JOINT POWERS AGREEMENT
ESTABLISHING A WATERSHED MANAGEMENT ORGANIZATION
FOR THE LOWER MISSISSIPPI RIVER WATERSHED

THE PARTIES TO THIS AGREEMENT ("**Agreement**") are Members of the Lower Mississippi River Watershed Management Organization and have land that drain surface water into the Mississippi River. This Agreement replaces the following documents in their entirety: (i) the original Joint Powers Agreement that established a Watershed Management Organization for the Lower Mississippi River which became effective in 1985; (ii) the Revised and Restated Joint Powers Agreement executed by Member Cities in 2003; (iii) the Amendment to the Revised and Restated Joint Powers Agreement which was executed in 2011; (iv) the Second Amendment to the Revised and Restated Joint Powers Agreement which was executed in 2013; and (iv) the Third Amendment to the Revised and Restated Joint Powers Agreement that was executed in 2014. This Agreement is made pursuant to the authority conferred upon the parties by Minn. Stat. §§ 471.59 and 103B.201 - 103B.252.

SECTION 1. NAME AND LEGAL BOUNDARY. The parties hereby establish the Lower Mississippi River Watershed Management Organization, hereinafter referred to as the "WMO." The "Revised Legal Boundary Map of the Lower Mississippi River Watershed Management Organization" is attached hereto as **Exhibit "A"**.

SECTION 2. PURPOSE. The purpose of this Agreement is to provide an organization to regulate the natural water storage and retention of the ~~Lower Mississippi watershed~~WMO to:

       A.   Protect, preserve, and use natural surface and ground water storage and retention systems;

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B.   Minimize public capital expenditures needed to correct flooding and water quality problems;

C.   Identify and plan for means to effectively protect and improve surface and ground water quality;

D.   Establish more uniform local policies and official controls for surface and ground water management;

E.   Prevent erosion of soil into surface water systems;

F.   Promote ground water recharge;

G.   Protect and enhance fish and wildlife habitat and water recreational facilities;

H.   Secure the other benefits associated with the proper management of surface and ground water; and

I.   Carry out all the duties and responsibilities in Minn. Stat. §§ 471.59 and 103B.201 - 103B.252.

SECTION 3. DEFINITIONS.

"Allowable Flow" means the rate and volume of flow, according the to design criteria set forth in this Agreementthe Watershed Management Plan, at which a Member community may discharge into the drainage system without financial obligation and as the rate and volume of surface water runoff from a tributary area under natural conditions, with a drainage system in place which has been designed and constructed according to the criteria stated herein, excluding diverted waters. Current topographic data that exists on the enactment date of this Agreement shall be used for the determination of the natural conditions and calculation of the allowable flow.

"Board" means the Bboard of Mmanagers of the WMO.

"Council" means the governing body of a governmental unit which is a Member of this WMO.

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Commented [BJ1]: Other helpful definitions to include in new JPA?

"Drainage Facilities" means any improvement constructed for the conveyance or storage of surface water.

"Drainage System" means the combination of drainage facilities required to safely control or convey runoff water from a major tributary drainage area(s) to a point of final discharge into a water body.

"Excessive Flow" means that rate and volume of flow, calculated according to the design criteria in the Watershed Management Plan, from a Member which is in excess of the allowable flow of that Member.

"Governmental Unit" means any city.

"Lower Mississippi River Watershed" or *"Watershed"* means the area contained within the "Legal Boundary Map of the Lower Mississippi River Water Management Organization" attached hereto as Exhibit "A".

"Manager" means the representative appointed to the Board by a Member.

Add Alternate Manager definition

"Member" means a governmental unit which enters into this Agreement.

"Natural Conditions" means the characteristics of the land on the date of enactment without regard to any urban development including structures, parking lots, or other artificial improvements.

"Rate of Flow" means the discharge of surface water runoff as a function of time which has been calculated according the design criteria identified in the Watershed Management Plan. The rate of flow shall apply to the design and construction of open channels and storm sewer conduits.

"Volume of Flow" means the total discharge of all surface water runoff which has been calculated according to the design criteria identified in the adopted Watershed Management Plan. The volume of runoff flow shall apply to the design and construction of detention facilities.

"Watershed Management Organization" or *"WMO"* means the organization created by this Agreement the full name of which is "Lower Mississippi River Watershed Management Organization." It shall be a public agency of its Members.

"Watershed Management Plan" or *"Watershed Plan"* means the current adopted 10 year Comprehensive Watershed Management Plan including any subsequent amendments created by and approved by the Board of Managers meeting the requirements of Minn. Stat. § 103B.231.

SECTION 4. MEMBERSHIP. The Membership of the WMO shall consist of the following governmental units, each entitled to the following eligible votes:

Member	Votes
City of Inver Grove Heights	3 votes
City of Lilydale	1 vote
City of Mendota Heights	2 votes
City of Saint Paul	2 votes
City of South Saint Paul	2 votes
City of Sunfish Lake	1 vote
City of West Saint Paul	2 votes

No change in governmental boundaries, structure, organizational status, or character shall affect the eligibility of any governmental unit listed above to be represented on the WMO, so long as such governmental unit continues to exist as a separate political subdivision. A majority of all eligible votes shall be sufficient for all matters, unless otherwise provided for in this Agreement. A majority vote of all Members, with each Member having one vote, shall be required for Section 7. A Member may not cast a split vote. Any Member that fails to contribute

Commented [WB2]: This does not seem to align with existing process of voting members vs. alternates which suggests one vote per Member and Section 6 Board of Managers.

Commented [BJ3]: Clarify when one vote per member is utilized and when a City would exercise multiple eligible votes.

Is the multiple votes meant to apply to section 9 or others? Is this still necessary?

their share of the WMO annual administration fund or their allocation of a capital improvement cost, shall be declared ineligible for voting on all matters before the Board, until such contribution is made to the WMO.

SECTION 5.   ADVISORY COMMITTEES. S

A.   **Technical Advisory Committee**. The following governmental subdivisions or agencies shall be requested to appoint a non-voting advisory Member to the WMO: Member Cities, Dakota County, Ramsey County, Dakota County Soil and Water Conservation District, member cities. The advisory Members shall not be required to contribute funds for the operation of the WMO, except as provided in Minn. Stat. § 103B.231, but may provide technical services.

B.   **Citizen Advisory Committee**. The WMO may establish a citizen advisory committee ("CAC") from the public at large to provide input on Watershed Management Plan revisions and other matters as deemed appropriate. The CAC shall be appointed by the WMO considering individuals nominated by each Member. The WMO will notify each Member of its intent to establish a CAC, will specify the purpose and duration of the CAC and, will request each Member to nominate candidates to be considered for appointment by the WMO. At the time of establishment of a CAC, the WMO will appoint a chair of the CAC, a board member liaison to the CAC, establish a time for submittal of any comments, and specify the support the WMO will provide to the CAC.

C.   Each Member City may appoint a non-voting staff advisory member to the WMO Board. The Dakota County Soil and Water Conservation District (SWCD) shall appoint a non-voting staff advisory member to the WMO Board.

SECTION 6. BOARD OF MANAGERS.

A. **Appointment**. The governing body of the WMO shall be its Board. Each Member shall be entitled to appoint one Manager and an Aalternate on the Board, consistent with the provisions of Minn. Stat. § 103B.227. The Aalternate shall have the right to vote in the absence of their Manager representative. Vacancies in the office of Manager shall be filled for the remainder of the term by the Member which appointed or had the right to appoint the Manager. All vacancies shall be filled within ninety (90) days after they occur.

B. **Eligibility or Qualification.** The Council of each Member shall determine the eligibility or qualification of its representative on the WMO.

C. **Term.** The Managers shall not have a fixed term, but shall serve at the pleasure of the Member appointing such Manager to the Board.

D. **Compensation.** Managers shall serve without compensation from the WMO, but this shall not prevent a Member from providing compensation for its Manager.

E. **Organizational Meeting.** At the first meeting of the Board each year, the Board shall elect from its Managers a chair, a vice chair, a secretary/treasurer, and such other officers as it deems necessary to conduct its meetings and affairs. The Board shall adopt rules of order and procedure governing its meetings and affairs as it deems necessary. The rules of order and procedure may be amended from time to time at either a regular or a special meeting of the Board provided that at least ten (10) days' prior notice of the proposed amendment has been furnished to each person to whom notice of the Board meetings is required to be sent. A majority vote of all eligible votes of the Members of the WMO shall be sufficient to adopt any proposed amendment to such rules of order and procedure.

Commented [BJ4]: Vacancies have been open in the past for long times, months or years. Is this necessary to include? Should it be extended, should there be note of what happens if a City is not represented?

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F.   **Annual Meeting Requirement.** The Board shall meet at least annually, at times and places selected by the Board. If the Board changes its regularly established meeting place or time, it shall place a notice of the change on a bulletin board at least three (3) days in advance in the building where it was scheduled to meet.

G.   **Committees.** The Board may establish committees as it deems appropriate.

H.   **Action.** Unless otherwise specified in this Agreement, action by the Board shall require a majority vote of the Managers present.

> **Commented [BJ5]:** Shall we explicitly dictate what a quorum consists of?
>
> **Commented [BJ6]:** Clarify number of votes as noted above.

SECTION 7. POWERS AND DUTIES OF THE WMO. The WMO, acting by its Board:

A.   Shall prepare, adopt, and implement a Watershed Management Plan meeting the requirements of Minn. Stat. § 103B.231;

B.   Shall review and approve local water management plans as provided in Minn. Stat. § 103B.235;

C.   Shall exercise the authority of a watershed district under Minn. Stat. Chapter 103D to regulate the use and development of land in the watershed when one or more of the following conditions exist:

1.   The local government unit exercising planning and zoning authority over the land under Minn. Stat. §§ 366.10 to 366.19, 394.21 to 394.37, or 462.351 to 462.364 does not have a local water management plan approved and adopted in accordance with requirements of Minn. Stat. § 103B.235 or has not adopted the implementation program described in the plan.

2.   An application to the local government unit for a permit for the use and development of land, requires an amendment to, or variance from, the adopted local water management plan or implementation program of the local unit.

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3. The local government unit has authorized the WMO to require permits for the use and development of land.

D. Shall adopt an annual work plan.

E. May employ such persons as it deems necessary to accomplish its duties and powers.

F. May contract for space and for material and supplies to carry on its activities either with a Member or elsewhere.

G. May acquire necessary personal and real property to carry out its powers and its duties.

H. May make necessary surveys or use other reliable surveys and data, and develop projects to accomplish the purposes for which the WMO is organized.

I. May cooperate or contract with the State of Minnesota or any subdivision thereof or federal agency or private or public organization to accomplish the purposes for which it is organized.

J. May order any governmental unit to carry out the local water management plan which has been approved by the Board, or if the local unit of government fails to do so, in addition to other remedies, in its discretion, the Board may implement any required action or improvement in accordance with this Agreement.

K. May acquire, operate, construct, and maintain the capital improvements delineated in the Watershed Management Plan adopted by the Board.

L. May contract for or purchase such insurance as the Board deems necessary for the protection of the WMO and its Board.

M. May establish and maintain devices for acquiring and recording hydrological and water quality data within the watershed area of the WMO.

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N.   May enter upon lands within or without the watershed to make surveys

and investigations to accomplish the purposes of the WMO.

O.   May provide any Member with technical data or any other information of

which the WMO has knowledge which will assist the Member in preparing land use

classifications or local water management plans within the ~~watershed.~~WMO, or in other water

resources related to the functions of the WMO.

