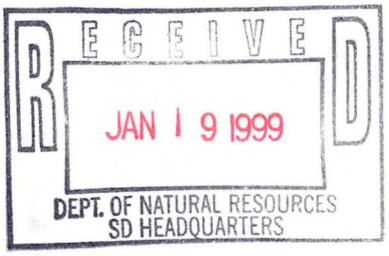




January 15, 1999

Mr. Paul Kozol
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53590

Re: Monthly Monitoring Report for the Oconomowoc Groundwater Treatment Facility

Dear Mr. Kozol:

Attached is the Monthly Monitoring Report for December, 1998 for the above referenced project. Questions regarding these reports should be directed to James Chang of APL, Inc. at (414) 355-5800.

Thank you for your continued cooperation and assistance with this project.

Sincerely,

Dean Groleau

Dean Groleau, Plant Superintendent
APL, Inc.

cc: Arne Thomsen, USACE, St. Paul District
Steve Peterson, USACE, Omaha District
Tom Williams, USEPA
James Chang, APL, Inc.
Mike Boehlar, Black and Veatch
David Brodzinski, WDNR, Horicon

8222 W. Calumet Road, P. O. Box 23785, Milwaukee, WI 53223 (414) 355-5800 • Fax#: (414) 355-3099
Wisconsin Dept. of Natural Resources Certificate #241340550

# MONTHLY MONITORING REPORT
# FOR THE
# OCONOMOWOC ELECTROPLATING
# GROUNDWATER TREATMENT FACILITY

**ASHIPPUN, WISCONSIN 53003**

**Prepared for:**

**U.S. ARMY CORPS OF ENGINEERS**
**ST. PAUL DISTRICT**
**HASTINGS, MINNESOTA**
**CONTRACT DACW37-98-C-0009**

**Prepared by:**

**APL, Inc.**
**8222 West Calumet Road**
**Milwaukee, WI 53223**

**January 15, 1999**

## 1.0 Introduction

This report summarizes the monthly effluent monitoring results for the Oconomowoc Electroplating Groundwater Treatment Plant (OEGTP) for December, 1998. The OEGTP is located at the site of the former Oconomowoc Electroplating Company, in ASHIPPUN, WI.

Laboratory results of effluent sampling can be found in the Discharge Monitoring Report Form, sent under separate cover. The effluent sampling was conducted by Scott Harrison, Tony Goodman, and Dave Dugan of APL, Inc. Laboratory analysis was provided by APL, Inc., 8222 W. Calumet Road, Milwaukee WI 53223. All sampling and analyses were conducted in accordance with the Oconomowoc Electroplating Groundwater Treatment System's Chemical Data Acquisition Plan (CDAP). The parameters tested for, frequency of testing, sample type, and limits are set forth in the Final Discharge Limits, Table 1 of the Oconomowoc Electroplating Superfund Site Limits and Requirements for Discharge of Treated Groundwater, issued by the Wisconsin Department of Natural Resources (WDNR) on September 24, 1996. This report is submitted in accordance with the reporting requirements of the WDNR permit.

### 1.1 Site Background Review

The OEGTP is located at 2572 Oak Street in Ashippun, Wisconsin, in the NW 1/4 of the SE 1/4 of Section 30, Township 30 North, Range 17 East. The site consists of approximately 10 acres, which includes approximately 3.5 acres of the former electroplating facility. The site is bounded by Oak Street (Highway 'O') and Eva Street to the North, and Davey Creek and the Town of Ashippun's garage facilities to the South. The property directly across Oak Street is occupied by Thermogas, Inc. A residential area is located across Eva Street, and a wetlands surrounds Davey Creek.

The contact person is Arne Thomsen of the U.S. Army Corps of Engineers (USACE). Mr. Thomsen's phone number is (612) 438-3076, Fax (612) 438-2464. APL, Inc. is contracted by the USACE to operate and maintain the plant. The phone number for the Treatment Plant is (920) 474-3212, Fax (920) 474-4241. The contact for APL, Inc. is James Chang, who can be reached at (414) 355-5800, Fax (414) 355-3099.

## 1.2 Project Objectives

The objective of this project is to prevent the spreading of any plume of contamination that may exist at the site. Contaminated groundwater is pumped from five extraction wells, treated for cyanide, metals, suspended solids, and volatile organic compounds (VOC's). The treated water is then transferred to a groundwater effluent gallery, located south of Elm Street, near Davey Creek.

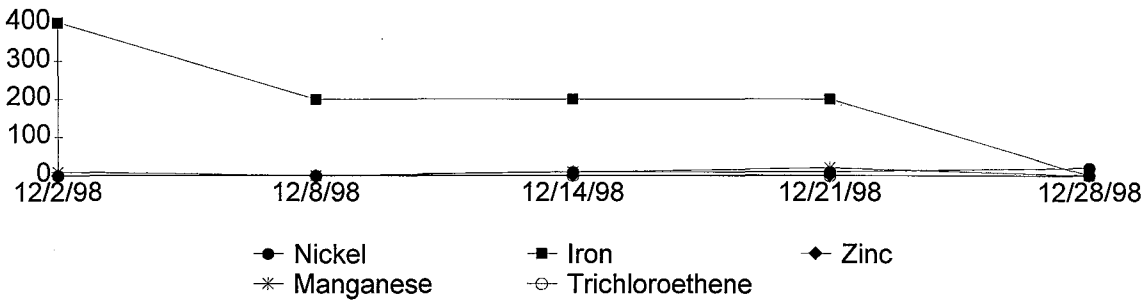
## 1.3 Effluent Monitoring

Weekly monitoring was conducted on December 2, 8, 14, 21, and 28. The weekly samples for December were tested by APL, Inc. The results of the effluent monitoring tests for the samples taken on December 2 showed that Trichloroethene equaled the limit of the WDNR effluent discharge permit. The results of the effluent monitoring tests for the samples taken on December 8 and 14 showed that Trichloroethene exceeded the limit of the WDNR effluent discharge permit. The results of the effluent monitoring tests for the samples taken on December 28 showed that Nickel equaled the limit of the WDNR effluent discharge permit. The results of the effluent monitoring tests for the samples taken on December 21 showed that Total Chromium equaled the limit of the WDNR effluent discharge permit. Paul Kozol of the WDNR authorized continuation of plant operation because the exceedence of Trichloroethene (0.6ug/l) was close to the laboratory's limit of detection (0.2ug/l). The possible causes of the high levels are discussed in Section 2.0.

## 1.4 Monitoring Results

Results from weekly effluent monitoring can be found in the Discharge Monitoring Report Form, sent under a separate cover. Chart 1, below, shows the results of effluent monitoring for five important indicator parameters listed in the Monitoring Requirements of the Oconomowoc Electroplating Superfund Site Substantive WPDES Permit Requirements Summary (9/96). The December sampling results showed 2 exceedences in TCE.

**Chart 1 - 5 Important Indicator Parameters**




## 2.0 Plant Permit Exceedences

The possible cause for high level for TCE and VOCs in the December samplings was due to the blower duct on the Diffused Air Stripper had a tear in it. The tear was discovered on December 26 and a PVC replacement was ordered. The PVC replacement duct was received and installed on December 30. The blower's output went from 15 to 40 + inches of water column after the new blower duct was installed.

The possible cause for high level for Metals in the December samplings may be due to the daily backwashing of the Tertiary Filtration System (TF-600) that requires temporarily by-passing it during the Manual effluent backwashing. The operators attempt to reduce this by-passing time by pumping the Clarifier (C-400) to the Sludge Holding Tank (ST-820) and cleaning it out at the same time as the backwashing of TF-600. Some flow past TF-600 is unavoidable with out shutting down the plant on a daily basis. Another possible source of Metals is the evident deterioration of the metal piping after the Sulfuric Acid Static Mixer to the NPDES Monitor Station.

## 2.1 Plant Shut Down

The treatment plant was shut down three times for a total of 43.75 hours in December, 1998. There was one shut down due to a clogged discharge line from the Cyanide Reduction Tank (CRT-211). The second shut down was due to the calibration of the Motor Operated Valve (MOV-113). The third shut down was due to cleaning of the Equalization Tank (EQT-100) and the piping for the Metals Package and Extraction Wells. Table 1 shows the summary of the plant down time for the month of December, 1998.

## Table 1 - Plant Down Time Summary

| Date(s) | Number Hours Shut Down | Reason |
|---|---|---|
| 12/2 | 3.5 | CRT-211 Discharge Line Clogged |
| 12/11 | 1 | MOV-113 Was Calibrated |
| 12/15-17 | 39.25 | EQT-100 & Piping Cleaning |
| **TOTAL** | **43.75** | |

### 2.1.1. Shut Down Due To Clogged CRT-211 Discharge Line

On December 1, the first and second stages of the Metals Package (CRT-201 & 211) started over-flowing onto the floor. They were by-passed and an attempt was made to clear the discharge line from CRT-211 using water pressure. This only partially cleared the pipe. Plans were made for a shut down for the next morning and equipment was obtained for the clean out process.

On December 2, the Treatment Plant was shut down and the CRT-211 discharge line isolation valve was removed and acid cleaned. The discharge line piping was jetted out with a water hose. The CRT-211 discharge line isolation valve was re-installed and the Treatment Plant was restarted. The flow from CRT-211 returned to normal. Total down time was 3.5 hours.

### 2.1.2. Shut Down Due To Calibrating MOV-113

On December 2, the plumbing and valve for the Plant Influent Motor Operated Valve (MOV-113) was installed. On December 7, a technician from Pieper Electric installed the actuator and electrical connections. On December 11, another technician from Pieper Electric calibrated the MOV-113 to accept the Treatment Plant's control parameters. The Treatment Plant was shut down for 1 hour while the MOV-113 was being calibrated.

### 2.1.3. Shut Down Due To EQT-100 & Piping Cleaning

On December 14, the Extraction Well pumps were shut down to allow the level In the Equalization Tank (EQT-100) to lower. On December 15, the Treatment Plant was switched to Manual mode from 12:30 P.M. to 3:30 P.M. to drain the last 25% of the EQT-100. At 3:30 P.M., the Treatment Plant was shut down. During the day, a dilute inhibited Muriatic acid solution was added to the piping of the Extraction Well pumps' and Metals Package piping and

left to react overnight. The Tertiary Filter (TF-600) was drained to the top of the media and a dilute inhibited Muriatic acid solution was added. Water was added until the level reached the TF-600 overflow and air was added to percolate the mixture overnight.

On December 16, all tanks in the Metals Package were drained to the Sludge Holding Tank (ST-820) and the sludge was removed using a pressure washer. Taylor Industrial Vac Company removed the sludge from the bottom of the EQT-100 and the sludge was added to ST-820 using the Clarifier's (C-400) Thickened Sludge Pump (TSP-410). The Extraction Well pumps were activated to fill the EQT-100 overnight.

On December 17, the Treatment System Feed Pump (TFP-110) was activated to start filling the Metals Package. All Metals Package pH and ORP probes were cleaned and tested for accuracy. An effluent backwash was performed on TF-600 and the Treatment System was put back in Automatic operational mode. Total Treatment System shut down time was 39.25 hours.

## 4.0 Summary

Groundwater treatment plant effluent monitoring was conducted on December 2, 8, 14, 21, and 28 of 1998. The laboratory results of these samples show that all contaminants listed in the Requirements of the Oconomowoc Electroplating Superfund Site Substantive WPDES Permit Requirements Summary (9/96) comply with the permit except for TCE on December 8 and 14. See Chart 1, Section 1.4 for important indicator parameters.

During the month of December, 1998, the plant was shut down three times for a total of 43.75 hours. See Table 1, Section 2.1 for shut down times. All equipment operation and maintenance related issues are detailed in a separate report, entitled "*Monthly Operation and Maintenance Report for the Oconomowoc Electroplating Groundwater Treatment Facility*". That report will be submitted by January 15, 1999.

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weekly Sampling Results | | | | | Date: | 12-2-98 | |
| Parameter | Influent | After Metals Package | After Stripper | Between Carbon Filters | Effluent | WDNR Site Permit ug/l | |
| pH | 7.3 | 11 | N/A | N/A | NT | Monitor | |
| TSS | NT | NT | NT | NT | NT | Monitor | mg/l |
| Arsenic | ND | NT | NT | NT | ND | 5 | |
| Barium | 200 | NT | NT | NT | 20 | 400 | |
| Cadmium | ND | NT | NT | NT | ND | 0.5 | |
| Cadmium Total Recoverable | ND | NT | NT | NT | ND | Monitor | |
| Chromium +6 | ND | NT | NT | NT | ND | Monitor | |
| Chromium Total | ND | NT | NT | NT | ND | 10 | |
| Copper | ND | NT | NT | NT | ND | Monitor | |
| Iron | 1000 | NT | NT | NT | 400 | Monitor | |
| Lead | ND | NT | NT | NT | ND | 1.5 | |
| Manganese | 200 | NT | NT | NT | 9 | Monitor | |
| Mercury | ND | NT | NT | NT | ND | 0.2 | |
| Nickel | 50 | NT | NT | NT | ND | 20 | |
| Selenium | ND | NT | NT | NT | ND | 10 | |
| Silver | ND | NT | NT | NT | ND | 10 | |
| Thallium | ND | NT | NT | NT | ND | 0.4 | |
| Zinc | ND | NT | NT | NT | ND | Monitor | |
| Cyanide | ND | NT | NT | NT | ND | 40 | |
| Cyanide Free | ND | NT | NT | NT | ND | Monitor | |
| 1,1-dichloroethane | 43 | NT | NT | NT | ND | 85 | |
| 1,2-dichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| 1,1-dichloroethene | ND | NT | NT | NT | ND | 0.7 | |
| 1,2-dichloroethene cis | 75 | NT | NT | NT | ND | 7 | |
| 1,2-dichloroethene trans | 22 | NT | NT | NT | ND | 20 | |
| Ethylbenzene | ND | NT | NT | NT | ND | 140 | |
| Methylene Chloride | ND | NT | NT | NT | ND | 0.5 | |
| Tetrachloroethene | 14 | NT | NT | NT | ND | 0.5 | |
| Toluene | ND | NT | NT | NT | ND | 68 | |
| 1,1,1-trichloroethane | 314 | NT | NT | NT | ND | 40 | |
| 1,1,2-trichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| TCE | 862 | NT | NT | NT | 0.5 | 0.5 | |
| Vinyl Chloride | ND | NT | NT | NT | ND | 0.2 | |
| Xylene Total | ND | NT | NT | NT | ND | 124 | |
| COD | NT | NT | NT | NT | NT | Monitor | mg/l |
| Phosphorus total | NT | NT | NT | NT | NT | Monitor | mg/l |
| Nitrate + Nitrite | NT | NT | NT | NT | NT | Monitor | mg/l |
| Ammonia Nitrogen | NT | NT | NT | NT | NT | Monitor | mg/l |

