Dawn Bartel

From: Brian Helminger <brian.helminger@hvmsd.org>
Sent: Tuesday, November 6, 2018 10:45 AM
To: bruce siebers; Dave Casper; John Sundelius; kcoffey238@gmail.com; Pat Hennessey
Cc: Dawn Bartel; Kevin Skogman
Subject: Siphon operations
Attachments: Syphon calcs.pdf

Commissioners:

This is a follow up on the three siphons discussed at the last meeting. Scott as SMS reviewed flow data from the 4/7 Meter station from 2017. His analysis confirmed what we had already believed was the case and showed flows were not sufficient to meet the 3 fps standard in place to keep grit and debris in suspension while passing thru the siphons.

The following actions have been taken since the last meeting:

- 10/30 R&R and Great Lakes TV attempted the second radar inspection of the 6" and 34" siphons. Both barrels were recleaned and river water was introduced to dilute or flush particulate. Great Lakes reported the second attempt was a success with good images were captured.

- Last week HOV staff entered MH #42 and isolated the 34" siphon. All flows are being directed to the double barrel 16" and 6" siphons. Fabrication of a stainless weir plate has not yet been started but appears to be the long term solution. We anticipate taking further permanent action once a decision is made on the interceptor action plan. We do not want to make any operational changes or major improvements until we know the plan on which direction the siphons are going to flow.

Brian Helminger
District Director

Heart of the Valley
Metropolitan Sewerage District
801 Thilmany Road
Kaukauna, WI 54130
Phone: 920-766-5731
www.hvmsd.org

SMS

SIPHON FLOW VELOCITY and INTERCEPTOR PIPE CAPACITY
Open Channel Hydraulic Capacity (Pipe Full Conditions)
Heart of the Valley Metropolitan Sewerage District

REVIEW 10/30/18

description	pipe				S_o	Q_{design}						Notes
	diameter	A_{area}	P_{wetted}	η		cfs	$cfs_{rounded}$	gpm	$gpm_{rounded}$	mgd	$mgd_{rounded}$	
Siphon Flow Velocity Conditions						V_{fps}						V_{min} 3 fps (NR 110.13 (4))
6 - inch	6	0.2										- to keep grit & solids in suspension
$Q_{average\ annual\ day}$						10.0						
$Q_{peak\ day}$ (*PF 2*)						20.0						
$Q_{peak\ hour}$ (*PF 4*)						39.9						
$Q_{high\ flow\ events}$												
$Q_{peak\ -\ max\ day}$						22.6						
$Q_{max\ -\ top\ 10\ flow\ days}$						17.8						
$Q_{max\ -\ top\ 20\ flow\ days}$						16.3						
$Q_{max\ -\ top\ 30\ flow\ days}$						15.5						
$Q_{low\ flow\ events}$												
$Q_{min\ -\ lowest\ 30\ flow\ days}$						7.7						
16 - inch	16	1.4										
$Q_{average\ annual\ day}$						1.4						MH 42 Weir location - new plate fabricate
$Q_{peak\ day}$ (*PF 2*)						2.8						
$Q_{peak\ hour}$ (*PF 4*)						5.6						
$Q_{high\ flow\ events}$												MH 39 Weir - saw cut/stainless - primary flow → 6" - higher flows → 16"
$Q_{peak\ -\ max\ day}$						3.2						
$Q_{max\ -\ top\ 10\ flow\ days}$						2.5						
$Q_{max\ -\ top\ 20\ flow\ days}$						2.3						
$Q_{max\ -\ top\ 30\ flow\ days}$						2.2						
$Q_{low\ flow\ events}$												
$Q_{min\ -\ lowest\ 30\ flow\ days}$						1.1						
34 - inch	34	6.3										
$Q_{average\ annual\ day}$						0.3						Under all conditions its too big!!
$Q_{peak\ day}$ (*PF 2*)						0.6						
$Q_{peak\ hour}$ (*PF 4*)						1.2						
$Q_{high\ flow\ events}$												
$Q_{peak\ -\ max\ day}$						0.7						Even at 4X the daily max flow its under 3 fps
$Q_{max\ -\ top\ 10\ flow\ days}$						0.6						
$Q_{max\ -\ top\ 20\ flow\ days}$						0.5						
$Q_{max\ -\ top\ 30\ flow\ days}$						0.5						
$Q_{low\ flow\ events}$												
$Q_{min\ -\ lowest\ 30\ flow\ days}$						0.2						

Dawn Bartel

From: Brian Helminger <brian.helminger@hvmsd.org>
Sent: Tuesday, November 6, 2018 9:25 AM
To: bruce siebers; Dave Casper; John Sundelius; kcoffey238@gmail.com; Pat Hennessey
Cc: Dawn Bartel
Subject: HOVMSD PSC Review
Attachments: Interceptor Reach Method - PSC case.pdf

Commissioners:

Attached is some history and background information related to the "reach" method and its use for paying for the design and construction of the original HOVMSD Interceptor. We have been doing some digging in the archives and I will have other items to share in preparation for the next strategic planning meeting on 11/27.

Brian Helminger
District Director

Heart of the Valley
Metropolitan Sewerage District
801 Thilmany Road
Kaukauna, WI 54130
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will be completed under the old extension rule.

20. That Wisconsin Public Service Corporation file tariff sheets to reflect the extension rule ordered herein and that the tariff sheets include the main extension charges applicable for the remaining construction season based on the appropriate cost for calendar year 1979. Such charges shall be used until March 1, 1981 at which time updated charges shall be filed based on the appropriate costs for calendar year 1980.

Appendix A

APPEARANCES: Docket 6690-UR-10

WISCONSIN PUBLIC SERVICE CORPORATION, Applicant by
Steven E. Keane, Attorney
Allen W. Williams, Jr., Attorney
Foley & Lardner
777 East Wisconsin Avenue
Milwaukee, 53202

and by

Paul Liegeois
700 North Adams Street
Green Bay 54305

In support:

Benjamin Cruz-Uribe
Green Bay

John W. Manning
Green Bay

As interest may appear:

City of Two Rivers, by
William Pappathopoulos,
Director of Utilities
Two Rivers

Sturgeon Bay Utilities, by

Raymond R. Maples, Office Manager
Sturgeon Bay

Emil Prilewe
Green Bay

FOOTNOTES

[1]Commission Order, Madison Gas and Electric Co. ("Madison Gas") Docket 2-U-7423 (Wis. Public Serv. Comm., Aug. 8, 1974); Commission Order, Wisconsin Power and Light Docket 2-U-8085 (Public Service Commission Wisconsin 11/12/76) Wisconsin Electric Power Company Docket 6630-ER 2/5 (1978) and Docket 6630-ER-8 (1979) among others.

Complaint of the Villages of Kimberly, Little Chute and Combined Locks, Outagamie County

v.

Heart of the Valley Metropolitan Sewerage District

9300-SR-3

Wisconsin Public Service Commission
October 2, 1980

---

1. APPORTIONMENT, § 16 — Methods and bases — Commercial and collection expenses — Interceptor debt service — "Reach" method — Sewerage.

[WIS.] A sewerage district recovered its "interceptor debt service" costs through charges to user municipalities based on the "reach" method of cost allocation, whereby a municipality shares the costs of only that portion of the interceptor system that it uses, and for the reaches or portions of the interceptor used by

more than one municipality, debt service costs are apportioned on the basis of the design flow of sewage for each municipality estimated for the year 2025; the "reach" method using design flows for the year 2025 was reasonable for allocating costs of the interceptor system attributable to four municipalities, but was found unreasonable for allocating the costs of excess capacity attributable to certain areas within three towns.
p. 388.

2. APPORTIONMENT, § 16 — Methods and bases — Commercial and collection expenses — Interceptor debt service — "Reach" method — Sewerage.

[WIS.] The "reach" method for cost allocation used by a sewerage district was found reasonable because (1) complainants had not shown that the "reach" method was clearly unreasonable, (2) the "reach" method of allocating interceptor costs closely reflected the costs of providing service in that the charges were based only on the portions of the interceptor system used by each municipality, and (3) the decision by a municipality to join a regional sewerage district should be based on receiving a positive benefit for the municipality, even if it would not necessarily result in equal benefits for all member municipalities.
p. 388.

3. APPORTIONMENT, § 10 — Methods and bases — Interceptor excess capacity — Present versus future users — Sewerage.

[WIS.] It was held that a sewerage district's interceptor excess capacity costs attributable to future users should be recovered from all present users on the basis of a uniform volume charge applicable to discharged sewage, because (1) the excess capacity costs attributable to each municipality should be charged to each respective municipality, and (2) charges cannot yet be levied against certain towns not yet connected to the sewerage system, and lacking a method of charging said towns directly, the district should distribute the related costs equally to all present users of the system.
p. 389.

4. SEWERS — Interceptor excess capacity — Definition — Allocation adjustment.

[WIS.] Excess capacity attributable to outside areas not yet connected to a sewer system should be defined as the total design capacity of the "interceptor reach" less the greater of either the design capacity of the reach attributable to the member municipalities or the peak flow from the member municipalities into that reach; the sewerage district should periodically review the usage of each reach or interceptor to determine changes in the excess capacity attributable to the outside areas, in order to allow adjustment to the allocation of excess capacity costs as the outside areas become developed and are connected to the system.
p. 389.

Findings of Fact and Order

On April 12, 1979, the villages of Kimberly, Little Chute and Combined Locks, Outagamie County, filed a complaint with the commission under s. 66.076(9), Wis. Stats., that the sewerage rates of the Heart of the Valley Metropolitan Sewerage District are unreasonable and unjustly discriminatory.

Pursuant to due notice, hearings were held at Madison on July 26, September 4, September 5 and September 6, 1979 before Examiner James Wolter; and on November 8, 1979 before Examiner Ann K. Pfeifer.

