

# **SPRING 1979 QUARTERLY REPORT BAILLY NUCLEAR-1 SITE**

**ENCOMPASSING  
APRIL - JUNE 1979**

**AUGUST 1979**

Prepared for  
**NORTHERN INDIANA  
PUBLIC SERVICE COMPANY**  
5265 Hohman Avenue  
Hammond, Indiana 46325

**POOR  
ORIGINAL**



by  
**TEXAS INSTRUMENTS INCORPORATED  
ECOLOGICAL SERVICES**

**P.O. Box 225621  
Dallas, Texas 75265**

827 160

7908230341



SPRING 1979 QUARTERLY REPORT  
BAILLY NUCLEAR-1 SITE  
ENCOMPASSING  
APRIL-JUNE 1979

15 August 1979

Prepared for  
NORTHERN INDIANA PUBLIC SERVICE COMPANY  
5265 Hohman Avenue  
Hammond, Indiana 46325

Prepared by  
TEXAS INSTRUMENTS INCORPORATED  
Ecological Services  
P.O. Box 225621  
M/S 3949  
Dallas, Texas 75265

827 161





---

## FOREWORD

Ecological Services of Texas Instruments Incorporated, under contract to Northern Indiana Public Service Company, is conducting an ecological monitoring program to determine and document existing ecological conditions in the immediate vicinity of the Bailly Nuclear-1 Generating Station site, Baillytown, Indiana. This ecological monitoring program will provide data necessary for assessing and minimizing the effects of plant construction on the local environment and will provide information for assessing any future changes.

This report, the 20th in a series of quarterly reports prepared for Northern Indiana Public Service Company by Texas Instruments, contains analyses and interpretation of data for April through June 1979. No collection of aquatic data was scheduled during May 1979 or of terrestrial during April or June 1979. Statements contained in this report are based on data collected over a relatively short time period and should be viewed as preliminary.

827 162



## SUMMARY

### Terrestrial

Spring 1979 terrestrial sampling on the Bailly Study Area was accomplished on schedule during two periods in May. Sampling counts included:

- Sherman live-trapping of small mammals
- Observations of large mammals
- Roadside counts of cottontail rabbits and birds
- Transect counts of birds
- Surveys of reptiles and amphibians
- Collection of soil samples
- Inspection of vegetation for foliar damage

Mammal sampling revealed 14 species; three species were trapped, while 11 were either sighted or their tracks or other signs observed. Small-mammal populations appeared to be low, as might be expected following a severe winter such as 1978-79. Few individuals were trapped; chipmunks and tree squirrels seemed to be less active or less abundant than usual in forested habitats. Only five cottontail rabbits were observed along the road route - the fewest recorded during this monitoring study.

There were 92 species of birds observed on and in the vicinity of the Bailly Study Area. During the first sampling period, primarily early migrants were sighted; this included frequent sightings of the Common Merganser, Caspian Gull, Yellow-rumped Warbler, and White-throated Sparrow. Surveys during the second sampling period produced higher counts of species that typically reside on the Bailly Study Area during summer months; these included the Common Yellowthroat, American Redstart, and Rose-breasted Grosbeak.

Although cold wet weather undoubtedly limited amphibian and reptile activity in general, several large choruses of gray treefrogs were heard. Of the nine herpetile species recorded, the painted turtle was the only one frequently sighted.

827 163



## Aquatic

Spring 1979 aquatic sampling was accomplished in April and early May. Phytoplankton, periphyton, zooplankton, benthos, fisheries, and water quality samples were collected. This report does not include results of the chlorophyll a, benthos, fisheries, and pond sediment analyses for any of the June data. These analyses will be included in the summer 1979 quarterly report.

Lake Michigan and interdunal pond phytoplankton densities were higher in April 1979 than in April 1978 but lower than in November 1978. In the lake, blue-greens and diatoms dominated density, while diatoms dominated biovolume; there were nine dominant taxa (4 percent or greater) among a total 58. In the ponds, density increased approximately 3-fold from November 1978, blue-greens were density-dominant, diatoms were biovolume-dominant, and there were five dominant taxa among a total of 50. No unusual or undesirable taxa were found in either the lake or the ponds. April 1979 productivity results for Lake Michigan were similar to those of November 1978, and no unusual values were observed during either quarter. Pond productivity values were much lower in April 1979 than in April and November 1978. The 1979 productivity results indicated no adverse effects due to plant construction.

Periphyton data for April 1979 showed that blue-green algae, comprised mostly of Lyngbya spp., dominated both Lake Michigan and pond samples. Blue-greens and diatoms were co-dominant contributors to lake biovolume, while diatoms were dominant and greens subdominant in the ponds. Lyngbya spp. did not contribute significantly to the total pond biovolume. In Lake Michigan, periphyton densities were lowest at station 25 and highest at station 12. Average lake densities exhibited a 6-fold decrease from November 1978 to April 1979. Pond densities showed only a slight decrease from November to April; however, compared with April 1978, a 2.5-fold decrease in density was observed. Low water temperatures (approximately 5.0°C at time of sampling) are suspected as the cause of the slow spring periphyton growth. Periphyton diatom data indicated that Fragilaria vaucheria represented as much as 69 percent of the diatom assemblage of the lake and that Achnanthes minutissima, Fragilaria crotonensis, and Gomphonema angustatum dominated pond samples.

827 164



April 1979 zooplankton densities averaged 1,211 organisms per cubic meter in Lake Michigan and 20,090 organisms per cubic meter in the interdunal ponds. A total of 42 taxa were observed in Lake Michigan and 33 taxa in the interdunal ponds. Nearfield lake densities continued to be higher than farfield densities. The lake zooplankton community exhibited no obvious changes in composition in April 1979. Cowles Bog exhibited the highest density (49,958 organisms per cubic meter); ponds B and C were much lower (3,687 and 6,625 organisms per cubic meter, respectively). Cladocerans dominated ponds B and C, while copepods dominated Cowles Bog. No unusual taxa or density changes were noted in either the interdunal ponds or Lake Michigan.

Ichthyoplankton catches yielded rainbow smelt and unidentified eggs as well as rainbow smelt yolk-sac larvae. The only previous year in which catches had been productive in April was 1975. The cool lake temperatures appear to have promoted some degree of smelt spawning in the lake.

Water quality parameters were measured in both Lake Michigan and the interdunal ponds. All values were within acceptable ranges for protection of the indigenous population. Although some parameter values exceeded Indiana standards, particularly those of ammonia and nitrate, which could stimulate growth of phytoplankton, there was no indication of stimulated growth. The general water quality parameters continued to indicate high water quality in Lake Michigan and generally in the ponds. The aquatic nutrients at times exceeded the Indiana standards but had no effect on the flora or fauna. Indicators of industrial contamination and trace elements changed little from previous sampling periods.

827 165



## TABLE OF CONTENTS

Section	Title	Page
	FOREWORD	iii
	SUMMARY	v
1	TERRESTRIAL	1.1
1.1	STATUS	1.1
1.2	DATES AND PURPOSES OF TERRESTRIAL FIELD TRIPS	1.2
1.3	RESULTS AND DISCUSSION	1.2
1.3.1	MAMMALS	1.2
1.3.1.1	Beachgrass Community	1.4
1.3.1.2	Foredune	1.4
1.3.1.3	Immature Oak Forest	1.4
1.3.1.4	Cowles Bog (Wooded)	1.5
1.3.1.5	Cowles Bog (Open)	1.5
1.3.1.6	Maple Forest	1.5
1.3.1.7	Emergent Macrophyte	1.5
1.3.1.8	Transmission Corridor	1.5
1.3.1.9	Industrial Areas	1.6
1.3.1.10	Road Route	1.6
1.3.2	BIRDS	1.6
1.3.2.1	Beachgrass Community	1.6
1.3.2.2	Immature Oak Forest	1.6
1.3.2.3	Cowles Bog (Wooded)	1.6
1.3.2.4	Cowles Bog Trail	1.10
1.3.2.5	Cowles Bog (Open)	1.10
1.3.2.6	Maple Forest	1.12
1.3.2.7	Transmission Corridor	1.12
1.3.2.8	Aquatic Habitats	1.12
1.3.2.9	Road-Route Census	1.12
1.3.3	AMPHIBIANS AND REPTILES	1.14
1.3.3.1	Lakefront Communities	1.15
1.3.3.2	Cowles Bog (Wooded)	1.15
1.3.3.3	Cowles Bog (Open)	1.15
1.3.3.4	Maple Forest	1.15
1.3.3.5	Emergent Macrophyte	1.15
1.3.3.6	Transmission Corridor	1.15
1.3.4	FOLIAR DAMAGE	1.16
1.3.5	SOIL CONDUCTIVITY	1.16
2	AQUATIC ECOLOGY	2.1
2.1	STATUS	2.1
2.2	AQUATIC FLORA	
2.2.1	METHODOLOGY	2.3
2.2.2	PHYTOPLANKTON RESULTS AND DISCUSSION	2.6

827 166



## TABLE OF CONTENTS (CONTD)

Section	Title	Page
2	2.2.2.1 Identification and Enumeration	2.6
	2.2.2.2 Productivity	2.14
	2.2.3 PERIPHYTON RESULTS AND DISCUSSION	2.15
	2.2.3.1 Density and Biovolume	2.15
2.3	ZOOPLANKTON	2.20
	2.3.1 METHODOLOGY	2.20
	2.3.2 ZOOPLANKTON RESULTS AND DISCUSSION	2.22
	2.3.2.1 Lake Michigan	2.22
	2.3.2.2 Interdunal Ponds	2.26
2.4	FISHERIES	2.27
2.5	ICHTHYOPLANKTON	2.27
	2.5.1 METHODOLOGY	2.27
	2.5.2 RESULTS	2.27
2.6	WATER QUALITY	2.27
	2.6.1 METHODOLOGY	2.27
	2.6.2 RESULTS AND DISCUSSION	2.32
	2.6.2.1 General Water Quality Parameter	2.32
	2.6.2.2 Aquatic Nutrients	2.33
	2.6.2.3 Indicators of Contamination	2.36
	2.6.2.4 Trace Elements in Interdunal Ponds	2.37
2.7	LITERATURE CITED	2.39
2.8	HOW TO READ TI COMPUTER PRINTOUTS	2.40

## APPENDIXES

Appendix	Title
A	PHYTOPLANKTON DENSITY REPLICATE REPORTS, BAILLY STUDY AREA, APRIL 1979
B	PHYTOPLANKTON BIOVOLUME REPLICATE REPORTS, BAILLY STUDY AREA, APRIL 1979
C	PERIPHYTON DENSITY REPLICATE REPORTS BAILLY STUDY AREA, APRIL 1979
D	PERIPHYTON BIOVOLUME REPLICATE REPORTS BAILLY STUDY AREA, APRIL 1979
E	ZOOPLANKTON DENSITY REPLICATE REPORTS BAILLY STUDY AREA, APRIL 1979

827 167



---

TABLES

Table	Title	Page
1.1	Terrestrial Ecology Sampling Status, June 1979	1.1
1.2	Dates and Purposes of Terrestrial Field Trips	1.1
1.3	Mammals Reported from Bailly Study Area, May 1979	1.3
1.4	Small Mammals Captured per 100 Trapnights in Five Sampling Locations in Bailly Study Area, May 1979	1.3
1.5	Mammals Reported from Sampling Locations in Bailly Study Area, May 1979	1.4
1.6	Bird Species Observed in Bailly Study Area, May 1979	1.7
1.7	Birds Observed along Transects in Six Sampling Locations in Bailly Study Area, May 1979	1.9
1.8	Birds Observed on Eight Transects along Cowles Bog Trail in Bailly Study Area, May 1979	1.9
1.9	Maximum Counts of Birds Utilizing 10 Aquatic Locations in Bailly Study Area, May 1979	1.10
1.10	Results of 22-Mile Road-Route Census of Birds in Bailly Study Area, May 1979	1.11
1.11	Amphibians and Reptiles Observed in Bailly Study Area, May 1979	1.14
1.12	Amphibians and Reptiles Encountered in Bailly Study Area, May 1979	1.14
2.1	Status of Laboratory Analyses for Bailly Study Area	2.2
2.2	Dates and Purposes of All Aquatic Field Trips, Bailly Study Area, Spring Quarter, 1979	2.2
2.3	Bailly Study Area Site Summary of Phytoplankton Densities, April 1979	2.7
2.4	Bailly Study Area Site Summary of Phytoplankton Biovolume, April 1979	2.10
2.5	Phytoplankton Density and Biovolume by Sampling Area in Bailly Study Area, April 1979	2.12
2.6	Phytoplankton Density and Biovolume at Interdunal Pond Stations in Bailly Study Area, April 1979	2.13
2.7	Phytoplankton Productivity, Bailly Study Area, April 1979	2.14





## TABLES (CONTD)

Table	Title	Page
2.8	Periphyton Densities at Bailly Study Area Stations, April 1979	2.16
2.9	Periphyton Biovolume at Bailly Study Area Stations, April 1979	2.18
2.10	Periphyton Diatom Proportional Counts, Bailly Study Area, April 1979	2.21
2.11	Zooplankton Density in Lake Michigan and Interdunal Pond Stations in Bailly Study Area, April 1979	2.23
2.12	Zooplankton Densities by Station on Lake Michigan in Bailly Study Area, April 1979	2.25
2.13	Diversity and Number of Zooplankton Taxa at Lake Stations in Bailly Study Area, April 1979	2.25
2.14	Zooplankton Densities of Interdunal Pond Stations in Bailly Study Area during April 1978 and April 1979	2.26
2.15	Diversity and Numbers of Zooplankton Taxa at Interdunal Pond Stations in Bailly Study Area, April 1979	2.26
2.16	Water Quality Parameters Measured in Bailly Study Area	2.28
2.17	Water Quality Values Defined by Indiana Stream Pollution Board, U.S. Public Health Service, or Federal EPA and Applicable to Lake Michigan in Bailly Study Area	2.30
2.18	General Water Quality Parameters, Bailly Study Area, April 1979	2.31
2.19	Aquatic Nutrient Concentrations, Bailly Study Area, April 1979	2.35
2.20	Indicators of Industrial and Organic Contamination, Bailly Study Area, April 1979	2.37
2.21	Trace Element Concentrations, Bailly Study Area, April 1979	2.38

27 149





---

## ILLUSTRATIONS

Figure	Description	Page
1.1	Terrestrial Sampling Locations in Bailly Study Area	1.2
1.2	Major Aquatic Habitats Utilized by Water Birds in Bailly Study Area, 1979	1.13
1.3	Road Route in Bailly Study Area	1.13
2.1	Aquatic Sampling Stations in Bailly Study Area	2.1

827 170



SECTION 1  
TERRESTRIAL

1.1 STATUS

Spring 1979 terrestrial samples were taken in May as scheduled (Table 1.1) by the personnel listed in Table 1.2. Sampling locations are indicated in Figure 1.1.

Table 1.1  
Terrestrial Ecology Sampling Status, June 1979

Parameter	Sampling Locations**	Sampling Scheduled	Analyses May*	
			Completed	Continuing
Vegetation				
General survey	5-mi radius			
Quantitative analysis	1-6,8			
Qualitative analysis	9-11			
Aquatic macrophytes	4,7			
Foliar effects	1-11	X	X	
Mammals				
Small-mammal trapping	1,3,4,6,8	X	X	
Large-mammal observations	1-11	X	X	
Roadside counts	22-mi route	X	X	
Avifauna				
Roadside counts	22-mi route	X	X	
Transect counts	1,3-6,8	X	X	
Reptiles and amphibians	1-8	X	X	
Invertebrates	1-8			
Soil conductivity	1-6,8-11	X		X

\*No sampling scheduled for April or June.

\*\*Location 12 (the industrial zone) was studied for incidental sightings of mammals, birds, reptiles, and amphibians.

Table 1.2  
Dates and Purposes of Terrestrial Field Trips

Date	Personnel	Sampling Performed
1-5 and 12-16 May	Roy Greer	Foliar effects Large-mammal observation Small-mammal trapping Roadside counts Avian transect counts Reptiles and amphibians Soil samples

827 171

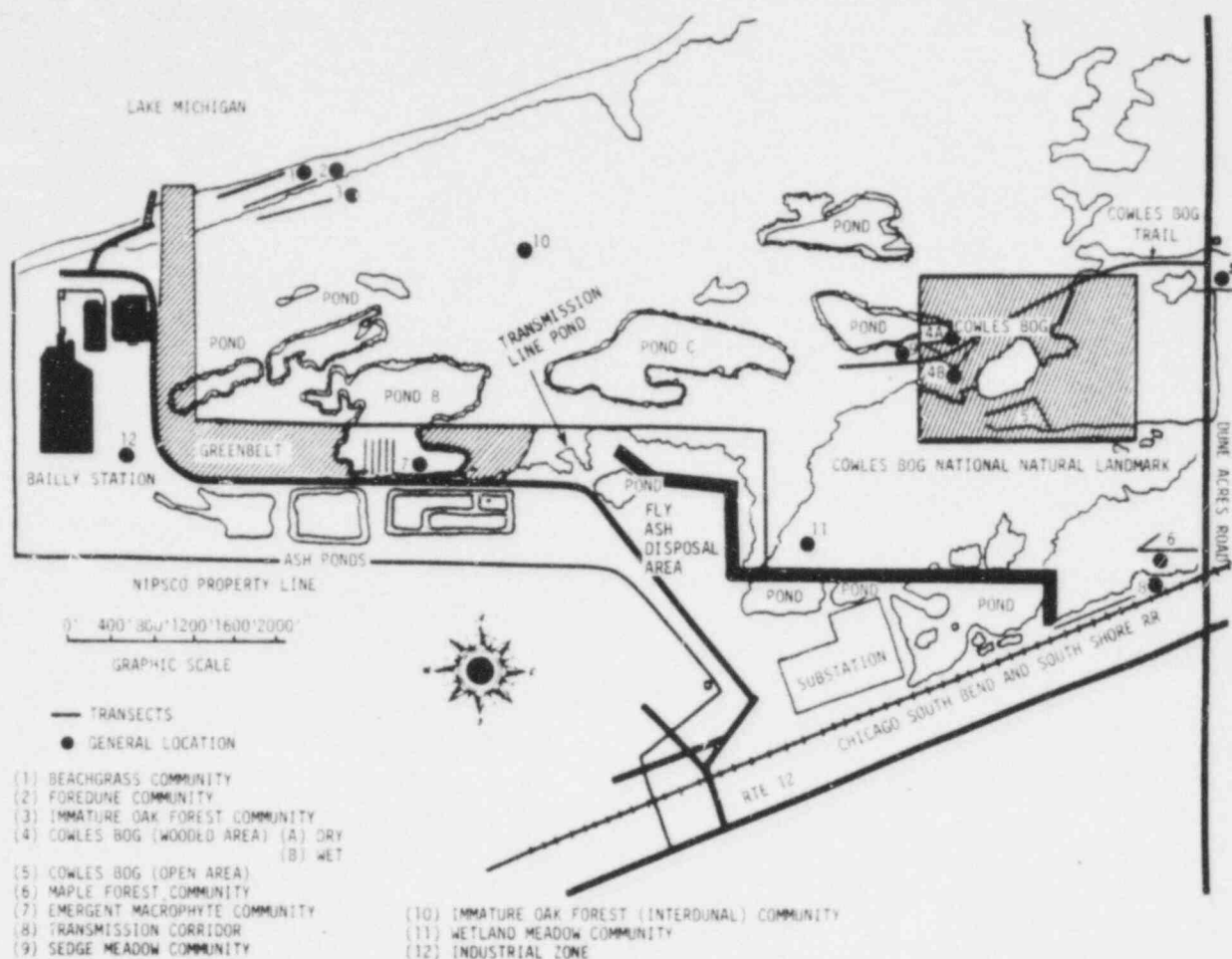


Figure 1.1. Terrestrial Sampling Locations in Bailly Study Area

## 1.2 DATES AND PURPOSES OF TERRESTRIAL FIELD TRIPS

Table 1.2 presents information on the dates and purposes of the terrestrial field trips to the Bailly Study Area. Data are tabulated for mammals in Tables 1.4 and 1.5, for birds in Tables 1.7 through 1.10, and for herpetofauna in Table 1.12. Species checklists for May 1979 appear in Tables 1.3 (mammals), 1.6 (birds), and 1.11 (herpetofauna).

## 1.3 RESULTS AND DISCUSSION

1.3.1 MAMMALS. During May 1979, 14 mammal species were captured or observed on the Bailly Study Area (Table 1.3). As in 1977-78, severe winter weather apparently affected small-mammal population levels: only three species and few individuals were trapped, and there were comparatively few observations of chipmunks and tree squirrels (Table 1.4).

827 172



Table 1.3

Mammals Reported from Bailly Study Area, May 1979

Common Name	Scientific Name
Opossum	<u>Didelphis marsupialis</u>
Short-tailed shrew	<u>Blarina brevicauda</u>
Masked shrew	<u>Sorex cinereus</u>
Eastern mole	<u>Scalopus aquaticus</u>
Eastern cottontail rabbit	<u>Sylvilagus floridanus</u>
Eastern chipmunk	<u>Tamias striatus</u>
Woodchuck	<u>Marmota monax</u>
13-lined ground squirrel	<u>Spermophilus tridecemlineatus</u>
Fox squirrel	<u>Sciurus niger</u>
Red squirrel	<u>Tamiasciurus hudsonicus</u>
White-footed mouse	<u>Peromyscus leucopus</u>
Muskrat	<u>Ondatra zibethica</u>
Raccoon	<u>Procyon lotor</u>
White-tailed deer	<u>Odocoileus virginianus</u>

Table 1.4

Small Mammals Captured per 100 Trapnights in Five Sampling Locations in Bailly Study Area, May 1979

Common Name	Sampling Locations				
	Beach-grass	Immature Oak Forest	Cowles Bog (wooded)	Maple Forest	Transmission Corridor
Short-tailed shrew	—	—	—	—	0.3
Masked shrew	0.7	—	—	—	—
White-footed mouse	—	—	1.0	1.3	—
No./100 trapnights	0.7	0.0	1.0	1.3	0.3
Number of species	1	0	1	1	1

827 173



1.3.1.1 Beachgrass Community. The masked shrew (Sorex cinereus) was the only mammal captured in the beachgrass community during May 1979 (Table 1.4). One individual was captured on two occasions at different stations along the 50-trap transect in this locale.

Tracks of the raccoon (Procyon lotor) and white-tailed deer (Odocoileus virginianus) were observed throughout the community (Table 1.5).

Table 1.5  
Mammals Reported from Sampling Locations in  
Bailly Study Area, May 1979

Common Name	Sampling Locations								
	Beach-grass	Foredune	Immature Oak Forest	Cowles Bog (wooded)	Cowles Bog (open)*	Maple Forest	Emergent Macrophyte	Transmission Corridor	Industrial
Opossum	—	—	—	—	**	—	—	—	—
Eastern mole	—	—	—	—	**	—	—	—	—
Eastern cottontail rabbit	**	**	**	—	**	—	—	**	—
Eastern chipmunk	—	—	—	7	—	—	—	—	—
13-lined ground squirrel	—	—	—	—	—	—	—	—	1
Woodchuck	—	—	—	**	**	—	—	—	—
Fox squirrel	—	—	—	2	—	—	4†	—	—
Red squirrel	—	—	1	1	—	1	—	—	—
Muskrat	—	—	—	—	—	—	1	—	—
Raccoon	**	**	**	4	**	**	1	**	—
White-tailed deer	**	**	**	1	1	*	—	**	—
No. of species	3	3	4	6	6	3	3	3	1

\*All sightings along dike.

\*\*Tracks or other signs.

†In willows around pond.

1.3.1.2 Foredune. As usual, the same larger-mammal species observed in the beachgrass community occurred in the foredune area (Table 1.5). These species generally cross both areas en route to the Lake Michigan shore.

1.3.1.3 Immature Oak Forest. No small mammals were captured in this location during May 1979. Midway through the second sampling period, 22 traps were stolen from the transect. Calculations for this transect were based on 278 trap sets. Except for one red squirrel (Tamiasciurus hudsonicus), mammals recorded were the same as those in the other lakefront locations.

827 174



1.3.1.4 Cowles Bog (Wooded). The white-footed mouse (Peromyscus leucopus) was the only mammal trapped in the wooded bog during May 1979 (Table 1.4). All captures occurred in the wet woods.

Six other mammal species were sighted in this locale (Table 1.5). Raccoons appeared quite active along the trail, but the eastern chipmunk (Tamias striatus) seemed to be less active than usual. Also, the fox squirrel (Sciurus niger) appeared somewhat less abundant than in past springs. One white-tailed deer was sighted.

1.3.1.5 Cowles Bog (Open). A white-tailed deer was one of six species recorded from the dike that parallels the open bog (Table 1.5). This mature doe was probably the same one observed in the wooded bog just off the trail. Tracks observed in this and other locations indicated that at least two other deer utilize the Bailly Study Area extensively.

1.3.1.6 Maple Forest. Four white-footed mice were captured along the trapline in this locale (Table 1.4). The red squirrel was the only other species sighted (Table 1.5), although the tracks of raccoon and white-tailed deer were noted.

1.3.1.7 Emergent Macrophyte. Three species of mammals were sighted in the macrophyte sampling location during May 1979 (Table 1.5). On one occasion, four fox squirrels feeding on willow along the pond's shoreline were observed. The muskrat (Ondatra zibethica) and raccoon are fairly common in this location, although muskrat sightings have become less frequent during the past 2 years.

1.3.1.8 Transmission Corridor. One short-tailed shrew (Blarina brevicauda) was captured along the transmission assessment line (Table 1.4). Trapping results possibly were affected by an early May fire that burned approximately half of the trapping area. The raccoon was one of three larger-mammal species for which signs were observed in this location during May 1979 (Table 1.5).

827 175





1.3.1.9 Industrial Areas. A 13-lined ground squirrel (Spermophilis tridecemlineatus) was sighted in lawn habitat in this location during May (Table 1.5).

1.3.1.10 Road Route. The 22-mile road route survey produced sightings of only five eastern cottontail rabbits (Sylvilagus floridanus) during May 1979. This represented the fewest sightings during the 6-year survey period; the number of sightings per survey has ranged from 5 to 34 and has averaged about 15. The previous low number was 7 in May and July 1978.

1.3.2 BIRDS. The spring 1979 bird surveys in the Bailly Study Area produced 92 species; these are listed, along with their probable status, in Table 1.6. In Table 1.7 are data collected along transects in six of the major sampling locations, in Table 1.8 data from the transects along Cowles Bog trail, in Table 1.9 the aquatic survey data, and in Table 1.10 the road route data.

1.3.2.1 Beachgrass Community. One Barn Swallow (Hirundo rustica) was sighted on each 375-foot transect in this community (Table 1.7). Tree Swallows (Iridoprocne bicolor) and Bank Swallows (Riparia riparia) feeding on insects flying over the beachgrass were observed during nonsurvey periods.

1.3.2.2 Immature Oak Forest. The two transects in this locale during May yielded four species of birds (Table 1.7). The Yellow-rumped Warbler (Dendroica coronata), generally one of the first warblers to migrate north during spring, was sighted most frequently (three observations per survey).

1.3.2.3 Cowles Bog (Wooded). There were one to two sightings of six bird species along the two transects in the wooded bog. The Gray Catbird (Dumetella carolinensis) and American Robin (Turdus migratorius) were the only species sighted on both transects.

827 176



Table 1.6

Bird Species Observed in Baily Study Area, May 1979 (Page 1 of 2)

Common Name	Scientific Name	Probable Status
Horned Grebe	<u>Podiceps auritus</u>	Migrant
Pied-billed Grebe	<u>Podilymbus podiceps</u>	Summer resident
Great Blue Heron	<u>Ardea herodias</u>	Summer resident
Green Heron	<u>Butorides virescens</u>	Summer resident
Canada Goose	<u>Branta canadensis</u>	Summer resident
Mallard	<u>Anas platyrhynchos</u>	Summer resident
Blue-winged Teal	<u>Anas discors</u>	Summer resident
Wood Duck	<u>Aix sponsa</u>	Summer resident
Ring-necked Duck	<u>Aythya collaris</u>	Summer resident
Common Merganser	<u>Mergus merganser</u>	Summer resident
Red-tailed Hawk	<u>Buteo jamaicensis</u>	Summer resident
Broadwinged Hawk	<u>Buteo platypterus</u>	Permanent resident
Ring-necked Pheasant	<u>Phasianus colchicus</u>	Permanent resident
Virginia Rail	<u>Rallus limicola</u>	Summer resident
Sora	<u>Porzana carolina</u>	Summer resident
Common Gallinule	<u>Gallinula chloropus</u>	Summer resident
American Coot	<u>Fulica americana</u>	Summer resident
Killdeer	<u>Charadrius vociferus</u>	Summer resident
Ruddy Turnstone	<u>Arenaria interpres</u>	Migrant
Spotted Sandpiper	<u>Actitis macularia</u>	Summer resident
Lesser Yellowlegs	<u>Tringa flavipes</u>	Migrant
Herring Gull	<u>Larus argentatus</u>	Migrant-winter resident
Ring-billed Gull	<u>Larus delawarensis</u>	Permanent resident
Common Tern	<u>Sterna hirundo</u>	Migrant
Caspian Tern	<u>Hydroprogne caspia</u>	Migrant
Rock Dove	<u>Columba livia</u>	Permanent resident
Mourning Dove	<u>Zenaidura macroura</u>	Permanent resident
Yellow-billed Cuckoo	<u>Coccyzus americanus</u>	Migrant
Screech Owl	<u>Otus asio</u>	Permanent resident
Barred Owl	<u>Strix varia</u>	Permanent resident
Common Nighthawk	<u>Chordeiles minor</u>	Summer resident
Chimney Swift	<u>Chaetura pelagica</u>	Summer resident
Belted Kingfisher	<u>Megasceryle alcyon</u>	Permanent resident
Common Flicker	<u>Colaptes auratus</u>	Permanent resident
Red-bellied Woodpecker	<u>Centurus carolinus</u>	Permanent resident
Red-headed Woodpecker	<u>Melanerpes erythrocephalus</u>	Permanent resident
Yellow-bellied Sapsucker	<u>Sphyrapicus varius</u>	Summer resident
Downy Woodpecker	<u>Dendrocopos pubescens</u>	Permanent resident
Eastern Kingbird	<u>Tyrannus tyrannus</u>	Summer resident
Eastern Phoebe	<u>Sayornis phoebe</u>	Summer resident
Least Flycatcher	<u>Empidonax minimus</u>	Summer resident
Eastern Wood Pewee	<u>Contopus virens</u>	Summer resident
Tree Swallow	<u>Iridoprocne bicolor</u>	Summer resident
Bank Swallow	<u>Riparia riparia</u>	Summer resident
Barn Swallow	<u>Hirundo rustica</u>	Summer resident
Blue Jay	<u>Cyanocitta cristata</u>	Permanent resident

827 177





Table 1.6

Bird Species Observed in Bailly Study Area, May 1979 (Page 2 of 2)

Common Name	Scientific Name	Probable Status
Common Crow	<u>Corvus brachyrhynchos</u>	Permanent resident
Black-capped Chickadee	<u>Parus atricapillus</u>	Permanent resident
Tufted Titmouse	<u>Parus bicolor</u>	Permanent resident
White-breasted Nuthatch	<u>Sitta carolinensis</u>	Permanent resident
House Wren	<u>Troglodytes aedon</u>	Summer resident
Short-billed Marsh Wren	<u>Cistothorus platensis</u>	Summer resident
Gray Catbird	<u>Dumetella carolinensis</u>	Summer resident
Brown Thrasher	<u>Toxostoma rufum</u>	Summer resident
American Robin	<u>Turdus migratorius</u>	Summer resident
Wood Thrush	<u>Hylocichla mustelina</u>	Summer resident
Hermit Thrush	<u>Catharus guttata</u>	Migrant
Swainson's Thrush	<u>Catharus ustulata</u>	Migrant
Gray-cheeked Thrush	<u>Catharus minima</u>	Migrant
Veery	<u>Catharus fuscescens</u>	Summer resident
Blue-gray Gnatcatcher	<u>Polioptila caerulea</u>	Summer resident
Ruby-crowned Kinglet	<u>Regulus calendula</u>	Migrant
Cedar Waxwing	<u>Bombycilla cedrorum</u>	Permanent resident
Starling	<u>Sturnus vulgaris</u>	Permanent resident
White-eyed Vireo	<u>Vireo griseus</u>	Summer resident
Red-eyed Vireo	<u>Vireo olivaceus</u>	Summer resident
Warbling Vireo	<u>Vireo gilvus</u>	Summer resident
Black-and-white Warbler	<u>Mniotilta varia</u>	Summer resident
Yellow Warbler	<u>Dendroica petechia</u>	Summer resident
Magnolia Warbler	<u>Dendroica magnolia</u>	Migrant
Yellow-rumped Warbler	<u>Dendroica coronata</u>	Migrant
Chestnut-sided Warbler	<u>Dendroica pennsylvanica</u>	Summer resident
Palm Warbler	<u>Dendroica palmarum</u>	Migrant
Ovenbird	<u>Seiurus aurocapillus</u>	Summer resident
Common Yellowthroat	<u>Geothlypis trichas</u>	Summer resident
Wilson's Warbler	<u>Wilsonia pusilla</u>	Migrant
Canada Warbler	<u>Wilsonia canadensis</u>	Summer resident
American Redstart	<u>Setophaga ruticilla</u>	Summer resident
House Sparrow	<u>Passer domesticus</u>	Permanent resident
Red-winged Blackbird	<u>Agelaius phoeniceus</u>	Summer resident
Common Grackle	<u>Quiscalus quiscula</u>	Summer resident
Brown-headed Cowbird	<u>Molothrus ater</u>	Summer resident
Cardinal	<u>Cardinalis cardinalis</u>	Permanent resident
Rose-breasted Grosbeak	<u>Pheucticus ludovicianus</u>	Summer resident
American Goldfinch	<u>Spinus tristis</u>	Permanent resident
Rufous-sided Towhee	<u>Papilo erythrophthalmus</u>	Summer resident
Chipping Sparrow	<u>Spizella passerina</u>	Summer resident
Field Sparrow	<u>Spizella pusilla</u>	Summer resident
White-crowned Sparrow	<u>Zonotrichia leucophrys</u>	Migrant
White-throated Sparrow	<u>Zonotrichia albicollis</u>	Migrant
Swamp Sparrow	<u>Melospiza georgiana</u>	Permanent resident
Song Sparrow	<u>Melospiza melodia</u>	Permanent resident
Total Species - 92		

827 178



Table 1.7

Birds Observed along Transects in Six Sampling Locations in Bailly Study Area, May 1979

Species	Sampling Locations and Transects*											
	Beachgrass		Immature Oak		Cowles Bog (wooded)		Cowles Bog (open)		Maple Forest		Transmission	
	A	B	A	B	A	B	A	B	A	B	A	B
Common Flicker	-	-	-	-	-	2	-	-	-	-	-	-
Tree Swallow	-	-	-	-	-	-	4	2	-	-	-	-
Barn Swallow	1	1	-	-	-	-	-	-	-	-	-	-
Blue Jay	-	-	3	-	-	-	-	-	1	-	-	-
Short-billed Marsh Wren	-	-	-	-	-	-	1	-	-	-	-	-
Gray Catbird	-	-	-	-	1	1	-	-	-	-	-	-
American Robin	-	-	-	-	-	-	-	-	1	1	-	-
Wood Thrush	-	-	-	-	-	2	-	-	-	-	-	-
Ruby-crowned Kinglet	-	-	-	-	-	-	1	-	-	1	-	-
Yellow-rumped Warbler	-	-	3	3	-	-	-	-	-	-	-	-
Palm Warbler	-	-	-	2	-	-	-	-	-	-	-	-
American Redstart	-	-	-	-	1	1	-	-	-	-	-	-
Red-winged Blackbird	-	-	-	-	-	-	1	3	-	-	-	-
Cardinal	-	-	1	-	-	-	-	-	-	-	-	-
Rufous-sided Towhee	-	-	-	-	2	-	-	-	-	-	-	-
White-throated Sparrow	-	-	-	-	2	-	-	-	-	3	-	-
Swamp Sparrow	-	-	-	-	-	-	2	-	-	-	-	-
No. of observations	1	1	7	3	6	6	9	-	2	5	0	0
No. of species	1	1	3	2	4	4	5	2	2	3	0	0
Total species	1		4		6		5		4		0	

\*Transect length, 375 feet.

Table 1.8

Birds Observed on Eight Transects along Cowles Bog Trail in Bailly Study Area, May 1979

Species	Cowles Bog Trail Transects*							
	1	2	3	4	5	6	7	8
Green Heron	-	-	-	-	-	-	1	1
Mallard	-	-	-	-	-	2	-	-
Wood Duck	-	-	-	-	2	-	-	-
Downy Woodpecker	-	-	-	2	-	-	-	-
Blue Jay	-	1	-	3	1	-	1	-
Black-capped Chickadee	-	-	-	2	-	-	-	-
Gray Catbird	-	1	2	1	-	-	1	1
American Robin	-	-	-	2	-	-	-	-
Wood Thrush	-	-	-	1	-	-	-	-
Hermit Thrush	-	-	-	-	-	1	-	-
Swainson's Thrush	-	-	-	-	-	1	-	-
Gray-cheeked Thrush	-	1	-	-	-	-	-	-
Veery	-	-	-	-	-	-	-	1
White-eyed Vireo	1	-	-	-	-	-	-	-
Black-and-white Warbler	-	-	-	-	-	-	-	1
Magnolia Warbler	1	4	-	-	-	-	-	1
Chestnut-sided Warbler	-	-	-	-	-	-	-	3
Ovenbird	-	-	-	-	-	-	-	1
Common Yellowthroat	3	-	5	-	-	2	1	1
Wilson's Warbler	2	3	-	-	-	2	2	1
American Redstart	4	1	-	3	-	-	-	5
Brown-headed Cowbird	-	-	-	-	-	-	1	-
Cardinal	-	-	-	-	-	1	-	-
Rose-breasted Grosbeak	-	2	-	1	2	-	-	-
Rufous-sided Towhee	-	-	-	-	-	-	-	2
White-throated Sparrow	-	-	-	-	1	-	-	-
Swamp Sparrow	-	-	1	-	-	-	1	-
Total individuals	11	13	8	15	6	9	8	18
Total species	5	7	3	8	4	6	7	11

\*Transect length, 375 feet.

827 179



Table 1.9

Maximum Counts of Birds Utilizing 10 Aquatic  
Locations in Bailly Study Area, May 1979

Species	Aquatic Locations*									
	A	B	C	D	E	F	G	H	I	J
Horned Grebe	-	-	-	-	-	-	-	-	-	3
Pied-billed Grebe	2	3	-	-	-	-	-	-	-	-
Great Blue Heron	-	-	4	-	-	-	-	-	-	2
Green Heron	-	-	3	-	3	-	2	-	-	-
Canada Goose	-	1	-	-	3	-	-	-	-	-
Mallard	-	-	-	-	2	-	-	-	-	-
Blue-winged Teal	-	-	-	-	-	1	1	2	3	-
Ring-necked Duck	-	-	-	-	-	-	1	-	-	-
Common Merganser	-	-	-	10	-	-	-	-	-	6
Sora	-	-	-	-	-	1	1	-	-	-
American Coot	4	3	9	8	2	15	5	-	-	-
Ruddy Turnstone	-	-	-	-	-	-	-	-	-	2
Spotted Sandpiper	-	-	-	-	-	-	-	-	-	2
Lesser Yellowlegs	-	-	-	-	-	-	4	-	-	-
Herring Gull	-	-	-	-	-	-	-	-	-	39
Ring-billed Gull	-	-	-	-	-	-	-	-	-	218
Common Tern	-	-	-	-	-	-	-	-	-	12
Caspian Tern	-	-	-	-	-	-	-	-	-	8
Belted Kingfisher	-	1	-	1	-	-	1	-	-	-
Killdeer	-	-	-	-	-	-	-	-	-	1
Total observations	6	8	16	19	10	17	15	2	3	293
Total species	2	4	3	3	4	3	7	1	1	10

\*See Figure 1.2

1.3.2.4 Cowles Bog Trail. During the first sampling period in May 1979, vireos and warblers had not arrived in this location; by the third week in May, when this bird survey was conducted, however, most of the vireos and warblers had arrived in the wooded bog along with several other species. Three warblers, Common Yellowthroat (Geothlypis trichas), Wilson's Warbler (Wilsonia pusilla), and American Redstart (Setophaga ruticilla), were especially common (Table 1.8). Transects 8 and 4 yielded the most species - 11 and 8, respectively.

1.3.2.5 Cowles Bog (Open). Five species of birds were observed in the open bog during May transect counts. The Tree Swallow and Red-winged Blackbird (Agelaius phoeniceus) were the only species common to both transects.

827 180



Table 1.10

Results of 22-Mile Road-Route Census of Birds in  
Bailly Study Area, May 1979

Species	No. of Individuals	No. of Stops with Observations
Wood Duck	1	1
Herring Gull	31	1
Ring-billed Gull	212	1
Common Tern	1	1
Mourning Dove	3	2
Common Flicker	2	2
Red-bellied Woodpecker	5	3
Red-headed Woodpecker	1	1
Downy Woodpecker	1	1
Eastern Kingbird	2	1
Barn Swallow	2	1
Tree Swallow	2	1
Blue Jay	24	10
Common Crow	3	2
House Wren	4	3
Catbird	8	5
Robin	31	11
Wood Thrush	3	3
Hermit Thrush	1	1
Veery	1	1
Gray-cheeked Thrush	3	2
Starling	12	7
Red-eyed Vireo	2	1
Warbling Vireo	1	1
Golden-winged Warbler	2	1
Blackburnian Warbler	2	1
Wilson Warbler	2	2
Bay-breasted Warbler	2	1
American Redstart	7	4
House Sparrow	7	4
Red-winged Blackbird	20	9
Common Grackle	18	8
Cardinal	9	5
Rosebreasted Grosbeak	6	4
American Goldfinch	2	1
Rufous-sided Towhee	5	3
Swamp Sparrow	2	1
Song Sparrow	3	2
Tree Sparrow	2	2
White-crowned Sparrow	1	1
<hr/> No. of species - 40 <hr/>		

827 181



1.3.2.6 Maple Forest. The American Robin, one of four species observed in this location during May 1979, was the only species observed on both transects. Three White-throated Sparrows were sighted near the end of transect B.

1.3.2.7 Transmission Corridor. No birds were sighted along transects in the transmission corridor during May 1979. Most of the area along the transects had been disturbed recently: herbicides and cutting during 1978 reduced shrub/forb cover in the location, while fire during early May 1979 burned approximately one-half of the sampling location, further diminishing the area's vegetation. These events undoubtedly contributed to bird avoidance of this location.

1.3.2.8 Aquatic Habitats. Aquatic locations A through J (Figure 1.2) were surveyed on several occasions during May to determine maximum bird use. The total species count for all areas was 20 (Table 1.9). The outfall area (J) yielded the most species (10) and individuals (293). The Ring-billed Gull (Larus delawarensis) was the dominant species. A group of eight Caspian Terns (Hydroprogne caspia), a species that has not been reported in the Bailly Study Area since October 1975, was sighted at location J during the first week in May. Several sightings of Canada Goose (Branta canadensis) occurred during May 1979; some of the geese apparently were trying to nest on pond E. A flight of 10 Common Mergansers was using pond D during the first week of May but, by the third week of May, apparently had moved farther north, presumably to breeding grounds in Canada.

1.3.2.9 Road-Route Census. The survey of the 22-mile road route (Figure 1.3) in the early morning hours during the third week of May yielded 40 species. The most frequent species was the American Robin, which occurred at 11 stops; second most frequent was the Blue Jay (Cyanocitta cristata), which occurred at 10 of the 22 stops. The Ring-billed Gull was the most numerous species sighted: 212 individuals were observed at stop 22. Other commonly sighted species included the Herring Gull (Larus argentatus) and the Red-winged Blackbird.

827 182

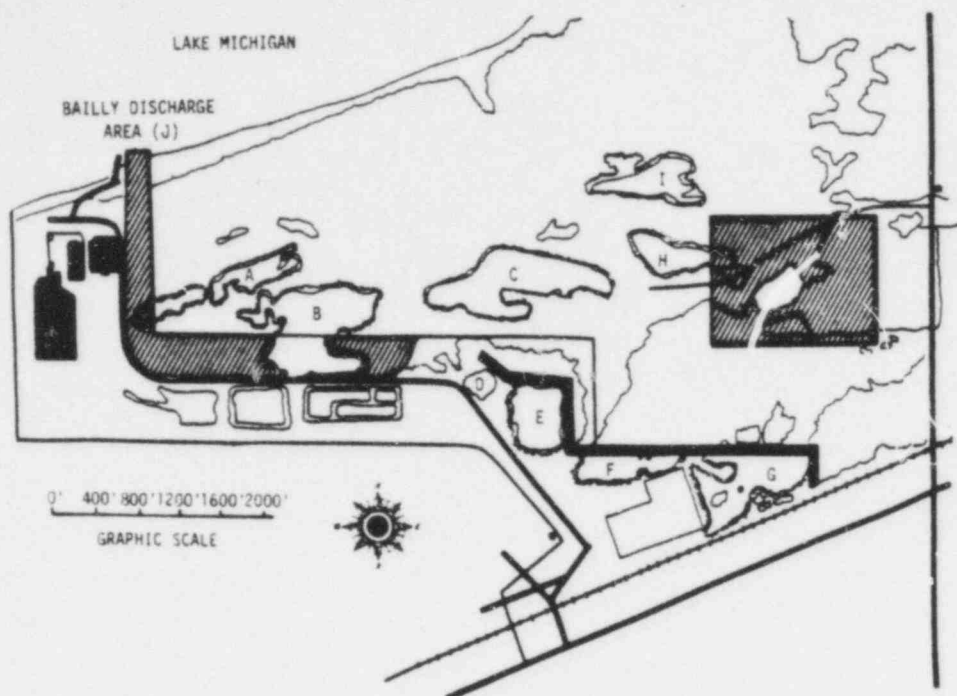


Figure 1.2. Major Aquatic Habitats (A through J) Utilized by Water Birds in Baily Study Area, 1979

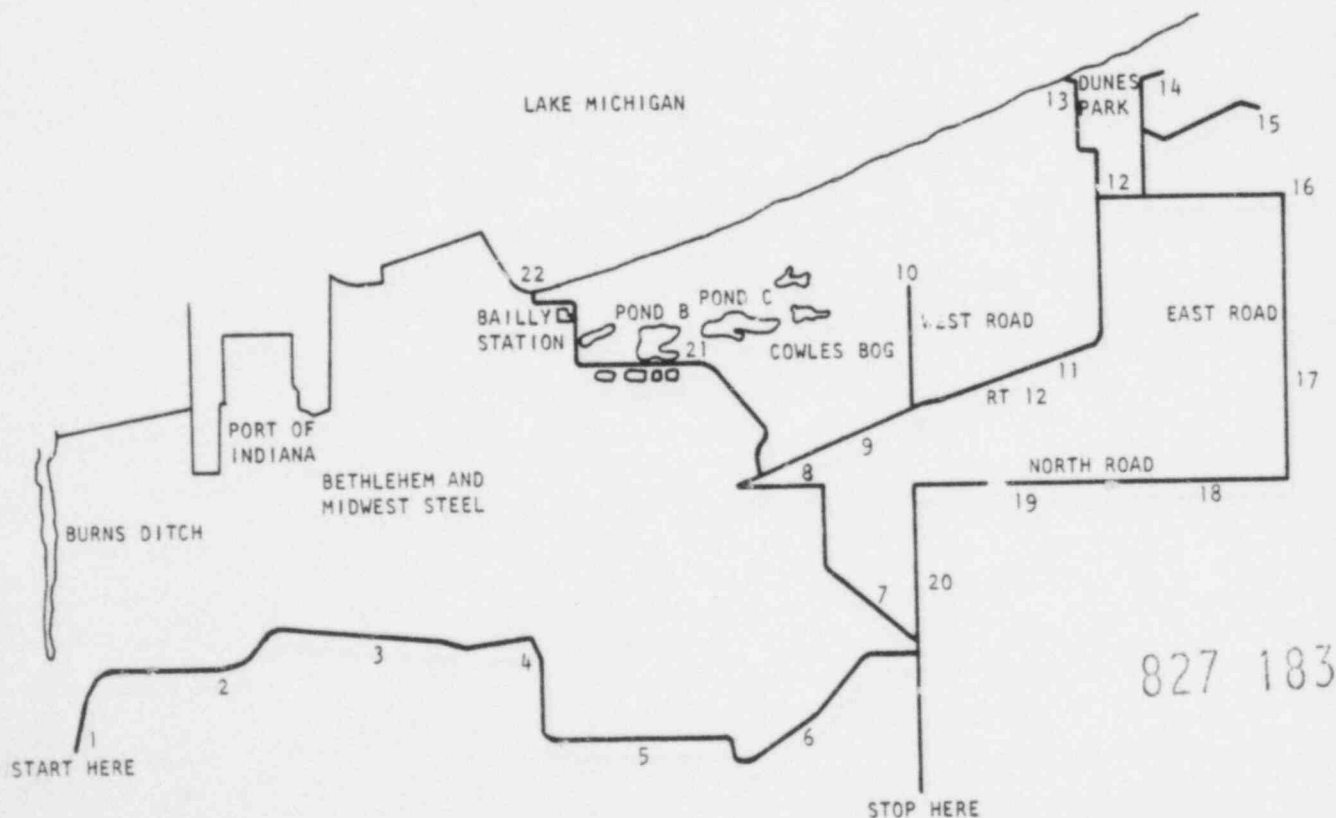


Figure 1.3. Road Route (22 miles) in Baily Study Area





1.3.3 AMPHIBIANS AND REPTILES. Herpetile activity undoubtedly was affected by the unusual cold as well as by the wetter conditions during May 1979 (compared with previous years); low temperatures inhibited reptile activity, while increased water promoted frog activity. Nine species of amphibians and reptiles were noted during the two survey periods (Tables 1.11 and 1.12).

Table 1.11

Amphibians and Reptiles Observed in Bailly Study Area, May 1979

Species	
Common Name	Scientific Name
Cricket frog	<u>Acris crepitans</u>
Spring peeper	<u>Hyla crucifer</u>
Gray treefrog	<u>Hyla versicolor</u>
Bullfrog	<u>Rana catesbeiana</u>
Green frog	<u>Rana clamitans</u>
Wood frog	<u>Rana sylvatica</u>
Painted turtle	<u>Chrysemys picta</u>
Northern water snake	<u>Natrix sipedon</u>
Common garter snake	<u>Thamnophis sirtalis</u>

Table 1.12

Amphibians and Reptiles Encountered in Bailly Study Area, May 1979

Species	Sampling Locations							
	Beach-grass	Foredune	Immature Oak Forest	Cowles Bog (wooded)	Cowles Bog (open)	Maple Forest	Emergent Macrophyte	Transmission Corridor
Cricket frog	—	—	—	—	*	—	*	*
Spring peeper	—	—	—	—	*	—	*	*
Gray treefrog	—	—	—	*	*	—	*	—
Bullfrog	—	—	—	—	1	—	2	—
Green frog	—	—	—	3**	—	—	—	—
Wood frog	—	—	—	*	—	2	—	—
Painted turtle	—	—	—	—	—	—	25	—
Northern water snake	—	—	—	—	—	—	2	—
Common garter snake	—	—	—	—	—	—	—	1
No. of species	0	0	0	3	4	1	6	3

\*Chorus (10-50 individuals).

\*\*Occasional choruses of less than 10 individuals were heard.

827 184



1.3.3.1 Lakefront Communities (Beachgrass-Foredune-Immature Oak). No reptiles or amphibians were observed in the lakefront communities during May 1979. Weather conditions probably contributed to these results; however, few herpetiles have been sighted in these communities in the past.

1.3.3.2 Cowles Bog (Wooded). Frogs were fairly active in the wooded bog during May 1979 (Table 1.12), with large choruses (approximately 25 individuals) of gray treefrogs (Hyla versicolor) calling from several locations in the bog. Scattered small choruses (approximately 10 individuals) of wood frogs (Rana sylvatica), as well as an occasional green frog chorus (Rana clamitans), were also noted.

1.3.3.3 Cowles Bog (Open). Frogs of several species were common in this location during May 1979 (Table 1.12). Of particular importance were cricket frogs (Acris crepitans), which were heard throughout the open bog as were spring peepers (Hyla crucifer).

1.3.3.4 Maple Forest. The maple forest, like other sampling locations, was unusually wet during May 1979 and contained pools of water throughout. The only herpetile observed was the wood frog. This first sighting of the wood frog in this location likely was correlated with the wet conditions.

1.3.3.5 Emergent Macrophyte. Six species of herpetiles were observed in the macrophyte community during May 1979 (Table 1.12). Two adult male bullfrogs (Rana catesbeiana) calling from the shoreline were observed, and choruses of three other frog species were noted, including one large gray treefrog chorus (approximately 50 individuals). Numerous painted turtles (Chrysemys picta) basking on logs in the aquatic macrophyte community were observed, and two sunning northern water snakes (Natrix sipedon) were observed. Water snakes were generally less active during May 1979 than during past springs.

827 185

1.3.3.6 Transmission Corridor. Small choruses of cricket frogs and spring peepers were heard calling from small temporary pools of water in this locale during May 1979. A wounded common garter snake (Thamnophis sirtalis)





was found along a burned section of the corridor, apparently having been stunned by the fire and attacked by birds or shrews, which had eaten most of its head.

1.3.4 FOLIAR DAMAGE. Older needles on white pine (Pinus strobus) along the Bailly entrance road still exhibited some flagging. New needles had not yet formed, nor had deciduous trees leafed.

1.3.5 SOIL CONDUCTIVITY. All soil samples for conductivity analysis were collected during May 1979, and results of the soils analysis will appear in the summer report.

