APPENDIX C-5

SUMMARY OF NONRADIOLOGICAL MONITORING

Nonradiological emissions and plant effluents are controlled and permitted under New York State and U.S. EPA regulations. Airborne emissions arise from seven sources, all of which are permitted by New York State Department of Environmental Conservation (NYSDEC). These release points include two natural gas-fired boilers, two nitric acid tank vents, an office paper waste incinerator, a glass-melter off-gas system and a cement storage silo vent. The melter off-gas system is currently being tested and operated under a permit to construct. These permits are identified and described in Table C-5.1. Although there are periodic New York State inspections of the air emission points, routine sampling and analysis of nonradiological emissions from these points are not required. Discharges from these points are well below the levels requiring monitoring under the state permit system.

Liquid discharges are regulated under the State Pollution Discharge Elimination System (SPDES). The outfalls and monitoring requirements for the permit are presented in Table C-5.2. The locations of the monitoring points are shown in Figure C-5.1.

The results of the SPDES nonradiological monitoring are presented in Figures C-5.2 through C-5.23. These data indicate Project effluents were generally within the permit limits during 1986. However, the WVDP reported a total of 33 noncompliance episodes. These noncompliances are summarized in Table C-5.3 and are described in the following paragraphs.

The majority of the noncompliance episodes are for pH and solids (either total suspended or settleable) at outfall 007 (the mixing basin for utility room and sewage plant effluents). Of the 33 excursions reported during 1986, 25 were at outfall 007; 19 of which were pH and three each for settleable solids and total suspended solids. The pH excursions occurred between June and October. Solids excursions only occurred during pH excursions.

The pH excursions were, without exception, values that exceeded the maximum limit of 9.0 standard units. The cause of these excursions is believed to be photosynthetically mediated carbon dioxide assimilation by a dense algal bloom which appeared in the basin in the warm summer months. This phenomenon is well documented in eutrophic and hypereutrophic lentic systems.

Aeration increases the carbon dioxide transfer to the water and lowers the pH. However, aeration resuspends material that had settled to the bottom of the basin causing an increase of solids in the effluent. Different means of aerating the basin are being investigated to control pH without increasing the solids in the effluent.

The remaining excursions are for various parameters at other outfalls. Outfall 001, the discharge lagoon for the low level radioactive liquid waste treatment facility (LLWT), experienced pH and solids excursions in June and a solids excursion again in September. In both cases, the lagoon discharge was nearly completed when rainfall washed sediments from the sides and bottom of the lagoon into the effluent. Discharges were terminated as soon as the excursions were discovered.

On two occasions the flow weighted average ammonia concentration for outfalls 001 and 007 exceeded the permit limits. These episodes were caused by operational upsets at the sewage treatment facility. Operator training and modification of operating procedures are being pursued to prevent recurrance of these non-compliances.

The remaining two non-compliance episodes were for flow weighted average iron concentrations from outfalls 001, 007 and 008. The iron discharge limit is a net discharge limit which provides for subtraction of the mass of iron in the raw water supply from the effluent mass discharge. On both occasions, lagoon 3 was being discharged through outfall 001, an operation which takes up to 10 days. At the start of the discharge, the raw water iron concentration (and mass) provided adequate offset to discharge effluent of a given iron concentration at a high rate. As the discharge continued, the iron concentration in the effluent did not change significantly, but the concentration in the raw water dropped. (Wide fluctuations in the raw water iron concentration have been observed in the past.) This resulted in a lower mass offset and a higher net effluent concentration than the permit limits allow.

These noncompliance episodes are summarized in Table C-5.3. The environmental impacts associated with these noncompliance episodes are negligible because of their generally small magnitude and short duration, the innocuous nature of the noncomplying parameters, and natural dilution by a factor of approximately 1000 between the point where Erdman Brook leaves the controlled area of the site (formerly outfall 006) and Cattaraugus Creek (the nearest point of public access).

Table C-5.1

West Valley Demonstration Project

Environmental Permits

Permit #	Issued by	Expiration Date	Type of Permit
042200-0114-00002 WC	NYSDEC	6/89	Certificate to operate air contamination source - boiler
042200-0114-00003 WC	NYSDEC	6/89	Certificate to operate air contamination source - boiler
042200-0114-00004 WR	NYSDEC	6/89	Certificate to operate air contamination source - incinerator†
042200-0114-00010 WI	NYSDEC	6/89	Certificate to operate air contamination source - Low Level Waste Treatment Facility Nitric Acid Storage Tank
042200-0114-014D1 WI	NYSDEC	6/89	Certificate to operate air contamination source - Nitric Acid Bulk Storage Tank
042200-0114 CSS01	NYSDEC	6/89	Certificate to Operate Cement Storage Silo Ventilation System.
042200-0114 015F-1	NYSDEC	6/86*	Permit to Construct Vitrification Off-Gas System
NY-0000973	NYSDEC	9/90	State Pollution Discharge Elimination System (SPDES permit)

*Permit to construct is extended annually with submittal of status report.

†Currently nonradioactive waste is removed to a commercial landfill and not incinerated.

TABLE C-5.2
West Valley Demonstration Project
SPDES Sampling Program
Effective September 1, 1985

Outfall #	Parameter	Limit	Sample Frequency
001 (Process and Storm waste waters)	Flow		2 per discharge event
	Aluminum	14.0 mg/L	2 per discharge event
	Ammonia	*	2 per discharge event
	Arsenic	0.01 mg/L	2 per discharge event
	BOD-5	**	2 per discharge event
	Iron	**	2 per discharge event
	Zinc	0.31 mg/L	2 per discharge event
	Suspended Solids	45.0 mg/L	2 per discharge event
	Cyanide	0.1 mg/L	2 per discharge event
	Settleable Solids	0.30 ml/L	2 per discharge event
	pH	6.0 - 9.0	2 per discharge event
	Cadmium	0.013 mg/L	annual
	Chromium	0.050 mg/L	annual
	Copper	0.050 mg/L	annual
	Lead	0.080 mg/L	annual
	Nickel	0.080 mg/L	annual
	Selenium	0.040 mg/L	annual
007 (Sanitary and Utility waste water)	Flow		3 per month
	Ammonia	*	3 per month
	BOD-5	**	3 per month
	Iron	**	3 per month
	Suspended Solids	45.0 mg/L	2 per month
	Settleable Solids	0.3 ml/L	Weekly
	pH 6.0 - 9.0	Weekly	
	Chloroform	0.020 mg/L	annual
008 (French Drain waste water)	Flow		3 per month
	BOD-5	**	3 per month
	Iron	**	3 per month
pH	6.0 - 9.0	3 per month	
Silver	0.008 mg/l	annual	
Zinc	0.100 mg/l	annual	

* Reported as flow weighted average of Outfalls 001 and 007.

** Reported as flow weighted average of Outfalls 001, 007 and 008. Iron data are net limits reported after background concentrations are subtracted.

Table C-5.3

West Valley Demonstration Project

1986 SPDES Non Compliance Episodes

Date	Outfall #	Parameter	Limit	Value	Comments
June 1986	001	pH	6.0 - 9.0 std units	9.6	
		Total Suspended Solids	30.0 mg/L avg. 45.0 mg/L max.	39.2 53.8	maximum values caused average values to exceed limits
	007	pH	6.0 - 9.0 std units	9.5	3 occasions reported
	Sum 001, 007, 008	Iron	0.31 mg/L	0.65	
July 1986	007	pH	7.0 - 9.0 std units	9.1	
	Sum 001,007	Ammonia	2.1 mg/L	2.78	2 occasions reported
August 1986	007	pH	6.0 - 9.0 std units	9.5	7 occasions reported
		Total Suspended Solids	30.0 mg/L avg. 45.0 mg/L max.	 59.2	 3 occasions reported
		Settleable Solids	0.3 ml/L	2.5	2 occasions reported
Sept. 1986	001	Total Suspended Solids	30.0 mg/L avg. 45.0 mg/L max.	66.5 120.0	one excursion caused maximum value and average value to exceed limits
	007	pH	6.0 - 9.0 std units	9.1	5 occasions reported
		Settleable Solids	0.3 ml/L	0.4	
	Sum 001, 007, 008	Iron	0.31 mg/L	1.81	
Oct. 1986	007	pH	6.0 - 9.0 std units	9.3	3 occasions reported
Nov.1986	Sum 001,007	Ammonia	2.1 mg/L	3.39	

