APPENDIX C-5

SUMMARY OF NONRADIOLOGICAL MONITORING

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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. 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 and cement silo vent are currently being tested and operated under permits 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 permit held by the WVDP pursuant to this program was renewed with revisions during 1985. The outfalls and monitoring requirements for the permit prior to renewal are presented in Table C-5.2. The new permit monitoring requirements are identified in Table C-5.3. The locations of the monitoring points are shown in Figure C-5.1.

The results of the SPDES nonradiological monitoring under both the old and new permits are presented in Figures C-5.2 through C-5.15. These data indicate Project effluents were generally within the permit limits during 1985. However, the WVDP reported a total of 21 noncompliance episodes. These noncompliances are summarized in Table C-5.4 and are described in the following paragraphs.

The majority of noncompliances were related to naturally high concentrations of regulated parameters. There were 14 occasions during nine separate months when the iron concentration exceeded permit levels. Twelve of these instances were at outfall 006, Erdman Brook, and are attributed to iron concentrations in the brook at or near the permit limit before discharge of Project effluents. This has also been determined to be the source of elevated zinc and lead in process water originating from this watershed and being discharged through outfall 001.

Three noncompliance episodes are related to start-up of new systems or implementing changes in the monitoring program to reflect new permit conditions. A new sewage treatment plant was started up in May 1985 and the initial settleable solids were high, but decreased as the plant approached operating equilibrium. In September, the new permit came into effect but background iron samples were not collected. This precluded calculation of the incoming mass of iron, which in turn is necessary to calculate the net discharge concentration. In November, the net discharge from iron was again in excess of permit limits, but was attributed to rapid discharge of outfall 001. The volume of effluent discharged from outfall 001 created a mass loading of iron to Erdman Brook in excess of that which could be accommodated within the permit limits, including the correction for background iron concentrations.

In October, the waste stream mixing and flow equalization basin became operational. The first discharge from this outfall was not completely mixed and had a pH value above the permit limits. Subsequent samples indicate a well mixed effluent within the permit limits.

An isolated excursion occurred in September for suspended solids in the sewage plant effluent. This was caused by a pump failure and was corrected within 24 hours.

The remaining two excursions occurred at outfall 001 during August and are directly related to each other. The liquid accumulated in Lagoon 3 for discharge through SPDES outfall 001 supported a dense algal population during

this period. It is suspected that the algae photosynthetically induced an elevated pH by assimilating total inorganic carbon. This high pH value was used to calculate the unionized ammonia value, resulting in a value above the limit for this parameter.

These noncompliance episodes are summarized in Table C-5.4. 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
NY-0000973	NYSDEC	7/83	State Pollution Discharge Elimination System (SPDES permit)
042200-0114 CSS01	NYSDEC	4/86	Permit to Construct Cement Storage Silo Ventilation System.
042200-0114 015F-1	NYSDEC	6/86	Permit to Construct Vitrification Off-Gas System

Table C-5.2

West Valley Demonstration Project

SPDES Sampling Program

Prior to September 1, 1985

Outfall #	Parameter	Limit	Sampling Frequency
001	Barium	1.0 mg/l	Monthly during discharge
	Chromium	0.05 mg/l	Monthly during discharge
	Copper	0.2 mg/l	Monthly during discharge
	Lead	0.03 mg/l	Monthly during discharge
	Manganese	1.0 mg/l	Monthly during discharge
	Nickel	0.3 mg/l	Monthly during discharge
	Zinc	0.3 mg/l	Monthly during discharge
	Unionized Ammonia	0.15 mg/l	Monthly during discharge
	Total Suspended Solids	No limit	Monthly during discharge
	Temperature	90° F	Monthly during discharge
	pH	6.0 - 9.0	Monthly during discharge
002	Total Suspended Solids	100 mg/l	Monthly
003	Flow volume	No limit	Per discharge
004	pH	6.0 - 9.0	Weekly
	BOD-5	45.0 mg/l	Quarterly
	Total Suspended Solids	45.0 mg/l	Quarterly
	Settleable Solids	0.3 ml/l	Weekly
005	pH	6.0 - 9.0	Monthly
	Total Suspended Solids	100.0 mg/l	Monthly
006	Iron	1.0 mg/l	Twice per month
	Ammonia	2.0 mg/l	Twice per month
	Unionized Ammonia	0.15 mg/l	Twice per month
	pH	6.0 - 9.0	Twice per month
	Temperature	32° C	Twice per month

TABLE C-5.3
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
004† (Sanitary 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
005† (Utility waste water)	Same as 004		
	Chloroform	0.020 mg/l	annual
007† (Sanitary and Utility waste water)	Same as 005, including annual chloroform		
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

† Outfalls 004 and 005 are to be combined into outfall 007 per the requirements of NYSDEC Consent Order.

* Reported as flow weighted average of Outfalls 001, 004 and 005 or 001 and 007.

** Reported as flow weighted average of Outfalls 001, 004, 005 and 008 or 001, 007 and 008. Iron data are net limits reported after background concentrations are subtracted.

TABLE C-5.4
West Valley Demonstration Project
1985 SPDES Noncompliance Episodes

Date	Outfall	Parameter	Limit	Value	Comments
Jan. 1985	001	Lead	0.03 mg/l	0.042	
		Zinc	0.30 mg/l	0.35	
	006	Iron	1.00 mg/l	2.14	
Feb. 1985	006	Iron	1.00 mg/l	1.36	
March 1985	006	Iron	1.00 mg/l	5.29	Three episodes reported.
April 1985	006	Iron		2.05	
May 1985	004	Settleable Solids	0.3 ml/l	1.0	Start up of new sewage treatment plant.
	006	Iron	1.00 mg/l	5.12	
June 1985	006	Iron	1.00 mg/l	6.77	Three episodes reported.
July 1985	006	Iron	1.00 mg/l	19.7	Two episodes reported.
Aug. 1985	001	pH	6.0 - 9.0	9.15	Algae Mediated.
		Unionized Ammonia	0.15 mg/l	0.25	Calculated based on pH
Sept. 1985	004	Suspended Solids	0.3 mg/l	393.0	Pump failure in treatment plant.
	Sum of 001, 004, 005, 008	Iron	0.31 (net) mg/l	0.82	Background sample not collected for calculation of net concentration.
Oct. 1985	007	pH	6.0 - 9.0	9.5	Start-up of new effluent mixing basin.
Nov. 1985	Sum of 001, 007, 008	Iron	0.31 (net) mg/l	0.97	Too rapid discharge from 001.

