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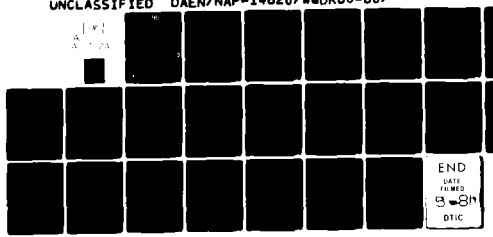

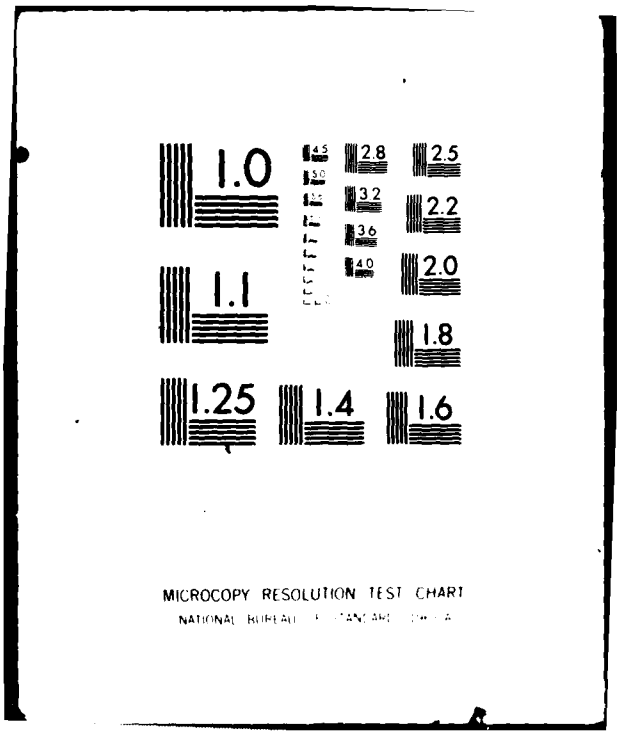
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AD A097124

PROMPTON LAKE PROJECT

WATER QUALITY DATA REPORT (RCS DAEN-CWE-15)

Prepared by

U. S. Army Corps of Engineers
Philadelphia District

COVERS PERIOD

OCTOBER 1, 1979 TO SEPTEMBER 30, 1980

Rept no. DAEN/NAP-14620/WQDR80-80/12

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Prompton Lake is located on the Lackawxen River within the limits of the Borough of Prompton in Wayne County, Pa. The purpose of this report is to present and briefly interpret the water quality data collected to date at Prompton Lake. The report characterizes the general drainage areas as to land use, potential pollution sources contributing to the lake and the relationship between potential water quality problems that may occur and the possible effects of the lake on the water quality.

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APPENDIX

SECTION I - SUMMARY AND CONCLUSIONS

1-01. Summary. Prompton Lake, located on the Lackawaxen River within the limits of the Borough of Prompton in Wayne County (Plate 1), has been in operation since July 1960. The primary purposes of the project are flood control, emergency water supply storage and recreation. This report deals with the water quality aspect of the project.

The drainage basin above Prompton Lake consists of woodland and farmland interspersed with recreational areas throughout. Stream valleys, within the watershed have steep side slopes and are mostly wooded with open fields and natural flood plains of moderate width. Pollution control in the watershed is problematic, due to septic tank overflows, lack of sewage systems and drainage from swamplands in the headwaters. Flushing action of spring and fall rains exhibit slight increases in ammonia nitrogen and some decrease in pH, during heavy stream flows. However, it is very slight and does not appear to lower the water quality.

Prompton Lake has a wide variety of fish, ranging from bass to game fish such as trout. The majority of fishing is done in the lake, however, waters both upstream and downstream are also under heavy fishing pressures. The lake has been stocked several times since its inception and reproduction is satisfactory, indicating that the water quality is good from the biological standpoint. No fish were stocked during 1980. Total coliform counts are within the allowable limits as prescribed in Pennsylvania'a Water Quality Criteria, Chapter 93.