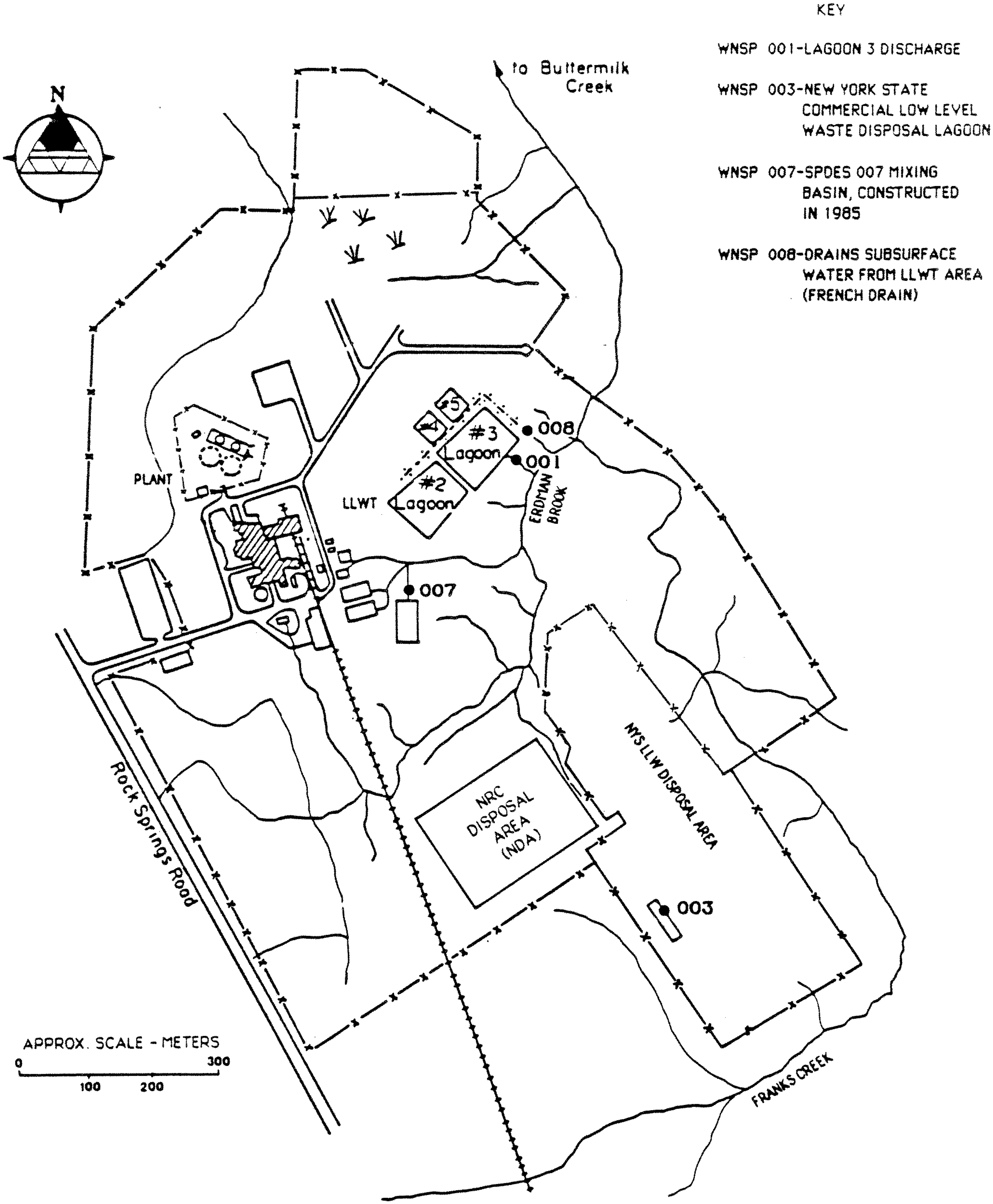

FIGURE C-5.1
Locations of SPDES Monitoring Points On-site

FIGURE C-5.2
BOD-5
OUTFALL 001

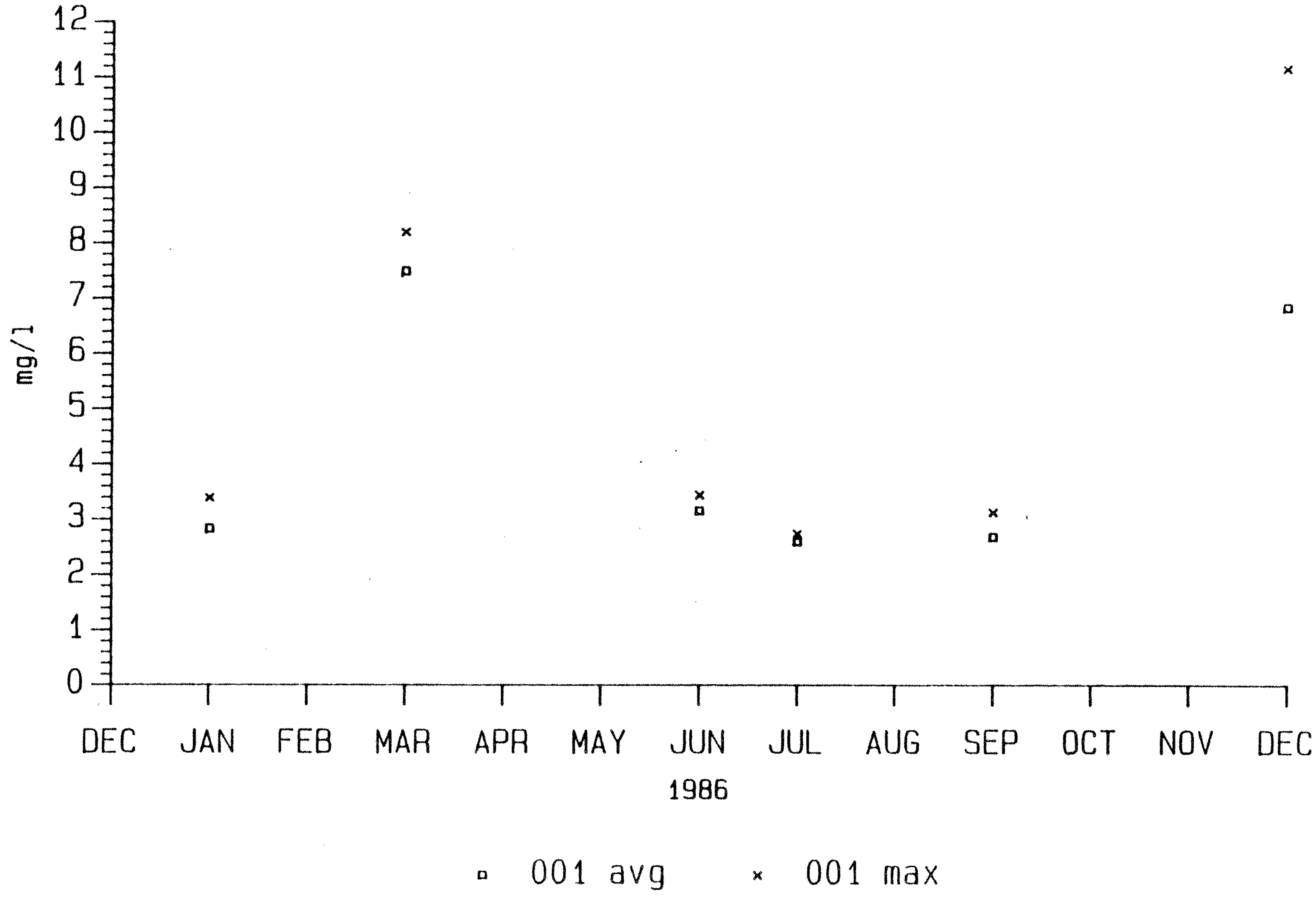

FIGURE C-5.3
BOD-5
OUTFALLS 007, 008

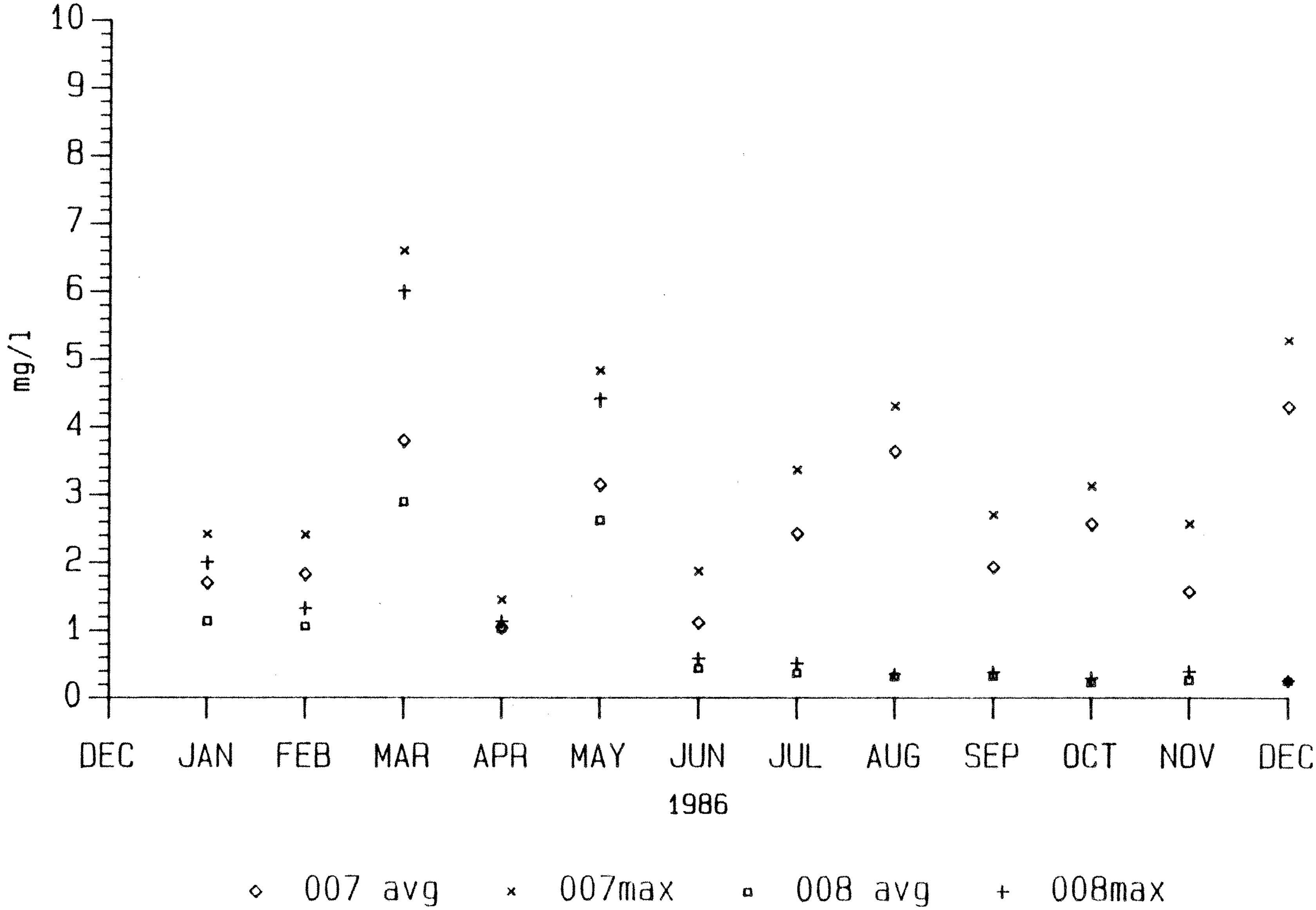

FIGURE C-5.4
SUSPENDED SOLIDS