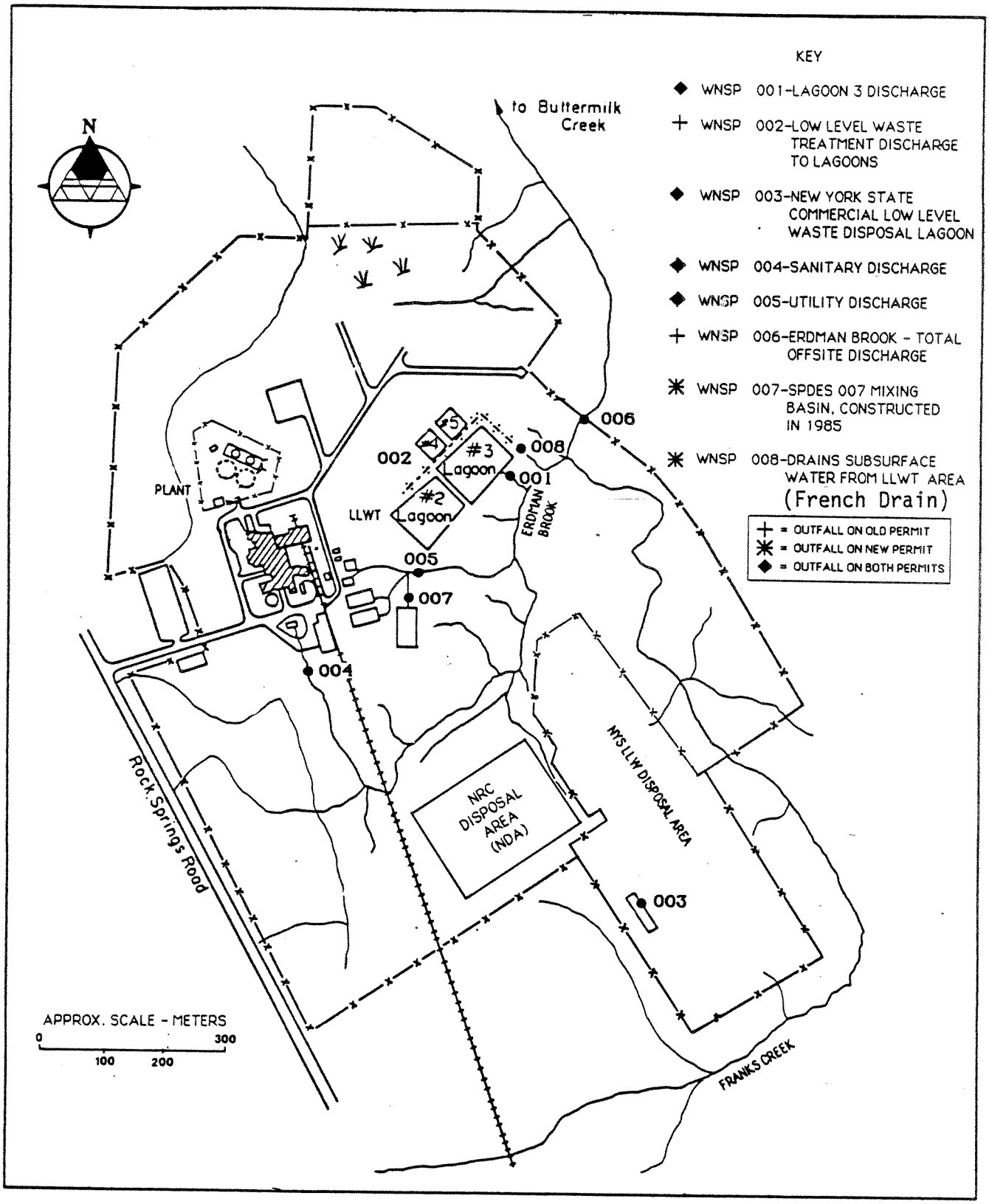

FIGURE C-5.1
Locations of SPDES Monitoring Points On-site

FIGURE C-5.2
TEMPERATURE
OUTFALLS 001, 006

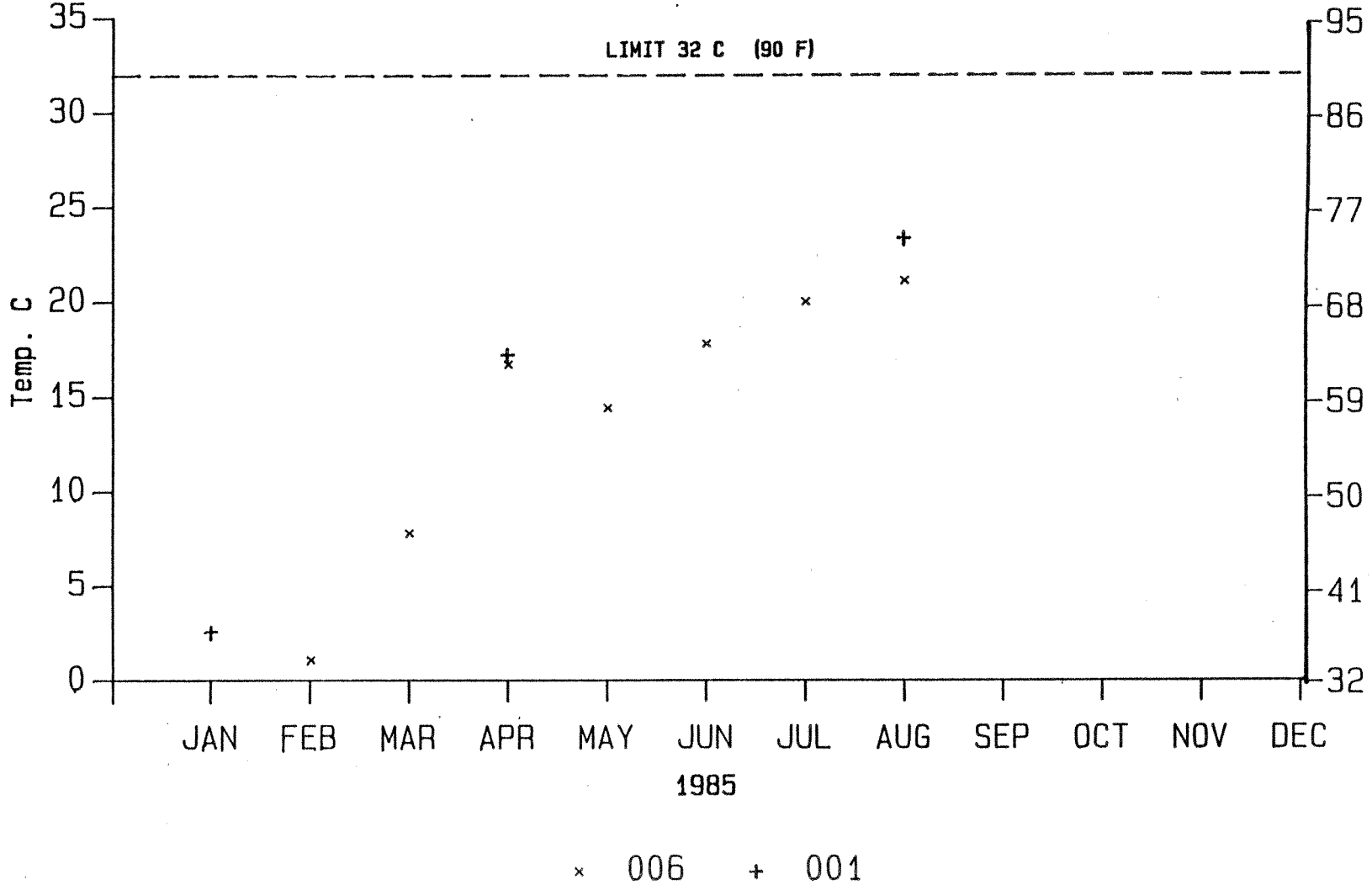