Close monitoring of the following water quality parameters; temperature, pH, Ortho Phosphate, Total Dissolved Solids, Specific Conductance, Ammonia, Nitrate, Nitrites and Total Coliforms will be maintained to assure a continuance of acceptable Pennsylvania (DER) water quality standards and to minimize pollution or algal problems as they may occur.

SECTION II - INTRODUCTION

2-01. Purpose and Scope. The purpose of this report is to present and briefly interpret the water quality data collected to date at Prompton Lake. The analyzed data (Appendix A) meets the standards established by the U. S. Environmental Protection Agency and the State of Pennsylvania as outlined in Chapter 93, Water Quality Criteria.

The current fecal coliform standards for swimming beaches is 200 fecal coliforms per 100 ml of sample and this was not exceeded at any time during the current year. (See Appendix A).

The report characterizes the general drainage areas as to land use, potential pollution sources contributing to the lake, the project itself and the relationship between potential water quality problems that may occur and possible effects of the lake on the water quality.

2-03. Authority. This report is submitted in accordance with the Corps of Engineers policy as authorized in ER 1110-2-334, "Water Quality Management at Corps Civil Works Facilities," 1 May 1974.

2-03. Background Information. Prompton Lake is located across the Lackawaxen River and about one-half mile north of U. S. Highway 6. (See Plate 1). Prompton Dam, spillway and outlet works were completed on 30 November 1960. The primary purpose of the reservoir is for flood control along the Lackawaxen River, with water quality and recreation as secondary uses. Prompton Reservoir is one of four flood control structures in the Delaware River Basin.

2-04. Pertinent References. The following references are pertinent to this report:

a. (ER 1110-2-1402)

b. (ER 1130-2-415)

c. Water Quality Management Report - Contract DACW61-79-D-0013.

SECTION III - AREA & PROJECT DESCRIPTION

3-01. River Basin Characteristics. The Lackawaxen River Basin is located in Wayne County in Northeastern Pennsylvania. The Lackawaxen River drains an area of 588 square miles in the northeast corner of Pennsylvania and flows in a southeasterly direction 49 miles to the town of Lackawaxen where it enters the Delaware River. The three principal tributaries of the Lackawaxen River are: Dyberry Creek, draining 71 square miles and entering the river from the north in Honesdale; Middle Creek, draining 82 square miles and joining the river from the west at Hawley; and Wallenpaupack Creek, draining 227 square miles and entering the river from the southwest a short distance downstream from Hawley. The general topography of the basin is characterized by hills with round tops and steep slopes. The bed of the Lackawaxen River rises from 590 feet at its mouth to 960 feet at the confluence with Dyberry Creek. Stream valleys within the reservoir watersheds have steep side slopes and natural flood plains of moderate widths. The watershed is essentially rural with approximately 60-70% being forested. There are several small rural communities along the Lackawaxen River, none of which has a population over several thousand people. Honesdale, which is the county seat, is located approximately five miles downstream of the Prompton Dam at the confluence of the Lackawaxen River and Dyberry Creek.

3-02. Project Description. The principal features of the project are a dam, a spillway, an outlet works, a service building, and several recreation areas, distributed within approximately 1030 acres of partially forested land. The dam is a rock faced, earth filled structure across the valley of the Lackawaxen River. The top of the dam is at elevation 1226. The spillway is located in the west abutment and is an ungated structure with crest at elevation 1205. The outlet works is a concrete structure which houses components including an intake transition pipe, an intake well, standard use concrete stop logs, emergency use wood stop logs, debris interceptors and grating. The reservoir when filled to the recreation pool level, elevation 1125, is approximately 2½ miles long and 1/6 mile wide at the point of maximum width. The average depth of the reservoir is about 20 feet, and the maximum depth is 39 feet.

