



Wastewater Committee

Date: August 11, 2010

CMAP Water Quality Review #: 10-WQ-005

Applicant: Illinois American Water Company

Re: Illinois American Water Company (ILAWC) has submitted a request to expand its Valley Marina Water Reclamation Facility (WRF) from a daily average flow (DAF) of 0.25 mgd (million gallons per day) to 0.42 mgd. The facility is currently operating above its design capacity and existing equipment is at the end of its useful life. The facility is located in Unincorporated Oswego, Kendall County.

The request was originally considered by CMAP's Wastewater Committee on April 7, 2010. At this time, the Committee recommended non support. To date, ILAWC has resubmitted an amended application in an effort to address the Committee's recommendations which are as follows:

- ILAWC's should provide the same quality of effluent as the Fox Metro Water Reclamation District (FRWRD) by doing one of the following: maintain concentration levels comparable to FRWRD for BOD, TSS, and ammonia comparable to FMWRD or continue negotiations with FRWRD to send its influent to the district for wastewater treatment service.
- The USEPA recommends 0.1 mg/L for total phosphorus in flowing waters and a limit of 0.05 mg/L for total phosphorus in streams that enter lakes. Therefore, the ILAWC should meet a phosphorus effluent limit concentration not to exceed 1 mg/L.
- ILAWC should pursue the Village of Oswego's interest in obtaining effluent for landscape and irrigation purposes.
- Kendall County should update its stormwater management ordinance so that nonpoint source protections are comparable to CMAP's model ordinances.

