRSG, however, presented evidence that the PCB contamination found in the floor samples was caused, at least in part, by PCB-contaminated quench oils. Stuart Lightfoot, Eaton's former director of environmental engineering, was questioned about the cause of the contamination at the Kalamazoo plant:

Q: Were you ever able to ascertain the cause of the PCB contamination at the Kalamazoo facility?

A: We think we did.

Q: And what did you think that cause was?

A: A dripping spicket on an internal wet transformer, and a heat treat oil quench operation.

Q So you think you determined that that [sic] oil quench operation at the Kalamazoo facility was in part the cause of the PCB contamination at that facility?

A Yes We think that is true

J A at 2690 (Lightfoot Dep) Although no PCB testing was ever conducted on the quench oils used at the Kalamazoo [***22] facility, Lightfoot explained that he suspected that the facility used quench oils containing PCBs because of their fire-retardant qualities Additionally, KRSG presented the deposition testimony of Thomas Newell, a former MDNR engineer, [**35] who expressed a belief that PCBs may occasionally be in the oils used at the plant at trace contaminant levels J A at 2783 (Newell Dep) Newell based this opinion on his general knowledge that many of the oils used in the automotive industry were recycled and were contaminated with PCBs

The district court discounted Lightfoot's testimony because Lightfoot could not be sure that the quench oils used contained PCBs, and it found that Newell's general knowledge about the automobile parts manufacturing industry was not probative of what occurred at Eaton However, the evidence presented by KRSG, although circumstantial, was sufficient to enable a reasonable juror to conclude that Eaton used PCBs in its quench oils at the Kalamazoo facility The district court therefore erroneously granted summary judgment to Eaton

b Marshall Facility

Eaton's still operable Marshall facility machines, grinds, heat-treats, and assembles components for the automobile industry The facility is located one-quarter mile from the Kalamazoo River and approximately 30 miles upstream of the site

With regard to this facility, KRSG presented test results indicating the presence of PCBs in the effluent[**36] from the Marshall facility In 1980, MDNR performed a wastewater survey at the Marshall facility, and samples indicated the presence of PCBs Newell indicated that the PCBs that were found were "most likely associated with the oils that are used at the plant " J A at 3388 (Newell Letter) Although the results of this one test were never repeated, it is direct evidence that the Marshall facility discharged PCBs into the [***23] Kalamazoo River n7 Summary judgment in Eaton's favor was therefore improper

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n7 Eaton argues that a one-time detection of PCBs in the plant's effluent is insufficient to withstand a motion for summary judgment because there is no evidence that such a result was typical of Eaton-Marshall's effluent However, [HN17] one discharge is sufficient to support liability, there is no requirement that the generator typically discharge waste to the site

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Because we conclude that a material question of fact exists as to the liability of Menasha, Eaton-Kalamazoo, and Eaton-Marshall, we will reverse the [**37]district [*661] court's grant of summary judgment and remand for a determination of liability under the appropriate standard With regard to Eaton's Battle Creek facility, the district court ruled in favor of Eaton after a bench trial On remand, the district court should similarly re-evaluate the liability of Eaton-Battle Creek under the proper standard

C The District Court's Evidentiary Ruling

KRSG also argues that the district court erred in refusing to admit a certain document regarding Eaton's Battle Creek facility under the ancient documents exception to the hearsay rule " [HN18] We review factual components of the district court's evidentiary determinations under an 'abuse of discretion' standard, and review its legal conclusions de novo " *Reynolds v Green, 184 F 3d 589, 596 (6th Cir 1999)*

[HN19] Rule 803(16) of the Federal Rules of Evidence provides an exception to the hearsay rule for "statements in a document in existence twenty years or more the authenticity of which is established " Fed R Evid 803(16) [HN20] Rule 901 provides that "the requirement of authentication or identification as a condition precedent to admissibility is satisfied by evidence sufficient [**38]to support a finding that the matter in question is what its proponent claims " Fed R Evid 901(a) [HN21] Under the ancient documents provision of Rule 901, a document is [***24] authentic if it "(A) is in such condition as to create no suspicion concerning its authenticity, (B) was in a place where it, if authentic, would likely be, and (C) has been in existence 20 years or more at the time it is offered " Fed R Evid 901(b)(8)

Although we have not often had occasion to address the proper application of the ancient documents exception to the hearsay rule, the Third Circuit has explained

While the ancient documents provision has not been a subject of frequent discussion in reported opinions, those cases which do address the provision establish that [HN22] the point of a Rule 901(b)(8) inquiry is to determine whether the documents in question are, in fact, what they appear to be "Although the rule requires that the document be free of suspicion, that suspicion does not go to the content of the document but rather to whether the document is what it purports to be " Questions as to the documents' content and completeness bear upon the weight to be accorded the evidence and [**39]do not affect the threshold question of authenticity The determination that a set of documents are, indeed, prima facie authentic in no way precludes counsel from challenging the content of the documents or from arguing that missing documents subject the contents to a different interpretation

Threadgill v Armstrong World Indus , Inc , 928 F 2d 1366, 1375-76 (3d Cir 1991) (quoting *United States v Kairys, 782 F 2d 1374, 1379* (7th Cir), cert denied, *476 U S 1153, 90 L Ed 2d 703, 106 S Ct 2258 (1986))* (citations omitted)

The excluded document is purportedly an EPA report indicating that Eaton's Battle Creek facility purchased from Monsanto large quantities of a substance known as Pydraul A-200, which contained PCBs Specifically, the document indicates that Eaton Battle Creek purchased 1,940 pounds of Pydraul in 1970 and 645 pounds in 1971 J A at 4964 At [***25] the bench trial KRSG called MDNR employee Tom Rohrer to the stand to identify the document Rohrer testified that the document came from the files of the Lansing office of MDNR, and that it had been in those files for over twenty years [**40] J A at 4445-46 (Rohrer Test) Rohrer personally reviewed the document in the fall of 1977 through the spring of 1978 in connection with a study MDNR was conducting Rohrer testified that the document was not prepared by MDNR, but that "[he] believed it was prepared by the United States Environmental Protection Agency " J A at 4447 (Rohrer Test)

[*662] KRSG then offered the exhibit as an exception to the hearsay rule as an ancient document, for the purpose of showing that Monsanto made certain sales to Eaton Battle Creek The court refused to admit the document, explaining that its reliability was seriously in question

Considering all the circumstances, we find no error in the district court's ruling Most important, Rohrer was unable to state with certainty that the document was even prepared by the EPA, he could only state that it was his belief that the document "was a page out of an EPA report if I recall correctly " J A at 4449 (Rohrer Test) Moreover, Rohrer's testimony does not establish why the document was in the MDNR files We therefore affirm the district court's exclusion of this document from consideration

III CONCLUSION

Because the district court applied[**41] an incorrect legal standard for determining liability under CERCLA, we REVERSE its judgments Under the correct standard, the record makes clear that summary judgment was erroneously granted to Menasha and to Eaton with regard to its Kalamazoo and Marshall facilities Therefore, we REMAND for a determination of the liability of those three facilities using the correct standard, and for a redetermination of the liability of Eaton's Battle Creek facility After liability has [***26] been determined, the district court may properly consider the causal link between each defendant's waste and the resulting environmental harm, along with other relevant equitable factors, in allocating response costs among the liable parties

142 F Supp 2d 831
52 ERC 1842, 31 Envtl L Rep 20,617
(Cite as: 142 F.Supp.2d 831)

H

United States District Court,
W D Michigan,
Southern Division

KALAMAZOO RIVER STUDY GROUP,
Plaintiff,
v
EATON CORPORATION, Defendant

No. 1:95-CV-838.

May 9, 2001

Association of companies who released polychlorinated biphenyls (PCBs) to environmentally contaminated site filed action against eight potentially responsible parties (PRPs), alleging that they contributed to PCB contamination, and seeking to recover response costs under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Michigan Natural Resources and Environmental Protection Act (NREPA), and common law theories The District Court, 3 F Supp 2d 799, granted summary judgment for one PRP, granted partial summary judgment for second PRP, and, following bench trial, ruled in favor of second PRP on remaining claim Association appealed The Court of Appeals, 228 F 3d 648, reversed and remanded On remand, the District Court, Robert Holmes Bell, J, held that (1) evidence supported finding that PCB discharges from two of PRP's automotive parts manufacturing plants reached river, but (2) there was insufficient evidence of PCB discharges from PRP's third plant

Ordered accordingly

West Headnotes

[1] Contribution ⚷9(6)
96k9(6) Most Cited Cases

Although evidence indicated that any polychlorinated biphenyls (PCBs) discharged in automotive parts plants' wastewater came from minor hydraulic and di-electric equipment leaks, rather than from plant's significant quench and cutting oil discharges, evidence of some PCBs in drainage ditches running from plants to river was sufficient to establish plant owner's liability for CERCLA contribution to cost of cleaning PCB-contaminated river Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U S C A § 9613(f)

[2] Contribution ⚷9(6)
96k9(6) Most Cited Cases

Single, low-level detection of polychlorinated biphenyls (PCBs) in automobile parts manufacturing plant's wastewater effluent over twenty year period was not sufficient to establish plant owner's liability for CERCLA contribution to cost of cleaning PCB-contaminated river Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U S C A § 9613(f)

***832** Alan C Bennett, Law, Weathers & Richardson, Grand Rapids, MI, Jerome T Wolf, James Lee Moeller, Sonnenschein Nath & Rosenthal, Kansas City, MO, for Kalamazoo River Study Group, pltfs

Richard A Glaser, Dickinson Wright, PLLC, Grand Rapids, MI, for Menasha Corp

OPINION

BELL, District Judge

This contribution action under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), 42 U S C § 9601, *et seq*, came before the Court for a bench trial on the issue of liability as to Defendant Eaton Corporation for discharges of PCBs to the Kalamazoo River ("the River") from its three facilities in Battle Creek, Kalamazoo, and Marshall, Michigan

This Court previously granted summary judgment in favor of Eaton with regard to its Kalamazoo and Marshall facilities, and ruled in favor of Eaton with regard to its Battle Creek facility after a bench trial The basis for those rulings was that the evidence was not sufficient to show that any of the three Eaton facilities had released sufficient quantities of PCBs to satisfy the "threshold of significance"

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standard [FN1] The Sixth Circuit reversed this ***833** Court's rulings with respect to all three facilities on the basis that this Court applied an incorrect liability standard to the CERCLA contribution action *Kalamazoo River Study Group v Menasha Corp* ("*KRSG v Menasha* "), 228 F 3d 648, 650 (6th Cir 2000) [FN2] The Sixth Circuit instructed that a § 113(f) contribution plaintiff, like a § 107 plaintiff, is not required to show any direct causal link between the waste each defendant sent to the site and the environmental harm *Id* at 655-56 The Court advised that consideration of causation and other equitable contribution factors is proper only in allocating response costs, not in determining liability *Id* at 656 Thus, for purposes of this liability action, the relevant inquiry is whether Eaton discharged any PCBs to the site, regardless of the quantity *Id* at 658 "[O]ne discharge [of PCBs] is sufficient to support liability, there is no requirement that the generator typically discharge waste to the site " *Id* at 660 n 7

FN1 6/30/98 Opinion and Order (Docket # 756 & 757), and 12/7/98 Opinion and Order and Partial Judgment (Docket # 849 & 850)

FN2 On 1/17/01, pursuant to a stipulation between KRSG and Menasha, this Court entered an order dismissing without prejudice KRSG's claims against Menasha, and Menasha's claims against KRSG (Docket # 969) Accordingly, the only Defendant left in the liability action was Defendant Eaton

A bench trial on the issue of liability was held on February 17-19, 2001 This Court has considered the testimony of the witnesses, the evidence introduced at this and the previous trials, the deposition testimony that was admitted into evidence, the parties' stipulations, and the parties' proposed findings of fact and conclusions of law In light of the evidence and the Sixth Circuit's articulation of the relevant standard, the Court finds that Eaton is liable under § 113(f) with respect to the Battle Creek and Kalamazoo facilities, but not the Marshall facility This opinion contains the Court's findings of fact and conclusions of law, in accordance with Fed R Civ P 52(a) [FN3]

FN3 Citations to the trial transcript from the 1/17-19/01, bench trial will be referred to as Tr at _____ Citations to testimony from previous bench trials will include the date of the bench trial

I. BACKGROUND

Plaintiff KRSG is an unincorporated association of four paper companies Millennium Holdings, Inc (formerly HM Holdings, Inc /Allied Paper, Inc) ("Allied"), Georgia-Pacific Corporation ("Georgia-Pacific"), Plainwell, Inc (formerly Simpson-Plainwell Paper Company) ("Simpson"), and Fort James Operating Company, Inc (formerly James River Paper Company) ("James River")

Defendant Eaton Corporation is an Ohio corporation At all relevant times, Eaton owned three automotive manufacturing facilities near the Kalamazoo River, in Battle Creek, Kalamazoo, and Marshall, Michigan

In 1990 the Michigan Department of Natural Resources (now the Michigan Department of Environmental Quality) ("MDNR" or "MDEQ") determined that a three-mile portion of Portage Creek and a thirty-five mile portion of the Kalamazoo River from its confluence with Portage Creek downstream to the Allegan City Dam (the "Site") were heavily concentrated with PCBs The Site was placed on the National Priorities List ("NPL") by the United States Environmental Protection Agency ("EPA") pursuant to Section 105 of CERCLA, 42 U S C § 9605 The MDNR identified three paper companies, Allied, Georgia-Pacific and Simpson as potentially responsible parties ("PRPs") for ***834** the PCB contamination These paper companies entered into an Administrative Order by Consent ("AOC") which required them to perform a Remedial Investigation and Feasibility Study ("RI/FS") at the Site [FN4] The MDEQ has required the PRPs, as part of the RI/FS, to extend their investigation upstream and downstream of the NPL site to include a ninety-five mile stretch of the Kalamazoo River from upstream of the Eaton Battle Creek facility to Lake Michigan

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FN4 Although not a party to the AOC, James River joined the KRSG and has agreed to participate in the conducting and funding of the RI/FS

For a more comprehensive factual background on the parties, the history of this NPL Site, and the nature of PCBs, refer to this Court's previous opinions [FN5] and the Sixth Circuit's opinion in *KRSG v Menasha, supra*

FN5 12/7/98 opinion (Docket # 849), 6/3/00 opinion (Docket # 942)

II. BATTLE CREEK FACILITY

The Sixth Circuit held that on remand, the district court should re-evaluate the liability of Eaton-Battle Creek under the proper standard *KRSG v Menasha,* 228 F 3d at 661 The Sixth Circuit's reversal of this Court's finding of no liability with respect to the Eaton-Battle Creek facility was predicated upon the legal standard applied by the Court, and not on this Court's factual findings For purposes of this second liability trial, however, the parties agreed to allow limited additional evidence with respect to the Battle Creek facility In light of the new evidence and legal standard, the Court will amend and restate its findings of fact and conclusions of law with respect to the Battle Creek facility

Prior to its demolition in 1984, the Eaton Battle Creek facility was located at 463 North 20th Street, Battle Creek, Michigan The plant was approximately one-half mile from the Kalamazoo River, upstream of the NPL Site, but within the area to be studied under the AOC [FN6]

FN6 Uncontroverted Facts, ¶ 19, Final Pretrial Order (Docket # 826), Attachment C

The Battle Creek facility was in operation from the early 1940s until 1983 [FN7] At the Battle Creek facility Eaton manufactured parts for the automotive industry, including internal combustion engine valves and gears [FN8] During the 1950s Eaton also ran an Aircraft Division at the Battle Creek facility [FN9] Manufacturing processes at the Battle Creek facility included heat treating, forging, welding and machining [FN10] These processes involved the use of quench oils, cutting or grinding oils, and hydraulic oils [FN11] Some of the heat treating involved temperatures as high as 2500 degrees Fahrenheit [FN12]

FN7 Uncontroverted Facts at ¶ 26, Steven F Fesko dep at 40, Kenneth Manchen dep at 95

FN8 Uncontroverted Facts ¶ 19

FN9 Stuart Lightfoot dep at 13

FN10 Carleton Swanson dep at 10

FN11 Uncontroverted Facts at ¶ 21, Lightfoot dep at 11-13, Bill Romick dep at 9

FN12 Clifford Galen dep at 22, 30, 90-92

There were no floor drains at the plant Because the wood floors would swell and buckle if wet, Eaton took great care to keep water off the floor Process oils were collected in drip pans under the machines and under the conveyor belts Still, residual quench and cutting oils on parts and waste metals dripped onto the floors, and ***835** the floors became greasy [FN13] While the machinery was in use it was common for the cutting, quenching, and water soluble oil to splash or splatter onto the floor, and for there to be oil standing on the floor at the base of the machines [FN14] Oil pipes leading to the machines sometimes leaked, and it was recalled that on one occasion a high-pressure hydraulic line burst [FN15]

FN13 Galen dep at 22

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FN14 Roosevelt Jones dep at 107-08, James Seaver dep at 54-56, Lightfoot dep at 24-25

FN15 Jones dep at 108

Hydraulic operations are nominally closed operations The hydraulic systems had filters that kept the oil clean, so those oils were not thrown away [FN16] Nevertheless, in the normal life of a machine that used hydraulics, the hydraulic lines would need maintenance or would leak from time to time [FN17]

FN16 John Eustis dep at 55-56

FN17 Galen dep at 85

When grinding fines and oils were vacuumed from the machinery reservoirs workers occasionally splashed oil from the hose onto the wood block floor On one occasion multiple gallons of water-soluble oils were spilled onto the floor causing the blocks to swell and requiring replacement of the wood blocks [FN18]

FN18 Chuck Heindrichs dep at 16-19

Oils that spilled onto the floor were either absorbed into the wood block floors or absorbed with a dry absorbent such as "Floor Dry" or "Speedy-Dry," swept up and discarded with the non-liquid wastes rather than with the wastewater The floors in the large aisles and open areas were also cleaned periodically with a scarifying machine that scraped up the oil residue on the floors [FN19] Spills of process oils were common enough that the Battle Creek facility purchased 2,000 to 4,000 pounds of dry absorbent each month to keep any spillage from leaking out from around the machines all over the floor [FN20]

FN19 Heindrichs dep at 57-59

FN20 Romick dep at 12-13

The oils that collected in the pans beneath the manufacturing machines were pumped out and taken to the mud room where waste metals and sludges were separated The waste oil was collected in a tank and the effluent was discharged to the sanitary sewer [FN21] Clifford Galen, plant manager from 1968-1973, testified that some of the drip pans were piped directly to either the sanitary sewer or the storm sewer [FN22]

FN21 Galen dep at 69-70

FN22 Galen dep at 20, 90-93

Scrap metal was stored in open bins outside in the back of the plant, and resulted in some oil run-off [FN23] During World War II, and perhaps later, employees dumped solvents, which had been used for cleaning oil off the valves, directly onto the ground in the plant back yard [FN24] Storm drains outside the plant could have carried some of these oils to the Kalamazoo River [FN25]

FN23 Swanson dep at 57-58, Galen dep at 122-24

FN24 John Bloemer dep at 16-18, Seaver dep at 190-93, Lightfoot dep at 133-34

FN25 Galen dep at 48

Prior to the late 1960s Eaton had no wastewater treatment system other than a settling weir to settle out the grinding mud from the water soluble oils [FN26] The Eaton ***836** facility discharged its wastewater to the City of Springfield Sanitary Sewer System and the City of Springfield Storm Sewer System [FN27] Prior to the mid-1960s, both the storm sewer and the sanitary sewer discharged to a ditch which led to the Kalamazoo River [FN28] It was not until the mid-1960s that the

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Springfield Sanitary Sewer System was connected to the Battle Creek Sanitary Sewer System [FN29]

FN26 Exh 2019, Environmental Pollution Survey, Swanson, dep at 19, Lightfoot dep at 50, Galen dep at 16

FN27 Exh 2019

FN28 Swanson dep at 22-23

FN29 Uncontroverted Facts at ¶ 22

The effluent that was being discharged into the storm sewer ran through a concrete pipe under Eaton's property, and then entered an open ditch that led from Eaton's property to the Kalamazoo River [FN30] In 1967 the Michigan Water Resources Commission ("MWRC") conducted a wastewater survey of the Eaton Battle Creek Plant and determined that the plant was discharging 2220 pounds of oil a day to the Kalamazoo River via the storm sewers and the ditch [FN31] Although the wastewater problem was primarily concerned with the discharge of soluble oil in solution into the storm sewer and on into the Kalamazoo River, straight oils were also released to the River [FN32]

FN30 Galen dep at 16

FN31 Exh 2018, 4/10/70 letter from Eaton to MDNR, referencing 1967 survey

FN32 Exh 2011, 1/12/68 letter from Eaton to MDNR, Exh 2013, 5/10/68 Internal Eaton Memo, Exh 2014 8/22/68 letter from MWRC to Eaton, Exh 2015, 12/23/68 letter from MWRC to Eaton, Galen dep at 50

When he became plant engineer in the late 1960s, Clifford Galen observed oily sheens in the effluent and dark oily stains in the ditch that carried the wastewater to the Kalamazoo River [FN33] Galen focused his attention on the problem of oils in Eaton's effluent, and under his direction the process wastes were diverted from the storm sewer lines to the sanitary sewer lines [FN34] Modifications to the oil disposal room eliminated 1500 to 2000 gallons of oil per day from the River [FN35] Used lubricants and cutting oils were collected in storage tanks which were removed by a licensed industrial waste hauler for off-site disposal [FN36] By December 1969 the amount of oil discharged in the Eaton plant effluent was reduced to 177 pounds a day [FN37] In 1973 Eaton constructed an oil skimming pond to skim oil from its wastewater prior to discharge to the Kalamazoo River [FN38]

