THE EFFECTS OF ENERGY RELATED ACTIVITIES
ON THE PLANKTON OF THE CHESAPEAKE BAY

MASTER

PROGRESS REPORT

Section 1

WORK IN PROGRESS

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1 August 1976 - 30 September 1977

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A. General Introduction

This continuing project is concerned with a comprehensive study of the Chesapeake Bay estuarine system. It encompasses the entire estuary over all seasons focusing on initial energy fixation by the planktonic primary producers and subsequent energy transfer to herbivorous and bacterial heterotrophs with attention to the impact of nuclear and fossil fuel energy technology on these processes.

The principal goals of the Plankton Ecology Program are to: 1) understand plankton interrelations in sufficient detail to permit identification and projection of the effects of man's activities on a major estuary; and 2) identify and quantitate biological processes influencing the flow of nutrients and organic material of continental origin through the estuary to the coastal ocean.

Our specific objectives for the contract period 1 August 1976 to 30 September 1977 are to:

1. Analyze previously collected nutrient data using a mixed dimension kinematic model developed at CBI.
2. Examine the role of plankton metabolism in regenerating nutrients in the water column.
3. Design, construct and test a sediment coring device to permit sampling with minimal disturbance of the surface sediments.
4. Measure nutrient exchange between sediment and water in cores taken with the minimal disturbance core.
5. Add a micro-zooplankton biologist to our staff to initiate studies on the distribution of micro-zooplankton in Chesapeake Bay and their role in the ecology of the plankton.

6. Continue analysis of the productivity, light and nutrient data collected during "AESOP" and "PROCON" cruises.
7. Continue counting of "AESOP" macro-zooplankton samples.
8. Initiate studies concerned with the effects of several by-products of energy production on the plankton in Chesapeake Bay.

This document reports the status of our program with respect to these objectives, though not necessarily in the above order. It also reports on work completed in the form of reprints and manuscripts in preparation for publication.

Reprints Removed

B. Kinematic Box Model

J. L. Taft and W. R. Taylor

1. Introduction

Investigators at CBI have collected a considerable body of nutrient data since 1949, including an extensive survey of the northern two-thirds of the bay by Carpenter (see Whaley et al., 1966; Carpenter et al., 1969) and an intensive study of the entire bay by Taylor (see accompanying AESOP Data Report). Most of these data are high quality and when carefully analyzed yield important information regarding processes occurring in Chesapeake Bay. Examples are a) identification of the Susquehanna River as a primary nitrate source to the bay in spring (Carpenter et al., 1969); b) description of the annual phosphate cycle within the bay (Taft and Taylor, 1976); and c) correlation of deep water oxygen depletion in the bay with fresh water input.

Early in this 3-year contract cycle an attempt was made to analyze some of this historical data with a model described by Pritchard (1969). This attempt was unsuccessful because the data were not collected in a spatial pattern appropriate to the model. Therefore, additional nutrient data were collected during February, May and August 1975, and February, April and August 1976 which could be subjected to such analysis. During this period Pritchard's formulation was modified and computerized by Elliott (1976). Some of our recent data have now been analyzed with this tool.

The initial questions we are concerned with are a) What is the magnitude of the deep water source of ammonium and phosphate identified by inspection of the summer nutrient data? b) Is the deep water/sediment a

- nutrient source year-round? c) What are the flux rates of nutrients vertically from deep water to the upper mixed layer of the estuary?
- d) What are the loss rates of dissolved nutrients to the coastal ocean?
- e) What are the input rates of nutrients to the bay from the coastal ocean?
- f) What are the longitudinal flux rates of nutrients in the seaward flowing surface waters and in the landward flowing deep waters.

To begin answering these questions requires information about nutrient concentrations and about the physical processes of water motion. In our application of Elliot's computer model advection and diffusion are not differentiated, but the sum of these two processes is estimated from salinity distribution and river input. Diffusion could be differentiated from advection if dynamic measurements were made, but differentiation is not necessary to an initial description of the net nutrient flux.

In application of the model the bay is divided into boxes with vertical boundaries at lateral transects through the hydrographic stations occupied and horizontal boundaries at the upper edge of the pycnocline between upper and lower layers. Coefficients for nutrient flux are calculated based upon the salinity distribution and river flow. The nutrient concentrations at the vertical boundaries are weighted by the boundary surface area and a mean concentration is calculated for each upper and lower box. Nutrient flux across each boundary is then calculated. Nutrients are not conservative so summing the inputs and outputs for each box reveal discrepancies due to non-conservative behavior. Since mass must be conserved these discrepancies are accounted for as sources or sinks for nutrient in each segment. Advantages of this approach are: distinction between nutrient removal from the dissolved inorganic pool and nutrient

dilution by mixing of low nutrient water with high nutrient water; and identification of apparent upper layer addition and lower layer removal of nutrient not obvious by inspection of the concentration data. Disadvantages are: The relative significance of advection and diffusion (or turbulent diffusion) cannot be assessed as transport mechanisms; mechanisms for nutrient addition and removal are not indicated; contributions of the lower water layer cannot be distinguished from those resulting from sediment-water interactions.

Nevertheless, this initial modeling effort has been instructive, has led to some important conclusions and has identified areas for additional investigation.

2. Status

During the field program data on physical parameters, dissolved nutrients and particulate nutrients were collected from five or six depths at seven stations along the mid-channel of Chesapeake Bay. The stations are shown in Figure B-1. Some of these data are presented in Tables B-1, B-2 and B-3 and are summarized in Figures B-2 through B-39.

a. Particulate carbon, nitrogen and phosphorus data and chlorophyll a concentrations, passing 35 μ m mesh are shown in Table B-2 with their ratios. Significant features in the data are:

1) Particulate carbon (PC) concentration is maximum in deep waters during winter and in surface waters during summer.

2) Atom ratios of PC to particulate nitrogen (PN) are remarkably consistent at about 8:1 (Figure B-40). Regression of 187 data pairs from all stations and all depths yield the following line

$$PN = 1.34 (\pm 1.01) + 0.12 (\pm 0.01) PC \quad r = 0.87$$

with 95% confidence limits indicated. This compares well with regression of 50 data pairs collected from the upper 2 m only on 6 cruises during December 1972 through October 1973 which gave

$$PN = 0.23 (\pm 2.02) + 0.15 (\pm 0.02) PC \quad r = 0.87$$

3) In contrast, atom ratios of PN and particulate phosphorus (PP) are variable and are usually higher than the expected ratio of about 15:1 for well nourished phytoplankton. Figure B-41 shows most of the data for three cruises grouped about a line representing a 30:1 ratio. Review of data for August 1975 and February and August 1976 show 55% and 64% of the values between 20:1 and 29:1

Figure B-1. Map of Chesapeake Bay showing station locations and segment boundaries for the kinematic box model.

for the two summer cruises with only 24% in this range for the winter cruise. For the winter cruise analyzed, 51% of the N:P values were between 30:1 and 39:1, whereas 15% and 28% of the summer values were in this range. While not conclusive these ratios suggest the phytoplankton are more frequently better nourished with respect to phosphorus in summer than in winter, but local processes influencing the N:P ratio dominate over bay-wide trends.

- 4) PC to Chlorophyll a ($\mu\text{g}:\mu\text{g}$) ratios are widely variable but show some seasonal trends as indicated in Figure B-42. The May 1975 ratios are generally less than 10:1, whereas those for August 1975 and February 1976 were generally greater than 10:1. The line in Figure B-42 represents an expected phytoplankton ratio based upon a PN:Chla ratio of unity.

b. Five computer runs of the kinematic box model have been processed and the results are illustrated in Figures B-43 through B-47.

- 1) Ammonium flux calculations for February 1975 (Figure B-43) indicate ammonium removal in the upper layer between stations 904N and 818P, and additions in the lower layer in that region. If the removal is due entirely to phytoplankton uptake, then net uptake is the sum of the sink terms or $1081 \mu\text{g atom}\cdot\text{S}^{-1}$. Net production in the lower layer was $668 \mu\text{g atom}\cdot\text{S}^{-1}$ or 62% of net uptake in the surface layer. Vertical input to the upper layer was $450 \mu\text{g atom}\cdot\text{S}^{-1}$ and longitudinal input from north of station 904N was $640 \mu\text{g atom}\cdot\text{S}^{-1}$. These two fluxes provide $1090 \mu\text{g atom}\cdot\text{S}^{-1}$, or just exceed the net uptake. Therefore, about 41% of the net ammonium loss from the

upper layer was supplied from below the pycnocline and 59% was added from north of station 904N. Ammonium leaving the region in the upper layer at Station 818P was approximately balanced by ammonium entering in the lower layer at 818P.

The upper layer of the southern portion of the bay (stations 818P to 707Ø) showed a net production of $1212 \mu\text{g atom}\cdot\text{S}^{-1}$, whereas the lower layer had a net loss of $1206 \mu\text{g atom}\cdot\text{S}^{-1}$. Mechanisms for these contrasts to ammonium flux in the northern Bay are not obvious. The Potomac River may have some influence near station 804C, but would not be expected to similarly influence the region between stations 744 and 707Ø. Ammonium output in the surface layer at Station 707Ø was balanced by ammonium input with the lower layer ocean water.

Dividing the source and sink terms by the volume of the box containing them yields input and loss estimates per liter of water which is a more common way to compare nutrient flux values. Table B-4 contains ammonium and nitrate flux values normalized to $\mu\text{g atom}(\text{liter}\cdot\text{day})^{-1}$. The source and sink terms for the southern bay (stations 818P to 707Ø) reflect lower biological activity per unit volume of water, if in situ biota are largely responsible for the calculated nutrient inputs and losses. However, chlorophyll a and particulate nutrient data for Procon 16 (Table B-2) indicate consistent levels of phytoplankton biomass ($<35\mu\text{m}$) in northern and southern Chesapeake Bay. Particulate nitrogen levels in the upper layer of the northern bay were about $8 \mu\text{g atom}\cdot\text{liter}^{-1}$. Thus, the loss of ammonium plus nitrate in the upper layer of the 904N-853F

segment could have yielded about one doubling of the phytoplankton per day. However, in the 853F-818P segments the net loss of ammonium and nitrate would have supported one phytoplankton doubling in about two weeks. This is contrary to other measurements of phytoplankton growth in this area and suggests the recycling of nitrogen within each upper layer segment, not the input of "new" nitrogen from adjacent segments, is the more significant process.

- 2) Ammonium flux in May 1975 (Figure B-44) was characterized by input of $225 \mu\text{g atom}\cdot\text{S}^{-1}$ in the upper layer from north of station 904N, 76% of which was lost from the water, presumably the result of phytoplankton uptake. About 15% was lost vertically to the lower layer and 8% was transported downstream. Loss from the upper layer between stations 904N and 818P ($275 \mu\text{g atom}\cdot\text{S}^{-1}$) was nearly balanced (82%) by the single $225 \mu\text{g atom}\cdot\text{S}^{-1}$ input from north of station 904N. The remaining 18% was contributed from the lower layer. Export from the northern Bay across the boundary represented by station 818P approximately equalled the vertical flux in segment 834G-818P. In contrast to February ammonium flux, lower layer input to the northern bay was about 3 times the upper layer export.

The southern bay (818P-7070) incurred a $395 \mu\text{g atom}\cdot\text{S}^{-1}$ ammonium loss which was nearly balanced by vertical flux of $376 \mu\text{g atom}\cdot\text{S}^{-1}$. Ammonium input with the lower layer ocean water was more than 3 times the surface loss to the continental shelf waters. Landward ammonium flux increased to segment 818P-804C then dropped sharply across boundaries 818P and 834G. Excess net ammonium production was calculated for lower layer 804C-7070 but net loss was

indicated in lower layer 834G-804C. A possible mechanism for ammonium loss in the lower layer is microbial oxidation to nitrite and nitrate.

The nitrate flux calculations for May 1977 (Figure B-45) indicate production in all lower layer segments so ammonium oxidation could be significant. However, nitrate production was only 66% of ammonium loss in segment 834G-818P so other processes must be involved.

Other characteristics of the nitrate flux are: substantial input from north of station 904N ($520 \mu\text{g atom}\cdot\text{S}^{-1}$) as observed by Carpenter et al. (1969); loss in the surface waters except in segment 818P-804C which showed a net nitrate increase; significant downstream transport and net export in the upper layer; relatively low vertical flux rates except in segment 804C-744; and significant landward movement of nitrate in the deep water.

- 3) The fluxes of ammonium and phosphorus have been calculated for August 1976 (Figures B-46 and B-47). The most striking features of the ammonium flux were excess production of $720 \mu\text{g atom}\cdot\text{S}^{-1}$ in lower segment 853F-834G combined with downward flux of $319 \mu\text{g atom}\cdot\text{S}^{-1}$ resulting in landward lower layer flux of $1126 \mu\text{g atom}\cdot\text{S}^{-1}$. Vertical flux from lower to upper segment 904N-853F accounts for $967 \mu\text{g atom}\cdot\text{S}^{-1}$. Cycles of both ammonium and phosphate (Figure B-47) appear to have existed in the 904N-834G segment with seaward flux in the upper layer, downward flux in the 853F-834G segment, landward flux in the lower layer and upward flux in the 904N-853F segment. Downward flux in the 853F-834G segment was not observed in the previously discussed winter and spring calculations.

Chesapeake Bay deep water/sediment appeared as a source of ammonium and phosphate in the summer concentration data (Table B-1). With the exception of lower segment 834G-818P, the lower layer was a source of excess ammonium and phosphate. Atom ratios for N:P flux are shown in Table B-5. Ratios for upper layer loss and lower layer production seldom resembled the observed phytoplankton ratios. However, landward flux in the lower layer and upward vertical flux did occur in ratios similar to observed phytoplankton ratios. The net loss ratios for the upper layer are lower than observed phytoplankton ratios suggesting phosphorus was in ample supply. This view is also supported by previous work (Taft and Taylor, 1976) and by the net phosphate production observed in three upper layer segments during August 1976.

c. Our preliminary conclusions are:

- 1) The deep water/sediment is a source of ammonium year-round, a source of phosphorus in summer, and may also be a year-round source of nitrate.
- 2) North of station 853F "new" nitrogen input is more significant in supporting phytoplankton productivity. South of station 853F nitrogen regenerated in the upper mixed layer is more significant to phytoplankton productivity.
- 3) Chesapeake Bay is a sink for nutrients from both land runoff, including metropolitan waste input, and from the coastal Atlantic Ocean.
- 4) Most active regions for longitudinal nutrient flux are near the Potomac River mouth and near the Chesapeake Bay Bridge in the northern bay.
- 5) Although the Calvert Cliffs nuclear power plant was operating for portions of the data collecting period, its effect is not obvious in either our raw data or the nutrient flux calculations.
- 6) Particulate carbon and nitrogen concentrations are closely correlated and indicate that most particulate organic material in the bay originates from phytoplankton productivity.

Table B-1. Soluble nutrient data collected on cruises PROCON 16 through 21 in February, May and August 1975, and February, April and August 1976. All values are $\mu\text{g atom-liter}^{-1}$.

PROCON 16 SRP

Station	Ø707V	707Ø	744C	804C	818P	834G	853F	904N
---------	-------	------	------	------	------	------	------	------

Depth
m

Surface	0.0							
1		0.10	0.03	0.03		0.16	0.0	0.38
3		0.10	0.15		0.06		0.04	0.28
4				0.03		0.04		
5		0.20	0.0				0.0	0.22
7		0.20	0.01		0.0	0.03	0.0	0.24
9		0.17	0.03	0.05		0.04	0.0	0.22
11			0.0		0.0	0.03		0.28
13				0.07	0.02			
19				0.07	0.12			
24				0.03				
25					0.12			

NH₄-N

Surface	1.0							
1		1.0	1.6	2.3		0.5	2.3	11.5
3		2.2	1.7		0.11		2.3	11.3
4				2.3		0.4		
5		1.2	2.1				2.2	18.5
7		2.2	0.4		0.06	0.5	1.9	8.9
9		2.0	0.7	2.3		0.5	1.9	8.9
11			0.7		0.15	1.0		8.9
13				1.6	0.15			
19				1.9	0.19			
24				2.2	0.5			

NO₂-N

Station	Ø707V	707Ø	744C	804C	818P	834G	853F	904N
Depth m								
1		0	0.3	0.4		0.4	0.5	0.7
3		0.4	0.3		0.3		0.5	0.5
4				0.4		0.5		
5		0.1	0.3				0.5	0.8
7		0	0.2		0.4	0.4	0.4	0.4
9		0	0.2	0.2		0.4	0.3	0.4
11			0.2		0.5	0.4		0.4
13				0.3	0.3			
19				0.3	0.2			
24				0.2				
27					0.2			

NO₃-N

1	0.0	4.1	6.6		9.8	12.5	19.6
3	0.0	2.6		10.3		13.5	19.3
4			7.1		11.1		
5	0.0	3.7				12.4	20.3
7	0.0	1.0		14.4	9.8	10.9	11.3
9	0.0	3.8	6.0		7.7	8.8	9.3
11		1.5		5.2	5.8		6.3
13			4.3	4.0			
19			3.1	2.9			
24			3.1				
27				2.0			

PROCON 17 SRP

Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
Depth								
m								
Surface	.0.05				0.03			
1		U	0.02			U	U	U
2				0.06				
3								U
4		U		0.03	U		U	
5			U			U		U
6		U		0.02			U	U
7						0.01	0.02	
8		0.04			0.05			
9			0.02			0.06		0.03
10		0.16					0.05	
11						0.06		
12			0.05					
14			U	0.08	0.03			
20				0.05				
24					U			

NH₄-N

Surface					0.5			
1		0.4	0.2			0.4	0.4	5.1
2				1.2				
3								7.3
4		0.9		1.2	0.9		0.3	
5			0.4			0.9		11.5
6		4.0		1.1			2.5	12.8
7						1.9	6.6	
8		3.1			3.1			
9			2.7			4.6		15.7
10		7.2					8.1	
11						5.2		
12			3.6					
14			5.8	9.2	7.4			
20				10.0				
24					7.9			

PROCON 17 NO₂-N

Station	0707V	7070	744	804C	818P	834G	853F	904N
Depth m								
Surface	0.9				0.5			
1		0.2	0.6			0.6		0.7
2				4.8				
3								0.8
4		0.1		4.8	0.4			
5			0.5			0.5		0.8
6		U		4.5				0.9
7						0.5		
8		U			0.4			
9			0.5			0.4		1.0
10		U						
11						0.4		
12			0.6					
14			0.5	4.6	0.4			
20				4.5				
24					0.4			

NO₃-N

Surface	0.3				7.4			
1		1.6	4.1			10.5		22.6
2				11.1				
3								13.2
4		1.2		5.5	6.6			
5			3.2			8.5		9.1
6		0.4		5.2				11.6
7						8.8		
8		0.4			6.8			
9			5.0			7.3		11.8
10		0.4						
11						8.0		
12			4.9					
14			4.8	5.0	6.2			
20				6.5				
24					7.4			

PROCON 18 SRP

Station	Ø707V	707Ø	744	804C	818F	834G	853F	904N
Depth m								
Surface					U		0.13	
1	0.17	0.10	0.09	0.12		0.19		
2							0.19	0.01
3		0.12						
4			0.12		0.35	0.11	0.16	0.01
5	0.10	0.29	0.18					
6						0.12	0.26	0.06
7		0.49		0.26				0.05
8			0.61		0.76		3.50	
9	0.33					0.17		
10		0.54					3.57	1.26
11	0.36			1.09		1.22		
13			0.72					
14	0.38							
15				1.37				
16					1.07			
19				1.55				
28					2.04			

NH₄-N

Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
Depth m								
Surface					0.2		U	
1	0.4	1.0	0.6	0.1		4.6		
2							U	3.7
3		0.5						
4			1.2		4.8	4.5	1.7	5.2
5	U	0.1	1.5					
6						7.0	13.1	8.1
7		3.6		6.6				5.8
8			5.8		9.4		33.7	
9	0.5					14.8		
10		3.8					34.9	17.0
11	0.2			18.0		18.3		
13			6.5					
14	0.1							
15				20.1				
16					12.6			
19				21.1				
28					17.1			

PROCON 18 NO₂-N

Depth m	Station	Ø707V	707Ø	744C	804C	818P	834C	853F	904N
S									
1		0.03	0.04	0.06	0.03	0.04	0.2		
2									0.7
3			0.3						
4				0.08		0.5	0.2		0.4
5		0.03	0.04	0.09					
6							0.3		0.5
7			0.04		0.6				0.5
8				0.22		0.9			
9		0.04					1.0		
10			0.04						0.3
11		0.03			0.5		0.2		
13				0.25					
14		0.11							
15					0.4				
16						0.9			
19					0.5				
28						0.2			

NO₃-N

S						0.06			
1		0.17	0.06	0.07	U		0.6		
2									1.8
3			0.07						
4				0.1		0.6	0.5		1.2
5		0.07	0.1	0.1					
6							0.6		1.2
7			0.2		0.4				1.6
8				0.2		1.0			
9		0.16					1.2		
10			0.2						0.8
11		0.17			0.5		0.5		
13				0.2					
14		0.20							
15					0.6				
16						0.9			
19					0.5				
23						0.2			

PROCON 19 SRP

Depth m	Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
S		0.14	0.14	U	0.06	0.06	0.09	0.14	0.07
2		0.10	0.10	U			0.11	0.17	0.05
4				U	0.07	0.09	0.04	0.14	0.09
5		0.09	U						
6			U	0.03			0.09	0.09	0.07
8		0.09	0.08	0.03	0.24		0.11	0.11	0.06
10			0.04	U			0.06	0.14	
11		0.15							0.05
12						0.09			
14					0.27				
15		0.15							
18						0.06			
20					0.12				
24					0.07	0.08			
30						0.10			

NH₄-N

S	0.5	0.7	0.8	0.1	1.3	2.9	8.7	16.9
2	0.2	0.6	1.9			2.5	7.3	18.4
4		0.3	0.9	0.6	0.7	1.6	7.0	17.4
5	0.2							
6		1.1	0.6			2.6	6.0	16.7
8	0.8	1.0	1.3	0.2		1.9	6.5	12.6
10		1.4	3.3			2.9	7.3	
11	0.2							13.2
12					1.3			
14				1.4				
15	0.3							
18					2.3			
20				0.9				
24				1.2	2.7			
30					2.9			

PROCON 19

NO₂-N

Depth m	Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
S	U		0.3	0.3	0.5	0.5	0.5	0.7	0.6
2	U		0.3	0.3			0.6	0.7	0.6
4			0.2	0.3	0.5	0.5	0.6	0.8	0.6
5	U								
6			0.1	0.5			0.6	0.7	0.6
8	U		0.1	0.3	0.5		0.5	0.7	0.5
10			0.1	0.2			0.4	0.7	
11	U								0.5
12						0.4			
14					0.3				
15	U								
18						0.5			
20					0.3				
24					0.3	0.4			
30						0.4			

NO₃-N

S	0.1	0.9	7.8	3.1	3.4	7.9	6.3	8.5
2	U	1.3	7.6			7.2	4.8	11.6
4		0.4	5.6	3.5	2.2	7.9	8.1	6.5
5	0.1							
6		0.4	5.6			8.1	4.3	8.1
8	0.2	0.2	4.2	2.9		6.3	5.7	5.0
10		0.3	3.1			4.7	4.3	
11	0.1							6.3
12					2.7			
14				3.3				
15	0.1							
18					3.9			
20				1.8				
24				3.1	2.0			
30					3.0			

PROCON 20 SRP

Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
Depth								
Surface	.04	.01	U		.03	.02	U	.04
2m		U				.02	U	.05
3	.03		U					
4		U				.04	U	.05
5	.05		U					
6	.07	.01			.02	.04	U	.05
8		.02	.02			.03	U	.07
10						.04	U	.10
11	.05	.01	.02					
12					.03			
13			.02					
14	.07							
18					.04			
24					.04			
30					.04			

NH ₄								
Surface	.8	.6	1.4		.2	1.6	-	.1
2m		.7				.5	.6	.3
3	.5		.6					
4		.4				.6	.2	.5
5	.5		.4					
6	1.1	.7			.3	2.3	.4	1.0
8		.6	2.0			1.4	1.2	.7
10						5.3	1.9	4.5
11	.4	.2	1.5					
12					.7			
13			1.5					
14	.4							
18					6.3			
24					5.3			
30					5.4			

PROCON 20 NO₂

Station	Ø707V	707Ø	744	804C	818P	834G	853F	904N
Depth								
Surface	U	.03	.4		.6	.5		.7
2		U				.5		.7
3	U		.4					
4		U				.6		.7
5	U		.4					
6	U	U			.5	.4		.7
8		U	.2			.5		.7
10						.5		.7
11	U	U	.4					
12					.5			
13			.3					
14	U							
18					.4			
24					.3			
30					.3			

NO₃

Surface	.3	.3	1.8		3.1	3.5	9.1	7.2
2		.2	1.5			2.9	5.9	5.6
3	.2							
4		.1				3.3	6.1	5.5
5	.2		1.8					
6	.3	.2			3.4	2.7	6.8	5.9
8		.2	.9			3.1		6.0
10						2.6	5.8	5.3
11	.2	.1	.6					
12					3.6			
13			1.1					
14	.4							
18					2.3			
24					2.8			
30					2.5			

PROCON 21 SRP

Depth	Station	707Ø	744C	804C	818P	834G	853F	904N
Surface			.08				.95	
1		.13		.03		.08		.06
2			.11		.75			
3		.28				.06	.36	.11
4			.06				.14	
5		.42				.06		.11
6			.08	.02			.16	
7		.49				.09		.11
8			.08		.21		.25	
9		.49	.09			.15		.22
10				.08			.41	
11		.57				.62		.73
12				.18	.30			
15				.38				
18				.46	.55			
26					.82			
31					.60			

NH₄

Surface			1.1				2.2	
1		.3		3.9		1.1		4.8
2			1.0		0.5			
3		.3				1.6	1.0	4.3
4			0.4				1.8	
5		1.2				2.1		5.7
6			1.3	1.2			5.2	
7		1.9				5.6		7.0
8			2.2		4.2		7.0	
9		1.9	2.0			5.7		8.1
10				3.4			8.1	
10.5		2.1						
11						6.9		9.1
12				5.4	5.5			
15				5.4				
18				6.0	6.7			
26					6.8			
31					6.9			

PROCON 21 NO₂

Depth	Station	7070	744C	804C	818P	834G	853F	904N
Surface			.09				.66	
1	U			.09		.12		.50
2			.03		.40			
3		.05				.17	1.63	.50
4			.03				1.67	
5		.09				.43		.54
6			U	.07			2.16	
7		.07				1.75		.58
8			.05		.60		2.29	
9		.05	.08			1.72		.64
10				.17			2.39	
10.5		.06						
11						1.61		.77
12				.35	.35			
15				.23				
18				.23	.22			
26					.31			
31					.28			

NO₃

Surface			.07				U	
1		.13		.28		.13		.2
2			.09		U			
3		.22				.21	.05	.5
4			.08				U	
5		.15				.17		.4
6			.14	.17			.14	
7		.10				.04		.4
8			.14		.19		.10	
9		.19	.22			U		.3
10				.09			.16	
10.5		.47						
11						.16		.3
12				U	U			
15				.07				
18				.13	U			
26					.21			
31					U			

Table B-2. Chlorophyll a ($\mu\text{g}\cdot\text{liter}^{-1}$) and particulate nitrogen ($\mu\text{g atom}\cdot\text{liter}^{-1}$), particulate carbon ($\mu\text{g atom}\cdot\text{liter}^{-1}$), particulate phosphorus ($\mu\text{g atom}\cdot\text{liter}^{-1}$) and ratios.

PROCON 16

Station	Depth	Chla	PN	PC	PP	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
904N	1	*2.8								
	3	*3.3								
	5	*3.8								
	7	*3.9								
	9	*3.5								
	11	*4.5								
853F	1	8.1	8.0	58.8		1.0	7.3	7.4		
	3	8.2	7.6	41.8		0.9	5.1	5.5		
	5	8.2	9.4	53.9		1.1	6.5	5.7		
	7	5.9	10.7	51.4		1.8	8.7	4.8		
	9	3.2	8.8	58.3		2.8	18.2	6.6		
834G	1	5.6	8.2	51.4		1.5	9.1	6.3		
	4	6.4	8.1	46.5		1.3	7.3	5.7		
	7	17.0	19.0	105.9		1.1	6.2	5.6		
	9	18.3	20.5	121.4		1.1	6.6	5.9		
	11	14.5	15.8	96.3		1.1	6.6	6.1		
818P	3	5.3	8.4	85.8		1.6	16.1	10.2		
	7	4.6	8.7	63.5		1.9	13.8	7.3		
	11	7.4	10.1	65.1		1.4	8.8	6.4		
	13	7.6	11.1	82.1		1.5	10.1	6.6		
	27	7.6	14.4	108.4		1.9	14.3	7.5		
804C	1	3.6	2.4	28.3		0.7	7.9	11.9		
	4	3.6	13.8	59.5		3.8	16.5	4.3		
	9	4.8	10.2	51.4		2.1	10.7	5.0		
	13	6.3	10.7	59.9		1.7	9.5	5.6		
	19	6.9	9.4	93.0		1.4	13.5	9.9		
	24	7.3	13.3	112.1		1.8	15.4	8.4		

*Calculated from $\frac{\text{in vivo}}{\text{extracted}}$ = 4.0 from 853F average of upper 5 depths

PROCON 16

Station	Depth	Chla	PN	PC	PP	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
744C	1	4.2	5.1	46.5		1.2	11.0	9.1		
	3	3.4	5.8	40.3		1.7	11.8	6.9		
	5	5.2	9.3	61.6		1.8	11.8	6.6		
	7	6.6	8.1	64.9		1.2	9.8	8.0		
	9	4.8	6.1	47.5		1.3	9.9	7.8		
	11	6.2	7.3	70.6		1.2	11.4	9.7		
7070	1	3.6	5.3	42.7		1.5	11.9	8.1		
	3	5.9	6.7	40.3		1.1	6.8	6.0		
	5	4.3	6.2	47.5		1.4	11.0	7.7		
	7	6.4	8.6	76.3		1.3	11.9	8.9		
	9	8.6	10.9	114.1		1.3	13.3	10.4		

PROCON 17

Station	Depth	Chla	PN	PC	PP	$\frac{C}{Chla}$	$\frac{N}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
904N	1	24.5	16.1	106		4.3	0.7	6.7		
	3	17.3	12.4	94	0.35	5.4	0.7	7.6	269	35
	5	8.3	11.1	84		10.1	1.3	7.6		
	6	9.8	9.8	83	0.29	8.5	1.0	8.5	286	34
	9	6.2	6.4	62	0.18	10.0	1.0	9.7	344	36
853F	1	39.6	14.6	134	0.39	3.4	0.4	9.2	343	37
	4	52.5	15.1	127	0.41	2.4	0.3	8.4	310	37
	6	21.7	14.3	100	0.35	4.6	0.7	7.0	286	41
	7	20.8	11.3	76	0.27	3.7	0.5	6.7	281	42
	10	9.4	6.3	56	0.19	6.0	0.7	8.9	295	33
834G	1	29.0	13.9	135	0.40	4.7	0.5	9.7	338	35
	5	10.8	7.5	60	0.25	5.6	0.7	8.0	240	30
	7	29.3	11.5	101	0.34	3.4	0.4	8.8	297	34
	9	33.9	11.9	115	0.48	3.4	0.4	9.7	240	25
	11	9.6	9.4	86	0.35	9.0	1.0	9.1	246	27
818P	Surface	12.7	11.9	127	0.34	10.0	1.0	10.6	374	35
	4	16.8	12.7	121	0.43	7.2	0.8	9.5	281	30
	8	13.5	11.2	104	0.37	7.7	0.8	9.3	281	30
	14	31.9	14.0	145	0.43	4.5	0.4	10.4	337	33
	24	19.4			0.39					
804C	2	17.2			0.24					
	4	31.2			0.29					
	6	51.1			0.31					
	14	15.8			0.27					
	20	68.9			0.52					
744	1	15.8			0.24					
	5	18.2			0.39					
	9	19.4			0.33					
	12	21.6			0.35					
	14	12.0			0.22					

PROCON 17

Station	Depth	Chla	PN	PC	PP	$\frac{C}{Chla}$	$\frac{N}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
7070	1	9.8	10.9	93	0.27	9.5	1.1	8.5	344	40
	4	4.8	10.8	78	0.34	16.3	2.3	7.2	229	32
	6	9.0	9.5	68	0.36	7.6	1.1	7.2	189	27
	8	8.4	8.2	56	0.31	6.7	1.0	6.8	181	26
	10	4.9	12.4	73	0.39	14.9	2.5	5.6	187	32

PROCON 18

Station	Depth m	Chla	PN	PC	PP	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
904N	2	26.3	26.8	188	0.88	1.0	7.1	7.0	214	30
	4	8.7	12.8	94	0.54	1.5	10.8	7.3	174	24
	6	4.8	11.1	75	0.35	2.3	15.6	6.8	214	32
	7	22.1	22.7	158	0.85	1.0	7.1	7.0	186	27
	10	4.2	16.4	131	0.41	3.9	31.2	8.0	320	40
853F	0		32.7	233	1.37			7.1	170	24
	2		31.5	228	1.40			7.2	163	23
	4		18.3	131	0.89			7.2	147	21
	6		13.6	91	0.61			6.7	149	22
	8		5.7	66	0.26			11.6	254	22
	10		8.3	86	0.31			10.4	277	27
834G	1	71.0			2.12					
	4	27.7	33.5	199	1.69	1.2	7.2	5.9	118	20
	6	30.2	32.4	250	1.91	1.1	8.3	7.7	131	17
	9	3.9	14.0	127	0.69	3.6	32.6	9.1	184	20
	11	7.2	19.3	115	0.87	2.7	15.9	6.0	132	22
818P	0.5	8.4	21.5	177	0.68	2.6	21.1	8.2	260	32
	4	3.9	7.9	36	0.49	2.0	9.2	4.6	73	16
	8	2.8	3.3	47	0.26	1.2	16.7	14.2	181	13
	16	1.0	6.1	51	0.65	6.1	51.0	8.4	78	9
	28	0.7	0.2	47	0.15	0.3	67.0	235.0	313	1
804C	1	6.3	17.7	155	0.72	2.8	24.6	8.8	215	25
	7	3.4	16.8	77	0.44	4.9	22.6	4.6	175	38
	11	1.1	6.3	50	0.26	5.7	45.5	7.9	192	24
	15	1.1	4.1	44	0.20	3.7	40.0	10.7	220	21
	19	0.8	3.7	45	0.17	4.6	56.0	12.2	264	22

Station	Depth m	Chla	PN	PC	PP	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
744	1	6.7	25.0	155	0.53	3.7	23.1	6.2	292	47
	4	12.2	17.5	136	0.81	1.4	11.1	7.8	172	22
	5	7.9	37.7	130	0.82	4.8	16.4	3.4	159	45
	8	5.2	13.0	130	0.58	2.5	25.0	10.0	224	22
	13	10.8	10.8	93	0.49	1.0	8.6	8.6	190	22
7070	1	4.0	22.7	146	0.64	5.7	36.5	6.4	228	35
	3	10.1	17.7	163	0.55	1.8	16.1	9.2	296	32
	5	8.9	10.3	90	0.48	1.2	10.1	8.7	188	21
	7	5.1	10.6	62	0.41	2.1	12.1	5.8	151	26
	10	5.1	5.3	63	0.21	1.0	12.4	11.9	300	25
0707V	1	0.2	0.8	14.5	0.05	4.0	72.5	18.1	290	16
	5	0.2	3.4	12.0	0.05	17.0	60.0	3.5	240	68
	9	0.5	2.8	16.1	0.13	5.6	32.2	5.8	124	22
	11	0.6	1.5	20.5	0.10	2.5	34.2	13.7	205	15
	14	1.1	2.1	30.1	0.14	1.9	27.3	14.3	215	15

PROCON 19

Station	Depth m	Chla	PN	PC	PP	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
904N	S	11.0	17.9	120	0.39	1.7	10.9	6.7	308	46
	2	11.3	16.3	127	0.48	1.4	11.2	7.8	265	34
	4	12.1	18.4	112	0.48	1.4	9.3	6.1	233	38
	6	11.5	16.1	121	0.53	1.4	10.5	7.5	228	30
	8	8.3	14.4	95		1.7	11.4	6.6		
	11	7.0	12.8	92		2.0	13.1	7.2		
853F	S	24.8	16.3	124	1.12	0.7	5.0	7.6	111	15
	2	15.7	9.6	77	0.88	0.6	4.9	8.0	88	11
	4	13.0	21.4	71	0.78	1.6	5.5	3.3	91	27
	6	13.2	8.5	70	0.82	0.6	5.3	8.2	85	10
	8	12.0	10.8	65	0.84	0.9	5.4	6.0	77	13
	10	8.3	8.2	55	0.76	1.0	6.6	6.7	72	11
834G	S	7.3	13.0	104	0.43	1.8	14.2	8.0	242	30
	2	8.7	16.9	903	0.47	1.9	11.8	6.1	219	36
	4	7.7	13.4	108	0.45	1.7	14.0	8.1	240	30
	6	8.5	21.5	107	0.48	2.5	12.6	5.0	228	45
	8	15.7	26.6	159	0.76	1.7	10.1	6.0	209	35
	10	20.0	26.1	201		1.3	10.1	7.7		
818P	S	3.1	9.3	76	0.27	3.0	24.5	8.2	281	34
	4	5.0	15.0	117	0.41	3.0	23.4	7.8	285	37
	12	9.5	20.0	134	0.58	2.1	14.1	6.7	231	34
	18	11.9	18.6	133	0.63	1.6	11.1	7.2	211	30
	24	7.0	18.0	110	0.53	2.6	15.7	6.1	208	34
	30	11.0	18.0	120	0.58	1.6	10.9	6.7	207	31

804C	S	2.7	7.0	79	0.32	2.6	29.3	11.3	247	22
	4	3.5	6.9	77	0.33	2.0	22.0	11.2	233	21
	8	4.2	7.8	84	0.34	1.9	20.0	10.8	247	23
	14	9.3		107	0.49		11.5		218	
	20	8.4	12.5	108	0.49	1.5	12.9	8.6	220	26
	24	7.2	13.0	106	0.46	1.8	14.7	8.2	230	28

744	S	4.2	12.4	105	0.39	3.0	25.0	8.5	269	32
	2	4.2			0.38					
	4	4.1	13.4	100	0.41	3.3	24.4	7.5	243	33
	6	3.7	12.1	106	0.39	3.3	28.6	8.8	272	31
	8	3.5	11.3	110	0.40	3.2	31.4	9.7	275	28
	10	5.0			0.47					

707Ø	S	4.2	7.5	89	0.27	1.8	21.2	11.9	330	28
	2	4.8	9.5	88	0.28	2.0	18.3	9.3	314	34
	4	7.2	17.0	102	0.53	2.4	14.2	6.0	192	32
	6	6.4	12.0	116	0.57	1.9	18.1	9.7	204	21
	8	6.9	11.0	89	0.61	1.6	12.9	8.1	146	18
	10	6.6	10.5	93	0.61	1.6	14.1	8.9	152	17

Ø707V	S	2.2								
	2	2.3								
	5	2.1								
	8	2.1								
	11	1.9								
	15	2.1								

PROCON 21

Station	Depth m	Chla $\mu\text{g}/\ell$	PN $\mu\text{gat}/\ell$	PC $\mu\text{gat}/\ell$	PP $\mu\text{gat}/\ell$	$\frac{\text{N}}{\text{Chla}}$	$\frac{\text{C}}{\text{Chla}}$	$\frac{\text{C}}{\text{N}}$	$\frac{\text{C}}{\text{P}}$	$\frac{\text{N}}{\text{P}}$
904N	1	8.4	18.4	124	0.93	2.2	15	6.7	133	20
	3	8.0	16.4	109	0.75	2.1	14	6.6	145	22
	5	7.1	14.4	100	0.67	2.0	14	6.9	149	22
	7	7.0	17.6	96	0.86	2.5	14	5.5	112	21
	9	3.5	12.0	68	0.47	3.4	19	5.7	145	26
	11	1.0	10.8	40	0.24	10.8	40	3.7	167	45
853F	Surf	120.0	56.5	494	3.88	0.5	4.1	8.7	127	15
	3	10.3	17.7	128	0.77	1.7	12	7.2	166	23
	4	8.5	17.0	110	0.55	2.0	13	6.5	200	31
	6	6.0	14.2	92	0.56	2.4	15	6.5	164	25
	8	4.1	12.0	91	0.46	2.9	22	7.6	198	26
	10	2.6	10.6	72	0.37	4.1	28	6.8	195	29
834G	1	6.0	16.8	137	0.61	2.8	23	8.2	225	28
	3	6.3	14.0	107	0.55	2.2	17	7.6	195	26
	5	2.0	10.9	68	0.39	5.5	34	6.2	174	28
	7	0.8	6.9	45	0.28	8.6	56	6.5	161	25
	9	0.8	5.8	41	0.22	7.3	51	7.1	186	26
	11	0.3	4.0	36	0.13	13.3	120	9.0	277	31
818P	2	4.4	14.4	98		3.3	22	6.8		
	8	1.1	6.6	42	0.24	6.0	38	6.4	175	28
	12	0.6	6.4	45	0.20	10.7	75	7.0	225	32
	18	0.4	5.6	29	0.12	14.0	73	5.2	242	47
	26	0.4	4.5	30	0.13	11.3	75	6.7	231	35
	31	0.5	9.2	47	0.19	18.4	94	5.1	247	48
804C	1	1.2	9.1	67	0.36	7.6	56	7.4	186	25
	6	1.6	10.3	76	0.42	6.4	48	7.4	181	25
	10	1.3	7.9	62	0.36	6.1	48	7.8	172	22
	12	0.6	5.3	44	0.21	8.8	73	8.3	210	25
	15	0.4	4.3	37	0.18	10.8	93	8.6	206	24
	18	0.5	9.1	52	0.18	18.2	104	5.7	289	51

PROCON 21 (continued)

Station	Depth m	Chla μg/ℓ	PN μgat/ℓ	PC μgat/ℓ	PP μgat/ℓ	$\frac{N}{Chla}$	$\frac{C}{Chla}$	$\frac{C}{N}$	$\frac{C}{P}$	$\frac{N}{P}$
744C	Surf	2.7	12.3	122	0.43	4.6	45	9.9	284	29
	2	3.6	16.8	141	0.49	4.7	39	8.4	289	34
	4	2.1	12.4	112	0.53	5.9	53	9.0	211	23
	6	0.9	12.4	105	0.47	13.8	117	8.5	223	26
	8	1.6	17.5	94	0.56	10.9	59	5.4	168	31
	9	0.8	18.4	84	0.50	23.0	105	4.6	168	37
7070	1	1.4	8.7	58	0.29	6.2	41	6.7	200	30
	3	3.1	9.4	65	0.39	3.0	21	6.9	167	24
	5	1.7	5.4	36	0.19	3.2	23	6.7	189	28
	7	1.1	5.9	36	0.19	5.4	33	6.1	189	31
	9	1.0	6.1	36	0.18	6.1	36	5.9	200	34
	10.5	1.0	6.6	50	0.21	6.6	50	7.7	238	31

Table B-3. Station data for cruises Procon 16 through 21. Temperature $^{\circ}\text{C}$;
salinity, ‰ ; PO_4 and ammonium $\mu\text{g atom}\cdot\text{liter}^{-1}$; chlorophyll a,
 $\mu\text{g}\cdot\text{liter}^{-1}$; particulate N, C and P, $\mu\text{g atom}\cdot\text{liter}^{-1}$.