The recreation areas are located along the west bank of the reservoir. The sites provide a bathing beach, picnic areas, and a boat launch area. The recreation areas were built by the Army Corps of Engineers, and are operated and maintained by the Commonwealth of Pennsylvania, Bureau of State Parks. The service building, located on the west embankment, provides garage space for project vehicles, and office space for the dam tender's use.

3-03. Climate. [1/] The Lackawaxen River Basin has a temperate northeast Atlantic Coast climate that is characterized by frequent changes in temperature and moderate amounts of precipitations. The area is subject to precipitation from normal rainfall, thunderstorms, and heavy rains associated with hurricanes and snowfall. The mean annual temperature in the Lackawaxen Basin is about 50°F. The range of mean monthly temperature varies from about 72°F in July to about 28°F in both January and February. The average frost-free period is about 130 days per year.

3-04. Dam and Lake Characteristics.

a. Embankment. The dam is a rock faced, earth filled structure across the valley of the Lackawaxen River, just north of the village of Prompton. The top of the dam is surfaced with gravel to serve as a maintenance road. The top of the dam is at elevation 1226 with the spillway located in the west abutment. The spillway is an ungated structure with crest at elevation 1205.

b. Outlet Works. The outlet works is a concrete structure which houses components including an intake transition pipe, an intake well, standard use concrete stop logs, emergency wood stop logs, debris interceptors and grating.

c. Reservoir. The reservoir when filled to the recreation pool level, elevation 1125, is approximately 2½ miles long and 1/16 mile wide at the point of maximum width. The average depth of the reservoir is about 20 feet, and the maximum depth is 39 feet.

3-05. Geological Patterns. The topography of the region is of moderate relief. Flat or semi-rounded ridges, marking an older plateau topography, occur at elevations of from 1500 feet to 1650 feet above sea level. Bedrock valleys, the lower parts of which are obscured by glacial accumulations, are eroded to depths of 500 feet to 600 feet in horizontal sedimentary rock. Above five miles west of the Lackawaxen River, the nearly uniform ridge level is broken by the Moosic Mountains, which extend in height from 2200 feet to 2,300 feet above sea level. The direction of principal drainage courses is from west to east, from the headwaters of streams in the Moosic Mountains. Due to glaciation, the topography has a distinct orientation in a north-south direction.

1/ Climatological Data - 1980, Table 1

The rounded crests of ridges, and character of soils sediments indicate the effects of Pleistocene glaciation. Where exposed in extensive areas high above the valley floor, the bedrock presents a combination of flat surfaces and vertical faces, caused by glacial abrasion and plucking. Glacial stream-deposited sand and gravel form flat-topped or sloping terraces, knolls and ridges along the valley sides. This type of overburden does not occur at the dam site, but does occur in the valley, several miles upstream. A glacial ground moraine. comprised of sand, gravel, and silt and clay mixtures, together with biulders, occurs within the valley in the higher ground and throughout the elevated ridge areas. This formation is generally unstratified and frequently is sufficiently compact to be comparable to glacial till. It occasionally contains, however, assorted or semi-stratified lenses or layers of sand and gravel. This moraine type of deposit is well developed throughout the dam site and adjacent area. Within the park the elevation changes 275 feet.

3-06. Soils. Not all of Wayne County has been surveyed by the Soils Conservation Service, and only one-third of Prompton Lake lies within a surveyed zone. Because of this a soils map of the area could only be incomplete. The soils talked about here are from that one-third of Prompton Lake, which has been surveyed. Because the vegetation around the lake is all of the same type (typical eastern hardwood forest) it would be logical to assume that the unsurveyed lands have much the same soils as have the surveyed lands.

Soils prevalent in the area were formed in glacial till with the exception of the Basher Silt Loam found on either side of the Lackawaxen River on the downstream side of the dam. They are either channery silt loams or extremely stony silt loams. The soils around the reservoir are moderately to poorly drained, with the exception of the well drained Oquaga soil, and in general do not lend themselves to development.