Appearances:

VILLAGES OF KIMBERLY, LITTLE CHUTE AND COMBINED LOCKS, OUTAGAMIE COUNTY, Complainants
by
Eugene O. Gehl, Attorney
Timothy D. Fenner, Attorney
Brynelson, Herrick, Gehl & Bucaida
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Post Office Box 1767
Madison 53703

IN SUPPORT:

VILLAGE OF LITTLE CHUTE
by
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Little Chute 54140
and by
Lloyd Vanden Heuvel, Clerk-Treasurer
Post Office Box 163
Little Chute 54140
and by
Robert Ebben, Village Trustee
108 Main Street
Little Chute 54140

VILLAGE OF KIMBERLY
by
James J. Siebers, Village President
390 Paul Drive
Kimberly 54136
and by
Sylvester Lenz, Village Clerk
121 Birch Street
Kimberly 54136

VILLAGE OF COMBINED LOCKS
by
David A. Pennings, Village President
424 Jerelyn Court
Combined Locks 54113
and by
Gerald Wydeven, Trustee
513 Richard Street
Combined Locks 54113

JOSEPH F. SCHIRGER, Consultant
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Oshkosh 54901

JON W. SCHELLPFEFFER, Consultant
4717 Ferris Avenue
Madison 53716

THOMAS H. PROBST,
Professional Engineer
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Menasha 54952

IN OPPOSITION:

HEART OF THE VALLEY
METROPOLITAN SEWERAGE
DISTRICT
by
Steven I. Cohen, Attorney
314 South Madison Street
Post Office Box 1064
Green Bay 54305
and by
David W. Martin, Civil Engineer
9042 Rosewood Drive
Prairie Village, KS 66207
and by
Robert L. Natrop, Engineer-Manager
Post Office Box 187
Kaukauna 54130

CITY OF KAUKAUNA
by
Richard L. Olson, Attorney
Boardman, Suhr, Curry & Field
One South Pinckney Street
Post Office Box 927
Madison 53701
and by
Joan Cleveland, City Clerk
415 Klein Street
Kaukauna 54130

OF THE COMMISSION STAFF:

Scot Cullen
Utility Rates Division

William Eatough
Accounts and Finance Division

Findings of Fact

THE COMMISSION FINDS:

Heart of the Valley Metropolitan Sewerage District (HOVMSD or District) is a metropolitan sewerage district which was organized on October 12, 1974, pursuant to order of the Wisconsin Department of Natural Resources. The organization and operation of HOVMSD are governed by ss. 66.20 through 66.26, Wis. Stats.

HOVMSD was organized to provide sewerage service to the city of Kaukauna and the villages of Kimberly, Little Chute, and Combined Locks. HOVMSD purchased an existing sewage treatment plant owned by the city of Kaukauna and expanded and improved that plant to provide tertiary treatment. In addition, HOVMSD constructed a system of intercepting sewers to transport the sewage flow from the above-stated municipalities to the treatment plant. Each of the municipalities served by HOVMSD maintains its own sewer collector system.

HOVMSD's sewerage facilities were constructed between 1975 and 1979 at a cost of approximately $19 million with approximately $12.7 million attributable to the wastewater treatment plant and approximately $6.3 million attributable to the interceptor sewer system. The district received grants for approximately $14.4 million of the total construction cost of its system. It financed the remaining $4.6 million of the capital cost through general obligation bonds repayable over 12 years. The repayment schedule is shown in exhibit no. 9 of the record in this proceeding. For purposes of cost allocation, the district attributes 67% of its share of the capital costs to the sewage treatment facilities and 33% to the interceptor system.

The issues in this proceeding concern the allocation of the capital costs and debt service costs of the District's interceptor sewers. The District has allocated these costs on the following basis: The District divided the interceptor system into geographic sections or reaches and determined the total construction cost of each reach. The District then allocated the cost of each reach to the municipalities that discharge sewage through that particular reach based on the municipalities' anticipated design flows of sewage estimated for the year 2025. These design flows are based on year 2025 population projections, land use, density of development, municipal boundaries and waste-water generation rates.

Using the cost allocation method just described, the percentage of the interceptor system debt service costs attributable to each municipality is as follows:

Municipality	*Percentage of Interceptor Debt Service*
Kaukauna	4.2%
Combined Locks	18.6%
Little Chute	33.6%
Kimberly	43.6%
	100.0%

Complainants contend that the District's method of allocating interceptor debt service costs to the four municipalities as described above is unreasonable and unjustly discriminatory. The issues to be resolved in this proceeding are as follows:

(1) allocation of interceptor costs using the "reach" method whereby a municipality shares the cost of only that portion of the interceptor through which its sewage flows;

(2) allocation of the portion of the interceptor costs attributable to excess

capacity; and

(3) alleged agreements between the District and the four municipalities by which the method of interceptor cost allocation was agreed upon by all parties: whether or not the alleged agreements are binding on the parties and, further, are the agreements binding on the commission in determining the reasonableness of rates charged by the District.

Following is an explanation of the above-stated issues and a brief discussion of the position of each party with respect to these issues.

Issues

I. Use of the "reach" method of allocating interceptor debt service costs to determine charges to the user-municipalities.

Discussion

Heart of the Valley Metropolitan Sewerage District (HOVMSD) currently recovers its interceptor debt service costs through charges to the user municipalities based on the "reach" method of cost allocation. With the "reach" method, a municipality shares the costs of only the portion of the interceptor system that it uses. For the reaches or portions of the interceptor used by more than one municipality, debt service costs are apportioned on the basis of the design flow of sewage for each municipality estimated for the year 2025. Treatment plant debt service costs are recovered through charges to each municipality based on flow and strength of wastewater discharged to the plant from each municipality.

Positions

Complainant

The position of the complainants (villages of Kimberly, Little Chute and Combined Locks) is that charges for interceptor debt service costs based on the "reach" method of cost allocation are unreasonable and unjustly discriminatory. Complainant contends:

(1) that the benefits of a regional treatment system would not be available without the participation of all four of the municipalities; therefore the economies of scale achieved with the regional system should be apportioned equally to each municipality;

(2) that the interceptor cost allocation should reflect the benefits accruing to the District as a whole rather than the benefits to each municipality separately;

(3) that Kaukauna receives the benefits of less expensive joint treatment because of the regional system; therefore it should share the costs of the entire interceptor system;

(4) that the use of design flow for the year 2025 in allocating the interceptor costs is speculative, therefore unreasonable and arbitrary;

(5) that the benefits of a regional system (economic savings, operational effectiveness, access to greater economic resources, and responsiveness to local needs) cannot be achieved if the level of charge to each municipality is based on geographic location;

(6) that the charges based on the

"reach" method adversely affect growth and economic development in Kimberly, Little Chute and Combined Locks, compared to Kaukauna;

(7) that the use of the "reach" method is unreasonable when applied to a completely new regional system as is the HOVMSD;

(8) that the "reach" method of cost allocation is not unreasonable in theory; but the use of the "reach" method in the context of HOVMSD's system and the resulting charges are unreasonable; and,

(9) that political factors and the reasons for which Kaukauna decided to join the District are irrelevant to the issue of reasonableness of the interceptor debt service charges.

Complainant concludes that the allocation of interceptor debt service costs should be based on proportionate volume of sewage discharged to the treatment plant by each municipality.

Respondent

The position of HOVMSD is that the "reach" method of cost allocation used to determine the interceptor debt service costs applicable to each municipality is reasonable. Respondent contends:

(1) that the standard for determination in this case is whether the rate or practice complained of is clearly unreasonable. If not clearly unreasonable, the present practice should remain unchanged;

(2) that the HOVMSD Commission, by statute, is given discretion in setting rates in part because political factors enter into the cost allocation of the district;

(3) that the "reach" method of cost allocation is a commonly used method within the state and nationally;

(4) that the Joint Committee Report, "Financing and Charges for Wastewater Systems" by the American Public Works Association, the American Society of Civil Engineers, and the Water Pollution Control Federation recognizes the "reach" method as one of the most commonly used of a number of reasonable methods of cost allocation;

(5) that all four municipalities did not enter into the regional agreement on an equal basis; Kaukauna already had adequate treatment facilities whereas Kimberly, Little Chute and Combined Locks were in a position of having to make major improvements to their facilities;

(6) that there is no requirement that each municipality in a regional system has to share equally in the benefits of economy of scale; further, each municipality analyzed its own cost/benefit ratio before deciding to join the regional system;

(7) that at a small expense, Kaukauna could modify its sewage collection system to discharge directly to the treatment plant without using the district's interceptor system. If that were the case, no charge should be levied against Kaukauna for the interceptor debt service costs.

Determination — Issue No. 1

[1, 2] The commission finds that the "reach" method using design flows for the year 2025 is reasonable for allocating costs of the interceptor system attributable to the four municipalities; but is unreasonable for allocating the costs of excess capacity attributable to areas in the towns of Vandenbroek, Harrison and Buchanan. The "reach" method, as used to allocate the costs as described above, is found reasonable under the facts and circumstances of this proceeding because of the following reasons:

(1) Complainants have not shown that the "reach" method used by HOVMSD is clearly unreasonable;

(2) The "reach" method of allocating interceptor costs closely reflects the costs of providing service in that the charges are based on only the portions of the interceptor system used by each municipality; and,

(3) The decision by a municipality to join a regional sewerage district should be based on receiving a positive benefit for the municipality; but would not necessarily result in equal benefits for all member municipalities.

II. The allocation of interceptor debt service costs attributable to excess capacity for future users.

Discussion

The flow capacity of the interceptor system constructed by HOVMSD was designed on the basis of estimated flows from the planned service area for the year 2025. Presently, approximately 44 percent of the interceptor capacity is being used which leaves 56% of the capacity available for future users. Approximately 16.5% of the total interceptor capacity is intended to be available to serve areas in the towns of Vandenbroek, Buchanan and Harrison outside of the municipal boundaries of Kimberly, Little Chute, Combined Locks and Kaukauna. The cost attributable to the interceptor excess capacity is included in the total interceptor debt service cost recovered from the four user-municipalities on the basis of the "reach" method of cost allocation.

Positions

Complainant

Complainants' position is that the costs attributable to interceptor system excess capacity should be borne equally and uniformly by all present users. Complainant concludes that the interceptor debt service costs should be allocated as a constant unit charge to the volume parameter of HOVMSD's sewer rate. As such, the interceptor debt service costs attributable to excess capacity would be allocated among all present users.

Respondent

Respondent contends that its present interceptor debt service cost recovery system is reasonable in that it places the burden on each municipality to appropriately recover such costs from present and future users. Respondent suggests that the municipalities' options of cost recovery include but are not limited to user charges, property taxation, special assessment, deferred assessment and municipal borrowing. Respondent did not separately address the portion of this issue pertaining to the cost of excess capacity attributable to areas outside the boundaries of the four munici-

palities presently served.