OUTFALL 001

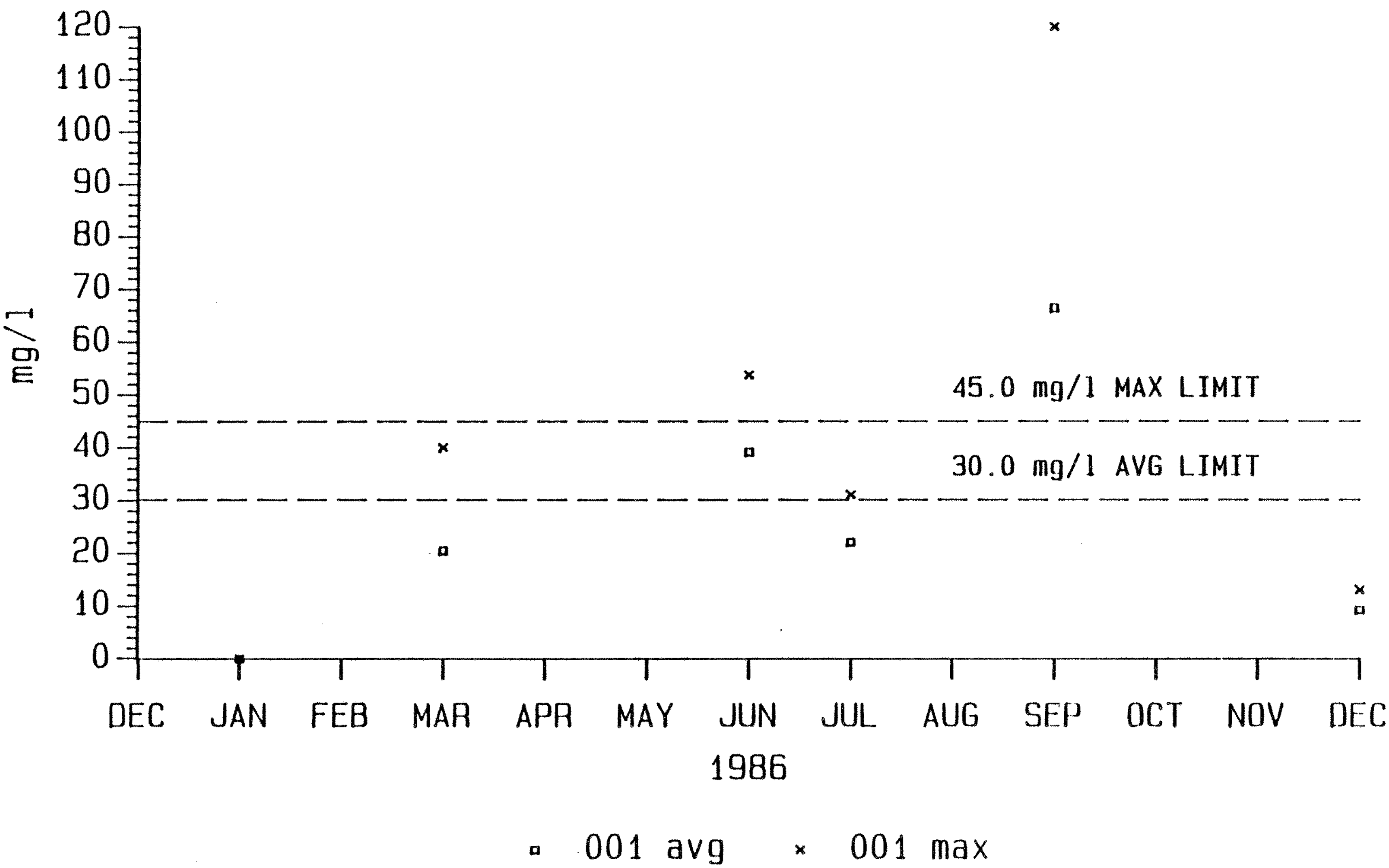

FIGURE C-5.5
SUSPENDED SOLIDS
OUTFALL 007

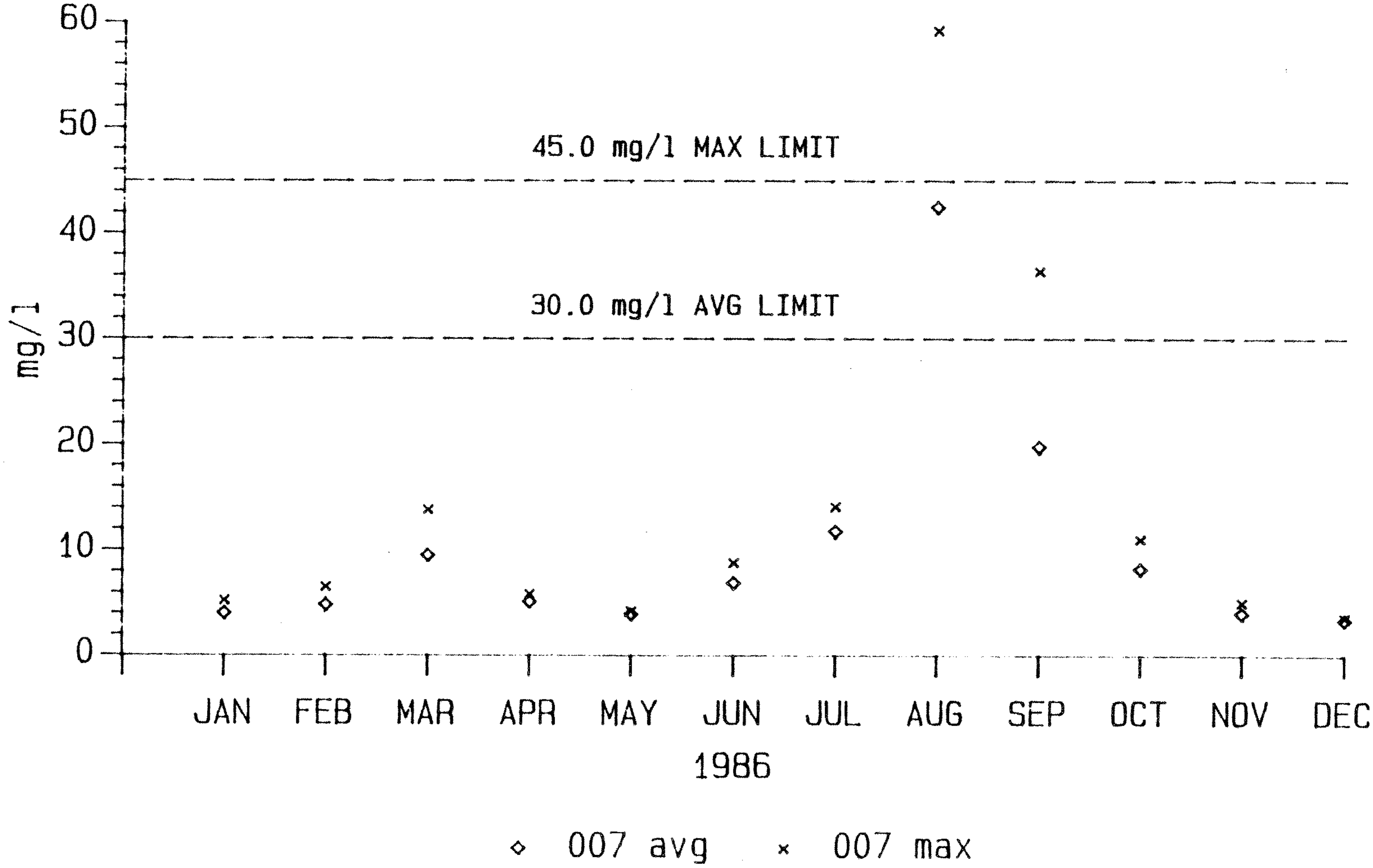

FIGURE C-5.6
SETTLEABLE SOLIDS
OUTFALL 001

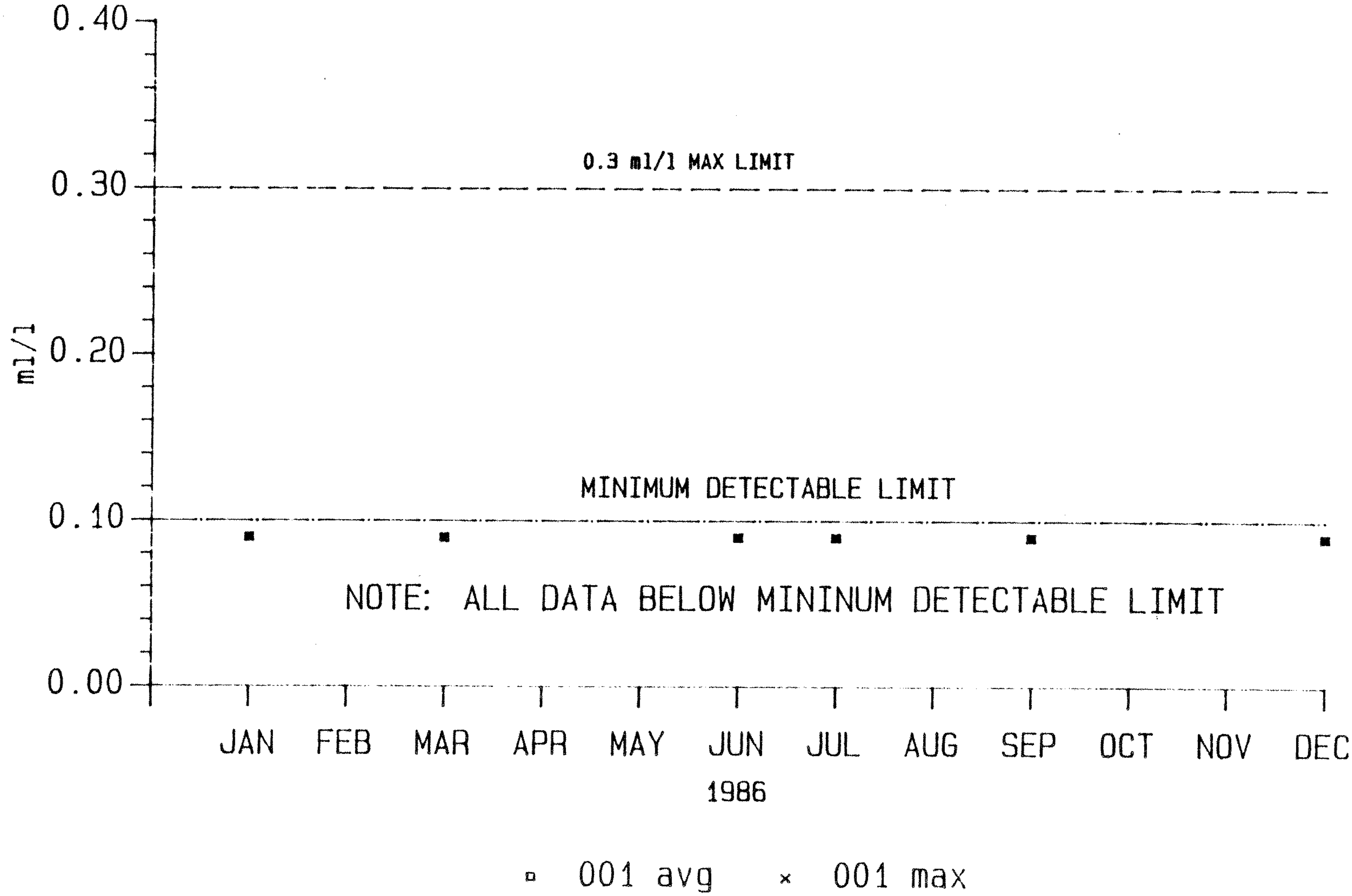

FIGURE C-5.7
SETTLEABLE SOLIDS
OUTFALL 007