827 186

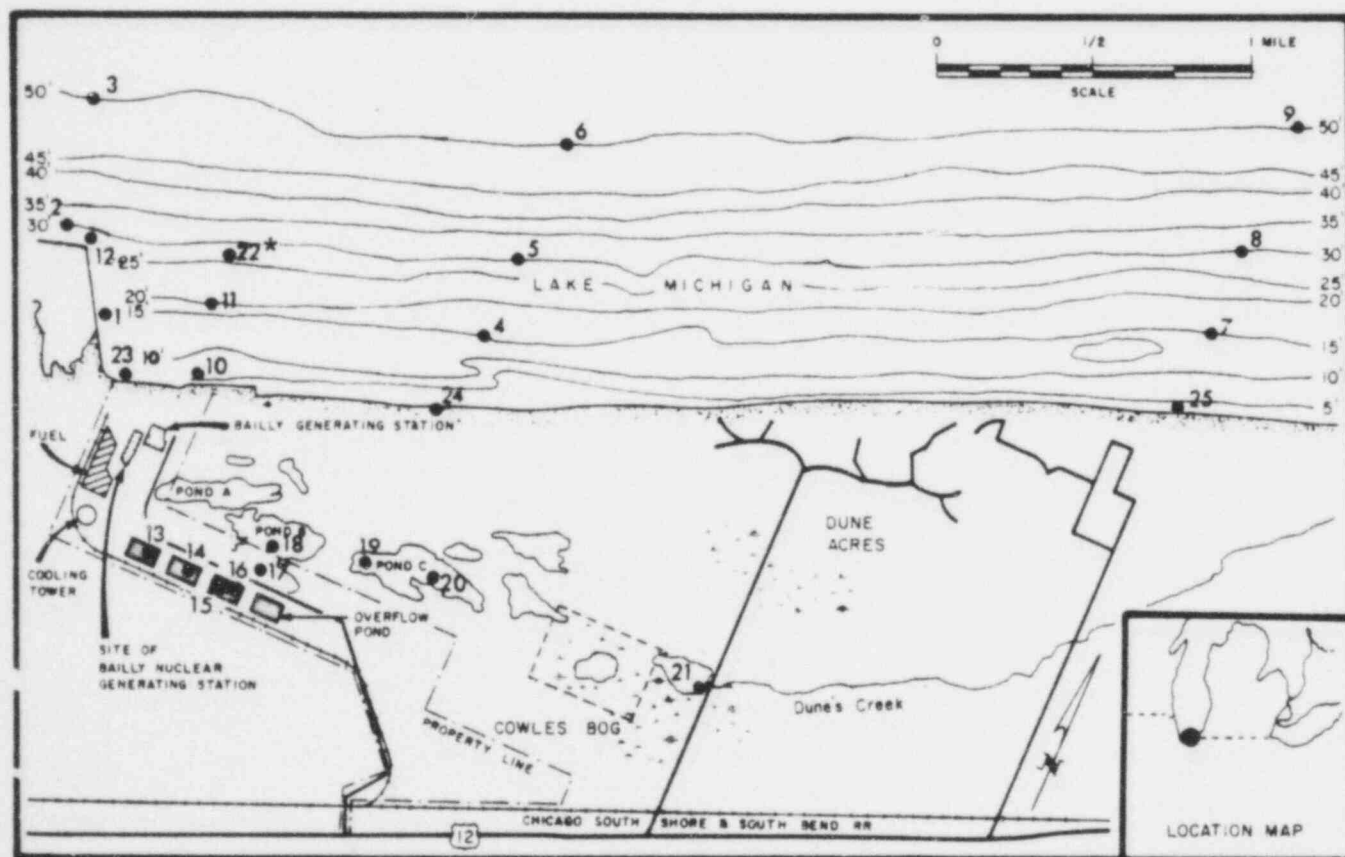


## SECTION 2

### AQUATIC ECOLOGY

#### 2.1 STATUS

Samples were collected under the direction of TI's Frank Crawford in April and June during the spring 1979 quarter. Sampling stations are indicated in Figure 2.1 as well as in Table 2.1 which also lists samples collected and sample status. Dates and purposes of all aquatic field trips during spring 1979 are listed in Table 2.2. Those samples for which data have not been included herein will appear in the summer 1979 quarterly report.



\*Station 22 is a "floating" station located on the plume center line, 1000 feet from the discharge.

Figure 2.1. Aquatic Sampling Stations in Bailly Study Area



Table 2.1  
Status of Laboratory Analyses for Bailly Study Area

Parameter	Sampling Station	Sampling Schedule	April Analyses		Sampling Schedule	June Analyses	
			Complete	Continuing		Complete	Continuing
Phytoplankton							
Identification, enumeration	1-10, 17-21	x	x		x		x
Productivity	1-10, 17-21	x	x		x		x
Chlorophyll <u>a</u>	1-10, 17-21	x		x	x		x
Zooplankton							
Identification, enumeration	1-10, 17-21	x	x		x		x
Periphyton							
Identification, enumeration	1,10,11,12,25 17,19,21	x	x		x		x
Chlorophyll <u>a</u>	1,10,11,12,25 17,19,21	x		x	x		x
Benthos							
Identification, enumeration	1-10, 17-21	x		x	x		x
Fish							
Gill netting	4,7	x		x	x		x
Beach seining	23,24,25	x		x	x		x
Pond electroshocking	17,18				x		x
Food habits	1-10	x		x*	x		x*
Ichthyoplankton	1-10	x	x		x		x
Water Quality							
General water quality	1-22	x	x		x		x
Aquatic nutrients	1-22	x	x		x		x
Trace elements	13-21	x	x		x		x
Indicators of contamination	13-21	x	x		x		x
Sediments	17-21	x		x			
Aquatic Macrophytes	17-21				x		x

\* Since the objective of the food-habits study is to collect 50 specimens each of six taxa over the course of a year, analyses cannot be performed until all fish are collected.

Table 2.2  
Dates and Purposes of All Aquatic Field Trips,  
Bailly Study Area, Spring Quarter, 1979

Date	Personnel	Parameters Sampled
7-9 and 27-30 Apr 1-2 May	Frank Crawford Paul McKeown Nancy Chaps Gail Wandke	Phytoplankton Zooplankton Periphyton Benthos Fish Ichthyoplankton Water quality
13-16 Jun 12-15 Jul	Frank Crawford Nancy Chaps Gail Wandke Joe Crittenden John Richards	Phytoplankton Zooplankton Periphyton Benthos Fish Ichthyoplankton Water quality Aquatic macrophytes

827 188



## 2.2

### AQUATIC FLORA

#### 2.2.1

##### METHODOLOGY.

Duplicate 2-liter phytoplankton samples were collected with a 6-liter Van Dorn bottle at stations 1 through 10 in Lake Michigan and at stations 17 through 21 in the pond areas (Figure 2.1). All samples were collected from 1 meter below the surface. Before sampling, each 2-liter sample container was prepared with 20 milliliters of acid Lugol's solution, which is a narcotizing settling agent. After sampling, each container was supplemented with buffered formalin to a final concentration of 4 percent and 3 to 5 drops of liquid detergent to facilitate sedimentation. Before processing, each sample was allowed to settle for 48 hours; then 1800 milliliters of supernatant were siphoned off with a membrane-covered siphon. The remaining 200 milliliters were spun on a laboratory centrifuge at 2000 revolutions per minute for 15 minutes to further concentrate the organisms before the supernatant was filtered off the centrifuge tubes and the "bead" of phytoplankton transferred to 12-dram vials.

In the laboratory, concentrated phytoplankton samples (10 milliliters) were thoroughly mixed and three subsamples placed in Palmer cells. The algae in 12 fields (four per subsample) were identified, enumerated, and measured at 400X magnification. In instances where there was a scarcity of organisms in a sample, the total field count was extended to 24 fields. Biovolume (microliters per liter) was determined by attributing to the algae geometric shapes best suiting their morphology and calculating their appropriate volumes (Nauwerck 1963; Rodhe, Vollenweider, and Nauwerck 1958; Strickland 1960). Instead of developing an average volume per species based on a few representatives, dimensions of each organism enumerated were measured.

Phytoplankton productivity samples were taken at the same locations and sampling frequency used for collections for identification, enumeration, and biovolume measurements. Duplicate samples were collected from 1 meter below the surface at each station in a 6-liter Van Dorn bottle. Each collected sample was strained through a 333-micrometer mesh nitex net to remove zooplankters and large detrital material that could be labeled by the carbon-14 material.

827 189



The strained water of each sample was measured in a 2-liter flask to which three 1-milliliter aliquots of 5-microcuries  $\text{NaH}^{14}\text{CO}_3$  were added and thoroughly mixed. A time-zero sample consisting of two 0.5-milliliter subsamples was measured and placed in scintillation vials along with one drop of 6N sodium hydroxide. Two 50-milliliter subsamples also were removed and strained through Whatman GF/C filters at minimum vacuum pressure (less than 50 millimeters Hg differential across the filter) and the filters placed in scintillation vials. Duplicate clear and darkened 300-milliliter BOD bottles were filled with the remaining sample. After all samples had been prepared, they were suspended 1 meter below the surface at their stations for 4 hours. Following incubation, the bottles were retrieved and the contents of each preserved by adding 12 milliliters of buffered formalin. Subsamples of 50 milliliters were removed from each bottle and filtered as previously described; each was placed in a labeled scintillation vial with enough tissue solubilizer to cover the filter pad. Activity counts were made with a liquid scintillation counter.

The following formula (APHA 1971) was used to calculate from the scintillation counts the phytoplankton productivity in milligrams of carbon fixed per liter for each replicate sample:

$$\text{mg carbon fixed/l/4-hr period} = (\text{counting rate} / \text{total activity}) \times (\text{total sample volume} / \text{subsample volume}) \times \text{mg/l initial organic carbon (mg/l)} \times 1.064$$

where

Total activity = amount of potentially available carbon-14 at time zero

Counting rate = clear bottle counts minus darkened bottle counts

Total sample volume = 300 milliliters

Subsample volume = 50 milliliters

1.064 = correction for isotope effect

827 190

Phytoplankton chlorophyll a samples were collected from the same water samples from which regular phytoplankton samples were extracted (stations 1



through 10 and 17 through 21). To prepare phytoplankton samples for chlorophyll a analysis, a measured volume of water was filtered through a 0.45-micrometer filter pad stabilized with magnesium carbonate. The filter pad was then frozen for shipment to the central laboratory, where it was extracted for 24 hours with acetone, ground for 30 seconds with a tissue grinder, centrifuged, and measured on a narrow-band spectrophotometer at 665- and 750-millimicron wavelengths before and after sample acidification. Periphyton samples were similarly processed using measured scrapings from natural (as available) or artificial substrates. All concentrations were calculated using the following equation (Vollenweider 1974):

$$\begin{aligned}\text{Chlorophyll } \underline{a} \text{ (mg per sample)} &= (D_b - D_a) [R/(R-1)] (V/l) (10^3/a_c) \\ &= 11.9 \times 2.43 (D_b - D_a) (V/l)\end{aligned}$$

where

$D_a$  = optical density of sample after acidification -  $D_{665} - D_{750}$   
(acidified)

$D_b$  = optical density of sample before acidification =  $D_{665} - D_{750}$   
(unacidified)

$a_c$  = specific absorption coefficient for chlorophyll a (in grams per centimeter)

$V$  = volume of solvent used to extract the sample (milliliters)

$l$  = path length in centimeters

$R = D_b/D_a$  for pure chlorophyll a = 84 (Talling and Driver 1963)

To convert to micrograms per liter or micrograms per square centimeter, the chlorophyll a value was divided by number of liters filtered or number of square centimeters scraped.

Periphyton sampling was scheduled at five Lake Michigan stations (1, 10, 11, 12, and 25) and three pond stations (17, 19, and 21). Pond samples were collected using a Design Alliance periphytometer, a modification of a sampler first described by Patrick, Hohn, and Wallace (1954). This sampler suspends one rack of eight glass slides, with a surface area of 37.5 square centimeters per slide, just below the surface as a substrate for periphyton colonization. Colonization generally occurs in 2 to 4 weeks; thus, the





"incubation" time per sampler is 1 month. Lake samples were scraped from natural substrates (as available) at each sampling station. The slides (both sides) and substrate scrapings were placed in 8-dram vials and preserved with 6-3-1 solution (six parts water: three parts ethanol: one part formalin). Two replicate slides per sample were quantitatively analyzed; however, all slides were scraped and the scrapings saved for references. Counts were made as described for the regular phytoplankton samples. Biovolume estimates were also generated in a manner fashioned after the phytoplankton biovolume technique.

## 2.2.2 PHYTOPLANKTON RESULTS AND DISCUSSION

2.2.2.1 Identification and Enumeration. Average phytoplankton densities during April 1979 were: Lake Michigan,  $8095 \pm 1035$  cells per milliliter; interdunal ponds,  $8469 \pm 2324$  (Table 2.3 and Appendix A). Biovolume averaged  $7.90 \pm 1.12$  microliters per liter for Lake Michigan and  $6.15 \pm 2.75$  microliters per liter for the ponds (Table 2.4 and Appendix B). In both the lake and the ponds, April phytoplankton densities were higher in 1979 than in 1978. Biovolume values were similar to those of April 1978.

Dominant taxa in Lake Michigan (those representing more than or as much as 4 percent of either density or biovolume) included Microcystis sp., Aphanizomenon flos-aquae, Asterionella formosa, Fragilaria sp. Fragilaria crotonensis (density- and biovolume-dominant), Melosira sp., Synedra sp., Nitzschia sp., and Tabellaria flocculosa. The diatom taxa were the largest contributors to the biovolume estimates, comprising 92 percent of the total, while density estimates revealed the blue-green algae and diatoms to be equally dominant. Lake Michigan samples yielded 58 taxa. Diversity ( $H'$ ) and evenness ( $J'$ ) for phytoplankton density were moderate (2.68 and 0.69, respectively), and calculations for biovolume were similar (2.77 and 0.72, respectively).

Samples collected from the interdunal ponds were dominated (more than or as much as 4 percent of the density or biovolume) by Achnanthes sp., Gomphonema sp., Synedra sp., Scenedesmus quadricauda (density-dominant), Cryptomonas ovata, and unidentified members of the Chroococcoceae (blue-greens) and Pennales (pennate diatoms). Blue-green algae were density-dominant, while

827 192



Table 2.3

Bailly Study Area Site Summary of Phytoplankton Densities  
(No. of Cells per Liter), April 1979 (Page 1 of 3)

S	TAXA	Lake Michigan Stations		X	S.E.	REL ABX
		Nearfield 1-6 & 10	Farfield 7-9			
0	UNIDENTIFIED ALGAE	24723.02	86599.94	55661.48	30938.46	0.7
0	UNIDENTIFIED ALGAE (LPIL)	24723.02	86599.94	55661.48	30938.46	0.7
0	CYANOPHYTA	4601945.00	2630556.00	3616250.00	985694.50	44.7
0	CHROCOCCACEAE					
0	CHROCOCCUS (LPIL)	48963.70	0.0	24481.85	24481.85	0.3
0	MICROCYSTIS (LPIL)	838047.00	597430.00	717738.50	120308.50	8.9
0	GOMPHOSPHERA LACUSTRIS	419553.06	0.0	209776.50	209776.50	2.6
0	APHANOTHECE (LPIL)	0.0	1640466.00	820233.00	820233.00	10.1
0	OSCILLATORIA					
0	OSCILLATORIA (LPIL)	2797549.00	0.0	1398774.00	1398774.00	17.3
0	NOSTOCACEAE					
0	APHANIZOMENON FLOS-AQUAE	497832.44	392659.50	445245.94	52586.47	5.5
0	CHLOROPHYTA	461617.56	95225.06	278421.31	183196.25	3.4
0	VOLVOCALES					
0	CHLAMYDOMONAS (LPIL)	34457.28	25760.76	30109.02	4348.26	0.4
0	CHLOROCOCCALES					
0	ANKISTRODESCHMUS FALCATUS	0.0	9611.69	4805.84	4805.84	0.1
0	ANKISTRODESCHMUS (LPIL)	61804.93	11619.74	36712.33	25092.59	0.5
0	UNIDENTIFIED: 05030511	9135.02	0.0	4567.51	4567.51	0.1
0	COCYSTIS (LPIL)	67155.44	0.0	33577.72	33577.72	0.4
0	QUADRIGULA (LPIL)	16187.25	0.0	8093.62	8093.62	0.1
0	SCENEDESMUS ACUMINATUS	8477.30	0.0	4238.65	4238.65	0.1
0	SCENEDESMUS QUADRICAUDA	66189.75	0.0	33094.87	33094.87	0.4
0	SCENEDESMUS ECORNIS	36759.32	48232.89	42496.11	5736.79	0.5
0	SCENEDESMUS (LPIL)	15378.69	0.0	7689.34	7689.34	0.1
0	PEDIASTRUM BORYANUM	59341.04	0.0	29670.52	29670.52	0.4
0	OEDOGONIALES					
0	OEDOGONIUM (LPIL)	23239.48	0.0	11619.74	11619.74	0.1
0	CHLOROPHYTA (LPIL)	63492.04	0.0	31746.02	31746.02	0.4
0	EUGLENOPHYTA	22801.02	0.0	11400.51	11400.51	0.1
0	EUGLENALES					
0	EUGLENA (LPIL)	14542.95	0.0	7271.48	7271.48	0.1
0	TRACHELOMONAS (LPIL)	8258.06	0.0	4129.03	4129.03	0.1
0	XANTHOPHYTA	140164.56	341247.69	240706.12	100541.56	3.0
0	HETEROCOCCALES					
0	HETEROCOCCALES (LPIL)	140164.56	341247.69	240706.12	100541.56	3.0
0	CHRYSOPHYTA	76697.62	0.0	38348.81	38348.81	0.5
0	CHRYSOCHONDALES					
0	CHRYSOCCUS (LPIL)	4202.11	0.0	2101.05	2101.05	0.0
0	DINOBRYON DIVERGENS	38074.76	0.0	19037.38	19037.38	0.2
0	DINOBRYON SOCIALE	15054.51	0.0	7527.25	7527.25	0.1
0	CHRYSOCHROMULINA PARVA	15492.99	0.0	7746.50	7746.50	0.1
0	MONOSIGALES					
0	STELIONOMAS DICHOTOMA	3873.25	0.0	1936.62	1936.62	0.0
0	BACILLARIOPHYTA-CENTRIC	1050078.00	594133.00	822105.50	227912.50	10.2
0	EUPODISCALES					
0	HELOSIRA VARIANS	94748.37	0.0	47374.19	47374.19	0.6
0	HELOSIRA (LPIL)	392568.31	180912.25	287740.77	104803.00	3.6
0	CYCIOTELLA (LPIL)	0.0	57670.12	28335.06	28335.06	0.4
0	STELIONODISCUS ASTRAEA	56500.97	55632.26	56066.61	434.36	0.7
0	STELIONODISCUS (LPIL)	49775.54	37709.35	43742.45	6033.09	0.5
0	EUPODISCALES (LPIL)	108196.62	99535.12	103965.87	4430.75	1.3
0	RHIZOSOLENALES					
0	RHIZOSOLENA ERIENSIS	34089.37	160673.75	254381.56	93707.81	3.1
0	BACILLARIOPHYTA-PENNATE	2627388.00	3098307.00	2863097.00	235709.50	35.4
0	FRAGILARIALES					
0	ASTERIONELLA FORMOSA	1456870.00	1191135.00	1324002.00	132867.50	16.4
0	DIATOMA TENUE	6361.07	54285.87	59073.47	4767.60	0.7
0	DIATOMA (LPIL)	23069.04	0.0	11534.02	11534.02	0.1
0	FRAGILARIA CROTCHENSIS	202752.81	109585.31	16169.06	46533.75	1.9
0	FRAGILARIA PIPATA	34602.06	0.0	17301.03	17301.03	0.2
0	FRAGILARIA (LPIL)	79007.55	1151340.00	615173.75	536166.19	7.0
0	SHIETA ULNA	0.0	17733.05	8666.52	8666.52	0.1
0	SINECRA (LPIL)	123807.75	181204.31	152546.00	13738.28	1.9
0	TABELLARIA FLOCCULOSA	111235.25	100782.81	106009.00	5026.22	1.3
0	FRAGILARIALES (LPIL)	3844.67	19223.37	11534.02	7689.35	0.1
0	ACHIRANTHALES					
0	COCONEIS (LPIL)	22545.23	0.0	11272.61	11272.61	0.1
0	NAVICULALES					
0	NAVICULA (LPIL)	15774.87	11619.74	13697.30	2077.57	0.2
0	BACILLARIALES					
0	HITZSCHIA ACICULARIS	45603.47	0.0	22601.73	22601.73	0.3
0	HITZSCHIA HOLSATICA	82876.50	0.0	41438.25	41438.25	0.5
0	HITZSCHIA (LPIL)	175189.07	171257.06	173223.44	1966.41	2.1
0	SURIPELLALES					
0	CYTOPLLEURA SOLEA	17246.92	0.0	8623.44	8623.44	0.1
0	SURIPELLA OVATA	12014.25	13264.05	15639.15	2375.10	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	151069.50	77299.62	114193.06	36896.44	1.4
0	PYRRHOPHYTA-DINOPHYCEAE	4238.65	1619.74	7929.19	3690.54	0.1
0	PERIDINIALES					
0	PERIDINIUM INCONSRICUM	4238.65	11619.74	7929.19	3690.54	0.1
0	CRYPTOPHYTA	121876.00	201561.62	161718.01	39842.81	2.0
0	CRYPTOMONDALES					
0	CRYPTOMONAS MARSSONII	0.0	11181.26	5590.63	5590.63	0.1

POOR  
ORIGINAL

827 193





Table 2.3

Bailey Study Area Site Summary of Phytoplankton Densities  
(No. of Cells per Liter), April (Page 2 of 3)

		Lake Michigan Stations		X	S.E.	REL ABX
LS	TAXA	Nearfield 1-6 & 10	Farfield 7-9			
0	CRYPTOMONAS (LPIL)	4421.35	0.0	2210.67	2210.67	0.0
0	RHODOMONAS MINUTA	117454.69	180768.62	149111.62	31656.97	1.8
0	RHODOMONAS (LPIL)	0.0	9611.69	4805.84	4805.84	0.1
TOTAL		9131527.00	7059746.00	8095636.00	1035090.50	100.0
DIVERSITY (H PRIME)		2.68	2.68	2.63	0.00	
DIVERSITY (J PRIME)		0.67	0.71	0.69	0.02	
NUMBER OF TAXA		52	31	58		
ABOVE COMPUTED USING SAMPLE IDS						
	11	12	21	22		
	31	32	41	42		
	51	52	61	62		
	101	102	71	72		
	81	82	91	92		

		Interdunal Ponds			X	S.E.	REL ABX
LS	TAXA	B	C	Cowles Bog			
0	UNIDENTIFIED ALGAE	357859.12	40136.06	106222.00	168072.37	96792.00	2.0
0	UNIDENTIFIED ALGAE (LPIL)	357859.12	40136.06	106222.00	168072.37	96792.00	2.0
0	CYANOPHYTA	6780554.00	4683056.00	332149.37	3931919.00	1899002.00	46.4
0	CHROCOCCACEAE						
0	CHROCOCCUS (LPIL)	78926.56	0.0	0.0	26308.85	26308.85	0.3
0	CHROCOCCACEAE (LPIL)	0.0	1123809.00	0.0	374603.00	374603.00	4.4
0	OSCILLATORIACEAE						
0	OSCILLATORIA (LPIL)	6259451.00	2716389.00	332149.37	3102663.00	1721930.00	36.6
0	LYNGBYA (LPIL)	0.0	842857.00	0.0	280952.31	280952.31	3.3
0	NOSTOCACEAE						
0	ANABAENA	442176.50	0.0	0.0	147392.12	147392.12	1.7
0	CHLOROPHYTA	1926788.00	1242967.00	716258.50	1295337.00	350429.44	15.3
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	130023.25	355169.50	0.0	161730.87	103747.06	1.9
0	VOLVOCALES (LPIL)	34013.59	20068.03	0.0	18027.21	9871.76	0.2
0	CHLOROCOCCALES						
0	ANKISTRODESCHUS FALCATUS	0.0	157853.12	0.0	52617.71	52617.71	0.6
0	ANKISTRODESCHUS (LPIL)	14387.66	12825.57	39792.16	22335.13	8740.15	0.3
0	CHLOPILLA (LPIL)	17006.80	0.0	0.0	5688.93	5688.93	0.1
0	OCCYSTIS (LPIL)	74980.19	39134.42	0.0	30035.20	21651.85	0.4
0	SCENEDESMUS ACUMINATUS	97013.67	0.0	0.0	32337.96	32337.96	0.4
0	SCENEDESMUS QUADRICAUDA	1063863.00	0.0	0.0	354621.00	354621.00	4.2
0	SCENEDESMUS INTERMEDIUS	136054.37	0.0	0.0	45351.46	45351.46	0.5
0	SCENEDESMUS ECORNIS	39463.28	0.0	0.0	13154.43	13154.43	0.2
0	PEDIASTRUM	230202.56	0.0	0.0	76734.19	76734.19	0.9
0	TETRAEDRON	0.0	19731.64	0.0	6577.21	6577.21	0.1
0	TETRAEDRON (LPIL)	0.0	38905.56	0.0	12935.19	12935.19	0.2
0	CHLOROCOCCALES (LPIL)	0.0	521768.75	0.0	173922.67	173922.67	2.1
0	ULOTRICHALES						
0	GEMMELLA (LPIL)	0.0	0.0	676466.50	225488.81	225488.81	2.7
0	OEDOGONIALES						
0	OEDOGONUM (LPIL)	0.0	77611.12	0.0	25870.37	25870.37	0.3
0	GNATHATALES						
0	HOUSEOTIA (LPIL)	89778.94	0.0	0.0	29926.31	29926.31	0.4
0	EUGLENOPHYTA	0.0	20068.03	0.0	6689.34	6689.34	0.1
0	EUGLENALES						
0	PHACUS (LPIL)	0.0	20068.03	0.0	6689.34	6689.34	0.1
0	CHRYSOPHYTA	412156.44	561544.69	0.0	324567.00	167915.69	3.8
0	CHRYSOMONADALES						
0	SYMPHYLLA	36738.44	0.0	0.0	12246.14	12246.14	0.1
0	DINOBRYON STIRULARIA	85033.94	0.0	0.0	28344.64	28344.64	0.3
0	DINOBRYON DIVERGENS	115101.25	181037.81	0.0	98713.00	52899.60	1.2

POOR  
ORIGINAL

827 194



POOR  
ORIGINAL

Table 2.3

Bailly Study Area Site Summary of Phytoplankton Densities  
(No. of Cells per Liter), April 1979 (Page 3 of 3)

LS	TAXA	Interdunal Ponds			X	S.E.	REL ABD
		B	C	Cowles Bog			
0	CHRYSOCHROMULINA PARVA	175282.69	39799.67	0.0	71694.06	53053.27	0.8
0	CYCLONEKIS (LPIL)	0.0	269337.00	0.0	89779.00	89779.00	1.1
0	CHRYSONOMADALES (LPIL)	0.0	20068.03	0.0	6689.34	6689.34	0.1
0	CHRYSOPIHA (LPIL)	0.0	51302.25	0.0	17100.75	17100.75	0.2
0	BACILLARIOPHYTA-CENTRIC	17429.61	0.0	0.0	5809.87	5809.87	0.1
0	EUPODISCALES						
0	EUPODISCALES (LPIL)	17429.61	0.0	0.0	5809.87	5809.87	0.1
0	BACILLARIOPHYTA-PEIRATE	928244.19	4306979.00	2643611.00	2626278.00	975395.19	31.0
0	FRAGILARIALES						
0	FRAGILARIA CROTONEHENSIS	0.0	97013.87	0.0	32337.96	32337.96	0.4
0	FRAGILARIA (LPIL)	30612.23	50170.06	278545.06	119775.75	79555.12	1.4
0	SYNEDRA (LPIL)	71428.50	3074097.00	102834.75	1083053.00	927715.00	10.8
0	TABELLARIA FLOCCULOSA	56892.87	33905.56	0.0	31899.48	10782.63	0.4
0	FRAGILARIALES (LPIL)	17006.00	20068.03	0.0	12358.27	6242.01	0.1
0	EUNOTIALES						
0	EUNOTIA (LPIL)	0.0	0.0	112799.25	37599.75	37599.75	0.4
0	ACHNANTHALES						
0	ACHNANTHES (LPIL)	335320.37	850905.94	709681.44	631969.25	157025.06	7.5
0	COCONEIS (LPIL)	0.0	0.0	39792.16	13264.05	13264.05	0.2
0	NAVICULALES						
0	NAVICULA (LPIL)	0.0	58208.34	119376.44	59194.93	34464.54	0.7
0	GOMPHOCHEMA (LPIL)	0.0	0.0	629386.56	276462.19	276462.19	3.3
0	BACILLARIALES						
0	HITZCHIA (LPIL)	37161.25	26144.43	66429.87	43245.18	12020.68	0.5
0	BACILLARIOPHYTA-PEIRATE (LPIL)	379820.25	90765.50	384707.12	285118.25	97186.37	3.6
0	PHYRHOPIHA-DINOPHYCEAE	0.0	26144.43	0.0	8714.61	8714.61	0.1
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	26144.43	0.0	8714.61	8714.61	0.1
0	CRYPTOPHYTA	80641.31	192637.62	332	102164.82	47262.87	1.2
0	CRYPTONOMADALES						
0	CRYPTONOMAS MAPSSONII	0.0	49082.44	33214.94	27432.46	14400.86	0.3
0	CRYPTONOMAS REFLEXA	0.0	38805.56	0.0	12935.19	12935.19	0.2
0	CRYPTONOMAS OVATA	0.0	65278.84	0.0	21759.61	21759.61	0.3
0	CRYPTONOMAS (LPIL)	46204.92	39470.81	0.0	28569.58	14411.00	0.3
0	CHROONOMAS (LPIL)	34436.41	0.0	0.0	11478.80	11478.80	0.1
TOTAL		10503666.0	11073520.0	3831451.00	8469548.00	2324876.00	100.0
DIVERSITY (H PRIME)		2.12	2.11	2.69	2.31	0.19	
DIVERSITY (J PRIME)		0.57	0.58	0.81	0.66	0.08	
NUMBER OF TAXA		29	33	14	50		
ABOVE COMPUTED USING SAMPLE IDS							
	171	172	181	182			
	191	192	201	202			
	211	212					

the diatoms dominated biovolume estimates. There were 50 taxa during April 1979 in the interdunal ponds. Ponds B and C exhibited higher densities than the Cowles Bog area. The diversity and evenness indexes for density were moderate (2.31 and 0.66, respectively), and were similar to the biovolume indexes (2.30 and 0.65, respectively).

The nearfield stations (1 through 3) have slightly higher densities and bio-volumes than the other areas. Densities differences among sampling areas (Table 2.5) were smaller than those observed during November 1978 (TI, 1979). Density and biovolume were higher in the discharge area than in the other areas. Previous results had indicated that the high discharge values are probably a result of natural variability rather than influence by thermal stimulation.

827 195



Table 2.4

Bailly Study Area Site Summary of Phytoplankton Biovolume  
(Micro liters per liter), April 1979 (Page 1 of 3)

Lake Michigan Stations

1-6 & 10  
Nearfield Farfield

7-9

11-12

13-14

15-16

17-18

19-20

21-22

23-24

25-26

27-28

29-30

31-32

33-34

35-36

37-38

39-40

41-42

43-44

45-46

47-48

49-50

51-52

53-54

55-56

57-58

59-60

61-62

63-64

65-66

67-68

69-70

71-72

73-74

75-76

77-78

79-80

81-82

83-84

85-86

87-88

89-90

91-92

93-94

95-96

97-98

99-100

101-102

103-104

105-106

107-108

109-110

111-112

113-114

115-116

117-118

119-120

121-122

123-124

125-126

127-128

129-130

131-132

133-134

135-136

137-138

139-140

141-142

143-144

145-146

147-148

149-150

151-152

153-154

155-156

157-158

159-160

161-162

163-164

165-166

167-168

169-170

171-172

173-174

175-176

177-178

179-180

181-182

183-184

185-186

187-188

189-190

191-192

193-194

195-196

197-198

199-200

201-202

203-204

205-206

207-208

209-210

211-212

213-214

215-216

217-218

219-220

221-222

223-224

225-226

227-228

229-230

231-232

233-234

235-236

237-238

239-240

241-242

243-244

245-246

247-248

249-250

251-252

253-254

255-256

257-258

259-260

261-262

263-264

265-266

267-268

269-270

271-272

273-274

275-276

277-278

279-280

281-282

283-284

285-286

287-288

289-290

291-292

293-294

295-296

297-298

299-300

301-302

303-304

305-306

307-308

309-310

311-312

313-314

315-316

317-318

319-320

321-322

323-324

325-326

327-328

329-330

331-332

333-334

335-336

337-338

339-340

341-342

343-344

345-346

347-348

349-350

351-352

353-354

355-356

357-358

359-360

361-362

363-364

365-366

367-368

369-370

371-372

373-374

375-376

377-378

379-380

381-382

383-384

385-386

387-388

389-390

391-392

393-394

395-396

397-398

399-400

401-402

403-404

405-406

407-408

409-410

411-412

413-414

415-416

417-418

419-420

421-422

423-424

425-426

427-428

429-430

431-432

433-434

435-436

437-438

439-440

441-442

443-444

445-446

447-448

449-450

451-452

453-454

455-456

457-458

459-460

461-462

463-464

465-466

467-468

469-470

471-472

473-474

475-476

477-478

479-480

481-482

483-484

485-486

487-488

489-490

491-492

493-494

495-496

497-498

499-500

501-502

503-504

505-506

507-508

509-510

511-512

513-514

515-516

517-518

519-520

521-522

523-524

525-526

527-528

529-530

531-532

533-534

535-536

537-538

539-540

541-542

543-544

545-546

547-548

549-550

551-552

553-554

555-556

557-558

559-560

561-562

563-564

565-566

567-568

569-570

571-572

573-574

575-576

577-578

579-580

581-582

583-584

585-586

587-588

589-590

591-592

593-594

595-596

597-598

599-600

601-602

603-604

605-606

607-608

609-610

611-612

613-614

615-616

617-618

619

827 197

POOR ORIGINAL

[illegible]

LAKE MICHIGAN STATIONS		FAIRFELD		1-6 & 10		LAKE	
0	CALPHONAS (LPLI)	0.02	0.0	0.01	0.01	0.01	0.1
0	PHODONAS MFLIA	0.03	0.07	0.05	0.05	0.05	0.6
0	PHODONAS (LPLI)	0.0	0.00	0.00	0.00	0.00	0.0
TOTAL							
	OLIGON (H PLINE)	0.84	0.70	0.77	0.97	1.12	100.0
	OLIGON (F PLINE)	0.72	0.72	0.72	0.00		
NUMBER OF TAKA							
ABOVE COMPUTED USING SAMPLE 105							
11		21	22				
11		10	40				
51		50	50				
101		100	70				
61		20	20				

Table 2.4  
Bailey Study Area Site Summary of Phytoplankton Biovolume  
(Microliters per Liter), April 1979 (Page 2 of 3)





Table 2.4

Bailly Study Area Site Summary of Phytoplankton Biovolume  
(Microliters per Liter), April 1979 (Page 3 of 3)

LS	TAXA	Interdunal Ponds			X	S.E.	REL AREA
		B	C	Cowles Bog			
0	CHRYSOPHYTES PARVA	0.00	0.00	0.0	0.00	0.00	0.0
0	CYCLONEIS (LPIL)	0.0	0.19	0.0	0.06	0.06	1.0
0	CHRYSOPHYTES (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	CHRYSOPHYTES (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	BACILLARIOPHYTES-CENTRIC	0.02	0.0	0.0	0.01	0.01	0.1
0	EUPHOSIALES						
0	EUPHOSIALES (LPIL)	0.02	0.0	0.0	0.01	0.01	0.1
0	BACILLARIOPHYTES-PENNATE	0.65	8.72	4.77	4.71	2.33	76.6
0	FRAGILARIALES						
0	FRAGILARIA CROTCHENSIS	0.0	0.07	0.0	0.02	0.02	0.4
0	FRAGILARIA (LPIL)	0.01	0.03	0.21	0.00	0.06	1.4
0	SYNEDRA (LPIL)	0.03	7.77	0.88	2.90	2.45	47.1
0	FRAGILARIA FLOCCULOSA	0.21	0.29	0.0	0.17	0.09	2.7
0	FRAGILARIALES (LPIL)	0.01	0.01	0.0	0.00	0.00	0.1
0	EUTHOIALES						
0	EUTHOIA (LPIL)	0.0	0.0	0.35	0.12	0.12	1.9
0	ACHILANTHALES						
0	ACHILANTHALES (LPIL)	0.04	0.17	0.12	0.11	0.04	1.8
0	ODONTEIS (LPIL)	0.0	0.0	0.10	0.03	0.03	0.5
0	NAVICULALES						
0	NAVICULA (LPIL)	0.0	0.29	0.05	0.11	0.09	1.8
0	GOMPHONEMA (LPIL)	0.0	0.0	2.16	0.72	0.72	11.7
0	BACILLARIALES						
0	NITZSCHIA (LPIL)	0.02	0.02	0.01	0.02	0.00	0.3
0	BACILLARIOPHYTES-PENNATE (LPIL)	0.33	0.07	0.88	0.43	0.24	6.9
0	PHYCOPHYTES-DINOPHYCEAE	0.0	0.02	0.0	0.07	0.07	1.2
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	0.02	0.0	0.07	0.07	1.2
0	CRYPTOPHYTES	0.10	1.59	0.04	0.58	0.51	9.3
0	CRYPTOPHYTES						
0	CRYPTOPHYTES MARSSONII	0.0	0.09	0.04	0.04	0.03	0.7
0	CRYPTOPHYTES REFLEXA	0.0	0.23	0.0	0.08	0.08	1.3
0	CRYPTOPHYTES OVATA	0.0	1.11	0.0	0.37	0.37	6.0
0	CRYPTOPHYTES (LPIL)	0.08	0.15	0.0	0.08	0.04	1.3
0	CHROMONAS (LPIL)	0.02	0.0	0.0	0.01	0.01	0.1
TOTAL		2.12	11.42	4.92	6.15	2.75	100.0
DIVERSITY (H PRIME)		2.87	1.89	2.15	2.30	0.29	
DIVERSITY (J PRIME)		0.77	0.55	0.65	0.65	0.07	
NUMBER OF TAXA		29	33	14	50		
ABOVE COMPUTED USING SAMPLE 10							
	171	172	181	182			
	191	192	201	202			
	211	212					

POOR  
ORIGINAL

Table 2.5

Phytoplankton Density and Biovolume by Sampling Area in  
Bailly Study Area, April 1979

Transect	Station	Density (No./ml)	Biovolume ( $\mu$ l/l)
Nearfield (west of discharge)	1	7,689	5.14
	2	6,310	12.04
	3	13,055	7.66
Nearfield (east of discharge)	4	7,594	10.95
	5	6,672	7.49
	6	4,252	5.16
Farfield	7	4,632	6.84
	8	7,539	9.08
	9	9,006	4.42
Discharge	10	12,202	10.89

827 198



Within the interdunal ponds, density, biovolume, diversity, and number of taxa were quite variable in April 1979, as detailed in Table 2.6

Table 2.6  
Phytoplankton Density and Biovolume at Interdunal Pond  
Stations in Bailly Study Area, April 1979

Station	No. of Taxa	Density No./ml	Diversity		Biovolume $\mu$ l/l	Diversity	
			H'	J'		H'	J'
17	18	12,543	1.82	0.48	2.45	2.48	0.76
18	23	8,464	2.42	0.65	1.79	2.89	0.78
Pond B (17-18)	29	10,503	2.12	0.57	2.12	2.12	0.77
19	24	15,265	2.63	0.71	19.29	1.69	0.46
20	17	6,881	1.58	0.46	3.55	2.09	0.60
Pond C (19-20)	33	11,073	2.11	0.58	11.42	1.89	0.53
Cowles Bog (21)	14	3,831	2.69	0.81	4.92	2.15	0.65
All pond	50	8,469	2.31	0.66	6.15	2.30	0.65

Density (3831 cells per milliliter) and number of taxa (14) were lowest in Cowles Bog; however, biovolume in Cowles Bog was not lowest because of the presence of Gomphonema sp., a large diatom, which comprised 44 percent of the biovolume. Station 19 (pond C) represented the highest density (15,265 cells per milliliter) and biovolume (19.29 microliters per liter). Mean density from all ponds represented a 2.5-fold increase, and mean biovolume a 6-fold increase over November 1978. The blue-greens and diatoms were numerically dominant, and the diatoms dominated biovolume estimates. These results are typical of spring growth in small water bodies such as the interdunal ponds. Diversity and evenness values exhibited no change from November 1978.

Data from both the lake and the ponds were examined for taxa considered either unusual or undesirable. Although large numbers of Oscillatoria spp. (a blue-green alga) were found in the ponds, densities were not high enough to create an odor problem and no unusual taxa were found. None of the phytoplankton data indicated any effects of plant activities.

827 199





2.2.2.2 Productivity. Productivity levels (milligrams carbon fixed per liter per 4-hour incubation period) at the 15 phytoplankton sampling stations are presented in Table 2.7. Lake Michigan values ranged from 0.738 mg C/l/4 hr to 11.795 mg C/l/4 hr (negative values excluded), with a mean of 3.288 mg C/l/4 hr. Pond mean results were lower, ranging from -0.065 (pond C) to 0.813 (pond B) to 5.159 mg C/l/4 hr (Cowles Bog). The overall pond mean value was 1.664 mg C/l/4 hr, which was approximately half that of the lake. A comparison of mean lake values of April 1978 and April 1979 showed 1979 to be 9-fold higher than 1978. The differences probably can be attributed to the variability of the productivity studies. Pond means fluctuated only slightly from April 1978 to April 1979. The results in 1979 indicated no adverse effects due to plant construction.

Table 2.7  
Phytoplankton Productivity, Bailly Study Area, April 1979

Milligrams Carbon Fixed/Liter/4-Hour Incubation			
Station	Replicate a		Replicate b
1	11.795		4.852
2	4.044		5.647
3	0.738		2.767
4	6.283		2.689
5	2.718		2.750
6	4.822		1.473
7	*		*
8	3.537		-0.920**
9	1.634		1.800
10	1.584		0.974
$\bar{x}$ , Lake Michigan		3.288	
17	0.138		0.194
18	0.222		2.699
$\bar{x}$ , Pond B (17-18)		0.813	
19	-0.443**		0.025
20	-0.193**		0.351
$\bar{x}$ , Pond C (19-20)		-0.065	
Cowles Bog (21)	6.773		3.544
$\bar{x}$ , All ponds (17-21)		1.664	

\* Sample bottles broken during incubation.

\*\* Dark bottle greater than light bottle.

827 200

2.2.2.3 Chlorophyll a. Results of Lake Michigan chlorophyll a for April will be included in the summer 1979 quarterly report.



## 2.2.3 PERIPHYTON RESULTS AND DISCUSSION

2.2.3.1 Density and Biovolume. Lake Michigan periphyton densities during April 1979 averaged  $1.239 \times 10^6$  cells per square centimeter (Table 2.8 and Appendix C); biovolume averaged 0.04 microliters per square centimeter (Table 2.9 and Appendix D). Average densities were lower in the ponds ( $5.743 \times 10^5$  cells per square centimeter) than in the lake; however, biovolume was 0.19 microliter per square centimeter because of the biovolume contribution of the pennate diatoms.

Lyngbya spp., a blue-green alga, numerically dominated both the Lake Michigan and pond periphyton, comprising 86 percent and 58 percent, respectively. Lake Michigan biovolume dominance was shared by the blue-greens (52 percent) and the diatoms (48 percent), and Lyngbya spp. made up 23 percent of the total. The mean biovolume in the ponds showed a slightly different dominance pattern consisting of diatoms (75 percent) and green algae (23 percent). Lyngbya spp. did not contribute significantly to the total pond biovolume.

Dominant taxa in Lake Michigan (more than 4 percent of either the density or biovolume) included Oscillatoria sp., Lyngbya sp., Schizothrix sp., Diatoma tenue, Fragilaria crotonensis, F. vaucheriae, and Gomphonema sp. Dominant pond taxa (using the same criteria) included Lyngbya sp., Oocystis borgei, Oedogonium sp., Mougeotia sp., Fragilaria sp., Synedra ulna, Tabellaria flocculosa, Achnanthes minutissima, and Gomphonema sp. The dominants represented blue-green and green algae as well as diatoms. Lyngbya sp. was the numerically dominant form in both the lake and ponds, while the biovolume dominants were Lyngbya sp. (lake) and Gomphonema sp. (ponds).

Periphyton densities showed station 25 to be lowest and station 12 to be highest; it is not known why stations 1 and 25 were low. Pond B and Cowles Bog had similar periphyton densities; Pond C density was high primarily because Lyngbya sp. was present in large numbers. Lake periphyton densities were similar from April to April. Pond densities exhibited a 2.5-fold decrease from 1978 to 1979.

827 201



Table 2.8  
Periphyton Densities (No./cm<sup>2</sup>) at Bailly Study Area Stations,  
April 1979 (Page 1 of 2)

LS	TAXA	Lake Michigan Stations											
		1	10	11	12	X	S.E.	ABX	SEI				
0	CYANOPHYTA	64260.12	119585.75	2724797.00	1061972.00	1201802.00	69727.44	46.7					
0	OSCILLATORIACEAE	49140.09	0.0	239906.62	60712.75	69951.87	44266.04	5.6					
0	OSILLATORIA (LPIL)	0.0											
0	LYNGBYA (LPIL)	15120.04	119585.75	2215332.00	2957751.00	1064936.00	632469.31	85.9					
0	SCHIZOTHRIX (LPIL)	16895.61	0.0	269558.00	54641.47	64839.89	52261.91	5.2					
0	CYANOPHYTA (LPIL)	0.0	0.0	0.0	8868.15	1773.63	1773.63	0.1					
0	CHLOROPHYTA	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	CHLOROCOCCEAE	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	ANKISTRODESMIUS (LPIL)	0.0	2989.64	0.0	0.0	597.93	597.93	0.0					
0	BACILLARIOPHYTA-CENTRIC	1690.00	0.0	0.0	0.0	378.00	378.00	0.0					
0	EUPHOTISCALES	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	STEPHANODISCUS (LPIL)	1690.00	0.0	0.0	0.0	378.00	378.00	0.0					
0	BACILLARIOPHYTA-PENIAE	9024.39	32866.06	97040.81	11943.58	17037.48	15873.88	3.0					
0	FRAGILARIACEAE	34242.97	0.0	13427.90	1847.53	6187.76	3201.47	0.5					
0	FRAGILARIA	1118.17	0.0	0.0	0.0	0.0	0.0	0.0					
0	DIAZOMA TENUIS	14495.27	0.0	0.0	0.0	0.0	0.0	0.0					
0	FRAGILARIA CROTONEUSIS	16895.61	0.0	0.0	0.0	0.0	0.0	0.0					
0	FRAGILARIA VAUCHERIAE	1690.00	0.0	0.0	0.0	0.0	0.0	0.0					
0	ACHANANTHES	0.0	32866.06	0.0	0.0	0.0	0.0	0.0					
0	ACHANANTHES MINUTISSIMA	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	ACHANANTHES (LPIL)	1118.13	0.0	0.0	0.0	0.0	0.0	0.0					
0	NAVICULARES	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	NAVICULA (LPIL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0					
0	GOMPHONEMA (LPIL)	3008.13	0.0	0.0	0.0	0.0	0.0	0.0					
0	BACILLARIOPHYTA-PENIAE (LPIL)	1690.00	0.0	0.0	0.0	0.0	0.0	0.0					
TOTAL		75174.50	155461.50	2821836.00	3093915.00	1239515.00	703047.62	100.0					
DIVERSITY (H PRIME)		51188.18	1.49	0.44	0.58	0.84	0.21						
DIVERSITY (J PRIME)		0.77	0.28	0.19	0.25	0.48	0.15						
NUMBER OF TAXA		8	8	8	7	14							

ABOVE COMPUTED USING SAMPLE IDS  
101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

POOR  
ORIGINAL



Table 2.8  
Periphyton Densities (No./cm<sup>2</sup>) at Bailly Study Area Stations,  
April 1979 (Page 2 of 2)

LS	TAXA	Interdunal Ponds			X	S.E.	REL ABX
		B	C	Cowles Bog			
		17	19	21			
0	CYANOPHYTA	185428.06	864089.87	23664.06	357700.62	257425.44	62.3
0	CHROCOCCACEAE						
0	CHROCOCCUS (LPIL)	0.0	4748.89	0.0	1582.96	1582.96	0.3
0	MICROCYSTIS (LPIL)	0.0	47488.91	4176.01	17221.64	15181.57	3.0
0	OSCILLATOPIACEAE						
0	LYNGBYA (LPIL)	185428.06	811772.12	0.0	332400.06	245590.44	57.9
0	NOSTOCACEAE						
0	ANISAFNA (LPIL)	0.0	0.0	19488.05	6496.02	6496.02	1.1
0	CHLOROPHYTA	21317.37	51458.75	67106.12	46627.41	13437.00	8.1
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.0	783.00	0.0	261.00	261.00	0.0
0	CHLOPOCCOCCALES						
0	OCCYSTIS CORREI	0.0	18995.56	0.0	6331.85	6331.85	1.1
0	SCENEDESMUS QUADRICAUDA	4432.04	0.0	0.0	1477.34	1477.34	0.3
0	SCENEDESMUS ECCRHYS	0.0	1565.00	0.0	522.00	522.00	0.1
0	SCENEDESMUS SPINOSUS	0.0	1374.45	0.0	791.48	791.48	0.1
0	CHASTOPHYCELES						
0	STIGEOCLONUM (LPIL)	6448.25	0.0	12180.03	6299.43	3518.10	1.1
0	PROTODERMA (LPIL)	0.0	0.0	34404.12	16134.71	16134.71	3.2
0	OEDOGONIALES						
0	OEDOGONIUM (LPIL)	1289.65	6812.11	0.0	2700.59	2089.17	0.5
0	ZYONCHATALES						
0	MOUSEOTIA (LPIL)	5078.68	9055.40	0.0	4711.36	2620.51	1.8
0	CORMARIUM (LPIL)	0.0	4748.89	0.0	1582.96	1582.96	0.3
0	CHLOROPHYTA (LPIL)	4068.75	7123.34	522.00	3904.70	1497.41	0.7
0	EUGLENOPHYTA	463.18	0.0	0.0	154.39	154.39	0.0
0	EUGLENALES						
0	EUGLENA (LPIL)	463.18	0.0	0.0	154.39	154.39	0.0
0	CHRYSOPHYTA	21578.93	1566.00	0.0	7714.99	6946.70	1.3
0	CHRYSOCHONDALES						
0	DIHODRYON DIVERGENS	0.0	783.00	0.0	261.00	261.00	0.0
0	ERIPYXIS (LPIL)	21578.93	0.0	0.0	7192.98	7192.98	1.3
0	PSEUDOCHEPHYRION (LPIL)	0.0	783.00	0.0	261.00	261.00	0.0
0	BACILLARIOPHYTA-PENIATE	120662.00	198222.25	167700.06	162112.06	22548.35	78.7
0	FRAGILARIALES						
0	FRAGILARIA VAUCHERIAE	0.0	0.0	3572.81	1190.94	1190.94	0.2
0	FRAGILARIA (LPIL)	0.0	0.0	41412.11	13804.04	13804.04	2.4
0	MERIDION CIRCULARE	0.0	0.0	522.00	174.00	174.00	0.0
0	SINEDRA ULNA	0.0	0.0	6478.61	2159.54	2159.54	0.4
0	SINEDRA (LPIL)	3224.12	0.0	6206.01	3143.38	1791.93	0.5
0	TABELLARIA FLOCCULOSA	6110.39	33948.92	0.0	13353.10	10447.68	2.3
0	EUNOTIALES						
0	EUNOTIA (LPIL)	644.83	0.0	0.0	214.94	214.94	0.0
0	ACHNANTHALES						
0	ACHNANTHES MINUTISSIMA	105142.75	132231.12	522.00	79298.62	40157.03	13.8
0	ACHNANTHES (LPIL)	0.0	9497.78	1044.00	3513.93	3007.07	0.6
0	NAVICULALES						
0	ANOMOEONEIS VITREA	644.83	0.0	522.00	388.94	197.68	0.1
0	NAVICULA (LPIL)	0.0	0.0	2436.01	812.00	812.00	0.1
0	GOMPHOREMA ACUMINATUM	1289.65	0.0	0.0	429.88	429.88	0.1
0	GOMPHOREMA (LPIL)	1289.65	0.0	74170.56	25153.40	24511.41	4.4
0	BACILLARIALES						
0	UNIDENTIFIED: 11060114	0.0	21370.01	0.0	7123.34	7123.34	1.2
0	NITZSCHIA ACICULARIS	0.0	0.0	522.00	174.00	174.00	0.0
0	NITZSCHIA (LPIL)	0.0	0.0	32040.05	7346.68	7346.68	1.3
0	BACILLARIOPHYTA-PENIATE (LPIL)	2315.92	1174.50	8004.02	3831.48	2112.13	0.7
	TOTAL	349449.37	1115256.00	258222.19	574309.19	271752.44	100.0
	DIVERSITY (H' PRIME)	1.88	1.46	2.76	2.03	0.38	
	DIVERSITY (J' PRIME)	0.54	0.42	0.77	0.59	0.10	
	NUMBER OF TAXA	16	18	18	36		
	ABOVE COMPUTED USING SAMPLE IDS						
	171	172	191	192			
	211	212					

POOR  
ORIGINAL

A total of 14 taxa were identified in Lake Michigan samples and 36 in the pond samples. The ponds had higher diversity (H') and evenness (J') indexes than the lake because of their greater number of taxa and greater number of dominant taxa.



Table 2.9  
Periphyton Biovolume ( $\mu\text{l}/\text{cm}^2$ ) at Bailly Study Area Stations,  
April 1979 (Page 2 of 2)

LS	TAXA	B	C	Comies Bog	X	REL
15	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
16	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
17	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
18	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
19	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
20	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
21	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
22	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
23	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
24	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
25	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
26	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
27	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
28	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
29	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
30	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
31	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
32	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
33	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
34	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
35	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
36	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
37	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
38	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
39	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
40	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
41	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
42	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
43	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
44	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
45	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
46	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
47	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
48	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
49	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
50	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
51	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
52	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
53	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
54	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
55	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
56	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
57	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
58	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
59	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
60	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
61	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
62	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
63	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
64	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
65	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
66	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
67	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
68	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
69	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
70	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
71	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
72	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
73	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
74	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
75	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
76	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
77	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
78	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
79	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
80	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
81	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
82	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
83	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
84	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
85	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
86	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
87	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
88	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
89	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
90	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
91	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
92	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
93	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
94	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
95	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
96	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
97	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
98	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
99	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00
100	CHLOROPHYTES	0.00	0.00	0.00	0.00	0.00

Further analysis of the periphyton diatom data is reflected in Table 2.10. *Fragilaria vaucheria* comprised up to 69 percent of the diatom assemblage of the Lake Michigan stations but was uncommon in the ponds. As in April 1978, the relative abundance of *Fragilaria vaucheria* was low at the discharge area (station 10). This diatom is considered to be thermo-intolerant and an indicator to the limited extent of the thermal-plume influence. *Diatoma tenue* and *Comphonema* spp. were abundant in the lake. Centric diatoms (*Cyclotella* sp., *Melosira* sp., and *Stephanodiscus* sp.) were common at the Lake Michigan





stations, but few were observed in the ponds. Dominant pennate diatoms in the interdunal ponds were Achnanthes minutissima, Fragilaria crotonensis, and Gomphonema angustatum; they dominated the ponds during April 1978, appearing to be indicators of the ponds' calmer, more nutrient-rich waters.

Within the interdunal ponds (stations 17, 19, and 21) were different groups of taxa by pond. The dominant taxa (more than or as much as 4 percent mean relative abundance) were as follows:

Pond B	Pond C	Cowles Bog
<u>Achnanthes minutissima</u>	<u>Achnanthes minutissima</u>	<u>Fragilaria vaucheria</u>
<u>Fragilaria crotonensis</u>	<u>Fragilaria crotonensis</u>	<u>Gomphonema angustatum</u>
<u>Fragilaria vaucheria</u>	<u>Tabellaria flocculosa</u>	<u>Meridion circulare</u>
<u>Synedra ulna</u>		<u>Synedra fasciculata</u>
<u>Tabellaria flocculosa</u>		<u>Synedra ulna</u>

As indicated, no dominant taxa were shared by all three ponds. Pond B yielded 24 diatom taxa, pond C 32, and Cowles Bog 12. Pond C exhibited the most taxa; the few dominant forms indicated good distribution of diatom taxa. Density estimates from whole periphyton (Table 2.6) showed that pond C also had the highest density, while Cowles Bog had the lowest density and the fewest taxa. Density estimates support the diatom counts. Achnanthes minutissima dominated both density estimates and diatom counts for ponds B and C.

There was no indication in any of the lake or pond diatom data of adverse effects of plant construction activities.

2.2.3.2 Periphyton Chlorophyll a. Results of chlorophyll a analyses will be presented in the summer 1979 quarterly report.

