

Date: November 30, 2005

To: Mel Odens, Director of Public Works

Copy: Brian Bollig, Assistant City Engineer
Colleen Thompson, WWTF Superintendent
Sam Lahanis, Program Manager
Sandy Kimmler, Civil Engineer
File

From: Ken Sedmak, Senior Program Manager

Prepared by: Sandy Kimmler, Civil Engineer
Ken Sedmak, Senior Program Manager
Mike Gerbitz, Wastewater Engineer

Attendees: Mel Odens, Director of Public Works
Brian Bollig, Assistant Engineer
Colleen Thompson, WWTF Superintendent
Jim Gauer, WWTF Foreman
Terry Thole, Operator
Tom Templer
Sam Lahanis, Donohue
Ken Sedmak, Donohue
Mike Gerbitz, Donohue
Sandy Kimmler, Donohue

Re: Workshop No. 4 - Collection System and Alternatives
Wastewater Program
City of Willmar, Minnesota
Donohue Project No. 10831.105

Donohue & Associates conducted a workshop on November 8 and 9, 2005 to discuss the collection system, flow monitoring and the Alternatives Evaluation phase.

Note No.	Action By	Note
Tom Card and Odor-Related Discussions		
1	Information	Tom Card attended the morning session on November 8. Donohue introduced Tom Card as a subconsultant with considerable odor control experience. Donohue explained Donohue and Tom Card have worked together successfully on a number of projects.
2	Information	Tom Card provided a brief outline of his odor-related experience. He is internationally recognized as an authority regarding the assessment and control of odors, air toxics, and volatile organic compounds (VOCs) from industrial, agricultural, and wastewater treatment sources. He has written eight books on air and odor emissions and participated in hundreds of air emission control projects over the last 20+ years.
3	Donohue	The City has stated that several large hog farms will be constructed in the general vicinity of the proposed new WWTF. Determine the size and type

Note No.	Action By	Note
		of that operation and, if necessary, meet with the future owners to discuss odor-related issues.
4	Information	Tom Card discussed the odor-related issues pertaining to the collection system. Potential odor release points include air release valves and lift stations.
5	Information	Tom Card recommended a separate forcemain for all JOTS wastewater regardless of the WWTF configuration.
6	Information	Tom Card discussed the odor-related issues pertaining to the proposed new WWTF. If the selected liquid treatment train is an extended aeration process, Tom Card recommended only controlling liquid-treatment related odors from the preliminary treatment process. According to Tom Card, each proposed solids handling process should be evaluated for its odor-production potential. Those deemed as odor-producing or potentially odor-producing should be equipped with adequate odor control. Tom stated that the potential added cost of odor control could reach 10% of the cost of the plant and odor generating facilities.
7	Information	Tom Card expressed opinions similar to those expressed previously by both the City and Donohue: sound monitoring, pre-treatment, and spill control measures are required at JOTS production facilities. The high FOG content from the Benson Avenue facility is an issue that must be addressed as the Program moves forward.
8	Information/ Willmar	Tom Card discussed potential issues related to Epitopix. The City should insist on an adequate monitoring station at the new Epitopix production facility. A sound monitoring program will determine if additional pre-treatment or spill containment measures are required. The City should implement a formal pre-treatment program with enforcement. The City stated that Lester Lange is the pre-treatment coordinator. A subsequent Staffing Technical Memorandum will address this.
9	Information	Tom Card discussed septage and leachate. If the objective is zero odor emissions, the hauled-in waste receiving station should be enclosed and equipped with odor control. Hauled-in waste should be discharged below the water surface of the downstream treatment system (i.e., avoid a free-fall or cascade that would release odors).
10	Information	Tom Card discussed the need to enclose the sludge hauling trucks during filling. Bottom filling produces less odors than the current top-filling method. To reduce odors during transport the trucks should be cleaned prior to leaving the loading building.
11	Information	Tom Card discussed sulfur. According to Tom, the nominal 150 ppm sulfate concentration in the raw wastewater is high, but not at a “crisis level.” A high level of sulfate would be near 400 ppm.
12	Information	Tom Card is concerned about the odor production potential of the organic acids and FOG from JOTS. More specifically, he is concerned with the organic acids from the slaughter operation at the Willmar

Note No.	Action By	Note
		Avenue facility, and concerned with the FOG from the Benson Avenue facility.
13	Information	Tom Card recommends keeping the wastewater-related “stuff” in town to a minimum (e.g., pump stations, equalization basins, preliminary treatment processes, air relief valves, etc.). This in turn minimizes the number of odor sources.
14	Information	Tom Card discussed the cost of a study to document existing ambient odors: \$50 – 100k. Tom feels such a study would not help decision makers select an appropriate alternatives; however, he felt it may prove beneficial to the City if it finds itself in a position of defending decisions that were made and the performance of future odor control measures.
15	Information	Tom Card attended the Department Head meeting during the afternoon of November 8.