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 16

904	02/10/75	TIME 1225	LAT 39 04 20	LONG 76 19 40	DEPTH TO BOT. 13.1	WIND 000 - 00K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	2.85	6.16	4.97	7.20						
1.0	2.90	6.13	4.94	7.32	.38	11.50	2.80			
2.0	2.63	6.64	5.35	7.30						
3.0	2.69	7.25	5.84	7.30	.28	11.30	3.30			
4.0	3.08	8.24	6.63	7.31						
5.0	3.50	9.27	7.44	7.23	.22	18.50	3.80			
6.0	4.27	12.72	10.16	7.27						
7.0	4.74	14.99	11.93	7.30	.24	8.90	3.90			
8.0	4.90	15.96	12.68	7.33						
9.0	4.95	16.24	12.89	7.34	.22	8.90	3.50			
10.0	4.99	16.36	12.99	7.35						
11.0	5.01	16.51	13.11	7.36	.28	8.90	4.50			
12.0	4.99	16.50	13.10	7.37						

PROCON 16

854E	02/13/75	TIME 0930	LAT 38 54 00	LONG 76 25 00	DEPTH TO BOT. 12.2	WIND 340 - 19K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	3.12	9.59	7.70	7.34						
1.0	3.01	9.62	7.73	7.35	.00	2.30	8.10	8.00	59.00	
2.0	3.02	9.68	7.78	7.34						
3.0	3.10	9.70	7.79	7.34	.04	2.30	8.20	7.60	42.00	
4.0	3.14	10.00	8.03	7.34						
5.0	3.21	10.22	8.20	7.32	.00	2.20	8.20	9.40	54.00	
6.0	3.47	10.83	8.68	7.28						
7.0	3.58	11.05	8.85	7.27	.00	1.90	5.90	10.70	51.00	
8.0	4.02	12.99	10.38	7.20						
9.0	4.61	14.91	11.87	7.16	.00	1.90	3.20	8.80	58.00	
10.0	4.83	16.03	12.74	7.19						

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 16

834F	02/12/75	TIME 0808	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 12.8	WIND 025 - 11K	WEATHER 5			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	3.53	12.10	9.69	7.52						
1.0	3.52	12.04	9.64	7.62	.16	0.50	5.60	8.20	51.00	
2.0	3.52	12.04	9.64	7.63						
3.0	3.53	12.04	9.64	7.63						
4.0	3.53	12.05	9.65	7.63	.04	0.40	6.40	8.10	47.00	
5.0	3.54	12.07	9.67	7.63						
6.0	3.55	12.12	9.71	7.62						
7.0	3.55	12.11	9.70	7.62	.03	0.50	17.00	19.00	106.00	
8.0	3.56	12.16	9.74	7.60						
9.0	3.58	12.46	9.97	7.49	.04	0.50	18.30	20.50	121.00	
10.0	4.51	15.72	12.51	7.39						
11.0	4.74	16.26	12.93	7.32	.03	1.00	14.50	15.80	96.00	

PROCON 16

813P	02/11/75	TIME 0930	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 33.5	WIND 205 - 03K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	3.93	12.59	10.06	7.98						
1.0	3.92	12.58	10.06	7.99						
2.0	3.92	12.56	10.04	7.99						
3.0	3.91	12.57	10.05	7.98	.06	0.11	5.30	8.40	86.00	
4.0	3.89	12.57	10.05	7.98						
5.0	3.85	12.62	10.09	7.98						
7.0	3.84	12.66	10.13	7.98	.00	0.06	4.60	8.70	64.00	
9.0	4.16	13.86	11.06	7.96						
11.0	4.76	16.16	12.84	7.97	.00	0.15	7.40	10.10	65.00	
13.0	5.03	17.52	13.90	7.98	.00	0.15	7.60	11.10	82.00	
15.0	5.19	18.16	14.39	7.98						
17.0	5.22	18.33	14.52	7.99						
19.0	5.24	18.50	14.66	7.99	.12	0.19	7.80	12.00	79.00	
21.0	5.23	18.53	14.69	7.99						
23.0	5.22	18.59	14.73	7.99						
25.0	5.23	18.78	14.88	8.00	.12	0.50	7.60	14.40	108.00	

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 16

804C	02/07/75	TIME 0825	LAT 38 03 50	LONG 76 12 42	DEPTH TO BOT. 25.3	WIND 300 - 18K	WEATHER 0			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	4.53	14.19	11.30	7.85						
1.0	4.54	14.21	11.32	7.86	.03	2.30	3.60	2.40	28.00	
2.0	4.55	14.21	11.32	7.86						
3.0	4.53	14.16	11.28	7.85						
4.0	4.56	14.22	11.33	7.85	.03	2.30	3.60	13.80	60.00	
5.0	4.54	14.23	11.33	7.85						
6.0	4.64	14.78	11.76	7.86						
7.0	4.67	14.82	11.79	7.87						
8.0	4.63	14.88	11.84	7.86						
9.0	4.65	15.16	12.06	7.84	.05	2.30	4.80	10.20	51.00	
10.0	4.71	15.54	12.36	7.84						
11.0	4.78	15.75	12.52	7.86						
12.0	4.81	16.06	12.76	7.87						
13.0	4.86	16.15	12.83	7.88	.07	1.60	6.30	10.70	60.00	
14.0	4.92	16.51	13.11	7.90						
15.0	4.99	16.90	13.41	7.90						
16.0	5.06	17.06	13.54	7.89						
17.0	5.06	17.10	13.57	7.89						
18.0	5.09	17.10	13.57	7.88						
19.0	5.11	17.22	13.66	7.88	.07	1.90	6.90	9.40	93.00	
20.0	5.15	17.58	13.94	7.88						
21.0	5.13	17.53	13.90	7.88						
22.0	5.13	17.62	13.97	7.87						
23.0	5.12	17.63	13.98	7.87						
24.0	5.11	17.65	14.00	7.87	.03	2.20	7.30	13.30	112.00	
25.0	5.10	17.57	13.93	7.87						

PROCON 14

744C	02/06/75	TIME 1234	LAT 37 44 00	LONG 76 13 00	DEPTH TO BOT. 14.3	WIND 210 - 08K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	5.34	15.59	12.36	7.89						
1.0	5.34	15.57	12.34	7.89	.03	1.60	4.20	5.10	47.00	
2.0	5.36	15.58	12.35	7.90						
3.0	5.01	16.07	12.76	7.90	.15	1.70	3.40	5.80	40.00	
4.0	5.02	16.39	13.01	7.90						
5.0	5.02	16.49	13.09	7.89	.00	2.10	5.20	9.30	62.00	
6.0	5.05	17.17	13.62	7.86						
7.0	5.05	17.27	13.70	7.85	.00	0.40	6.60	8.10	65.00	
8.0	5.07	17.38	13.79	7.86						
9.0	5.07	17.39	13.80	7.85	.03	0.70	4.80	6.10	48.00	
10.0	5.12	17.98	14.26	7.83						
11.0	5.27	18.75	14.85	7.83	.00	0.70	6.20	7.30	71.00	
12.0	5.52	19.40	15.34	7.82						
13.0	5.58	19.81	15.66	7.82						

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 16

7070	02/05/75	TIME 1205	LAT 37 07 00	LONG 76 07 32	DEPTH TO BOT. 11.9	WIND 330 - 17K	WEATHER 2			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
1.0	5.33	23.34	18.41	7.85	.10	1.00	3.60	5.30	42.70	
2.0	5.78	23.36	18.43	7.85						
3.0	5.81	23.98	18.92	7.85	.10	2.20	5.90	6.70	40.30	
4.0	5.81	24.19	19.09	7.85						
5.0	5.90	25.35	19.99	7.85	.20	1.20	4.30	6.20	47.50	
6.0	5.93	25.97	20.47	7.84						
7.0	5.86	26.46	20.86	7.84	.20	2.20	6.40	8.60	76.30	
8.0	5.80	28.92	22.81	7.82						
9.0	5.82	29.39	23.17	7.82	.17	2.00	8.60	10.90	114.10	
10.0	5.82	29.55	23.30	7.82						

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 17

904	05/26/75	TIME 0920	LAT 39 04 20	LONG 76 19 40	DEPTH TO BOT. 11.6	WIND 000 - 00X	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	19.64	4.91	2.08	7.56						
1.0	19.55	5.03	2.19	7.57	.00	5.10	24.50	16.10	106.00	
2.0	19.37	5.28	2.41	7.49						
3.0	18.98	6.15	3.15	7.36	.00	7.30	17.30	12.40	94.00	0.35
4.0	18.35	7.74	4.49	7.19						
5.0	16.43	9.88	6.50	7.07	.00	11.50	8.30	11.10	84.00	
6.0	14.70	12.38	8.72	7.00	.00	12.80	9.80	9.80	82.00	0.29
7.0	13.56	14.25	10.35	6.96						
8.0	13.29	14.59	10.65	6.96						
9.0	13.21	14.62	10.69	6.96	.03	15.70	6.20	6.40	62.00	0.18
10.0	13.20	14.63	10.70	6.96						

PROCON 17

854E	05/25/75	TIME 0820	LAT 38 54 00	LONG 76 25 00	DEPTH TO BOT. 11.7	WIND 000 - 00X	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	22.05	4.44	1.19	8.69						
1.0	21.95	4.45	1.21	8.70	.00	0.40	39.60	14.60	134.00	0.39
2.0	21.74	4.59	1.37	8.55						
3.0	21.50	4.92	1.67	8.32						
4.0	20.74	6.13	2.76	7.98	.00	0.30	52.50	15.10	127.00	0.41
5.0	20.14	6.69	3.32	7.76						
6.0	18.16	8.42	5.05	7.22	.00	2.50	21.70	14.30	100.00	0.35
7.0	15.42	12.08	8.37	7.03	.00	6.60	20.80	11.30	76.00	0.27
8.0	14.67	13.14	9.31	7.00						
9.0	14.22	13.87	9.95	6.99						
10.0	14.00	14.12	10.17	6.99	.05	8.10	9.40	6.30	56.00	0.19
11.0	13.97	14.15	10.20	6.98						

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 17

834F	05/28/75	TIME 0745	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 12.2	WIND	- K	WEATHER		
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	21.72	6.95	3.15	8.52						
0.5	21.65	7.04	3.24	8.53						
1.0	21.75	7.04	3.22	8.53	.00	0.40	29.00	13.90	135.00	0.40
2.0	21.74	7.08	3.25	8.53						
3.0	21.48	7.22	3.41	8.54						
4.0	21.34	7.38	3.57	8.54						
5.0	20.59	8.40	4.51	8.55	.00	0.90	10.80	7.50	60.00	0.25
6.0	19.19	9.59	5.73	8.24						
7.0	16.78	12.85	8.70	7.54	.00	1.90	29.30	11.50	101.00	0.34
8.0	15.23	15.14	10.74	7.35						
9.0	14.33	16.14	11.57	7.06	.06	4.60	33.90	11.90	115.00	0.48
10.0	14.77	16.38	11.77	7.02						
11.0	14.68	16.50	11.88	7.02	.06	5.20	9.60	9.40	86.00	0.35

PROCON 17

818P	05/27/75	TIME 1127	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 33.5	WIND 000 - 00K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	23.63	7.74	3.28	9.02	.03	0.50	12.70	11.90	127.00	0.34
2.0	21.68	9.01	4.72	8.93						
4.0	21.04	9.51	5.25	8.77	.00	0.90	16.80	12.70	121.00	0.43
6.0	18.32	11.41	7.18	8.24						
8.0	17.35	13.12	8.79	7.70	.05	3.10	13.50	11.20	104.00	0.37
10.0	15.95	16.21	11.42	7.29						
12.0	15.84	17.07	12.10	7.30						
14.0	15.54	17.99	12.86	7.25	.03	7.40	31.90	14.00	145.00	0.43
16.0	15.27	18.33	13.17	7.21						
18.0	15.10	18.49	13.32	7.19						
20.0	14.94	18.65	13.47	7.17						
22.0	14.84	18.70	13.53	7.17						
24.0	14.70	18.83	13.66	7.16	.00	7.90	19.40			0.39
26.0	14.49	18.95	13.79	7.13						
28.0	14.40	18.99	13.83	7.13						
30.0	14.36	19.01	13.86	7.12						

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 17

804C	05/23/75	TIME 0800	LAT 38 03 50	LONG 76 12 42	DEPTH TO BOT. 25.3	WIND 000 - 01K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	21.38	10.29	5.76	9.10						
2.0	20.39	10.96	6.49	9.05	.06	1.20	17.20			0.24
4.0	20.38	11.18	6.66	9.04	.03	1.20	31.20			0.29
6.0	18.54	12.26	7.89	8.69	.00	1.10	51.10			0.31
8.0	16.09	14.93	10.41	7.83						
10.0	15.25	16.85	12.04	7.40						
12.0	15.10	18.30	13.18	7.40						
14.0	14.75	18.92	13.72	7.29	.08	9.20	15.80			0.27
16.0	14.69	18.97	13.77	7.26						
18.0	14.55	19.16	13.94	7.24						
20.0	14.37	19.36	14.13	7.20	.05	10.00	68.90			0.52
22.0	14.26	19.47	14.23	7.17						
24.0	14.20	19.51	14.27	7.16						

PROCON 17

744P	05/22/75	TIME 0840	LAT 37 44 00	LONG 76 07 00	DEPTH TO BOT. 15.9	WIND 175 - 16K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	20.37	12.51	7.67	9.06						
1.0	20.39	12.50	7.66	9.06	.00	0.20	15.80			0.24
2.0	20.36	12.49	7.66	9.06						
3.0	20.22	12.57	7.75	9.04						
4.0	19.94	12.87	8.04	8.98						
5.0	19.36	13.75	8.83	8.83	.00	0.40	18.20			0.39
6.0	18.07	15.48	10.43	8.39						
7.0	17.47	16.11	11.05	8.25						
8.0	17.23	16.29	11.22	8.26						
9.0	16.87	16.95	11.80	8.14	.00	2.70	19.40			0.33
10.0	16.54	17.82	12.53	8.07						
11.0	16.33	17.88	12.62	7.98						
12.0	16.42	18.64	13.18	7.98	.05	3.60	21.60			0.35
13.0	16.40	18.69	13.22	7.99						
14.0	16.06	18.70	13.30	7.90	.00	5.80	12.00			0.22

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 17

7070	05/21/75	TIME 0815	LAT 37 07 00	LONG 76 07 32	DEPTH TO BOT. 11.9	WIND 000 - 00K	WEATHER 0			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	19.57	15.71	10.27	8.67						
1.0	19.61	15.69	10.25	8.67	.00	0.40	9.80	10.90	93.00	0.27
2.0	19.33	16.32	10.79	8.62						
3.0	18.93	19.16	13.03	8.46						
4.0	18.65	21.42	14.81	8.34	.00	0.90	4.80	10.80	78.00	0.34
5.0	18.30	22.73	15.88	8.29						
6.0	17.80	23.74	16.77	8.23	.00	4.00	9.00	9.50	68.00	0.36
7.0	17.73	24.45	17.32	8.22						
8.0	16.98	25.86	18.56	8.15	.04	3.10	8.40	8.20	56.00	0.31
9.0	16.95	26.10	18.75	8.13						
10.0	16.91	26.18	18.82	8.10	.16	7.20	4.90	12.40	73.00	0.39

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CON. CAL. DATE 01 JUL 74

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PROCON 18

904	08/18/75	TIME 0840	LAT 39 04 20	LONG 76 19 40	DEPTH TO BOT. 12.2	WIND 300 - 09K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	25.96	7.55	2.52	8.06						
1.0	25.97	7.44	2.43	8.01						
2.0	25.97	7.41	2.41	7.99	.00	3.70	26.30	26.80	188.00	0.88
3.0	26.03	7.70	2.61	7.97						
4.0	26.26	9.96	4.24	7.58	.00	5.20	8.70	12.80	94.00	0.54
5.0	26.17	10.68	4.80	7.39						
6.0	26.06	11.49	5.44	7.36	.06	8.10	4.80	11.10	75.00	0.35
7.0	25.86	14.53	7.77	7.30	.05	5.80	22.10	22.70	158.00	0.85
8.0	25.52	16.90	9.63	7.50						
9.0	25.52	16.99	9.70	7.50						
10.0	25.52	17.04	9.74	7.51	1.26	17.00	4.20	16.40	131.00	0.41
11.0	25.50	17.04	9.75	7.51						

PROCON 18

834F	08/15/75	TIME 1000	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 11.3	WIND - K	WEATHER 4			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	26.42	9.89	4.14	8.25						
1.0	26.41	9.88	4.14	8.25	.19	4.60				2.12
2.0	26.42	9.87	4.12	8.24						
3.0	26.44	9.88	4.13	8.24						
4.0	26.43	9.88	4.13	8.22	.11	4.50	27.70	33.50	199.00	1.69
5.0	26.44	9.99	4.21	7.98						
6.0	26.31	10.55	4.67	7.45	.12	7.00	30.20	32.40	250.00	1.91
7.0	26.25	12.16	5.89	7.50						
8.0	26.25	12.66	6.26	7.53						
9.0	26.04	13.74	7.12	7.30	.17	14.80	3.90	14.00	127.00	0.69
10.0	25.18	15.03	8.33	7.34						
11.0	25.76	16.55	9.30	7.40	1.22	18.30	7.20	19.30	115.00	0.87

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PROCON 18

818P	08/18/75	TIME 1300	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 33.5	WIND 000 - 00K	WEATHER 4			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.5	28.27	11.34	4.68	8.49	.00	0.20	8.40	21.50	177.00	0.68
2.0	27.31	12.49	5.82	7.69						
4.0	27.07	14.16	7.14	7.55	.35	4.80	3.90	7.90	36.00	0.49
6.0	27.05	14.58	7.45	7.39						
8.0	26.70	17.27	9.56	7.48	.76	9.40	2.80	3.30	47.00	0.26
10.0	26.65	18.16	10.26	7.52						
12.0	26.47	19.31	11.16	7.54						
14.0	26.36	20.20	11.86	7.56						
16.0	26.28	20.50	12.10	7.57	1.07	12.60	1.00	6.10	51.00	0.65
18.0	26.21	20.58	12.18	7.56						
20.0	26.19	20.66	12.25	7.57						
24.0	26.15	20.91	12.45	7.58						
28.0	26.10	20.97	12.51	7.58	2.04	17.10	0.70	0.20	47.00	0.15
30.0	26.12	21.02	12.54	7.57						

PROCON 18

744P	08/14/75	TIME 0705	LAT 37 44 00	LONG 76 07 00	DEPTH TO BOT. 15.0	WIND 175 - 12K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.5	27.31	11.79	5.30	8.47						
1.0	27.39	11.74	5.24	8.47	.09	0.60	6.70	25.00	155.00	
2.0	27.39	11.75	5.25	8.48						
3.0	27.40	11.97	5.41	8.43						
4.0	27.31	12.39	5.75	8.39	.12	1.20	12.20	17.50	136.00	
5.0	26.58	16.87	9.30	7.99	.18	1.50	7.90		130.00	
6.0	26.39	17.51	9.84	7.91						
7.0	26.34	17.77	10.05	7.87						
8.0	26.16	19.30	11.24	7.85	.61	5.80	5.20	13.00	130.00	
9.0	26.16	19.19	11.16	7.84						
10.0	26.14	19.52	11.41	7.83						
11.0	26.11	19.72	11.57	7.81						
12.0	25.96	20.35	12.06	7.77						
13.0	25.86	20.76	12.42	7.70	.72	6.50	10.80	10.80	93.00	
14.0	25.84	20.84	12.48	7.69						

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PROCON 18

7070	08/13/75	TIME 1120	LAT 37 07 00	LONG 76 07 32	DEPTH TO BOT. 11.6	WIND 225 - 03K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	27.78	18.72	10.32	8.43	.10	1.00	4.00	22.70	146.00	0.64
1.0	27.72	18.85	10.44	8.43						
2.0	27.54	19.10	10.68	8.43						
3.0	26.53	22.65	13.63	8.23	.12	0.50	10.10	17.70	163.00	0.55
4.0	26.11	24.28	14.97	8.12						
5.0	25.83	24.93	15.55	8.07	.29	0.10	8.90	10.30	90.00	0.48
6.0	25.47	27.39	17.50	8.04						
7.0	25.25	27.96	17.99	8.03	.49	3.60	5.10	10.60	62.00	0.41
8.0	25.10	28.45	18.40	8.02						
9.0	25.09	28.46	18.42	8.02						
10.0	25.08	28.59	18.51	8.02	.54	3.80	5.10	5.30	63.00	0.21

PROCON 18

08/12/75	TIME 1000	LAT 37 07 00	LONG 75 41 00	DEPTH TO BOT. 15.2	WIND 350 - 08K	WEATHER 1				
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	24.87	31.79	20.98	8.12						
1.0	24.89	31.84	21.02	8.11	.17	0.40	0.20	0.80	15.00	
2.0	24.87	31.81	21.00	8.11						
3.0	24.80	31.84	21.04	8.11						
4.0	24.78	31.81	21.03	8.11						
5.0	24.75	31.78	21.01	8.12	.10	0.00	0.20	3.40	12.00	
6.0	24.73	31.82	21.05	8.12						
7.0	24.68	31.80	21.04	8.12						
8.0	24.52	31.89	21.16	8.12						
9.0	22.37	32.19	22.01	8.06	.33	0.50	0.50	2.80	16.00	
10.0	20.13	32.61	22.93	8.03						
11.0	19.87	32.65	23.03	8.03	.36	0.20	0.60	1.50	21.00	
12.0	19.56	32.71	23.16	8.02						
13.0	19.12	32.77	23.31	8.02						
14.0	18.94	32.81	23.36	8.01	.38	0.10	1.10	2.10	30.00	

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CON. CAL. DATE 01 JUL 74

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PROCON 19

904	02/13/76	TIME 0830	LAT 39 04 20	LONG 76 19 40	DEPTH TO BOT. 12.5	WIND 170 - 15K	WEATHER 2			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	4.02	4.98	4.02	7.76	.07	16.90	11.00	17.90	120.00	
1.0	4.31	4.95	3.99	7.76						
2.0	4.27	4.95	3.98	7.76	.05	18.40	11.30	16.30	127.00	
3.0	4.53	4.92	3.96	7.77						
4.0	4.50	4.98	4.01	7.75	.09	17.40	12.10	18.40	112.00	
5.0	5.22	4.94	3.96	7.75						
6.0	5.37	5.23	4.18	7.76	.07	16.70	11.50	16.10	121.00	
7.0	5.53	5.42	4.32	7.76						
8.0	5.64	5.95	4.74	7.77	.06	12.60	8.30	14.40	95.00	
9.0	6.08	7.86	6.22	7.68						
10.0	6.40	8.85	6.98	7.64						
11.0	6.63	9.09	7.16	7.62	.05	13.20	7.00	12.80	92.00	

PROCON 19

854E	02/13/76	TIME 1150	LAT 38 54 00	LONG 76 25 00	DEPTH TO BOT. 11.6	WIND 145 - 08K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	2.84	7.05	5.68	8.19	.14	8.70	24.80	16.30	124.00	
1.0	2.65	7.25	5.84	8.14						
2.0	2.45	7.35	5.92	8.04	.17	7.30	15.70	9.60	77.00	
3.0	2.43	7.65	6.16	7.93						
4.0	2.43	7.75	6.24	7.94	.14	7.00	13.00		71.00	
5.0	2.30	7.97	6.41	7.87						
6.0	2.24	8.34	6.71	7.87	.09	6.00	13.20	8.50	70.00	
7.0	2.23	9.16	7.37	7.77						
8.0	2.15	9.59	7.71	7.71	.11	6.50	12.00	10.80	65.00	
9.0	2.25	10.66	8.57	7.66						
10.0	2.35	10.85	8.72	7.66	.14	7.30	8.30	8.20	55.00	

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CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 19

834F	02/09/76	TIME 1050	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 12.2	WIND	- K	WEATHER		
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	1.16	8.63	6.94	7.38	.09	2.90	7.30	13.00	104.00	
1.0	1.23	8.62	6.93	7.38						
2.0	1.14	8.65	6.95	7.36	.11	2.50	8.70	16.90	103.00	
3.0	1.13	8.65	6.95	7.35						
4.0	1.13	8.68	6.98	7.35	.04	1.60	7.70	13.40	108.00	
5.0	1.07	8.85	7.11	7.33						
6.0	1.12	8.90	7.15	7.33	.09	2.60	8.50		107.00	
7.0	1.31	9.85	7.92	7.30						
8.0	1.52	10.40	8.36	7.30	.11	1.90	15.70	26.60	159.00	
9.0	1.83	11.34	9.11	7.22						
10.0	2.06	11.93	9.58	7.24	.06	2.90	20.00	26.10	201.00	
11.0	2.02	12.07	9.70	7.24						

PROCON 19

818P	02/12/76	TIME 0900	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 33.5	WIND 345 - 08K	WEATHER 0			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	2.39	10.17	8.18	8.13	.06	1.30	3.10	9.30	76.00	
2.0	2.35	10.16	8.17	8.15						
4.0	2.43	10.73	8.62	8.07	.09	0.70	5.00	15.00	117.00	
6.0	2.40	11.34	9.11	8.05						
8.0	2.39	11.46	9.21	8.05						
10.0	2.43	11.96	9.60	8.04						
12.0	2.53	12.45	10.00	8.06	.09	1.30	9.50	20.00	134.00	
14.0	2.58	12.67	10.17	8.07						
16.0	2.59	12.76	10.24	8.07						
18.0	2.68	13.13	10.53	8.07	.06	2.30	11.90	18.60	133.00	
20.0	2.78	13.49	10.81	8.07						
22.0	2.81	13.66	10.95	8.08						
24.0	2.85	13.81	11.07	8.08	.08	2.70	7.00	18.00	110.00	
26.0	2.89	13.98	11.21	8.08						
28.0	2.92	14.16	11.35	8.08						
30.0	2.92	14.38	11.52	8.08	.10	2.90	11.00	18.00	120.00	

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PROCON 19

804C		02/11/76		TIME 1450		LAT 38 03 50		LONG 76 12 42		DEPTH TO BOT. 26.2		WIND 340 - 15K		WEATHER 2	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	2.44	11.69	9.39	8.22	.06	0.10	2.70	7.00	79.00						
2.0	2.43	11.67	9.37	8.21											
4.0	2.40	11.71	9.41	8.21	.07	0.60	3.50	6.90	77.00						
6.0	2.41	12.05	9.68	8.21											
8.0	2.36	12.30	9.87	8.19	.24	0.20	4.20	7.80	84.00						
10.0	2.30	12.49	10.03	8.18											
12.0	2.35	12.61	10.13	8.17											
14.0	2.68	13.54	10.86	8.16	.27	1.40	9.30		107.00						
16.0	2.84	14.13	11.32	8.17											
18.0	2.85	14.18	11.36	8.18											
20.0	2.84	14.22	11.39	8.18	.12	0.90	8.40	12.50	108.00						
22.0	3.00	14.40	11.54	8.19											
24.0	2.91	14.51	11.62	8.19	.07	1.20	7.20	13.00	106.00						

PROCON 19

744P		02/09/76		TIME 1715		LAT 37 44 00		LONG 76 07 00		DEPTH TO BOT. 13.7		WIND 005 - 04K		WEATHER 1	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	2.48	13.27	10.64	7.55	.00	0.80	4.20	12.40	105.00						
1.0	2.47	13.30	10.67	7.55											
2.0	2.48	13.35	10.72	7.55	.00	1.90	4.20								
3.0	2.49	13.41	10.76	7.55											
4.0	2.50	13.51	10.84	7.55	.00	0.90	4.10	13.40	100.00						
5.0	2.51	13.62	10.93	7.55											
6.0	2.53	13.69	10.98	7.55	.03	0.60	3.70	12.10	106.00						
7.0	2.53	13.76	11.04	7.55											
8.0	2.51	13.82	11.09	7.54	.03	1.30	3.50	11.30	110.00						
9.0	2.49	13.92	11.17	7.54											
10.0	2.60	14.53	11.65	7.51	.00	3.30	5.00								
11.0	2.64	14.81	11.87	7.51											
12.0	2.66	14.85	11.90	7.52											

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CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

FROCON 19

7070	02/11/76	TIME 0845	LAT 37 07 00	LONG 76 07 32	DEPTH TO BOT. 12.5	WIND 220 - 16K	WEATHER 2			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	4.24	17.38	13.84	8.34	.14	0.70	4.20	7.50	89.00	
1.0	4.23	17.34	13.81	8.40						
2.0	4.23	17.37	13.83	8.39	.10	0.60	4.80	9.50	88.00	
3.0	4.22	17.45	13.90	8.38						
4.0	4.46	23.36	18.55	8.34	.00	0.30	7.20	17.00	102.00	
5.0	4.84	26.62	21.09	8.26						
6.0	4.91	27.03	21.41	8.27	.00	1.10	6.40	12.00	116.00	
7.0	4.93	27.08	21.45	8.27						
8.0	4.93	27.17	21.52	8.27	.08	1.00	6.90	11.00	89.00	
9.0	4.94	27.32	21.64	8.28						
10.0	4.94	27.37	21.67	8.28	.04	1.40	6.60	10.50	93.00	
11.0	4.94	27.36	21.66	8.28						

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PROCON 20

904		04/23/76		TIME 1030		LAT 39 04 20		LONG 76 19 40		DEPTH TO BOT. 13.4		WIND 180 - 16K		WEATHER 1	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	17.29	4.60	2.31	8.84	.04	0.10	15.30								
1.0	17.35	4.37	2.12	8.89											
2.0	17.25	4.30	2.08	8.88	.05	0.30	13.40								
3.0	16.80	4.78	2.54	8.76											
4.0	15.80	5.42	3.20	8.50	.05	0.50	8.20								
5.0	15.37	5.58	3.39	8.30											
6.0	14.76	6.00	3.82	7.85	.05	1.00	10.20								
7.0	15.07	6.42	4.09	7.69											
8.0	14.18	6.87	4.58	7.34	.07	0.70	19.60								
9.0	13.56	7.27	4.98	7.14											
10.0	13.45	7.29	5.01	7.09	.10	4.50	35.50								
11.0	13.39	7.32	5.05	7.08											
12.0	13.32	7.37	5.09	7.07											

PROCON 20

854E		04/24/76		TIME 1105		LAT 38 54 00		LONG 76 25 00		DEPTH TO BOT. 11.6		WIND 085 - 02K		WEATHER 1	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	17.02	6.80	4.04	8.69	.00		3.20								
1.0	17.06	6.79	4.02	8.70											
2.0	16.88	6.78	4.05	8.71	.00	0.50	3.60								
3.0	16.75	6.80	4.09	8.70											
4.0	16.66	6.83	4.13	8.68	.00	0.50	6.30								
5.0	16.65	6.84	4.14	8.65											
6.0	16.62	6.89	4.13	8.63	.00	0.80	3.80								
7.0	16.50	7.08	4.35	8.56											
8.0	16.40	7.18	4.44	8.50	.00	0.80	9.30								
9.0	16.36	7.23	4.49	8.44											
10.0	16.12	7.37	4.64	8.30	.00	1.30	10.90								

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CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 20

834F	04/19/76	TIME 1100	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 12.5	WIND 145 - 09K	WEATHER 4			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	14.77	7.57	5.02	8.69	.00	1.60	1.00			
1.0	14.74	7.56	5.02	8.65						
2.0	14.71	7.55	5.02	8.64	.00	0.50	2.20			
3.0	14.25	7.63	5.15	8.60						
4.0	13.72	7.90	5.45	8.56	.04	0.60	5.40			
5.0	13.12	8.23	5.79	8.45						
6.0	12.42	8.45	5.76	8.23	.04	2.30	7.80			
7.0	12.30	8.66	6.24	8.14						
8.0	12.24	9.08	6.56	7.93	.00	1.40	8.90			
9.0	11.78	10.59	7.80	7.68						
10.0	11.75	11.15	8.23	7.48	.04	5.30	9.00			
11.0	11.69	11.53	8.54	7.44						

PROCON 20

818P	04/22/76	TIME 0830	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 34.1	WIND 180 - 11K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	16.29	8.99	5.85	8.80	.03	0.20	8.70			
2.0	16.29	9.00	5.85	8.80						
4.0	16.29	9.00	5.85	8.80						
6.0	16.19	9.00	5.87	8.78	.00	0.30	9.30			
8.0	15.91	9.06	5.97	8.76						
10.0	15.47	9.16	6.12	8.73						
12.0	13.87	10.69	7.57	8.34	.03	0.70	8.60			
14.0	11.94	13.14	9.74	7.67						
16.0	11.87	13.66	10.16	7.64						
18.0	11.86	13.82	10.28	7.63	.04	6.30	11.40			
20.0	11.85	14.06	10.46	7.62						
22.0	11.86	14.41	10.74	7.65						
24.0	11.86	14.47	10.78	7.65	.04	5.30	12.00			
26.0	11.85	14.58	10.87	7.66						
28.0	11.84	14.68	10.94	7.68						
30.0	11.84	14.78	11.03	7.67	.04	5.40	11.70			

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 20

804C		04/21/76		TIME 1525		LAT 38 03 50		LONG 76 12 42		DEPTH TO BOT. 21.6		WIND - K		WEATHER	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	16.32	9.49	6.22	8.77											
1.0	16.15	9.47	6.24	8.76											
2.0	16.25	9.47	6.22	8.75											
3.0	16.11	9.48	6.25	8.76											
4.0	16.12	9.47	6.25	8.75											
5.0	15.94	9.49	6.29	8.73											
6.0	15.73	9.53	6.36	8.75											
7.0	15.53	9.55	6.41	8.75											
8.0	14.24	10.80	7.59	8.44											
9.0	12.83	12.48	9.11	8.31											
10.0	12.67	12.71	9.31	7.94											
11.0	12.31	13.54	10.00	7.82											
12.0	12.28	13.96	10.32	7.80											
13.0	12.34	14.11	10.43	7.81											
14.0	12.34	14.54	10.77	7.81											
15.0	12.29	14.63	10.84	7.79											
16.0	12.30	14.86	11.01	7.79											
17.0	12.28	14.85	11.01	7.80											
18.0	12.29	14.93	11.07	7.81											
19.0	12.20	14.98	11.13	7.81											
20.0	12.22	15.08	11.20	7.81											
21.0	12.22	15.10	11.21	7.79											