FN33 Galen dep at 49-55

FN34 Galen dep at 49

FN35 Exh 2018, 4/10/70 letter from Eaton to MDNR

FN36 Exh 2022, 6/11/70 internal Eaton memorandum re Environmental Pollution Survey

FN37 Exh 2018

FN38 Exh 2029, 7/17/73 MWRC Facilities Inspection Report

In a 1979 survey, Snell Environmental Group found that free oils and soluble oils were allowed to enter the sewer system untreated The retention pond had a considerable free oil layer and the definite presence of soluble oils, and the effluent had extremely high oil levels The survey team also found oil spill problems in the vicinity of the drum storage area, which would allow oils to drain into the yard drains [FN39]

FN39 Exh 2081, Snell Environmental Group, Phase I Investigations Report,

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Manchen dep at 79-86

Based upon the evidence presented there is no question that over the years Eaton discharged significant quantities of ***837** oil to the Kalamazoo River The discharge of oils to the River, however, does not answer the key question of whether those oils contained PCBs

Eaton did not retain documents dating back to the 1940s and 1950s with respect to what oils were purchased at the Battle Creek facility [FN40] None of the former employees at Eaton's Battle Creek facility, including its stockroom supervisor from 1965 to 1983, recalled any purchases of Monsanto oils [FN41] The only oils Eaton employees recalled being used in the plant were supplied by Shell, Arco, Texaco, Mobil, Amoco and Standard [FN42] There is no evidence to suggest that oils from any of these suppliers contained PCBs at any time

FN40 Fesko dep at 41-42

FN41 *See, e g,* Romick dep at 6-7, 17-19, Jones dep at 187, Ted Wolf dep at 46

FN42 Exh 2067/6007, 1979 Pollution Incident Prevention Plan, Jones dep at 59, 163-64, Romick dep at 17, 28, 37-41

However, based upon certain documentary evidence from Monsanto Corporation, the parties have stipulated that the Battle Creek facility purchased 1940 pounds of Pydraul A 200 from Monsanto in 1970 and an additional 645 pounds of Pydraul A 200 from Monsanto in 1971 This amounts to approximately 5 drums of Pydraul [FN43] Pydraul, is a hydraulic oil containing 100% PCBs [FN44]

FN43 Wharton testimony, Tr at 395 (550 pounds of Pydraul per 55- gallon drum)

FN44 Stipulation entered 1/9/01, Docket # 964, Tr at 4

PCBs were detected in Eaton's effluent on two occasions In February 1972, the MWRC conducted a study of industrial effluents into various rivers of the state The sample taken from the joint outfall from Eaton's Battle Creek facility and Clark Equipment Company showed 1 4 ppb of PCB Aroclor 1254 [FN45] In September 1972 the MWRC conducted a wastewater survey at Eaton's Battle Creek facility and found 24 ppb and 12 ppb of PCBs in the storm sewer as it left Eaton's property [FN46] The MDNR concluded that the presence of PCBs in the wastewater indicated that Eaton's process wastes were obtaining entrance to the storm drain [FN47]

FN45 Exh 2027, Industrial Effluents at 2, Uncontroverted Facts at ¶ 23

FN46 Exh 2028, MWRC 9/25-27/72 Wastewater Survey, Uncontroverted Facts at ¶ 23

FN47 Exh 2028, Wastewater Survey at 7

Because the storm sewer lines that were tested did not originate at Eaton and served areas outside of the plant, the 1972 PCB detections in the effluent cannot be definitively attributed to Eaton In addition, the September 1972 test results must be viewed with some skepticism because the low levels reported were at the limit of detectability [FN48]

FN48 Plaintiff's expert, Dr Crumrine, admitted that he had testified in another case that testing at a detection limit of less than 1 ppb, even in 1983, was below the concentration level where wastewater characterization could be reliably determined using state of the art monitoring procedures Crumrine testimony Tr 8/12/98 at 144-47

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Notwithstanding the shortcomings of the evidence, the evidence taken as a whole suggests that if there were PCBs in the effluent, Eaton is the most likely source of those PCBs The MDNR survey reveals that Eaton contributed more than 97% of the flow to the storm sewer, while upstream sources contributed only 3% of the flow [FN49] Tom Matson, Public Works Director ***838** for the City of Springfield, produced maps indicating that nearly all of the flow through the Eaton ditch came from Eaton The only other contributors were the Clark buildings on the east side of 24th Street and storm water runoff from residential areas south of the Eaton facility [FN50] While Clark manufactured hydraulic forklift trucks which could have used PCB-containing hydraulic fluid, Matson testified that Clark's principal manufacturing operations were conducted in buildings on the west side of 24th Street, and that wastewater from these buildings was discharged into sewers that led to a ditch west of the Eaton ditch, or to a storm sewer west past Helmer Road They did not empty into the Eaton ditch The four Clark buildings on the east side of 24th Street that shared the Eaton sewer line were used for administration, engineering, research and development, and trucking [FN51] In light of the uses to which the Clark buildings on the Eaton line were put, it is reasonable to assume that the PCBs found in the storm sewer are more probably associated with Eaton than with Clark The only other contributor to the Eaton storm sewer was storm water runoff from residential areas within a several block area south of Eaton [FN52] Again, although it is not definitively established, this Court can reasonably conclude that the PCBs were more likely to have originated in the Eaton industrial facility than from the road surface waters from the residential area

FN49 Exh 2028

FN50 Tom Matson testimony, Tr at 39-49, Exh 2085NNN

FN51 Matson testimony, Tr at 39-49, 57-58, Exh 2085JJJ (Eaton line shown in yellow, Clark line shown in red)

FN52 Matson testimony, Tr at 44-45, Exh 2085NNN

In 1980 the MDNR monitored Eaton's wastewater discharge for a twenty-four hour period The results showed no traces of PCB The detection limit used was 0 1 ppb [FN53] As a result of this test, the MDNR stopped testing Eaton's effluent for PCBs as a requirement for the NPDES permit The MDNR determined that while occasional PCBs may be in the oils used in the plant, they only appeared at trace contaminant levels [FN54]

FN53 Exh 6011, 1/26/81 letter from Eaton to MDNR Water Quality Division

FN54 Exh 6012, 4/3/81 internal MDNR Water Quality Division memo from Newell

When the Eaton Battle Creek facility was demolished in 1983-1984, the MDNR requested Eaton to test the wood block floors for PCBs Eaton was not averse to complying with the request as its employees had no reason to believe that there was any contamination [FN55] Eaton hired Howard Laboratories to do the testing Howard tested fifty-five of the approximately 2 8 million wood blocks on the floor twenty-seven samples from under capacitors in Building C, eleven samples for background in Building C, six samples for background in Building A, seven samples from the heat treat area in Building B, and four additional blocks All fifty-five samples tested showed the presence of PCBs in the range of 3 1 mg kg(ppm) to 155 mg/kg(ppm) The dominant Aroclors were 1248 and 1254 The wood blocks which contained high oil content also contained higher PCB content Of the fifty-one samples tested for specific Aroclors, Aroclor 1248 was found in forty-six samples, Aroclor 1254 was found in forty-one samples, Aroclor 1242 was found in four samples and Aroclor 1260 was found in three samples [FN56]

FN55 Manchen dep at 56-67

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FN56 Exh 2067, Howard Laboratories Inc Report of PCB Analyses re Eaton-Battle Creek, 10/5/83, and Additional Analyses of Floor Blocks, 10/12/83, Howard dep at 56

***839** Although Aroclors 1242, 1248 and 1254 were all used in hydraulic oils produced by the Monsanto Corporation, Aroclor 1248 is the Aroclor most commonly associated with hydraulics [FN57] According to Dr Crumrine, Aroclor 1248 was not found in anything other than hydraulic systems [FN58] Aroclors 1254 and 1260 are the Aroclors that are expected to be found in conjunction with capacitors and transformers [FN59] According to the testimony of Plaintiff's experts, Aroclor 1254 is the only Aroclor associated with cutting oils and quench oils sold commercially by Monsanto [FN60]

FN57 Exh 1372, Aroclors, The Physical Properties and Suggested Applications, at 15-17, Exh 2023, Monsanto PCB Products

FN58 Crumrine testimony, Tr 8/12/98, at 98

FN59 Exh 2023, Exh 1372, Crumrine testimony, Tr 8/12/98 at 100- 101, Wharton testimony, Tr at 399

FN60 Crumrine testimony, Tr 8/12/98 at 58-59, McLaughlin testimony, Tr at 254

Based upon the test results, Eaton attempted to determine the source of the PCBs Kenneth Manchen, an environmental engineer at Eaton, testified that the PCBs were randomly scattered throughout the facility, and that he was unable to detect a pattern in their disbursement [FN61] Stuart Lightfoot, the Director of Facilities and Plant Engineering, testified that although there were correlations between some of the higher concentrations of PCBs and the location of some of the capacitors, he was generally unable to find a pattern that established a relationship between the locations of electrical equipment and the PCB contamination in the wood block floors [FN62] Manchen testified that because he did not observe any definable pattern to the PCBs in the wood flooring, he concluded that in all probability the PCBs must have come from hydraulic fluids used during the war years [FN63]

FN61 Manchen dep at 61-66

FN62 Lightfoot dep at 154

FN63 Manchen dep at 73

In 1981, VERSAR, an outside environmental contractor to USEPA, inspected the Battle Creek plant to document Eaton's compliance with PCB marking and disposal regulations VERSAR found several slight leaks from transformers, but no leaks in the in-service capacitors VERSAR sampled the cutting, quench and hydraulic oils from various tanks and machines in the plant and found no detectable levels of PCBs in those o'ls [FN64] VERSAR did detect Aroclor 1242 at a concentration level of 7 ppm in the grinding swarf Grinding swarf is the sludge created by the process of grinding metal parts It usually consists of small particles of the metal part being ground, the grinding wheel or tool, and the cooling fluid used in grinding Because VERSAR did not find PCBs in the process oils, Eaton personnel, after investigating, concluded that the PCBs in the grinding swarf likely were attributable to floor scrapings from the floor scarifier being mixed with the grinding swarf [FN65]

FN64 Exh 2059, Versar Inc 5/14/81 report on inspection of Eaton Corporation to determine compliance with PCB disposal and marking regulations, performed for U S EPA

FN65 Heindrichs dep at 277-79

In August 1984 Eaton sent four soil samples to the

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Anspec Company, Inc, for PCB analysis No PCBs were found in the samples from the north clay beneath sludge, the south clay beneath sludge, or the north sludge PCB Aroclor 1254, at 8 ppm, was found in the south sludge [FN66]

FN66 Exh 2072, Anspec Technical Services, Inc, 9/6/84 letter and data summary sheet

***840** In November of 2000, Plaintiff's expert, Michael McLaughlin, took three samples of sediments from the drainage ditch leading from the Battle Creek facility The three samples, B-1, B-2, and B-3, were within 100 feet of each other Sample B-1, which was taken from a ditch between the railroad tracks and Lafayette Avenue, contained Aroclor 1254 at 12,000 ppb Sample B- 2, which was taken 15 to 20 feet north of B-1, contained Aroclor 1254 at 4,700 ppb, and Aroclor 1260 at 2,400 ppb Sample B-3, which was taken on the north side of Lafayette Avenue, contained Aroclor 1254 at 14,000 ppb and Aroclor 1260 at 4,800 ppb [FN67] Although Mr McLaughlin sought to take samples near the junction of the ditch and the River, he was unable to locate the ditch along the riverbank [FN68] The samples were all taken from a public right of way, and were subject to runoff from the nearby railroad tracks, Lafayette Avenue, and surface streets in the residential neighborhood south of the Eaton facility Mr McLaughlin could not state within any degree of certainty when the PCBs were deposited in the culvert [FN69]

FN67 McLaughlin testimony, Tr at 293-96, 307-16, Exh 2085JJ, map showing sample locations

FN68 McLaughlin testimony, Tr 1/18/01 at 296-97, 316-17

FN69 McLaughlin testimony, Tr at 312-15

If the Battle Creek facility were a source of PCBs, the ditch sampled by Mr McLaughlin would be an area where one would expect to find PCBs in the sediments [FN70] However, Mr McLaughlin did not sample any portion of the ditch between sample B-3 and the Kalamazoo River, which was 1500 to 1600 feet away Eaton contends that even assuming the PCBs in samples B-1, B-2 and B-3 originated from Eaton, Plaintiff has failed to provide evidence that any such PCBs were actually transported to the Kalamazoo River due to the significant distance (one-third mile) between sample B-3 and the River According to Eaton this failure is compounded by the lack of evidence of PCBs in the Kalamazoo River in the vicinity of Eaton's Battle Creek facility

FN70 Connolly testimony, Tr at 467-68

The experts are in agreement that PCBs in the water tend to settle out with the sediment in depositional areas There are numerous depositional zones in the fifteen miles between Eaton's Battle Creek facility and Morrow Lake If PCBs had been released from Eaton they would have shown up in these depositional zones KRSG has not sampled either sediments or settleable solids immediately adjacent to the discharge point from the Eaton sewer to the Kalamazoo River In fact, KRSG has not taken any sediment samples in the entire fifteen mile stretch of the River downstream of Eaton's Battle Creek plant The closest sediment sample was taken in Morrow Lake, approximately fifteen miles downstream of the Battle Creek facility [FN71] Instead, for evidence of PCBs in the Kalamazoo River from Battle Creek to the Morrow Dam, Plaintiff relies on a 1971 MDNR study, the 1976 Wuycheck study, a 1988 MDNR study, and a 1999 MDEQ study

FN71 Brown testimony, Tr at 178

In a July 1971 study of the Kalamazoo River, one water sample downstream of the Battle Creek facility, near Augusta, Michigan, indicated a total PCB concentration of 0 1 ppb Because Plaintiff has not attempted to rule out other industries upstream as potential sources of the PCBs there is insufficient evidence to attribute this finding to Eaton's Battle Creek plant According to Plaintiff's

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expert, Dr Mark ***841** Brown, of Blasland Bouck and Lee ("BBL"), approximately 25% of the Kalamazoo River watershed (by water volume) is upstream of Battle Creek [FN72] Moreover, the sample could have reflected effluent from the Battle Creek Wastewater Treatment Plant which was located approximately one mile downstream from Eaton's Battle Creek plant

FN72 Brown testimony, Tr 8/10/98 at 80-81

For purposes of this Court's determination of Eaton's contribution to PCBs in the River, the Wuycheck data is perhaps the most relevant because it was undertaken in the mid-1970s, close in time to when PCBs were being used in industry If PCBs had been released by Eaton as alleged by Plaintiff, they should have been detected in the Wuycheck tests In 1976, John Wuycheck, an employee in the Biology Section of the MDNR, conducted an "intensive" survey of both sediment and settleable solids (also known as suspended solids) in the Kalamazoo River Of the six locations tested between the Battle Creek plant and Morrow Lake, the only positive sediment samples came from 35th Street in Galesburg (K-12), where he detected Aroclor 1254 at 1190 ppb, and Morrow Pond at Rosemont St (K-13), where he detected Aroclor 1254 at 3140 ppb These sites are approximately thirteen and fifteen miles downstream of Eaton's Battle Creek facility The sediment sample from the site closest to the Eaton Battle Creek plant, Stringham Road (K-8), was non-detect for PCBs [FN73]

FN73 Exh 2036/6110, John Wuycheck 4/13/77 Sediment and Settleable Solids Samples--Kalamazoo River, 1976

The Wuycheck study also detected no PCBs in the suspended solids from the Stringham Road (K-8) site It did detect PCBs at a level of 1140 ppb in suspended solids at Custer Road (K-9), approximately five and one-half miles downstream of the Battle Creek facility and at a level of 810 ppb at 38th Street in Galesburg (K-11), approximately eleven miles downstream of the Battle Creek facility The detection of PCBs in the water column over five miles downstream of the Eaton Battle Creek facility also tells little to nothing about the Eaton Battle Creek facility Since almost twenty-five percent of the watershed for the Kalamazoo River is upstream of Battle Creek, PCBs in the water column could be from unknown point sources, runoff, and air pollution The Custer Road collection point was also within the plume of the Battle Creek Wastewater Plant Furthermore, even though the settleable solids test is useful for determining the presence of PCBs in the water column, it is not helpful in determining the source, quantity or concentration of PCBs In a settleable solids test the collection bottles are suspended in the water for a period of time during which particles from the water and organic film accumulates in the bottle and collects PCBs from the water column Because the organic materials in the bottle tend to attract PCBs, the test may indicate an artificially high reading of PCBs [FN74]

FN74 Brown testimony, Tr 8/10/98, at 75-77

In 1988 the MDNR tested the sediment at eleven locations between Battle Creek and Morrow Lake Only one of the eleven sediment samples tested positive for PCBs PCBs at a concentration level of 1000 ppb of Aroclor 1254 were detected at one location downstream of the Battle Creek facility and 0 3 kilometers upstream of the discharge point of the Battle Creek Wastewater Treatment Plant [FN75] The sediment ***842** tests from the remaining ten locations were all non-detect for PCBs

FN75 Exh 6020, 7/7/88 MDNR Qualitative Biological Survey of Kalamazoo River

Plaintiff KRSG contends that the lack of positive tests for PCBs in the 1988 study is deceptive and should not be relied upon to show the absence of PCBs in the River because the MDNR used a high detection limit of one part per million (1000 ppb) Plaintiff's argument ignores the burden of proof This Court will not guess what the use of lower

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detection limits might have shown Plaintiff bears the burden of proof on the issue of Eaton's contribution to the PCBs in the River If Plaintiff was dissatisfied with the available studies, Plaintiff could have done its own studies of this portion of the River

The experts were in agreement that PCBs are normally found in greatest concentration in depositional areas closest to the source Plaintiff would like the Court to infer that the sediments might have been disturbed or blown out by floods or the removal of dams on the River This theory is not supported by the evidence Eaton's expert, Dr Connolly, sampled the sediment in Morrow Lake for a form of Cesium, an element deposited by the atmospheric testing of nuclear weapons beginning in 1954 The Cesium analysis revealed that Morrow Lake sediments have remained virtually undisturbed since before 1954 [FN76] The sediments in Morrow Lake are accordingly a reliable source of information on PCBs that were historically released to the River

FN76 Connolly testimony, Tr 8/14/98, at 37-39

The MDEQ's recent sampling of the River water similarly adds little support to Plaintiff's case In September and October 1999, the MDEQ collected water column samples from various locations in the Kalamazoo River Two of the samples are of particular interest in this case One sample was taken just downstream of the Ceresco Dam, upstream of Eaton's Battle Creek and Marshall facilities Another sample was taken at the 35th Street Bridge in Galesburg, just upstream of Morrow Lake These two locations are approximately thirty miles apart PCBs were detected at levels of approximately 3 5 parts per trillion at both locations Because there are depositional areas between those two points in the River, this data indicates that there is no evidence of PCBs fluxing from sediments in the region between the Ceresco Reservoir and Morrow Lake If there were sources of PCBs upstream of Morrow Lake, one would expect to see the concentrations increase, and to be higher at the downstream station The PCB level detected, 3 5 ppt, is a relatively low level of PCBs It is typical of levels observed in precipitation in the Great Lakes area, and typical of PCB levels in rainwater or snow Studies of rainwater in the Great Lakes region indicate PCB levels in rainwater ranging from 1 ppt to 7 or 8 ppt PCB levels of 2-4 ppt are found in remote lakes in Ontario, Canada [FN77]

FN77 Connolly testimony, Tr at 449-53

In March 2000, the KRSG initiated a Surface Water Sampling Program in the Kalamazoo River Sampling locations included one station near Galesburg, downstream of Eaton's Marshall and Battle Creek facilities Samples were taken every two weeks from March through July of 2000 PCBs were not detected in any of the eleven water column samples The detection limit used was six parts per trillion Ten additional water column samples were collected during elevated flow in the River when sediments from the bottom of the River would likely be resuspended and transported downstream in the water column PCBs were not detected in any of those samples, either Dr Connolly testified ***843** that if there were PCBs in the sediment he would expect to see them in the water column, particularly during a high flow event where sediments would likely be resuspended off the bottom According to Dr Connolly, the Kalamazoo River data indicates no detectable releases of PCBs from Eaton's Marshall or Battle Creek facilities, or any other facilities between Marshall and Morrow Lake [FN78]

FN78 Connolly testimony, Tr at 454-55

The KRSG's fish data taken from 1993 to 1997 in the vicinity of Battle Creek showed PCB concentrations of 04 ppm to 14 ppm, with a single value outside of that range, which was at 24 ppm These numbers are consistent with the earlier sampling done by the MDNR in 1987 in the Ceresco Reservoir, upstream of Eaton's Battle Creek facility, where they found PCB levels in fish at levels ranging from 02 to 12 ppm Both the levels found by the MDNR as well as the levels found in KRSG's more recent sampling are similar to levels found at background sites These background sites are from around the country where

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there are no known PCB sources, and the only believed source of PCBs is atmospheric deposition Downstream, within the Superfund site, the PCB levels in fish are considerably higher than they are in the vicinity of Battle Creek [FN79]

FN79 Connolly testimony, Tr at 455-57

The information gathered from the River sediments, water, and fish is of primary relevance to the issue of allocation because it bears on such issues as quantity and frequency of PCB releases from the facility It is of less importance in determining the discrete question presented here, i e, whether any PCBs were released from the Eaton property to the River However, it does have some relevance in determining which oils used at Eaton's Battle Creek facility contained PCBs