## 2.3 ZOOPLANKTON

2.3.1 METHODOLOGY. Zooplankton samples were collected in Lake Michigan and the nearshore interdunal ponds. At each lake station (1 through 10), four samples were collected by bottom-to-surface vertical tows of an 80-micrometer mesh, 0.5-meter-diameter plankton net. Each sample comprised a

827 206



Table 2.10

Periphyton Diatom Proportional Counts (% Composition),  
Bailly Study Area, April 1979

	Station															
	1		10		11		12		17		19		21		25	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
Centrales																
<i>Cyclotella meneghiniana</i>				3.9											2.0	1.5
<i>C. sp.</i>	6.6														0.5	1.0
Eupodiscales																
<i>Melosira islandica</i>			11.8								1.0	1.7				
<i>M. sp.</i>			35.3			2.0		0.5								2.0
<i>Stephanodiscus astraea</i>																
<i>S. sp.</i>	1.9			23.1	17.2				1.0						2.0	
Pennales																
<i>Achnanthes linearis</i>				11.5			1.0								5.0	
<i>A. microcephala</i>																1.0
<i>A. minutissima</i>				7.7				2.0	10.8	54.0	46.8	22.9			10.0	28.6
<i>A. sp.</i>		8.7			2.5											
<i>Amphipleura pellucida</i>										0.5		0.5				1.0
<i>Amphora sp.</i>																
<i>Anomooneis vitrea</i>										4.0	1.0	1.0				
<i>Asterionella formosa</i>				3.9			0.5								6.0	
<i>Cymatopleura solea</i>						0.5										
<i>Cymbella amphicephala</i>						0.5										
<i>C. costula</i>																
<i>C. lunata</i>																
<i>C. microcephala</i>		8.7			0.6		2.0				1.0	1.0				11.8
<i>C. sp.</i>							1.5	1.0								3.0
<i>Diatoma tenue</i>				7.7		2.5	13.5	40.8		0.5					32.0	4.4
<i>D. vulgare</i>	5.2	4.3	5.9		1.2		1.0									
<i>Epithemia sp.</i>												0.3				
<i>Eunotia curvata</i>										1.0						
<i>E. flexuosa</i>				1.9	1.2						1.5	1.0		0.9		
<i>E. hexaglyphis</i>											1.0					
<i>E. maior</i>					1.2											
<i>E. pectinalis</i>									1.0							
<i>E. Van Heurckii</i>																
<i>E. sp.</i>									2.0		1.5	1.0				
<i>Fragilaria brevistriata</i>															1.0	
<i>F. capucina</i>																
<i>F. crotonensis</i>					5.5			1.0	32.5	13.0	32.8	41.8	2.0			
<i>F. pinnata</i>					9.8											
<i>F. vaucheria</i>	57.3	39.1	5.9		14.7	64.4	69.0	48.3	8.9				7.0	3.8	16.0	14.8
<i>F. sp.</i>					22.1	25.7	14.0			2.0					18.0	
<i>Frustulia rhomboides</i>																
<i>Gomphonema acuminatum</i>			5.9						3.0							
<i>G. angustatum</i>			11.8		6.8				2.0	2.5	3.5	1.0		0.7	0.9	1.5
<i>G. olivaceum</i>	28.0	17.4				2.5										0.5
<i>G. sp.</i>			11.8	13.5	2.5				0.5	0.5	0.5					10.8
<i>Meridion circulare</i>					4.9									9.1	6.0	
<i>Navicula costulata</i>		8.7														
<i>N. cryptocephala</i>				7.7											4.5	10.8
<i>N. oblonga</i>						0.6										
<i>N. pupula</i>												0.5				
<i>N. sp.</i>		13.0		11.5	1.2							1.0				1.0
<i>Neidium iridis</i>																
<i>Nitzschia acicularis</i>					1.2				0.5							
<i>N. amphibia</i>					1.2							2.0				
<i>N. dissipata</i>	1.0					2.0	1.0	2.0								
<i>N. palea</i>					2.5											
<i>N. sp.</i>			11.8	1.9	1.2					1.0		1.0	0.3		1.0	2.0
<i>Pinnularia biceps</i>										0.5						
<i>P. maior</i>																
<i>P. viridis</i>												0.5				
<i>P. sp.</i>											0.5					
<i>Rhizosolenia curvata</i>				5.8												4.4
<i>Stauroneis acuta</i>																
<i>S. phoenicenteron</i>										1.0						
<i>Synedra capitata</i>													36.8	31.9		
<i>S. fasciculata</i>																
<i>S. pulchella</i>																
<i>S. ulna</i>									14.8	6.0		2.6	6.8	9.4	1.0	
<i>S. sp.</i>									3.5	0.5		0.5				
<i>Tabellaria flocculosa</i>								2.0	19.7	10.0	9.5	6.0				1.0
<i>T. sp.</i>						0.6										
Unid. Pennales						1.2										

827 207

POOR  
ORIGINAL



composite of four such tows condensed into one 1-liter sample. Additional zooplankton samples were collected at the surface in the nearshore interdunal ponds (stations 17 through 21) with a 6-liter Van Dorn bottle. Each of the four replicate samples was concentrated to 1 liter. All samples were fixed to a final concentration of 4 percent buffered formalin.

Each sample, after being prepared with 5 milliliters of rose-bengal dye, was analyzed for quantity and composition of all mature and immature zooplankters (excluding nauplii, rotifers, and protozoans) with dimensions greater than the plankton net's 80-micrometer mesh aperture.

2.3.2 ZOOPLANKTON RESULTS AND DISCUSSION. Results of the April 1979 sampling (Table 2.11 and Appendix E) indicated mean Lake Michigan zooplankton densities of  $1211 \pm 239$  organisms per cubic meter and interdunal pond mean densities of  $20,090 \pm 14,958$  organisms per cubic meter. A total of 42 taxa were observed in Lake Michigan and 33 taxa in the interdunal ponds. No effects of plant construction were observed from either the lake or the interdunal pond stations.

Since the two areas are quite dissimilar, they will be discussed separately.

2.3.2.1 Lake Michigan. Densities in Lake Michigan in April 1979 were greater at the nearfield stations (1 through 6 and 10), where the average density was  $1450 \pm 250$  organisms per cubic meter, than at the farfield stations (7 through 9), where densities averaged  $972 \pm 180$  organisms per cubic meter (Table 2.12). Density estimates by station exhibited some variability, and there were no extreme highs or lows.

Cassie (1963) indicated that a between-replicate variability ( $SE/\bar{x}$ ) of 22 to 44 percent could be expected. All of the stations yielded variabilities that were less than or within this range. Stations 6 and 7 showed the highest replicate variability, but this did not appear to indicate any influence of the plant on population.

Table 2.13 indicates numbers of taxa, as well as diversity and evenness, in Lake Michigan during April 1979.

827 208

Numbers of taxa in 1979 were similar to those in April 1978; however, 1979 diversity and evenness were lower. This may have been a result of the large number of immature Calanoida forms, which comprised 60 percent of the total lake densities. There were no obvious changes in the composition of the zooplankton community in 1979.

Table 2.11  
Zooplankton Density (No./m<sup>3</sup>) in Lake Michigan and Interdunal Pond Stations in Bailly Study Area, April 1979 (Page 1 of 3)

LS	TAXA	Lake Michigan Stations		X	S.E.	REL ABZ
		Nearfield 1-6 & 10	Farfield 7-9			
0	CHITONIA (TOTAL)	0.69	0.0	0.35	0.35	0.0
0	HYDROZOA					
1	HYDRA (LPIL)	0.69	0.0	0.35	0.35	0.0
0	HEMATODA (TOTAL)	76.18	11.25	43.72	32.46	3.6
1	HEMATODA (LPIL)	76.18	11.25	43.72	32.46	3.6
0	OLIGOCHAETA (TOTAL)	31.40	3.20	17.30	14.10	1.4
0	NAIDIDAE					
1	CHAETOGASTER (LPIL)	0.26	0.0	0.13	0.13	0.0
1	NAIDIDAE (LPIL)	16.81	1.38	10.10	8.72	0.8
19	NAIDIDAE (LPIL)	12.33	1.82	7.07	5.25	0.6
0	ARACHNIDA (TOTAL)	0.26	0.0	0.13	0.13	0.0
0	PROSTIGMATA					
19	HYDRACARINA (LPIL)	0.26	0.0	0.13	0.13	0.0
0	CLADOCERA (TOTAL)	101.70	41.93	71.81	29.89	5.9
0	EGGSHINIDAE					
1	BOSMINIDAE (LPIL)	52.05	21.74	36.90	15.16	3.0
0	CHYDORIDAE					
1	ALONA QUADRANGULARIS	0.45	0.0	0.23	0.23	0.0
1	ALONA (LPIL)	0.21	0.0	0.11	0.11	0.0
0	ALONA (LPIL)	0.68	0.0	0.34	0.34	0.0
1	CHYDORUS (LPIL)	7.26	1.01	4.13	3.13	0.3
1	EURYCERCUS LAMELLATUS	2.41	1.78	2.10	0.31	0.2
6	CHYDORIDAE (LPIL)	0.19	0.0	0.09	0.09	0.0
0	DAPHNIDAE					
1	DAPHNIA GALEATA HENDOTAE	0.75	0.0	0.37	0.37	0.0
1	DAPHNIA PULEX	0.19	0.0	0.10	0.10	0.0
6	DAPHNIA (LPIL)	36.79	11.36	24.07	12.71	2.0
1	DAPHNIA (LPIL)	0.20	5.09	2.64	2.45	0.2
6	DAPHNIDAE (LPIL)	0.12	0.0	0.06	0.06	0.0
0	HOLOPEIDAE					
6	HOLOPEIDUM (LPIL)	0.10	0.0	0.05	0.05	0.0
6	HOLOPEIDAE (LPIL)	0.0	0.23	0.12	0.12	0.0
0	LEPTOCORIDAE					
6	LEPTOCORIDAE (LPIL)	0.0	0.39	0.20	0.20	0.0
0	MACROTHRICIDAE					
1	LYCOPHTUS SCORIDUS	0.10	0.0	0.05	0.05	0.0
6	MACROTHRICIDAE (LPIL)	0.0	0.33	0.17	0.17	0.0
0	SIDIIDAE					
6	SIDIIDAE (LPIL)	0.21	0.0	0.10	0.10	0.0
0	OSTRACODA (TOTAL)	0.21	0.0	0.11	0.11	0.0
19	OSTRACODA (LPIL)	0.22	0.0	0.11	0.11	0.0
0	COPEPODA (TOTAL)	1235.67	914.39	1075.53	161.14	88.8
0	CALANOIDA (TOTAL)					
1	DIAPYCNUS OREGONENSIS	0.08	0.0	0.04	0.04	0.0
1	DIAPYCNUS ASHLANDI	59.63	39.46	49.54	10.04	4.1
1	DIAPYCNUS PALLIUS	0.13	0.23	0.18	0.05	0.0
1	DIAPYCNUS SICILIS	3.69	2.02	2.66	0.83	0.2
1	DIAPYCNUS MINUTUS	47.84	49.62	48.73	0.89	4.0
1	DIAPYCNUS (LPIL)	0.10	0.0	0.05	0.05	0.0
1	LEPIDOCALANUS MACRURUS	3.75	1.66	2.70	1.05	0.2
14	LEPIDOCALANUS MACRURUS	0.66	0.0	0.33	0.33	0.0
14	CALANOIDA (LPIL)	758.96	704.04	731.50	27.46	60.4
0	CYCLOPOIDA (TOTAL)					
1	CYCLOPS BICUSPIDATUS THOMASI	31.30	10.57	20.93	10.36	1.7
1	CYCLOPS VERNALIS	1.24	1.01	1.12	0.12	0.1
1	CYCLOPS (LPIL)	0.0	0.29	0.15	0.15	0.0
1	EUCYCLOPS AGILIS	0.97	0.0	0.48	0.48	0.0
1	TROPYCYCLOPS (LPIL)	0.30	0.0	0.15	0.15	0.0
14	CYCLOPOIDA (LPIL)	322.34	98.85	210.59	111.74	17.4
0	CYCLOPOIDA (LPIL)	0.21	0.0	0.11	0.11	0.0
0	HARPACTICOIDA (TOTAL)					
6	LONGIPEDIA (LPIL)	0.0	1.87	0.93	0.93	0.1
1	HARPACTICOIDA (LPIL)	4.47	2.02	3.25	1.22	0.3
14	HARPACTICOIDA (LPIL)	0.91	2.75	1.83	0.92	0.2
0	HARPACTICOIDA (LPIL)	0.18	0.0	0.05	0.05	0.0

POOR ORIGINAL

827 209



Table 2.11

Zooplankton Density (No./m<sup>3</sup>) in Lake Michigan and Interdunal Pond Stations in Bailly Study Area, April 1979 (Page 2 of 3)

LS	TAXA	Lake Michigan Stations		X	S.E.	REL ABX
		Nearfield 1-6 & 10	Farfield 7-9			
0	AMPHIPODA (TOTAL)	0.73	0.0	0.36	0.36	0.0
0	HAUSTORIIDAE					
6	PONTOPOREIA (LPIL)	0.10	0.0	0.05	0.05	0.0
6	AMPHIPODA (LPIL)	0.63	0.0	0.32	0.32	0.0
0	DIPTERA NEMATOCERA (TOTAL)	2.12	0.47	1.30	0.83	0.1
0	CHIRONOMIDAE					
2	CHIRONOMIDAE (LPIL)	2.03	0.47	1.25	0.78	0.1
6	CHIRONOMIDAE (LPIL)	0.10	0.0	0.05	0.05	0.0
0	TARDIGRADA (TOTAL)	0.39	0.39	0.39	0.00	0.0
1	TARDIGRADA (LPIL)	0.39	0.39	0.39	0.00	0.0
TOTAL		1450.36	971.63	1210.99	239.37	100.0
DIVERSITY (H PRIME)		2.07	1.55	1.01	0.26	
DIVERSITY (J PRIME)		0.58	0.46	0.52	0.06	
NUMBER OF TAXA		37	23	42		
ABOVE COMPUTED USING SAMPLE IDS						
	11	12	13	14		
	21	22	23	24		
	31	32	33	34		
	41	42	43	44		
	51	52	53	54		
	61	62	63	64		
	101	102	103	104		
	71	72	73	74		
	81	82	83	84		
	91	92	93	94		

POOR  
ORIGINAL

LS	TAXA	Interdunal Ponds			X	S.E.	REL ABX
		B	C	Cowles Bog			
0	CNIDARIA (TOTAL)	20.83	0.0	0.0	6.94	6.94	0.0
0	HYDROZOA						
6	HYDRA (LPIL)	20.83	0.0	0.0	6.94	6.94	0.0
0	NEMATODA (TOTAL)	2145.83	62.50	6666.66	2958.33	1947.26	14.7
1	NEMATODA (LPIL)	2145.83	62.50	6666.66	2958.33	1947.26	14.7
0	OLIGOCHAETA (TOTAL)	270.83	83.33	1750.00	701.39	527.09	3.5
0	NAIDIDAE						
1	NAIDIDAE (LPIL)	270.83	0.0	1458.33	576.39	447.85	2.9
19	NAIDIDAE (LPIL)	0.0	83.33	291.67	125.00	86.74	0.6
0	ARACHNIDA (TOTAL)	20.83	0.0	333.33	119.06	107.81	0.6
0	PROSTIGMATA						
19	HYDRACARINA (LPIL)	20.83	0.0	333.33	118.06	107.81	0.6
0	CLADOCERA (TOTAL)	2354.16	2395.83	416.67	1722.22	652.89	8.6
0	BOSMINIDAE						
1	BOSMINIDAE (LPIL)	375.00	20.83	0.0	131.94	121.68	0.7
0	CHYDORIDAE						
1	ALONA RECTANGULA	62.50	0.0	0.0	20.83	20.83	0.1
1	ALONA AFFINIS	62.50	0.0	0.0	20.83	20.83	0.1
1	ALONA QUADRANGULARIS	20.83	0.0	0.0	6.94	6.94	0.0
6	ALONA (LPIL)	41.67	0.0	0.0	13.89	13.89	0.1
1	CAMPTOCERCUS RECTIROSTRIS	20.83	20.83	0.0	13.89	6.94	0.1
1	CHYDORUS (LPIL)	1770.83	2312.50	291.67	1458.33	603.93	7.3
1	PLEUROLIUS DENTICULATUS	0.0	20.83	0.0	6.94	6.94	0.0
6	CHYDORIDAE (LPIL)	0.0	20.83	0.0	6.94	6.94	0.0
0	DAPHNIDAE						
1	SIMDCEPHALUS VETULUS	0.0	0.0	83.33	27.78	27.78	0.1
1	SIMDCEPHALUS (LPIL)	0.0	0.0	41.67	13.89	13.89	0.1
0	OSTRACODA (TOTAL)	104.17	104.17	7833.33	2680.55	2576.19	13.3
19	OSTRACODA (LPIL)	41.67	104.17	7833.33	2659.72	2586.87	13.2
1	OSTRACODA (LPIL)	62.50	0.0	0.0	20.83	20.83	0.1
0	COPEPODA (TOTAL)	1354.17	687.50	31999.98	11347.21	10328.18	56.5
0	CALANOIDA (TOTAL)						
14	CALANOIDA (LPIL)	20.83	0.0	0.0	6.94	6.94	0.0
0	CYCLOPOIDA (TOTAL)						
1	CYCLOPS BICUSPIDATUS THOMASI	0.0	20.83	41.67	20.83	12.03	0.1
1	CYCLOPS VARICANS RUBELLUS	0.0	20.83	458.33	159.72	149.43	0.8
1	CYCLOPS VERNALIS	104.17	0.0	375.00	159.72	111.76	0.8
1	CYCLOPS (LPIL)	0.0	0.0	41.67	13.89	13.89	0.1
1	EUCYCLOPS AGILIS	62.50	20.83	41.67	41.67	12.03	0.2
1	EUCYCLOPS PRIONOPHORUS	20.83	0.0	0.0	6.94	6.94	0.0
1	EUCYCLOPS SPERATUS	0.0	20.83	0.0	6.94	6.94	0.0
1	MACROCYCLOPS ALBIUS	0.0	0.0	500.00	166.67	166.67	0.8
14	MESOCYCLOPS (LPIL)	0.0	20.83	0.0	6.94	6.94	0.0
1	MESOCYCLOPS (LPIL)	0.0	0.0	41.67	13.89	13.89	0.1

827 210



Table 2.11

Zooplankton Density (No./m<sup>3</sup>) in Lake Michigan and Interdunal Pond Stations in Bailly Study Area, April 1979 (Page 3 of 3)

LS	TAXA	Interdunal Ponds			K	S.E.	REL AB%
		B	C	Cowles Bog			
14	CYCLOPOIDA (LPIL)	979.17	541.67	4625.00	2048.61	1294.37	10.2
0	HARPACTICOIDA (TOTAL)						
1	HARPACTICOIDA (LPIL)	104.17	0.0	23041.66	7715.27	7663.25	38.4
14	HARPACTICOIDA (LPIL)	82.50	41.67	2833.33	979.17	927.10	4.9
0	ISOPODA (TOTAL)	0.0	0.0	166.67	55.56	55.56	0.3
0	ASELLIDAE						
1	ASELLUS (LPIL)	0.0	0.0	166.67	55.56	55.56	0.3
0	AMPHIPODA (TOTAL)	0.0	0.0	291.67	97.22	97.22	0.5
0	HYALELLIDAE						
1	HYALELLA AZTECA	0.0	0.0	291.67	97.22	97.22	0.5
0	EPHEMEROPTERA (TOTAL)	20.83	20.83	41.67	27.78	6.94	0.1
0	CAENIDAE						
13	CAENIDAE (LPIL)	0.0	20.83	41.67	20.83	12.03	0.1
13	EPHEMEROPTERA (LPIL)	20.83	0.0	0.0	6.94	6.94	0.0
0	DIPTERA NEMATOCERA (TOTAL)	333.33	333.33	458.33	375.00	41.67	1.9
0	CHIRONOMIDAE						
2	CHIRONOMIDAE (LPIL)	312.50	333.33	458.33	368.06	45.54	1.8
0	CHIRONOMIDAE (LPIL)	20.83	0.0	0.0	6.94	6.94	0.0
TOTAL		6624.99	3687.49	49958.18	20090.22	14956.03	100.0
DIVERSITY (H' PRIME)		2.07	1.64	2.12	1.94	0.15	
DIVERSITY (J' PRIME)		0.79	0.82	0.62	0.74	0.06	
NUMBER OF TAXA		20	17	20	33		
ABOVE COMPUTED USING SAMPLE IDS							
	171	172	173	174			
	181	182	183	184			
	191	192	193	194			
	201	202	203	204			
	211	212	213	214			

Table 2.12

Zooplankton Densities by Station on Lake Michigan in Bailly Study Area, April 1979

Station	No./m <sup>3</sup>	Station	No./m <sup>3</sup>
1	1910 ± 205	6	1072 ± 303
2	826 ± 122	7	1250 ± 233
3	900 ± 57	8	1031 ± 53
4	1633 ± 89	9	634 ± 74
5	862 ± 34	10	1950 ± 58

POOR  
ORIGINAL

Table 2.13

Diversity and Number of Zooplankton Taxa at Lake Stations in Bailly Study Area, April 1979

Station	Diversity (H')	Evenness (J')	No. of Taxa
1	2.36	0.65	19
2	2.09	0.59	17
3	1.60	0.46	19
4	2.14	0.57	19
5	2.11	0.59	19
6	1.52	0.47	12
7	1.63	0.46	16
8	1.40	0.44	14
9	1.62	0.46	19
10	2.28	0.64	18

827 211





2.3.2.2 Interdunal Ponds. Densities within the ponds were variable (Table 2.14). Ponds B and C densities averaged 3687 and 6625 organisms per cubic meter, respectively, while Cowles Bog averaged 49,958 organisms per cubic meter. Cladocerans dominated ponds B and C, with 36 and 63 percent, respectively, and Chydorus sp. was the dominant taxa. Copepods dominated the Cowles Bog fauna (64 percent).

Table 2.14  
Zooplankton Densities of Interdunal Pond Stations in  
Bailly Study Area during April 1978 and April 1979

	Density (No./m <sup>3</sup> )	
	1978	1979
Pond B	1,541	3,687
Pond C	24,249	6,625
Cowles Bog	51,771	49,958

A comparison of the 1978 and 1979 pond results (Table 2.14) showed some differences, primarily in the cladoceran and copepod densities. Pond B in April 1978 exhibited low cladoceran and copepod densities, while pond C showed the reverse trend. These differences were not significant.

Diversity and number of taxa by individual pond and station are presented in Table 2.15. The diversity and evenness for all ponds for 1979 compared favorably with those in April 1978. Pond C appeared to have low diversity, probably because of the large number of immature calanoid forms. No unusual taxa or density shifts were noted.

Table 2.15  
Diversity and Numbers of Zooplankton Taxa at Interdunal  
Pond Stations in Bailly Study Area, April 1979

Station	Diversity (H')	Evenness (J')	No. of Taxa
17	2.21	0.74	18
18	1.93	0.84	9
Pond B (17,18)	2.07	0.79	20
19	1.61	0.78	13
20	1.65	0.87	10
Pond C (19,20)	1.64	0.82	17
Cowles Bog (21)	2.12	0.62	20
All pond samples	1.94	0.74	33

827 212



Benthos samples from April and June 1979 have been collected; data will be included in the summer 1979 quarterly report. Lake Michigan fisheries data obtained from gill nets and beach seines are unavailable at this time but will be included in the summer quarterly report. Pond fish data were not collected in April and, because of an equipment theft problem, samples were missed in June. The problem has been alleviated, and sampling will proceed in August as usual.

2.5.1 METHODOLOGY. Ichthyoplankton (fish eggs and larvae) were sampled in Lake Michigan in the Bailly Study Area at stations 1 through 10 (Figure 2-1) by two methods: zooplankton net and epibenthic pump. Ichthyoplankton collection with the zooplankton net was an adjunct to zooplankton sampling at stations 1 through 10. The epibenthic pump was used at stations 4 and 7; all of the demersal organisms in the vicinity of the pumping head were pumped by and into an 80-micrometer mesh net suspended in the water column at the surface of the lake. Pumping velocity was high enough to minimize avoidance but low enough to minimize harm to the organisms.

RESULTS. Samples collected in April 1979 yielded rainbow smelt eggs and yolk-sac larvae and unidentified eggs. In April 1975, the only ichthyoplankton collected was a single darter. April sampling in other years (1976, 1977, and 1978) yielded no ichthyoplankton. Densities and locations of catches in April 1979 were as follows:

Taxon	Density (m <sup>3</sup> )*	
	Station	
	3	10
Rainbow smelt eggs	0	2.63
Rainbow smelt yolk sac	0.08	0.07
Unidentified eggs	0.17	0.40

\*All organisms in April 1979 were collected with the zooplankton net; pumping yielded no catch

827 213

No eggs or larvae were collected at stations 1, 2, 4, 5, 6, 7, 8, or 9. Although egg and larval sampling is not scheduled for the ponds, routine examination of the pond zooplankton samples yielded no eggs or larvae therein.



Table 2.16

## Water Quality Parameters Measured in Bailly Study Area

Parameter	Station	Method	Accuracy
<b>AQUATIC</b>			
Water Chemistry and Bacteriology			
<u>General Water Quality</u>			
Alkalinity, total	1-21	Titration	1% at 100 mg/l
Calcium, soluble	1-21 exc 12	Atomic absorption	±0.05 mg/l
Chloride, total	1-21 exc 12	Auto analysis	2/3% at 5 mg/l
Chlorine, total		Titration	
Conductance, specific	1-21	Conductivity bridge	5% at 50 umhos
Oxygen, dissolved		Winkler and polarographic	±0.1 mg/l
Oxygen, saturation	1-21	Calculation	N/A
Odor, threshold	1-21 exc 12	Threshold	N/A
Magnesium, soluble	1-21 exc 12	Atomic absorption	±0.004 mg/l
Hardness	1-21 exc 12	Titration	2.9% at 232 mg/l
pH	1-21	Electrode	±0.1 pH
Potassium, soluble	1-21 exc 12	Atomic absorption	±0.005 mg/l
Sodium, soluble	1-21 exc 12	Atomic absorption	±0.005 mg/l
Dissolved solids, total	1-21 exc 12	Gravimetric	4% at 100 mg/l
Suspended solids, total	1-21 exc 12	Gravimetric	4% at 100 mg/l
Sulfate	1-21 exc 12	Colorimetric	3% at 100 mg/l
Temperature	1-21	Thermometer	±0.1°C
Turbidity	1-21	Nephelometric	N/A
Color, true	1-21 exc 12	Standard filters	N/A
Fluoride, soluble	1-21 exc 12	Distillation	8% at 800 µg/l
<u>Aquatic Nutrients</u>			
Ammonia, soluble	1-21	Auto analysis	0.31% at 8 µgat/LN
Nitrate, soluble	1-21	Auto analysis	0.59% at 2.5 µgat/LN
Nitrite, soluble	1-21	Auto analysis	0.59% at 2.5 µgat/LN
Organic nitrogen, total	1-21	Auto analysis	1.25% at 50 mg/LN
Orthophosphate, soluble	1-21	Auto analysis	1.98% at 2 µgat/LP
Phosphorus, total	1-21	Auto analysis	0.89% at 30 mg/LP
Silica, soluble	1-21	Auto analysis	0.36% at 5 mg/LSiO <sub>2</sub>
<u>Trace Elements</u>			
Cadmium, total	13-21	Atomic absorption	±0.005 mg/l
Chromium, soluble hexavalent	13-21	Auto analysis	±0.14% at 0.10 mg/l
Chromium, total	13-21	Atomic absorption	±0.002 mg/l
Copper, total	13-21	Atomic absorption	±0.03 mg/l
Iron, soluble	13-21	Atomic absorption	±0.05 mg/l
Manganese, total	13-21	Atomic absorption	±0.01 mg/l
Mercury, total	13-21	Atomic absorption	±0.0002 mg/l
Nickel, total	13-21	Atomic absorption	±0.05 mg/l
Zinc, total	13-21	Atomic absorption	±0.01 mg/l
Lead	13-21	Atomic absorption	±0.01 mg/l
<u>Indicators of Industrial and Organic Contamination</u>			
Bacteria, fecal coliform	13-21	Membrane filter	N/A
Bacteria, total coliform	13-21	Membrane filter	N/A
Biochemical Oxygen Demand	13-21	Winkler and polarographic	±0.1 mg/l
Hexane-soluble materials	13-21	Hexane extraction	N/A
Organic Carbon, total	13-21	Combustion - IR	N/A
Phenols	13-21	Chloroform extraction	±0.0001 mg/l
Methylene Blue-Active Substance	13-21	Spectrophotometric	±0.02 mg/l
Cyanide	13-21	Cyanide distillation	±0.005 mg/l
Chemical Oxygen Demand	13-21	Titration	±0.1 mg/l
<u>Sediment</u>			
Cadmium, total	13-20	Atomic absorption	±0.005 mg/l
Chromium, total	13-20	Atomic absorption	±0.07 mg/l
Copper, total	13-20	Atomic absorption	±0.03 mg/l
Iron, total	13-20	Atomic absorption	±0.05 mg/l
Lead, total	13-20	Atomic absorption	±0.06 mg/l
Manganese, total	13-20	Atomic absorption	±0.01 mg/l
Mercury, total	13-20	Atomic absorption (flameless)	±0.0002 mg/l
Nickel, total	13-20	Atomic absorption	±0.05 mg/l
Selenium, total	13-20	Atomic absorption	±0.0003 mg/l
Vanadium, total	13-20	Atomic absorption	±0.002 mg/l
Zinc, total	13-20	Atomic absorption	±0.01 mg/l
Phosphorus, total	13-20	Auto analysis	±1.98% at 2 µgat/l

POOR ORIGINAL



2.6.1            **METHODOLOGY.**    Water quality parameters were measured in the lake and ponds onsite as well as in the National Lakeshore area, as designated by stations 1 through 22 in Figure 2.1. Table 2.16 indicates the stations sampled, the water quality parameters measured, and the methods and their accuracy. Additionally, Table 2.17 lists each parameter and its Indiana Pollution Control Board standard levels; where Indiana standards were not immediately available, U.S. Public Health Service or Federal Environmental Protection Agency values were used.

All water quality samples were collected using either a Van Dorn whole-water sampler (or equivalent) or, for bacteria samples, sterile bottles dipped below the water's surface. In situ parameters were measured using a YSI Model 59 temperature/dissolved-oxygen meter with remote stirrer, a Beckman solu-bridge conductivity meter, a standard 4-quadrant Secchi disk, and a Beckman field-model pH meter (or equivalent gear). Also recorded at each sampling location were wind direction and speed, air temperature, water color, percent cloud cover, and time of day. While these ancillary measurements are useful in interpreting some of the biological data, they are not considered part of water quality data and are not presented in the tables; they are included in sections where they help explain biological findings.

Samples from the ash-settling basins (stations 13 through 16), the natural ponds (stations 17 through 20), and Cowles Bog (station 21) were collected at mid-depth. Lake Michigan samples from locations along the 15-foot contour (stations 1, 4, and 7) were collected from 1 meter below the surface, lake samples along the 30-foot contour (stations 2, 5, and 8) were collected from 1 meter below the surface and from 1 meter above the bottom, and lake samples along the 50-foot contour (stations 3, 6, and 9) were collected from 1 meter below the surface, at mid-depth, and from 1 meter above the bottom. All other lake samples (stations 10, 11, and 22) were collected from 1 meter below the surface. Sediment samples were collected from the substrate in the vicinities of stations 13 through 20.

827 215



Table 2.17

Water Quality Values Defined by Indiana Stream Pollution Board,  
U.S. Public Health Service, or Federal EPA and Applicable  
to Lake Michigan in Bailly Study Area

General Water Quality	Units	Indiana, USPHS or EPA Levels
Alkalinity	mg/l	30-500 range, whatever is of natural origin <sup>(2)</sup>
Calcium	mg/l	No limits defined
Chlorides	mg/l	15 single values, 10 monthly average <sup>(1)</sup>
Chlorine	mg/l	.003 mg/l <sup>(1,2)</sup>
Conductivity	umhos	<800-1200 micromhos/cm (at 25°C) <sup>(1)</sup>
Color	APHA units	15 single value maximum, 5 monthly average <sup>(1)</sup>
Dissolved Oxygen	mg/l	Not < 5 mg/l <sup>(1)</sup>
Dissolved Oxygen	mg/l	80% minimum <sup>(1)</sup>
Fluorides	mg/l	Not to exceed 1.0 at any time <sup>(1)</sup>
Hardness	mg/l	0-500 range, natural origin <sup>(2)</sup>
Magnesium	mg/l	No limits defined <sup>(2)</sup>
Odor	odor units pos-neg	Single value 8 - daily ave 4 <sup>(1)</sup>
pH	pH units	7.5-8.5 <sup>(1)</sup>
Potassium	mg/l	No limits defined <sup>(2)</sup>
Sodium	mg/l	No limits defined <sup>(2)</sup>
Total Dissolved Solids	mg/l	172 (Lake Michigan monthly avg) 750 elsewhere <sup>(1)</sup>
Total Suspended Solids	mg/l	200 (Lake Michigan single value) 1000 elsewhere <sup>(1)</sup>
Sulfate	mg/l	80 <sup>(2)</sup>
Water Temperature	°C	50-single value; 26-monthly average
		3°F above existing 1000 ft from discharge or <sup>(1)</sup>
		45°(Jan-Mar) 55°(Apr) 60°(May) 70°(Jun) 80°(Jul-Sep) 65°(Oct) 60°(Nov) 50°(Dec), whichever is lower
Turbidity	FTU	None other than natural origin <sup>(1)</sup>
<u>Aquatic Nutrient</u>		
Ammonia	mg/l	0.05 single value, 0.02 monthly average <sup>(1)</sup>
Nitrates	mg/l	10 mg/l <sup>(2)</sup> - Freshwater (Public Supply)
Nitrites	mg/l	1 mg/l <sup>(2)</sup> - Freshwater (Public Supply)
Organic Nitrogen	mg/l	No limits defined <sup>(2)</sup>
Orthophosphate	mg/l	No limits defined - presumably less than total P.
Total Phosphorus	mg/l	0.04 single value, 0.03 monthly average
Silicates	mg/l	No limits defined
<u>Trace Elements</u>		
Arsenic, total	mg/l	Not to exceed 0.05 at any time <sup>(1)</sup>
Cadmium, total	mg/l	Not to exceed 0.01 at any time <sup>(1)</sup>
Chromium, hexavalent	mg/l	Not to exceed 0.05 at any time <sup>(1)</sup>
Chromium, total	mg/l	<0.03 <sup>(2)</sup>
Copper, total	mg/l	1.0 <sup>(2)</sup>
Iron, soluble	mg/l	.30 single value, .15 monthly average <sup>(1)</sup>
Iron, total	mg/l	0.3 <sup>(2)</sup>
Lead, total	mg/l	Not to exceed 0.05 at any time <sup>(1)</sup>
Manganese, total	mg/l	0.05 <sup>(2)</sup>
Mercury, total	mg/l	Not to exceed 0.0005 at any time <sup>(2)</sup>
Nickel, total	mg/l	1/50 96 hr. TL <sub>50</sub> = .5-2 mg/l <sup>(3)</sup>
Selenium, total	mg/l	Not to exceed 0.005 at any time <sup>(1)</sup>
Vanadium, total	mg/l	No limits defined <sup>(2)</sup>
Zinc, total	mg/l	5 <sup>(2)</sup>
<u>Indicators of Industrial and Organic Contamination</u>		
Bacteria, fecal coliform	#/100 ml	20/100 (Lake Michigan open water) 200/100 ml at beaches <sup>(1)</sup>
Bacteria, total coliform	#/100 ml	based on geometric mean of 5 samples
Biochemical Oxygen Demand	mg/l	<100/100 ml desirable 10,000/100 ml allowed <sup>(2)</sup>
Chemical Oxygen Demand	mg/l	No prescribed limits <sup>(2)</sup>
Cyanide	mg/l	No prescribed limits <sup>(2)</sup>
Hexane, soluble material	mg/l	Not to exceed .01 at any time <sup>(1)</sup>
Phenols	mg/l	Virtually absent <sup>(2)</sup>
Methylene Blue Active Substances	mg/l	.003 single value, .001 monthly average <sup>(1)</sup>
Total Organic Carbon	mg/l	0.5 <sup>(2)</sup>
		No prescribed limits <sup>(2)</sup>

(1) Indiana Regulation SPC 4R or SPC 1R-3  
(2) USPHS Drinking Water Standards (1962)  
(3) EPA Water Quality Criteria Data Book - Vol. 3 (1971)

827 216



General Water Quality Parameters, Bailly Study Area, April 1979

Parameter	Unit	Rep	15	25	28	30	3M	45	55	58	65	68	75	85	95	98	105	115	125	225	135	145	155	165	175	185	195	205	215		
Alkalinity, total	mg/l	a	113	108	111	110	115	109	110	110	108	109	110	109	108	113	108	109	114	110	112	28	23	23	33	30	30	27	130		
Calcium, soluble	mg/l	a	36.3	33.7	36.5	33.7	33.0	34.9	33.5	33.3	34.3	33.0	35.1	33.8	32.7	35.2	37.2	38.6	37.8	39.7	39.2	51.2	123	78.2	52.7	93	98.0	45.0	42.7	52.9	
Chloride, total	mg/l	a	35.5	33.7	35.9	32.7	33.0	33.8	33.2	32.2	33.1	32.1	32.5	35.9	32.8	34.6	35.4	36.7	36.0	39.0	36.7	55.1	102	68.7	77.3	109	96.0	41.6	43.7	65.9	
Chlorine, total	mg/l	a	7.4	6.3	7.0	6.1	6.0	6.1	7.3	6.3	6.3	7.2	6.2	7.2	6.1	6.6	6.8	6.3	6.0	6.5	14.3	13.9	14.3	14.4	14.3	11.6	11.1	5.0	4.9	5.4	
Color, true	Pt-Co	a	<0.1																											<0.01	
Conductance	µmhos	a	280	280	280	280	240	280	240	280	280	280	280	280	280	260	280	280	280	310	650	610	650	620	610	610	220	220	240	240	
Fluoride, soluble	mg/l	a	<0.01																											<0.01	
Hardness	mg/l	a	150	144	149	151	144	149	149	148	153	150	153	155	159	162	149	153	154	157	180	216	204	198	207	208	270	167	96	128	
Magnesium, soluble	mg/l	a	9.37	8.90	9.19	8.66	8.74	9.13	9.01	8.96	9.19	8.54	8.47	8.95	8.48	8.66	8.78	8.77	9.13	9.25	8.99	12.5	12.0	12.7	12.5	15.6	16.1	8.49	8.23	13.8	
Gaur, (residual)	Pos/Neg	a	Neg																												
Oxygen, dissolved	mg/l	a	12.7	13.2	13.0	12.8		17.3	13.0	12.9	13.1	12.9	13.0	13.1	13.0	13.0	12.9	13.1	13.2	11.9	11.8	10.6	13.2	12.1	11.5	11.1	10.9	12.4	9.2	9.2	
Oxygen, % saturation	% sat	a	106	103	102	99		135	102	101	100	102	101	102	104	103	104	102	102	99	112	103	103	104	97	114	108	105	100	101	115
pH	pH units	a	8.3	8.3	8.3	8.2	8.3	8.2	8.2	8.2	8.3	8.2	8.2	8.2	8.3	8.2	8.2	8.2	8.3	8.0	6.6	6.7	7.0	7.1	7.0	7.2	7.2	7.2	7.2	7.2	
Potassium, soluble	mg/l	a	1.63	1.47	1.57	1.48	1.51	1.51	1.37	1.37	1.44	1.48	1.45	1.54	1.40	1.41	1.34	1.29	1.34	1.61	9.4	8.5	8.1	9.0	12.3	10.6	2.2	1.9	1.7	1.7	
Sodium, soluble	mg/l	a	6.56	5.88	6.22	5.92	5.88	6.00	5.96	5.60	5.56	5.78	5.94	5.72	5.55	5.52	5.34	5.26	5.32	6.11	6.00	6.17	6.20	23.2	22.6	49.9	41.5	22.0	21.6	3.40	2.33
Solids, total dissolved (TDS)	mg/l	a	282	181	205	187	189	193	183	188	194	198	197	186	192	183	161	165	166	196	193	164	445	294	440	516	459	143	136	136	
Solids, total suspended (TSS)	mg/l	a	198	191	199	190	189	190	181	180	83	131	123	124	141	167	66	67	66	204	202	197	451	499	457	502	459	129	129	129	
Solids, total suspended (TSS)	mg/l	a	13.8	2.4	4.6	6.5	4.3	29.2	10.2	14.4	14.2	14.4	18.2	37.2	13.4	15.4	4.6	9.0	30.4	38.8	39.2	4.0	29.4	17.6	3.4	3.4	19.6	2.8	37.6	6.0	
Selfaxes	mg/l	a	18.7	17.0	18.3	17.7	18.0	17.7	16.7	17.0	19.3	19.7	20.0	18.3	17.0	18.3	19.3	22.3	22.3	22.3	32.7	30.6	31.4	39.2	1.4	3.2	2.2	38.0	8.0	67.6	
Temperature	-C	a	8.0	5.0	5.0	4.5	5.0	5.0	5.0	4.0	5.0	5.0	5.0	5.5	6.0	5.5	4.5	11.0	5.5	5.0	9.0	10.3	11.5	8.8	9.7	11.5	11.0	12.0	12.0	12.0	
Turbidity	NTU	a	2	2	6	1	1	2	1	2	1	1	2	1	1	1	1	3	6	6	1	1	1	1	1	2	1	2	1	2	

$z_s$  = surface  
 $z_d$  = mid-depth  
 $z_b$  = bottom

\*Oxygen reading offscale and believed to be erroneous; value deleted. Value for station 38 retained but also believed to be erroneous.

827 217





## 2.6.2 RESULTS AND DISCUSSION

2.6.2.1 General Water Quality Parameter. Results of general water quality analyses for both lake and ponds during April 1979 are presented in Table 2.18. No effects of plant construction on either Lake Michigan or the interdunal ponds were indicated by the general water quality analyses.

2.6.2.1.1 Lake Michigan. Alkalinity, odor, color, and chlorine levels in April 1979 were virtually identical to those in April 1978. Levels of chloride, hardness, calcium, magnesium, potassium, sodium, sulfate, and conductivity in April 1979 were also similar to those of April 1978. Levels of fluoride in 1979 were less than detection, continuing the trend of being at or near the lower limit of detection. Oxygen concentrations ranged from 11.9 to 13.2 milligrams per liter, and percent saturation averaged 104 (an exceedingly high dissolved oxygen at station 3 was believed to be erroneous). All concentrations and percent saturation levels exceeded the minimum allowed levels indicated by the Indiana Stream Pollution Control Board (ISPCB). The slightly higher oxygen levels in 1979 were probably a result of lower water temperatures (6.0-7.5°C range), which increase oxygen solubility. The pH levels, ranging from 8.0 to 8.3 pH units, were all at or below the 8.5 ISPCB standard.

As mentioned previously, color levels in April 1979 were identical to those of April 1978, all being at 1 Platinum-Cobalt (Pt-Co) unit, an indication of very high clarity. Suspended solids levels were low, averaging 18.6 milligrams per liter, and dissolved solids averaged 144 milligrams per liter; both values were comparable to those of April 1978. Turbidity levels were low, ranging from 1 to 10 NTUs, supporting the above results.

2.6.2.1.2 Ponds. The ponds can be considered to be four units: ash-settling ponds (stations 13 through 16), pond B (17 through 18), pond C (19 through 20), and Cowles Bog (station 21). Both the natural and ash-settling ponds were monitored for general water quality parameters. Generally, there were considerable differences among the ponds, but only minor differences from the data collected in April 1978.

827 218



Oxygen concentrations in the ponds were somewhat lower than in the lakes, ranging from 9.2 to 13.2 milligrams per liter. Percent saturation was 85 to 114. Levels of pH were between 6.6 and 7.2 units, lower than the average of 8.2 observed in the lake. Alkalinity values were low compared to those in the lake. Conductance and hardness were generally higher in the ponds. Concentrations of ions which would cause these higher levels - calcium, magnesium, potassium, sodium, sulfates, and chlorides - were generally higher in the ponds than in the lake. Pond C stations tended to have lower levels than the other stations, and no explanation is readily available.

Pond water temperatures ranged from 8.8 to 12.0°C, the highest occurring in pond C and Cowles Bog, and averaged 5°C higher than for the lake in April 1979 and almost 7.0°C higher than for the lake in April 1978. The shallow nature of the pond during the spring permits it to rapidly warm.

April 1979 color values were 1 in all ponds except Cowles Bog. Previous data had shown the natural ponds (stations 17 through 21) to exhibit higher color values. There is no obvious explanation for the low color values, although the high water levels observed on site may indicate the possibility of dilution.

Odor was present in all natural ponds, as it had been previously. Fluoride levels were at or below detection limits at all stations except settling pond 2 (station 14), but values observed in settling pond 2 were low and did not exceed values observed in April 1978. Total dissolved and suspended solids results were similar to those obtained in 1978: station 13 had lower dissolved solids but higher suspended solids than the other ash ponds. Cowles Bog exhibited a high suspended solids load, but the results did not indicate a long-term change from past years, since the bog tends to change rapidly because of outside influences. Turbidity analysis yielded low values that indicated a very small amount of suspended material present during April.

2.6.2.2 Aquatic Nutrients. Results for April 1979 aquatic nutrient analyses are presented in Table 2.19. Mean values were as follows:

827 219



Parameter	Unit	Stations				
		Lake Michigan 1-12 & 22	Ash Pond 13-16	Pond B 17-18	Pond C 19-20	Cowles Bog 21
Ammonia	mg/l	0.099	1.9	0.96	0.71	0.22
Nitrate	mg/l	0.34	0.28	0.05	0.04	0.03
Nitrite	mg/l	0.009	0.022	0.005	0.003	0.004
Organic nitrogen	mg/l	0.44	1.8	<0.1	0.4	1.2
Orthophosphate	mg/l	0.006	<0.002	<0.002	<0.002	<0.002
Total phosphate	mg/l	0.034	0.007	0.012	0.019	0.043
Silicate	mg/l	0.91	3.6	0.96	0.31	5.8

Results from both the lake and the interdunal ponds indicated no adverse effects on the environment as a result of plant construction.

Ammonia values in Lake Michigan were considered to be moderate. The overall average at lake stations was higher than in previous sampling periods. Ammonia values in the ash ponds and ponds B and C were higher than those reported in August and November 1978. Cowles Bog also exhibited high ammonia values, but fluctuations are not unusual due to its shallow nature. All values except one (station 8, replicate a) exceeded the applicable single-value Indiana Stream Pollution Control Board (ISPCB) standards (see Table 2.17) as well as the monthly mean value for the lake and the interdunal ponds. Ammonia will continue to be monitored, although present values should not endanger any indigenous fauna (EPA 1971).

All stations had nitrate and nitrite values that were within ISPCB standards. April 1979 nitrate values generally exhibited a similar trend during April 1978. Average and mean nitrate values were 0.34 milligrams per liter and 0.009 milligrams per liter, respectively, for Lake Michigan and 0.15 milligrams per liter and 0.012 milligrams per liter, respectively, for the interdunal ponds. The highest nitrite values occurred in the ash-settling ponds. Organic nitrogen levels exhibited little variation, averaging 0.44 milligrams per liter over all stations. Values in the ash ponds were high and were three times higher than in April 1978. Ash pond levels fluctuate widely as influenced by input of bottom ash and/or fly ash. Results from pond B indicated little or no leaching from the ash ponds. Pond C and Cowles Bog demonstrated little change from April 1978 or November 1978.

827 220



Table 2.19

## Aquatic Nutrient Concentrations, Bailey Study Area, April 1979

Parameter	Unit	Rep	Station*															
			15	25	28	35	3M	38	45	55	58	65	6M	68	75	85	88	95
Ammonia, soluble	mg/l	a	0.123	0.104	0.088	0.149	0.165	0.146	0.170	0.113	0.068	0.086	0.092	0.094	0.098	0.012	0.088	0.080
		b	0.115	0.124	0.084	0.126	0.128	0.132	0.156	0.060	0.062	0.080	0.080	0.090	0.080	0.086	0.082	0.080
Nitrate, soluble	mg/l	a	0.40	0.36	0.40	0.30	0.30	0.34	0.36	0.32	0.32	0.34	0.34	0.40	0.39	0.30	0.30	0.26
		b	0.40	0.35	0.40	0.31	0.31	0.33	0.36	0.31	0.32	0.34	0.34	0.34	0.39	0.30	0.30	0.26
Nitrite, soluble	mg/l	a	0.010	0.008	0.011	0.007	0.007	0.009	0.009	0.008	0.009	0.010	0.009	0.012	0.009	0.006	0.007	0.006
		b	0.011	0.008	0.011	0.008	0.007	0.008	0.009	0.008	0.008	0.009	0.010	0.009	0.010	0.007	0.007	0.006
Organic nitrogen, total	mg/l	a	0.78	0.41	0.53	0.63	0.46	0.60	0.43	0.51	0.36	0.51	0.60	0.40	0.33	0.42	0.49	0.43
		b	0.28	0.52	0.60	0.47	0.27	0.47	0.64	0.83	0.62	0.42	0.45	0.31	0.37	0.42	0.75	0.46
Orthophosphate, total	mg/l	a	0.013	0.005	0.009	0.008	0.006	0.008	0.005	0.003	0.005	0.006	0.006	0.007	0.009	0.003	0.004	0.003
		b	0.009	0.011	0.009	0.008	0.002	0.003	0.006	0.003	0.004	0.006	0.006	0.006	0.007	0.005	0.004	0.003
Phosphorus, total	mg/l	a	0.033	0.024	0.044	0.047	0.050	0.019	0.074	0.060	0.024	0.028	0.020	0.050	0.020	0.006	0.035	0.039
		b	0.046	0.030	0.039	0.048	0.033	0.040	0.068	0.054	0.036	0.057	0.020	0.044	0.020	0.014	0.050	0.034
Silica, soluble	mg/l	a	1.35	0.90	0.90	0.63	0.60	0.75	1.05	0.85	0.85	1.00	1.00	0.90	1.25	0.75	0.80	0.58
		b	1.25	0.93	1.30	0.58	0.60	0.78	1.06	0.80	0.83	1.00	1.00	0.90	1.28	0.78	0.78	0.58

Parameter	Unit	Rep	9M	98	105	115	125	225	135	145	155	165	175	185	195	205	215
			9M	98	105	115	125	225	135	145	155	165	175	185	195	205	215
Ammonia, soluble	mg/l	a	0.064	0.066	0.100	0.108	0.100	0.104	1.4	1.9	1.9	2.2	0.97	0.92	0.87	0.85	0.22
		b	0.054	0.060	0.108	0.110	0.106	0.110	1.9	1.9	2.2	1.8	1.0	0.95	0.85	0.25	0.22
Nitrate, soluble	mg/l	a	0.27	0.28	0.37	0.40	0.40	0.37	0.32	0.35	0.37	0.14	0.03	0.05	0.04	0.04	0.03
		b	0.28	0.28	0.36	0.39	0.39	0.37	0.32	0.39	0.32	0.02	0.05	0.05	0.04	0.04	0.03
Nitrite, soluble	mg/l	a	0.006	0.006	0.012	0.012	0.012	0.011	0.024	0.025	0.025	0.022	0.005	0.005	0.003	0.002	0.004
		b	0.006	0.006	0.010	0.010	0.010	0.012	0.023	0.024	0.023	0.006	0.005	0.005	0.005	0.002	0.004
Organic nitrogen, total	mg/l	a	0.31	0.39	0.21	0.04	0.50	0.21	3.6	1.3	1.0	1.9	<0.1	<0.1	0.1	0.2	1.2
		b	0.56	0.40	0.32	0.05	0.51	0.26	3.1	1.3	0.9	2.3	<0.1	<0.1	0.2	0.9	1.2
Orthophosphate, total	mg/l	a	0.009	0.004	0.008	0.007	0.009	0.009	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
		b	0.004	0.003	0.007	0.008	0.009	0.007	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus, total	mg/l	a	0.033	0.034	0.018	0.016	0.014	0.016	0.010	0.008	0.005	0.008	0.012	0.016	0.018	0.020	0.040
		b	0.046	0.052	0.014	0.016	0.010	0.007	0.006	0.005	0.005	0.009	0.012	0.008	0.016	0.020	0.046
Silica, soluble	mg/l	a	0.60	0.60	1.03	1.20	1.20	0.98	3.4	3.5	3.5	4.2	1.0	0.86	0.32	0.29	5.9
		b	0.63	0.60	1.03	1.20	1.20	0.93	3.5	3.3	3.4	4.2	1.0	0.99	0.30	0.31	5.7

\* S - surface  
M - mid-depth  
B - bottom

827 221



Orthophosphate and total phosphate levels were uniformly low. Although several total phosphate values exceeded the ISPCB standards, as did the mean values for both Lake Michigan and Cowles Bog, there were no obvious biological indications of the increased levels. Orthophosphate and total phosphate values were extremely low in the ash ponds and in ponds B and C.

Silicate levels in April 1979 were higher than in April and November 1978, but there was no indication of a "bloom" condition for diatoms as a result of the higher silicate levels. The ash ponds and Cowles Bog exhibited the highest silicate levels, while the averages for Lake Michigan and pond B were similar and moderate. Lowest values observed in April 1979 were in pond C. There are no prescribed ISPCB limits for silicates. The values recorded during April are different from those described previously in respect to the declining silicate values in Lake Michigan (i.e., the concentrations observed during April are slightly higher than the mean annual concentration expected, based on an observed 20-year trend of declining silicate levels).

2.6.2.3 Indicators of Contamination. Nine indicators of contamination were examined in the interdunal ponds during April 1979. As indicated in Table 2.20, fecal coliform bacteria were less than 1 per 100 milliliters at all stations and total coliform bacteria values were less than 1 per 100 milliliters at ash pond stations 14 and 15; at stations 13, 17, 19, 20, and 21, however, total coliform bacteria exceeded ISPCB standards. It should be noted that the ISPCB standards were developed for Lake Michigan and do not apply directly to the ponds. Values at the latter stations ranged from less than 1 to 500 per 100 milliliters. During previous years, high total coliform counts had been attributed to migratory birds, and it is likely that this was the situation this year.

Biological oxygen demand (BOD), chemical oxygen demand (COD), and total organic carbon (TOC) had low values except in Cowles Bog, a trend which has been observed during the last several sampling periods.

Hexane extraction of oils and grease produced the highest values in the ash ponds and pond B (less than 0.1 to 36.4 milligrams per liter), while pond C

827 222





Table 2.20

Indicators of Industrial and Organic Contamination,  
Bailly Study Area, April 1979

Parameter	Unit	Rep	Station*								
			13S	14S	15S	16S	17S	18S	19S	20S	21S
Bacteria, fecal coliform	No./100 ml	a	<1	<1	<1	<1	<1	<1	<1	<1	<1
		b	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bacteria, total coliform	No./100 ml	a	100	<1	<1	100	500	100	<1	300	500
		b	200	<1	<1	<1	200	100	400	100	300
Biochemical oxygen demand	mg/l	a	2	2	1	1	1	2	1	1	1
		b	2	1	1	1	1	1	1	3	1
Chemical oxygen demand	mg/l	a	3.4	2.3	2.3	<2.0	4.6	4.0	15.5	18.4	50.0
		b	3.4	2.9	2.9	6.3	4.0	5.2	16.1	15.5	51.1
Hexane soluble materials	mg/l	a	3.6	1.2	23.6	16.2	6.0	24.4	<0.1	16.4	<0.1
		b	36.4	4.8	11.2	24.0	28.4	6.4	<0.1	6.0	14.8
Methylene-blue active substances	mg/l	a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
		b	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Organic carbon, total (TOC)	mg/l	a	14.9	4.2	2.5	1.5	0.8	6.9	4.2	6.7	23.0
		b	14.8	2.5	1.1	3.0	11.7	2.8	6.3	6.7	24.1
Phenols	mg/l	a	<0.005	<0.005	0.015	0.011	0.017	0.020	0.022	0.027	0.035
		b	<0.005	<0.005	0.024	0.011	0.020	0.021	0.025	0.022	0.046

\*S = surface

and Cowles Bog were similar to one another. The overall values for all ponds were slightly higher in April 1979 than in April 1978 (12.4 versus 7.4 milligrams per liter).