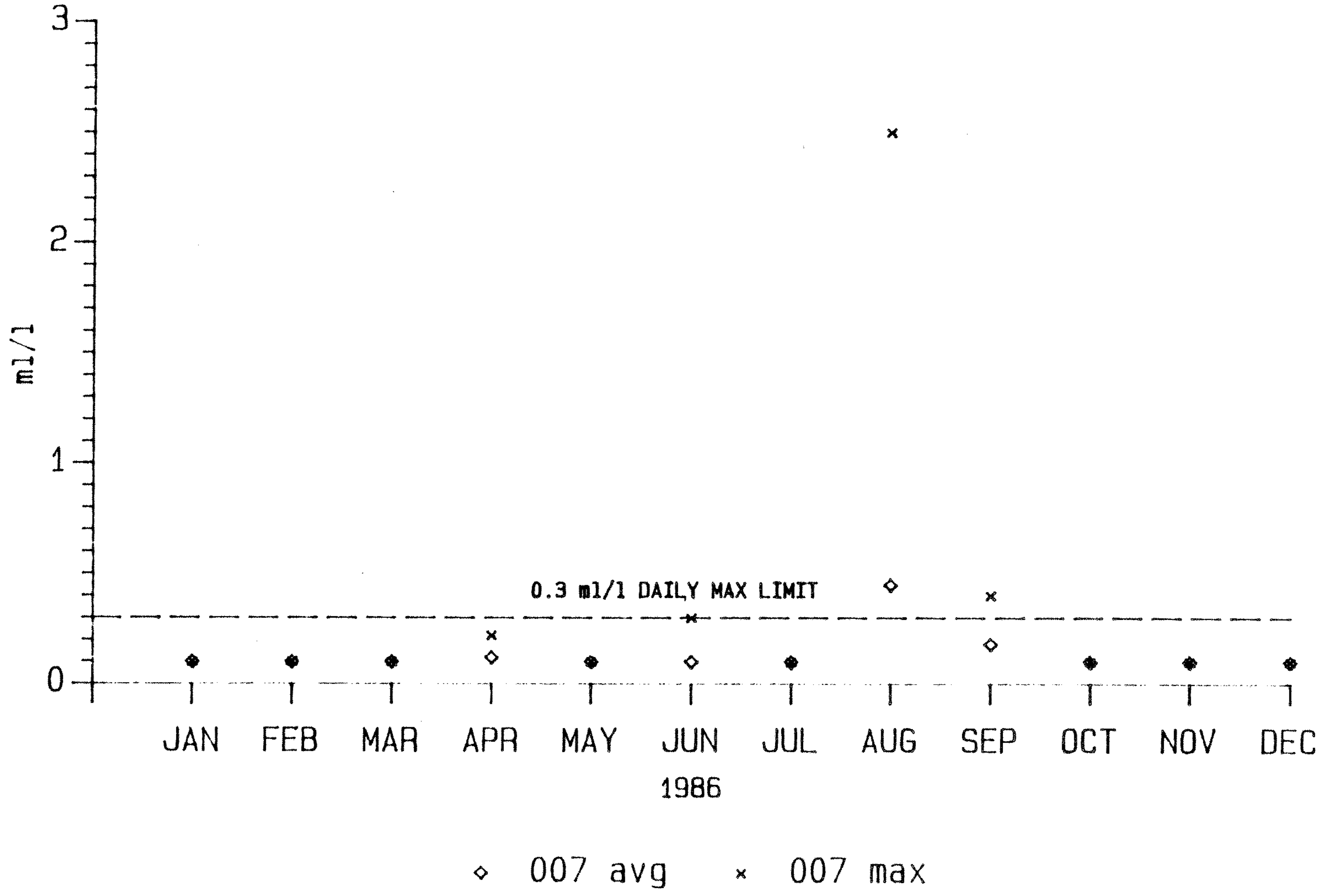

FIGURE C-5.8
AMMONIA
OUTFALL 001

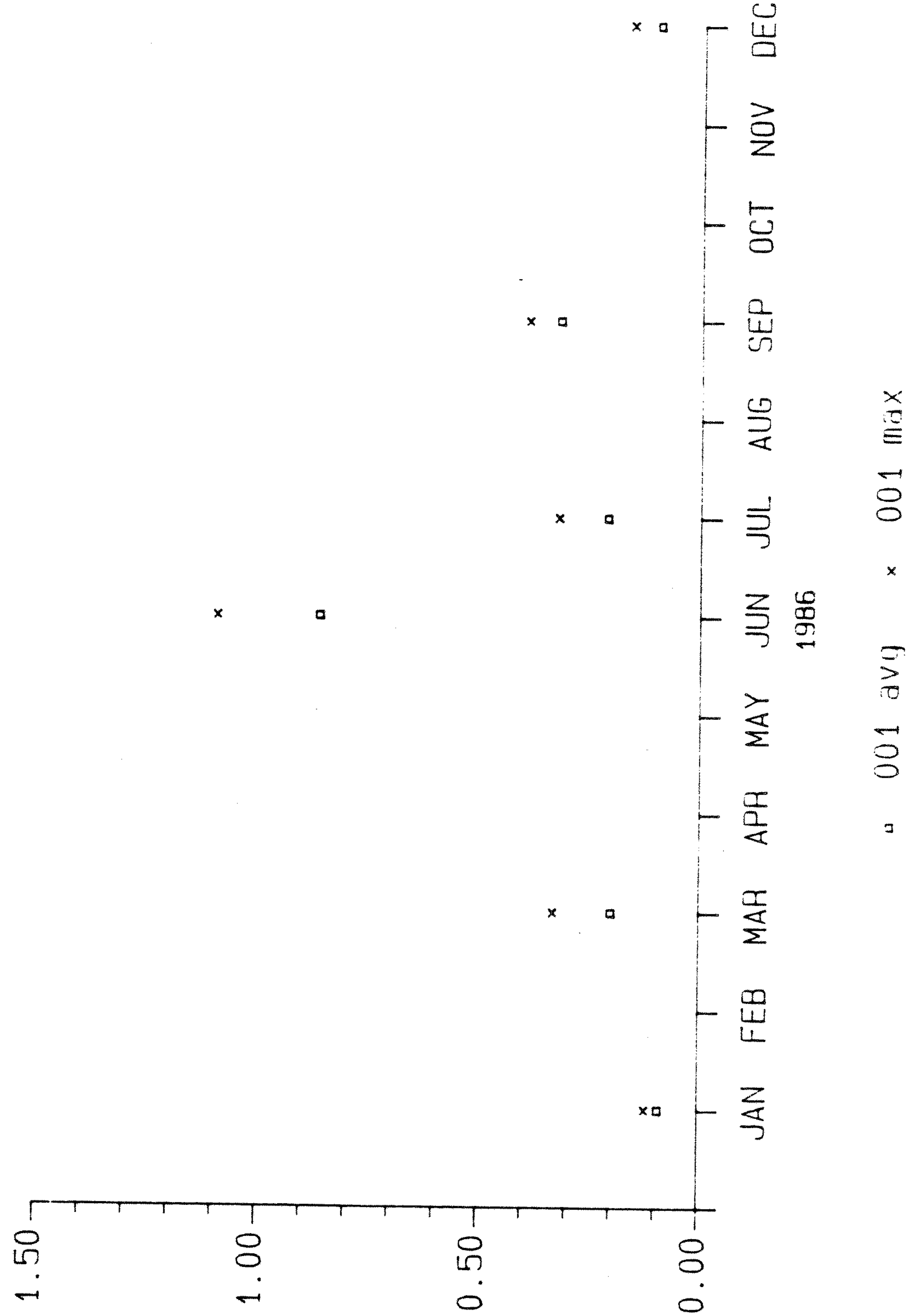

FIGURE C-5.9
AMMONIA
OUTFALL 007

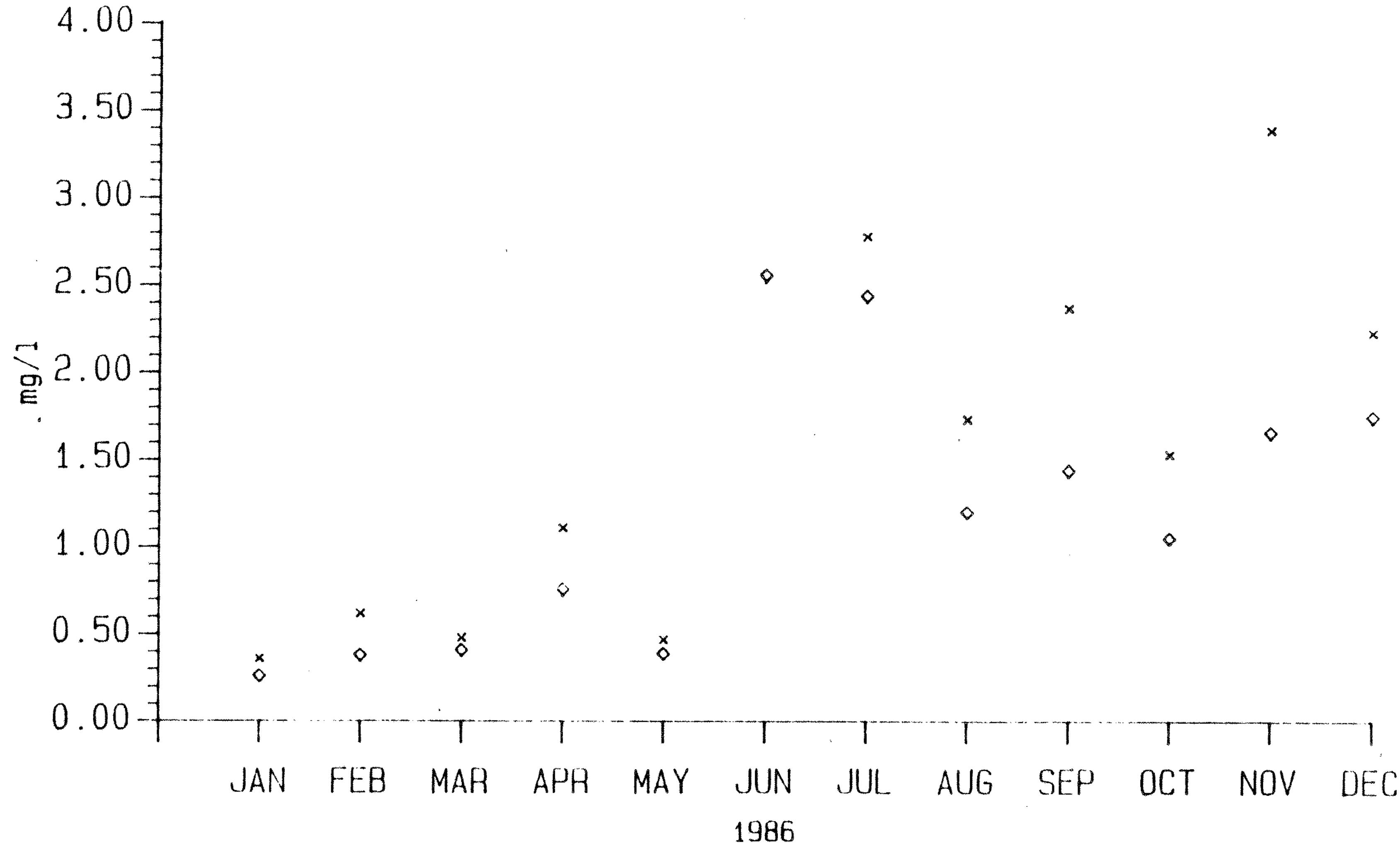

FIGURE C-5.10
METALS - Al
OUTFALL 001

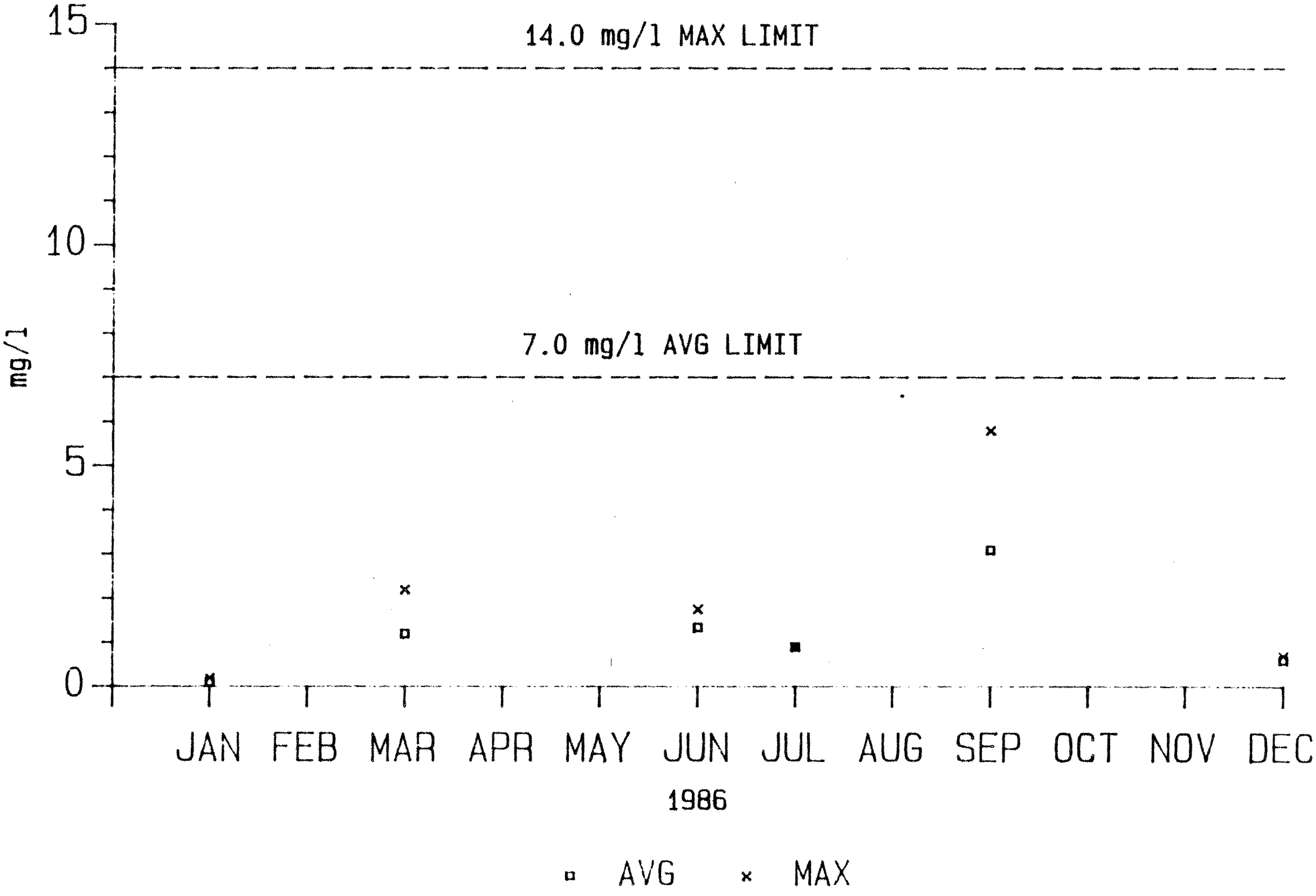