P.   May provide legal and technical assistance in connection with litigation or

other proceedings between one or more of its Members and any other political subdivision,

commission, board, corporation, individual, or agency relating to the planning or construction of

facilities to drain or pond storm waters or relating to the powers and duties of ~~water quality~~

~~within~~ the WMO.

Q.   May accumulate reserve funds for the purposes herein mentioned and may

invest funds of the WMO not currently needed for its operations.

R.   May collect money, in accordance with the provisions of this Agreement,

from its Members and from any other source approved by the Board.

S.   May make contracts, incur expenses, and make expenditures necessary

and incidental to the effectuation of its purposes and powers.

T.   Shall cause to be made an annual audit of the books and accounts of the

WMO and shall make and file a report to its Members at least once each year including the

following information:

1.   The financial condition of the WMO;
2.   The status of all WMO projects and work within the watershed; and
3.   The business transacted by the WMO and other matters which affect the interests of the WMO. Copies of the report shall be

> **Commented [BJ7]:** Confusing/outdated language, "Within our outside the boundaries of the WMO to make…."

transmitted to ~~the clerk of~~ each Member by <u>June</u>~~March~~ 3<u>0</u>~~1~~ of each year.

U.   Shall make the WMO's books, reports, and records available for and open to inspection by its Members or the public at all reasonable times.

V.   May recommend changes in this Agreement to its Members. Any amendments shall require ratification by all parties to this Agreement.

W.   May exercise all other powers necessary and incidental to the implementation of the purposes and powers set forth herein and as authorized by Minn. Stat. §§ 103B.201 through 103B.252.

X.   Must solicit proposals for all legal, engineering, auditing, and other technical services in accordance with Minn. Stat. § 103B.227, subd. 5.

Y.   Shall coordinate its planning activities with contiguous watershed management organizations and counties conducting water planning and implementation under Minn. Stat. Chapter 103B.

Z.   Shall designate one or more legal newspapers of general circulation which are published in the county(ies) in which the watershed is located.

SECTION 8. POWERS AND DUTIES OF THE OFFICERS OF THE BOARD.

A.   It shall be the duty of the Chair of the Board to:

1.   Attend and preside at all meetings of the Board;
2.   Assist in the preparation of meeting agendas and the annual work plan;
3.   See that orders and resolutions of the Board are carried into effect;
4.   Sign and execute documents as may be required for the Board's exercise of its powers, except as otherwise required by law; and
5.   Perform such other duties applicable to the office as are necessary to fulfill the powers and duties of the Board as set forth in this Agreement, and as provided by law.

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B.   It shall be the duty of the Vice Chair of the Board to:

    1.   Perform the duties of the Chair in the Chair's absence; and
    2.   Perform other duties as assigned from time to time by the Board.

C.   It shall be the duty of the Secretary/Treasurer of the Board to:

    1.   Keep and post a true and accurate record of the proceedings of all meetings of the Board;
    2.   Keep a record of all amendments, alterations and additions to this Agreement;
    3.   Prepare and process all correspondence;
    4.   Prepare and file all reports and statements as required by law and this Agreement;
    5.   Keep all financial accounts of the WMO, and prepare and present to the Board full and detailed financial statements of the WMO prior to its annual meeting; and
    6.   Perform other duties as assigned from time to time by the Board.

The Board may delegate powers and duties of the Officers to WMO staff as necessary to accomplish the work of the WMO.

SECTION 9. CONSTRUCTION OF IMPROVEMENTS.

A.   All construction, reconstruction, extension, or maintenance of WMO improvements, including outlets, lift stations, dams, reservoirs, or appurtenances of a surface water or storm sewer system ordered by the WMO which involve potential construction by and or assessment against any Member or against privately or publicly owned land within the watershed shall adhere to the following procedures set forth in this section. The Board shall secure from its engineers or some other competent person a preliminary report advising it whether the proposed improvement is feasible, whether there are feasible alternatives, whether the proposed improvement shall best be made as proposed or in conjunction with some other improvement, a determination of the quantity and/or quality of storm and surface water contributed to the improvement by each Member, the estimated cost of the improvement(s),

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Commented [BJ8]: This needs to be clarified if Cities or the WMO need to go through this process for all projects or just ones where a City or the WMO is requiring another member to fund a portion of the project and a member disagrees with the cost.

Commented [BJ9]: Add heading/title?

including maintenance, the estimated cost to each Member, and evaluating the consistency of the improvement with the Watershed Management Plan capital improvement section. The Board shall then hold a public hearing on the proposed improvement. Notice of the hearing shall be mailed to the clerk of each affected Member and shall also be published in the Board's official newspaper(s). The notice shall be mailed not less than forty-five (45) days before the hearing, shall state the time and place of the hearing, the general nature of the improvement, the estimated total cost, and the estimated cost to each Member.

To order the improvement, a resolution setting forth the order shall require a favorable majority vote of all eligible votes of the Members of the WMO. The order shall describe the improvement, shall allocate in percentages the cost allocation among the Members, shall determine the method of financing, shall designate the engineers to prepare plans and specifications, and shall designate the entity that will contract for the improvement. The Board shall not order and no engineer shall prepare plans and specification before the Board has adopted a resolution ordering the improvement. After the Board has ordered an improvement, it shall forward the preliminary report to all affected Members with an estimated time schedule for the construction of the improvement.

The Board shall allow not less than 90 days, nor more than 270 days, for each Member to conduct hearings as provided by law or applicable charter requirements, to approve the construction and the method of financing of the improvement which the Member will use to pay its proportionate share of the costs of the improvement.

If the WMO proposes to use Dakota County's and/or Ramsey County's bonding authority, or if the WMO proposes to certify all or any part of an improvement to Dakota and/or

> **Commented [BJ10]:** Clarify, is this where Cities have weighted votes?

Ramsey County for payment, then and in that event all proceedings shall be carried out in accordance with Minn. Stat. § 103B.251.

The Board may order advertising for bids upon receipt of notice from each Member which will be assessed that it has completed its hearing or determined its method of payment, or upon expiration of 270 days after the mailing of the preliminary report to the Members, whichever occurs first.

B.   **Appeal.** Any Member aggrieved by the determination of the Board as to the financing of an improvement or allocation of the costs of an improvement shall have thirty (30) days after the WMO resolution ordering the improvement to appeal the determination to arbitration. The appeal shall be in writing requesting the arbitration and shall be addressed to the Board in c/o City of South St. Paul, 125 3rd Ave. N., South St. Paul, MN 55075. The determination of the Member's appeal shall be referred to a Board of Arbitration. The Board of Arbitration shall consist of three (3) persons: one to be appointed by the Board, one to be appointed by the appealing Member, and the third to be appointed by the two so selected. In the event the two persons so selected do not appoint the third person within fifteen (15) days after their appointment, then the chief judge of the District Court of Dakota County shall have jurisdiction to appoint, upon application of either or both of the two earlier selected, the third person to the Board of Arbitration. The third person selected shall not be a resident of any Member and if appointed by the chief judge, shall be a person knowledgeable in the subject matter of the dispute. The arbitrators' expenses and fees, together with the other expenses, not including counsel fees, incurred in the conduct of the arbitration shall be divided equally between the WMO and the appealing Member. Arbitration shall be conducted in accordance with

Commented [BJ11]: Add heading?

the Uniform Arbitration Act, Minn. Stat. Chapter 572. Arbitration must be completed within the 270 day period provided for in paragraph A of this Section.

C.   **Contracts for Improvements**. The bidding and contracting of the work may be let by any Member or by the WMO as determined by the Board, in compliance with state statutes. Contracts and bidding procedures shall comply with all legal requirements.

D.   **Supervision**. All improvement contracts shall be supervised by the entity awarding the contract. A WMO representative shall also be authorized to observe and review the work in progress and the Members agree to cooperate with the WMO representative in accomplishing the WMO's purposes. Representatives of the WMO shall have the right to enter upon the place or places where the improvement work is in progress for the purpose of making reasonable tests and inspections. The WMO representative shall report to the Board on the progress of the work.

E.   **Land Acquisition**. The WMO shall not have the power of eminent domain. All easements or interest in land which are necessary for an improvement will be negotiated or condemned in accordance with Minn. Stat. Chapter 117 by the Member where the land is located, and each Member agrees to acquire the necessary easement or right-of-way or partial or complete interest in land upon order of the Board to accomplish the purposes of this Agreement. All reasonable costs of the acquisition, including attorney's and appraiser's fees, shall be a cost of the improvement, and shall be allocated according to the formula for allocating Capital Improvement cost in Section 10G. If a Member determines it is in its best interests to acquire additional rights in lands for some other purposes, in conjunction with the taking of lands for the improvement, the costs of the acquisition of additional rights in lands will not be included in the improvement costs. The Board, in determining the amount of the improvement costs to be

assessed to each Member, may take into consideration the land use for which the additional lands are being acquired and may credit the acquiring Member for the land acquisition to the extent that it benefits the other Members. Any credits may be applied to the cost allocation of the improvement, or the Board, if feasible and necessary, may defer the credits to a future improvement.

Members may not condemn or negotiate for land acquisition to pond or drain storm and surface waters within the corporate boundaries of another Member within the WMO.

SECTION 10. FINANCES.

A.   **Disbursements**. The WMO funds may be expended by the Board in accordance with this Agreement in a manner determined by the Board. The Board shall designate one or more national or state bank or trust companies authorized to receive deposits of public monies to act as depositories for the WMO funds. In no event shall there be a disbursement of WMO funds without approval by the Board and the signature of at least two (2) Board Members, one of whom shall be an officer. The Board may require the secretary/treasurer to file with the Board a bond in the sum of at least $10,000 or such higher amount as shall be determined by the Board. The WMO shall pay the premium on said bond.

B.   **Budget**. On or before July 1 of each year, the Board shall adopt a general fund budget ("Budget") by a majority vote of all Members (with each Member having one vote) for the ensuing year and decide upon the total amount necessary for the general fund. The secretary/treasurer of the Board shall certify the Budget to the clerk of each Member, together with a statement of the proportion of the Budget to be provided by each Member, computed in accordance with Section 10, paragraph E. The council of each Member shall review the Budget,

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and the Board shall upon notice from any Member received prior to August 1, hear objections to the Budget, and may, upon notice to all Members of the time, date, place of and right to participate in the hearing and after a hearing, modify or amend the Budget, and then give notice to the Members of any and all modifications or amendments. Each Member agrees to provide the funds required by the Budget by February 15th of each year.

If a Member fails to provide its share of the funds required by the Budget by February 15th of each year, the unpaid balance of the funds shall accrue interest at a rate of eight percent (8%) per annum commencing the day following February 15th of the year in which the funds were due. The WMO may take whatever action, at law or in equity it deems appropriate, to collect any amounts due from a Member under this Agreement. The Member agrees to pay the cost of collection, including reasonable attorneys' fees.

C. **Maintenance**. The Board shall have the option of funding maintenance work through the Budget, or funding as a capital improvement in accordance with paragraph F of this Section. Maintenance costs that are associated with an improvement in the approved Capital Improvement Program, shall be allocated according to the same formula as is applicable for allocating capital improvement costs as identified in Section 10, paragraph G. The Members affected by the improvement shall decide on the level of maintenance to be applied to the improvement. If the Members cannot agree, the Board shall make the determination.