Plaintiff suggests that because Aroclor 1254 has been associated with cutting oils and quench oils in the literature and in some heavy industries, because Aroclor 1254 was found in all areas of the plant where machining processes occurred, because Aroclor 1254 was found in the ditch leading to the Kalamazoo River, and because the highest PCB levels were associated with the wood blocks with the highest oil content, the only reasonable conclusion is that the process oils used historically in cutting and quenching operations at the Battle Creek facility contained PCB Aroclor 1254

The Court does not find that such a conclusion is warranted The evidence indicates that PCBs were not a common additive in cutting and quenching oils Although Monsanto marketed PCB-containing cutting oils, PCB- containing cutting oils were not commercially successful [FN80] There is no reason to add PCBs to cutting oils, there is no chemically feasible way to add them to soluble oils, and there were many better and cheaper alternatives to adding them to quench oil [FN81] Dr Howard, an environmental consultant who owned and operated chemical laboratories from 1971 until 1989, tested approximately 100,000 samples for PCBs In that testing he recalled only one group of cutting oil samples, no soluble oil samples, and only two groups of quench oil samples that tested positive for PCBs [FN82] Plaintiff has not offered evidence to persuade this Court that Eaton's Battle Creek facility would have chosen to use PCB containing cutting and quenching oils

FN80 Wharton testimony, Tr at 400

FN81 Wharton testimony, Tr at 383-85

FN82 David Howard dep at 6, 17-21, 23, 32

***844** Due to the fact that not many wood blocks from the floor of the Eaton Battle Creek facility were tested, and the majority of the blocks tested were from the vicinity of transformers or capacitors that were thought to have contained PCBs, the testing of the wood block floors is not representative of the floor as a whole The wood block floor testing is insufficient to show the widespread dispersal of PCBs that would be indicative of the use of PCBs in quench and cutting oils at the facility

The evidence in the River also does not support Plaintiff's argument that Eaton used PCBs in its quench and cutting oils In fact, the evidence from the Kalamazoo River supports the opposite conclusion that the discharge of PCBs was small and related to oils used in closed or nominally closed systems The evidence shows that Eaton was discharging a ton of oil per day in the 1960s The majority of those oils would come from its open systems, i e, its cutting and quench oils If those cutting and quenching oils contained PCBs, they would be expected to show up in the River sediments near or immediately downstream of the plant There is no evidence of that The Court is struck by the lack of evidence regarding PCBs at or near the outfall of the drain from Eaton to the River As the party with the burden of proof in this matter, the Court would have expected KRSG to have presented some evidence of River contamination close to Eaton's Battle Creek plant

The Court is also struck by the complete lack of evidence of Aroclor 1248 in the Eaton ditch or in the River between Eaton's Battle Creek facility and Morrow Lake Since Aroclors 1254 and 1248 were both in the floor of Eaton's plant, one would expect

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that if Aroclor 1254 from the Eaton facility reached the River, Aroclor 1248 would have reached the River as well Yet Plaintiff has come forward with no evidence of Aroclor 1248 in the ditch or in the River downstream of Eaton and upstream of Plaintiff's members

[1] Upon reconsideration of the evidence produced at the first trial in light of the new evidence Plaintiff has produced at this trial, this Court abides by its initial determination that the evidence does not support a finding that the PCBs at the Battle Creek facility were related to cutting and quenching oils Plaintiff has not shown that PCBs were necessary to Eaton's cutting and quenching processes Plaintiff has not shown that Eaton purchased PCB-containing quench or cutting oils Plaintiff has not shown PCBs in the River that would indicate the use of PCBs in open systems Because Plaintiff is the party with the burden of proof, and because the PCBs at Eaton's Battle Creek facility can all be explained by reference to leaks from hydraulic and di-electric equipment, the Court finds that the PCB contamination at Eaton's Battle Creek facility is not attributable to the use of PCBs in quench and cutting oils Rather, this Court finds that the PCBs at the plant are attributable to leaking transformers, capacitors and hydraulic systems

Because di-electric and hydraulic systems are closed or nominally closed systems, the Court finds that the quantity of PCBs released in the waste oils was minimal Still, it is fair to conclude that it is more likely than not that some very small quantity of PCBs probably found their way to the Kalamazoo River

In the first trial Plaintiff offered no evidence that the PCBs had found their way to the ditch or to the River Now Plaintiff has, for the first time, come forward with evidence of PCBs in the Eaton ditch Eaton contends that Mr McLaughlin's testing does not add anything of significance to KRSG's case against the Battle Creek plant because 1) the sediments sampled in ***845** a culvert near the former location of the plant were taken from a public right of way to which anyone had access and which was subject to runoff from Lafayette Avenue and the railroad tracks, 2) Mr McLaughlin could not determine when the PCBs were deposited in the culvert, 3) the Aroclors detected are commonly associated with di-electrics, and 4) the sample nearest the River was still approximately 1/3 of a mile away Eaton contends that because KRSG has presented no samples from the riverbank where the Eaton ditch discharged to the Kalamazoo River, KRSG has failed to connect the dots and to show that a discharge at one location caused a response action at a second location

Eaton's attempt to compare this case to *KRSG v Rockwell Int'l Corp ("Benteler")* 171 F 3d 1065, 1068 (6th Cir 1999), is not persuasive Unlike *Benteler* there was no evidence in this case that the ditch was not an active water course connecting the facility with the River To the contrary, the evidence reveals the discharge of large quantities of effluent from Eaton, through the ditch, to the Kalamazoo River

Plaintiff has established by a preponderance of the evidence that some small quantity of PCBs probably went to the River Based upon Eaton's purchase of PCB-containing hydraulic oil, the presence of PCBs on the plant floor, the detection of PCBs in Eaton's effluent, and the detection of PCBs in the Eaton ditch, it appears to this Court that it is more likely than not that some of the PCBs from the Eaton plant found their way into the sewer system and to the ditch Even if the bulk of the spills of PCB-containing di-electric or hydraulic oils was absorbed by the floors or swept up and discarded, some of the oil would probably have mixed with the process oils and found its way into the effluent from the facility Although organics in the slow-moving ditch would have acted as a magnet and a trap for PCBs, the Court finds that some, albeit very few, PCBs would have found their way to the River

While the new evidence does not change this Court's previous conclusion that there is insufficient evidence of a detectable or measurable discharge of PCBs from Eaton's Battle Creek plant into the Kalamazoo River, under the liability standard articulated by the Sixth Circuit, this Court is constrained to find that Eaton is liable for some PCB releases from its Battle Creek facility to the Kalamazoo River

III. KALAMAZOO FACILITY

Eaton manufactured truck transmissions at the Eaton Transmission Division on Mosel Avenue in

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Kalamazoo, Michigan, from the mid-1950s until January 1984, when the plant was closed Eaton was the sole occupant of the building The plant was serviced by City sewer and water The plant was located approximately a half mile from the Kalamazoo River

The plant's processes included machining (cutting, turning and hobbing), heat- treating and polishing transmission parts such as gears, shafts, and housings, and assembling those parts into truck transmissions [FN83] These operations required the use of water soluble cutting oils, synthetic cutting compounds, and quench oils [FN84] There were no die-casting or forging operations at the plant [FN85]

FN83 Exh 2212, 1985 GZA Environmental Site Assessment, Exh 6114, 1976 MDNR Industrial Wastewater Survey, Exh 2232, 1978 MDNR Discharge Permit Application

FN84 Exh 2215, 1967 MWRC Industrial Survey

FN85 Brown testimony, Tr at 179

Parts that went through the heat treat furnaces went into a quench oil bath, and then were washed When David Martin, ***846** plant engineer at Eaton's Kalamazoo facility from the mid-1960s to the mid-1980s, first started at Eaton, the sewer lines from the heat treat department and from some of the manufacturing areas discharged to a catch basin, from which it was pumped to the Zantman drain The oils that went into the drains were primarily the water soluble oils [FN86]

FN86 Martin dep, vol 1, at 14, 21-22, 46, 50, 54-55, Martin dep, vol 2, at 28-29, Exh 2233, 1968 MWRC Industrial Wastewater Survey

Parts were also washed after machining operations in other areas of the plant Prior to the late 1960s, the wastewater from those operations, including waste oils, were passed through a decanter system, then discharged to the catch basin, the City sanitary sewers or the City storm sewers The catch basin and some of the storm sewers discharged to the Zantman Drain Other sewer lines discharged to the municipal sanitary system or the municipal storm water system The catch basin removed some oils, but other than that there was no treatment before the water, mixed with oils, was discharged to the Zantman Drain, the sanitary sewer, or the storm sewer system [FN87]

FN87 Martin dep, vol 1 at 16 29, Martin dep, vol 2 at 137, Exh 2233, 1968 MWRC Industrial Wastewater Survey

During the manufacturing process, cutting oils, hydraulic oils and oil-based coolants commonly spilled onto the wood-block floors [FN88] After a part came off a machine it would be placed on a spindle or cart There was a pan under the carts, but oil was bound to splash and drip onto the floor Most of the oil was lost while a machine part was in transit from one manufacturing area to another [FN89] Enough oil dripped on the floor to require the use of large quantities of Floor Dry or Oil Dry [FN90] Waste from the scarifier used to clean the floors was placed into one of several trash compactors, and fluids from some of the compactors would run into floor drains [FN91] Until the mid-1970s, the floor drains at the Kalamazoo facility led to either the Zantman Drain, the storm sewer, or the sanitary sewer

FN88 Baker dep at 36-40, Duane Clarke dep at 47

FN89 Clarke dep at 19-21, David Stephayn dep at 34-35, 39

FN90 Clarke dep at 21-22, Martin dep, vol 2, at 62

FN91 Martin dep, vol 2, at 62-64

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Because oil was expensive, it was generally recycled and reused [FN92] Straight oils would be recycled or picked up by waste haulers [FN93] Carl Baker, who started working at Eaton corporation in the 1950s, testified that quench oil, in particular, was continually reused, and he did not recall any spills of quench oils [FN94] Hydraulic oils were filtered and reused Although hydraulic lines would break periodically with a loss of two or three gallons of oil at a time, most of the time the oil went right into the cutting oil reservoir [FN95] Some oil spilled on the ground outside the building There was staining outside the heat treat area where the tankers would fill the tanks [FN96] On occasion spills occurred when a chip operator was hauling chips, or when an oil line froze [FN97] Some of the storm water from off the property went to the ***847** catch basin, and was discharged to the Zantman drain [FN98] Other storm drains went to the municipal storm water system [FN99]

FN92 Clarke dep. at 17-20

FN93 Martin dep , vol 1, at 50-51

FN94 Baker dep at 14, 38-40

FN95 Clarke dep at 17-18, 45-46

FN96 Clarke dep at 51-52

FN97 Martin dep , vol 2, at 128-29

FN98 Exh 2233, 1968 MWRC Industrial Wastewater Survey

FN99 Martin dep , vol 1 at 25, Clarke dep at 30-31

Metal shavings and trimmings were dumped into a collection pit outside of the plant Oils were drained from the trimmings pooled on the ground under and around the pile [FN100] Periodically the shavings were lifted off with a magnet separator, and the oil was pumped out and hauled away [FN101]

FN100 Exh 2215, 1967 MWRC Industrial Survey

FN101 Clarke dep at 30

The catch basin did not prevent all the oil from entering the Zantman Drain [FN102] In March 1965, the MWRC tested the water in the Zantman Drain and found that it contained oil in concentrations of 41 and 51 2 ppm The MWRC advised that Eaton was responsible for the excessive quantities of oil in the Zantman Drain, and for the oil pooling in the swampy area north of Mosel Street The MWRC further advised that "[t]he amount of oil being lost to the drain would undoubtedly create oil pollution problems in the Kalamazoo River were this drain to be cleaned out to the river " [FN103] The MWRC advised Eaton that it had to improve its waste control methods to correct the contamination of the Zantman Drain and groundwater [FN104] Eaton acknowledged that as a result of the practice of emptying its metal shavings coated with cutting oil outside, "a great deal of oil accumulates in our yard which seeps into and at times of substantial rainfall washes into the drainage ditch " [FN105]

FN102 Martin dep , vol 1 at 22

FN103 Exh 2213, MWRC March 1965 Report of Survey *See also* 11/14/67 letter from MUCC to MWRC complaining about Eaton's discharge of oils to the Zantman Drain, and expressing concern that if plans to improve the drain are carried out, the oils will flow directly into the Kalamazoo River

FN104 Exh 6302, 5/14/65 letter from Eaton to County Drain Commissioner, quoting from MWRC's 3/23/65 survey

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FN105 Exh 6302, 5/14/65 letter from Eaton to County Drain Commissioner

The 1967 wastewater survey showed that Eaton was releasing oil at concentrations of 373 ppm, for an estimated release of 1332 pounds of oil per day The MWRC noted that heavy deposits of oil had accumulated along the banks of the Zantman Drain and around the periphery of the waste ponding area According to the MWRC, the major source of this oil is from parts washers in the heat treating department The MWRC was also concerned that the oil pooled around the scrap metal pile could be washed overland into the Zantman Drain during times of heavy precipitation [FN106]

FN106 Exh 2215, MWRC June 1967 Industrial Survey

Eaton responded to the MWRC's concerns by making changes in its waste disposal system A concrete pit was constructed to catch oil drippings from the scrap metal pile [FN107] A free oil skimmer was installed at the outlet of the collection basin [FN108] By the early 1970s most of the floor drains were plugged to prevent the ***848** active disposal or accidental drainage of water and oil into the floor drains [FN109] A clarifier was installed in the mid-1970s [FN110]

FN107 Exh 2216, 10/23/67 letter from Eaton to MDNR, Exh 2217, 1/29/68 letter from Eaton to MDNR

FN108 Exh 2216, 10/23/67 letter from Eaton to MDNR, Martin dep , vol 2 at 31

FN109 Martin dep , vol 1 at 56-57, Martin dep , vol 2 at 26, 158, Baker dep at 19

FN110 Clarke dep at 29-30

All process water and cooling water was discharged to the collection basin or settling lagoon where sediment was allowed to drop out In early 1974, Eaton advised the MWRC that it had recently completed construction of a detention pond for oil removal "Both the storm drain and the process water which originally went to the Zantman Drain are now directed to the detention pond" [FN111] An oil skimmer was installed on the lagoon to keep the oil from being discharged to the Zantman Drain [FN112] Free floating oils were skimmed and collected in a holding tank Water from the collection basin was pumped into the Zantman Drain The waste from the holding tank was pumped through a decantering system, with the wastewater going to the sanitary sewer and the oil being hauled away by commercial carrier [FN113] Despite the installation of the oil skimmer on the pond in the early 1970s, the skimmer did not prevent all oils from reaching the Zantman Drain [FN114]

FN111 Exh 2220, Briefing Memo for NPDES Application

FN112 Exh 2219, MWRC 1973 Industrial Wastewater Survey, Exh 6113, 1976 MDNR Industrial Wastewater Survey

FN113 Exh 2232, 1978 MDNR Discharge Permit Application

FN114 Stephayn dep at 97-98

The Zantman Drain is a county drain under the jurisdiction of the Kalamazoo Drain Commission Prior to approximately 1973 when it was reconstructed, the Zantman Drain was an open culvert that began west of the Eaton facility, came across to the east side of the Eaton facility, then turned north where it tied into the Richardson Drain It went through a culvert under Mosel Avenue, through a 24 inch pipe under the Upjohn Building, then into an open ditch before discharging into the Kalamazoo River [FN115]

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FN115 Robert Snell testimony, Tr at 71, 83, Exh 2230, 1966 diagram of Zantman Drain, Exh 2200A, 1955 Aerial Photograph, Exh 2201, 6/8/64 letter from Snell to Kalamazoo Township Board, Exn 2085KKK, aerial photo and overlay

There was not much contribution to the old Zantman Drain from upstream of the Eaton Kalamazoo facility There was little evidence of a water course west of Burdick Street Most of the land west of the Eaton facility was agricultural, so there was little industrial development that would have contributed to the Zantman Drain [FN116]

FN116 Snell testimony, Tr at 81-82

In the 1960s and early 1970s there was concern that the Zantman Drain was inoperative due to construction over the drains, improper grading, debris, and plant growth The obstruction caused wastewater to pond in a marshy area and to back up on the properties just north of Mosel Avenue There was not much flow in the drain north of Mosel Avenue There was only a trickle from the 24 inch pipe underneath the Upjohn Buildings through to the ditch on the north side of the Upjohn property The minimal flow through the drain to the Kalamazoo River, however, would have increased during a heavy rain [FN117]

FN117 Snell testimony, Tr at 84, 89-90, Exh 2201, 6/8/64 letter from Robert E Snell to the Kalamazoo Township Board, Exh 6300, 5/4/64 letter from Eaton to County Drain Commissioner, Exh 2253, 10/21/65 letter from Eaton to County Drain Commissioner

***849** In 1973 the Zantman Drain was improved and relocated The entire section of the drain between the Eaton facility and Mosel Avenue was enclosed in a corrugated metal pipe The portion of the new drain north of Mosel Avenue was an open ditch, east of the former channel The drain ran north from Mosel past the Southon Paper Company, then east across the back part of Southon's property, then north along the railroad tracks to the River Over 15,000 cubic yards of dirt were excavated for the open drain north of Mosel Avenue That dirt was not hauled away It was left on the banks or spread on neighboring property [FN118]

FN118 Snell testimony, Tr at 92-103, Exh 2085M, map of Zantman Drain, Exh 2200-D, 1974 Aerial Photograph, Exh 2200-E, 1991 Aerial Photograph

In a 1965 study, Eaton was found to be discharging 433,000 gallons of wastewater per day to the Zantman Drain [FN119] In a 1968 study, Eaton was found to be discharging 459,000 gallons of wastewater per day to the Zantman Drain [FN120] Given this magnitude of flow on a daily basis, Dr Brown opined that it would be difficult to contain all the wastewater in the marshy area north of Mosel Avenue without some of that water flowing thorough the drain towards the Kalamazoo River [FN121] Heavy rains would also have carried water through the drain to the River [FN122]

FN119 Exh 2213, MWRC 1965 Report of Survey

FN120 Exh 2233, MWRC 1968 Industrial Wastewater Survey

FN121 Brown testimony, Tr at 211-12

FN122 Snell testimony, Tr at 89-90

There is no dispute that once the Zantman Drain was improved in 1973, effluent discharged by Eaton through the Zantman Drain did reach the Kalamazoo River There is also no question that some oils were carried from the Eaton facility to the River The NPDES permit itself allowed a daily maximum release of 10mg/l of oil from the Eaton Kalamazoo facility to the Kalamazoo River via Zantman Drain [FN123] In a 1973 letter to Eaton, the Kalamazoo County Drain Commissioner stated that in his "recent inspection and observation of the

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Zantman Drain there seems to be an oil film on the water as it escapes into the Kalamazoo River" [FN124] In 1974 and 1975, an engineering company noted that after a physical inspection of the Zantman Drain it found "a collection of oil on the water surface and adjoining banks where the water level has fluctuated" [FN125] Although Eaton has suggested that the oils might be attributable to other sources, there is nothing in the historical record to suggest that Eaton ever objected to the Drain Commissioner's implication that Eaton was responsible for oils reaching the Kalamazoo River

FN123 Exh 2206, MWRC 3/29/74 NPDES Permit

FN124 Exh 2226, 12/19/73 letter from Kalamazoo County Drain Commissioner to Eaton

FN125 Exh 2202, 12/16/74 letter from Wilkins & Wheaton Engineering Co to Kalamazoo County Drain Commission, Exh 2203, 12/8/75 letter from Wilkins & Wheaton Engineering Co to Kalamazoo County Drain Commission

The question for this Court is whether there were PCBs in those oils There is no evidence of any testing of the process oils at the Kalamazoo facility that would indicate the presence of PCBs, and there is no testimony from any Eaton employee that PCBs were used in any of the process oils at the plant [FN126] Duane Clarke began working for Eaton in 1967, and was the ***850** general foreman of machine repair from 1968 until the plant closed in 1985 He testified that he did not know of any PCB-containing oil used at the Kalamazoo facility Most of the hydraulic oil purchased was Mobil Clarke did not know of any reason why the oils used would have to have PCBs The only PCBs Clarke was aware of were those in transformers or capacitors [FN127]

FN126 Brown testimony, Tr at 179

FN127 Clarke dep at 4, 10, 13, 46, 57, 63-65

In the 1973 industrial wastewater survey the MWRC, for the first time, tested the effluent from Eaton's Kalamazoo facility for PCBs No PCBs were detected [FN128] The industrial wastewater survey of 1976 similarly detected no PCBs in Eaton's effluent [FN129]

FN128 Exh 6113, 1973 MWRC Industrial Wastewater Survey

FN129 Exh 6114, MDNR 1976 Industrial Wastewater Survey

In 1984, in connection with Eaton's sale of the Kalamazoo facility to Liberty Properties, Eaton tested seventy samples of the wood block floors PCBs were found in the wood flooring in levels ranging from non-detect to 743 ppm No distinction was made in the study between the various Aroclors The floor map indicates where the samples were taken, and whether they were taken from the aisle, background, capacitors, or transformers Of the sixty-nine samples taken, twenty-eight samples were below the detection limit Only four samples contained PCBS in excess of 20 ppm, and all four of these samples were from locations near transformers or capacitors [FN130]

FN130 Exh 2209, Eaton Floor PCB Analyses

Stuart Lightfoot was manager and then director of Environmental Engineering at Eaton's Battle Creek facility for nineteen years Sometime after learning about the PCB contamination of the wood floors at Battle Creek, he learned that there were also small areas of PCB contamination in the wood block floors at the Kalamazoo facility He thought the cause of the PCB contamination was a leaking transformer and the heat treat oil quench operation [FN131]

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FN131 Lightfoot dep at 5, 172-73