FIGURE C-5.11
METALS - Zn
OUTFALL 001

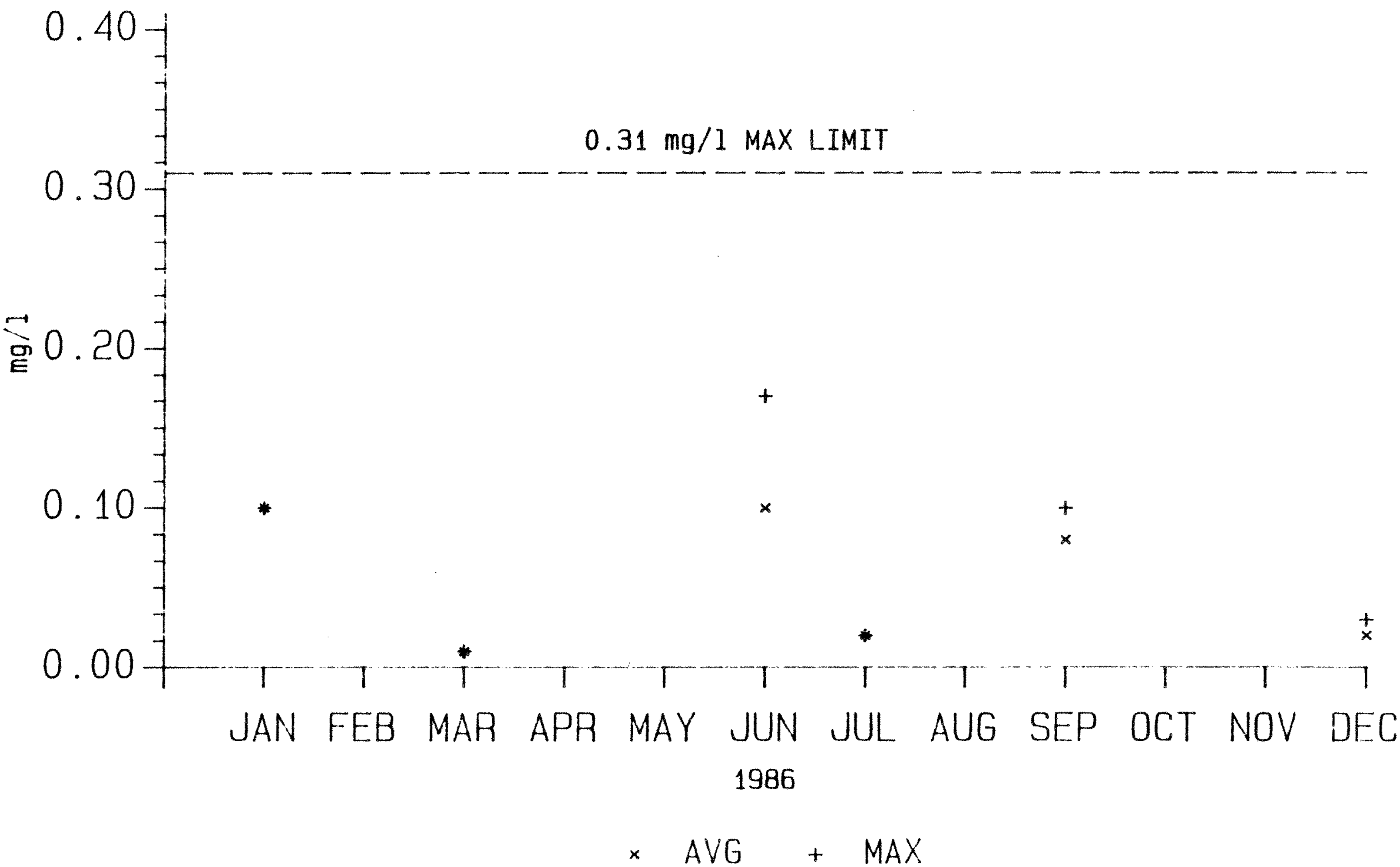

FIGURE C-5.12
METALS - Fe
OUTFALL 001

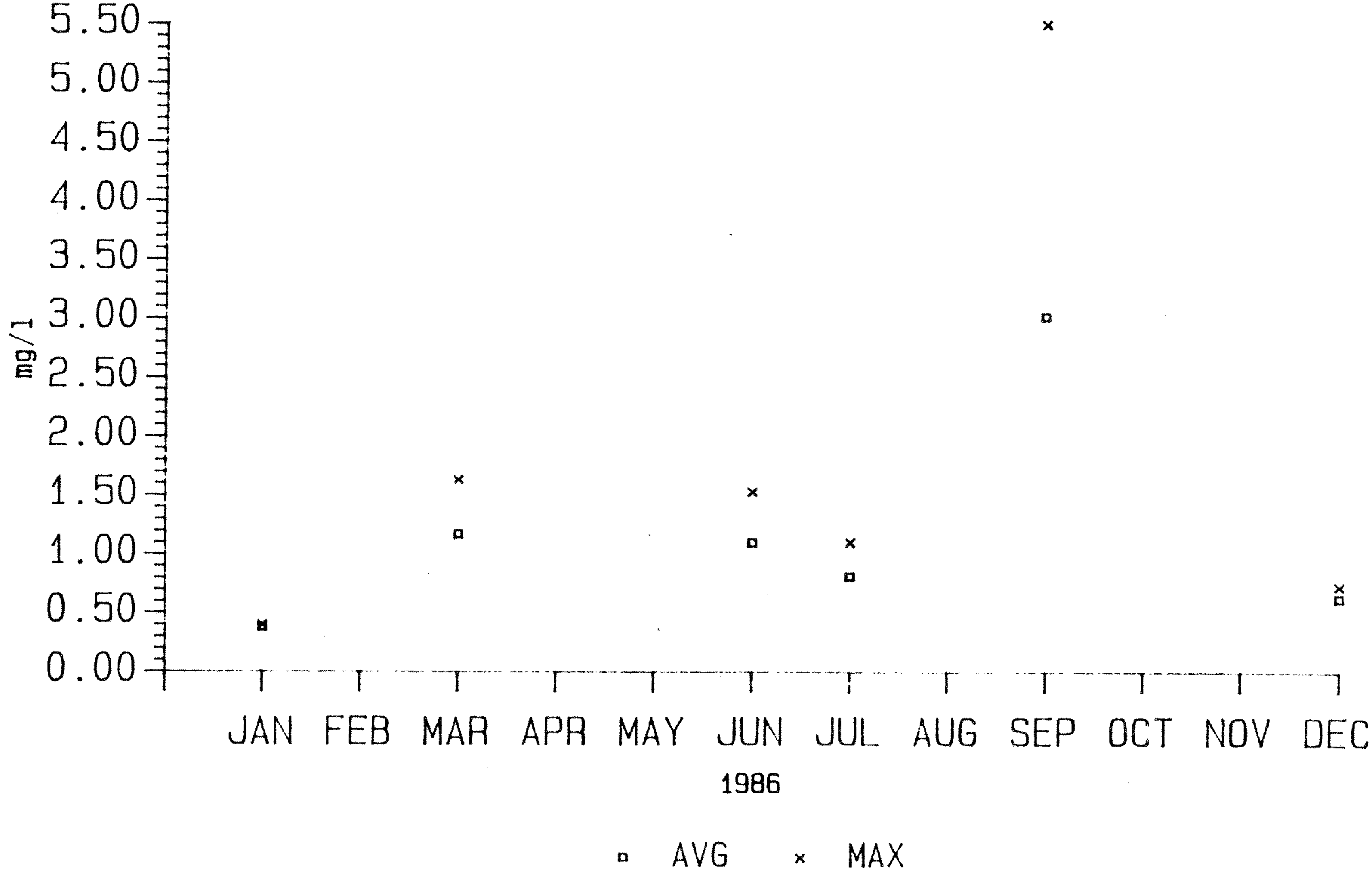

FIGURE C-5.15

METALS - As

OUTFALL 001

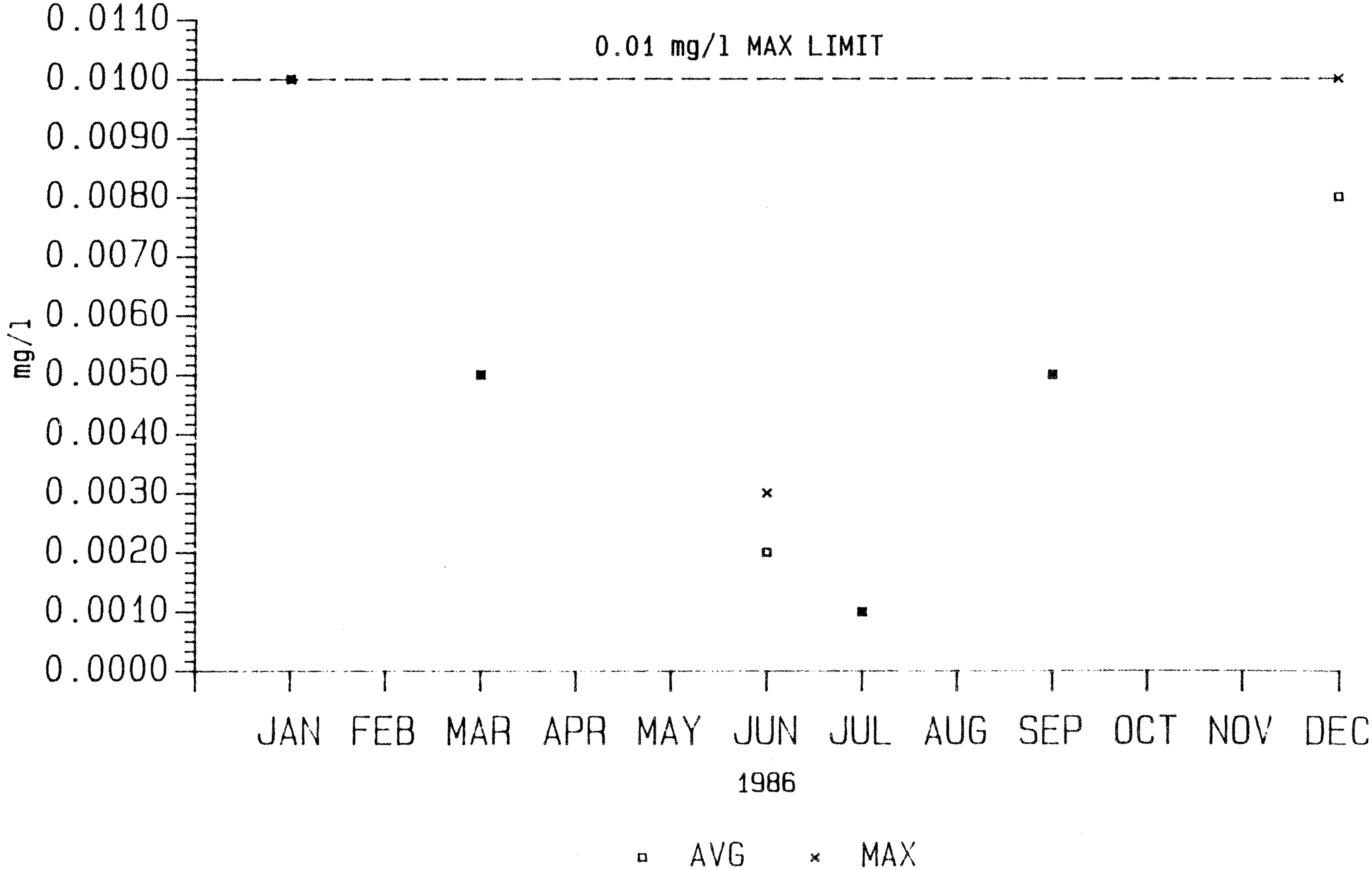

FIGURE C-5.14
METALS - Fe