D. **Tax Levy**. If authorized by law, the WMO may levy a tax. The proceeds of any tax levied under this paragraph shall be expended only for the purposes authorized by law. The WMO may accumulate the proceeds of levies as an alternative to issuing bonds to finance improvements.

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E.   **General Fund**. Each Member agrees to contribute each year to a general fund to be used for general administration purposes including, but not limited to: improvement projects, salaries, rent, supplies, development of an overall plan, insurance, bonds, and to purchase and maintain devices to measure hydrological and water quality data. The funds may also be used for any other purpose authorized by this Agreement. The annual contribution by each Member shall be based fifty percent (50%) on taxable market value (for the preceding year) and fifty percent (50%) on area in accordance with the following formula:

Annual Watershed Levy = L

Taxable Market Value of a Member's Property in the Watershed = MV

Taxable Market Value of All Property in the Watershed = TV

Acres of Property a Member Has in the Watershed = A

Total Acres in Watershed = TA

Member Required Contribution = C

$$\frac{1}{2} L \times \frac{MV}{TV} + \frac{1}{2} L \times \frac{A}{TA} = C$$

F.   **Capital Improvement**.

1.   All capital improvements ordered by the Board must be included in the WMO's adopted capital improvement program. An improvement fund shall be established for each improvement ordered by the WMO. If ordered by the Board, each Member agrees to contribute to the funds its proportionate share of the engineering, legal, and administrative costs as determined by the amount to be assessed against each Member as a cost of the improvement. The Board shall submit in writing a statement to each Member, setting forth in detail the expenses incurred by the WMO for each improvement.

Each Member further agrees to pay its proportionate share of the cost of the improvement in accordance with the determination of the Board, under Section 10, paragraph G. The Board or the Member awarding the contract shall submit in writing copies of the

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engineer's certificate authorizing payment during construction and the Member being billed agrees to pay its share of the costs within thirty (30) days after receipt of the statement. The Board may also require payment from Members before awarding a contract based upon an engineer's estimate of cost. Billings will then be adjusted when actual costs are known. The Board or the Member awarding the contract shall advise other contributing Members of the tentative time schedule of the work and the estimated times when the contributions shall be necessary.

2. Notwithstanding the provisions of paragraph F(1) above, of the Capital Improvements, the WMO may also fund all or any part of the cost of a capital improvement contained in the capital improvement program of the plan in accordance with Minn. Stat. § 103B.251. The WMO and Dakota County and/or Ramsey County may establish a maintenance fund to be used for normal and routine maintenance of an improvement constructed in whole or in part with money provided by Dakota and/or Ramsey County pursuant to Minn. Stat. § 103B.251. The levy and collection of an ad valorem tax levy for maintenance shall be by Dakota and/or Ramsey County based upon a tax levy resolution adopted by the WMO and remitted to the county(ies) on or before October 1 of each year. If it is determined to levy for maintenance, the WMO shall be required to follow the hearing process established by Minn. Stat. §103D.921. Mailed notice shall also be sent to the clerk of each Member at least thirty (30) days prior to the hearing.

3. The WMO may also fund all or any part of the cost of a capital improvement contained in the capital improvement program of the plan in accordance with Minn. Stat. § 103B.241.

G. **Capital Cost Allocation of Improvements in the Board's Watershed Management Plan**. All capital improvement costs of improvements designated in the WMO's adopted watershed management plan for construction by the WMO pursuant to Section 10, paragraph F1 of this Agreement shall be apportioned by the following methods or a combination of these methods:

1. For improvements related to water quantity:

a. A Member shall be responsible for the costs of construction of that portion of a drainage system that is located within its borders and that is necessary to accommodate its

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Allowable Flow and the Allowable Flow of all other tributary Members.

b. A Member shall also be responsible for its share of construction costs of a drainage system, whether or not that system is located within its borders, that is necessary to convey Excessive Flows originating within the Member's borders.

c. Increased costs of construction incurred for acquisition of lands, easements and rights of way within natural watercourses shall be the obligation of the Member in which the land lies and shall not be apportioned to other Members to the extent that such costs exceed costs which would have been incurred if there had been no improvement on such lands, easements, or rights of way.

d. Costs of construction shall include all costs associated with a WMO approved improvement (whether trunk sewer or natural conveyance) and whether or not actually constructed, including, but not limited to, costs for design, administration, construction supervision, legal fees, acquisition of lands and improvements and actual construction and maintenance costs.

e. The WMO shall consider any grant money received or to be received by a Member for sanitary sewer/storm sewer separation or for the construction, reconstruction or replacement of storm sewer facilities before making cost allocations among Members and may consider the application of any grant proceeds toward the cost of the improvement before allocating costs between or among the Members involved, provided that such allocation would not violate the terms and conditions of the grant.

f. The attached **Exhibit "B"** is incorporated by reference and serves as a compilation of general examples of cost allocated under this Agreement for hypothetical circumstances stated in the examples.

2. For improvements related to water quality:

a. For water quality projects and maintenance, the cost sharing will be based on the cost allocation methods in the attached **Exhibit "C"** incorporated by reference.

b. Or other cost sharing method approved by the Board.

c. Pursuant to Minn. Stat. § 103B.251.

H. **Capital Cost Allocation of Improvements Delineated in Local**

Watershed Management Plans. All capital improvement costs incurred by the WMO for

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improvements delineated in local watershed management plans that benefit only that Member, which the WMO undertakes because the Member fails to do so, shall be apportioned entirely to that Member.

SECTION 11. SPECIAL ASSESSMENTS. The WMO shall not have the power to levy special assessments. All such assessments shall be levied by the Member within which the land is located.

SECTION 12. DURATION.

A.   Each Member agrees to be bound by the terms of this Agreement until January 1, 2023. It may be continued thereafter upon the agreement of all the parties.

Commented [BJ12]: Have legal counsel change agreement to remain in perpetuity or until terminated by Majority of Members.

B.   This Agreement may be terminated prior to January 1, 2023, by the written agreement of a majority of the Members.

SECTION 13. DISSOLUTION. Upon dissolution of the WMO or termination of this Agreement, all property of the WMO shall be sold and the proceeds thereof, together with monies on hand, shall be distributed to the Members. Such distribution of WMO assets shall be made in proportion to the total contribution to the WMO required by the last annual Budget.

SECTION 14. EFFECTIVE DATE. This Agreement shall be in full force and effect when all seven (7) Members file a certified copy of a resolution approving this Agreement and have executed this Agreement and filed the executed Agreement with the Board. All Members need not sign the same copy.

IN WITNESS WHEREOF, the undersigned governmental units, by action of their governing bodies, have caused this Agreement to be executed in accordance with the authority of Minn. Stat. § 471.59.

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Signature pages follow.

Approved by the City Council
_____, 20____.

CITY OF INVER GROVE HEIGHTS

By: _____

Attest: _____

Approved by the City Council
_____, 20____.

CITY OF LILYDALE

By: _____

Attest: _____

Approved by the City Council
_____, 20____.

CITY OF MENDOTA HEIGHTS

By: _____

Attest: _____

Approved by the City Council
_____, 20____.

CITY OF ST. PAUL

By: _____

Attest: _____

Approved as to Form:

By:_____
     Assistant City Attorney

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Approved by the City Council
_____, 20____.

CITY OF SOUTH ST. PAUL

By: _____

Attest: _____

Approved by the City Council
_____, 20____.

CITY OF SUNFISH LAKE

By: _____

Attest: _____

Approved by the City Council
_____, 20____.

CITY OF WEST ST. PAUL

By: _____
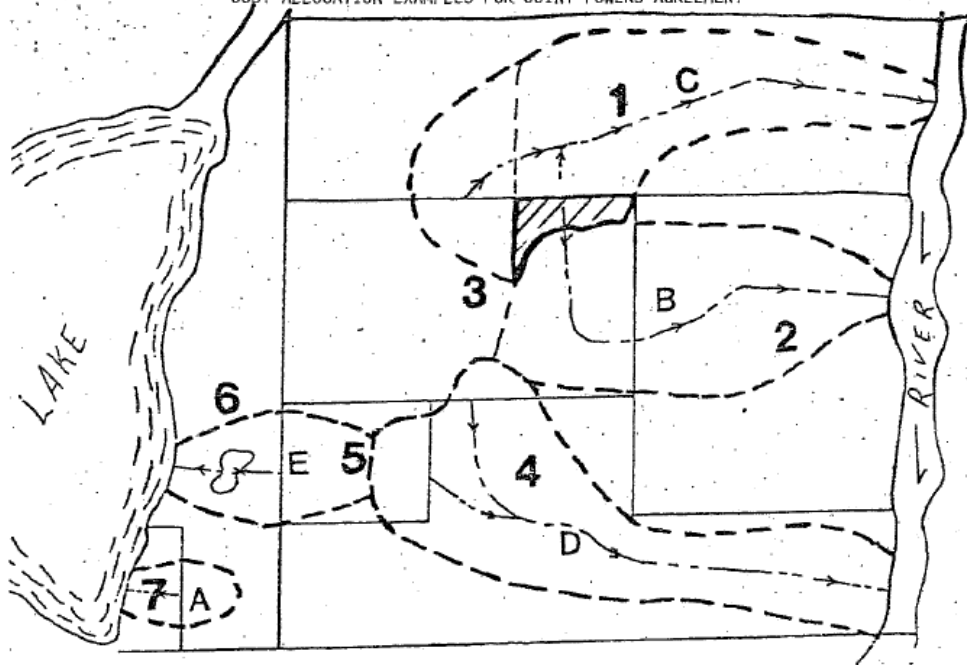   Its Mayor

By: _____
           Its City Manager

EXHIBIT "A"
JOINT POWERS AGREEMENT

EXHIBIT A
Revised Legal Boundary
Map of the Lower Mississippi
River Watershed
Management Organization