Phenol concentrations ranged from less than 0.005 milligrams per liter to 0.046 milligrams per liter, whereas 1978 concentrations ranged from less than 0.005 to 0.007. No direct source was evident. Methylene-blue active substances (detergent-like substances) were below the detection limits, as they had been during April 1978.

2.6.2.4 Trace Elements in Interdunal Ponds. Trace elements were monitored in the interdunal ponds during April. As indicated in Table 2.21 cadmium exceeded the ISPCB standard in the ash ponds only and was near or at the detection limits in ponds B and C and Cowles Bog. Iron and manganese also exceeded the state standards at most stations. Iron and manganese values have also been high in previous sampling periods. All other trace element analyses indicated nothing unusual. Concentrations of copper, nickel, and zinc were higher in the ash ponds than in the other sampling ponds but should not be harmful to the biota.

827 223





Table 2.21  
Trace Element Concentrations, Bailly Study Area, April 1979

Parameter	Unit	Rep	Station*								
			13S	14S	15S	16S	17S	18S	19S	20S	21S
Cadmium, total	mg/l	a	0.017	0.015	0.016	0.016	0.003	<0.001	<0.001	<0.001	<0.001
		b	0.023	0.017	0.012	0.016	0.002	<0.001	<0.001	<0.001	<0.001
Chromium, hexavalent	mg/l	a	0.002	0.001	0.002	0.002	0.004	0.004	0.004	0.004	0.012
		b	0.002	0.002	0.002	0.002	0.004	0.005	0.004	0.005	0.011
Chromium, total	mg/l	a	0.004	0.002	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
		b	0.003	0.002	0.002	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
Copper, total	mg/l	a	0.088	0.043	0.076	0.117	0.006	0.006	0.005	0.005	0.006
		b	0.114	0.056	0.063	0.033	0.005	0.006	0.005	0.005	0.005
Iron, soluble	mg/l	a	0.132	0.326	0.243	0.102	0.331	0.359	0.276	0.303	0.366
		b	0.222	0.324	0.135	0.098	0.458	0.380	0.283	0.303	0.331
Lead, total	mg/l	a	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
		b	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese, total	mg/l	a	0.190	0.168	0.169	0.171	0.259	0.166	0.002	0.010	<0.001
		b	0.190	0.154	0.169	0.043	0.164	0.257	0.004	0.013	0.004
Mercury, total	mg/l	a	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
		b	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	0.0008	<0.0013
Nickel, total	mg/l	a	0.091	0.158	0.098	0.098	0.009	0.008	0.003	0.003	0.004
		b	0.111	0.111	0.078	0.073	0.010	0.008	0.003	0.003	0.004
Zinc, total	mg/l	a	1.23	0.284	0.138	0.353	0.019	0.012	0.001	0.002	0.001
		b	0.431	0.365	0.130	0.343	0.019	0.012	0.001	0.001	0.006

\*S - surface



- American Public Health Association. 1971. Standard methods for the examination of water and wastewater. 13th ed. APHA, Washington, D.C. xxxv + 874 p.
- American Public Health Association. 1975. Standard methods for the examination of water and wastewater. 14th ed. APHA, Washington, D.C.
- Cassie, R.M. 1963. Microdistribution of plankton. Oceanography and marine biology: an annual review. 1:223-252.
- Environmental Protection Agency. 1971. Water quality criteria data book, Vol. 3. Effects of chemicals on aquatic life. 526 p.
- Indiana Stream Pollution Control Board. 1972. Regulation SPC 4R, Lake Michigan and contiguous harbors.
- Indiana Stream Pollution Control Board. 1973. Regulation SPC IR3, water quality standards for waters of Indiana.
- Nauwerck, A. 1963. Die beziehungen zwischen zooplankton und phytoplankton. In: See Erken. Symb. Bot. Usal. 17(5):1-163.
- Patrick, R., M.H. Hohn, and J.H. Wallace. 1954. A new method for determining the pattern of the diatom flora. Bull. Phil. Acad. Nat. Sci. 259:1.
- Rohde, W., R.A. Vollenweider, and A. Nauwerck. 1958. The primary production and standing crop of zooplankton. In: Perspectives in marine biology (A.A. Buzzati-Traverso, ed). Univ. of Cal. 299-322 p.
- Strickland, J.D.H. 1960. Measuring the production of marine phytoplankton. Fish. Res. Bd. Can. Bull. 122:1-172.
- Talling, V.F., and D. Driver. 1963. Some problems in the estimation of chlorophyll a in phytoplankton. Proc. Conf. of Primary Productivity Measurement, Marine and Freshwater, Hawaii, 1961. USAEC TID-7633: 142-146.
- Texas Instruments Incorporated. 1976. Fall 1976 quarterly report, Bailly Nuclear-1 site, encompassing September-November 1977. Northern Indiana Public Service Company.
- Texas Instruments Incorporated. 1978. Summer 1978 quarterly report, Bailly Nuclear-1 site, encompassing April-June 1978. Northern Indiana Public Service Company.
- Texas Instruments Incorporated. 1978. Summer 1978 quarterly report, Bailly Nuclear-1 site, encompassing July-September 1978. Northern Indiana Public Service Company.

827 225



Texas Instruments Incorporated. 1978. Winter 1978 quarterly report, Bailly Nuclear-1 site, encompassing January-March 1978. Northern Indiana Public Service Company.

Texas Instruments Incorporated. 1978. 1977-1978 annual report. Bailly Nuclear-1 site, encompassing April 1977-March 1978. Northern Indiana Public Service Company.

Texas Instruments Incorporated. 1979. Fall 1978 quarterly report, Bailly Nuclear-1 site, encompassing October-December 1978. Northern Indiana Public Service Company.

United States Public Health Service. 1967. Drinking water standards for United States waters.

Vollenweider, R.A. 1974. A manual on methods for measuring primary production in aquatic environments. IBP Handbook 12. Blackwell Scientific Pub., Oxford, 2nd ed. xvii + 225 p.

## 2.8 HOW TO READ TI COMPUTER PRINTOUTS

On the following two pages are detailed instructions for reading the TI computer printouts which appear in Appendixes A, B, C, D, and E.

827 226



Company →  
NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)  
Location →  
BAILLY GENERATING PLANT  
Parameter →  
BENTHIC MACROINVERTEBRATE NUMERICAL ABUNDANCE (NO/SQ M)  
Type of Report →  
REPLICATE REPORT

Task and Gear Codes  
Project Code → PC TC GC LOC  
5 71 71 1 2 00  
Location Code (for computer processing)

Station ID indicates Station 1, Replicates 104  
SID DATE TIME D/N UNITS C SD MD SP D UNITS C SECH M T SC DI CL SP DI AIR WAT BT TURBD COND DO PH SALN P  
191 6/14/78 0 0 0.0 0 0.0 0.0 0.0 0 0.0 0.0 0 0 0 0.0 0 0.0 0.0 0.0  
192 6/14/78 0 0 0.0 0 0.0 0.0 0.0 0 0.0 0.0 0 0 0 0.0 0 0.0 0.0 0.0

Date Samples Collected  
LS TAXA  
Volume Sampled  
Volume Units 3 = m<sup>3</sup>  
REL ABX  
Relative Abundance of Each Taxon

0	HEMATODA (TOTAL)	76.92	0.0	38.46	38.46	4.7
1	HEMATODA (LPIL)	76.92	0.0	38.46	38.46	4.7
0	OLIGOCHAETA (TOTAL)	326.92	192.31	259.61	67.31	31.4
0	HAIDIDAE					
1	HAIDIDAE (LPIL)	250.00	76.92	163.46	86.54	19.8
0	TUBIFICIDAE					
1	TUBIFICIDAE (LPIL)	76.92	115.38	96.15	19.23	11.6
0	GASTROPODA (TOTAL)	0.0	76.92	38.46	38.46	4.7
0	PHYSIDAE					
1	PHYSIDAE (LPIL)	0.0	76.92	38.46	38.46	4.7
0	BIVALVIA (TOTAL)	76.92	76.92	76.92	0.0	9.3
0	SPHAERIIDAE					
1	SPHAERIUM (LPIL)	76.92	76.92	76.92	0.0	9.3
0	ARACHNIDA (TOTAL)	0.0	19.23	9.62	9.62	1.2
0	PROSTIGMATA					
1	HYDRACARINA (LPIL)	0.0	19.23	9.62	9.62	1.2
0	EPHEMEROPTERA (TOTAL)	0.0	230.77	115.38	115.38	14.0
0	CAENIDAE					
10	CAENIS (LPIL)	0.0	230.77	115.38	115.38	14.0
0	ODONATA (TOTAL)	0.0	19.23	9.62	9.62	1.2
0	COENAGRIONIDAE					
10	COENAGRIONIDAE (LPIL)	0.0	19.23	9.62	9.62	1.2
0	DIPTERA NEMATOCERA (TOTAL)	365.38	192.31	278.85	86.54	33.7
0	CHIRONOMIDAE					
2	CHIRONOMUS (LPIL)	211.54	0.0	105.77	105.77	12.8
2	TANYTARSUS (LPIL)	38.46	57.69	48.08	9.62	5.8
2	POLYPEDILUM (LPIL)	19.23	0.0	9.62	9.62	1.2
2	ABLABESMYIA (LPIL)	19.23	76.92	48.08	28.65	5.8
2	PROCLADIUS (LPIL)	38.46	57.69	48.08	9.62	5.8
2	PARACHIRONOMUS (LPIL)	19.23	0.0	9.62	9.62	1.2
2	PSEUDOCLODIUS (LPIL)	19.23	0.0	9.62	9.62	1.2

Taxa listed in phylogenetic order

ORIGINAL POOR

Indicates Summary Level

TOTAL DIVERSITY (H PRIME) → Shannon Weaver  
DIVERSITY (J PRIME) → Evenness Index  
NUMBER OF TAXA  
BOTTOM TYPE 0

Samples 1-4

DATE 09/22/78  
PAGE NO 26  
T600AQUA 9/28/77

Mean of All 4 Samples

Standard Error of 4 Samples



II Project No.

NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT ← Site

BENTHIC MACROINVERTEBRATE NUMERICAL ABUNDANCE (NO/SQ M) ← Parameter

REPLICATE REPORT ←

PC TC GC LOC  
5 71 71 1 1 00

SID DATE  
181 6/14/78  
182 6/14/78

SID = Station ID:  
11 = Station 1, Replicate 1  
12 = Station 1, Replicate 2

Type of Report:

Replicate = 1 station

Station/within site =  
multiple stations with-  
in an area of interest  
(e.g., Pond B, Lake  
Michigan, etc.)

PC = Project Code; 5 = NIPSCO  
TC GC = Task Code/Gear Code:  
51 51 = Zooplankton/Net  
56 56 = Phytoplankton/Van Dorn  
66 66 = Periphyton/Substrate  
71 71 = Benthos/Ponar or Ekman

LS TAXA  
0 OLIGOCHAETA (TOTAL)  
0 NAIDIDAE  
1 NAIDIDAE (LPIL)  
0 BIVALVIA (TOTAL)  
0 SPHAERIIDAE  
1 SPHAERIUM (LPIL)  
6 BIVALVIA (LPIL)  
0 EPHIMEROPTERA (TOTAL)  
0 CAENIDAE  
10 CAENIS (LPIL)  
0 DIPTERA NEMATOCERA (TOTAL)  
0 CERATOPOGONIDAE  
2 CERATOPOGONIDAE (LPIL)  
0 CHIRONOMIDAE  
2 CHIRONOMUS (LPIL)  
2 CRYPTOCHIRONOMUS (LPIL)  
2 TANYTARSUS (LPIL)  
2 DICROTENDIPES (LPIL)  
2 ABLABESHYIA (LPIL)  
2 PROCLADIUS (LPIL)  
2 PSECTROCLADIUS (LPIL)  
3 CHIRONOMIDAE (LPIL)

TOTAL  
DIVERSITY (H PRIME) ← Shannon-Weaver Index  
DIVERSITY (J PRIME) ← Evenness Index  
NUMBER OF TAXA  
BOTTOM TYPE 0

ABOVE COMPUTED USING SAMPLE IDS  
181 182

LS = Life Stage  
0 = Summary Level  
1 = Adult  
2 = Larvae  
3 = Pupae  
4 = Egg

5-20 - Zooplankton	Benthos
5 Nestling	5 Immature
6 Immature	6 Juvenile
7 Juvenile	7 Ehippium
8 No Code	8 Statoblast
9 Trocophore	9 Nauplius
10 Ehippium	10 Nymph
11 Statoblast	11 Colony
12 Nauplius	12 Undetermined
13 Nymph	
14 Copepodid	
15 Protozoa	
16 Zoi	
17 Postlarvae	
18 Colony	
19 Undetermined	
20 Mixed	

ORIGINAL  
POOR



---

APPENDIX A  
PHYTOPLANKTON DENSITY REPLICATE REPORTS  
BAILLY STUDY AREA  
APRIL 1979

827 229



## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 0 00

				DURATION		TOW				SAMP VOL				WIND				CURENT				TEMP									
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	WT	TURBO	COND	DO	PH	SALN	P			
11	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0		
12	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0		
																												-			REL
LS	TAXA																							X	S.E.		ABX				
									1										2												
0	UNIDENTIFIED ALGAE							71428.56				82215.19				76821.87									5393.31		1				
0	UNIDENTIFIED ALGAE (LPIL)							71428.56				82215.19				76821.87									5393.31		1.0				
0	CYANOPHYTA							0.0				5755063.00				2877531.00									2877531.00		37.4				
0	CHROOCOCCACEAE																														
0	GONPHOSPHAERIA LACUSTRIS							0.0				5755063.00				2877531.00									2877531.00		37.4				
0	CHLOROPHYTA							1142857.00				164430.37				653643.69									489213.31		8.5				
0	CHLOROCOCCALES																														
0	UNIDENTIFIED: 05030511							0.0				164430.37				82215.19									82215.19		1.1				
0	CHLOROPHYTA (LPIL)							1142857.00				0.0				571428.50									571428.50		7.4				
0	XANTHOPHYTA							142857.12				0.0				71428.56									71428.56		0.9				
0	HETEROCOCCALES																														
0	HETEROCOCCALES (LPIL)							142857.12				0.0				71428.56									71428.56		0.9				
0	BACILLARIOPHYTA-CENTRIC							635714.12				945474.62				790594.57									154880.25		10.3				
0	EUPODISCALES																														
0	HELOSIRA (LPIL)							285714.25				698829.06				492271.62									206557.37		6.4				
0	STEPHANODISCUS ASTRAEA							7142.86				0.0				3571.43									3571.43		0.0				
0	EUPODISCALES (LPIL)							214285.69				246645.56				230465.62									16179.94		3.0				
0	RHIZOSOLENIALES																														
0	RHIZOSOLENIA ERIENSIS							128571.37				0.0				64285.69									64285.69		0.8				
0	BACILLARIOPHYTA-PENNATE							5114282.00				1175677.00				3144979.00									1969302.00		40.9				
0	FRAGILARIALES																														
0	ASTERIONELLA FORMOSA							1728570.00				534398.69				1131484.00									597085.62		14.7				
0	FRAGILARIA CROTONENSIS							2307142.00				0.0				1153571.00									1153571.00		15.0				
0	SYNEDRA (LPIL)							442856.87				0.0				221428.44									221428.44		2.9				
0	BACILLARIALES																														
0	NITZSCHIA ACICULARIS							635714.12				0.0				317857.06									317857.06		4.1				
0	NITZCHIA (LPIL)							0.0				271310.06				135655.00									135655.00		1.8				
0	BACILLARIOPHYTA-PENNATE (LPIL)							0.0				369968.31				184984.12									184984.12		2.4				
0	CRYPTOPHYTA							149999.94				0.0				74999.94									74999.94		1.0				
0	CRYPTOMONADALES																														
0	RHODOMONAS MINUTA							149999.94				0.0				74999.94									74999.94		1.0				
TOTAL							7257131.00				8122855.00				7689993.00									432862.00		100.0					
DIVERSITY (H PRIME)							2.73				1.62				2.17									0.56							
DIVERSITY (J PRIME)							0.76				0.54				0.65									0.11							
NUMBER OF TAXA							12				8				16																

ABOVE COMPUTED USING SAMPLE IDS

11

12

A.1 827 230

science services division



SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURBD	COND	DO	PH	SALN	P
				UNITS	C			SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP							
21	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0	
22	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0	
LS	TAXA																							
									1			2												
0	CYANOPHYTA							270981.25		2785450.00								1528215.00		1257234.00		24.2		
0	CHROOCOCCACEAE																							
0	CHROOCOCCUS (LPIL)							270981.25		0.0							135490.62		135490.62		2.1			
0	MICROCYSTIS (LPIL)							0.0		2785450.00							1392725.00		1392725.00		22.1			
0	CHLOROPHYTA							0.0		159168.62							79584.31		79584.31		1.3			
0	CHLOROCOCCALES																							
0	ANKISTRODESMUS (LPIL)							0.0		159168.62							79584.31		79584.31		1.3			
0	EUGLENOPHYTA							67745.31		0.0							33872.66		33872.66		0.5			
0	EUGLENALES																							
0	EUGLENA (LPIL)							67745.31		0.0							33872.66		33872.66		0.5			
0	CHRYSOPHYTA							0.0		557090.19							278545.06		278545.06		4.4			
0	CHRYSOMONADALES																							
0	DINOBRYON DIVERGENS							0.0		557090.19							278545.06		278545.06		4.4			
0	BACILLARIOPHYTA-CENTRIC							731649.37		1225598.00							978623.69		246974.31		15.5			
0	EUPODISCALES																							
0	HELOSIRA (LPIL)							270981.25		246711.37							258846.31		12134.94		4.1			
0	STEPHANODISCUS ASTRAEA							189686.87		103459.56							146573.19		43113.66		2.3			
0	STEPHANODISCUS (LPIL)							0.0		79584.31							39792.16		39792.16		0.6			
0	EUPODISCALES (LPIL)							67745.31		477505.87							272625.56		204880.25		4.3			
0	RHIZOSOLENIALES																							
0	RHIZOSOLENIA ERIENSIS							203235.94		318337.25							260786.56		57550.66		4.1			
0	BACILLARIOPHYTA-PENNATE							2553994.00		3828003.00							3190998.00		637004.50		50.6			
0	FRAGILARIALES																							
0	ASTERIONELLA FORMOSA							1470072.00		1687187.00							1578629.00		108557.50		25.0			
0	DIATOMA TENUE							54196.25		238752.94							146474.56		92278.31		2.3			
0	FRAGILARIA CRYPTONENSIS							0.0		318337.25							159168.62		159168.62		2.5			
0	FRAGILARIA (LPIL)							0.0		1352933.00							676466.50		676466.50		10.7			
0	SYNEDRA (LPIL)							0.0		39792.16							19896.08		19896.08		0.3			
0	TABELLARIA FLOCCULOSA							406471.87		0.0							203235.94		203235.94		3.2			

NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL ADZ
TOTAL		3827599.00	8794058.00	6310828.00	2483229.00	100.0
DIVERSITY (H PRIME)		2.90	3.09	3.00	0.09	
DIVERSITY (J PRIME)		0.81	0.76	0.78	0.03	
NUMBER OF TAXA		12	17	20		
ABOVE COMPUTED USING SAMPLE IDS						
		21	22			

A.3

science services division

027 232



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

PC TC GC LOC

5 56 56 0 0 00

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/H	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P	
31	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	P
32	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
LS	TAXA																												
0	UNIDENTIFIED ALGAE																												
0	UNIDENTIFIED ALGAE (LPIL)																												
0	CYANOPHYTA																												
0	CHROOCOCCACEAE																												
0	MICROCYSTIS (LPIL)																												
0	GOMPHOSPHAERIA LACUSTRIS																												
0	OSCILLATORIA																												
0	OSCILLATORIA (LPIL)																												
0	NOSTOCACEAE																												
0	APHANIZOMENON FLOS-AQUAE																												
0	CHLOROPHYTA																												
0	VOLVOCALES																												
0	CHLAMYDOMONAS (LPIL)																												
0	CHLOROCOCCALES																												
0	ANKISTRODESCHUS (LPIL)																												
0	QUADRIGULA (LPIL)																												
0	SCENEDESCHUS QUADRICAUDA																												
0	EUGLENOPHYTA																												
0	EUGLENALES																												
0	EUGLENA (LPIL)																												
0	XANTHOPHYTA																												
0	HETEROCOCCALES																												
0	HETEROCOCCALES (LPIL)																												
0	CHRYSOPHYTA																												
0	CHRYSONOMADALES																												
0	DINOBRYON DIVERGENS																												
0	DINOBRYON SOCIALE																												
0	CHRYSOCHROMULINA PARVA																												
0	BACILLARIOPHYTA-CENTRIC																												
0	EUPODISCALES																												
0	HELGOSIRA (LPIL)																												
0	STEPHANODISCUS ASTRAEA																												
0	STEPHANODISCUS (LPIL)																												
0	EUPODISCALES (LPIL)																												
0	RHIZOSOLENIALES																												
0	RHIZOSOLENIA ERIENSIS																												

A.4

827 233

science services division

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
0	BACILLARIOPHYTA-PENNATE	1330570.00	4437313.00	2883941.00	1553371.00	22.1
0	FRAGILARIALES			2042586.00	1019499.94	15.6
0	ASTERIONELLA FORMOSA	1023086.06	3062086.00	37259.91	37259.91	0.3
0	DIATOMA TENUE	0.0	74519.81	474217.19	474217.19	3.6
0	FRAGILARIA CROTONENSIS	0.0	948434.37	30485.39	30485.39	0.2
0	SYNEDRA (LPIL)	0.0	60970.78			
0	BACILLARIALES			16936.33	16936.33	0.1
0	NITZSCHIA ACICULARIS	0.0	33872.66	44725.03	44725.03	0.3
0	NITZSCHIA (LPIL)	89450.06	0.0			
0	SURIPELLALES			27953.17	27953.17	0.2
0	CYTHOPLEURA SOLEA	55906.35	0.0	209780.19	47651.87	1.6
0	BACILLARIOPHYTA-PENNATE (LPIL)	162128.31	257432.06	157524.31	45711.62	1.2
0	CRYPTOPHYTA	111812.69	203235.94			
0	CRYPTOMONADALES			157524.31	45711.62	1.2
0	RHODONONAS MINUTA	111812.69	203235.94			
	TOTAL	16592997.0	9518205.00	13055601.0	3537396.00	100.0
	DIVERSITY (H PRIME)	1.56	2.98	2.27	0.71	
	DIVERSITY (J PRIME)	0.38	0.70	0.54	0.16	
	NUMBER OF TAXA	17	19	28		

ABOVE COMPUTED USING SAMPLE IDS

31 32

A.5



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 0 10

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP											
SID	DATE	TIME	D/H	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P					
41	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	
42	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	
LS		TAXA																															



## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	ASTERIONELLA FORMOSA	534069.81	1959087.00	1246578.00	712508.56	16.4
0	DIATOMA TENUE	0.0	278873.75	139436.87	139436.87	1.8
0	SYNEDRA (LPIL)	22888.71	167324.19	95106.44	72217.69	1.3
0	TABELLARIA FLOCCULOSA	152591.37	362535.81	257563.56	104972.19	3.
0	NAVICULALES					
0	NAVICULA (LPIL)	0.0	69718.44	34859.22	34859.22	0.5
0	BACILLARIALES					
0	NITZSCHIA HOLSATICA	0.0	906339.69	453169.81	453169.81	6.0
0	NITZCHIA (LPIL)	152591.37	139436.37	146014.12	6577.25	1.9
0	SURIPELLALES					
0	SURIPELLA OVATA	0.0	69718.44	34859.22	34859.22	0.5
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.0	69718.44	34859.22	34859.22	0.5
0	PYRRHOPHYTA-DINOPHYCEAE	76295.69	0.0	38147.84	38147.84	0.5
0	PERIDINIALES					
0	PERIDINIUM INCONSPICUUM	76295.69	0.0	38147.84	38147.84	0.5
0	CRYPTOPHYTA	152591.37	69718.44	111154.87	41436.47	1.5
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	152591.37	69718.44	111154.87	41436.47	1.5
	TOTAL	10086277.0	5103378.00	7594827.00	2491449.00	100.0
	DIVERSITY (H PRIME)	3.09	3.03	3.06	0.03	
	DIVERSITY (J PRIME)	0.70	0.76	0.73	0.03	
	NUMBER OF TAXA	21	16	29		

ABOVE COMPUTED USING SAMPLE IDS

41 42

A.7

science services division

827 236

A.8 827 237 science services division

827 237

science services division

**vision**

**vision**

SID	DATE	TIME	DURATION	SD	WD	TOW	SAMP VOL	WIND	CURRENT	TEMP	BT	TURBD	COND	DO	PH	SALN P
			D/N UNITS C			SP D	UNITS C SECH W T	SC DI	CL SP DI	AIR	WAT					
51	4/29/79	0 0	0.0 0	0.0	0.0	0.0 0	20.4 4 0.0 0 0	0 0	0 0.0 0	0.0	0.0	0 0.0	0	0.0	0.0	0.0 0
52	4/29/79	0 0	0.0 0	0.0	0.0	0.0 0	2.0 4 0.0 0 0	0 0	0 0.0 0	0.0	0.0	0 0.0	0	0.0	0.0	0.0 0
LS	TAXA															
						1	2									
0	UNIDENTIFIED ALGAE					72349.37	151276.00					111812.69		39463.31		1.7
0	UNIDENTIFIED ALGAE (LPIL)					72349.37	151276.00					111812.69		39463.31		1.7
0	CYANOPHYTA					0.0	4613918.00					2306959.00		2306959.00		34.6
0	OSCILLATORIAEAE															
0	OSCILLATORIA (LPIL)					0.0	2647330.00					1323665.00		1323665.00		19.8
0	NOSTOCACEAE															
0	APHANIZOMENON FLOS-AQUAE					0.0	1966588.00					983294.00		983294.00		14.7
0	CHLOROPHYTA					723493.75	151276.00					437384.87		286108.87		6.6
0	VOLVOCALES															
0	CHLAMYDOMONAS (LPIL)					144698.75	75638.00					110168.37		34530.37		1.7
0	CHLOROCOCCALES															
0	ANKISTRODESMUS (LPIL)					0.0	75638.00					37819.00		37819.00		0.6
0	OOCYSTIS (LPIL)					289397.50	0.0					144698.75		144698.75		2.2
0	SCENEDESMUS QUADRICAUDA					289397.50	0.0					144698.75		144698.75		2.2
0	EUGLENOPHYTA					72349.37	75638.00					73993.69		1644.31		1.1
0	EUGLENALES															
0	EUGLENA (LPIL)					0.0	75638.00					37819.00		37819.00		0.6
0	TRACHELOMONAS (LPIL)					72349.37	0.0					36174.69		36174.69		0.5
0	XANTHOPHYTA					72349.37	529466.00					300907.69		228558.31		4.5
0	HETEROCOCCALES															
0	HETEROCOCCALES (LPIL)					72349.37	529466.00					300907.69		228558.31		4.5
0	CHRYSOPHYTA					72349.37	151276.00					111812.69		39463.31		1.7
0	CHRYSOMONADALES															
0	CHRYSOCOCCUS (LPIL)					0.0	75638.00					37819.00		37819.00		0.6
0	DINOBRYON DIVERGENS					72349.37	0.0					36174.69		36174.69		0.5
0	CHRYSOCHROMULINA PARVA					0.0	75638.00					37819.00		37819.00		0.6
0	BACILLARIOPHYTA-CENTRIC					1410812.00	1270718.00					1340765.00		70047.00		20.1
0	EUPODISCALES															
0	MELOSIRA VARIANS					904367.19	0.0					452183.56		452183.56		6.8
0	MELOSIRA (LPIL)					0.0	514338.37					257169.19		257169.19		3.9

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	FRAGILARIALES					
0	ASTERIONELLA FORMOSA	397921.44	1686727.00	1042324.19	644402.75	15.6
0	DIATOMA TENUE	202578.25	75638.00	139108.12	63470.12	2.1
0	FRAGILARIA CROTONENSIS	0.0	75638.00	37819.00	37819.00	0.6
0	SYNEDRA (LPIL)	180873.44	75638.00	128255.69	52617.72	1.9
0	ACHNANTHALES					
0	COCCONEIS (LPIL)	0.0	151276.00	75638.00	75638.00	1.1
0	BACILLARIALES					
0	NITZSCHIA ACICULARIS	0.0	151276.00	75638.00	75638.00	1.1
0	NITZSCHIA (LPIL)	108524.06	75638.00	92081.00	16443.03	1.1
0	BACILLARIOPHYTA-PENNATE (LPIL)	217048.12	151276.00	184162.06	32886.06	2.1
0	CRYPTOPHYTA	72349.37	355498.56	213923.94	141574.56	3.2
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	72349.37	355498.56	213923.94	141574.56	3.2
	TOTAL	3602990.00	9742173.00	6672581.00	3069591.00	100.0
	DIVERSITY (H PRIME)	3.63	3.25	3.44	0.19	
	DIVERSITY (J PRIME)	0.89	0.74	0.81	0.07	
	NUMBER OF TAXA	17	21	28		

ABOVE COMPUTED USING SAMPLE IDS

51

52

A.9

science services division

827 238

1000

1000

1000

1000

[illegible]

1000

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	62483.57	359861.37	211172.44	148688.87	5.0
TOTAL		4767488.00	3737017.00	4252252.00	515235.50	100.0
DIVERSITY (H PRIME)		2.81	2.84	2.83	0.02	
DIVERSITY (J PRIME)		0.69	0.82	0.76	0.07	
NUMBER OF TAXA		17	11	23		

ABOVE COMPUTED USING SAMPLE IDS

61 62

A.11

science services division

827 240





## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL ABZ
0	RHODONONAS (LPIL)	0.0	57670.14	28835.07	28835.07	0.6
TOTAL		6860160.00	2404841.00	4632500.00	2227659.00	100.0
DIVERSITY (H PRIME)		2.66	3.09	2.88	0.22	
DIVERSITY (J PRIME)		0.67	0.81	0.74	0.07	
NUMBER OF TAXA		16	14	22		

ABOVE COMPUTED USING SAMPLE IDS

71 72

A.13

science services division

827 242



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 1 00

				DURATION				TOW				SAMP VOL				WIND				CURENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P			
81	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
82	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
																									REL						
																									S.E.						
LS	TAXA																								ABZ						
								1		2																					
0	UNIDENTIFIED ALGAE							224940.75		0.0													112470.37								
0	UNIDENTIFIED ALGAE (LPIL)							224940.75		0.0													112470.37								
0	CYANOPHYTA							3749012.00		348592.19													2048802.00								
0	CHROOCOCCACEAE																														
0	APHANOTHECE (LPIL)							3749012.00		0.0													1874506.00								
0	NOSTOCACEAE																														
0	APHANIZOMENON FLOS-AQUAE							0.0		348592.19													174296.06								
0	CHLOROPHYTA							224940.75		209155.31													217043.00								
0	VOLVOCALES																														
0	CHLAMYDOMONAS (LPIL)							74980.25		0.0													37490.12								
0	CHLOROCOCCALES																														
0	ANKISTRODESMUS (LPIL)							0.0		69718.44													34859.22								
0	SCENEDESMUS ECOMIS							149960.50		139436.87													144698.69								
0	XANTHOPHYTA							149960.50		522888.25													336424.37								
0	HETEROCOCCALES																														
0	HETEROCOCCALES (LPIL)							149960.50		522888.25													336424.37								
0	BACILLARIOPHYTA-CENTRIC							779794.56		871480.44													825637.50								
0	EUPODISCALES																														
0	MELOSIRA (LPIL)							404893.31		453169.81													429031.56								
0	STEPHANODISCUS ASTRAEA							74980.25		139436.87													107208.56								
0	EUPODISCALES (LPIL)							224940.75		69718.44													147329.56								
0	RHIZOSOLENIALES																														
0	RHIZOSOLENIA ERIENSIS							74980.25		209155.31													142067.75								
0	BACILLARIOPHYTA-PENNATE							2549327.00		4908176.00													3728751.00								
0	FRAGILARIALES																														
0	ASTERIONELLA FORMOSA							1537095.00		697184.37													1117139.00								
0	FRAGILARIA CROTONENSIS							599842.00		0.0													299921.00								
0	FRAGILARIA (LPIL)							0.0		3485921.00													1742960.00								
0	SYNEDRA (LPIL)							74980.25		306761.06													190870.62								
0	NAVICULALES																														
0	NAVICULA (LPIL)							0.0		69718.44													34859.22								
0	BACILLARIALES																														
0	NITZCHIA (LPIL)							149960.50		348592.19													249276.31								
0	BACILLARIOPHYTA-PENNATE (LPIL)							187450.62		0.0													93725.31								
0	PYRRHOPHYTA-DINOPHYCEAE							0.0		69718.44													34859.22								
0	PERIDINIALES																														

A.14

827 243

science services division

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL ABX
0	PERIDINIUM INCONSPICUUM	0.0	69718.44	34859.22	34859.22	0.5
0	CRYPTOPHYTA	262430.87	209155.31	235793.06	26637.78	3.1
0	CRYPTOMONADALES					
0	RHODONONAS MINUTA	262430.87	209155.31	235793.06	26637.78	3.1
	TOTAL	7940403.00	7139157.00	7539780.00	400623.00	100.0
	DIVERSITY (H PRIME)	2.63	2.76	2.70	0.07	
	DIVERSITY (J PRIME)	0.67	0.71	0.69	0.02	
	NUMBER OF TAXA	15	15	20		

ABOVE COMPUTED USING SAMPLE IDS  
81 82

A.15

science services division

827 244

## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 1 00

			DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBO	COND	DO	PH	SALIN	P			
91	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0 0	0 0.0	0 0	0 0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
92	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0 0	0 0.0	0 0	0 0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
																									REL					
																									X		S.E.		ABX	
LS		TAXA						1		2																				
0	UNIDENTIFIED ALGAE								0.0		215074.87										107537.44		107537.44		1.2					
0	UNIDENTIFIED ALGAE (LPIL)								0.0		215074.87										107537.44		107537.44		1.2					
0	CYANOPHYTA								0.0		11685734.0										5842867.00		5842867.00		64.9					
0	CHROOCOCCACEAE																													
0	MICROCYSTIS (LPIL)								0.0		3584581.00										1792290.00		1792290.00		19.9					
0	APHANOTHECE (LPIL)								0.0		6093788.00										3046894.00		3046894.00		33.8					
0	NOSTOCACEAE																													
0	APHANIZOMENON FLOS-AQUAE								0.0		2007365.00										1003682.50		1003682.50		11.1					
0	XANTHOPHYTA								737963.19		0.0										368981.56		368981.56		4.1					
0	HETEROCOCCALES																													
0	HETEROCOCCALES (LPIL)								737963.19		0.0										368981.56		368981.56		4.1					
0	BACILLARIOPHYTA-CENTRIC								355564.00		573533.00										464548.50		108984.50		5.2					
0	EUPODISCALES																													
0	HELOSIRA (LPIL)								167718.87		71691.62										119705.25		48013.62		1.3					
0	STEPHANODISCUS (LPIL)								67087.56		0.0										33543.78		33543.78		0.4					
0	EUPODISCALES (LPIL)								0.0		143383.25										71691.62		71691.62		0.8					
0	RHIZOSOLENIALES																													
0	RHIZOSOLENIA ERIENSIS								120757.56		358458.12										239607.81		118850.25		2.7					
0	BACILLARIOPHYTA-PENNATE								2012625.00		2165083.00										2088954.00		76229.00		23.2					
0	FRAGILARIALES																													
0	ASTERIONELLA FORMOSA								1482635.00		1570045.00										1526340.00		43705.00		16.9					
0	DIAOMA TENUE								161010.06		0.0										80505.00		80505.00		0.9					
0	SYNEDRA ULNA								100631.31		0.0										50315.66		50315.66		0.6					
0	SYNEDRA (LPIL)								201262.69		35845.81										116554.25		82708.44		1.3					
0	TABELLARIA FLOCCULOSA								0.0		308274.00										154137.00		154137.00		1.7					
0	BACILLARIALES																													
0	NITZCHIA (LPIL)								67087.56		215074.87										141081.19		73993.62		1.6					
0	BACILLARIOPHYTA-PENNATE (LPIL)								0.0		35845.81										17922.91		17922.91		0.2					
0	CRYPTOPHYTA								268350.25		0.0										134175.12		134175.12		1.5					
0	CRYPTONHODALES																													
0	CRYPTONHODAS MARSSONII								67087.56		0.0										33543.78		33543.78		0.4					
0	RHODOMONAS MINUTA								201262.69		0.0										100631.31		100631.31		1.1					
TOTAL								3374498.00		14639421.0										9006959.00		5632461.00		100.0						
DIVERSITY (H PRIME)								2.57		2.33										2.45		0.12								
DIVERSITY (J PRIME)								0.74		0.65										0.70		0.05								
NUMBER OF TAXA								11		12										18										

## BAILY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 0 20

SID	DATE	TIME	DURATION		SD	WD	TOW		SAMP VOL		SC	DI	CURENT		AIR	WAT	BT	TURBD	COND	DO	PH	SALN P									
			D/H	UNITS C			SP	D	UNITS C	SECH W T			CL	SP	DI																
101	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	2.0	4 0.0 0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0 0									
102	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	2.0	4 0.0 0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0 0									
																					REL										
LS	TAXA																				ABZ										
							1	2													S.E.										
0	CYANOPHYTA						3733226.00	11139919.0													60.9										
0	OSCILLATORIAEAE																														
0	OSCILLATORIA (LPIL)						3733226.00	9711724.00													55.1										
0	NOSTOCACEAE																														
0	APHANIZOMENON FLOS-AQUAE						0.0	1428195.00													5.9										
0	CHLOROPHYTA						254538.19	571278.00													3.4										
0	CHLOROCOCCALES																														
0	ANKISTRODESMUS (LPIL)						84846.06	142819.50													0.9										
0	OOCYSTIS (LPIL)						0.0	285639.00													1.2										
0	SCENEDESMUS QUADRICAUDA						0.0	142819.50													0.6										
0	SCENEDESMUS ECORNIS						169692.12	0.0													0.7										
0	XANTHOPHYTA						339384.25	71409.75													1.7										
0	HETEROCOCCALES																														
0	HETEROCOCCALES (LPIL)						339384.25	71409.75													1.7										
0	BACILLARIOPHYTA-CENTRIC						1612075.00	1249670.00													11.7										
0	EUPODISCALES																														
0	MELOSIRA (LPIL)						509076.37	749802.37													5.2										
0	STEPHANODISCUS ASTRAEA						0.0	71409.75													0.3										
0	STEPHANODISCUS (LPIL)						84846.06	0.0													0.3										
0	EUPODISCALES (LPIL)						84846.06	71409.75													0.6										
0	RHIZOSOLENIALES																														
0	RHIZOSOLENIA ERIENSIS						933306.56	357048.75													5.3										
0	BACILLARIOPHYTA-PENNATE						3648377.00	1713831.00													22.0										
0	FRAGILARIALES																														
0	ASTERIONELLA FORMOSA						2070243.00	142556.00													13.2										
0	DIATOMA TENUE						0.0	49986.82													0.2										
0	SYNEDRA (LPIL)						296961.06	35704.87													1.4										
0	TABELLARIA FLOCCULOSA						339384.25	0.0													1.4										
0	ACHILANTHALES																														
0	COCCONEIS (LPIL)						84846.06	0.0													0.3										
0	NAVICULALES																														
0	NAVICULA (LPIL)						0.0	71409.75													0.3										
0	BACILLARIALES																														
0	NITZSCHIA HOLSATICA						195145.94	0.0													0.8										
0	NITZSCHIA (LPIL)						339384.25	164242.44													2.1										
0	SURIRELLALES																														

A.17 827 246

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL ABZ
0	CYHTOPLEURA SOLEA	84845.06	0.0	42423.03	42423.03	0.3
0	SURIRELLA OVATA	84846.06	0.0	42423.03	42423.03	0.3
0	BACILLARIOPHYTA-PENNATE (LPIL)	152722.87	249934.12	201328.50	46605.62	1.6
0	CRYPTOPHYTA	0.0	71409.75	35704.87	35704.87	0.3
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	0.0	71409.75	35704.87	35704.87	0.3
TOTAL		9587598.00	14817510.0	12202554.0	2614956.00	100.0
DIVERSITY (H PRIME)		2.90	2.00	2.45	0.45	
DIVERSITY (J PRIME)		0.71	0.49	0.60	0.11	
NUMBER OF TAXA		17	17	24		

ABOVE COMPUTED USING SAMPLE IDS

101 102

A.18

science services division

827 247



## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	1	2	3	X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	76821.87	0.0	33872.66	36898.18	22228.10	0.4
0	UNIDENTIFIED ALGAE (LPIL)	76821.87	0.0	33872.66	36898.18	22228.10	0.4
0	CYANOPHYTA	2877531.00	1528215.00	8506642.00	4304129.00	2137053.00	47.7
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	0.0	135490.62	0.0	45163.54	45163.54	0.5
0	MICROCYSTIS (LPIL)	0.0	1392725.00	6149698.00	2514141.00	1861708.00	27.9
0	GOMPHOSPHERA LACUSTRIS	2877531.00	0.0	135490.62	1004340.50	937411.50	11.1
0	OSCILLATORIACEAE						
0	OSCILLATORIA (LPIL)	0.0	0.0	866548.00	288849.31	288849.31	3.2
0	NOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	0.	0.0	1354906.00	451635.31	451635.31	5.0
0	CHLOROPHYTA	653643.61	79584.31	381149.69	371459.19	165787.44	4.1
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.0	0.0	95698.44	31899.48	31899.48	0.4
0	CHLOROCOCCALES						
0	ANKISTRODESMUS (LPIL)	0.0	79584.31	27953.17	35845.83	23310.48	0.4
0	UNIDENTIFIED: 05030511	82215.19	0.0	0.0	27405.06	27405.06	0.3
0	QUADRIGULA (LPIL)	0.0	0.0	145685.31	48561.77	48561.77	0.5
0	SCENEDESMUS QUADRICAUDA	0.0	0.0	111812.69	37270.89	37270.89	0.4
0	CHLOROPHYTA (LPIL)	571428.50	0.0	0.0	190476.12	190476.12	2.1
0	EUGLENOPHYTA	0.0	33872.66	27953.17	20608.61	10445.03	0.2
0	EUGLENALES						
0	EUGLENA (LPIL)	0.0	33872.66	27953.17	20608.61	10445.03	0.2
0	XANTHOPHYTA	71428.56	0.0	203235.94	91554.81	59525.93	1.0
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	71428.56	0.0	203235.94	91554.81	59525.93	1.0
0	CHRYSOPHYTA	0.0	278545.06	265061.75	181202.25	90684.69	2.0
0	CHRYSONOMADALES						
0	DINOBRYON DIVERGENS	0.0	278545.06	27953.17	102166.06	88557.87	1.1
0	DINOBRYON SOCIALE	0.0	0.0	135490.62	45163.54	45163.54	0.5
0	CHRYSOCHROMULINA PARVA	0.0	0.0	101617.94	33872.64	33872.64	0.4
0	BACILLARIOPHYTA-CENTRIC	700594.37	978623.69	596224.56	788480.87	110394.12	8.7
0	EUFODISCALES						
0	HELOSIRA (LPIL)	492271.62	258846.31	225269.62	325462.50	83965.87	3.6
0	STEPHANODISCUS ASTRAEA	3571.43	146573.19	145685.31	98609.94	47519.96	1.1
0	STEPHANODISCUS (LPIL)	0.0	39792.16	27953.17	22531.77	11796.79	0.3
0	EUFODISCALES (LPIL)	230465.62	272625.56	33872.66	178987.94	73571.25	2.0
0	RHIZOSOLENIALES						
0	PHIZOSOLENIA ERIENSIS	64285.69	260786.56	163443.75	162838.62	56725.72	1.8
0	BACILLARIOPHYTA-PENNATE	3144979.00	3190998.00	2883941.00	3073306.00	95609.87	34.1
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	1131484.00	1578629.00	2042586.00	1584233.00	263027.37	17.6



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	1	2	3	X	S.E.	REL AB%
0	DIATOMA TENUE	0.0	146474.56	37259.91	61244.82	43951.32	0.7
0	FRAGILARIA CROTONENSIS	1153571.00	159168.62	474217.19	595652.25	293410.31	6.6
0	FRAGILARIA (LPIL)	0.0	676466.50	0.0	225488.81	225488.81	2.5
0	SYNEDRA (LPIL)	221428.44	19896.08	30485.39	90603.25	65483.95	1.0
0	TABELLARIA FLOCCULOSA	0.0	203235.94	0.0	67745.31	67745.31	0.8
0	BACILLARIALES						
0	NITZSCHIA ACICULARIS	317857.06	0.0	16936.33	111597.75	103245.44	1.2
0	NITZCHIA (LPIL)	135655.00	280715.44	44725.03	153698.44	68719.31	1.7
0	SURIPELLALES						
0	CYTHOPLEURA SOLEA	0.0	0.0	27953.17	9317.72	9317.72	0.1
0	BACILLARIOPHYTA-PENNATE (LPIL)	184984.12	126414.00	209780.19	173726.06	24715.29	1.9
0	CRYPTOPHYTA	74999.94	220994.44	157524.31	151172.87	42264.46	1.7
0	CRYPTOMONADALES						
0	CRYPTOMONAS (LPIL)	0.0	39792.16	0.0	13264.05	13264.05	0.1
0	RHODOMONAS MINUTA	74999.94	181202.25	157524.31	137908.81	32188.55	1.5
	TOTAL	7689993.00	6310828.00	13055601.0	9018807.00	2057287.00	100.0
	DIVERSITY (H PRIME)	2.17	3.00	2.27	2.48	0.26	
	DIVERSITY (J PRIME)	0.65	0.78	0.54	0.66	0.07	
	NUMBER OF TAXA	16	20	28	34		

ABOVE COMPUTED USING SAMPLE IDS

11	12	21	22
31	32		

A.20

science services division

827 249

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL ABZ
0	UNIDENTIFIED ALGAE	36898.18	37270.89	0.0	24723.02	12361.98	0.3
0	UNIDENTIFIED ALGAE (LPIL)	36898.18	37270.89	0.0	24723.02	12361.98	0.3
0	CYANOPHYTA	4304129.00	2065135.00	7436572.00	4601945.00	1557733.00	50.4
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	45163.54	101727.56	0.0	48963.70	29427.62	0.5
0	MICROCYSTIS (LPIL)	2514141.00	0.0	0.0	838047.00	838047.00	9.2
0	GOMPHOSPHAERIA LACUSTRIS	1004340.50	254318.81	0.0	419553.06	301469.56	4.6
0	OSCILLATORIACEAE						
0	OSCILLATORIA (LPIL)	288849.31	1381324.00	6722475.00	2797549.00	1987641.00	30.6
0	HOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	451635.31	327764.62	714097.50	497832.44	113891.56	5.5
0	CHLOROPHYTA	371459.19	600485.50	412908.06	461617.56	70457.37	5.1
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	31899.48	71472.37	0.0	34457.28	20671.89	0.4
0	CHLOROCOCCALES						
0	ANKISTRODESNIUS (LPIL)	35845.83	35736.21	113632.75	61804.93	26013.93	0.7
0	UNIDENTIFIED: 05030511	27405.06	0.0	0.0	9135.02	9135.02	0.1
0	OOCYSTIS (LPIL)	0.0	58646.84	142819.50	67155.44	41447.35	0.7
0	QUADRIGULA (LPIL)	48561.77	0.0	0.0	16187.25	16187.25	0.2
0	SCENEDESNIUS ACUMINATUS	0.0	25431.89	0.0	8477.30	8477.30	0.1
0	SCENEDESNIUS QUADRICAUDA	37270.89	89888.62	71409.75	66189.75	15412.04	0.7
0	SCENEDESNIUS ECORNIS	0.0	25431.79	84846.06	36759.32	25139.25	0.4
0	SCENEDESNIUS (LPIL)	0.0	46136.08	0.0	15378.69	15378.69	0.2
0	PEDIASTRUM BORYANUM	0.0	178023.12	0.0	59341.04	59341.04	0.6
0	OEDOGONIALES						
0	OEDOGONIUM (LPIL)	0.0	69718.44	0.0	23239.48	23239.48	0.3
0	CHLOROPHYTA (LPIL)	190476.12	0.0	0.0	63492.04	63492.04	0.7
0	EUGLENOPHYTA	20608.61	47794.44	0.0	22801.02	13840.54	0.2
0	EUGLENALES						
0	EUGLENA (LPIL)	20608.61	23020.26	0.0	14542.95	7304.73	0.2
0	TRACHELONONAS (LPIL)	0.0	24774.18	0.0	8258.06	8258.06	0.1
0	XANTHOPHYTA	91554.81	123542.00	205397.00	140164.56	33898.10	1.5
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	91554.81	123542.00	205397.00	140164.56	33898.10	1.5
0	CHRYSOPHYTA	181202.25	48890.63	0.0	76697.62	54124.81	0.8
0	CHRYSOMONADALES						
0	CHRYSOCOCCUS (LPIL)	0.0	12606.33	0.0	4202.11	4202.11	0.0
0	DINOBRYON DIVERGENS	102166.06	12058.23	0.0	38074.76	32234.15	0.4
0	DINOBRYON SOCIALE	45163.54	0.0	0.0	15054.51	15054.51	0.2
0	CHRYSOCHROMULINA PARVA	33872.64	12606.33	0.0	15492.99	9884.14	0.2
0	MONOSIGALES						
0	STELXCHONAS DICHOTOMA	0.0	11619.74	0.0	3873.25	3873.25	0.0



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL ABZ
0	BACILLARIOPHYTA-CENTRIC	788480.87	930883.87	1430872.00	1050078.00	194783.75	11.5
0	EUPODISCALES						
0	HELOSIRA VARIANS	0.0	284245.25	0.0	94748.37	94748.37	1.0
0	HELOSIRA (LPIL)	325462.50	222803.19	629439.37	392568.31	122086.87	4.3
0	STEPHANODISCUS ASTRAEA	93609.94	35188.10	35704.87	56500.97	21055.01	0.6
0	STEPHANODISCUS (LPIL)	22581.77	84321.81	42423.03	49775.54	18198.01	0.5
0	EUPODISCALES (LPIL)	178987.94	68074.12	78127.87	108396.62	35414.77	1.2
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	162838.62	236251.87	645177.62	348089.37	150048.25	3.8
0	BACILLARIOPHYTA-PENNATE	3073306.00	2127755.00	2681104.00	2627388.00	274275.19	28.8
0	FPAGILARIALES						
0	ASTERIONELLA FORMOSA	1584233.00	1179978.00	1606399.00	1456870.00	138593.75	16.0
0	DIATOMA TENUE	61244.82	105345.00	24993.41	63361.07	23232.36	0.7
0	DIATOMA (LPIL)	0.0	69204.12	0.0	23068.04	23068.04	0.3
0	FRAGILARIA CROTONENSIS	595652.25	12606.33	0.0	202752.81	196483.37	2.2
0	FRAGILARIA PINNATA	0.0	103806.19	0.0	34602.06	34602.06	0.4
0	FRAGILARIA (LPIL)	225488.81	11534.02	0.0	79007.56	73316.19	0.9
0	SYNEDRA (LPIL)	90603.25	114487.06	166332.94	123807.75	22352.50	1.4
0	TABELLARIA FLOCCULOSA	67745.31	96268.44	169852.12	111235.25	30366.06	1.2
0	FRAGILARIALES (LPIL)	0.0	11534.02	0.0	3844.67	3844.67	0.0
0	ACHNANTHALES						
0	COCCONEIS (LPIL)	0.0	23212.66	42423.03	22545.23	12318.88	0.2
0	NAVICULES						
0	NAVICULA (LPIL)	0.0	11619.74	35704.87	15774.87	10514.41	0.2
0	BACILLARIALES						
0	NITZSCHIA ACICULARIS	111597.75	25212.66	0.0	45603.47	33790.30	0.5
0	NITZSCHIA HOLSATICA	0.0	151056.56	97572.94	82876.80	44221.07	0.9
0	NITZSCHIA (LPIL)	153698.44	120058.00	251813.31	175189.87	39523.32	1.9
0	SURIRELLALES						
0	CYTHOPLEURA SOLEA	9317.72	0.0	42423.03	17246.92	12872.22	0.2
0	SURIRELLA OVATA	0.0	11619.74	42423.03	17014.25	12656.96	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	173726.06	78214.00	201328.50	151089.50	37298.81	1.7
0	PIRRHOPHYTA-DINOPHYCEAE	0.0	12715.95	0.0	4238.65	4238.65	0.0
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	12715.95	0.0	4238.65	4238.65	0.0
0	CRYPTOPHYTA	151172.87	178750.37	35704.87	121876.00	43814.88	1.3
0	CRYPTONHODALES						
0	CRYPTONHODAS (LPIL)	13264.05	0.0	0.0	4421.35	4421.35	0.0
0	RHODONHODAS MINUTA	137908.81	178750.37	35704.87	117454.69	42541.28	1.3
	TOTAL	9018807.00	6173220.00	12202554.0	9131527.00	1741431.00	100.0
	DIVERSITY (H PRIME)	2.48	3.11	2.45	2.68	0.21	
	DIVERSITY (J PRIME)	0.66	0.77	0.60	0.67	0.05	