OUTFALLS 007, 008

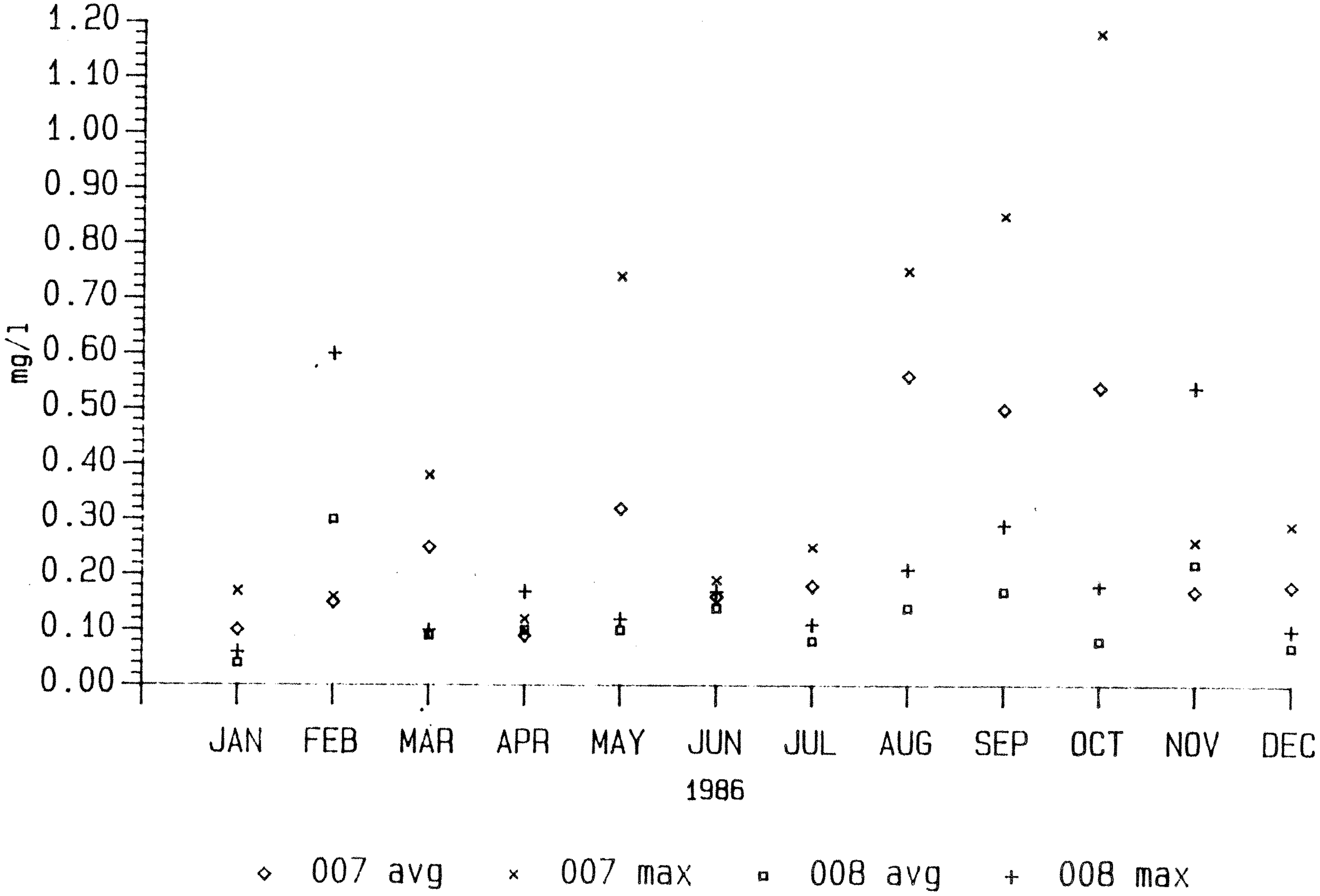

FIGURE C-5.15
CYANIDE
OUTFALL 001

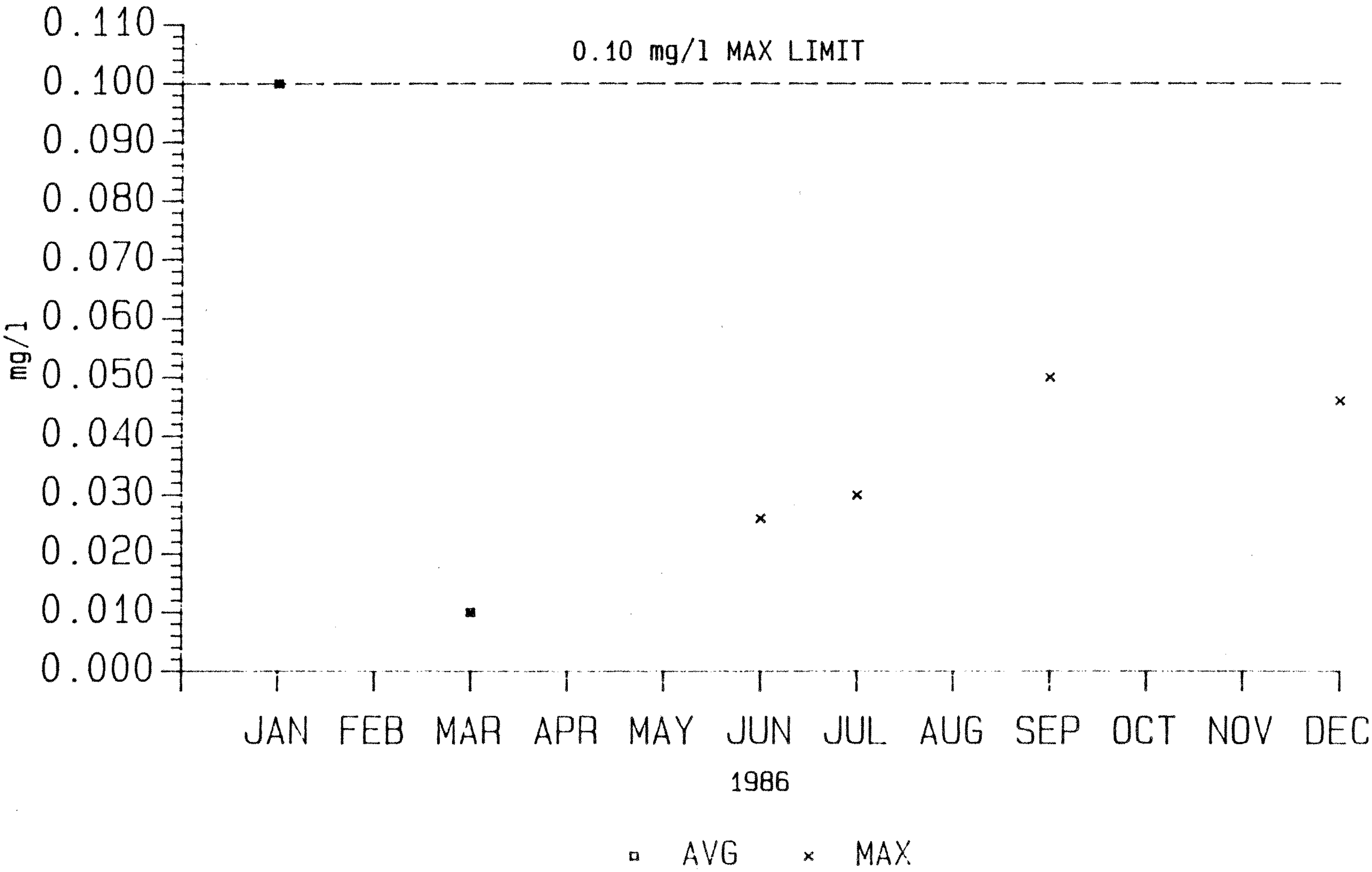

FIGURE C-5.16
pH
OUTFALL 001

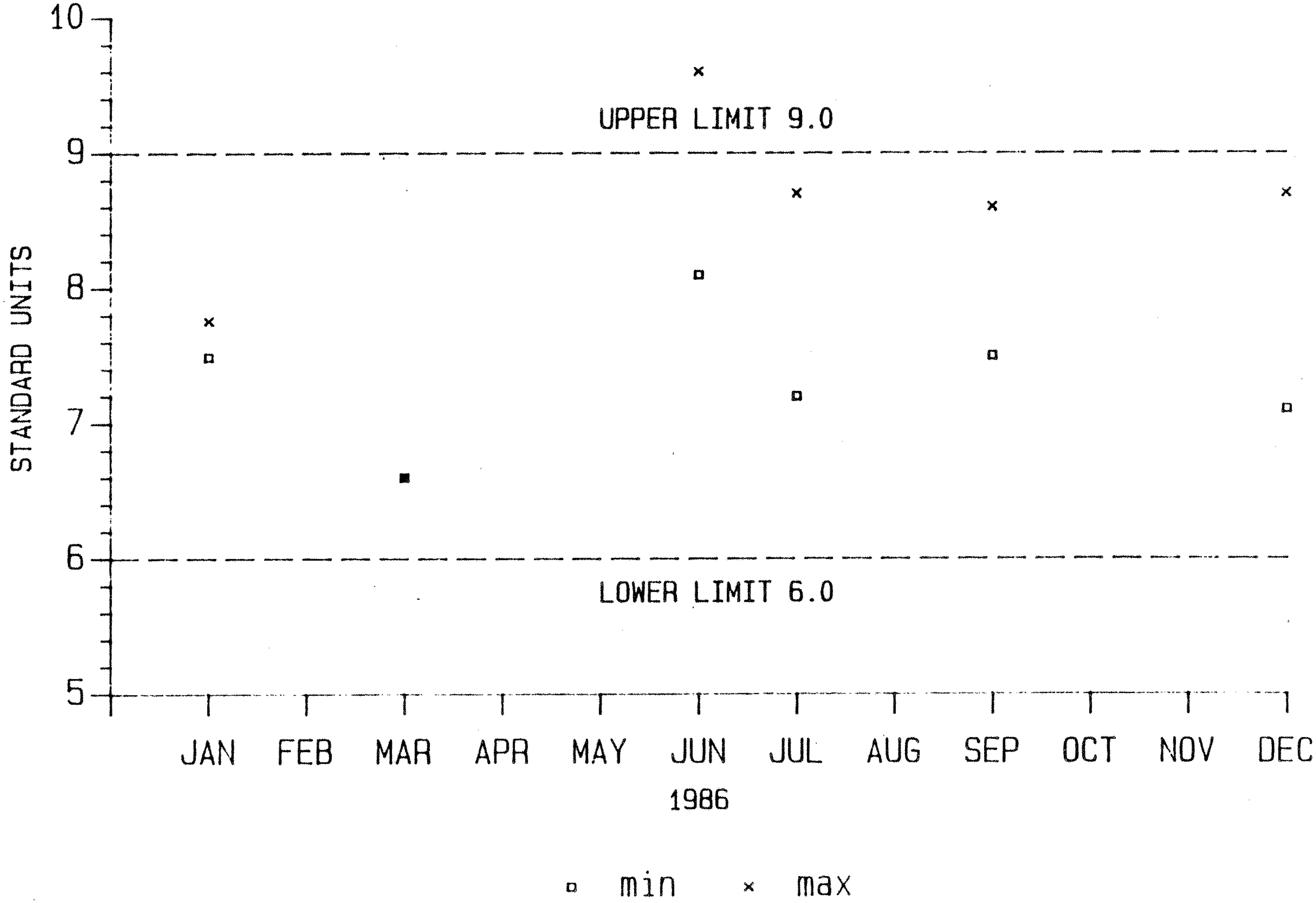

FIGURE C-5.17
pH
OUTFALLS 007, 008

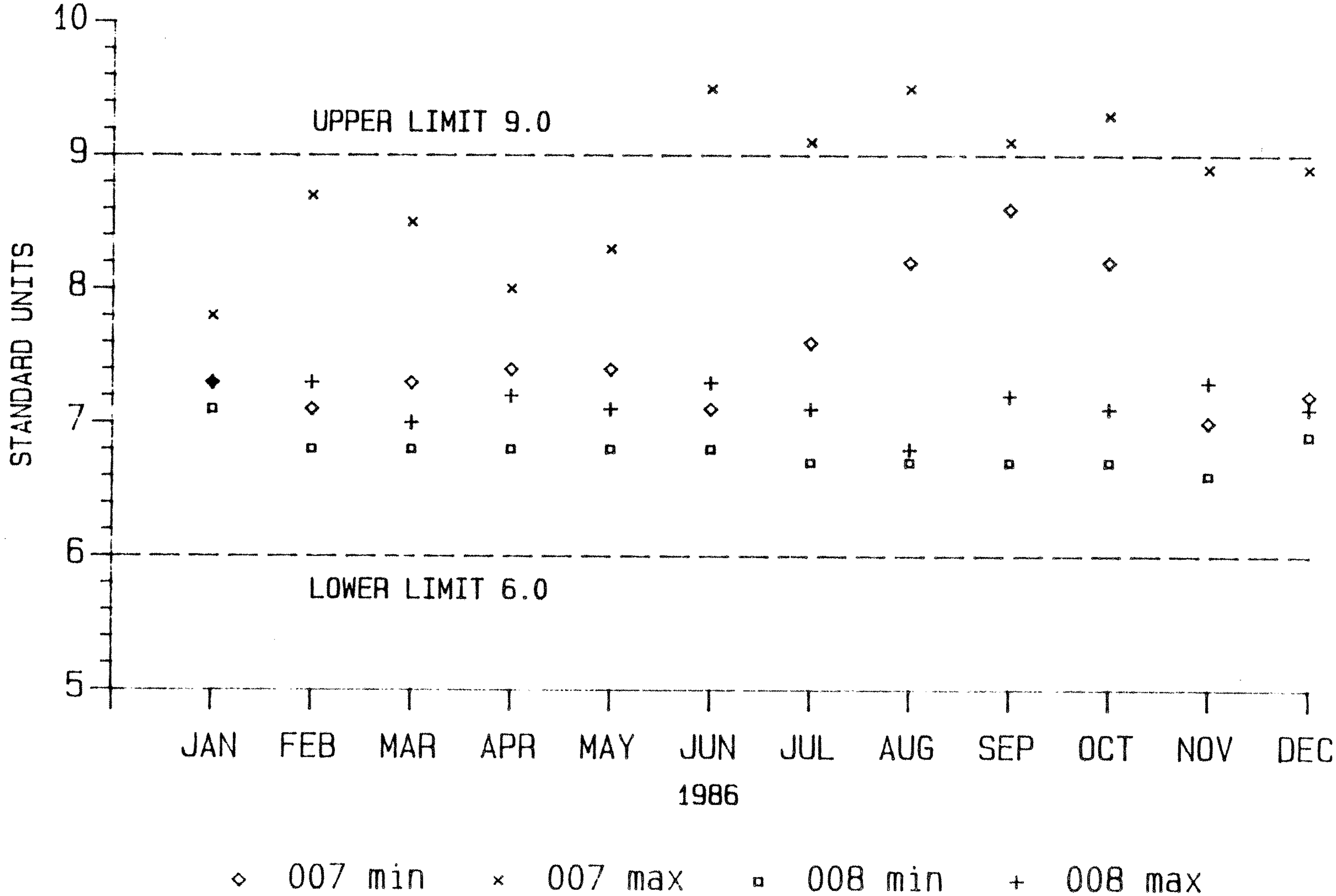

