

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
SURFACE WATER QUALITY DIVISION
JULY 1996

STAFF REPORT

CHRONIC TOXICITY ASSESSMENT OF HOWARD CITY WWTP
OUTFALL 001 EFFLUENT

HOWARD CITY, MICHIGAN
MAY 24-30, 1996
NPDES PERMIT NO. MI0053406

Staff of the Great Lakes and Environmental Assessment Section (GLEAS) performed a *Ceriodaphnia dubia* chronic toxicity test on a grab sample of the Howard City WWTP outfall 001 effluent collected May 23, 1996. The facility was operating normally when the sample was collected.

Toxicity testing was performed according to GLEAS Procedure #54 (procedure available upon request). Because chlorine was not detected in the effluent, dechlorination was not necessary.

The facility discharges treated municipal wastewater to Indian Creek Drain (effluent design flow = 0.2 mgd). The receiving water concentration (RWC) of the effluent is 100% effluent.

SUMMARY

1. Water quality parameters met minimum test acceptability criteria (data available upon request), except that the temperatures varied slightly outside the required range (25.0 ± 1.0 °C)(Table 2). We do not believe the out-of-range temperatures affected the test results.
2. The *Ceriodaphnia dubia* chronic test results were compromised by excessive control mortality (Table 1). Control mortality (40%) exceeded acceptable levels (20%). However, the good performance of the test animals in the 100% effluent concentration (Table 1) indicates that the effluent was not acutely or chronically toxic to *Ceriodaphnia dubia*.
3. The results of this study suggest the effluent was meeting the aquatic toxicity-related requirements of Rules 57 and 82 of the Michigan Water Quality Standards.

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Table 1. Mean reproduction and percent survival of *Ceriodaphnia dubia* exposed to select concentrations of Howard City WWTP outfall 001 effluent from May 24-30, 1996.

Percent Effluent	Average Young/Adult	Percent Survival		
		Day 1	Day 2	Day 7
Control*	29.2	100	100	60
6.25	33.7	100	100	80
12.5	33.5	100	100	90
25	35.5	100	100	90
50	35.4	100	100	100
100	33.7	100	100	100

*Control was moderately hard dilute mineral water.

Table 2. Summary of water quality characteristics of fresh test solutions for the *Ceriodaphnia dubia* survival and reproduction test of Howard City WWTP outfall 001 effluent.

<u>Test Solution</u>	<u>pH (S.U.)</u>	<u>Dissolved Oxygen(mg/l)</u>	<u>Temperature(°C)</u>
Control	7.99-8.08	7.8-7.9	23.1-24.6
100%	7.57-8.37	7.7-8.0	23.3-25.0