3-07. Vegetation. Nearly all relatively flat lands in the drainage basin have been cleared and farmed - principally for grass, hay, grain and corn to sustain dairy operations. Uncleared land contains an abundance of second growth hardwoods with a heavy mixture of Birch, Beech, Maple, Ash, Black Cherry, Oak and Hickory. Interspersed throughout these stands, substantial growth of White Pine, Eastern Hemlock and Spruce can also be found.

3-08. Land Use. Prompton State Park is a small park with three public use activities now present: picnicking, boating and swimming. The public use areas for picnicking and swimming remain much the way they were built by the Corps in 1962 while the boat launching area was constructed by the Commonwealth of Pennsylvania in 1971. Since January 1, 1966, the Corps has leased the park to the Commonwealth of Pennsylvania to operate and maintain the recreational facilities and manage the adjacent lands and waters.

Lands north of the lake are devoted partially to farming, heavily to private recreational pursuit and to a limited degree to timber production.

SECTION IV - WATER QUALITY DATA

4-01. Purpose of Sampling Program. The purpose of taking water samples on a regularly scheduled basis is to add to our base line inventory of water quality parameters within the areas influencing and influenced by the lake. Refer to Plate 1 for sampling point locations.

The data collected and documented will be useful in determining the kinds of pollutants that may occur in the watershed and within the lake environment. From this data, the Corps through the Pennsylvania DER, can initiate corrective action to control or minimize these sources of pollution. It is the Corps' intent to maintain sources of a meaningful water quality program and to conform with the Pennsylvania (DER) standards as outlined in Chapter 93, Water Quality Criteria.

4-02. Testing Procedures and Equipment. Water samples are being collected on a year round basis by personnel of BCM (contract) twice per month from April through November and once per month for the remainder of the year. These samples are being analyzed by a certified laboratory (under contract) for pH, dissolved oxygen, total dissolved solids, ammonia, specific conductance, nitrite, nitrate and phosphorous. In addition, algal and bacteriological samples are also collected and analyzed by a certified laboratory.

4-03. Data Available. [1/] Considerable data has been collected and documented for future use in project regulation, pollution detection and to initiate protective measures for stream inflows and lake waters to conform with Pennsylvania (DER) Regulations, Chapter 93. Beginning in May 1975, a water quality management program, of a more intensive nature, was instituted through contracted services. Water quality data, temperature, dissolved oxygen, conductivity, pH, phosphorous, total dissolved solids, nitrate, nitrite and ammonia has been collected and documented on a regular basis. In addition, algal and bacteriological sampling has continued on a regular basis for the past several years. On the basis of this accumulated data, the Philadelphia District evalutes and applies this information in the management of the lake waters.

1/ Appendix A - Water Quality Management Report.

The Environmental Branch has initiated coordination meetings with the Pennsylvania Department of Environmental Resources for the purpose of enlisting their assistance in conducting biological and chemical surveys of stream inflows and lake waters at Corps Project in the Philadelphia District.

Water samples for total coliform testing are also collected regularly and analyzed by personnel of the contractor (See Appendix A). The current bacteriological quality of the water at Prompton Lake is acceptable and meets the Pennsylvania DER standards as outlined in Chapter 93: Water Quality Criteria.

Fecal coliform samples are collected weekly at the beach waters by personnel of the Pennsylvania DER, and analyzed at their facilities.

The current fecal coliform standards for swimming beaches is 200 fecal coliforms per 100/ml of sample and this was not exceeded at any time during the calendar year at Prompton Lake.

Stratification sampling results (Appendix A/4) indicate that the water quality at Prompton Lake meets Pennsylvania (DER) standards. Parameters analyzed were dissolved oxygen, pH, ammonia, nitrate, nitrite and phosphorous. Biologically, the lake remained productive throughout the summer and fall seasons.