Collection System and Flow Monitoring Results

16	Information	Sandy Kimmler led the discussion of the existing collection system. Donohue provided an exhibit showing the current collection system drainage basins, main collector sewers, and lift stations for the discussion. The sewer information is based on data collected by Bonnema Survey. Average and peak flows based on land use within the service area were calculated for each drainage basin. A basin routing was completed resulting in a summary of the flows to the WWTP. An exhibit was prepared for each drainage basin showing the collection system, lift station, land use areas, average flows and peak flows. Flows entering and leaving the basin are also noted.
17	Information	A spreadsheet comparing the capacity of the existing sewers to average and peak flows of each basin was handed out and discussed. There appears to be two major areas where pipe capacity is insufficient: Lakeland Drive and the main sewer line between JOTS and the existing WWTF. Capacity of the lift stations and projected peak flows was discussed. The City of Willmar provided lift station information for the analysis. A summary of the lift station discussion is documented in the following notes for “Lift Station Evaluation.”
18	Donohue/City	The City will provide information on the Eagle Lake lift stations. Donohue will evaluate the capacity of the Eagle Lake lift stations and force mains.
19	Donohue	Donohue completed a QC review of the sewer survey data. A list of discrepancies will be provided to the City. Donohue will revisit the areas with apparent capacity issues after all pipe information has been verified. An estimate of flow under a combination of gravity and pressure flows will be provided for the Lakeland Drive and Willmar Avenue interceptors, along with hydraulic head elevations at key (low) manholes. Flow routed directly to the new WWTP will be subtracted from the problem areas.

Note No.	Action By	Note
		An exhibit will be prepared showing the locations where future service area flows will enter the collection system. The City will review the locations and provide comments on the locations. After receiving the City's comments, Donohue will provide a final exhibit and spreadsheet showing future flows to each basin and a cumulative flow along the main interceptor routes.
20	Information	<p>The results of the first six weeks of flow monitoring were discussed. Eight flow meters were installed on a day when Willmar received a 100-year storm. Peak hourly flows were recorded, but the entire day's flow was not recorded. Other rainfall events during the monitoring period were on the order of a 3-month return period. There were also several weeks without rain that can be used to establish dry-weather base flows.</p> <p>The meter station at the WWTF was not able to record the entire flow for September 12, 2005 (day of 100-year storm). For dry weather flows, the plant's meter station and flow monitoring results are comparable. During rain events, the plant's meter station records less than the total flow recorded at the flow meters measuring flow coming into the plan.</p> <p>A comparison of the peak hourly flow during dry conditions and rainfall conditions show that the Ortenblad drainage basin, the Hwy 12 LS drainage basin and the basin east of the WWTP all have peaking factors of more than 4, suggesting that inflow may be a problem in these areas.</p>
Collection System Alternatives for New WWTF		
21	Donohue	<p>There is an existing 24" FM under 19th Avenue that serves to discharge treated water from the existing WWTF to County Ditch 46 at the intersection of 28th Avenue SW and 30th Street SW. Previous studies and cost estimates have recommended converting this FM from an effluent outfall to a FM conveying wastewater from the existing WWTF to the new WWTF.</p> <p>In order to determine if this is a feasible option, several issues need to be addressed:</p> <ul style="list-style-type: none"> • What is the capacity of the force main? • Will the construction facilitate conveyance of wastewater? I.e. Are there too many air relief valves at high spots for odor control? • Will MPCA allow the existing WWTF interim discharge to Ditch 23A during the period when the new WWTP is in the start-up phase? Note: Ditch 23A is not the existing WWTF's normal discharge location. • If discharge to Ditch 23A is allowed, what type of additional treatment will be required? (phosphorus, disinfection)
22	Information	<p>Routing alternatives for the new interceptor sewer were presented. In general, the intent of the new interceptor(s) is to address three issues: 1) to route flows to the new WWTF, 2) where feasible, to replace or relieve lift stations and sewers with insufficient capacity, and 3) to</p>