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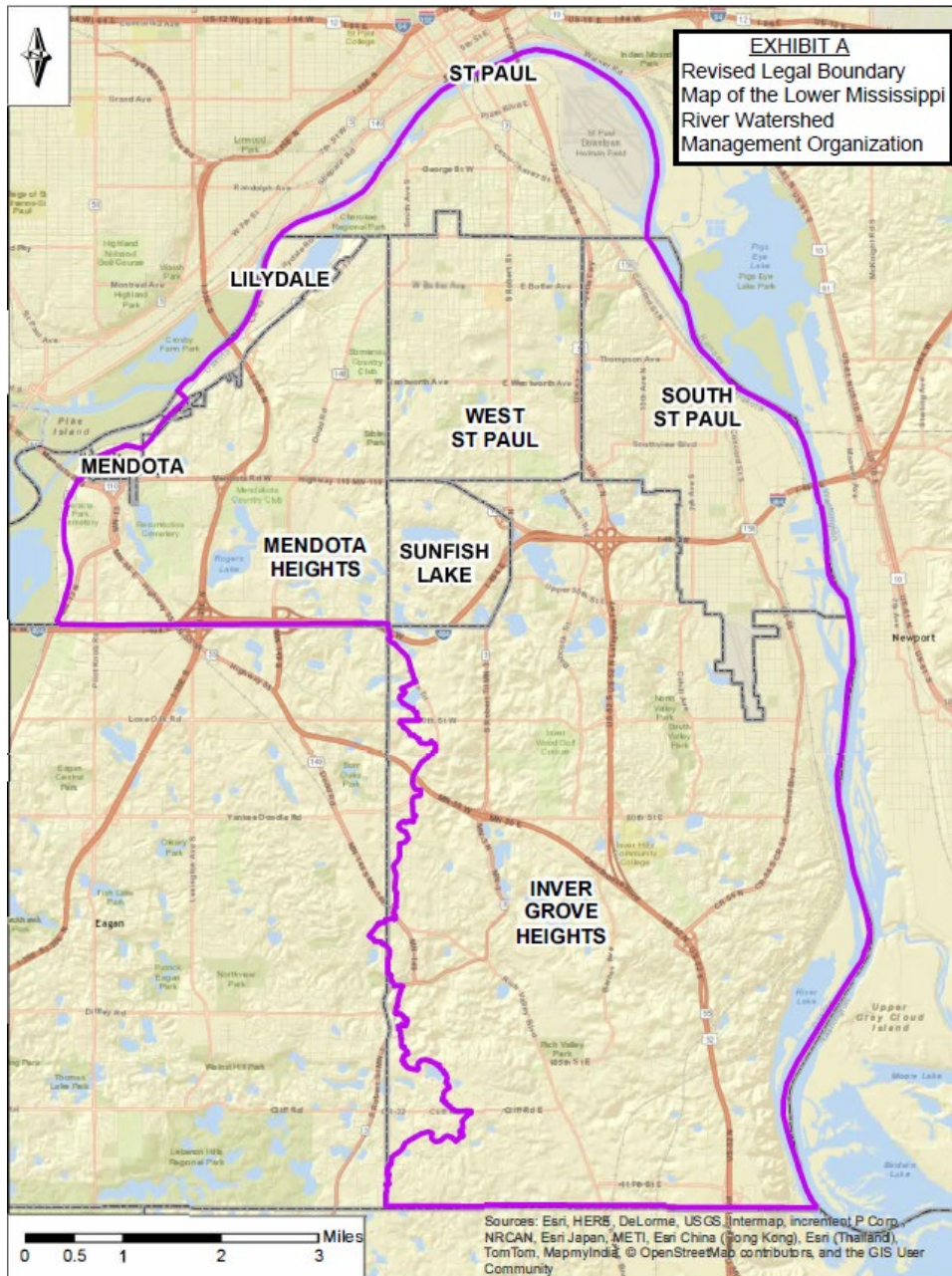
COST ALLOCATION EXAMPLES FOR JOINT POWERS AGREEMENT

EXAMPLE	DESCRIPTION
A.	Two Cities
B.	Two Cities With Diversion In
C.	Two Cities With Diversion Out
D.	Three Cities
E.	Added Ponding

LEGEND

- - - - -	Watershed Boundary
——→—	Drainage Facility
———	City Boundary
⬭	Detention Pond
▨	Diverted Area

Exhibit B
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JOINT POWERS AGREEMENT
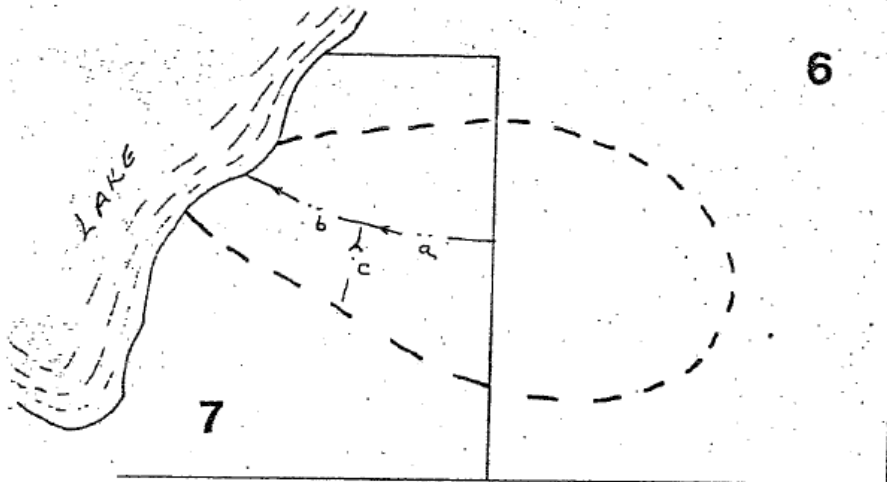
EXAMPLE "A" - TWO CITIES

Project: Construct project (Segments "a" and "b") in City #7 to provide drainage for Cities #6 and #7 under fully developed conditions.

Cost Allocation:

City #6: Cost share $= \dfrac{Q_{E6}}{Q_T} \times$ Total project cost for "a".

City #7: Cost share $=$ Total project cost $- \left(\dfrac{Q_{E6}}{Q_T} \times \text{Total project cost} \right)$

Where: $Q_{E6} = Q_{T6} - Q_{A6}$;

Q_{E6} is the design flow rate from City #6 which is in excess of the allowable flow rate from City #6;

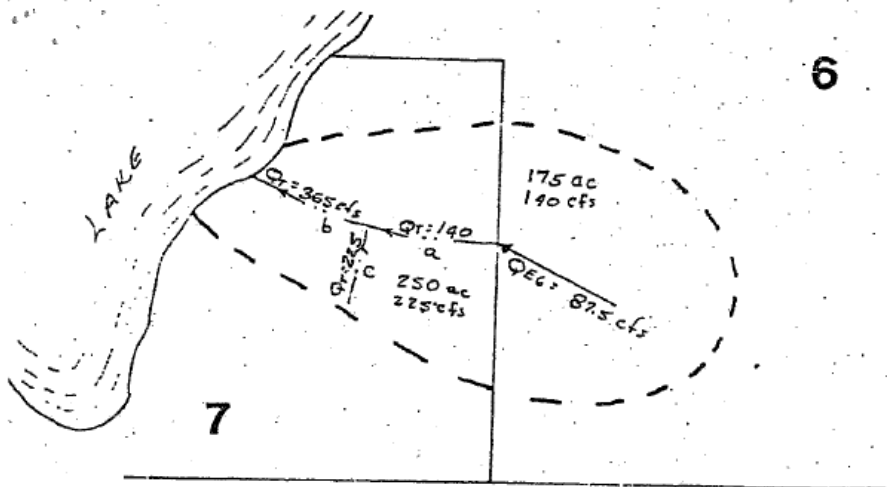Q_{A6} is the allowable flow rate from City #6;

Q_{T6} is the total design flow rate from City #6;

Q_T is the total flow rate for which the project is designed in each Segment.

City #6: Cost share for Segment "c" = Zero dollar (no tributary flow).

JOINT POWERS AGREEMENT

EXAMPLE "A" - TWO CITIES

Sample Calculations

Assume:

City #6 - Area of Watershed within City #6 = 175 acres
Full development runoff (Q_{T6}) = CIA = 0.40 x 2.0"/h x 175 = 140 cfs
Predevelopment runoff (Q_{A6}) = CIA = 0.15 x 2.0"/h x 175 = 52.5 cfs

Then:

Excess runoff (Q_{E6}) (from formulae: $Q_E = Q_T - Q_A$) = 87.5 cfs

1. City #6 cost share for Segment "a" = $\frac{87.5}{140}$ x project cost for "a" = .63 x Project cost for "a".

(From formulae: share = $\frac{Q_E}{Q_T}$ x Project cost)

Note: Segment "a" ends at first point of entry into the system from City #7.

Assume:

City #7 - Area of Watershed within City #7 = 250 acres and all flows from City #7 enter system by way of Segment "c".
Full development runoff (Q_{T7}) = CIA = .50x1.8x250 = 225 cfs
Design flow for Segment "b" = $Q_{T(SEG. "a")} + Q_{T7}$ = 140 + 225 = 365 cfs

2. City #6 has no cost share obligation in Segment "c" when there is no tributary flow from City #6.

(continued)

Then:

3. City #6 cost share for Segment "b" = $\dfrac{87.5}{365}$ x Project cost for "b" = 0.24 Project cost of "b".

(From formulae: Share = $\dfrac{Q_{E6}}{Q_T}$ x Project cost)

Note:

City #6 can reduce the excess flow (Q_{E6}) by detention ponding even to the amount that the rate of flow from City #6 (Q_{T6}) is no greater than the allowable flow rate (Q_{A6}). Any reduction in the total rate from City #6 would be applied to the excess rate and thereby reduce the obligation of City #6 to share in the cost of constructing any conveyance system in City #7.

SUMMARY OF COSTS

Segment "a":

City #6: Cost share = $\dfrac{87.5}{140}$ x Project cost for "a".

City #7: Cost share = $\dfrac{52.5}{140}$ x Project cost for "a".

Segment "b":

City #6: Cost share = $\dfrac{87.5}{365}$ x Project cost for "b".
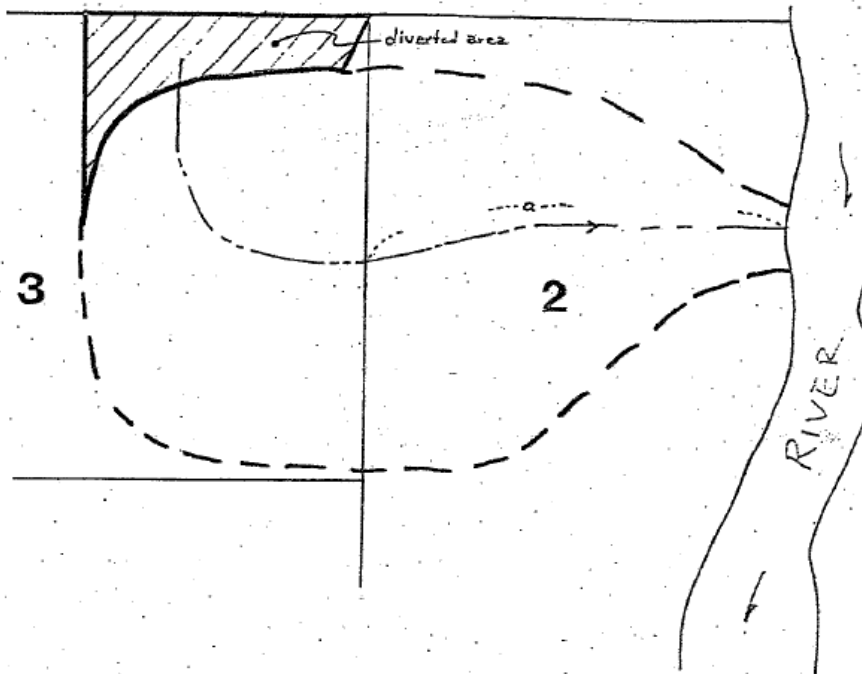
City #7: Cost share = $\dfrac{277.5}{365}$ x Project cost for "b".

Segment "c":

City #6: Cost share = Zero dollar (no tributary flow).

City #7: Cost share = All of Project cost for "c".

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EXAMPLE "B" - TWO CITIES WITH DIVERSION IN

Project: Construct Trunk facility "a" in City #2 only for Cities #2 and #3 under fully developed conditions.

Cost Allocation:

City #3: Cost share $= \dfrac{Q_{E3}}{Q_T}$ x Total project cost.

Where: $Q_{E3} = Q_{T3} - Q_{A3}$
And Q_{E3} is the design flow from City #3 as described in Example "A" plus all flows coming from the area diverted. All facilities within City #3 are constructed by City #3. Detention in City #3 can reduce Q_{E3};

Q_T and Q_A are as defined in Example "A".

Note: This case applies only where waters are diverted from one City to another City or from one major drainage district to another.