FIGURE C-5.18
OIL & GREASE
OUTFALL 001

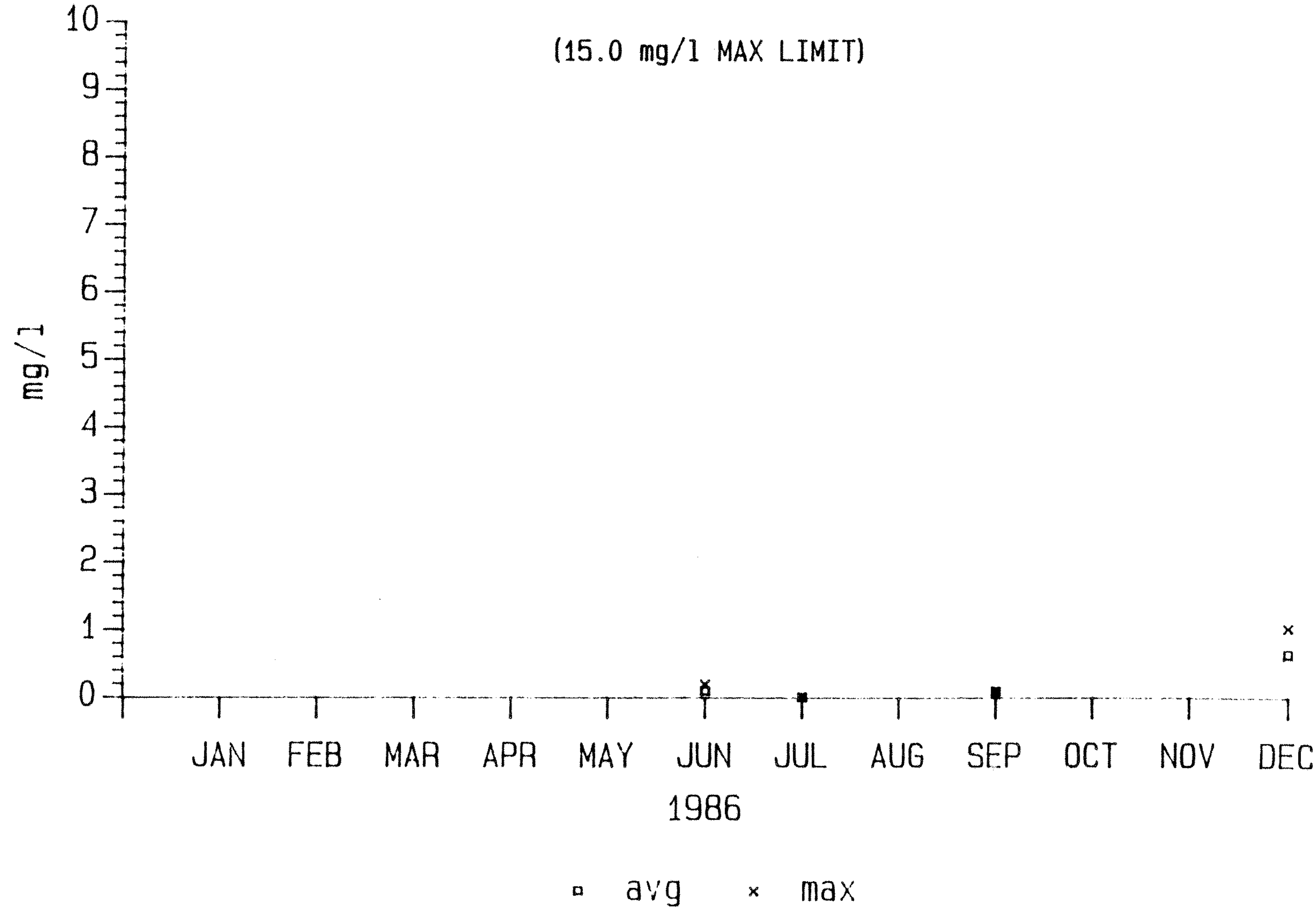

FIGURE C-5.19
DISCHARGE RATE
OUTFALL 001

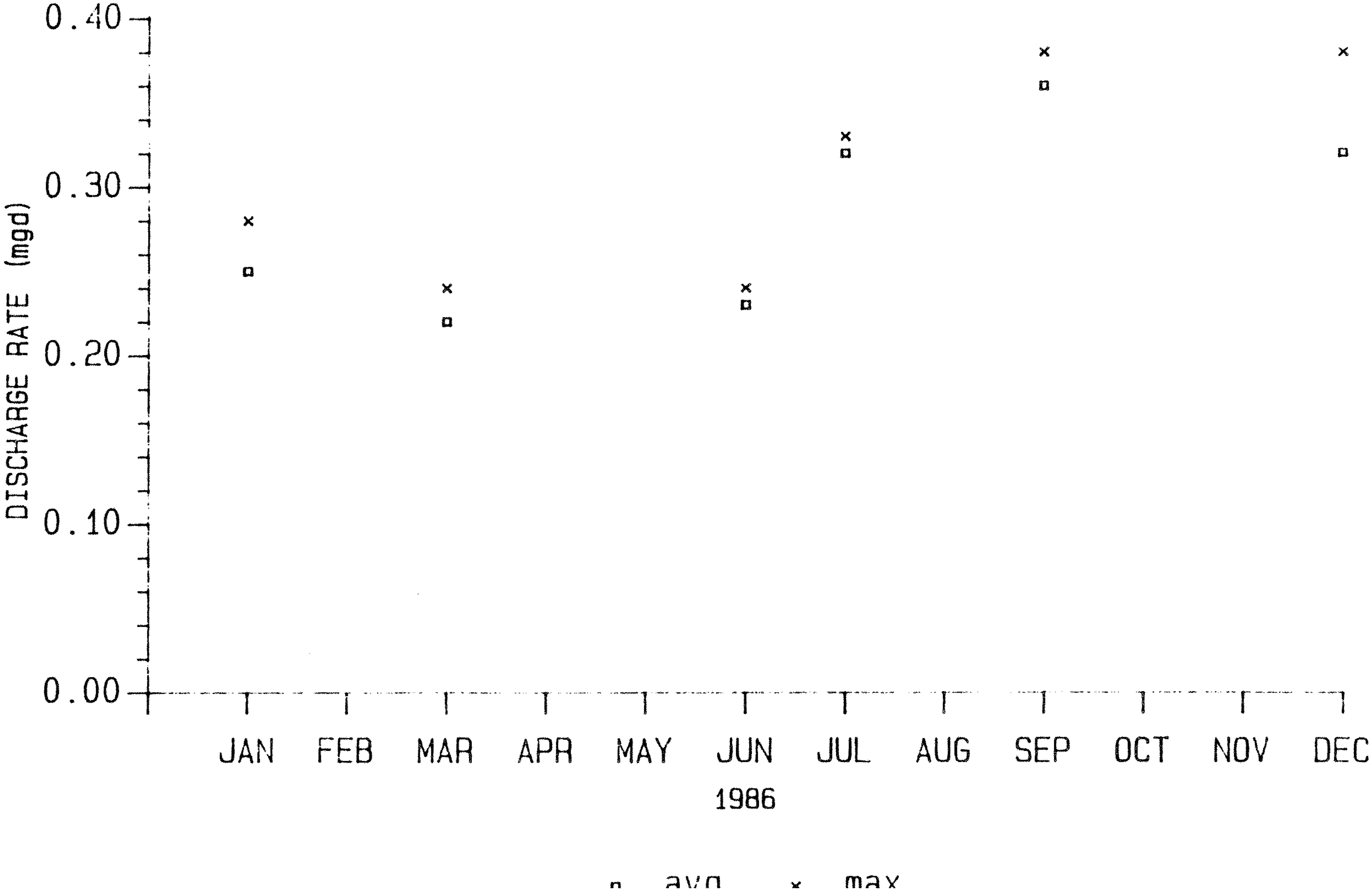

FIGURE C-5.20
DISCHARGE RATE
OUTFALLS 007, 008

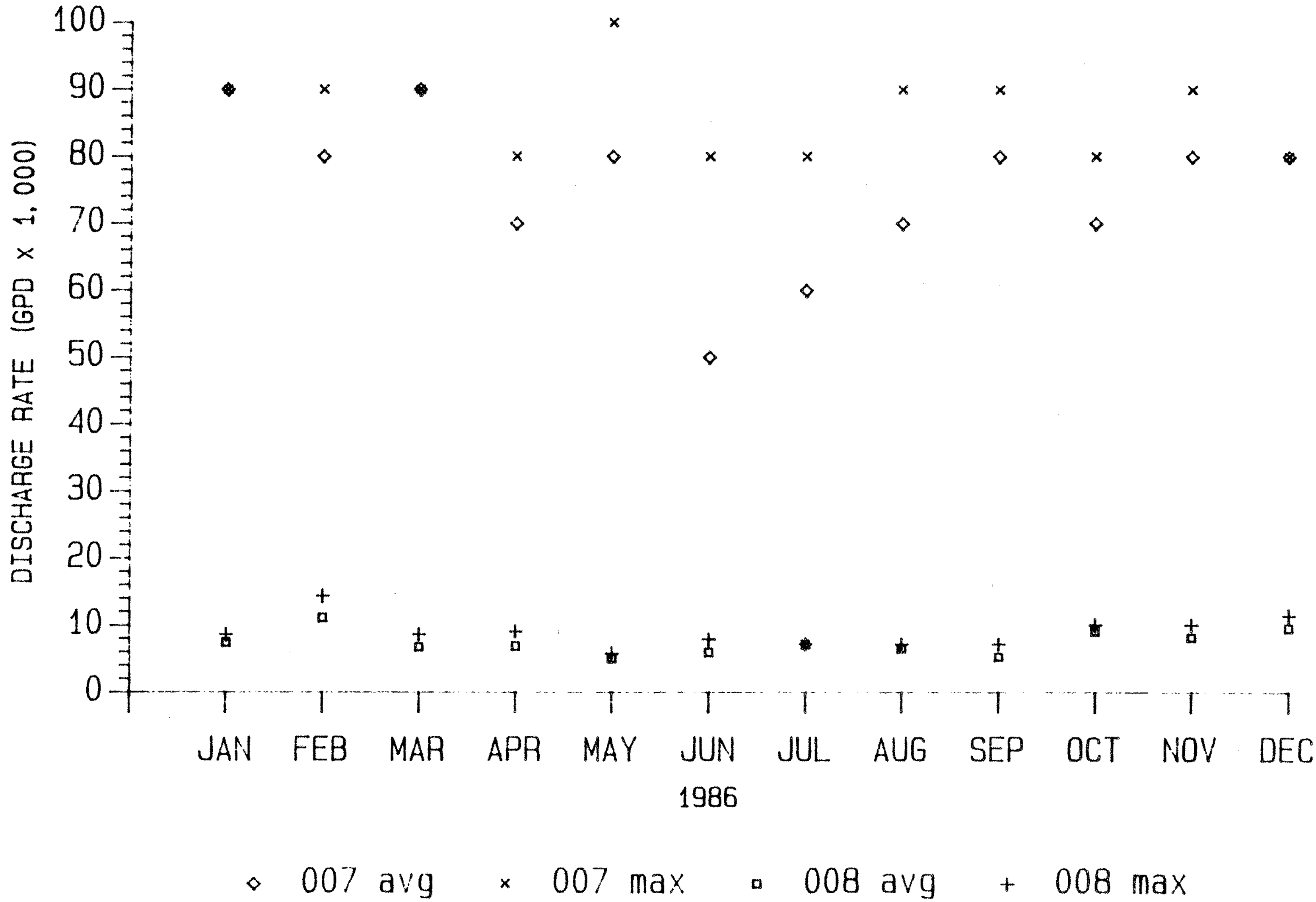

FIGURE C-5.21