A.22827 251

science services division

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL ABZ
0	UNIDENTIFIED ALGAE	0.0	111812.69	0.0	37270.89	37270.89	0.6
0	UNIDENTIFIED ALGAE (LPIL)	0.0	111812.69	0.0	37270.89	37270.89	0.6
0	CYANOPHYTA	3013679.00	2306959.00	874769.50	2065135.00	629177.31	33.5
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	305182.75	0.0	0.0	101727.56	101727.56	1.6
0	GOMPHOSPHAERIA LACUSTRIS	762956.50	0.0	0.0	254318.81	254318.81	4.1
0	OSCILLATORIA						
0	OSCILLATORIA (LPIL)	1945540.00	1323665.00	874769.50	1381324.00	310446.37	22.4
0	NOSTOCACEAE						
0	AFHANIZOMENON FLOS-AQUAE	0.0	983294.00	0.0	327764.62	327764.62	5.3
0	CHLOROPHYTA	1006971.00	437384.87	357100.69	600485.50	204559.81	9.7
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	73007.06	110168.37	31241.78	71472.37	22797.06	1.2
0	CHLOROCOCCALES						
0	ANKISTRODESHUS (LPIL)	38147.84	37819.00	31241.78	35736.21	2249.22	0.6
0	BOCYSITIS (LPIL)	0.0	144698.75	31241.78	50646.84	43961.00	1.0
0	SCENEDESHUS ACUMINATUS	76295.69	0.0	0.0	25431.89	25431.89	0.4
0	SCENEDESHUS QUADRICAUDA	0.0	144698.75	124967.12	89808.62	45303.82	1.5
0	SCENEDESHUS ECOMIS	76295.69	0.0	0.0	25431.89	25431.89	0.4
0	SCENEDESHUS (LPIL)	0.0	0.0	138408.25	46136.08	46136.08	0.7
0	PEDIASTRUM BORYANUM	534069.50	0.0	0.0	178023.12	178023.12	2.9
0	OEDOGONIALES						
0	OEDOGONIUM (LPIL)	209155.31	0.0	0.0	69718.44	69718.44	1.1
0	EUGLENOPHYTA	38147.84	73993.69	31241.78	47794.44	13250.46	0.8
0	EUGLENALES						
0	EUGLENA (LPIL)	0.0	37819.00	31241.78	23020.26	11665.68	0.4
0	TRACHELONAS (LPIL)	38147.84	36174.69	0.0	24774.18	12400.18	0.4
0	XANTHOPHYTA	69718.44	300907.69	0.0	123542.00	90937.87	2.0
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	69718.44	300907.69	0.0	123542.00	90937.87	2.0
0	CHRYSOPHYTA	34859.22	111812.69	0.0	48890.63	33031.20	0.8
0	CHRYSOMONADALES						
0	CHRYSOCOCCUS (LPIL)	0.0	37819.00	0.0	12606.33	12606.33	0.2
0	DINOBRYON DIVERGENS	0.0	36174.69	0.0	12058.23	12058.23	0.2
0	CHRYSOCHROMULINA PARVA	0.0	37819.00	0.0	12606.33	12606.33	0.2
0	MONOSIGALES						
0	STELXOMONAS DICHOTOMA	34859.22	0.0	0.0	11619.74	11619.74	0.2
0	BACILLARIOPHYTA-CENTRIC	839711.44	1340765.00	612175.31	930883.87	215209.19	15.1
0	EUPODISCALES						
0	MELOSIRA VARIANS	400552.31	452183.56	0.0	284245.25	142902.00	4.6
0	MELOSIRA (LPIL)	114443.50	257169.19	296796.87	222803.19	55374.34	3.6
0	STEPHANODISCUS ASTRAEA	38147.84	36174.69	31241.78	35188.10	2053.73	0.6

A.23  
227 252

science services division





## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL ABZ
0	STEPHANODISCUS (LPIL)	142725.50	75638.00	34602.06	64321.81	31513.10	1.4
0	EUPODISCALES (LPIL)	38147.84	72349.37	93725.31	68074.12	16185.61	1.1
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	105695.75	447250.75	152899.19	236251.87	106486.62	3.8
0	BACILLARIOPHYTA-PENNATE	2442444.00	1775026.00	2165796.00	2127755.00	193603.50	34.5
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	1246578.00	1042324.19	1251032.00	1179978.00	66838.94	19.1
0	DIATOMA TENUE	139436.87	139108.12	37490.12	105345.00	33927.59	1.7
0	DIATOMA (LPIL)	0.0	0.0	207612.37	69204.12	69204.12	1.1
0	FRAGILARIA CROTONENSIS	0.0	37819.00	0.0	12606.33	12606.33	0.2
0	FRAGILARIA PINNATA	0.0	0.0	311418.56	103806.19	103806.19	1.7
0	FRAGILARIA (LPIL)	0.0	0.0	34602.06	11534.02	11534.02	0.2
0	SYNEDRA (LPIL)	95106.44	128255.69	120099.06	114487.06	9972.28	1.9
0	TABELLARIA FLOCCULOSA	257563.56	0.0	31241.78	96268.44	81150.25	1.6
0	FRAGILARIALES (LPIL)	0.0	0.0	34602.06	11534.02	11534.02	0.2
0	ACHNANTHALES						
0	COCCONEIS (LPIL)	0.0	75638.00	0.0	25212.66	25212.66	0.4
0	NAVICULALES						
0	NAVICULA (LPIL)	34859.22	0.0	0.0	11619.74	11619.74	0.2
0	BACILLARIALES						
0	NITZSCHIA ACICULARIS	0.0	75638.00	0.0	25212.66	25212.66	0.4
0	NITZSCHIA HOLSATICA	453169.81	0.0	0.0	151056.56	151056.56	2.4
0	NITZSCHIA (LPIL)	146014.12	92081.00	122079.00	120058.00	15601.91	1.9
0	SURIPELLALES						
0	SURIPELLA OVATA	34859.22	0.0	0.0	11619.74	11619.74	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	34859.22	184102.06	15620.89	78214.00	53264.32	1.3
0	PYRRHOPHYTA-DINOPHYCEAE	38147.84	0.0	0.0	12715.95	12715.95	0.2
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	38147.84	0.0	0.0	12715.95	12715.95	0.2
0	CRYPTOPHYTA	111154.87	213923.94	211172.44	176750.37	33807.10	2.9
0	CRYPTOMONADALES						
0	RHODOMONAS MINUTA	111154.87	213923.94	211172.44	176750.37	33807.10	2.9
	TOTAL	7594827.00	6672581.00	4252252.00	6173220.00	996698.37	100.0
	DIVERSITY (H PRIME)	3.06	3.44	2.63	3.11	0.18	
	DIVERSITY (J PRIME)	0.73	0.81	0.76	0.77	0.02	
	NUMBER OF TAXA	29	28	23	45		

ABOVE COMPUTED USING SAMPLE IDS

41	42	51	52
61	62		

A.24827 255

science services division



## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	7	8	9	X	S.E.	REL ABX
0	UNIDENTIFIED ALGAE	39792.16	112470.37	107537.44	86599.94	23447.20	1.2
0	UNIDENTIFIED ALGAE (LPIL)	39792.16	112470.37	107537.44	86599.94	23447.20	1.2
0	CYANOPHYTA	0.0	2048002.00	5842867.00	2630556.00	1711588.00	37.3
0	CHROOCOCCACEAE						
0	MICROCYSTIS (LPIL)	0.0	0.0	1792290.00	597430.00	597430.00	8.5
0	APHANOTHECE (LPIL)	0.0	1874506.00	3046894.00	1640466.00	887312.69	23.2
0	NOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	0.0	174296.06	1003682.50	392659.50	309626.94	5.6
0	CHLOROPHYTA	68627.19	217048.00	0.0	95225.06	64052.18	1.3
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	39792.16	37490.12	0.0	25760.76	12897.51	0.4
0	CHLOROCOCCALES						
0	ANKISTRODESMUS FALCATUS	28835.07	0.0	0.0	9611.69	9611.69	0.1
0	ANKISTRODESMUS (LPIL)	0.0	34859.22	0.0	11619.74	11619.74	0.2
0	SCENEDESMUS ECORNIS	0.0	144698.69	0.0	48232.89	48232.89	0.7
0	XANTHOPHYTA	318337.25	336424.37	368981.56	341247.69	14817.33	4.8
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	318337.25	336424.37	368981.56	341247.69	14817.33	4.8
0	BACILLARIOPHYTA-CENTRIC	492213.00	825637.50	464548.50	594133.00	116027.37	8.4
0	EUPODISCALES						
0	HELOSIRA (LPIL)	0.0	429031.56	119705.25	182912.25	127819.31	2.6
0	CYCLOTELLA (LPIL)	173010.37	0.0	0.0	57670.12	57670.12	0.8
0	STEPHANODISCUS ASTRAEA	59688.22	107208.56	0.0	55632.26	31014.82	0.6
0	STEPHANODISCUS (LPIL)	79584.31	0.0	33543.78	37709.36	23068.23	0.5
0	EUPODISCALES (LPIL)	79584.31	147329.56	71691.62	99535.12	24005.57	1.4
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	100345.75	142067.75	239607.81	160673.75	41263.86	2.3
0	BACILLARIOPHYTA-PENNIATE	3478817.00	3728751.00	2088854.00	3098807.00	510104.87	43.9
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	929927.81	1117139.00	1526340.00	1191135.00	176099.81	16.9
0	DIATOMA TEHUE	62352.62	0.0	80505.00	54285.87	27148.18	0.8
0	FRAGILARIA CROTONENSIS	28835.07	299921.00	0.0	109585.31	95531.12	1.6
0	FRAGILARIA (LPIL)	1711062.00	1742960.00	0.0	1151340.00	575743.94	16.3
0	SYNEDRA ULNA	2883.51	0.0	50315.66	17733.05	16312.55	0.3
0	SYNEDRA (LPIL)	234428.19	190870.62	118554.25	181284.31	33791.59	2.6
0	TABELLARIA FLOCCULOSA	148211.50	0.0	154137.00	100782.81	50420.44	1.4
0	FRAGILARIALES (LPIL)	57670.12	0.0	0.0	19223.37	19223.37	0.3
0	NAVICULALES						
0	NAVICULA (LPIL)	0.0	34859.22	0.0	11619.74	11619.74	0.2
0	BACILLARIALES						
0	NITZSCHIA (LPIL)	123413.61	249276.31	141081.19	171257.06	39341.59	2.4
0	SURIPELLALES						





## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	7	8	9	X	S.E.	REL AB%
0	SURIPELLA OVATA	39792.16	0.0	0.0	13264.05	13264.05	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	120241.81	93725.31	17922.91	77296.62	30657.87	1.1
0	PYRRHOPHYTA-DINOPHYCEAE	0.0	34859.22	0.0	11619.74	11619.74	0.2
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	34859.22	0.0	11619.74	11619.74	0.2
0	CRYPTOPHYTA	234716.69	235793.06	134175.12	201561.62	33694.68	2.9
0	CRYPTOMONADALES						
0	CRYPTOMONAS MARSSONII	0.0	0.0	33543.78	11181.26	11181.26	0.2
0	RHODOMONAS MINUTA	205881.62	235793.06	100631.31	180768.62	40988.49	2.6
0	RHODOMONAS (LPIL)	28835.07	0.0	0.0	9611.69	9611.69	0.1
TOTAL		4632500.00	7539780.00	9006959.00	7059746.00	1285404.00	100.0
DIVERSITY (H PRIME)		2.88	2.70	2.45	2.68	0.12	
DIVERSITY (J PRIME)		0.74	0.69	0.70	0.71	0.02	
NUMBER OF TAXA		22	20	18	31		

ABOVE COMPUTED USING SAMPLE IDS

71	72	81	82
91	92		

A.26

science services division

827 255

## REPLICATE REPORT

5	56	56	1	1	00
---	----	----	---	---	----

LS	TAXA	-	REL
		X	AB%

A.27

827 256

**science services division**



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
TOTAL		13420788.0	11665340.0	12543064.9	877724.00	100.0
DIVERSITY (H PRIME)		1.71	1.92	1.82	0.11	
DIVERSITY (J PRIME)		0.45	0.52	0.48	0.04	
NUMBER OF TAXA		14	13	18		

ABOVE COMPUTED USING SAMPLE IDS  
171 172

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC

5 56 56 1 1 00

				DURATION		TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/H	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBO	COND	DO	PH	SALN	P		
181	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
182	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
LS	TAXA																							X	S.E.		REL		
									1		2																ABZ		
0	UNIDENTIFIED ALGAE								612244.69		57550.65											334897.62		277347.00		4.0			
0	UNIDENTIFIED ALGAE (LPIL)								612244.69		57550.65											334897.62		277347.00		4.0			
0	CYANOPHYTA								1768706.00		7654236.00											4711471.00		2942765.00		55.7			
0	OSCILLATORIACEAE																												
0	OSCILLATORIA (LPIL)								0.0		7654236.00											3827118.00		3827118.00		45.2			
0	NOSTOCACEAE																												
0	ANABAENA								1768706.00		0.0										884353.00		884353.00		10.4				
0	CHLOROPHYTA								748299.06		3769565.00										2258932.00		1510632.00		26.7				
0	VOLVOCALES																												
0	CHLAMYDOMONAS (LPIL)								0.0		143876.56										71938.25		71938.25		0.8				
0	VOLVOCALES (LPIL)								136054.37		0.0									68027.19		68027.19		0.8					
0	CHLOROCOCCALES																												
0	ANKISTRODESCHUS (LPIL)								0.0		57550.65										28775.32		28775.32		0.3				
0	CHLORELLA (LPIL)								68027.19		0.0									34013.59		34013.59		0.4					
0	OOCYSTIS (LPIL)								0.0		230202.56									115101.25		115101.25		1.4					
0	SCENEDESHUS ACUMINATUS								0.0		230202.56									115101.25		115101.25		1.4					
0	SCENEDESHUS QUADRICAUDA								0.0		2071822.00									1035911.00		1035911.00		12.2					
0	SCENEDESHUS INTERMEDIUS								544217.50		0.0									272103.75		272103.75		3.2					
0	PEDIASTRUM BORYANUM								0.0		920810.44									460405.19		460405.19		5.4					
0	ZYGHEMATALES																												
0	NOUGEOTIA (LPIL)								0.0		111101.25									57550.62		57550.62		0.7					
0	CHRYSOPHYTA								408163.12		460405.19									434284.12		26121.03		5.1					
0	CHRYSONOMADALES																												
0	SYNURA UVELLA								68027.19		0.0								34013.59		34013.59		0.4						
0	DINOBRYON SERTULARIA								340135.94		0.0								170067.94		170067.94		2.0						
0	DINOBRYON DIVERGENS								0.0		460405.19								230202.56		230202.56		2.7						
0	BACILLARIOPHYTA-PENNATE								748299.00		517955.75								633127.37		115171.62		7.5						
0	FRAGILARIALES																												
0	FRAGILARIA (LPIL)								122448.94		0.0								61224.47		61224.47		0.7						
0	SYNEDRA (LPIL)								285714.12		0.0								142857.06		142857.06		1.7						
0	FRAGILARIALES (LPIL)								68027.19		0.0								34013.59		34013.59		0.4						
0	ACHNANTHALES																												
0	ACHNANTHES (LPIL)								204081.56		115101.25								159591.37		44490.16		1.9						
0	BACILLARIOPHYTA-PENNATE (LPIL)								68027.19		402854.50								235440.81		167413.62		2.8						
0	CRYPTOPHYTA								68027.19		115101.25									91564.19		23537.03		1.1					
0	CRYPTONOMODALES																												

A.29 827 258

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL ABZ
0	CRYPTOMONAS (LPIL)	0.0	115101.25	57550.62	57550.62	0.7
0	CHROOMONAS (LPIL)	68027.19	0.0	34013.59	34013.59	0.4
TOTAL		4353734.00	12574804.0	8464269.00	4110535.00	100.0
DIVERSITY (H PRIME)		2.82	2.02	2.42	0.40	
DIVERSITY (J PRIME)		0.76	0.54	0.65	0.11	
NUMBER OF TAXA		13	13	23		

ABOVE COMPUTED USING SAMPLE IDS

181 182

A.30

science services division

827 259



## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	17	18	X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	380820.62	334897.62	357859.12	22961.50	3.4
0	UNIDENTIFIED ALGAE (LPIL)	380820.62	334897.62	357859.12	22961.50	3.4
0	CYANOPHYTA	8849638.00	4711471.00	6780554.00	2069083.00	64.6
0	CHROOCOCCACEAE					
0	CHROOCOCCUS (LPIL)	157853.12	0.0	78926.56	78926.56	0.8
0	OSCILLATORIA					
0	OSCILLATORIA (LPIL)	8691785.00	3827118.00	6259451.00	2432333.00	59.6
0	NOSTOCACEAE					
0	ANABAENA	0.0	884353.00	442176.50	442176.50	4.2
0	CHLOROPHYTA	1594644.00	2258932.00	1926788.00	332144.00	18.3
0	VOLVOCALES					
0	CHLAMYDOMONAS (LPIL)	188108.25	71933.25	130023.25	58085.00	1.2
0	VOLVOCALES (LPIL)	0.0	68027.19	34013.59	34013.59	0.3
0	CHLOROCOCCALES					
0	ANKISTRODESMUS (LPIL)	0.0	28775.32	14387.66	14387.66	0.1
0	CHLORELLA (LPIL)	0.0	34013.59	17006.80	17006.80	0.2
0	OOCYSTIS (LPIL)	34859.22	115101.25	74990.19	40121.02	0.7
0	SCENEDESMUS ACUMINATUS	78926.56	115101.25	97013.87	18087.34	0.9
0	SCENEDESMUS QUADRICAUDA	1091816.00	1035911.00	1063863.00	27952.50	10.1
0	SCENEDESMUS INTERMEDIUS	0.0	272108.75	136054.37	136054.37	1.3
0	SCENEDESMUS EORNIS	78926.56	0.0	39463.28	39463.28	0.4
0	PEDIASTRUM BORYANUM	0.0	460405.19	230202.56	230202.56	2.2
0	ZYGNEHATALES					
0	MOUGEOTIA (LPIL)	122007.25	57550.62	60778.94	32228.31	0.9
0	CHRYSOPHYTA	390028.75	434284.12	412156.44	22127.69	3.9
0	CHRYSONOMADALES					
0	SYNURA UVELLA	39463.28	34013.59	36730.44	2724.84	0.3
0	DINOBRYON SERTULARIA	0.0	170067.94	85033.94	85033.94	0.8
0	DINOBRYON DIVERGENS	0.0	230202.56	115101.25	115101.25	1.1
0	CHRYSOCHROMULINA PARVA	350565.44	0.0	175282.69	175282.69	1.7
0	BACILLARIOPHYTA-CENTRIC	34859.22	0.0	17429.61	17429.61	0.2
0	EUPODISCALES					
0	EUFODISCALES (LPIL)	34859.22	0.0	17429.61	17429.61	0.2
0	BACILLARIOPHYTA-PENNAE	1223361.00	633127.37	928244.19	295116.11	8.8
0	FRAGILARIALES					
0	FRAGILARIA (LPIL)	0.0	61224.47	30612.23	30612.23	0.3
0	SYNEDRA (LPIL)	0.0	142857.06	71428.50	71428.50	0.7
0	TABELLARIA FLOCCULOSA	113785.75	0.0	56892.87	56892.87	0.5
0	FRAGILARIALES (LPIL)	0.0	34013.59	17006.00	17006.80	0.2
0	ACHNANTHIALES					
0	ACHNANTHES (LPIL)	511049.37	159591.37	335320.37	175729.00	3.2
0	BACILLARIALES					

A.31

science services division





NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON DENSITY

NUMBER OF CELLS PER LITER

STATION REPORT

LS	TAXA	17	18	X	S.E.	REL AB%
0	NIJZCHIA (LPIL)	74322.50	0.0	37161.25	37161.25	0.4
0	BACILLARIOPHYTA-PENNATE (LPIL)	524203.69	235440.81	379822.25	144381.44	3.6
0	CRYPTOPHYTA	69718.44	91564.19	80641.31	10922.87	0.8
0	CRYPTOMONADALES					
0	CRYPTOMONAS (LPIL)	34859.22	57550.62	46204.92	11345.70	0.4
0	CHROONONAS (LPIL)	34859.22	34013.59	34436.41	422.81	0.3
	TOTAL	12543064.0	8464269.00	10503666.0	2039397.00	100.0
	DIVERSITY (H PRIME)	1.82	2.42	2.12	0.30	
	DIVERSITY (J PRIME)	0.48	0.65	0.57	0.08	
	NUMBER OF TAXA	18	23	29		

ABOVE COMPUTED USING SAMPLE IDS

171 172 181 182

A.32

science services division

827 261

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC TC GC LOC  
5 56 56 1 2 00

			DURATION		TOW				SAMP VOL				WIND		CURRENT		TEMP															
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P					
191	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0					
192	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0 0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0					
LS	TAXA																				X		S.E.		REL ABZ							
													1		2																	
0	UNIDENTIFIED ALGAE												0.0		160544.25												80272.12		80272.12		0	
0	UNIDENTIFIED ALGAE (LPIL)												0.0		160544.25												80272.12		80272.12		0.5	
0	CYANOPHYTA												1552222.00		7866668.00												4709445.00		3157223.00		30.9	
0	CHROOCOCCACEAE																															
0	CHROOCOCCACEAE (LPIL)												0.0		4495239.00												2247619.00		2247619.00		14.7	
0	OSCILLATORIA																															
0	OSCILLATORIA (LPIL)												1552222.00		0.0												776111.00		776111.00		5.1	
0	LYNGBYA (LPIL)												0.0		3371429.00												1685714.00		1685714.00		11.0	
0	CHLOROPHYTA												543277.87		2167347.00												1355312.00		812034.56		8.9	
0	VOLVOCALES																															
0	VOLVOCALES (LPIL)												0.0		80272.12												40136.06		40136.06		0.3	
0	CHLOROCOCCALES																															
0	OOCYSTIS (LPIL)												77611.12		0.0												38805.56		38805.56		0.3	
0	TETRAEDRON (LPIL)												155222.25		0.0												77611.12		77611.12		0.5	
0	CHLOROCOCCALES (LPIL)												0.0		2087075.00												1043537.50		1043537.50		6.8	
0	OEDOGONIALES																															
0	OEDOGONIUM (LPIL)												310444.50		0.0												155222.25		155222.25		1.0	
0	EUGLENIOPHYTA												0.0		80272.12												40136.06		40136.06		0.3	
0	EUGLENALES																															
0	PHACUS (LPIL)												0.0		80272.12												40136.06		40136.06		0.3	
0	CHRYSTOPHYTA												698500.12		160544.25												429522.19		268977.94		2.8	
0	CHRYSONOMADALES																															
0	DINOBRYON DIVERGENS												698500.12		0.0												349250.06		349250.06		2.3	
0	CHRYSOCHROMULINA PARVA												0.0		80272.12												40136.06		40136.06		0.3	
0	CHRYSONOMADALES (LPIL)												0.0		80272.12												40136.06		40136.06		0.3	
0	BACILLARIOPHYTA-PENNATE												1940277.00		14970750.0												8455513.00		6515236.00		55.4	
0	FRAGILARIALES																															
0	FRAGILARIA CROTONENSIS												388055.62		0.0												194027.81		194027.81		1.3	
0	FRAGILARIA (LPIL)												0.0		200680.31												107340.12		107340.12		0.7	
0	SYNEDRA (LPIL)												0.0		12281635.0												6140817.00		6140817.00		40.2	
0	TABELLARIA FLOCCULOSA												155222.25		0.0												77611.12		77611.12		0.5	
0	FRAGILARIALES (LPIL)												0.0		80272.12												40136.06		40136.06		0.3	
0	ACHNANTHIALES																															
0	ACHNANTHES (LPIL)												931333.50		2408163.00												1669748.00		738414.75		10.9	
0	NAVICULALES																															
0	NAVICULA (LPIL)												232833.37		0.0												116416.69		116416.69		0.8	

A.33

827 262

science services division



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
0	BACILLARIOPHYTA-PENNATE (LPIL)	232833.37	0.0	116416.69	116416.69	0.8
0	CRYPTOPHYTA	310444.50	80272.12	195358.31	115086.19	1.3
0	CRYPTOMONADALES					
0	CRYPTOMONAS REFLEXA	155222.25	0.0	77611.12	77611.12	0.5
0	CRYPTOMONAS OVATA	77611.12	0.0	38805.56	38805.56	0.3
0	CRYPTOMONAS (LPIL)	77611.12	80272.12	78941.62	1330.50	0.5
	TOTAL	5044719.00	25486384.0	15265551.0	10220832.0	100.0
	DIVERSITY (H PRIME)	3.05	2.21	2.63	0.42	
	DIVERSITY (J PRIME)	0.82	0.60	0.71	0.11	
	NUMBER OF TAXA	13	13	24		

ABOVE COMPUTED USING SAMPLE IDS

191 192

A.34

science services division

827 263

## REPLICATE REPORT

PC	TC	GC	LOC
5	56	56	1 2 00

DURATION						TOW				SAMP VOI.				WIND				CURRENT				TEMP								
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P		
201	4/ 8/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
202	4/ 8/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
LS	TAXA										X										S.E. ABZ									
									1					2																
0	CYANOPHYTA								9313334.00					0.0									4656667.00		4656667.00		67.			
0	OSCILLATORIAEAE																													
0	OSCILLATORIA (LPIL)								9313334.00					0.0									4656667.00		4656667.00		67.7			
0	CHLOROPHYTA								2209942.00					51302.30									1130622.00		1079319.00		16.4			
0	VOLVOCALES																													
0	CHLAMYDOMONAS (LPIL)								1420678.00					0.0									710339.00		710339.00		10.3			
0	CHLOROCOCCALES																													
0	ANKISTRODESNIUS FALCATUS								631412.50					0.0									315706.25		315706.25		4.6			
0	ANKISTRODESNIUS (LPIL)								0.0					51302.30									25651.15		25651.15		0.4			
0	OOCYSTIS (LPIL)								78926.56					0.0									39463.28		39463.28		0.6			
0	TETRAEDRON MINIMUM								78926.56					0.0									39463.28		39463.28		0.6			
0	CHRYSOPHYTA								78926.56					1308208.00									693567.25		614640.69		10.1			
0	CHRYSONOMADALES																													
0	DINOBRYON DIVERGENS								0.0					25651.15									12825.57		12825.57		0.2			
0	CHRYSOCHROMULINA PARVA								78926.56					0.0									39463.28		39463.28		0.6			
0	CYCLOHEXIS (LPIL)								0.0					1077348.00									538674.00		538674.00		7.8			
0	CHRYSOPHYTA (LPIL)								0.0					205209.06									102604.50		102604.50		1.5			
0	BACILLARIOPHYTA-PENNATE								157853.12					159037.00									158445.06		591.94		2.3			
0	FRAGILARIALES																													
0	SYNEDRA (LPIL)								0.0					17955.00									8977.90		8977.90		0.1			
0	ACHNANTHALES																													
0	ACHNANTHES (LPIL)								0.0					64127.87									32063.93		32063.93		0.5			
0	BACILLARIALES																													
0	HITZCHIA (LPIL)								78926.56					25651.15									52288.86		26637.71		0.8			
0	BACILLARIOPHYTA-PENNATE (LPIL)								78926.56					51302.30									65114.43		13812.13		0.9			
0	PYRRHOPHYTA-DINOPHYCEAE								73926.56					25651.15									52288.86		26637.71		0.8			
0	PERIDINIALES																													
0	PERIDINIUM INCONSPICUUM								78926.56					25651.15									52288.86		26637.71		0.8			
0	CRYPTOPHYTA								315706.25					64127.87									189917.00		125789.19		2.8			
0	CRYPTOMONADALES																													
0	CRYPTOMONAS MARSSONII								157853.12					38476.72									98164.87		59688.20		1.4			
0	CRYPTOMONAS OVATA								157853.12					25651.15									91752.12		66100.94		1.3			
TOTAL									12154686.0					1608324.00									6881505.00		5273181.00		100.0			
DIVERSITY (H PRIME)									1.32					1.85									1.59		0.26					
DIVERSITY (J PRIME)									0.38					0.53									0.46		0.08					
NUMBER OF TAXA									11					11									17							

ABOVE COMPUTED USING SAMPLE IDS

201 202

A.35

**science services division**

## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA	19	20	X	S.E.	REL ABX
0	UNIDENTIFIED ALGAE	80272.12	0.0	40136.06	40136.06	0.4
0	UNIDENTIFIED ALGAE (LPIL)	80272.12	0.0	40136.06	40136.06	0.4
0	CYANOPHYTA	4709445.00	4656667.00	4683056.00	26389.00	42.3
0	CHROOCOCCACEAE					
0	CHROOCOCCACEAE (LPIL)	2247619.00	0.0	1123809.00	1123809.00	10.1
0	OSCILLATORIAEAE					
0	OSCILLATORIA (LPIL)	776111.00	4656667.00	2716389.00	1940278.00	24.5
0	LYNGBYA (LPIL)	1685714.00	0.0	842857.00	842857.00	7.6
0	CHLOROPHYTA	1355312.00	1130622.00	1242967.00	112345.06	2
0	VOLVOCALES					
0	CHLAMYDOMONAS (LPIL)	0.0	710339.00	355169.50	355169.50	3.2
0	VOLVOCALES (LPIL)	40136.06	0.0	20068.03	20068.03	3.2
0	CHLOROCOCCALES					
0	ANKISTRODESMUS FALCATUS	0.0	315706.25	157853.12	157853.12	1.4
0	ANKISTRODESMUS (LPIL)	0.0	25651.15	12825.57	12825.57	0.1
0	OOCYSTIS (LPIL)	38805.56	39463.28	39134.42	328.86	0.4
0	TETRAEDRON MINIMUM	0.0	39463.28	19731.64	19731.64	0.2
0	TETRAEDRON (LPIL)	77611.12	0.0	38805.56	38805.56	0.4
0	CHLOROCOCCALES (LPIL)	1043537.50	0.0	521768.75	521768.75	4.7
0	OEDOGONIALES					
0	OEDOGONIUM (LPIL)	155222.25	0.0	77611.12	77611.12	0.7
0	EUGLENOPHYTA	40136.06	0.0	20068.03	20068.03	0.2
0	EUGLENALES					
0	PHACUS (LPIL)	40136.06	0.0	20068.03	20068.03	0.2
0	CHRYSOPHYTA	429522.19	693567.25	561544.69	132022.50	5.1
0	CHRYSONOMADALES					
0	DINOBYRON DIVERGENS	349250.06	12825.57	181037.81	168212.19	1.6
0	CHRYSOCHROMULINA PARVA	40136.06	39463.28	39799.67	336.39	0.4
0	CYCLONEXIS (LPIL)	0.0	538674.00	269337.00	269337.00	2.4
0	CHRYSONOMADALES (LPIL)	40136.06	0.0	20068.03	20068.03	0.2
0	CHRYSOPHYTA (LPIL)	0.0	102604.50	51302.25	51302.25	0.5
0	BACILLARIOPHYTA-PENNATE	8455513.00	158445.06	4306979.00	4140533.00	38.9
0	FRAGILARIALES					
0	FRAGILARIA CROTONENSIS	194027.81	0.0	97013.87	97013.87	0.9
0	FRAGILARIA (LPIL)	100340.12	0.0	50170.06	50170.06	0.5
0	SYNEDRA (LPIL)	6140817.00	8977.90	3074897.00	3065919.00	27.8
0	TABELLARIA FLOCCULOSA	77611.12	0.0	38805.56	38805.56	0.4
0	FRAGILARIALES (LPIL)	40136.06	0.0	20068.03	20068.03	0.2
0	ACHNANTHALES					
0	ACHNANTHES (LPIL)	1669748.00	32063.93	850905.94	818842.00	7.7
0	NAVICULALES					
0	NAVICULA (LPIL)	116416.69	0.0	58208.34	58208.34	0.5

A.36

827 265 science services division





## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

NUMBER C. CELLS PER LITER

## STATION REPORT

LS	TAXA	19	20	X	S.E.	REL ABZ
0	BACILLARIALES					
0	NITZCHIA (LPIL)	0.0	52288.86	26144.43	26144.43	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	116412.69	65114.43	90765.50	25651.13	0.8
0	PYRRHOPHYTA-DINOPHYCEAE	0.0	52288.86	26144.43	26144.43	0.2
0	PERIDINIALES					
0	PERIDINIUM INCONSPICUUM	0.0	52288.86	26144.43	26144.43	0.2
0	CRYPTOPHYTA	195358.31	189917.00	192637.62	2720.66	1.7
0	CRYPTOMONADALES					
0	CRYPTOMONAS MARSSONII	0.0	98164.87	49082.44	49082.44	0.4
0	CRYPTOMONAS REFLEXA	77611.12	0.0	38805.56	38805.56	0.4
0	CRYPTOMONAS OVATA	38805.56	91752.12	65278.84	26473.28	0.6
0	CRYPTOMONAS (LPIL)	78941.62	0.0	39470.81	39470.81	0.4
	TOTAL	15265551.0	6881505.00	11073528.0	4192023.00	100.0
	DIVERSITY (H PRIME)	2.63	1.59	2.11	0.52	
	DIVERSITY (J PRIME)	0.71	0.46	0.58	0.13	
	NUMBER OF TAXA	24	17	33		

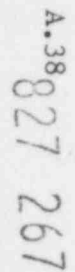
ABOVE COMPUTED USING SAMPLE IDS

191 192 201 202

A.37

science services division

827 266



**science services division**

### BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## REPLICATE REPORT

PC	TC	GC	LOC
5	56	56	1 3 00

		DURATION		TOW		SAMP VOL		WIND		CURRENT		TEMP													
SID	DATE	TIME D/N	UNITS C	SD	WD	SP	D	UNITS C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALIN P	
212	4/ 8/79	0 0	0.0 0	0.0	0.0	0.0	0	2.0 4	0.0	0	0	0	0	0	0.0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0 0	
212	4/ 9/79	0 0	0.0 0	0.0	0.0	0.0	0	2.0 4	0.0	0	0	0	0	0	0.0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0 0	
LS	TAXA																								
							1				2									X			S.E.	AB%	
0	UNIDENTIFIED ALGAE						132859.75				79584.31									106222.00		26637.72		2.8	
0	UNIDENTIFIED ALGAE (LPIL)						132859.75				79584.31									106222.00		26637.72		2.8	
0	CYANOPHYTA						664298.75				0.0									332149.37		332149.37		8.7	
0	OSCILLATORIACEAE																								
0	OSCILLATORIA (LPIL)						664298.75				0.0									332149.37		332149.37		8.7	
0	CHLOROPHYTA						0.0				1432517.00									716258.50		716258.50		18.7	
0	CHLOROCOCCALES																								
0	ANKISTRODESNIUS (LPIL)						0.0				79584.31									39792.16		39792.16		1.0	
0	ULOTRICHALES																								
0	GEMINELLA (LPIL)						0.0				1352933.00									676466.50		676466.50		17.7	
0	BACILLARIOPHYTA-PENNATE						910089.25				4377134.00									2643611.00		1733522.00		69.0	
0	FRAGILARIALES																								
0	FRAGILARIA (LPIL)						0.0				557090.19									278545.06		278545.06		7.1	
0	SYNEDRA (LPIL)						46500.91				159168.62									102834.75		56333.86		2.7	
0	EUNOTIALES																								
0	EUNOTIA (LPIL)						66429.87				159168.62									112799.25		46369.37		2.9	
0	ACHNANTHALES																								
0	ACHNANTHES (LPIL)						66429.87				1352933.00									709681.44		643251.56		18.5	
0	COCCONEIS (LPIL)						0.0				79584.31									39792.16		39792.16		1.0	
0	NAVICULES																								
0	NAVICULA (LPIL)						0.0				238752.94									119376.44		119376.44		3.1	
0	GONIPHONEMA (LPIL)						465009.12				1193764.00									829386.56		364377.44		21.6	
0	BACILLARIALS																								
0	NITZSCHIA (LPIL)						132859.75				0.0									66429.87		66429.87		1.7	
0	BACILLARIOPHYTA-PENNATE (LPIL)						132859.75				636674.50									384767.12		251907.37		10.0	
0	CRYPTOPHYTA						66429.87				0.0									33214.94		33214.94		0.9	
0	CRYPTOMONADALES																								
0	CRYPTOMONAS MARSSONII						66429.87				0.0									33214.94		33214.94		0.9	
TOTAL							1773673.00				5889230.00									3831451.00		2057778.00		100.0	
DIVERSITY (H PRIME)							2.55				2.83									2.69		0.14			
DIVERSITY (J PRIME)							0.80				0.82									0.81		0.01			
NUMBER OF TAXA							9				11									14					

ABOVE COMPUTED USING SAMPLE IDS

211 212

## BAILLY GENERATING PLANT

## PHYTOPLANKTON DENSITY

## NUMBER OF CELLS PER LITER

## STATION REPORT

LS	TAXA		- X	S.E.	REL AB%
		21			
0	UNIDENTIFIED ALGAE	106222.00	106222.00	-1.00	2.8
0	UNIDENTIFIED ALGAE (LPIL)	106222.00	106222.00	-1.00	2.8
0	CYANOPHYTA	332149.37	332149.37	-1.00	8.7
0	OSCILLATORIACEAE				
0	OSCILLATORIA (LPIL)	332149.37	332149.37	-1.00	8.7
0	CHLOROPHYTA	716258.50	716258.50	-1.00	18.7
0	CHLOROCOCCALES				
0	ANKISTRODESMUS (LPIL)	39792.16	39792.16	-1.00	1.0
0	ULOTRICHALES				
0	GEMINELLA (LPIL)	676466.50	676466.50	-1.00	17.7
0	BACILLARIOPHYTA-PENNATE	2643611.00	2643611.00	-1.00	69.0
0	FRAGILARIACEAE				
0	FRAGILARIA (LPIL)	278545.06	278545.06	-1.00	7.3
0	SYNEDRA (LPIL)	102834.75	102834.75	-1.00	2.7
0	EUNOTIALES				
0	EUNOTIA (LPIL)	112799.25	112799.25	-1.00	2.9
0	CHIRANTHALES				
0	CHIRANTHES (LPIL)	709681.44	709681.44	-1.00	18.5
0	COCCONIS (LPIL)	39792.16	39792.16	-1.00	1.0
0	NAVICULALES				
0	NAVICULA (LPIL)	119376.44	119376.44	-1.00	3.1
0	GOMPHONEMA (LPIL)	829386.56	829386.56	-1.00	21.6
0	BACILLARIALES				
0	NITZCHIA (LPIL)	66429.87	66429.87	-1.00	1.7
0	BACILLARIOPHYTA-PENNATE (LPIL)	384767.12	384767.12	-1.00	10.0
0	CRYPTOPHYTA	33214.94	33214.94	-1.00	0.9
0	CRYPTOMONADALES				
0	CRYPTOMONAS MARSSONII	33214.94	33214.94	-1.00	0.9
	TOTAL	3831451.00	3831451.00	-1.00	100.0
	DIVERSITY (H PRIME)	2.69	2.69	-1.00	
	DIVERSITY (J PRIME)	0.81	0.81	-1.00	
	NUMBER OF TAXA	14	14		

ABOVE COMPUTED USING SAMPLE IDS

211

212

827 268



---

APPENDIX B  
PHYTOPLANKTON BIOVOLUME REPLICATE REPORTS  
BAILLY STUDY AREA  
APRIL 1979

827 269

ABOVE COMPUTED USING SAMPLE IDS  
11 12

**science services division**

B.2 827 271

science services division

REPLICATE REPORT

SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P
21	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
22	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
LS	TAXA																											
										1				2														
0	CYANOPHYTA									0.07				0.01											0.04		0.03	0.4
0	CHROOCOCCACEAE																											
0	CHROOCOCCUS (LPIL)									0.07				0.0											0.04		0.04	0.3
0	MICROCYSTIS (LPIL)									0.0				0.01											0.01		0.01	0.0
0	CHLOROPHYTA									0.0				0.01											0.01		0.01	0.0
0	CHLOROCOCCALES																											
0	ANKISTRODESMUS (LPIL)									0.0				0.01											0.01		0.01	0.0
0	EUGLENOPHYTA									0.00				0.0											0.00		0.00	0.0
0	EUGLENALES																											
0	EUGLENA (LPIL)									0.00				0.0											0.00		0.00	0.0
0	CHRYSTOPHYTA									0.0				0.51											0.26		0.26	2.1
0	CHRYSONOMADALES																											
0	DINOBRYON DIVERGENS									0.0				0.51											0.26		0.26	2.1
0	BACILLARIOPHYTA-CENTRIC									5.25				5.38											5.31		0.07	44.1
0	EUPODISCALES																											
0	MELOSIRA (LPIL)									2.03				0.86											1.45		0.58	12.0
0	STEPHANODISCUS ASTRAEA									3.15				2.49											2.82		0.33	23.4
0	STEPHANODISCUS (LPIL)									0.0				1.15											0.57		0.57	4.8
0	EUPODISCALES (LPIL)									0.01				0.81											0.41		0.40	3.4
0	RHIZOSOLENIALES																											
0	RHIZOSOLENIA ERIEENSIS									0.05				0.07											0.06		0.01	0.5
0	BACILLARIOPHYTA-PENNATE									6.91				5.48														





BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
TOTAL		12.29	11.79	12.04	0.25	100.0
DIVERSITY (H PRIME)		2.41	3.25	2.83	0.42	
DIVERSITY (J PRIME)		0.67	0.79	0.73	0.06	
HUBER OF TAXA		12	17	20		

ABOVE COMPUTED USING SAMPLE IDS  
21 22

827 272



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC AC LOC  
5 56 56 0 0 00

		DURATION			TOW			SAMP VOL			WIND			CURRENT			TEMP												
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P	
31	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
32	4/29/79	0	0	0.0		0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
LS		TAXA																						REL					
																								S.E.					
																								ABX					
0	UNIDENTIFIED ALGAE							1				2																	
0	UNIDENTIFIED ALGAE (LPIL)							0.0				0.00										0.00		0.00		0.0			
0	CYANOPHYTA							0.0				0.00										0.00		0.00		0.0			
0	CHROOCOCCACEAE							0.32				0.14										0.23		0.09		3.0			
0	MICROCYSTIS (LPIL)							0.05				0.0										0.03		0.03		0.3			
0	GOMPHOSPHAERIA LACUSTRIS							0.0				0.01										0.00		0.00		0.0			
0	OSCILLATORIACEAE							0.27				0.0										0.13		0.13		1.7			
0	OSCILLATORIA (LPIL)							0.0				0.13										0.07		0.07		0.9			
0	NOSTOCACEAE							0.14				0.23										0.18		0.05		2.4			
0	APHANIZOMENON FLOS-AQUAE							0.04				0.22										0.13		0.09		1.7			
0	CHLOPOPHYTA							0.01				0.0										0.00		0.00		0.1			
0	VOLVOCALES							0.06				0.01										0.04		0.02		0.5			
0	CHLAMYDOMONAS (LPIL)							0.03				0.0										0.01		0.01		0.2			
0	CHLOROCOCCALES							1.02				0.0										0.51		0.51		6.6			
0	ANKISTRODESMUS (LPIL)							0.0				0.02										0.01		0.01		0.7			
0	QUADRIGULA (LPIL)							0.0				0.02										0.01		0.01		0.1			
0	SCENEDESMUS QUADRICAUDA							0.04				0.13										0.08		0.05		1.1			
0	EUGLENOPHYTA							0.04				0.0										0.02		0.02		0.3			
0	EUGLENALES							0.0				0.13										0.06		0.06		0.8			
0	EUGLENA (LPIL)							0.0				0.00										0.00		0.00		0.0			
0	XANTHOPHYTA							0.74				2.95										1.84		1.10		24.0			
0	HETEROCOCCALES							0.08				0.13										0.10		0.02		1.3			
0	HETEROCOCCALES (LPIL)							0.51				2.66										1.58		1.08		20.7			
0	CHRYSOPHYTA							0.14				0.0										0.07		0.07		0.9			
0	CHRYSOMONADALES							0.0				0.01										0.01		0.01		0.1			
0	DINOBRYON DIVERGENS							0.01				0.15										0.08		0.07		1.0			
0	DINOBRYON SOCIALE							0.01				0.15										0.08		0.07		1.0			
0	CHRYSOCHROMULINA PARVA							0.01				0.15										0.08		0.07		1.0			
0	BACILLARIOPHYTA-CENTRIC							0.01				0.15										0.08		0.07		1.0			
0	EUPODISCALES							0.01				0.15										0.08		0.07		1.0			
0	HELOSIRA (LPIL)							0.01				0.15										0.08		0.07		1.0			
0	STEPHANODISCUS ASTRAEA							0.01				0.15										0.08		0.07		1.0			
0	STEPHANODISCUS (LPIL)							0.01				0.15										0.08		0.07		1.0			
0	EUPODISCALES (LPIL)							0.01				0.15										0.08		0.07		1.0			
0	RHIZOSOLENIALES							0.01				0.15										0.08		0.07		1.0			
0	RHIZOSOLENIA ERIENSIS							0.01				0.15										0.08		0.07		1.0			

B.4 827 273

science services division

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	BACILLARIOPHYTA-PENNATE	4.04	2.48	4.76	0.72	62.1
0	FRAGILARIALES					
0	ASTERIONELLA FORMOSA	0.81	2.99	1.91	1.08	24.9
0	DIATOMA TENUE	0.0	0.08	0.04	0.04	0.6
0	FRAGILARIA CROTONENSIS	0.0	1.21	0.61	0.61	7.9
0	SYNEDRA (LPIL)	0.0	0.61	0.30	0.30	4.0
0	BACILLARIALES					
0	NITZSCHIA ACICULARIS	0.0	0.04	0.02	0.02	0.2
0	NITZSCHIA (LPIL)	0.56	0.0	0.28	0.28	3.7
0	SURIPPELLALES					
0	CYTHOPLEURA SOLEA	2.37	0.0	1.18	1.18	15.4
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.28	0.56	0.42	0.14	5.5
0	CRYPTOPHYTA	0.04	0.06	0.05	0.01	0.6
0	CRYPTOMONADALES					
0	RHODONONAS MINUTA	0.04	0.06	0.05	0.01	0.6
	TOTAL	6.32	9.01	7.66	1.34	100.0
	DIVERSITY (H PRIME)	2.85	2.64	2.74	0.11	
	DIVERSITY (J PRIME)	0.70	0.62	0.66	0.04	
	NUMBER OF TAXA	17	19	28		

ABOVE COMPUTED USING SAMPLE IDS

31 32

B.5

science services division

827 274



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC  
5 56 56 0 0 10

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP																																		
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P																													
41	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0																												
42	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0																												
																										-																														
																										X																														
																										1									2																					
0	CYANOPHYTA									0.81		0.0															0.40		0.40		3.2																									
0	CHROOCOCCACEAE																																																							
0	CHROOCOCCUS (LPIL)									0.23		0.0															0.11		0.11		1.0																									
0	GOMPHOSPHAERIA LACUSTRIS									0.04		0.0															0.02		0.02		0.2																									
0	OSCILLATORIA																																																							
0	OSCILLATORIA (LPIL)									0.54		0.0															0.27		0.27		2.5																									
0	CHLOROPHYTA									2.47		0.76															1.61		0.86		14.7																									
0	VOLVOCALES																																																							
0	CHLAMYDOMONAS (LPIL)									0.13		0.18															0.16		0.02		1.4																									
0	CHLOROCOCCALES																																																							
0	ANKISTRODESMUS (LPIL)									0.01		0.0															0.00		0.00		0.0																									
0	SCENEDESMUS ACUMINATUS									0.01		0.0															0.01		0.01		0.1																									
0	SCENEDESMUS ECOMNIS									0.02		0.0															0.01		0.01		0.1																									
0	PEDIASTRUM BORYANUM									2.29		0.0															1.15		1.15		10.5																									
0	OEDOGONIALES																																																							
0	OEDOGONIUM (LPIL)									0.0		0.58															0.29		0.29		2.6																									
0	EUGLENOPHYTA									0.11		0.0															0.05		0.05		0.5																									
0	EUGLENALES																																																							
0	TRACHELOMONAS (LPIL)									0.11		0.0															0.05		0.05		0.5																									
0	XANTHOPHYTA									0.0		0.01															0.00		0.00		0.0																									
0	HETEROCOCCALES																																																							
0	HETEROCOCCALES (LPIL)									0.0		0.01															0.00		0.00		0.0																									
0	CHRYSOPHYTA									0.0		0.00															0.00		0.00		0.0																									
0	MONOSIGALES																																																							
0	STELIXONONAS DICHOTOMA									0.0		0.00															0.00		0.00		0.0																									
0	BACILLARIOPHYTA-CENTRIC									0.17		1.11															3.64		2.53		33.3																									
0	EUPODISCALES																																																							
0	HELOSIRA VARIANS									4.91		0.0															2.45		2.45		22.4																									
0	HELOSIRA (LPIL)									0.15		0.0															0.07		0.07		0.7																									
0	STEPHANODISCUS ASTRAEA									0.86		0.0															0.43		0.43		3.9																									
0	STEPHANODISCUS (LPIL)									0.19		1.09															0.64		0.45		5.8																									
0	EUPODISCALES (LPIL)									0.04		0.0															0.02		0.02		0.2																									
0	RHIZOSOLENIALES																																																							
0	RHIZOSOLENIA ERIENSIS									0.02		0.03															0.03		0.00		0.2																									
0	BACILLARIOPHYTA-PENNATE									2.05		8.15															5.10		3.05		46.6																									
0	FRAGILARIALES																																																							

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
0	ASTERIONELLA FORMOSA	0.58	1.22	0.90	0.32	8.2
0	DIATOMA TENUE	0.0	1.43	0.71	0.71	6.5
0	SYNEDRA (LPIL)	0.57	0.85	0.71	0.14	6.5
0	TABELLARIA FLOCCULOSA	0.43	2.74	1.58	1.16	14.5
0	NAVICULALES					
0	NAVICULA (LPIL)	0.0	0.35	0.17	0.17	1.6
0	BACILLARIALES					
0	NITZSCHIA HOLSATICA	0.0	0.43	0.22	0.22	2.0
0	NITZCHIA (LPIL)	0.46	0.03	0.25	0.22	2.3
0	SURIPELLALES					
0	SURIPELLA OVATA	0.0	0.75	0.37	0.37	3.4
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.0	0.36	0.18	0.18	1.6
0	PYRRHOPHYTA-DIHOPIHYCEAE	0.23	0.0	0.12	0.12	1.1
0	PERIDINIALES					
0	PERIDINIUM INCONSPICUUM	0.23	0.0	0.12	0.12	1.1
0	CRYPTOPHYTA	0.02	0.00	0.01	0.01	0.1
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	0.02	0.00	0.01	0.01	0.1
	TOTAL	11.85	10.04	10.95	0.91	100.0
	DIVERSITY (H PRIME)	2.90	3.15	3.02	0.12	
	DIVERSITY (J PRIME)	0.66	0.79	0.72	0.06	
	NUMBER OF TAXA	21	16	29		

ABOVE COMPUTED USING SAMPLE IDS

41

42

B.7

science services division

827 276



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC

5 56 56 0 0 10

SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TUBED	COND	DO	PH	SALIN	P
				UNITS	C			SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP							
51	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	20.4	4	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
52	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0

LS	TAXA	REL		S.E.	ABZ
		X	ABZ		
0	UNIDENTIFIED ALGAE	0.00	0.02	0.01	0.1
0	UNIDENTIFIED ALGAE (LPIL)	0.00	0.02	0.01	0.1
0	CYANOPHYTA	0.0	0.72	0.36	4.8
0	OSCILLATORIA	0.0	0.41	0.20	2.7
0	OSCILLATORIA (LPIL)	0.0	0.31	0.15	2.2
0	NOSTOCACEAE	0.31	0.05	0.18	2.4
0	APHANIZOENON FLOS-AQUAE	0.23	0.04	0.14	1.8
0	CHLOROPHYTA	0.0	0.01	0.01	0.1
0	VOLVOCALES	0.05	0.0	0.02	0.3
0	CHLAMYDOMONAS (LPIL)	0.03	0.0	0.01	0.2
0	CHLOROCOCCALES	0.10	0.38	0.24	3.3
0	ANKISTRODESNIUS (LPIL)	0.0	0.38	0.19	2.6
0	OOCYSTIS (LPIL)	0.10	0.0	0.05	0.7
0	SCENEDESMUS QUADRICAUDA	0.01	0.03	0.02	0.3
0	EUGLENOPHYTA	0.01	0.00	0.00	0.0
0	EUGLENALES	0.11	0.00	0.05	0.7
0	EUGLENA (LPIL)	0.01	0.03	0.02	0.3
0	TRACHELOMONAS (LPIL)	0.01	0.00	0.00	0.0
0	XANTHOPHYTA	0.01	0.00	0.00	0.0
0	HETEROCOCCALES	0.01	0.03	0.02	0.3
0	HETEROCOCCALES (LPIL)	0.11	0.00	0.05	0.7
0	CHRYSOCHROMULINA PARVA	0.01	0.00	0.00	0.0
0	CHRYSONOMADALES	6.06	2.89	4.48	59.8
0	CHRYSOCOCCUS (LPIL)	0.0	0.00	0.00	0.0
0	DINOBRYON DIVERGENS	0.11	0.0	0.05	0.7
0	CHRYSOCHROMULINA PARVA	0.0	0.00	0.00	0.0
0	BACILLARIOPHYTA-CENTRIC	0.07	0.0	0.03	0.5
0	EUPHODISCALES	2.73	0.0	1.36	18.2
0	ELOSIRA VARIANS	0.0	1.36	0.68	9.1
0	ELOSIRA (LPIL)	3.19	0.0	1.60	21.3
0	STEPHANODISCUS ASTRAEA	0.0	1.45	0.73	9.7
0	STEPHANODISCUS (LPIL)	0.07	0.0	0.03	0.5
0	RHIZOSOLENIALES	0.08	0.08	0.08	1.0
0	RHIZOSOLENIA ERIENSIS	1.70	2.43	2.07	27.6
0	BACILLARIOPHYTA-PENNIATE				

B.8

027 277

science services division



## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL ABX
0	FRAGILARIALES					
0	ASTERIONELLA FORMOSA	0.41	1.27	0.84	0.43	11.3
0	DIATOMA TENUE	0.51	0.14	0.32	0.19	4.3
0	FRAGILARIA CROTONENSIS	0.0	0.06	0.03	0.03	0.4
0	SYNEDRA (LPIL)	0.51	0.11	0.31	0.20	4.1
0	ACHNANTHALES					
0	COCONEIS (LPIL)	0.0	0.03	0.01	0.01	0.2
0	BACILLARIALES					
0	HITZSCHIA ACICULARIS	0.0	0.14	0.07	0.07	1.0
0	HITZCHIA (LPIL)	0.08	0.45	0.26	0.18	3.5
0	BACILLARIOPHYTA-PENHATE (LPIL)	0.19	0.24	0.22	0.02	2.9
0	CRYPTOPHYTA	0.02	0.12	0.07	0.05	0.9
0	CRYPTONHODALES					
0	RHODONHAS MINUTA	0.02	0.12	0.07	0.05	0.9
	TOTAL	8.32	6.66	7.49	0.83	100.0
	DIVERSITY (H PRIME)	2.49	3.26	2.87	0.39	
	DIVERSITY (J PRIME)	0.61	0.74	0.68	0.07	
	NUMBER OF TAXA	17	21	28		

ABOVE COMPUTED USING SAMPLE IDS

51 52

B.9

science services division

827 278

B.10

827 279

Residence services division

PC	TC	GC	LOC
----	----	----	-----

5	56	56	0	0	10
---	----	----	---	---	----

SID	DATE	TIME	D/N	DURATION		SD	WD	S	D	SAMP VOL			WIND		CURENT			TEMP				COND	DC	PH	SALN P
				UNITS	C					UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT				
61	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	
62	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	

LS	TAXA	1	2	S.E.	ABX
0	CYANOPH	0.13	0.0	0.07	1.3
0	OSCILLATORIA (LPIL)	0.13	0.0	0.07	1.3
0	CHLOROPHYTA	0.20	0.01	0.10	2.0
0	VOLVOCALES				
0	CHLAMYDOMONAS (LPIL)	0.16	0.0	0.08	1.6
0	CHLOROCOCCALES				
0	ANKISTRODESMUS (LPIL)	0.00	0.0	0.00	0.0
0	OOCYSTIS (LPIL)	0.01	0.0	0.01	0.1
0	SCENEDESMUS QUADRICAUDA	0.02	0.0	0.01	0.2
0	SCENEDESMUS (LPIL)	0.0	0.01	0.00	0.1
0	EUGLENOPHYTA	0.45	0.0	0.22	4.3
0	EUGLENALES				
0	EUGLENA (LPIL)	0.45	0.0	0.22	4.3
0	BACILLARIOPHYTA-CENTRIC	4.56	0.23	2.40	46.5
0	EUPODISCALES				
0	MELOSIRA (LPIL)	2.47	0.0	1.24	24.0
0	STEPHANODISCUS ASTRAEA	1.99	0.0	0.99	19.3
0	STEPHANODISCUS (LPIL)	0.0	0.09	0.05	0.9
0	EUPODISCALES (LPIL)	0.04	0.0	0.04	0.9
0	RHIZOSOLENTALES				
0	RHIZOSOLENIA ERIENSIS	0.01	0.14	0.08	1.5
0	BACILLARIOPHYTA-PENNATE	2.37	2.31	2.34	45.4
0	FRAGILARIALES				
0	ASTERIONELLA FORNOSA	0.92	0.57	0.74	14.4
0	DIATOMA TENUE	0.17	0.0	0.09	1.7
0	DIATOMA (LPIL)	0.0	0.02	0.01	0.2
0	FRAGILARIA PINNATA	0.0	0.69	0.35	6.7
0	FRAGILARIA (LPIL)	0.0	0.06	0.03	0.6
0	SYNEDRA (LPIL)	0.28	0.55	0.42	8.1
0	TABELLARIA FLOECULOSA	0.23	0.0	0.11	2.2
0	FRAGILARIALES (LPIL)	0.0	0.08	0.04	0.8
0	BACILLARIALES				
0	NITZCHIA (LPIL)	0.72	0.34	0.53	10.3
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.05	0.0	0.02	0.5
0	CRYPTOPHYTA	0.02	0.04	0.03	0.6