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weekly Sampling Results | | | | | Date: | 12-8-98 | |
| Parameter | Influent | After Metals Package | After Stripper | Between Carbon Filters | Effluent | WDNR Site Permit ug/l | |
| pH | 7.3 | 11 | N/A | N/A | NT | Monitor | |
| TSS | NT | NT | NT | NT | NT | Monitor | mg/l |
| Arsenic | ND | NT | NT | NT | ND | 5 | |
| Barium | 100 | NT | NT | NT | 20 | 400 | |
| Cadmium | ND | NT | NT | NT | ND | 0.5 | |
| Cadmium Total Recoverable | ND | NT | NT | NT | ND | Monitor | |
| Chromium +6 | ND | NT | NT | NT | ND | Monitor | |
| Chromium Total | 100 | NT | NT | NT | ND | 10 | |
| Copper | ND | NT | NT | NT | ND | Monitor | |
| Iron | 1600 | NT | NT | NT | 200 | Monitor | |
| Lead | ND | NT | NT | NT | ND | 1.5 | |
| Manganese | 200 | NT | NT | NT | ND | Monitor | |
| Mercury | ND | NT | NT | NT | ND | 0.2 | |
| Nickel | 50 | NT | NT | NT | ND | 20 | |
| Selenium | ND | NT | NT | NT | ND | 10 | |
| Silver | ND | NT | NT | NT | ND | 10 | |
| Thallium | ND | NT | NT | NT | ND | 0.4 | |
| Zinc | ND | NT | NT | NT | ND | Monitor | |
| Cyanide | ND | NT | NT | NT | ND | 40 | |
| Cyanide Free | ND | NT | NT | NT | ND | Monitor | |
| 1,1-dichloroethane | 45 | NT | NT | NT | ND | 85 | |
| 1,2-dichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| 1,1-dichloroethene | ND | NT | NT | NT | ND | 0.7 | |
| 1,2-dichloroethene cis | 85 | NT | NT | NT | ND | 7 | |
| 1,2-dichloroethene trans | 24 | NT | NT | NT | ND | 20 | |
| Ethylbenzene | ND | NT | NT | NT | ND | 140 | |
| Methylene Chloride | ND | NT | NT | NT | ND | 0.5 | |
| Tetrachloroethene | 12 | NT | NT | NT | ND | 0.5 | |
| Toluene | ND | NT | NT | NT | ND | 68 | |
| 1,1,1-trichloroethane | 384 | NT | NT | NT | ND | 40 | |
| 1,1,2-trichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| TCE | 905 | NT | NT | NT | 0.6 | 0.5 | |
| Vinyl Chloride | ND | NT | NT | NT | ND | 0.2 | |
| Xylene Total | ND | NT | NT | NT | ND | 124 | |
| COD | NT | NT | NT | NT | NT | Monitor | mg/l |
| Phosphorus total | NT | NT | NT | NT | NT | Monitor | mg/l |
| Nitrate + Nitrite | NT | NT | NT | NT | NT | Monitor | mg/l |
| Ammonia Nitrogen | NT | NT | NT | NT | NT | Monitor | mg/l |

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weekly Sampling Results | | | | | Date: | 12-14-98 | |
| Parameter | Influent | After Metals Package | After Stripper | Between Carbon Filters | Effluent | WDNR Site Permit ug/l | |
| pH | 7 | 11 | N/A | N/A | 8.4 | Monitor | |
| TSS | 1.5 | NT | NT | NT | 0.5 | Monitor | mg/l |
| Arsenic | ND | ND | ND | NT | ND | 5 | |
| Barium | 200 | 20 | ND | NT | 20 | 400 | |
| Cadmium | ND | ND | ND | NT | ND | 0.5 | |
| Cadmium Total Recoverable | ND | ND | ND | NT | ND | Monitor | |
| Chromium +6 | ND | ND | ND | NT | ND | Monitor | |
| Chromium Total | ND | ND | ND | NT | ND | 10 | |
| Copper | ND | ND | ND | NT | ND | Monitor | |
| Iron | 1000 | 100 | 800 | NT | 200 | Monitor | |
| Lead | 5.9 | ND | ND | NT | ND | 1.5 | |
| Manganese | 200 | ND | 20 | NT | 9 | Monitor | |
| Mercury | 0.4 | ND | ND | NT | ND | 0.2 | |
| Nickel | 40 | ND | ND | NT | 10 | 20 | |
| Selenium | ND | ND | ND | NT | ND | 10 | |
| Silver | ND | ND | ND | NT | ND | 10 | |
| Thallium | ND | ND | ND | NT | ND | 0.4 | |
| Zinc | ND | ND | ND | NT | ND | Monitor | |
| Cyanide | ND | NT | NT | NT | ND | 40 | |
| Cyanide Free | ND | NT | NT | NT | ND | Monitor | |
| 1,1-dichloroethane | 47 | NT | ND | NT | ND | 85 | |
| 1,2-dichloroethane | ND | NT | ND | NT | ND | 0.5 | |
| 1,1-dichloroethene | 24 | NT | ND | NT | ND | 0.7 | |
| 1,2-dichloroethene cis | 89 | NT | 0.7 | NT | ND | 7 | |
| 1,2-dichloroethene trans | 26 | NT | ND | NT | ND | 20 | |
| Ethylbenzene | 2.1 | NT | ND | NT | ND | 140 | |
| Methylene Chloride | ND | NT | ND | NT | ND | 0.5 | |
| Tetrachloroethene | 15 | NT | ND | NT | ND | 0.5 | |
| Toluene | ND | NT | ND | NT | ND | 68 | |
| 1,1,1-trichloroethane | 379 | NT | 1.2 | NT | ND | 40 | |
| 1,1,2-trichloroethane | ND | NT | ND | NT | ND | 0.5 | |
| TCE | 946 | NT | 4.3 | NT | 0.6 | 0.5 | |
| Vinyl Chloride | ND | NT | ND | NT | ND | 0.2 | |
| Xylene Total | 6.9 | NT | ND | NT | ND | 124 | |
| COD | 24 | NT | NT | NT | 9 | Monitor | mg/l |
| Phosphorus total | NT | NT | NT | NT | ND | Monitor | mg/l |
| Nitrate + Nitrite | NT | NT | NT | NT | 84 | Monitor | mg/l |
| Ammonia Nitrogen | NT | NT | NT | NT | ND | Monitor | mg/l |

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weekly Sampling Results | | | | | Date: | 12-21-98 | |
| Parameter | Influent | After Metals Package | After Stripper | Between Carbon Filters | Effluent | WDNR Site Permit ug/l | |
| pH | 7.6 | 11 | N/A | N/A | NT | Monitor | |
| TSS | NT | NT | NT | NT | NT | Monitor | mg/l |
| Arsenic | 14 | NT | NT | NT | ND | 5 | |
| Barium | 100 | NT | NT | NT | 40 | 400 | |
| Cadmium | ND | NT | NT | NT | ND | 0.5 | |
| Cadmium Total Recoverable | ND | NT | NT | NT | ND | Monitor | |
| Chromium +6 | ND | NT | NT | NT | ND | Monitor | |
| Chromium Total | ND | NT | NT | NT | 10 | 10 | |
| Copper | ND | NT | NT | NT | 8 | Monitor | |
| Iron | 1200 | NT | NT | NT | 200 | Monitor | |
| Lead | ND | NT | NT | NT | ND | 1.5 | |
| Manganese | 100 | NT | NT | NT | 20 | Monitor | |
| Mercury | ND | NT | NT | NT | ND | 0.2 | |
| Nickel | 30 | NT | NT | NT | 10 | 20 | |
| Selenium | ND | NT | NT | NT | ND | 10 | |
| Silver | ND | NT | NT | NT | ND | 10 | |
| Thallium | ND | NT | NT | NT | ND | 0.4 | |
| Zinc | ND | NT | NT | NT | ND | Monitor | |
| Cyanide | 7 | NT | NT | NT | 5 | 40 | |
| Cyanide Free | 4 | NT | NT | NT | ND | Monitor | |
| 1,1-dichloroethane | 56 | NT | NT | NT | ND | 85 | |
| 1,2-dichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| 1,1-dichloroethene | 21 | NT | NT | NT | ND | 0.7 | |
| 1,2-dichloroethene cis | 111 | NT | NT | NT | ND | 7 | |
| 1,2-dichloroethene trans | 21 | NT | NT | NT | ND | 20 | |
| Ethylbenzene | 2.3 | NT | NT | NT | ND | 140 | |
| Methylene Chloride | ND | NT | NT | NT | ND | 0.5 | |
| Tetrachloroethene | 14 | NT | NT | NT | ND | 0.5 | |
| Toluene | 3.7 | NT | NT | NT | ND | 68 | |
| 1,1,1-trichloroethane | 384 | NT | NT | NT | 0.2 | 40 | |
| 1,1,2-trichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| TCE | 1090 | NT | NT | NT | 0.2 | 0.5 | |
| Vinyl Chloride | ND | NT | NT | NT | ND | 0.2 | |
| Xylene Total | 7.8 | NT | NT | NT | ND | 124 | |
| COD | NT | NT | NT | NT | NT | Monitor | mg/l |
| Phosphorus total | NT | NT | NT | NT | NT | Monitor | mg/l |
| Nitrate + Nitrite | NT | NT | NT | NT | NT | Monitor | mg/l |
| Ammonia Nitrogen | NT | NT | NT | NT | NT | Monitor | mg/l |

All Effluent Samples Were Grab Samples Authorized By Paul Kozol, WDNR.

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weekly Sampling Results | | | | | Date: | 12-28-98 | |
| Parameter | Influent | After Metals Package | After Stripper | Between Carbon Filters | Effluent | WDNR Site Permit ug/l | |
| pH | 7.3 | 10 | N/A | N/A | NT | Monitor | |
| TSS | NT | NT | NT | NT | NT | Monitor | mg/l |
| Arsenic | 14 | NT | NT | NT | ND | 5 | |
| Barium | 100 | NT | NT | NT | 20 | 400 | |
| Cadmium | ND | NT | NT | NT | ND | 0.5 | |
| Cadmium Total Recoverable | ND | NT | NT | NT | ND | Monitor | |
| Chromium +6 | ND | NT | NT | NT | ND | Monitor | |
| Chromium Total | 10 | NT | NT | NT | ND | 10 | |
| Copper | ND | NT | NT | NT | ND | Monitor | |
| Iron | 1000 | NT | NT | NT | ND | Monitor | |
| Lead | 2.6 | NT | NT | NT | ND | 1.5 | |
| Manganese | 200 | NT | NT | NT | ND | Monitor | |
| Mercury | ND | NT | NT | NT | ND | 0.2 | |
| Nickel | 60 | NT | NT | NT | 20 | 20 | |
| Selenium | ND | NT | NT | NT | ND | 10 | |
| Silver | ND | NT | NT | NT | ND | 10 | |
| Thallium | ND | NT | NT | NT | ND | 0.4 | |
| Zinc | 100 | NT | NT | NT | ND | Monitor | |
| Cyanide | ND | NT | NT | NT | ND | 40 | |
| Cyanide Free | ND | NT | NT | NT | ND | Monitor | |
| 1,1-dichloroethane | 37 | NT | NT | NT | 1.7 | 85 | |
| 1,2-dichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| 1,1-dichloroethene | 18 | NT | NT | NT | ND | 0.7 | |
| 1,2-dichloroethene cis | 73 | NT | NT | NT | ND | 7 | |
| 1,2-dichloroethene trans | 19 | NT | NT | NT | ND | 20 | |
| Ethylbenzene | ND | NT | NT | NT | ND | 140 | |
| Methylene Chloride | ND | NT | NT | NT | ND | 0.5 | |
| Tetrachloroethene | 12 | NT | NT | NT | ND | 0.5 | |
| Toluene | ND | NT | NT | NT | ND | 68 | |
| 1,1,1-trichloroethane | 330 | NT | NT | NT | 1.7 | 40 | |
| 1,1,2-trichloroethane | ND | NT | NT | NT | ND | 0.5 | |
| TCE | 862 | NT | NT | NT | 0.2 | 0.5 | |
| Vinyl Chloride | ND | NT | NT | NT | ND | 0.2 | |
| Xylene Total | ND | NT | NT | NT | ND | 124 | |
| COD | NT | NT | NT | NT | NT | Monitor | mg/l |
| Phosphorus total | NT | NT | NT | NT | NT | Monitor | mg/l |
| Nitrate + Nitrite | NT | NT | NT | NT | NT | Monitor | mg/l |
| Ammonia Nitrogen | NT | NT | NT | NT | NT | Monitor | mg/l |

All Effluent Samples Were Grab Samples Authorized By Paul Kozol, WDNR.

FLOW FROM EXTRACTION WELLS

**YEAR: 1998**

| **MONTH: DEC.** DAY | FE-100 FLOW TOTALIZER | TOTAL DAY'S FLOW (GAL.) | DAILY FLOW MGD | |
|---|---|---|---|---|
| 1 | 571,408.44 | 16,838.87 | 0.017 | |
| 2 | 588,247.31 | 22,017.13 | 0.022 | SHUT DOWN |
| 3 | 610,264.44 | 19,223.72 | 0.019 | |
| 4 | 629,488.16 | 20,137.47 | 0.020 | |
| 5 | 649,625.63 | 23,579.93 | 0.024 | |
| 6 | 673,205.56 | 18,119.63 | 0.018 | |
| 7 | 691,325.19 | 20,175.81 | 0.020 | |
| 8 | 711,501.00 | 20,160.88 | 0.020 | |
| 9 | 731,661.88 | 21,095.18 | 0.021 | |
| 10 | 752,757.06 | 20,926.63 | 0.021 | |
| 11 | 773,683.69 | 22,807.81 | 0.023 | |
| 12 | 796,491.50 | 20,111.09 | 0.020 | |
| 13 | 816,602.59 | 17,606.22 | 0.018 | |
| 14 | 834,208.81 | 437.13 | 0.000 | |
| 15 | 834,645.94 | 0.00 | 0.000 | SHUT DOWN |
| 16 | 834,645.94 | 21,985.25 | 0.022 | SHUT DOWN |
| 17 | 856,631.19 | 13,943.00 | 0.014 | SHUT DOWN |
| 18 | 870,574.19 | 13,292.56 | 0.013 | |
| 19 | 883,866.75 | 9,560.06 | 0.010 | |
| 20 | 893,426.81 | 8,760.57 | 0.009 | |
| 21 | 902,187.38 | 30,642.06 | 0.031 | |
| 22 | 932,829.44 | 19,687.56 | 0.020 | |
| 23 | 952,517.00 | 17,550.44 | 0.018 | |
| 24 | 970,067.44 | 21,061.19 | 0.021 | |
| 25 | 991,128.63 | 18,228.62 | 0.018 | |
| 26 | 1,009,357.25 | 19,018.00 | 0.019 | |
| 27 | 1,028,375.25 | 15,443.75 | 0.015 | |
| 28 | 1,043,819.00 | 20,476.38 | 0.020 | |
| 29 | 1,064,295.38 | 17,967.50 | 0.018 | |
| 30 | 1,082,262.88 | 15,484.50 | 0.015 | |
| 31 | 1,097,747.38 | 30,544.87 | 0.031 | |
| JAN. 1 | 1,128,292.25 | | | |
| | | **TOTAL** | 0.557 | |
| | | **AVERAGE** | 0.018 | |