FIGURE C-5.3
BOD-5
OUTFALLS 001, 004, 005, 007, 008

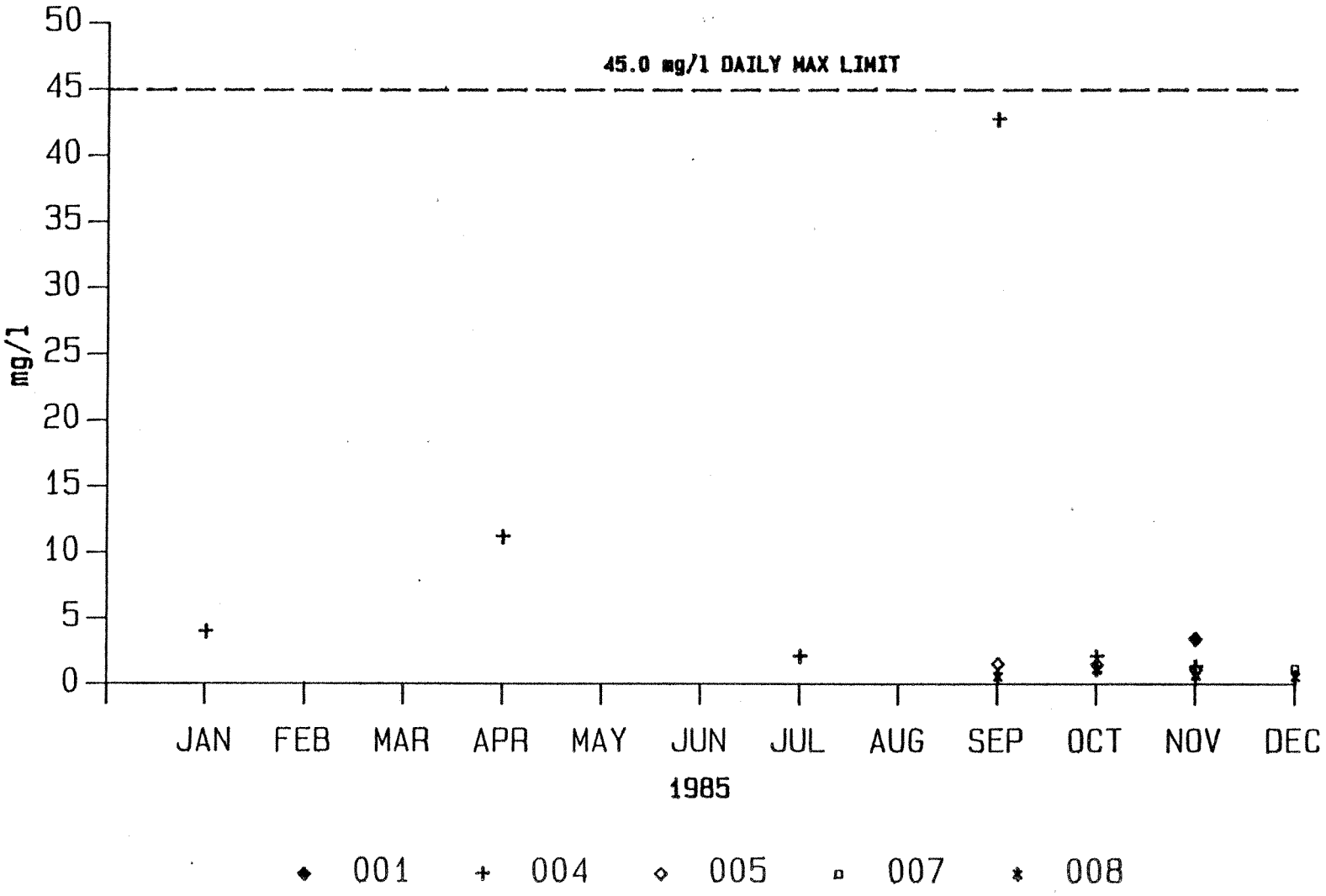

FIGURE C-5.4
SUSPENDED SOLIDS
OUTFALLS 001, 004, 007

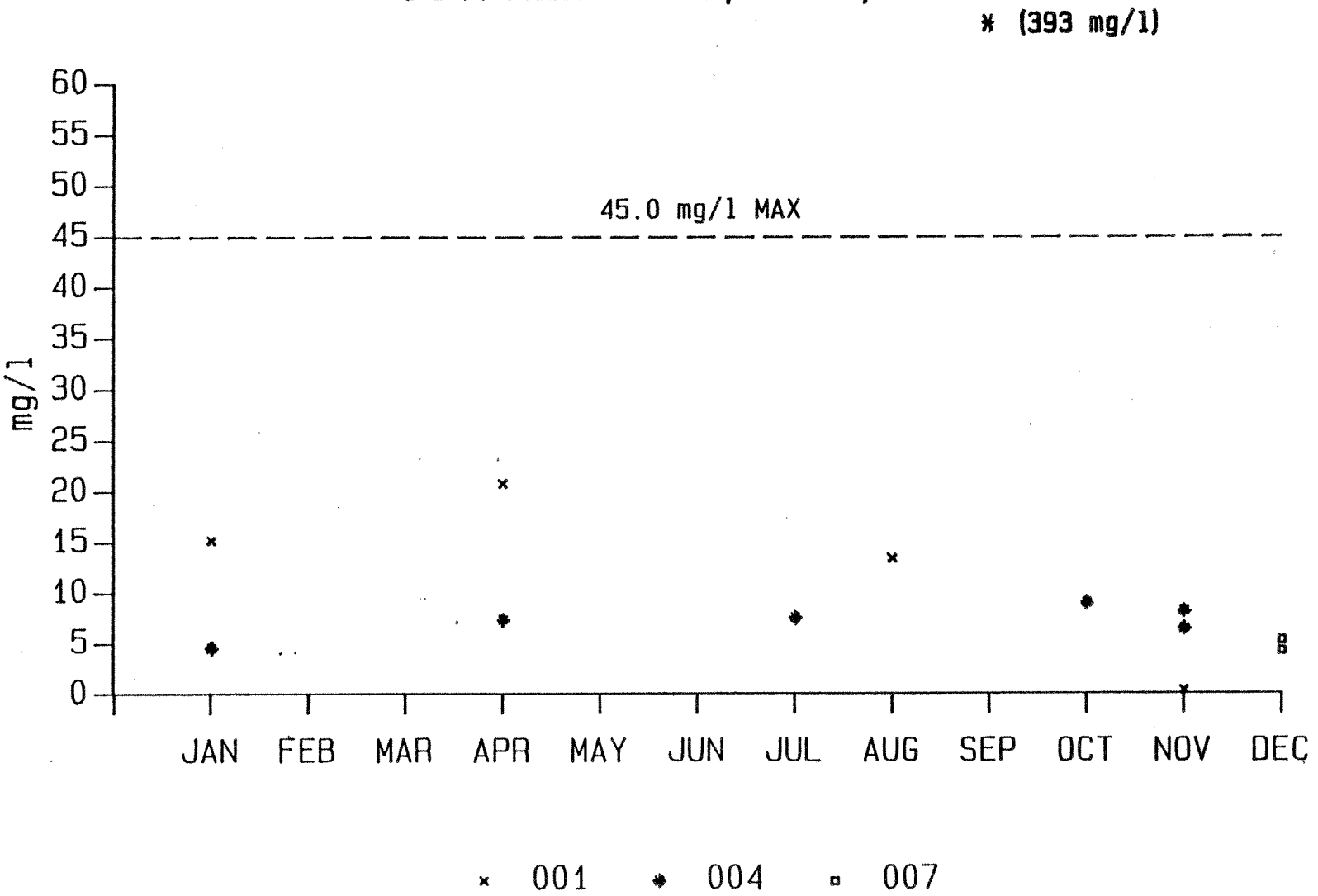