Determination — Issue No. II

[3] The commission finds that the District's present method of recovering interceptor excess capacity costs attributable to future users in Kimberly, Little Chute, Combined Locks and Kaukauna is reasonable, but that the present method of recovering interceptor excess capacity costs attributable to the towns of Vandenbroek, Buchanan and Harrison is unreasonable. The commission further finds that such costs should be recovered from all present users on the basis of a uniform volume charge applicable to sewage discharged by Kimberly, Little Chute, Combined Locks and Kaukauna. The commission's finding with respect to this issue is based on the following reasons:

(1) The excess capacity costs attributable to each municipality should be charged to each municipality. As indicated by the Respondent, each municipality has the flexibility to recover these costs from its residents on a reasonable basis. To be necessarily consistent with the "reach" method of recovering costs of the interceptor system, each user-municipality should remain responsible for the portion of the interceptor system attributable to its current and potential use. The District's allocation method reasonably accomplishes that purpose.

(2) A proper cost allocation would provide charges to the towns of Vandenbroek, Buchanan and Harrison for the costs of the interceptor system attributable to each. Such charges can not be levied at this time inasmuch as said towns are not connected to the District's system and are not members of the District. Lacking a method of charging said towns directly, the District should distribute the related costs equally to all present users of the system. It is reasonable to distribute these costs to the present user-municipalities on the basis of the number of customers served within each municipality. Such distribution method would be more equitable than using the "reach" method because it more equally spreads the cost burden over all present users of the system.

As indicated by the District, the distribution of costs based on the number of customers would result in a charge to each municipality essentially equivalent in terms of total dollars to that resulting from a distribution of costs based on the volume of sewage discharged to the District's system by each municipality. The volumetric distribution is more economical and practical to administer than a distribution based on the number of customers. Inasmuch as both of these cost distribution methods produce essentially equivalent results, the commission will authorize the volumetric method, as a reasonable equivalent substitute for a distribution based on the number of customers, because it is more feasible to administer.

[4] The commission further finds with respect to this issue that excess capacity attributable to the outside areas be defined as the total design capacity of the interceptor reach less the greater of either the design capacity of the reach attributable to the member-municipalities or the peak flow from the member-municipalities into that reach. HOVMSD should periodically review the usage of each reach of interceptor to determine changes in the excess capacity of the interceptor attributable to

the outside areas. This will allow adjustment to the allocation of excess capacity costs as the outside areas become developed and are connected to the system.

III. Agreements entered into by Kaukauna, Kimberly, Little Chute and Combined Locks as to the cost allocation of the interceptor sewer system.

Discussion

Several reports prepared for HOVMSD in conjunction with the regional sewage system contain references to the allocation of interceptor debt service costs. These reports were accepted by the user-municipalities at various stages of the planning and construction of the system.

Positions

Respondent

Respondent contends that the above-stated reports constitute the basis for which Kaukauna agreed to join the regional system. Respondent further contends that the acceptance of these reports by the municipalities should be binding on the municipalities and that it would be unfair to Kaukauna to change the cost allocations that were set forth in the agreements.

Complainant

Complainant contends that no agreement exists with respect to the terms of the interceptor cost allocation, and that there was never a meeting of the minds on interceptor cost allocation. Further, complainant contends that the commission is not bound by any such agreement, if one exists, in determining the reasonableness of rates charged by HOVMSD.

Determination — Issue No. 3

The commission finds that the record does not support respondent's claim that there is a binding contractual agreement between the city of Kaukauna and the villages of Kimberly, Little Chute and Combined Locks with respect to the allocation of HOVMSD's interceptor system debt service costs. Furthermore, the commission specifically finds that the acceptance of the above-described reports by said municipalities in conjunction with the planning and construction of the interceptor and sewage treatment systems by HOVMSD does not constitute an intergovernmental agreement between said municipalities as to the allocation of the interceptor debt service costs under the provisions of s. 66.30, Wis. Stats., pertaining to intergovernmental cooperation. It is, therefore, unnecessary to decide the question of whether the existence of any such agreement under s. 66.30, Wis. Stats. or otherwise, would bind the commission in determining the reasonableness of rates charged by HOVMSD pursuant to s. 66.076(9), Wis. Stats.

The attached appendix shows a summary of interceptor debt service cost allocation to the city of Kaukauna and the villages of Kimberly, Little Chute and Combined Locks comparing the District's present method of allocation with the allocation incorporating the changes required herein.

The authorization to revise rates for sewer service is classified as a Category 3 Action under s. PSC 2.90(3), Wis. Adm. Code. It consequently requires neither an

environmental impact statement under s. 1.11, Wis. Stats., nor an environmental screening under the Revised Guidelines for the Implementation of the Wisconsin Environmental Policy Act issued by Executive Order No. 26, February 1976.

Ultimate Findings of Fact

THE COMMISSION FINDS:

1. That the rates, rules and practices of the District are not unreasonable or unjustly discriminatory with respect to the use of the "reach" method based on design flows for the year 2025 in allocating the interceptor debt service costs attributable to the city of Kaukauna and the villages of Kimberly, Little Chute and Combined Locks.

2. That the rates, rules and practices of the District are unreasonable and unjustly discriminatory with respect to the use of the "reach" method in allocating the interceptor debt service costs attributable to excess capacity for future service in the towns of Vandenbroek, Buchanan and Harrison.

Conclusions of Law

THE COMMISSION CONCLUDES:

1. That the commission has jurisdiction in accordance with s. 66.076(9), Wis. Stats. to review the rates, rules and practices of Heart of the Valley Metropolitan Sewerage District which are the subject of the complaint filed by the villages of Kimberly, Little Chute and Combined Locks in this proceeding.

2. That the commission has authority under s. 66.076(9), Wis. Stats., to require Heart of the Valley Metropolitan Sewerage District to revise its rates, rules and practices in accordance with the preceding findings of fact; and that such an order should be issued.

Order

THE COMMISSION THEREFORE ORDERS:

1. That Heart of the Valley Metropolitan Sewerage District allocate the interceptor excess capacity costs attributable to the towns of Vandenbroek, Buchanan and Harrison to each of the current user-municipalities on the basis of a uniform volume charge.

2. That excess capacity of each reach of the interceptor system attributable to the towns of Vandenbroek, Buchanan and Harrison be defined as the total design capacity of the interceptor reach less the greater of either the design capacity of the reach attributable to the user-municipalities or the peak flow from the user-municipalities into that reach.

3. That in all other respects the complaint of the villages of Kimberly, Little Chute and Combined Locks be dismissed.

4. That Heart of the Valley Metropolitan Sewerage District comply with the provision of paragraphs no. 1 and 2 of this order until said order is modified or rescinded by the commission.

5. That jurisdiction is retained over the rates, rules and practices of Heart of the Valley Metropolitan Sewerage District only with respect to paragraph no. 4 of this order.

Dawn Bartel

From: Brian Helminger <brian.helminger@hvmsd.org>
Sent: Tuesday, November 6, 2018 9:32 AM
To: bruce siebers; Dave Casper; John Sundelius; kcoffey238@gmail.com; Pat Hennessey
Cc: Dawn Bartel
Subject: Original cost allocations for HOVMSD
Attachments: 1976 Donohue Report.pdf

Commissioners:

Attached is the original Donohue report describing cost allocations for member communities for the treatment plant and the Interceptor sewer dating to the creation of the District.

Brian Helminger
District Director

Heart of the Valley
Metropolitan Sewerage District
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CAPITAL COST ALLOCATION
OF THE
PROPOSED WASTEWATER
TREATMENT FACILITIES
HEART OF THE VALLEY
METROPOLITAN SEWERAGE
DISTRICT

PRELIMINARY

AUGUST, 1976

Donohue & Associates, Inc.
Consulting Engineers
Sheboygan, WI

DONOHUE & ASSOCIATES, INC.

4738 N. 40TH STREET
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CONSULTING & DESIGN ENGINEERS

SHEBOYGAN • GREEN BAY • WAUKESHA

August 17, 1976

Heart of the Valley
Metropolitan Sewerage Commision
Kaukauna, Wisconsin 54130

Re: Heart of the Valley
Metropolitan Sewerage District
Capital Cost Allocation Program
Project No. 4353

Gentlemen:

We are respectively submitting herewith the proposed capital allocation costs pertaining to the proposed wastewater treatment facilities and interceptor sewer required to serve the Heart of the Valley Metropolitan Sewerage District.

This report provides information concerning the methods by which the capital cost for repayment of the general obligation bonds can be raised and divided equitably amongst the communities associated with the Heart of the Valley Metropolitan Sewerage District. Following your review, we would be pleased to meet with the commission at their convenience to review and discuss the subject matter presented herein.

Very truly yours,

DONOHUE & ASSOCIATES, INC.

John F. Stauss, P.E.
Senior Associate

Kenneth L. Buesing, P.E.