FLOW FROM EQT-100

| YEAR: 1998 | | | | |
|---|---|---|---|---|
| **MONTH: DEC.** DAY | FE-112 FLOW TOTALIZER | TOTAL DAY'S FLOW (GAL.) | DAILY FLOW MGD | |
| 1 | 4,277,473.50 | 32,558.00 | 0.033 | |
| 2 | 4,310,031.50 | 37,906.00 | 0.038 | SHUT DOWN |
| 3 | 4,347,937.50 | 36,506.50 | 0.037 | |
| 4 | 4,384,444.00 | 37,551.00 | 0.038 | |
| 5 | 4,421,995.00 | 43,960.00 | 0.044 | |
| 6 | 4,465,955.00 | 29,008.50 | 0.029 | |
| 7 | 4,494,963.50 | 38,074.50 | 0.038 | |
| 8 | 4,533,038.00 | 35,022.00 | 0.035 | |
| 9 | 4,568,060.00 | 43,667.50 | 0.044 | |
| 10 | 4,611,727.50 | 30,468.00 | 0.030 | |
| 11 | 4,642,195.50 | 33,950.00 | 0.034 | |
| 12 | 4,676,145.50 | 32,077.00 | 0.032 | |
| 13 | 4,708,222.50 | 33,364.50 | 0.033 | |
| 14 | 4,741,587.00 | 29,720.50 | 0.030 | |
| 15 | 4,771,307.50 | 9,636.00 | 0.010 | SHUT DOWN |
| 16 | 4,780,943.50 | 12,703.50 | 0.013 | SHUT DOWN |
| 17 | 4,793,647.00 | 44,907.00 | 0.045 | SHUT DOWN |
| 18 | 4,838,554.00 | 38,035.00 | 0.038 | |
| 19 | 4,876,589.00 | 45,848.50 | 0.046 | |
| 20 | 4,922,437.50 | 45,686.50 | 0.046 | |
| 21 | 4,968,124.00 | 43,106.50 | 0.043 | |
| 22 | 5,011,230.50 | 35,424.50 | 0.035 | |
| 23 | 5,046,655.00 | 37,245.50 | 0.037 | |
| 24 | 5,083,900.50 | 51,335.00 | 0.051 | |
| 25 | 5,135,235.50 | 50,685.50 | 0.051 | |
| 26 | 5,185,921.00 | 44,898.50 | 0.045 | |
| 27 | 5,230,819.50 | 49,396.00 | 0.049 | |
| 28 | 5,280,215.50 | 39,518.50 | 0.040 | |
| 29 | 5,319,734.00 | 44,456.50 | 0.044 | |
| 30 | 5,364,190.50 | 34,468.50 | 0.034 | |
| 31 | 5,398,659.00 | 52,252.00 | 0.052 | |
| JAN. 1 | 5,450,911.00 | | | |
| | | **TOTAL** | 1.173 | |
| | | **AVERAGE** | 0.038 | |

EFFLUENT FLOW FROM PLANT

| YEAR: 1998 | | | | | |
|---|---|---|---|---|---|
| **MONTH: DEC.** DAY | NPDES STATION TOTALIZER | TOTAL DAY'S FLOW (GAL.) | X2 | DAILY FLOW MGD | |
| 1 | 1,031,193.19 | 9,631.75 | 19,263.50 | 0.019 | |
| 2 | 1,040,824.94 | 11,472.31 | 22,944.62 | 0.023 | SHUT DOWN |
| 3 | 1,052,297.25 | 9,414.38 | 18,828.76 | 0.019 | |
| 4 | 1,061,711.63 | 9,661.87 | 19,323.74 | 0.019 | |
| 5 | 1,071,373.50 | 12,136.88 | 24,273.76 | 0.024 | |
| 6 | 1,083,510.38 | 9,666.75 | 19,333.50 | 0.019 | |
| 7 | 1,093,177.13 | 13,106.50 | 26,213.00 | 0.026 | |
| 8 | 1,106,283.63 | 9,410.75 | 18,821.50 | 0.019 | |
| 9 | 1,115,694.38 | 13,304.37 | 26,608.74 | 0.027 | |
| 10 | 1,128,998.75 | 8,541.00 | 17,082.00 | 0.017 | |
| 11 | 1,137,539.75 | 9,044.63 | 18,089.26 | 0.018 | |
| 12 | 1,146,584.38 | 10,180.87 | 20,361.74 | 0.020 | |
| 13 | 1,156,765.25 | 10,545.50 | 21,091.00 | 0.021 | |
| 14 | 1,167,310.75 | 9,098.25 | 18,196.50 | 0.018 | |
| 15 | 1,176,409.00 | 3,407.00 | 6,814.00 | 0.007 | SHUT DOWN |
| 16 | 1,179,816.00 | 1,077.63 | 2,155.26 | 0.002 | SHUT DOWN |
| 17 | 1,180,893.63 | 6,603.62 | 13,207.24 | 0.013 | SHUT DOWN |
| 18 | 1,187,497.25 | 4,682.13 | 9,364.26 | 0.009 | |
| 19 | 1,192,179.38 | 4,727.62 | 9,455.24 | 0.009 | |
| 20 | 1,196,907.00 | 7,117.63 | 14,235.26 | 0.014 | |
| 21 | 1,204,024.63 | 17,545.87 | 35,091.74 | 0.035 | |
| 22 | 1,221,570.50 | 6,628.63 | 13,257.26 | 0.013 | |
| 23 | 1,228,199.13 | 9,813.37 | 19,626.74 | 0.020 | |
| 24 | 1,238,012.50 | 9,432.50 | 18,865.00 | 0.019 | |
| 25 | 1,247,445.00 | 10,103.50 | 20,207.00 | 0.020 | |
| 26 | 1,257,548.50 | 10,244.50 | 20,489.00 | 0.020 | |
| 27 | 1,267,793.00 | 11,834.00 | 23,668.00 | 0.024 | |
| 28 | 1,279,627.00 | 9,612.75 | 19,225.50 | 0.019 | |
| 29 | 1,289,239.75 | 10,406.13 | 20,812.26 | 0.021 | |
| 30 | 1,299,645.88 | 9,810.50 | 19,621.00 | 0.020 | |
| 31 | 1309456.38 | 12,091.12 | 24,182.24 | 0.02 | |
| JAN. 1 | 1,321,547.50 | | | | |
| | | | **TOTAL** | 0.581 | |
| | | | **AVERAGE** | 0.019 | |

MONITOR WELL DEPTHS

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | |
|---|---|---|---|---|---|---|
| MONITORING WELLS | | WATER LEVEL | | FEET | | |
| DATE | MW02DP | MW03SP | MW05P | MW05DP | MW06P | MW11BP |
| July 31, 1998 | 6.64 | DRY | 3.74 | 4.26 | 8.00 | COVERED |
| Aug. 31, 1998 | 7.70 | DRY | DRY | 5.34 | 8.70 | COVERED |
| Sept. 17, 1998 | 7.50 | DRY | DRY | 5.00 | 8.66 | COVERED |
| Oct. 7, 1998 | 6.50 | DRY | 3.75 | 4.10 | 8.34 | COVERED |
| Nov.23, 1998 | 6.66 | DRY | DRY | 4.37 | 8.17 | COVERED |
| Dec. 15, 1998 | 5.90 | DRY | 3.40 | 3.75 | 8.20 | COVERED |

MONITOR WELL DEPTHS

| OCONOMOWOC GROUNDWATER TREATMENT PLANT | | | | | | |
|---|---|---|---|---|---|---|
| MONITORING WELLS | | WATER LEVE | FEET | | | |
| DATE | MW12BP | MW12DP | MW13SP | MW14DP | MW15DP | MW16SP |
| July 31, 1998 | 4.75 | 3.78 | 5.75 | 4.80 | 10.49 | UNACCESS. |
| Aug. 31, 1998 | 5.64 | 4.48 | 6.38 | 4.80 | 11.64 | UNACCESS. |
| Sept. 17, 1998 | 5.35 | 3.20 | 6.31 | 4.86 | 11.10 | UNACCESS. |
| Oct. 7, 1998 | 4.75 | 3.65 | 5.79 | 4.75 | 10.60 | UNACCESS. |
| Nov. 23, 1998 | 4.73 | 3.70 | 5.82 | 4.56 | 10.46 | UNACCESS. |
| Dec. 15, 1998 | 4.10 | 3.00 | 5.85 | 4.70 | 9.95 | UNACCESS. |

January 15, 1999

Paul Kozol
Wisconsin Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53590

Re: Monthly O&M Report for the Oconomowoc Groundwater Treatment Facility

Dear Mr. Kozol:

Attached is the Monthly O&M Report for December, 1998, for the above referenced project. Questions regarding this report should be directed to me at the treatment plant. The treatment plant phone number is (920) 474-3212.

Thank you for your continued cooperation and assistance with this project.

Sincerely,

Dean Groleau

Dean Groleau, Plant Superintendent
APL, Inc.

cc: James Chang, APL, Inc.
Mike Boehlar, Black and Veatch
Arne Thomsen, USACE, St. Paul District
David Brodzinski, WDNR, Horicon
Steve Peterson, USACE, Omaha District
Thomas Williams, USEPA

8222 W. Calumet Road, P. O. Box 23785, Milwaukee, WI 53223 (414) 355-5800 • Fax#: (414) 355-3099
Wisconsin Dept. of Natural Resources Certificate #241340550

# MONTHLY OPERATIONS AND MAINTENANCE REPORT
# FOR THE
# OCONOMOWOC ELECTROPLATING
# GROUNDWATER TREATMENT FACILITY

**2572 Oak Street**
**ASHIPPUN, WISCONSIN 53003**

**Prepared for:**

**U.S. Army Corps Of Engineers**
**St. Paul District**
**Hastings, Minnesota**
**Contract DACW37-98-C-0009**

**Prepared by:**

**APL, Inc.**
**8222 West Calumet Road**
**Milwaukee, Wisconsin 53223**

**January 15, 1999**

## 1.0 Introduction

This report is submitted to provide information concerning the operations and maintenance (O&M) problems encountered at the Oconomowoc Electroplating Groundwater Treatment Plant during the month of December, 1998. O&M problems that led to a plant shut down are discussed in the *Monthly Monitoring Report for the Oconomowoc Electroplating Groundwater Treatment Facility.*

The O&M difficulties encountered in December include:

1. Tertiary Filtration System (TF-600) needs daily backwashing.
2. Sulfuric Acid Pumping Station needs rebuilding.
3. Press Filtrate Tank (PFT-840) access ladder has cracked supports.
4. Sodium Hypochlorite Pump (SCP-252) needs to be sent to the manufacturer for inspection and repair.
5. Motor Operated Valve (MOV-113) needed to be installed.
6. NPDES Station needed pH probe recalibrated.
7. Diffused Air Stripper (DAS-500) sump has pin holes.
8. Office Personal Computer (Acer) not recognizing CD ROM drive.
9. Metals Package pH & ORP Probes needed cleaning.
10. Metals Package needed sludge removed.
11. Thickened Sludge Pump (TSP-411) has a leak.
12. Air Stripper Transfer Pump (TP-520) base needs repainting.
13. Diffused Air Stripper (DAS-500) filter element needed cleaning.
14. Metals Package Mixers (CTM-202/212, RTM-302, & TD-401) needed lubricating.
15. Floor Sump Trench needed cleaning.
16. Press Filtrate Pumps (PFP-830/831) air-line regulator leaked.
17. Filter Press Feed Pump (FFP-810/811) leaking.
18. Cyanide Tank Mixer (CTM-212) failed.
19. Cyanide Reaction Tank (CRT-211) discharge line clogged.
20. Equalization Tank (EQT-100) needed sludge removed.
21. Metals Package & Extraction Wells' piping needed acid cleaning.
22. North Gate lock and rollers keep freezing.
23. Sodium Hypochlorite Pump (SCP-251) discharge line & anti-siphon valve leaked.
24. Gas-Fired Unit Heaters (GUH's) need resetting.
25. Tertiary Filtration System (TF-600) needed acid cleaning.
26. Sodium Hydroxide Pumps' (SHP-261/262/361) Y-strainers needed cleaning.

27. Floor Trench Sump Pump (SP-960A) failed.
28. Diffused Air Stripper (DAS-500) blower duct needed replacing.
29. Filter Press (FP-800) hydraulic oil needs to be changed.
30. Extraction Well (EW-1, 3, & 4) covers need bolts.
31. Floc Tank Mixer (FT-301) & Cyanide Tank Mixer (CTM-202) oil seals need to be changed.
32. NPDES Station Conductivity & Temperature readings erratic.
33. NPDES Station Composite Sampler failed.

## 2.0 Process Difficulties

Nine process systems experienced difficulties in December, 1998. The treatment plant was shut down two times due to the problems experienced with these processes. All of the difficulties have been resolved either by permanent or temporary solutions. Technical assistance from equipment suppliers was sought whenever possible. For information regarding plant shut downs, see the *Monthly Monitoring Report for the Oconomowoc Electroplating Groundwater Treatment Facility.*

### 2.0.1. Tertiary Filtration System

The Tertiary Filtration System's (TF-600) needs backwashing with effluent every day due to too much polymer going through the Metals Package. TF-600 started experiencing media binding problems after running the Sludge Filter Press (FP-800) and transferring the filtrate to the Equalization Tank (EQT-100). The Polymer Feed Pumps (PFU-350/351) are at their lowest settings without damaging the pumps. This has been an on-going problem since the initial Treatment Plant's start-up in 1996. The Polymer Process is currently under modification to up-grade and reduce this situation.

TF-600 was acid cleaned on December 15 with a dilute inhibited Muriatic Acid solution to remove the polymer and hardness/build-up from the filter walls and media. The procedure was repeated on December 21 because the hardness/build-up that was removed from the filter walls had plugged the media up-lift system. TF-600 returned to normal operating parameters after the second acid cleaning.

### 2.0.2. Metals Package

On July 1, the plant's influent motor operated valve (MOV-113) would not operate in the Automatic or Manual modes. Technicians from Pieper Electric inspected it and determined that the valve needs to be replaced. A quote was received from the supplier (Bertsch Co.) and sent to the USACE on July 28. On September 14, a replacement valve was ordered by the USACE. The replacement valve was received on October 13. Three 2" x 10" nipples were ordered on October 20, but were placed on back order. On November 13, the 3 nipples arrived at the Treatment Plant and the valve piping was pre-assembled and painted on November 16. On December 2, the piping and valve were installed, but not the electrical components. On December 7, a technician from Pieper Electric installed the valve actuator and electrical components. On December 11, another technician from Pieper Electric calibrated the actuator and adjusted the valve to accept the Treatment Plant's parameters.

On December 7 and 16, all of the ORP & pH Probes located in the Metals Package were cleaned and tested. This is on the semi-monthly preventive maintenance schedule.