FIGURE C-5.5
SUSPENDED SOLIDS
OUTFALLS 002, 005

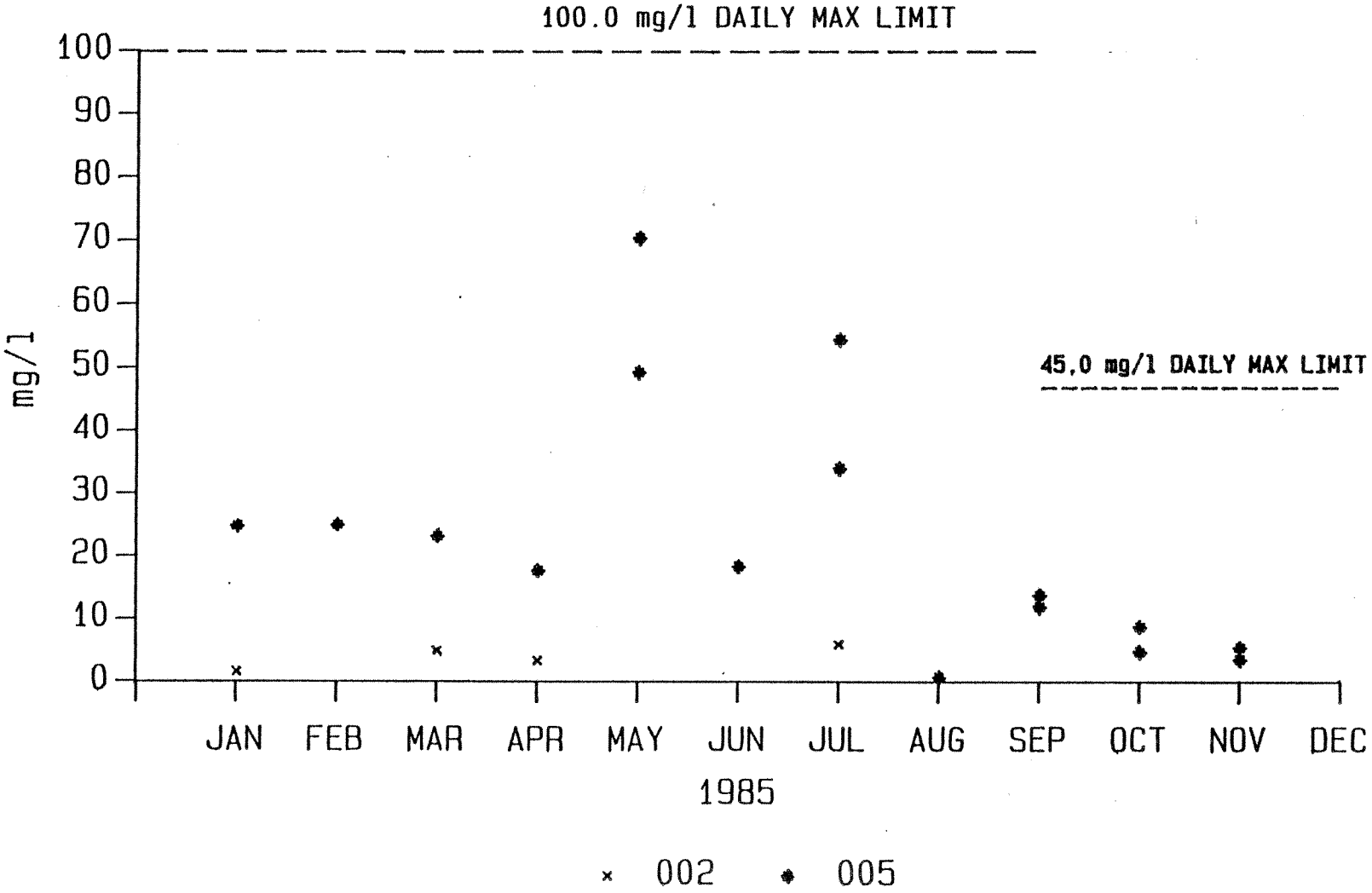

FIGURE C-5.6
SETTLEABLE SOLIDS
OUTFALLS 001, 004, 005, 007

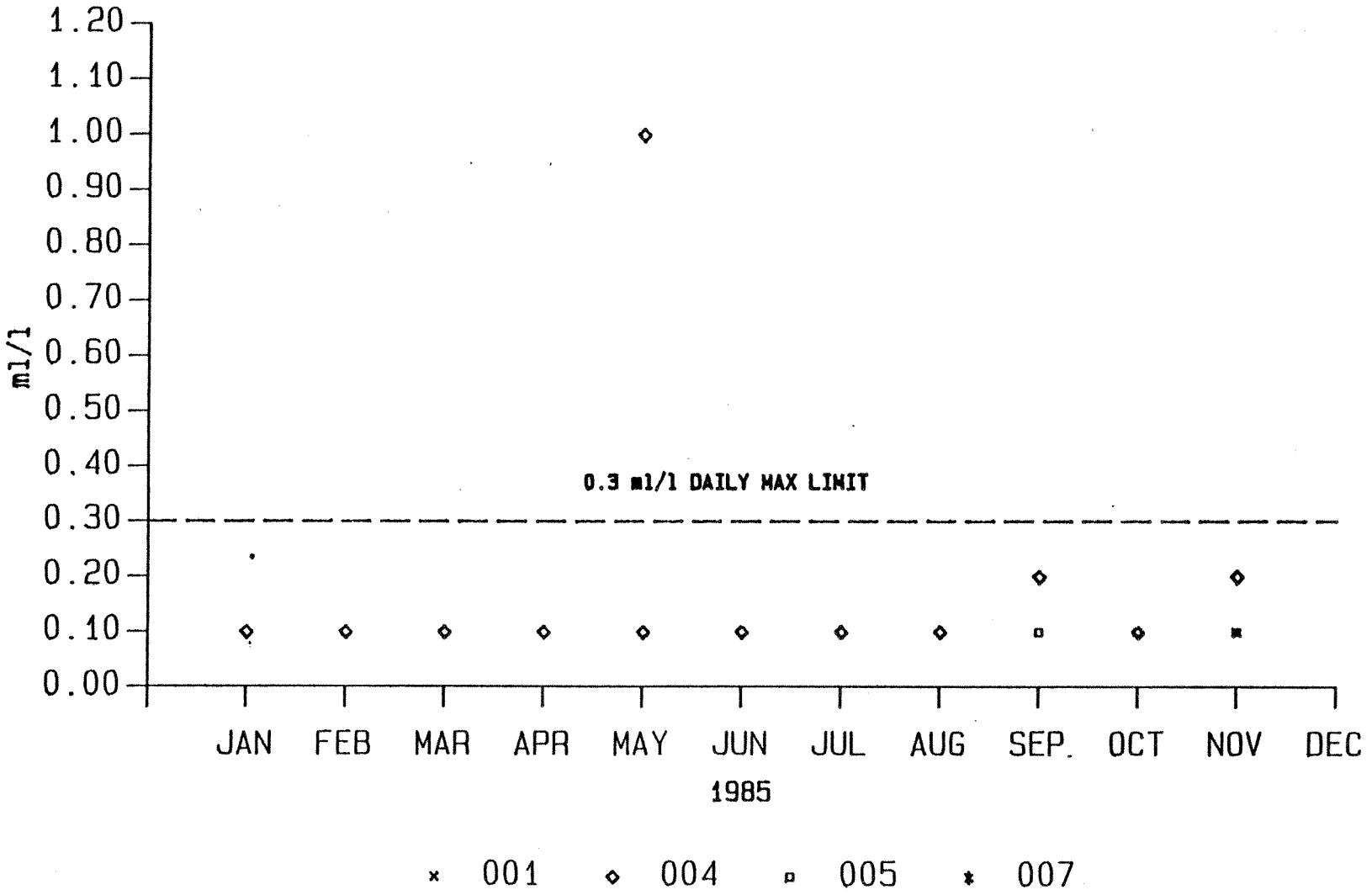