Patrick Ries
Project Engineer

KLB/kh

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CHAPTER I

INTRODUCTION

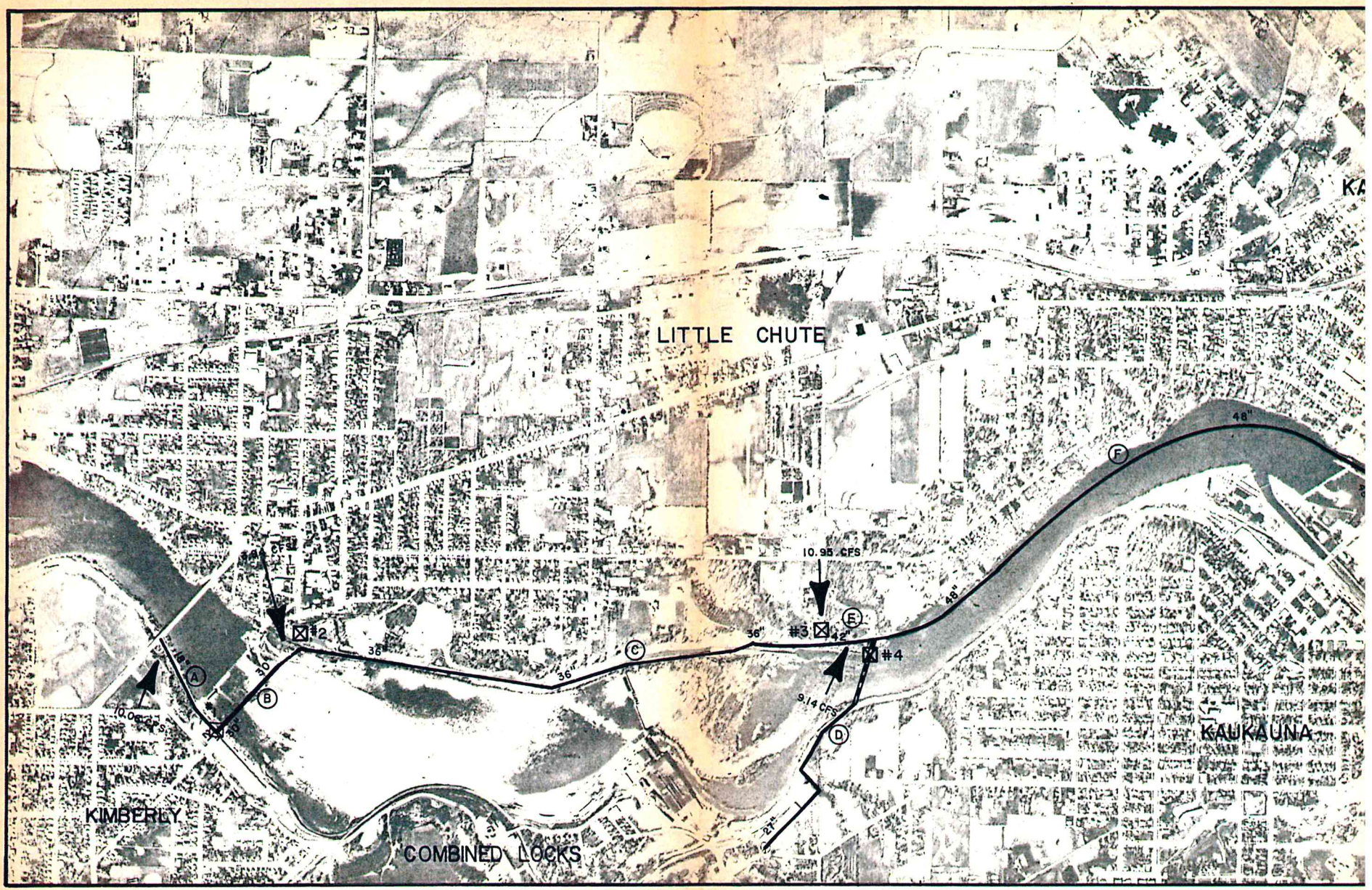
GENERAL

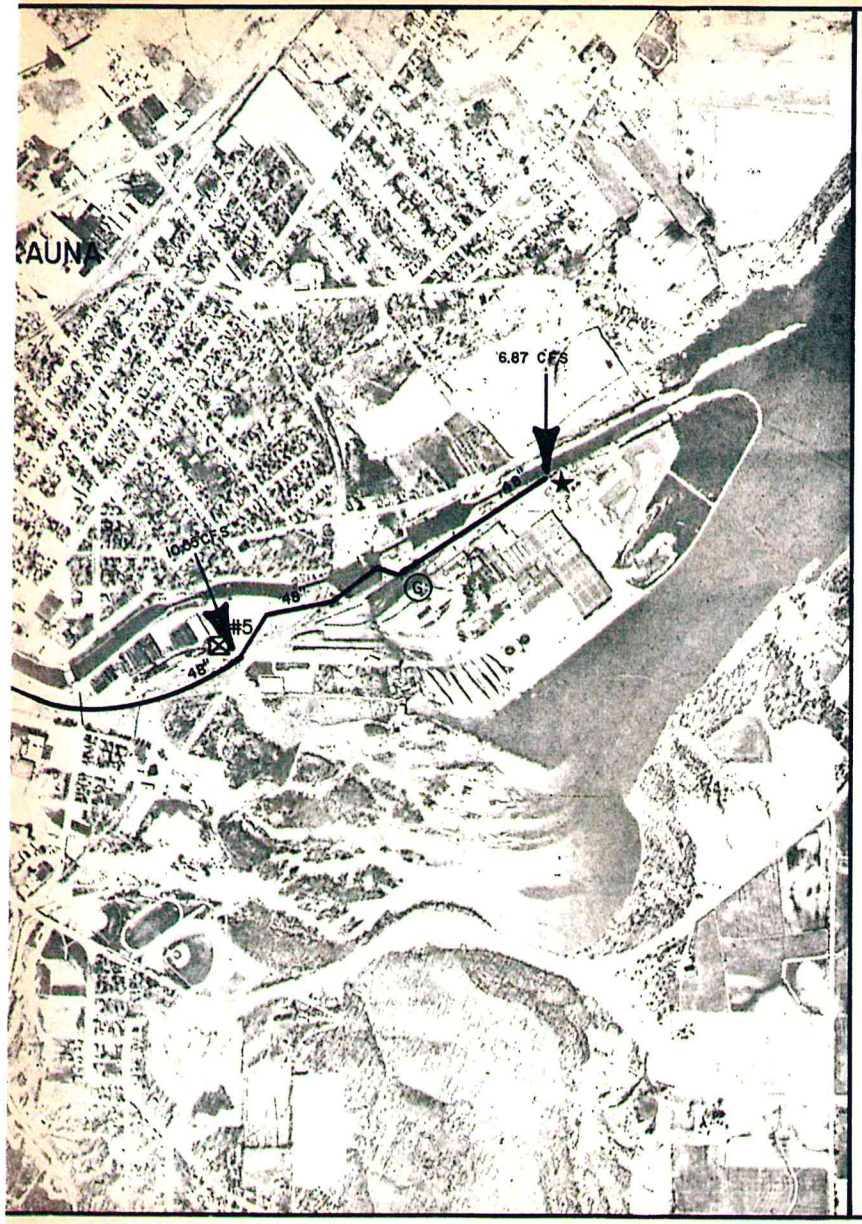
The Heart of the Valley Metropolitan Sewerage District is located in the State of Wisconsin, along the lower Fox River, between Lake Winnebago and Green Bay and presently consists of the City of Kaukauna and the Villages of Little Chute, Kimberly, and Combined Locks. The sanitary districts of Vandenbroek and Darboy are located within the District's planning area but are not presently members of the Heart of the Valley Metropolitan Sewerage District. A regional commission, which is organized to provide wastewater collection and treatment services to the member communities and the surrounding region, governs the District.

The Heart of the Valley Metropolitan Sewerage District has applied for federal financial assistance to construct a regional wastewater treatment facility and interceptor sewer. This proposed project is necessary to upgrade the level of treatment provided wastewater presently being generated within the District and to eliminate the bypassing of untreated wastewaters to the Fox River. The proposed regional facility, which is located at the former Kaukauna wastewater treatment plant site (see Plate 1), has been sized for an average daily hydraulic capacity of 5.5 million gallons per day. Tertiary waste treatment facilities are included to ensure that Wisconsin water quality standards are achieved.

On June 29 and July 1, 1976, the District opened bids for construction of approximately 24,000 feet of interceptor sewer and the Phase I portion of the wastewater treatment facility. The interceptor sewer is designed to transport wastewaters generated from the participating communities to the regional wastewater treatment facility. Phase I is the liquids handling, secondary treatment portion of the facility, while Phase II, to be bid at a future date, is the solids handling and tertiary treatment portion. The total cost for the entire project is estimated to be approximately $20,000,000.

To aid the Heart of the Valley Metropolitan Sewerage District in the construction of wastewater collection and treatment facilities, the federal government, through the U.S. Environmental Protection Agency (EPA), has a program to provide financial assistance for funding part of the capital costs. This aid amounts to 75 percent of the eligible cost.


LITTLE CHUTE
KIMBERLY
COMBINED LOCKS
KAUKAUNA
#2
#3
#4
10.95 CFS
9.14 CFS
10.06 CFS
A
B
C
D
E
F
18"
30"
36"
42"
48"
21"



INTERCEPTOR SEWER ROUTING AND REACHES AT 50 YEAR DESIGN (2025)

FOR
THE

HEART OF THE VALLEY METROPOLITAN SEWERAGE DISTRICT REGIONAL WASTEWATER TREATMENT FACILITY

N

0 500' 1000'

LEGEND

- ☒ METER STATION
- ★ EXISTING TREATMENT PLANT, KAUKAUNA – SITE OF REGIONAL WASTEWATER TREATMENT FACILITY
- INTERCEPTOR SEWER, SIPHON INTERCEPTOR
- (E) DESIGNATION OF "REACH" OF INTERCEPTOR
- FLOW INTRODUCTION FROM COMMUNITIES

PLATE NO. 1

DONOHUE & ASSOCIATES, INC.
CONSULTING ENGINEERS
SHEBOYGAN, WISCONSIN
1976

A-31635

PURPOSE AND SCOPE

The purpose of this report is to provide the Heart of the Valley Metropolitan Sewerage District with suggested procedures for the allocation of the local capital costs to member communities for the construction of the interceptor sewer and wastewater treatment facility. The following is a general scope of the items presented in this report:

1. To review population and wastewater flows for the planning area.

2. To assign flows to each planning area served by the District.

3. To describe the procedures used for allocating capital costs.

4. To present tables reflecting the allocated capital costs for the wastewater treatment facility and the interceptor sewer to communities in the planning area under several combinations of present and future District members.

CHAPTER II

POPULATION, WASTEWATER FLOWS,AND LOADINGS

GENERAL

The allocation of capital costs to member communities will be based on a consideration of population and wastewater flow. This chapter of the report will present a discussion relative to populations served by the District facilities and wastewater flows from the participating communities.

POPULATION PROJECTIONS

The East Central Wisconsin Regional Planning Commission (ECWRPC) published a report entitled "Population Study" in 1973. This report contains a projected future population through the year 2000 for the ECWRPC area, which encompasses the Heart of the Valley Metropolitan Sewerage District planning area.

The population forecasting procedure used in the report is the Cohort Survival Method. Utilizing this procedure, the 1970 population of the area was divided into five year age-sex Cohorts, or groups ranging from ages 0 to 4 to ages 85 and over. These groups were individually aged ten years, thereby becoming a new older age-sex Cohort or group in 1980. A group specific net migration rate was then applied to the surviving Cohort population to adjust the surviving population of each group up or down to account for net in or out migration. The result was a 1980 population for the new Cohort which was aged ten years from the original Cohort or group. The same process was then repeated to again age the Cohort to 1990 and to the year 2000.

From the information provided in the ECWRPC Report concerning future populations and further discussions with planning commission officials, the population projections for the areas included as a part of the Heart of the Valley planning area have been determined as shown in Table 1. Because the population projection technique generated forecasts for every ten year period, the 1995 population for each planning area was interpolated.