On September 23, it was discovered that the Thickened Sludge Pump (TSP-411) would not operate and liquid was leaking from the air exhaust. This indicates a ruptured diaphragm. On October 1, the pump was disassembled and it was discovered that both diaphragms were ruptured. The inner and outer diaphragm plates on both diaphragms were corroded together and were damaged while trying to separate them. Quotes for replacement parts were obtained from 3 suppliers and submitted to the USACE on October 13. The replacement parts were ordered on October 15. On November 2, the replacement parts arrived at the treatment plant but 2 parts had been omitted from the order. The two parts were reordered on November 3. One part was received on November 6 but the other part was placed on back-order. TSP-411 was assembled as much as possible on November 11. On December 22, the final part arrived and the pump was reassembled and test run. TSP-411 would only go through a half cycle and quit. A technician from A.A. Anderson Pumps instructed that the air assembly be disassembled, inspected, cleaned, and reassembled. On December 29, this was done but the pump still would not cycle completely. On December 30, a technician from A.A. Anderson Pumps arrived and assisted in trouble-shooting the problem. He found that the "sleeve & spool" assembly had seized up. It was removed, disassembled, honed, lubricated, and reassembled. TSP-411 was test run and everything functioned normally.

On December 16, all mixers (CTM-202, 212, RTM-302, & TD-401) that had Zerk fittings in the Metals Package were lubricated. This is on the monthly preventive maintenance schedule.

On November 30, the circuit breaker to the Cyanide Tank Mixer (CTM-212) was discovered opened. The circuit breaker was reset and several attempts were made to restart CTM-212. Blue sparks were seen at each attempt and the starter breaker would re-trip. The control panel circuit breaker was opened and the start switch left off until a more thorough inspection can be made. On December 2, the Cyanide Reduction Tank (CRT-211) was drained and the impeller and shaft was cleaned, inspected, and tested (to see if it spun freely). All appeared normal. On December 7, a technician from Pieper Electric tested CTM-212 and determined that the mixer motor was burned out. On December 8, the gear grease was changed and, on December 9, a replacement quote for the motor was obtained and submitted to the USACE. On December 10, the new motor was ordered by the USACE and it was received on December 16. The new motor only had a key connection on the shaft but the drive gear needed to be attached with a pin. On December 23, a local machinist picked up the new motor to drill a pin hole connection in the drive shaft and attached the drive gear.

On December 1, it was noticed that the first and second stages of the Metals Package (CRT-201/211) were overflowing onto the Treatment Plant floor. After an inspection of the problem, it was discovered that the discharge line from CRT-211 was partially plugged and caused the tanks to over-fill. A water hose connector was attached to Sample Port #2 and the discharge line was flushed out. The flow through the discharge line increased. The Treatment Plant's flow was reduced and plans for a maintenance shut down were made for December 2. On December 2, the isolation valve and CRT-211 discharge line elbow were removed and cleaned with a dilute inhibited Muriatic acid solution. The rest of the discharge line was augured out with a water hose jetter. The discharge line, isolation valve, and discharge line elbow were reassembled and the Treatment Plant was restarted. The levels in CRT-201 and 211 and the flow through CRT-211's discharge line returned to normal. Total Treatment Plant shut down time was 3.5 hours. There are no Treatment Plant fail safes to prevent this or alarms to indicate that the Metals Package piping has clogged.

On December 10, CRT-201 was drained to the Sludge Holding Tank (ST-820) using the Thickened Sludge Pump (TSP-410). The tank was cleaned of sludge/ hardness build-up with a pressure washer and pumped to ST-820, to be dewatered through the Filter Press (FP-800). On December 11, CRT-211 was drained to ST-820 using TSP-410. The tank was cleaned of sludge/ hardness build-up with a pressure washer and pumped to ST-820, to be dewatered through the FP-800. On December 15, both CRT-201 and CRT-211 were drained to ST-820 using TSP-410. The tanks were cleaned of sludge/ hardness build-up with a pressure washer and pumped to ST-820, to be dewatered through the FP-800. On December 16, the Rapid Mix Tank (RMT-301), Flocculation Tank (FT-311), and Clarifier were drained to ST-820 using TSP-410. The tanks were cleaned of sludge/ hardness build-up with a pressure washer and pumped to

ST-820, to be dewatered through the FP-800. This procedure will be routinely performed to keep the Metals Package operating efficiently.

On December 16, the piping from all five Extraction Wells (EW-1/2/3/4/5) and in the Metals Package were cleaned using a dilute inhibited Muriatic acid solution. The solution was allowed to react in the piping overnight and drained or pumped to the Equalization Tank (EQT-100) to be treated. The total flow from the Extraction Wells increased from 17.1 gpm to 22.7 gpm. The possible flow through the Treatment Plant increased from 22 gpm to over 44 gpm. This procedure will be routinely performed to keep the Treatment Plant operating efficiently. During the acid cleaning of the Extraction Well piping, it was noticed that several bolts were either missing or sheared off from the Extraction Well covers (EW-1, 3, & 4) and need replacing.

On December 21, it was noticed that the Flocculation Tank Mixer (FTM-312) was leaking oil. The oil seal had failed and a replacement quote was obtained from the manufacturer on December 29. A replacement seal was ordered by APL, Inc. on December 29.

On December 29, it was noticed that the Cyanide Reduction Tank Mixer (CTM-202) was leaking oil. The oil seal had failed and a replacement quote was obtained from the manufacturer on December 29. A replacement seal was ordered by APL, Inc. on December 29.

On December 15, the Equalization Tank (EQT-100) was drained down as far as possible with the Treatment System Feed Pump (TFP-111) and further down using the Equalization Tank Solids Pump (ESP-120). On December 16, Taylor Industrial Vac Company removed the sludge from the bottom of the EQT-100 and it was transferred from their truck to the Sludge Holding Tank (ST-820) using the Thickened Sludge Pump (TSP-410) to be dewatered in the Filter Press (FP-800). This procedure will need to be conducted periodically to ensure that the flow from the EQT-100 to the Metals Package does not clog up with sludge.

### 2.0.3. Sulfuric Acid System

On July 1, it was discovered that several of the Sulfuric Acid pumping station's fittings were leaking. It appeared that acid had dissolved the pipe's fitting compound and dripped onto the galvanized electrical conduit, causing them to corrode. The repair of the leaks has been put on hold since there is a plan to rebuild the pumping station. The area is under constant observation so that the leakage does not increase. New fittings for the Sulfuric Acid Pumps (SAP-750/751) were ordered on August 28. On September 16, the new pump fittings were received and they were installed on September 17. The problem with the leaking pipe fittings is still a hazard.

### 2.0.4. Sodium Hypochlorite System

On July 13, Sodium Hypochlorite Pump (SCP-252) was found locked into the Programming mode and would not respond to any changes made on its key pad face. A technician from Liqui-Systems assisted in troubleshooting the problem but the pump would not respond. The pump had been knocked out of its External (Automatic) mode but does respond to the 4 to 20 milliamp programming parameters. The only way to shut the pump off is by the switch on the control panel. Liqui-Systems recommended that the pump be sent back to the factory so that they could get a better look at the problem. The operators are waiting for further instructions from the USACE on this matter.

On December 7, it was noticed that the Anti-Syphon valve and piping for the Sodium Hypochlorite Pump (SCP-251) was leaking. On December 14, quotes for Anti-Syphon valve rebuild kits were obtained from the supplier and submitted to the USACE. The USACE ordered 2 Anti-Syphon valve rebuild kits on December 21. The Anti-Syphon valve rebuild kits were received on December 23. The piping leak was fixed and the Anti-Syphon valve was rebuilt on December 29. It was discovered that the Anti-Syphon valve required 2 more parts. Replacement quotes were obtained from the supplier and submitted to the USACE on December 30. Temporary parts were fabricated and the Anti-Syphon valve was put back into service on December 29, until the correct parts arrive. The Anti-Syphon valve is under constant inspection.

### 2.0.5. Diffused Air Stripping System

On September 4, it was noticed that the DAS-500 had several pin holes that were leaking. These pin holes had been siliconed over before and the silicone had worn away. On September 23, the old silicone had been removed and fresh silicone applied. Some of the fresh silicone had been blown away and the leaks have restarted. A more permanent solution is being investigated. The leaking had stopped on October 15. On October 22, the leaking had resumed. No further action had been taken on this situation during the month of December.

On December 21, the DAS-500 air blower filter element was removed, cleaned, and inspected. This will be on the monthly preventive maintenance schedule.

On November 18, the mounting base for the Diffused Air Stripper Feed Pump (TP-520) was cleaned and primed. This procedure will be used on most of the mounting bases to control the spread of rust and to prolong their life. No further action had been taken during the month of December.

On December 21, it was noticed that the DAS-500 blower output had declined and that the VOC removal efficiency had reduced. The entire blower system was dismantled and inspected for blockage or wearing. Nothing out of the ordinary was found. On December 26, it was discovered that the DAS-500 blower hosing duct had a tear in it. The supplier was notified and they recommended changing it to a PVC style duct. Replacement quotes were obtained on December 28 and a PVC style duct was ordered by APL, Inc. The new duct was received on and installed on December 30. The DAS-500 blower output had increased from 15 inches of water column to over 40 inches of water column.

### 2.0.6. Filter Press System

On July 1, it was noticed that the ladder supports for the Press Filtrate Tank (PFT-840) are still cracked and have never been reinforced. This was first noted in 1996. The operators are waiting for further instructions from the USACE on this matter.

On October 22, the Press Filtrate Pumps' (PFP-830/831) air-line regulator started leaking air. On November 11, a technician from Cochrane Compressor Company inspected it. He disassembled, cleaned, and reassembled it. The leaking stopped and the technician said that it was corroded inside, preventing the parts from reseating. On November 13, the leaking had restarted. APL, Inc. ordered a new regulator on November 16 and it was received on November 18. The leaking starts and stops. A Cochrane Compressor technician was on site on November 24, so he inspected the old regulator and discovered that an O-ring was damaged. He did not have a spare one with him, so he rebuilt the regulator, and ordered a new O-ring. No further action had been taken during the month of December.

On November 18, it was discovered that the Filter Press Feed Pump (FFP-811) leaked while the pump is in operation. On December 4, FFP-811 was disassembled, inspected, cleaned, and reassembled. No tears in the diaphragms were found. FFP-811 was test run on December 7. The leakage had slowed down but still leaked. On December 17, the pump could not completely fill the Filter Press (FP-800). FFP-811 was dismantled and inspected, again. This time it was discovered that the diaphragm shaft had been sheared. On December 17, FFP-810 would not cycle. FFP-810 was dismantled and inspected and it, also, had a sheared diaphragm shaft. The USACE was notified and wanted the supplier notified. The supplier was notified and they sent out 2 technicians to inspect the pumps. The technicians assisted in removing the broken shafts and recommended stainless steel clamp bands (to prevent the leaking), installing a water back-flush connection to the suction side of pumps (to thin out the settled sludge before initial

FP-800 start-up), and installing air line oilers (to lubricate the internal pneumatic pump parts). A.A. Anderson submitted quotes that were sent to the USACE on December 21. The USACE ordered the stainless steel clamp bands and replacement shafts on December 22. The parts were received on December 23 and the reassembling of FFP-810 was started. FFP-810 was completely reassembled on December 28 and a temporary water back-flush connection was installed at the FFP-811 suction isolation valve. The suction side of FFP-810 was back-flushed and FP-800 was started. FP-800 was completely filled up in only 2 hours. FFP-810 started to leak, again, so A.A. Anderson was notified and sent out a Teflon seal to try on December 30. A local machinist picked up the 2 diaphragm plates that had the sheared off ends from the broken shafts on December 23. The machinist was attempting to remove the broken pieces from the diaphragm plates and salvage the parts.

On December 10, it was noticed that FP-800 kept losing its hydraulic oil pressure causing the oil pump to cycle periodically. The supplier recommended having the hydraulic oil and filter changed out because their O & M Manual recommended that they be changed out yearly. I could not find any record that the hydraulic oil had ever been changed. The supplier submitted quotes to the USACE for the hydraulic oil filter on December 18. The USACE ordered 3 replacement hydraulic oil filters on December 21 and they were received on December 23.

### 2.0.7. NPDES Monitoring Station

On December 7 and 21, the NPDES Monitoring Station's pH probe was removed, cleaned, inspected, and recalibrated. This will be on the semi-monthly preventive maintenance schedule.

On December 21, it was noticed that the NPDES Monitoring Station's conductivity and temperature readings were inconsistent. An inspection was conducted and several loose wire connections and windings were found. The loose wire connections and windings were retightened and the readings returned to normal but the erratic readings returned after a few days. On December 27, the automatic composite sampler malfunctioned and a blown fuse and indicator bulb were found. The fuse and indicator bulb were changed out but the composite sampler still would not work. Paul Kozol, of the WDNR, was notified and authorized Grab-type samples could be taken until the problem could be resolved.

### 2.0.8. Sodium Hydroxide System

On December 17, it was noticed that the Sodium Hydroxide Pumps (SHP-261/262/361) were air-locked and their fittings were leaking. All 3 pumps were isolated, their lines drained, and their Y-strainers were removed and cleaned of crystallization. The fittings that were leaking were removed, cleaned, and new Teflon tape was applied. The fittings were reconnected, the pumps reprimed, and all connections were inspected. The pumps were operating correctly and the leaking stopped.

### 2.0.9. General Equipment

On July 1, it was noticed that the desk top personal computer (Acer) would not recognize it's CD ROM drive. After many attempts to get it working, it was sent back to the supplier (Best Buy), on July 20, to be tested. APL, Inc. provided another computer until the treatment plant's computer is repaired. On September 17, the Acer computer was brought back from Best Buy, but there still are problems with re-booting the system and re-installing software. These problems are still under investigation. On October 23, the USACE did not authorized the purchase of a new p.c., but is looking at the possibility of replacing it in the future.

On December 18 and 30, the Floor Sump Trench was cleaned and all sand and sludge and placed in the sludge hopper. This will be on the preventive maintenance schedule.

On December 15, it was noticed that the Floor Sump Trench Pump (SP-960A) was not operating. The Control Panel (CP-960) was inspected and it was discovered that the starter to SP-960A was tripped open. The starter was closed and an attempt to restart the pump was made and blue sparks were seen at the starter connections. On December 18, SP-960A was removed from the sump pit and inspected. There was no obstruction in the impeller and an attempt to start the pump indicated that the motor was burned out. This is the third incident with these sump pumps since the initial Treatment Plant start up in 1996. This pump was installed on May 1998. The supplier was notified but said that the manufacturer would not replace it under warranty because they had recommended a different type of pump be used after the second incident. The supplier submitted a quote to the USACE for his recommended type of pump on December 30.

During the cold weather, the North Gate lock and rollers continually freeze and the operators have problems opening the lock and gate. Until a better solution is developed the North Gate will remain open during the Winter months. The Treatment Plant building has its own security system.

During the cold weather, the Gas Fired Unit Heaters (GUH's) need to be periodically reset and restarted. This has been an on-going problem since the Treatment Plant's initial start-up in 1996.

## 3.0 Summary

The following is a list of outstanding maintenance items encountered at the Oconomowoc Groundwater Treatment System in December, 1998.

The Tertiary Filter needs to be backwashed daily to keep it running to its expected performance capabilities. The main problem is still the over polymerization of the Metals Package that causes the media to bind. See Section 2.0.1.

