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**NONCOMPLIANCE REPORT - JUNE 1996 - NPDES PERMIT  
11000004\*ED - FERNALD ENVIRONMENTAL MANAGEMENT PROJECT**

07/15/96

**C:EC(RTS):96-0055  
FERMCO HAMILTON COUNTY  
6  
REPORT**



Restoration Management Corporation

P. O. Box 538704 Cincinnati, Ohio 45253-8704 (513) 648-3000

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July 15, 1996

Fernald Environmental Management Project  
Letter No. C:EC(RTS):96-0055

Mr. Thomas A. Winston, District Chief  
Southwest District Office  
Ohio Environmental Protection Agency  
401 East Fifth Street  
Dayton, OH 45402-2911

Dear Mr. Winston:

**NONCOMPLIANCE REPORT - JUNE 1996 - NPDES PERMIT NUMBER 11000004\*ED - FERNALD ENVIRONMENTAL MANAGEMENT PROJECT**

Enclosed is the Noncompliance Report for June 1996. In addition, the June 1996 Discharge Monitoring reports are enclosed to aid your review. If you have any questions please contact Frank Johnston at (513) 648-5294.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen M. Beckman". The signature is fluid and cursive, written over a white background.

Stephen M. Beckman  
Manager  
Air & Water Programs

SMB:FLJ:mhv  
Enclosure

Thomas A. Winston  
Letter No. C:EC:(RTS):96-0055  
Page 2



c: Noncompliance Report Only

S. L. Blankenship, FERMCO  
D. J. Carr, FERMCO  
K. A. Chaney, EM-423, OO  
D. E. Faris, FERMCO  
T. D. Hagen, FERMCO  
E. H. Henry, FERMCO  
F. L. Johnston, FERMCO  
C. C. Little, FERMCO  
B. S. Perkins, FERMCO  
C. G. Siefert, FERMCO  
E. P. Skintik, DOE-FN  
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AR Coordinator  
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**NONCOMPLIANCE REPORT  
NPDES PERMIT NO. 11000004\*ED  
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT  
U.S. DEPARTMENT OF ENERGY**

The following table describes the June 1996 noncompliances with the discharge limitations specified in the FEMP NPDES Permit. This table lists the outfall, date of noncompliance, parameter, permit limit, and measured effluent concentration.

OUTFALL (NAME AND NUMBER): SEWAGE TREATMENT PLANT - 4601

<u>Incident</u>	<u>Date</u>	<u>Parameter</u>	<u>Permit Limit</u>	<u>Actual Measurement</u>
96-01	June 5, 1996	CBOD	40 mg/l (Daily Maximum)	> 50 mg/l
96-02	June 17, 1996	CBOD	40 mg/l (Daily Maximum)	> 48.2 mg/l
96-03	June 19, 1996	CBOD	40 mg/l (Daily Maximum)	239.4 mg/l
96-04	June 19, 1996	CBOD	24.2 kg/d (Daily Maximum)	92.4 kg/d
96-05	June 1996	CBOD	20 mg/l (Monthly Average)	42.9 mg/l
96-06	June 1996	CBOD	12.1 kg/d (Monthly Average)	17.1 kg/d
96-07	June 24, 1996	Fecal Coliform	2000/100 ml (Daily Maximum)	> 9000
96-08	June 23, 24, 25, 1996	Dissolved Oxygen	5.0 mg/l Minimum	< 5.0 mg/l

The CBOD violations (incidents 96-01 through 96-06) at the sewage treatment plant (STP) are all related to three high CBOD concentrations measured for June 5, June 17, and June 19, 1996. OEPA was informed of these daily maximum violations on June 12 and June 24, 1996. While the definitive cause has yet to be determined the investigation has centered on a change in the character of the STP influent.

During the month of June all STP systems were operational with the exception of isolated down times for the digester furnace, one secondary clarifier, and the ultraviolet disinfection system (discussed below). Operator logs on June 5, 17, and 19 show no obvious abnormalities except for very low dissolved oxygen measurements on June 19, which is expected given the high CBOD measured. Historically, solids loading can be adequately

managed with one primary and one secondary clarifier functioning. Plant operations reports and operator logs indicate solids carryover has not occurred. This observation is confirmed given the TSS measurements for these days.

Operators have noted a smell of unknown origin at the sanitary lift station as well as in the STP area. This smell, described as a sweet or rotten garlic or onion smell, has been verified by environmental compliance personnel during an investigation of June 24, 1996. However, operators have indicated this smell occurs infrequently.

Based on the description of the smell FERMCO Industrial Hygiene performed an instrument survey (attached) of the sanitary lift station for methyl mercaptan ( $\text{CH}_3\text{SH}$ ). Methyl mercaptan was detected at a level of 4.5 ppm in the air at the sanitary lift station sump. However, with no base-line data it is not possible to determine if this level is elevated or abnormal. A review of the FEMP MSDS database has revealed no-known products on site which contain methyl mercaptan. The Merck Index indicates that methyl mercaptan (also known as methanethiol) is produced in the intestinal tract of humans. The Merck Index also indicates that methyl mercaptan can be prepared catalytically from methanol and hydrogen sulfide. The FEMP does use methanol on site and hydrogen sulfide is a common sewer gas, however, there are no known sources of methanol into the sanitary sewer. In the absence of more definitive data it is premature to conclude that methyl mercaptan is the cause of the CBOD violations. FERMCO will continue to monitor this situation closely.