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	0.02	0.04	0.03	0.01	0.6
TOTAL		7.73	2.59	5.16	1.57	100.0
DIVERSITY (H PRIME)		2.81	2.69	2.75	1.06	
DIVERSITY (J PRIME)		0.69	0.78	0.73	0.04	
NUMBER OF TAXA		17	11	23		

ABOVE COMPUTED USING SAMPLE IDS

61 62

B.11

science services division

827 230



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICAT REPORT

PC TC GC LOC  
5 56 56 0 1 00

				DURATION		TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBO	COND	DO	PH	SALN	P		
71	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
72	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
																							REL						
LS	TAXA																				X		S.E.		ABZ				
										1																			
0	UNIDENTIFIED ALGAE									0.01		2	0.0										0.01		0.01	0.1			
0	UNIDENTIFIED ALGAE (LPIL)									0.01		0.0											0.01		0.01	0.1			
0	CHLOROPHYTA									0.06		0.00											0.03		0.03	0.4			
0	VOLVOCALES																												
0	CHLAMYDOMONAS (LPIL)									0.06		0.0											0.03		0.03	0.4			
0	CHLOROCOCCALES																												
0	ANKISTRODESMUS FALCATUS									0.0		0.00											0.00		0.00	0.0			
0	XANTHOPHYTA									0.03		0.0											0.01		0.01	0.2			
0	HETEROCOCCALES																												
0	HETEROCOCCALES (LPIL)									0.03		0.0											0.01		0.01	0.2			
0	BACILLARIOPHYTA-CENTRIC									4.63		0.27											2.45		2.18	35.8			
0	EUPODISCALES																												
0	CYCLOTELLA (LPIL)									0.0		0.08											0.04		0.04	0.6			
0	STEPHANODISCUS ASTRAEA									3.15		0.0											1.57		1.57	23.0			
0	STEPHANODISCUS (LPIL)									1.40		0.0											0.70		0.70	10.2			
0	EUPODISCALES (LPIL)									0.08		0.0											0.04		0.04	0.6			
0	RHIZOSOLENIALES																												
0	RHIZOSOLENIA ERIENSIS									0.01		0.20											0.10		0.09	1.5			
0	BACILLARIOPHYTA-PENNIATE									6.44		2.09										4.27		2.18	62.4				
0	FRAGILARIALES																												
0	ASTERIONELLA FORMOSA									0.75		0.65											0.70		0.05	10.2			
0	DIATOMA TENUE									0.18		0.10											0.14		0.04	2.1			
0	FRAGILARIA CROTONENSIS									0.0		0.08												0.04		0.04	0.6		
0	FRAGILARIA (LPIL)									2.40		0.0											1.20		1.20	17.6			
0	SYNEDRA ULNA									0.0		0.08											0.04		0.04	0.6			
0	SYNEDRA (LPIL)									1.35		0.23											0.79		0.56	11.6			
0	TABELLARIA FLOCCULOSA									0.96		0.14											0.55		0.41	8.1			
0	FRAGILARIALES (LPIL)									0.0		0.07												0.04		0.04	0.5		
0	BACILLARIALES																												
0	NITZSCHIA (LPIL)									0.02		0.63											0.32		0.30	4.7			
0	SURIRELLALES																												
0	SURIRELLA OVATA									0.60		0.0											0.30		0.30	4.4			
0	BACILLARIOPHYTA-PENNIATE (LPIL)									0.19		0.09											0.14		0.05	2.0			
0	CRYPTOPHYTA									0.08		0.06												0.07		0.01	1.0		
0	CRYPTOMONADALES																												
0	RHODOMONAS MINUTA									0.08		0.04												0.06		0.2	0.9		

B. 827 281

science services division

BAILY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	RHODOSPIRAS (LPIL)	0.0	0.01	0.01	0.01	0.1
TOTAL		11.25	2.42	6.84	4.42	100.0
DIVERSITY (H PRIME)		2.91	3.04	2.98	0.07	
DIVERSITY (J PRIME)		0.73	0.80	0.76	0.04	
NUMBER OF TAXA		16	14	22		

ABOVE COMPUTED USING SAMPLE IDS

71 72

282



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC

5 56 56 0 1 00

				DURATION		TOW				SAMP VOL				WIND				CURRENT				TEMP									
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P			
81	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
82	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0		
																							-					REL			
LS	TAXA																							X	S.E.		AB%				
										1					2																
0	UNIDENTIFIED ALGAE										0.04					0.0											0.02			0.02	0.2
0	UNIDENTIFIED ALGAE (LPIL)										0.04					0.0											0.02			0.02	0.2
0	CYANOPHYTA										0.01					0.02											0.01			0.01	0.2
0	CHROOCOCCACEAE																														
0	APHANOTHECE (LPIL)										0.01					0.0											0.00			0.00	0.0
0	NOSTOCACEAE																														
0	APHANIZOMENON FLOS-AQUAE										0.0					0.02											0.01			0.01	0.1
0	CHLOROPHYTA										0.22					0.03											0.12			0.10	1.3
0	VOLVOCALES																														
0	CHLAMYDOMONAS (LPIL)										0.19					0.0											0.10			0.10	1.1
0	CHLOPISCOCCALES																														
0	ANKISTRODESNIUS (LPIL)										0.0					0.00											0.00			0.00	0.0
0	SCENEDESNIUS ECOMNIS										0.02					0.02											0.02			0.00	0.3
0	XANTHOPHYTA										0.00					0.03											0.02			0.01	0.2
0	HETEROCOCCALES																														
0	HETEROCOCCALES (LPIL)										0.00					0.03											0.02			0.01	0.2
0	BACILLARIOPHYTA-CENTRIC										1.76					6.01											3.80			2.12	42.8
0	EUPODISCALES																														
0	HELOSIPA (LPIL)										1.33					1.16											1.00			0.08	13.7
0	STEPHANODISCUS ASTRACA										0.31					4.77											2.54			2.23	28.0
0	EUPODISCALES (LPIL)										0.11					0.03											0.07			0.04	0.8
0	RHIZOSOLENIALES																														
0	RHIZOSOLENIA ERIENSIS										0.01					0.04											0.03			0.02	0.3
0	BACILLARIOPHYTA-PENNATE										4.91					4.74											4.83			0.09	53.2
0	FRAGILARIALES																														
0	ASTERIONELLA FORMOSA										1.32					0.72											1.02			0.30	11.2
0	FRAGILARIA CROTONENSIS										2.66					0.0											1.33			1.33	14.6
0	FRAGILARIA (LPIL)										0.0					1.76											0.88			0.88	9.7
0	SYNEDRA (LPIL)										0.32					0.68											0.50			0.18	5.5
0	NAVICULALES																														
0	NAVICULA (LPIL)										0.0					0.03											0.02			0.02	0.2
0	BACILLARIALES																														
0	NITZCHIA (LPIL)										0.54					1.55											1.05			0.50	11.5
0	BACILLARIOPHYTA-PENNATE (LPIL)										0.07					0.0											0.03			0.03	0.4
0	PYRRHOPHYTA-DINOPHYCEAE										0.0					0.18											0.09			0.09	1.0
0	PERIDINIALES																														

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	X	S.E.	REL AB%
0	PERIDINIUM INCONSPICUUM	0.0	0.18	0.09	0.09	1.0
0	CRYPTOPHYTA	0.09	0.12	0.11	0.02	1.2
0	CRYPTOMONADALES					
0	RHODOMONAS MINUTA	0.09	0.12	0.11	0.02	1.2
	TOTAL	7.03	11.13	9.08	2.05	100.0
	DIVERSITY (H PRIME)	2.61	2.50	2.55	0.06	
	DIVERSITY (J PRIME)	0.67	0.64	0.65	0.01	
	NUMBER OF TAXA	15	15	20		

ABOVE COMPUTED USING SAMPLE IDS

81 82

B.15

science services division

827 284





REPLICATE REPORT

5 56 56 0 1 00

**science services division**

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## REPLICATE REPORT

PC TC GC LOC

5 56 56 0 0 20

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P	
101	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
102	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0
LS	TAXA																							REL					
																							X			S.E.		ABX	
									1				2																
0	CYANOPHYTA								0.81				0.92											0.86		0.06	7.9		
0	OSCILLATORIA																												
0	OSCILLATORIA (LPIL)								0.81				0.89											0.85		0.04	7.8		
0	NOSTOCACEAE																												
0	APHANIZOMENON FLOS-AQUAE								0.0				0.02											0.01		0.01	0.1		
0	CHLOROPHYTA								0.01				1.32											0.66		0.65	6.1		
0	CHLOROCOCCALES																												
0	ANKISTRODESMUS (LPIL)								0.00				0.03											0.02		0.01	0.2		
0	OOCYSTIS (LPIL)								0.0				1.14											0.57		0.57	5.2		
0	SCENEDESMUS QUADRICAUDA								0.0				0.15											0.07		0.07	0.7		
0	SCENEDESMUS ECOMNIS								0.01				0.0											0.00		0.00	0.0		
0	XANTHOPHYTA								0.01				0.00											0.01		0.00	0.1		
0	HETEROCOCCALES																												
0	HETEROCOCCALES (LPIL)								0.01				0.00											0.01		0.00	0.1		
0	BACILLARIOPHYTA-CENTRIC								1.31				6.06											3.68		2.38	33.8		
0	EUPODISCALES																												
0	MELOSIPA (LPIL)								0.87				2.48											1.66		0.81	15.4		
0	STEPHANODISCUS ASTRAEA								0.0				3.47											1.73		1.73	15.9		
0	STEPHANODISCUS (LPIL)								0.17				0.0											0.09		0.09	0.8		
0	EUPODISCALES (LPIL)								0.02				0.05											0.04		0.01	0.3		
0	RHIZOSOLENIALES																												
0	RHIZOSOLENIA ERIENSIS								0.24				0.06											0.15		0.09	1.4		
0	BACILLARIOPHYTA-PENHATE								7.81				3.52											5.67		2.14	52.0		
0	FR. TLARIALES																												
0	ASTERIONELLA FORMOSA								2.13				0.91											1.52		0.61	14.0		
0	DIATOMA TENUE								0.0				0.11											0.06		0.06	0.5		
0	SYNEDRA (LPIL)								1.28				0.66											0.97		0.31	8.9		
0	TABELLARIA FLOCCULOSA								0.81				0.0											0.40		0.40	3.7		
0	ACHNANTHALES																												
0	COCCONEIS (LPIL)								0.06				0.0											0.03		0.03	0.3		
0	NAVICULALES																												
0	NAVICULA (LPIL)								0.0				0.85											0.43		0.43	3.9		
0	BACILLARIALES																												
0	NITZSCHIA HOLSATICA								0.10				0.0											0.05		0.05	0.5		
0	NITZSCHIA (LPIL)								0.11				0.66											0.39		0.28	3.5		
0	SURIPPELLALES																												

B.17

827 286

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA			-	X	S.E.	REL
		1	2				AB%
0	CYTHOPLEURA SOLEA	2.63	0.0		1.31	1.31	12.1
0	SURIPELLA OVATA	0.62	0.0		0.31	0.31	2.8
0	BACTILLARIOPHYTA-PENNATE (LPIL)	0.08	0.32		0.20	0.12	1.9
0	C. PHYTOPHYTA	0.0	0.02		0.01	0.01	0.1
0	CRYPTOMONADALES						
0	RHODOMONAS MINUTA	0.0	0.02		0.01	0.01	0.1
TOTAL		9.95	11.84		10.89	0.95	100.0
DIVERSITY (H PRIME)		3.02	3.04		3.03	0.01	
DIVERSITY (J PRIME)		0.74	0.74		0.74	0.00	
NUMBER OF TAXA		17	17		24		

ABOVE COMPUTED USING SAMPLE IDS

101 102

B.18 827 287

science services division

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	1	2	3	- X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	0.05	0.0	0.00	0.02	0.02	0.2
0	UNIDENTIFIED ALGAE (LPIL)	0.05	0.0	0.00	0.02	0.02	0.2
0	CYANOPHYTA	0.07	0.04	0.23	0.11	0.06	1.4
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	0.0	0.04	0.0	0.01	0.01	0.1
0	MICROCYSTIS (LPIL)	0.0	0.01	0.03	0.01	0.01	0.1
0	GOMPHOSPHERIA LACUSTRIS	0.07	0.0	0.00	0.02	0.02	0.3
0	OSCILLATORIA						
0	OSCILLATORIA (LPIL)	0.0	0.0	0.13	0.04	0.04	0.5
0	HOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	0.0	0.0	0.07	0.02	0.02	0.3
0	CHLOROPHYTA	0.02	0.01	0.18	0.07	0.06	0.9
0	COLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.0	0.0	0.13	0.04	0.04	0.5
0	CHLOROCOCCALES						
0	ANKISTRODESNIUS (LPIL)	0.0	0.01	0.00	0.00	0.00	0.0
0	UNIDENTIFIED: 05030511	0.01	0.0	0.0	0.00	0.00	0.0
0	QUADRIGULA (LPIL)	0.0	0.0	0.04	0.01	0.01	0.2
0	SCENEDESMUS QUADRICAUDA	0.0	0.0	0.01	0.00	0.00	0.1
0	CHLOROPHYTA (LPIL)	0.01	0.0	0.0	0.00	0.00	0.1
0	EUGLENOPHYTA	0.0	0.00	0.51	0.17	0.17	2.1
0	EUGLENALES						
0	EUGLENA (LPIL)	0.0	0.00	0.51	0.17	0.17	2.1
0	XANTHOPHYTA	0.00	0.0	0.01	0.00	0.00	0.0
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	0.00	0.0	0.01	0.00	0.00	0.0
0	CHRYSOPHYTA	0.0	0.26	0.08	0.11	0.08	1.4
0	CHRYSOMONADALES						
0	DINOBRYON DIVERGENS	0.0	0.26	0.02	0.09	0.08	1.1
0	DINOBRYON SOCIALE	0.0	0.0	0.06	0.02	0.02	0.3
0	CHRYSOCHROMULINA PARVA	0.0	0.0	0.00	0.00	0.00	0.0
0	BACILLARIOPHYTA-CENTRIC	0.92	5.31	1.84	2.69	1.34	32.5
0	EUPODISCALES						
0	HELOSIRA (LPIL)	0.36	1.45	0.10	0.64	0.41	7.7
0	STEPHANODISCUS ASTRAEA	1.13	2.82	1.58	1.51	0.78	18.3
0	STEPHANODISCUS (LPIL)	0.0	0.57	0.07	0.22	0.18	2.6
0	EUPODISCALES (LPIL)	0.35	0.41	0.01	0.26	0.13	3.1
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	0.07	0.06	0.08	0.07	0.01	0.8
0	BACILLARIOPHYTA-PENNATE	4.06	6.20	4.76	5.01	0.63	60.5
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	0.98	1.28	1.91	1.39	0.27	16.8

B.19

827 288

science service 1 division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

STATION REPORT

LS	TAXA				-		REL
		1	2	3	X	S.E.	AB%
0	DIATOMA TENUE	0.0	0.20	0.04	0.08	0.06	1.0
0	FRAGILARIA CROTONENSIS	2.17	0.28	0.61	1.02	0.58	12.3
0	FRAGILARIA (LPIL)	0.0	1.34	0.0	0.45	0.45	5.4
0	SYNEDRA (LPIL)	0.30	0.09	0.30	0.23	0.07	2.8
0	TABELLARIA FLOCCULOSA	0.0	0.51	0.0	0.17	0.17	2.0
0	BACILLARIALES						
0	NITZSCHIA ACICULARIS	0.24	0.0	0.02	0.08	0.08	1.0
0	NITZSCHIA (LPIL)	0.09	2.20	0.28	0.86	0.67	10.4
0	SUPIPELLALES						
0	CYHTOPLEURA SOLEA	0.0	0.0	1.18	0.39	0.39	4.8
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.28	0.31	0.42	0.34	0.04	4.0
0	CRYPTOPHYTA	0.01	0.23	0.05	0.09	0.07	1.1
0	CRYPTOMONADALES						
0	CRYPTOMONAS (LPIL)	0.0	0.17	0.0	0.06	0.06	0.7
0	RHODOMONAS MINUTA	0.01	0.06	0.05	0.04	0.01	0.4
TOTAL		5.14	12.04	7.66	8.28	2.02	100.0
DIVERSITY (H PRIME)		2.28	2.83	2.74	2.62	0.17	
DIVERSITY (J PRIME)		0.71	0.73	0.66	0.70	0.02	
NUMBER OF TAXA		16	20	28	34		

ABOVE COMPUTED USING SAMPLE IDS

11	12	21	22
37	32		

B.20  
827  
289

science services division

## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	0.0	0.01	0.0	0.00	0.00	0.0
0	UNIDENTIFIED ALGAE (LPIL)	0.0	0.01	0.0	0.00	0.00	0.0
0	CYANOPHYTA	0.40	0.36	0.07	0.28	0.11	3.5
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	0.11	0.0	0.0	0.04	0.04	0.5
0	GOMPHOSPHERIA LACUSTRIS	0.02	0.0	0.0	0.01	0.01	0.1
0	OSCILLATORIA						
0	OSCILLATORIA (LPIL)	0.27	0.20	0.07	0.18	0.06	2.3
0	OSTOCACEAE						
0	APHANIZOENON FLOS-AQUAE	0.0	0.15	0.0	0.05	0.05	0.7
0	CHLOROPHYTA	1.61	0.18	0.10	0.63	0.49	8.0
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.16	0.14	0.08	0.12	0.02	1.6
0	CHLOROCOCCALES						
0	ANKISTRODESMUS (LPIL)	0.00	0.01	0.00	0.00	0.00	0.0
0	OOCYSTIS (LPIL)	0.0	0.02	0.01	0.01	0.01	0.1
0	SCENEDESMUS ACUMINATUS	0.01	0.0	0.0	0.00	0.00	0.0
0	SCENEDESMUS QUADRICAUDA	0.0	0.01	0.01	0.01	0.00	0.1
0	SCENEDESMUS ECORNIS	0.01	0.0	0.0	0.00	0.00	0.1
0	SCENEDESMUS (LPIL)	0.0	0.0	0.00	0.00	0.00	0.0
0	PEDIASTURM BORYANUM	1.15	0.0	0.0	0.38	0.38	4.9
0	OEDOCONTALES						
0	OEDOGONIUM (LPIL)	0.29	0.0	0.0	0.10	0.10	1.2
0	EUGLENOPHYTA	0.05	0.24	0.22	0.17	0.06	2.2
0	EUGLENALES						
0	EUGLENA (LPIL)	0.0	0.19	0.22	0.14	0.07	1.8
0	TRACHELONAS (LPIL)	0.05	0.05	0.0	0.04	0.02	0.5
0	XANTHOPHYTA	0.00	0.02	0.0	0.01	0.01	0.1
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	0.00	0.02	0.0	0.01	0.01	0.1
0	CHRYSOPHYTA	0.00	0.05	0.0	0.02	0.02	0.2
0	CHRYSOMONADALES						
0	CHRYSOCOCCUS (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	DINOBRYON DIVERGENS	0.0	0.05	0.0	0.02	0.02	0.2
0	CHRYSOCHROMULINA PARVA	0.0	0.00	0.0	0.00	0.00	0.0
0	MONOSIGALES						
0	STELXOMONAS DICHOTOMA	0.00	0.0	0.0	0.00	0.00	0.0
0	BACILLARIOPHYTA-CENTRIC	3.64	4.48	2.40	3.50	0.60	44.6
0	EUPODISCALES						
0	HELOSIPA VARIANS	2.45	1.36	0.0	1.27	0.71	16.2
0	HELOSIPA (LPIL)	0.07	0.68	1.24	0.66	0.34	8.4
0	STEPHANODISCUS ASTRAEA	0.43	1.60	0.99	1.01	0.34	12.8

3.21

827 290 science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL AB%
0	STEPHANODISCUS (LPIL)	0.64	0.73	0.05	0.47	0.21	6.0
0	EUPODISCALES (LPIL)	0.02	0.03	0.04	0.03	0.01	0.4
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	0.03	0.08	0.08	0.06	0.02	0.8
0	BACILLARIOPHYTA-PENNATE	5.10	2.07	2.34	3.17	0.97	40.3
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	0.90	0.84	0.74	0.83	0.05	10.5
0	DIATOMA TENUE	0.71	0.32	0.09	0.38	0.18	4.8
0	DIATOMA (LPIL)	0.0	0.0	0.01	0.00	0.00	0.0
0	FRAGILARIA CROTONENSIS	0.0	0.03	0.0	0.01	0.01	0.1
0	FRAGILARIA PINNATA	0.0	0.0	0.35	0.12	0.12	1.5
0	FRAGILARIA (LPIL)	0.0	0.0	0.03	0.01	0.01	0.1
0	SYNEDRA (LPIL)	0.71	0.31	0.42	0.48	0.12	6.1
0	TABELLARIA FLOCCULOSA	1.58	0.0	0.11	0.57	0.51	7.2
0	FRAGILARIALES (LPIL)	0.0	0.0	0.04	0.01	0.01	0.2
0	ACHNANTHALES						
0	COCCONEIS (LPIL)	0.0	0.01	0.0	0.00	0.00	0.1
0	NAVICULALES						
0	NAVICULA (LPIL)	0.17	0.0	0.0	0.06	0.06	0.7
0	BACILLARIAPALES						
0	NITZSCHIA ACICULARIS	0.0	0.07	0.0	0.02	0.02	0.3
0	NITZSCHIA HOLSATICA	0.22	0.0	0.0	0.07	0.07	0.9
0	NITZSCHIA (LPIL)	0.25	0.26	0.53	0.35	0.09	4.4
0	SURIPELLALES						
0	SURIPELLA OVATA	0.37	0.0	0.0	0.12	0.12	1.6
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.18	0.22	0.02	0.14	0.06	1.8
0	PYRROPHYTA-DINOPHYCEAE	0.12	0.0	0.0	0.04	0.04	0.5
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.12	0.0	0.0	0.04	0.04	0.5
0	CRYPTOPHYTA	0.01	0.07	0.03	0.04	0.02	0.5
0	CRYPTOMONADALES						
0	RHODOMONAS MINUTA	0.01	0.07	0.03	0.04	0.02	0.5
-	TOTAL	10.95	7.49	5.16	7.86	1.68	100.0
	DIVERSITY (H PRIME)	3.02	2.87	2.75	2.83	0.08	
	DIVERSITY (J PRIME)	0.72	0.68	0.73	0.71	0.02	
	NUMBER OF TAXA	29	28	23	45		

ABOVE COMPUTED USING SAMPLE IDS

41	42	51	52
61	62		



## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	0.02	0.00	0.0	0.01	0.01	0.1
0	UNIDENTIFIED ALGAE (LPIL)	0.02	0.00	0.0	0.01	0.01	0.1
0	CYANOPHYTA	0.11	0.28	0.86	0.42	0.23	4.6
0	CHROOCOCCACEAE						
0	CHROOCOCCUS (LPIL)	0.01	0.04	0.0	0.02	0.01	0.2
0	MICROCYSTIS (LPIL)	0.01	0.0	0.0	0.00	0.00	0.0
0	GOMPHOSPHAERIA LACUSTRIS	0.02	0.01	0.0	0.01	0.01	0.1
0	OSCILLATORIACEAE						
0	OSCILLATORIA (LPIL)	0.04	0.18	0.85	0.36	0.25	4.0
0	NOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	0.02	0.05	0.01	0.03	0.01	0.3
0	CHLOROPHYTA	0.07	0.63	0.66	0.46	0.19	5.1
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.04	0.12	0.0	0.06	0.04	0.6
0	CHLOPOCCOCALES						
0	ANKISTRODESMUS (LPIL)	0.00	0.00	0.02	0.01	0.00	0.1
0	UNIDENTIFIED: 05030511	0.00	0.0	0.0	0.00	0.00	0.0
0	OOCYSTIS (LPIL)	0.0	0.01	0.57	0.19	0.19	2.1
0	QUADRIGULA (LPIL)	0.01	0.0	0.0	0.00	0.00	0.0
0	SCENEDESMUS ACUMINATUS	0.0	0.00	0.0	0.00	0.00	0.0
0	SCENEDESMUS QUADRICAUDA	0.00	0.01	0.07	0.03	0.02	0.3
0	SCENEDESMUS ECORNIS	0.0	0.00	0.00	0.00	0.00	0.0
0	SCENEDESMUS (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	PEDIASTRUM BORYANUM	0.0	0.38	0.0	0.13	0.13	1.4
0	OEDOGONIALES						
0	OEDOGONIUM (LPIL)	0.0	0.10	0.0	0.03	0.03	0.4
0	CHLOROPHYTA (LPIL)	0.00	0.0	0.0	0.00	0.00	0.0
0	EUGLENOPHYTA	0.17	0.17	0.0	0.11	0.06	1.3
0	EUGLENALES						
0	EUGLENA (LPIL)	0.17	0.14	0.0	0.10	0.05	1.1
0	TRACHELONONAS (LPIL)	0.0	0.04	0.0	0.01	0.01	0.1
0	XANTHOPHYTA	0.00	0.01	0.01	0.01	0.00	0.1
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	0.00	0.01	0.01	0.01	0.00	0.1
0	CHRYSOPHYTA	0.11	0.02	0.0	0.04	0.04	0.5
0	CHRYSONOMADALES						
0	CHRYSOCOCCUS (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	DINOBRYON DIVERGENS	0.09	0.02	0.0	0.04	0.03	0.4
0	DINOBRYON SOCIALE	0.02	0.0	0.0	0.01	0.01	0.1
0	CHRYSOCHROMULINA PARVA	0.00	0.00	0.0	0.00	0.00	0.0
0	MONOSIGALES						
0	STELXONONAS DICHOTOMA	0.0	0.00	0.0	0.00	0.00	0.0



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

\*MICROLITERS PER LITER

STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL ABZ
0	BACILLARIOPHYTA-CENTRIC	2.69	3.50	3.68	3.29	0.30	36.5
0	EUPODISCALES						
0	MELOSIRA VARIANS	0.0	1.27	0.0	0.42	0.42	4.7
0	MELOSIRA (LPIL)	0.64	0.66	1.68	0.99	0.34	11.0
0	STEPHANODISCUS ASTRAEA	1.51	1.01	1.73	1.42	0.22	15.7
0	STEPHANODISCUS (LPIL)	0.22	0.47	0.09	0.26	0.11	2.9
0	EUPODISCALES (LPIL)	0.26	0.03	0.04	0.11	0.07	1.2
0	RHIZOSOLENIALES						
0	RHIZOSOLENIA ERIENSIS	0.07	0.06	0.15	0.09	0.03	1.0
0	BACILLARIOPHYTA-PENNATE	5.01	3.17	5.67	4.61	0.75	51.2
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	1.39	0.83	1.52	1.25	0.21	13.8
0	DIATOMA TENUE	0.06	0.38	0.06	0.17	0.10	1.9
0	DIATOMA (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	FRAGILARIA CROTONENSIS	1.02	0.01	0.0	0.34	0.34	3.8
0	FRAGILARIA PINNATA	0.0	0.12	0.0	0.04	0.04	0.4
0	FRAGILARIA (LPIL)	0.45	0.01	0.0	0.15	0.15	1.7
0	SYNEDEA (LPIL)	0.23	0.48	0.97	0.56	0.22	6.2
0	TABELLARIA FLOCCULOSA	0.17	0.57	0.40	0.38	0.12	4.2
0	FRAGILARIALES (LPIL)	0.0	0.01	0.0	0.00	0.00	0.1
0	ACHNANTHALES						
0	COCconeIS (LPIL)	0.0	0.00	0.03	0.01	0.01	0.1
0	NAVICULALES						
0	NAVICULA (LPIL)	0.0	0.06	0.43	0.16	0.13	1.8
0	BACILLARIALES						
0	NITZSCHIA ACICULARIS	0.08	0.02	0.0	0.04	0.03	0.4
0	NITZSCHIA HOLSATICA	0.0	0.07	0.05	0.04	0.02	0.5
0	NITZSCHIA (LPIL)	0.86	0.35	0.39	0.53	0.16	5.9
0	SURIPELLALES						
0	CYTHOPLEURA SOLEA	0.39	0.0	1.31	0.57	0.39	6.3
0	SURIPELLA OVATA	0.0	0.12	0.31	0.14	0.09	1.6
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.34	0.14	0.20	0.23	0.06	2.5
0	PYRPHOPHYTA-DINOPHYCEAE	0.0	0.04	0.0	0.01	0.01	0.1
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	0.04	0.0	0.01	0.01	0.1
0	CRYPTOPHYTA	0.09	0.04	0.01	0.05	0.02	0.5
0	CRYPTOMONADALES						
0	CRYPTOMONAS (LPIL)	0.06	0.0	0.0	0.02	0.02	0.2
0	RHODOMONAS MINUTA	0.04	0.04	0.01	0.03	0.01	0.3
	TOTAL	8.28	7.86	10.89	9.01	0.95	100.0
	DIVERSITY (H PRIME)	2.62	2.88	3.03	2.84	0.12	

B.24  
827 293

science services division

STATION REPORT

—  
X

REL  
AB%

52

11	12	21	22
31	32	41	42
51	52	61	62
101	102		

**science services division**

827 294



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49,720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

STATION REPORT

LS	TAXA	7	8	9	X	S.E.	REL ABZ
0	UNIDENTIFIED ALGAE	0.01	0.02	0.06	0.03	0.01	0.4
0	UNIDENTIFIED ALGAE (LPIL)	0.01	0.02	0.06	0.03	0.01	0.4
0	CYANOPHYTA	0.0	0.01	0.05	0.02	0.02	0.3
0	CHROOCOCCACEAE						
0	MICROCYSTIS (LPIL)	0.0	0.0	0.00	0.00	0.00	0.0
0	APHANOTHECE (LPIL)	0.0	0.00	0.01	0.00	0.00	0.1
0	NOSTOCACEAE						
0	APHANIZOMENON FLOS-AQUAE	0.0	0.01	0.04	0.02	0.01	0.3
0	CHLOROPHYTA	0.03	0.12	0.0	0.05	0.04	0.7
0	VOLVOCALES						
0	CHLAMYDOMONAS (LPIL)	0.03	0.10	0.0	0.04	0.03	0.6
0	CHLOPOCCOCALES						
0	ANKISTRODESMUS FALCATUS	0.00	0.0	0.0	0.00	0.00	0.0
0	ANKISTRODESMUS (LPIL)	0.0	0.00	0.0	0.00	0.00	0.0
0	SCENEDESMUS ECORNIS	0.0	0.02	0.0	0.01	0.01	0.1
0	XANTHOPHYTA	0.01	0.02	0.02	0.02	0.00	0.3
0	HETEROCOCCALES						
0	HETEROCOCCALES (LPIL)	0.01	0.02	0.02	0.02	0.00	0.3
0	BACILLARIOPHYTA-CENTRIC	2.45	3.88	0.73	2.35	0.91	34.7
0	EUPODISCALES						
0	MELOSIRA (LPIL)	0.0	1.25	0.42	0.55	0.37	8.2
0	CYCLOTELLA (LPIL)	0.04	0.0	0.0	0.01	0.01	0.2
0	STEPHANODISCUS ASTRAEA	1.57	2.54	0.0	1.37	0.74	20.2
0	STEPHANODISCUS (LPIL)	0.70	0.0	0.08	0.26	0.22	3.8
0	EUPODISCALES (LPIL)	0.04	0.07	0.14	0.08	0.03	1.2
0	PHIZOSOLENIALES						
0	PHIZOSOLENIA ERIENSIS	0.10	0.03	0.09	0.07	0.02	1.1
0	BACILLARIOPHYTA-PENNAL	4.27	4.83	3.49	4.19	0.39	61.9
0	FRAGILARIALES						
0	ASTERIONELLA FORMOSA	0.70	1.02	1.38	1.03	0.20	15.2
0	DIATOMA TENUE	0.14	0.0	0.34	0.16	0.10	2.4
0	FRAGILARIA CROTONENSIS	0.04	1.33	0.0	0.46	0.44	6.7
0	FRAGILARIA (LPIL)	1.20	0.88	0.0	0.69	0.36	10.2
0	SYNEDRA ULNA	0.04	0.0	0.32	0.12	0.10	1.7
0	SYNEDRA (LPIL)	0.79	0.50	0.21	0.50	0.17	7.4
0	TABELLARIA FLOCCULOSA	0.55	0.0	0.67	0.41	0.21	6.0
0	FRAGILARIALES (LPIL)	0.04	0.0	0.0	0.01	0.01	0.2
0	NAVICULALES						
0	NAVICULA (LPIL)	0.0	0.02	0.0	0.01	0.01	0.1
0	BACILLARIALES						
0	NITZCHIA (LPIL)	0.32	1.05	0.53	0.63	0.22	9.3
0	SURIPELLALES						

B.26

827 295

science services division

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	7	8	9	X	S.E.	REL AB%
0	SUPIRELLA OVATA	0.30	0.0	0.0	0.10	0.10	1.5
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.14	0.03	0.05	0.07	0.03	1.1
0	PYRRHOPHYTA-DINOPHYCEAE	0.0	0.09	0.0	0.03	0.03	0.4
0	PERIDINIALES						
0	PERIDINIUM INCONSPICUUM	0.0	0.09	0.0	0.03	0.03	0.4
0	CRYPTOPHYTA	0.07	0.11	0.07	0.05	0.01	1.2
0	CRYPTOMONADALES						
0	CRYPTOMONAS MARSSONII	0.0	0.0	0.04	0.01	0.01	0.2
0	RHODOMONAS MINUTA	0.06	0.11	0.03	0.07	0.02	1.0
0	RHODOMONAS (LPIL)	0.01	0.0	0.0	0.00	0.00	0.0
	TOTAL	6.84	9.08	4.42	6.78	1.34	100.0
	DIVERSITY (H PRIME)	2.98	2.55	2.59	2.70	0.14	
	DIVERSITY (J PRIME)	0.76	0.65	0.74	0.72	0.03	
	NUMBER OF TAXA	22	20	18	31		

ABOVE COMPUTED USING SAMPLE ICS

71	72	81	82
91	92		

B.27

science services division

827 296



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC  
5 56 56 1 1 00

				DURATION		TOW				SAMP VOL				WIND				CURRENT				TEMP																																
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P																										
171	4/ 8/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																									
172	4/ 8/79	0	0	0.0	0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																									
																								-					REL																									
LS	TAXA																						X	S.E.		AB%																												
									1										2																																			
0	UNIDENTIFIED ALGAE									0.05									0.20									0.12									0.08									5.0								
0	UNIDENTIFIED ALGAE (LPIL)									0.05									0.20									0.12									0.08									5.0								
0	CYANOPHYTA									0.07									0.22									0.14									0.07									5.9								
0	CHROOCOCCACEAE																																																					
0	CHROOCOCCUS (LPIL)									0.0									0.01									0.00									0.00									0.1								
0	OSCILLATORIAEAE																																																					
0	OSCILLATORIA (LPIL)									0.07									0.21									0.14									0.07									5.7								
0	CHLOROPHYTA									1.06									1.03									1.05									0.02									42.8								
0	VOLVOCALES																																																					
0	CHLAMYDOMONAS (LPIL)									0.19									0.66									0.43									0.23									17.4								
0	CHLOROCOCCALES																																																					
0	OOCYSTIS (LPIL)									0.01									0.0									0.00									0.00									0.2								
0	SCENEDESMUS ACUMINATUS									0.0									0.30									0.15									0.15									6.2								
0	SCENEDESMUS QUADRICAUDA									0.15									0.06									0.10									0.04									4.2								
0	SCENEDESMUS ECORNIS									0.0									0.00									0.00									0.00									0.1								
0	ZYGHEMATALES																																																					
0	MOUGEOTIA (LPIL)									0.72									0.0									0.36									0.36									14.7								
0	CHRYSTOPHYTA									0.00									0.07									0.04									0.04									1.5								
0	CHRYSONOMADALES																																																					
0	SYNHURA OVELLA									0.0									0.05									0.03									0.03									1.1								
0	CHRYSOCHROMULINA PARVA									0.00									0.02									0.01									0.01									0.4								
0	BACILLARIOPHYTA-CENTRIC									0.09									0.0									0.04									0.04									1.8								
0	EUPODISCALES																																																					
0	EUPODISCALES (LPIL)									0.09									0.0									0.04									0.04									1.8								
0	BACILLARIOPHYTA-PENNATE									0.86									1.03									0.95									0.08									38.7								
0	FRAGILARIALES																																																					
0	TABELLARIA FLOCCULOSA									0.10									0.75									0.42									0.33									17.3								
0	ACHNANTHALES																																																					
0	ACHNANTHES (LPIL)									0.06									0.07									0.06									0.00									2.6								
0	BACILLARIALES																																																					
0	NITZCHIA (LPIL)									0.03									0.06									0.04									0.01									1.7								
0	BACILLARIOPHYTA-PENNATE (LPIL)									0.68									0.15									0.42									0.26									17.0								
0	CRYPTOPHYTA									0.22									0.0									0.11									0.11									4.4								
0	CRYPTOMONADALES																																																					
0	CRYPTOMONAS (LPIL)									0.14									0.0									0.07									0.07									2.8								
0	CHROOMONAS (LPIL)									0.08									0.0									0.04									0.04									1.6								

B.28

827 297

science services division

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
TOTAL		2.35	2.55	2.45	0.10	100.0
DIVERSITY (H PRIME)		2.86	2.82	2.84	0.02	
DIVERSITY (J PRIME)		0.75	0.76	0.76	0.00	
NUMBER OF TAXA		14	13	18		

ABOVE COMPUTED USING SAMPLE IDS

171 172

827 298



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC  
5 56 56 1 1 00

				DURATION		TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P	
181	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0 0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
182	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0 0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
																								-					REL
LS	TAXA																						X	S.E.				ABX	
									1						2														
0	UNIDENTIFIED ALGAE								0.34					0.02					0.18					0.16					10.0
0	UNIDENTIFIED ALGAE (LPIL)								0.34					0.02					0.18					0.16					10.0
0	CYANOPHYTA								0.06					0.02					0.04					0.02					2.1
0	OSCILLATORIACEAE																												
0	OSCILLATORIA (LPIL)								0.0					0.02					0.01					0.01					0.5
0	HOSTOCACEAE																												
0	ANABAENA								0.06					0.0					0.03					0.03					1.7
0	CHLOROPHYTA								0.05					1.26					0.66					0.61					36.5
0	VOLVOCALES																												
0	CHLAMYDOMONAS (LPIL)								0.0					0.37					0.19					0.19					10.3
0	VOLVOCALES (LPIL)								0.01					0.0					0.00					0.00					0.1
0	CHLOROCOCCALES																												
0	ANKISTRODESMUS (LPIL)								0.0					0.02					0.01					0.01					0.6
0	CHLORELLA (LPIL)								0.02					0.0					0.01					0.01					0.5
0	OOCYSTIS (LPIL)								0.0					0.05					0.02					0.02					1.3
0	SCENEDESMUS ACUMINATUS								0.0					0.01					0.01					0.01					0.3
0	SCENEDESMUS QUADRICAUDA								0.0					0.17					0.09					0.09					4.8
0	SCENEDESMUS INTERMEDIUS								0.02					0.0					0.01					0.01					0.6
0	PEDIASTRUM BORYANUM								0.0					0.35					0.18					0.18					9.8
0	ZYGHEMATALES																												
0	MOUGEOTIA (LPIL)								0.0					0.29					0.14					0.14					8.1
0	CHRYSTOPHYTA								0.23					0.71					0.47					0.24					26.2
0	CHRYSONOMADALES																												
0	SYNURA UVELLA								0.03					0.0					0.01					0.01					0.8
0	DINOBRYON SERTULARIA								0.20					0.0					0.10					0.10					5.5
0	DINOBRYON DIVERGENS								0.0					0.71					0.36					0.36					19.9
0	BACILLARIOPHYTA-PENNATE								0.28					0.43					0.35					0.08					19.8
0	FRAGILARIALES																												
0	FRAGILARIA (LPIL)								0.06					0.0					0.03					0.03					1.6
0	SYNEDRA (LPIL)								0.12					0.0					0.06					0.06					3.3
0	FRAGILARIALES (LPIL)								0.02					0.0					0.01					0.01					0.7
0	ACHNANTHALES																												
0	ACHNANTHES (LPIL)								0.02					0.01					0.01					0.00					0.8
0	BACILLARIOPHYTA-PENNATE (LPIL)								0.06					0.42					0.24					0.18					13.3
0	CRYPTOPHYTA								0.01					0.18					0.10					0.09					5.4
0	CRYPTOMONADALES																												

B.30 827 299

science services division



BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	CRYPTOMONAS (LPIL)	0.0	0.18	0.09	0.09	5.1
0	CHROOMONAS (LPIL)	0.01	0.0	0.01	0.01	0.3
	TOTAL	0.96	2.63	1.79	0.84	100.0
	DIVERSITY (H PRIME)	2.86	2.92	2.89	0.03	
	DIVERSITY (J PRIME)	0.77	0.79	0.78	0.01	
	NUMBER OF TAXA	13	13	23		

ABOVE COMPUTED USING SAMPLE IDS  
181 182

## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	17	18	- X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	0.12	0.18	0.15	0.03	7.1
0	UNIDENTIFIED ALGAE (LPIL)	0.12	0.18	0.15	0.03	7.1
0	CYANOPHYTA	0.14	0.04	0.09	0.05	4.3
0	CHROOCOCCACEAE					
0	CHROOCOCCUS (LPIL)	0.00	0.0	0.00	0.00	0.1
0	OSCILLATORIACEAE					
0	OSCILLATORIA (LPIL)	0.14	0.01	0.07	0.07	3.5
0	NOSTOCACEAE					
0	ANABAENA	0.0	0.03	0.01	0.01	0.7
0	CHLOROPHYTA	1.05	0.66	0.85	0.20	40.1
0	VOLVOCALES					
0	CHLAMYDOMONAS (LPIL)	0.43	0.19	0.31	0.12	14.4
0	VOLVOCALES (LPIL)	0.0	0.00	0.00	0.00	0.1
0	CHLOROCOCCALES					
0	ANKISTRODESMUS (LPIL)	0.0	0.01	0.01	0.01	0.3
0	CHLORELLA (LPIL)	0.0	0.01	0.00	0.00	0.2
0	OOCYSTIS (LPIL)	0.00	0.02	0.01	0.01	0.6
0	SCENEDESMUS ACUMINATUS	0.15	0.01	0.08	0.07	3.7
0	SCENEDESMUS QUADRICAUDA	0.10	0.09	0.10	0.01	4.5
0	SCENEDESMUS INTERMEDIUS	0.0	0.01	0.01	0.01	0.3
0	SCENEDESMUS ECOMNIS	0.00	0.0	0.00	0.00	0.0
0	PEDIASTRUM BORYANUM	0.0	0.18	0.09	0.09	4.1
0	ZYGNEHATALES					
0	MOUGEOTIA (LPIL)	0.36	0.14	0.25	0.11	11.9
0	CHRYSTOPHYTA	0.04	0.47	0.25	0.22	11.9
0	CHRYSONOMADALES					
0	SYMPURA UVELLA	0.03	0.01	0.02	0.01	1.0
0	DINOBYRON SERTULARIA	0.0	0.10	0.05	0.05	2.3
0	DINOBYRON DIVERGENS	0.0	0.36	0.19	0.18	8.4
0	CHRYSOCHROMULINA PARVA	0.01	0.0	0.00	0.00	0.2
0	BACILLARIOPHYTA-CENTRIC	0.04	0.0	0.02	0.02	1.0
0	EUPODISCALES					
0	EUPODISCALES (LPIL)	0.04	0.0	0.02	0.02	1.0
0	BACILLARIOPHYTA-PENNATE	0.95	0.35	0.65	0.30	30.7
0	FRAGILARIALES					
0	FRAGILARIA (LPIL)	0.0	0.03	0.01	0.01	0.7
0	SYNEDRA (LPIL)	0.0	0.06	0.03	0.03	1.4
0	TABELLARIA FLOCCULOSA	0.42	0.0	0.21	0.21	10.0
0	FRAGILARIALES (LPIL)	0.0	0.01	0.01	0.01	0.3
0	ACHNANTHALES					
0	ACHNANTHES (LPIL)	0.06	0.01	0.04	0.02	1.8
0	BACILLARIALES					

B.32 827 301

science services division



BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	17	18	- X	S.E.	REL AB%
0	NITZCHIA (LPIL)	0.04	0.0	0.02	0.02	1.0
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.42	0.24	0.33	0.09	15.4
0	CRYPTOPHYTA	0.11	0.10	0.10	0.01	4.8
0	CRYPTOMONADALES					
0	CRYPTOMONAS (LPIL)	0.07	0.09	0.08	0.01	3.8
0	CHROOMONAS (LPIL)	0.04	0.01	0.02	0.02	1.0
TOTAL		2.45	1.79	2.12	0.33	100.0
DIVERSITY (H PRIME)		2.84	2.89	2.87	0.03	
DIVERSITY (J PRIME)		0.76	0.78	0.77	0.01	
NUMBER OF TAXA		18	23	29		

ABOVE COMPUTED USING SAMPLE 105

171 172 181 182

B.33

science services division

827 302



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC  
5 56 56 1 2 00

		DURATION			TOW			SAMP VOL			WIND			CURRENT			TEMP			BT	TURBO	COND	DO	PH	SALN	P
SID	DATE	TIME	D/H	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT					
191	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
192	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
																					-					REL
LS	TAXA																				X			S.E.		ABX
								1				2														
0	UNIDENTIFIED ALGAE							0.0				0.09										0.05		0.05		0.2
0	UNIDENTIFIED ALGAE (LPIL)							0.0				0.09										0.05		0.05		0.2
0	CYANOPHYTA							0.00				0.08										0.04		0.04		0.2
0	CHROOCOCCACEAE																									
0	CHROOCOCCACEAE (LPIL)							0.0				0.06										0.03		0.03		0.2
0	OSCILLATORIACEAE																									
0	OSCILLATORIA (LPIL)							0.00				0.0										0.00		0.00		0.0
0	LYNGBYA (LPIL)							0.0				0.01										0.01		0.01		0.0
0	CHLOROPHYTA							0.46				0.02										0.24		0.22		1.2
0	VOLVOCALES																									
0	VOLVOCALES (LPIL)							0.0				0.02										0.01		0.01		0.0
0	CHLOROCOCCALES																									
0	OOCYSTIS (LPIL)							0.01				0.0										0.01		0.01		0.0
0	TETRAEDRON (LPIL)							0.03				0.0										0.01		0.01		0.1
0	CHLOPOCOCCALES (LPIL)							0.0				0.01										0.00		0.00		0.0
0	OEDOGONIALES																									
0	OEDOGONIUM (LPIL)							0.42				0.0										0.21		0.21		1.1
0	EUGLENOPHYTA							0.0				0.04										0.02		0.02		0.1
0	EUGLENALES																									
0	PHACUS (LPIL)							0.0				0.04										0.02		0.02		0.1
0	CHRYSTOPHYTA							0.73				0.01										0.37		0.36		1.9
0	CHRYSTOMONADALES																									
0	DINOBYRON DIVERGENS							0.73				0.0										0.36		0.36		1.9
0	CHRYSOCHROMULINA PARVA							0.0				0.00										0.00		0.00		0.0
0	CHRYSTOMONADALES (LPIL)							0.0				0.01										0.00		0.00		0.0
0	BACILLARIOPHYTA-PENNAE							2.88				31.65										17.27		14.37		89.5
0	FRAGILARIALES																									
0	FRAGILARIA PROTONENSIS							0.29				0.0										0.14		0.14		0.7
0	FRAGILARIA (LPIL)							0.0				0.12										0.06		0.06		0.3
0	SYNEDRA (LPIL)							0.0				30.95										15.47		15.47		80.2
0	TABELLARIA FLOCCULOSA							1.15				0.0										0.58		0.58		3.0
0	FRAGILARIALES (LPIL)							0.0				0.03										0.02		0.02		0.1
0	ACHNANTHALES																									
0	ACHNANTHES (LPIL)							0.13				0.55										0.34		0.21		1.8
0	NAVICULALES																									
0	NAVICULA (LPIL)							1.14				0.0										0.57		0.57		3.0

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

LS	TAXA	1	2	- X	S.E.	REL AB%
0	BACILLARIOPHYTA-PENHATE (LPIL)	0.17	0.0	0.08	0.08	0.4
0	CRYPTOPHYTA	2.24	0.38	1.31	0.93	2.0
0	CRYPTOMONADALES					
0	CRYPTOMONAS REFLEXA	0.94	0.0	0.47	0.47	2.4
0	CRYPTOMONAS OVATA	1.08	0.0	0.54	0.54	2.8
0	CRYPTOMONAS (LPIL)	0.22	0.38	0.30	0.08	1.6
	TOTAL	6.30	32.27	19.29	12.99	100.0
	DIVERSITY (H PRIME)	3.04	0.34	1.69	1.35	
	DIVERSITY (J PRIME)	0.82	0.09	0.46	0.36	
	NUMBER OF TAXA	13	13	24		

ABOVE COMPUTED USING SAMPLE IDS

191 192

B.35

science services division

827 304

B.36

827 305

science services division

PC	TC	GC		LOC
5	56	56	1	2 00

1



## BAILLY GENERATING PLANT

## PHYTOPLANKTON BIOVOLUME

## MICROLITERS PER LITER

## STATION REPORT

LS	TAXA	19	20	- X	S.E.	REL AB%
0	UNIDENTIFIED ALGAE	0.05	0.0	0.02	0.02	0.2
0	UNIDENTIFIED ALGAE (LPIL)	0.05	0.0	0.02	0.02	0.2
0	CYANOPHYTA	0.04	0.03	0.03	0.01	0.3
0	CHROOCOCCACEAE					
0	CHROOCOCCACEAE (LPIL)	0.03	0.0	0.02	0.02	0.1
0	OSCILLATORIA					
0	OSCILLATORIA (LPIL)	0.00	0.03	0.01	0.01	0.1
0	LYNGBYA (LPIL)	0.01	0.0	0.00	0.00	0.0
0	CHLOPAPHYTA	0.24	0.67	0.46	0.21	4.0
0	VOLVOCALES					
0	CHLAMYDOMONAS (LPIL)	0.0	0.49	0.25	0.25	2.2
0	VOLVOCALES (LPIL)	0.01	0.0	0.00	0.00	0.0
0	CHLOROCOCCALES					
0	ANKISTRODESMUS FALCATUS	0.0	0.13	0.07	0.07	0.6
0	ANKISTRODESMUS (LPIL)	0.0	0.00	0.00	0.00	0.0
0	OCCYSTIS (LPIL)	0.01	0.02	0.01	0.01	0.1
0	TETRAEDRON MINIMUM	0.0	0.02	0.01	0.01	0.1
0	TETRAEDRON (LPIL)	0.01	0.0	0.01	0.01	0.1
0	CHLOROCOCCALES (LPIL)	0.00	0.0	0.00	0.00	0.0
0	OEDOGONIALES					
0	OEDOGONIUM (LPIL)	0.21	0.0	0.10	0.10	0.9
0	EUGLENOPHYTA	0.02	0.0	0.01	0.01	0.1
0	EUGLENALES					
0	PHACUS (LPIL)	0.02	0.0	0.01	0.01	0.1
0	CHRYSOPHYTA	0.37	0.39	0.38	0.01	3.3
0	CHRYSONOMADALES					
0	DINOBRYON DIVERGENS	0.36	0.01	0.19	0.18	1.6
0	CHRYSOCHROMULINA PARVA	0.00	0.00	0.00	0.00	0.0
0	CYCLOHESIS (LPIL)	0.0	0.38	0.19	0.19	1.6
0	CHRYSONOMADALES (LPIL)	0.00	0.0	0.00	0.00	0.0
0	CHRYSOPHYTA (LPIL)	0.0	0.00	0.00	0.00	0.0
0	BACILLARIOPHYTA-PENNATE	17.27	0.17	8.72	8.55	76.3
0	FRAGILARIALES					
0	FRAGILARIA CROTONENSIS	0.14	0.0	0.07	0.07	0.6
0	FR. ILARIA (LPIL)	0.06	0.0	0.03	0.03	0.3
0	SYNEDRA (LPIL)	15.47	0.07	7.77	7.70	68.1
0	TABELLARIA FLOCCULOSA	0.58	0.0	0.29	0.29	2.5
0	FRAGILARIALES (LPIL)	0.02	0.0	0.01	0.01	0.1
0	ACHNANTHALES					
0	ACHNANTHES (LPIL)	0.34	0.01	0.17	0.17	1.5
0	NAVICULALES					
0	NAVICULA (LPIL)	0.57	0.0	0.29	0.29	2.5

B.37

science services division

827 206



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

STATION REPORT

LS	TAXA	19	20	- X	S.E.	REL AB%
0	BACILLARIALES					
0	NITZCHIA (LPIL)	0.0	0.03	0.02	0.02	0.2
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.08	0.06	0.07	0.01	0.6
0	PYRPHOPHYTA-DINOPHYCEAE	0.0	0.44	0.22	0.22	1.9
0	PERIDINIALES					
0	PERIDINIUM INCONSPICUUM	0.0	0.44	0.22	0.22	1.9
0	CRYPTOPHYTA	1.31	1.86	1.59	0.28	13.9
0	CRYPTOMONADALES					
0	CRYPTOMONAS HARSSONII	0.0	0.19	0.09	0.09	0.8
0	CRYPTOMONAS REFLEXA	0.47	0.0	0.23	0.23	2.1
0	CRYPTOMONAS OVATA	0.54	1.67	1.11	0.57	9.7
0	CRYPTOMONAS (LPIL)	0.30	0.0	0.15	0.15	1.3
	TOTAL	19.29	3.55	11.42	7.87	100.0
	DIVERSITY (H PRIME)	1.69	2.09	1.69	0.20	
	DIVERSITY (J PRIME)	0.46	0.60	0.53	0.07	
	NUMBER OF TAXA	24	17	33		

ABOVE COMPUTED USING SAMPLE IDS

191 192 201 202

B.38

Science Services Division

027 307

BATTLING GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

REPLICATE REPORT

PC TC GC LOC

5 56 56 1 3 00

SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURBD	COND	DO	PH	SALN	P
				UNITS	C			SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP							
211	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0
212	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	2.0	4	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0