The documented data supports the premise that the water quality of Prompton Lake meets Pennsylvania's DER standards, however, at times, minor problems arose due to moderate algae concentrations, but these cleared up due to the flushing action of heavy rains and increased stream flows.

4-04. Water Chemistry

a. Nitrogen.

As expected, the nitrogen levels in the feeder streams for the reservoir and the outlet followed rainfall patterns. The in-pool levels showed peaks and valleys of longer duration due to the moderating effect of the reservoir. The data documented during the past year indicates that the nitrates were declining during March and April. The major source appears to be runoff since the peaks in the feeder stream precede the peaks in the reservoir. The peaks in ammonia nitrogen concentration correspond to the low Dissolved Oxygen levels in the hypolimnion. These peaks are reduced or eliminated as rainfall breaks stratification and flushes the excess ammonia nitrogen from the pool.

b. Phosphates.

The phosphorous levels in the pool and feeder streams are correlated directly with rainfall. The peaks in March and September correspond to rainfall and may indicate that the source of phosphate is runoff from farms and leachate from septic systems. There are no treatment plants capable of removing phosphate in this drainage area. The spring and fall peaks correspond to the overturns. This is due to a large amount of colloidal phosphorous being removed from the bottom muds and returning to solution. The August - September peak may also be the result of the Blue-Green Algae bloom. Blue-Green Algae excrete filterable phosphorous that washes through the reservoir showing up in the analysis at station P-3. This peak corresponds to the die off of the algae bloom and fall rains so it is difficult to ascertain the true source of this peak from available data. The level of phosphorous in the Lackawaxen River above the reservoir is still decreasing since the last water quality report was prepared. The available data is not adequate to determine if this is a permanent trend or if this is only a temporary reduction. The reduction may be due to a decrease in farming activity and an increasing use of low phosphate detergents.

c. Dissolved Oxygen

Dissolved oxygen at both stations P-1 and P-3 remained within the range normally found in surface water the entire year. There is a possibility that D.O. levels are depressed below the reservoir when a large amount of organic matter is flushed from the reservoir. This would be particularly noticeable on a warm summer night when decaying organic matter uses the oxygen in the water and respires carbon dioxide. Results of the Dissolved Oxygen tests showed a constant decline from above reservoir to reservoir to below reservoir, most notably from 30 July to 15 September. This seems to indicate that decaying matter is using up the oxygen in the water as it enters the reservoir and is not reaerated enough as it leaves the reservoir.

d. pH

The pH for surface water remained for the most part in the acidic range with the lowest value occurring on August 27th at the downstream station (5.0). Conditions in the reservoir reflected the slightly acidic nature of the Lackawaxen River that flows into Prompton Reservoir.

e. Total Dissolved Solids (TDS) and Specific Conductance.

The relationship between TDS and specific conductance found in the Lackawaxen River and Prompton Reservoir react as it was expected to. As TDS increased the specific conductance of the waters also increased, which usually followed periods of heavy rains. Dissolved solids in the reservoir showed an increase from April to the middle of August and then started to decline once again. A peak was reached on August 13 with a reading of 84 mg/l. Specific conductance demonstrated a general increasing trend from April through September with the highest heading of 94 umhos/cm on 15 September. Conductivity and dissolved solids tests were not conducted on a year round basis. Therefore a specific trend is not drawn from the 7 months of available data.

4-05. COLIFORM SAMPLING.

The coliform counts [1/] at Prompton Reservoir remained within the limits established by the Pennsylvania Department of Environmental Resources of no more than a geometric mean of 200 colonies per 100 milliliters of sample for fecal coliform and no more than 5,000 per 100 milliliters of sample for total coliform. The highest count follows a period of rain, particularly after a prolonged dry spell. This indicates that most of the coliform load is the result of runoff carrying material into the water rather than a point source.