PROCON 20

744P		04/19/76		TIME 1840		LAT 37 44 00		LONG 76 07 00		DEPTH TO BOT. 14.3		WIND 150 - 09K		WEATHER 1	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	15.77	10.36	6.99	8.65	.00	1.40	4.60								
1.0	15.75	10.28	6.93	8.65											
2.0	15.52	11.42	7.84	8.58											
3.0	15.09	12.73	8.92	8.47	.00	0.60	5.30								
4.0	14.14	13.61	9.76	8.36											
5.0	12.78	14.40	10.59	8.22	.00	0.40	6.20								
6.0	12.60	14.47	10.67	8.18											
7.0	12.58	14.46	10.67	8.17											
8.0	12.63	14.82	10.94	8.16	.00	2.00	12.60								
9.0	12.65	15.06	11.12	8.16											
10.0	12.59	15.28	11.30	8.14											
11.0	12.57	15.59	11.53	8.13	.00	1.50	9.80								
12.0	12.57	15.80	11.70	8.13											
13.0	12.56	15.85	11.74	8.12	.00	1.50	8.40								

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 20

7070	04/21/76	TIME 0900	LAT 37 07 00	LONG 76 07 32	DEPTH TO B01. 12*2	WIND 205 - 04K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	16.90	16.65	11.59	8.48	.00	0.60	4.10			
1.0	16.71	16.71	11.65	8.49						
2.0	16.53	17.00	11.91	8.50	.00	0.70	2.90			
3.0	15.82	20.53	14.74	8.42						
4.0	15.31	23.15	15.35	8.35	.00	0.10	6.80			
5.0	15.20	23.65	17.24	8.33						
6.0	14.78	24.54	18.01	8.30	.00	0.70	2.60			
7.0	14.66	24.90	18.31	8.30						
8.0	14.56	25.10	18.48	8.30	.00	0.60	2.30			
9.0	14.18	26.36	19.53	8.25						
10.0	14.07	26.55	19.69	8.23						
11.0	14.06	26.55	19.70	8.23	.00	0.20	2.30			

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 21

904	08/27/76	TIME 0745	LAT 39 04 20	LONG 76 19 40	DEPTH TO BOT. 12.8	WIND 170 - 06K	WEATHER 4			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	25.77	10.06	4.45	7.58						
1.0	25.76	10.04	4.43	7.59	.06	4.80	8.40			
2.0	25.72	9.98	4.41	7.58						
3.0	25.72	10.02	4.43	7.58	.11	4.30	8.00			
4.0	25.72	10.09	4.49	7.55						
5.0	25.65	10.22	4.60	7.48	.11	5.70	7.10			
6.0	25.59	10.28	4.66	7.35						
7.0	25.47	10.40	4.79	7.25	.11	7.00	7.00			
8.0	25.34	10.90	5.20	7.01						
9.0	25.12	11.24	5.51	6.92	.22	8.10	3.50			
10.0	24.96	12.19	6.27	6.82						
10.0	24.81	12.68	6.67	6.72	.73	9.10	1.00			
12.0	24.80	12.78	6.76	6.70						

PROCON 21

854E	08/27/76	TIME 1200	LAT 38 54 00	LONG 76 25 00	DEPTH TO BOT. 0.0	WIND 150 - 04K	WEATHER 4			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	26.23	11.57	5.45	7.78	.95	2.20	120.00			
1.0	26.36	11.37	5.26	7.95						
2.0	26.05	11.34	5.33	7.78						
3.0	26.01	11.37	5.36	7.72	.36	1.00	10.30			
4.0	26.01	11.36	5.35	7.72	.14	1.80	8.50			
5.0	25.86	11.42	5.44	7.54						
6.0	25.68	11.58	5.61	7.30	.16	5.20	6.00			
7.0	25.62	11.64	5.67	7.20						
8.0	25.57	11.77	5.79	7.14	.25	7.00	4.10			
9.0	25.49	12.03	6.00	7.05						
10.0	25.43	12.17	6.13	7.02	.41	8.10	2.60			

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 21

834F	08/26/76	TIME 0830	LAT 38 34 00	LONG 76 26 00	DEPTH TO BOT. 12.2	WIND 000 - 00K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	26.00	10.75	4.90	7.80						
1.0	26.01	10.75	4.90	7.80	.08	1.10	6.00			
2.0	26.04	10.74	4.88	7.81						
3.0	26.01	10.80	4.94	7.80	.06	1.60	6.30			
4.0	25.95	11.32	5.34	7.68						
5.0	25.99	12.34	6.09	7.57	.06	2.10	2.00			
6.0	25.81	12.91	6.57	7.37						
7.0	25.30	14.55	7.94	7.08	.09	5.60	0.80			
8.0	25.12	15.82	8.94	6.94						
9.0	25.13	16.00	9.07	6.92	.15	5.70	0.80			
10.0	25.08	16.65	9.57	6.88						
11.0	25.06	17.02	9.85	6.87	.62	6.90	0.30			

PROCON 21

818P	08/24/76	TIME 1300	LAT 38 18 23	LONG 76 17 25	DEPTH TO BOT. 32.0	WIND 000 - 00K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	26.39	12.57	6.15	7.70						
2.0	25.87	13.01	6.63	7.55	.75	0.50	4.40			
4.0	25.63	13.36	6.96	7.46						
6.0	25.48	13.70	7.25	7.37						
8.0	25.12	15.43	8.65	7.16	.21	4.20	1.10			
10.0	25.04	16.19	9.24	7.15						
12.0	25.00	17.27	10.06	7.13	.30	5.50	0.60			
14.0	24.94	18.61	11.08	7.20						
16.0	24.93	18.68	11.13	7.17						
18.0	24.88	18.96	11.36	7.20	.55	6.70	0.40			
20.0	24.84	19.10	11.47	7.18						
22.0	24.34	19.16	11.52	7.19						
24.0	24.77	19.43	11.74	7.16						
26.0	24.74	19.54	11.83	7.18	.82	6.80	0.40			
28.0	24.70	19.65	11.93	7.20						
30.0	24.65	19.74	12.00	7.19	.60	6.90	0.50			

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 21

804C		08/25/76		TIME 0755		LAT 38 03 50		LONG 76 12 42		DEPTH TO BOT. 19.8		WIND 000 - 00K		WEATHER 1	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	25.66	14.25	7.62	7.82											
1.0	25.67	14.19	7.56	7.81	.03	3.90	1.20								
2.0	25.81	14.32	7.63	7.81											
3.0	25.74	14.39	7.69	7.75											
4.0	25.68	14.55	7.83	7.72											
5.0	25.70	14.58	7.85	7.71											
6.0	25.69	14.58	7.86	7.70	.00	1.20	1.60								
7.0	25.64	14.80	8.03	7.66											
8.0	25.43	15.33	8.49	7.52											
9.0	25.34	15.37	8.54	7.49											
10.0	24.99	15.81	8.97	7.35	.08	3.40	1.30								
11.0	24.87	17.27	10.09	7.30											
12.0	24.77	17.81	10.53	7.17	.18	5.40	0.60								
13.0	24.73	19.28	11.64	7.26											
14.0	24.72	19.62	11.90	7.32											
15.0	24.70	20.16	12.30	7.32	.38	5.40	0.40								
16.0	24.69	20.44	12.52	7.32											
17.0	24.67	20.65	12.68	7.32											
18.0	24.67	20.81	12.80	7.32	.46	6.00	0.50								
19.0	24.68	20.82	12.80	7.30											

PROCON 21

744C		08/24/76		TIME 1415		LAT 37 44 00		LONG 76 13 00		DEPTH TO BOT. 9.8		WIND - K		WEATHER	
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	P04	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P					
0.0	27.00	14.78	7.62	8.34	.08	1.10	2.70								
1.0	26.90	14.77	7.64	8.34											
2.0	26.92	14.78	7.64	8.34	.11	1.00	3.60								
3.0	26.36	14.72	7.76	8.31											
4.0	26.19	14.71	7.80	8.31	.06	0.40	2.10								
5.0	26.13	14.73	7.84	8.29											
6.0	26.12	14.74	7.85	8.27	.08	1.30	0.90								
7.0	26.18	14.77	7.85	8.27											
8.0	25.47	15.51	8.61	8.01	.08	2.20	1.60								
9.0	25.22	16.12	9.13	7.86	.09	2.00	0.80								

ICTI NO. 4

CON. CAL. DATE 01 JUL 74

TEMP. CAL. DATE 01 JUL 74

PROCON 21

7070	08/21/76	TIME 0920	LAT 37 07 00	LONG 76 07 32	DEPTH TO BOT. 12.2	WIND 005 - 04K	WEATHER 1			
DEPTH	TEMPERATURE	SALINITY	SIGMA T	PH	PO4	AMMONIUM	CHLOROPHYLL	PART. N	PART. C	PART. P
0.0	25.80	20.54	12.28	8.18						
1.0	25.44	23.05	14.26	8.16	.13	0.30	1.40			
2.0	25.09	24.60	15.52	8.16						
3.0	24.85	25.08	15.95	8.14	.28	0.30	3.10			
4.0	24.57	26.08	16.78	8.10						
5.0	24.36	27.15	17.64	8.05	.42	1.20	1.70			
6.0	24.25	28.06	18.36	8.05						
7.0	24.20	28.51	18.71	8.03	.49	1.90	1.10			
8.0	24.20	28.69	18.84	8.03						
9.0	24.19	28.65	18.82	8.04	.49	1.90	1.00			
10.0	24.21	28.60	18.78	8.04						
11.0	24.18	28.65	18.82	8.04	.57	2.10	1.00			

FIGURES B-2 through B-39. Contours of sigma-t, chlorophyll a, POC and inorganic nutrients on six cruises from February 1975 through August 1976.

FIGURE B-2.

FIGURE B-3.

FIGURE B-4.

FIGURE B-5.

FIGURE B-6.

FIGURE B-7.

FIGURE B-8.

FIGURE B-9.

FIGURE B-10.

FIGURE B-11.

FIGURE B-12.

FIGURE B-13.

FIGURE B-14.

FIGURE B-15.

FIGURE B-16.

FIGURE B-17.

FIGURE B-18.

FIGURE B-19.

FIGURE B-20.

FIGURE B-21

FIGURE B-22.

FIGURE B-23

FIGURE B-24.

FIGURE B-25.

FIGURE B-26.

FIGURE B-27.

FIGURE B-28.

FIGURE B-29.

FIGURE B-30.

FIGURE B-31.

FIGURE B-32.

FIGURE B-33.

FIGURE B-34.

FIGURE B-35.

FIGURE B-36.

FIGURE B-37

FIGURE B-38.

FIGURE B-39.

Figures B-40 through B-42. Graphs comparing particulate carbon with nitrogen, particulate phosphorus with nitrogen, and chlorophyll a with particulate carbon for all stations and all depths sampled during cruises in May and August 1975 and February 1976.

FIGURE B-40.

FIGURE B-41

FIGURE B-42.

	Upper Layer		Lower Layer	
	$\mu\text{g atom(liter}\cdot\text{day)}^{-1}$		$\mu\text{g atom(liter}\cdot\text{day)}^{-1}$	
	NH_4^+	NO_3^-	NH_4^+	NO_3^-
904N	-6.2	-2.6	+8.4	+3.0
853F	-0.7	-0.3	+2.2	+1.7
834G	-0.1	+0.6	+0.5	+0.2
818P	+1.0	-0.9	-1.2	+0.8
804C	+0.2	-0.6	+0.3	+0.8
744	+0.4	-0.1	-1.1	-0.4
707Ø				

Table B-4. Sources (+) and sinks (-) of ammonium and nitrate expressed as mass per liter per day for cruise Procon 16 in February 1975.

Segment or Boundary	N : P				Vertical Flux (+) Upward
	Upper Layer Loss	Lower Layer Excess	Upper Layer Seaward Flux	Lower Layer Landward Flux	
904N	-	0.8	55.0	19.1	+21.5
853F	0.2	144	4.5	26.2	- 9.1
834G	-	-	17.0	29.0	-
818P	0.8	9.3	3.1	15.3	+13.5
804C	-	16.0	84.0	17.7	+24.8
744	6.4	50.0	12.5	23.5	-
707Ø			1.7	3.4	

Table B-5. Atom ratios of NH_4^+ -N and PO_4^{3-} -P flux calculated from Figures B-46 and B-47. Only segments and boundaries showing identical signs and directions for net ammonium and phosphate flux are considered; others indicated by (-).

FIGURE B-43.

FIGURE B-44.

FIGURE B-45.

FIGURE B-46.

FIGURE B-47.

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C. Effects of Heat and Chlorine on Natural Assemblages of Chesapeake Bay
Phytoplankton.

J. L. Taft

1. Introduction

Several studies have dealt with the effects of passage through an electric power generating plant on phytoplankton (Morgan and Stross, 1969; Hamilton et al., 1970; Carpenter et al., 1974a; Carpenter, 1973; Carpenter et al., 1972) and zooplankton (Heinle, 1969; Carpenter et al., 1974b). During passage through power plant cooling condensers the plankton are subjected to physical abrasion, rapidly increased temperature and, at certain times, are exposed to biocides such as chlorine which are added to cooling water to prevent attached organisms from growing within the plumbing.

Physical abrasion and temperature increase may (Morgan and Stross, 1969) or may not (Carpenter et al., 1972) reduce phytoplankton productivity and, in cold seasons, elevated temperature may stimulate productivity (Morgan and Stross, 1969; Gurtz and Weiss, 1974; Brooks, 1974). Raising temperature by an average of 5.5°C in pools of natural brackish water increased dinoflagellate numbers and the numbers of larger cells (Carpenter, 1973). The populations also became more diverse and matured earlier than control populations at ambient temperature.

An organism which survives the initial temperature perturbation during entrainment may suffer physiological alterations if it remains in a heated effluent. Naylor (1965) and Coutant (1969) discuss temperature effects on metabolism, reproduction and behavior of fishes and some invertebrates. It is unlikely that an entrained phytoplankter would remain in an effluent plume for periods as extensive as those experienced by benthic or attached

organisms but short exposure to a 5°C increase could provoke alterations in biological functions of such an organism. Drost-Hansen and Thorhaug (1967) and Drost-Hansen (1969) even suggest that alterations in water structure at temperatures between 29 and 33°C cause profound changes in membrane systems and, possibly, macromolecules such as enzymes. If this is correct, temperature elevation of 5°C in power plant cooling water from 26 to 31°C might induce chronic physiological alterations in phytoplankton through changes in water structure.

Chlorination dramatically reduces phytoplankton biomass and productivity in power plant discharges (Hamilton et al., 1970; Carpenter et al., 1972; Fox and Moyer, 1975) even when the amount added is $0.1 \text{ mg liter}^{-1}$ and the residual chlorine in solution is less than $0.05 \text{ mg liter}^{-1}$. However, recent studies have confirmed that chlorine addition to seawater results in formation of hypobromous acid, hypobromite ions and chloride ions (J. H. Carpenter, personal communication; Eppley et al., 1976). Thus, bromine compounds could account for biocidal activity in the presence of low residual chlorine concentrations.

Copper sulfate concentrations of $12.5 \mu\text{M}$ are toxic to phytoplankton in the absence of metal chelating organic compounds (Palmer and Maloney, 1955). This is about 200 times ambient total copper concentration and is about 10^3 times the dissolved copper concentration in upper Chesapeake Bay. Heavy metals, such as copper (Roosenberg, 1969), may be leached from condenser tubes and be carried out of the plant with adverse effects on organisms that have not passed through the power plant as well as on those which have.

Most studies of the effects of power plant entrainment on phytoplankton reported in the open literature have considered only the organisms which actually passed through condensers and have ignored the effects on organisms

which never entered the power plant but are mixed into the discharge plume. This is probably due to the extremely large number of samples which must be collected to detect small changes in conveniently measured parameters such as chlorophyll a or number of organisms (Carpenter et al., 1974a). A 2 to 1 dilution of discharge water with new natural water results in the organisms in a volume equal to the entrained volume being subjected to perturbations averaging one-half the magnitude endured by organisms actually entrained. However, since discharge dilution occurs at non-linear (logarithmic) rates, simply averaging perturbation magnitudes within a large water volume is not realistic on small scales. Also, the time spent in the discharge plume should influence the magnitude of a perturbation upon the planktonic organisms (Schubel and Auld, 1973; Schubel, 1973).

During the past 18 months we initiated studies of the effects of experimentally induced environmental perturbations on those physiological parameters of natural phytoplankton assemblages from Chesapeake Bay for which we already have base line data. These parameters are carbon fixation rate, orthophosphate uptake, ammonium uptake, alkaline phosphatase activity, ATP, in vivo fluorescence and release of dissolved organic matter. The sensitivity of the measurements made within a captured sample enable us to detect small changes in the biological functions of the exposed organisms. Thus, we hope to avoid the sampling problems noted by Carpenter et al. (1974a).

2. Status

The perturbations evaluated to date are 5°C to 15°C temperature elevation and additions of chlorine up to 0.55 ppm. These experiments were conducted at three stations in February, two stations in April and one station

in August, 1976. Figures C-1 and C-2 show the sample heating and cooling rates on logarithmic scales for two February experiments. At station Ø707V on the continental shelf surface water was heated over 5 hours to 12°C above ambient and cooled over 4 hours to near ambient. The temperature in the "control" carboy was slightly elevated from sitting on deck. At station 707Ø in the lower bay a carboy of surface water was equilibrated with the air temperature on deck (≈3°C above water temperature). One subsample was then heated quickly to 23°C and maintained at 21°C for 60 minutes after which it was placed in an incubator cooled with near surface water. The control subsample was drawn from the carboy and placed directly in the incubator.

In each experiment primary productivity and chlorophyll a concentrations were measured before and after exposure to elevated temperature. The raw data in Table C-1 show that ¹⁴C uptake was nearly identical in heated water and in the controls, even up to 17 hours after exposure at station Ø707V.

Figure C-3 shows the results of chlorine addition on ¹⁴C uptake at station 904N in February. As noted by many other investigators, chlorine addition sharply reduces ¹⁴C uptake.

In April 1976 water samples were heated for two hours at 25°C (10°C above ambient) at stations 707Ø and 834G, then cooled to and held at ambient temperature for 15 hours. ¹⁴C was added and the samples incubated for 24 hrs in an ondeck incubator at ambient temperature. The data in Table 1 indicate heating to 25°C had essentially no effect differentiable from controls in terms of ¹⁴C uptake, chl a or ATP.

An experiment was conducted at station 7070 in August 1976 in which water sampled by Van Dorn cast from 1 m and screened through 35 μ m mesh was heated to 30° or 40°C (5° and 15°C above ambient) for 15 minutes then cooled to ambient for 1 hr. The data in Table 1 indicate heating to 40°C markedly reduced 14 C uptake and biomass as measured by chl a and ATP. This contrasts to the February experiment at the same station in which heating to 14°C above ambient (21°C) had no detectable effect on 14 C uptake or chl a concentration. Thus, it appears the absolute temperature, and perhaps exposure time, have more influence on phytoplankton survival than does the magnitude of temperature elevation from ambient.

Figure C-1. Heating and cooling rates for natural water collected from station Ø707V.

Figure C-2. Heating and cooling rates for natural water from station 707Ø

Figure C-3. Effect of chlorine on primary productivity (^{14}C -uptake) of natural phytoplankton from station 904N.

Table C-1.

	^{14}C Uptake CPM (liter·hr) $^{-1}$	Chl <u>a</u> $\mu\text{g}\cdot\text{liter}^{-1}$	ATP $\mu\text{g}\cdot\text{liter}^{-1}$
February 1976			
<u>Station 0707V</u>			
Control	1412	1.4	
Heat +12°C	1808	1.4	
17 hr after heating and cooling			
Control	2420		
Heat +12°C	2567		
<u>Station 7070</u>			
Control	20312	3.2	
Heat +14°C	20884	3.1	
<u>Calvert Cliffs</u>			
Intake Canal	8315	4.7	
Discharge Plume	4984	4.0	
April 1976			
<u>Station 7070</u>			
Before heating		2.7	1.3
After ^{14}C incubation			
Control	2624	2.5	1.3 $\pm$ 0.2*
Heat +10°C	2985	2.7	0.9
<u>Calvert Cliffs</u>			
Intake Canal	41517	2.2	3.1
Discharge Plume	35132	1.7	2.3
<u>Station 834G</u>			
Before ^{14}C incubation			
Control		6.6	1.1
Heat +10°C		5.5	1.0
After ^{14}C incubation			
Control	10272	5.5	1.1
Heat +10°C	9629	7.1	1.3

Table C-1 (continued)

	^{14}C Uptake CPM (liter·hr) ⁻¹	Chl <u>a</u> μg·liter ⁻¹	ATP μg·liter ⁻¹
August 1976			
<u>Station 7070</u>			
Control	88320	1.4	1.1
+5°C	72265	1.8	0.9
+15°C	10855	0.4	0.3

*Mean and standard deviation for 9 determinations.

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D. WATER COLUMN NUTRIENT REGENERATION

E. O. Hartwig

1. Introduction

Water column nutrient regeneration or cycling is a major process in the deep ocean where 95% or more of the primary productivity is recycled in the upper water layers (Redfield et al., 1963; Riley, 1951). The concept of the coupling of water column nutrient cycling and primary production has been discussed by Corner and Davies (1971), Eppley et al. (1973), Ketchum (1962), Martin (1968), Dugdale (1967) and Dugdale and Goering (1967). In the Chesapeake Bay where there is a high phytoplankton biomass and productivity in the presence of low ambient nutrient concentrations, McCarthy et al. (1975, 1977 unpublished) have demonstrated that phytoplankton will preferentially utilize NH_4^+ even in the presence of high ambient concentrations of NO_3^- . The NH_4^+ being supplied is through local processes (regenerative) and not from river discharges or rainfall.

The rate of supply of inorganic nutrients by local regenerative processes is unknown, but two major supply routes are available. The first is through benthic metabolic activity resulting in a gradient of nutrients from the sediments to the overlying water and the advection of these nutrients into the euphotic zone. The second supply route is regeneration entirely within the water column.

Measurements of water column regeneration cannot be done directly in a dynamic system such as the Bay. While theoretically it might be possible to measure NH_4^+ increases in an incubated water sample, the uptake of NH_4^+ by phytoplankton, even in the dark, precludes obtaining meaningful results in their presence. Pulsed isotopic labeling of the inorganic nitrogen and phosphorus pools permit estimation of regeneration rates by

the isotope dilution technique and a preliminary experiment was performed using $^{32}\text{PO}_4^{-3}$. In the deep ocean it is possible to determine the amount of regenerated inorganic nitrogen and phosphorus from the apparent oxygen utilization (AOU) (Redfield et al., 1963). This method, however, cannot be applied to the Bay which is shallow so water masses do not retain their integrity as they are transported through the Bay. Another method is to determine the respiration rate of a water sample in a darkened container. Then, from the amount of oxygen consumed, calculate the quantity of inorganic nitrogen and phosphorus regenerated using a suitable respiratory quotient (RQ) and atomic ratios for the regeneration of carbon:nitrogen:phosphorus (C:N:P).

Dark bottle oxygen concentration changes have long been a method for determining the respiration rate of incubated water samples. Due to sensitivity problems, however, this method has not been extensively utilized in unpolluted waters. To overcome this difficulty investigators have resorted to measuring oxygen changes in plankton samples concentrated by reverse-flow (Pomeroy and Johannes, 1966, 1968) or by filtration (Pomeroy, 1976). The effects of concentration (time involved, crowding, etc.) on plankton respiration, however, can be severe (Satomi and Pomeroy, 1965; Pomeroy, 1976).

These and other investigators have used oxygen electrodes and chambers of various designs to measure oxygen concentration changes. Most electrodes are readable to only 0.05 ppm and have an accuracy of about 0.1 ppm. Therefore, one would prefer to measure oxygen changes of substantially greater than 0.05 ppm. The highest respiration rate in the waters measured by Pomeroy and Johannes (1968) was $15.5 \text{ mg-at } \text{O}_2 \text{ m}^{-3} \text{ d}^{-1}$ ($=.00506 \text{ ppm } \text{O}_2 \text{ h}^{-1}$). To measure an oxygen concentration change of 0.1 ppm in an unconcentrated

sample of water would, therefore, require approximately 10 hours of incubation. Since most respiration values were more than an order of magnitude less than this, incubation times would need to exceed 100 hours for unconcentrated samples. Such long incubations could result in severe interpretational difficulties due to growth on walls, biomass changes, etc.

In addition to the electrode measurement of oxygen concentration, there is the standard Winkler titration, which, is a very accurate method for determining oxygen concentration (0.1%), and depending upon the reagents used and the method of end-point detection, can be very sensitive (Carpenter, 1965a, b; Carritt and Carpenter, 1966). With standardized reagents the sensitivity of the Winkler technique is dependent upon the operator and the end-point detection scheme. Photometric end-point detection of triiodide (absorption maximum at 350 nm) virtually eliminates operator error and is the most sensitive end-point detection scheme having an uncertainty of titration not greater than 0.04% (Carpenter, 1965a).

Therefore, the Winkler titration coupled with the photometric end-point detection method appeared to offer promise for analyzing oxygen consumption in natural water samples. To this end Bryan et al. (1976) have recently reported on the construction and use of photoelectric titrator. We felt their instrument could be improved significantly in several areas and in Section 2 of this publication report on those improvements.

From oxygen uptake rates the amount of organic carbon respired is calculated using an RQ of 0.85. Commonly determined RQ values range from 0.27 in an intertidal sandflat to 1.6 for Chlorella using nitrate as a nitrogen source (Strickland, 1960; Teal and Kanwisher, 1961; Pamatmat, 1968). From the literature values an RQ of approximately 0.85 appears to be

reasonable. One must realize that this is an unknown variable but from other studies appears to be a reasonable value which varies by $\pm 15\%$.

The incorporation of C:N:P atomic ratios into the calculation will yield inorganic nitrogen and phosphorus regeneration rates. The ratio in the Chesapeake Bay for particulate C:N:P is approximately 240:30:1 as discussed in Section B. The ratio of NH_4^+ to soluble reactive phosphorus (SRP) has also been calculated but no trend in the ratio could be calculated due to the very low ambient concentration of SRP and the dynamic water flow characteristics of the Bay. This is in contrast to the open ocean where Alvarez-Borrego et al. (1975) have recently re-examined the ratios given by Redfield et al. (1963) and found that 106C:16N:1P is a satisfactory representation of the atomic ratios of planktonic regenerative processes.

We have used the Redfield ratio to calculate regeneration rates from respiration rates in the Chesapeake Bay. The reason for this is the highly variable nature of the ratios in the Bay, especially for N:P, and the unknown contribution of detrital material to the C:N:P ratio.

2. Status

Measured respiration and calculated regeneration rates for the 5 cruises are listed in Tables D-1 to D-5. The rates show no trend along either the horizontal or vertical axis of the Bay, and there were only a few occasions where there was a statistical (at $p = 0.05$) difference between stations or depths during a single cruise. For these reasons the respiration rates for the total plankton (TP) data are averaged over the entire Bay for each cruise and listed at the bottom of each cruise column.

Tables D-1 to D-5. Results of five cruises at the various stations showing the measured respiration rate and the calculated nitrogen and phosphorus regeneration rate.

- ¹Resp: measured respiration rate mg-at $O_2 \ell^{-1} h^{-1} \times 10^{-3}$
- ²N: calculated N regenerated mg-at N $\ell^{-1} h^{-1} \times 10^{-4}$
- ³P: calculated P regenerated mg-at P $\ell^{-1} h^{-1} \times 10^{-5}$
- ⁴S: surface sample (approximately 0.3 m)
- ⁵TP: total plankton
- ⁶<35: plankton passing 35 μm mesh
- ⁷<3: plankton passing 3 μm Nucleopore filter
- ⁸In and Out: intake canal and discharge plume at Calvert Cliffs Nuclear Generating Plant
- ⁹In-ht: intake canal water-heated from 17°C to 30°C in 4 minutes then incubated at 15°C.
- ¹⁰ $\bar{x}$: mean rate for untreated TP samples for all stations.

Table D-1

PROCON 18 (August, 1975)

<u>Station</u>	<u>Sample</u>		<u>¹Resp</u>	<u>²N</u>	<u>³P</u>
	<u>Depth</u>	<u>Fraction</u>			
Ø707V	⁴ S	⁵ TP	3.4	4.4	2.7
	S	⁶ <35	1.2	1.5	0.96
707V	S	TP	2.4	3.1	1.9
	10 m	TP	2.1	2.7	1.7
744	S	TP	4.6	5.9	3.7
	S	<35	4.1	5.3	3.3
	S	⁷ <3	2.3	3.0	1.8
P-12	S	TP	2.5	3.2	2.0
	S	<3µm	1.2	1.5	0.96
818P	S	TP	3.6	4.6	2.9
834G	S	TP	4.6	5.9	3.7
853F	S	TP	3.4	4.4	2.7
	S	<3	2.7	3.5	2.2
	6 m	TP	7.1	9.1	5.7
904N	S	TP	4.9	6.3	3.9
	7 m	TP	5.2	6.7	4.2
10 _{x̄}			4.0	5.1	3.2

Table D-2

PROCON 19 (February, 1976)

<u>Station</u>	<u>Sample</u>		<u>¹Resp.</u>	<u>²N</u>	<u>³P</u>
	<u>Depth</u>	<u>Fraction</u>			
Ø707V	8m	TP	.60	.77	.48
707V	1m	TP	3.5	4.5	2.8
	10m	TP	2.8	3.6	2.3
744	2m	TP	1.7	2.2	1.4
	10m	TP	1.3	1.7	1.0
804C	4m	TP	2.3	3.0	1.9
	20m	TP	1.4	1.8	1.1
Calvert Cliffs	⁸ In	TP	1.3	1.7	1.0
	⁸ Out	TP	2.2	2.8	1.8
834G	2m	TP	3.3	4.2	2.7
	9m	TP	1.3	1.7	1.0
904N	2m	TP	2.1	2.7	1.7
	11m	TP	.85	1.1	.68
$\bar{x}$			1.9	2.4	1.5

Table D-3

PROCON 20 (April, 1976)

<u>Station</u>	<u>Sample</u>		<u>¹Resp.</u>	<u>²N</u>	<u>³P</u>
	<u>Depth</u>	<u>Fraction</u>			
Ø707V	4m	TP	1.8	2.3	1.4
707V	5m	TP	.96	1.2	.77
	5m	<3	1.0	1.3	.83
818P	6m	TP	1.9	2.4	1.5
	18m	TP	1.0	1.3	.83
Calvert Cliffs	⁹ In + ht	TP	5.4	6.9	4.3
	In	TP	2.7	3.4	2.2
834G	4m	TP	3.7	4.7	3.0
	11m	TP	3.4	4.4	2.7
904N	2m	TP	5.0	6.4	4.0
	10m	TP	4.4	5.6	3.5
$\bar{x}$			2.8	3.5	2.2

Table D-4

PROCON 21 (August 1976)

<u>Station</u>	<u>Sample</u>		<u>¹Resp.</u>	<u>²N</u>	<u>³P</u>
	<u>Depth</u>	<u>Fraction</u>			
707V	1m	TP	2.5	3.1	2.0
744	2m	TP	5.7	7.3	4.5
804C	2m	TP	2.9	3.7	2.3
818P	2m	TP	2.0	2.6	1.6
834G	1m	TP	2.8	3.6	2.3
853F	1m	TP	4.0	5.1	3.2
904N	1m	TP	2.7	3.5	2.2
$\bar{x}$			3.2	4.1	2.6

Table D-5

NUSIBAR 3 (April, 1977)

<u>Station</u>	<u>Sample</u>		<u>¹Resp.</u>	<u>²N</u>	<u>³P</u>
	<u>Depth</u>	<u>Fraction</u>			
Ø707V	3m	TP	2.0	2.5	1.6
	3m	<3	.65	.83	.52
707V	2m	TP	3.5	4.5	2.8
724R	2m	TP	2.1	2.7	1.7
804C	5m	TP	2.5	3.2	2.0
823B	3m	TP	2.8	3.6	2.2
834C	1m	TP	3.5	4.5	2.8
904N	1m	TP	3.0	3.8	2.4
922Z	3m	TP	2.3	3.0	1.9
$\bar{x}$			2.7	3.4	2.1

a. Temperature effects

Rates of respiration and regeneration in the water column of the Bay show seasonal changes with the lowest rates in the winter and highest rates in summer. This increase is in part due to the temperature increase but other factors such as phytoplankton biomass and productivity, freshwater inflow, zooplankton biomass and activity, and microbial biomass and activity also account for portions of the increase.

Temperature alone, however, may be the significant factor as found in April, 1976 when the respiration rates measured in a heated (from 17°C to 30°C in 4 minutes, then incubated at 15°C) water sample were significantly greater than the same water incubated unheated. This water sample was taken from the intake canal of the Calvert Cliffs Nuclear Generating Plant. Also, during February 1976 organisms in water sampled from the Calvert Cliffs intake canal had a lower respiration rate than organisms in the heated water (+2 to 5°C) of the discharge plume (1.3 vs. $2.2 \times 10^{-3} \mu\text{g-at O}_2 \ell^{-1} \text{h}^{-1}$). Even though the samples were not of the same water mass, the data indicate that temperature in the Bay may be the major factor affecting the respiration rate of the plankton.

b. Sampling effects

Some constituents of the plankton are not sampled quantitatively using Van Dorn bottles, especially those organisms capable of avoiding the sampler, such as the macro-zooplankton. To determine the effect this bias in sampling had upon the measured respiration rate a vertical net haul (35 μm mesh) was taken and organisms passing a 253 μm mesh but not a 405 μm mesh were isolated. Five zooplankton were picked and added to 3 respiration bottles, 10 zooplankton added to 3 other bottles and 20 zooplankton to 3 other respiration bottles,

each bottle being already filled with TP sample water. The respiration rates of these three sets were then compared to the same water having no added zooplankton. The above additions correspond to densities of approximately 40, 80 and 160 zooplankton per liter. The respiration rates measured were:

<u>Added Zooplankton</u>		<u>mg-at O₂ l⁻¹h⁻¹</u>
0	:	2.9x10 ⁻³
5	:	2.5x10 ⁻³
10	:	2.9x10 ⁻³
20	:	3.5x10 ⁻³

Although the rates are not different at the $p = 0.05$ level it does appear that at zooplankton densities of approximately 160 l⁻¹ one would have higher respiration rates than those measured by sampling simply with a Van Dorn bottle. These results agree with those of Pomeroy and Johannes (1966) who found that in short term incubations net zooplankton respiration accounts for only 0.6-5.7% of the total respiration.

The above results could be attributed to several causes. The sampling and picking method giving rise to artifacts, e.g. zooplankton being shocked and not behaving normally; zooplankton respiration is not a major portion; the Van Dorn bottle is sampling those organisms mainly responsible for measured respiration rates. Data from Tables D-1 to D-5 would lead one to believe that the latter is the explanation. In a few simple fractionation experiments TP were further separated by size into either those passing a 35 μ m mesh and/or those passing a 3 μ m Nucleopore filter. At the ocean station approximately 35% of respiration activity passed the 35 μ m mesh in August, 1976 and 33% passed the 3 μ m filter in May, 1977. This station is anomalous as most activity appears to be in the larger size fraction (>35 μ m). At Bay station 744 in August, 1975 almost all the respiratory activity passed

a 35 μm mesh and 50% of the activity passed a 3 μm filter. On the three other stations where the 3 μm filtrate was tested for its respiratory activity, the contained microbial populations accounted for 50%, 79% and 104% of the respiratory activity of the total water sample. Therefore, it appears that, at least in the Bay, it is the smaller organisms which account for most of the respiratory activity.

McCarthy et al. (1974) showed that most of the chlorophyll a was present in the phytoplankton passing a 35 μm mesh. Tables D-7 and D-8 show the same relationship, and in addition gives values for the $\mu\text{g } \ell^{-1}$ of phaeophytin and adenosine triphosphate (ATP). (We wish to thank Dr. Grace Picciolo, Jody Deming and Dave Nibley for determining the ATP concentrations for us.) In our samples the <35 μm phytoplankton accounted for 70-115% of the total chlorophyll a and 41-118% of the ATP. If one plots $\mu\text{g ATP } \ell^{-1}$ vs $\mu\text{g Chl a } \ell^{-1}$ the obvious relationship between ATP and chl a is revealed (Fig. D-1). The relationship exists for all size fractions except the <0.4 μm . Also of interest are the two distinct regressions which emerge if one plots the size fraction data from Procon 21 by station. The stations from 804C and to the south lie on one line and those from 818P and to the north on another. 818P seems to be a changing point as regards this relationship.

The regression equations and standard deviations (S.D.) are:

$$y = a + bx$$

$$\text{line 1: } \mu\text{g-ATP } \ell^{-1} = -0.052 + 0.503(\mu\text{g Chla } \ell^{-1})$$

$$\text{S.D. } a = 0.051$$

$$\text{S.D. } b = 0.028$$

$$n = 23 \text{ samples}$$

$$\text{line 2: } \mu\text{g ATP } \ell^{-1} = -0.027 + 0.203(\mu\text{g Chla } \ell^{-1})$$

$$\text{S.D. } a = 0.069$$

$$\text{S.D. } b = 0.014$$

$$n = 32 \text{ samples}$$

Table D-7. Procon 20

<u>Station</u>	<u>1_z</u>	<u>2_{SF}</u>	<u>µg/l¹</u> <u>chl a</u>	<u>µg/l</u> <u>phaeo</u>	<u>µg/l</u> <u>ATP</u>	<u>% of</u> <u>TP</u>
Ø707V	4m	TP	8.2	-	2.9	100
		<35	-	-	2.6	90
		< 3	-	-	.056	1.9
		< 1	-	-	.028	1.0
707Ø	5m	TP	1.8	2.0	3.7	100
		<35	2.1	.10	1.5	41
		< 3	.57	.21	.15	4.1
		< 1	.31	.04	.096	2.6
744	5m	TP	20.6	0	2.9	100
		<35	14.2	.39	1.5	52
		< 3	.80	.13	.14	4.8
		< 1	.33	.09	.050	1.7
818P	6m	TP	6.6	2.7	1.9	100
		<35	-	-	2.1	110
		< 3	.61	.26	.32	17
		< 1	.20	.06	.18	9.5
904N	2m	TP	9.8	2.1	2.2	100
		<35	6.9	5.0	1.9	86
		< 3	3.1	.26	.67	31
		< 1	.15	.098	0	0

¹_z: depth

²_{SF}: size fraction in µm

Table D-8. Procon 21

<u>Station</u>	<u>1_z</u>	<u>2_{SF}</u>	<u>µg/l chl a</u>	<u>µg/l phaeo</u>	<u>µg/l ATP</u>	<u>% of TP</u>
707Ø	1m	TP	2.0	1.0	1.9	100
		<35	2.3	.91	1.3	68
		< 8	1.3	1.3	.94	50
		< 5	.94	1.1	.45	24
		< 3	.90	.90	.53	28
		< 1	.49	.36	.23	12
		< .8	.29	.28	.17	8.9
		< .4	.41	.07	.022	1.2
744	2m	TP	4.5	.81	2.3	100
		<35	4.1	.86	1.9	83
		< 8	2.6	.96	1.3	57
		< 5	2.0	1.2	.81	34
		< 3	1.9	1.1	1.0	44
		< 1	1.3	.35	.35	15
		< .8	1.0	.21	.19	8.3
		< .4	.42	.12	.046	2.0
804C	2m	TP	2.2	1.3	1.1	100
		<35	2.2	1.1	.84	76
		< 8	1.5	1.3	.78	71
		< 5	1.6	.78	.68	62
		< 3	1.1	.99	.57	52
		< 1	.50	.51	.23	21
		< .8	.33	.39	.15	14
		< .4	.17	.12	.017	1.5

¹_z: depth²_{SF}: size fraction in µm

Table D-8. Procon 21 (continued)

<u>Station</u>	<u>1</u> <u>z</u>	<u>2</u> <u>SF</u>	<u>µg/l</u> <u>chl a</u>	<u>µg/l</u> <u>phaeo</u>	<u>µg/l</u> <u>ATP</u>	<u>% of</u> <u>TP</u>
818P	2m	TP	4.9	1.3	1.7	100
		<35	3.8	1.2	.91	54
		< 8	2.3	1.3	.54	32
		< 5	1.5	1.0	.43	25
		< 3	1.1	1.3	.44	26
		< 1	.74	.40	.085	5.0
		< .8	.49	.36	.10	5.9
		< .4	.25	.23	.038	2.2
834G	1m	TP	8.0	.93	1.1	100
		<35	6.9	1.3	1.1	100
		< 8	5.3	1.3	.85	77
		< 5	3.1	.54	.51	46
		< 3	2.2	.45	.35	32
		< 1	1.0	.31	.21	19
		< .8	.92	.39	.080	7.3
		< .4	.50	.13	.022	2.0
853F	1m	TP	10.8	2.7	2.9	100
		<35	10.0	2.7	1.8	62
		< 8	5.8	3.0	1.3	45
		< 5	3.4	2.5	.72	25
		< 3	2.4	2.0	.38	13
		< 1	1.5	.77	.20	6.9
		< .8	1.9	.60	.18	6.2
		< .4	.92	.29	.046	1.6
904N	1m	TP	10.2	1.4	1.7	100
		<35	9.8	1.2	2.0	118
		< 8	4.8	1.6	.75	44
		< 5	2.8	1.6	.57	34
		< 3	1.0	.90	.41	24
		< 1	1.9	.51	.19	11
		< .8	1.5	.24	.10	5.9
		< .4	.68	.30	.020	1.2

Figure D-1. $\mu\text{g ATP } \ell^{-1}$ vs. $\mu\text{g chl a } \ell^{-1}$ for all size fractions of plankton during Procon 21 (Aug., 1976) cruise.