LS	TAXA	1	2	X	S.E.	ABZ
0	UNIDENTIFIED ALGAE	0.03	0.00	0.02	0.02	0.4
0	UNIDENTIFIED ALGAE (LPIL)	0.03	0.00	0.02	0.02	0.4
0	CYANOPHYTA	0.00	0.0	0.00	0.00	0.0
0	OSCILLATORIACEAE					
0	OSCILLATORIA (LPIL)	0.00	0.0	0.00	0.00	0.0
0	CHLOROPHYTA	0.0	0.18	0.09	0.09	1.9
0	CHLOROPHYTES					
0	ANKISTRODESNIUS (LPIL)	0.0	0.02	0.01	0.01	0.2
0	ULOTRICHIALES					
0	GEMINELLA (LPIL)	0.0	0.16	0.08	0.08	1.6
0	BACILLARIOPHYTA-PENNATE	1.62	7.92	4.77	3.15	97.0
0	FRAGILARIALES					
0	FRAGILARIA (LPIL)	0.0	0.41	0.21	0.21	4.2
0	SYNEDRA (LPIL)	0.57	1.19	0.88	0.31	17.9
0	EUPHOTIALES					
0	EUPHOTIA (LPIL)	0.07	0.64	0.35	0.28	7.2
0	ACHNANTHALES					
0	ACHNANTHES (LPIL)	0.01	0.24	0.12	0.12	2.5
0	COCCONEIS (LPIL)	0.0	0.20	0.10	0.10	2.0
0	NAVICULALES					
0	NAVICULA (LPIL)	0.0	0.11	0.05	0.05	1.1
0	GOMPHONEMA (LPIL)	0.85	3.46	2.16	1.31	43.9
0	BACILLARIALES					
0	NITZCHIA (LPIL)	0.03	0.0	0.01	0.01	0.3
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.09	1.66	0.88	0.78	17.9
0	CRYPTOPHYTA	0.08	0.0	0.04	0.04	0.8
0	CRYPTOMONADALES					
0	CRYPTOMONAS MARSSONII	0.08	0.0	0.04	0.04	0.8
	TOTAL	1.73	8.10	4.92	3.19	100.0
	DIVERSITY (H PRIME)	1.89	2.41	2.15	0.26	
	DIVERSITY (J PRIME)	0.60	0.70	0.65	0.05	
	NUMBER OF TAXA	9	11	14		

ABOVE COMPUTED USING SAMPLE IDS

211 212

827 208

E.39

Science Services Division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PHYTOPLANKTON BIOVOLUME

MICROLITERS PER LITER

STATION REPORT

LS	TAXA		- X	S.E.	REL AB%
		21			
0	UNIDENTIFIED ALGAE	0.02	0.02	-1.00	0.4
0	UNIDENTIFIED ALGAE (LPIL)	0.02	0.02	-1.00	0.4
0	CYANOPHYTA	0.00	0.00	-1.00	0.0
0	OSCILLATORIACEAE				
0	OSCILLATORIA (LPIL)	0.00	0.00	-1.00	0.0
0	CHLOROPHYTA	0.09	0.09	-1.00	1.9
0	CHLOROCOCCALES				
0	ANKISTRODESMUS (LPIL)	0.01	0.01	-1.00	0.2
0	ULOTRICHALES				
0	GEMINELLA (LPIL)	0.08	0.08	-1.00	1.6
0	BACILLARIOPHYTA-PENNATE	4.77	4.77	-1.00	97.0
0	FRAGILARIALES				
0	FRAGILARIA (LPIL)	0.21	0.21	-1.00	4.2
0	SYNEDRA (LPIL)	0.68	0.68	-1.00	17.9
0	EUNOTIALES				
0	EUNOTIA (LPIL)	0.35	0.35	-1.00	7.2
0	ACHNANTHALES				
0	ACHNANTHES (LPIL)	0.12	0.12	-1.00	2.5
0	COCCONEIS (LPIL)	0.10	0.10	-1.00	2.0
0	NAVICULALES				
0	NAVICULA (LPIL)	0.05	0.05	-1.00	1.1
0	GOMPHONEMA (LPIL)	2.16	2.16	-1.00	43.9
0	BACILLARIALES				
0	NITZCHIA (LPIL)	0.01	0.01	-1.00	0.3
0	BACILLARIOPHYTA-PENNATE (LPIL)	0.88	0.88	-1.00	17.9
0	CRYPTOPHYTA	0.04	0.04	-1.00	0.8
0	CRYPTOMONADALES				
0	CRYPTOMONAS MARSSONII	0.04	0.04	-1.00	0.8
	TOTAL	4.92	4.92	-1.00	100.0
	DIVERSITY (H PRIME)	2.15	2.15	-1.00	
	DIVERSITY (J PRIME)	0.65	0.65	-1.00	
	NUMBER OF TAXA	14	14		

ABOVE COMPUTED USING SAMPLE IDS

211 212

B.40 827 309

Science Services Division



---

APPENDIX C  
PERIPHYTON DENSITY REPLICATE REPORTS  
BAILLY STUDY AREA  
APRIL 1979

827 310

## BAILLY GENERATING PLANT

## PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

## REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 10

SID	DATE	TIME	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURB	COND	DO	PH	SALN P
			D/H	UNITS C			SP	D	UNITS C	SECH W T	SC	DI	CL	SP	DI	AIR						
11	5/ 2/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0
12	5/ 2/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	
LS	TAXA																					
								1		2												
0	CYANOPHYTA							128520.25		0.0								64260.12		64260.12	85.5	
0	OSCILLATORIACEAE																					
0	OSCILLATORIA (LPIL)							98280.19		0.0								49140.09		49140.09	65.4	
0	LYNGBYA (LPIL)							30240.07		0.0								15120.04		15120.04	20.1	
0	BACILLARIOPHYTA-CENTRIC							3780.01		0.0								1890.00		1890.00	2.5	
0	EUPODISCALES																					
0	STEPHANODISCUS (LPIL)							3780.01		0.0								1890.00		1890.00	2.5	
0	BACILLARIOPHYTA-PENNATE							11340.02		6708.76								9024.39		2315.63	12.0	
0	FRAGILARIALES																					
0	DIATOMA TERRE							0.0		1236.25								1118.13		1118.13	1.5	
0	FRAGILARIA VAUCHERIAE							3780.01		0.0								1890.00		1890.00	2.5	
0	ACHNANTHALES																					
0	ACHNANTHES (LPIL)							0.0		2236.25								1118.13		1118.13	1.5	
0	NAVICULALES																					
0	COMPHONEMA (LPIL)							3780.01		2236.25								3008.13		771.88	4.0	
0	BACILLARIOPHYTA-PENNATE (LPIL)							3780.01		0.0								1890.00		1890.00	2.5	
TOTAL								143640.25		6708.76								75174.50		68465.69	100.0	
DIVERSITY (H PRIME)								1.40		1.58								1.49		0.09		
DIVERSITY (J PRIME)								0.54		1.00								0.77		0.23		
NUMBER OF TAXA								6		3								8				

ABOVE COMPUTED USING SAMPLE IDS

11 12

C.1

science services division

827 311



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 20

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP													
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P	REL	AB%					
101	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0 0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0				
102	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0 0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0.0	0.0					
LS		TAXA						1				2																							
0	CYANOPHYTA							239171.56				0.0												119585.75		119585.75		76.9							
0	OSCILLATORIACEAE																																		
0	LYNGBYA (LPIL)							239171.56				0.0												119585.75		119585.75		76.9							
0	CHLOROPHYTA							5979.29				0.0												2989.64		2989.64		1.9							
0	CHLOROCOCCALES																																		
0	ANKISTRODESMIUS (LPIL)							5979.29				0.0												2989.64		2989.64		1.9							
0	BACILLARIOPHYTA-PENNATE							65772.12				0.0												32886.06		32886.06		21.2							
0	ACHNANTHALES																																		
0	ACHNANTHES MINUTISSIMA							65772.12				0.0												32886.06		32886.06		21.2							
TOTAL								310923.00				0.0												155461.50		155461.50		100.0							
DIVERSITY (H PRIME)								0.87				0.0												0.44		0.44									
DIVERSITY (J PRIME)								0.55				0.0												0.28		0.28									
NUMBER OF TAXA								3				0												3											

ABOVE COMPUTED USING SAMPLE IDS  
101 102

C.2

science services division

827 312



## BAILLY GENERATING PLANT

## PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

## REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 30

SID	DATE	TIME	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURB	COND	DO	PH	SALN	P
			D/N	UNITS			C	SP	D	UNITS	C	SECH	WT	SC	DI	CL							
111	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0
112	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0
LS	TAXA																						
								1		2													
0	CYANOPHYTA							198606.06		5250988.00								2724797.00		2526190.00		96.6	
0	OSCILLATORIACEAE																						
0	OSCILLATORIA (LPIL)							0.0		479813.25								239906.62		239906.62		8.5	
0	LYNGBYA (LPIL)							198606.06		4232059.00								2215332.00		2016726.00		78.5	
0	SCHIZOTHRIX (LPIL)							0.0		539116.00								269558.00		269558.00		9.6	
0	BACILLARIOPHYTA-PENNIATE							0.0		194081.69								97040.81		97040.81		3.4	
0	FRAGILARIALES																						
0	DIATOMA TENUE							0.0		26955.80								13477.90		13477.90		0.5	
0	FRAGILARIA VAUCHERIAE							0.0		43129.28								21564.64		21564.64		0.8	
0	NAVICULALES																						
0	NAVICULA (LPIL)							0.0		10782.32								5391.16		5391.16		0.2	
0	GOMPHONEMA (LPIL)							0.0		53911.60								26955.80		26955.80		1.0	
0	BACILLARIOPHYTA-PENNIATE (LPIL)							0.0		59302.76								29651.38		29651.38		1.1	
TOTAL								198606.06		5445066.00								2821836.00		2623229.00		100.0	
DIVERSITY (H PRIME)								0.0		1.17								0.58		0.58			
DIVERSITY (J PRIME)								0.0		0.39								0.19		0.19			
NUMBER OF TAXA								1		8								8					

ABOVE COMPUTED USING SAMPLE IDS  
111 112

C.3

science services division

827 313

C.4

REPLICATE REPORT

SID		DATE	TIME	D/N	DURATION	UNITS	C	SD	WD	SP	TOW	0	SAMP VOL	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	CURRENT	TEMP	AIR	WAT	BT	TURB	COND	DO	PH	SALN	P
121	5/ 2/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0.0	0	0	0	0	0	0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
122	5/ 2/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0.0	0	0	0	0	0	0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
LS	TAXA																																	
											1		2																					
0	CYANOPHYTA										5913420.00		250525.31																3081972.00		2831447.00		99.6	
0	OSCILLATORIAEAE																																	
0	OSCILLATORIA (LPIL)										121425.50		0.0																60712.75		60712.75		2.0	
0	LYNGBYA (LPIL)										5682713.00		232789.06																2957751.00		2724961.00		95.6	
0	SCHIZOTHRIX (LPIL)										109282.94		0.0																54641.47		54641.47		1.8	
0	CYANOPHYTA (LPIL)										0.0		17736.31																8868.15		8868.15		0.3	
0	BACILLARIOPHYTA-PENNATE										9106.91		14780.25																11943.58		2836.67		0.4	
0	FRAGILARIALES																																	
0	DIATOMA TENUE										0.0		3695.06																1847.53		1847.53		0.1	
0	FRAGILARIA VAUCHERIAE										0.0		11085.19																5542.59		5542.59		0.2	
0	BACILLARIOPHYTA-PENNATE (LPIL)										9106.91		0.0																4553.45		4553.45		0.1	
TOTAL											5922526.00		265305.56															3093915.00		2828610.00		100.0		
DIVERSITY (H PRIME)											0.29		0.70																0.50		0.21			
DIVERSITY (J PRIME)											0.15		0.35																0.25		0.10			

ABOVE COMPUTED USING SAMPLE IDS  
121 122

827 314

827 315

NORTHERN INDIANA PUBLIC SERVICE COMPANY 1497201

BAILY GENERATING PLANT

PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

REPLICATE REPORT

PC JC GC LOC  
5 66 66 1 0 10

SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURED	COND	DO	PH	SALN P	
				UNITS	C			SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP							DI
171	4/ 9/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	
172	4/ 9/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	
																						-	REL	
																						X	S.E. AB%	
LS	TAXA																							
					1	2																		
0	CYANOPHYTA				129691.56	241164.56											185428.06		55736.50		53.1			
0	OSCILLATORIACEAE																185428.06		55736.50		53.1			
0	LYNGBYA (LPIL)				129691.56	241164.56											21317.37		7699.76		6.1			
0	CHLOROPHYTA				13617.61	29017.13																		
0	CHLOPOCOCCALES																							
0	SCENEDESMUS QUADRICAUDA				3705.47	5158.60											4432.04		726.56		1.3			
0	CHAETOPHORALES																6448.25		6448.25		1.8			
0	STIGEOLONIUM (LPIL)				0.0	12896.50																		
0	OEDOGONIALES																1289.65		1289.65		0.4			
0	OEDOGONIUM (LPIL)				0.0	2579.30																		
0	ZYGHEMATALES																							
0	MOUGEOTIA (LPIL)				4353.93	5803.43											5078.68		724.75		1.5			
0	CHLOROPHYTA (LPIL)				5558.21	2579.30											4008.75		1489.45		1.2			
0	EUGLENOPHYTA				926.37	0.0											463.18		463.18		0.1			
0	EUGLENALES																							
0	EUGLENA (LPIL)				926.37	0.0											463.18		463.18		0.1			
0	CHRYSOPHYTA				8337.31	34820.56											21578.93		13241.62		6.2			
0	CHRYSONOMADALES																							
0	EPIPYXIS (LPIL)				8337.31	34820.56											21578.93		13241.62		6.2			
0	BACILLARIOPHYTA-PENNATE				94304.19	147019.87											120662.00		26357.84		34.5			
0	FRAGILARIALES																							
0	SYNEDRA (LPIL)				0.0	6448.25											3224.12		3224.12		0.9			
0	TABELLARIA FLOCCULOSA				10931.14	1289.65											6110.39		4820.75		1.7			
0	EUNOTIALES																							
0	EUNOTIA (LPIL)				0.0	1289.65											644.83		644.83		0.2			
0	ACHNANTHALES																							
0	ACHNANTHES MINUTISSIMA				78741.25	131544.25											105142.75		26401.50		30.1			
0	NAVICULALES																							
0	ANOMOEONEIS VITREA				0.0	1289.65											644.83		644.83		0.2			
0	GOMPHONEMA ACUMINATUM				0.0	2579.30											1289.65		1289.65		0.4			
0	GOMPHONEMA (LPIL)				0.0	2579.30											1289.65		1289.65		0.4			
0	BACILLARIOPHYTA-PENNATE (LPIL)				4631.84	0.0											2315.92		2315.92		0.7			
TOTAL					246876.87	452021.87											349449.37		102572.50		100.0			
DIVERSITY (H PRIME)					1.83	1.92											1.88		0.04					
DIVERSITY (J PRIME)					0.58	0.50											0.54		0.04					
NUMBER OF TAXA					9	14																		

C.6 827 316 science services division



## BAILLY GENERATING PLANT

## PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

## REPLICATE REPORT

PC TC CC LOC  
5 66 66 1 0 20

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP							
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P		
191	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0 0	0 0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	
192	5/ 1/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0	0.0	0 0	0 0	0	0.0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	
																												KEL	
																												AB%	

ABOVE COMPUTED USING SAMPLE IDS

191 192

C.7

827 317

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PERIPHYTON DENSITY

DENSITY IN NUMBER / SQUARE CENTIMETER

REPLICATE REPORT

PC TC GC LOC

5 66 66 1 0 30

SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	TOW	SAMP VOL	WIND	CURRENT	TEMP	BT	TURBD	COND	DO	PH	SALN	P
211	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0 0 0 0 0 0	0 0	0 0.0 0	0.0 0.0	0	0.0	0	0.0	0.0	0.0	0
212	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0 0 0 0 0 0	0 0	0 0.0 0	0.0 0.0	0	0.0	0	0.0	0.0	0.0	0
LS	TAXA																				
										1	2										
0	CYANOPHYTA									8352.02	38976.11					23664.06		15312.04		9.2	
0	CHROOCOCCACEAE																				
0	MICROCYSTIS (LPIL)									8352.02	0.0					4176.01		4176.01		1.6	
0	NOSTOCACEAE																				
0	ANABAENA (LPIL)									0.0	38976.11					19488.05		19488.05		7.5	
0	CHLOROPHYTA									1044.00	133168.31					67106.12		66062.12		26.0	
0	CHAETOPHORALES																				
0	STIGEOCLONIUM (LPIL)									0.0	24360.06					12180.03		12180.03		7	
0	PROTODERMA (LPIL)									0.0	108808.25					54404.12		54404.12		21.1	
0	CHLOPOPHYTA (LPIL)									1044.00	0.0					522.00		522.00		0.2	
0	BACILLARIOPHYTA-PENNATE									96987.75	237916.44					167452.06		70464.31		64.8	
0	FRAGILARIALES																				
0	FRAGILARIA VAUCHERIAE									0.0	7145.62					3572.81		3572.81		1.4	
0	FRAGILARIA (LPIL)									29232.07	53592.14					41412.11		12180.03		16.0	
0	MERIDION CIRCULARE									1044.00	0.0					522.00		522.00		0.2	
0	SYNEORA ULNA									3862.81	9094.42					6478.61		2615.80		2.5	
0	SYNEORA (LPIL)									8352.02	4060.01					6206.01		2146.00		2.4	
0	ACHNANTHALES																				
0	ACHNANTHES MINUTISSIMA									1044.00	0.0					522.00		522.00		0.2	
0	ACHNANTHES (LPIL)									2088.01	0.0					1044.00		1044.00		0.4	
0	NAVICULALES																				
0	ANOMOEONEIS VITREA									1044.00	0.0					522.00		522.00		0.2	
0	NAVICULA (LPIL)									0.0	4872.01					2436.01		2436.01		0.9	
0	GOMPHONEMA (LPIL)									34660.88	113680.25					74170.56		39509.68		28.7	
0	BACILLARIALES																				
0	HITZSCHIA ACICULARIS									1044.00	0.0					522.00		522.00		0.2	
0	HITZCHIA (LPIL)									8352.02	35728.09					22040.05		13688.04		8.5	
0	BACILLARIOPHYTA-PENNATE (LPIL)									6264.01	9744.02					8004.02		1740.01		3.1	
TOTAL										106383.69	410060.69					258222.19		151838.50		100.0	
DIVERSITY (H PRIME)										2.76	2.77					2.76		0.01			
DIVERSITY (J PRIME)										0.74	0.80					0.77		0.03			
NUMBER OF TAXA										13	11					18					

ABOVE COMPUTED USING SAMPLE IDS

211 212

0.827 318

science services division



---

APPENDIX D  
PERIPHYTON BIOVOLUME REPLICATE REPORTS  
BAILLY STUDY AREA  
APRIL 1979

827 319





## BAILY GENERATING PLANT

## PERIPLHYON BIOVOLUME

BIOVOLUME IN MICROLITERS / SQUARE CENTIMETER

## REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 10

DURATION										TOW		SAHP VOL		WIND		CURRENT		TEMP		BT	TURBD	COND	DO	PH	SALM	P												
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI								AIR	WAT										
11	5/ 2/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0													
12	5/ 2/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0													
LS	TAXA																1	2	0.00		0.00		0.00		0.00		0.00		S.E.	AB%								
0	CYANOPHYTA																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		14.7	14.7						
0	OSCILLATORIAEAE																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		14.1	14.1						
0	OSCILLATORIA (LPIL)																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		0.6	0.6						
0	LYNGBYA (LPIL)																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		30.0	30.0						
0	BACILLARIOPHYTA-CENTRIC																0.01	0.0	0.00		0.00		0.00		0.00		0.00		0.00		30.0	30.0						
0	EUPHOTISCALES																0.01	0.0	0.00		0.00		0.00		0.00		0.00		0.00		30.0	30.0						
0	STEPHANODISCUS (LPIL)																0.01	0.0	0.00		0.00		0.00		0.00		0.00		0.00		55.3	55.3						
0	BACILLARIOPHYTA-PENNIATE																0.01	0.0	0.00		0.00		0.00		0.00		0.00		0.00		5.3	5.3						
0	FRAGILARIALES																0.0	0.0	0.00		0.00		0.00		0.00		0.00		0.00		6.5	6.5						
0	DIATOMA TENUE																0.0	0.0	0.00		0.00		0.00		0.00		0.00		0.00		5.3	5.3						
0	FRAGILARIA VAUCHERIAE																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		0.9	0.9						
0	ACHNANTHALES																0.0	0.0	0.00		0.00		0.00		0.00		0.00		0.00		36.4	36.4						
0	ACHNANTHES (LPIL)																0.0	0.0	0.00		0.00		0.00		0.00		0.00		0.00		6.2	6.2						
0	NAVICULALES																0.01	0.0	0.00		0.00		0.00		0.00		0.00		0.00		100.0	100.0						
0	GOMPHOREHA (LPIL)																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		0.41	0.41						
0	BACILLARIOPHYTA-PENNIATE (LPIL)																0.00	0.0	0.00		0.00		0.00		0.00		0.00		0.00		0.01	0.01						
TOTAL																	0.02	0.00	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.01		100.0	100.0
DIVERSITY (H PRIME)																	2.07	1.25	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.41	0.41		
DIVERSITY (J PRIME)																	0.80	0.79	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.01	0.01		
NUMBER OF TAXA																	6	3	3		3		3		3		3		3		3		8		8			

ABOVE COMPUTED USING SAMPLE IDS

11

12

827 320

NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PERIPHYTON BIOVOLUME

BIOVOLUME IN MICROLITERS / SQUARE CENTIMETER

REPLICATE REPORT

PC	TC	GC	LOC
5	66	66	0 0 20

[illegible]

ABOVE COMPUTED USING SAMPLE IDS  
101 102

827 321

## REPLICATE REPORT

PC	TC	GC	LOC
5	66	66	0 0 30

SID	DATE	TIME D/H	DURATION UNITS C	SD	WD	TOM SP D	SAMP VOL UNITS C	SECCH W T	WIND SC DI	CURRENT CL SP DI	TEMP AIR WATER BT TURBO COND DO PH SALIN P
111	5/ 1/79	0 0	0 0 0	0.0	0.0	0.0 0.0	0.0 0.0	0.0 0.0	0 0	0 0.0 0	0.0 0.0 0.0 0.0 0.0 0.0
112	5/ 1/79	0 0	0 0 0	0.0	0.0	0.0 0.0	0.0 0.0	0.0 0.0	0 0	0 0.0 0	REL ABZ S.E. ADZ
LS	TAXA					1	2			X	
0	CYNOPHYTA					0.00	0.09			0.05	0.04 45.3
0	OSCILLATORIAACEAE										
0	OSCILLATORIA (LPIL)					0.0	0.01			0.00	0.00 4.6
0	LINGBYA (LPIL)					0.00	0.01			0.01	0.01 7.0
0	SCHIZOTRPIX (LPIL)					0.0	0.07			0.03	0.03 33.7
0	BACILLARIOPHYTA-PENNATE					0.0	0.11			0.05	0.05 54.7
0	FRAGILARIALES										
0	DIATOMA TERJE					0.0	0.01			0.00	0.00 3.5
0	FRAGILARIA VAUCHERIAE					0.0	0.01			0.01	0.01 6.1
0	HAVICULALES										
0	NAVICULA (LPIL)					0.0	0.01			0.00	0.00 4.5
0	GOMPHONEMA (LPIL)					0.0	0.04			0.02	0.02 21.2
0	BACILLARIOPHYTA-PENNATE (LPIL)					0.0	0.14			0.02	0.02 19.4
TOTAL						0.00	0.2			0.10	0.10 100.0
DIVERSITY (H PRIME)						0.0	2.55			1.27	1.27
DIVERSITY (J PRIME)						0.0	0.85			0.42	0.42
NUMBER OF TAXA						1	8			8	8

ABOVE COMPUTED USING SAMPLE IDS  
111 112

827 222



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PERIPHYTON BIOVOLUME

BIOVOLUME IN MICROLITERS / SQUARE CENTIMETER

REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 40

SID		DATE		TIME		D/N		UNITS		C		DURATION		WD		SP		D		SAMP		VOL		WIND		CURRENT		TEMP		BT		TURED		COND		DO		PH		SALN		P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
121		5/ 2/79		0		0		0.0		0		0.0		0.0		0.0		0.0		0.0		0.0		0		0		0.0		0.0		0		0.0		0.0		0.0		0.0		REL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
122		5/ 2/79		0		0		0.0		0		0.0		0.0		0.0		0.0		0.0		0.0		0		0		0.0		0.0		0		0.0		0.0		0.0		0.0		REL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
LS		TAXA		1		2		0.09		0.03		0.06		0.03		93.6		0.03		93.6		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03	

ABOVE COMPUTED USING SAMPLE IDS  
121 122

827 323

## BAILY GENERATING PLANT

## PERIPHYTON BIOVOLUME

## BIOVOLUME IN MICROLITERS / SQUARE CENTIMETER

## REPLICATE REPORT

PC TC GC LOC  
5 66 66 0 0 50

DURATION										TOW		SAMP VOL		WIND				CURRENT				TEMP			BT	TURED	COND	DO	PH	SALN P									
SID	DATE	TIME	D/H	UNITS	C	SD	WD	SP	D	UNITS	C	SC	DI	CL	SP	DI	AIR	WAT																					
251	5/ 1/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	REL									
252	5/ 1/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	-	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	ABZ									
LS	TAXA																			S.E.		ABZ																	
	1																			2		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
0	CYANOPHYTA																			0.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
0	OSCILLATORIACEAE																			0.0		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00	
0	LYNGBYA (LPIL)																			0.02		0.04		0.04		0.04		0.04		0.04		0.04		0.04		0.04			
0	BACILLARIOPHYTA-PENNATE																			0.02		0.01		0.01		0.01		0.01		0.01		0.01		0.01		0.01			
0	FRAGILARIALES																			0.0		0.03		0.03		0.03		0.03		0.03		0.03		0.03		0.03			
0	DIATOMA TENUE																			0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0			
0	FRAGILARIA CROTONENSIS																			0.02		0.04		0.04		0.04		0.04		0.04		0.04		0.04		0.04			
0	BACILLARIOPHYTA-PENNATE (LPIL)																			0.59		0.52		0.52		0.52		0.52		0.52		0.52		0.52					
TOTAL	DIVERSITY (H PRIME)																			2		3		4		4		4		4		4		4		4			
DIVERSITY (H PRIME)	DIVERSITY (J PRIME)																			2		3		4		4		4		4		4		4					
DIVERSITY (J PRIME)	NUMBER OF TAXA																			2		3		4		4		4		4		4		4					

TOTAL

DIVERSITY (H PRIME)

DIVERSITY (J PRIME)

NUMBER OF TAXA

ABOVE COMPUTED USING SAMPLE IDS

251 252

827 324



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

PERIPLHYTON BIOVOLUME

BIOVOLUME IN MICROLITERS / SQUARE CENTIMETER

REPLICATE REPORT

FC TC GC LOC  
5 66 66 1 0 10

SID	DATE	TIME	DURATION			WD	SP	D	SAMP VOL		WIND	CURRENT			AIR	WAT	BT	TURB	COND	DO	PH	SALIN P
			UNITS	C	SD				UNITS	C		CL	SP	DI								
171	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
172	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
REL																						
S.E. ABZ																						
LS	TAXA																					
0	CYANOPHYTA																					
0	OSCILLATORIACEAE																					
0	LYNGBYA (LPIL)																					
0	CHLOROPHYTA																					
0	CHLOROCOCCALES																					
0	SCENEDESMUS QUADRICAUDA																					
0	CHAETOPHORALES																					
0	STIGEODONTHUM (LPIL)																					
0	OEDOGONIALES																					
0	OEDOGONIUM (LPIL)																					
0	ZYGNEPHALES																					
0	NOUGETIA (LPIL)																					
0	CHLOROPHYTA (LPIL)																					
0	EUGLEPHOPHYTA																					
0	EUGLEPHALES																					
0	EUGLENA (LPIL)																					
0	CHRYSOPHYTA																					
0	CHRYSOHOMADALES																					
0	EPIPYXIS (LPIL)																					
0	BACILLARIOPHYTA-PERRINATE																					
0	FRAGILARIALES																					
0	SYNEDRA (LPIL)																					
0	TABELLARIA FLOCCULOSA																					
0	EUNOTIALES																					
0	EUNOTIA (LPIL)																					
0	ACHNANTHIALES																					
0	ACHNANTHES MINUTISSIMA																					
0	NAVICULALES																					
0	ANOMOEONEIS VITREA																					
0	GONPHOREMA ACUMINATUM																					
0	GONPHOREMA (LPIL)																					
0	BACILLARIOPHYTA-PERRINATE (LPIL)																					
TOTAL									0.06	0.09	0.03			0.03	0.02			0.03	0.02			100.0
DIVERSITY (H PRIME)									1.75	3.20	2.47			2.47	0.73			0.73	0.14			0.14
DIVERSITY (J PRIME)									0.55	0.84	0.69			0.69	0.16			0.16				
-NUMBER OF TAXA									9	14	16			16								







D.8 827 327

science services division

REPLICATE REPORT

5 66 66 1 0 30

SID	DATE	TIME	D/N	UNITS C	SD	WD	SP	TOW	SAMP VOL	SECH	WT	WIND	CURRENT	TEMP	AIR	WAT	BT	TURBO	COND	DO	PH	SALN P
211	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0 0	0 0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
212	4/ 9/79	0 0	0.0	0	0.0	0.0	0.0	0	0.0	0	0.0	0 0	0 0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
LS	TAXA																	X			S.E.	ABZ
0	CYANOPHYTA							1		2									0.00		0.00	0.1
0	CHROOCOCCACEAE																					
0	MICROCYSTIS (LPIL)							0.00		0.0									0.00		0.00	0.0
0	NOSTOCACEAE																					
0	ANAKENA (LPIL)							0.0		0.00									0.00		0.00	0.1
0	CHLOROPHYTA							0.00		0.01									0.01		0.00	1.8
0	CHAETOPHORALES																					
0	STIGEOCLONIUM (LPIL)							0.0		0.00									0.00		0.00	0.3
0	PROTODERMA (LPIL)							0.0		0.01									0.00		0.00	1.4
0	CHLOROPHYTA (LPIL)							0.00		0.0									0.00		0.00	0.1
0	BACILLARIOPHYTA-PENNATE							0.26		0.35									0.30		0.05	98.1
0	FRAGILARIALES																					
0	FRAGILARIA VAUCHERIAE							0.0		0.00									0.00		0.00	0.6
0	FRAGILARIA (LPIL)							0.04		0.07									0.05		0.02	17.2
0	NERIDIUM CIRCULARE							0.00		0.0									0.00		0.00	0.1
0	SYNHEDRA ULNA							0.08		0.05									0.07		0.02	21.7
0	SYNHEDRA (LPIL)							0.02		0.01									0.02		0.01	4.9
0	ACHNANTHALES																					
0	ACHNANTHES MINUTISSIMA							0.00		0.0									0.00		0.00	0.0
0	ACHNANTHES (LPIL)							0.00		0.0									0.00		0.00	0.0
0	NAVICULALES																					
0	ANOMOEONEIS VITREA							0.00		0.0									0.00		0.00	0.1
0	NAVICULA (LPIL)							0.0		0.03									0.02		0.02	5.0
0	GOMPHONEMA (LPIL)							0.11		0.17									0.14		0.03	44.4
0	BACILLARIALES																					
0	NITZSCHIA ACICULARIS							0.00		0.0									0.00		0.00	0.0
0	NITZSCHIA (LPIL)							0.00		0.01									0.01		0.01	2.2
- 0	BACILLARIOPHYTA-PENNATE (LPIL)							0.01		0.00												

ABOVE COMPUTED USING SAMPLE IDS

211 212



---

APPENDIX E  
ZOOPLANKTON DENSITY REPLICATE REPORTS  
BAILLY STUDY AREA  
APRIL 1979

827 328

## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 0 00

SID		DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURBD	COND	DO	PH	SALN	P	
					UNITS	C			SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT				
11		4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0
12		4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0
13		4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0
14		4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0
																							-			REL
																							X			ABX
LS		TAXA								1			2			3			4			X			S.E.	ABX
0		NEMATODA (TOTAL)								100.31			219.71			238.10			185.19			185.87			30.56	9.7
1		NEMATODA (LPIL)								100.31			219.91			238.10			185.19			185.87			30.56	9.7
0		OLIGOCHAETA (TOTAL)								15.43			46.30			23.81			37.04			30.64			6.86	1.6
0		NAIDIDAE																								
1		NAIDIDAE (LPIL)								15.43			46.30			23.81			37.04			30.64			6.86	1.6
0		ARACHNIDA (TOTAL)								0.0			0.0			0.0			9.26			2.31			2.31	0.1
0		PROSTIGMATA																								
19		HYDRACARINA (LPIL)								0.0			0.0			0.0			9.26			2.31			2.31	0.1
0		CLADOCERA (TOTAL)								185.19			231.48			95.24			92.59			151.12			34.36	7.9
0		BOSMINIDAE																								
1		BOSMINIDAE (LPIL)								92.59			104.17			63.49			64.81			81.27			10.16	4.3
0		CHYDORIDAE																								
1		ALONA (LPIL)								7.72			0.0			0.0			0.0			1.93			1.93	0.1
1		CHYDORUS (LPIL)								15.43			34.72			23.81			27.78			25.44			4.03	1.3
1		EURYCERCUS LAMELLATUS								15.43			57.87			0.0			0.0			18.33			13.67	1.0
0		DAPHNIDAE																								
6		DAPHNIA (LPIL)								54.01			34.72			7.94			0.0			24.17			12.42	1.3
0		OSTRACODA (TOTAL)								0.0			0.0			7.94			0.0			1.98			1.98	0.1
19		OSTRACODA (LPIL)								0.0			0.0			7.94			0.0			1.98			1.98	0.1
0		COPEPODA (TOTAL)								1365.74			2002.31			1238.09			1527.78			1533.48			167.14	80.3
0		CALANOIDA (TOTAL)																								
1		DIAPTOMUS ASHLANDI								30.86			11.57			47.62			0.0			22.51			10.51	1.2
1		DIAPTOMUS SICILIS								0.0			0.0			7.94			0.0			1.98			1.98	0.1
1		DIAPTOMUS MINUTUS								115.74			127.31			23.81			18.52			71.35			29.09	3.7
1		LIMNOCALANUS MACRURUS								15.43			0.0			0.0			0.0			3.86			3.86	0.2
14		CALANOIDA (LPIL)								532.41			717.59			428.57			620.37			574.73			61.68	30.1
0		CYCLOPOIDA (TOTAL)																								
1		CYCLOPS BICUSPIDATUS THOMASI								30.86			34.72			55.56			46.30			41.86			5.62	2.2
1		TROPICOCYCLOPS (LPIL)								0.0			0.0			7.94			0.0			1.98			1.98	0.1
14		CYCLOPOIDA (LPIL)								609.57			1076.39			666.67			805.55			789.54			104.09	41.3
1		CYCLOPOIDA (LPIL)								7.72			0.0			0.0			0.0			1.93			1.93	0.1
0		HARPACTICOIDA (TOTAL)																								
1		HARPACTICOIDA (LPIL)								23.15			34.72			0.0			37.04			23.73			8.47	1.2
0		DIPTERA NEMATOCERA (TOTAL)								0.0			0.0			0.0			18.52			4.63			4.63	0.2
0		CHIRONOMIDAE																								
2		CHIRONOMIDAE (LPIL)								0.0			0.0			0.0			18.52			4.63			4.63	0.2



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	- X	S.E.	REL ABX
TOTAL		1666.66	2500.00	1603.17	1870.37	1910.05	204.74	100.0
DIVERSITY (H PRIME)		2.54	2.37	2.37	2.17	2.36	0.08	
DIVERSITY (J PRIME)		0.67	0.66	0.64	0.63	0.65	0.01	
NUMBER OF TAXA		14	12	13	11	19		
ABOVE COMPUTED USING SAMPLE IDS								
		11	12	13	14			

E.2

science services division

827 330

## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 0 00

5 51 0 0 0 0				DURATION		TOW		SAMP VOL		WIND		CURRENT		TEMP																																			
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBO	COND	DO	PH	SALN	P																					
21	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0																					
22	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0																					
23	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0																					
24	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0																					
																									-																							REL	
																									X																					S.E.		ABZ	
LS	TAXA																																																
										1		2		3		4																																	
0	NEMATODA (TOTAL)							28.17		25.35		21.13		19.21		23.46								2.03		2.8																							
1	NEMATODA (LPIL)							28.17		25.35		21.13		19.21		23.46								2.03		2.8																							
0	OLIGOCHAETA (TOTAL)							5.63		2.82		0.0		3.20		2.91								1.15		0.4																							
0	NAIDIDAE																																																
1	NAIDIDAE (LPIL)							5.63		2.82		0.0		3.20		2.91								1.15		0.4																							
0	CLADOCERA (TOTAL)							84.51		90.14		105.63		76.82		89.28								6.10		10.8																							
0	BOSMINIDAE																																																
1	BOSMINIDAE (LPIL)							45.07		61.97		63.38		60.82		57.81								4.28		7.0																							
0	CHYDORIDAE																																																
6	CHYDORIDAE (LPIL)							0.0		0.0		3.52		3.20		1.68								0.97		0.2																							
0	DAPHNIDAE																																																
6	DAPHNIA (LPIL)							39.44		28.17		35.21		9.60		28.13								6.59		3.4																							
0	MACROTHRICIDAE																																																
1	ILYOCRYPTUS SORDIDUS							0.0		0.0		3.52		0.0		0.88								0.88		0.1																							
0	SIDIDAE																																																
6	SIDIDAE (LPIL)							0.0		0.0		0.0		3.20		0.80								0.80		0.1																							
0	COPEPODA (TOTAL)							1030.99		498.59		750.00		556.98		709.14								119.93		85.8																							
0	CALANOIDA (TOTAL)																																																
1	DIAPTOMUS ASHLANDI							28.17		28.17		31.69		41.61		32.41								3.18		3.9																							
1	DIAPTOMUS MINUTUS							33.80		8.45		59.86		9.60		27.93								12.14		3.4																							
1	DIAPTOMUS (LPIL)							0.0		0.0		3.52		0.0		0.88								0.88		0.1																							
1	LIHNOCALANUS MACRURUS							0.0		2.82		3.52		0.0		1.58								0.93		0.2																							
14	CALANOIDA (LPIL)							749.30		278.87		478.87		307.30		453.58								108.02		54.9																							
0	CYCLOPOIDA (TOTAL)																																																
1	CYCLOPS BICUSPIDATUS THOMASI							0.0		8.45		14.08		6.40		7.23								2.91		0.9																							
1	CYCLOPS VERNALIS							0.0		2.82		0.0		0.0		0.70								0.70		0.1																							
14	CYCLOPOIDA (LPIL)							214.08		166.20		151.41		192.06		180.94								13.68		21.9																							
0	HARPACTICOIDA (TOTAL)																																																
1	HARPACTICOIDA (LPIL)							5.63		0.0		3.52		0.0		2.29								1.39		0.3																							
14	HARPACTICOIDA (LPIL)							0.0		2.82		0.0		0.0		0.70								0.70		0.1																							
0	HARPACTICOIDA (LPIL)							0.0		0.0		3.52		0.0		0.88								0.88		0.1																							
0	HARPACTICOIDA (LPIL)							0.0		0.0		3.52		3.20		1.68								0.97		0.2																							
0	DIPTERA NEMATOCERA (TOTAL)																																																
0	CHIRONOMIDAE																																																
2	CHIRONOMIDAE (LPIL)							0.0		0.0		3.52		3.20		1.68								0.97		0.2																							
TOTAL								1149.30		616.90		880.28		659.41		826.47								122.11		100.0																							
-DIVERSITY (H PRIME)								1.69		2.27		2.25		2.14		2.09								0.14																									

E.3 827 331

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	- X	S.E.	REL AB%
DIVERSITY (J PRIME)		0.53	0.63	0.59	0.60	0.59		0.02
NUMBER OF TAXA		9	12	14	12	17		
ABOVE COMPUTED USING SAMPLE IDS								
	21	22	23	24				

## REPLICATE REPORT

PC	TC	GC		LOC
5	51	51	0	0 00

SID		DATE	TIME	D/N	DURATION		UNITS	C	SD	WD	SP	D	SAMP VOL		UNITS	C	SECH	W	T	WIND		SC	DI	CURRENT		CL	SP	DI	TEMP		AIR	WAT	BT	TURB	COND	DO	PH	SALN	P				
31	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
32	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
33	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
34	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LS		TAXA																																									
0	NEMATODA (TOTAL)																																										
1	NEMATODA (LPIL)																																										
0	OLIGOCHAETA (TOTAL)																																										
0	NAIDIDAE																																										
1	NAIDIDAE (LPIL)																																										
0	CLADOCERA (TOTAL)																																										
0	BOSMINIDAE																																										
1	BOSMINIDAE (LPIL)																																										
0	CHYDORIDAE																																										
1	CHYDORUS (LPIL)																																										
1	EURYCERCUS LAMELLATUS																																										
0	DAPHNIDAE																																										
1	DAPHNIA GALEATA MENDOTAE																																										
6	DAPHNIA (LPIL)																																										
6	DAPHNIDAE (LPIL)																																										
0	SIDIDAE																																										
6	SIDIDAE (LPIL)																																										
0	COPEPODA (TOTAL)																																										
0	CALANOIDA (TOTAL)																																										
1	DIAPYCNUS OREGONENSIS																																										
1	DIAPYCNUS ASHLANDI																																										
1	DIAPYCNUS SICILIS																																										
1	DIAPYCNUS MINUTUS																																										
1	LIMNOCALANUS MACRURUS																																										
14	LIMNOCALANUS MACRURUS																																										
14	CALANOIDA (LPIL)																																										
0	CYCLOPOIDA (TOTAL)																																										
1	CYCLOPS BICUSPIDATUS THOMASI																																										
1	EUCYCLOPS AGILIS																																										
1	TROPYCYCLOPS (LPIL)																																										
14	CYCLOPOIDA (LPIL)																																										
TOTAL																																											
DIVERSITY (H PRIME)																																											
DIVERSITY (J PRIME)																																											
NUMBER OF TAXA																																											

ABOVE COMPUTED USING SAMPLE IDS

31                      32                      33                      34

821 555 E-5

**science services division**



E.6827 334

## science services division

**visio**

**visio**

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP								
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P		
41	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
42	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
43	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
44	4/29/79	0	0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0	
LS	TAXA																								REL					
										1		2						3						X		S.E.		ABX		
0	NEMATODA (TOTAL)									97.22		62.50		55.56		90.28		76.39		10.22	4.7									
1	NEMATODA (LPIL)									97.22		62.50		55.56		90.28		76.39		10.22	4.7									
0	OLIGOCHAETA (TOTAL)									34.72		118.06		46.30		27.78		56.71		20.80	3.5									
0	NAIDIDAE																													
1	CHAETOGASTER (LPIL)									0.0		0.0		9.26		0.0		2.31		2.31	0.1									
1	NAIDIDAE (LPIL)									34.72		118.06		37.04		27.78		54.40		21.31	3.3									
0	CLADOCERA (TOTAL)									41.67		34.72		101.85		90.28		67.13		16.93	4.1									
0	BOSMINIDAE																													
1	BOSMINIDAE (LPIL)									20.83		20.83		55.56		34.72		32.99		8.20	2.0									
0	CHYDORIDAE																													
1	ALONA QUADRANGULARIS									6.94		0.0		9.26		0.0		4.05		2.39	0.2									
1	CHYDORUS (LPIL)									0.0		6.94		18.52		6.94		8.10		3.84	0.5									
1	EURYCERCUS LAMELLATUS									0.0		0.0		9.26		0.0		2.31		2.31	0.1									
0	DAPHNIDAE																													
1	DAPHNIA PULEX									6.94		0.0		0.0		0.0		1.74		1.74	0.1									
6	DAPHNIA (LPIL)									6.94		6.94		9.26		46.61		17.94		10.24	1.1									
0	COPEPODA (TOTAL)									1298.61		1409.72		1675.92		1333.33		1429.40		85.39	87.5									
0	CALANOIDA (TOTAL)																													
1	DIAPTOMUS ASHLANDI									90.28		62.50		92.59		20.83		66.55		16.70	4.1									
1	DIAPTOMUS SICILIS									6.94		6.94		9.26		6.94		7.52		0.58	0.5									
1	DIAPTOMUS MINUTUS									27.78		104.17		55.56		34.72		55.56		17.24	3.4									
14	LIMNOCALANUS MACRURUS									6.94		0.0		0.0		0.0		1.74		1.74	0.2									
14	CALANOIDA (LPIL)									875.00		840.28		981.48		881.94		894.68		30.34	54.8									
0	CYCLOPOIDA (TOTAL)																													
1	CYCLOPS BICUSPIDATUS THOMASI									27.78		27.78		27.78		34.72		29.51		1.74	1.8									
1	CYCLOPS VERNALIS									6.94		0.0		0.0		0.0		1.74		1.74	0.1									
14	CYCLOPOIDA (LPIL)									250.00		347.22		472.22		354.17		355.90		45.48	21.8									
0	HARPACTICOIDA (TOTAL)																													
1	HARPACTICOIDA (LPIL)									0.0		17.89		27.78		0.0		10.42		6.65	0.6									
14	HARPACTICOIDA (LPIL)									6.94		6.94		9.26		0.0		5.79		2.00	0.4									
0	TARDIGRADA (TOTAL)									0.0		13.89		0.0		0.0		3.47		3.47	0.2									
1	TARDIGRADA (LPIL)									0.0		13.89		0.0		0.0		3.47		3.47	0.2									
TOTAL									1472.22		1638.89		1879.63		1541.66		1633.10		89.00	100.0										
DIVERSITY (H PRIME)									2.07		2.27		2.22		1.97		2.14		0.07											
DIVERSITY (J PRIME)									0.53		0.61		0.57		0.57		0.57		0.02											

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	- X	S.E.	REL AB%
ABOVE COMPUTED USING SAMPLE IDS								
	41	42	43	44				



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 0 10

			DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP											
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	WT	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P							
51	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0.0	0 0	0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0						
52	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0.0	0 0	0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0						
53	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0.0	0 0	0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0.0						
54	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0.0	0 0	0	0 0	0 0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0						
																					X			S.E.			REL							
LS	TAXA					1			2			3			4																			
0	NEMATODA (TOTAL)					7.04			23.47			21.13			17.61			17.31						3.63			2.0							
1	NEMATODA (LPIL)					7.0			23.47			21.13			17.61			17.31						3.63			2.0							
0	OLIGOCHAETA (TOTAL)					3.52			9.39			7.04			3.52			5.87						1.44			0.7							
0	NAIDIDAE																																	
1	NAIDIDAE (LPIL)					3.52			9.39			7.04			3.52			5.87						1.44			0.7							
0	CLADOCERA (TOTAL)					42.25			42.25			59.86			14.08			39.61						9.47			4.6							
0	BOSMINIDAE																																	
1	BOSMINIDAE (LPIL)					0.0			23.47			21.13			7.04			12.91						5.63			1.5							
0	CHYDORIDAE																																	
0	ALONA (LPIL)					24.65			0.0			0.0			0.0			6.16						6.16			0.7							
1	CHYDORUS (LPIL)					10.56			0.0			0.0			0.0			2.64						2.64			0.7							
0	DAPHNIDAE																																	
6	DAPHNIA (LPIL)					7.04			18.78			35.21			0.0			15.26						7.70			1.6							
1	DAPHNIA (LPIL)					0.0			0.0			0.0			7.04			1.76						1.76			0.2							
0	HOLOPEDIDAE																																	
0	HOLOPEDIDUM (LPIL)					0.0			0.0			3.52			0.0			0.88						0.88			0.1							
0	COPEPODA (TOTAL)					785.21			865.54			788.73			746.48			797.24						25.62			92.5							
0	CALANOIDA (TOTAL)																																	
1	DIAPTOMUS ASHLANDI					73.94			98.59			102.11			52.82			81.87						11.53			9.5							
1	DIAPTOMUS PALLIDUS					0.0			4.69			0.0			0.0			1.11						1.17			0.1							
1	DIAPTOMUS SICILIS					0.0			4.69			7.04			3.52			3.81						1.47			0.4							
1	DIAPTOMUS MINUTUS					45.77			42.25			59.86			17.61			41.37						8.79			4.8							
1	LIMNOCALANUS MACRURUS					0.0			0.0			3.52			3.52			1.76						1.02			0.2							
14	CALANOIDA (LPIL)					426.06			474.18			422.53			517.61			460.09						22.50			53.4							
0	CYCLOPOIDA (TOTAL)																																	
1	CYCLOPS BICUSPIDATUS THOMASI					17.61			14.08			38.73			24.65			23.77						5.45			2.8							
1	CYCLOPS VERNALIS					0.0			0.0			0.0			3.52			0.88						0.88			0.1							
14	CYCLOPOIDA (LPIL)					221.83			230.05			151.41			119.72			180.75						26.93			21.0							
0	HARPACTICOIDA (TOTAL)																																	
1	HARPACTICOIDA (LPIL)					0.0			0.0			0.0			3.52			0.88						0.88			0.1							
14	HARPACTICOIDA (LPIL)					0.0			0.0			3.52			0.0			0.88						0.88			0.1							
0	AMPHIPODA (TOTAL)					0.0			0.0			3.52			0.0			0.88						0.88			0.1							
0	HAUSTORIIDAE																																	
6	PONTOPOREIA (LPIL)					0.0			0.0			3.52			0.0			0.88						0.88			0.1							
0	DIPTERA NEMATOCERA (TOTAL)					0.0			0.0			3.52			0.0			0.88						0.88			0.1							
0	CHIRONOMIDAE																																	

## DAILY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

LS	TAXA	1	2	3	4	- X	S.E.	REL ABZ
6	CHIRONOMIDAE (LPIL)	0.0	0.0	3.52	0.0	0.88	0.88	0.1
	TOTAL	838.03	943.66	883.80	781.69	861.79	34.36	100.0
	DIVERSITY (H PRIME)	2.04	2.15	2.48	1.77	2.11	0.15	
	DIVERSITY (J PRIME)	0.61	0.62	0.63	0.48	0.59	0.04	
	NUMBER OF TAXA	10	11	15	13	19		

ABOVE COMPUTED USING SAMPLE IDS

51	52	53	54
----	----	----	----

827 337

## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC

5 51 51 0 0 10

		DURATION				TOW				SAMP VOL				WIND				CURRENT				TEMP																																																										
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P																																																				
61	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																																																			
62	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																																																			
63	4/29/79	0 0	0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																																																			
64	4/29/79	0 0	0	0.0	0	0.0	J.0	0.0	0	11.9	3	0.0	0	0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	0																																																			
																										REL																																																						
LS																										X	S.E.	ABZ																																																				
									1										2										3										4										X										S.E.										ABZ											
0	NEMATODA (TOTAL)								6.72									16.81									10.50									0.0									8.51									3.52									0.8																	
1	NEMATODA (LPIL)								6.72									16.81									10.50									0.0									8.51									3.52									0.8																	
0	OLIGOCHAETA (TOTAL)								3.36									16.81									3.50									0.0									5.92									3.72									0.6																	
0	NAIDIDAE																																																																															
1	NAIDIDAE (LPIL)								3.36									16.81									3.50									0.0									5.92									3.72									0.6																	
0	CLADOCERA (TOTAL)								16.81									84.03									24.51									40.34									41.42									15.02									3.9																	
0	BOSMINIDAE																																																																															
1	BOSMINIDAE (LPIL)								10.08									42.02									17.51									10.08									19.92									7.57									1.9																	
0	DAPHNIDAE																																																																															
6	DAPHNIA (LPIL)								6.72									42.02									7.00									30.25									21.50									8.78									2.0																	
0	COPEPODA (TOTAL)								668.91									1857.14									717.79									820.17									1016.00									282.15									94.8																	
0	CALANOIDA (TOTAL)																																																																															
1	DIAPTOMUS ASHLANDI								6.72									42.02									28.01									50.42									31.79									9.55									3.0																	
1	DIAPTOMUS SICILIS								0.0									0.0									3.50									0.0									0.88									0.88									0.1																	
1	DIAPTOMUS MINUTUS								60.50									67.23									14.01									60.50									50.56									12.29									4.7																	
1	LIIMOCALANUS MACRURUS								0.0									16.81									0.0									0.0									4.20									4.20									0.4																	
14	CALANOIDA (LPIL)								497.40									1411.76									567.23									571.43									761.97									217.26									71.1																	
0	CYCLOPOIDA (TOTAL)																																																																															
1	CYCLOPS BICUSPIDATUS THOMASI								6.72									25.21									10.50									10.08									13.13									4.11									1.2																	
14	CYCLOPOIDA (LPIL)								94.12									285.71									94.54									124.37									149.68									45.89									14.0																	
0	HARPACTICOIDA (TOTAL)																																																																															
1	HARPACTICOIDA (LPIL)								0.0									8.40									0.0									3.36									2.94									1.99									0.3																	
14	HARPACTICOIDA (LPIL)								3.36									0.0									0.0									0.0									0.84									0.84									0.1																	
TOTAL									695.80									1974.79									756.30									860.50									1071.85									302.90									100.0																	
DIVERSITY (H PRIME)									1.46									1.56									1.40									1.66									1.52									0.06																										
DIVERSITY (J PRIME)									0.44									0.45									0.42									0.55									0.47									0.03																										
NUMBER OF TAXA									10									11									10									8									12																																			

ABOVE COMPUTED USING SAMPLE IDS

01

62

63

64

E.10 827 338

science services division



## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 1 00

				DURATION		TOW		SAMP VOL				WIND		CURRENT		TEMP											
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURB	COND	DO	PH	SALN P
71	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0 0	0 0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
72	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0 0	0 0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
73	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0 0	0 0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
74	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	3.6	3	0.0	0	0	0 0	0 0	0 0	0 0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
LS	TAXA																										
										1	2	3	4	X		S.E.		REL		ABX							
0	NEMATODA (TOTAL)									27.78	31.75	23.15	16.03	24.67		3.38		2.0									
1	NEMATODA (LPIL)									27.78	31.75	23.15	16.03	24.67		3.38		2.0									
0	OLIGOCHAETA (TOTAL)									7.94	0.0	13.89	5.34	6.79		2.89		0.5									
0	NAIDIDAE																										
1	NAIDIDAE (LPIL)									0.0	0.0	0.0	5.34	1.34		1.34		0.1									
19	NAIDIDAE (LPIL)									7.94	0.0	13.89	0.0	5.46		3.38		0.4									
0	CLADOCERA (TOTAL)									27.78	63.49	41.67	48.08	45.25		7.41		3.6									
0	BOSMINIDAE																										
1	BOSMINIDAE (LPIL)									15.87	31.75	18.52	32.05	24.55		4.28		2.0									
0	CHYDORIDAE																										
1	CHYDORUS (LPIL)									0.0	0.0	9.26	0.0	2.31		2.31		0.2									
1	EURYCERCUS LAMELLATUS									3.97	0.0	9.26	5.34	4.64		1.91		0.4									
0	DAPHNIDAE																										
6	DAPHNIA (LPIL)									3.97	31.75	4.63	10.68	12.76		6.51		1.0									
0	MACROTHRICIDAE																										
6	MACROTHRICIDAE (LPIL)									3.97	0.0	0.0	0.0	0.99		0.99		0.1									
0	COPEPODA (TOTAL)									904.76	1849.21	925.93	1014.96	1173.71		226.43		93.9									
0	CALANOIDA (TOTAL)																										
1	DIAPTOMUS ASHLANDI									27.78	119.05	37.04	32.05	53.98		21.77		4.3									
1	DIAPTOMUS SICILIS									0.0	0.0	9.26	0.0	2.31		2.31		0.2									
1	DIAPTOMUS MINUTUS									31.75	103.17	50.93	90.81	69.16		16.73		5.5									
1	LIMNOCALANUS MACRURUS									3.97	0.0	0.0	0.0	0.99		0.99		0.1									
14	CALANOIDA (LPIL)									682.54	1500.00	712.96	705.13	900.16		200.05		72.0									
0	CYCLOPOIDA (TOTAL)																										
1	CYCLOPS BICUSPIDATUS THOMASI									3.97	7.94	18.52	10.68	10.28		3.07		0.8									
1	CYCLOPS VERNALIS									0.0	0.0	9.26	0.0	2.31		2.31		0.2									
14	CYCLOPOIDA (LPIL)									142.86	111.11	87.96	160.26	125.55		16.14		10.0									
0	HARPACTICOIDA (TOTAL)																										
1	HARPACTICOIDA (LPIL)									3.97	7.94	0.0	5.34	4.31		1.66		0.3									
14	HARPACTICOIDA (LPIL)									7.94	0.0	0.0	10.68	4.66		2.75		0.4									
TOTAL										968.25	1944.44	1004.63	1084.40	1250.43		232.61		100.0									
DIVERSITY (H PRIME)										1.61	1.35	1.76	1.80	1.63		0.10											
DIVERSITY (J PRIME)										0.44	0.43	0.48	0.52	0.46		0.02											
NUMBER OF TAXA										13	9	13	11	16													