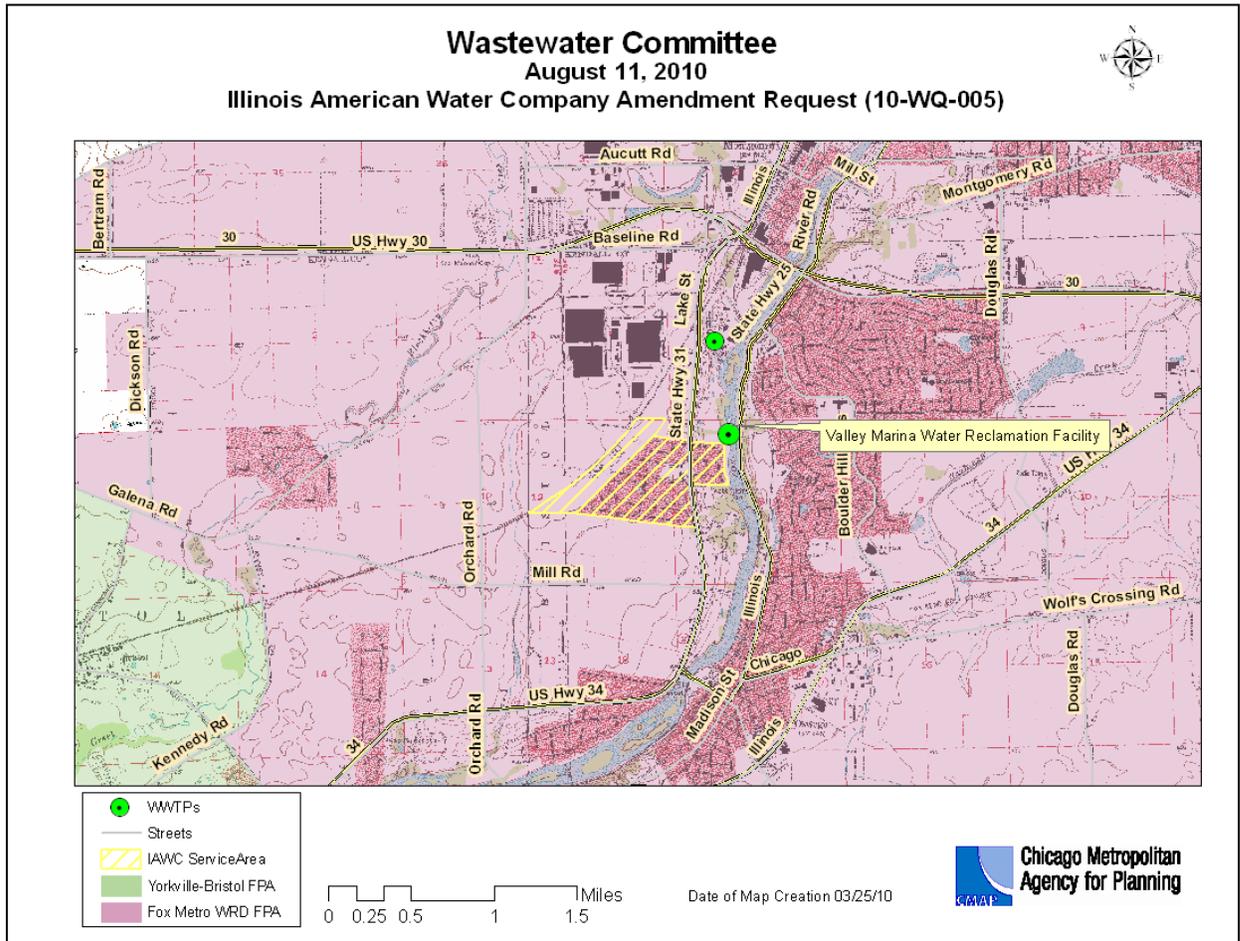
COMMITTEE ACTION REQUESTED

Based on the policies and recommendations of the *Areawide Water Quality Management Plan for Northeastern Illinois*, the *Illinois Water Quality Management Plan*, local government and agency comments, comments received from various interested and affected parties, and staff's analysis, staff recommends a Committee recommendation of "**Support**" for the proposed amendment request.

Important Note: CMAP is the designated areawide water quality planning agency and the advisory comprehensive regional planning agency for northeastern Illinois. Therefore, CMAP needs to act as a consensus builder by promoting sound planning principles and practices. Though not specifically required by the Illinois Environmental Protection Agency (IEPA), Criteria Nos. 6 – 9 specifically address CMAP's regional role and promote sound planning.



Map of the Water Reclamation Facility Area





RELATIONSHIP TO RECOMMENDED CRITERIA FOR FACILITY PLAN AMENDMENTS

Illinois American Water Company (ILAWC) owns and operates the Valley Marina WRF in Kendall County which serves a specific service area within the Fox Metro Water Reclamation District Facility (FMWRD) Planning Area near Oswego, IL in unincorporated Kendall County. This area consists of a 0.35-square-mile area within the FMWRD FPA and includes moderately developed residential areas with a light commercial area.

ILAWC also owns and operates three (3) WRF's that serve the Citizens Utilities Company FPA in northeastern Will County, Illinois. The facilities include the Derby Meadows facility, the Chickasaw Hills facility, and the Oak Valley facility.

ILAWC's Valley Marina WRF is currently operating above capacity for both its design average flow and design maximum flow. Existing equipment is also at the end of its useful life. Expansion of the existing WRF is required to maintain compliance and allow full build-out of the service area.



Below is a summary and analysis of the proposed amendment application with regards to these criteria.