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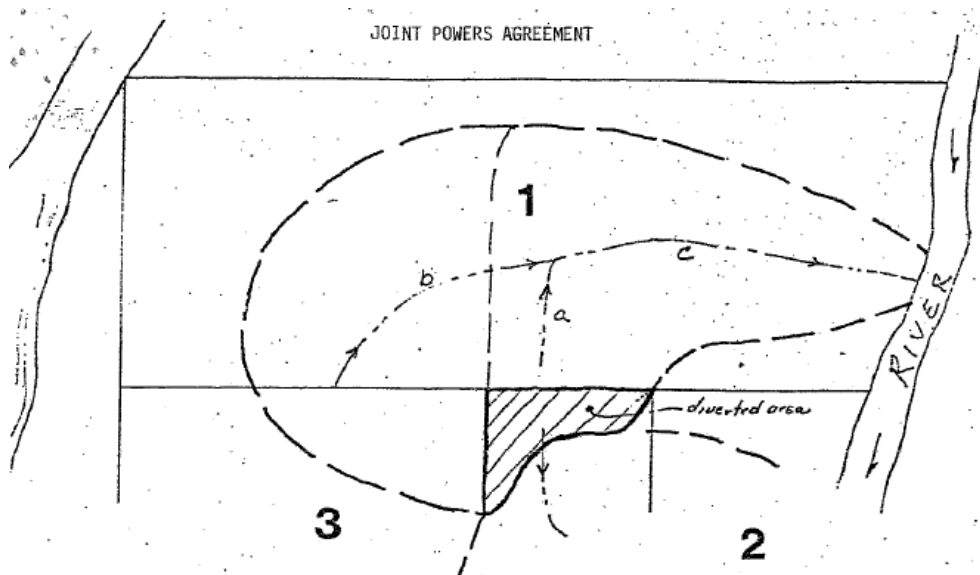
EXAMPLE "C" — TWO CITIES WITH DIVERSION OUT

Project: Construct Trunk Segments "a", "b", "c" in City #1 under fully developed conditions.

Cost Allocation:

City #3: Cost share for Segment "a" = Zero dollars (all flows have been diverted away)

Cost share for Segment "b" = $\dfrac{Q_{E3}}{Q_T}$ x Total project cost for "b".

Where: Q_{E3} is the excess flow from City #3 that is tributary to Segment "b" only.

City #3: Cost share for Segment "c" = $\dfrac{Q_{E3}}{Q_T}$ x Total project cost for "c".
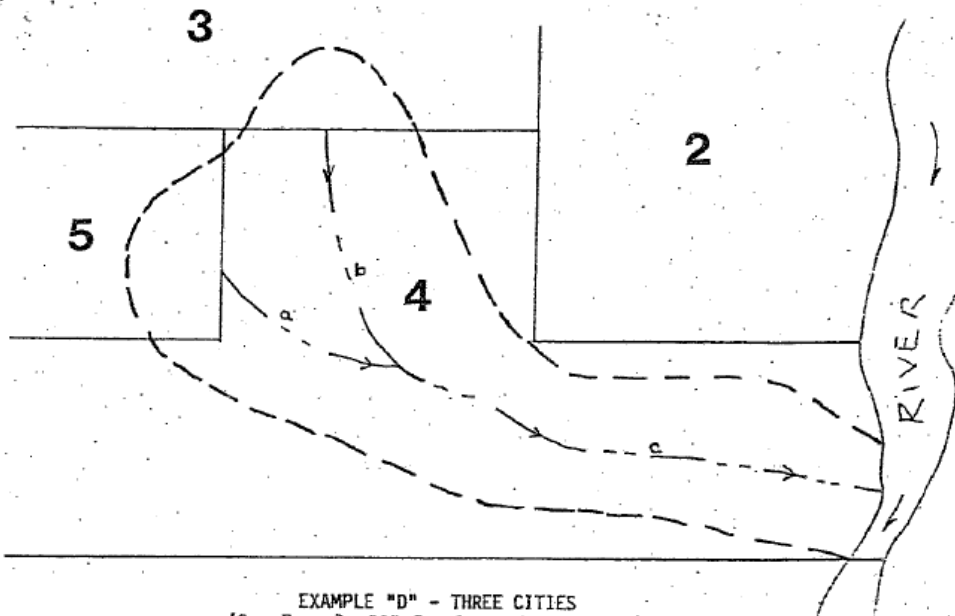
Where: Q_{E3} is the excess flow from City #3 that is tributary to Segment "c" calculated as Q_{E3} tributary to "b" minus Q_{A3} that would have been tributary to "a" had there been no diversion out of the drainage district.

Q_T and Q_A are as defined in Example "A".

Note: This case applies only where waters are diverted from one City to another City or from one major drainage district to another.

EXAMPLE "D" – THREE CITIES
(See Example "A" for Q_T, Q_A and Q_E)

Project: Construct Project (Segments "a", "b" and "c") in City #4 to provide
drainage for Cities #3, #4, and #5 under fully developed conditions.

Cost Allocations:

City #3: Cost share Segment "b" = $\dfrac{Q_{E3}}{Q_T}$ x Project cost for "b".

Cost share Segment "a" = Zero dollars (no tributary flow).

Cost share Segment "c" = $\dfrac{Q_{E3}}{Q_T}$ x Project cost for "c".

City #5 Cost share Segment "a" = $\dfrac{Q_{E5}}{Q_T}$ x Project cost for "a".
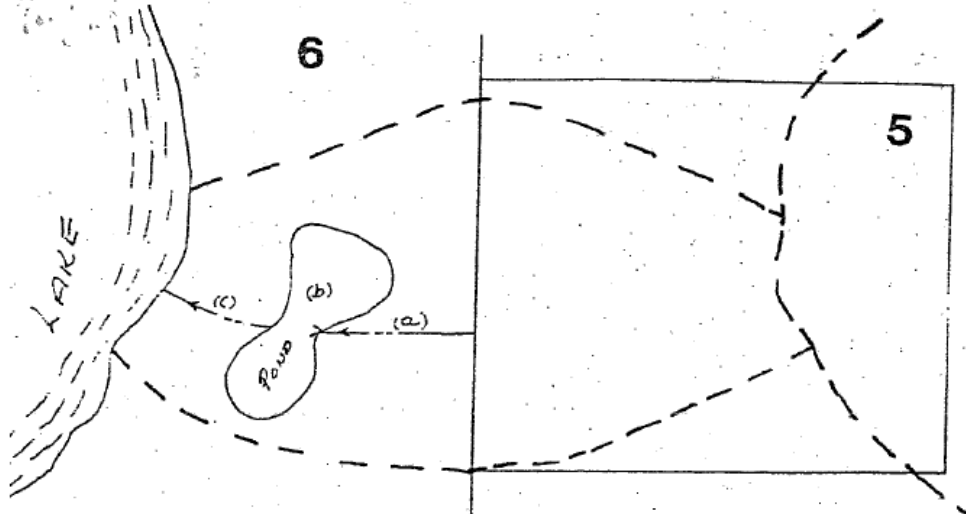
Cost share Segment "b" = Zero Dollars (no tributary flow).

Cost share Segment "c" = $\dfrac{Q_{E5}}{Q_T}$ x Project cost for "c".

Where: Q_T is the total flow rate for which each respective Segment
is designed.

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EXAMPLE "E" - ADDED PONDING
(See Example "A" for definition of Q_T , Q_A and Q_E)

Project: Construct Trunk "a", Detention Pond "b" and Outlet "c" for cities #5 and #6 under
           fully developed conditions.

Cost Allocation:

   City #5 (Trunk "a"): Cost share $= \dfrac{Q_{E5}}{Q_T}$ x Project cost of Trunk "a".

      Where: Q is the total flow rate in Trunk "a".

   City #5 (Pond "b"):   Cost share $= \dfrac{V_{E5}}{V_T}$ x Project cost of Pond "b".

      Where: V_{E5} is the design Volume of runoff from City #5 which is in
              excess of the allowable Volume from City #5;

              V_T is the total Volume used in the design of the detention pond.

   City #5 (Outlet "c"): Cost share $= \dfrac{Q_{E5}}{Q_T}$ x Project cost of Outlet "c".

      Where: Q_{E5} is reduced from Trunk "a" Inlet Q_{E5} by the ratio of $\dfrac{\text{Outlet } Q_T}{\text{Inlet } Q_T}$;
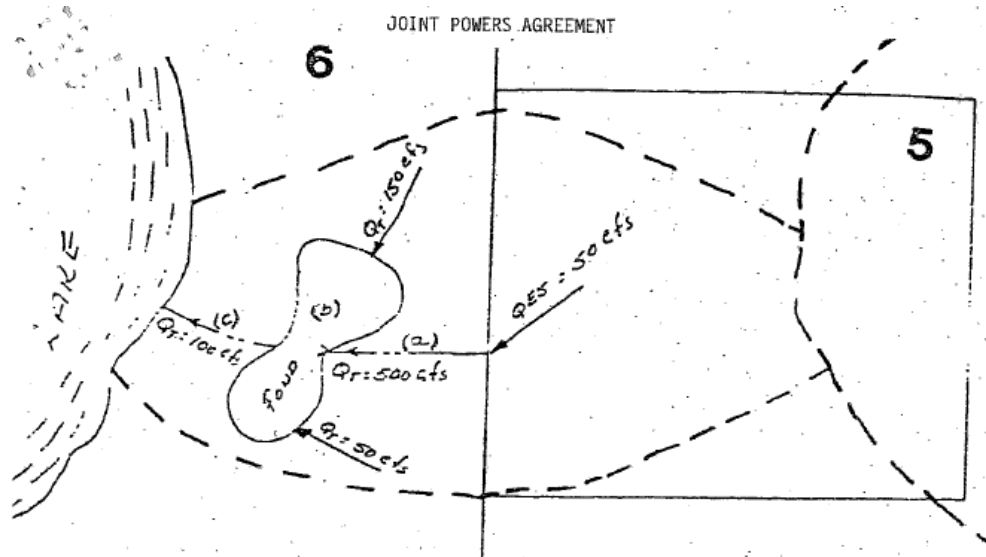
              Inlet Q_T is the summation of all flows into the pond;
              Outlet Q_T is the total flow rate out of the pond under design conditions.

   Note: See Page 9 for sample calculations

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EXAMPLE "E" - ADDED PONDING

Sample calculation for City #5 cost share for Outlet "c":

Assume:

Q_{E5} = 50 cfs

Q_T Pond inflow in Segment "a" = 500 cfs

Q_T Pond inflow from other areas = 200 cfs
_____
$\leq Q_T$ Pond inflow = 700 cfs

Q_T Pond Outlet "c" = 100 cfs

And:

$$Q_{E5 \, (OUTLET)} = Q_{E5 \, (INLET)} \times \frac{Q_{T \, (OUTLET)}}{\leq Q_{T \, (INLET)}}$$

$$\text{City \#5 cost share} = \frac{Q_{E5 \, (OUTLET)}}{Q_T \, (OUTLET)} \times \text{Project cost of Outlet "c"}$$

Then:

$$Q_{E5} \text{ (for Segment "c")} = \frac{100}{700} \times 50 = 7.14 \text{ cfs}$$

$$\text{City \#5 cost share} = \frac{7.14}{100} \times \text{Project cost of Outlet "c"}$$

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EXHIBIT "C"
JOINT POWERS AGREEMENT

Exhibit C

The Lower Mississippi River Watershed Management Organization (LMRWMO) has developed the following four water quality cost allocation methods:

1. Total Area
2. Effective Impervious Area
3. Relative Pollutant Load
4. Allowable Pollutant Load

A description of each of these four methods is provided in this exhibit, including applicable formulas, and criteria for when application of each method is appropriate. In addition, four hypothetical scenarios are presented to illustrate differences between the four cost allocation methods listed above. An alternative approach to the cost allocation methods listed above is also included, referred to as the "Cost for Equivalent Treatment." This cost allocation approach is described separately, as it must be assessed on a case-by-case basis and is intended for use only when the above methods are considered unacceptable to the LMRWMO Board.