FIGURE C-5.7
NH3-N
OUTFALLS 001, 004, 005, 006, 007

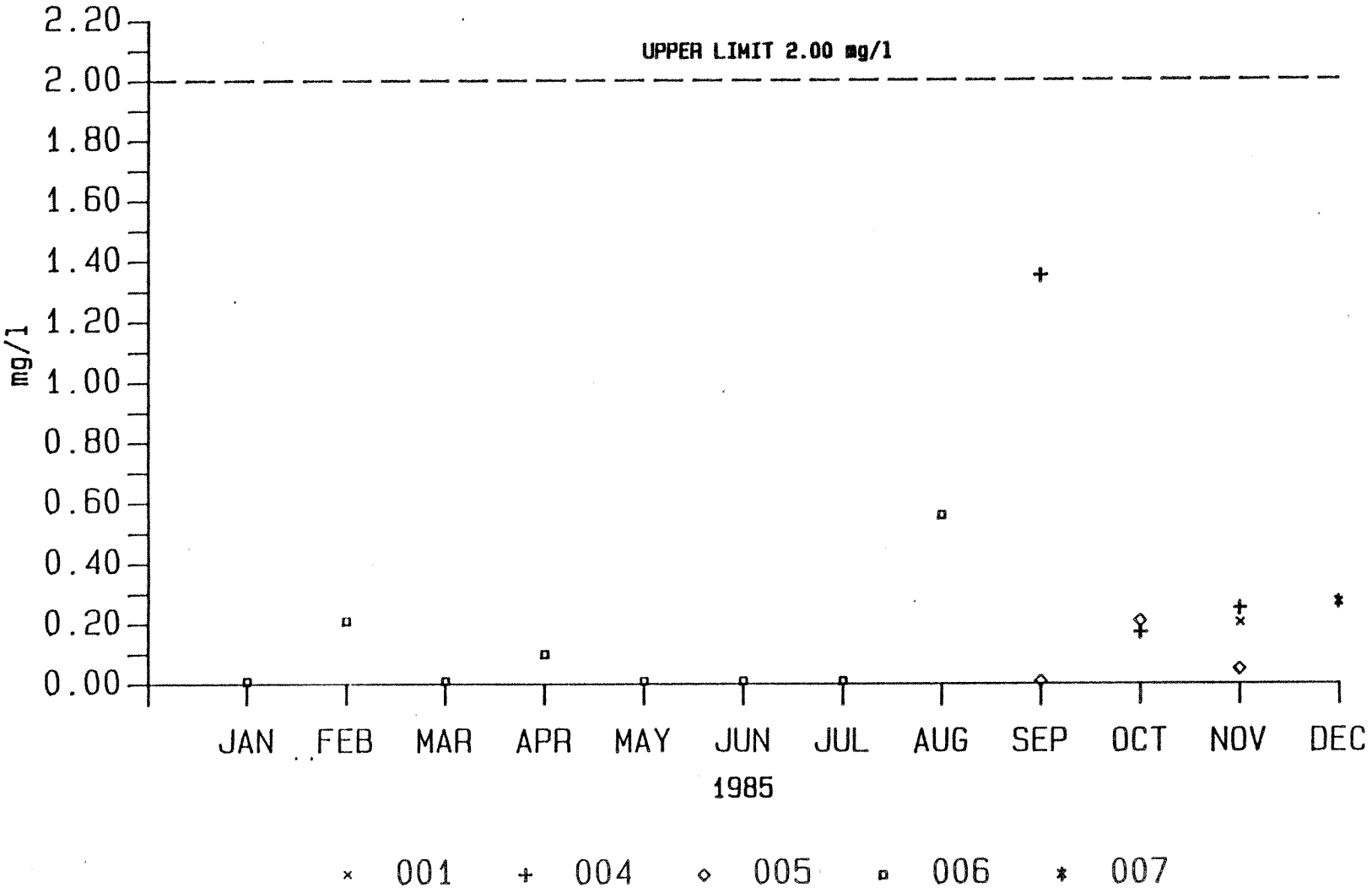

FIGURE C-5.8
UNIONIZED NH3
OUTFALLS 001, 006

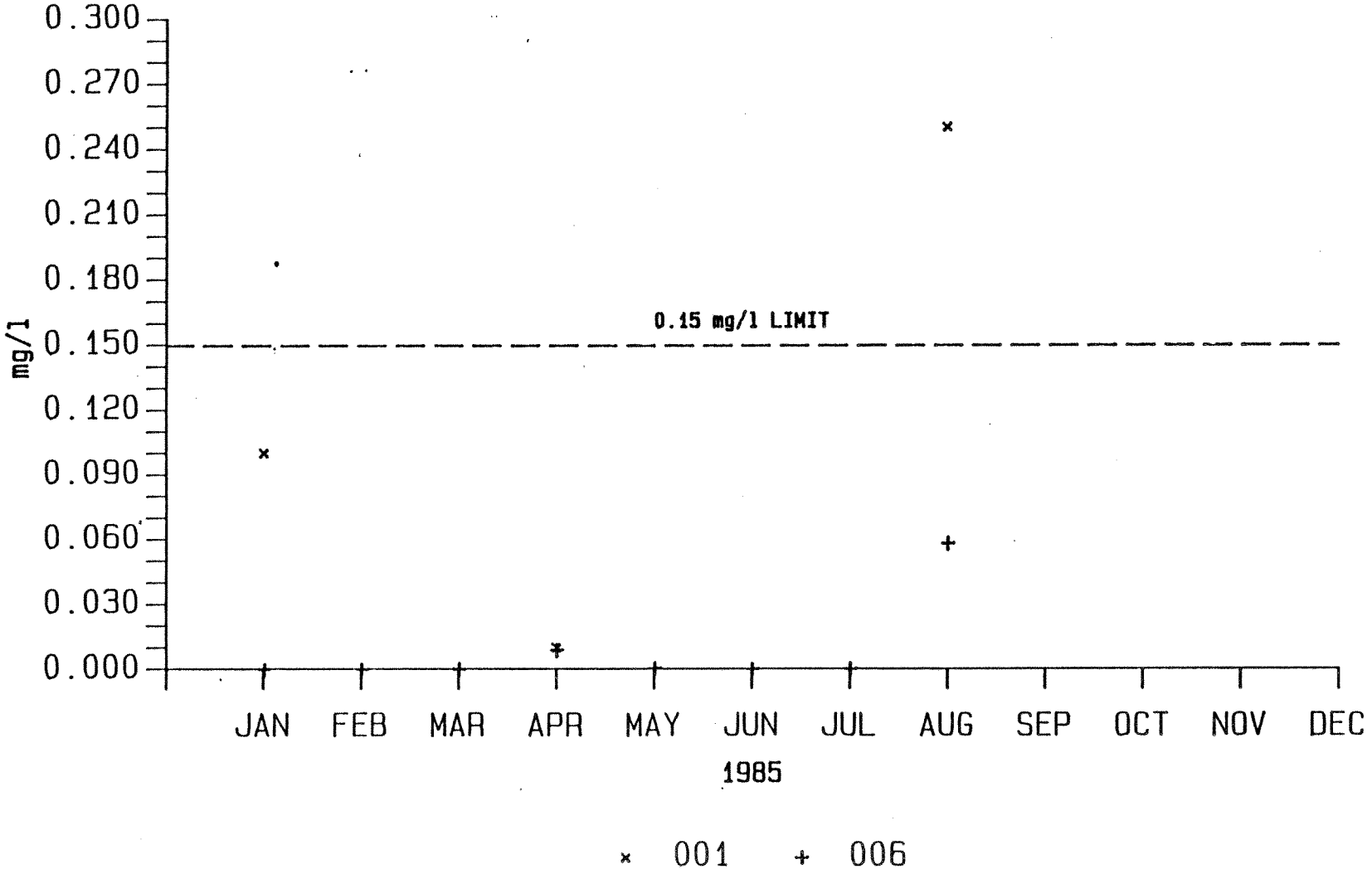