FLOW WEIGHTED AVERAGES

AMMONIA

(OUTFALLS 001, 007)

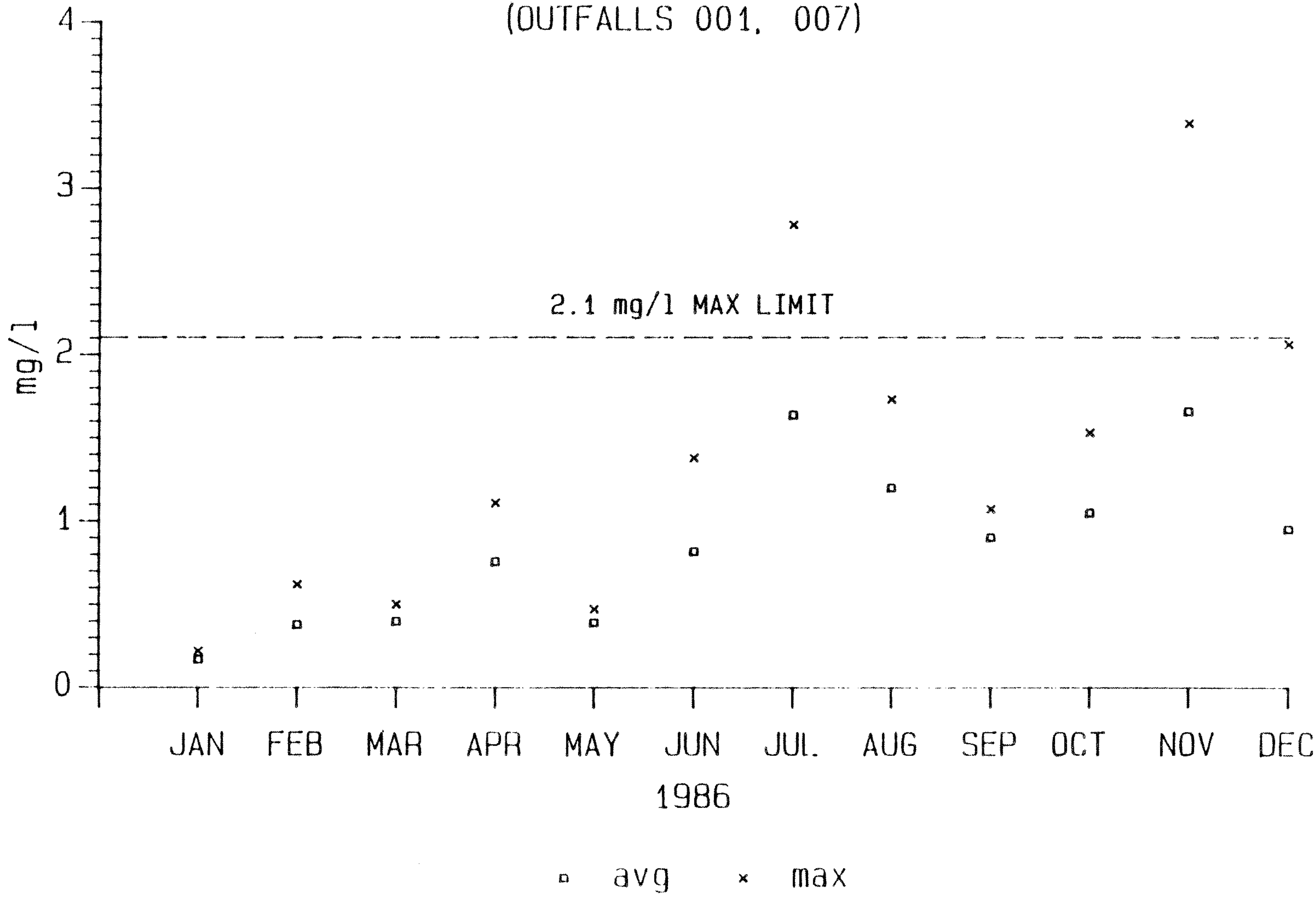

FIGURE C-5.22
FLOW WEIGHTED AVERAGES
BOD-5
(OUTFALLS 001, 007, 008)

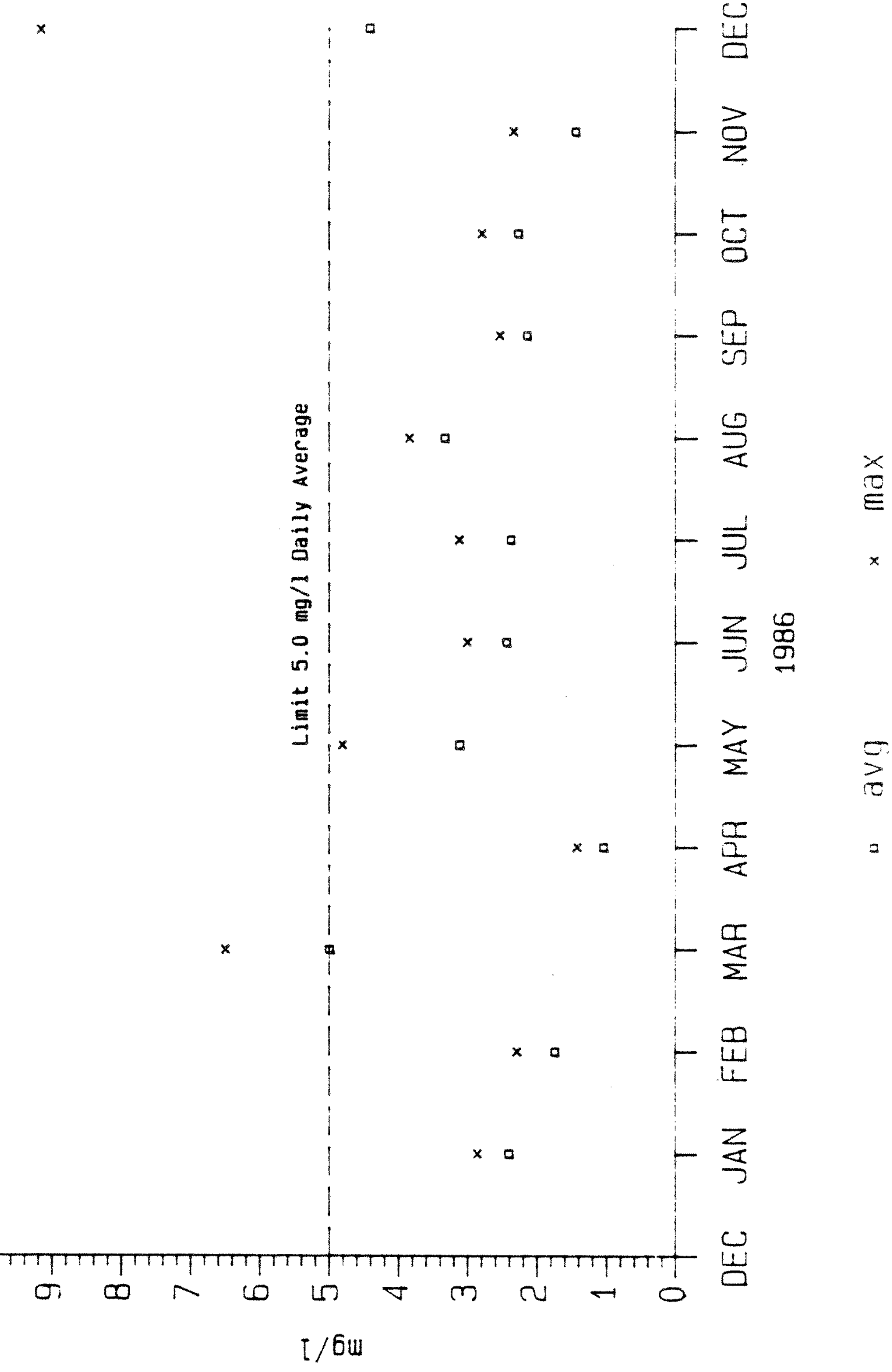

FIGURE C-5.23
FLOW WEIGHTED AVERAGES
METALS - Fe
(OUTFALLS 001, 007, 008)