Summary of Cost Allocation Methods

Method 1: Total Area Method

The Total Area method allocates cost based on the fractions of the total tributary area within each member city. This method does not account for the variation in pollutant loading from areas of differing land use (and imperviousness). Nor does this method account for water quality treatment that may already occur upstream of the proposed project (via natural systems or past best management practice (BMP) implementation such as ponds or sedimentation basins). This is the simplest water quality cost allocation method presented, described by Equation 1:

$$Cost_i = \frac{Area_i}{Area_{total}} \qquad \text{Equation 1}$$

...where $Cost_i$ = cost to member city i

           $Area_i$ = area within member city i tributary to project

           $Area_{total}$ = total area tributary to project

The Total Area Method normally should not be used for projects encompassing a wide range of land use and/or various levels of upstream treatment (and therefore varying pollutant loads). The Total Area cost allocation method is most applicable when the tributary drainage areas from each member city contribute similar pollutant loads per unit area. This is likely to occur when tributary watersheds have similar land use and levels of existing water quality treatment. Criteria for application of this method include:

- Similar land uses across member cities' tributary areas
- Similar levels of existing treatment (if applicable) across member cities' tributary areas/land uses

Method 2: Effective Impervious Area Method

The Effective Impervious Area Method is similar to the Total Area Method in that costs are apportioned based on the fractions of tributary area within each member city. However, the Effective Impervious Area Method is based on the fraction of impervious area (versus total area) within each member city, to account for variation in land use (and imperviousness) throughout the tributary area. The Effective Impervious Area Method also accounts for existing upstream water quality treatment by applying a treatment effectiveness coefficient to areas already receiving treatment, in recognition that the pollutant contribution from "treated" areas will be less. The Effective Impervious Area Method is appealing because it accounts for differences in pollutant contribution from tributary areas both due to land use differences (via an assumed relationship between imperviousness and pollutant loading) and the presence of upstream treatment.

In the Effective Impervious Area Method, the cost is apportioned to each member city based on the fraction of that city's effective tributary area to the total effective tributary area. The effective tributary area includes 100% of the untreated impervious area and a fraction of the treated impervious area. This method is described by the following formulas:

$$Cost_i = \frac{Area_{effective,i}}{Area_{effective,total}} \qquad \text{Equation 2-a}$$

$$Area_{effective,i} = Area_{untreated\ imp,i} + E * Area_{treated\ imp,i} \qquad \text{Equation 2-b}$$

…where
$Cost_i$	= cost to member city i	
$Area_{effective,i}$	= untreated impervious area plus fraction of treated, impervious	
$Area_{effective,total}$	= sum of effective areas of each tributary member city	
$Area_{untreated\ imp,i}$	= untreated impervious area within member city i tributary to project	
$Area_{treated\ imp,i}$	= treated impervious area within member city i tributary to project	
E	= BMP treatment effectiveness (unitless value from 0 to 1.0, 0.5 proposed for total phosphorus)	

As shown in Equation 2-b, the Effective Impervious Area Method incorporates treated areas using a coefficient to account for the treatment efficiency of existing Best Management Practices (BMPs). For simplicity, a single coefficient of 0.5 is proposed. This value is based on total phosphorus removal performance presented in Table L8 of the *Minnesota Stormwater Manual* (MPCA, 2008). Other coefficients may be more applicable for specific pollutants. Impervious areas (both treated and untreated) are calculated by summing the impervious area for all tributary land uses. Impervious area for each land

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use is calculated based on the tributary area and an assumed impervious fraction for the given land use (see Table 1 for example impervious fraction assumptions for a selection of land uses).

$$Area_{imp,i} = \sum K_j Area_{i,j}$$
<div align="right">Equation 2-c</div>

...where $Area_{imp,i}$ = treated or untreated impervious area within member city i tributary to project

$Area_{i,j}$ = area within member city i of land use j tributary to project

K = fraction of imperviousness for land use j (unitless value from 0 to 1.0)

The Effective Impervious Area cost allocation method is most applicable when tributary areas are comprised of different land use types and existing water quality treatment BMPs. This method simplifies variability in treatment efficiency in order to limit method complexity. If no existing treatment BMPs are in-place, this method presents a relatively simple way to account for variability in land use. Criteria for application of this method include:

- Impervious areas are present in tributary watersheds
- Varying land uses across tributary watersheds
- Treatment BMPs are present in tributary areas

Table 1. Average impervious fraction of land use types

Land Use	Impervious Fraction
Natural/Park/Open	0.0
Low Density Residential	0.2
High Density Residential	0.4
Institutional	0.5
Highway	0.5
Commercial	0.8
Industrial/Office	0.8

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Method 3: Relative Pollutant Load

Method 3 – Relative Pollutant Load allocates cost based on the fraction of the total pollutant load to the project that is contributed by each member city. This method is more detailed than Method 2 (presented above) in that it estimates pollutant loading (pounds of pollutant per year) from land used and considers variable effectiveness of existing treatment. While a detailed runoff model (e.g., P8) could be used to estimate Relative Pollutant Loading, use of a calculation based "simple" method is proposed to limit the level of computational effort required. The simple method, which is described in the Minnesota Stormwater Manual, estimates runoff volume and pollutant concentrations based on imperviousness and land use, as described in the following formulas:

$$Cost_i = \frac{W_i}{W_{total}} \qquad\qquad \text{Equation 3-a}$$

$$W_i = W_{untreated,i} + \sum W_{BMP,j,i} \qquad\qquad \text{Equation 3-b}$$

$$W_{untreated,i} = 0.2(P)(R_v)(C)(Area_{untreated,i}) \qquad\qquad \text{Equation 3-c}$$

$$W_{BMP,j,i} = 0.2(P)(R_v)(C)(Area_{BMP,j,i})(BMP_{RE}) \qquad\qquad \text{Equation 3-d}$$

…where		
$Cost_i$	= cost to member city i	
W_i	= annual load contributed by member city i (lbs/yr)	
W_{total}	= total annual load to the project (lbs/yr)	
$W_{untreated,i}$	= annual load contributed from untreated areas of member city i (lbs/yr)	
$W_{BMP,i,j}$	= annual load contributed from areas of member city i treated by BMP j (lbs/yr)	
P	= annual precipitation (inches)	
R_v	= runoff coefficient (0.05 + 0. 9*I) (unitless)	
I	= average percent imperviousness of tributary area (unitless value from 0 to 1.0)	
C	= concentration of pollutant in runoff (0.3 mg/L for P in urban environments)	
$Area_{untreated,i}$	= untreated area within city i tributary to project (acres)	
$Area_{BMP,j,i}$	= area within city i tributary to treatment BMP j (acres)	
BMP_{RE}	= 1 – BMP treatment efficiency (unitless value from 0 to 1.0)	
0.2	= unit conversion factor based on the input parameters as shown above	

In the simple method, annual precipitation (P), area, and a runoff coefficient (R_v) are multiplied to create a runoff volume. That volume is multiplied by an assumed pollutant concentration (C) to determine the load (W). The runoff coefficient is an area-weighted average based on imperviousness. The fraction of

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imperviousness for each land use type is as described in Method 2 (see Table 1).When there is existing treatment within the tributary watershed, the pollutant removal is quantified by the removal efficiency of a given best management practice (BMP_{RE}). BMP removal efficiencies are derived from Table L8 of the *Minnesota Stormwater Manual* (MPCA, 2008). The total load from a member city to the proposed project is the sum of the untreated load and the treated load from each BMP.

This method is more technical than area-based methods and requires detailed user inputs. This method accounts for varying degrees of treatment. This method is identical to Method 2 (Impervious Area Method) if all BMP treatment efficiencies are the same. The benefit of this method is the calculation of annual load from each area, which may be required for grant reporting or demonstrating waste load allocation (WLA) compliance. Criteria for application of this method include:

- Varying land uses across tributary watersheds
- Significant treatment BMPs are present in tributary areas
- Wide range in effectiveness of existing treatment

Method 4: Allowable Pollutant Load

Method 4 – Allowable Pollutant Load, apportions cost for water quality improvements similar to the existing allowable flow method, but based on pollutant load rather than flow. In this method, an upstream member city's portion of the project cost is based on the percentage of the upstream city's "excess" load relative to the total load to the project. Excess load is the total load from the upstream member city less an "allowable" load. Thus, the upstream city receives a credit for that allowable pollutant load. The credit is paid by the downstream city in which the project is located. The cost assigned to the city in which the project is located is based on the ratio of that city's total load (including the allowable pollutant loads from all upstream member cities) to the total load to the project.

The total load from areas tributary to the project is calculated using the simple method as described in Method 3 – Relative Pollutant Load. There are many ways that the "allowable" pollutant load could be defined. Allowable pollutant load is calculated by multiplying a member city's tributary area by an export coefficient (pollutant loading per unit area) corresponding to natural conditions. For simplicity, a single export coefficient is proposed for each pollutant. An export coefficient of 0.15 kg/ha/year (or 0.17 lbs/acre/year) is proposed for total phosphorus generated from natural areas. This value represents a combination of forested, mixed, and idle land export coefficients summarized in the *Review of Published Export Coefficients and Event Mean Concentration Data* (Lin, 2004). Excess load is calculated as the difference between the total load and the allowable pollutant load. This method is described by the formulas shown below:

$$Cost_{up,\ i} = \frac{W_{excess,up,\ i}}{W_{total}} \qquad\qquad \text{Equation 4-a}$$

$$W_{excess,up,\ i} = W_{up,\ i} - W_{allowable,up,\ i} \qquad\qquad \text{Equation 4-b}$$

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$$W_{allowable,up.\ i} = (C_{nat})(Area_{up.\ i}) \qquad\qquad \text{Equation 4-c}$$

$$Cost_{host} = Cost_{total} - \sum Cost_{up.\ i} = \frac{W_{total} - \sum W_{excess,up.\ i}}{W_{total}} \qquad \text{Equation 4-d}$$

…where $Cost_{up.\ i}$ = cost to upstream member city i

$Cost_{host}$ = cost to member city in which the project is located

W_{total} = annual total load to project (lbs, see Method 3 – Relative Pollutant Load)

$W_{up.\ i}$ = annual total load from upstream member city i tributary to project (lbs, see Method 3 – Relative Pollutant Load)

$W_{allowable,up.\ i}$ = annual allowable pollutant load from upstream member city i tributary to project (lbs)

$W_{excess,up.\ i}$ = annual excess load from upstream member city i tributary to project (lbs)

$Area_{up.\ i}$ = area within upstream member city i tributary to project (acres)

C_{nat} = pollutant-specific export coefficient (lbs/acre/yr, 0.17 proposed for total phosphorus)

The allowable pollutant load calculation shown above is provided as a simple method applicable to most situations. In some cases (e.g., TMDL waste load allocations) it may be useful to define allowable pollutant load through other methods. Relative to Method 3 – Relative Pollutant Load, Method 4 rewards member cities that have taken steps to reduce their loading towards pre-development levels. Criteria for application of this method are similar to Method 3 and include:

- Varying land uses across tributary watersheds
- Significant treatment BMPs are present in tributary areas
- Wide range in effectiveness of existing treatment

Alternative Approach: Cost for Equivalent Treatment

Cost for Equivalent Treatment apportions the cost for water quality improvements located downstream of a member city based on the cost to achieve the same level of treatment through other means. In this method, an upstream city would contribute to a downstream city's water quality improvement project based on the cost of implementing other equally-effective BMPs, and the share of the improvement (or pounds of loading reduction) that they get credit for. This method implies that a pollutant reduction target has been established for each city (i.e., improving the quality of a downstream lake requires a certain level of treatment throughout the watershed). Desired load reductions could be estimated using the simple method described in Method 3 (Relative Pollutant Load).