The intercepts are not significantly different from zero (i.e. 0 chl a = 0 ATP) but both regression coefficients are not only significantly ($p = 0.05$) different from zero but also significantly ($p = 0.05$) different from each other. The reason for this distinct physiological difference in the amount of ATP per unit chlorophyll a between upper and lower Bay phytoplankton is unknown. It may simply be a function of the species present or it may be representative of physiological changes which occur in the phytoplankton during transit through the Bay.

c. Relation between O_2 utilization and nutrient regeneration

The phytoplankton of the Bay often have substantial biomass and productivity occurring in the presence of low ambient nutrient concentrations. Therefore, an important aspect of water column respiration is the relation between O_2 utilization and the nutrient regeneration resulting from the measured metabolism. Tables D-1 to D-5 list the calculated nutrient regeneration rates and their mean using an R.Q. = 0.85 and C:N:P ratio of 106:16:1.

Table D-9 lists the results of the cruise in April, 1977. Simultaneous measurements of respiration and productivity were made by the light bottle-dark bottle technique using a photosynthetic quotient (PQ) of 1.2. The quantity of N and P required was calculated using an assimilation ratio of 106C:16N:1P. Productivity and dark respiration incubations were done on the deck of the ship in surface water flow through incubators. At all stations except 818P (late afternoon) and 922Z (turbid incubator water) stainless steel screening was used to reduce ambient light to 35% of its incident intensity. Water samples were drawn from a depth approximating the 35% light level.

The emergent pattern of Table D-9 is the increasing productivity as one goes from the mouth towards the head of the Bay and the decreasing percentage of the required N and P which is regenerated within the same water mass. These conclusions assume that the recycling within the water column is rapid and that both gross and net photosynthesis are dependent upon regenerated N and P for sustained productivity. It, therefore, appears that not only can one see a difference between the upper and lower Bay as regards the ATP:Chl ratio but also as regards the ratio of photosynthetically required N and P:regenerated N and P. In the lower Bay 40% to 153% of the required N and P can be supplied through water column regenerative processes while in the upper Bay it is 24% or less. Again, it appears that the demarcation between upper and lower Bay is made near station 818P.

d. Cooling tower effluent effects

One aspect of power plants located around the Chesapeake Bay is their discharge into the Bay of water run through copper (Cu)-nickel (Ni) condensor tubes. To examine, in a cursory manner, the effect of this Cu-Ni enriched water the following experiments were run. Water from the Chalk Point power plant (C.P.) was collected from the cooling ponds and stored in the dark at 4°C for two months. This aged water was then diluted with half-strength Atlantic Ocean sea water to obtain the following concentrations of Chalk Point cooling water; 0%, 10%, 25%, 50%, 70%, 90% and 100%. One ml of a 1 part per thousand mercuric chloride solution was added to duplicate samples of 0% and 100% Chalk Point water to serve as controls. Replicate aliquots of a bacterial suspension were added to the entire series of dilutions. Five pure cultures of bacteria isolated from Chesapeake Bay were tested. The bacterial suspensions in the Chalk Point dilution series

Table D-9.

<u>Station</u>	Productivity	Nutrient Requirement		<u>Supplied by Respiration</u>
	<u>¹_C</u>	<u>²_N</u>	<u>³_P</u>	
Ø707V	1.10	1.66	1.04	153%
707Ø	2.63	3.97	2.48	114%
724R	4.47	6.75	4.22	40%
804C	2.60	3.92	2.45	82%
823B	9.79	14.8	9.24	24%
834C	12.9	19.5	12.2	23%
904R	15.3	23.1	14.4	16%
922Z	32.2	48.6	30.4	6%

$$^1_{\text{mg-at C l}^{-1}\text{h}^{-1} \times 10^{-3}}$$

$$^2_{\text{mg-at N l}^{-1}\text{h}^{-1} \times 10^{-4}}$$

$$^3_{\text{mg-at P l}^{-1}\text{h}^{-1} \times 10^{-5}}$$

were preincubated for 15 to 20 minutes before adding either 0.1 μCi of ^{14}C -acetate or ^3H -acetate to each sample. After incubation at 20°C (^{14}C -acetate) or 15°C (^3H -acetate) for 1 hour the samples were filtered through $0.2\ \mu\text{m}$ membrane filters and placed into a scintillation cocktail. Each sample filter was counted and the dpm of activity determined by the channels ratio method.

The results, shown in Table D-10, indicate an increased rate of uptake with increasing content of C.P. water. Differences in the data are a result of not only response by the various organisms but in the case of the ^{14}C -acetate may also be due to changes in the velocity of respiration with respect to uptake with the changing content of C.P. water. Metal ion concentrations were (we thank Dr. A. Eaton and V. Grant for the analysis):

<u>C.P.</u>	<u>Typical Bay</u>
Cu : 69 ppb	1-2 ppb
Ni : 30 ppb	1-2 ppb
Zn : 6.5 ppb	1-2 ppb

Zinc (Zn) was used as a tracer for the concentrating factor by condensor tubes as it is not a component of the tubes. Therefore, the C.P. water was concentrated 3-6 fold. Stimulation of bacterial uptake in C.P. water may be due to the concentrating of organic matter by the 3-6 fold in the condensation process. The effect of the increased metal concentrations is unknown, but could have been either stimulatory or inhibitory.

In another experiment the effect of residual chlorine on bacterial uptake and respiration of ^{14}C -acetate was examined. Chlorine was added to 5 ml of sample water as sodium hypochlorite to final concentrations of approximately 0, .22, .44 and 2.2 ppm and at the same time varying concen-

Table D-10.

Substrate	² % C.P. Water	Uptake (% of 0% C.P. water)		
		Organism		
		<u>7</u>	<u>JDW 80</u>	
¹⁴ C-acetate	0 + HgCl ₂	12	5	
	0	100%	100	
	10	127	125	
	25	201	236	
	50	243	166	
	70	244	217	
	90	62	155	
	100 + HgCl ₂	8	2	
		<u>#8</u>	<u>#6</u>	<u>Ps 1</u>
³ H-acetate	0 + HgCl ₂	2	3	101
	0	100	100	100
	10	89	96	126
	25	82	122	109
	50	120	121	94
	70	159	157	96
	90	145	158	133
	100	182	181	152
	100 + HgCl ₂	3	3	1

²C.P. - Chalk Point power plant cooling pond water.

trations of ^{14}C -acetate were added. The intent was to determine the kinetic parameters V_m and K_s as described by Hobbie and Crawford (1969), however, the velocity of uptake plus respiration over the range of substrate concentrations used was linear not hyperbolic, therefore, these parameters could not be established. Nonetheless, as the rate of uptake plus respiration vs. concentration of substrate was linear over the one hour incubation, the rates of uptake plus respiration could be compared.

	$\frac{\mu\text{g C l}^{-1}\text{h}^{-1} \pm 95\% \text{C.L.}}{r^2}$	
0 ppm:	$6.66 \times 10^{-5} \pm 2.50 \times 10^{-5}$	.8758
.22 ppm:	$2.75 \times 10^{-5} \pm 0.90 \times 10^{-5}$	.9247
.44 ppm:	$2.31 \times 10^{-5} \pm 0.87 \times 10^{-5}$	.9025
2.2 ppm :	$2.27 \times 10^{-5} \pm 0.91 \times 10^{-5}$	.9830

*C.L. = Confidence limits

As shown above the rates could be precisely depicted as a linear function. From these results one concludes that, first, no matter how much residual chlorine was added between .22 to 2.2 ppm the inhibition compared to 0 ppm was the same; and second, the mean inhibition was 65% of the total uptake plus respiration. It is readily apparent that not only can residual chlorine adversely affect phytoplankton productivity (Carpenter et al., 1972) but can likewise affect the metabolic activities of the bacterial population. The consequence of this is a decreased oxidation of organic matter which affects the cycling of nutrients to phytoplankton and yields an increase in the organic loading of the water.

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E. SEDIMENT-WATER COLUMN NUTRIENT EXCHANGE

E. O. Hartwig and J. L. Taft

1. Introduction

Benthic communities receive the organic matter required for heterotrophic processes from sinking organisms and detritus and, in limited circumstances, autotrophic production. Depending upon the environment at the site of deposition, the settled organic matter will be removed by resuspension, diffusion and/or metabolic processes (Teal and Kanwisher, 1961; Pamatmat, 1971, 1973; Smith, 1973; Hartwig, 1974, 1976b). These benthic metabolic processes, of which 30-95% is due to bacteria (Hargrave, 1969; Smith et al. 1972; Smith, 1973; Hartwig, 1974), result in the assimilation of a portion of the organic matter, the release of small portion (exo-enzymes, vitamins, etc.) and the mineralization of the remainder. It is this latter mechanism by which organic phosphorus and nitrogen are converted to inorganic forms. These are, of course, required nutrients for phytoplankton growth and it is the release of these nutrients, specifically ammonium and orthophosphate, from the bottom sediments into the water column with which the present and proposed work is concerned.

The rate at which nutrients are released into the water column will depend upon factors that influence their formation (ie., the metabolic rate) such as redox potential, pH and temperature. In addition, such physical or geophysical factors as diffusion, resuspension, bioturbation, adsorption and sediment pumping (pressure changes due to wave action) will influence the rate of nutrient release from the sediments (Carritt and Goodgal, 1954; Hayes, 1964; Pomeroy et al., 1965; Lee, 1970; Mortimer, 1971; Hale, 1974, 1975; Hartwig, 1974, 1976a; Serruya et al., 1974; Glibert, 1976; Smetacek et al., 1976). The impact of benthic release of nutrients on the nutrient

chemistry of the overlying water column will depend on such factors as the rate of nutrient release, depth of water, degree of vertical mixing into the overlying water, rate of uptake of nutrient by phytoplankton in the surface layers and the water column concentration of the nutrient (Hartwig, 1976a).

The literature contains several reports in which the metabolic products were found to influence the water nutrient chemistry. Pomeroy et al. (1965) found that in Doboy Sound, Georgia, the sediment stabilized the phosphate concentration in the overlying water at approximately $1 \mu\text{mol l}^{-1}$. Hale (1975) measured benthic nutrient fluxes in Narragansett Bay, Rhode Island and found that in summer the benthos releases four to six times as much ammonia and phosphate to the bay as do river runoff and sewage input. The relative importance of the processes decreased with decreasing water temperature. Rowe et al. (1975) calculated that benthic release in the New York Bight accounted for 200% of the nitrogen required by phytoplankton. On the other hand, Glibert (1976) calculated that measured benthic release rates would have no detectable effect on the water column nutrient chemistry in Great Bay, New Hampshire. However, she did not measure ammonia which is the most abundant form of nitrogenous nutrient released by sediments. Hartwig (1976a), working off of LaJolla, California, reported that a two year average of $872 \mu\text{mol m}^{-2}\text{d}^{-1}$ of ammonium and $77 \mu\text{mol m}^{-2}\text{d}^{-1}$ phosphate was released from the sediments. This was, however, an insignificant fraction of the phytoplankton requirements in that area.

The Chesapeake Bay receives significant inputs of nutrients from land runoff and urban centers through the tributary river systems (Carpenter et al., 1969). The major inputs are both seasonal and temporally limited, and through much of the year the concentrations of dissolved inorganic nutrients

Minimum disturbance multiple corer being tested aboard the
R/V Warfield in April, 1977.

are low. Phytoplankton productivity is, however, relatively high during these low nutrient conditions, and it is obvious that the required nutrients must be supplied by recycling processes (McCarthy et al., 1975; Taft et al., 1975; Taft and Taylor, 1976; Taylor, unpublished data in Progress Report to Energy Research and Development Administration, 1975). Benthic regeneration is one phase of a recycling process and could possibly influence phytoplankton growth and, therefore, the productivity of the food chain. The distributions of nutrients in the Bay are often strongly suggestive of benthic regeneration (see Figures E-1, E-2 and E-3). However, the impact of these sediment processes on the chemistry of nutrients in the water column of the estuary is a poorly understood component of the nutrient fluxes (Bricker and Troup, 1975).

2. Status

The major activity for the past year has been the redesign and construction of a disturbance free multiple corer (DFMC). The basic operating principle of the corer is as described by Craib (1965). Briefly, the operating principles of the corer are to have the bottom of the corer frame contact the sediment first. The frame encircles a hydraulic piston to which are attached 4 core tubes. When the frame reaches the sediment the holding force on the hydraulic piston is relaxed and the piston with attached core tubes slowly descends, driven by the weight of the core tube holders plus any attached weights, at a velocity determined by the rate at which water contained within the hydraulic system can escape through a small orifice in the piston. The DFMC was redesigned from drawings given to us by Dr. Mario Pamatmat of Auburn University and constructed by Mr. Joe Walters.

The corer was field tested for the first time on the April, 1977 cruise and with it we obtained cores from several areas in the Bay. Minor modifications to the frame itself and minor redesign of the core closing apparatus were found to be necessary. Working drawings of the corer are now being completed and if finished in time will be included with this report.

Two preliminary experiments were performed using cores obtained from station 831P and 904N to determine if 1) relatively undisturbed cores could be taken by the core and, 2) changes in nutrient concentrations could be measured fairly rapidly.

The answer to question (1) is yes. Dr. E. O. Hartwig and C. Dunmire dived (SCUBA) with the corer to watch its operation. These observations revealed it performed according to design. The core tubes took approximately 45 seconds to penetrate 15 cm (0.33 cm sec^{-1}) into the sediment. The largest disturbance was created by the corer contacting the bottom, but most of the disturbance was directed out from the core tubes. On board ship the water appeared to be murky but not much more so than bottom water (BW) sampled with a Van Dorn bottle. Nutrient levels in bottom water (as close as Van Dorn could be taken, ie. approximately 0.5-1.0 m above bottom) and core tube water were:

		$\text{NH}_4 (\mu\text{g-at } \ell^{-1})$		$\text{SRP} (\mu\text{g-at } \ell^{-1})$	
		<u>B.W.</u>	<u>Core</u>	<u>B.W.</u>	<u>Core</u>
831P	1	4.9	5.1	.07	.17
	2	4.9	4.9	.07	.09
904N	1	20.3	23.5	.27	.59
		20.3	21.7	.27	.40

Therefore, it appears that there was minimal disturbance of the sediment surface. Visually this was also observed by the presence of fine, flocculent

material on the surface of the core sediment which was easily disturbed on board ship by a gentle movement of the water immediately above the sediment surface.

The answer to question (2), can we measure nutrient changes in the water above the sediment, is also yes. The experiments were neither controlled nor quantitative, but nutrient concentration changes were readily observed. The cores were incubated in uncooled plastic tubs on deck and, therefore, incubation conditions did not resemble in situ conditions. Water overlying the sediment was siphoned into clean bottles, filtered through a prewashed GF/C filter and the ammonium (NH_4^+) and soluble reactive phosphorus (SRP) concentrations were determined on board ship. The difference between initial and final nutrient concentrations was corrected for volume of overlying water, area of core tube and hours of incubation. The results are given below.

	<u>hr</u>	<u>$\mu\text{g-at NH}_4^+ \text{ m}^{-2} \text{ h}^{-1}$</u>	<u>$\mu\text{g-at SRP m}^{-2} \text{ h}^{-1}$</u>
Station 831P			
1st Core:	2.4	+2.1	-0.43
	8.5	+0.91	+0.07
2nd Core:	2.4	+7.6	-0.26
	8.5	+2.2	+0.17
Station 904N			
1st Core:	4	-2.2	+0.67
2nd Core:	4	+26.1	+0.30

The results were quite variable, presumably due to two minor design problems making it difficult to remove the core tubes from the corer without disturbing the upper layer of fine sediment, and due to non-uniform incubation conditions. The design will be modified and a core tube incubator will be constructed to overcome these difficulties.

Figure E-1. Distribution of ammonium concentration in Chesapeake Bay. May, 1975.
J. L. Taft, unpublished data.

Figure E-2. Distribution of ammonium concentration in Chesapeake Bay. August, 1975.
J. L. Tøft, unpublished data.

Figure E-3. Distribution of ammonium concentration in Chesapeake Bay. February, 1976.
J. L. Tait, unpublished data.

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F. MICRO-ZOOPLANKTON ECOLOGY

J. F. Heinbokel

1. Introduction

Although research on the abundance, distribution and activities of planktonic organisms has been actively pursued for many decades, relatively little is known of those components of the zooplankton which will pass through all but the finest collecting nets. It has long been known (e.g. Lohmann, 1908) that this heterogeneous assemblage of protozoans and minute metazoans can comprise a significant portion of the zooplankton, but it is only recently that the earlier work of Lohmann has been confirmed and extended. This recent research (see especially the series of investigations of Beers and Stewart, 1967, 1970, 1971 and Beers et al. 1971, 1975) has shown the micro-zooplankton (defined now as those zooplankton which will pass a 200 μ m mesh (UNESCO, 1968)) to be an ubiquitous and abundant part of the total planktonic assemblage throughout the surface layers of the open ocean.

In spite of this recent work on the distribution and abundance patterns of the micro-zooplankton, very little is known of their metabolic activities, nutritional needs, or trophic relationships with other components of the plankton, making evaluation of their role in the transfer of energy and materials in the sea very difficult. However, the small size and often simple life cycle of the various micro-zooplankters suggest both very rapid metabolic and growth rates (Fenchel, 1974; Johannes, 1965; Zeuthen, 1947) and an ability to utilize food sources of a size largely unavailable to the larger crustacean grazers (Anraku and Omori, 1963; Marshall, 1973; Nival and Nival, 1976), giving this fraction of the zooplankton at least the potential to influence profoundly the trophic dynamics within the planktonic

assemblage. The experimental work which has been done to date (Blackbourn, 1974; Dewey, 1976; Gold, 1973; Hamilton and Preslan, 1970; Heinbokel, 1977 and in prep.; Johansen, 1976; Paffenhöffer, 1971; Spittler, 1973) has largely confirmed these expectations. For example Heinbokel (1977 and in prep.) has shown that tintinnids isolated from Southern California coastal waters were capable of ingesting microflagellates at rates equivalent to approximately 75% of the tintinnids' body volume per hour while displaying specific growth rates in excess of 0.06 hr^{-1} (a generation time of slightly less than 12 hr). In extrapolating these results to the assemblage of tintinnids observed in the coastal waters off Southern California, Heinbokel (1977) estimated that this single component of the micro-zooplankton would, at times, be consuming material equivalent to more than 20% of the total planktonic primary production.

Data for evaluating the role of the micro-zooplankton in estuaries in general and the Chesapeake Bay in particular are still too scarce to allow meaningful generalizations or conclusions, although a number of observations suggest that the impact of these forms may be highly important. Although the systematic survey data which are available for evaluating the standing stocks of micro-zooplankton in the Chesapeake Bay (Mulford, 1972; Whaley and Taylor, 1968) are limited either in terms of areal extent or by sampling techniques inadequate for the definition of the micro-zooplankton assemblage, it is clear that these forms are present in high densities throughout the Bay. Mulford (1972) in studying the annual cycle of phytoplankton at one location in mid-Bay, also enumerated tintinnids which he reported to be present in concentrations as high as $31,000 \text{ l}^{-1}$. Whaley and Taylor (1968), despite concentrating their samples on a $65 \mu\text{m}$ mesh which

would allow many micro-plankters to escape, reported tintinnid assemblages as dense as $17,000 \ell^{-1}$. Loftus et al. (1972), in following a transient bloom of phytoplankton in the Chesapeake Bay, encountered a rotifer population which reached densities as high as $100,000 \ell^{-1}$ and which was implicated in the subsequent demise of the bloom. That there is an adequate supply of food to support large assemblages of micro-zooplankton in the Bay is apparent from the data of Flemer (1970) and Patten et al. (1963) who studied the annual pattern of phytoplankton abundance in the upper and lower Bay respectively, and from the data of McCarthy et al. (1974) who showed that the phytoplankton capable of passing a $10 \mu\text{m}$ mesh were responsible for averages of about 80% of the chlorophyll and 90% of the carbon fixation of the total phytoplankton assemblage. This preponderance of nanno-phytoplankton strongly suggests an important role for those small zooplankton adapted for grazing on such minute food.

Similarly, the extreme variability in phytoplankton concentrations observed in the Bay on both spatial (Flemer, 1970) and temporal (Loftus et al., 1972) scales suggests that grazers which can rapidly adjust their population size in response to this varying food resource should be favored. With generation times on the order of hours or days the ciliates and rotifers are apparently capable of responding to the finest scales of variability which have been observed in the Bay. Indeed, the data of Beers and Stewart (1970, 1971) and Beers et al. (1971, 1975) show the tintinnids to be increasingly important in the zooplankton assemblage as one moves from the relatively stable North Pacific central gyre to the California coastal zone or equatorial upwelling system and then finally to a recently upwelled patch of water off Peru, precisely the pattern expected for organisms

adapted to responding to and taking advantage of transient fluctuations in their environment. In short, the existing survey data; the composition of the phytoplankton stocks; and the rapid, small scale fluctuations in the physical and biological structure of this system all suggest an important functional role for the micro-zooplankton in the Chesapeake Bay.

2. Status

Investigation into the role of the micro-zooplankton in the Chesapeake Bay began with the NUSIBAR 3 cruise, 18-29 April 1977. The work undertaken was focused on two areas: 1) the establishment of cultures of various micro-zooplankters for future research on their metabolic and trophic activities, and 2) preliminary investigation of the relatively fine scale distribution of the micro-zooplankton in relation to the physical structure of the water and to the distribution of the phytoplankton crop.

Cultures:

Samples were taken as circumstances warranted from several locations in the Bay using either a Niskin bottle or a phytoplankton net (35 μ m mesh), enriched with suspensions of microflagellates and/or phytoplankton culture medium, and stored in a lighted incubator at approximately 15°C aboard ship. Good growth of an oligotrich ciliate (cf. Strombidium sp.), at least two species of the tintinnid genus Tintinnopsis, and a rotifer (cf. Synchaeta sp.), were noted in the initial shipboard enrichments. These cultures were all subsequently lost, however, on return to the laboratory, at least in part due to a utility shut down which necessitated storing the cultures in an unlighted incubator, allowing the grazers to overshoot their food supply.

A species of hypotrich ciliate (cf. Euplotes sp.), however, was also isolated and has continued to show active growth in cultures supplied with a variety of microflagellates. Experiments are presently in progress to define the growth rate and food preferences and/or requirements of this ciliate, and similar experiments are planned to investigate its temperature and salinity tolerances preparatory to more sophisticated experiments to define its metabolic and trophic activities.

Distribution:

Samples were taken at three locations in the Bay to define the relatively fine-scale distribution of the micro-zooplankton in relation to the physical and biological structure of the water. Two length scales were sampled at each location. Patchiness on the scale of tens of meters was examined while at anchor at stations 707Ø, 823N, and 904N, where water was pumped from a fixed depth for 1-1½ hr during an ebbing tide. Every two minutes temperature, conductivity, current speed and direction, and in vivo fluorescence were determined; every four or five minutes water was collected for a one minute period and then sub-sampled for the analysis of extracted chlorophyll/phaeopigments and particulate carbon and nitrogen and an aliquot fixed for future identification and enumeration of the micro-zooplankton. The particulate carbon and nitrogen samples have not yet been analyzed and the micro-zooplankton enumerations are still incomplete. The variability in the phytoplankton standing stock, however, for stations 707Ø and 823N is illustrated in Figures F-1 and F-2. In each of these figures, the spatial scale is represented by the time of sampling; the mean current speeds observed during the sampling at the two stations were 0.64 and 1.03 kts respectively, which represents a mean separation of approximately 40 and 64 m respectively between samples taken at two minute intervals.

Figure F-1. Variation in extracted chlorophyll a, in vivo fluorescence, and conductivity at a fixed depth at Station 7070.

Figure F-2. Variation in extracted chlorophyll a and in vivo
fluorescence at a fixed depth at station 823N.

A second, larger, scale of patchiness was also examined in transects across the bay at the levels of the three anchor stations discussed above. At the mid- and upper-Bay locations, where the Bay is relatively narrow, three stations spaced across the width of the Bay were occupied and samples from 4 to 8 depths at each station taken for the analysis of extracted chlorophyll/phaeopigments and particulate carbon and nitrogen and for identification and enumeration of the micro-zooplankton. In the wider lower Bay a steaming transect across the Bay was made at a ship speed of approximately 12 kt. Water was pumped continuously from a hull pump one meter below the surface. Again temperature, conductivity and in vivo fluorescence were monitored at two-minute intervals, and water was collected for one minute every four minutes for analysis of extracted chlorophyll/phaeopigments, particulate carbon and nitrogen, and micro-zooplankton standing stocks. Analysis of the particulates and micro-zooplankton is still incomplete. Figure F-3 illustrates the variability noted in the phytoplankton crops and conductivity during the lower Bay transect. At a ship speed of twelve knots, samples taken at two minute intervals are separated by approximately 750 meters. Analysis of the preserved micro-zooplankton samples is continuing with the goal of determining if there is any readily identifiable response by the micro-zooplankton assemblage to the variations noted in the phytoplankton crop on which they feed.

Figure F-3. Variation in extracted chlorophyll a, in vivo fluorescence, and conductivity during a transect across the lower Chesapeake Bay ($37^{\circ}07'N$ lat.).

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G. Data from "AESOP" Cruises

W. R. Taylor

The AESOP cruises were made at monthly intervals over a two-year period and were terminated in May of 1971. Primary productivity was measured by the radioactive carbon uptake technique described by Strickland and Parsons (1972) and concurrently chlorophyll determinations were made by the fluorometric method of Loftus and Carpenter (1971). Initial analyses of the productivity data indicate temperature had little effect on carbon assimilation number ($\text{mg C}(\text{mg chl}_a \cdot \text{h})^{-1}$) at station 904N in upper Chesapeake Bay during the 24 month study (Fig. G-1 and G-2). However, at mid-bay station 834G assimilation number was highest at the warmest temperatures during the first 12 months (Fig. G-3), and except for 1 data point, the trend was similar during the second 12 months (Fig. G-4). A lower Bay station, 724R, exhibited correlation of assimilation number with temperature during the first year (Fig. G-5). The second year trend was generally similar excepting the low assimilation numbers at 14° and 21°C (Fig. G-6).

These data are uncorrected for illumination so the relation between carbon assimilation and temperature is still not clear. The essentially flat response of carbon assimilation to temperature at station 904N may reflect light regulation of phytoplankton productivity in the upper portion of the estuary. Productivity data analysis will continue.

On each of the AESOP cruises samples were collected on seven of the twelve primary productivity stations for chemical analyses. The purpose of these analyses was to determine the inorganic nutrient levels in order to see if nutrient might be limiting to photosynthesis. A second purpose was to extend the chemical oceanographic data of Carpenter, et al. (1969) to include the entire Chesapeake Bay. The analyses were done with the aid of

a Technicon Autoanalyzer II system and include the determination of "soluble" (passing a 0.2 μ Sela filter) nitrogen and phosphorus components (ammonium, nitrite, nitrate and soluble reactive phosphate). Dissolved organic carbon analyses have been done with a Beckman Carbon Analyzer. Analyses are complete but data interpretation is still in progress.

The nutrient data are presented in Table G-1. Station designation is the righthand entry on the top line of each data group. Units for nitrogen and phosphorus species are $\mu\text{g atom}\cdot\text{liter}^{-1}$; units for inorganic carbon and dissolved organic carbon (DOC) are $\text{mg atom}\cdot\text{liter}^{-1}$; units for chlorophyll a, b, and c and pheophytin a are $\mu\text{g}\cdot\text{liter}^{-1}$.

Quantitative macro-zooplankton samples were collected during the AESOP cruise series by high volume pump into a 50 liter carboy. The carboy was then drained through 160 μm Nitex screen. The animals were washed off the screen and preserved in buffered 5% formalin-seawater for counting, sizing and identification. To date samples from 9 of 24 cruises have been analyzed. Data from one cruise is shown in Table G-2. Remaining data will be tabulated for evaluation during the next contract year. Sample counting is also expected to carry over into the next contract year.

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FIGURES G-1 through G-6.

Graphs of carbon assimilation number vs. temperature for upper bay station 904N, mid-bay station 834G and lower bay station 724R for the period April 1969 to May 1971.

Figure G-1.

Figure G-2.

Figure G-3.

Figure G-4.

Figure G-5.

Figure G-6.

Table G-1. Nutrient chemical data for cruises AESOP 1-24 during April
1969 to May 1971. Micro-atoms/L equal $\mu\text{g atom}\cdot\text{liter}^{-1}$.

AESOP 01		07APR69		922Y									
MICRO-ATOMS/L		MICRO-ATOMS/L		MG-ATOMS/L		MICRO-G/L							
DEPTH	NO2	NO3	NH4	N-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0									1.13	0.32	0.34	2.90	
0.5									1.33	0.12	0.29	2.49	
1.0									2.45	0.40	0.47	3.72	
2.0									1.79	0.40	0.42	2.60	

AESOP 01		07APR69		904N									
MICRO-ATOMS/L		MICRO-ATOMS/L		MG-ATOMS/L		MICRO-G/L							
DEPTH	NO2	NO3	NH4	N-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0									1.14	0.01	0.33	2.29	
0.5									2.06	-0.01	0.83	2.48	
1.0									2.90	0.19	1.19	2.15	
3.0									3.80	0.00	1.55	3.18	
5.0									3.10	-0.02	1.25	3.21	

AESOP 01		08APR69		858C									
MICRO-ATOMS/L		MICRO-ATOMS/L		MG-ATOMS/L		MICRO-G/L							
DEPTH	NO2	NO3	NH4	N-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0									6.50	0.35	2.24	0.33	
0.5									6.41	0.47	2.09	2.03	
1.5									6.03	0.45	2.64	2.60	
4.0									6.15	0.22	2.42	3.07	
5.0									6.20	0.33	1.60	1.59	

AESOP 01				08APR69			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEDA
0.0	2.1	12.0	13.0	0.3	0.5		0.7	0.7	4.58	0.55	1.48	0.48
1.0	1.5	11.0	11.0	0.2	0.3		0.8	1.2	5.27	0.55	1.70	0.86
2.0	1.9	31.0	12.0	0.3	0.7		0.7	0.9	7.92	0.67	2.20	0.44
4.0	2.1	28.0	12.0	0.5	0.7		0.9	0.8	6.48	0.76	2.22	0.48
6.0	1.2	34.0	10.0	0.4	0.8		0.7	0.6	5.06	0.42	1.71	1.33

AESOP 01				08APR69			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEDA
0.0	1.4	22.0	7.7	0.3	1.0		0.9	0.9	3.56	0.34	1.35	0.53
0.5	1.3	23.0	8.2	0.2	0.8		1.0	1.0	3.10	0.30	1.26	0.53
2.0	1.4	23.0	7.5	0.4	0.6		1.0	0.6	3.65	0.72	1.19	0.01
6.0	1.9	20.0	6.8	0.2	0.9		0.9	1.3	3.42	0.25	1.34	0.93
9.0	1.2	19.0	6.6	0.3	0.9		1.0	1.0	4.44	-0.03	1.69	2.64

AESOP 01				09APR69			818P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEDA
0.0	1.1	11.0	1.6				1.7	1.7	1.67	0.59	0.55	0.13
1.0	0.7	10.0	3.7	0.3	0.7		1.3	1.2	1.54	0.50	0.59	0.14
2.5	1.1	9.4	3.6	0.3	0.6		1.3	1.1	1.43	0.43	0.55	0.36
6.0	0.6	9.3	3.4	0.4	0.4		1.2	0.5	1.86	0.81	0.63	-0.06
11.0	0.8	9.5	1.1	0.3	0.5		0.6	0.3	2.02	0.64	0.74	0.11

AESOP 01				09APR69		804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.8	7.6	3.0	0.4	0.5		1.7	2.0	6.71	0.77	2.41	0.61
0.5	0.9	8.7	2.7	0.2	0.6		1.0	2.4	6.95	0.60	2.60	1.00
2.0	1.2	7.4	3.0	0.4	0.6		1.4		5.99	0.62	2.28	0.94
4.5	1.0	8.6	2.7	0.4	0.5		1.6		6.38	0.55	2.21	1.40
7.0	0.9	9.4	1.7	0.4	0.7		1.3		6.45	0.84	2.56	0.55

AESOP 01				09APR69		744S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.62	0.44	2.22	1.78
1.0									5.35	0.56	1.85	1.08
2.0									5.99	0.56	2.24	1.60
4.5									6.02	0.43	2.01	1.93
6.5									7.77	0.75	3.15	2.10

AESOP 01				10APR69		744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.31	0.00	0.13	2.31
0.5									0.72	-0.01	0.44	2.33
1.0									0.57	0.07	0.17	2.09
2.0									0.55	0.02	0.65	2.35

AESOP 01 10APR69 724R												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.3	3.2	1.0	0.5	0.5		1.7	0.9	8.65	0.62	2.94	0.97
0.5	0.6	3.2	1.6	0.2	0.3		1.5	0.9	8.54	0.69	3.21	1.29
2.0	0.8	2.9	1.7	0.3	0.2		1.5	0.9	8.90	0.78	3.27	0.45
3.5	1.0	3.0	2.1	0.4	0.5		1.4	0.8	7.27	-0.26	2.88	3.23
6.5	4.0	1.2	1.5	0.4	0.3		0.5	0.7	7.68	0.12	2.02	1.98

AESOP 01 10APR69 7070												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.6	0.7	1.5	0.2			1.2	0.7	12.22	0.63	4.07	1.02
0.5	0.5	0.8	1.5	0.2			1.3	0.8	10.65	0.22	4.12	2.37
1.5	1.4	0.9	1.4	0.3			1.3	0.9	9.75	0.03	4.10	3.50
4.0									12.02	0.57	4.82	2.23
6.0	0.7	0.3	1.2	0.3			1.4	0.7	10.61	0.21	4.49	3.04

AESOP 01 10APR69 0701A												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.1		0.3	1.1		2.5	0.4	1.81	0.28	0.67	0.30
1.5	0.4	0.2		0.2	1.3		2.2	0.6	1.58	0.31	0.65	0.33
3.0	0.2	0.3		0.2	1.3		3.2	1.6	1.67	0.28	0.70	0.35
6.0	0.3	0.1		0.5	0.9		2.4	2.1	1.68	0.42	0.70	0.59
8.0	0.1	0.1		0.5	1.4		2.6	0.8	1.70	0.47	0.77	0.74

AESOP 02				01MAY69			9146					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.1	49.0	8.7	0.8	0.2				4.26	0.42	0.74	4.14
0.5	1.0	47.0	7.3	0.3	0.4				3.63	0.26	0.66	4.14
1.0	1.0	47.0	7.6	0.3	0.3				4.27	0.38	0.75	4.31
2.0	1.1	44.0	7.8	0.3	0.4				5.62	0.50	1.06	3.78
3.0	1.1	41.0	9.7	0.2	0.4				3.77	0.46	0.67	4.57

AESOP 02				01MAY69			904H					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.99	0.88	0.68	1.38
0.5									3.66	0.44	0.50	2.10
1.5									8.24	1.17	1.86	1.32
3.0									9.67	1.25	2.46	1.42
4.5									10.61	0.91	3.13	2.36

AESOP 02				02MAY69			858C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.21	0.32	2.70	4.02
0.5									8.23	0.09	2.24	4.22
1.0									9.09	0.53	2.24	3.87
2.5									8.89	0.44	2.55	3.96
4.0									9.02	0.21	2.32	5.39

AESOP 02				02MAY69			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.6	30.0	4.4	0.1					4.36	0.38	1.78	3.02
1.0	2.0	37.0	4.4	0.1					5.63	0.40	1.89	2.80
2.0	1.8	31.0	2.7	0.1					8.65	0.41	3.92	4.32
4.0	1.2	24.0	2.1	0.1					13.50	0.41	7.67	4.36
6.0	1.1	22.0	1.4	0.1					16.38	0.15	9.05	6.21

AESOP 02				02MAY69			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									11.55	0.90	5.66	0.82
0.5									10.66	0.18	5.44	3.32
2.0									15.98	0.93	9.09	2.15
4.0									19.95	0.82	10.47	3.25
5.5									24.39	0.65	15.46	5.51

AESOP 02				03MAY69			818P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	12.0	0.9	0.1	0.6				27.66	3.49	15.85	-2.92
1.0	0.6	10.0	0.9	0.1	0.6				31.61	2.73	17.32	-1.51
1.5	0.6	11.0	0.7	0.1	0.5				30.77	2.84	17.00	-1.94
3.0	0.6	11.0	0.7	0.2	0.3				30.64	3.85	17.03	-3.42
5.0	0.8	12.0	0.7	0.1	0.7				32.20	3.49	17.60	0.22