The Extraction Wells pipelines need to be cleaned periodically to increase the flow into the Equalization Tank and to dilute down the pH in the tank coming in from the Tertiary Filter backwash water.

The Sodium Hypochlorite Pump (SCP-252) needs to be returned to the factory to be reprogrammed.

The plant's influent controlling Motor Operated Valve (MOV-113) needed to be installed.

The Press Filtrate Tank's (PFT-840) access ladder's supports need to be reinforced.

Most of the chemical feed pumps need spare replacement parts to keep them running at expected performance levels.

The Sulfuric Acid System (SAP's) needs to be rebuilt to prevent a possible fire hazard. See Section 2.0.3.

The Floor Trench Sump Pump (SP-960A) needs replacing. There is no back-up pump. If SP-960B fails, the Treatment Plant will be shut down until a replacement pump is installed. This could lead to the freezing up of the Extraction Wells' piping during the Winter months.

## 4.0 Recommendations

In order to reduce the pH in the EQT-100, Backwash from the TF-600 could be redirected to the Press Filtrate Holding Tank (PFT-840) or Sludge Holding Tank (ST-820). The flow from the Press Filtrate Holding Tank could also be redirected to the Cyanide/ Metals Treatment Package.

The Sulfuric Acid System could be rearranged so that the electrical connections are not below the acid lines. The electrical conduit should be replaced with acid resistant conduit to prolong the life of the electrical system. The SAP's should be lowered to reduce the pumping head to the pumps. Installing an acid tank would reduce the number of barrel changes and reduce the risks to the operators while handling the acid barrels.

Periodic cleaning of the Metals Package, transfer pumps & piping, Extraction Well piping, and the Floor Sump Trench would reduce the monthly amount of unexpected down time.

Having a spare parts inventory for the chemical feed pumps would also aid in reducing the monthly amount of unexpected down time. There are 6 different models of LMI Chemical Metering Pumps used at this Treatment Plant and very few of their parts are inter-changeable.

Replacing the existing Tertiary Sand Filter (TF-600) with 2 smaller Sand Filters that could be rotated out with a clean unit when one plugs. The plugged Sand Filter would be cleaned and left in the Stand-By position, ready to be put on-line when the Operating filter plugs. This could increase the amount of treated water discharged and reduce the amount of treated water returned to the EQT-100. This would keep the pH in the EQT-100 lower, reduce the amount of polymer that is reintroduced to the Metals Package, and reduce the amount of premature precipitation of metals in the wrong locations.

Electrical outlets should be installed at each of the 5 Extraction Well pumping stations. There are no outlets at the pumping stations if any type of maintenance needs to be done at the well heads. The locations are too far away from the Treatment Plant building to run extension cords out to them.

There should be some sort of a fail-safe that would shut down the Treatment System Feed Pumps (TFP-110/111) in the event that the Equalization Tank (EQT-100) is full and the Floor Trench Sump is full. There has been several incidents where the operators have found the Treatment Plant floor flooded upon their arrival for the work day.

There should be water backwash valves connected to the suction lines to the Filter Press Feed Pumps (FFP-810/811) to dilute the sludge before starting up the Filter Press (FP-800). This would prevent the breakage of internal pump parts and prolong the life of the pumps.

There should be 2" hose adapters and isolation valves connected to the Equalization Tank Solids Pumps' (ESP-120/121) suction lines that could be utilized for the sludge removal from the Metals Package during routine clean out. These pumps have very little run time accrued on them. The Thickened Sludge Pumps (TSP-410/411) are in constant use removing sludge from the Clarifier (C-400), Metals Package clean out, and transferring the EQT-100 sludge from the tanker truck after the EQT-100 clean out. This would prolong the life of TSP-410 & 411 and reduce the wear and tear on them.

## 5.0 Steps for Plant Self-Automation

We are in the process of installing the Polymer Dilution System and the Effluent Neutralization Stage between the Clarifier and the Tertiary Sand Filter in the very near future. Once these stages are installed, on-line, and the "bugs" are worked out of them, it will become clearer as to what the next steps to Plant Self-Automation may be.

Some of the problems that I have already seen is the inconsistent flow coming to the Equalization Tank from the Extraction Well Field. The Treatment Plant sends out an alarm if the flow is <19GPM. Extraction Well #4 is a shallow well that loses its level very often and shuts down to re-fill. The low flow alarm was constantly going off.

Semi-hardened chunks of polymer plug the suction end of the Polymer Feed Pumps (PFP-350/351) and prevents polymer to be added to the Flocculation Tank (FT-311) or the precipitation of metals to occur in the Clarifier (C-400). This leads to plugging of the media in the Tertiary Sand Filter (TF-600) and metals exceedences in the effluent.

The crystallization of the Sodium Hydroxide and plugging the in-line Y-strainers for the influent lines to the Sodium Hydroxide Pumps (SHP-261/262/361) prevents the Sodium Hydroxide to reach the Metals Package to increase the pH's adequately to allow the polymer to work or metals to precipitate. This leads to plugging of the media in the Tertiary Sand Filter (TF-600) and metals exceedences in the effluent.

The clogging of the piping from the Equalization Tank (EQT-100) throughout the Metals Package to the Tertiary Filtration System (TF-600). There are no fail safes in place to detect or prevent the piping from clogging.

The filling of the EQT-100 due to the media binding in the TF-600 causes the Extraction Wells (EW's) and the Floor Trench Sump Pumps (SP-960A/B) to shut down but the Treatment Plant continues to run. The treated water continues to flow into the Floor Trench Sump. The Floor Trench Sump continues to fill even after the High High Alarm is activated and floods the building. The activation of the Floor Trench Sump High High Alarm should shut down the Treatment System Feed Pumps (TFP-110/111) to prevent the building from being flooded.

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990027
DATE REPORTED: 25-Jan-99
DATE RECEIVED: 21-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME: OGTP

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| tert-Butylbenzene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| Tetrachloroethene | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Toluene | <0.3 | ug/l | 0.3 | 1 | 68.6 | 1 | | 8260 | srh | 1/22/99 |
| trans-1,2-Dichloroethene | <0.2 | ug/l | 0.2 | 0.5 | 20 | 1 | | 8260 | srh | 1/22/99 |
| trans-1,3-Dichloropropene | <0.2 | ug/l | 0.2 | 0.6 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| Trichloroethene | 0.5 | ug/l | 0.2 | 0.5 | 0.5 | 1 | J | 8260 | srh | 1/22/99 |
| Trichlorofluoromethane | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Vinyl chloride | <0.2 | ug/l | 0.2 | 0.7 | 0.02 | 1 | | 8260 | srh | 1/22/99 |

Sample Number: **13777** QC Prep Batch Number: 990108 *Sample analyzed within 2 Day(s) from collection.*
Client ID: **Trip Blank** Sample Description: *Collection: 1/20/99 Time:*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,1,1-Trichloroethane | <0.2 | ug/l | 0.2 | 0.7 | 40 | 1 | | 8260 | srh | 1/22/99 |
| 1,1,2,2-Tetrachloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| 1,1,2-Trichloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethane | <0.2 | ug/l | 0.2 | 0.5 | 85 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethene | <0.4 | ug/l | 0.4 | 1.1 | 0.7 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloropropene | <0.5 | ug/l | 0.5 | 1.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichloropropane | <0.6 | ug/l | 0.6 | 1.9 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 14 | 1 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trimethylbenzene | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dibromoethane | <0.2 | ug/l | 0.2 | 0.8 | 0.005 | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 60 | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dichloroethane | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| 1,3,5-Trimethylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,3-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 125 | 1 | | 8260 | srh | 1/22/99 |
| 1,3-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,4-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 15 | 1 | | 8260 | srh | 1/22/99 |
| 12Dibromo-3-chloropropan | <0.6 | ug/l | 0.6 | 1.9 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| 2,2-Dichloropropane | <0.4 | ug/l | 0.4 | 1.3 | ns | 1 | | 8260 | srh | 1/22/99 |
| 2-Butanone (MEK) | <1.4 | ug/l | 1.4 | 4.4 | 90 | 1 | | 8260 | srh | 1/22/99 |
| 2-Chloroethyl Vinyl Ether | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/22/99 |
| 2-Chlorotoluene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/22/99 |
| 4-Chlorotoluene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/22/99 |
| 4-Methyl-2-Pentanone | <0.8 | ug/l | 0.8 | 2.7 | 50 | 1 | | 8260 | srh | 1/22/99 |
| Acetone | <1.6 | ug/l | 1.6 | 4.9 | 200 | 1 | | 8260 | srh | 1/22/99 |
| Benzene | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Bromobenzene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| Bromochloromethane | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Bromodichloromethane | <0.3 | ug/l | 0.3 | 0.8 | 0.06 | 1 | | 8260 | srh | 1/22/99 |

APL Environmental
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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990027
DATE REPORTED: 25-Jan-99
DATE RECEIVED: 21-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME: OGTP

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromoform | <0.5 | ug/l | 0.5 | 1.5 | 0.44 | 1 | | 8260 | srh | 1/22/99 |
| Bromomethane | <0.2 | ug/l | 0.2 | 0.7 | 1 | 1 | | 8260 | srh | 1/22/99 |
| Carbon tetrachloride | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Chlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 20 | 1 | | 8260 | srh | 1/22/99 |
| Chloroethane | <1.2 | ug/l | 1.2 | 3.7 | 80 | 1 | | 8260 | srh | 1/22/99 |
| Chloroform | <0.3 | ug/l | 0.3 | 0.9 | 0.6 | 1 | | 8260 | srh | 1/22/99 |
| Chloromethane | <0.8 | ug/l | 0.8 | 2.4 | 0.3 | 1 | | 8260 | srh | 1/22/99 |
| cis-1,2-Dichloroethene | <0.2 | ug/l | 0.2 | 0.6 | 7 | 1 | | 8260 | srh | 1/22/99 |
| cis-1,3-Dichloropropene | <0.2 | ug/l | 0.2 | 0.8 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| Dibromochloromethane | <0.2 | ug/l | 0.2 | 0.7 | 6 | 1 | | 8260 | srh | 1/22/99 |
| Dibromomethane | <0.4 | ug/l | 0.4 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Dichlorodifluoromethane | <0.4 | ug/l | 0.4 | 1.1 | 200 | 1 | | 8260 | srh | 1/22/99 |
| Ethylbenzene | <0.2 | ug/l | 0.2 | 0.5 | 140 | 1 | | 8260 | srh | 1/22/99 |
| Hexachlorobutadiene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| Isopropyl Ether | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Isopropylbenzene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/22/99 |
| m&p-xylene | <0.4 | ug/l | 0.4 | 1.1 | 124 | 1 | | 8260 | srh | 1/22/99 |
| Methyl-t-butyl ether | <0.2 | ug/l | 0.2 | 0.7 | 12 | 1 | | 8260 | srh | 1/22/99 |
| Methylene chloride | <0.8 | ug/l | 0.8 | 2.4 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| n-Butylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| n-Propylbenzene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/22/99 |
| Naphthalene | <0.5 | ug/l | 0.5 | 1.5 | 8 | 1 | | 8260 | srh | 1/22/99 |
| o-xylene | <0.2 | ug/l | 0.2 | 0.6 | 124 | 1 | | 8260 | srh | 1/22/99 |
| p-Isopropyltoluene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| sec-Butylbenzene | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Styrene | <0.2 | ug/l | 0.2 | 0.7 | 10 | 1 | | 8260 | srh | 1/22/99 |
| tert-Butylbenzene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| Tetrachloroethene | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Toluene | <0.3 | ug/l | 0.3 | 1 | 68.6 | 1 | | 8260 | srh | 1/22/99 |
| trans-1,2-Dichloroethene | <0.2 | ug/l | 0.2 | 0.5 | 20 | 1 | | 8260 | srh | 1/22/99 |
| trans-1,3-Dichloropropene | <0.2 | ug/l | 0.2 | 0.6 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| Trichloroethene | <0.2 | ug/l | 0.2 | 0.5 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Trichlorofluoromethane | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Vinyl chloride | <0.2 | ug/l | 0.2 | 0.7 | 0.02 | 1 | | 8260 | srh | 1/22/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

| | |
|---|---|
| BATCH NUMBER: | **990027** |
| DATE REPORTED: | 25-Jan-99 |
| DATE RECEIVED: | 21-Jan-99 |
| SAMPLE TEMP (C): | Rec On Ice |
| PROJECT ID: | |
| PROJECT NAME: | OGTP |

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|

**Approved By:** James Chang / sml **Date:** 1/25/99
James Chang, Ph.D. , Lab Director

*MDL: Method Detection Limit determined by 40CFR Part 136 Appendix B* *"e" = Estimate value, over calibration range .*
*LOQ = 10 (S) x Dilution Factor, where "S" is the Standard Deviation from the MDL Study*
*LOD = 3.143 (S) x Dilution Factor, where "S" is the Standard Deviation from the MDL Study*
*PAL: Preventive Action Limit, NR 140.10 Public health related groundwater standards. "ns" = not specified*
*RQ : Run Qualifier; "J" = Results between LOD and LOQ. "RR" = Re-extract Rerun sample, "B" = Showed in Blank sample.*

*Rounding Rules: Three significant figures were used for concentrations above 99 ug/L, two significant figures for concentrations between 1-99 ug/L, and one significant figure for lower concentrations.*
*DNR Analytical Detection Limit Guidance, April 1995.*

APL INC.