TABLE 1

POPULATION PROJECTION
Heart of the Valley Metropolitan Sewerage District

Planning Area	1970	1980	1990	1995	2000
Combined Locks	2,774	3,336	4,060	4,423	4,785
Darboy	1,719	2,292	4,408	5,467	6,525
Kaukauna	12,020	13,361	15,301	16,272	17,242
Kimberly	6,118	6,832	6,976	7,048	7,120
Little Chute	5,491	6,034	6,885	7,310	7,736
Vandenbroek	1,642	2,166	2,722	3,000	3,278
TOTAL	29,764	34,021	40,352	43,520	46,686

The six planning areas which will ultimately receive regional wastewater collection and treatment service as listed in Table 1 are shown on Plate 2. It should be noted that the 1970 population figures listed in Table 1 are not the same as the 1970 census figures for each community. This is due to the differences between the existing community boundaries and the planning area boundaries shown on Plate 2.

WASTEWATER FLOWS

Projected Flows:

Based upon an evaluation of information from the records of the existing wastewater treatment plants at Kaukauna, Kimberly, and Little Chute, wastewater sampling and testing, water use data, and appropriate Wisconsin Department of Natural Resources Administrative Codes, a projected residential-commercial wastewater flow of 100 gallons per capita per day (gpcpd) was considered to be representative of residential and commercial flow contribution for the District. Using 100 gpcpd and the population values from Table 1, the residential-commercial sewage flows for each planning area in 1995 were evaluated as shown in Table 2.

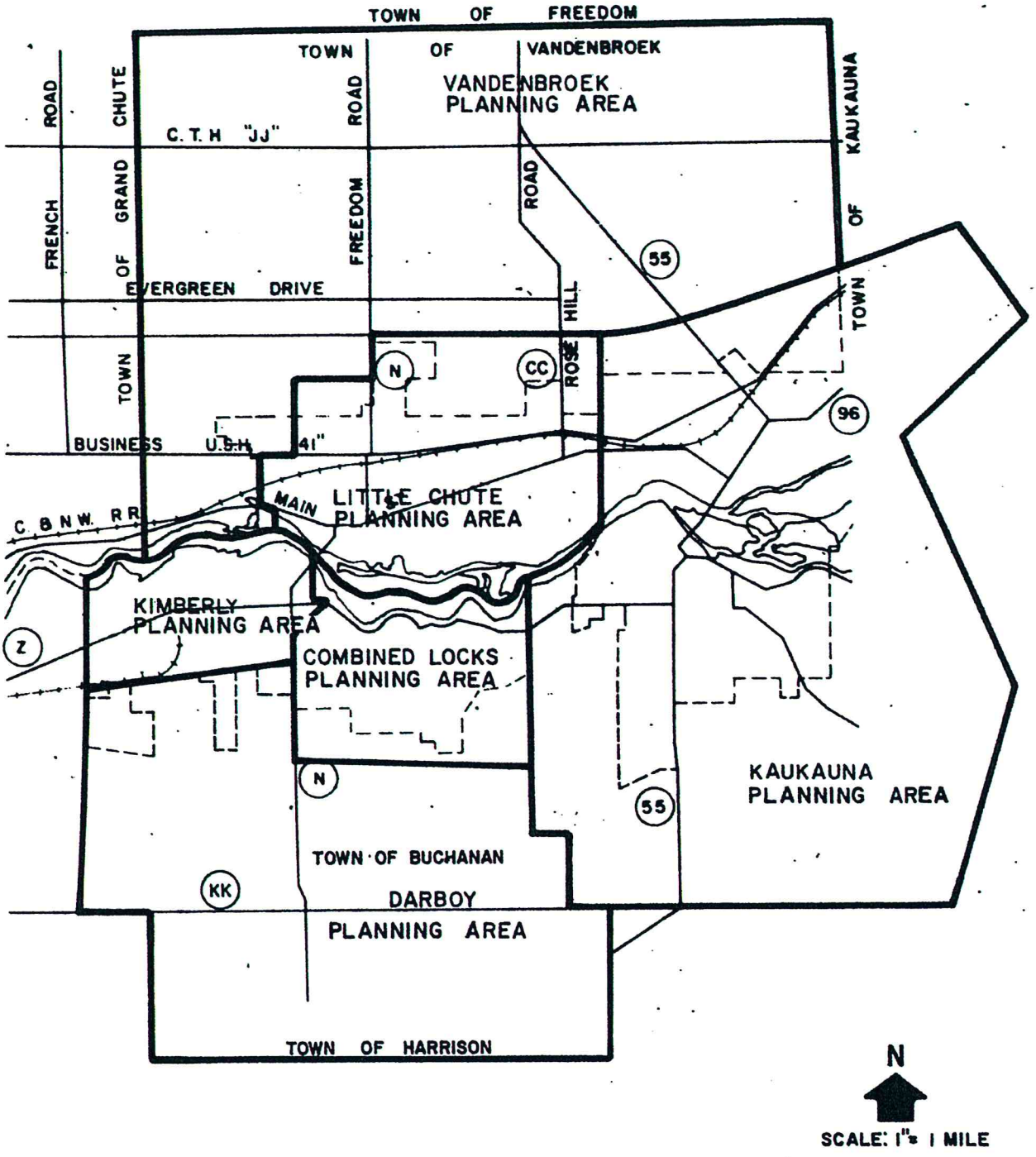


PLATE 2

PLANNING AREAS

HEART OF THE VALLEY METROPOLITAN SEWERAGE DISTRICT

1976

DONOHUE & ASSOCIATES, INC.
CONSULTING ENGINEERS
SHEBOYGAN, WISCONSIN

L-7674

TABLE 2

RESIDENTIAL-COMMERCIAL SEWAGE FLOW PROJECTIONS
Heart of the Valley Metropolitan Sewerage District

Planning Area	Projected 1995 Population	Projected Residential-Commercial Sewage Flow - MGD*
Combined Locks	4,423	0.442
Darboy	5,467	0.546
Kaukauna	16,272	1.627
Kimberly	7,048	0.704
Little Chute	7,310	0.731
Vandenbroek	3,000	0.300
TOTAL	43,520	4.350

*Based upon 100 gpcpd

The proposed industrial sewage flow for 1995 was projected in the Heart of the Valley Metropolitan Sewerage District Facilities Plan dated March 17, 1975. The data developed in the facilities plan was reviewed for this report to determine its continued accuracy. Based upon this review, which indicated the industrial wastewater flow projections to be accurate, the projected industrial wastewater flows are shown in Table 3.

TABLE 3

INDUSTRIAL WASTEWATER FLOW PROJECTIONS
Heart of the Valley Metropolitan Sewerage District

Planning Area	Projected 1995 Industrial Wastewater Generated (MGD)
Combined Locks	0.053
Darboy	0
Kaukauna	0.754
Kimberly	0.161
Little Chute	0.182
Vandenbroek	0
TOTAL	1.150

For the proposed treatment facility, the total projected 1995 wastewater flow (design flow) from each planning area is shown in Table 4. Each planning area's portion, in percent of the design flow, is also indicated.

TABLE 4

TOTAL WASTEWATER FLOW PROJECTIONS
Heart of the Valley Metropolitan Sewerage District

Planning Area	Projected 1995 Residential-Commercial Wastewater Flow - MGD	Projected 1995 Industrial Wastewater Flow MGD	Total Projected 1995 Wastewater Flow - MGD	Percent Of Total Flow
Combined Locks	0.442	0.053	0.495	9.0%
Darboy	0.546	---	0.546	9.9%
Kaukauna	1.627	0.754	2.381	43.3%
Kimberly	0.704	0.161	0.865	15.7%
Little Chute	0.731	0.182	0.913	16.6%
Vandenbroek	0.300	---	0.300	5.5%
TOTAL	4.350	1.150	5.500	100.0%

Present Flows:

The 1975 wastewater flow to the three existing treatment plants was used to determine the member community's portion of the present sewage flow. Table 5 shows the wastewater flow and percent of the total flow from the present member communities.

TABLE 5

1975 WASTEWATER FLOWS
Heart of the Valley Metropolitan Sewerage District

Planning Area	Total 1975 Wastewater Flow - MGD	Percent Of Total Flow
Combined Locks	0.239	8.0%
Darboy	0	0.0%
Kaukauna	1.549	52.0%
Kimberly	0.546	18.3%
Little Chute	0.648	21.7%
Vandenbroek	0	0.0%
TOTAL	2.982	100.0%

WASTEWATER LOADINGS

A review was made of the wastewater characteristics at each of the existing municipal treatment plants. On the basis of the review, it appears that the wastewater strength approximates normal domestic sewage. The review indicates that no significant industries are contributing wastes to the District. The three existing paper mills in the Heart of the Valley Metropolitan Sewerage District presently provide wastewater treatment for their own industrial process wastewater. Discussions with officials of these firms indicated that they would continue to operate their own treatment works.

Therefore, based on the above review of the existing wastewater strengths and anticipating future wastewater strengths to be approximately equivalent to domestic wastewater strengths, the wastewater treatment facility is designed for domestic wastewaters. If an industry with high strength wastewaters was to begin utilizing the wastewater treatment plant, pretreatment processes to reduce the strength to domestic levels could be implemented. Since similar, low strength, domestic type wastewater loadings (BOD, suspended solids, and phosphorus) exist throughout the District, the allocation of capital costs can be evaluated on the basis of the volume of wastewater alone.

CHAPTER III

ALLOCATION OF CAPITAL COSTS FOR WASTEWATER TREATMENT FACILITIES

INTRODUCTION

The previous chapters of this report reviewed the pertinent background material to be considered when allocating capital costs for wastewater treatment services. It was shown that for the Heart of the Valley Metropolitan Sewerage District, the capital costs could be allocated on the basis of flow alone. This chapter will describe the suggested methods by which the capital costs for the wastewater plant can be allocated to members of the District.

COSTS AND BONDS

The estimated total cost of the Heart of the Valley Metropolitan Sewerage District wastewater treatment facility is approximately $14,000,000, and the estimated total cost of the interceptor sewer is approximately $6,000,000. The present capital cost breakdown assumes 70 percent of the total costs for the wastewater treatment facility and 30 percent for the interceptor sewer. Costs and percentages would be revised to reflect actual conditions when all the contract amounts are available.