AESOP 02

03MAY69

804C

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	
0.0									29.13	0.93	11.15	1.65
0.5									20.52	-0.41	8.02	6.18
1.5									31.89	2.68	16.22	-2.21
3.5									27.84	1.44	13.61	1.93
4.5									28.44	1.69	18.16	1.88

AESOP 02

03MAY69

744

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	
0.0	0.5	0.4	0.8	0.1	0.5				16.88	0.63	8.21	1.68
1.0	0.2	0.1	0.9	0.1	0.5				20.66	0.88	10.80	1.74
2.5	0.2	0.5	0.7	0.1	0.5				20.53	0.98	9.85	2.42
4.5	0.2	0.1	0.4	0.1	0.5				19.98	0.60	8.78	2.51
6.5	0.3	ND	0.4	0.1	0.5				13.27	0.56	7.11	1.78

AESOP 02

04MAY69

724R

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	
0.0									11.15	0.54	4.78	-1.15
1.0									8.35	0.32	4.79	1.78
2.0									7.83	0.49	4.44	1.33
4.0									9.45	0.70	5.95	0.70
6.5									6.78	0.56	3.27	0.22

AESOP 02 04MAY69 7070

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEUA
	NO2	NO3	NH4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0	3.7	1.2	0.6	0.1	1.0				4.77	0.48	1.92	0.06
1.0	0.7	0.7	0.7	0.1	0.7				4.16	0.26	1.98	1.16
2.5	1.8	1.5	0.9	0.2	0.6				4.52	0.49	1.84	0.15
5.0	0.6	1.7	0.8	0.1	1.5				5.36	0.64	2.23	0.15
7.0	4.8	1.2	0.7	0.1	1.1				5.15	0.54	2.16	1.26

AESOP 02 04MAY69 0701A

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEUA
	NO2	NO3	NH4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0									0.52	0.08	0.15	0.11
2.5									0.78	0.08	0.28	0.24
3.5									1.10	0.12	0.50	0.26
7.0									2.15	0.14	0.84	0.28
9.0									4.07	0.15	1.97	1.35

AESOP 03 02JUN69 922Y												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0									3.38	0.78	0.46	5.17
1.5									3.77	0.64	0.52	7.85
3.0									3.05	0.45	0.51	8.87
4.0									2.85	0.67	0.44	8.63
5.0									2.69	0.58	0.39	9.31

AESOP 03 02JUN69 914S												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0									8.60	0.50	1.80	2.78
2.5									7.96	0.26	2.24	4.12
5.0									8.42	0.38	2.07	4.08
8.0									3.14	0.28	0.80	3.45
9.0									2.21	0.12	0.62	4.22

AESOP 03 02JUN69 914												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0	0.7	11.0	1.8	0.1	0.6							
2.5	0.8	11.0	1.6									
5.0	1.2	11.0	1.9	0.3	0.7							
8.0	0.7	11.0	1.6	0.2	0.5							

AESOP 03 02JUN69 904H												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.91	0.94	1.77	0.15
1.0									7.06	0.39	1.15	3.22
2.0									8.37	0.65	1.89	2.37
3.0									8.77	0.72	1.83	0.83
5.0									7.66	0.78	1.70	1.18

AESOP 03 03JUN69 858C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	9.0	2.6	0.2	0.4				6.91	5.38	0.74	-3.19
0.5	0.6	8.0	2.0	0.1	0.4				4.74	-0.95	1.66	6.48
1.0	0.6	9.0	2.4	0.2	0.4				4.73	-0.16	1.49	4.54
2.0	0.7	9.0	2.5	0.1	0.4				5.54	-0.34	1.83	4.91
3.0	0.9	9.0	2.4	0.1	0.4				4.46	-0.28	2.04	7.77

AESOP 03 03JUN69 845G												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.87	0.10	0.60	0.89
1.0									2.29	0.03	0.66	1.24
2.0									3.44	-0.10	0.90	1.36
4.0									4.61	-0.23	1.12	3.12
6.0									5.87	-0.32	1.68	2.48

AESUP 03 03JUN69 H34G												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	1.0	9.0	1.3	0.1			0.7	0.8	3.20	0.01	1.11	1.94
1.0	1.7	8.0	1.1	0.1			0.8	0.7	3.05	-0.25	1.19	2.30
2.0	0.6	8.0	1.0	0.1			0.7	0.5	3.57	0.29	1.24	1.09
4.0	1.1	8.0	1.2	0.1			0.8	0.7	4.68	-0.12	1.97	1.77
6.0	0.5	7.0	1.3	0.2			0.9	0.5	4.64	0.31	1.69	4.18

AESUP 03 04JUN69 818P												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	0.5	4.0	1.0	0.2	0.5				5.24	-0.45	1.34	3.82
1.0	0.6	5.0	0.9	0.1	0.7				4.72	-0.30	1.58	4.26
2.0	0.6	3.0	0.9	0.2	0.6				5.53	-0.09	1.62	2.47
4.0	0.5	4.0	0.9	0.2	0.5				5.90	-1.11	2.08	2.97
9.0	0.4	3.0	2.5	0.2	0.5				5.50	0.30	2.06	2.11

AESUP 03 04JUN69 804C												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	1.2	1.0	0.8	0.1	0.5				3.44	-0.12	1.48	2.40
1.0	1.5	2.0	0.9	0.1	0.8				3.23	-0.33	1.61	3.72
2.0	0.8	1.0	3.2	0.2	0.7				3.44	0.02	1.46	2.33
4.5	0.3	0.1	0.5	0.2	0.7				3.93	-0.12	2.05	3.56
7.0	1.1	0.4	0.8	0.1	0.6				5.10	0.50	1.81	0.87

AESOP 03 04JUN69 744												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	0.6		0.2	1.8				1.73	0.34	0.71	0.10
1.5	0.2	0.1		0.1	1.6				1.71	0.24	0.61	0.50
3.5	0.4	0.1		0.1	1.1				1.58	0.28	0.69	0.53
7.0	0.4	0.3		0.1	1.3				1.98	0.20	0.90	1.11
11.0	0.3	0.3		0.2	1.3				2.66	0.02	1.37	1.92

AESOP 03 05JUN69 724R												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.1	0.5	0.1					1.51	0.07	0.72	0.16
1.5	0.7	ND	0.4	0.1	0.6				1.57	0.08	0.64	-0.20
3.5	0.3	ND	0.4	0.1	0.7				1.87	0.11	0.90	-0.16
7.0	3.0	0.3	0.5	0.2	0.8				1.95	0.07	0.85	-0.14
10.0	0.5	ND	0.4	0.2	1.0				1.97	0.03	0.84	-0.02

AESOP 03 05JUN69 707D												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	0.1	0.7	0.2	1.0				1.75	0.14	0.77	0.76
0.5									1.66	-0.01	0.79	2.11
1.5	0.3	0.1	0.6	0.1	1.1							
3.0			0.4	0.2	1.2				1.68	0.20	0.70	0.61
6.0	0.5		0.2	0.2	1.2				1.83	0.03	0.77	1.16
8.0	0.3	0.1	0.5	0.2	1.3				1.90	0.37	0.83	0.35

AESOP 03 05JUN69 659W												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.92	0.13	0.59	1.20
1.0									1.01	0.03	0.52	1.74
2.5									1.47	0.03	0.60	1.43
5.0									2.13	0.06	1.05	1.93
8.0									2.66	0.07	1.07	1.49

AESOP 03 05JUN69 0701A												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.9	ND	ND	0.1	0.9				0.25	0.03	0.09	0.04
1.0	0.6	0.7	0.7	0.1	1.1				0.17	0.02	0.07	-0.01
3.5	0.2	0.1	0.1	0.1	0.6				0.22	0.02	0.08	0.03
7.0	0.4	ND	ND	0.1	0.7				0.98	0.06	0.33	0.53
9.5	0.4	0.2	0.2	0.1	0.8				1.08	0.05	0.42	0.43

AESOP 03 05JUN69 522												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.2	0.7	0.7	0.1								
1.5	0.4	0.2	0.6	0.1								
6.0	0.4	0.2	0.4	0.1								
12.0	0.7	0.6	0.6	0.2								

AESOP 04				07JUL69		922Y						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.03	0.47	0.68	5.45
0.5									6.70	0.27	0.72	6.00
1.0									6.53	0.26	0.70	5.44
1.5									6.84	0.91	0.65	2.77

AESOP 04				07JUL69		914S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	8.8	10.3	0.5					16.96	-0.30	4.36	9.77
0.5	0.7	8.1	6.0	0.3					14.26	0.03	3.54	11.09
1.5	0.8	3.2	9.9	0.3					9.24	-0.94	2.55	10.29
2.0	0.9	2.4	8.2	0.2	0.3				9.87	-0.58	2.58	8.80

AESOP 04				07JUL69		904N						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									14.62	-0.93	4.36	9.95
0.5									13.78	-0.28	4.61	8.54
2.5									14.74	-0.67	5.21	8.74
3.5									9.77	-0.22	2.96	7.97
5.0									6.75	-0.13	1.91	6.29

AESOP 04				08JUL69				858C							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L				MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA			
0.0	1.7	2.0	15.3	0.4					5.33	-0.03	1.37	4.93			
0.5									5.44	-0.06	1.71	5.31			
1.0	0.9	2.0	15.1	0.4	1.0				5.51	-0.13	1.92	5.57			
2.0	1.7	1.1	14.3	0.3	0.8				5.37	-0.17	1.66	5.44			
3.5	0.7	0.8	14.7	0.3	0.9				5.42	-0.03	1.74	5.43			

AESOP 04				08JUL69				845G							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L				MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA			
0.0									5.07	0.09	0.92	2.49			
0.5									4.37	0.24	0.71	2.10			
1.0									4.79	0.19	0.95	2.21			
2.0									4.71	0.37	0.77	1.35			
3.5									4.91	0.49	0.93	0.93			

AESOP 04				08JUL69				834G							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L				MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA			
0.0	0.3	1.2	5.1	0.2	0.6				5.06	0.52	1.02	1.57			
0.5	0.1	0.6	4.9	0.3	0.6				4.09	0.13	1.10	3.75			
1.0	0.4	0.5	4.3	0.3	0.6				3.77	0.03	1.13	4.26			
3.0	0.2	0.4	4.2	0.2	0.7				3.97	-0.10	0.91	4.36			
4.5	0.2	0.4	4.2	0.3	0.5				4.43	0.32	0.96	2.68			

AESOP 04 09JUL69 818F												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	0.2	0.4	3.8	0.3	0.8				4.45	-0.05	1.01	3.56
0.5	0.2	0.6	3.8	0.2	0.7				4.14	-0.18	1.01	4.75
1.5	0.2	0.2	3.8	0.2	0.6				4.33	0.05	1.14	3.72
3.0	0.2	0.2	5.1	0.2	0.6				3.86	0.18	1.24	4.05
5.0	0.1	0.2	4.6	0.3	0.5				3.83	0.12	1.18	4.38

AESOP 04 09JUL69 804C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.91	-0.56	0.77	3.32
0.5									2.02	-0.17	1.08	2.23
1.5									3.98	0.14	1.62	2.43
3.5									3.37	-0.04	1.44	2.41
6.0									3.29	-0.32	1.45	2.52

AESOP 04 09JUL69 744												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.9	1.8	0.2	0.5				1.34	-0.15	0.65	3.39
0.5	0.2	0.6	2.3	0.2	0.5				2.30	-0.03	0.65	2.12
1.5	0.2	0.6	1.6	0.3	0.5				1.70	-0.10	0.56	2.06
3.5	0.2	0.6	2.1	0.3	0.3				2.12	0.03	0.81	1.63
7.0	0.2	0.5	2.6	0.4	0.4				1.20	0.11	0.49	2.31

AESOP 04

10JUL69

724R

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.7	0.8	0.3	0.6				2.43	0.35	0.72	1.46
0.5	0.4	0.4	0.8	0.3	0.6				2.56	0.36	0.84	1.27
2.0	0.3	0.5	0.8	0.2	0.6				1.85	-1.56	1.00	2.24
3.5	0.2	0.6	4.1	0.4	0.7							
4.5									0.88	0.12	0.34	1.26
7.0	0.4	0.7	3.9	0.4	0.8				0.74	0.14	0.32	1.09

AESOP 04

10JUL69

707D

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.23	0.39	1.02	1.34
1.0									1.15	0.06	1.13	2.30
2.0									1.35	0.21	1.41	2.63
4.0									2.81	0.12	1.19	2.25
6.0									2.94	0.03	1.48	2.52

AESOP 04

10JUL69

0701A

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.6	0.6	0.2	0.9				0.42	0.03	0.25	0.49
1.0	0.5	0.6	0.5	0.2	0.9				0.41	0.01	0.24	0.53
3.0	0.2	0.5	0.9	0.2	0.9				0.71	-0.01	0.39	0.99
6.0	0.5	0.5	0.6	0.2	1.1				0.90	-0.03	0.55	1.17
8.0	0.3	0.4	0.7	0.2	0.9				1.40	0.08	0.89	1.30

AESOP 05				05AUG69				922Y				
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									13.92	-0.64	2.45	13.70
0.5									11.92	-1.20	2.44	14.14
1.0									13.08	-1.12	2.36	14.97
1.5									13.11	-0.99	2.91	14.45

AESOP 05				05AUG69		914S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									22.53	0.17	2.96	6.51
0.5	0.7	16.0	11.0	0.5	0.2		0.4	0.3	22.77	-0.60	3.63	14.28
1.0	0.5	14.0	4.5				0.4	0.3	26.89	-0.53	3.78	9.61
1.5	1.0	17.0	7.9	0.8	0.5		0.4	0.3	15.01	-0.63	3.29	10.96
2.0									14.22	-0.99	2.70	9.53
2.5	0.6	14.0	8.1	0.8	0.4		0.4	0.3				

AESOP 05				05AUG69				904N				
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									21.58	-1.70	6.93	6.98
0.5									18.63	-1.25	7.63	11.66
1.0									16.00	-1.30	5.85	8.82
2.0									8.66	0.18	3.19	5.83
3.0									0.43	-0.04	1.37	3.14
4.5									3.11	0.21	1.09	3.80

AESOP 05 06AUG69 858C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.6	5.1	7.5	0.5	0.3		0.8	0.2	7.71	-1.23	2.07	3.60
0.5	1.8	3.7	8.0	0.3	0.5		0.6	0.4	8.02	-1.31	3.08	5.49
1.0	1.7	3.8	5.7	0.4	0.4		0.7	0.3	9.09	0.15	3.16	5.26
2.0	1.8	4.6	6.0	0.4	0.7		0.6	0.5	9.41	2.68	2.07	0.04
3.0	2.3	4.2	4.8	0.4	0.6		0.7	0.2	7.35	3.00	2.00	-0.42

AESOP 05 06AUG69 845G												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.64	-0.11	2.65	4.58
0.5									4.37	-0.40	1.39	6.59
1.0									6.13	-0.50	2.72	7.40
2.0									5.06	-0.03	1.59	5.35
3.5									2.97	0.22	0.94	3.50
4.5									2.43	0.15	0.82	4.25

AESOP 05 06AUG69 834G												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.9	0.5	1.5	0.3	0.6		0.8	0.3	8.24	-0.30	2.47	8.55
0.5	1.2	0.7	1.7	0.4	0.5		0.9	0.3	6.14	-0.25	1.74	5.64
1.5	1.3	0.9	1.2	0.4	0.5		0.9	0.2	7.37	0.01	2.07	5.69
3.0	1.8	0.6	1.3	0.4	0.5		0.7	0.3	6.89	-0.13	2.40	6.29
4.5	2.9	0.7	1.6	0.5	0.5		0.8	0.3	7.83	-0.27	2.35	9.21
6.0	2.5	1.1	2.0	0.5	0.7		0.9	0.3	7.05	-0.21	2.16	6.57

AESOP 05				07AUG69		818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.3	6.1	0.4	0.5		0.8	0.5	6.02	0.30	1.77	3.87
0.5	0.3	0.4	4.0	0.7	0.3		0.8	0.5	5.95	0.22	2.02	5.05
1.5	0.3	0.2	1.7	0.4	0.3		0.9	0.5	4.88	-0.39	2.08	8.22
2.5	0.3	0.3	1.5	0.7	0.1		0.9	0.2	5.15	-0.26	1.82	6.31
4.0	0.4	0.3	1.7	0.2	0.3		0.9	0.8	6.29	0.32	2.26	4.08
6.0	0.9	0.4	1.4	0.3	0.4		1.0	0.2	5.98	0.16	1.97	4.63

AESOP 05				07AUG69		804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.02	-0.39	1.67	4.36
0.5									5.16	0.05	1.44	3.45
1.5									6.33	-0.45	1.70	5.00
3.5									7.27	-0.59	2.42	6.10
6.0									6.47	-0.24	2.29	4.92
8.0									6.82	-0.41	2.24	5.61

AESOP 05				07AUG69		744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.4	2.4	0.4	0.4		0.8	0.5	7.42	0.47	2.68	-1.08
0.5	0.1	0.3	1.9	0.4	0.2		0.8	0.5	5.05	0.09	1.68	2.10
3.0	0.1	0.5	1.7	0.3	0.5		0.8	0.6	6.00	-0.59	2.97	3.73
5.0	0.2	0.2	1.3	0.4	0.2		0.8	0.5	11.69	-1.14	6.52	7.22
7.0	0.2	0.7	2.0	0.3	0.2		1.0	0.3	13.16	-1.27	7.02	8.31
9.0	0.2	0.3	2.5	0.5	0.2		0.9	0.8	9.24	-1.18	4.97	4.18

AESOP 05				08AUG69		724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.6	2.3	0.5	0.6		1.0	0.3	10.63	3.93	3.70	1.12
0.5	0.1	0.3	3.3	0.4	0.5		1.0	0.1	13.43	5.16	4.92	-4.37
1.0	0.2	0.2	1.0	0.4	0.6		1.2	0.1	11.44	4.45	3.50	-3.52
2.5	0.2	0.2	1.6	0.4	0.4		1.0	0.2	11.69	4.31	3.97	-3.23
4.0	0.2	0.3	1.1	0.4	0.6		1.0	0.3	8.67	3.74	2.89	-4.93
6.0	0.1	0.2	0.8	0.4	0.6		1.1	0.1	8.76	-0.70	5.47	4.84

AESOP 05				08AUG69			707D						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									6.38	-0.82	3.21	4.77	
1.0									5.77	-0.66	3.28	4.76	
1.5									5.35	-0.73	2.79	4.17	
3.5									4.04	-3.46	3.10	3.86	
5.0									6.11	-0.73	3.93	7.02	
7.0									6.85	0.05	4.70	4.27	

AESDP 05				08AUG69		701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.2	1.1	0.3	0.8		1.5					
1.5	0.1	0.3	1.4	0.3	0.7		1.6					
3.5	0.1	0.3	0.8	0.3	0.8		1.2	ND				
8.0	0.1	0.3	0.6	0.7	0.4		1.5	0.2				

AESOP 05				09AUG69		0707V						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.3	0.3	1.1	0.5	0.7		1.6	ND				
1.0	0.2	0.7	2.0	0.5	0.6		1.6	ND				
4.0	0.2	0.3	1.1	0.5	0.9		1.3	0.3				
9.0	0.2	0.3	1.4	0.8	0.5		1.2	0.2				
14.0	0.1	0.3	0.8	0.6	0.7		1.5	0.1				

AESOP 05				08AUG69		0701A						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0												
1.5									1.39	0.04	0.69	1.47
3.5									1.44	-0.16	1.00	1.53
8.0									0.76	-0.21	0.92	2.09
									0.73	-0.13	0.79	1.56

AESOP 05				09AUG69		0707V						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0												
1.0									0.77	-0.07	0.49	0.75
4.0									0.56	-0.01	0.43	0.74
9.0									0.38	-0.06	0.49	0.61
14.0									0.88	0.01	0.57	0.85
									0.48	0.01	0.50	1.32

AESUP 06			16SEP69			922Y						
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									27.82	3.19	1.38	-1.30
0.5									24.79	2.92	1.81	2.10
1.0									28.95	3.22	1.98	2.50
1.5									28.02	3.58	1.73	1.32
2.0									28.27	0.49	2.49	10.34

AESUP 06			16SEP69			914S						
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.1	0.3	2.4	0.6	0.2		0.8	0.3	20.85	-2.73	4.78	10.00
0.5	0.1	0.4	5.4	0.6	0.3		0.8	0.3	20.64	-4.34	3.47	10.24
1.0	0.3	0.4	2.4	0.4	0.5		0.8	0.2	20.99	-2.85	4.58	9.36
2.0	0.1	0.5	1.9	0.3	0.5		0.8	0.4	19.03	-3.33	3.80	8.54
2.5	0.3	0.5	1.3	0.4	0.5		0.8	0.4	16.75	-2.24	4.70	9.41

AESUP 06			16SEP69			904N						
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									23.19	6.98	8.18	-5.04
0.5									23.28	5.82	9.10	0.57
1.0									25.03	7.80	8.79	-5.51
2.0									29.12	9.26	9.35	-4.78
2.5									25.81	5.50	8.31	3.18
3.5									24.20	6.43	9.32	0.18

AESOP 06				17SEP69			858C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NU4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	0.8	1.9	0.4	0.5		0.9	0.7	8.16	-0.38	3.80	8.52
0.5	0.5	0.5	1.8	0.4	0.8		0.8	0.8	8.43	-0.74	3.45	7.09
1.0	0.6	0.6	1.5	0.4	0.6		1.1	0.8	5.43	-0.75	2.19	5.76
2.0	0.4	0.6	1.8	0.4	0.6		1.1	1.2	6.61	-0.38	3.13	5.69
3.0	0.4	0.5	1.0	0.4	0.5		1.1	0.6	8.17	-0.58	3.68	6.43
4.0	0.5	0.4	0.5	0.4	0.4				8.25	-0.14	3.44	6.80

AESOP 06				17SEP69			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NU4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.12	-0.65	3.11	5.08
0.5									5.69	-1.61	2.19	4.64
1.5									4.77	-0.63	2.43	4.06
3.5									5.43	-0.99	2.11	4.43
5.0									5.06	-1.02	1.89	4.46
7.0									4.14	-0.47	1.79	5.08

AESOP 06				17SEP69			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NU2	NU3	NU4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.1	0.3	1.5	0.4	0.8		1.3	0.8	6.36	0.34	2.34	2.13
0.5	0.1	0.2	2.3	0.5	0.8		1.4	0.7	5.04	0.69	1.70	1.44
1.5	0.1	0.1	0.7	0.4	0.6		1.3	0.9	4.93	0.99	1.70	2.13
3.5	0.1	0.2	1.0	0.4	0.7		1.2	0.9	5.46	-0.15	2.23	3.19
4.5	0.1	0.1	0.8	0.5	0.7		1.2	0.5	5.65	-0.34	2.45	3.94
7.0	0.2	0.2	0.9	0.4	0.8		1.2	0.9	4.79	0.17	1.91	2.99

AESUP 06				18SEP69				818P							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	0.7	0.6	2.1	0.7	1.2	0.3	1.1	0.7		2.47	-0.22	0.35	1.60		
1.5	0.9	0.5	3.6	0.7	1.0	0.6	1.4	0.7		1.69	-0.14	0.21	1.32		
3.5	0.7	0.7	2.3	0.6	1.0	0.5	1.3	0.8		1.94	-0.14	0.24	1.00		
5.0	0.6	0.6	2.3	0.6	0.8	0.8	1.0	0.7		2.03	-0.23	0.28	1.43		

AESUP 06				18SEP69				804C							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0															
0.5										2.03	0.08	0.20	1.05		
1.5										0.78	0.01	0.10	0.94		
4.0										1.68	-0.05	0.20	1.27		
6.0										1.79	-0.02	0.19	1.16		
7.5										1.65	-0.03	0.17	1.43		
										1.53	-0.02	0.17	1.38		

AESUP 06				18SEP69				744							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	3.5	2.6	1.2	0.6	0.7		0.9	0.1		3.23	0.27	0.22	1.63		
0.5	3.6	1.3	1.5	0.7	0.6		0.9	0.2		2.30	-0.01	0.21	2.38		
1.0	3.6	1.2	1.5	0.6	0.7		1.0	0.1		2.27	0.03	0.25	2.58		
2.5	3.6	0.9	1.7	0.8	0.6		0.9	0.4		1.47	0.09	0.15	2.47		
4.0	3.7	1.1	1.2	0.7	0.6		1.1	0.2		2.20	0.02	0.25	2.23		
5.0	3.9	0.8	1.5	0.7	0.7		1.1	0.4		2.40	0.03	0.33	2.19		

AESOP 06				19SEP69			724R					
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEUA
0.0	0.6	0.3	2.0	0.4	0.7		1.3		0.30	0.12	0.05	0.92
0.5									0.78	-0.08	0.09	1.17
1.5	0.5	0.2	2.3	0.4	0.6		1.2	0.2	0.10	0.18	0.14	0.81
2.5									0.27	0.09	0.08	1.23
4.0	0.5	0.1	1.8	0.4	0.7		1.5		0.23	0.03	0.16	1.29
5.5	0.4	0.3	2.2	0.4	0.4		0.9	0.1	0.51	-0.11	0.21	1.41

AESOP 06				19SEP69			707D					
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEUA
0.0									0.47	0.20	0.06	0.88
1.0									0.75	0.08	0.11	1.40
3.0									0.61	0.14	0.07	1.13
5.0									0.17	0.12	0.05	1.29
6.0									0.21	0.10	0.07	1.35
7.0									0.33	0.12	0.10	1.46

AESOP 07 06OCT69 922Y											
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L		
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC PHEOA
0.0									5.65	1.80	-0.07
0.5									1.89	0.49	0.01
1.0									4.81	4.52	-0.45
3.5									2.87	0.32	0.00
5.0									2.51	0.43	0.00

AESOP 07 06OCT69 914S											
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L		
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC PHEOA
0.0	0.4	0.2	5.2	0.4	0.5		1.1	0.4	3.94	0.46	0.18
0.5	0.4	0.3	3.7	0.8	0.3		0.8	0.5	4.94	0.69	0.22
1.5	0.5	1.0	3.0	0.7	0.4		1.1	0.5	5.05	-0.43	0.66
2.5	0.6	3.0	3.5	0.9	0.3		0.9	0.4	5.19	0.54	0.23
3.5	0.8	3.1	2.2	0.7	0.4		1.0	0.4	5.10	0.64	0.24

AESOP 07 06OCT69 904N											
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L		
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC PHEOA
0.0									3.17	0.38	0.06
0.5									3.35	0.28	0.16
1.0									4.52	0.68	0.11
1.5									5.29	1.02	0.11
3.0									4.05	0.49	0.06
4.5									2.30	0.31	0.02

AESOP 07 07OCT69 858C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.3	6.2	1.5	1.0	ND	0.5	0.9	0.4	2.37	0.15	0.09	1.16
0.5	1.1	5.5	1.5	0.9	0.2	0.3	0.8	0.4	2.27	0.36	0.02	0.25
1.0	1.5	6.0	2.2	0.8	0.3	1.1	0.8	0.4	2.29	0.27	0.04	0.64
2.0	1.2	6.0	1.7	1.0	0.2	0.3	1.0	0.3	3.29	0.61	0.04	-0.41
3.5	1.3	5.9	1.0	0.8	0.4	0.2	0.9	0.4	1.92	0.04	0.18	1.19

AESOP 07 07OCT69 845G												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.17	0.23	0.04	0.72
0.5									0.39	0.38	0.03	0.50
1.5									0.52	0.37	0.01	0.38
3.0									1.89	0.17	0.06	0.57
4.5									0.63	0.29	0.05	0.82
6.0									0.63	0.38	0.01	0.53

AESOP 07 07OCT69 834G												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.81	0.44	0.09	-0.42
0.5									1.81	0.26	0.12	0.21
1.0									2.04	0.21	0.15	0.44
2.5									2.48	-0.17	0.25	1.36
4.0									1.94	0.33	0.11	-0.03
6.0									2.80	-0.17	0.24	1.44

AESOP 07				07OCT69			834C					
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.2	1.2	1.2	0.5	0.4	ND	0.9	0.5				
0.5	1.7	1.5	1.6	0.5	0.3	ND	0.9	0.5				
1.0	0.3	0.7	2.1	0.4	0.4	ND	0.9	0.3				
2.5	0.4	0.7	1.6	0.3	0.2	0.3	0.9	0.4				
4.0	0.2	0.5	1.2	0.5	0.6	ND	1.0	0.3				
6.0	0.6	1.0	1.7	0.5	0.4	0.2	1.2	0.4				

AESOP 07				08OCT69			818P					
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.59	-0.40	2.21	3.25
0.5									9.24	0.59	2.46	-4.23
1.5									6.40	-0.91	2.46	3.69
3.5									5.74	-0.54	2.13	3.36
7.0									5.40	-0.57	2.34	3.61
9.0									4.98	-0.70	2.47	4.05

AESOP 07				08OCT69			818					
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	0.6	1.6	0.5	0.5	0.4	1.1	0.7				
0.5	0.5	0.2	1.2	0.4	0.4	0.6	1.0	0.2				
1.5	0.1	0.3	0.7	0.4	0.6	0.1	1.0	0.7				
3.5	0.5	0.5	1.2	0.5	0.7	ND	1.5	0.2				
7.0	0.4	0.7	1.1	0.3	0.7	0.1	1.1	0.3				
9.0	0.3	0.5	0.8	0.4	0.9	ND	1.1	0.3				

AESOP 07 08OCT69 804C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.90	-0.15	2.23	3.24
0.5									6.16	-0.41	2.20	3.71
1.5									5.37	-0.28	1.87	3.35
3.5									4.85	-0.05	1.84	3.55
6.0									4.72	0.35	1.98	2.23
8.0									3.97	0.41	1.48	2.29

AESOP 07 08OCT69 744												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	0.5	1.9	0.8	0.1	0.2	1.1	0.5	3.19	0.25	1.20	3.40
0.5	0.3	0.2	1.0	0.3	0.6	ND	1.0	0.5	7.25	-2.10	4.14	5.67
1.0	0.4	0.3	0.9	0.4	0.5	ND	1.0	0.6	6.19	-0.13	4.50	6.04
3.0	0.1	0.4	0.6	0.3	0.6	ND	1.0	1.1	5.40	-0.33	2.65	4.85
4.5	0.5	0.4	1.3	0.4	0.6	0.1	1.2	0.6	5.01	0.42	2.40	3.08
7.0	0.9	0.3	1.1	0.4	0.5	0.2	1.3	0.3	4.71	0.32	2.05	3.33

AESOP 07 09OCT69 724R												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.18	0.46	1.02	2.31
0.5									2.76	-0.54	0.84	5.33
1.5									3.31	-0.19	1.15	4.21
3.0									3.52	-0.12	1.18	4.04
4.5									3.40	-0.24	1.61	4.59
6.0									2.92	-0.24	1.50	4.26

AESOP 07 09OCT69 724												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DUP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA
0.0	5.6	1.5	1.7	0.4	0.4	ND	1.1	0.3				
0.5	0.2	3.7	0.7	0.3	0.6	ND	1.3					
1.5	0.9	4.4	0.6	0.3	0.5	ND	1.0	0.4				
3.0	0.4	4.1	0.7	0.3	0.5	ND	1.1	0.5				
4.5	0.9	3.7	2.1	0.6	0.5	ND	1.0	1.2				
6.0	1.2	5.0	2.8	0.7	0.6	ND	1.5	0.4				

AESOP 07 09OCT69 7070												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DUP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA
0.0									3.00	-0.17	1.52	2.60
0.5									2.62	-0.07	1.30	2.23
2.0									2.93	-0.08	1.54	2.56
4.0									2.74	-0.20	1.43	3.20
7.0									2.75	0.04	1.47	3.08
9.0									2.01	0.25	1.44	2.91

AESOP 07 09OCT69 0701A												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DUP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA
0.0	0.3	0.3	0.9	0.7			1.6	0.3	1.26	-0.03	0.57	0.79
1.0	0.2	0.3	0.4	0.6	0.3	ND	1.7	0.3	1.10	-0.17	0.51	0.96
3.0	0.2	0.3	0.4	0.9	0.4	0.3	1.7	0.3	1.17	-0.03	0.60	0.65
7.0	0.2	0.4	0.9	0.7	0.3	ND	1.8	0.2	1.43	-0.09	0.85	1.17
9.0	0.1	0.4	0.9	0.8	0.2	0.1	1.9	0.3	1.91	-0.12	1.39	1.84
10.0									2.01	-0.00	1.39	1.85
11.0	0.4	0.8	0.7	0.8	0.4	ND	1.9	0.3				

AESOP 07

10OCT69

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN, C	DOC	CA	CB	CC	PHEDA
0.0	0.8	0.7	2.2	0.9	0.8		1.4	0.2	0.88	0.06	0.42	0.40
1.0	0.5	0.5	1.1	0.7	0.8		1.7	0.3	0.84	0.04	0.48	0.63
2.0	0.7	0.4	0.8	0.7	0.7		1.9	0.3	0.77	0.07	0.42	0.54
6.0	0.6	0.5	0.7	0.7	0.7		1.8	0.3	0.66	0.03	0.35	0.62
10.0	0.1	0.5	0.6	0.8	0.7		1.5	0.3	0.95	-0.07	0.59	1.19
13.0	0.3	0.4	0.9	0.6	0.8		1.9	0.4				

AESUP 08 10NOV69 922Y												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									11.56	-1.05	3.02	4.83
0.5									8.72	-0.02	2.79	5.00
1.0									10.77	-1.14	2.99	6.46
2.0									10.51	-0.98	2.78	6.40
2.5									11.64	-1.43	3.17	5.89
3.5									11.21	-1.35	2.85	6.35

AESOP 08 10NOV69 9145												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	7.2	8.1	0.3	0.3	0.6	0.9	0.4	8.40	-0.59	2.94	4.79
1.0	0.8	7.1	11.0	0.4	0.3	0.5	0.9	0.4	8.08	-0.76	2.30	5.00
2.0	0.6	7.3	7.9	0.4	0.3	0.7	0.9	0.4	8.08	-0.70	2.75	4.38
3.5	0.4	6.1	6.1	0.5	0.3	0.4	0.9	0.3	7.56	-0.60	2.63	4.43
5.0	0.9	5.5	9.4	0.6	0.5	0.1	0.8	0.4	6.17	-0.79	1.97	5.07
6.0	1.0	5.7	9.8	0.7	0.4	0.2	0.9	0.4	5.25	-0.49	1.99	4.80

AESOP 08 10NOV69 904N												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.15	-0.31	3.05	4.98
0.5									6.16	-0.46	2.25	4.06
1.0									6.20	-0.21	3.93	4.06
1.5									5.46	-0.95	1.93	5.18
3.0									5.04	-0.51	2.03	3.52
4.0									3.73	-0.71	1.41	3.16

AESOP 08

11NOV69

858C

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.5	4.0	19.0	0.9	0.3	ND	1.3	0.3	2.95	-0.14	1.14	2.35
0.5	0.7	4.0	13.0	0.7	0.6	ND	1.2	0.3	2.63	-0.14	1.09	2.45
2.0	0.8	3.9	12.0	0.8	0.9		1.4	0.2	2.89	-0.02	1.12	2.32
4.0	0.7	3.8	12.0	0.7	0.4	ND	1.2	0.3	2.64	-0.19	1.02	2.62
6.0	0.8	4.0	12.0	0.7	0.6	ND	1.2	0.3	2.90	-0.06	1.57	2.63
9.0	0.7	3.5	11.0	0.6	0.6	ND	1.1	0.3	2.71	-0.05	1.17	2.76

AESOP 08

11NOV69

845G

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.22	-0.35	2.12	2.55
0.5									4.94	-0.20	2.69	3.24
4.0									5.43	-0.60	2.70	3.79
5.0									6.57	-0.83	3.43	3.66
7.0									7.24	-0.81	3.72	4.54

AESOP 08

11NOV69

834G

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.8	4.8	5.5	0.4	0.6		1.4	0.5	10.87	-1.94	4.66	5.88
0.5	0.6	4.5	2.8	0.4	0.6		1.4	0.3	13.87	-2.27	6.89	6.75
1.0	0.6	4.7	2.4	0.3	0.6		1.0	0.2	13.60	-2.48	7.31	7.38
3.0	0.7	4.7	2.9	0.4	0.6		1.1	0.4	12.34	-2.05	6.90	8.46
5.0	0.6	3.7	2.4	0.3	0.7		1.2	0.3	13.54	-2.40	5.79	14.05
6.5	0.6	4.0	2.4	0.3	0.7		1.2	0.5	16.36	-0.20	7.57	8.99

AESOP 08			12NOV69			818P							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA
0.0	0.4	0.9	4.7	0.3	0.5		1.1	0.5		2.68	-3.97	5.46	13.13
0.5	0.5	0.6	2.4	0.4	0.4		1.1	0.5		2.96	-5.39	5.97	14.38
1.5	0.4	0.7	1.9	0.3	0.6		1.1	0.5		2.50	-3.51	4.95	13.91
3.0	0.4	0.6	2.1	0.5	0.3		1.1	0.4		2.81	-3.59	5.70	14.04
6.0	0.5	0.8	1.9	0.4	0.4		1.6	0.3		3.00	-1.89	5.51	13.93
7.0	0.3	0.7	1.7	0.4	0.4		1.1	0.5		2.71	-2.17	5.66	14.61

AESOP 08			12NOV69			804C							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA
0.0										10.12	0.56	4.36	4.77
0.5										10.23	0.60	4.16	3.19
2.0										9.58	0.55	3.82	4.14
4.0										9.25	0.16	3.60	5.22
6.0										9.03	0.08	4.00	5.06
8.0										8.63	1.90	3.27	0.21

AESOP 08			12NOV69			744							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA
0.0										10.32	6.79	2.57	-8.57
0.5	0.4	1.2	4.3	0.4	0.5	0.5	1.2	0.4		11.40	7.60	3.37	-9.68
1.0	0.4	1.2	2.5	0.5	0.5	0.5	1.2	0.3		11.36	7.37	2.54	-9.36
3.0	0.3	0.8	2.6	0.6	0.4	0.8	1.3	0.4		7.58	-0.11	3.44	5.89
4.0	0.3	1.2	2.2	0.5	0.3	0.6	1.3	0.4		6.99	-0.56	3.62	5.56
5.0	0.4	1.1	3.1	0.5	0.5	0.4	1.3	0.7		6.10	-0.95	3.38	6.53

AESOP 08

13NOV69

724R

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	1.9	11.4	0.5	2.2		1.3	0.5	2.99	-0.01	1.38	2.94
0.5	0.7	1.9	6.9	0.7	1.2		1.2	0.5	2.59	-0.06	1.20	2.26
1.5	0.6	2.1	6.7	1.0	1.2		1.3	0.7	2.42	-0.03	1.31	2.71
3.0	0.6	2.0	6.5				1.3	0.6	2.52	-0.12	1.10	2.62
5.0	0.6	2.0	6.7	0.7	0.8		1.1	0.5	2.34	-0.09	1.28	2.55
6.0	0.6	1.9	6.4	0.5	1.0		1.0	0.8	2.85	-0.08	1.21	2.60