Lightfoot's testimony regarding the possibility of PCBs in the quench oil is not persuasive Lightfoot did not test the quench oils at Kalamazoo He merely assumed there might have been PCBs in the quench oil because the Kalamazoo facility heat treat department did not have automatic fire extinguishers on it [FN132] In light of the fact that the facility was operational until 1983, long after PCBs were no longer available in quench oils, the absence of fire extinguishers in the quench department tends to lead to the opposite conclusion, i e, that the temperatures in the heat treat department were not high enough to require either PCBs in the quench oil or fire extinguishers

FN132 Lightfoot dep at 175

After the Eaton Kalamazoo Plant was sold in 1984, an environmental due diligence investigation was performed by an environmental consultant, GZA, retained by the purchaser The investigation included thirty-one soil and water samples The only PCBs mentioned in the environmental report were those detected in the wood block flooring in the study conducted by Eaton [FN133]

FN133 Exh 2212, GZA Environmental Site Assessment

In 2000 the MDEQ conducted Aroclor-specific testing at the Kalamazoo facility PCBs were detected in soil, concrete, floor blocks and wipe samples In contrast to ***851** the testing of a limited number of wood blocks from strategic areas at the Battle Creek facility, the testing at the Kalamazoo facility was done in a variety of areas throughout the facility Very few PCBs were detected in soils and no PCBs were detected in the groundwater [FN134] The MDEQ's 2000 data shows a predominance of Aroclors 1254 and 1260 Aroclor 1260 was detected primarily in wipe samples It was not detected in any of the soil samples under or adjacent to the facility Only one sample from within the building contained Aroclor 1248 Aroclor 1242 was not detected anywhere in the plant or on the adjoining property, except in one isolated sediment sample from the former settling pond [FN135] Because there was no evidence of Aroclor 1242 in the building, this detection is probably explained by the fact that the settling pond was lined with paper mill sludge [FN136]

FN134 Exh 6305, Eaton's demonstrative exhibit depicting results of 1984 and 2000 PCB testing, Exh 2085MM, Plaintiff's demonstrative exhibit depicting results of 1984 and 2000 PCB testing, Barrick testimony, Tr at 489

FN135 Barrick testimony, Tr at 489, 492-93, Wharton testimony, Tr at 391

FN136 Exh 6145, 1/10/72 letter from MWRC to Eaton, approving Eaton's plan to line settling basin with paper mill sludge, Barrick testimony, Tr at 492-93

Dr Brown testified that the detection of Aroclor 1248 at a fairly high concentration in a wipe sample (120 ppm) as well as the detection of PCBs in soils beneath the plant, in some cases as deep as fifteen feet or more below the concrete, indicate that the PCBs are more likely to have come from cutting oils or hydraulic fluids than from only capacitors and transformers [FN137] Mr McLaughlin testified that when he considered the distribution of samples and removed one anomalous transformer result and two anomalous capacitor results, there was no difference between the electrical samples and the background or aisle samples According to Mr McLaughlin, finding PCBs at depth beneath the heat treat department is an indication that these PCBs were in the quench oil He also testified that PCBs of electrical origin do not typically migrate to such depths From his consideration of all the data he concluded that the PCB detections were not principally related to capacitor and transformer leaks [FN138]

FN137 Brown testimony, Tr at 202

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FN138 McLaughlin testimony, Tr at 269, 275-76, Exh 2085MM

This Court agrees with Dr Brown and Mr McLaughlin's conclusion that in light of the detection of Aroclor 1248, the PCB detections cannot all be ascribed to capacitor and transformer leaks While Mr Barrick testified that there is a possibility that some electrical equipment could contain Aroclor 1248, the documentary evidence does not indicate that this application of Aroclor 1248 was recommended or advertised [FN139] The Court finds that it is more likely that the single detection of Aroclor 1248 indicates the presence of PCBs in hydraulic fluid that leaked on the floor

FN139 Barrick testimony, Tr at 493, Exh 2023, Monsanto PCB Products at 3-4, Exh 1372, Aroclors, The Physical Properties and Suggested Applications, at 9

The Court does not agree with Plaintiff's assertion that the predominant Aroclors found at the Kalamazoo facility, Aroclors 1254 and 1260, are more likely to be attributable to PCBs in cutting or quench oil than to the oils from the di-electric equipment Aroclors 1254 and 1260 are the same Aroclors one would expect to find in ***852** electrical equipment Dr Brown conceded that the evidence of PCBs in the wood block floor at the Kalamazoo plant could be consistent with periodic leaks from transformers and capacitors He also acknowledged that the presence of PCBs at depth can be explained by the use of detergents which would bring the PCBs down into the soil [FN140] Mr McLaughlin was unable to explain the absence of any PCBs detected in the chip storage area, where process oils would have drained off the metal chips into the soils [FN141]

FN140 Brown testimony, Tr at 184, 202, Exh 2216, 10/23/67 letter from Eaton to MDNR, documenting use of detergents

FN141 McLaughlin testimony, Tr at 331-34

The testing of the Eaton Kalamazoo facility in 1984 and again in 2000 revealed that the PCB concentrations were primarily of a low level, either non- detect or up to a few parts per million, in a sporadic pattern throughout the facility The highest concentrations of PCBs were found near the electrical equipment areas [FN142] The lower levels of PCBs were found in the aisles and the background There were no significant concentrations of PCBs in the vicinity of the quench baths or the machine tool areas where cutting fluids would have been used [FN143] According to Eaton's experts, Dr Lennard Wharton and Robert Barrick, the nature and dispersion of PCBs reflected the use of PCBs in capacitors and transformers They testified that the patchy pattern of limited PCB contamination consistent with tracking the PCBs from the electrical equipment areas, and that it was inconsistent with the use of process oils containing PCBs in open systems such as cutting and quenching operations [FN144]

FN142 Brown testimony, Tr at 143, Wharton testimony, Tr at 370- 88, Barrick testimony, Tr at 486

FN143 Wharton testimony, Tr at 370-88, Barrick testimony, Tr at 486

FN144 Wharton testimony, Tr at 363-64, Barrick testimony, Tr at 486-87

The MDEQ detected no PCBs in soil samples taken from the vicinity of the outdoor quench oil storage tanks [FN145] Neither did the MDEQ find any PCBs in the chip storage area on the southeast corner of building where one would expect to find them if PCB-containing process oils dripped from the metal chips The closest PCB detection to the chip storage area was a single detection north of the chip pile at the level of 53 ppm [FN146]

FN145 Wharton testimony, Tr at 390, Exh 6305, Exh 2085MM

FN146 Wharton testimony, Tr at 391-94,

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403, Exh 6305

Although Monsanto literature describes the use of PCBs in cutting oils, PCB- containing cutting oils did not have widespread or common use PCBs make a poor additive to cutting fluids because the chlorine in the PCBs is not sufficiently free to assist in the cutting process The operations at Eaton's Kalamazoo facility did not require anything other than conventional cutting oils [FN147]

FN147 Wharton testimony, Tr at 366-69, 383-84

The most commonly used quench oil in American industry during the 1950s through 1980s was straight mineral oil PCB-containing quench oils were about five times as expensive as mineral oils There was nothing about the operations at Eaton's Kalamazoo plant, such as a risk of fire or ignition of quench oils, that would militate in favor of using PCBs in quench oil [FN148]

FN148 Wharton testimony, Tr at 385-86

***853** This Court finds that given the relatively low level PCB detections, their concentration around the electrical equipment, the lack of PCB concentrations in the machining and heat treat areas, the lack of PCBs in the area of the chip pile, the fact that PCBs have never been detected as a constituent of the process oils used at the Eaton Kalamazoo facility, and Dr Brown's concession that the distribution of the PCBs was consistent with leaks from electrical equipment, it is unlikely that the PCBs found at Eaton's Kalamazoo facility were part of the open systems

Having determined that Eaton's Kalamazoo facility more likely than not used PCBs in its di-electric equipment and in some hydraulic fluid, the Court must still determine whether the proofs show by a preponderance of the evidence that any of those PCBs found their way to the Kalamazoo River

On December 7, 2000, Plaintiff's expert, Michael McLaughlin, sampled four locations in the vicinity of the former Eaton facility in Kalamazoo He sampled two areas, K-1 and K-2, immediately southeast of the plant, as close as he could get to the location of the chip storage pile without trespassing on Eaton's former property He described the location as being just east of the chip pile, and in the drainage swale between Eaton and the railroad tracks In sample K-1 he found Aroclor 1260 at the level of 20 ppb In sample K-2, nearby, he found Aroclor 1260 at the level of 370 ppb [FN149]

FN149 McLaughlin testimony, Tr at 248-250, Exh 2085P, Analytical Report prepared for SCS Engineers, Exh 2085KKK

Mr McLaughlin attempted to test the Zantman Drain in two locations Sample K-3, was taken from the exit of an abandoned concrete culvert under the railroad tracks, a location he believed was near the outfall from Eaton's plant to the old Zantman Drain At this location, almost one-half mile from the River, he found Aroclor 1254 at the level of 2000 ppb Based upon the historical documents and his observations in the field, McLaughlin opined that there were no other sources for this PCB detection other than the Eaton facility [FN150]

FN150 McLaughlin testimony, Tr at 250-53, Exh 2085KKK

Mr McLaughlin also sampled an area north of Mosel Avenue, because he believed that if Eaton discharged PCBs, they would likely be present in the marshy area described in the historical documents He could not find the marshy area He did not know if the marshy area had been obliterated by the 1973 improvements to the Zantman Drain, or whether he just could not locate it He took sample K-4 from a culvert which he believed to be where the old Zantman Drain went under Mosel No PCBs were detected at this location Mr McLaughlin now opines that he must have been in the discharge of the new Zantman Drain [FN151]

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FN151 McLaughlin, testimony, Tr at 254-56

Eaton's expert witness, Robert Barrick, testified that Mr McLaughlin's detection of low levels of Aroclor 1260 in the sediments at K-1 and K-2, was of little significance The 20 ppb detection at K-1, in particular, was a low concentration near the detection limits for many routine analyses The detection of Aroclor 1260 at K-1 and K-2 also failed to match any of the MDEQ's soil samples from outside of the facility The MDEQ did not detect any Aroclor 1260 on the property immediately outside the plant Aroclor 1254 was the predominant Aroclor found in the plant The MDEQ also did not detect any PCBs in the chip storage area where one would expect to find them if they were in the ***854** cutting or quench oils Mr McLaughlin could not account for this discrepancy between his findings and the findings of the MDEQ The area the samples were taken from could have included material from many places other than Eaton, including upstream sources on the Zantman Drain, or the highway According to Mr Barrick, in light of this negative and contradictory evidence, it would not be reasonable from a scientific standpoint to associate the PCB detections at K-1 and K-2 with the Eaton facility [FN152]

FN152 Barrick testimony, Tr at 501-03

Mr Barrick acknowledged that the PCBs in sample K-3 could be associated with the Eaton facility, although there is also the possibility that it could have come from another source, such as the railroad tracks Mr McLaughlin acknowledged that there was runoff from the railroad tracks, and that there are reports of PCB contamination associated with railroad tracks He stated, however, that PCBs were not generally on collector lines like the one at issue, but were rather associated with maintenance facilities and electric locomotives [FN153]

FN153 McLaughlin testimony, Tr at 252-53

According to Mr Barrick, the non-detection of PCBs at K-4 is of particular significance Even assuming K-4 was taken where the new Zantman Drain emerges from under Mosel Avenue, rather than where the old Zantman Drain used to emerge, it would have been one of the first collection points for sediment or other oil from the plant Because this is a slow-moving, organic- rich system with a lot of vegetation, it would have absorbed many of the PCBs if they had been present Accordingly, if PCBs had been used in the cutting oils or in the heat treat areas of the plant, the plant would have been a continuing source of PCBs, and one would expect to find them in the culvert [FN154] The lack of PCBs at K-4 tends to indicate that PCBs were not a part of the process oils used in the open systems at the Eaton Kalamazoo facility

FN154 Barrick testimony, Tr at 505-08

Mr Barrick testified that the PCBs found on the floor at the Kalamazoo facility related to incidental leaks from the electrical equipment Very little contamination left the facility, and what contamination did leave was sporadic According to him, such incidental PCBs would tend to be trapped in the marshy area north of Mosel Avenue, and would not have made it all the way down the drain to the Kalamazoo River [FN155]

FN155 Barrick testimony, Tr at 488-89

KRSG did no testing for PCBs between Mosel Avenue and the River Eaton contends that Plaintiff's failure to do so is a fatal flaw in its proofs in this two site case The Sixth Circuit previously observed in *Benteler* that

> In a two-site case such as this, where hazardous substances are released at one site and allegedly travel to a second site, in order to make out a prima facie case, the plaintiff must establish a causal connection between the defendant's release of hazardous substances and the plaintiff's response costs incurred in cleaning them up

Benteler, 171 F 3d at 1068 This Court s entry of summary judgment in favor of Benteler was affirmed in light of evidence that the drainage ditch that allegedly connected Benteler to Morrow Lake and the Kalamazoo River was 3200 feet long, the

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evidence was unrefuted that no PCBs were detected beyond 1500 feet from the facility, hydrogeological evidence demonstrated that the ditch lacked sufficient water flow ***855** to carry PCBs the full length of the ditch, and soil and vegetation in the ditch was not consistent even with occasional discharges of sufficient magnitude to carry water down the ditch to Morrow Lake *Id* at 1068-69

The evidence with respect to the lack of flow through Zantman Drain is not as strong as the evidence with respect to the drain at issue in *Benteler* In this case, while the drainage was slow, there did appear to be sufficient water flow to connect the Zantman Drain with the Kalamazoo River In light of the evidence that PCBs were found on the floor at Eaton's Kalamazoo facility, that Eaton was discharging almost half a million gallons of wastewater to the Zantman Drain on a daily basis in 1965 and 1968, and that there was at least a trickle of water coming through the drain pipe from under the Upjohn Building at this time, the Court is satisfied that there was some flow from Eaton to the Kalamazoo River via the Zantman Drain

Plaintiff's expert, Dr Brown, undertook some sampling of the Kalamazoo River upstream and downstream of the Eaton Kalamazoo facility in an attempt to isolate the potential effect of the Zantman Drain He testified that based upon the wide variability in the samples, both as to concentration and composition of Aroclors, he could not prove or disprove a release of PCBs from Eaton's Kalamazoo facility The release of PCBs from Eaton would have to increase the concentration of River PCBs by almost fifty percent before they would be detectable Even when he adjusted concentrations by dividing by the amount of organic matter, there was still too much scatter in the data to show any contribution from Eaton's Kalamazoo facility Dr Brown explained that because the twenty mile segment of the River from the foot of the Morrow Dam upstream of the Kalamazoo facility, all the way down to Plainwell, has no dams or obstacles, and is fairly steep and fast-flowing, it operates as a pipe, moving the PCBs downstream to Lake Allegan According to Dr Brown, while it is not possible to trace the PCB detections in the River to Eaton or to any other source along the Kalamazoo River, the detections are consistent with a PCB discharge from Eaton's Kalamazoo facility Dr Brown opined that PCBs were released from the Kalamazoo facility in oils to the Zantman Drain and the Zantman Drain transported those to the Kalamazoo River [FN156]

FN156 Brown testimony, Tr at 150-59, Exh 2086A, Map of Kalamazoo River in Vicinity of Eaton Corporation's Kalamazoo Facility

Eaton's expert, Mr Barrick, also studied the Kalamazoo River in the vicinity of the Zantman Drain He agreed with Dr Brown that the Kalamazoo River in the vicinity of the Zantman Drain is relatively straight However, he indicated that just before the Zantman Drain, the River makes a loop going left and right This meander results in slower flow and provides opportunities for material to collect Even if the River in this vicinity is characterized as a pipe, it is a rough pipe with many pockets for material to accumulate [FN157]

FN157 Barrick testimony, Tr at 511-12, 527-28, Exh 6306, Facility Location

Mr Barrick studied hundreds of samples from the River collected by the MDEQ and by BBL on behalf of KRSG Rather than stepping back and averaging the samples for a broad view, he took a more forensic approach and focused on individual samples and specific Aroclors to determine whether the Zantman Drain was a potential source of PCBs to the River Because he found no increase in ***856** 1254/1260 (the Aroclors found at the Eaton plant), that was not accompanied by a rise in other Aroclors that could not be attributed to Eaton, he concluded that there was no correlation between the Zantman Drain and the River sediments When he focused on the samples with the highest percentage of Aroclors 1254 and 1260, he found that there were more of these samples upstream of Eaton than downstream There was nothing atypical, unusual or remarkable downstream of the Zantman Drain that was not already apparent in the system upstream [FN158] Based upon the data from the facility, the drain and the River, Mr Barrick concluded that the most logical interpretation is that there was no contribution of PCBs from the Eaton

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Kalamazoo facility [FN159]

FN158 Barrick testimony, Tr at 513-21, Exh 6307, Proportions of Aroclor 1254 and 1260 in total PCBs from confluence to KPT-39

FN159 Barrick testimony, Tr at 529

In determining whether Eaton's Kalamazoo facility is liable for the release of PCBs to the River the Court has considered all the evidence presented The Court notes that there is no testimony from anyone with personal knowledge that Eaton ever used PCB-containing oils in its processes There is no evidence of any test results showing the presence of PCBs in the cutting oils or quench oils used in the Eaton plant There is no testimony that Eaton engaged in activities that required PCB additives in the cutting or quench oil PCBs were, however, found on the floors of the facility Although Aroclor 1248 was detected in only one sample, its presence makes it more likely than not that Eaton used PCB-containing hydraulic oil at some point in time It is also more likely than not that some of Eaton's capacitors and transformers leaked PCB-containing oil Eaton's oils and waste discharges were reported throughout the length of the Zantman Drain, north of Mosel Avenue, as reflected in numerous complaints and reports in the historical record Based upon all the evidence and the Sixth Circuit's direction that any release of PCBs is sufficient for a finding of liability, the Court finds it more probable than not that some of the PCBs from the floor of the Kalamazoo facility were washed down the drain and into the Kalamazoo River along with the other oily wastes from the facility The Court accordingly concludes that Eaton's Kalamazoo facility is liable for the release of some PCBs to the Kalamazoo River

IV. MARSHALL FACILITY

[2] Of the three Eaton facilities at issue in this case, the Marshall facility is located farthest upstream The Marshall facility is thirty miles upstream of the NPL Site, but is within the area to be studied under the AOC The Marshall facility is approximately one-quarter mile from the Kalamazoo River

Eaton has operated the Marshall facility since 1941 [FN160] Historically, the Marshall facility was engaged in the manufacture, assembly and testing of hydrostatic transmissions, viscous fan clutches, power steering pumps, differentials and lubricating oil pumps Machining operations included lathing, grinding, boring and drilling There were no forging operations at the plant, but some of the parts received heat treatment [FN161] In contrast to the Battle Creek and Kalamazoo facilities, the Marshall facility is still in operation

FN160 Fesko dep at 39-40, Olof Stolen dep at 188-89

FN161 Stolen dep at 10, 17-18, 45-46

No evidence was presented of any use of PCB-containing oils in the processes at the ***857** Marshall facility There was no testing of the process oils at the Marshall plant showing the presence of PCBs, and no Eaton employee has testified to the use of PCBs in the process oils at the Marshall plant [FN162]

FN162 Brown testimony, Tr at 171

Although some of the electrical equipment at Eaton's Marshall plant used PCB- containing oils, Plaintiffs presented no evidence of any leaks at the Marshall facility from these closed systems Thomas Swalwell has been employed at Eaton's Marshall facility for thirty-one years, since 1966, as an electrician and maintenance supervisor He testified that there were trays under all of the capacitors to catch any leaks, but he was not aware of any capacitor ever leaking at the Marshall facility [FN163]

FN163 Thomas Swalwell dep at 4-6, 112-13

The wastewater from the Marshall plant was sampled and tested for PCBs by the MDNR in 1973 No detectable levels of PCBs were found

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[FN164] The wastewater from the Marshall plant was samp'ed and tested for PCBs by the MDNR again in August 1980 Testing was done at two outfalls from the plant to the storm sewer Cooling waters, roof and yard drainage were discharged through Outfall 001 Cooling water used in degreasers, heat exchangers and welders was discharged to Outfall 002 The MDNR reported that PCBs had been detected at Outfall 001 at the level of 0 82 ug/l (ppb) No detectable levels of PCBs were found at Outfall 002 [FN165] The MDNR suggested that the PCBs that were found "are most likely associated with the oils that are used at the plant," and recommended that Eaton test the oils at the plant for PCBs to determine the exact source and to eliminate these toxic compounds from the discharge [FN166]

FN164 Exh 6105, 8/6/73, letter from MDNR with Report of 6/12/73- 6/14/73 Industrial Wastewater Survey

FN165 Exh 6101, MDNR letter of 12/18/80 with Report of Industrial Wastewater Survey

FN166 Exh 6101, 12/18/80 letter at 2

Eaton immediately followed up on the MDNR's 1980 detection of PCBs at Outfall 001 A review of all incoming products disclosed none containing PCBs [FN167] Eaton also took additional samples of wastewater at Outfalls 001 and 002, and a concentration of water soluble oil and machinery fluid, on January 9, 1981 The samples were sent to Environmental Research Group, Inc All samples were non-detect for PCBs [FN168]