Note No.	Action By	Note
		<p>accommodate future growth.</p> <ul style="list-style-type: none"> • Alternate A provides a new collection sewer to receive flow from the Hwy 12 lift station and the new industrial development at the airport. The City expressed interest in pursuing this alternative and suggested that a route located ¼ section west of CTH 5, north of Hwy 12, be considered as well as the route along CTH 5. Depending on the conceptual layout of the new industrial park, the route may also be located along the ¼ section line east of CTH5 south of Hwy 12, but not necessarily. • Alternate B provides a new collection sewer to receive flow from Ortenblad. The City expressed interest in this alternative. • Alternate C is to reconstruct the interceptor sewer in Lakeland Drive. This alternate is not part of routing the flow from the existing WWTP to the new WWTP. • Alternate D is to construct a new interceptor north of Foot Lake, divert flow from Lakeland Drive and Eagle Lake, and provide for future growth north of the city. This alternate is not part of routing the flow from the existing WWTP to the new WWTP. • Alternate E is to construct a new force main from the WWTP to a lift station near JOTS. • Brian suggested a new alternative route from the existing WWTP to the west side of the city that would follow a new subdivision south of the plant and then run south of the existing developed area of the City. The advantages would include a reduced cost of construction because the route is through undeveloped property and accommodating future growth.
23	City	Send Donohue a copy of 2-foot contour map of City.
24	Donohue	Develop profiles of the various alternative routes. Select locations for lift stations. Provide cost estimate of alternatives. Do not include cost of re-surfacing or other utility construction in cost estimate. Prepare alternative analysis worksheet for each alternative.
Lift Station Evaluation		
25	Information	<p>Ken Sedmak led the discussion of the lift station evaluation. This was a review of the recommendations that the City should consider implementing over the next several years.</p> <p>The City should contact the County and discuss improvements to the Eagle Lake station control panels.</p> <p>There are capacity needs at Eagle Lake stations 3 & 8, Country Club and Ortenblad. Future capacity problem at Welshire. There is an immediate problem with drainage around Westwood Court.</p> <p>The remaining issues are minor and will be addressed by City staff or improved as the station is upgraded.</p>

Note No.	Action By	Note
26	Information/ Willmar	Ken Sedmak introduced the Lift Station Technical Memorandum that evaluated different types of lift stations. The memorandum suggested submersible type lift stations be constructed in the future because they are lower in cost and have no confined space requirements. The City is reviewing the memorandum and will provide comments to Donohue.

WWTF Alternatives Evaluation

27	Information	The Team reviewed the proposed alternatives for both the existing and proposed new WWTF. The Team decided to eliminate gaseous chlorination from the list of effluent disinfection alternatives.
28		Ken Sedmak discussed the Cannibal process.
29	Information	The Team developed definitions for the “qualitative” evaluation criteria (e.g., reliability) for both the collection system and WWTF evaluations. The Team eliminated “Environmental Issues” and added “Staffing”.
30	Information	The Team defined the weighting factors (from 1 – 5) for the “qualitative” evaluation criteria.

Other Items

31	Information Donohue	The Team discussed the nature and extent of the “landfill” in the vicinity of the existing WWTF. Donohue will review site plans and other information provided by the City and/or MPCA relating to this landfill. The potential construction cost issues and costs should be identified during this planning effort.
32	Information	Donohue met with Jeff Bredberg, Kandiyohi County, regarding the potential wetlands on the new WWTF site. After a brief look at topography and vegetation, there appear to be two areas that may be classified as wetlands on the new WWTF site (north of the existing biosolids facility). Jeff Bredberg will review past aerial photos and revisit the site after the corn is harvested to make a final determination.
33	Information	The City has a “wetland” bank that should be adequate to mitigate the potential wetlands if necessary.
34	Information	The City outlined the general vicinity of the wetland bank on a site plan of the new WWTF site. These wetlands should be outside the limits of the proposed new WWTF.
35	Information Donohue	The Team discussed Hawk Creek issues. Donohue will contact Gary Danielson, Kandiyohi County, ASAP to initiate discussions regarding relocation of the existing outfall and increased flow capacity. These meaningful discussions are possible now that future flows and loadings have been established.

Please contact Ken Sedmak with any comments concerning these notes.

e-mail: Ksedmak@donohue-associates.com
phone: (920) 208-0296
fax: (920) 208-0402

L:\Projects\10831\Donohue Working Area\Planning Phase (Tasks 101-106)\Task 105 - Alternative Evaluation\105.4 Workshops including materials and minutes\Workshop No. 4 - Nov 8 & 9, 2005\10-11-05 Workshop 4 - FINAL.doc