AESOP 08

13NOV69

7070

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.93	-0.16	1.13	2.82
0.5									2.50	-0.20	1.07	2.87
2.5									2.93	0.03	1.33	2.52
5.0									3.05	0.06	1.40	2.50
7.0									2.60	-0.14	1.30	2.99
8.0									2.79	0.04	1.43	2.70

AESOP 08

13NOV69

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	1.3	4.0	1.0	0.7		1.7	0.3				
2.5	0.4	1.3	4.2	0.9	0.9		1.9	0.5				
6.0	0.3	1.5	3.2	0.7	0.9		1.6	0.5				
12.0	0.6	1.2	3.2	0.8	0.8		1.7	0.5				

AESOP 08				13NOV69		0701A						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0	0.5	1.8	7.2	0.8			1.8	0.1	0.95	0.10	0.32	1.14
3.0	0.4	1.8	5.9	1.0			1.6	0.5	0.81	0.06	0.27	1.41
4.5	0.4	1.9	5.9	0.9			1.9	0.3	0.83	0.11	0.35	1.60
7.0	0.6	1.7	5.8	1.0			1.6	0.3	0.91	0.01	0.42	2.83
8.0	0.4	1.7	6.2	1.2			1.1	0.3	0.89	-0.01	0.38	2.88

AESOP 08				13NOV69		0707V						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0									1.22	0.26	0.18	0.45
2.5									1.00	0.13	0.19	0.89
5.0									1.10	0.08	0.30	1.25
12.0									0.90	0.12	0.24	0.91

AESOP 09 15DEC69 922Y												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.83	-0.60	0.69	3.55
0.5									1.92	-0.53	0.83	3.77
2.0									1.80	-0.28	0.85	3.94
4.0									1.72	-0.37	1.00	3.83
6.0									1.76	-0.42	0.90	4.39

AESOP 09 15DEC69 914S												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.1	50.0	28.0	0.4	0.6		0.4	0.4	3.01	-0.47	1.61	3.25
0.5	1.2	49.0	21.0	0.4	0.4		0.4	0.4	2.60	-0.71	1.46	3.88
1.0	1.1	49.0	18.0	0.5	0.8		0.4	0.4	2.82	0.03	1.57	2.96
2.0	1.0	44.0	17.0	0.6	0.2		0.4	0.4	2.64	-0.43	1.32	3.24
2.5	0.9	40.0	15.0	0.7	0.1		0.4	0.3	2.84	-0.10	1.42	3.20

AESOP 09 15DEC69 904N												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.89	0.17	0.78	1.99
0.5									1.89	0.07	0.58	2.25
1.0									1.74	0.20	0.84	2.03
2.0									1.68	0.14	1.02	2.35
3.0									1.78	0.24	0.83	1.81
4.0									1.69	0.24	0.80	1.89

AESOP 09				16DEC69				858C							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	0.8	21.0	17.0	0.8	0.2	0.1	0.8	0.5		1.35	-0.20	0.40	2.18		
0.5	0.8	21.0	15.0			0.1	0.7	0.4		1.07	-0.16	0.44	2.20		
1.5	0.8	22.0	13.0	0.7	0.1	0.1	0.7	0.6		1.24	-0.29	0.29	2.23		
3.0	0.8	20.0	14.0	1.0	0.3		0.6	0.4		1.13	-0.22	0.41	2.33		
4.5	0.7	13.0	12.0	0.7	ND		0.6	0.6		1.40	-0.25	0.62	2.59		
6.0	0.6	8.0	11.0	0.8	0.1		0.8	0.5		1.47	-0.23	0.72	3.13		

AESOP 09				16DEC69				845G							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0										1.84	-0.51	0.65	2.35		
0.5										1.50	-0.61	0.57	2.49		
1.0										1.76	-0.58	0.71	2.32		
3.0										1.79	-0.43	0.72	2.26		
6.0										1.94	-0.41	1.02	2.43		
8.0										2.04	-0.46	1.02	2.56		

AESOP 09				16DEC69				834G							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	0.4	6.0	5.9				0.9	0.4		3.02	-0.24	1.30	2.06		
0.5	0.4	5.4	7.1	0.3	0.3		0.9	0.4		2.71	-0.47	1.12	2.32		
1.5	0.5	6.5	6.9	0.2	0.5		0.9	0.5		2.88	-0.17	1.48	2.10		
4.0	0.4	5.8	6.1	0.2	0.4		0.9	0.4		2.89	-0.34	1.33	2.42		
7.0	0.5	5.8	6.4	0.2	0.4		0.9	0.5		2.73	-0.42	1.63	3.46		
8.0										2.65	-0.04	1.62	2.08		
9.0	0.5	5.1	5.2	0.1	0.5		0.9	0.6							

AESOP 09				17DEC69			018P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.3	2.6	4.5	0.2	0.4	0.2	0.8	0.4	3.18	-0.33	1.26	2.13
0.5	0.3	2.5	3.9	0.4	0.3	0.1	0.8	0.4				
1.0									2.74	-0.35	1.32	2.00
2.0	0.3	2.1	3.0	0.2	0.4	0.1	0.9	0.3	2.66	-0.45	1.19	2.20
5.0	0.3	2.0	3.9	0.2	0.4	0.2	0.8	0.4	2.78	-0.36	1.17	2.23
9.0	0.2	2.0	2.8	0.2	0.3	0.3	0.8	0.5	2.68	-0.25	1.17	2.28
10.0	0.3	2.3	3.7	0.2	0.3	0.2	0.9	0.3	2.88	-0.12	1.43	2.09

AESOP 09				17DEC69			804C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.18	0.71	1.13	0.29
1.0									2.76	0.84	1.10	-0.10
2.0									2.71	-0.31	1.22	1.91
4.5									2.69	-0.36	1.25	1.91
7.0									2.60	-0.09	1.13	1.87
10.0									2.39	-0.16	1.22	1.90

AESOP 09				17DEC69			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.3	1.2	0.3	0.4	0.2	1.0	0.4	2.12	-0.25	0.68	1.67
0.5	0.1	0.4	1.3	0.2	0.5	0.2	1.0	0.4	1.83	-0.24	0.60	1.70
1.5	0.1	0.4	1.1	0.2	0.4	0.2	0.8	0.7	2.07	-0.31	0.71	1.93
4.0	0.2	0.3	1.1	0.2	0.4	0.3	1.0	0.5	1.99	-0.18	0.54	1.78
7.0	0.1	0.3	1.7	0.2	0.5	ND	1.0	0.6	2.08	-0.10	0.79	1.65
9.0	0.1	0.2	1.6	0.1	0.3	0.1	1.0	0.6	2.12	-0.09	0.75	1.63

AESOP 09 18DEC69 724R												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.1	0.6	2.3	0.4	0.3	0.3	1.3	0.5				
0.5	0.4	0.6	1.3	0.6	0.1	0.4	1.4	0.2				
1.0	0.3	0.5	0.9	0.5	0.1	0.2	1.1	0.4				
2.5	0.2	0.6	1.4	0.4	0.2	0.1						
4.5	0.2	0.4	1.2	0.5	0.1	0.5	1.0	0.5				
6.0	0.3	0.4	1.1	0.4	0.2	0.3	1.2	0.4				

AESOP 09 18DEC69 7070												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.54	-0.25	0.90	2.98
0.5									2.93	-0.25	0.91	2.77
1.5									3.66	-0.32	1.17	2.84
3.0									3.25	-0.46	1.21	2.84
4.0									3.36	-0.33	1.26	3.38
6.0									2.79	-0.66	1.03	3.11

AESOP 09 18DEC69 0701A												
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.0	4.1	2.8	0.8	0.3	0.2	1.7	0.2	3.06	-0.41	1.15	2.08
0.5	0.7	1.5	2.1	0.7	0.3	0.2	1.8	0.2	2.70	-0.59	1.21	2.45
1.5	0.7	4.9	2.1	0.6	0.3	0.1	1.7	0.3	2.95	-0.48	1.15	2.21
3.5	0.8	4.6	2.2	0.8	0.4	ND	1.5	0.4	3.47	-0.49	1.62	2.66
6.0	0.7	4.4	2.0	0.8	0.3	0.1	1.8	0.3	3.57	-0.37	1.51	2.78
7.0	1.2	4.2	1.5			0.1	1.3	0.5	3.81	-0.27	1.62	2.44

AESOP 09

19DEC69

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEUA
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN, C	DOC	CA	CB	CC	
0.0									1.88	-0.20	0.75	1.07
0.5									1.91	-0.23	0.86	1.22
2.0									1.91	-0.20	0.96	1.32
6.0									1.63	-0.24	0.85	1.39
9.0									1.84	-0.31	0.92	1.37
12.0									1.99	-0.17	0.95	1.22

AESOP 10				13JAN70			R58C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.7	18.0	19.0	1.4	0.5	ND	0.8	0.3	0.47	0.07	0.44	2.22	
0.5	0.9	18.0	22.0	1.1	0.2	0.1	0.8	0.3	1.18	-0.17	0.49	1.41	
1.5	0.8	16.0	19.0	1.0	0.3	ND	0.7	0.3	1.02	-0.18	0.51	1.51	
3.5	0.8	17.0	16.0	0.9	ND	ND	0.7	0.3	1.09	-0.16	0.43	1.35	
5.0	0.7	12.0	13.0	1.1	0.5	0.4	0.7	0.3	1.17	-0.21	0.53	1.33	
7.0	0.7	12.0	13.0	0.8	ND	0.3	0.8	0.3	1.17	-0.21	0.55	1.40	

AESOP 10				13JAN70			R45C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									1.24	0.27	0.69	0.69	
1.0									1.75	0.13	0.60	1.04	
2.0									1.77	0.10	0.62	1.05	
4.5									1.88	0.06	0.75	1.19	
6.0									1.93	0.11	0.82	0.99	
8.0									1.82	-0.01	0.78	1.40	

AESOP 10				13JAN70			R34C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.0	10.0	9.6	0.8	ND	0.3	0.9	0.4	2.30	-0.14	1.00	1.16	
0.5	0.6	10.0	9.2	0.7	ND	0.2	1.8	0.6	2.11	0.15	0.84	0.86	
1.5	0.5	11.0	9.6	0.7	ND	0.4	1.1	0.2	2.24	-0.23	1.06	1.37	
3.5	0.6	10.0	9.5	0.8	ND	ND	1.0	0.3	1.64	-0.11	0.88	1.49	
6.0	0.5	9.0	8.3	0.6	ND	0.3	0.9	0.4	1.85	-0.20	1.01	1.50	
8.0	0.5	10.0	8.3	0.6	0.1	0.3	0.9	0.4	2.37	-0.17	1.24	1.29	

AESOP 10 14JAN70 818P												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0	0.6	7.0	5.8	0.4	0.1	0.4	1.0	0.4	3.44	0.11	1.33	1.10
1.0	0.8	6.2	5.2	0.4	0.3	0.2	0.6	0.4	3.08	0.19	1.15	1.14
1.5	0.5	6.9	5.2	0.5	0.2	0.3	0.6	0.4	3.03	0.14	1.13	1.21
3.0	0.5	5.8	4.4	0.4	0.1	0.4	0.9	0.5	3.59	0.12	1.45	1.42
4.5	0.5	5.8	4.3	0.5	0.1	0.5	0.8	0.4	3.27	0.15	1.30	1.41
6.0	0.5	6.4	3.6	0.4	0.2		0.9	0.6	3.70	0.32	1.42	0.90

AESOP 10 14JAN70 804C												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0									4.11	-0.02	1.93	1.34
0.5									3.40	0.15	1.17	1.12
1.5									2.90	-0.28	1.54	2.45
3.5									3.35	-0.52	2.19	2.39
6.0									3.30	-0.34	2.21	2.61
8.0									3.45	-0.54	2.28	2.79

AESOP 10 14JAN70 744												
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0	0.5	1.1	1.4	0.3	0.3	0.3	1.0	0.6	3.38	0.12	1.52	0.96
0.5	1.1	2.7	1.2	0.4	0.3	0.1	1.0	0.5	1.81	-2.90	-1.65	1.41
2.0	0.4	2.9	1.9	0.3	0.3	0.3	1.1	ND	3.29	0.21	1.65	1.15
4.0	1.1	2.0	1.2	0.5	0.2	0.4	1.0	0.6	4.45	-0.10	2.81	3.30
6.0	0.2	1.1	0.7	0.3	0.3	0.3	1.1	0.4	4.54	0.36	2.20	1.71
8.0	0.6	0.8	0.5	0.4	0.3	0.3	1.1	0.6	4.51	0.15	2.04	2.00

AESOP 10				15JAN70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	2.2	0.6	3.1	0.2	0.4	0.3	1.8	0.1	3.07	-0.18	1.10	1.05	
0.5	1.3	0.2	2.4	0.6	ND	0.7	1.9	ND	2.53	-0.04	0.97	1.78	
1.5	1.3	0.3	1.0	0.1	0.8	ND	1.3	0.4	2.83	0.14	1.12	1.35	
3.5	0.7	0.2	1.4	0.3	0.5	0.3	1.4	0.8	2.63	-0.31	1.20	1.89	
5.0	0.5	ND	0.9	0.3	0.5	0.2	1.5	0.4	2.99	-0.17	1.40	1.94	
7.0	1.6	0.3	1.3	0.1	0.7	0.2	1.7	0.6	2.98	-0.25	1.39	1.86	

AESUP 10			15JAN70			707V							
MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									3.69	-0.21	1.38	1.96	
1.0									3.35	-0.21	1.21	2.02	
2.0									3.00	-0.09	1.22	2.28	
4.0									1.90	-1.67	1.19	7.18	
6.0									2.91	-1.46	1.40	5.87	
7.0									3.00	-0.93	1.53	4.59	

AESOP 10				15JAN70			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA	
0.0	0.8	0.2	1.1	0.2	1.1		1.6	0.3	4.26	-0.36	1.65	1.23	
1.0	0.9	0.8	0.7	0.1	1.1		1.1	0.3	4.51	-0.79	2.40	1.98	
2.0	1.8	0.3	0.9	0.1	1.3		1.5	0.3	4.59	-0.36	2.04	1.88	
4.5	0.6	ND	1.0	0.2	1.1		1.4	0.4	5.41	-0.23	2.49	1.78	
7.0	1.5	0.3	0.4	0.1	1.3		2.1	0.5	4.96	0.00	2.07	1.71	

AESOP 11				18FEB70		914S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.1	97.0	16.0	0.4	0.9	ND			0.42	0.09	0.11	2.81
0.5	0.7	81.0	11.0	0.5	0.2	0.3			0.66	0.12	0.20	2.72
1.5	0.0	86.0	13.0	0.4	0.2	0.3			0.81	0.27	0.31	2.73

AESOP 11				18FEB70			904N						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									1.09	0.23	0.43	1.70	
0.5									0.54	0.09	0.19	2.21	
1.5									1.38	-0.10	0.80	2.69	
2.0									1.13	-0.09	0.56	3.21	

AESOP 11				19FEB70			858C						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.3	46.0	20.0	0.5	0.2	0.2			1.01	-0.10	0.45	1.99	
0.5	1.0	45.0	26.0	0.5	0.3	0.1			1.11	-0.23	0.54	2.36	
2.0	1.2	45.0	23.0	0.6	0.2	0.1			1.20	-0.13	0.51	1.96	
2.5	1.0	40.0	24.0	0.6	0.1	0.2			1.30	-0.07	0.59	2.12	
3.5	1.4	41.0	20.0	0.6	0.2	0.1			1.46	-0.11	0.60	2.00	

AESOP 11				19FEB70			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.10	0.04	0.39	1.28
0.5									0.90	-0.03	0.42	1.54
1.0									0.82	-0.06	0.40	1.75
2.5									1.00	-0.02	0.44	1.67
4.5									2.08	-0.07	0.74	2.20
5.0									1.71	-0.11	0.67	1.98

AESOP 11				19FEB70			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.5	27.0	15.0	0.5	0.3	0.7			1.07	-0.10	0.42	1.94
0.5	0.6	25.0	13.0	0.6	0.3	0.7			1.34	-0.10	0.60	1.94
1.0	1.0	27.0	16.0	0.6	0.2	0.8			0.98	-0.11	0.44	2.02
3.0	0.5	23.0	14.0	0.5	0.3	0.7			1.61	-0.14	0.97	2.30
5.0	1.3	21.0	10.0	0.4	0.4	0.6			1.91	-0.21	0.95	2.41
6.5	1.3	14.0	5.0	0.4	0.3	0.8			3.39	-0.31	1.98	3.57

AESOP 11				20FEB70			818P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.0	22.0	10.0	0.2	0.5	0.1			2.66	-0.45	1.45	3.10
0.5	1.6	23.0	10.0	0.3	0.4	0.1			2.51	-0.39	1.64	3.21
1.5	3.7	23.0	11.0	0.3	0.5	ND			2.61	-0.43	1.43	3.65
3.5	1.2	18.0	7.0	0.4	0.4	0.1			3.22	-0.46	1.77	3.11
5.0	1.4	15.0	8.0	0.3	0.4	0.2			3.80	-0.30	2.05	3.58
7.0			6.0	0.4	0.4	0.2			5.54	0.07	2.98	5.17

AESOP 11				20FEB70				804C							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DUP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0										3.31	-0.60	1.79	2.96		
0.5										3.32	-0.29	1.63	2.96		
1.0										3.38	-0.54	1.81	2.97		
2.5										3.04	-0.43	2.04	3.08		
4.5										3.42	-0.47	2.15	3.04		
6.5										3.36	-0.62	2.29	4.28		

AESOP 11				20FEB70				744							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DUP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	0.6	8.0	4.0	0.3	ND		1.0	0.5		5.59	-0.75	2.68	2.90		
0.5	0.8	8.7	3.4	0.2	0.4	0.5	1.2	0.4		4.79	-0.09	1.95	2.46		
2.0	0.5	9.3	3.6	0.2	ND	0.7	1.0	0.5		4.49	-0.37	2.61	4.46		
4.0	0.6	10.2	3.7	0.3	0.4	0.4	1.0	0.4		4.95	-0.25	2.71	3.80		
6.0	0.7	10.1	3.4	0.4	0.5	0.2	1.0	0.8		4.72	-0.22	2.68	4.12		
10.0	0.7	9.5	3.7				1.1	0.5		4.45	-0.28	3.22	4.90		

AESOP 11				21FEB70				724R							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DUP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0	1.1	1.2	1.8	0.2	0.4	ND	1.2	0.5		3.18	-0.34	1.79	2.80		
1.5	1.4	2.4	1.0	0.3	0.3	ND	1.1	0.4		2.85	-0.57	1.52	2.96		
2.0	0.7	2.5	0.9	0.3	0.3	ND	1.1	0.4		2.88	-0.39	1.43	2.03		
4.5	0.6	2.0	1.0	0.3	0.2	ND	1.0	0.4		2.38	-0.22	1.06	1.74		
7.0	0.5	1.6	1.0	0.2	0.4	ND	1.0	0.4		1.31	-0.12	0.66	0.84		
9.0	0.7	1.3	1.0	0.2	0.4	ND	1.2	0.4		2.55	-0.15	1.30	1.45		

AESOP 11			21FEB70			7070						
MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.88	-0.03	0.79	1.21
1.0									1.50	-0.12	0.65	0.81
2.5									1.37	-0.12	0.76	0.98
6.0									1.61	-0.16	0.73	0.94
8.0									2.72	-0.20	1.47	1.67
10.0									2.54	-0.29	1.32	2.11

AESOP 11			21FEB70			U701A						
MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	0.2	1.1	0.6	0.5		1.7	0.3	3.13	0.01	1.16	1.24
1.0	1.3	0.6	1.2	0.3	0.8		1.5	0.4	2.54	-0.09	0.99	1.38
2.0	1.7	0.7	1.2	0.4	0.7		1.6	0.4	2.84	-0.12	1.20	1.43
4.5	0.3	0.1	1.2	0.4	0.7		1.3	0.4	2.78	-0.13	1.12	1.51
6.0	0.4	0.2	0.5	0.3	0.8		1.5	0.5	2.87	-0.17	1.20	1.64
8.0	0.7	0.1	1.0	0.3	0.7		1.4	0.5	2.90	-0.23	1.34	2.02

AESOP 11			22FEB70			U707V						
MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.90	-0.71	1.77	1.28
0.5									3.35	-0.28	1.45	1.81
2.0									3.43	-0.44	1.57	1.70
5.0									3.27	-0.36	1.60	1.51
8.0									3.45	-0.32	1.59	1.55
11.0									3.96	-0.36	2.10	1.48

AESOP 12				16MAR70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									0.67	0.03	0.07	1.63
0.5									0.70	0.01	0.09	1.87
1.0									0.69	0.04	0.10	1.95
1.5									0.71	0.07	0.09	1.84
2.0									0.69	0.07	0.09	1.82
2.5									0.70	0.06	0.11	1.85

AESOP 12				16MAR70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	0.6	84.0	13.0	0.5			0.5	0.6	1.89	0.12	0.42	1.30
0.5	0.6	74.0	12.0	0.6	0.3	ND	0.6	0.5	1.97	0.28	0.54	0.87
1.0	0.6	81.0	12.0	0.5	ND	0.4	0.4	0.7	1.92	0.19	0.47	1.33
2.0	0.4	52.0	8.0	0.4	0.2	0.1	0.4	0.6	1.95	0.18	0.55	1.38
2.5	0.6	76.0	12.0	0.5	ND	0.4	0.4	0.7	1.82	0.13	0.50	1.44
3.5	0.6	81.0	12.0	0.6	ND		0.4	0.7	2.09	0.14	0.64	1.54

AESOP 12				16MAR70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									4.57	-0.01	1.24	2.29
0.5									3.34	-1.02	1.37	6.85
1.0									4.24	-0.38	1.23	2.81
1.5									4.32	-0.13	1.37	2.91
2.0									4.24	-0.45	1.40	3.16
3.0									4.17	-0.39	1.68	3.43

AESOP 12				17MAR70			858C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.8	18.0	14.0	0.5	0.1	0.1			3.50	-0.49	1.22	4.69
0.5	0.7	43.0	14.0	0.5	0.1	0.4			4.44	-0.62	1.43	3.55
1.0	0.7	39.0	15.0	0.4	0.2	0.3			4.29	-0.38	1.35	2.77
2.0	0.7	40.0	15.0	0.5	0.1	0.4			5.05	-0.71	1.26	3.75
3.0	0.6	33.0	13.0	0.6	ND	0.6			8.04	-0.83	2.76	4.12
4.0	0.5	18.0	6.0	0.6	0.1	0.5			6.42	-0.14	2.32	3.68

AESOP 12				17MAR70			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.69	0.24	0.84	1.13
0.5									3.33	0.19	0.99	1.03
1.5									3.50	-0.17	1.16	1.65
2.5									4.98	-0.13	1.83	2.29
4.0									7.77	-0.41	3.44	2.69
5.0									7.11	-0.69	3.15	2.48

AESOP 12				17MAR70			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.9	30.0	7.1	0.5	ND	0.1			2.88	-0.03	1.02	1.60
1.0	0.6	30.0	6.6	0.7	ND	0.1			2.56	0.02	1.04	1.63
2.0	0.6	29.0	7.1	0.6	ND	0.2			3.17	-0.06	1.12	1.68
4.0	0.6	26.0	5.7	0.6	ND	0.2			3.96	-0.36	1.80	2.57
6.0	0.5	28.0	5.4	0.7	ND	0.2			5.32	-0.16	1.78	2.72
7.0	0.5	21.0	5.9	0.5	ND	0.2			6.19	-0.13	2.39	2.47

AESOP 12				18MAR70			818P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	27.0	5.8	0.4	0.3	ND			1.94	0.07	0.78	1.08
0.5	0.7	27.0	5.6	0.6	0.2	ND			1.17	0.09	0.57	0.71
2.0	0.6	27.0	5.6	0.5	0.2	0.3			1.28	-0.12	0.67	1.01
5.0	0.5	26.0	5.1	0.4	0.1	0.5			1.78	-0.05	0.75	1.06
9.0	0.6	16.0	3.8	0.3	0.2	0.7			4.02	-0.45	1.83	2.11

AESOP 12				18MAR70			804C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.93	-0.01	0.49	0.82
0.5									0.96	-0.06	0.55	1.12
2.0									1.01	-0.01	0.55	0.83
6.0									1.18	0.06	0.58	0.56
10.0									2.36	0.16	1.11	1.20

AESOP 12				18MAR70			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.0	21.0	3.0	0.2	0.5	ND	0.9	0.4	1.39	0.20	0.54	0.38
1.0	0.9	20.0	3.0	0.2	0.3	0.1	0.9	0.4	1.01	0.02	0.46	0.85
3.0	1.0	21.0	3.0	0.2	0.3	0.1	1.0	0.4	1.19	0.03	0.52	0.94
6.0	1.0	18.0	2.5	0.2	0.5	ND	0.8	0.4	0.99	0.02	0.42	0.92
10.0	1.2	15.0	2.0	0.2	0.3	ND	0.9	0.6	1.03	0.08	0.42	0.87
14.0	1.5	14.0	2.7	0.2	0.3	0.3	0.9	0.4	1.17	0.00	0.50	1.18

AESOP 12				19MAR70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.8	10.4	1.7	0.2	0.2	0.3	1.0	0.5	1.90	0.26	0.67	0.39	
0.5	1.0	9.6	1.1	0.2	0.3	0.3	0.9	0.3	1.70	0.16	0.59	0.49	
2.0	1.0	9.1	1.2	0.2	0.2	0.2	1.0	0.4	1.63	0.18	0.66	0.46	
2.5	1.0	7.4	1.2	0.2	0.3	ND	1.0	0.4	1.57	0.15	0.63	0.54	
4.5	1.5	8.8	1.2	0.1	0.5	0.1	1.0	0.5	1.64	0.24	0.73	0.39	
7.0	0.9	5.1	1.6	0.1	0.4	0.4	1.1	0.5	4.56	-0.04	2.01	2.33	

AESOP 12				19MAR70			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									3.23	0.27	1.26	0.41	
0.5									2.54	0.16	1.04	0.87	
1.5									2.60	-0.10	1.39	1.45	
4.5									3.22	-0.04	1.73	1.47	
7.0									4.57	-0.15	2.49	1.76	
9.0									5.24	-0.22	3.07	2.31	

AESOP 12				19MAR70			0701A						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.6	0.6	0.6	0.3	0.6	0.1	1.3	0.3	1.54	-0.53	1.87	0.89	
0.5	0.6	0.6	0.3	0.2	0.7	0.1	1.3	0.4	2.57	-0.61	1.40	1.31	
1.5	0.9	ND	0.7	0.2	0.7	ND	1.6	0.4	1.40	-0.15	1.47	1.96	
4.5	0.9	0.1	0.4	0.3	0.6	ND	0.9	0.3	1.80	-0.35	1.66	2.10	
7.0	0.6	0.2	0.3	0.2	0.8	ND	1.3	0.4	2.64	-0.14	1.53	1.93	

AESOP 13				13APR70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.54	0.10	0.08	1.53
0.5									0.48	0.06	0.06	1.65
1.0									0.51	0.06	0.05	1.67
1.5									0.46	0.05	0.05	1.69

AESOP 13				13APR70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.56	0.03	0.07	2.04
0.5									0.48	0.05	0.07	2.07
1.5									0.47	0.05	0.07	2.13
2.0									0.48	0.04	0.08	2.12

AESOP 13				13APR70			914					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.0	73.0	15.0	0.4	0.2	0.2	0.6	0.4				
0.5	0.5	74.0	10.0	0.3	0.1	0.4	0.5	0.2				
1.5	0.9	65.0	12.0	0.5	ND	0.3	0.5	0.2				
2.0	0.7	74.0	14.0	0.4	0.1	0.3	0.6	0.4				

AESOP 13				13APR70			904N						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0									0.43	0.11	0.11	1.62	
0.5									0.39	0.08	0.11	1.61	
1.0									0.44	0.03	0.11	1.81	
1.5									0.26	-0.05	0.13	2.23	

AESOP 13				14APR70			858C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0	2.1	57.0	17.0	0.5	0.2	0.2	0.6	0.4	1.38	2.24	-0.18	-2.31	
0.5	0.7	55.0	17.0	0.7	ND	0.3	0.7	0.3	1.28	2.14	-0.18	-2.25	
1.5	0.7	57.0	18.0	0.6	ND	0.6	0.7	0.3	1.33	2.19	-0.16	-2.32	
2.0	1.2	59.0	19.0	0.5	0.1	0.2	0.6	0.3	1.30	2.16	-0.13	-2.16	
2.5	0.6	54.0	18.0	0.8	ND	0.3	0.7	0.3	1.29	2.21	-0.13	-2.24	

AESOP 13				14APR70			845G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0									1.17	0.17	0.30	1.03	
0.5									1.01	0.12	0.27	1.19	
1.5									1.02	0.12	0.33	1.32	
2.5									1.09	0.09	0.33	1.35	
3.0									0.92	0.11	0.30	1.27	

AESOP 13				14APR70		834G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.8	54.0	14.0	0.4	0.5	ND	0.9	0.3	1.56	0.08	0.75	1.42
0.5	0.8	54.0	17.0	0.4	0.3	0.1	0.9	0.4	1.12	-0.07	0.66	1.98
1.0	0.7	54.0	18.0	0.4	0.5	ND	1.0	0.3	1.63	0.02	0.89	1.67
2.5	0.7	54.0	17.0	0.4	0.3	0.1	1.0	0.4	1.68	0.12	0.77	1.63
4.0	0.8	51.0	19.0	0.4	0.3	0.1	1.0	0.4	1.14	0.05	0.57	1.26
5.0	0.8	50.0	17.0	0.3	0.3	0.1	1.2	0.4	1.28	0.03	0.37	1.58

AESOP 13				15APR70			818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.8	39.0	13.0	0.4	ND	0.3	1.2	0.4	3.95	0.07	1.46	1.86	
0.5	0.6	32.0	12.0	0.5	0.1	0.1	1.0	0.3	3.89	0.23	1.64	1.73	
1.5	0.6	31.0	11.0	0.4	0.2	0.1	0.9	0.3	4.34	-0.03	1.95	2.80	
3.0	0.6	30.0	10.0	0.4	0.2	0.2	1.0	0.2	4.64	-0.15	2.30	3.09	
5.0	0.7	30.0	10.0	0.4	0.2	0.1	1.3	0.5	5.18	0.05	2.31	3.12	

AESOP 13				15APR70		804C						
MICRO-ATOMS/L				MICRO-ATOMS/L		MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.04	0.79	2.96	1.61
1.0									7.01	0.41	3.06	2.69
1.5									6.25	0.24	3.21	2.64
3.5									5.82	0.47	2.81	2.10
5.0									6.29	0.08	3.50	4.02
6.0									7.35	0.55	4.42	3.68

AESOP 13				15APR70			744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DUP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.6	21.0	5.4	0.4	0.1	0.3	1.1	0.4	8.73	0.76	3.26	1.61	
1.0	0.5	21.0	5.4	0.3	0.3	0.3	1.1	0.3	8.71	0.19	3.38	3.35	
1.5	0.5	22.0	5.2	0.4	0.1	0.4	1.0	0.2	6.70	0.57	3.19	2.58	
3.0	0.5	21.0	5.2	0.5	0.1	0.2	1.0	0.3	8.22	-0.38	3.81	4.68	
5.0	0.6	23.0	6.0	0.3	0.5	0.1	1.2	0.4	8.31	0.91	3.74	1.62	
7.0	0.7	20.0	5.5	0.4	0.3	0.2	1.1	0.4	9.38	-0.36	4.14	5.21	

AESOP 13				16APR70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.8	9.0	3.9	0.3	1.2	ND	1.0	0.3	9.85	0.01	4.55	1.98	
1.0	0.8	7.4	2.2	0.2		ND	1.2	0.2	9.28	0.08	4.51	2.77	
1.5	1.8	7.8	1.1	0.2	0.8	ND	1.4	0.3	9.13	-0.24	5.03	3.37	
3.5	0.6	7.4	1.3	0.3	0.4	ND	1.3	0.3	8.90	-0.16	4.69	3.08	
6.0	0.6	7.1	2.8	0.2	0.3	ND	0.7	0.1	8.54	0.12	4.48	3.29	
7.0	1.4	8.2	1.4	0.4	0.5	ND	1.3	0.3	8.44	-0.23	5.34	3.66	

AESOP 13				16APR70			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0									4.51	0.42	2.80	2.59	
1.5									3.74	0.31	2.14	2.51	
2.5									3.14	0.22	1.91	2.32	
4.5									4.32	0.05	2.49	3.03	
6.0									5.28	-0.01	3.07	3.49	
7.0									6.08	0.06	4.37	3.72	

AESOP 13				17APR70			U707V					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	0.1	1.4	0.9			0.7	0.1				
1.5	0.4	0.4	1.5	1.0			0.7	0.1				
2.5	0.4	0.5	1.4	0.8			0.7	0.1				
4.0	0.4	0.4	1.5	0.9			0.9	0.2				
8.0	0.5	0.5	1.6	0.9			0.8	0.2				

AESOP 13				16APR70			U701A					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	4.9	0.2		0.5			1.4	0.2	0.36	0.05	0.17	0.27

AESOP 13				17APR70			U707V					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.37	-0.03	0.22	0.48
1.5									0.17	0.04	0.08	0.25
2.5									0.18	0.03	0.08	0.26
4.0									0.32	0.01	0.18	0.44
8.0									0.20	0.03	0.12	0.35

AESOP 14				16MAY70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.12	0.26	0.74	7.89
0.5									5.76	0.36	0.92	8.96
1.0									5.56	0.16	1.06	11.16
1.5									4.62	0.13	0.87	9.78
2.0									4.62	0.28	0.83	10.37

AESOP 14				16MAY70			9145					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.11	0.03	1.43	5.73
0.5									4.37	-0.05	1.07	6.43
1.5									4.59	-0.09	1.34	6.60
2.5									4.08	-0.19	1.02	6.27
3.0									3.45	-0.40	1.02	6.33

AESOP 14				16MAY70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									11.98	-0.23	3.85	6.10
0.5									13.61	-0.75	6.18	10.78
1.0									14.39	-1.20	6.84	10.18
2.0									14.80	-0.61	6.57	9.52
3.0									12.45	-0.54	5.47	8.67
4.0									9.40	1.02	3.31	4.91

AESOP 14				15MAY70			858C						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	7.0	45.0	3.6	0.8	ND	ND	0.3	0.2	8.50	0.41	3.24	4.90	
0.5	2.5	40.0	3.2	0.4	0.3	0.4	0.4	0.2	8.91	0.09	3.52	6.29	
1.0	2.3	42.0	3.4	0.3	ND	0.4	0.4	0.2	8.27	-0.23	3.79	6.56	
3.0	2.4	36.0	4.4	0.3	0.4	ND	0.5	0.6	8.13	-0.01	3.51	5.21	
4.0	2.9	34.0	4.7	0.4	0.6	0.2	0.4	0.3	7.74	-0.65	3.19	4.95	
6.0	2.9	26.0	6.9	0.3	0.3	0.1	0.5	0.3	6.47	0.28	2.90	4.25	

AESOP 14				15MAY70		845G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.20	0.60	1.04	0.79
1.0									3.41	0.35	0.81	1.24
2.0									3.61	-0.04	1.06	2.24
5.0									3.57	-0.04	1.17	2.53
7.0									5.88	0.54	1.62	2.90
8.0									7.09	0.41	2.10	3.96

AESOP 14				15MAY70			834G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.1	35.0	1.1	0.4			0.6	0.3	3.74	0.11	1.25	0.91	
1.0	1.1	35.0	2.5	0.4	ND	ND	0.4	0.3	3.42	-0.13	1.08	1.31	
2.5	1.1	35.0	1.1	0.4			0.7	0.3	3.38	-0.18	1.17	1.40	
6.0	1.3	44.0	2.4	0.4	0.1	ND	0.7	0.3	3.34	-0.29	1.37	2.23	
9.0	1.2	26.0	11.6	0.4	0.3		0.9	0.4	0.29	-1.58	3.73	5.86	

AESOP 14				14MAY70			818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DUP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.0	28.0	0.9	0.2			0.5	0.4	7.16	0.02	2.41	1.52	
0.5	1.2	28.0	1.2	0.2	0.6	ND	0.7	0.3	5.57	0.35	1.86	0.85	
2.5	1.1	31.0	1.3	0.2	0.7	ND	0.6	0.4	4.73	0.33	1.54	1.09	
4.5	1.1	27.0	2.1	0.3	0.6	ND	0.7	0.3	7.83	-0.67	3.39	5.43	
6.5	1.4	26.0	2.8	0.2	0.5	ND	0.9	0.5	19.95	0.83	8.76	4.50	
8.0									20.62	-0.23	9.97	7.48	

AESOP 14				14MAY70			804C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									12.61	-0.76	5.77	1.84
0.5									11.59	-0.28	5.40	2.70
1.5									9.20	-0.84	5.32	4.00
3.5									17.22	-0.59	9.26	4.51
4.5									26.12	-2.92	17.31	9.24
5.0									24.04	-2.99	17.82	9.37

AESOP 14				14MAY70			714						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	2.2	11.0	2.3	0.6	0.5	ND			23.17	-0.59	8.52	7.43	
0.5	1.6	11.0	2.0	0.3	0.8	ND			21.60	-0.48	8.23	8.54	
1.0	1.9	5.3	2.3	0.4	0.7	ND			21.65	-1.03	8.47	10.08	
2.5	0.3	0.9	1.8	0.2	0.8	ND			22.11	-4.96	18.13	18.03	
3.5	0.3	0.2	1.7	0.3	0.4	ND			28.19	-2.64	23.23	21.25	
4.5	0.2	0.3	1.9	0.3	0.7	ND			31.37	-2.13	21.47	19.79	

AESOP 15				10JUN70			818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.1	8.5	1.0	0.2	0.6	0.2	0.7	0.3	8.01	0.70	1.67	0.64	
1.0	0.6	8.3	1.0	0.3	0.8	ND	0.7	0.4	9.82	0.59	2.00	1.70	
2.0	0.6	8.3	1.2	0.3	0.7	ND	0.8	0.4	10.16	0.42	2.23	2.67	
3.5	1.5	11.0	1.1	0.3	0.7	ND	0.8	0.4	9.49	0.21	2.82	3.60	
5.0	1.0	11.0	2.7	0.3	0.6	ND	0.9	0.3	7.00	0.45	1.81	3.33	
6.5	1.2	10.0	1.4	0.3	0.6	0.1	0.7	0.3	6.98	0.01	2.00	4.61	

AESOP 15				10JUN70			804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									8.29	0.17	1.92	4.27	
0.5									6.85	-0.05	1.72	3.59	
1.0									6.70	-0.06	2.03	3.80	
2.5									6.23	-0.07	1.79	3.86	
3.5									6.60	-0.46	1.77	3.71	
4.5									7.36	-0.35	2.70	3.75	