FN167 Exh 6103, Rex Simmons, Mng Plant Engineering 1/26/81 letter to MDNR

FN168 Exh 6102, ERG Amended Laboratory Analysis report dated 1/26/81

The 1980 PCB detection has never been repeated, despite additional sampling On April 3, 1981, Thomas Newell of the MDNR recommended that PCB monitoring should no longer be required at Eaton's Marshall facility "because they do not use it" Newell stated that is was his "opinion that occasional PCB's may be in the oils used in the plant but at trace contaminant levels" [FN169] Further sampling in 1983 of pollutants in the Marshall facility wastewater was also non-detect for PCBs [FN170] On November 21, 1985, the MDNR conducted an inspection to determine ***858** compliance with PCB regulations The inspection revealed no leaking transformers or capacitors Company officials reported no known use of Pydraul in their hydraulic systems All testing of plant oils was non-detect for PCBs [FN171]

FN169 Exh 6104, Newell Memorandum of 4/3/81

FN170 Exh 6101, MDNR letter of 1/17/84, with Report of 5 983- 5/10/83 Industrial Wastewater Survey, Exh 6107, 3/20/84 letter from Eaton to MDNR, with 1/30/84 lab results of 12/23/83 samples

FN171 Exh 6108, MDNR 11/21/85 Report on PCB Inspection, at 4

Eaton's Marshall plant dumped industrial wastes in a landfill from the 1950s to the 1970s In 1990 the USEPA conducted an inspection of the Eaton landfill in Marshall There is no reference in the report to any PCBs [FN172]

FN172 Exh 6109, MDNR 8/1/90 Screening Site Inspection Report for Eaton Landfill

In 1993, Eaton engaged an outside environmental consultant, Applied Science and Technology, Inc ("ASTI"), to conduct sediment sampling for PCBs in the Kalamazoo River immediately downstream of the Marshall facility The purpose of the testing was to determine whether PCBs had been discharged from the Marshall plant Because PCBs

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have an affinity for fine-grained sediments if they were to settle out, the consultants tested fine-grained sediments from the three depositional zones identified No detectable levels of PCBs were found [FN173]

FN173 Exh 6111, ASTI 5/14/93, Sediment Sampling, Brown testimony, Tr at 177-78

No one on behalf of Plaintiff has tested the sediments in the vicinity of Marshall and immediately downstream of the Marshall facility KRSG has conducted no testing of River sediments between the Marshall plant and Morrow Lake, [FN174] approximately thirty miles downstream of the Marshall plant [FN175]

FN174 Connolly testimony, Tr at 481

FN175 Brown testimony, Tr at 178

The studies that have been conducted in the River between Marshall and Morrow Lake reveal no PCBs in the vicinity of the Marshall plant In 1976 and 1988 the MDNR sampled riverbed sediments in impoundment areas downstream of the Eaton Marshall plant, where PCBs would be expected to be deposited, and found none [FN176] In all the sampling of riverbed sediments and settleable solids for almost twenty miles downstream of Marshall, no PCBs were detected

FN176 Exh 2036/6110, Wuycheck Study, Exh 6020, 1988 study

Plaintiff's entire case against Eaton's Marshall facility rests upon the single detection of PCBs in the MDNR's 1980 water survey Dr Brown testified that although non-detects are not sufficient in and of themselves to rule out the presence of PCBs at a site, a single detection of PCBs is typically good confirmation that PCBs were present [FN177]

FN177 Brown testimony, Tr at 166

Although one discharge may be sufficient to support a finding of liability, this Court looks for some corroborating evidence to insure that the one detection is reliable In this case there is no corroborating evidence Eaton went to great lengths to determine the possible source of the PCBs, and was not able to find any Despite repeated efforts, Eaton has never been able to replicate the MDNR's finding

Thomas Newell, MDNR District Engineer, testified that it was his opinion that the Marshall plant's PCB detection was due to PCB containing process oils commonly used in the auto parts manufacturing industry His opinion amounts to no more than speculation He had no personal knowledge of the oils Eaton actually used at the plant In fact, his opinion was based in part on his assumption that Eaton ***859** had a die-casting operation [FN178] This assumption was inaccurate, as Eaton did not conduct die-casting at its Marshall facility [FN179]

FN178 Newell dep at 45

FN179 Brown testimony, Tr at 169

The KRSG has done nothing to verify the reliability of the one PCB detection Dr Brown has no specific knowledge of the application of PCBs in cutting oils at the Marshall plant [FN180] Despite the fact that the Eaton Marshall facility is still in operation, and despite the fact that Eaton's historic wastes are known to be present at the Eaton landfill in Marshall, no showing has been made that KRSG made any effort to collect evidence from these obvious sources of historic information

FN180 Brown testimony, Tr at 170

Based upon all the evidence presented, the Court finds that the single admittedly low level detection of PCBs at the Marshall facility in 1980 is not reliable There being no other evidence of PCBs discharged by the Marshall facility, the Court

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concludes that Plaintiff has not met its burden of demonstrating by a preponderance of the evidence that Eaton released PCBs from its Marshall facility to the Kalamazoo River Accordingly, the Court finds that Eaton is not liable for the release of any PCBs from its Marshall facility

V. CONCLUSION

In summary, the Court finds that Eaton is liable for the release of PCBs in some quantity, small though it may have been, from its Battle Creek and Kalamazoo facilities, but that Eaton is not liable for the release of PCBs from its Marshall facility

An order and partial judgment as to liability consistent with this opinion will be entered

ORDER AND PARTIAL JUDGMENT

In accordance with the opinion entered this date,

IT IS HEREBY ORDERED that **JUDGMENT AS TO LIABILITY ONLY** is entered in favor of Plaintiff Kalamazoo River Study Group and against Defendant Eaton Corporation with respect to Eaton Corporation's Battle Creek and Kalamazoo facilities

IT IS FURTHER ORDERED that **JUDGMENT** is entered in favor of Defendant Eaton Corporation with respect to its Marshall facility

142 F Supp 2d 831, 52 ERC 1842, 31 Envtl L Rep 20,617

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258 F.Supp.2d 736
56 ERC 1078
(Cite as: 258 F.Supp.2d 736)
<KeyCite History>

United States District Court,
W.D. Michigan,
Southern Division.

KALAMAZOO RIVER STUDY GROUP,
Plaintiff,
v.
EATON CORPORATION, Defendant.

No. 1:95-CV-838.

Aug. 29, 2002.
As amended, June 9, 2003.

Association of companies that released polychlorinated biphenyls (PCBs) to environmentally contaminated site filed action against eight potentially responsible parties (PRPs), alleging that they contributed to PCB contamination, and seeking to recover response costs under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Michigan Natural Resources and Environmental Protection Act (NREPA), and common law theories. The District Court, 3 F.Supp.2d 799, granted summary judgment for one PRP, granted partial summary judgment for second PRP, and, following bench trial, ruled in favor of second PRP on remaining claim. Association appealed. The Court of Appeals, 228 F.3d 648, reversed and remanded. On remand, the District Court, 142 F.Supp.2d 831, made determination of liability. Following trial as to allocation, the District Court, Bell, Chief Judge, held that: (1) evidence was insufficient to single out PRP as significant source of specific PCB Aroclor 1254; (2) costs for cleanup of lake would be considered in making allocation; and (3) although PRP could not equitably be required to remediate site, PRP was required to pay 10% of investigation costs.

Ordered accordingly.

West Headnotes

[1] Environmental Law k447
149Ek447

Courts are not required to make meticulous findings as to the precise causative contribution each of the parties have made to a hazardous site, as in many cases such a finding would be literally impossible, in CERCLA cleanup cost contribution suit. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[2] Environmental Law k447
149Ek447

[2] Environmental Law k465
149Ek465

Plaintiff in a CERCLA cleanup cost contribution action may seek reimbursement even though it cannot make a meticulous factual showing as to the causal contribution of each defendant; nevertheless, although plaintiff is not required to prove its case with direct evidence, mathematical precision, or scientific certainty, it still has the burden of proving its equitable right to contribution by a preponderance of the evidence. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[3] Environmental Law k447
149Ek447

Nonexhaustive list of Gore factors, which a court may consider in interest of justice in allocating CERCLA cleanup contribution recovery, includes: (1) the ability of the parties to demonstrate that their contribution to a discharge, release or disposal of a hazardous waste can be distinguished; (2) the amount of the hazardous waste involved; (3) the degree of toxicity of the hazardous waste involved; (4) the degree of involvement by the parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste; (5) the degree of care exercised by the parties with respect to the hazardous waste concerned, taking into account the characteristics of such hazardous waste; and (6) the degree of cooperation by the parties with the

Federal, state or local officials to prevent any harm to the public health or environment. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[4] Environmental Law k447
149Ek447

Gore Factors, considered in allocation of CERCLA cleanup contribution cost recovery, enable the court to take into account more varying circumstances than does the common law contribution. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[5] Environmental Law k447
149Ek447

Because one of the primary goals of CERCLA is to encourage timely cleanup of hazardous waste sites, and because CERCLA seeks to place the cost of that response on those responsible for creating or maintaining the hazardous condition, the most important factors to consider in the allocation phase are harm to the environment and care on the part of the parties. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[6] Environmental Law k465
149Ek465

Evidence was insufficient to single out potentially responsible party (PRP) as significant source of specific polychlorinated biphenyl (PCB) Aroclor 1254 in national priorities list (NPL) site, in CERCLA cleanup cost contribution action by association of companies PCBs; PRP more likely than not discharged 2 to 5% of river's contaminants, higher estimates by association's expert lacked an articulated scientific basis, and lake that allegedly transported PCBs to NPL site was not a significant source of PCBs to site. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[7] Environmental Law k447
149Ek447

[7] Environmental Law k464
149Ek464

In CERCLA actions seeking cleanup cost contribution, the burden is placed on the plaintiff to establish the defendant's equitable share of response costs; while a party seeking cleanup contribution may not recover under joint and several liability, it is clear that under a plain reading of the statute, the party is seeking to recover its necessary costs of response. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[8] Environmental Law k446
149Ek446

Recoverable CERCLA response costs include costs associated with monitoring and investigation; the law does not require prior agency approval in order to recover response costs. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[9] Environmental Law k447
149Ek447

The district court has broad discretion in CERCLA cleanup cost contribution action to allocate the costs associated with the remedial investigation and feasibility study (RI/FS); in an appropriate set of circumstances, a tortfeasor's fair share of the response costs may be zero. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[10] Environmental Law k447
149Ek447

There is nothing to suggest that Congress intended to impose far-reaching CERCLA cleanup cost contribution liability on every party who is responsible for only trace levels of waste. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[11] Environmental Law k446
149Ek446

Environmental cleanup work conducted by association of companies that released polychlorinated biphenyls (PCBs), on lake upstream from site, was reasonably necessary and was within

the contemplation of the administrative order by consent (AOC) requiring the association to fund a Remedial Investigation and Feasibility Study (RI/FS) at the Site and its surrounding area, and thus costs from cleanup of lake, would be considered in determining allocation of CERCLA cleanup cost liability. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

[12] Environmental Law k447
149Ek447

Although potentially responsible party (PRP) could not equitably be required to share in remediation of national priorities list (NPL) site, PRP was required to bear 10% of costs of investigating presence of polychlorinated biphenyl (PCB) Aroclor 1254 site, in CERCLA cleanup cost contribution by association of companies that released PCBs; PCBs were discovered at PRP's facility, PRP lacked historical records, and PRP benefited from association's investigation of site. Comprehensive Environmental Response, Compensation, and Liability Act of 1980, § 113(f), 42 U.S.C.A. § 9613(f).

***738** Alan C. Bennett, Law, Weathers & Richardson, Grand Rapids, Jerome T. Wolf, James Lee Moeller, Sonnenschein Nath & Rosenthal, Kansas City, MO, for Kalamazoo River Study Group, pltf.

***739** Joseph C. Basta, Dykema, Gossett, Spencer, Goodnow, et al, Ann Arbor, for Rockwell International Corporation, Eaton Corporation, defts.

OPINION

BELL, Chief Judge.

This is a contribution action brought by Plaintiff Kalamazoo River Study Group ("KRSG") under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), 42 U.S.C. § 9601, *et seq.* In a previous opinion this Court determined that Defendant Eaton Corporation ("Eaton") was liable for the release of some PCBs to the Kalamazoo River Superfund Site from both its Battle Creek and its Kalamazoo facilities. (May 9, 2001 Opinion at 28 and 53). This action is currently before the Court on the allocation phase of KRSG's contribution action against Eaton. [FN1]

FN1. This is the fourth phase of the trial in this matter. The Phase I trial held in August 1998 resulted in a judgment as to liability only in favor of Plaintiff Kalamazoo River Study Group ("KRSG") and against Defendant Rockwell International ("Rockwell"). (Opinion and Order, 12/8/98, Docket # 's 849 & 850). The Phase II trial held in November 1999 addressed the allocation of costs between Plaintiff KRSG and Defendant Rockwell and resulted in a determination not to allocate any response costs to Rockwell. (Opinion and Order, 6/5/00, Docket # 's 942 & 943). The Phase III trial held in January 2001 addressed the liability of Eaton Corporation for PCB discharges from its Battle Creek and Kalamazoo facilities and resulted in a finding that Eaton was liable for PCB releases to the Site from its Battle Creek and Kalamazoo facilities. (Opinion and Order, 5/9/01, Docket # 's 1006 & 1007).

I.

The trial on the issue of allocation was held before the Court on February 4- 6, 2002. At trial the Court heard the testimony of Plaintiff's experts, Michael W. McLaughlin and Dr. Mark P. Brown, and the testimony of Defendant's experts, Dr. John P. Connolly, and Robert C. Barrick. [FN2] The parties also introduced into evidence numerous new exhibits and additional depositions.

FN2. The testimony will be reference in this opinion by name, date of testimony, and transcript page number.

This opinion contains the Court's findings of fact and conclusions of law, in accordance with Fed.R.Civ.P. 52(a). This Court has considered the testimony of the witnesses at this and the previous trials, the evidence introduced at this and the previous trials, the deposition testimony that the parties have stipulated may come into evidence, the parties' stipulations, and the parties' proposed findings of fact and conclusions of law.

With regard to the history of this National Priorities List Site ("NPL Site"), the nature of PCBs, and specific findings regarding the Eaton facilities, the KRSG members' activities and the

results of PCB testing, this Court incorporates by reference its previous opinions and the Sixth Circuit's opinions regarding this Site. [FN3] This Court will not revisit the factual findings made in its earlier opinions except to the extent they are affected by new evidence introduced at the Phase IV allocation trial.

FN3. *See* this Court's opinions referenced in footnote 1 and *Kalamazoo River Study Group v. Rockwell International Corp.*, 171 F.3d 1065 (6th Cir.1999) (affirming entry of summary judgment in favor of Benteler Industries, Inc.); *Kalamazoo River Study Group v. Menasha Corp.*, 228 F.3d 648, 654 (6th Cir.2000) (affirming entry of summary judgment in favor of Eaton with respect to its Marshall facility, and reversing entry of summary judgment and judgment after trial in favor of Eaton with respect to its Kalamazoo and Battle Creek facilities); *Kalamazoo River Study Group v. Rockwell Intern. Corp.*, 274 F.3d 1043 (6th Cir.2001) (affirming decision not to allocate any response costs to Rockwell).

***740** [1][2] The Court recognizes that this case presents the not uncommon situation where companies have disposed of waste without knowing its contents. *See B.F. Goodrich v. Betkoski,* 99 F.3d 505, 526 (2d Cir.1996). This is true of the KRSG members as well as Defendant Eaton. Because there is a lack of direct evidence as to the nature or quantity of the hazardous wastes that were disposed of, the Court must rely on circumstantial evidence in order to accomplish the broad, remedial purpose of CERCLA. *Id.* Courts are not required to make meticulous findings as to the precise causative contribution each of the parties have made to a hazardous site, as in many cases such a finding would be literally impossible. *United States v. R.W. Meyer, Inc.,* 932 F.2d 568, 573-74 (6th Cir.1991). Similarly, the plaintiff in a contribution action may seek reimbursement even though it cannot make a meticulous factual showing as to the causal contribution of each defendant. *Id.* at 573-74. Nevertheless, although Plaintiff is not required to prove its case with direct evidence, mathematical precision, or scientific certainty, it still has the burden of proving its equitable right to contribution by a preponderance of the evidence. *Id.See also B.F. Goodrich,* 99 F.3d at 526.

II.

The NPL Site at issue in this case consists of a 35 mile stretch of the Kalamazoo River from the confluence of Portage Creek with the Kalamazoo River downstream to the Allegan City Dam west of the City of Kalamazoo, plus three miles of Portage Creek upstream of the confluence. (Revised Joint Final Pretrial Order of 2/1/02, Exh. D, Uncontroverted Facts ¶ 2; Exh. 8803; December 7, 1998 Order and Opinion at 3.)

Plaintiff's Allied, Fort James and Plainwell facilities were or are located within the NPL Site, while Plaintiff's Georgia-Pacific facility is located just upstream of the NPL Site. Plaintiff's responsibilities include work at four Operable Units ("OUs"), which are former landfills and lagoons where Plaintiff's members disposed of papermaking residuals. Plaintiff is not seeking contribution from Eaton for work at the OUs.

Morrow Lake is upstream of the NPL Site. Morrow Lake is approximately three miles long from its inlet to the dam. The Morrow Lake Dam is approximately 5 miles upstream of the start of the NPL site. (Exh. 2111-K; Brown, 2/5/02, at 337).

Eaton's Battle Creek facility, prior to its demolition in 1984, was located approximately 15 miles upstream of the Morrow Lake Dam, and approximately 20 miles upstream of the NPL Site. (Exh. 2111-K). Eaton's Kalamazoo facility was located approximately 3 miles downstream of the start of the NPL Site and was downstream of KRSG members Georgia-Pacific, Allied and James River, but upstream of KRSG member Simpson-Plainwell. (Exh. 2111-K).

Although the NPL Site investigation focuses on the current Kalamazoo River channel, there are three areas of now-exposed river sediments associated with the former Plainwell, Otsego and Trowbridge impoundments that are included in the NPL Site study area. These sediments became exposed when the Plainwell, Otsego and Trowbridge dams were removed in the early 1970s.

It has been previously established in this case that the PCBs found in the NPL Site consist primarily of Aroclors 1242, 1248, 1254, and 1260. Plaintiff does not deny that its members are responsible for the majority of Aroclor 1242 found at the NPL Site. (McLaughlin, 2/4/02, at 129). Plaintiff hired Blasland Bouck & Lee ("BBL") to perform the

Remedial Investigation/Feasibility Study ("RI/FS") activities ***741** at the Site. (Exh. 8803). Plaintiff's sampling reflects that Aroclors 1254 and 1260 make up only 2 to3% of the PCBs in the KRSG members' operable units or landfills. (Exh. 2111-M). Aroclors 1254 and 1260 make up approximately 90% of the PCBs in Morrow Lake, and approximately 25% of the sediments in the Kalamazoo River between Morrow Lake and Allegan Dam and in the former impoundment areas. Plaintiff contends that because of the differential between the Aroclors 1254 and 1260 in the River and the Aroclors 1254 and 1260 in the OUs, its members cannot be responsible for the majority of the Aroclors 1254 and 1260 at the NPL Site. Plaintiff contends the evidence demonstrates that most of those PCBs more likely than not came from Eaton. Eaton, on the other hand, contends that the amounts of PCBs contributed by Eaton to the Kalamazoo River, if any, are of such a small quantity as to be negligible.

III.

This Court previously determined that the primary Aroclors found at Eaton's Battle Creek facility were Aroclors 1248 and 1254. This Court concluded that the PCB contamination at Eaton's Battle Creek facility was not attributable to the use of PCBs in Eaton's process oils. Rather, the PCBs at the plant were attributable to leaking transformers, capacitors and hydraulic systems, all of which are closed or nominally closed systems. (Opinion, 5/9/01, at 27). This Court concluded that even if the bulk of the spills of PCB-containing di-electric or hydraulic oils was absorbed by the floors or swept up and discarded, it was more likely than not that some of the PCBs from the Eaton Battle Creek facility would probably have mixed with the process oils and found their way into the effluent from the facility. Although organics in the slow-moving ditch would have acted as a magnet and a trap for PCBs, this Court determined that some, albeit a small quantity, of PCBs would have found their way to the River. (Opinion, 5/9/01, at 29).

This Court's determination of liability with regard to the Eaton Battle Creek facility was based, in part, upon what is now known to be erroneous testimony by Thomas Mattson, Public Works Director for the City of Springfield. Mr. Mattson testified at the Phase III liability trial that Clark Equipment Company ("Clark") did not discharge effluent to the Eaton/Clark ditch except from two non-manufacturing related buildings located on the east side of 24th Street. (Opinion, 5/9/01, at 12). The erroneous testimony, in part, led to the Court's conclusion that the PCBs detected in the Eaton/Clark ditch were more likely than not attributable to Eaton as opposed to any other source. (Opinion, 5/9/01, at 13). Based on uncontroverted documentary evidence and the admissions of Plaintiff's expert, Mr. McLaughlin, it is now known that Clark discharged effluent from its manufacturing facilities located west of 24th Street to the Eaton/Clark ditch from the beginning of its operations up until 1978. (Exh. 6490-6497; McLaughlin, 2/4/02 at 170). Clark was involved in the manufacture of industrial trucks, tractors, trailers and stackers, with plant processes including forging, machining, and hard chrome plating. (Exh. 6494). Based upon this new evidence, Mr. MacLaughlin conceded that the PCBs found in the Eaton/Clark ditch could have originated from Clark if Clark's effluent contained PCBs. (McLaughlin 2/4/02 at 177).

There is no direct evidence that Clark's effluent contained PCBs. However, it is undisputed that Clark's facility contained a number of PCB-containing transformers and capacitors. (Exh. 6487-6488). In 1985 Clark was using approximately 30 hydraulic systems, primarily on machining ***742** equipment. (Exh. 6487). Clark also manufactured forklifts, which could have used PCB- containing hydraulic fluids. (May 9, 2001, Opinion at 13).