Incident 96-07 relates to a high fecal coliform measurement on June 24, 1996. It appears the high measurement is related to a faulty photo cell used to measure ultra-violet light intensity. This intensity reading provides operators with an indication of when the UV bulbs need to be cleaned or replaced. The photo cell was reading 100% intensity when in fact the UV bulbs were significantly blinded thus reducing disinfection efficiency. Instrument technicians have repaired the photo cell and operators have been instructed to check the UV bulbs on a routine basis regardless of the intensity reading.

Incident 98-08 is related to low dissolved oxygen recorded at the parshall flume (outfall 4001). Due to improper sample collection and analysis techniques compliant samples were not collected as required by the permit. However, as explained below there is enough information available to indicate that the FEMP effluent discharged on June 23, 24, and 25 did not contain sufficient dissolved oxygen.

Note: While the permit requires that the FEMP conduct a once/week grab sample for dissolved oxygen, the FEMP actually monitors dissolved oxygen much more aggressively. The parshall flume building is equipped with a continuous dissolved oxygen meter. Additionally, operators routinely perform dissolved oxygen measurements using a hand held Horiba Meter - approximately twice every shift (6 times/day). Unfortunately, these Horiba Meter readings were used in lieu of the permit required grab sample and the associated 40 CFR 136 sampling and analysis protocols.

Most of the FEMP wastewater treatment system was shut down during the week of June 24, 1996 to perform a variety of maintenance activities at the Advanced Wastewater Treatment Facility (AWWT), the valve house and the south plume recovery well system. OEPA was informed of this activity on June 20, 1996 via DOE letter DOE-1047-96.

In order to accomplish these maintenance activities all wastewater discharges from the stormwater retention basin, biosurge-lagoon, general sump and south plume groundwater were halted leaving the STP as the only discharger to the parshall flume (Outfall 4001). Taking these systems off-line began on Sunday June 23, 1996. This coincided with the time that the STP was experiencing high CBOD effluent resulting in the low dissolved oxygen measurements at the parshall flume. Continuous dissolved oxygen charts show that the dissolved oxygen level fell below 5.0 mg/l at approximately 12:30 pm on June 23 and lasted through 7:30 pm on June 24. There was also a 2 hour and 45 minute period of time (9:25 am - 12:10 pm) on June 25 when the dissolved oxygen level fell below 5.0 mg/l. While the FEMP maintains a dissolved oxygen facility, the sewage treatment plant discharge through Manhole 175 ties in downstream of the dissolved oxygen facility at Manhole 176B. Acceptable dissolved oxygen readings resumed once the STP effluent CBOD improved.

INDUSTRIAL HYGIENE CONTROL # \_\_\_\_\_  
**Direct Reading Instrument Survey Sheet**

Project / Activity \_\_\_\_\_ Charge Number **7EAB4** Date **6-26-96**  
 Bldg / Plant **Lift Station** Level \_\_\_\_\_ Coordinates / Location \_\_\_\_\_ Job Number **None**  
**22-0002** near RIMA

Ambient Conditions: Indoor  Outdoor  Temperature °F **78.0** Barometric Pressure **29.67"** % Relative Humidity **67%** Wind Speed / Direction **E/5 mph**

Instrument Information: Manufacturer **Foxboro** Model / Type **Miran 1R** Instrument ID Number \_\_\_\_\_  
 Type of Calibration \_\_\_\_\_ Calibration Standard (Gas Type, Concentration, cylinder #) \_\_\_\_\_ Pre-Cal Reading \_\_\_\_\_ Post-Cal Reading \_\_\_\_\_ Contaminant(s) Being Sampled \_\_\_\_\_  
 Full Calibration (AQ-7700, PID)  
 Field Test (CCM, D-1000)  
 Factory Reference (MMA, MDA, NAM)  
 N/A or Other Calibration (sp. Jerome)  
**Factory calibration for Methyl mercaptan** **Zero Set** **N/A** **Methyl Mercaptan**

Location / Activity	Time	Type	Average Reading	Peak Reading	Comments
1 Ground level at Lift Station	0905	<input type="checkbox"/> BZ <input checked="" type="checkbox"/> GA	0.0	0.2	No odor
2 Concrete basement of Lift Station	0910	<input type="checkbox"/> BZ <input checked="" type="checkbox"/> GA	0.1	0.3	Odor of privy-sewerage
3 Sump in SW corner of Lift Station Basement	0920	<input type="checkbox"/> BZ <input type="checkbox"/> GA	0.2	4.5	Odor of privy-sewerage
4		<input type="checkbox"/> BZ <input type="checkbox"/> GA			
5		<input type="checkbox"/> BZ <input type="checkbox"/> GA			
6		<input type="checkbox"/> BZ <input type="checkbox"/> GA			
7		<input type="checkbox"/> BZ <input type="checkbox"/> GA			
8		<input type="checkbox"/> BZ <input type="checkbox"/> GA			

Comments:  
 Measurements made at request of Water Treatment Plant supervisor, who reported an onion/garlic-like smell, which was probably methyl mercaptan.

Worker Name: **Walt Mengel** Badge:  Job Class: **6**  
**Jeff Halcomb** **Ind Hygienist**  
**Water Plt. Super**

Industrial Hygiene Representative: **W. H. Mengel** Signature: **W. H. Mengel** Date: **6-26-96** See Map:  on reverse  attached