AESOP 15				10JUN70			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.2	1.5	0.2	0.7	0.2			3.43	0.10	1.21	2.25
0.5	0.3	0.2	1.7	0.3	0.8	0.1			2.97	0.08	1.10	2.15
1.5	0.4	0.3	2.2	0.3	1.0	ND			3.52	0.11	1.29	2.51
3.5	0.2	0.2	1.6	0.3	0.8	ND			3.23	0.14	1.12	2.35
5.0	0.3	ND	1.6	0.3	0.7	ND			3.05	-0.18	1.11	3.05
7.0	0.4	ND	1.0	0.3	0.8	ND			3.07	0.19	1.12	2.74

AESUP 15				09JUN70				724R					
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA	
0.0	0.6	0.2	1.0	0.3	0.8	ND			2.71	0.52	0.81	1.08	
0.5	0.5	0.4	1.3	0.3	0.9	ND			1.90	0.51	0.61	0.72	
2.0	0.9	0.8	1.3	0.4	0.8	ND			2.16	0.56	0.65	0.40	
4.0	0.2	ND	1.8	0.3	0.8	ND			3.43	0.59	1.02	2.29	
6.0	0.4	0.2	1.5	0.4	0.9	ND			4.23	0.49	1.12	2.48	
8.0	0.6	0.7	2.7	0.4	1.0	0.1			2.95	0.13	0.86	3.25	

AESUP 15				09JUN70				7070							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA			
0.0									2.57	2.08	1.12	6.47			
1.0									1.69	0.32	0.51	1.18			
2.0									1.84	0.38	0.49	0.97			
4.0									1.56	0.24	0.39	0.72			
6.5									1.67	0.06	0.45	1.29			
8.0									1.66	0.06	0.56	1.75			

AESUP 15				09JUN70			0701A						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA	
0.0	5.0	0.5	1.1	0.8	0.6	ND			1.66	0.12	0.34	0.84	
0.5	0.5	0.1	1.4	0.5	0.7				1.72	0.14	0.48	1.02	
1.0	0.6	0.1	0.7	0.3	0.8	ND			1.45	0.19	0.46	0.74	
3.0	0.5	0.1	1.3	0.4	0.7	ND			1.34	0.13	0.47	0.93	
6.0	0.6	0.3	1.9	0.3	0.8	ND			1.18	0.13	0.38	1.39	
9.0	2.0	0.2	1.0	0.7	0.5	ND			2.71	0.17	1.08	4.20	

AESOP 15

08JUN70

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.56	0.04	0.21	0.19
0.5									0.49	0.02	0.19	0.26
3.5									0.53	-0.04	0.25	0.44
7.0									1.00	0.12	0.36	0.64
11.0									1.56	0.03	0.59	1.36
13.0									1.14	0.04	0.46	1.35

AESOP 16				12JUL70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									17.30	1.47	1.60	6.67
0.5									15.67	0.46	2.04	12.40
1.5									16.83	0.48	2.28	13.03

AESOP 16				12JUL70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0	0.8	30.0	2.1	0.8	0.4	ND			6.69	0.29	0.82	5.63
0.5	0.9	29.0	2.5	0.7	0.5	ND			6.58	0.44	0.85	5.72
1.5	0.9	29.0	2.8	0.9	0.2	0.1			7.60	0.68	0.89	5.39
2.5	0.8	26.0	4.2	0.8	0.4	0.1			5.40	0.47	0.74	6.00

AESOP 16				12JUL70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									9.28	0.57	2.38	3.82
0.5									14.86	-0.39	5.21	9.36
1.0									16.91	-0.17	6.44	10.44
2.0									14.10	-0.64	4.05	9.00
3.6									8.40	-0.47	2.45	7.28

AESOP 16				11JUL70			R58C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.06	0.02	2.69	5.27
1.0									9.07	-0.56	3.43	7.31
2.0									8.27	-0.26	2.66	6.79
4.0									3.16	0.16	0.69	4.74
5.0									4.63	1.09	0.56	-2.66
6.0									3.01	0.33	0.71	3.40

AESOP 16				11JUL70			R45G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									12.61	0.60	4.68	4.86
0.5									11.30	0.26	4.70	5.60
1.0									10.70	0.33	4.44	5.34
2.0									9.61	-0.35	4.13	7.06
3.0									12.47	3.07	2.91	-7.91
4.0									6.96	1.69	2.06	1.62

AESOP 16				11JUL70			R34G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.6	6.7	0.6	0.5	0.4	0.7	0.3	6.98	0.58	2.46	6.55
0.5	0.2	0.1	6.3	0.7	0.5	0.3	0.7	0.3	-2.64	-26.67	5.88	6.77
1.0	0.3	0.2	5.8	0.6	0.6	0.4	0.7	0.3	7.81	0.99	2.27	5.95
2.0	0.2	0.2	5.7	0.7	0.5	0.4	0.9	0.3	7.91	0.89	2.41	6.56
3.5	0.3	0.2	6.1	0.6	0.5	0.2	0.8	0.3	7.17	0.23	2.43	5.76
4.5	0.1	0.2	6.6	0.5	0.7	0.1	0.8	0.3	5.95	0.00	2.35	6.31

AESOP 16				10JUL70			810P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA	
0.0	0.8		2.2	0.5	0.8	0.8	0.8	0.4	17.35	3.63	4.74	1.55	
0.5	0.7		1.8	0.6	0.7	1.0	0.8	0.3	17.06	3.43	5.07	3.35	
1.0	0.4		2.3	0.6	0.7	0.9	0.7	0.4	15.33	2.72	4.86	5.96	
3.0	0.6		1.6	0.5	0.8	1.0	0.8	0.4	13.18	2.02	4.31	7.72	
4.5	1.0		1.6	0.6	0.6	1.1	0.8	0.4	12.53	1.07	3.69	9.71	

AESOP 16				10JUL70			804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA	
0.0									5.30	0.44	1.59	1.80	
0.5									6.00	0.25	2.10	3.49	
1.5									5.53	0.44	2.11	3.16	
3.0									6.02	0.25	2.15	3.11	
4.5									4.97	-0.28	1.79	4.24	
6.0									4.40	0.21	1.24	3.43	

AESOP 16				10JUL70			744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA	
0.0									4.37	0.07	1.32	5.16	
0.5	0.5	0.1	2.6	0.6	0.6	0.7	1.1	0.3	4.51	0.40	0.94	1.32	
1.5	0.4	0.1	1.4	0.6	0.7	0.7	1.1	0.3	4.78	0.28	1.11	2.18	
3.0	0.5	ND	1.1	0.4	1.0	0.3	1.1	0.4	4.48	0.16	1.17	2.46	
5.0	0.5	ND	1.1	0.3	1.1	0.2	1.1	0.3	4.93	0.24	1.03	2.31	
7.0	0.7	0.2	1.8	0.6	0.8	0.5	1.2	0.1	3.99	-0.05	1.17	3.08	
9.0	0.5	0.3	2.7	0.7	0.8	0.6	1.0	0.4					

AESOP 16				09JUL70		724R							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.2	0.4	0.8	1.2	0.5	ND	1.3	0.2	2.18	0.25	0.31	0.58	
0.5	0.2	ND	0.6	0.7	0.6	ND	1.2	0.2	0.64	-0.55	0.57	3.06	
2.0	0.4	0.3	0.5	0.7	0.6	ND	1.2	0.2	2.05	0.25	0.39	1.00	
5.0	0.1	0.1	0.5	0.7	0.7	ND	1.2	0.3	2.20	0.12	0.45	1.30	
7.0	0.1	0.5	1.7	0.5	0.9	ND	1.3	0.2	2.21	0.23	0.37	1.03	
9.0	0.1	0.7	4.8	0.9	0.6	ND	1.5	0.2	1.67	0.20	0.39	1.86	

AESOP 16				09JUL70		7070							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0													
0.5									2.54	0.44	0.36	1.02	
1.5									2.29	0.44	0.37	0.94	
3.0									2.19	0.31	0.38	1.47	
5.5									1.93	0.17	0.44	1.45	
8.0									0.74	0.08	0.22	0.87	
									0.33	0.03	0.11	0.69	

AESOP 16				09JUL70		0701A							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.1	1.7	0.7	0.9	0.3	ND							
2.5	0.5	0.3	1.7	0.3	0.6	ND			0.19	0.03	0.07	0.10	
5.0	0.6	0.3	0.8	0.4	0.6	ND			0.17	0.04	0.09	0.10	
10.0	0.7	0.6	0.0	1.2	ND	ND			0.22	0.03	0.10	0.18	
									0.97	0.04	0.18	0.64	

AESOP 16			08JUL70		0707V							
MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEQA
0.0									0.27	0.04	0.07	0.09
7.0									0.40	0.06	0.18	0.26
12.0									0.44	0.00	0.23	0.40

AESOP 17 15AUG70 922Y												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CH	CC	PHEOA
0.0									20.11	3.00	1.89	-2.14
0.5									17.37	1.91	2.42	4.10
1.0									16.62	1.89	2.34	4.45
1.5									17.08	1.49	2.23	2.96
2.0									19.79	2.98	1.78	-6.49

AESOP 17 15AUG70 914S												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CH	CC	PHEOA
0.0	0.8	4.1	1.3	0.4					23.91	2.66	7.77	-0.92
0.5	0.9	7.9	0.7	1.0					34.11	1.36	14.49	5.07
1.0	0.9	2.6	1.3	0.8					39.60	1.97	18.27	3.13
2.0	0.6	7.5	0.6	0.4	0.7	1.2			28.71	2.69	11.27	2.75
3.5	0.5	1.1	0.7	0.6	0.1				19.87	2.45	7.27	0.75

AESOP 17 15AUG70 904N												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CH	CC	PHEOA
0.0									35.78	2.83	19.55	1.51
0.5									31.57	3.08	17.12	0.22
1.0									46.39	3.54	29.84	1.16
2.0									19.06	3.24	7.24	0.49
3.0									13.84	1.66	4.11	2.31
4.0									5.03	0.53	1.22	2.22

AESOP 17				14AUG70			858C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0	2.6	1.5	0.7	1.0	0.3	0.9	0.9	0.1	19.52	2.78	5.74	1.17	
0.5	0.6	0.2	0.7	0.7	0.7	0.8	1.2	0.3	20.74	3.34	7.89	0.70	
1.0	3.0	0.9	1.7	0.9	0.4	0.9	0.9	0.3	20.24	2.86	8.16	1.55	
2.0	1.9	0.9	2.3	0.7	0.5	0.7	0.8	0.3	16.44	2.26	6.55	2.83	
3.5	1.6	0.5	1.1	0.6	0.7	0.6	0.9	0.3	15.55	2.54	6.01	-0.19	
4.0	1.1	1.3	2.4	0.7	0.6	0.5			14.94	2.22	5.70	1.13	

AESOP 17				14AUG70			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA
0.0									11.11	1.81	3.79	-1.20
0.5									12.24	1.24	4.92	0.90
1.0									13.74	2.10	5.15	-0.73
2.0									12.72	1.86	4.10	0.20
4.0									11.73	1.73	3.79	0.75
5.0									11.73	1.63	3.42	0.02

AESOP 17				14AUG70			834G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.3	3.0	0.6	0.9	0.5	0.1	1.0	0.4	9.72	1.52	2.42	0.39	
0.5	0.3	0.1	0.4	0.7	0.5	0.3	1.0	0.5	8.30	0.85	2.57	1.93	
1.0	0.3	0.1	0.7	0.9	0.5	0.1	1.0	0.4	8.79	1.82	2.67	1.36	
2.0	0.8	0.6	0.6	1.0	0.4	0.2	0.9	0.5	8.66	0.80	2.05	2.84	
3.5	0.5	0.5	0.7	0.8	0.4	0.5	0.6	0.9	8.72	1.16	2.48	1.65	
4.5	0.8	0.4	0.5	0.9	0.4	ND	0.9	0.4	9.51	1.15	2.91	1.08	

AESUP 17				13AUG70			818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.6	0.3	0.8	1.1	ND	0.4	3.0	0.6	6.47	1.01	1.40	0.30	
0.5	0.9	0.1	0.7	0.4	0.8	ND	0.7	0.3	6.49	1.25	1.57	-0.55	
1.5	0.7	1.8	0.9	0.7	0.6	ND	1.4	0.4	6.01	0.87	1.54	0.91	
3.0	0.3	0.1	1.0	0.4	0.9	0.4	0.7	0.3	8.47	0.87	3.38	2.31	
4.5	3.2	1.6	0.9	0.3	0.9	0.4	0.8	0.3	7.66	0.67	2.50	2.75	
6.0	0.5	0.2	0.5	0.3	0.7	0.4	1.7	0.5	7.22	0.31	2.19	3.48	

AESUP 17				13AUG70			804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									7.16	0.86	1.09	0.52	
0.5									17.31	0.74	6.46	3.88	
2.0									10.35	0.35	3.01	4.41	
3.0									11.45	0.42	3.31	3.48	
4.5									7.33	0.19	1.43	3.67	
6.0									7.13	0.51	1.41	1.97	

AESUP 17				13AUG70			744						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NO4	O-PO4	DOP	PARTIC, P	IN, C	DOC	CA	CB	CC	PHEOA	
0.0	0.5	0.4	0.4	0.7	0.4	0.3	0.8	0.4	8.59	1.09	2.02	0.72	
0.5	0.5	0.3	0.3	0.4	0.8	0.1	0.4	0.3	7.37	1.27	1.76	-0.21	
1.0	0.4	0.2	0.4	0.6	0.4	0.3	0.8	0.6	7.42	0.85	1.96	2.03	
2.0	0.2	ND	0.2	0.4	1.0	ND	0.5	0.2	7.53	0.48	2.37	3.43	
3.0	0.2	ND	0.2	0.3	0.9	0.2	0.4	0.2	7.84	0.60	3.26	3.18	
4.0	0.2	0.2	0.3	0.3	1.0	ND	0.5	0.3	7.09	0.48	2.60	3.72	

AESOP 17				12AUG70			724P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.6	2.5	1.0	0.8	0.6	0.9	0.9	0.4	8.49	1.06	4.07	-0.22	
0.5	0.4	1.0	1.1	0.9	0.6	0.9	0.9	0.3	4.64	0.61	2.19	-0.19	
1.5	1.2	2.8	0.7	0.6	0.8	0.8	1.1	0.3	6.77	0.62	3.41	0.73	
3.0	0.2	0.2	0.8	0.3	1.1	0.5	1.1	0.3	12.89	1.19	6.89	0.47	
5.0	0.3	0.2	0.3	0.3	1.0	0.3	0.6	0.2	5.01	0.25	2.02	1.65	
6.0	0.9	0.3	0.3	0.3	1.3	ND	0.5	0.1	4.76	0.42	1.75	0.74	

AESOP 17				12AUG70			707D					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									1.62	0.09	0.58	0.50
1.0									1.31	0.10	0.48	0.42
1.5									1.41	0.05	0.47	0.47
4.0									1.97	0.18	0.61	-0.64
6.0									2.36	0.29	0.90	0.38
7.0									2.18	0.21	0.81	1.15

AESOP 17				12AUG70			0701A					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.2	0.6	1.7	0.5	0.5	ND			1.54	0.22	0.79	0.63
0.5	0.8	ND	1.7	0.3	0.9	ND			1.40	0.13	0.71	0.82
1.5	0.2	1.3	1.6	0.7	0.4	ND			1.66	0.10	0.83	1.06
3.5	0.7	1.0	1.3	0.3	0.9	ND			1.70	0.14	0.85	0.73
5.0	0.4	0.5	1.7	0.3	1.0	ND			1.59	0.17	0.88	0.89
7.0	0.2	1.3	1.7	0.3	0.9	ND			1.70	0.18	0.89	1.10

AESOP 18				14SEP70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0									11.61	0.03	2.46	0.10
0.5									14.63	1.05	2.36	4.47
1.0									15.48	0.90	2.89	5.44
1.5									15.83	1.12	2.85	4.82

AESOP 18				14SEP70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0	0.8	0.3	1.2	0.8	0.4	0.9	0.6	0.3	12.79	2.13	5.27	-0.70
0.5	1.4	0.1	2.5	1.0	0.5	0.6	0.2	0.2	18.70	1.42	6.69	2.98
1.0	1.3	0.1	1.3	1.0	0.3	1.3	0.5	0.3	14.89	0.56	6.44	5.35
2.0	1.5	0.3	1.2	1.1	0.3	0.6	0.5	0.5	10.08	0.82	4.24	3.07
3.0	1.8	0.5	1.3	1.0	0.5	0.3	0.7	0.3	11.49	0.51	4.06	5.25

AESOP 18				14SEP70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA
0.0									40.86	17.16	16.25	-24.54
0.5									31.89	12.93	12.88	-14.81
1.0									35.19	14.53	14.02	-18.54
2.0									35.40	14.42	16.67	-14.90
3.5									18.41	3.90	5.52	7.11
4.0									15.62	3.96	4.55	6.08

AESOP 1H				19SEP70			058C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	2.4	ND	0.9	0.9	ND		0.6	0.8	22.35	4.38	9.20	-1.56	
0.5	2.4	ND	0.9	1.3	0.3	0.5	0.8	0.3	10.53	3.31	7.65	0.97	
1.5	0.8	0.5	0.9	1.0	0.1	1.0	0.6	0.3	21.13	3.49	8.99	2.38	
3.0	1.2	0.3	1.1	1.1	0.3	0.2	0.8	0.4	15.59	1.42	6.78	5.88	
4.5	1.3	0.2	0.8	1.1	0.5	0.2	0.9	0.3	14.42	0.66	5.41	11.19	
6.0	6.3	2.0	0.8	1.7	0.3	0.2	1.2	0.3	2.57	0.08	1.22	2.78	

AESOP 1H				19SEP70			045G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									7.07	0.19	2.40	4.36	
1.0									6.33	0.20	2.18	4.17	
1.5									6.74	0.43	2.36	4.21	
4.0									6.89	0.37	3.04	5.01	
6.0									5.80	0.20	1.87	4.97	
7.0									5.11	-0.07	2.13	5.04	

AESOP 1H				19SEP70			034G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	U-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.6	0.6	1.1	0.7	0.8	0.2	0.8	0.4	3.93	0.73	1.36	1.45	
0.5	1.4	0.3	0.5	0.8	0.0	0.1	0.9	0.4	3.64	0.23	1.38	3.21	
2.0	1.7	0.6	0.8	0.7	1.0	ND	0.9	0.3	3.31	0.20	1.32	2.89	
4.0	1.4	0.7	0.7	0.8	1.0	0.1	0.9	0.4	4.55	0.41	1.82	3.00	
6.0	1.5	0.3	0.5	0.7	1.2	0.1	0.9	0.4	3.58	0.21	1.66	3.20	
8.0	1.4	1.2	0.6	0.7	1.1	0.3	0.8	0.3	3.87	0.17	1.70	3.57	

AESOP 18				18SEP70			R18P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-P04	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	1.3	1.1	1.5	0.1	ND	0.8	0.4	10.68	1.88	4.57	-0.61
1.0	0.3	0.1	0.8	1.1	0.4	ND	1.2	0.4	7.80	1.03	3.53	1.70
2.0	0.3	1.1	0.5	1.2	ND	0.3	0.6	0.3	6.95	1.06	2.89	1.10
4.0	0.9	0.5	0.4	1.2	0.3	0.2	0.5	0.3	7.50	0.84	3.63	2.50
6.0	0.4	0.7	0.6	1.2	0.2	0.5	1.1	0.4	7.13	0.84	3.40	2.69
7.0	0.6	0.1	0.6	1.4	ND	0.2	0.7	0.3	6.35	0.76	2.83	1.86

AESOP 18				18SEP70			R04C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-P04	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.91	0.74	1.59	0.60
0.5									4.22	0.55	1.38	1.13
2.5									5.08	0.47	1.91	2.54
4.5									4.58	0.30	1.62	2.82
7.0									3.99	0.49	1.57	1.99
9.0									4.08	0.43	1.61	2.14

AESOP 18				18SEP70			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-P04	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	0.6	0.9	0.5	1.1	ND	0.5	0.2	8.76	1.12	4.76	1.54
0.5	0.8	0.1	0.5	0.5	0.9	ND	0.5	0.3	7.46	1.16	3.79	0.56
1.5	0.8	0.3	0.5	0.9	0.6	0.1	0.4	0.3	6.67	0.52	4.14	3.30
3.0	0.9	1.0	0.4	0.3	1.0	ND	0.4	0.3	5.42	0.64	3.64	2.40
5.0	0.5	0.2	0.5	0.8	0.2	ND	0.5	0.4	3.87	-0.13	3.81	4.66
8.0	0.7	0.3	0.7	0.9	0.4	0.1	0.4	0.3	5.42	1.41	5.92	0.73

AESUP 18				17SEP70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	2.9	ND	0.8	0.5	0.6	0.1	1.0	0.5	4.24	0.96	5.05	-0.37	
0.5	1.2	ND	0.7	0.1	1.1	ND	1.0	0.5	1.60	0.30	4.33	2.51	
2.5	0.4	ND	0.6	0.1	0.9	0.1	1.0	0.4	3.58	0.60	4.56	0.61	
5.0	0.2	ND	0.8	0.5	0.7	ND	1.1	0.3	2.43	0.58	4.82	2.95	
7.0	0.2	0.2	0.7	0.7	0.1	0.6	1.4	0.3	6.64	1.37	8.75	1.75	
9.0	0.3	0.1	1.0	1.1	0.2	0.3	1.4	0.3	7.52	0.45	10.50	5.59	

AESUP 18				17SEP70			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									3.00	-0.29	1.89	1.43	
1.0									3.06	-0.17	2.18	1.48	
2.5									3.90	-0.09	2.94	1.77	
4.0									4.99	-0.05	6.44	6.14	
6.0									6.40	0.09	5.02	4.78	

AESUP 18				17SEP70			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.4	0.2	1.0	0.7	ND		0.7	ND	1.66	0.15	0.68	0.31	
1.0	0.8	0.2	0.8	0.7	ND	ND	0.7	0.1	1.50	0.11	0.62	0.65	
2.0	1.3	0.6	0.9	0.7	0.1	ND	0.7	0.1	1.66	0.07	0.67	0.91	
5.0	1.1	0.4	1.0	0.7	ND	ND	0.7	0.1	1.50	0.06	0.60	0.79	
9.0	0.6	0.1	0.7	0.8	0.3	ND	0.8	ND	1.52	0.14	0.63	0.69	

AESOP 18

16SEP70

0707Y

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DDP	PARTIC. P	IN. C	DUC	CA	CU	CC	PHEOA
0.0									0.51	0.23	0.13	-0.21
0.5									0.46	0.21	0.12	-0.11
2.0									0.44	0.03	0.16	0.34
5.0									0.57	0.07	0.22	0.46
9.0									1.09	0.06	0.43	1.48
11.0									1.21	0.21	0.51	1.62

AESOP 19				12OCT70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN, C	DOC	CA	CH	CC	PHEOA
0.0									12.30	6.04	1.21	-6.42
0.5									8.25	1.18	1.32	3.48
1.0									8.23	1.20	1.77	3.71
2.0									6.06	0.28	1.45	10.22
3.5									7.36	0.61	2.07	9.18
4.0									6.91	0.26	2.08	10.17

AESOP 19				12OCT70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN, C	DOC	CA	CH	CC	PHEOA
0.0	0.7	5.8	1.2	0.7	0.3	0.2			6.62	0.24	2.19	3.70
0.5	0.7	4.9	1.1	0.6	0.5	ND			6.05	0.51	1.75	2.48
1.5	0.5	4.2	1.0	0.6	0.3	0.3			5.90	-0.13	2.05	4.60
2.5	0.6	3.9	1.3	0.7	0.2	0.4			5.68	0.47	2.14	2.58
3.5	0.7	3.5	1.0	0.8	0.3	0.2			4.95	0.19	2.12	3.71
4.0	0.4	2.7	0.9	0.9	0.2	0.2			5.29	0.26	2.23	4.19

AESOP 19				12OCT70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN, C	DOC	CA	CH	CC	PHEOA
0.0									25.76	1.21	12.14	5.89
0.5									33.02	-0.71	15.69	11.59
1.5									29.28	-1.54	13.16	18.07
2.5									27.37	-0.20	11.24	15.03
4.0									17.63	0.79	7.66	12.85
5.0									16.27	1.72	5.48	4.37

AESOP 19				130CT70			858C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	1.7	1.6	0.4	0.9	0.5	0.8	0.4	18.62	2.46	5.94	-1.62
0.5	0.6	1.4	1.2	0.6	0.9	0.2	0.8	0.4	17.99	1.69	5.38	0.50
1.5	0.4	1.2	1.0	0.5	0.9	0.4	0.9	0.4	18.53	1.17	6.21	2.17
3.5	0.6	1.5	0.9	0.4	0.9	0.4	0.8	0.4	18.18	1.57	6.73	2.20
5.0	0.7	1.5	1.3	0.4	0.9	0.3			18.21	0.78	7.63	3.23

AESOP 19				130CT70			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									8.24	0.97	2.91	-0.10
1.0									10.49	0.84	4.02	0.99
2.5									7.61	0.10	2.10	4.14
5.0									4.47	0.29	1.98	1.06
9.0									2.15	0.39	0.97	0.64
12.0									0.68	0.11	0.35	0.36

AESOP 19				130CT70			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	0.3	0.6	0.5	0.9	ND	0.9	0.4	6.45	0.84	1.52	1.01
1.0	0.2	0.1	0.3	0.5	1.0	0.2	0.9	0.4	5.47	0.74	1.74	0.91
2.5	1.2	0.7	0.4	0.5	0.8	0.1	0.8	0.3	3.90	0.66	1.15	1.13
6.0	0.6	0.6	0.8	0.5	0.8	0.2	0.9	0.4	3.16	0.32	0.96	1.66
9.0	0.8	2.5	2.5	0.5	0.8	0.7	0.8	0.5	1.72	0.15	0.61	1.26
13.0	1.1	3.1	2.4	0.7	0.5	0.1	1.2	0.4	1.42	0.08	0.52	1.69

AESOP 19				140CT70			H10P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	0.1	0.3	0.3	0.8	0.1	1.4	0.4	3.65	0.33	0.92	2.56
1.0	0.3	0.1	0.3	0.2	0.7	0.3	0.6	0.6	3.04	0.10	0.87	3.50
2.0	0.2	0.1	0.3	0.5	0.6	0.3	2.0	0.3	2.98	0.13	0.97	3.70
5.0	1.3	1.1	0.2	0.3	0.8	0.1	1.7	0.3	1.47	-0.64	0.95	5.61
8.0	0.9	0.3	0.5	0.3	0.9	ND	1.0	0.7	1.49	-0.50	1.24	5.17
10.0	1.2	1.3	0.2	0.3	0.9	0.2	0.6	0.3	3.32	0.47	1.17	2.92

AESOP 19				140CT70			H04C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.38	0.89	1.40	1.12
1.0									4.51	0.91	1.55	1.37
2.0									4.23	0.79	1.37	1.57
4.5									4.09	0.46	1.48	1.96
7.5									3.58	0.33	1.46	1.91
10.0									2.54	0.28	0.98	1.43

AESOP 19				140CT70			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.9	0.7	0.2	0.5	0.5	ND	0.6	0.2	4.87	0.69	1.26	1.54
0.5	0.6	0.2	0.2	0.1	1.0	ND	0.3	0.3	3.44	0.51	0.98	1.59
1.5	0.7	0.2	0.2	0.2	0.8	0.4	0.5	0.3	4.51	0.72	1.51	2.06
4.0	0.6	0.1	0.5	0.4	0.7	0.2	0.5	0.4	4.59	0.87	1.74	2.01
6.0	0.8	0.5	0.4	0.1	0.8	ND	0.4	0.3	4.34	0.99	0.99	1.05
8.0	0.3	0.1	0.4	0.2	0.6	0.2	0.4	0.3	3.69	0.86	0.75	1.20

AESOP 19				15OCT70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA	
0.0	0.7	0.4	0.6	0.2	0.7	0.1	1.1	0.5	1.45	0.10	0.29	0.83	
1.0	0.6	0.3	0.9	0.2	0.8	ND	0.6	0.3	1.22	-0.05	0.24	1.11	
2.0	0.7	0.6	0.3	0.2	0.6	0.1	0.6	0.3	1.39	0.04	0.25	1.03	
4.5	0.8	0.5	0.0	0.3	1.2	ND	0.7	0.3	2.11	0.06	0.54	1.20	
8.0	0.6	1.1	2.0	0.2	0.8	ND	0.7	0.5	1.68	0.10	0.51	1.49	
10.0	0.3	0.3	1.8	0.3	1.0	0.5	1.0	0.3	1.59	0.08	0.47	1.23	

AESOP 19				15OCT70			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									3.78	0.08	1.06	2.00	
1.0									2.81	0.02	0.92	2.35	
2.0									2.99	0.07	1.08	2.58	
3.5									3.23	0.00	1.27	3.07	
5.0									2.78	0.15	1.06	3.37	
6.0									2.82	0.12	1.15	3.55	

AESOP 19				15OCT70			0701A						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.2	0.2	1.1	0.2			0.6	0.1	1.81	0.10	0.49	0.33	
1.0	0.1	0.1	0.6	0.2			0.8	0.3	1.17	0.05	0.34	0.55	
3.5	0.1	0.1	0.7	0.3			0.7	ND	2.07	0.06	0.75	0.66	
7.0	0.1	0.2	0.7	0.4			0.5	ND	3.56	0.05	1.63	2.33	
9.5	0.1	0.1	0.7	0.4			0.3	0.3	4.02	0.19	1.66	2.25	

AESOP 20				20NOV70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.62	0.49	0.45	5.99
0.5									2.44	0.36	0.42	5.91
1.0									2.42	0.39	0.47	6.22
1.5									2.14	0.27	0.40	6.76

AESOP 20				20NOV70			914S					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.8	63.0	7.5	0.9			0.4	0.1	1.50	0.16	0.35	2.45
0.5	0.7	31.0	6.4	0.9	0.2	ND	0.3	0.1	1.26	0.09	0.26	3.19
1.5	0.8	37.0	6.9	0.9			0.4	0.1	1.31	0.12	0.24	2.83
2.0	0.8	28.0	5.4	1.2	0.1	ND	0.3	0.2	1.05	0.11	0.19	2.61
3.0	0.6	21.0	5.9	1.6	0.1	ND	0.3	0.2	0.96	0.07	0.25	2.23

AESOP 20				20NOV70			904N					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.39	0.15	0.59	1.96
0.5									1.81	0.09	0.41	1.56
1.5									1.66	0.06	0.45	1.48
4.0									1.36	0.20	0.28	1.60

AESOP 20				19NOV70		858C							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P.	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.4	46.0	13.0	1.0	ND	0.5	0.5	0.3	0.59	-0.09	0.14	2.15	
0.5	1.3	36.0	16.0	1.0	0.2	ND	0.7	0.3	1.28	-1.88	-0.85	3.51	
1.5	1.1	32.0	11.0	0.9	0.9	ND	0.7	0.4	0.96	0.02	0.24	1.11	
4.0	0.8	23.0	11.0	0.8	0.7	ND	0.8	0.4	0.96	0.03	0.27	0.98	
7.0	1.2	15.0	15.0	1.0	0.6	ND	0.9	0.5	0.44	-0.02	0.10	0.77	
11.0	0.8	5.0	16.0	1.1	0.9	ND	1.2	0.3	0.36	0.03	0.12	0.59	

AESOP 20				19NOV70		845G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									0.78	0.07	0.23	0.34
1.0									3.20	-0.09	1.31	0.99
2.5									3.45	-0.06	1.29	0.87
7.0									1.55	-0.03	0.64	0.72
12.0									0.87	0.00	0.28	1.68

AESOP 20				19NOV70		834G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.2	17.0	6.2	0.8	0.8	ND	0.4	0.5	4.30	0.20	1.74	1.04
1.0	0.9	17.0	8.0	0.7	0.8	ND	0.7	0.3	0.16	0.00	0.08	0.07
2.5	1.4	17.0	8.9	0.9	0.4	ND	0.8	0.6	4.33	0.04	1.95	1.60
6.0	0.9	13.0	6.9	0.8	0.4	ND	0.4	0.3	2.64	0.13	0.99	1.18
10.0	0.9	12.0	6.8	0.3	1.0	ND	0.7	0.7	3.45	0.10	1.54	3.08
11.0	0.6	2.0	4.8	0.3	0.5	0.4	0.5	0.7	1.59	-0.02	0.77	3.24

AESOP 20				18NOV70			818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0	0.7	6.0	0.3	0.8	ND	ND	2.9	0.3	9.16	-1.11	3.73	13.38	
0.5	1.0	6.6	0.9	0.3	0.2	ND	0.6	0.7	9.01	-0.17	3.20	11.56	
1.5	0.7	4.5	0.4	0.3	0.3	ND	2.9	0.3	7.24	-0.67	2.60	15.24	
4.0	1.0	4.0	0.8	0.6	0.2	ND	0.7	0.2	9.71	-0.12	3.22	10.23	
7.0	1.4	3.8	1.9	0.7	ND	ND	1.9	0.4	7.03	0.29	2.14	14.81	
9.0	0.4	3.2	2.7	0.3	ND	0.3	0.5	0.5	5.30	0.25	1.60	10.67	

AESOP 20				18NOV70			804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0									7.14	-0.30	3.20	8.69	
0.5									8.15	-0.28	3.61	7.58	
2.0									9.35	0.62	5.12	7.51	
4.5									10.04	0.34	4.00	6.77	
7.0									7.75	-0.33	3.11	6.02	
9.0									6.88	0.05	2.76	5.73	

AESOP 20				18NOV70			744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA	
0.0	1.0	1.9	0.4	0.6	0.3	ND	0.5	0.3	5.83	-0.39	2.91	8.13	
0.5	0.5	0.2	0.8	0.5	0.5	0.1	0.7	0.2	4.50	-0.58	2.25	8.65	
2.0	1.2	0.8	0.8	0.3	0.4	0.1	0.5	0.3	5.43	-0.19	2.39	8.84	
4.0	0.7	0.5	0.7	0.5	0.3	ND	0.6	0.2	4.66	-0.37	2.62	7.65	
6.0	0.5	0.2	0.4	0.5	0.6	ND	0.5	0.2	4.12	0.42	2.88	3.86	
8.0	0.9	0.3	0.6	0.5	0.4	ND	0.9	0.4	8.66	0.62	3.98	3.54	

AESOP 20				17NOV70		724R						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.4	1.0	1.0	1.1	ND	ND	1.8	0.5	5.58	0.18	2.68	3.53
1.0	0.2	0.4	0.7	0.7	0.2	ND	0.7	0.1	4.73	0.06	2.60	4.31
2.0	0.4	0.7	0.8	0.4	0.4	0.2	0.8	0.7	5.61	0.33	2.66	3.97
4.0	0.5	0.7	1.1	0.3	0.8	ND	1.1	0.6	6.32	0.17	2.92	3.52
6.0	0.7	0.6	1.1	0.6	0.7	ND	0.7	0.3	6.59	-0.15	2.70	5.34
8.0	0.5	1.3	1.9	0.5	0.6	ND	2.9	0.5	2.52	0.05	0.96	1.65

AESOP 20				17NOV70			7070					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									4.50	0.14	1.89	3.38
0.5									3.71	-0.12	1.44	3.59
2.0									4.29	-0.02	1.64	3.64
4.0									5.17	-0.10	2.12	3.72
6.0									5.26	-0.14	2.10	3.50
8.0									4.75	-0.13	1.76	3.18

AESOP 20				17NOV70			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.2	1.1	1.5	0.9	ND	0.6	0.4	0.1	6.21	-1.00	2.15	6.35	
0.5	0.9	5.4	1.5	1.0	ND	0.7	0.4	0.1	6.00	-0.77	1.85	5.00	
1.5	0.2	1.0	1.1	1.1	ND	0.3	0.5	0.1	5.41	-0.83	1.68	6.13	
3.0	0.0	5.6	1.8	1.0	ND	0.3	0.6	0.1	7.07	-0.73	2.16	4.11	
4.0	0.9	5.1	1.2	0.9	ND	0.2	0.6	ND	6.03	-0.16	2.40	4.73	
8.0	0.7	5.0	1.3	0.4	0.7	0.1	0.7	0.1	15.31	1.05	5.23	9.36	

AESOP 21				19DEC70		922Y								
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L					PHEOA
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC			
0.0														
0.5									0.60	0.00	0.15		2.62	
1.0									0.52	0.00	0.12		2.70	
2.0									0.68	0.02	0.19		2.82	
									0.53	-0.02	0.14		2.91	

AESOP 21				19DEC70		9145							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0	1.0	71.0	6.0	0.6	0.5	ND	0.4	0.2	0.45	0.00	0.13	1.58	
1.0	2.2	58.0	5.4	0.6	0.4	ND	0.3	0.1	0.57	0.01	0.14	1.63	
2.0	0.8	47.0	6.8	0.4	0.7	ND	0.3	0.2	0.44	0.05	0.13	1.37	
3.5	0.9	52.0	9.3	0.6	0.7	ND	0.5	0.3	0.46	0.04	0.15	1.60	

AESOP 21				19DEC70		904N							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC, P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0													
0.5									3.05	0.07	1.33	2.15	
1.5									2.62	0.06	1.11	1.90	
1.5									2.64	0.13	1.01	1.16	
5.0									1.25	0.06	0.43	0.82	
8.0									0.00	0.00	0.00	0.00	
									1.54	0.02	0.66	0.75	

AESOP 21				18DEC70			05RC					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	PO4	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.7	23.0	9.8	0.4	0.9	ND	0.3	0.2	1.90	-0.30	0.61	1.60
1.0	0.5	19.0	8.4	0.3	1.1	ND	0.3	0.2	1.44	-0.19	0.46	1.38
2.0	0.6	24.0	8.9	0.4	0.7	ND	0.5	ND	1.67	-0.20	0.56	1.11
4.0	0.7	24.0	7.0	0.5	0.7	ND	2.2	0.4	1.94	-0.20	0.73	1.21
7.0	0.5	10.0	8.3	0.3	0.4	ND	4.3	0.4	2.26	-0.31	0.94	1.36
9.0	0.4	6.0	8.2	0.3	0.8	ND	1.1	0.3	2.85	-0.49	1.15	1.73

AESOP 21				18DEC70			045G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	PO4	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.16	-0.12	1.31	2.22
3.0									2.99	-0.41	1.31	3.23
6.0									3.54	-0.06	1.40	2.55
10.0									6.93	-0.33	2.60	5.16
13.0									6.72	-0.17	2.79	3.55

AESOP 21				18DEC70			034G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	PO4	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	12.0	3.1	0.2	ND	0.8	0.5	0.3	6.25	-0.34	2.50	3.29
1.0	0.8	13.0	2.9	0.3	0.6	ND	0.6	0.2	4.29	-1.51	2.46	9.10
2.0	0.6	11.0	1.2	0.2	1.1	0.5	0.5	0.3	6.49	-0.41	2.50	3.56
4.5	0.8	12.0	2.9	0.2	0.8	ND	0.4	0.3	5.65	-0.24	2.24	1.54
7.0	0.6	12.0	2.8	0.3	0.6	0.1	0.4	0.3	2.22	0.01	0.81	1.09
10.0	0.5	11.0	2.3	0.4	0.6	ND	0.5	0.3	5.98	0.15	2.14	2.32