At the Phase IV allocation trial the Court also received new evidence on PCB testing in the vicinity of the Eaton Battle Creek facility. Subsequent to the Phase III trial on liability, Mr. McLaughlin returned to the Eaton Battle Creek facility to take additional samples in the Eaton/Clark ditch between Sample B-3 and the intervening one-third mile to the Kalamazoo River (samples B-5 and B- 6), in the River immediately adjacent to the outfall of the ditch to the current river channel, (samples B-7 and B-8), and in what was apparently the former river channel prior to the Army Corps of Engineers river-straightening project in 1957 (samples B-9, B-11, BOT1, B-4, BOT2, and B-10). (Exh. 2144-B; McLaughlin, 2/4/02 at 32-42).

Sample B-6 contained between 50,000 and 68,000 ppb (50-68 ppm) PCB Aroclor 1254 and 8,300 ppb (8.3 ppm) PCB Aroclor 1260. Sample B-5, which was closer to the Kalamazoo River, contained

16,000 ppb (16 ppm) PCB Aroclor 1254. (Exh. 2144-B.) Sample B-8, taken near the outfall of the ditch to the River, contained 6800 ppb Aroclor 1254. Sample B-7, slightly downstream, contained 6300 ppb Aroclor 1254. (Exh. 2144-B). Sample B-9 was taken from what Mr. McLaughlin then believed to be the old channel of the Eaton/Clark drainage ditch which led to the oxbows. Sample B-9 contained 22 ppb (.022 ppm) Aroclor 1254. Mr. McLaughlin testified that he is now unsure whether he found the correct location within the channel to the oxbow. (McLaughlin, 2/4/02 at 33, 42). Sample B-9 is also within the vicinity of the outfall from the middle Clark ditch which is located just west of the Eaton/Clark ditch. (McLaughlin 2/4/02 at 42). Sample B-11, the next sample in the oxbow downstream of the Eaton/Clark ditch, contained 5600 ppb (5.6 ppm) Aroclor 1254 and 1300 ppb (1.3 ppm) Aroclor 1260. (Exh. 2144-B; McLaughlin 2/4/02 at 42-43).

The four samples in BOT1 were taken in a transect across the width of the oxbow. These samples showed lower levels of total PCBs ranging from 79 ppb (.079 ppm) to 570 ppb (.57 ppm) of Aroclors 1254 and 1260. (McLaughlin, 2/4/02 at 44). The next downstream location, B-4, which was sampled twice, contained 1000 ppb (1 ppm) and 560 ppb (.56ppm) Aroclor 1254. (McLaughlin, 2/4/02 at 43). Further downstream at another transect across the oxbow, BOT2, all four samples were non-detect for PCBs. (*Id.* at 44-45). The final sample, B-10, was taken just downstream of where Clark's Helmer Road ditch outfall intersects the oxbow. (*Id.* at 174). B-10 contained 170 ppb (.17 ppm) Aroclor 1254 and 46 ppb (.046 ppm) Aroclor 1242. (*Id.* at 44).

Mr. McLaughlin testified that the most comparable PCB data with which to compare the Eaton Battle Creek ditch samples for relative significance are focused samples of suspected point sources in the NPL site that BBL collected at the request of the Michigan Department of Environmental Quality ("MDEQ"). Mr. McLaughlin considered this an appropriate comparison because his Eaton samples and the MDEQ's samples both had a similar purpose--they were biased samples focusing on suspected source areas. (McLaughlin, 2/4/02, at 96). According to Mr. McLaughlin, this particular comparison--looking at total PCB levels--provides the best "apples-to-apples" comparison of relative significance because the MDEQ chose those locations because it suspected they were likely to have higher concentrations of PCBs. (McLaughlin, 2/4/02, at 92- 94, 111-14). On a total PCB basis, the average ***743** levels of PCBs in the Eaton-Battle Creek ditch were higher than in any of the suspected point source samples in the NPL Site. (Exh.2091-I). Mr. McLaughlin also compared the Eaton ditch samples to the focused point source samples on an Aroclor-specific basis. In that comparison, the average Aroclor 1254 levels in the ditch samples exceeded the average Aroclor 1254 PCB levels in all of the focused point source samples by a substantial margin. (Exh.2091-J; McLaughlin, 2/4/02, at 114-15). The same is true comparing the average Aroclor 1260 PCB detections between the Eaton Battle Creek ditch samples and the focused point source samples. (Exh.2091-K; McLaughlin, 2/4/02, at 115-16). Mr. McLaughlin ranked the samples he took from the vicinity of the Eaton Battle Creek and Kalamazoo Sites and against the point source and waste disposal sample locations selected by the MDEQ. (Exh.2091-F). Mr. McLaughlin testified that the Eaton results were "obviously significant" because they tended to bunch up near the top of the table. He noted that eight of the top ten entries are Eaton results. (McLaughlin, 2/4/02, at 96).

This Court does not agree with Plaintiff's assertion that the focused point source samples are the most appropriate samples to compare to the Eaton Battle Creek ditch and immediate outfall samples for significance. The MDEQ samples come from the Hawthorne Mill (FF-1, FF-2, FF-3), the James River outfall (FF-18, FF-19), the Kalamazoo Water Reclamation Plant (FF-20), the outfall of the Parchment Waste Water Treatment Plant (FF-24), and a sample from downstream of Parchment (FF-25). (McLaughlin, 2/4/02, at 93). A comparison between Mr. McLaughlin's samples from the vicinity of the two Eaton plants and selected samples from several potential point sources within the NPL Site identified by the MDEQ is not a comparison between Eaton and Plaintiff. None of the focused point sources are associated with any of the potentially responsible parties ("PRPs") identified by the MDEQ. There is no data shown on this exhibit regarding samples from Allied, Georgia-Pacific or Simpson. There is data from only one of Plaintiff's members on this exhibit, and that data is from James River, the one member that has not been identified as a PRP by the MDEQ. (Opinion, 5/9/01, at 3-4). Although Exhibit 2091-F reveals that the results from James River are near the top of the list, Exhibit 2091-F

tells the Court nothing about the relative responsibility of Eaton vis-a-vis Plaintiff's members as a whole. Moreover, because the number of samples taken from the two Eaton plants far exceeds the number of samples taken from any one other location, the number of Eaton entries at the top of the list is of little significance. This exhibit, viewed in its best light, shows nothing more than that Eaton's Battle Creek facility, 15 miles upstream of the NPL Site, may have released more PCBs than some other non-PRPs who discharged directly to the River within the NPL Site. Although the focused point samples are significant comparisons for sources of PCBs, they tell nothing about quantity. For the same reasons the Court accords little significance to Plaintiff's Exhibits 2091-G-2091-K.

Mr. McLaughlin also compared the PCB levels in the Eaton Battle Creek ditch with the PCB levels in the OUs where Plaintiff's members disposed of papermaking sludges and residuals. (McLaughlin, 2/4/02, at 48-50). The 50,000 ppb to 68,000 ppb Aroclor 1254 detection in sample B-6 in the Eaton Battle Creek ditch is higher than any Aroclor 1254 detection in all of Plaintiff's OUs. The other three ditch samples, B-1, B-3, and B-5 are higher than all Aroclor 1254 detections in the OUs except the 19,000 ppb sample from Willow Boulevard/***744** A-Site. (McLaughlin, 2/4/02, at 48-50, Exh. 2144-B).

Mr. McLaughlin testified that the total PCB level in Eaton Battle Creek ditch Sample B-6--50,000 ppb to 76,000 ppb--ranks between the 13th and 26th highest total PCB level compared to all of BBL's sediment samples throughout the NPL Site. (McLaughlin, 2/4/02, at 60). Mr. Mc Laughlin also testified that when the 24 PCB detections he found that he relates to Eaton's Battle Creek and Kalamazoo facilities are combined, more than one-third of all of those PCB detections fall into the upper 2% of all of BBL's samples taken throughout the River and the OUs. (McLaughlin, 2/4/02 at 59). Almost all of his samples would fall in the top 10% of all of BBL's samples taken throughout the River and the OUs. (McLaughlin, 2/4/02 at 59).

Mr. McLaughlin opined that on a comparative basis, the PCB data relating to the Eaton Battle Creeki ditch coupled with the PCB data in the River at and downstream of Eaton's outfall, demonstrate that Eaton's Battle Creek facility is among the most contaminated throughout the Kalamazoo River system, and caused significant PCB contamination to the River, including downstream to Morrow Lake and through the NPL Site. Based upon Mr. McLaughlin's sediment samples Plaintiff contends the Court should review the findings it made at the liability phase and conclude that PCB-containing oils were used in large quantities in the process oils at Eaton's Battle Creek facility. Plaintiff contends that because its PCB releases caused PCB contamination predominantly at the zero to 1000 ppb level in areas reaching more than 50 miles downstream of its facilities, then, given the significant contamination seen in Eaton Battle Creek's ditch and in the adjacent River, it is reasonable to conclude that Eaton caused PCB contamination of a similar magnitude over a similar distance.

This Court does not find Mr. McLaughlin's conclusions to be well supported. First, because both Eaton and Clark discharged industrial effluents to the Eaton/Clark ditch, it is impossible to know if the PCBs in the ditch originated from Eaton or from Clark. (Connolly, 2/5/02 at 442; McLaughlin, 2/4/02, at 177).

Second, the PCBs in the ditch and the River do not match the PCBs found at the Eaton Battle Creek facility. After the Phase III liability trial this Court found that the PCBs in the Eaton Battle Creek plant were primarily Aroclor 1248 with significant amounts of 1254. (5/9/01 Opinion at 14). Mr. McLaughlin detected no Aroclor 1248 in any of the samples in the ditch, the river, or the oxbow. Mr. McLaughlin admitted that the Aroclors found (primarily Aroclor 1254 with some 1260) do not match the pattern or combination of Aroclors found in the Eaton Battle Creek plant floor blocks. (McLaughlin, 2/4/02, at 161-64). Because all Aroclors have the same tendency to sorb or stick to particles, whatever PCBs were released to the ditch would have left their signature in the sediments of that ditch. (Connolly, 2/5/02, at 444).

Third, there is no evidence that PCBs from Eaton's Pydraul A-200 hydraulic oil was discharged to the ditch or the River. Pydraul A-200 is the only PCB-containing hydraulic oil known to have been purchased by Eaton. (McLaughlin, 2/4/02, at 163). Pydraul A-200 consists of 1/3 Aroclor 1242 and 2/3 Aroclor 1248. (Exh. 6472; Exh. 6473; McLaughlin, 2/4/02, at 157). Neither of these Aroclors have been found in the Eaton/Clark ditch. (McLaughlin, 2/4/02, at 163).

Fourth, Plaintiff's claim regarding the Eaton Battle Creek facility ignores other potential sources of PCBs located upstream ***745** of Eaton's Battle Creek facility that could have contributed to the PCBs found in the former channel and current channel of the Kalamazoo River near the Eaton/Clark ditch. Twenty five percent of the Kalamazoo River watershed is upstream of Eaton's Battle Creek facility. (Brown, 8/10/98, at 80-81; Opinion 5/9/01, at 19). The only Aroclors Mr. McLaughlin found in the vicinity of the Eaton Battle Creek facility are Aroclor 1254 and 1260, which are consistent with the primary types of Aroclors found in di-electric fluids. (McLaughlin, 2/4/02, at 164). PCB-containing transformers and capacitors were widely used in a variety of industries. There is evidence of record that in 1972 Aroclor 1254 was found in the effluent of two Battle Creek companies, the Michigan Carton Company at a level of 160 ppb, and in the effluent of the Grand Trunk Railroad facility at a level of 320 ppb. (Exh. 6534).

The 1971 Hesse study of the Kalamazoo River, undertaken by John Hesse for the MDNR, found that, based upon levels of PCBs in settleable solids, the most significant source of PCBs to the Kalamazoo River upstream of Battle Creek was from the Battle Creek River which enters the Kalamazoo River upstream of the Eaton facility. (von Gunten dep. at 199-201; Exh. 2111K). "The sample from the Battle Creek River had the highest concentration [of PCBs] (0.422 mg/kg) [422 ppb] detected in the watershed. This concentration indicates that a source or sources of PCB contamination exists upstream from the sampling site which would be contributing to the total problem in the mainstream." (Exh.2096 & 6411 at 77). Despite the historical data that tends to show upstream sources of PCBs, Mr. McLaughlin did no testing upstream of Eaton.

Finally, the Court ascribes little significance to Mr. McLaughlin's comparisons of the ditch samples to the BBL sediment samples from the River. The ditch samples are naturally more concentrated than the River sediments because they are taken from discharge routes and have not yet been subject to dilution caused by the effect of higher flows in the River and additional clean sediment.

This Court found the testimony of Dr. Connolly to be more persuasive than the testimony of Mr. McLaughlin. Dr. Connolly has the most expertise of any of the witnesses in the area of hydrogeology and the transport of PCBs in the river environment. In addition to the training and background to which he testified in past trials, Dr. Connolly has recently been called to testify before and advise a Congressional subcommittee investigating contaminated sediment issues and providing oversight to the U.S. EPA. (Connolly, 2/5/02 at 389).

Dr. Connolly testified that although it appears that relatively low amounts of Aroclors 1254 and 1260 were transported to the former river channel oxbows through the Eaton/Clark ditch, after exiting the oxbow and entering the main former river channel the PCBs would have quickly attached themselves to organic matter in the former channel and settled out of the water column. (Connolly, 2/5/02 at 452-53, 470, 472). This phenomenon is evidenced by the rapid drop off of PCB concentrations between sample location B-11 (6.9 ppm total PCBs found in the natural oxbow close to the ditch discharge) and sample location BOT1 (up to .570 ppm), B-4 (up to 1 ppm) and BOT2 (non-detect), all in the main former river channel. (Connolly, 2/5/02 at 452-53, 470, 472).

The PCBs found at Sample locations B-7 and B-8 are located directly adjacent to the outfall of the Eaton/Clark ditch to the current river channel. According to Dr. Connolly, they are not characteristic of what is found in the intervening 13 miles ***746** from Eaton down to Morrow Lake. Dr. Connolly testified that because these samples were taken just outside the outfall, the samples were taken within the influence of the outfall plume prior to mixing with the rest of the river flow, and are more characteristic of what is in the ditch than what would be found in the River just downstream of the outfall plume of the ditch. (Connolly, 2/5/02 at 453-54).

Dr. Connolly testified persuasively on one of the fundamental principles of PCB transport and fate--i.e., that PCBs will normally be deposited in highest concentration near the source, with a gradient going down in concentration downstream from the source. Using examples from the Grasse River in New York State (Exh. 6569), the Hudson River in New York State (Exh. 6570), and the Housatonic River in Massachusetts, (Exh. 6571), Dr. Connolly demonstrated that the typical pattern of contamination downstream from a single-source PCB site is that of a PCB gradient. PCB

concentrations tend to be highest closest to the source of the PCBs. A gradient occurs when the PCB concentrations increasingly diminish as one moves away from that source. (Connolly, 2/5/02, at 392-94). PCB concentrations in the water column and in the sediments decrease as one moves away from a source because PCBs will preferentially attach to sediments close to the source, especially organic-rich sediments, and fall to the bottom of the river, and because those sediments with attached PCBs that do move downstream become diluted due to the addition of water from tributaries and runoff and the influx of clean sediments. (Connolly, 2/5/02, at 394-95; Exh. 6562).

Plaintiff contends that Dr. Connolly's testimony regarding other PCB sites-- the Hudson, Housatonic and Grasse Rivers--actually supports the downstream migration of PCBs. As Dr. Connolly testified, PCBs in the Hudson River traveled more than 80 miles from the source. (Connolly 2/6/02, at 511). His data on the other sites also demonstrate the tremendous variability in PCB concentrations one sees in river systems, whether on a raw PCB data basis or a "carbon-normalized" PCB basis. (Exh. Nos. 6569-6574; 2148; Connolly, 2/6/02, at 496-98). According to Plaintiff, Dr. Connolly's comparison to those other sites does not support a conclusion that significant amounts of PCBs discharged from Eaton's ditch did not migrate far from the source.

Neither Dr. Connolly nor this Court would disagree with Plaintiff's assertion that PCBs migrate a great distance in rivers or that one can expect to see a great variability in PCB concentrations throughout a river environment. (Connolly, 2/6/02, at 511; Connolly, 2/5/02, at 397). Plaintiff's contentions do not, however, address the central point of Dr. Connolly's testimony, that as PCBs migrate in a river environment they tend to leave a trace, in a rough gradient, particularly in areas with a high organic content. (Connolly, 2/5/02, at 394-95).

If there are multiple sources of PCBs to a river, the concentrations of PCBs will "spike up" as new sources enter the river, and concentrations will drop down or diminish with distance downstream. (Connolly, 2/5/02 at 395-96). This up and down PCB concentration pattern typical of multiple PCB sources is exemplified by the NPL Site portion of the Kalamazoo River, downstream of the KRSG members. (Connolly 2/5/02 at 434-36).

Dr. Connolly's theory that concentrations of PCBs will "spike up" as new sources enter the river is not contested. Mr. McLaughlin made the same point using Exhibit 2111-N which purports to show increases in PCBs downstream from known PCB sources. (McLaughlin 2/4/02 at 85-92).

*747 Dr. Connolly testified that the highest levels of organic material in the River are present in the stretch of River from Battle Creek to Morrow Lake Dam. The organic-carbon levels in the sediments upstream of Morrow Lake range from 9 to 20%, which are "extremely high levels." (Exh. 6566; Connolly, 2/5/02 at 412). Dr. Connolly testified that there are two reasons why the organic-carbon levels are so high in this area. First, this section of the River received fairly high organic loading from such sources as the Battle Creek Waste Water Treatment Plant. Second, the high number of meanders indicates an increased number of depositional environments and isolated quiescent areas where fine organic particles may settle out. (Connolly, 2/5/02 at 411-12). Dr. Brown agrees that as a general rule, meanders will pick up and trap more PCBs than straight stretches of a river. (Brown, 2/5/02, at 345). Given its high organic content, this segment of the River from Battle Creek to Morrow Lake Dam would be relatively efficient in capturing PCBs. (Connolly, 2/5/02 at 416).

Downstream of Morrow Lake, within the NPL Site, organic-carbon levels are generally lower due to sandier sediments in the channels and a faster flow. The Kalamazoo River drops at a rate of two feet per mile in the section from Battle Creek to Morrow Lake, while the stretch within the NPL Site drops at a rate of nine feet per mile. (Brown, 2/5/02, at 290). There are, however, relatively higher organic carbon levels within the NPL Site in the impoundment areas at Plainwell, Otsego, and Trowbridge. (Connolly, 2/5/02 at 408-09; Exh. 6566).

Through this litigation this Court has become very familiar with the tendency of PCBs to accumulate in higher concentration in areas where there is a high organic carbon content. Because of this tendency, dry weight PCB levels tend to be higher in areas of high organic carbon content. In the Phase IV trial Dr. Connolly introduced the Court to the concept of carbon normalization, a method used to take out the total organic carbon variable.

Dr. Connolly testified that due to the high organic content and the slower flow of the River between Battle Creek and Morrow Lake, if the Eaton Battle Creek facility were a source of PCBs to the River in the 1950s, 1960s and 1970s, he would expect to see detectible PCB concentrations in the 13-mile stretch of River between the Eaton Battle Creek facility and Morrow Lake. He also would expect to see a gradient with the highest concentrations of PCBs in the vicinity of Eaton and declining concentrations as one moved downstream throughout this 13-mile stretch of River. (Connolly, 2/5/02 at 417). However, this is not what the evidence shows.

The 1976 Wuycheck study found no Aroclor 1254 or any other Aroclor in sediment between the Eaton Battle Creek facility and the next 13-mile stretch of the River extending to Morrow Lake. (Connolly, 2/5/02 at 414-16; 5/9/01 Opinion at 20). The 1976 Wuycheck suspended solids data similarly reveals no measurable or otherwise significant source of Aroclor 1254 upstream of Morrow Lake. (Connolly, 2/5/02 at 414-16). Dr. Connolly has charted the Aroclor 1254 concentrations on a dry weight basis from the sediment samples and settleable solids collected by the MDNR in the 1976 Wuycheck study. (Connolly, 2/5/02 at 416; Exh. 6567; Exh. 6572).

Dr. Connolly also charted the Aroclor 1254 data from sediment cores taken by BBL from 1993 through 2000 on an organic-carbon normalized basis from Battle Creek through the NPL Site to Lake Allegan. (Connolly, 2/5/02, at 418; Exh. 6565). This exhibit also shows no gradient of PCB concentrations originating from the Eaton ***748** Battle Creek facility downstream. (Connolly, 2/5/02 at 420).

Based upon the detections and concentrations of Aroclor 1254 in the River, Dr. Connolly testified that the data appeared to indicate a multiple source pattern for 1254. (Connolly, 2/5/02 at 421). The data was not consistent with a single or primary source originating from Eaton Battle Creek.

Plaintiff has argued that in a portion of the River known to contain PCBs in sediment, the fact that some samples are non-detect for PCBs is not significant. In support of this statement Plaintiff notes that testing downstream of KRSG member paper mills has also yielded many non-detects. Thus, according to Plaintiff, the non-detects in the 1988 MDNR sampling downstream of Eaton and upstream of Morrow Lake are meaningless.

The Court agrees that a single non-detect is not significant in and of itself. The difference is that the non-detects downstream of the KRSG members are peppered among numerous and consistently high detections of PCBs. The samples taken downstream of the Eaton facility, on the other hand, are predominantly non-detects, and the few PCB detections are relatively low in concentration. Accordingly, the non-detects in the stretch of river between Eaton and Morrow Lake are not insignificant.