# INORGANIC REPORT

**James Chang**
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

WDNR# 241340550

INVOICE NUMBER 990039
DATE REPORTED: 05-Feb-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

| Test | Result | Units | | RQ | LOD | LOQ | Method | Analyst | Date Anal | QC# | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **pH (water)** | **11** | **s.u.** | | **#** | | | 150.1 | dmd | 1/25/99 | *990143* | |
| Nova Sample Number: 13827 | | | | | | | | | | | |
| Client ID: **990125WA05P** | | | | | | | | | Collection: 1/25/99 | | Time: 14:20 |
| | | | | | | | | | Sample Description: grab | | |
| **pH (water)** | **7.1** | **s.u.** | | **#** | | | 150.1 | dmd | 1/25/99 | *990143* | |
| Nova Sample Number: 13828 | | | | | | | | | | | |
| Client ID: **990125WA09R** | | | | | | | | | Collection: 1/25/99 | | Time: 14:30 |
| | | | | | | | | | Sample Description: 24hr composite | | |
| **Arsenic - Furnace AA** | **<9.9** | **ug/l** | | **RJ** | 9.9 | 31 | 206.2 | dmd | 1/26/99 | *990129* | |
| **Barium - ICAP** | **0.02** | **mg/l** | | **RJ** | 0.003 | 0.010 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Cadmium - Furnace AA** | **<0.7** | **ug/l** | | **TTR** | 0.7 | 2.2 | 213.2 | dmd | 1/27/99 | *990127* | |
| **Chromium, Total - ICAP** | **<0.01** | **mg/l** | | **RJ** | 0.01 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Copper- ICAP** | **<0.008** | **mg/l** | | **RJ** | 0.008 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Iron - ICAP** | **<0.071** | **mg/l** | | **RJ** | 0.071 | 0.2 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Lead - Furnace AA** | **<1.1** | **ug/l** | | **RJ** | 1.1 | 3.5 | 239.2 | dmd | 1/27/99 | *990128* | |
| **Manganese - ICAP** | **0.01** | **mg/l** | *J* | **RJ** | 0.009 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Mercury CV** | **<0.0002** | **mg/l** | | **RJ** | 0.0002 | 0.0006 | 245.1 | dmd | 1/28/99 | *990162* | |
| **Nickel - ICAP** | **<0.011** | **mg/l** | | **RJ** | 0.011 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Selenium - Furnace AA** | **<7.8** | **ug/l** | | **RJ** | 7.8 | 25 | 270.2 | dmd | 1/26/99 | *990131* | |
| **Silver - ICAP** | **<0.006** | **mg/l** | | **RJ** | 0.006 | 0.02 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Thallium - Furnace AA** | **<5.0** | **ug/l** | | **RJ** | 5 | 16 | 279.2 | dmd | 1/26/99 | *990130* | |
| **Zinc - ICAP** | **<0.021** | **mg/l** | | **RJ** | 0.021 | 0.07 | 200.7 | dmd | 1/26/99 | *990114* | |

**Approved By:** _____ **Date:** 2/5/99
James Chang, Ph.D. , Lab Director

***RJ*** *Result expressed as Total.*
***TTR*** *Result expressed as total and total recoverable.*

*MDL: Method Detection Limit determined by 40CFR Part 136 Appendix B* *"J" = Results between LOD and LOQ* *"#" = no LOD or LOQ required.*
*LOQ = 10 (S) x Dilution Facor, where "S" is the Standard Deviation from the MDL Study*
*LOD = 3.143 (S) x Dilution Facor, where "S" is the Standard Deviation from the MDL Study*

*Rounding Rules: Three significant figures were used for concentrations above 99 ug/L, two significant figures for concentrations between 1-99 ug/L, and one significant figure for lower concentrations.*
*DNR Analytical Detection Limit Guidance, April 1995.*

# INORGANIC REPORT

WDNR# 241340550

INVOICE NUMBER 990039
DATE REPORTED: 05-Feb-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

**James Chang**
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Test | Result | Units | RQ | LOD | LOQ | Method | Analyst | Date Anal | QC# | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| Nova Sample Number: 13823 | | | | | | | | | | |
| Client ID: **990125WA01P** | | | | | | | | Collection: 1/25/99 | Time: 14:00 | |
| | | | | | | | | Sample Description: grab | | |
| **Arsenic - Furnace AA** | **<9.9** | **ug/l** | **RJ** | 9.9 | 31 | 206.2 | dmd | 1/26/99 | *990129* | |
| **Barium - ICAP** | **0.1** | **mg/l** | **RJ** | 0.003 | 0.010 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Cadmium - Furnace AA** | **<0.7** | **ug/l** | **TTR** | 0.7 | 2.2 | 213.2 | dmd | 1/27/99 | *990127* | |
| **Chromium, Total - ICAP** | **<0.01** | **mg/l** | **RJ** | 0.01 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Copper- ICAP** | **<0.008** | **mg/l** | **RJ** | 0.008 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Iron - ICAP** | **0.6** | **mg/l** | **RJ** | 0.071 | 0.2 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Lead - Furnace AA** | **<1.1** | **ug/l** | **RJ** | 1.1 | 3.5 | 239.2 | dmd | 1/27/99 | *990128* | |
| **Manganese - ICAP** | **0.2** | **mg/l** | **RJ** | 0.009 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Mercury CV** | **<0.0002** | **mg/l** | **RJ** | 0.0002 | 0.0006 | 245.1 | dmd | 1/28/99 | *990162* | |
| **Nickel - ICAP** | **0.04** | **mg/l** | **RJ** | 0.011 | 0.03 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Selenium - Furnace AA** | **<7.8** | **ug/l** | **RJ** | 7.8 | 25 | 270.2 | dmd | 1/26/99 | *990131* | |
| **Silver - ICAP** | **<0.006** | **mg/l** | **RJ** | 0.006 | 0.02 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Thallium - Furnace AA** | **<5.0** | **ug/l** | **RJ** | 5 | 16 | 279.2 | dmd | 1/26/99 | *990130* | |
| **Zinc - ICAP** | **<0.021** | **mg/l** | **RJ** | 0.021 | 0.07 | 200.7 | dmd | 1/26/99 | *990114* | |
| **Chromium, Hexavalent** | **<10** | **ug/l** | | 10 | 32 | SM 3500D | 12830 | 1/26/99 | *990123* | |
| **Cyanide, Amenable** | **<0.018** | **mg/l** | | 0.018 | 0.06 | 335.2 | van | 2/5/99 | *990199* | |
| **Cyanide, Total** | **<0.018** | **mg/l** | | 0.018 | 0.06 | 335.2 | van | 2/5/99 | *990197* | |
| **pH (water)** | **7.1** | **s.u.** | **#** | | | 150.1 | dmd | 1/25/99 | *990143* | |
| Nova Sample Number: 13824 | | | | | | | | | | |
| Client ID: **990125WA09P** | | | | | | | | Collection: 1/25/99 | Time: 14:25 | |
| | | | | | | | | Sample Description: grab | | |
| **Chromium, Hexavalent** | **<10** | **ug/l** | | 10 | 32 | SM 3500D | 12830 | 1/26/99 | *990123* | |
| **Cyanide, Amenable** | **<0.018** | **mg/l** | | 0.018 | 0.06 | 335.2 | van | 2/5/99 | *990199* | |
| **Cyanide, Total** | **<0.018** | **mg/l** | | 0.018 | 0.06 | 335.2 | van | 2/5/99 | *990197* | |
| **pH (water)** | **8.4** | **s.u.** | **#** | | | 150.1 | dmd | 1/25/99 | *990143* | |
| Nova Sample Number: 13825 | | | | | | | | | | |
| Client ID: **990125WA02P** | | | | | | | | Collection: 1/25/99 | Time: 14:05 | |
| | | | | | | | | Sample Description: grab | | |
| **pH (water)** | **9.8** | **s.u.** | **#** | | | 150.1 | dmd | 1/25/99 | *990143* | |
| Nova Sample Number: 13826 | | | | | | | | | | |
| Client ID: **990125WA03P** | | | | | | | | Collection: 1/25/99 | Time: 14:15 | |
| | | | | | | | | Sample Description: grab | | |

**APL Environmental**
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: **990039**
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number: 13823 | | QC Prep Batch Number: | | 990154 | | *Sample analyzed within* | | *2 Day(s) from collection.* | | |
| Client ID: 990125WA01P | Sample Description: | grab | | | | *Collection:* | *1/25/99* | *Time:* | *14:00* | |
| 1,1,1,2-Tetrachloroethane | <2 | ug/l | 2 | 6.4 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,1,1-Trichloroethane | 309 | ug/l | 2.3 | 7.3 | 40 | 10 | | 8260 | srh | 1/27/99 |
| 1,1,2,2-Tetrachloroethane | <2.9 | ug/l | 2.9 | 9.2 | 0.02 | 10 | | 8260 | srh | 1/27/99 |
| 1,1,2-Trichloroethane | <2.9 | ug/l | 2.9 | 9.2 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloroethane | 36 | ug/l | 1.5 | 4.8 | 85 | 10 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloroethene | 19 | ug/l | 3.6 | 11 | 0.7 | 10 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloropropene | <4.9 | ug/l | 4.9 | 16 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,2,3-Trichlorobenzene | <2.2 | ug/l | 2.2 | 7 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,2,3-Trichloropropane | <6 | ug/l | 6 | 19 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,2,4-Trichlorobenzene | <1.6 | ug/l | 1.6 | 5.1 | 14 | 10 | | 8260 | srh | 1/27/99 |
| 1,2,4-Trimethylbenzene | <2.9 | ug/l | 2.9 | 9.2 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,2-Dibromoethane | <2.4 | ug/l | 2.4 | 7.6 | 0.005 | 10 | | 8260 | srh | 1/27/99 |
| 1,2-Dichlorobenzene | <2 | ug/l | 2 | 6.4 | 60 | 10 | | 8260 | srh | 1/27/99 |
| 1,2-Dichloroethane | <1.9 | ug/l | 1.9 | 6 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| 1,2-Dichloropropane | <2.3 | ug/l | 2.3 | 7.3 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| 1,3,5-Trimethylbenzene | <2.3 | ug/l | 2.3 | 7.3 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,3-Dichlorobenzene | <1.9 | ug/l | 1.9 | 6 | 125 | 10 | | 8260 | srh | 1/27/99 |
| 1,3-Dichloropropane | <2.1 | ug/l | 2.1 | 6.7 | ns | 10 | | 8260 | srh | 1/27/99 |
| 1,4-Dichlorobenzene | <1.5 | ug/l | 1.5 | 4.8 | 15 | 10 | | 8260 | srh | 1/27/99 |
| 12Dibromo-3-chloropropan | <5.9 | ug/l | 5.9 | 19 | 0.02 | 10 | | 8260 | srh | 1/27/99 |
| 2,2-Dichloropropane | <4 | ug/l | 4 | 13 | ns | 10 | | 8260 | srh | 1/27/99 |
| 2-Butanone (MEK) | <14 | ug/l | 14 | 44 | 90 | 10 | | 8260 | srh | 1/27/99 |
| 2-Chloroethyl Vinyl Ether | <2.9 | ug/l | 2.9 | 9.2 | ns | 10 | | 8260 | srh | 1/27/99 |
| 2-Chlorotoluene | <1.5 | ug/l | 1.5 | 4.8 | ns | 10 | | 8260 | srh | 1/27/99 |
| 4-Chlorotoluene | <2.5 | ug/l | 2.5 | 8 | ns | 10 | | 8260 | srh | 1/27/99 |
| 4-Methyl-2-Pentanone | <8.4 | ug/l | 8.4 | 27 | 50 | 10 | | 8260 | srh | 1/27/99 |
| Acetone | <16 | ug/l | 16 | 49 | 200 | 10 | | 8260 | srh | 1/27/99 |
| Benzene | <1.9 | ug/l | 1.9 | 6 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| Bromobenzene | <1.9 | ug/l | 1.9 | 6 | ns | 10 | | 8260 | srh | 1/27/99 |
| Bromochloromethane | <3.4 | ug/l | 3.4 | 11 | ns | 10 | | 8260 | srh | 1/27/99 |
| Bromodichloromethane | <2.6 | ug/l | 2.6 | 8.3 | 0.06 | 10 | | 8260 | srh | 1/27/99 |
| Bromoform | <4.7 | ug/l | 4.7 | 15 | 0.44 | 10 | | 8260 | srh | 1/27/99 |
| Bromomethane | <2.1 | ug/l | 2.1 | 6.7 | 1 | 10 | | 8260 | srh | 1/27/99 |
| Carbon tetrachloride | <2.2 | ug/l | 2.2 | 7 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| Chlorobenzene | <2 | ug/l | 2 | 6.4 | 20 | 10 | | 8260 | srh | 1/27/99 |
| Chloroethane | <12 | ug/l | 12 | 37 | 80 | 10 | | 8260 | srh | 1/27/99 |
| Chloroform | <2.7 | ug/l | 2.7 | 8.6 | 0.6 | 10 | | 8260 | srh | 1/27/99 |
| Chloromethane | <7.7 | ug/l | 7.7 | 24 | 0.3 | 10 | | 8260 | srh | 1/27/99 |
| cis-1,2-Dichloroethene | 64 | ug/l | 2 | 6.4 | 7 | 10 | | 8260 | srh | 1/27/99 |
| cis-1,3-Dichloropropene | <2.4 | ug/l | 2.4 | 7.6 | 0.02 | 10 | | 8260 | srh | 1/27/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990039
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| Dibromochloromethane | <2.1 | ug/l | 2.1 | 6.7 | 6 | 10 | | 8260 | srh | 1/27/99 |
| Dibromomethane | <3.5 | ug/l | 3.5 | 11 | ns | 10 | | 8260 | srh | 1/27/99 |
| Dichlorodifluoromethane | <3.6 | ug/l | 3.6 | 11 | 200 | 10 | | 8260 | srh | 1/27/99 |
| Ethylbenzene | <1.6 | ug/l | 1.6 | 5.1 | 140 | 10 | | 8260 | srh | 1/27/99 |
| Hexachlorobutadiene | <2.2 | ug/l | 2.2 | 7 | ns | 10 | | 8260 | srh | 1/27/99 |
| Isopropyl Ether | <3.2 | ug/l | 3.2 | 10 | ns | 10 | | 8260 | srh | 1/27/99 |
| Isopropylbenzene | <1.6 | ug/l | 1.6 | 5.1 | ns | 10 | | 8260 | srh | 1/27/99 |
| m&p-xylene | <3.6 | ug/l | 3.6 | 11 | 124 | 10 | | 8260 | srh | 1/27/99 |
| Methyl-t-butyl ether | <2.1 | ug/l | 2.1 | 6.7 | 12 | 10 | | 8260 | srh | 1/27/99 |
| Methylene chloride | <7.6 | ug/l | 7.6 | 24 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| n-Butylbenzene | <2.3 | ug/l | 2.3 | 7.3 | ns | 10 | | 8260 | srh | 1/27/99 |
| n-Propylbenzene | <2.5 | ug/l | 2.5 | 8 | ns | 10 | | 8260 | srh | 1/27/99 |
| Naphthalene | <4.6 | ug/l | 4.6 | 15 | 8 | 10 | | 8260 | srh | 1/27/99 |
| o-xylene | <1.8 | ug/l | 1.8 | 5.7 | 124 | 10 | | 8260 | srh | 1/27/99 |
| p-Isopropyltoluene | <1.8 | ug/l | 1.8 | 5.7 | ns | 10 | | 8260 | srh | 1/27/99 |
| sec-Butylbenzene | <3 | ug/l | 3 | 9.5 | ns | 10 | | 8260 | srh | 1/27/99 |
| Styrene | <2.1 | ug/l | 2.1 | 6.7 | 10 | 10 | | 8260 | srh | 1/27/99 |
| tert-Butylbenzene | <2 | ug/l | 2 | 6.4 | ns | 10 | | 8260 | srh | 1/27/99 |
| Tetrachloroethene | 11 | ug/l | 2.9 | 9.2 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| Toluene | 8.7 | ug/l | 3.3 | 10 | 68.6 | 10 | J | 8260 | srh | 1/27/99 |
| trans-1,2-Dichloroethene | 19 | ug/l | 1.6 | 5.1 | 20 | 10 | | 8260 | srh | 1/27/99 |
| trans-1,3-Dichloropropene | <2 | ug/l | 2 | 6.4 | 0.02 | 10 | | 8260 | srh | 1/27/99 |
| Trichloroethene | 792 | ug/l | 1.6 | 5.1 | 0.5 | 10 | | 8260 | srh | 1/27/99 |
| Trichlorofluoromethane | <3.4 | ug/l | 3.4 | 11 | ns | 10 | | 8260 | srh | 1/27/99 |
| Vinyl chloride | <2.1 | ug/l | 2.1 | 6.7 | 0.02 | 10 | | 8260 | srh | 1/27/99 |