AESOP 21				17DEC70			81BP						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	7.2	8.6	1.6	0.2	0.3	ND	0.7	0.6	8.27	-0.15	2.27	1.99	
1.0	0.8	9.0	1.7	0.2	0.3	0.2	0.7	0.6	8.18	-0.30	2.43	2.70	
2.0	0.7	9.0	1.6	0.3	0.3	0.1	0.8	0.9	9.04	-0.18	2.98	2.65	
4.5	4.5	11.2	2.0	0.2	0.2	0.1	0.7	1.0	7.88	-0.43	3.17	3.45	
9.0	0.4	2.3	2.9	0.2	0.4	ND	0.7	0.7	3.98	0.16	1.26	0.73	
11.0	1.2	0.7	2.9	0.2	0.3	ND	1.3	0.4	6.85	-0.22	3.59	4.40	

AESOP 21				17DEC70			R04C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.33	-4.15	2.47	1.64
1.0									4.86	-0.66	1.73	2.55
3.0									5.72	-0.32	1.93	2.21
8.0									4.84	-0.47	1.91	2.62
10.0									7.79	-0.43	3.23	3.79
14.0									1.32	-0.05	0.72	0.56

AESOP 21				17DEC70		744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.0	0.3	1.3	0.2	0.6	0.1	1.1	0.4	4.34	-0.17	1.84	1.58
1.0	0.2	0.2	1.3	0.2	0.7	ND	1.1	0.3	3.66	-0.37	1.68	2.45
2.0	0.3	0.2	1.2	0.2	0.7	ND	1.2	0.4	4.14	-0.27	1.99	2.14
6.0	0.2	0.1		0.5	0.4	ND	1.0	0.4	3.45	-0.14	1.77	3.11
9.0	0.2	0.1	1.2	0.1	0.6	0.1	1.2	0.4	5.82	-0.20	2.75	3.12
11.0	0.2	0.2		0.2	0.8	ND	1.3	0.4	5.77	-0.03	2.50	2.38

AESOP 21				16DEC70			724P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.8	0.3	0.6	0.2	0.6	0.2	1.4	0.4	3.45	-0.20	1.39	1.42	
1.0	0.2	0.1	0.3	0.2	0.9	ND	1.3	0.4	3.36	-0.16	1.24	1.66	
2.0	0.4	ND	0.4	0.2	0.9	ND	1.4	0.2	3.32	0.03	1.35	1.48	
5.0	0.7	0.1	0.9	0.2	0.7	ND	1.1	0.3	2.97	0.02	1.43	1.20	
8.0	0.2	0.1	1.2	0.2	1.0	ND	1.1	0.4	3.21	0.33	1.42	0.33	

AESOP 21				16DEC70			707D					
MICRO-ATOMS/L				PICPO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.74	-0.25	1.66	1.61
1.0									3.47	-0.36	1.79	1.11
2.5									3.18	-0.30	1.77	1.49
6.0									2.33	0.00	1.16	0.77
9.0									2.66	-0.16	1.40	1.88

AESOP 21				16DEC70			0701A							
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L					
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA		
0.0	0.3	0.3	0.4	0.2			1.7	0.2	1.20	-0.12	0.60	1.04		
1.5	0.3	0.4	1.2	0.2	0.7	0.4	1.7		1.29	-0.02	0.52	0.69		
3.5	0.4	0.3	2.2	0.3	0.4	0.3	1.5	ND	0.94	-0.03	0.33	0.49		
8.0	0.5	0.3	0.3	0.2	0.9	0.2	1.3	ND	0.97	-0.02	0.43	0.43		

AESOP 21

15DEC70

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	#02	#03	#04	0-P04	DOP	PARTIC. P	TH. C	DOC	CA	CB	CC	
0.0									2.01	-0.04	0.76	0.98
1.0									1.86	-0.01	0.55	0.84
3.0									1.55	-0.01	0.59	0.94
7.0									1.41	0.08	0.48	0.56
11.0									1.84	-0.06	0.69	1.06
16.0									1.31	0.03	0.59	0.55

AESOP 22				26JAN71			B58C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	12.0	6.3	0.2	0.6	0.2	0.6	0.2	4.53	-0.16	2.16	1.56
2.0	0.6	14.0	11.5	0.3	0.6	0.1	0.7	0.2	3.39	-0.09	1.64	1.50
4.0	0.6	16.0	10.4	0.2	0.4	ND	0.6	0.2	3.20	-0.57	1.76	1.95
6.0	1.5	18.0	10.5	0.3	0.4	ND	1.0	0.2	3.70	-0.41	2.06	1.90
9.0	0.7	10.0	5.3	0.2	0.8	0.2	1.1	0.2	3.29	-0.34	1.54	1.99

AESOP 22				26JAN71			B45G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.07	-0.24	2.99	1.97
3.0									4.40	-0.23	2.56	2.08
6.0									6.81	0.01	4.42	2.69
9.0									9.30	0.12	4.74	3.16

AESOP 22				26JAN71			B34G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.8	24.0	1.5	0.3	0.5	ND	0.7	0.3	5.18	-0.35	2.85	3.13
1.0	1.6	21.0	1.2	0.5	0.4	ND	0.5	0.3	4.82	0.60	2.07	1.06
2.0	1.2	20.0	1.4	0.3	0.5	ND	0.5	0.2	4.29	-0.56	1.84	3.03
5.0	1.0	18.0	1.0	0.3	0.4	0.1	0.5	0.1	6.78	-0.51	3.91	2.85
9.0	0.6	12.0	0.5	0.2	0.5	0.3	0.5	0.2	11.14	-0.02	6.06	4.09

AESOP 22				25JAN71		818P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.5	12.0	0.4	0.5	0.1	ND	0.6	0.4	4.29	-0.64	2.39	2.26
3.5	0.7	13.0	0.6	0.5	ND	ND	0.7	0.5	7.44	-1.74	4.85	11.03
6.0	0.8	11.0	0.6	0.7	ND	ND	0.8	0.4	8.89	-0.58	5.07	2.60
10.0	0.5	10.0	0.8	0.7	ND	ND	0.8	0.5	12.33	-1.00	6.28	4.34
14.0	0.6	10.0	0.7	0.7	ND	ND	0.6	0.4	12.28	-1.34	6.41	8.48

AESOP 22				25JAN71		804C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.38	-2.93	3.14	17.03
1.5									6.02	-3.23	3.05	16.08
3.5									5.22	-2.05	3.26	16.95
7.0									6.32	-0.95	2.85	5.51
11.0									13.13	-0.39	5.41	15.19

AESOP 22				25JAN71			744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.7	7.0	0.5	0.2	0.5	0.3	0.9	0.2	9.83	-0.40	5.23	2.40	
0.5	0.9	7.4	0.6	0.3	0.8	0.2	0.9	0.3	8.47	0.08	3.65	1.92	
1.5	0.8	6.9	0.6	0.3	0.6	0.4	0.9	0.3	7.88	0.08	4.45	2.05	
4.0	0.8	5.9	0.9	0.4	0.5	0.5	1.0	0.2	9.96	0.21	5.64	2.96	
8.0	0.5	2.2	0.8	0.5	0.5	0.7	0.8	0.3					

AESOP 22				24JAN71			724R						
DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DNC	CA	CB	CC	PHEOA	
0.0	0.5	1.4	0.3	0.2	0.5	ND	1.1	0.3	5.26	-1.20	1.56	1.84	
1.0	0.5	0.6	0.5	0.3	0.4	ND	0.8	0.3	3.39	-0.68	1.13	1.89	
2.5	0.3	0.5	0.5	0.2			1.1	0.3	4.47	-0.87	1.53	1.89	
5.0	0.4	0.4	0.6	0.2	0.6	ND	1.2	0.2	6.57	-1.44	2.31	3.75	
7.0	0.4	0.3	1.0	0.2	0.6	ND	0.8	0.3	8.78	-1.00	2.80	3.48	
9.0	0.5	0.1	1.3	0.3	0.6	ND	1.0	0.3	8.71	-0.83	2.26	3.53	

AESOP 22				24JAN71			707D						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0									6.83	-0.87	3.57	9.96	
0.5									5.49	-0.98	3.28	10.22	
1.5									6.78	-0.37	3.23	3.92	
4.0									9.19	0.29	4.25	4.69	
7.0									7.51	0.96	3.91	8.87	

AESOP 22				24JAN71			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DUC	CA	CB	CC	PHEOA	
0.0	0.7	1.1	1.0	0.5	0.5	ND	1.7	0.4	3.77	-0.57	1.51	1.77	
2.0	0.6	1.1	1.7	0.7	0.3	ND	1.3	0.3	4.85	-0.10	1.81	1.57	
7.0	0.6	2.0	1.6	0.9	0.1	ND	1.2	0.4	5.46	-0.80	2.55	2.74	
10.0	0.6	2.1	1.4	0.9	0.1	ND	0.9	0.5	6.81	-1.28	3.10	3.43	

AESOP 22

23JAN71

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	HH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0									3.06	-0.18	1.31	1.62
1.0									3.36	-0.38	1.51	1.89
4.0									3.33	-0.35	1.48	1.64
8.0									3.51	-0.35	1.56	1.55
12.0									5.32	-0.77	2.54	2.30

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AESOP 23				20MAR71				922V							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L				MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC		CA	CB	CC	PHEOA		
0.0										1.33	-0.12	0.37	4.43		
0.5										1.38	-0.19	0.46	5.12		
1.0										1.33	-0.13	0.41	4.55		

AESOP 23				20MAR71			914S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.2	71.0	8.8	0.3			0.3	0.2	1.29	0.13	0.17	3.82	
0.5	1.5	85.0	9.3	0.6			0.3	0.2	1.25	0.13	0.24	3.87	
1.0									1.19	0.05	0.18	4.17	
1.5	1.7	84.0	8.4	0.4			0.3	0.2	1.11	0.05	0.24	3.94	

AESOP 23				20MAR71				904N							
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L				MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	POP	PARTIC. P	IN. C	DOC		CA	CH	CC	PHEUA		
0.0										1.44	0.05	0.32	1.52		
0.5										1.46	0.35	0.26	0.87		
1.0										1.35	0.05	0.29	1.37		
1.5										1.26	-0.01	0.29	1.58		
2.0										1.26	0.00	0.33	1.69		
3.0										1.10	0.02	0.25	1.57		

AESOP 23				19MAR71			H5RC					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PH4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.8	48.0	23.0	0.6	0.3	ND	0.4	0.3	1.99	0.00	0.49	1.39
1.0	0.9	40.0	23.0	0.6	0.3	ND	0.4	0.3	1.80	-0.09	0.45	1.44
2.5	0.9	50.0	23.0	0.5	0.4	ND	0.5	0.3	1.94	-0.03	0.55	1.53
5.0	0.9	49.0	24.0	0.5	0.3	ND	0.5	0.2	1.66	-0.10	0.46	1.51

AESOP 23				19MAR71			H45G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PH4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									2.95	0.01	0.93	1.74
0.5									2.21	-0.38	0.75	2.50
3.0									2.39	-0.29	0.74	2.06
5.0									2.00	-0.43	0.87	2.43
7.0									2.26	-0.23	0.75	2.46

AESOP 23				19MAR71			H34G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PH4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.1	47.0	18.0	0.5	ND	0.4	0.4	0.3	5.99	-0.58	2.33	2.95
2.0	1.1	45.0	17.0	0.5	0.3	0.1	0.5	0.3	5.01	-0.71	2.07	3.82
3.0	0.8	33.0	12.0	0.5	ND	0.6	0.3	0.2	5.81	-0.67	2.36	3.72
6.0	0.7	26.0	10.0	0.5	0.4	ND	0.5	0.1	7.56	-0.81	3.65	4.10
8.0	0.8	24.0	8.0	0.6	0.3	0.1	0.4	0.1	8.25	-1.10	4.49	5.19

AESOP 23				18MAR71			R18P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.9	37.0	12.0	0.5	0.4	ND	0.4	0.4	4.44	-0.44	2.27	3.84
1.0	1.0	36.0	12.0	0.7	0.1	ND	0.6	0.6	5.05	-0.47	2.11	3.56
2.0	0.8	37.0	10.0	0.2	0.6	ND	0.7	0.3	4.88	-0.49	2.30	3.48
4.5	0.8	31.0	10.0	0.2	1.0	ND	0.7	0.5	7.07	-0.60	4.33	4.94
8.0	0.7		10.0	0.2	0.9	ND	0.8	0.5	7.82	-0.70	4.14	4.33

AESOP 23				18MAR71			R04C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									7.84	-0.19	3.64	5.21
1.0									6.47	-1.03	2.99	5.76
2.5									7.03	-1.26	3.88	6.72
5.0									7.62	-0.94	3.67	5.76
7.0									7.61	-0.91	3.62	5.58
9.0									6.83	-0.61	3.30	5.20

AESOP 23				18MAR71			744					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.2	24.0	9.4	0.7	0.4	0.5	1.0	0.2	3.49	-0.15	1.40	2.06
3.5	5.1	23.0	7.1	0.5	0.5	0.3	1.0	0.4	3.09	-0.08	1.27	2.28
7.0	1.1	19.0	6.1	0.4	0.4	0.4	1.1	0.3	3.37	-0.10	1.37	2.19
11.0	0.9	16.0	5.5	0.5	0.5	0.4	0.8	0.4	3.66	-0.13	1.51	2.40
14.0	1.8	9.0	5.0	0.4	0.6	0.4	1.0	0.3	8.37	-0.26	4.08	4.73

AESOP 23				17HAR71			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.7	5.3	1.7	0.4	0.7	ND	0.8	0.3	11.40	-0.96	5.51	5.87	
2.0	0.4	5.2	1.5	0.5	0.6	ND	0.8	0.3	10.13	-1.36	5.63	5.54	
6.0	0.4	4.7	1.6	0.4	0.4	ND	0.8	0.4	9.79	-1.71	5.82	6.26	
8.0	0.5	4.5	1.3	0.4	0.5	ND	1.0	0.4	7.03	-0.79	3.86	4.28	
10.0	0.4	4.9	2.0	0.5	0.6	ND	1.4	0.1	9.87	-1.67	5.81	6.01	

AESOP 23				17HAR71			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									14.20	0.42	5.74	3.09	
1.0									10.23	-0.73	4.47	4.08	
2.0									11.63	0.19	5.10	5.08	
3.5									10.66	0.05	5.18	5.50	
5.0									11.88	0.85	5.29	3.35	
7.0									10.72	0.89	4.82	4.49	

AESOP 23				17HAP71			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L			MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									11.84	-1.64	4.86	3.83	
1.5									11.35	-0.26	4.27	4.02	
3.5									12.07	-0.36	4.24	4.99	
6.0									12.08	-1.11	4.79	4.98	
9.0									10.36	0.23	3.43	8.26	

AENOP 23

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DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			PHEOA
	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	
0.0									2.99	-0.52	1.43	1.56
1.0									2.48	-0.61	1.34	2.12
2.5									3.54	-0.66	1.63	2.58
6.0									3.10	-0.61	1.46	2.76
10.0									6.39	-0.97	2.99	4.22
13.0									7.94	-1.14	3.91	4.51

AESOP 24 24APR71 922Y												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.38	-0.48	0.45	4.38
0.5									3.74	-0.59	0.42	4.92
1.5									3.86	-0.39	0.49	5.23
2.0									4.02	-0.35	0.57	4.77

AESOP 24 24APR71 914S												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.23	-0.30	1.88	3.11
0.5									5.72	-0.22	2.29	3.66
1.5									5.92	-0.43	2.48	3.75
2.5									2.79	-0.57	0.67	3.46
3.0									2.40	-0.35	0.63	3.02

AESOP 24 24APR71 904N												
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									3.17	-0.00	1.08	2.65
0.5									3.17	-0.07	1.07	3.08
1.5									4.08	0.17	1.20	3.26
3.0									4.47	0.12	1.26	3.80
4.5									4.74	0.15	1.24	3.62
6.0									0.96	0.36	1.32	2.66

AESOP 24				23APR71			858C					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									7.81	0.90	2.04	2.05
0.5									6.79	0.56	1.90	2.78
1.5									6.53	0.66	1.77	2.13
3.0									6.48	0.47	1.69	2.93
4.5									5.19	0.25	1.46	3.50
6.0									4.58	-0.23	1.10	3.68

AESOP 24				23APR71			845G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									7.49	0.09	1.88	4.27
3.0									9.96	-0.98	1.97	5.37
4.0									42.49	-2.03	14.44	9.47
6.0									16.68	-0.96	5.73	8.01
7.0									14.44	-1.28	5.42	7.97
9.0									11.02	-0.89	4.08	7.12

AESOP 24				23APR71			834G					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									6.63	1.40	1.40	0.39
1.0									5.99	-1.47	1.29	0.08
3.0									7.38	-0.33	2.21	4.06
5.0									8.52	-0.28	2.49	3.97
7.0									8.81	-0.85	2.81	5.31
9.0									7.46	-0.58	1.87	4.71

AESOP 24				22APR71			W18P						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DIC	CA	CB	CC	PHEOA	
0.0	1.2	34.0	2.0	0.2	0.6	0.1	0.7	0.3	5.83	-0.95	2.32	5.12	
1.0	1.2	36.0	2.0	0.2	0.5	ND	0.7	0.4	4.95	-0.81	2.00	4.20	
2.0	1.2	36.0	2.0	0.3	0.4	ND	0.6	0.3	5.66	-0.91	2.33	4.89	
4.5	1.2	33.0	2.3	0.4	0.5	0.1	0.7	0.4	5.77	-0.97	2.42	5.27	
7.0	1.1	25.0	4.5	0.2	1.0	0.2	0.6	0.3	4.31	-2.53	3.34	8.64	
8.0	1.0	20.0	5.6	0.2	0.7	0.1	0.7	0.2	7.24	-1.92	3.46	6.85	

AESOP 24				22APR71			B04C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DIC	CA	CB	CC	PHEOA	
0.0									6.31	0.22	1.63	2.27	
1.0									5.43	0.42	1.25	1.66	
2.5									4.95	0.10	1.32	2.70	
5.0									4.96	0.04	1.53	3.34	
8.0									9.49	1.88	2.62	1.01	
10.0									8.82	-0.76	2.86	5.31	

AESOP 24				22APR71			744						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DIC	CA	CB	CC	PHEOA	
0.0	1.3	22.0	2.1	0.2			0.8	0.4	4.22	-0.25	0.94	3.11	
2.0	1.3	22.0	1.5	0.3			0.6	0.4	3.98	-0.27	1.16	3.64	
5.0	1.2	22.0	1.6	0.2			0.7	0.4	4.21	-0.74	0.93	3.70	
8.0	1.1	18.0	1.8	0.2			0.9	0.3	5.13	-1.22	0.90	4.06	
10.0	0.9	13.0	2.2	0.2			1.0	0.4	5.36	-0.90	1.30	3.84	
12.0	1.0	18.0	1.9	0.7			0.9	0.3	4.24	-0.39	1.66	4.64	

AESOP 24				21APR71			724P					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									4.10	-0.60	0.65	1.64
5.0									4.24	-0.17	0.75	2.60
9.0									8.00	-2.31	2.51	4.57
11.0									9.52	-2.78	3.77	4.49
13.0									9.90	-2.66	4.69	5.23
15.0									0.78	-0.12	0.35	0.34

AESOP 24				21APR71			724					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	1.0	15.0	1.1	0.2	0.4	0.2	0.8	0.4				
5.0	0.8	13.0	0.8	0.3	0.7	ND	0.8	0.5				
9.0	0.4	2.1	0.4	0.3	0.7	ED	1.2	0.2				
11.0	0.3	1.6	0.4	0.2	0.8	ND	1.1	0.4				
13.0	0.3	1.0	0.4	0.2	1.0	ND	1.0	0.5				
15.0	0.3	1.0	0.5	0.2	0.9	ND	0.8	0.5				

AESOP 24				21APR71			7070					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									5.00	0.23	1.50	0.81
1.5									4.72	0.00	1.61	1.76
2.5									4.91	-0.11	1.54	1.83
6.0									6.32	-0.52	3.10	3.68
8.0									6.22	-0.56	2.84	3.16
10.0									3.79	-4.47	6.60	13.17

AESOP 24				21APR71			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L						
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.5	0.2	0.8	0.2	0.8	ND	1.4	0.5	4.34	-0.36	1.67	1.10	
1.0	0.3	0.1	0.7	0.2	0.8	ND	1.4	0.3	3.94	-0.64	1.79	1.76	
2.5	0.3	0.2	0.7	0.2	0.8	ND	1.1	0.1	4.67	-0.79	1.92	1.70	
5.0	0.2	0.2	0.5	0.2	0.8	ND	1.3	0.3	3.83	-0.91	1.44	1.69	
7.0	0.1	0.1	0.7	0.2	0.8	1.0	1.4	0.4	4.77	-1.23	1.96	2.39	
9.0	0.2	0.6	0.3	0.2	0.8	ND	1.3	0.3	5.34	-1.19	1.95	2.80	

AESOP 24				20APR71			0707V						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L						
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									1.31	-0.09	0.44	0.51	
2.5									1.23	-0.06	0.43	0.45	
5.0									1.50	-0.22	0.60	0.63	
11.0									1.78	-0.40	0.62	1.08	
13.0									5.82	-2.05	2.07	4.38	

Table G-2. Sizes, Numbers and Identifications of Macro-zooplankton
Collected during Cruise AESOP I in April 1969.

AESOP I - Station 0701A

Date: 10 April 1969

Depth:	Surface		4 m	
	Size	No.	Size	No.
	mm		mm	
Acartia				
Nauplii	.20	17	.20	20
Copepodites (I-V)	.28-.52	3	.32-.6	7
Adults	.88-1.12	10		
Annelids	.2	3	.8	5
Cladocera				
Evadnae			.88	1
Copepods				
Oithona	.52-.80	7	.64-1.0	9
Temora	.40-1.28	13	.4	10
Centrophages	.48-.80	14	.72-.84	13
Tailed Nauplii	.28-.36	15	.12-.36	29
Harpacticoid			.36	2
Rotifer	.24	2		
Tintinids	.24-.28	9		

Measured: 68.0 ml

Subsample: 5.0 ml

Sample Volume: 73.0 ml

132.0 ml

5.0 ml

137.0 ml

AESOP I - Station 7070

Date: 10 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii	.2-.24	16	.16-.24	27	.16-.32	58	.16-.32	15
Copepodites (I-V)	.2-.80	38	.2-.72	26	.36-.48	13	.16-.72	28
Adult	.8-.92	9	.76-.96	23	.76-.92	10	.76-0.96	48
Annelids			.36	18	.32-.48	51		1
Balanoid Larvae								
Nauplii				1				1
Copepods								
Oithona	.88	2						1
Temora	.4	1	.48	4	.24	3		2
Centrophages								1
Tailed Nauplii	.28	13			.32	9		2
Harpacticoid			.48	7	.44-.48	9		
Tintinids	.2	4	.2	6	.24	7		

Measured:	76.0 ml	106.0 ml	129.0 ml	94.0 ml
Subsample:	<u>5.0 ml</u>	<u>5.0 ml</u>	<u>10.0 ml</u>	<u>7.0 ml</u>
Sample Volume:	81.0 ml	111.0 ml	139.0 ml	101.0 ml

AESOP I - Station 724R

Date: 10 April 1969

Depth:	Surface	4 m		8 m		12 m		
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia	Sample							
Copepodites	deteriorated	.24-.28	16	.32-.44	22	.28-.40	7	
		.40-.48	16	.28-.68	12	.56	4	
Adults		.68-1.0	23	.76-.96	24	.76-.84	8	
Annelids				.20-.60	26	.2-.36	9	
Copepods								
Temora		.56	2	1.28	1	.36-.80	4	
				.46	2			
Nauplii		.12-.20	34	.12-.20	34	.16-.20	25	
		.2-.24	19	.20-.28	25	.20-.24	25	
Tailed Nauplii		.12-.24	7	.20-.24	6	.16-.36	9	
		.28	9	.24-.32	6	.16-.36	9	
Harpacticoid		.52	5	.32	1	.4-.44	5	
				.48-.68	4			
				.48	2			
Eurglemura		.48	6			.52-.68	2	
Tintinid		.24-.28	6	.28	2	.24	2	

Measured:	129.0	139.0	126.0
Subsample:	<u>10.0</u>	<u>5.0</u>	<u>5.0</u>
Sample Volume:	139.0 ml	144.0 ml	131.0

AESOP I - Station 744S

Date: 9 April 1969

Depth:	Surface		4 m		8 m	
	Size	No.	Size	No.	Size	No.
	mm		mm		mm	
Acartia						
Nauplii		32	.16-.20	56	.16-.20	
Copepodites (I-V)	.32-.68	45	.36-.48	39	.36-.48	12
			.6-.8	25	.6-.8	18
Adults	.72-.96	46	.80-1.0	34	.8-1.0	45
Cladocera						
Podon			.24	1		
Copepods						
Oithona	.32-.80	5			.68	1
Temora	.72-.92	2			.92	1
Tailed Nauplii	.24-.40	7	.2-.40	4	.2	1
Harpacticoid					.48-.52	8
Rotifer		3	.32	2		
Tintinid		1				

Measured: 220.0
 Subsample 1: 5.0
 Subsample 2: 2.0
 Sample Volume: 227.0 ml

226.0
5.0
 231.0 ml

27.0
7.0
 34.0 ml

AESOP I - Station 804C

Date: 9 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii		68		86		38	.12-.20	14
Copepodites (I-III)	.32-.48	57	.32-.48	42	.32-.48	24	.48	1
Copepodites (IV-V)	.6-.8	17	.6-.8	21	.6-.8	16	.6-.8	11
Adults	.8-1.0	21	.8-1.0	25	.8-1.0	33	.8-1.0	64
Copepods	.40-.44	3					.44-1.32	4
Tailed Nauplii	.42	1		3		2	.16-.42	3
Harpacticoid						2	.4-.48	14
Rotifer			.28	1	.28	1	.28	2
Tintinid							.24	1

Measured: 232.0

257.0

232.0

139.0

Subsample: 5.0

5.0

5.0

7.0

Sample Volume: 237.0

262.0

237.0

146.0

AESOP I - Station 818P

Date: 9 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size	No.	Size	No.	Size	No.	Size	No.
	mm		mm		mm		mm	
Acartia								
Nauplii	.16-.24	62	.08-.24	79	.16-.24	38	.16-.24	44
Copepodites (I-III)	.20-.45	38	.2-.52	47	.2-.48	24	.20-.40	14
Copepodites (IV-V)	.60-.76	13	.68-.76	11	.6-.76	22	.6-.76	9
Adults	.80-.96	18	.8-1.0	32	.8-.96	29	.8-.96	24
Annelids						2		
Copepods								
Oithona					1.08	1		
Tailed Nauplii	.11	1		2				1
Rotifer	.2-.32	6	.2-.32	5			2-.36	4
Tintinids	.28	3			.28	1		

Measured: 265.0

218.0

191.0

184.0

Subsample: 5.0

7.0

5.0

5.0

Sample Volume: 270.0 ml

225.0 ml

196.0 ml

189.0 ml

AESOP I - Station 834G

Date: 8 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii	.16-.24	60	.16-.24	82	.16-.24	71	.16-.24	66
Copepodites (I-III)	.2-.52	7	.2-.52	13	.2-.52	21	.16-.52	14
Copepodites (IV-V)	.60	1	.6	1	.6-.78	7	.6-.78	3
Adults			.80	1	.8-1.0	9	.8-1.0	15
Copepods								
Harpacticroid	.4	1					.48	2
Rotifer	.2-.32	37	.2-.32	12	.2-.32	7	.2-.32	4
Tintinids		1					.28	1

Measured:	53.0	191.0	163.0	231.0
Subsample:	<u>5.0</u>	<u>2.0</u>	<u>2.0</u>	<u>5.0</u>
Sample Volume:	58.0 ml	193.0 ml	165.0 ml	236.0 ml

AESOP I - Station 845G

Date: 8 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size	No.	Size	No.	Size	No.	Size	No.
	mm		mm		mm		mm	
Acartia								
Nauplii	.12-.24	82	.12-.24	97	.12-.24	59	.12-.24	10
Copepodites (I-III)	.2-.5	6	.2-.52	13	.2-.52	18	.2-.52	16
Copepodites (IV-V)					.6-.78	4	.6-.78	10
Adults	.8-.10	5	.8-1.0	9	.8-1.0	14	.8-1.0	67
Copepods								
Oithona			.52	1				
Harpacticroid				1				
Rotifer	.2-.32	17	.32	10	.2-.32	6	.2-.32	8
Tintinids		2						

Measured:	136.0	182.0	193.0	244.0
Subsample:	<u>5.0</u>	<u>5.0</u>	<u>2.0</u>	<u>7.0</u>
Total Volume:	141.0 ml	187.0 ml	195.0 ml	251.0 ml

AESOP I - Station 858C

Date: 8 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii			.16-.24	68	.16-.24	53	.16-.24	18
Copepodites (I-III)			.2-.52	10	.2-.52	8	.2-.52	6
Copepodites (IV-V)			.6-.76	6	.6-.78	10	.6-.78	3
Adults			.8-1.0	25	.8-1.0	28	.8-1.0	67
Copepods								
Temora				1				
Harpacticroid						2		
Eurglemura							1.12	1
Rotifer			.2-.32	40	.2-.32	67	.2-.32	12
Tintinid			.28	1	.28	2	.28	4

Measured: 166.0

Subsample: 5.0

Sample Volume: 171.0 ml

225.0

7.0

232.0 ml

226.0

5.0

231.0 ml

AESOP I - Station 904N

Date: 9 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size	No.	Size	No.	Size	No.	Size	No.
	mm		mm		mm		mm	
Acartia								
Nauplii	.2-.28	11	.16-.24	33	.16-.36	5	.2	2
Adults	.72-.1.04	11	.84-1.12	30	.84-1.08	72	.84-1.12	96
Copepods	1.20	1			.44	2	.72-.88	2
Temora							.48	1
Harpacticoid							.62-.60	2
Eurglemura							1.44-1.46	2
Rotifers	.16-.20	106	.16-.28	18	.2-.32	60	.32	9
Tintinids	.2	1	.2-.28	12	.24-.28	8	.24	2

Measured: 30.0

Subsample: 10.0

Sample Volume: 40.0

131.0

5.0

136.0

112.0

5.0

117.0

106.0

5.0

111.0

AESOP I - Station 922Y
Date: 7 April 1969

Depth:	Surface		4 m		8 m		12 m	
	Size	No.	Size	No.	Size	No.	Size	No.
	mm		mm		mm		mm	
Acartia								
Nauplii	.2-.28	6	Dehydrated		.2-.28	11	.16-.28	7
Copepodites (I-IV)							.48-.72	8
Adult							.92-1.2	42
Copepods					.40-.48	11	.21-1.6	6
Temora	.72-1.00	2			.68-1.2	11	1.20	3
Harpactocoid							.32-.8	3
Rotifer							.16	1
Tintinid	.2-.34	111			.2-.34	71	.24-.32	13

Measured: 38.0
Subsample: 5.0
Sample Volume: 43.0

76.0
5.0
81.0

AESOP II - Station 744
Date: 3 May 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii	.16-.36	18	.16-.36	18	.16-.36	24	.16-.36	11
Copepodites (I-V)	.16-.76	36	.16-.76	29	.6-.76	5	.2-.76	19
Adults	.8-1.12	2	.8-1.12	3	.8-1.12	2	.8-1.12	25
Annelids	.48-.72	6	.48-.72	21		15		29
Balanoid Larvae	.24-.56	20	.36-.6	15	.36-.56	3	.36	2
Cladocera								
Evadnae	.48-.52	6		1		1		
Copepods								
Temora	.52	2			.1	4		6
Harpacticoid	.48	1						9
Eurglemura				1				1
Rotifer	.16-.32	8	.16	1	.16-.32	5		

Measured:	101.0	160.0	66.0	68.0
Subsample:	<u>5.0</u>	<u>5.0</u>	<u>10.0</u>	<u>5.0</u>
Sample Volume:	106.0	165.0	76.0	73.0

AESOP II - Station 804C

Date: 3 May 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
<i>Acartia</i>								
Nauplii	.16-.36	19	.16-.36	19	.16-.36	21	.16-.36	16
Copepodites (I-V)	.16-.76	71	.16-.76	63	.16-.76	49	.16-.76	23
Adults	.8-1.12	4	.8-1.12	9	.8-1.12	15	.8-1.12	28
Annelids		1		2		1		5
Balanoid Larvae	.36-.56	4	.36-.56	18	.36-.56	48	.36-.56	3
<i>Copepods</i>								
Temora		2	.8	1				3
Harpacticoid								6
Eurglemura			.8	1				1
Rotifer	.16-.32	3	.16-.32	7			.16-.32	8

Measured:	13.0	220.0	40.0	72.0
Subsample:	<u>5.0</u>	<u>10.0</u>	<u>5.0</u>	<u>5.0</u>
Sample Volume:	18.0	230.0	45.0	77.0

AESOP II - Station 818P

Date: 3 May 1969

Depth:	Surface		4 m		8 m		12 m	
	Size mm	No.	Size mm	No.	Size mm	No.	Size mm	No.
Acartia								
Nauplii	.16-.36	10	.16-.36	16	.16-.36	8		
Copepodites (I-V)	.16-.76	68	.16-.76	55	.16-.76	54		
Adults	.8-1.12	11	.8-1.12	22	.8-1.12	35		
Balanoid Larvae	.36-.56	11	.36-.56	19	.30-.6	14		
Copepod		2	.96	3		1		
Oithona				1				
Harpacticoid				8		5		
Rotifer	.16-.32	4	.16-.32	3	.16-.32	2		

Measured:	58.0	88.0	220.0
Subsample:	<u>5.0</u>	<u>5.0</u>	<u>10.0</u>
Sample Volume:	63.0	93.0	230.0

AESOP 14				13MAY70			724R						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.5	1.1	1.4	0.4	0.8	ND			23.44	1.85	9.77	3.23	
0.5	0.5	1.2	2.0	0.3	0.4	0.1			23.04	0.13	9.03	4.72	
1.5	0.5	1.5	1.1	0.2	0.6	ND			19.41	-1.87	11.54	8.04	
3.0	0.2	ND	1.7	0.2	0.7	ND			18.17	-12.92	10.85	14.48	
4.0	0.3	0.4	2.5	0.2	0.7	ND			14.93	-11.87	17.01	45.13	
5.0	0.4	0.2	1.8	0.3	0.6	ND			38.44	-5.91	20.29	10.42	

AESOP 14				13MAY70			7070						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									17.62	-4.06	9.51	12.40	
0.5									15.93	-3.55	9.02	8.74	
1.5									22.46	-2.60	10.02	8.65	
3.0									18.45	-2.09	12.51	10.31	
4.5									16.30	0.08	5.92	3.02	
6.0									11.72	-0.07	7.97	7.03	

AESOP 14				13MAY70			0701A						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NO4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	0.4	0.2	1.3	0.2					9.82	0.71	8.01	2.08	
1.5	0.3	0.2	1.5	0.2					10.45	-0.09	7.37	3.56	
2.5	0.4	ND	0.9	0.2					3.53	-0.39	1.97	1.03	
6.0	1.1	0.5	1.2	0.2					3.13	0.05	1.65	0.81	
10.0			1.7						0.31	-0.03	0.16	0.13	

AESOP 14

12MAY70

0707V

DEPTH	MICRO-ATOMS/L			MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CH	CC	PHEOA
0.0									1.07	0.11	0.36	0.01
1.0									0.99	0.12	0.37	-0.10
3.5									0.93	0.13	0.32	-0.03
10.0									2.21	-0.01	0.70	1.03
14.0									4.49	-0.71	1.89	1.90

AESOP 15				12JUN70			922Y					
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEUA
0.0									6.73	0.14	1.67	10.36
0.5									5.70	0.11	1.73	8.75
1.0									5.82	-0.22	1.68	9.36
1.5									5.92	-0.17	1.63	8.79

AESOP 15				12JUN70		914S						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L			
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0	0.6	33.0	2.5	0.5					5.99	0.32	1.01	4.14
0.5	0.5	27.0	3.2	0.5	0.2	0.4			6.14	0.32	1.02	5.38
1.0	0.7	32.0	2.1	0.4	0.3	0.5			6.82	0.31	1.29	5.11
1.5	0.6	30.0	2.9	0.6	0.1	0.5			5.95	-0.22	1.05	7.03
2.5	0.7	31.0	3.0	0.5	0.2	0.4			5.62	-0.69	1.31	6.70

AESOP 15				12JUN70				904N				
MICRO-ATOMS/L				MICRO-ATOMS/L				MG-ATOMS/L		MICRO-G/L		
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA
0.0									17.53	0.16	5.09	8.59
0.5									16.96	-0.22	6.21	10.89
1.5									17.94	0.03	6.22	14.46
2.5									17.61	0.08	6.23	13.13
3.0									16.23	0.31	6.01	10.02

AESOP 15				11JUN70			858C						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.2	15.0	0.8	0.4	0.4	1.2	0.5	0.2	31.61	-1.47	12.32	14.52	
0.5	1.5	7.0	0.9	0.5	0.3	1.1	0.4	0.3	36.19	-2.67	14.59	16.98	
1.5	1.0	12.0	1.5	0.5	0.3	1.1	0.4	0.3	39.27	-0.77	20.47	20.29	
2.0	0.5	6.0	0.7	0.5	0.3	0.9	0.4	0.2	33.87	-2.58	13.20	13.56	
2.5	0.7	8.0	0.9	0.5					22.99	-0.88	9.70	12.49	

AESOP 15				11JUN70			845G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0									17.32	-0.30	4.86	5.94	
0.5									16.79	-0.56	5.78	6.05	
1.0									17.66	-0.50	5.81	6.65	
2.0									19.98	-0.72	7.12	8.60	
3.0									16.62	-0.32	5.38	7.17	
4.0									15.40	-1.02	5.62	9.15	

AESOP 15				11JUN70			034G						
MICRO-ATOMS/L				MICRO-ATOMS/L			MG-ATOMS/L		MICRO-G/L				
DEPTH	NO2	NO3	NH4	O-PO4	DOP	PARTIC. P	IN. C	DOC	CA	CB	CC	PHEOA	
0.0	1.7	5.4	1.2	0.4	0.4	0.1	0.5	0.1	12.19	-0.11	3.38	5.86	
0.5	1.6	4.1	0.7	0.5	0.4	0.2	0.4	0.2	13.93	-0.42	3.94	5.55	
1.0	1.7	5.3	0.5	0.5	0.4	0.2	0.4	0.2	14.90	-0.44	4.55	6.10	
2.5	2.1	6.5	0.9	0.6	0.2	0.1	0.4	0.2	12.11	-0.25	3.47	7.75	
3.5	1.2	6.3	0.8	0.7	0.1	0.1	0.4	0.1	13.76	-0.82	4.85	7.28	
4.5	2.4	8.6	1.1	0.6	0.4	0.2	0.5	0.2	11.45	-1.24	3.42	6.93	