The Heart of the Valley Metropolitan Sewerage District sold general obligation bonds in the fall of 1975 in the amount of $4,600,000. The bond repayment schedule selected by the District and the distribution of the payments between the wastewater treatment facilities and the interceptor sewer, based on the above percentages, is shown in Table 6.

Until the spring of 1976, the Wisconsin Department of Natural Resources provided an additional 5 percent state grant supplemental to the EPA program for all eligible pollution abatement projects. They also provided an additional 15 percent funding for all tertiary treatment facilities. Due to the recent elimination of the DNR funding program, it may be necessary for the District to borrow additional funds. Thus, the payment schedule shown in Table 6 may be revised if additional funds are borrowed.

TABLE 6

BOND PAYMENT SCHEDULE
Heart of the Valley Metropolitan Sewerage District

Date Due	Total Payment	Payment For Wastewater Treatment Facilities (70%)	Payment For Interceptor (30%)
June 1, 1977	$ 634,300.00	$ 444,010.00	$ 190,290.00
June 1, 1978	651,475.00	456,032.50	195,442.50
June 1, 1979	628,675.00	440,072.50	188,602.50
June 1, 1980	605,875.00	424,112.50	181,762.50
June 1, 1981	583,075.00	408,152.50	174,922.50
June 1, 1982	560,275.00	392,192.50	168,082.50
June 1, 1983	537,475.00	376,232.50	161,242.50
June 1, 1984	514,675.00	360,272.50	154,402.50
June 1, 1985	515,525.00	360,867.50	154,657.50
June 1, 1986	490,025.00	343,017.50	147,007.50
June 1, 1987	464,312.50	325,018.75	139,293.75
June 1, 1988	438,175.00	306,722.50	131,452.50
TOTAL	$6,623,862.50	$4,636,703.75	$1,987,158.75

ALLOCATION OF CAPITAL COSTS FOR PARTICIPATING PLANNING AREAS

The suggested allocation of the annual capital costs for the regional treatment facility shown in Table 6 would be distributed among the participating planning areas (communities) based upon the actual annual sewage flow from each planning area for the previous year. For example, because only the four initial planning areas (Kimberly, Combined Locks, Little Chute, and Kaukauna) are part of the District when the first payment is due in 1976, their individual costs for the wastewater treatment plant would be based on the 1975 wastewater flow, as shown in Table 5. The first year costs would be as shown in Table 7.

TABLE 7

CAPITAL COSTS FOR THE FIRST YEAR'S PAYMENT
OF WASTEWATER TREATMENT PLANT
Heart of the Valley Metropolitan Sewerage District

Planning Area	Percent of Total 1975 Wastewater Flow	First Year's Capital Cost For Wastewater Treatment Plant
Combined Locks	8.0	$ 35,520.80
Darboy	---	---
Kaukauna	52.0	230,885.20
Kimberly	18.3	81,253.83
Little Chute	21.7	96,350.17
Vandenbroek	---	---
TOTAL	100.0	$444,010.00

In the future, sewer connections would be made in the District to serve new residential, commercial, or industrial customers. It is anticipated that by the design year 1995, the treatment plant's capacity for future wastewater flows would be utilized. Since the wastewater plant was designed to serve not only existing but future customers, it is suggested that the future customers should pay for their share of the capital cost of the wastewater plant. The planning areas that are paying for the future users now would, therefore, be reimbursed when future sewer connections are made.

To implement the above concept, it is necessary to define a normal user of wastewater treatment services as an Equivalent Household Unit (EHU). An Equivalent Household Unit is 330 gallons per day of domestic strength sewage, which is approximately

equal to a household of 3.3 persons generating 100 gallons of wastewater per capita per day. For future commercial and industrial customers, it would be necessary to compare their projected sewage flows and concentrations to an EHU and determine the number of EHU's for each user.

The average annual bond payment is approximately $386,400 for each year of the 12 year period that the wastewater plant bonds will be amortized by the Heart of the Valley Metropolitan Sewerage District. The wastewater facility has a design flow of 5.5 MGD, which is equal to 16,667 Equivalent Household Units. Therefore, the annual cost for each Equivalent Household Unit is approximately $23.

Each planning area must, therefore, keep accurate records of the number of Equivalent Household Units added to their sewage collection system and annually report this information to the District. The District would then levy a connection fee, $23 in 1977; $46 in 1978; etc., to each community on the basis of new Equivalent Household Units. This connection fee would cover the new users' share of the annual capital costs assessed to and paid by existing users of the system for the years the new user was not utilizing the District wastewater treatment system. The monies raised from the connection fee would be reimbursed to the planning areas that have paid for the reserve capacity of the wastewater plant.

An example to illustrate the method of allocation of capital costs is shown to clarify the suggested procedures. Assume 25 Equivalent Household Units from the Vandenbroek planning area connect into the regional facility in the third year of operation, while no new Equivalent Household Units are brought in from the other planning areas. These 25 Equivalent Household Units would be charged by the Heart of the Valley Metropolitan Sewerage District a connection fee of $69, or a total of $1,725. Vandenbroek, as a member community, would pay to the Heart of the Valley Metropolitan Sewerage District the $1,725 connection fee.

The connection fee would then be distributed among the initial planning areas who have paid for the reserve capacity of the wastewater treatment plant. Table 5 indicates the initial planning area's 1975 wastewater flows and a percent of total flows. For this example, it has been assumed that the percent of total flows for each future year is the same as 1975. The reimbursement is, therefore, as shown in Table 8.

TABLE 8

REIMBURSEMENT OF CONNECTION FEES TO INITIAL PLANNING AREAS
Heart of the Valley Metropolitan Sewerage District

Planning Area	Percent of Total Wastewater Flow	Amount Reimbursed
Combined Locks	8.0%	$ 138.00
Darboy	0.0%	0
Kaukauna	52.0%	897.00
Kimberly	18.3%	315.67
Little Chute	21.7%	374.33
Vandenbroek	0.0%	0
TOTAL	100.0%	$1,725.00

The Town of Vandenbroek would also be required to begin payments on the capital costs of the wastewater treatment plant. The capital costs would be calculated based on Vandenbroek's actual wastewater flow to the treatment plant.

CHAPTER IV

ALLOCATION OF ANNUAL CAPITAL COST FOR INTERCEPTOR SEWERS

INTRODUCTION

The interceptor sewer will be used to transport wastewaters from the planning areas to the regional wastewater treatment facility. This chapter will describe the suggested allocation of capital costs for the interceptor sewer to members of the District based on the design flow.

COST ALLOCATION PROCEDURE

Plate 1 shows the interceptor sewer which was sized to serve the Heart of the Valley planning area to the year 2025. The planning area was defined in the Facilities Plan and is shown on Plate 2.

The East Central Wisconsin Regional Planning Commission (ECWRPC) divided the District into traffic analysis zones (TAZ) for the purpose of land use projections and an area traffic analysis. The number of homes within each TAZ (see Plate 3) along with the population was identified. On the basis of this data, future 1980 and 2000 population forecasts for each TAZ were completed by ECWRPC.

The interceptor sewer has been divided into sections, or reaches, to provide for the allocation of the annual capital cost associated with the interceptor to the planning areas. Each individual reach has been assigned a letter designation as shown on Plate 1. Each planning area may contribute wastewater to the interceptor at one or two locations, or input points, through the existing sewage collection systems. The length of sewer between each input point is, therefore, defined as a reach.

ALLOCATION OF ANNUAL CAPITAL COST

The Facilities Plan for the Heart of the Valley Metropolitan Sewerage District designated various design flows that would be expected at each input point into the regional interceptor sewer. These design flows are based upon 2025 population projections, land use, population density, and a certain wastewater generation rate. The design flows for each planning area are attached to this report as Appendix A.

It is possible that the wastewater flowing into the interceptors at various input points could be generated in more than one planning area. Therefore, the quantity of wastewater flow from each planning area was estimated based upon the design flows of each planning area. The flow and cost of the individual reaches of interceptor could then be allocated to the corresponding planning areas. From the evaluation, the percent use of the reaches was defined as shown in Table 9.

TABLE 9

PROJECTED WASTEWATER FLOWS AND PERCENT USE
FOR EACH REACH OF INTERCEPTOR
Heart of the Valley Metropolitan Sewerage District

Reach of Interceptor	Planning Area Utilizing Reach	Projected 2025 Flow From Planning Area (cfs)		Percent Use by Planning Area
A	Kimberly	9.874		100.0%
B	Kimberly	9.874		98.2%
	Combined Locks	0.185		1.8%
C	Kimberly	9.874		70.5%
	Combined Locks	0.185		1.3%
	Little Chute	3.943		28.2%
D	Combined Locks	4.725	100%	51.7%
	Darboy	4.420		48.3%
E	Kimberly	9.874	44.49	39.6%
	Combined Locks	0.185	0.78	0.7%
	Little Chute	12.151	54.71	48.7%
	Vandenbroek	2.739		11.0%
F	Kimberly	9.874	36.70	29.0%
	Combined Locks	4.910	18.20	14.4%
	Little Chute	12.151	44.06	35.6%
	Vandenbroek	2.739		8.0%
	Darboy	4.420		13.0%
G	Kimberly	9.874	26.30	22.1%
	Combined Locks	4.910	13.09	11.0%
	Little Chute	12.151	32.38	27.2%
	Vandenbroek	2.739		6.1%
	Darboy	4.420		9.9%
	Kaukauna	10.550	28.21	23.7%

ALLOCATION OF INTERCEPTOR SEWER ANNUAL CAPITAL COSTS FOR PARTICIPATING PLANNING AREAS

The annual bond payments attributable to the interceptor sewer were presented in Table 6. To allocate the annual bond payments of the interceptor among the planning areas, it was necessary to determine what portion of the total capital cost is associated with each reach by reviewing the plans and specifications.

Construction of the interceptor sewer is divided into three contracts. Contract "E", which corresponds to reach G, is for the construction of the interceptor from the wastewater treatment facility to meter station 5 (see Plate 1). The cost of reach G is estimated at $900,000. Contract "F", which corresponds to reach F, is for the construction of the interceptor from meter station 5 to meter station 4. The cost of this reach of interceptor is estimated at $3,000,000. Contract "G" is for the construction of the remaining interceptor, which corresponds to reaches E, D, C, B, and A. The combined cost of the reaches A, B, C, D, and E is estimated at $2,100,000. The $2,100,000 has been divided into each individual reach on the basis of estimated construction costs. The cost per reach and percent of the total interceptor cost is presented in Table 10.