Bacteriological testing of water samples began in September of 1978. Samples are collected by contract personnel of PCM. The water samples are tested for total, fecal and fecal streptococcus coliforms in accordance with procedures outlined in Standard Methods for the Examination of Water and Waste Water, 14th Edition. The data obtained from the contractor can be found in (Appendix B) of this report. The documented data (coliform counts) are within the allowable limits as prescribed in Pennsylvania's Water Quality Criteria, Chapter 93.

The coliform counts from the beach remain within the limits the Pennsylvania Department of Environmental Resources has established for public swimming areas.

4-06. ALGAL BLOOM - PROMPTON RESERVOIR.

The bloom at Prompton Reservoir was composed of essentially the same organisms as in previous years as in 1977. During the summer numerous rooted aquatic plants, primarily Elodea, and mats of floating algae were noted.

SECTION V - INTERPRETATION OF DATA

5-01. General Post-Impoundment Conditions. Occasionally an acid condition occurs within the lake usually after a heavy rainfall. A flushing action of the swamps in the headwaters occurs during such prolonged rains which cause a temporary acid condition within the lake. However, this condition doesn't last very long, because this same flushing action (flooding) also cleanses the lake. Some turbidity of the lake occurs during this cycle but this is also short-lived. During late summer, algae blooms may occur in the lower portion of the lake. This condition varies from light to heavy depending on temperature, pH, light and chemical action that may occur.

Water samples have also been taken by personnel of Pennsylvania Bureau of State Parks on a weekly basis at the beach area beginning in May until the closing down of the beach in September. The analyses indicates that the coliform bacteriological test results are within the allowable limits of water quality standards for swimming areas under provisions of the Clean Streams Law, reference Title 25, Chapter 93, Commonwealth of Pennsylvania.

1/ Appendix A - Water Quality Report.

Analysis of data [1/] collected by the Philadelphia District indicates that the water quality of lake waters meets the standards as set forth in the Clean Streams Law, ref. Title 25, Chapter 93. Documented data indicates that generally throughout the summer season, water quality remains good and is acceptable for recreational pursuits.

5-02. Fishery. Prompton Lake is primarily a walleye-bass (both largemouth and smallmouth) lake with yellow perch, the principal forage fish, especially for the former. Chain pickerel provide sport fishing opportunities in the shallower portion. Brown bullhead populations are excellent. The Pennsylvania Fish Commission did not stock the lake in 1980.

5-03. Coordination Efforts with Other Federal and State Agencies.

Close coordination is maintained with the Pennsylvania Fish Commission pertaining to matters such as lake stocking, habitat improvement and the continuance of periodic lake survey.

The Philadelphia District also maintains close cooperation with the Pennsylvania Bureau of Water Quality (DER). Biologists from the Bureau assist in periodic reservoir and stream water sampling and analyze samples for other parameters [2/] not tested by the district.

This on-going yearly program is beneficial in the District's collection and evaluation of water quality data which is used in lake management decisions.

Algal problems developed in the lake during the summer months in moderate to heavy levels. However, with the advent of fall rains, the floating algae was flushed out of the drainage system before the oxygen in the water could be depleted. Generally our programs found that the water at Prompton Reservoir meet Pennsylvania DER standards.

SECTION VI - RECOMMENDATIONS AND PROPOSED STUDIES

6-01. General. The following recommendations and proposals are made relative to the water quality management and control at Prompton Lake.

1/ Appendix A - Water Quality Report
2/ Alkalinity, hardness, iron, chlorophyl

a. Maintain present sampling frequency to maintain a closer surveillance over the water quality in the lake.

b. Consider acquisition of additional parameters [1/] to include those presently not being taken in order to complete present data.

c. Continue close coordination with the Pennsylvania Fish Commission in the management of the lake as their projects, Philadelphia District and initiate improvement of habitat both in the lake and downstream from the dam site.

d. Maintain close coordination with Pennsylvania DER's Water Quality Section to continue present monitoring programs and to expand the program to include additional chemical and bacteriological parameters.

e. Correlate data collected from other agencies and establish their sampling locations, procedures and equipment used for testing.

f. Maintain a permanent record system of data on hand and other data obtained from all other sources. Such data will be used as a management tool and provide a means for evaluating water quality trends.

g. Investigate the various alternatives that are available to control algae growth, particularly in the upper lake. Some of the alternatives that should be considered are the use of aqua-screen for bottom coverage, spraying of Diquat and Cutrine and harvesting of noxious weeds.