Plaintiff places great significance on the presence of Aroclor 1254 in Morrow Lake. To the extent Morrow Lake may be a source of Aroclor 1254 to the NPL Site, Dr. Connolly testified that the evidence strongly supports the conclusion that the PCBs found in Morrow Lake originated from a source close to Morrow Lake as opposed to a source 15 miles upstream of Morrow Lake. (Connolly, 2/5/02 at 438). This conclusion is supported by the findings in the River upstream from Morrow Lake as well as samples taken within Morrow Lake. Samples from the most upstream portion of Morrow Lake had low PCB levels. Three of the four stations along the most upstream transect had PCB levels low enough to be ascribable to background. (Connolly, 2/5/02, at 438). The entrance of Morrow Lake is a sediment depositional area. Accordingly, if the PCBs in Morrow Lake originated from an upstream source, one would expect to see elevated PCB levels in these first transect samples. As one proceeds downstream into the lake, the PCB levels increase and begin to spread out as indicated by the detection of PCBs at multiples stations across the lake transects. The highest levels are found at the most downstream end of the lake. According to Dr. Connolly this pattern within Morrow Lake suggests that the principal source of the PCBs to Morrow Lake had to be in the vicinity of Morrow Lake and not upstream. (Connolly, 2/5/02 at 438).

Results from a 1971 fish study conducted by John Hesse for the Michigan Water Resources Commission also tend to support Dr. Connolly's conclusion that there is a PCB source close to Morrow Lake. (Exh.2096 & 6411). In the 1971 sampling program fish were taken from a reach extending from just above the Battle Creek Waste Water Treatment Plant downstream to Augusta, and from a reach extending from Augusta downstream

to Morrow Lake Dam. The average PCB concentrations in the fish collected in the region between Augusta and Morrow Lake Dam had an average PCB concentration more than five times higher than the fish collected in the upstream region between the Battle Creek Waste Water Treatment Plant and Augusta. (Connolly, 2/5/02, at 439). According to Dr. Connolly, this study shows that while there may have been some PCBs in the region upstream of Augusta, there were certainly higher PCB levels in the region downstream of ***749** Augusta. (Connolly, 2/5/02, at 440). Dr. Connolly testified that it was possible, but highly unlikely, that fish that had been contaminated from an upstream high PCB source would have been found in a downstream region. He has never seen a case where the gradient in the fish is opposite to the gradient in the sediment. (Connolly, 2/5/02, at 440-41).

Dr. Connolly identified two industries that he could not rule out as potential sources of PCBs to Morrow Lake: Benteler Industries, Inc. and Consumers Power B.E. Morrow Power Plant. (Connolly 2/5/02 at 439).

There is a ditch leading from Benteler Industries to a point one-half mile west of the upstream end of Morrow Lake. Following Benteler's release from this litigation in 1997, BBL took additional sediment samples in the ditch leading from Benteler to the upstream end of Morrow Lake. BBL found PCBs (primarily 1254 with some Aroclor 1260) in every sample taken in the ditch to within 50 feet of the entrance to Morrow Lake. (Exh. 6515; Brown, 2/5/02 at 337). Dr. Brown submitted these test results to the MDEQ because he believed that the test results were significant enough to warrant the MDEQ's further investigation of Benteler as an additional PRP at the Site. (Exh. 6515; Brown, 2/5/02 at 338-39). At trial Dr. Brown testified that Mr. McLaughlin's data had caused him to rethink his position with respect to Benteler and its role in the contamination of Morrow Lake. (Brown, 2/5/02, at 372). Dr. Brown has not, however, written to the EPA or to the MDEQ to withdraw his earlier letter which implied that Benteler was a significant source of PCBs. (Brown, 2/5/02, at 372). His testimony that he no longer considers Benteler a significant source is not credible.

Consumers Power Company historically discharged its effluent through an outfall at the downstream end of Morrow Lake near Morrow Lake Dam. (Connolly, 2/5/02 at 436-37). Although the effluent was never tested for PCBs, an oil skimmer had been installed to treat oily wastewater coming from various "metal cleaning operations" within the power plant. (Exh. 6500-6514) Consumers Power had PCB containing transformers and capacitors. Although Dr. Connolly was aware of no known leaks from those transformers and capacitors or any actual measurements of PCB discharges from either of these facilities to Morrow Lake, Dr. Connolly would not rule out Consumers Power or Benteler as a potential source of PCBs to Morrow Lake. (Connolly, 2/5/02, at 436, 513-14).

Mr. von Gunten, the current MDEQ project manager of the NPL Site, has identified air deposition as another potential source of PCBs in Morrow Lake. (von Gunten dep. at 138). Heavier Aroclors move by wind more selectively than other Aroclors. (von Gunten dep. at 194). The prevailing winds around the area move from west to east, which is upstream. (von Gunten dep. at 195-96). Thus, he suggested that Plaintiff's members' landfills themselves may be potential sources of windborne PCBs to Morrow Lake. (von Gunten dep. at 215).

Dr. Brown has admitted that there are industries on the River and in the watershed upstream of Battle Creek that he expects would have used capacitor and transformers with PCB Aroclors 1254 and 1260, and he expects that some of them would have leaked PCBs to the Kalamazoo River. (Brown, 2/5/02, at 334- 35). The water treatment plants along the River would also have discharged PCBs to the River, at one time or another. (Brown, 2/5/02, at 335). Dr. Brown also agrees that atmospheric pollution, PCBs borne in the atmosphere, would to some extent reside in Morrow Lake. (Brown, 2/5/02, at 340).

***750** Plaintiff disagrees with Dr. Connolly's theory regarding a local source of PCBs to Morrow Lake. Plaintiff contends the theory cuts against the Court's finding regarding the significant transport of PCBs in the Kalamazoo River system. Plaintiff also notes that the first transect in Morrow Lake shows PCB detections up to 3,200 ppb, a significant amount anywhere at the Site, including within the NPL Site. (Exh. 2111-A). Plaintiff has presented evidence that there are a number of transects in the NPL Site where low detections are side by side with higher detections. Even further downstream in Morrow Lake, low PCB levels are found next to higher

levels. (Exh. 2111-A). Plaintiff contends that this phenomenon is simply representative of the natural scatter that has occurred at this Site. (Exh. 2111-BB; Brown, 2/5/02, at 305). Thus, according to Plaintiff, contrary to Dr. Connolly's theory, the PCB detections in Morrow Lake are consistent with a contribution from upstream sources, and specifically a PCB contribution from Eaton's Battle Creek facility.

This Court would not feel confident about making any findings regarding PCB sources based on the evidence from Morrow Lake alone. However, given the lack of evidence of a PCB gradient in the River upstream of Morrow Lake in sediments or in fish, the Court is convinced that there must be some other local sources of PCBs that would account for the significant PCBs in Morrow Lake. The Court finds no basis for finding a significant PCB contribution to Morrow Lake from Eaton's Battle Creek facility.

Dr. Connolly admitted that some amount of PCBs from Eaton may have entered the Eaton/Clark ditch, may have traveled to Morrow Lake, and then may have traveled over the Morrow Lake Dam to the NPL Site. However, he opined that Eaton's Battle Creek facility did not release any measurable quantities of PCBs to Morrow Lake or the NPL Site. (Connolly, 2/5/02 at 391, 455).

In an attempt to quantify the highest release that one could argue may have occurred from Eaton, Dr. Connolly performed a calculation using the results from the 1972 MWRC test showing .12 ppb and .24 ppb PCBs in the effluent that was discharged to the Clark/Eaton ditch. Assuming the PCBs came from Eaton as opposed to Clark, and using the higher .24 ppb value, and a flow of one million gallons per day, Dr. Connolly calculated a maximum discharge of approximately .7 pounds of PCBs discharged to the Kalamazoo River in one year, or a total of 20 pounds over a 30 year period. (Connolly, 2/5/02 at 445-59).

As this Court noted in its opinion in Phase II of this case, a single measurement of a discharge, taken at a single location and point in time, should not be the basis for extrapolation to a multi-year time period, at least not without sufficient corroborative evidence that the single point was representative. (6/3/00 Opinion at 19). Moreover, Plaintiff correctly notes that the 1972 test was not necessarily representative of Eaton's highest releases because it was done after Eaton reduced its oil discharges by nearly a ton of oil per day. (Exh.2018). The Court accordingly places little value on Dr. Connolly's quantification.

Rejection of Dr. Connolly's quantification, however, does not require this Court to reject his conclusion that the quantity of PCBs discharged by Eaton to the Site is of a de micromis nature. This conclusion is supported by this Court's previous finding that the only PCB containing oils used by Eaton were in closed or nominally closed systems, and the lack of a gradient in the River that would indicate a significant contribution of PCBs.

***751** Based on the comparative significance of the PCB data in the ditch and River at Eaton's Battle Creek facility, and consistent with the Court's finding that the PCBs throughout the Kalamazoo River system have migrated great distances, Plaintiff would like this Court to find that Eaton discharged significant amounts of PCBs to the River, and that Eaton's PCB discharges caused most of the PCB contamination in Morrow Lake as well as a significant portion of the PCB Aroclor 1254 and 1260 contamination downstream of Morrow Lake.

Plaintiff has provided no persuasive, credible, or reliable new evidence which would undermine this Court's previous determination that any releases of PCBs from Eaton's Battle Creek facility were minimal and in the form of di-electric and hydraulic fluids only. In fact, in light of the new evidence that Clark discharged industrial effluent to the Eaton/Clark ditch prior to 1978, the likelihood that the PCBs in the Eaton/Clark ditch are attributable to Eaton rather than to Clark is less now than it was at the conclusion of the liability portion of the trial.

Based upon all the evidence, and particularly the lack of evidence of a PCB source gradient upstream of Morrow Lake, the Court agrees with Dr. Connolly's opinion that there were other sources of PCBs to Morrow Lake. The Court also agrees with his opinion that Eaton discharged only a small volume of PCBs to the Eaton/Clark ditch, that due to the high organic content of the River, its slow speed and its meanderings, only a fraction of this volume would have reached Morrow Lake, and that only a fraction of that volume would have gone over the dam to the NPL Site. (Connolly, 2/5/02, at 455). The total amount of PCBs contributed by Eaton's Battle Creek facility to the NPL Site would not be measurable above normal background levels

of PCBs.

The evidence from the River upstream of the NPL Site supports the conclusion that Eaton's Battle Creek facility was not a significant source of PCBs to the NPL Site.

IV.

At the conclusion of the Phase III liability trial, this Court found that Eaton was liable for the release of PCBs to the Kalamazoo River from its Kalamazoo facility. (5/9/01 Opinion at 53). This Court also found that it was unlikely that the PCBs found at Eaton's Kalamazoo facility were part of the open process systems. (5/9/01 Opinion at 45).

At the Phase IV allocation trial Plaintiff presented evidence of MDEQ sampling at the Eaton Kalamazoo facility in 2001. The MDEQ took a sample from a "product" dispenser that tested positive for the presence of PCBs at 3.2 ppb Aroclor 1248 and 2.1 ppb Aroclor 1260. (Exh.2097-A). Mr. McLaughlin testified that this data is significant because it shows the presence of PCBs in a process oil 30 years after PCBs were banned from use in such applications. (McLaughlin, 2/4/02, at 67).

Mr. Barrick testified that Mr. McLaughlin overstated the significance of the 2001 finding from the product dispenser. According to Mr. Barrick, the PCB concentration levels were so low as to not even be indicative of residual concentration. (Barrick, 2/6/02, at 549). He also testified that it cannot be inferred from this one trace level finding of PCBs that pure PCBs or even oils with high concentrations of PCBs were used in product dispensers. According to Mr. Barrick, this single detection supports the conclusion that the detection is related to isolated incidental contamination. (Barrick, 2/6/02 at 548-49).

At the Phase IV liability trial Plaintiff also presented, for the first time, evidence that in 1983 Environmental Data, Inc. tested ***752** five samples from five separate presser pits at the Eaton Kalamazoo facility for PCBs. One pit was non-detect. The four remaining pits had total PCB levels of 12,000 ppb, 57,000 ppb, 94,000 ppb and 880,000 ppb. (Exh. 2114). The Aroclors found included 1242, 1248, 1254, and 1260. Plaintiff contends this evidence confirms Eaton's use of PCB-containing process oils.

Contrary to Plaintiff's assertions, neither the evidence from the MDEQ nor the evidence from the presser pits requires this Court to conclude that PCBs were widely used in the Kalamazoo facility's process oils. The highest PCB level found by the MDEQ is not significantly higher than the levels found in the wood block flooring, which ranged from non-detect to 743 ppm. (5/9/01 Opinion at 39). Moreover, the new evidence does not address this Court's previous findings that the plant had no particular need for PCB-containing oils, that there was an absence of any evidence of PCBs in the chip storage area where process oils would have drained off the metal chips into the soils, and that there was an absence of PCBs in soil samples taken from the vicinity of the outdoor quench oil storage tanks. (5/9/01 Opinion at 43-44). Evidence of PCBs in the plant is not significant if those PCBs did not find their way to the River.

The focus of the Court's analysis must accordingly turn to the Zantman Drain and the River.

Mr. McLaughlin offered evidence of additional testing he conducted in August 2001 in the Zantman Drain between Eaton's Kalamazoo facility and the Kalamazoo River, as well as in the Kalamazoo River itself at the discharge point of the Drain. Drain samples from K-5A and K-5B were non-detect for PCBs. Drain sediment samples K-6 and K-8 were positive for Aroclor 1260 at 50 ppb and 320 ppb. Sample K-9, taken near the outfall of the Zantman Drain to the River, showed PCB Aroclors 1242, 1254 and 1260 at 140 ppb, 85 ppb and 120 ppb, respectively. (Exh. 2144-C; Exh.2091F; McLaughlin, 2/4/02, at 54). Sample K-7, which was taken fifty feet downstream from the Zantman Drain outfall showed PCB Aroclor 1254 at 42 ppb. (Exh. 2144-C; McLaughlin, 2/4/02, at 54, 56).

Mr. McLaughlin testified that the Aroclor 1260 detections of 120 ppb in sample K-9 is in the top 2% of all 1260 detections throughout the Site. (McLaughlin, 2/4/02, at 57). Mr. McLaughlin testified that because there is a jump in average total PCB concentrations between river transects 24 and 25, the Zantman Drain leading from the Eaton Kalamazoo facility must be a significant source of PCBs to the River. (McLaughlin, 2/4/02 at 85-92; Exh. 2111-N). According to Mr. McLaughlin, this data supports a significant PCB contribution from Eaton's Kalamazoo facility because this facility was

the only known PCB contributor to the Zantman Drain. (McLaughlin, 2/4/02, at 92). Although there was some mention of other companies located in the general vicinity of the Eaton Kalamazoo facility, Mr. Barrick admitted that he had no evidence that Checker Motors, Plate Craft, Mall City Containers, or any other company discharged PCBs to Zantman Drain. (Barrick, 2/6/02, at 636-38).

The Zantman Drain has historically been a stagnant, slow moving, organically rich ditch. This was so even after the improvement of the Zantman Drain in 1973. (Barrick, 2/6/02 at 580-82, 593-95). The Drain would have been an excellent environment for capturing PCBs that came down the Drain. If an assortment of PCB Aroclors came down the Drain, that assortment should be reflected in the Drain sediments. What this Court finds to be most significant about Mr. McLaughlin's ***753** data is that the only PCB Aroclor found in the ditch was Aroclor 1260. Because 1260 was the only PCB found in the ditch, Exhibit 2111-N is not as significant as Mr. McLaughlin would make it. Mr. McLaughlin fails to note that Exhibit 2111-N shows data for total PCBs, including Aroclors 1242, 1248, 1254 and 1260. There is no evidence to support the inference that the Zantman Drain is a significant source of Aroclors 1242, 1248, or 1254 to the River because none of these Aroclors are found in the slow-moving drain sediments. There is some evidence that the Drain may be a slight source of Aroclor 1260, but an increase in average Aroclor 1260 concentrations between transects 24 and 25 is not shown in Exhibit 2111-N. Moreover, Dr. Brown testified that he could not distinguish the Zantman Drain as a point source of PCB contamination to the River. (Brown, 2/5/02, at 372- 73).

The Court concludes that the Eaton's Kalamazoo facility was not a significant source of PCBs to the Kalamazoo River.

V.

[3][4] In resolving Plaintiff's contribution claim against Eaton, the Court may allocate response costs among the liable parties using such equitable factors as the Court determines are appropriate. 42 U.S.C. § 9613(f). Thus, under § 113(f) the Court may consider any factor it deems in the interest of justice in allocating contribution recovery. A nonexhaustive list of such factors, commonly referred to as the "Gore Factors," includes:

> (1) the ability of the parties to demonstrate that their contribution to a discharge, release or disposal of a hazardous waste can be distinguished; (2) the amount of the hazardous waste involved; (3) the degree of toxicity of the hazardous waste involved; (4) the degree of involvement by the parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste; (5) the degree of care exercised by the parties with respect to the hazardous waste concerned, taking into account the characteristics of such hazardous waste; and (6) the degree of cooperation by the parties with the Federal, State or local officials to prevent any harm to the public health or environment.

Centerior Service Co. v. Acme Scrap Iron & Metal Corp., 153 F.3d 344, 354 (6th Cir.1998) (citing *United States v. Colorado & Eastern Railroad,* 50 F.3d 1530, 1536 n. 5 (10th Cir.1995)). *See also, United States v. R.W. Meyer, Inc.*, 932 F.2d 568, 571 (6th Cir.1991). The Gore Factors enable the Court to take into account more varying circumstances than does the common law contribution. *R.W. Meyer,* 932 F.2d at 573.

[5] Because one of the primary goals of CERCLA is to encourage timely cleanup of hazardous waste sites, and because CERCLA seeks to place the cost of that response on those responsible for creating or maintaining the hazardous condition, the most important factors to consider in the allocation phase are harm to the environment and care on the part of the parties. *Control Data Corp. v. S.C.S.C. Corp.*, 53 F.3d 930, 935-36 (8th Cir.1995). Harm to the environment is a product of volume and toxicity. The Court finds that the Gore Factors with the most potential relevance in this allocation phase are volume of discharge, toxicity, and cooperation with governmental authorities.

[6] Plaintiff contends that based on the three Gore Factors of volume of discharge, toxicity, and cooperation with governmental authorities, Eaton should be allocated 40% of the River investigation and remediation costs Plaintiff has incurred and will incur in the future at the Site.

Plaintiff contends that the evidence of Eaton's historical dealings with the MWRC, MDNR and MDEQ, and the characteristics ***754** of the wastes discharged by Eaton (industrial oils), show that Eaton did not exercise the degree of care it should have in dealing historically with its oily wastes.

This Court does not find that the equities with regard to cooperation with governmental authorities works in favor of either KRSG or Eaton. There is ample evidence that historically neither Plaintiff nor Defendant was careful regarding the release of wastes into the River. There is no evidence, however, that either the MDEQ or the EPA considers Eaton to be a PRP at this Site, and there is no evidence that Eaton has failed to cooperate with governmental authorities with respect to the cleanup of PCBs in the Kalamazoo River. The Court will accordingly give no weight to the cooperation factor.

On the issue of toxicity, Plaintiff contends that PCBs in fish are driving the sediment clean-up levels at the Site because fish ingest PCBs from sediments. Plaintiff also contends that fish take up three to four times more Aroclor 1254 than the Aroclor 1242. Plaintiff accordingly contends that because Aroclor 1254 is more toxic than Aroclor 1242, a smaller contribution of Aroclor 1254 should be weighted more heavily than an equal contribution of Aroclor 1242.

This same argument was made and rejected by this Court in Phase II of this case. This Court determined in Phase II that the regulatory agencies are setting PCB clean-up levels on a total PCB basis and not an Aroclor-specific basis due to the presence of toxic congeners in all Aroclors. (6/3/00, Opinion at 43-44). On appeal the Sixth Circuit found no error in this Court's following the approach of the MDEQ and treating all PCBs on an equal basis. *KRSG v. Rockwell,* 274 F.3d at 1051. New testimony from Brian von Gunten, MDEQ project manager of the Kalamazoo River NPL Site, substantiates this Court's decision to treat all Aroclors the same. Mr. von Gunten testified that the MDEQ is only concerned with total PCBs rather than Aroclor-specific analyses because it regulates on the total PCB number. In selecting a remedy for the Site, the MDEQ is not concerned with specific Aroclors. Mr. von Gunten was not aware of any occasion where they would have specific clean-up levels for different Aroclors. (von Gunten dep. at 23-24).

Because it does not appear that cooperation or toxicity are relevant to the issue of equitable allocation in this case, the most relevant Gore Factor with regard to this allocation is the volume of PCBs released to the Site by each party.

On the issue of volume, Plaintiff requests this Court to find that Eaton is responsible for most of the PCB contamination downstream of its Battle Creek facility to Morrow Lake Dam, and a significant portion of the PCB Aroclor 1254 and 1260 contamination downstream of Morrow Lake Dam.

For purposes of the RI/FS, BBL has estimated that approximately 53,266 kilograms, or 117,452 pounds, of PCBs exist in the Kalamazoo River from the inlet of Morrow Lake downstream to Lake Allegan Dam, including in the now- exposed sediments in the impoundments at the former Plainwell, Trowbridge and Otsego Dams. (Exh. 2111-J; Brown, 2/5/02, at 285-91). This figure does not include the mass of PCBs in the OUs, which continue to contribute PCBs to the River. (Cornelius dep., 10/12/99, at 27-28). BBL has estimated that 1,905 kilograms (4,200 pounds) of PCBs are in Morrow Lake. (Brown, 2/5/02, at 282).