TABLE 10

PERCENT BREAKDOWN OF INTERCEPTOR COSTS
Heart of the Valley Metropolitan Sewerage District

Contract	Estimated Cost	Percent of Total Contract Cost	Interceptor Reach	Percent of Total Contracts
			A	1.2
			B	5.4
G	$2,100,000	35.0	C	20.5
			D	7.2
			E	0.7
F	$3,000,000	50.0	F	50.0
E	$ 900,000	15.0	G	15.0
TOTAL	$6,000,000	100.0		100.0

On the basis of the percent breakdowns per reach presented in Table 10, the annual capital cost per reach was calculated from the bond payment schedule. These costs are presented in Table 11.

As was done for the wastewater treatment facilities, the annual capital cost for a reach of interceptor was allocated among the participating planning areas. For the interceptor, the allocation was based on each planning area's design flow. For example, reach A of the interceptor is utilized by Kimberly only. Therefore, for the twelve years of bond payments for reach A, Kimberly finances 100 percent or $23,845.91 in twelve years (see Table 11). Reach B is utilized by Kimberly and Combined Locks, at the rate of 98.2 percent and 1.8 percent, respectively. To finance reach B, Kimberly pays 98.2 percent of the annual bond payments and Combined Locks 1.8 percent of the annual bond payments. A sample repayment schedule is shown in Table 12, which was calculated utilizing the same procedures as described above.

Since there are a number of possible combinations relative to the time that the Vandenbroek and Darboy planning areas could join the District, schedules were prepared reflecting the annual cost to the existing and future member communities for several combinations. These schedules are included in Appendix B.

The allocation of the capital costs for the interceptor sewer are based on the design wastewater flows from each planning area with boundaries as shown on Plate 2. When a new planning area joins the District, it may be necessary to review the design flows from the planning areas in the event of a change of the political boundaries of the planning areas.

SUMMARY

The preceding sections of this report describe a method by which the local capital cost associated with the construction of the Heart of the Valley Metropolitan Sewerage District interceptor and wastewater treatment facility can be equitably allocated to the participating communities. This report presents the allocation procedures along with estimated costs and percent breakdowns. Because the Wisconsin Department of Natural Resources discontinued the state grants program, it may be necessary for the Heart of the Valley Metropolitan Sewerage District to finance additional bonds. When the exact costs are determined by awarding contracts, the true capital cost can be allocated. It is anticipated that the additional items can be completed soon after the letting of all construction

contracts. However, the information provided herein should provide the basis for 1977 budgeting by Kimberly, Combined Locks, Little Chute, and Kaukauna until final costs are available. On the basis of procedures outlined in this report and current cost data, the total payments, due June 1, 1977, for the interceptor and wastewater treatment plant, which must be paid to the Heart of the Valley Metropolitan Sewerage District, are shown in Table 13.

TABLE 11

COST OF ANNUAL BOND PAYMENT FOR EACH REACH OF INTERCEPTOR SEWER
Heart of the Valley Metropolitan Sewerage District

Year	Reach A	B	C	D	E	F	G	Total
1977	$ 2,283.48	$ 10,275.66	$ 39,009.45	$ 13,700.88	$ 1,332.03	$ 95,145.00	$ 28,543.50	$ 190,290.00
1978	2,345.31	10,553.90	40,065.71	14,071.86	1,368.10	97,721.25	29,316.37	195,442.50
1979	2,263.23	10,184.54	28,663.51	13,579.38	1,320.22	94,301.25	28,290.37	188,602.50
1980	2,181.15	9,815.18	37,261.31	13,086.90	1,272.34	90,881.25	27,264.37	181,762.50
1981	2,099.07	9,445.81	35,859.11	12,594.42	1,224.46	87,461.25	26,238.38	174,922.50
1982	2,016.99	9,076.46	34,456.91	12,101.94	1,176.58	84,041.25	25,212.37	168,082.50
1983	1,934.91	8,707.10	33,054.71	11,609.46	1,128.70	80,621.25	24,186.37	161,242.50
1984	1,852.83	8,337.74	31,652.51	11,116.98	1,080.82	77,201.25	23,160.37	154,402.50
1985	1,855.89	8,351.51	31,704.79	11,135.34	1,082.60	77,328.75	23,198.62	154,657.50
1986	1,764.09	7,938.41	30,136.54	10,584.54	1,029.05	73,503.75	22,051.12	147,007.50
1987	1,671.53	7,521.86	28,555.22	10,029.15	975.06	69,646.87	20,894.06	139,293.75
1988	1,577.43	7,098.44	26,947.76	9,464.58	920.17	65,726.25	19,717.87	131,452.50
TOTAL	$23,845.91	$107,306.61	$407,367.53	$143,075.43	$13,910.13	$993,579.37	$298,073.77	$1,987,158.75

TABLE 12

ANNUAL ALLOCATION OF CAPITAL COSTS FOR INTERCEPTOR SEWER
BASED ON FOUR PRINCIPAL PLANNING AREAS UTILIZING
INTERCEPTOR SEWER
VANDENBROEK JOINS SYSTEM IN 1980
DARBOY JOINS SYSTEM IN 1982
Heart of the Valley Metropolitan Sewerage District

Year	Kaukauna	Kimberly	Combined Locks	Little Chute	Vandenbroek	Darboy
1977	$ 8,053.34	$ 82,904.83	$ 35,484.17	$ 63,847.66	$ .00	$ .00
1978	8,271.40	85,149.66	36,444.97	65,576.47	.00	.00
1979	7,981.93	82,169.61	35,169.49	63,281.46	.00	.00
1980	5,688.94	65,561.32	27,248.69	44,250.02	39,013.54	.00
1981	6,901.77	72,730.00	30,918.87	54,418.34	9,953.51	.00
1982	2,175.70	40,656.64	23,031.34	16,395.62	5,900.16	125,985.70
1983	5,732.17	62,961.17	20,866.39	45,150.97	8,049.23	18,482.58
1984	5,489.01	60,290.31	19,981.23	43,235.64	7,707.77	17,698.54
1985	5,498.07	60,389.90	20,014.23	43,307.04	7,720.51	17,727.77
1986	5,226.12	57,402.76	19,024.24	41,164.89	7,338.62	16,850.88
1987	4,951.89	54,390.73	18,026.01	39,004.89	6,953.55	15,966.68
1988	4,673.14	51,328.92	17,011.27	36,809.20	6,562.11	15,067.87
TOTAL	$70,643.48	$775,935.85	$257,158.22	$556,442.20	$99,199.00	$227,780.02

TABLE 13

TOTAL PAYMENTS DUE JUNE 1, 1977, FOR INTERCEPTOR & WASTEWATER TREATMENT PLANT
Heart of the Valley Metropolitan Sewerage District

Planning Area	Payments Due June 1, 1977, for Interceptor & Wastewater Treatment Plant Capital Costs	
Combined Locks	$ 70,980.01	71,004.97
Darboy	---	
Kaukauna	238,934.47	238,938.54
Kimberly	164,147.58	164,158.66
Little Chute	160,237.94	160,197.83
Vandenbroek	---	
TOTAL	$634,300.00	

APPENDIX A

FLOW CONTRIBUTIONS INTO INTERCEPTOR SEWER

APPENDIX A
FLOW CONTRIBUTIONS INTO INTERCEPTOR SEWER

Sub-drainage Area Flows @ Year 2025

Sub-drainage Area I

Kimberly	358 Ac. @ .005 CFS/Ac.	=	1.789 CFS	
TAZ 330N		=	.540	
TAZ 330S	.5 Ac. @ .004	=	.002	
TOTAL				2.331 CFS

Sub-drainage Area II

TAZ 330N		=	.274 CFS	
TAZ 330S	246 Ac. @ .004 CFS/Ac.	=	.983	
TAZ 331	36 Ac. @ .004	=	.143	
TAZ 336	12 Ac. @ .004	=	.048	
TOTAL				1.448 CFS

Sub-drainage Area III

Kimberly	521 Ac. @ .005 CFS/Ac.	=	2.606 CFS	
Comb. Locks	107 Ac. @ .005	=	.535	
TAZ 330N		=	.639	
TAZ 336	2.5 Ac. @ .004	=	.010	
TOTAL				3.790 CFS

Sub-drainage Area IV

TAZ 330S	4 Ac. @ .004 CFS/Ac.	=	.016 CFS	
TAZ 331	48 Ac. @ .004	=	.192	
TAZ 332	134 Ac. @ .004	=	.537	
TAZ 333	13 Ac. @ .004	=	.050	
TAZ 335	49 Ac. @ .004	=	.196	
TAZ 336	17 Ac. @ .004	=	.068	
TOTAL				1.059 CFS

Sub-drainage Area V

TAZ 333	.5 Ac. @ .004 CFS/Ac.	=	.002 CFS	
TAZ 335	128 Ac. @ .004	=	.512	
TAZ 336	37 Ac. @ .004	=	.146	
TOTAL				.660 CFS

Sub-drainage Area VI

TAZ 333	36 Ac. @ .004 CFS/Ac.	=	.142 CFS	
TAZ 334	40 Ac. @ .004	=	.160	
TAZ 335	231 Ac. @ .004	=	.922	
TAZ 336	7 Ac. @ .004	=	.029	
TOTAL				1.253 CFS

Sub-drainage Area VI-A

Comb. Locks	201 Ac. @ .005 CFS/Ac.	=	1.007 CFS	
TAZ 336	231 Ac. @ .004	=	.925	
TOTAL				1.932 CFS

Sub-drainage Area VI-B

Comb. Locks	80 Ac. @ .005 CFS/Ac.	=	.398 CFS	
TAZ 370		=	.140	
TOTAL				.538 CFS

Sub-drainage Area VI-C

Comb. Locks	31 Ac. @ .005 CFS/Ac.	=	.156 CFS	
TAZ 335	10 Ac. @ .004	=	.042	
TAZ 370		=	.003	
TAZ 371	10 Ac. @ .004	=	.038	
TOTAL				.239 CFS

Sub-drainage Area VII

Comb. Locks	54 Ac. @ .005 CFS/Ac.	=	.272 CFS	
TAZ 333	1.5 Ac. @ .004	=	.006	
TAZ 334	147 Ac. @ .004	=	.589	
TAZ 335	80 Ac. @ .004	=	.320	
TAZ 336	7 Ac. @ .004	=	.030	
TAZ 371	50 Ac. @ .004	=	.199	
TOTAL				1.416 CFS