FIGURE C-5.9
METALS
OUTFALL 001

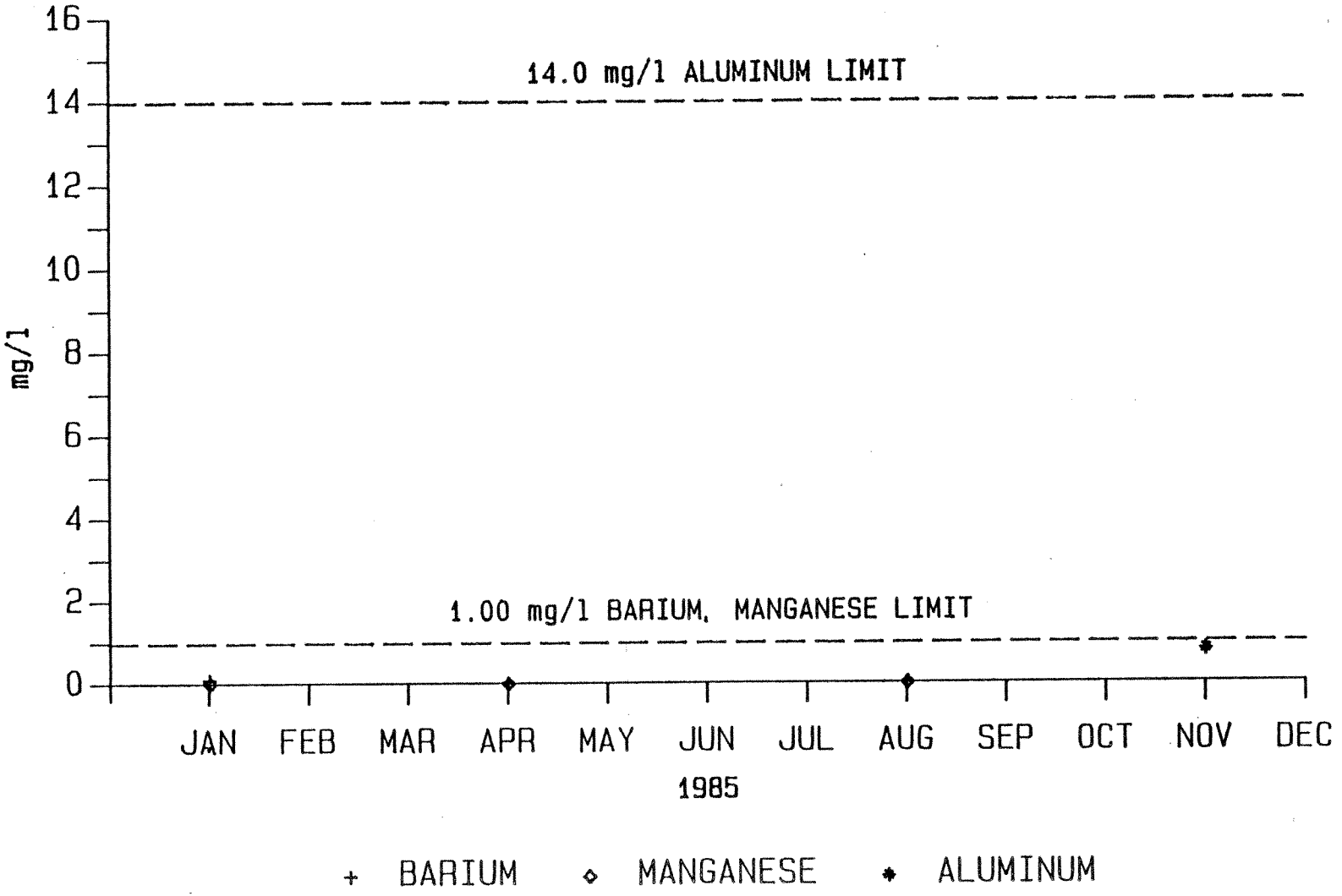

FIGURE C-5.10
METALS & CYANIDE
OUTFALL 001

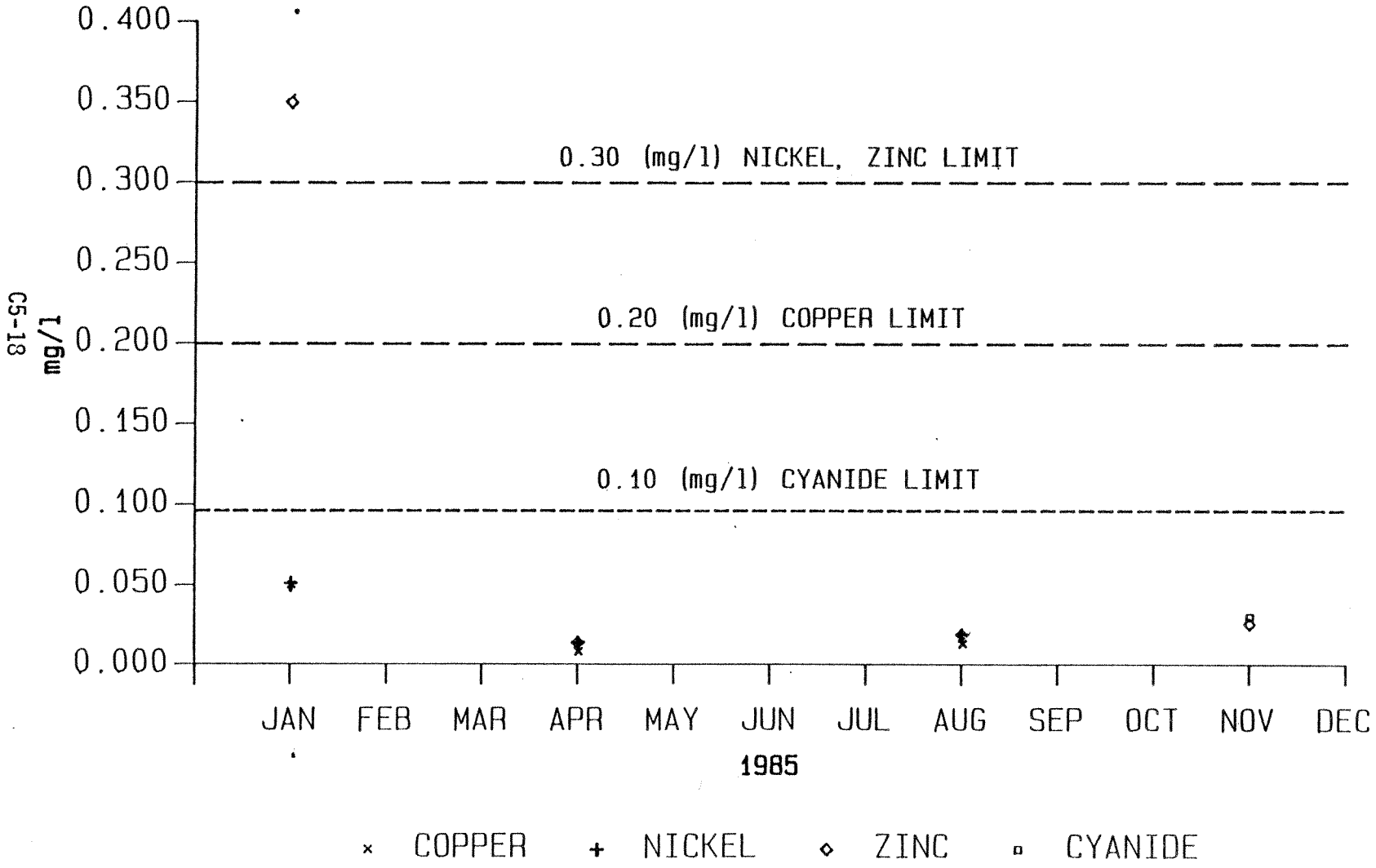

FIGURE C-5.11
METALS
OUTFALL 001