Review Criteria and Staff Analysis	Results
<p>1. <i>“The proposed facility amendment must be designed to meet the State of Illinois water quality standards for the receiving waters and the appropriate discharge standards or must receive a variance from the Illinois Pollution Control Board.”</i></p>	<p>Consistent</p>
<p>ILAWC’s wastewater reclamation facility (WRF) currently operates under National Pollution Discharge Elimination Permit (NPDES) No. IL 0031551, which expires on December 31, 2014. The request includes expansion of the Valley Marina WRF from an average daily flow of 0.25 million gallons per day (mgd) to 0.42 mgd of wastewater. The WRF is listed on Illinois EPA’s critical review list since its actual 12-month daily average wastewater flows exceed current plant capacity.</p> <p>The WRF discharges into the Fox River and segment IL-DT03 downstream of the river. The Fox River is a multi-purpose resource that contributes critical habitat for wildlife, provides potable water supplies and receives and assimilates pollutants from point and nonpoint sources. The River is classified as a General Use stream, is impaired for aquatic life use and has a biological rating of “C”. The Illinois Department of Natural Resources (IDNR) considers this segment of the Fox River to have enhanced and/or unique aquatic life.</p> <p>Some potential causes of impairment include total suspended solids (TSS), ammonia, BOD fecal coliform, sediment/siltation, polychlorinated biphenyls and pH. Point source contributions to the Fox River largely include nutrient-related impairments including phosphorus, nitrogen and low dissolved oxygen.</p> <p>The Wastewater Committee, at its April 7, 2010 meeting recommended that ILAWC, whose WRF serves a specific service area within the FMWRD FPA, provide the same quality of effluent as FRWRD. This could be achieved by doing one of the following: maintain concentration levels comparable to FRWRD for BOD, TSS, and ammonia comparable to FMWRD or continue negotiations with FRWRD to send its influent to the district for wastewater treatment service. ILAWC did not elect to continue negotiations with FRWRD but instead elected to hold its annual mass limits the same as its current NPDES limit to mitigate negative water quality impacts. ILAWC argued that BOD and ammonia impacts on in-stream DO are concentration-based not loading-based and these effluent concentrations will not increase with the proposed expansion. Effluent DO concentrations will increase with the expansion, which will further reduce the impact of effluent BOD and ammonia. Redundancy will be provided within the treatment plant process to mitigate negative water quality impacts. The WRF’s treatment process is also subject to enhanced Dissolved Oxygen (DO) standards. Lastly, ILAWC proposed to remove phosphorus and total nitrogen at its WRF though FMWRD does not. A comparison of the Valley Marina WRF and Fox Metro WRD effluent limits is as follows:</p>	



Parameter	Valley Marina	Valley Marina	Valley Marina	FMWRD	FMWRD	FMWRD
	Average Monthly (mg/L)	Average Weekly (mg/L)	Proposed Annual	Average Monthly (mg/L)	Average Weekly (mg/L)	Daily Maximum (mg/L)
CBOD	25	40	15 mg/L avg.	10		20
TSS	30	45	18 mg/L avg.	12		24
Ammonia Nitrogen						
March-May/Sept.-Oct.	3.3			1.5	3.8	4.4
June-Aug.	1.5			1.5		3.2
Nov.-Feb.	4.0			2.0		4.4
Total N			Remove to <=15,000 lb/yr total	No limit	No limit	No limit
Total P	1.0		1,300 lb/yr total	No limit	No limit	No limit

ILAWC's originally elected to maintain nutrient loadings at their current levels resulting in an effluent total nitrogen concentration of 8 mg/L or less and a total phosphorus permit limit of 1.5 mg/L. The Committee, at its meeting on April 7, 2010 noted that the USEPA recommends 0.1 mg/L for total phosphorus in flowing waters and a limit of 0.05 mg/L for total phosphorus in streams that enter lakes. Therefore, ILAWC should meet a phosphorus effluent limit concentration not to exceed 1 mg/L. To date, the applicant has agreed to a NPDES permit limit of 1.0 mg/L monthly average effluent for phosphorus for the WRF. Both biological and chemical phosphorus removal will be used to meet the new limits.

ILAWC will incorporate biological nutrient removal of total nitrogen and hold its loads at current permit levels. The proposed WRF system will achieve total effluent nutrient limits of 8 to 10 mg/L, which is less than the current effluent concentration limits. Monthly monitoring of total nitrogen is also proposed for the WRF to mitigate potential total nitrogen impacts. ILAWC was not willing to establish a numeric permit limit for total nitrogen since there are no regulatory standards in place.

A comparison of the current and proposed effluent loadings is as follows:

Parameter	Current Permit (DAF = 0.25 mgd)	Current Permit (DAF = 0.42 mgd)
CBOD, annual total lb/year	1900	19000
CBOD, annual average mg/L	n/a	15