Although the MDEQ previously had estimated the total PCB mass in the Kalamazoo River NPL Site to be 350,000 pounds, the MDEQ's consultant, John Kern, performed an independent estimate ***755** of total PCB mass, and his estimates are within 10% of BBL's estimates. (von Gunten Dep. at 169-70, 217).

Ninety percent of the PCB mass in sediment in Morrow Lake is comprised of PCB Aroclor 1254. (Brown, 2/5/02, at 282, 288; Exh. 2111-J; Exh. 2111-K). Between Morrow Lake Dam and Lake Allegan Dam, on average approximately 25% of the PCB mass in sediment in the River and the former impoundments is Aroclor 1254. (Brown, 8/10/98, at 25-26; Brown, 11/9/99, at 34; Exh. 2111-M).

The PCB composition of Plaintiff's discharges to the River is generally discernible by looking at the PCB composition in the residual wastes Plaintiff's members contributed to the OUs. (Brown, 2/5/02, at 295-99, 368; Exh. 2111-M). Mr. von Gunten noted that a leak of di-electric fluid could have gone directly to the River, and not be reflected in paper sludges that went to the landfill. (von Gunten dep. at 196-98). However, because BBL's PCB sampling at the OUs has included many samples taken over a broad horizon, the MDEQ agrees that the sampling gives a good indication of what the KRSG's members' historical PCB discharges would

have been. (von Gunten dep. at 109-10, 223). The percentage of Aroclors 1254 and 1260 in the OUs range from 2% to 4.7% of the total PCBs, with an average of 2 to 3%. (Brown, 2/5/02 at 295, 368-69; Exh. 2111-M).

The Court concludes that it is more likely than not that 2 to 5% is representative of the KRSG's discharges of Aroclors 1254 and 1260 to the River. Thus, most of the Aroclors 1254 and 1260 in the Kalamazoo River and former impoundments between Morrow Lake and Lake Allegan had to have come from sources other than Plaintiff. The Court agrees with Plaintiff that because Aroclors 1254 and 1260 are not associated with paper wastes and because they are not found in the OUs in any significant ratio, much of the PCB Aroclors 1254 and 1260 now present in sediments between Morrow Lake Dam and Lake Allegan Dam is attributable to sources other than Plaintiff's members' papermaking operations. (Brown, 2/5/02, at 295-99, 368).

Dr. Brown compared the PCB mixtures, levels and chromatograms from Mr. McLaughlin's samples at and around Eaton's Battle Creek facility with the same type of data from BBL's Morrow Lake samples, and concluded based on that comparison as well as the fact of significant PCB transport in the Kalamazoo River system that Eaton was responsible for 80 to 85% of the PCBs in Morrow Lake and for a significant portion of the PCB contamination downstream. (Dr. Brown, 2/5/02 at 282-92,295-99, 368; Exh. 2111-M).

Plaintiff relied on Mr. McLaughlin to quantify the mass of PCBs that Eaton released to the River. Mr, McLaughlin testified that as an environmental engineer, from time to time he estimates the volumes that have been released for a variety of purposes into different media. (McLaughlin, 2/4/02, at 125). Mr. McLaughlin admitted that he was unable to do his normal computation using the flow of the waste water and the concentration of the contaminant of interest because the data was unavailable. (McLaughlin, 2/4/02, at 125). Instead, he estimated on an Aroclor by Aroclor basis how much mass must have come from where, and then back-checked that number against the few facts he did know about Eaton's waste water flows and concentrations. (McLaughlin, 2/4/02, at 126). Mr. McLaughlin allocated the mass of PCBs in Morrow Lake predominantly to Eaton. (McLaughlin, 2/4/02, at 127). Mr. McLaughlin gave his opinion that based on the differences between the Aroclor types discharged by Plaintiff and Eaton, and in ***756** order to account for and to allocate an orphan's share for other less significant PCB sources to the Site, Eaton should be held responsible for 18 to 20% of the PCB mass in the River. (McLaughlin at 125-34; Exh. 2146). However, based upon the greater biochemical impact of the Eaton-type PCBs at the Site, Plaintiff contends that Eaton's allocation should be increased to 40%.

It appears to this Court that Mr. McLaughlin's estimate lacks an articulated scientific basis. He has not indicated that he has any special expertise in estimating masses of PCBs in the river environment. Moreover, he gave no reasonable basis for ascribing 90% of the responsibility for the PCBs in Morrow Lake to Eaton, or for ascribing 80% of the Aroclor 1254 and 90% of the Aroclor 1260 in the NPL Site to Eaton. These estimates lack evidentiary support. Because the PCBs in the ditches do not mirror the mix of Aroclors found in the Eaton facilities, it is not reasonable to assert that they all came from Eaton. Moreover, neither Dr. Brown nor Mr. McLaughlin did any testing upstream of Eaton. The lack of evidence from upstream prevents them from showing, by a preponderance of the evidence, that the PCBs in Morrow Lake and at the NPL Site originated at Eaton's Battle Creek Site as opposed to upstream sources. In addition, if Plaintiff were correct in its assertion that Eaton is responsible for the majority of the 1254 in the River, there should be a gradient going down in concentration from Eaton's facilities downstream. The data from the sediment cores taken from the River shows the opposite of a gradient.

There is also a lack of evidence to support Plaintiff's theory that Morrow Lake was a major contributor of 1254 to the River. Dr. Connolly estimated that 78% of the particles that entered Morrow Lake between 1950 and 1990, including those that contained PCBs, passed over Morrow Lake Dam, and only 22% remain in Morrow Lake sediments. He further testified that only 26% of the PCBs that passed over Morrow Lake Dam during that same period, whether attached to particles/sediments or in a dissolved phase, are currently somewhere in the NPL Site, and 65% of those PCBs traveled more than 45 miles, through six impoundments and over six dams, past the Lake Allegan Dam. (Connolly, 2/6/02, at 516-23; Exh. 2111-K).

Using Dr. Connolly's estimates on the fate and transport of PCBs through Morrow Lake and the NPL Site and BBL's estimate of PCB mass currently in Morrow Lake, Dr. Brown estimated that approximately 15,000 pounds of PCBs passed over Morrow Lake Dam between 1950 and 1990 in connection with particle transport. (Brown, 2/5/02, at 293-294). Using Dr. Connolly's estimate that 26% of the PCBs that passed over Morrow Lake Dam are currently residing in the NPL site, the Court is left with an estimate of 3,870 pounds of PCBs from Morrow Lake remaining in the NPL Site. However, Dr. Brown testified that he has actually measured the amount of solids entering and leaving Morrow Lake, and his studies show that the lake retains about 40 % of the solids that come into it. Accordingly, Dr. Brown estimates that only 6000 pounds of PCBs went over the Morrow Lake Dam and into the NPL Site. (Brown, 2/5/02, at 294). Applying Dr. Connolly's unchallenged estimate that 26% of the PCBs that went over the Morrow Lake Dam remain in the Site, the Court is left with a figure of 1560 pounds of PCBs in the NPL Site originating from Morrow Lake. In other words, of the 117,452 pounds of PCBs in the NPL Site, only 1.3% of the PCBs in the NPL Site would have come from Morrow Lake.

*757 Based upon these calculations the Court concludes that Morrow Lake was not a significant source of PCBs to the Site. This conclusion is bolstered by Dr. Connolly's charting of the 1254 data on an organic-carbon ("OC") normalized basis in the River from Battle Creek through the NPL Site to Lake Allegan. (Exh. 6565). When the data for 1254 is examined on an OC normalized basis for the area extending from the upstream portion of Morrow Lake through Lake Allegan, the levels of Aroclor 1254 found in Morrow Lake are, in fact, lower than the Aroclor 1254 levels found downstream in the NPL Site. The 1254 concentrations in BBL's sediment cores range from non-detect to 50 ppm OC upstream of Morrow Lake Dam. Concentrations of 1254 rise above 50 ppm OC only in the NPL Site. This reverse gradient pattern is the opposite of the gradient found in the vicinity of PCB sources, and indicates that Morrow Lake is neither a primary source, nor even a significant source, of Aroclor 1254 to the NPL Site. (Connolly, 2/5/02 at 420, 434; Exh. 6574).

Exhibit 6565 reflects numerous cores with concentrations above 50 ppm OC downstream of the Willow Boulevard/A-Site OU, the King Highway Landfill OU, King Mill, Fort James Paper, the 12th Street Landfill OU, and in the former Otsego impoundment, the former Trowbridge impoundment, Lake Allegan, and Portage Creek downstream of the Allied Paper Mill. The exhibit tends to indicate local sources of 1254 within the NPL Site rather than the contribution of 1254 from sources upstream of the NPL Site. (Exh. 6565).

As indicated by the carbon normalized data, the most significant source of Aroclor 1254 to the NPL Site appears to enter the River at mile 7, in the vicinity of the Georgia-Pacific's Willow Boulevard and Allied's A-Site landfills. (Connolly, 5/2/02, at 434; Exh. 6574). Evidence indicating that the Willow Boulevard landfill is a significant source of Aroclor 1254 to the River is consistent with other evidence indicating that the Willow Boulevard landfill contained relatively high levels of Aroclor 1254, and that the Willow Boulevard landfill was created by placing paper sludge directly into the River. (von Gunten dep. at 61-65; Cornelius dep. 10/12/99, at 26-31). Because there was no berm or stormwater collection system at the Willow Boulevard landfill, PCB-contaminated residuals eroded directly into the River and are present in the River adjacent to the landfill. (Cornelius dep, 9/8/97, at 26- 29, 102-114; Cornelius dep., 10/12/99 at 26-31). The carbon normalized Aroclor 1254 in the vicinity of the Willow Boulevard/A-Site are higher than those found in Morrow Lake by almost a factor of 10. (Connolly, 2/5/02 at 435). Downstream of the Willow Boulevard/A-Site landfill, the carbon- normalized Aroclor 1254 concentrations show an up-and-down pattern indicating multiple sources of Aroclor 1254 to the Kalamazoo River within the NPL Site. (Connolly, 2/5/02 at 436). Mr. von Gunten testified that he is aware of a probable release of di-electric fluids at Allied Paper. He also testified that there is a possibility that any mill that was operating PCB transformers would have a release at one point or another. (von Gunten dep. at 220-21).

If Morrow Lake were a primary or significant source of PCBs to the NPL Site, one would expect to see Aroclor 1254 levels in Morrow Lake as the highest levels found, with concentrations getting progressively lower as you move down through the NPL Site. (Connolly, 2/5/02 at 420). Instead, Exhibit 6565 shows that the NPL Site has a multiple source pattern for Aroclor 1254 indicating various Aroclor 1254 sources within the NPL Site.

(Connolly, 2/5/02 at 420-21).

***758** Based upon this data, the Court concludes that Morrow Lake was not and is not a significant contributor of PCBs to the NPL Site. This conclusion is supported by the MDEQ's determination that Morrow Lake is not a significant enough issue to pursue as far as source identification. (von Gunten dep. at 139). The MDEQ has expressed no interest in remediating Morrow Lake or the areas upstream of Morrow Lake. (Brown, 2/5/02, at 353).

Because this Court finds that Eaton's Battle Creek facility was not a significant source of PCBs to Morrow Lake, and because this Court now concludes that Morrow Lake was not a significant source of PCBs to the NPL Site, Eaton Battle Creek's facility, which is upstream of Morrow Lake, is an even less significant contributor of PCBs to the NPL Site.

Based upon the findings contained in this opinion and in all of the previous opinions in this case, this Court concludes that the 1254 in the NPL Site came from multiple sources. Eaton was one of those many sources. So were Plaintiff's members.

Eaton was not a significant source of Aroclor 1254. Because Aroclor 1254 was widely associated with di-electric equipment which would have been found in most if not all of the industrial plants along the Kalamazoo River, and because that equipment has been known to leak, the Court assumes that every industry along the River, including Eaton, was a possible source of some small amount of Aroclor 1254 to the NPL Site. The Court finds insufficient evidence, however, for singling out Eaton as a significant source of the Aroclor 1254 in the NPL Site. The Court finds that Eaton's contribution of PCBs to the Site is very minimal.

VI.

[7][8] "In actions seeking contribution, ... the burden is placed on the plaintiff to establish the defendant's equitable share of response costs." *Centerior,* 153 F.3d at 348. While a party seeking contribution under § 113(f) may not recover under joint and several liability, it is clear that under a plain reading of the statute, the party is seeking to recover its "necessary costs of response" as referred to in § 107(a). *Centerior,* 153 F.3d at 350. Plaintiff KRSG is not required to show the precise causative contribution of Eaton to the Site. In this case, as in others of a historical nature, such a showing would be literally impossible. *R.W. Meyer,* 932 F.2d at 573-74; *see also Betkoski,* 99 F.3d at 524-26. Recoverable response costs include costs associated with monitoring and investigation. *Rockwell Int'l Corp. v. IU Int'l Corp.*, 702 F.Supp. 1384, 1387 (N.D.Ill.1988). The law does not require prior agency approval in order to recover response costs. *Id.* at 1386-88.

[9][10] "The district court has broad discretion to allocate the costs associated with the RI/FS." *KRSG v. Rockwell,* 274 F.3d at 1049 (citing *Franklin County Convention Facilities Auth. v. Am. Premier Underwriters, Inc.,* 240 F.3d 534, 549 (6th Cir.2001)). In an appropriate set of circumstances, a tortfeasor's fair share of the response costs may be zero. *KRSG v. Rockwell,* 274 F.3d 1043, 1047 (6th Cir.2001). *See also Acushnet Co. v. Mohasco Corp.,* 191 F.3d 69, 78 (1st Cir.1999). For example, in *PMC, Inc. v. Sherwin-Williams Co.,* 151 F.3d 610, 616 (7th Cir.1998), the Seventh Circuit held that even though PMC conceded that it had dumped toxic wastes at the site, it was not unreasonable for the district court to find that a zero allocation to PMC would be appropriate where PMC's spills were "too inconsequential to affect the cost of cleaning up significantly." 151 F.3d at 616. As the First Circuit observed, "there is nothing to suggest that Congress intended to impose ***759** far-reaching liability on every party who is responsible for only trace levels of waste." *Acushnet,* 191 F.3d at 78.

[11] The parties have stipulated that subject to one exception, noted below, through December 1, 2001, the work performed by Plaintiff, through BBL in the Study Area of the Kalamazoo River and Portage Creek (including investigation and some response activities), as well as the oversight work done by the MDEQ (formerly the MDNR) has been performed in substantial compliance with the NCP. (Stipulation Concerning Compliance with National Contingency Plan, Docket # 1043, at ¶ 1).

Through December, 2001, Plaintiff has incurred $26,180,589.41 in response costs associated with the River investigation and $3,046,275.68 in MDEQ oversight costs attributable to the River investigation. (Exh. 2108; Exh. 2109).

The parties have stipulated that the costs reflected in Exhibits 2108 and 2109 are necessary costs of

response incurred consistent with the NCP within the meaning of CERCLA Section 107(a), except that Eaton contends that a portion of the costs reflected in Trial Exhibit 2108 relating to certain work performed in 1999, 2000 and 2001 by BBL upstream of the Morrow Lake Dam are not necessary costs of response incurred consistent with the NCP within the meaning of CERCLA Section 107(a). Defendant challenges the reasonableness, necessity and NCP consistency of this work above Morrow Lake Dam. That work consists of certain sediment sampling, water column sampling, and biota sampling performed upstream of Morrow Lake Dam which MDEQ claims was not authorized. By this exception, Eaton is not challenging work performed by BBL upstream of Morrow Lake Dam that was specifically directed to be performed by the MDEQ. (Revised Joint Final Pretrial Order of 2/1/02, Exh. D(1), Stipulation Concerning Compliance with NCP at ¶ 3).

The MDEQ refused to consider and approve Plaintiff's work plans for its sampling in and above Morrow Lake on the basis that the work upstream of Morrow Lake Dam was outside of its current definition of the "Site." (Brown, 2/5/02, at 321; von Gunten dep. at 18-20, 150-52; Exh.2086-I at Section 1 Introduction through p. 1-4 and pp. 2-6 through 2-7).

Plaintiff disagrees with the MDEQ's refusal to approve its work above Morrow Lake Dam. The AOC clearly provides that Plaintiff has an obligation to "determine the full nature and extent of contamination that exists at or near the Site." (Exh. 8803, at 4). Moreover, in 1993 the MDEQ stated that "under the Administrative Order by Consent the RI must determine the nature and extent of the contamination which includes all upstream potential sources and the downstream migration of contaminants." (Exh.2098 at KB10603653). In response to public requests for clarification between the site listed on the NPL and the area to be investigated during the RI, the MDEQ advised:

> The purpose of the National Priorities List is merely to identify releases of hazardous substances that are priorities for further evaluation. The NPL does not describe releases in precise geographical terms. The precise geographical boundaries can only be determined after the information from the Remedial Investigation/Feasibility Study (RI/FS) becomes available. However, the MDNRs' working site boundaries are the perimeter of the extent of the contamination. Consequently, at this time all areas of known or potential contamination being investigated during the RI/FS are considered to be within the boundaries of the Site. During the ***760** RI/FS process, the release may be found to be larger or smaller than was originally known and the boundaries of the Site will change accordingly, as more is learned about the source and the migration of the contamination.

(Exh.2098 at KB10603653.)

MDEQ as early as 1991 also objected to BBL's reference to Morrow Lake as an example of "background" PCB contamination in the RI/FS documents, and stated in public documents that Morrow Lake is contaminated with PCBs. MDEQ directed BBL, on this issue, to "Delete 'Morrow Lake' where it appears throughout the text [of the RI/FS documents] as a background or reference sampling location. This lake is contaminated and therefore would be unacceptable for background or reference data." (Exh.2099 at KB10605090).

After the Phase III liability trial this Court found that the MDEQ "has required the PRPs, as part of the RI/FS, to extend their investigation upstream and downstream of the NPL site to include a ninety-five mile stretch of the Kalamazoo River from upstream of the Eaton Battle Creek facility to Lake Michigan." (Opinion, 5/9/01, at 4). This Court agrees with Plaintiff that the work BBL conducted upstream of the Morrow Lake Dam was reasonably necessary to Plaintiff's understanding of the River and the continuing sources of PCBs to the NPL Site, and was within the contemplation of the AOC. (Brown, 2/5/02, at 328). Accordingly, in performing the allocation in this case, the Court will consider all of the costs incurred by Plaintiff as reflected in Exhibits 2108, 2108-A, 2108-B, and 2109, and not only those costs approved by the MDEQ.

[12] Plaintiff requests a declaration that Eaton is liable for 40% of the $29,226,865.09 River investigation costs already incurred as well as 40% for future River investigation and remediation costs.

This Court concludes that the results of the investigation show that Eaton was not a significant source of the Aroclor 1254 to the NPL Site. Because small quantities of Aroclor 1254 were contributed by a large number of industries, and because the total amount of Aroclor 1254 would not have required remediation but for the large amount

of Aroclor 1242 routinely and systematically discharged into the River by Plaintiff's members, this Court concludes that Eaton should not be required to participate in the high cost of remediation of the NPL Site. The Court finds that the PCBs contributed by Eaton to the Site have not affected the necessity for the clean-up or the scope of the clean-up. The Court concludes that it would not be equitable to require Eaton to share in the remediation of the NPL Site. Accordingly, Eaton will not be held responsible for any of the remediation costs.

On the other hand, the Court finds that Eaton should be required to bear some of the costs of the investigation upstream of Morrow Lake. Based upon the discovery of PCBs at Eaton's Battle Creek facility, the presence of substantial PCBs in Morrow Lake, the presence of Aroclor 1254 in the NPL Site beyond what could be attributed to Plaintiff's members, and the lack of historical records from Eaton, there was sufficient evidence to indicate that Eaton might be a source of PCBs to the NPL Site. Both Plaintiff and Eaton had reason to be interested in ascertaining the amount of PCBs contributed by Eaton to the River and to the NPL Site. Plaintiff conducted that investigation. Eaton has reaped the benefits of that investigation. Accordingly, this Court concludes that it is equitable to require Eaton to bear 10% of the costs of investigating the River upstream of Morrow Lake and in the vicinity of the Eaton Battle Creek plant. The Court further concludes that with respect to the segments of the River downstream of Morrow ***761** Lake, the KRSG would have incurred all the costs for the River investigation, even without the issue of Eaton as a potential source. The Court accordingly will not require Eaton to bear any of the costs of investigation within the NPL Site.

In conclusion, the Court will hold Eaton responsible for 10% of the costs of investigating Segment 3 which covers the River upstream of Benteler (Exh. 2108- A) and part of Segment 5, which covers the River from Benteler downstream to the A-Site. (Exh. 2108-B). The total cost associated with Segment 3 is $115,818.09. (Exh. 2108-A). The total cost associated with Segment 5 from Benteler to A-Site is $506,797.70. The aggregate of Segment 3 and the relevant portion of segment 5 is $ 622,615.79. Ten percent of this amount is $62,261.58. The Court accordingly allocates $62,261.58 as the portion of the RI/FS costs that Eaton shall pay to Plaintiff plus prejudgment interest as provided by CERCLA Section 107(a), 42 U.S.C. § 9607(a).

An order and judgment consistent with this opinion will be entered.

ORDER

In accordance with the opinion entered this date,

IT IS HEREBY ORDERED that Plaintiff Kalamazoo River Study Group is awarded **DAMAGES** against Defendant Eaton Corporation in the amount of **$62,261.58.**

258 F.Supp.2d 736, 56 ERC 1078

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