Sample Number: **13824** QC Prep Batch Number: 990154 *Sample analyzed within 2 Day(s) from collection.*
Client ID: **990125WA09P** Sample Description: grab *Collection: 1/25/99 Time: 14:25*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,1,1-Trichloroethane | 1.1 | ug/l | 0.2 | 0.7 | 40 | 1 | | 8260 | srh | 1/27/99 |
| 1,1,2,2-Tetrachloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| 1,1,2-Trichloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloroethane | <0.2 | ug/l | 0.2 | 0.5 | 85 | 1 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloroethene | <0.4 | ug/l | 0.4 | 1.1 | 0.7 | 1 | | 8260 | srh | 1/27/99 |
| 1,1-Dichloropropene | <0.5 | ug/l | 0.5 | 1.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,2,3-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,2,3-Trichloropropane | <0.6 | ug/l | 0.6 | 1.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,2,4-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 14 | 1 | | 8260 | srh | 1/27/99 |
| 1,2,4-Trimethylbenzene | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,2-Dibromoethane | <0.2 | ug/l | 0.2 | 0.8 | 0.005 | 1 | | 8260 | srh | 1/27/99 |
| 1,2-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 60 | 1 | | 8260 | srh | 1/27/99 |
| 1,2-Dichloroethane | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/27/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990039
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| 1,3,5-Trimethylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,3-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 125 | 1 | | 8260 | srh | 1/27/99 |
| 1,3-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| 1,4-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 15 | 1 | | 8260 | srh | 1/27/99 |
| 12Dibromo-3-chloropropan | <0.6 | ug/l | 0.6 | 1.9 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| 2,2-Dichloropropane | <0.4 | ug/l | 0.4 | 1.3 | ns | 1 | | 8260 | srh | 1/27/99 |
| 2-Butanone (MEK) | <1.4 | ug/l | 1.4 | 4.4 | 90 | 1 | | 8260 | srh | 1/27/99 |
| 2-Chloroethyl Vinyl Ether | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| 2-Chlorotoluene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/27/99 |
| 4-Chlorotoluene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/27/99 |
| 4-Methyl-2-Pentanone | <0.8 | ug/l | 0.8 | 2.7 | 50 | 1 | | 8260 | srh | 1/27/99 |
| Acetone | <1.6 | ug/l | 1.6 | 4.9 | 200 | 1 | | 8260 | srh | 1/27/99 |
| Benzene | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| Bromobenzene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| Bromochloromethane | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| Bromodichloromethane | 2.6 | ug/l | 0.3 | 0.8 | 0.06 | 1 | | 8260 | srh | 1/27/99 |
| Bromoform | <0.5 | ug/l | 0.5 | 1.5 | 0.44 | 1 | | 8260 | srh | 1/27/99 |
| Bromomethane | <0.2 | ug/l | 0.2 | 0.7 | 1 | 1 | | 8260 | srh | 1/27/99 |
| Carbon tetrachloride | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| Chlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 20 | 1 | | 8260 | srh | 1/27/99 |
| Chloroethane | <1.2 | ug/l | 1.2 | 3.7 | 80 | 1 | | 8260 | srh | 1/27/99 |
| Chloroform | 5.5 | ug/l | 0.3 | 0.9 | 0.6 | 1 | | 8260 | srh | 1/27/99 |
| Chloromethane | <0.8 | ug/l | 0.8 | 2.4 | 0.3 | 1 | | 8260 | srh | 1/27/99 |
| cis-1,2-Dichloroethene | 0.4 | ug/l | 0.2 | 0.6 | 7 | 1 | J | 8260 | srh | 1/27/99 |
| cis-1,3-Dichloropropene | <0.2 | ug/l | 0.2 | 0.8 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| Dibromochloromethane | 1.4 | ug/l | 0.2 | 0.7 | 6 | 1 | | 8260 | srh | 1/27/99 |
| Dibromomethane | <0.4 | ug/l | 0.4 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| Dichlorodifluoromethane | <0.4 | ug/l | 0.4 | 1.1 | 200 | 1 | | 8260 | srh | 1/27/99 |
| Ethylbenzene | <0.2 | ug/l | 0.2 | 0.5 | 140 | 1 | | 8260 | srh | 1/27/99 |
| Hexachlorobutadiene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| Isopropyl Ether | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/27/99 |
| Isopropylbenzene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/27/99 |
| m&p-xylene | <0.4 | ug/l | 0.4 | 1.1 | 124 | 1 | | 8260 | srh | 1/27/99 |
| Methyl-t-butyl ether | <0.2 | ug/l | 0.2 | 0.7 | 12 | 1 | | 8260 | srh | 1/27/99 |
| Methylene chloride | <0.8 | ug/l | 0.8 | 2.4 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| n-Butylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| n-Propylbenzene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/27/99 |
| Naphthalene | <0.5 | ug/l | 0.5 | 1.5 | 8 | 1 | | 8260 | srh | 1/27/99 |
| o-xylene | <0.2 | ug/l | 0.2 | 0.6 | 124 | 1 | | 8260 | srh | 1/27/99 |
| p-Isopropyltoluene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| sec-Butylbenzene | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/27/99 |
| Styrene | <0.2 | ug/l | 0.2 | 0.7 | 10 | 1 | | 8260 | srh | 1/27/99 |

**APL Environmental**
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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990027
DATE REPORTED: 25-Jan-99
DATE RECEIVED: 21-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME: OGTP

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Number: 13771 | | | QC Prep Batch Number: | 990108 | | | *Sample analyzed within* | 2 | *Day(s) from collection.* | |
| Client ID: 990120WA01P | Sample Description: | pH 7.5 | | | | | *Collection:* | *1/20/99* | *Time:* | *14:15* |
| 1,1,1,2-Tetrachloroethane | <2 | ug/l | 2 | 6.4 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,1,1-Trichloroethane | 75 | ug/l | 2.3 | 7.3 | 40 | 10 | | 8260 | srh | 1/22/99 |
| 1,1,2,2-Tetrachloroethane | <2.9 | ug/l | 2.9 | 9.2 | 0.02 | 10 | | 8260 | srh | 1/22/99 |
| 1,1,2-Trichloroethane | <2.9 | ug/l | 2.9 | 9.2 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethane | 41 | ug/l | 1.5 | 4.8 | 85 | 10 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethene | 7.6 | ug/l | 3.6 | 11 | 0.7 | 10 | J | 8260 | srh | 1/22/99 |
| 1,1-Dichloropropene | <4.9 | ug/l | 4.9 | 16 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichlorobenzene | <2.2 | ug/l | 2.2 | 7 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichloropropane | <6 | ug/l | 6 | 19 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trichlorobenzene | <1.6 | ug/l | 1.6 | 5.1 | 14 | 10 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trimethylbenzene | 3.1 | ug/l | 2.9 | 9.2 | ns | 10 | J | 8260 | srh | 1/22/99 |
| 1,2-Dibromoethane | <2.4 | ug/l | 2.4 | 7.6 | 0.005 | 10 | | 8260 | srh | 1/22/99 |
| 1,2-Dichlorobenzene | <2 | ug/l | 2 | 6.4 | 60 | 10 | | 8260 | srh | 1/22/99 |
| 1,2-Dichloroethane | <1.9 | ug/l | 1.9 | 6 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| 1,2-Dichloropropane | <2.3 | ug/l | 2.3 | 7.3 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| 1,3,5-Trimethylbenzene | <2.3 | ug/l | 2.3 | 7.3 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,3-Dichlorobenzene | <1.9 | ug/l | 1.9 | 6 | 125 | 10 | | 8260 | srh | 1/22/99 |
| 1,3-Dichloropropane | <2.1 | ug/l | 2.1 | 6.7 | ns | 10 | | 8260 | srh | 1/22/99 |
| 1,4-Dichlorobenzene | <1.5 | ug/l | 1.5 | 4.8 | 15 | 10 | | 8260 | srh | 1/22/99 |
| 12Dibromo-3-chloropropan | <5.9 | ug/l | 5.9 | 19 | 0.02 | 10 | | 8260 | srh | 1/22/99 |
| 2,2-Dichloropropane | <4 | ug/l | 4 | 13 | ns | 10 | | 8260 | srh | 1/22/99 |
| 2-Butanone (MEK) | <14 | ug/l | 14 | 44 | 90 | 10 | | 8260 | srh | 1/22/99 |
| 2-Chloroethyl Vinyl Ether | <2.9 | ug/l | 2.9 | 9.2 | ns | 10 | | 8260 | srh | 1/22/99 |
| 2-Chlorotoluene | <1.5 | ug/l | 1.5 | 4.8 | ns | 10 | | 8260 | srh | 1/22/99 |
| 4-Chlorotoluene | <2.5 | ug/l | 2.5 | 8 | ns | 10 | | 8260 | srh | 1/22/99 |
| 4-Methyl-2-Pentanone | <8.4 | ug/l | 8.4 | 27 | 50 | 10 | | 8260 | srh | 1/22/99 |
| Acetone | <16 | ug/l | 16 | 49 | 200 | 10 | | 8260 | srh | 1/22/99 |
| Benzene | 2.2 | ug/l | 1.9 | 6 | 0.5 | 10 | J | 8260 | srh | 1/22/99 |
| Bromobenzene | <1.9 | ug/l | 1.9 | 6 | ns | 10 | | 8260 | srh | 1/22/99 |
| Bromochloromethane | <3.4 | ug/l | 3.4 | 11 | ns | 10 | | 8260 | srh | 1/22/99 |
| Bromodichloromethane | <2.6 | ug/l | 2.6 | 8.3 | 0.06 | 10 | | 8260 | srh | 1/22/99 |
| Bromoform | <4.7 | ug/l | 4.7 | 15 | 0.44 | 10 | | 8260 | srh | 1/22/99 |
| Bromomethane | <2.1 | ug/l | 2.1 | 6.7 | 1 | 10 | | 8260 | srh | 1/22/99 |
| Carbon tetrachloride | <2.2 | ug/l | 2.2 | 7 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| Chlorobenzene | <2 | ug/l | 2 | 6.4 | 20 | 10 | | 8260 | srh | 1/22/99 |
| Chloroethane | <12 | ug/l | 12 | 37 | 80 | 10 | | 8260 | srh | 1/22/99 |
| Chloroform | <2.7 | ug/l | 2.7 | 8.6 | 0.6 | 10 | | 8260 | srh | 1/22/99 |
| Chloromethane | <7.7 | ug/l | 7.7 | 24 | 0.3 | 10 | | 8260 | srh | 1/22/99 |
| cis-1,2-Dichloroethene | 55 | ug/l | 2 | 6.4 | 7 | 10 | | 8260 | srh | 1/22/99 |
| cis-1,3-Dichloropropene | <2.4 | ug/l | 2.4 | 7.6 | 0.02 | 10 | | 8260 | srh | 1/22/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990027
DATE REPORTED: 25-Jan-99
DATE RECEIVED: 21-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME: OGTP

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| Dibromochloromethane | <2.1 | ug/l | 2.1 | 6.7 | 6 | 10 | | 8260 | srh | 1/22/99 |
| Dibromomethane | <3.5 | ug/l | 3.5 | 11 | ns | 10 | | 8260 | srh | 1/22/99 |
| Dichlorodifluoromethane | <3.6 | ug/l | 3.6 | 11 | 200 | 10 | | 8260 | srh | 1/22/99 |
| Ethylbenzene | 2.4 | ug/l | 1.6 | 5.1 | 140 | 10 | J | 8260 | srh | 1/22/99 |
| Hexachlorobutadiene | <2.2 | ug/l | 2.2 | 7 | ns | 10 | | 8260 | srh | 1/22/99 |
| Isopropyl Ether | <3.2 | ug/l | 3.2 | 10 | ns | 10 | | 8260 | srh | 1/22/99 |
| Isopropylbenzene | <1.6 | ug/l | 1.6 | 5.1 | ns | 10 | | 8260 | srh | 1/22/99 |
| m&p-xylene | 5.9 | ug/l | 3.6 | 11 | 124 | 10 | J | 8260 | srh | 1/22/99 |
| Methyl-t-butyl ether | <2.1 | ug/l | 2.1 | 6.7 | 12 | 10 | | 8260 | srh | 1/22/99 |
| Methylene chloride | <7.6 | ug/l | 7.6 | 24 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| n-Butylbenzene | <2.3 | ug/l | 2.3 | 7.3 | ns | 10 | | 8260 | srh | 1/22/99 |
| n-Propylbenzene | <2.5 | ug/l | 2.5 | 8 | ns | 10 | | 8260 | srh | 1/22/99 |
| Naphthalene | <4.6 | ug/l | 4.6 | 15 | 8 | 10 | | 8260 | srh | 1/22/99 |
| o-xylene | 2.1 | ug/l | 1.8 | 5.7 | 124 | 10 | J | 8260 | srh | 1/22/99 |
| p-Isopropyltoluene | <1.8 | ug/l | 1.8 | 5.7 | ns | 10 | | 8260 | srh | 1/22/99 |
| sec-Butylbenzene | <3 | ug/l | 3 | 9.5 | ns | 10 | | 8260 | srh | 1/22/99 |
| Styrene | <2.1 | ug/l | 2.1 | 6.7 | 10 | 10 | | 8260 | srh | 1/22/99 |
| tert-Butylbenzene | <2 | ug/l | 2 | 6.4 | ns | 10 | | 8260 | srh | 1/22/99 |
| Tetrachloroethene | <2.9 | ug/l | 2.9 | 9.2 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| Toluene | 7.5 | ug/l | 3.3 | 10 | 68.6 | 10 | J | 8260 | srh | 1/22/99 |
| trans-1,2-Dichloroethene | 4.7 | ug/l | 1.6 | 5.1 | 20 | 10 | J | 8260 | srh | 1/22/99 |
| trans-1,3-Dichloropropene | <2 | ug/l | 2 | 6.4 | 0.02 | 10 | | 8260 | srh | 1/22/99 |
| Trichloroethene | 360 | ug/l | 1.6 | 5.1 | 0.5 | 10 | | 8260 | srh | 1/22/99 |
| Trichlorofluoromethane | <3.4 | ug/l | 3.4 | 11 | ns | 10 | | 8260 | srh | 1/22/99 |
| Vinyl chloride | <2.1 | ug/l | 2.1 | 6.7 | 0.02 | 10 | | 8260 | srh | 1/22/99 |