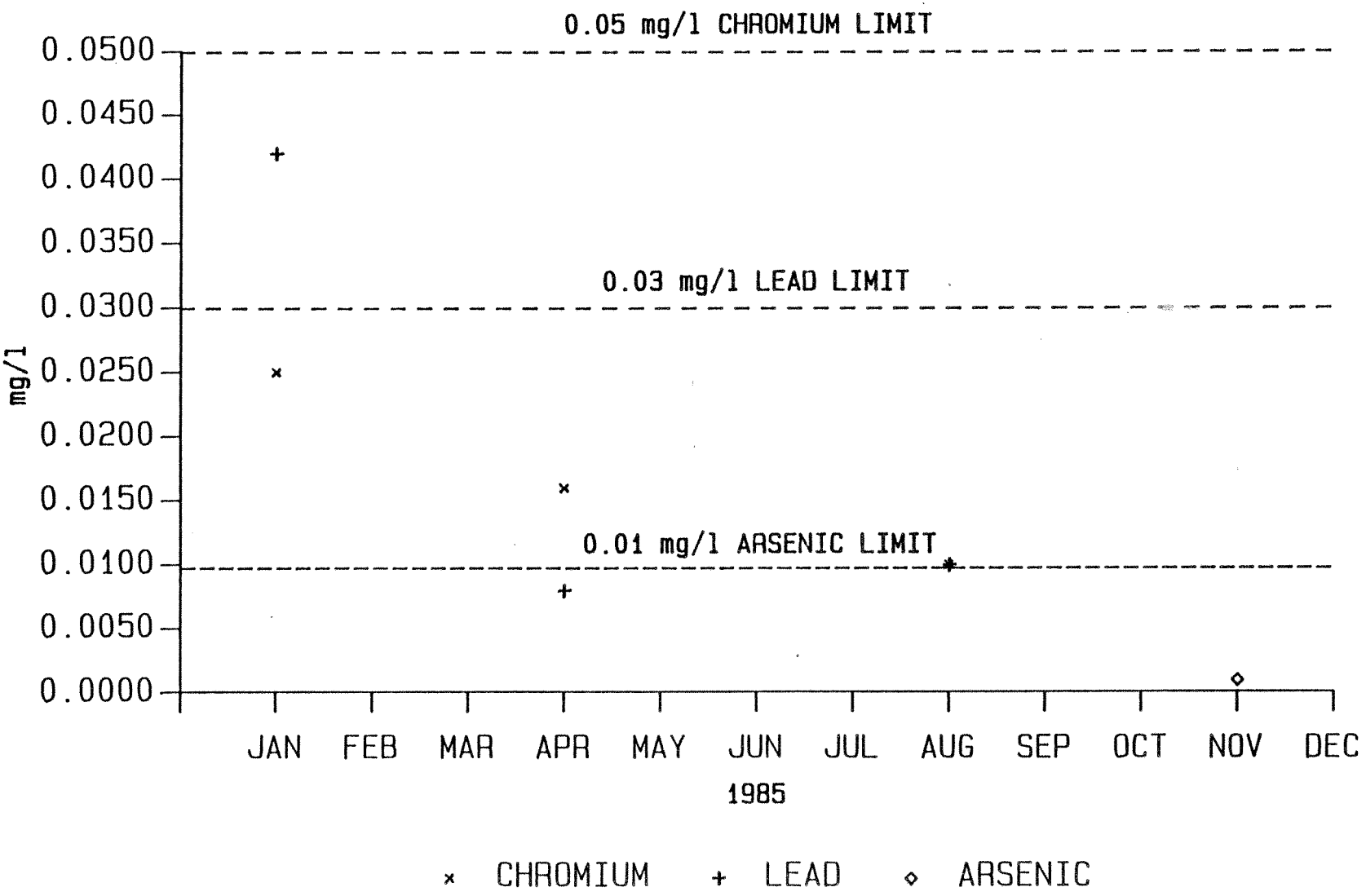

FIGURE C-5.12
DISCHARGE VOLUME
OUTFALLS 001, 003

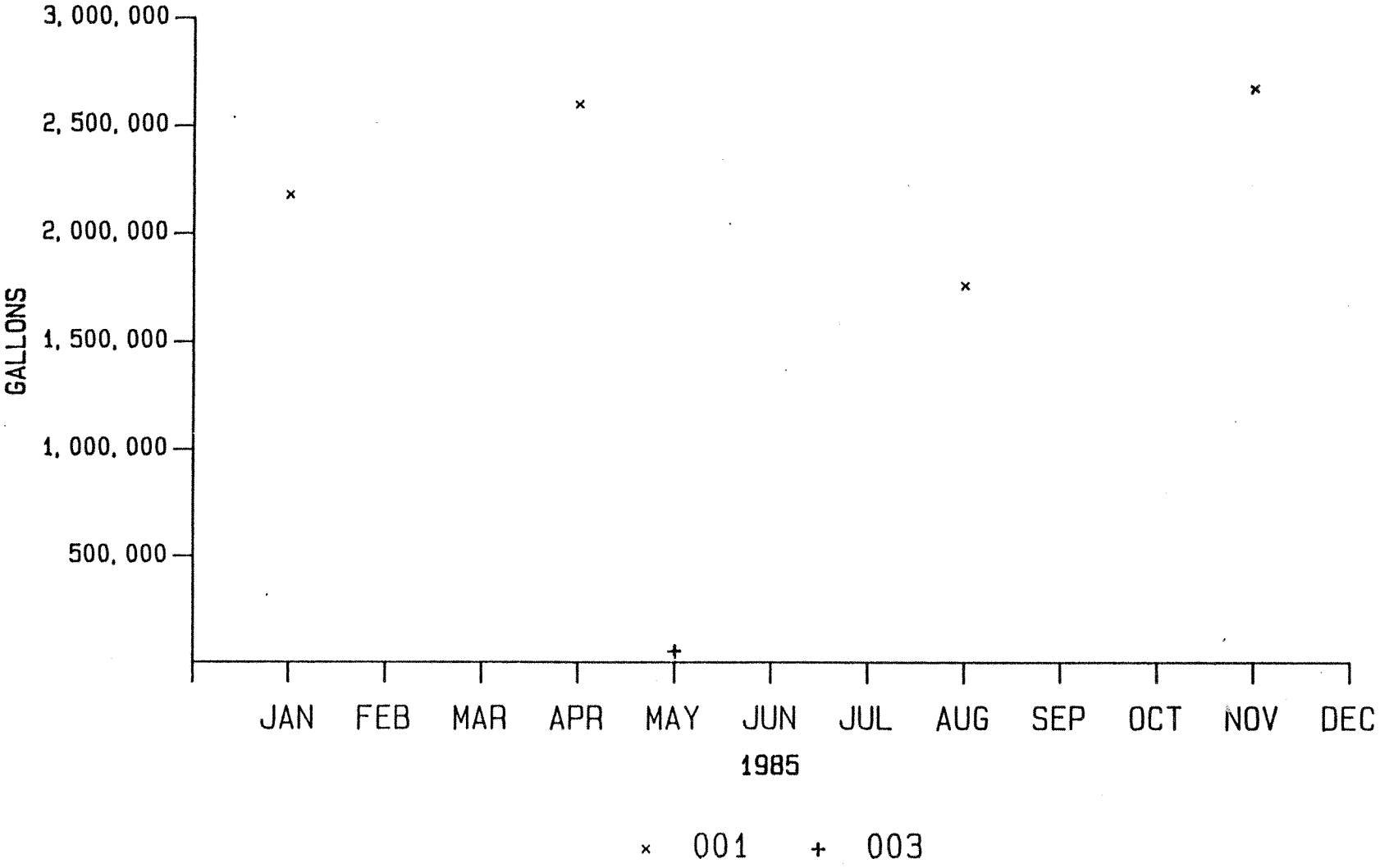

FIGURE C-5.13

Fe

OUTFALLS (001, 007, 008), (001, 004, 005, 008), 006