	<table border="1"> <tr> <td>CBOD, monthly average</td> <td>25</td> <td>25</td> </tr> <tr> <td>TSS, annual total lb/year</td> <td>2300</td> <td>2300</td> </tr> <tr> <td>TSS, annual average mg/L</td> <td>n/a</td> <td>18</td> </tr> <tr> <td>TSS, monthly average mg/L</td> <td>30</td> <td>30</td> </tr> <tr> <td>Ammonia-N, summer daily max, lb/day</td> <td>29</td> <td>13</td> </tr> <tr> <td>Ammonia-N, summer monthly average, mg/L</td> <td>N/A (approx. 3)</td> <td>Approx. 1.5</td> </tr> <tr> <td>Total nitrogen, annual lb/year</td> <td>N/A (est. 15,000)</td> <td>Approx. 15,000</td> </tr> <tr> <td>Total phosphorus, annual lb/year</td> <td>N/A (est. 2,300)</td> <td>1,300</td> </tr> <tr> <td>Total phosphorus, mg/L</td> <td>N/A (est. 3)</td> <td>1.0</td> </tr> </table>	CBOD, monthly average	25	25	TSS, annual total lb/year	2300	2300	TSS, annual average mg/L	n/a	18	TSS, monthly average mg/L	30	30	Ammonia-N, summer daily max, lb/day	29	13	Ammonia-N, summer monthly average, mg/L	N/A (approx. 3)	Approx. 1.5	Total nitrogen, annual lb/year	N/A (est. 15,000)	Approx. 15,000	Total phosphorus, annual lb/year	N/A (est. 2,300)	1,300	Total phosphorus, mg/L	N/A (est. 3)	1.0	
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2.	<i>“The population and employment for which the proposed amendment is designed must fall within the twenty year forecast most recently adopted by the Commission for the facility planning area or the Commission may agree to adjustments within the regional forecast total.”</i>	Consistent																											
	ILAWC estimates that by the year 2033 there will be a total population equivalent of 1665 persons in 423 households. The existing service area includes 224 acres and 411 households with a total population equivalent of 1613. This forecast shows virtually no increase in population for the service area and is consistent with the endorsed CMAP forecasts.																												
3.	<i>“The applicant must demonstrate that the unit of local government granting zoning to the project formally accept financial responsibility for the wastewater treatment system in the event of a system malfunction or failure. Such acceptance must be in the form of a resolution from the unit of government granting zoning.”</i>	Consistent																											
	<p>ILAWC is a privately owned facility. The Illinois Commerce Commission (ICC) has statutory jurisdiction over ILAWC and its Valley Marina WRF. As such, it is not required to demonstrate that the local government granting zoning would accept financial responsibility in the event of system malfunction or failure.</p> <p>Financial reports and reserves are used as a basis to ensure that a utility company has adequate financial resources to assure continued success for the facility. ILAWC’s Capital Investment Management Committee committed to financially support the expansion request in a letter dated March 24, 2010.</p>																												
4.	<i>“The proposed amendment should not reduce the effectiveness of the water quality improvement strategy contained in the original plan, either for point or non-point source control.”</i>	Inconsistent																											
	<p>Point Source Impacts (See analysis under Criterion #1)</p> <p>Nonpoint Source Impacts</p> <p>The request is subject to Kendall County’s nonpoint source protection ordinances which have provisions for stormwater management, soil erosion and sediment control, and floodplain management. The ordinance does not have provisions for stream and wetland protection.</p>																												