Sub-drainage Area VIII

Kaukauna S.	274 Ac. @ .005 CFS/Ac.	=	1.368 CFS	
TAZ 334	20 Ac. @ .004	=	.082	
TAZ 335	2 Ac. @ .004	=	.008	
TAZ 370		=	.517	
TAZ 371	388 Ac. @ .004	=	1.553	
TAZ 372	24 Ac. @ .004	=	.097	
TAZ 391	.25 Ac. @ .004	=	.001	
TAZ 392	1 Ac. @ .004	=	.004	
TOTAL				3.630 CFS

Sub-drainage Area IX

Kaukauna S.	10 Ac. @ .005 CFS/Ac.	=	.051 CFS	
TAZ 334	55 Ac. @ .004	=	.221	
TAZ 371	2 Ac. @ .004	=	.007	
TAZ 372	273 Ac. @ .004	=	1.091	
TAZ 392	128 Ac. @ .004	=	.511	
TOTAL				1.881 CFS

Sub-drainage Area X

TAZ 391	70 Ac. @ .004 CFS/Ac.	=	.279 CFS	
TAZ 392	87 Ac. @ .004	=	.348	
TOTAL				.627 CFS

Sub-drainage Area XI

TAZ 351	42 Ac. @ .004 CFS/Ac.	=	.166 CFS	
TAZ 352	151 Ac. @ .004	=	.603	
TOTAL				.769 CFS

Sub-drainage Area XII

Kaukauna N.	593 Ac. @ .005 CFS/Ac.	=	2.967 CFS	
TAZ 379	28 Ac. @ .004	=	.111	
TAZ 382	10 Ac. @ .004	=	.039	
TAZ 383	38 Ac. @ .004	=	.152	
TOTAL				3.269 CFS

Sub-drainage Area XII East (Pump Station)

Kaukauna N.	205 Ac. @ .005 CFS/Ac.	=	1.026 CFS
TAZ 379	164 Ac. @ .004	=	.657
TAZ 380	50 Ac. @ .004	=	.200
TAZ 381	136 Ac. @ .004	=	.543
TAZ 382	58 Ac. @ .004	=	.233
TAZ 383	68 Ac. @ .004	=	.273
TAZ 400	225 Ac. @ .004	=	.900
TAZ 491	92 Ac. @ .004	=	.366
TOTAL			4.198 CFS

Sub-drainage Area XIII West

Little Chute	290 Ac. @ .005 CFS/Ac.	=	1.450 CFS
TAZ 360	134 Ac. @ .004	=	.535
TAZ 361	81 Ac. @ .004	=	.324
TAZ 362	97 Ac. @ .004	=	.386
TAZ 368	120 Ac. @ .004	=	.479
TOTAL			3.174 CFS

Sub-drainage Area XIII East

TAZ 350	116 Ac. @ .004 CFS/Ac.	=	.463 CFS
TAZ 351	158 Ac. @ .004	=	.634
TAZ 360	55 Ac. @ .004	=	.220
TAZ 361	182 Ac. @ .004	=	.728
TAZ 362	58 Ac. @ .004	=	.231
TAZ 368	28 Ac. @ .004	=	.111
TAZ 369	143 Ac. @ .004	=	.572
TAZ 379	14 Ac. @ .004	=	.058
TAZ 380	112 Ac. @ .004	=	.448
TAZ 487	15 Ac. @ .004	=	.060
TAZ 491	93 Ac. @ .004	=	.371
Little Chute	777 Ac. @ .005	=	3.887
TOTAL			7.783 CFS

Contribution Point Flows

Meter Station No. 1 (From Kimberly)

Sub-drainage Area I	2.331
Sub-drainage Area III	3.790
Industrial (Kimberly)	3.770
Commercial (Kimberly)	.168

10.059 CFS

Meter Station No. 2 (From the West Side of Little Chute)

Sub-drainage Area XI	.769
Sub-drainage Area XIII	3.174

3.943 CFS

Meter Station No. 3 (From the East Side of Little Chute)

Sub-drainage Area XIII East	7.783
Industrial (Little Chute)	2.180
Commercial (Little Chute)	.984

10.947 CFS

Meter Station No. 4 (From Combined Locks)

Sub-drainage Area II	1.448
Sub-drainage Area IV	1.059
Sub-drainage Area V	.660
Sub-drainage Area VI	1.253
Sub-drainage Area VI-A	1.932
Sub-drainage Area VI-B	.538
Sub-drainage Area VI-C	.239
Sub-drainage Area VII	1.416
Industrial (Comb. Locks)	.480
Commercial (Comb. Locks)	.120

9.145 CFS

Meter Station No. 5 (From the South & West Sides of Kaukauna)

Sub-drainage Area VIII	3.630
Sub-drainage Area IX	1.881
Sub-drainage Area X	.627
Sub-drainage Area XII West	3.269
Industrial (Kaukauna)	.801
Commercial (Kaukauna)	.342

10.550 CFS

Meter Station No. 6 (From East Side of Kaukauna, Does Not Enter Interceptor)

Sub-drainage Area XII East	4.198	
Industrial (Kaukauna)	1.869	
Commercial (Kaukauna)	.798	
		6.865 CFS
TOTAL FLOW		51.509 CFS

APPENDIX B

SAMPLE REPAYMENT SCHEDULES

ANNUAL ALLOCATION OF CAPITAL COSTS FOR INTERCEPTOR SEWER BASED ON
FOUR PRINCIPLE PLANNING AREAS UTILIZING INTERCEPTOR SEWER

AND VANDENBROEK JOINS SYSTEM IN 1977
AND DARBOY JOINS SYSTEM IN 1977

YEAR	KAUKAUNA	KIMBERLY	COMBINED LOCKS	LITTLE CHUTE	VANDENBROEK	DARBOY
	$	$	$	$	$	$
1977	6,764.81	74,303.48	24,625.42	53,284.81	9,499.27	21,812.19
1978	6,947.98	76,315.42	25,292.21	54,727.61	9,756.49	22,402.79
1979	6,704.82	73,644.56	24,407.05	52,812.29	9,415.03	21,618.75
1980	6,461.66	70,973.72	23,521.89	50,896.96	9,073.59	20,834.70
1981	6,218.50	68,302.86	22,636.72	48,981.63	8,732.13	20,050.66
1982	5,975.33	65,632.01	21,751.56	47,066.29	8,390.67	19,266.62
1983	5,732.17	62,961.17	20,866.39	45,150.97	8,049.23	18,482.58
1984	5,489.01	60,290.31	19,981.23	43,235.64	7,707.77	17,698.54
1985	5,498.07	60,389.90	20,014.23	43,307.04	7,720.51	17,727.77
1986	5,226.12	57,402.76	19,024.24	41,164.89	7,338.62	16,850.88
1987	4,951.89	54,390.73	18,026.01	39,004.89	6,953.55	15,966.68
1988	4,673.14	51,328.92	17,011.27	36,809.20	6,562.11	15,067.87
*TOTALS	70,643.50	775,935.84	257,158.22	556,442.22	99,198.97	227,780.03

ANNUAL ALLOCATION OF CAPITAL COSTS FOR INTERCEPTOR SEWER BASED ON
FOUR PRINCIPLE PLANNING AREAS UTILIZING INTERCEPTOR SEWER

AND VANDENBROEK JOINS SYSTEM IN 1980
AND DARBOY JOINS SYSTEM IN 1982

YEAR	KAUKAUNA	KIMBERLY	COMBINED LOCKS	LITTLE CHUTE	VANDENBROEK	DARBOY
	$	$	$	$	$	$
1977	8,053.34	82,904.83	35,484.17	63,847.66	.00	.00
1978	8,271.40	85,149.66	36,444.97	65,576.47	.00	.00
1979	7,981.93	82,169.61	35,169.49	63,281.46	.00	.00
1980	5,688.94	65,561.32	27,248.69	44,250.02	39,013.54	.00
1981	6,901.77	72,730.00	30,918.87	54,418.34	9,953.51	.00
1982	2,175.70	40,656.64	23,031.34	16,395.62	5,900.16	125,985.70
1983	5,732.17	62,961.17	20,866.39	45,150.97	8,049.23	18,482.58
1984	5,489.01	60,290.31	19,981.23	43,235.64	7,707.77	17,698.54
1985	5,498.07	60,389.90	20,014.23	43,307.04	7,720.51	17,727.77
1986	5,226.12	57,402.76	19,024.24	41,164.89	7,338.62	16,850.88
1987	4,951.89	54,390.73	18,026.01	39,004.89	6,953.55	15,966.68
1988	4,673.14	51,328.92	17,011.27	36,809.20	6,562.11	15,067.87
*TOTALS	70,643.48	775,935.85	257,158.22	556,442.20	99,199.00	227,780.02

ANNUAL ALLOCATION OF CAPITAL COSTS FOR INTERCEPTOR SEWER BASED ON
FOUR PRINCIPLE PLANNING AREAS UTILIZING INTERCEPTOR SEWER

AND VANDENBROEK JOINS SYSTEM IN 1982
AND DARBOY JOINS SYSTEM IN 1982

YEAR	KAUKAUNA	KIMBERLY	COMBINED LOCKS	LITTLE CHUTE	VANDENBROEK	DARBOY
	$	$	$	$	$	$
1977	8,053.34	82,904.83	35,484.17	63,847.66	.00	.00
1978	8,271.40	85,149.66	36,444.97	65,576.47	.00	.00
1979	7,981.93	82,169.61	35,169.49	63,281.46	.00	.00
1980	7,692.45	79,189.60	33,894.01	60,986.44	.00	.00
1981	7,402.97	76,209.57	32,618.52	58,691.44	.00	.00
1982	329.00	23,548.80	31,376.30	4,613.91	54,867.18	125,985.71
1983	5,732.17	62,961.17	20,866.39	45,150.97	8,049.23	18,482.58
1984	5,489.01	60,290.31	19,981.23	43,235.64	7,707.77	17,698.54
1985	5,498.07	60,389.90	20,014.23	43,307.04	7,720.51	17,727.77
1986	5,226.12	57,402.76	19,024.24	41,164.89	7,338.62	16,850.88
1987	4,951.89	54,390.73	18,026.01	39,004.89	6,953.55	15,966.68
1988	4,673.14	51,328.92	17,011.27	36,809.20	6,562.11	15,067.87
*TOTALS	70,643.49	775,935.86	257,158.23	556,442.19	99,198.97	227,780.03