ABOVE COMPUTED USING SAMPLE IDS

71

72

73

74

E.11

827 339

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 1 00

SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURB	COND	DO	PH	SALN	P
				UNITS	C			SP	D	UNITS	C	SECH	W	T	SC	DI	CL							
81	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0
82	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0
83	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0
84	4/29/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	7.1	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0

LS	TAXA	1	2	3	4	X	S.E.	REL ABX
0	NEMATODA (TOTAL)	0.0	0.0	7.04	4.69	2.93	1.76	0.3
1	NEMATODA (LPIL)	0.0	0.0	7.04	4.69	2.93	1.76	0.3
0	CLADOCERA (TOTAL)	51.64	112.68	28.17	23.47	53.99	20.51	5.2
0	BOSMINIDAE							
1	BOSMINIDAE (LPIL)	28.17	46.95	17.01	14.08	26.70	7.38	2.6
0	DAPHNIDAE							
6	DAPHNIA (LPIL)	23.47	0.0	10.56	9.39	10.86	4.82	1.1
1	DAPHNIA (LPIL)	0.0	61.03	0.0	0.0	15.26	15.26	1.5
0	LEPTODORIDAE							
6	LEPTODORIDAE (LPIL)	0.0	4.69	0.0	0.0	1.17	1.17	0.1
0	COPEPODA (TOTAL)	1046.95	1000.00	848.59	995.30	972.71	42.98	94.4
0	CALANOIDA (TOTAL)							
1	DIAPYCNUS ASHLANDI	46.95	18.78	10.56	14.08	22.59	8.29	2.2
1	DIAPYCNUS SICILIS	0.0	0.0	0.0	9.39	2.35	2.35	0.2
1	DIAPYCNUS MINUTUS	75.12	79.61	10.56	46.95	53.11	15.93	5.2
1	LIPOCALANUS MACRURUS	0.0	0.0	0.0	4.69	1.17	1.17	0.1
14	CALANOIDA (LPIL)	755.87	798.12	718.31	779.34	702.91	17.20	74.0
0	CYCLOPOIDA (TOTAL)							
1	CYCLOPS BICUSPIDATUS THOMASI	9.39	9.39	7.04	14.08	9.98	1.43	1.0
1	CYCLOPS (LPIL)	0.0	0.0	3.52	0.0	0.88	0.88	0.1
14	CYCLOPOIDA (LPIL)	154.93	93.90	91.55	122.07	115.61	14.83	11.2
0	HARPACTICOIDA (TOTAL)							
1	HARPACTICOIDA (LPIL)	0.0	0.0	7.04	0.0	1.76	1.76	0.2
14	HARPACTICOIDA (LPIL)	4.69	0.0	0.0	4.69	2.35	1.35	0.2
0	TARDIGRADA (TOTAL)	0.0	4.69	0.0	0.0	1.17	1.17	0.1
1	TARDIGRADA (LPIL)	0.0	4.69	0.0	0.0	1.17	1.17	0.1
	TOTAL	1098.59	1117.37	883.80	1023.47	1030.81	53.03	100.0
	DIVERSITY (H PRIME)	1.58	1.56	1.12	1.36	1.40	0.11	
	DIVERSITY (J PRIME)	0.53	0.49	0.34	0.39	0.44	0.04	
	NUMBER OF TAXA	8	9	10	11	14		

ABOVE COMPUTED USING SAMPLE IDS

81 82 83 84

E.12 827 340 science services division



## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 0 1 00

SI 0 1 00																													
				DURATION			TOW				SAMP VOL				WIND			CURENT			TEMP								
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBD	COND	DO	PH	SALN	P	
91	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0 0	0 0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
92	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0 0	0 0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
93	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0 0	0 0	0 0	0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
94	4/29/79	0 0	0 0	0.0	0	0.0	0.0	0.0	0	11.9	3	0.0	0 0	0 0	0 0	0	0	0	1.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0
LS	TAXA										1		2		3		4		X		S.E.		REL						
0	NEMATODA (TOTAL)								2.80		11.20		2.21		8.40		6.16		2.19		1.0								
1	NEMATODA (LPIL)								2.80		11.20		2.21		8.40		6.16		2.19		1.0								
0	OLIGOCHAETA (TOTAL)								5.60		2.80		0.0		2.80		2.80		1.14		0.4								
0	NAIDIDAE																												
1	NAIDIDAE (LPIL)								5.60		2.80		0.0		2.80		2.80		1.14		0.4								
0	CLADOCERA (TOTAL)								33.61		30.81		22.11		19.61		26.54		3.37		4.2								
0	BOSMINIDAE																												
1	BOSMINIDAE (LPIL)								16.81		14.01		11.06		14.01		13.97		1.17		2.2								
0	CHYDORIDAE																												
1	CHYDORUS (LPIL)								0.0		2.80		0.0		0.0		0.70		0.70		0.1								
1	EURYCERCUS LAMELLATUS								0.0		0.0		0.0		2.80		0.70		0.70		0.1								
0	DAPHNIDAE																												
6	DAPHNIA (LPIL)								16.81		14.01		11.06		0.0		10.47		3.68		1.7								
0	HOLOPEDIDAE																												
6	HOLOPEDIDAE (LPIL)								0.0		0.0		0.0		2.80		0.70		0.70		0.1								
0	COPEPODA (TOTAL)								532.21		722.69		429.01		703.08		596.75		70.40		94.2								
0	CALANOIDA (TOTAL)																												
1	DIAPTONUS ASHLANDI								39.22		53.22		24.33		50.42		41.80		6.56		6.6								
1	DIAPTONUS PALLIDUS								0.0		2.80		0.0		0.0		0.70		0.70		0.1								
1	DIAPTONUS SICILIS								0.0		5.60		0.0		0.0		1.40		1.40		0.2								
1	DIAPTONUS MINUTUS								8.40		50.42		11.06		36.41		26.57		10.15		4.2								
1	LIMNOCALANUS MACRURUS								5.60		2.80		0.0		2.80		2.80		1.14		0.4								
14	CALANOIDA (LPIL)								400.56		599.44		322.87		473.39		449.06		58.80		70.9								
0	CYCLOPOIDA (TOTAL)																												
1	CYCLOPS BICUSPIDATUS THOMASI								5.60		2.80		6.63		30.81		11.46		6.50		1.8								
1	CYCLOPS VERNALIS								0.0		2.80		0.0		0.0		0.70		0.70		0.1								
14	CYCLOPOIDA (LPIL)								72.83		0.0		61.92		86.83		55.40		19.16		8.7								
0	HARPACTICOIDA (TOTAL)																												
6	LONGIPEDIA (LPIL)								0.0		0.0		0.0		22.41		5.60		5.60		0.9								
14	HARPACTICOIDA (LPIL)								0.0		2.80		2.21		0.0		1.25		0.73		0.2								
0	DIPTERA NEMATOCERA (TOTAL)								0.0		0.0		0.0		5.60		1.40		1.40		0.2								
0	CHIRONOMIDAE																												
2	CHIRONOMIDAE (LPIL)								0.0		0.0		0.0		5.60		1.40		1.40		0.2								
TOTAL								574.23		767.50		453.34		739.49		633.64		73.69		100.0									
-DIVERSITY (H PRIME)								1.63		1.36		1.52		1.95		1.62		0.12											
-DIVERSITY (J PRIME)								0.49		0.36		0.48		0.53		0.46		0.04											



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS TAXA

NUMBER OF TAXA

ABOVE COMPUTED USING SAMPLE IDS

91 92 93 94

1  
10

2  
14

3  
9

4  
13

-  
X  
19

S.E. REL  
AB%

DATE 07/10/79  
PAGE NO 25  
T600AQUA 9/28/77

## BAILY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 4 0 20

SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	SAMP VOL	WIND		CURRENT		TEMP		BT	TURB	COND	DO	PH	SALIN	P
											SC	DI	CL	SP	DI	AIR							
LS	TAXA												S.E.		X		REL		AEZ				
0	CNIDARIA (TOTAL)												2	8.33	3	0.0	4	0.0	2.08	0.1	2.08	0.1	
0	HYDROZOA																						
1	HYDRA (LPIL)												0.0	8.33	0.0	0.0	0.0	0.0	2.08	0.1	2.08	0.1	
0	NEMATODA (TOTAL)												186.27	83.33	90.91	135.42	123.98	23.73	6.4	23.73	6.4		
1	NEMATODA (LPIL)												186.27	83.33	90.91	135.42	123.98	23.73	6.4	23.73	6.4		
0	OLIGOCHAETA (TOTAL)												68.63	33.33	22.73	114.58	59.82	20.72	3.1	20.72	3.1		
0	NAIDIDAE																						
1	NAIDIDAE (LPIL)												68.63	0.0	22.73	0.0	22.84	16.18	1.2	16.18	1.2		
19	NAIDIDAE (LPIL)												0.0	33.33	0.0	114.58	36.98	27.03	1.9	27.03	1.9		
0	CLADOCERA (TOTAL)												166.67	150.00	181.82	135.42	158.48	10.06	8.1	10.06	8.1		
0	BOSMINIDAE																						
1	BOSMINIDAE (LPIL)												107.84	66.67	75.76	72.92	80.80	5.21	4.1	5.21	4.1		
0	CHYDORIDAE																						
1	CHYDORUS (LPIL)												0.0	16.67	7.58	10.42	8.66	3.46	0.4	3.46	0.4		
0	DAPHNIDAE																						
1	DAPHNIA GALEATA MENDOTAE												0.0	0.0	7.58	0.0	1.89	1.89	0.1	1.89	0.1		
6	DAPHNIA (LPIL)												58.82	66.67	90.91	52.08	67.12	8.47	3.4	8.47	3.4		
0	COPEPODA (TOTAL)												1558.82	1533.33	1598.48	1708.33	1599.74	38.60	82.0	38.60	82.0		
0	CALANOIDA (TOTAL)																						
1	DIAPYCNUS ASHLANDI												107.84	66.67	75.76	72.92	80.80	9.21	4.1	9.21	4.1		
1	DIAPYCNUS SICILIS												0.0	8.33	15.15	0.0	5.87	3.66	0.3	3.66	0.3		
1	DIAPYCNUS MINUTUS												39.22	25.00	83.33	62.50	52.51	12.86	2.7	12.86	2.7		
1	LIHNOCALANUS MACRURUS												0.0	0.0	7.58	20.83	7.10	4.91	0.4	4.91	0.4		
14	CALANOIDA (LPIL)												911.76	1100.00	984.85	1062.50	1014.78	41.08	52.0	41.08	52.0		
0	CYCLOPOIDA (TOTAL)																						
1	CYCLOPS BICUSPIDATUS THOMASI												88.24	50.00	7.58	41.67	46.87	16.56	2.4	16.56	2.4		
1	CYCLOPS VERNALIS												0.0	0.0	0.0	10.42	2.60	2.60	0.1	2.60	0.1		
1	EUCYCLOPS AGILIS												0.0	0.0	0.0	10.42	2.60	2.60	0.1	2.60	0.1		
14	CYCLOPOIDA (LPIL)												411.76	283.33	424.24	427.08	386.61	34.58	19.8	34.58	19.8		
0	AMPHIPODA (TOTAL)												0.0	0.0	7.58	0.0	1.89	1.89	0.1	1.89	0.1		
6	AMPHIPODA (LPIL)												0.0	0.0	7.58	0.0	1.89	1.89	0.1	1.89	0.1		
0	DIPTERA NEMATOCERA (TOTAL)												0.0	8.33	7.58	0.0	3.98	2.30	0.2	2.30	0.2		
0	CHIRONOMIDAE																						
2	CHIRONOMIDAE (LPIL)												0.0	8.33	7.58	0.0	3.98	2.30	0.2	2.30	0.2		
TOTAL												1980.39	1816.66	1909.09	2093.75	1949.97	58.48	100.0	58.48	100.0			
DIVERSITY (H PRIME)												2.40	2.09	2.28	2.36	2.28	0.07		0.07				



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	- X	S.E.	REL ABZ
DIVERSITY (J PRIME)		0.76	0.56	0.58	0.64	0.64		0.04
NUMBER OF TAXA		9	13	15	13	18		
ABOVE COMPUTED USING SAMPLE IDS								
	101	102	103	104				

## BAILY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	1	2	3	X	S.E.	REL AB%
0	NEMATODA (TOTAL)	185.87	23.46	2.10	70.48	58.03	5.8
1	NEMATODA (LPIL)	185.87	23.46	2.10	70.48	58.03	5.8
0	OLIGOCHAETA (TOTAL)	30.64	2.91	1.05	11.54	9.57	1.0
0	NAIDIDAE						
1	NAIDIDAE (LPIL)	30.64	2.91	1.05	11.54	9.57	1.0
0	ARACHNIDA (TOTAL)	2.31	0.0	0.0	0.77	0.77	0.1
0	PROSTIGMATA						
19	HYDRACARINA (LPIL)	2.31	0.0	0.0	0.77	0.77	0.1
0	CLADOCERA (TOTAL)	151.12	89.28	51.30	97.23	29.09	8.0
0	BOSMINIDAE						
1	BOSMINIDAE (LPIL)	81.27	57.81	21.18	53.42	17.48	4.4
0	CHYDORIDAE						
1	ALCNA (LPIL)	1.93	0.0	0.0	0.64	0.64	0.1
1	CHYDORUS (LPIL)	25.44	0.0	3.15	9.53	8.01	0.8
1	EURYCERCUS LAMELLATUS	18.33	0.0	1.05	6.46	5.94	0.5
6	CHYDORIDAE (LPIL)	0.0	1.68	0.0	0.56	0.56	0.0
0	DAPHNIDAE						
1	DAPHNIA GALEATA MENDOTAE	0.0	0.0	1.05	0.35	0.35	0.0
6	DAPHNIA (LPIL)	24.17	28.10	22.76	25.01	1.50	2.1
6	DAPHNIDAE (LPIL)	0.0	0.0	1.05	0.35	0.35	0.0
0	HYPOROTHERICIDAE						
1	ALYOCRYPTUS SORDIDUS	0.0	0.88	0.0	0.29	0.29	0.0
0	SIDIIDAE						
6	SIDIIDAE (LPIL)	0.0	0.60	1.05	0.62	0.32	0.1
0	OSTRACODA (TOTAL)	1.98	0.0	0.0	0.66	0.66	0.1
19	OSTRACODA (LPIL)	1.98	0.0	0.0	0.66	0.66	0.1
0	COPEPODA (TOTAL)	1533.48	709.14	845.59	1029.40	255.10	84.9
0	CALANOIDA (TOTAL)						
1	DIAPYCNUS OREGONENSIS	0.0	0.0	0.70	0.23	0.23	0.0
1	DIAPYCNUS ASHLANDI	22.51	32.41	59.17	38.03	10.95	3.1
1	DIAPYCNUS SICILIS	1.98	0.0	1.40	1.13	0.59	0.1
1	DIAPYCNUS MINUTUS	71.35	27.93	26.26	41.85	14.76	3.5
1	DIAPYCNUS (LPIL)	0.0	0.83	0.0	0.29	0.29	0.0
1	LIMNOCALANUS MACRURUS	3.86	1.58	1.05	2.16	0.86	0.2
14	LIMNOCALANUS MACRURUS	0.0	0.0	4.20	1.40	1.40	0.1
14	CALANOIDA (LPIL)	574.73	453.58	641.28	556.53	54.94	45.9
0	CYCLOPOIDA (TOTAL)						
1	CYCLOPS BICUSPIDATUS THOMASI	41.66	7.23	25.56	24.88	10.00	2.1
1	CYCLOPS VERNALIS	0.0	0.70	0.0	0.23	0.23	0.0
1	EUCYCLOPS AGILIS	0.0	0.0	0.88	0.29	0.29	0.0
1	PROCYCLOPS (LPIL)	1.98	0.0	0.0	0.89	0.58	0.1
14	CYCLOPOIDA (LPIL)	789.54	180.94	84.38	351.62	220.73	29.0
1	CYCLOPOIDA (LPIL)	1.93	0.0	0.0	0.64	0.64	0.1
0	HARPACTICOIDA (TOTAL)						



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	1	2	3	- X	S.E.	REL AB%
1	HARPACTICOIDA (LPIL)	23.73	2.29	0.0	8.67	7.56	0.7
14	HARPACTICOIDA (LPIL)	0.0	0.70	0.0	0.23	0.23	0.0
0	HARPACTICOIDA (LPIL)	0.0	0.88	0.0	0.29	0.29	0.0
0	DIPTERA NEMATOCERA (TOTAL)	4.63	1.68	0.0	2.10	1.35	0.2
0	CHIRONOMIDAE						
2	CHIRONOMIDAE (LPIL)	4.63	1.68	0.0	2.10	1.35	0.2
TOTAL		1910.05	826.47	900.03	1211.19	349.58	100.0
DIVERSITY (H PRIME)		2.36	2.09	1.60	2.02	0.22	
DIVERSITY (J PRIME)		0.65	0.59	0.46	0.57	0.06	
NUMBER OF TAXA		19	17	19	28		

ABOVE COMPUTED USING SAMPLE IDS

11	13
12	14
21	23
31	33
32	34

827 346

## BAILLY GENERATING PLANT

## ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL. ABZ
0	NEMATODA (TOTAL)	76.39	17.31	8.51	34.07	21.31	2.9
1	NEMATODA (LPIL)	76.39	17.31	8.51	34.07	21.31	2.9
0	OLIGOCHAETA (TOTAL)	56.71	5.97	5.92	22.83	16.94	1.9
0	NAIDIDAE						
1	CHAETOGASTER (LPIL)	2.31	0.0	0.0	0.77	0.77	0.1
1	NAIDIDAE (LPIL)	54.40	5.87	5.92	22.06	16.17	1.9
0	CLADOCERA (TOTAL)	67.13	39.61	41.42	49.39	8.89	4.2
0	BOSMINIDAE						
1	BOSMINIDAE (LPIL)	32.99	12.91	10.92	21.94	5.88	1.8
0	CHYDORIDAE						
1	ALONA QUADRANGULARIS	4.05	0.0	0.0	1.35	1	0.1
0	ALONA (LPIL)	0.0	6.16	0.0	2.05	2.05	0.2
1	CHYDORUS (LPIL)	8.10	2.64	0.0	3.58	2.39	0.3
1	EURYCERCUS LAMELLATUS	2.31	0.0	0.0	0.77	0.77	0.1
0	DAPHNIDAE						
1	DAPHNIA PULEX	1.74	0.0	0.0	0.58	0.58	0.0
6	DAPHNIA (LPIL)	17.94	15.26	11.50	18.23	1.81	1.5
1	DAPHNIA (LPIL)	0.0	1.76	0.0	0.59	0.59	0.0
0	HOLOPEDIDAE						
6	HOLOPEDIUM (LPIL)	0.0	0.88	0.0	0.29	0.29	0.0
0	COPEPODA (TOTAL)	1429.40	797.24	1016.00	1080.88	185.35	90.9
0	CALANOIDA (TOTAL)						
1	DIAPTOMUS ASHLANDI	66.55	81.87	31.79	60.07	14.81	5.1
1	DIAPTOMUS PALLIDUS	0.0	1.17	0.0	0.39	0.39	0.0
1	DIAPTOMUS SICILIS	7.52	3.81	0.88	4.07	1.92	0.3
1	DIAPTOMUS MINUTUS	55.56	41.37	50.56	49.16	4.15	4.1
1	LIIMNOCALANUS MACRURUS	0.0	1.76	4.20	1.99	1.22	0.2
14	LIIMNOCALANUS MACRURUS	1.74	0.0	0.0	0.58	0.58	0.0
14	CALANOIDA (LPIL)	894.68	460.09	761.97	705.58	128.58	59.3
0	CYCLOFOIDA (TOTAL)						
1	CYCLOPS BICUSPIDATUS THOMASI	29.51	23.77	13.13	22.14	4.80	1.9
1	CYCLOPS VERNALIS	1.74	0.88	0.0	0.87	0.50	0.1
14	CYCLOFOIDA (LPIL)	355.70	180.75	149.68	228.78	64.19	19.2
0	HARPACTICOIDA (TOTAL)						
1	HARPACTICOIDA (LPIL)	10.42	0.88	2.94	4.75	2.90	0.4
14	HARPACTICOIDA (LPIL)	5.79	0.88	3.84	2.50	1.64	0.2
0	AMPHIPODA (TOTAL)	0.0	0.88	0.0	0.29	0.29	0.0
0	HAUSTORIIDAE						
6	PONTOPOREIA (LPIL)	0.0	0.88	0.0	0.29	0.29	0.0
0	DIPTERA NEMATOTRA (TOTAL)	0.0	0.88	0.0	0.29	0.29	0.0
0	CHIRONOMIDAE						
6	CHIRONOMIDAE (LPIL)	0.0	0.88	0.0	0.29	0.29	0.0
0	TARDIGRADA (TOTAL)	3.47	0.0	0.0	1.16	1.16	0.1
1	TARDIGRADA (LPIL)	3.47	0.0	0.0	1.16	1.16	0.1

E.19 827 347

science services division





NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	4	5	6	X	S.E.	REL AB%
TOTAL		1633.10	861.79	1071.85	1128.91	230.22	100.0
DIVERSITY (H PRIME)		2.14	2.11	1.52	1.92	0.20	
DIVERSITY (J PRIME)		0.57	0.59	0.47	0.54	0.04	
NUMBER OF TAXA		19	19	12	24		

ABOVE COMPUTED USING SAMPLE IDS

41	43
51	53
61	63
	44
	54
	64

827 348



BAILY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL ABZ
0	CNIDARIA (TOTAL)	0.0	0.0	2.08	0.69	0.69	0.0
0	HYDROZOA						
1	HYDRA (LPIL)	0.0	0.0	2.08	0.69	0.69	0.0
0	NEMATODA (TOTAL)	70.48	34.07	123.98	76.18	26.11	5.3
1	NEMATODA (LPIL)	70.48	34.07	123.98	76.18	26.11	5.3
0	OLIGOCHAETA (TOTAL)	11.54	22.63	59.82	31.40	14.53	2.2
0	NAIDIDAE						
1	CHAETOGASTER (LPIL)	0.0	0.77	0.0	0.26	0.26	0.0
1	NAIDIDAE (LPIL)	11.54	22.06	22.84	18.81	3.65	1.3
19	NAIDIDAE (LPIL)	0.0	0.0	36.98	12.33	12.33	0.8
0	ARACHNIDA (TOTAL)	0.77	0.0	0.0	0.26	0.26	0.0
0	PROSTIGMATA						
19	HYDRACARINA (LPIL)	0.77	0.0	0.0	0.26	0.26	0.0
0	CLADOCERA (TOTAL)	97.23	49.39	158.48	101.70	31.57	7.0
0	BOSMINIDAE						
1	BOSMINIDAE (LPIL)	53.42	21.94	80.80	52.05	17.00	3.6
0	CHYDORIDAE						
1	ALONA QUADRANGULARIS	0.0	1.35	0.0	0.45	0.45	0.0
1	ALONA (LPIL)	0.64	0.0	0.0	0.21	0.21	0.0
1	ALONA (LPIL)	0.0	0.05	0.0	0.68	0.68	0.0
0	ALONA (LPIL)	9.53	3.59	8.66	7.26	1.86	0.5
1	CHYDORUS (LPIL)	6.46	0.77	0.0	2.41	2.04	0.2
1	EURYCERCUS LANELLATUS	0.56	0.0	0.0	0.19	0.19	0.0
6	CHYDORIDAE (LPIL)						
0	DAPHNIDAE						
1	DAPHNIA GALEATA MENDOTAE	0.35	0.0	1.89	0.75	0.58	0.1
1	DAPHNIA FULEX	0.0	0.58	0.0	0.19	0.19	0.0
6	DAPHNIA (LPIL)	25.01	18.23	67.12	36.79	15.29	2.5
1	DAPHNIA (LPIL)	0.0	0.59	0.0	0.20	0.20	0.0
6	DAPHNIDAE (LPIL)	0.35	0.0	0.0	0.12	0.12	0.0
0	HOLOPELIDAE						
6	HOLOPELIDAE (LPIL)	0.0	0.29	0.0	0.10	0.10	0.0
0	MACROTHRICIDAE						
1	ILYOCRYPTUS SORDIDUS	0.29	0.0	0.0	0.10	0.10	0.0
0	SIDIIDAE						
6	SIDIIDAE (LPIL)	0.62	0.0	0.0	0.21	0.21	0.0
0	OSTRACODA (TOTAL)	0.66	0.0	0.0	0.22	0.22	0.0
19	OSTRACODA (LPIL)	0.66	0.0	0.0	0.22	0.22	0.0
0	COPEPODA (TOTAL)	1029.40	1080.88	1599.74	1236.67	182.14	85.3
0	CALANOIDA (TOTAL)						
1	DIAPYCNUS OREGONENSIS	0.23	0.0	0.0	0.03	0.03	0.0
1	DIAPYCNUS ASHLANDI	38.03	60.07	80.80	59.63	12.35	4.1
1	DIAPYCNUS PALLIDUS	0.0	0.39	0.0	0.13	0.13	0.0
1	DIAPYCNUS SICILIS	1.13	4.07	5.87	3.69	1.38	0.3
1	DIAPYCNUS MINUTUS	41.85	49.16	52.51	47.84	3.15	3.3



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	3	6	10	X	S.E.	REL ABZ
1	DIAPTOMUS (LPIL)	0.29	0.0	0.0	0.10	0.10	0.0
1	LIHNOALANUS MACRURUS	2.16	1.99	7.10	3.75	1.68	0.3
14	LIHNOALANUS MACRURUS	1.40	0.58	0.0	0.66	0.41	0.0
14	CALANOIDA (LPIL)	556.53	705.58	1014.78	758.96	134.95	52.3
0	CYCLOPOIDA (TOTAL)						
1	CYCLOPS BICUSPIDATUS THOMASI	24.88	22.14	46.87	31.30	7.83	2.2
1	CYCLOPS VERNALIS	0.23	0.87	2.60	1.24	0.71	0.1
1	EUCYCLOPS AGILIS	0.29	0.0	2.60	0.97	0.82	0.1
1	TROPOCYCLOPS (LPIL)	0.69	0.0	0.0	0.30	0.30	0.0
14	CYCLOPOIDA (LPIL)	351.62	228.78	386.61	322.34	47.86	22.2
1	CYCLOPOIDA (LPIL)	0.64	0.0	0.0	0.21	0.21	0.0
0	HARPACTICOIDA (TOTAL)						
1	HARPACTICOIDA (LPIL)	8.67	4.75	0.0	4.47	2.51	0.3
14	HARPACTICOIDA (LPIL)	0.23	2.50	0.0	0.97	0.80	0.1
0	HARPACTICOIDA (LPIL)	0.29	0.0	0.0	0.10	0.10	0.0
0	AMPHIPODA (TOTAL)	0.0	0.29	1.89	0.73	0.59	0.1
0	HAUSTORIIDAE						
6	PONTOPOREIA (LPIL)	0.0	0.29	0.0	0.10	0.10	0.0
6	AMPHIPODA (LPIL)	0.0	0.0	1.89	0.63	0.63	0.0
0	DIPTERA NEMATOCERA (TOTAL)	2.10	0.29	3.98	2.12	1.06	0.1
0	CHIRONOMIDAE						
2	CHIRONOMIDAE (LPIL)	2.10	0.0	3.98	2.03	1.15	0.1
6	CHIRONOMIDAE (LPIL)	0.0	0.29	0.0	0.10	0.10	0.0
0	TARDIGRADA (TOTAL)	0.0	1.16	0.0	0.39	0.39	0.0
1	TARDIGRADA (LPIL)	0.0	1.16	0.0	0.39	0.39	0.0
TOTAL		1212.19	1188.91	1949.97	1450.36	249.90	100.0
DIVERSITY (H PRIME)		2.02	1.92	2.28	2.07	0.11	
DIVERSITY (J PRIME)		0.57	0.54	0.64	0.58	0.03	
NUMBER OF TAXA		28	24	18	37		

ABOVE COMPUTED USING SAMPLE IDS

11	12	13	14
21	22	23	24
31	32	33	34
41	42	43	44
51	52	53	54
61	62	63	64
101	102	103	104

E.22

science services division

827, 350

## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## STATION REPORT

LS	TAXA	7	8	9	X	S.E.	REL ABZ
0	NEMATODA (TOTAL)	24.67	2.93	6.16	11.25	6.77	1.2
1	NEMATODA (LPIL)	24.67	2.93	6.16	11.25	6.77	1.2
0	OLIGOCHAETA (TOTAL)	6.19	0.0	2.80	3.20	1.97	0.3
0	NAIDIDAE						
1	NAIDIDAE (LPIL)	1.3	0.0	2.80	1.33	0.81	0.1
19	NAIDIDAE (LPIL)	5.46	0.0	0.0	1.82	1.82	0.2
0	CLADOCERA (TOTAL)	45.25	53.99	26.54	41.93	8.10	4.3
0	BOSMINIDAE						
1	BOSMINIDAE (LPIL)	24.55	26.70	13.97	21.74	3.93	2.2
0	CHYDORIDAE						
1	CHYDORUS (LPIL)	2.31	0.0	0.70	1.01	0.69	0.1
1	EURYCERCUS LAMELATUS	4.64	0.0	0.70	1.78	1.44	0.2
0	DAPHNIDAE						
6	DAPHNIA (LPIL)	12.76	10.86	10.47	11.36	0.71	1.2
1	DAPHNIA (LPIL)	0.0	15.26	0.0	5.09	5.09	0.5
6	HOLOPEDIDAE						
6	HOLOPEDIDAE (LPIL)	0.0	0.0	0.70	0.23	0.23	0.0
0	LEPTODORIDAE						
6	LEPTODORIDAE (LPIL)	0.0	1.17	0.0	0.39	0.39	0.0
0	MACROTHRICIDAE						
6	MACROTHRICIDAE (LPIL)	0.99	0.0	0.0	0.33	0.33	0.0
0	COPEPODA (TOTAL)	1173.71	972.71	596.75	914.39	169.09	94.1
0	CALANOIDA (TOTAL)						
1	DIAPTOMUS ASHLANDI	53.98	22.59	41.80	39.46	9.14	4.1
1	DIAPTOMUS PALLIDUS	0.0	0.0	0.70	0.23	0.23	0.0
1	DIAPTOMUS SICILIS	2.31	2.35	1.40	2.02	0.31	0.2
1	DIAPTOMUS MINUTUS	69.16	53.11	26.57	49.62	12.42	5.1
1	LIHNOCCALANUS MACRURUS	0.99	1.17	2.80	1.66	0.58	0.2
14	CALANOIDA (LPIL)	900.16	762.91	449.06	704.04	133.50	72.5
0	CYCLOPOIDA (TOTAL)						
1	CYCLOPS BICUSPIATUS THOMASI	10.28	9.98	11.46	10.57	0.45	1.1
1	CYCLOPS VERNALI	2.31	0.0	0.70	1.01	0.69	0.1
1	CYCLOPS (LPIL)	0.0	0.88	0.0	0.29	0.29	0.0
14	CYCLOPOIDA (LPIL)	125.55	115.61	55.40	98.85	21.92	10.2
0	HARPACTICOIDA (TOTAL)						
6	LONGIFEDIA (LPIL)	0.0	0.0	5.60	1.87	1.87	0.2
1	HARPACTICOIDA (LPIL)	4.31	1.76	0.0	2.02	1.25	0.2
14	HARPACTICOIDA (LPIL)	4.66	2.35	1.25	2.75	1.00	0.3
0	DIPTERA NEMATOCERA (TOTAL)	0.0	0.0	1.40	0.47	0.47	0.0
0	CHIRONOMIDAE						
2	CHIRONOMIDAE (LPIL)	0.0	0.0	1.40	0.47	0.47	0.0
0	TARDIGRADA (TOTAL)	0.0	1.17	0.0	0.39	0.39	0.0
1	TARDIGRADA (LPIL)	0.0	1.17	0.0	0.39	0.39	0.0
-	TOTAL	1250.43	1030.81	633.64	971.63	180.49	100.0

E.23 827 351

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS TAXA

DIVERSITY (H PRIME)

DIVERSITY (J PRIME)

NUMBER OF TAXA

ABOVE COMPUTED USING SAMPLE IDS

71 72 73 74  
81 82 83 84  
91 92 93 94

REL  
AB%

S.E.

0.07

0.01

X

1.55

0.46

23

9

1.62

0.46

19

8

1.40

0.44

14

7

1.03

0.46

16

827 352

## BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC

5 51 51 1 1 00

SID		DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL			WIND		CURE.T		TEMP		BT	TURBD	COND	DO	PH	SALN	P	
					UNITS	C			SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT					
171		4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0
172		4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0	3	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0
173		4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0	3	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0
174		4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0	3	0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0

LS	TAXA	1	2	3	4	X	S.E.	REL ABX
0	CMIDARIA (TOTAL)	166.67	0.0	0.0	0.0	41.67	41.67	0.4
0	HYDROZOA							
6	HYDRA (LPIL)	166.67	0.0	0.0	0.0	41.67	41.67	0.4
0	NEMATODA (TOTAL)	9500.00	833.33	833.33	1000.00	3041.67	2153.14	29.7
1	NEMATODA (LPIL)	9500.00	833.33	833.33	1000.00	3041.67	2153.14	29.7
0	OLIGOCHAETA (TOTAL)	2166.67	0.0	0.0	0.0	541.67	541.67	5.3
0	NAIDIDAE							
1	NAIDIDAE (LPIL)	2166.67	0.0	0.0	0.0	541.67	541.67	5.3
0	CLADOCERA (TOTAL)	3333.33	2500.00	5499.99	1666.67	3250.00	823.55	31.7
0	BOSMINIDAE							
1	BOSMINIDAE (LPIL)	500.00	500.00	166.67	166.67	333.33	96.22	3.3
0	CHYDORIDAE							
1	ALONA RECTANGULA	333.33	0.0	166.67	0.0	125.00	79.79	1.2
1	ALONA AFFINIS	500.00	0.0	0.0	0.0	125.00	125.00	1.2
1	ALONA QUADRANGULARIS	0.0	0.0	166.67	0.0	41.67	41.67	0.4
6	ALONA (LPIL)	0.0	0.0	0.0	166.67	41.67	41.67	0.4
1	CAMPTOCERCUS RECTIROSTRIS	166.67	0.0	0.0	0.0	41.67	41.67	0.4
1	CHYDORUS (LPIL)	1833.33	2000.00	5000.00	1333.33	2541.67	831.59	24.8
0	OSTRACODA (TOTAL)	333.33	0.0	0.0	333.33	166.67	96.22	1.6
19	OSTRACODA (LPIL)	0.0	0.0	0.0	333.33	83.33	83.33	0.8
1	OSTRACODA (LPIL)	333.33	0.0	0.0	0.0	83.33	83.33	0.8
0	COPEPODA (TOTAL)	8333.32	666.67	1000.00	500.00	2625.00	1905.61	25.6
0	CALANOIDA (TOTAL)							
14	CALANOIDA (LPIL)	0.0	166.67	0.0	0.0	41.67	41.67	0.4
0	CYCLOPOIDA (TOTAL)							
1	CYCLOPS VERNALIS	833.33	0.0	0.0	0.0	208.33	208.33	2.0
1	EUCYCLOPS AGILIS	333.33	0.0	166.67	0.0	125.00	79.79	1.2
1	EUCYCLOPS PRIONOPHORUS	166.67	0.0	0.0	0.0	41.67	41.67	0.4
14	CYCLOPOIDA (LPIL)	5666.66	500.00	833.33	500.00	1875.00	1266.33	18.3
0	HARPACTICOIDA (TOTAL)							
1	HARPACTICOIDA (LPIL)	833.33	0.0	0.0	0.0	208.33	208.33	2.0
14	HARPACTICOIDA (LPIL)	500.00	0.0	0.0	0.0	125.00	125.00	1.2
0	DIPTERA NEMATOCERA (TOTAL)	2000.00	0.0	166.67	166.67	583.33	473.85	5.7
0	CHIRONOMIDAE							
2	CHIRONOMIDAE (LPIL)	2000.00	0.0	166.67	166.67	583.33	473.85	5.7
-	TOTAL	25833.29	4000.00	7499.99	3666.67	10249.98	5266.28	100.0

E.25

827 353

science services division



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	$\bar{X}$	S.E.	REL AB%
DIVERSITY (H PRIME)		2.85	1.91	1.70	2.36	2.21	0.25	
DIVERSITY (J PRIME)		0.73	0.82	0.57	0.84	0.74	0.06	
NUMBER OF TAXA		15	5	8	7	18		
ABOVE COMPUTED USING SAMPLE IDS								
	171	172	173	174				

827 354



## BAILY GENERATING PLANT

## ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC  
5 51 51 1 1 00

SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	SAMP VOL	SC	DI	WIND			CURRENT			TEMP	WAT	BT	TURB	COND	DO	PH	SALIN P				
													CL	SP	DI	CL	SP	DI									AIP			
181	4/ 8/79	0 0	0 0	0 0	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
182	4/ 8/79	0 0	0 0	0 0	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
183	4/ 8/79	0 0	0 0	0 0	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
184	4/ 8/79	0 0	0 0	0 0	0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
TAXA																														
0	NEMATODA (TOTAL)							1	2			3				4														
1	NEMATODA (LPIL)							1666.67	666.67			2333.33				333.33				1250.00				458.96	41.7					
0	ARACHNIDA (TOTAL)							0.0	166.67			2333.33				333.33				1250.00				458.96	41.7					
0	PROSTIGMATA											0.0				0.0				41.67				41.67	1.4					
1	HYDRACARINA (LPIL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
0	CLADOCERA (TOTAL)							1666.67	500.00			2333.33				1333.33				1458.33				381.12	48.6					
0	BOSMINIDAE																													
1	BOSMINIDAE (LPIL)							333.33	333.33			500.00				500.00				416.67				48.11	13.9					
0	CHYDORIDAE																													
0	ALONA (LPIL)							0.0	0.0			0.0				166.67				41.67				41.67	1.4					
1	CHYDORUS (LPIL)							1333.33	166.67			1833.33				666.67				1000.00				366.41	33.3					
0	OSTRACODA (TOTAL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
1	OSTRACODA (LPIL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
0	COPEPODA (TOTAL)							166.67	0.0			166.67				0.0				83.33				48.11	2.8					
0	CYCLOPOIDA (TOTAL)																													
14	CYCLOPOIDA (LPIL)							166.67	0.0			166.67				0.0				83.33				48.11	2.8					
0	EPHEMEROPTERA (TOTAL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
13	EPHEMEROPTERA (LPIL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
0	DIPTERA NEMATOCERA (TOTAL)							166.67	0.0			0.0				0.0				83.33				48.11	2.8					
0	CHIRONOMIDAE																													
2	CHIRONOMIDAE (LPIL)							166.67	0.0			0.0				0.0				41.67				41.67	1.4					
6	CHIRONOMIDAE (LPIL)							0.0	166.67			0.0				0.0				41.67				41.67	1.4					
TOTAL																														
DIVERSITY (H PRIME)																														
DIVERSITY (J PRIME)																														
NUMBER OF TAXA																														



NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	17	18	X	S.E.	REL ABZ
0	CNIDARIA (TOTAL)	41.67	0.0	20.83	20.83	0.3
0	HYDROZOA					
6	HYDRA (LPIL)	41.67	0.0	20.83	20.83	0.3
0	NEMATODA (TOTAL)	3041.67	1250.00	2145.83	895.83	32.4
1	NEMATODA (LPIL)	3041.67	1250.00	2145.83	895.83	32.4
0	OLIGOCHAETA (TOTAL)	541.67	0.0	270.83	270.83	4.1
0	NAIDIDAE					
1	NAIDIDAE (LPIL)	541.67	0.0	270.83	270.83	4.1
0	ARACHNIDA (TOTAL)	0.0	41.67	20.83	20.83	0.3
0	PROSTIGMATA					
19	HYDRACARINA (LPIL)	0.0	41.67	20.83	20.83	0.3
0	CLADOCERA (TOTAL)	3250.00	1458.33	2354.16	895.83	35.5
0	BOSMINIDAE					
1	BOSMINIDAE (LPIL)	333.33	416.67	375.00	41.67	5.7
0	CHYDORIDAE					
1	ALONA RECTANGULA	125.00	0.0	62.50	62.50	0.9
1	ALONA AFFINIS	125.00	0.0	62.50	62.50	0.9
1	ALONA QUADRANGULARIS	41.67	0.0	20.83	20.83	0.3
6	ALONA (LPIL)	41.67	41.67	41.67	0.0	0.6
1	CAMPTOCERCUS RECTIROSTRIS	41.67	0.0	20.83	20.83	0.3
1	CHYDORUS (LPIL)	2541.67	1000.00	1770.83	770.83	26.7
0	OSTRACODA (TOTAL)	166.67	41.67	104.17	62.50	1.6
19	OSTRACODA (LPIL)	83.33	0.0	41.67	41.67	0.6
1	OSTRACODA (LPIL)	83.33	41.67	62.50	20.83	0.9
0	COPEPODA (TOTAL)	2625.00	83.33	1354.17	1270.83	20.4
0	CALANOIDA (TOTAL)					
14	CALANOIDA (LPIL)	41.67	0.0	20.83	20.83	0.3
0	CYCLOPOIDA (TOTAL)					
1	CYCLOPS VERNALIS	208.33	0.0	104.17	104.17	1.6
1	EUCYCLOPS AGILIS	125.00	0.0	62.50	62.50	0.9
1	EUCYCLOPS PRIONOPHORUS	41.67	0.0	20.83	20.83	0.3
14	CYCLOPOIDA (LPIL)	1875.00	83.33	979.17	895.83	14.8
0	HARPACTICOIDA (TOTAL)					
1	HARPACTICOIDA (LPIL)	208.33	0.0	104.17	104.17	1.6
14	HARPACTICOIDA (LPIL)	125.00	0.0	62.50	62.50	0.9
0	EPHEMEROPTERA (TOTAL)	0.0	41.67	20.83	20.83	0.3
13	EPHEMEROPTERA (LPIL)	0.0	41.67	20.83	20.83	0.3
0	DIPTERA NEMATOCERA (TOTAL)	583.33	83.33	333.33	250.00	5.0
0	CHIRONOMIDAE					
2	CHIRONOMIDAE (LPIL)	583.33	41.67	312.50	270.83	4.7
6	CHIRONOMIDAE (LPIL)	0.0	41.67	20.83	20.83	0.3
	TOTAL	10249.98	3000.00	6624.99	3624.99	100.0
	DIVERSITY (H PRIME)	2.21	1.93	2.07	0.14	

E.28

827 356

science services division



## ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

PC	TC	GC	LOC		
5	51	51	1	2	00

SID		DATE		TIME D/N		DURATION		TOW		SAMP VOL		WIND		CURRENT		TEMP													
SID	DATE	TIME	D/N	UNITS	C	SD	WD	SP	D	UNITS	C	SECH	W	T	SC	DI	CL	SP	DI	AIR	WAT	BT	TURBO	COND	DO	PH	SALN	P	
191	4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0 0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	
192	✓/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0 0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	
193	4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0 0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	
194	4/ 8/79	0 0	0	0.0	0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0 0	0	0.0	0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0.0	
LS		TAXA																				X				S.E.		ABZ	
										1		2		3		4													
0	NEMATODA (TOTAL)									0.0		166.67		0.0		0.0						41.67				41.67		0.9	
1	NEMATODA (LPIL)									0.0		166.67		0.0		0.0						41.67				41.67		0.9	
0	OLIGOCHAETA (TOTAL)									0.0		0.0		333.33		0.0						83.33				83.33		1.8	
0	NAIDIDAE																												
19	NAIDIDAE (LPIL)									0.0		0.0		333.33		0.0						83.33				83.33		1.8	
0	CLADOCERA (TOTAL)									666.67		833.33		11833.32		166.67						3375.00				2823.00		71.7	
0	CHYDORIDAE																												
1	CHYDORUS (LPIL)									666.67		833.33		11666.66		166.67						3333.33				2781.38		70.8	
1	PLEUROXUS DENTICULATUS									0.0		0.0		166.67		0.0						41.67				41.67		0.9	
0	OSTRACODA (TOTAL)									0.0		166.67		0.0		166.67						83.33				48.11		1.8	
19	OSTRACODA (LPIL)									0.0		166.67		0.0		166.67						83.33				48.11		1.8	
0	COPEPODA (TOTAL)									833.33		1000.00		1833.33		0.0						916.67				375.77		19.5	
0	CYCLOPOIDA (TOTAL)																												
1	CYCLOPS BICUSPIDATUS THOMASI									0.0		0.0		166.67		0.0						41.67				41.67		0.9	
1	CYCLOPS VARICANS RUBELLUS									0.0		166.67		0.0		0.0						41.67				41.67		0.9	
1	EUCYCLOPS AGILIS									0.0		0.0		166.67		0.0						41.67				41.67		0.9	
1	EUCYCLOPS SPERATUS									0.0		166.67		0.0		0.0						41.67				41.67		0.9	
14	MESOCYCLOPS (LPIL)									0.0		166.67		0.0		0.0						41.67				41.67		0.9	
14	CYCLOPOIDA (LPIL)									666.67		500.00		1333.33		0.0						625.00				275.34		13.3	
0	HARPACTICOIDA (TOTAL)																												
14	HARPACTICOIDA (LPIL)									166.67		0.0		166.67		0.0						83.33				48.11		1.8	
0	DIPTERA NEMATOCERA (TOTAL)									166.67		500.00		166.67		0.0						208.33				104.86		4.4	
0	CHIRONOMIDAE																												
2	CHIRONOMIDAE (LPIL)									166.67		500.00		166.67		0.0						208.33				104.86		4.4	
TOTAL										1666.67		2666.67		14166.64		333.33						4708.32				3188.79		100.0	
DIVERSITY (H PRIME)										1.72		2.68		1.06		1.00						1.61				0.39			
DIVERSITY (J PRIME)										0.86		0.89		0.35		1.00						0.78				0.14			
NUMBER OF TAXA										4		8		8		2						13							

ABOVE COMPUTED USING SAMPLE IDS

191	192	193	194
-----	-----	-----	-----

E.30 827 358 science services division





NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

STATION REPORT

LS	TAXA	19	20	- X	S.E.	REL AB%
0	NEMATODA (TOTAL)	41.67	83.33	62.50	20.83	1.7
1	NEMATODA (LPIL)	41.67	83.33	62.50	20.83	1.7
0	OLIGOCHAETA (TOTAL)	83.33	83.33	83.33	0.0	2.3
0	NAIDIDAE					
19	NAIDIDAE (LPIL)	83.33	83.33	83.33	0.0	2.3
0	CLADOCERA (TOTAL)	3375.00	1416.67	2395.83	979.17	65.0
0	BOSMINIDAE					
1	BOSMINIDAE (LPIL)	0.0	41.67	20.83	20.83	0.6
0	CHYDORIDAE					
1	CAMPTOCERCUS RECTIROSTRIS	0.0	41.67	20.83	20.83	0.6
1	CHYDORUS (LPIL)	3375.33	1291.67	2312.50	1020.83	62.7
1	PLEUROXUS DENTICULATUS	41.67	0.0	20.83	20.83	0.6
6	CHYDORIDAE (LPIL)	0.0	41.67	20.83	20.83	0.6
0	OSTRACODA (TOTAL)	83.33	125.00	104.17	20.83	2.8
19	OSTRACODA (LPIL)	83.33	125.00	104.17	20.83	2.8
0	COPEPODA (TOTAL)	916.67	458.33	687.50	229.17	18.6
0	CYCLOPOIDA (TOTAL)					
1	CYCLOPS BICUSPIDATUS THOMASI	41.67	0.0	20.83	20.83	0.6
1	CYCLOPS VARICANS RUBELLUS	41.67	0.0	20.83	20.83	0.6
1	EUCYCLOPS AGILIS	41.67	0.0	20.83	20.83	0.6
1	EUCYCLOPS SPERATUS	41.67	0.0	20.83	20.83	0.6
14	MESOCYCLOPS (LPIL)	41.67	0.0	20.83	20.83	0.6
14	CYCLOPOIDA (LPIL)	625.00	458.33	541.67	83.33	14.7
0	HARPACTICOIDA (TOTAL)					
14	HARPACTICOIDA (LPIL)	83.33	0.0	41.67	41.57	1.1
0	EPHEMEROPTERA (TOTAL)	0.0	41.67	20.83	20.83	0.6
0	CAENIDAE					
13	CAENIDAE (LPIL)	0.0	41.67	20.83	20.83	0.6
0	DIPTERA NEMATOCERA (TOTAL)	208.33	458.33	333.33	125.00	9.0
0	CHIRONOMIDAE					
2	CHIRONOMIDAE (LPIL)	208.33	458.33	333.33	125.00	9.0
	TOTAL	4708.32	2666.66	3687.49	1020.83	100.0
	DIVERSITY (H PRIME)	1.61	1.67	1.64	0.03	
	DIVERSITY (J PRIME)	0.78	0.87	0.82	0.04	
	NUMBER OF TAXA	13	10	17		

ABOVE COMPUTED USING SAMPLE IDS

191	192	193	194
201	202	203	204

E.32827 360

science services division



## NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

## BAILLY GENERATING PLANT

## ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

## REPLICATE REPORT

PC TC GC LOC

5 51 51 1 3 00

SID	DATE	TIME	D/N	DURATION		SD	WD	TOW		SAMP VOL		WIND		CURRENT		TEMP		BT	TURB	COND	DO	PH	SALN	P
				UNITS	C			SP	D	UNITS	C	SECH	M	T	SC	DI	CL							
211	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	0.0
212	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	
213	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	
214	4/ 8/79	0 0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	3	0.0	0	0	0.0	0	0.0	0.0	0	0.0	0	0.0	0.0	

LS

TAXA

X

S.E.

ABZ

	1	2	3	4			
0 NEMATODA (TOTAL)	2833.33	21166.66	1333.33	1333.33	6666.66	4846.24	13.3
1 NEMATODA (LPIL)	2833.33	21166.66	1333.33	1333.33	6666.66	4846.24	13.3
0 OLIGOCHAETA (TOTAL)	833.33	5833.33	333.33	0.0	1750.00	1371.84	3.5
0 NAIDIDAE							
1 NAIDIDAE (LPIL)	0.0	5833.33	0.0	0.0	1458.33	1458.33	2.9
19 NAIDIDAE (LPIL)	833.33	0.0	333.33	0.0	291.67	196.91	0.6
0 ARACHNIDA (TOTAL)	333.33	500.00	333.33	166.67	333.33	68.04	0.7
0 PROSTIGMATA							
19 HYDRACARINA (LPIL)	333.33	500.00	333.33	166.67	333.33	68.04	0.7
0 CLADOCERA (TOTAL)	666.67	333.33	666.67	0.0	416.67	159.57	0.8
0 CHYDORIDAE							
1 CHYDORUS (LPIL)	666.67	166.67	333.33	0.0	291.67	142.32	0.6
0 DAPHNIDAE							
1 SIMOCEPHALUS VETULUS	0.0	0.0	333.33	0.0	83.33	83.33	0.2
1 SIMOCEPHALUS (LPIL)	0.0	166.67	0.0	0.0	41.67	41.67	0.1
0 OSTRACODA (TOTAL)	10000.00	6000.00	12500.00	2833.33	7833.33	2137.63	15.7
19 OSTRACODA (LPIL)	10000.00	6000.00	12500.00	2833.33	7833.33	2137.63	15.7
0 COPEPODA (TOTAL)	22166.65	65499.97	35999.99	4333.33	31999.98	12911.19	64.1
0 CYCLOPOIDA (TOTAL)							
1 CYCLOPS BICUSPIDATUS THOMASI	166.67	0.0	0.0	0.0	41.67	41.67	0.1
1 CYCLOPS VARICANS RUBELLUS	0.0	666.67	1166.67	0.0	458.33	283.62	0.9
1 CYCLOPS VERNALIS	666.67	500.00	333.33	0.0	375.00	142.32	0.8
1 CYCLOPS (LPIL)	0.0	0.0	166.67	0.0	41.67	41.67	0.1
1 EUCYCLOPS AGILIS	0.0	0.0	166.67	0.0	41.67	41.67	0.1
1 MACROCYCLOPS ALBIDUS	333.33	833.33	833.33	0.0	500.00	204.12	1.0
1 MESOCYCLOPS (LPIL)	0.0	166.67	0.0	0.0	41.67	41.67	0.1
14 CYCLOPOIDA (LPIL)	5500.00	8500.00	3500.00	1000.00	4625.00	1500.07	9.3
0 HARPACTICOIDA (TOTAL)							
1 HARPACTICOIDA (LPIL)	14166.66	48999.98	25666.66	3333.33	23041.66	9780.54	46.1
14 HARPACTICOIDA (LPIL)	1333.33	5833.33	4166.66	0.0	2833.33	1324.62	5.7
0 ISOPODA (TOTAL)	500.00	166.67	0.0	0.0	166.67	117.85	0.3
0 ASELLIDAE							
1 ASELLUS (LPIL)	500.00	166.67	0.0	0.0	166.67	117.85	0.3
0 AMPHIPODA (TOTAL)	500.00	500.00	0.0	166.67	291.67	125.00	0.6
0 HYALELLIDAE							
1 HYALELLA AZTECA	500.00	500.00	0.0	166.67	291.67	125.00	0.6

E.33

827 361

science services division





NORTHERN INDIANA PUBLIC SERVICE COMPANY (49720)

BAILLY GENERATING PLANT

ZOOPLANKTON DENSITY (NUMBERS/CUBIC METER)

REPLICATE REPORT

LS	TAXA	1	2	3	4	X	S.E.	REL AB%
0	EPEHEMEROPTERA (TOTAL)	0.0	166.67	0.0	0.0	41.67	41.67	0.1
0	CAENIDAE							
13	CAENIDAE (LPIL)	0.0	166.67	0.0	0.0	41.67	41.67	0.1
0	DIPTERA NEMATOCERA (TOTAL)	500.00	1000.00	333.33	0.0	458.33	208.33	0.9
0	CHIRONOMIDAE							
2	CHIRONOMIDAE (LPIL)	500.00	1000.00	333.33	0.0	458.33	208.33	0.9
TOTAL		38333.29	101166.12	51499.96	8833.32	49958.18	19259.24	100.0
DIVERSITY (H PRIME)		2.44	2.09	1.91	2.04	2.12	0.11	
DIVERSITY (J PRIME)		0.66	0.52	0.50	0.79	0.62	0.07	
NUMBER OF TAXA		13	16	14	6	20		

ABOVE COMPUTED USING SAMPLE IDS

211 212 213 214

E.34

science services division

827 362