This method could be considered when an upstream city believes the proposed downstream water quality improvement project is too expensive as a result of BMP selection and/or other design factors, and a less

expensive option exists to achieve the expected results of the downstream project. However, this method is only applicable if the less expensive option is feasible and can be demonstrated to achieve similar results, through comparison of estimated load reductions for the proposed project and the alternative, equivalent treatment. The inherent difficulty of the Cost for Equivalent Treatment approach is assessing an appropriate cost for equivalent treatment. The cost of achieving a given load reduction may vary based on many factors, including treatment location (i.e., upstream versus downstream), further complicating the estimation of a cost for equivalent treatment. Given the number of variables involved, this cost allocation approach is less structured than the other methods.

Ultimately, the cost for equivalent treatment allocation method must be applied on a case-by-case basis and should be limited to situations where other cost allocation methods are not applicable or acceptable to the LMRWMO Board.

Method Comparison via Hypothetical Scenarios

Four hypothetical scenarios involving three contributing cities were developed to illustrate the differences between cost allocation Methods 1 through 4 (Method 5 – Cost of Equivalent Treatment must be considered on a case-by-case basis and cannot be evaluated in the hypothetical situations presented here). Characteristics of the three contributing cities were varied to create the following four scenarios (see Figure 1):

- Scenario 1 – Identical land use with no treatment
- Scenario 2 – Different land use with no treatment
- Scenario 3 – Identical land use with varying levels of treatment
- Scenario 4 – Different land use with varying levels of treatment

For simplicity, all four scenarios include three contributing cities, with equal land area contributions. The contributing areas include:

- City A – 10 acres located in member city A, upstream of the project
- City B – 10 acres located in member city B, upstream of the project
- City C – 10 acres located in member city C, in which the project is located

Each scenario and the resulting relative cost distributions are summarized in the following sections.

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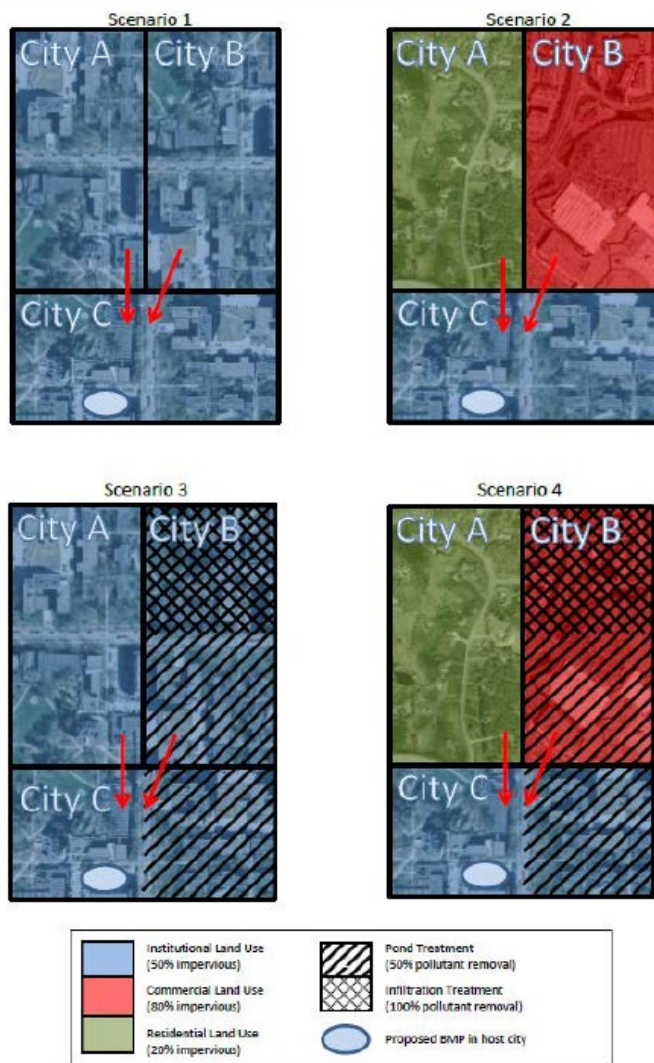Figure 1. Schematic of scenarios used to evaluate cost allocation methods

Figure 1. Schematic of scenarios used to evaluate cost allocation methods

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Scenario 1 – Identical Land Use with No Treatment

Scenario 1 assumes institutional land use (50 percent impervious area) for all areas within each contributing city. All land within each contributing city is assumed to be untreated. This scenario is illustrated in Figure 1. The relative cost breakdown between cities A, B, and C is illustrated for each of the four cost allocation methods in Figure 2.
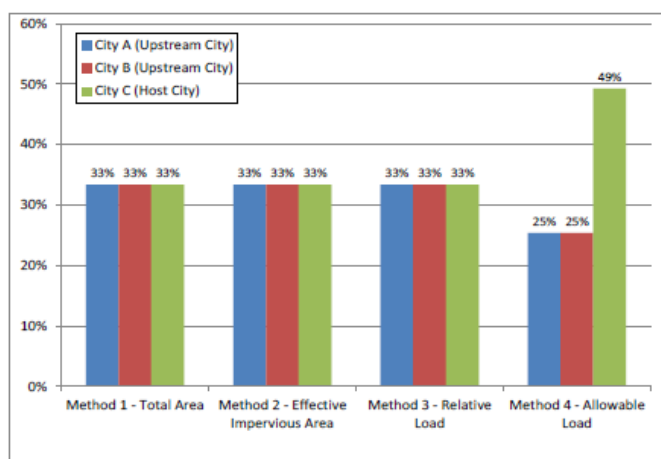

Figure 2. Cost allocation results for Scenario 1 – Identical land use

Costs are equally distributed amongst all cities according to cost allocation Methods 1 through 3 in Scenario 1. As each city's contributing area has identical characteristics, each has the same area, impervious area, and load, resulting in equivalent cost distribution for those methods. In Method 4 – Allowable Pollutant Load, upstream cities A and B receive a credit for an allowable pollutant load, reducing their relative cost from 33 percent of the total to 25 percent of the total. City C, as the host city, bears the cost for that credit; the cost to city C increases from 33 percent to 49 percent.

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Scenario 2 – Different land use with no treatment

Scenario 2 assumes a unique land use type for each contributing city. City A is classified as low density residential land use (20 percent impervious). City B is classified as commercial land use (80 percent impervious). City C, the host city, is designated as institutional land use (50 percent impervious), as in Scenario 1. No treatment is assumed for any of the contributing area. This scenario is illustrated in Figure 1. The relative cost breakdown between cities A, B, and C is illustrated for each of the four cost allocation methods in Figure 3.
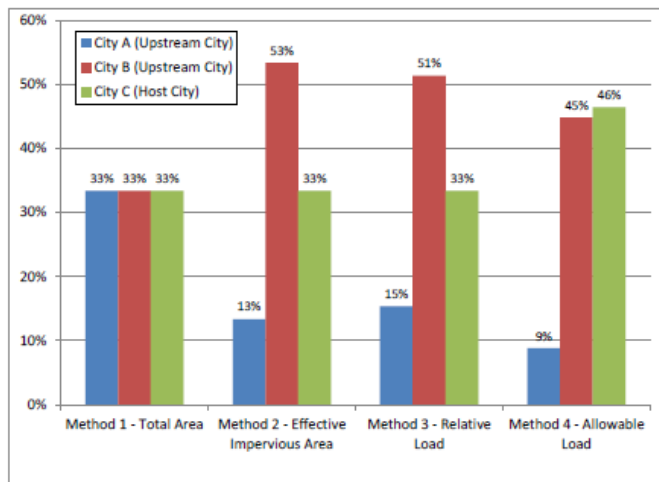

Figure 3. Cost allocation results for Scenario 2 – Different land use

In Scenario 2, the different land uses result in significantly different cost allocations for Method 2 – Effective Impervious Area as compared to Method 1 – Total area. Method 3 – Relative Pollutant Load returns a cost allocation approximately equal to Method 2, as there is no treatment in any of the contributing areas. The small difference between Methods 2 and 3 is due to the runoff coefficient used in the simple method formula to calculate pollutant load. In Scenario 2, the load from city B is much greater than its allowable pollutant load, resulting in a smaller cost difference between Method 3 and Method 4 – Allowable Pollutant Load. Thus, the additional allowable pollutant load borne by the host city (city C) is smaller than in Scenario 1.

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Scenario 3 – Similar land use with varying treatment

Scenario 3 assumes the same land use as in Scenario 1, but adds various levels of existing water quality treatment. City A has no treatment. In city B, half of the tributary area is treated via a pond; the other half is treated by infiltration. Half city C's contributing area is treated by a pond and the remaining half of the area is untreated. Pollutant removal efficiency is assumed to be 50 percent for a pond and 100 percent for infiltration. This scenario is illustrated in Figure 1. The cost breakdown between cities A, B, and C is illustrated for each of the four cost allocation methods in Figure 4.
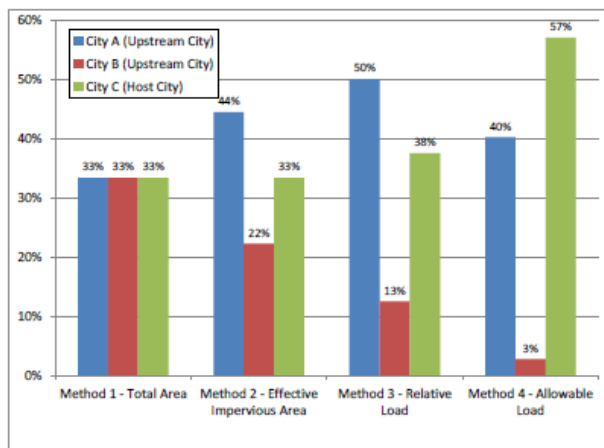

Figure 4. Cost allocation results for Scenario 3 – Identical land use with treatment

As with Scenarios 1 and 2, Method 1 – Total Area results in an equal cost allocation among each city. In Method 2 – Effective Impervious Area, the cost to city A is increased due to the lack of existing treatment BMPs within its contributing area. City B has the lowest "effective" imperviousness because 100% of the contributing area receives some kind of treatment. The cost to city C is higher than city B because only half of the area in city C receives treatment. In Scenario 3, Method 3 – Relative Pollutant Load results in a reduced cost for city B relative to Method 2 because the average treatment efficiency for the two BMPs is greater than the overall efficiency assumed in method 2 (50% pollutant removal). The relative cost to city C between Method 2 and Method 3 is similar, as the assumed treatment efficiency in Method 2 is the same as the treatment efficiency of the single pond in Method 3. The relative cost to city A is similar between Methods 2 and 3 because there is no treatment in city A. Using Method 4 – Allowable Pollutant Load, the cost assigned to city A decreases because city A gets a credit for the load expected under natural watershed conditions ("allowable" load). City B receives the same credit; the cost assigned to city B is minimal because the treatment present in city B reduces the total load to a value close to the allowable pollutant load. The cost to city C increases relative to the other methods, as city C must bear the cost of the allowable pollutant load credited to city A and city B.