<p>The Kendall County ordinance was not comparable to CMAP’s model ordinance with respect to soil erosion and sediment control and stream and wetland protection. Kendall County is in the process of updating its ordinance. On April 7, 2010 the Wastewater Committee requested that ILAWC support Kendall County’s efforts to amend its stormwater ordinance. To date, ILAWC forwarded a letter dated June 9, 2010 fully supporting Kendall County’s efforts to amend its ordinances.</p> <p>The Illinois Department of Natural Resources EcoCAT indicates the presence of the state-endangered greater redhorse and state threatened riverhorse found in the Fox River.</p>	
<p>5. <i>“The proposed amendment should not adversely affect the cost-effectiveness of the Areawide Water Quality Management Plan for meeting water quality standards in the facility planning areas as a whole.”</i></p>	Consistent
<p>The applicant’s original amendment request evaluated several wastewater alternatives including the following:</p> <ul style="list-style-type: none"> • Alternative 1: Construct one new 0.42 package plant and maintain both existing package plants totaling \$3,816,000. • Alternative 2: Build two new 0.21 mgd package plants totaling \$3,889,000. • Alternative 3: Build two new oxidation ditches with BNR totaling \$4,210,000. • Alternative 4: Renovate existing package plants and add a third plant totaling \$3,600,000. • Alternative 5: Pump influent flow from Valley Marina to Fox Metro Water Reclamation District for treatment and disposal totaling \$10,754,000. <p>Alternatives 2, 3, and 4 were not selected since they were not cost effective and lacked sufficient treatment including BOD and phosphorus removal, nitrification and denitrification.</p> <p>Alternative 5 was dismissed due to costs. FRWRD originally objected to the request since its WRF achieves lower effluent concentrations of BOD, TSS and ammonia than ILAWC’s WRF. Previously, CMAP Staff recommended that ILAWC consider upgrading its technological alternatives to achieve a similar or better result thereby protecting water quality in the Fox River. To date, ILAWC will employ new mechanical fine screening to better remove TSS. The applicant acknowledged that IEPA, may at some future date, impose new ammonia NPDES limits at 1.5 mg/L in the summer and 4.0 mg/L in the winter. If and when these limits are imposed, ILAWC’s expanded plant would be required to nitrify and the mass of effluent ammonia discharge would be decreased by 80 percent or more. The applicant argued, in a letter dated April 7, 2010, that BOD and ammonia impacts on in-stream DO are concentration-based not loading-based and these effluent concentrations will not increase with the proposed expansion. Effluent DO concentrations will increase with the expansion, which will further reduce the impact of effluent BOD and ammonia.</p> <p>ILAWC’s selected alternative includes expanding its WRF from 0.25 to 0.42 mgd. The applicant will also employ a 1.0 mg/L total phosphorus limit. Costs associated with both the</p>	



original and revised proposal are as follows:

	Original Costs	Modified Costs
Wastewater Treatment Plant	\$3,257,000	
Sludge Handling Facilities	\$801,000	\$801,000
Inspection/Construction Management	\$350,000	
Project Management Design	\$234,000	\$238,000
Estimated Total Cost	\$4,642,000	\$4,714,000

Estimated annual O, M & R costs are \$1,712,000 while the original costs were \$1,709,000. The project will be funded its entirety by ILAWC and user chargers will be determined in accordance with regulations by the ICC.

The Wastewater Committee, at its April 7, 2010 meeting, recommended that ILAWC pursue the Village of Oswego's interest in obtaining effluent for landscape and irrigation purposes. To date, ILAWC has been pursuing the Village's interest and physical requirements for such a system have been outlined. Staff encourages ILAWC to continue its efforts in this regard.

6. *"The proposed amendment should have the endorsement of the designated management agency for wastewater treatment and substantial support by the municipalities within the affected facility planning area."*

Consistent

ILAWC provided documentation endorsing its support of the WRF expansion.

ILAWC's WRF serves a specific service area within the Fox Metro Water Reclamation District FPA near Oswego, IL in unincorporated Kendall County. This area consists of a 0.35-square-mile area.

FMWRD originally submitted a letter requesting that ILAWC be required to meet the same NPDES concentration limits as its treatment plant since both discharge to the Fox River and their respective outfalls are within one mile of each other. This letter was considered at the April 7, 2010 Wastewater Committee Meeting. FRWRD removed its objection in an email dated July 29, 2010 to Ms. Dawn Thompson from Ms. Carrie Carter representing FRWRD based on the amended application.

7. *"The proposed amendment should not adversely affect adjoining units of government."*

Consistent

No comments have been received in support of or in opposition to ILAWC's revised request from adjoining units of government.

8. *"The proposed amendment should be consistent with other county and regional or state policies, such as the Governor's Executive Order #4 on the preservation of agricultural land."*

Consistent



<p>ILAWC's service area includes moderately developed residential areas with a light commercial area.</p> <p><u>Illinois Department of Agricultural Protection</u></p> <p>The Illinois Department of Agriculture submitted a letter of no objection for the amendment request.</p>	
<p>9. <i>"Consideration will be given to evidence of municipal or county zoning approval and commencement of development activity prior to Area-wide Water Quality Management Plan adoption in January 1979."</i></p>	<p><i>Not Applicable</i></p>