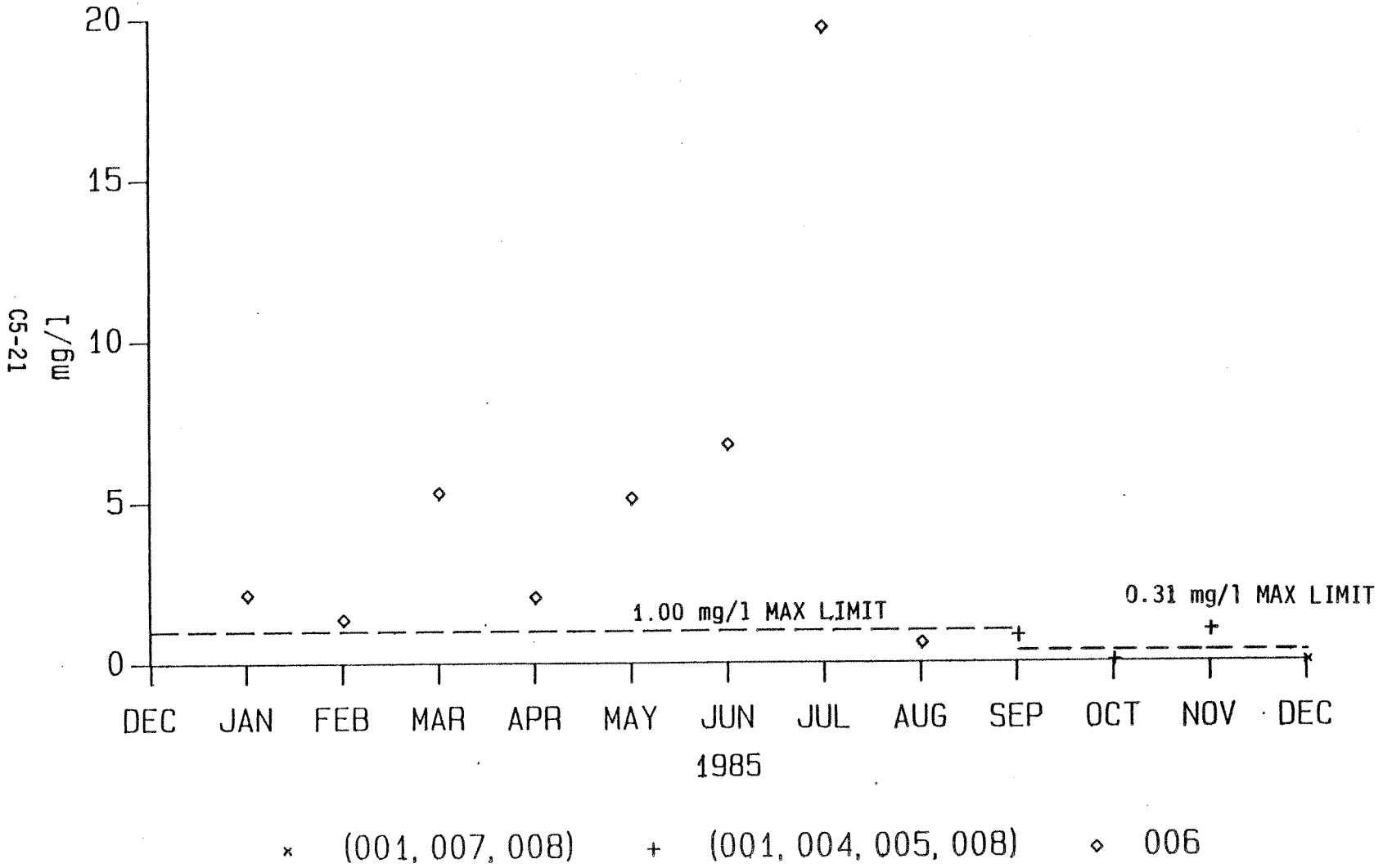

FIGURE C-5.14
pH FOR
OUTFALLS 004, 005, 006

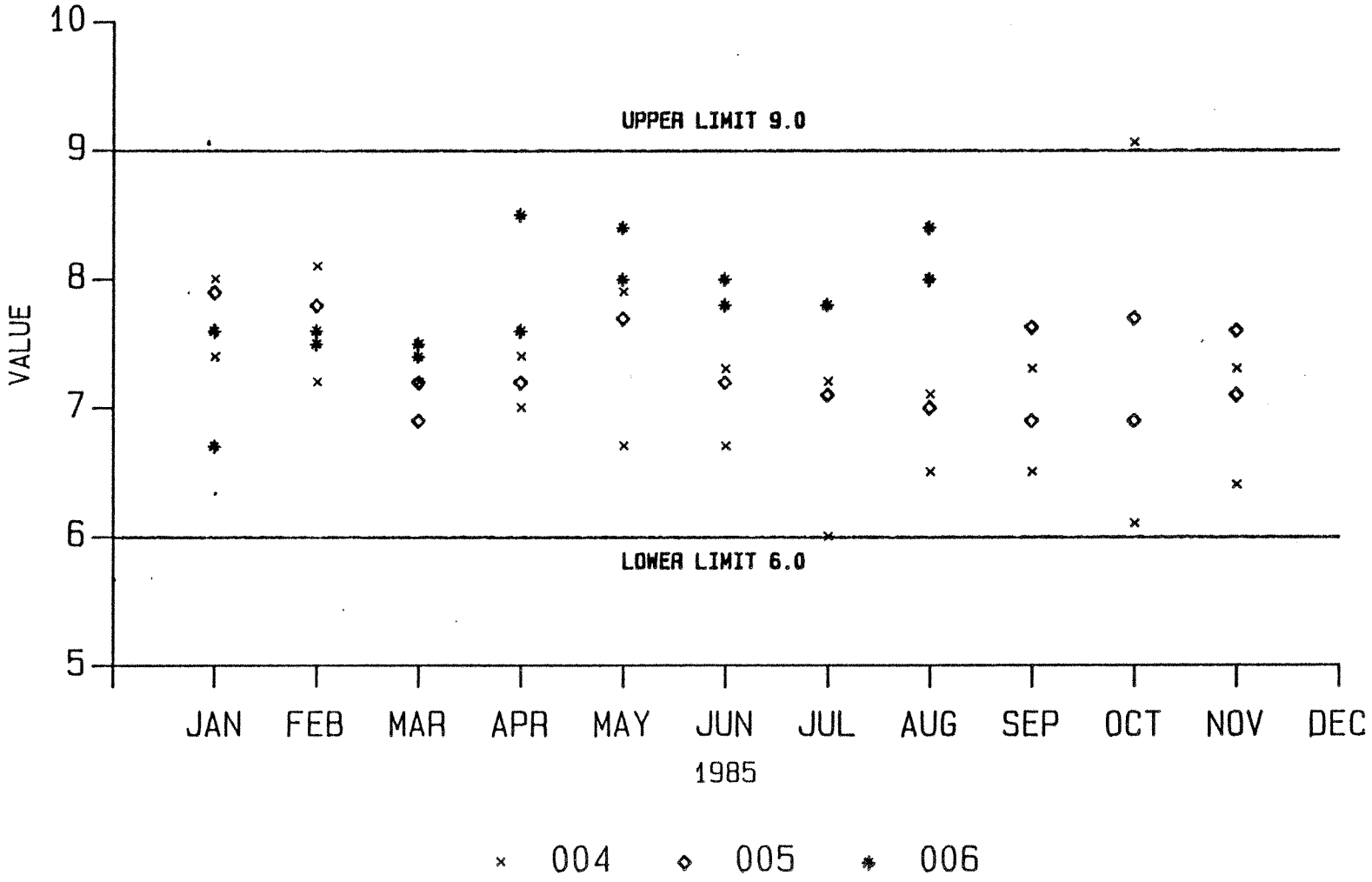

FIGURE C-5.15
pH FOR
OUTFALLS 001, 007, 008