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Scenario 4 – Different land use with varying treatment

Scenario 4 is the most complex scenario and a scenario likely to occur in the LMRWMO. This scenario combines the differing land use types in Scenario 2 with the varying levels of existing water quality treatment of Scenario 3. This scenario is illustrated in Figure 1. The cost breakdown between cities A, B, and C is illustrated for each of the four cost allocation methods in Figure 5.
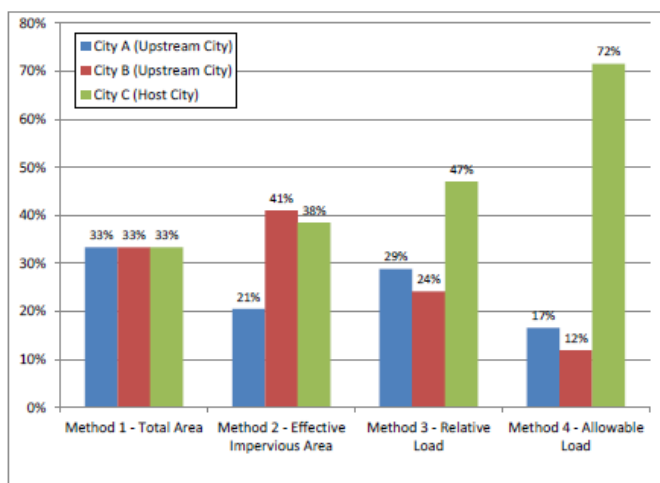

Figure 5. Cost allocation results for Scenario 4 – Different land use with treatment

Method 1 – Total Area results in the same cost breakdown as the other scenarios. In Method 2 – Effective Impervious Area, the lower imperviousness of city A reduces its cost share relative to Method 1. For city B and city C, the costs are approximately the same, as the more intense land use in city B is offset my more treatment. Like Scenario 3, the cost to city B is reduced in Method 3 – Relative Pollutant Load relative to Method 2 because the treatment efficiencies for the two BMPs in city B are greater than the assumed treatment efficiency in Method 2. As in Scenario 3, the reduction in relative cost to city B when moving from Method 2 to Method 3 results in increased relative costs to city A and city C. Method 4 – Allowable Pollutant Load, provides credit to city A and city B for their allowable pollutant loads, resulting in decreased relative costs to those cities and increased relative cost to city C as compared to the other methods.

Summary and Recommendations

Several potential cost allocation methods are presented in this memorandum. The four scenarios described in this memo provide an opportunity to compare and contrast potential water quality project cost allocation methods. Table 2 includes a summary of the cost breakdown between the three hypothetical cities for all cost allocation methods and scenarios. The cost to each city as a fraction of the total project cost is also presented in Figure 6 for all methods and all scenarios. The inputs used in these scenarios are summarized in Table 3.

Table 2. Summary of cost allocation results for all methods and scenarios

Method	Cost to City A / B / C as Percent of Total			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Method 1 – Total Area	33 / 33 / 33	33 / 33 / 33	33 / 33 / 33	33 / 33 / 33
Method 2 – Impervious Area	33 / 33 / 33	13 / 53 / 33	44 / 22 / 33	21 / 41 / 38
Method 3 – Relative Pollutant Load	33 / 33 / 33	15 / 51 / 33	50 / 13 / 38	29 / 24 / 47
Method 4 – Allowable Pollutant Load	25 / 25 / 49	9 / 45 / 46	40 / 3 / 57	17 / 12 / 72

Method 2 – Total Area, Method 3 – Relative Pollutant Load, and Method 4 – Allowable Pollutant Load all possess a wide range of applicability, as these methods account for differing land use and existing treatment in tributary watershed areas.

Method 4 – Allowable Pollutant Load is unique among the cost allocation methods in that it applies an "allowable load" credit to the upstream cities, resulting in increased relative cost to city C. This trend is apparent in each hypothetical scenario. This is most pronounced in Scenario 4, when city A and city B are contributing loading close to their allowable pollutant loads. This effect is masked somewhat in Scenario 2, when upstream city B is contributing load well in excess of its allowable pollutant load. Methods 2 and 3 provide similar results when treatment is not present (Scenarios 1 and 2), but deviate when treatment is present (Scenarios 3 and 4).

Method 4 – Allowable Pollutant Load differs from all other methods in that it gives upstream cities credit for the load expected under natural conditions. Should the LMRWMO wish to maintain this credit, Method 4 is recommended in all situations. If credit for allowable pollutant load is not deemed necessary, Methods 2 and 3 are recommended. When treatment is not present, Method 2 – Impervious Area is recommended. When treatment is present, Method 3 – Relative Pollutant Load is recommended.

Selecting a Cost Allocation Method

The applicability of each cost allocation method described herein varies according to the specifics of the proposed project. In general, use of the simplest method deemed appropriate and acceptable to the LMRWMO Board shall be used. Because of the additional effort associated with the Cost for Equivalent Treatment option, use of that allocation approach should be limited to instances when the affected member cities cannot agree to another cost allocation method.

The following should normally be used for method selection, but is not mandatory:

- If the tributary drainage areas from each member city are similar, consider Method 1 (Total Area Method).

- If the project cost is relatively low, consider Method 1 (Total Area Method) or Method 2 (Effective Impervious Area Method).

- If treatment BMPs are present in upstream tributary areas, consider Method 2 (Effective Impervious Area Method), Method 3 (Relative Pollutant Load) or Method 4 (Allowable Pollutant Load).

- If a quantitative calculation of pollutant load is required, consider Method 3 (Relative Pollutant Load) or Method 4 (Allowable Pollutant Load).

- When a reduction in an upstream city's financial obligation for stormwater discharged to a downstream community is appropriate due to implementation of BMPs in the upstream tributary area, consider Method 4 (Allowable Pollutant Load).

- If affected member cities are dissatisfied with all other methods, consider using the Cost for Equivalent Treatment allocation method.

When the information and resources allow, calculation and comparison of all four methods are recommended as part of determining the most appropriate cost allocation. The LMRWMO Board may determine that the most appropriate cost allocation is based directly on one of the four methods identified herein, or it may be an average or combination of several different methods. Understanding the range of possible cost allocation scenarios will result in greater confidence in the ultimate cost allocation selected.
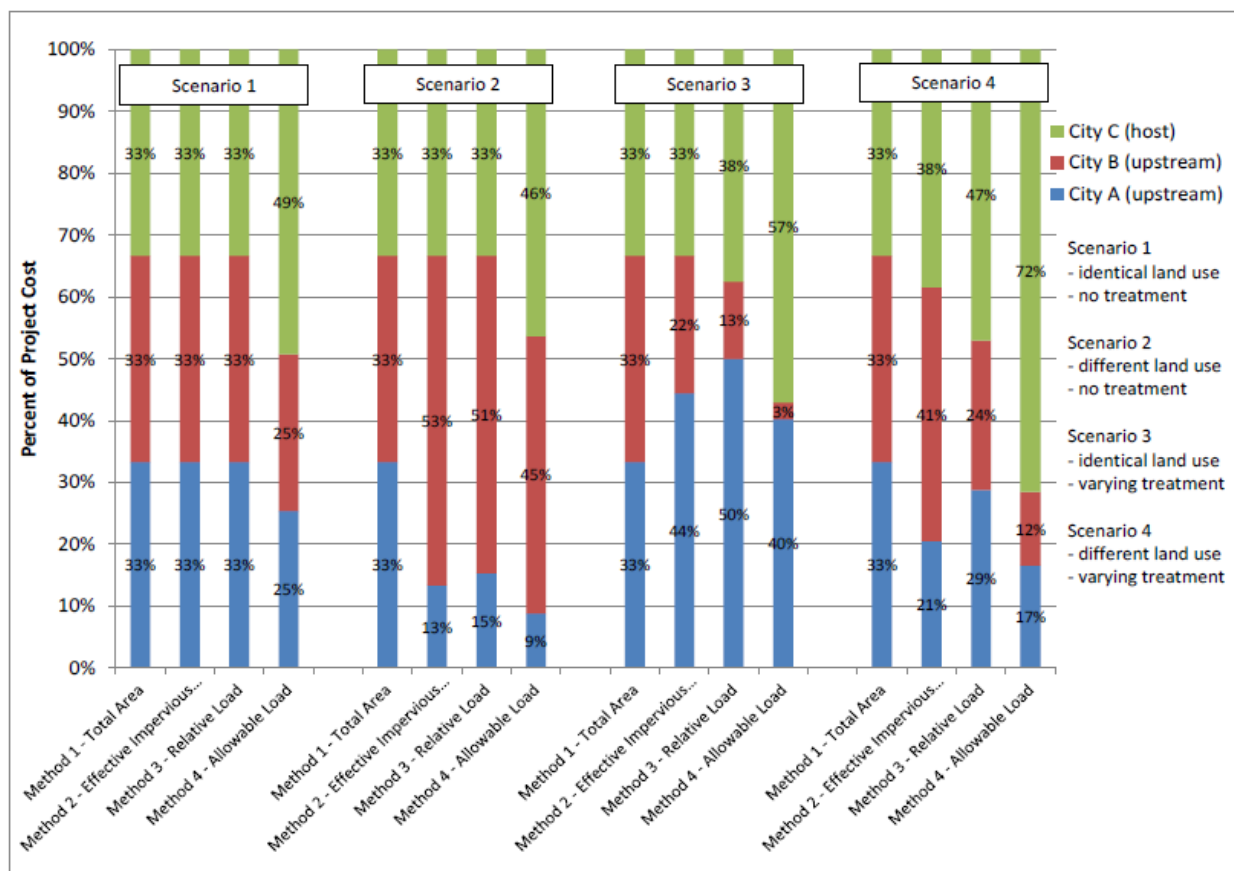
Figure 6. Summary of cost allocation results for all scenarios

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Table 3. Summary of contributing area inputs for Scenarios 1 through 4

Watershed Characteristic	Scenario 1			Scenario 2			Scenario 3			Scenario 4		
	City A	City B	City C	City A	City B	City C	City A	City B	City C	City A	City B	City C
Total Area (acres)	10	10	10	10	10	10	10	10	10	10	10	10
Land Use	Inst	Inst	Inst	Res	Com	Inst	Inst	Inst	Inst	Res	Com	Inst
Impervious Fraction	0.5	0.5	0.5	0.2	0.8	0.5	0.5	0.5	0.5	0.2	0.8	0.5
Is there treatment?	No	No	No	No	No	No	No	Yes	Yes	No	Yes	Yes
Untreated Area (acres)	10	10	10	10	10	10	10	0	5	10	0	5
Area treated by BMP 1 (single pond)	--	--	--	--	--	--	--	5	5	--	5	5
BMP 1 Removal Efficiency	--	--	--	--	--	--	--	0.5	0.5	--	0.5	0.5
Area treated by BMP 2 (infiltration)	--	--	--	--	--	--	--	5	--	--	5	--
BMP 2 Removal Efficiency	--	--	--	--	--	--	--	1.0	--	--	1.0	--

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