Sample Number: 13773 QC Prep Batch Number: 990108 *Sample analyzed within 2 Day(s) from collection.*
Client ID: 990120WA09P Sample Description: pH 8.1 *Collection: 1/20/99 Time: 14:35*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,1,1-Trichloroethane | 1.1 | ug/l | 0.2 | 0.7 | 40 | 1 | | 8260 | srh | 1/22/99 |
| 1,1,2,2-Tetrachloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| 1,1,2-Trichloroethane | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethane | <0.2 | ug/l | 0.2 | 0.5 | 85 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloroethene | <0.4 | ug/l | 0.4 | 1.1 | 0.7 | 1 | | 8260 | srh | 1/22/99 |
| 1,1-Dichloropropene | <0.5 | ug/l | 0.5 | 1.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,3-Trichloropropane | <0.6 | ug/l | 0.6 | 1.9 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 14 | 1 | | 8260 | srh | 1/22/99 |
| 1,2,4-Trimethylbenzene | 0.4 | ug/l | 0.3 | 0.9 | ns | 1 | J | 8260 | srh | 1/22/99 |
| 1,2-Dibromoethane | <0.2 | ug/l | 0.2 | 0.8 | 0.005 | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 60 | 1 | | 8260 | srh | 1/22/99 |
| 1,2-Dichloroethane | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/22/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: 990027
DATE REPORTED: 25-Jan-99
DATE RECEIVED: 21-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME: OGTP

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| 1,3,5-Trimethylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,3-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 125 | 1 | | 8260 | srh | 1/22/99 |
| 1,3-Dichloropropane | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| 1,4-Dichlorobenzene | <0.2 | ug/l | 0.2 | 0.5 | 15 | 1 | | 8260 | srh | 1/22/99 |
| 12Dibromo-3-chloropropan | <0.6 | ug/l | 0.6 | 1.9 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| 2,2-Dichloropropane | <0.4 | ug/l | 0.4 | 1.3 | ns | 1 | | 8260 | srh | 1/22/99 |
| 2-Butanone (MEK) | <1.4 | ug/l | 1.4 | 4.4 | 90 | 1 | | 8260 | srh | 1/22/99 |
| 2-Chloroethyl Vinyl Ether | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/22/99 |
| 2-Chlorotoluene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/22/99 |
| 4-Chlorotoluene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/22/99 |
| 4-Methyl-2-Pentanone | <0.8 | ug/l | 0.8 | 2.7 | 50 | 1 | | 8260 | srh | 1/22/99 |
| Acetone | <1.6 | ug/l | 1.6 | 4.9 | 200 | 1 | | 8260 | srh | 1/22/99 |
| Benzene | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Bromobenzene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| Bromochloromethane | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Bromodichloromethane | 2.5 | ug/l | 0.3 | 0.8 | 0.06 | 1 | | 8260 | srh | 1/22/99 |
| Bromoform | <0.5 | ug/l | 0.5 | 1.5 | 0.44 | 1 | | 8260 | srh | 1/22/99 |
| Bromomethane | <0.2 | ug/l | 0.2 | 0.7 | 1 | 1 | | 8260 | srh | 1/22/99 |
| Carbon tetrachloride | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| Chlorobenzene | <0.2 | ug/l | 0.2 | 0.6 | 20 | 1 | | 8260 | srh | 1/22/99 |
| Chloroethane | <1.2 | ug/l | 1.2 | 3.7 | 80 | 1 | | 8260 | srh | 1/22/99 |
| Chloroform | 6.1 | ug/l | 0.3 | 0.9 | 0.6 | 1 | | 8260 | srh | 1/22/99 |
| Chloromethane | <0.8 | ug/l | 0.8 | 2.4 | 0.3 | 1 | | 8260 | srh | 1/22/99 |
| cis-1,2-Dichloroethene | <0.2 | ug/l | 0.2 | 0.6 | 7 | 1 | | 8260 | srh | 1/22/99 |
| cis-1,3-Dichloropropene | <0.2 | ug/l | 0.2 | 0.8 | 0.02 | 1 | | 8260 | srh | 1/22/99 |
| Dibromochloromethane | 1.2 | ug/l | 0.2 | 0.7 | 6 | 1 | | 8260 | srh | 1/22/99 |
| Dibromomethane | <0.4 | ug/l | 0.4 | 1.1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Dichlorodifluoromethane | <0.4 | ug/l | 0.4 | 1.1 | 200 | 1 | | 8260 | srh | 1/22/99 |
| Ethylbenzene | <0.2 | ug/l | 0.2 | 0.5 | 140 | 1 | | 8260 | srh | 1/22/99 |
| Hexachlorobutadiene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| Isopropyl Ether | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Isopropylbenzene | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/22/99 |
| m&p-xylene | <0.4 | ug/l | 0.4 | 1.1 | 124 | 1 | | 8260 | srh | 1/22/99 |
| Methyl-t-butyl ether | <0.2 | ug/l | 0.2 | 0.7 | 12 | 1 | | 8260 | srh | 1/22/99 |
| Methylene chloride | <0.8 | ug/l | 0.8 | 2.4 | 0.5 | 1 | | 8260 | srh | 1/22/99 |
| n-Butylbenzene | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/22/99 |
| n-Propylbenzene | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/22/99 |
| Naphthalene | <0.5 | ug/l | 0.5 | 1.5 | 8 | 1 | | 8260 | srh | 1/22/99 |
| o-xylene | <0.2 | ug/l | 0.2 | 0.6 | 124 | 1 | | 8260 | srh | 1/22/99 |
| p-Isopropyltoluene | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/22/99 |
| sec-Butylbenzene | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/22/99 |
| Styrene | <0.2 | ug/l | 0.2 | 0.7 | 10 | 1 | | 8260 | srh | 1/22/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: **990039**
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| **tert-Butylbenzene** | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Tetrachloroethene** | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Toluene** | <0.3 | ug/l | 0.3 | 1 | 68.6 | 1 | | 8260 | srh | 1/27/99 |
| **trans-1,2-Dichloroethene** | <0.2 | ug/l | 0.2 | 0.5 | 20 | 1 | | 8260 | srh | 1/27/99 |
| **trans-1,3-Dichloropropene** | <0.2 | ug/l | 0.2 | 0.6 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| **Trichloroethene** | 0.8 | ug/l | 0.2 | 0.5 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Trichlorofluoromethane** | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Vinyl chloride** | <0.2 | ug/l | 0.2 | 0.7 | 0.02 | 1 | | 8260 | srh | 1/27/99 |

Sample Number: **13829** QC Prep Batch Number: 990154 *Sample analyzed within 2 Day(s) from collection.*
Client ID: **trip blank** Sample Description: *Collection: 1/25/99 Time: 15:00*

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,1,1,2-Tetrachloroethane** | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,1,1-Trichloroethane** | <0.2 | ug/l | 0.2 | 0.7 | 40 | 1 | | 8260 | srh | 1/27/99 |
| **1,1,2,2-Tetrachloroethane** | <0.3 | ug/l | 0.3 | 0.9 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| **1,1,2-Trichloroethane** | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **1,1-Dichloroethane** | <0.2 | ug/l | 0.2 | 0.5 | 85 | 1 | | 8260 | srh | 1/27/99 |
| **1,1-Dichloroethene** | <0.4 | ug/l | 0.4 | 1.1 | 0.7 | 1 | | 8260 | srh | 1/27/99 |
| **1,1-Dichloropropene** | <0.5 | ug/l | 0.5 | 1.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,2,3-Trichlorobenzene** | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,2,3-Trichloropropane** | <0.6 | ug/l | 0.6 | 1.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,2,4-Trichlorobenzene** | <0.2 | ug/l | 0.2 | 0.5 | 14 | 1 | | 8260 | srh | 1/27/99 |
| **1,2,4-Trimethylbenzene** | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,2-Dibromoethane** | <0.2 | ug/l | 0.2 | 0.8 | 0.005 | 1 | | 8260 | srh | 1/27/99 |
| **1,2-Dichlorobenzene** | <0.2 | ug/l | 0.2 | 0.6 | 60 | 1 | | 8260 | srh | 1/27/99 |
| **1,2-Dichloroethane** | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **1,2-Dichloropropane** | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **1,3,5-Trimethylbenzene** | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,3-Dichlorobenzene** | <0.2 | ug/l | 0.2 | 0.6 | 125 | 1 | | 8260 | srh | 1/27/99 |
| **1,3-Dichloropropane** | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| **1,4-Dichlorobenzene** | <0.2 | ug/l | 0.2 | 0.5 | 15 | 1 | | 8260 | srh | 1/27/99 |
| **12Dibromo-3-chloropropan** | <0.6 | ug/l | 0.6 | 1.9 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| **2,2-Dichloropropane** | <0.4 | ug/l | 0.4 | 1.3 | ns | 1 | | 8260 | srh | 1/27/99 |
| **2-Butanone (MEK)** | <1.4 | ug/l | 1.4 | 4.4 | 90 | 1 | | 8260 | srh | 1/27/99 |
| **2-Chloroethyl Vinyl Ether** | <0.3 | ug/l | 0.3 | 0.9 | ns | 1 | | 8260 | srh | 1/27/99 |
| **2-Chlorotoluene** | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/27/99 |
| **4-Chlorotoluene** | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/27/99 |
| **4-Methyl-2-Pentanone** | <0.8 | ug/l | 0.8 | 2.7 | 50 | 1 | | 8260 | srh | 1/27/99 |
| **Acetone** | <1.6 | ug/l | 1.6 | 4.9 | 200 | 1 | | 8260 | srh | 1/27/99 |
| **Benzene** | <0.2 | ug/l | 0.2 | 0.6 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Bromobenzene** | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Bromochloromethane** | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Bromodichloromethane** | <0.3 | ug/l | 0.3 | 0.8 | 0.06 | 1 | | 8260 | srh | 1/27/99 |

APL Environmental
8222 W. Calumet Rd., Milwaukee, WI 53223
Phone: (414) 355-5800 Fax: (414) 355-3099

# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: **990039**
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bromoform** | <0.5 | ug/l | 0.5 | 1.5 | 0.44 | 1 | | 8260 | srh | 1/27/99 |
| **Bromomethane** | <0.2 | ug/l | 0.2 | 0.7 | 1 | 1 | | 8260 | srh | 1/27/99 |
| **Carbon tetrachloride** | <0.2 | ug/l | 0.2 | 0.7 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Chlorobenzene** | <0.2 | ug/l | 0.2 | 0.6 | 20 | 1 | | 8260 | srh | 1/27/99 |
| **Chloroethane** | <1.2 | ug/l | 1.2 | 3.7 | 80 | 1 | | 8260 | srh | 1/27/99 |
| **Chloroform** | <0.3 | ug/l | 0.3 | 0.9 | 0.6 | 1 | | 8260 | srh | 1/27/99 |
| **Chloromethane** | <0.8 | ug/l | 0.8 | 2.4 | 0.3 | 1 | | 8260 | srh | 1/27/99 |
| **cis-1,2-Dichloroethene** | <0.2 | ug/l | 0.2 | 0.6 | 7 | 1 | | 8260 | srh | 1/27/99 |
| **cis-1,3-Dichloropropene** | <0.2 | ug/l | 0.2 | 0.8 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| **Dibromochloromethane** | <0.2 | ug/l | 0.2 | 0.7 | 6 | 1 | | 8260 | srh | 1/27/99 |
| **Dibromomethane** | <0.4 | ug/l | 0.4 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Dichlorodifluoromethane** | <0.4 | ug/l | 0.4 | 1.1 | 200 | 1 | | 8260 | srh | 1/27/99 |
| **Ethylbenzene** | <0.2 | ug/l | 0.2 | 0.5 | 140 | 1 | | 8260 | srh | 1/27/99 |
| **Hexachlorobutadiene** | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Isopropyl Ether** | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Isopropylbenzene** | <0.2 | ug/l | 0.2 | 0.5 | ns | 1 | | 8260 | srh | 1/27/99 |
| **m&p-xylene** | <0.4 | ug/l | 0.4 | 1.1 | 124 | 1 | | 8260 | srh | 1/27/99 |
| **Methyl-t-butyl ether** | <0.2 | ug/l | 0.2 | 0.7 | 12 | 1 | | 8260 | srh | 1/27/99 |
| **Methylene chloride** | <0.8 | ug/l | 0.8 | 2.4 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **n-Butylbenzene** | <0.2 | ug/l | 0.2 | 0.7 | ns | 1 | | 8260 | srh | 1/27/99 |
| **n-Propylbenzene** | <0.3 | ug/l | 0.3 | 0.8 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Naphthalene** | <0.5 | ug/l | 0.5 | 1.5 | 8 | 1 | | 8260 | srh | 1/27/99 |
| **o-xylene** | <0.2 | ug/l | 0.2 | 0.6 | 124 | 1 | | 8260 | srh | 1/27/99 |
| **p-Isopropyltoluene** | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **sec-Butylbenzene** | <0.3 | ug/l | 0.3 | 1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Styrene** | <0.2 | ug/l | 0.2 | 0.7 | 10 | 1 | | 8260 | srh | 1/27/99 |
| **tert-Butylbenzene** | <0.2 | ug/l | 0.2 | 0.6 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Tetrachloroethene** | <0.3 | ug/l | 0.3 | 0.9 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Toluene** | <0.3 | ug/l | 0.3 | 1 | 68.6 | 1 | | 8260 | srh | 1/27/99 |
| **trans-1,2-Dichloroethene** | <0.2 | ug/l | 0.2 | 0.5 | 20 | 1 | | 8260 | srh | 1/27/99 |
| **trans-1,3-Dichloropropene** | <0.2 | ug/l | 0.2 | 0.6 | 0.02 | 1 | | 8260 | srh | 1/27/99 |
| **Trichloroethene** | <0.2 | ug/l | 0.2 | 0.5 | 0.5 | 1 | | 8260 | srh | 1/27/99 |
| **Trichlorofluoromethane** | <0.3 | ug/l | 0.3 | 1.1 | ns | 1 | | 8260 | srh | 1/27/99 |
| **Vinyl chloride** | <0.2 | ug/l | 0.2 | 0.7 | 0.02 | 1 | | 8260 | srh | 1/27/99 |

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# ORGANIC REPORT

**WDNR# 241340550**

BATCH NUMBER: **990039**
DATE REPORTED: 29-Jan-99
DATE RECEIVED: 26-Jan-99
SAMPLE TEMP (C): Rec On Ice
PROJECT ID:
PROJECT NAME:

James Chang
Oconomowoc Groundwater Treatment Plant
2572 Oak St.
Ashippun , WI 53003

| Compound | Result | Units | LOD | LOQ | PAL | Dil | RQ | Method | Analyst | Date Anal |
|---|---|---|---|---|---|---|---|---|---|---|

**Approved By:** James Chang /cmd **Date:** 1/29/99
James Chang, Ph.D., Lab Director

*MDL: Method Detection Limit determined by 40CFR Part 136 Appendix B* *"e" = Estimate value, over calibration range .*
*LOQ = 10 (S) x Dilution Factor, where "S" is the Standard Deviation from the MDL Study*
*LOD = 3.143 (S) x Dilution Factor, where "S" is the Standard Deviation from the MDL Study*
*PAL: Preventive Action Limit, NR 140.10 Public health related groundwater standards. "ns" = not specified*
*RQ : Run Qualifier; "J" = Results between LOD and LOQ. "RR" = Re-extract Rerun sample, "B" = Showed in Blank sample.*

*Rounding Rules: Three significant figures were used for concentrations above 99 ug/L, two significant figures for concentrations between 1-99 ug/L, and one significant figure for lower concentrations.*
*DNR Analytical Detection Limit Guidance, April 1995.*