6-02. Findings and Conclusions. The water sampling program will continue for FY 81 at Prompton Lake.

Documented data [1/] collected on water quality for Prompton Lake during the past year indicates that the quality of water remains within the standards established by Pennsylvania (DER) and the U.S. Environmental Protection Agency. In general, following periods of heavy precipitation there is a slight increase in ammonia nitrogen and low chlorine levels with a decrease in the pH.

Bacteriological data [1/] recorded at stream inflow and reservoirs are within the limits established by Pennsylvania DER.

Total phosphate levels were not found to be excessive, however, slight increases were noted at times of high runoff associated with rainfall. In general, it was found that phosphorous levels were lower than in the preceding year. This is probably due to the curtailment of the use of phosphate detergents and the containment of sewage overflows.

1/ APPENDIX A - Water Quality Report - 1980

Results on all other parameters have remained uniform and within allowable limits for samples analyzed during the testing period.

The data collected represent samples taken on a regular basis. Patterns and trends are therefore reliable. Sample intervals appear to be adequate.

FUTURE TRENDS

It is recommended that the water quality program continue as in previous years plus the addition of several other parameters. Agricultural pollution appears to be the single greatest threat to water quality in the lake.

The monitoring program for Prompton Reservoir during CY 1981 will be similar to the past year's. Samples for chemical and bacteriological analysis will be collected under contract by BCM and presented to the Philadelphia District in report form. Consideration will be given to the control of algae and noxious weeds, using one of the following alternatives: (1) use of chemical sprays, (2) removal by harvesting, (3) and by the placement of aqua-screen at the greatest area of infestation.

CONCLUSION

The water quality at Prompton Reservoir seems to be improving based on the nitrogen and phosphate levels. The effect of this is not known since not enough data has been collected to determine if this is a short or long term reduction in nutrient levels. The lake stratifies during the late summer but severe summer storms break stratification and reoxygenate the hypolimnion.

The algal bloom and proliferation of ponds weeds continue to be water quality management problems. However, it is planned to apply in May 1980, one of the three alternative methods listed above, to control the infestation which has become a yearly problem. The blue-green bloom and ponds weeds reduced the oxygen levels, and as a result numerous fish were found dead floating on the lake waters. Lake water observations conducted during August and September indicate that the lake was clearing. This favorable condition was the direct result of heavy rains that caused the pool to rise and float the algae out the epilimnion drain. The effect of the algae on aquatic life downstream has not been investigated.

The bacteria levels remain within the limits established by the regulatory agencies and indicate no pollution from point sources above the dam.

APPENDIX A

MONTHLY WATER QUALITY REPORT - 1980

Betz • Converse • Murdoch • Inc

A Report Of

Water Quality Monitoring

At

Three Corps of Engineers Lakes

Work Order No. 7

Contract No. DACW61-79-D-0013

Performed For

The Philadephia District

U.S. Corps of Engineers

Prepared By:

Robert M. Hardy
Engineer

Approved By:

Thomas G. May, P.E.
Assistant Vice President

BETZ•CONVERSE•MURDOCH•INC.
ONE PLYMOUTH MEETING MALL
PLYMOUTH MEETING, PA 19462

Introduction

The work described herein pertains to gathering water quality samples at three Corps' lakes in the Delaware River watershed in Pennsylvania. The three lakes are Prompton near Honesdale, F.E. Walter near Stoddartsville, and Beltzville above Lehighton. This report presents the semi-annual summary of data collected between March 20 and September 15, 1980.

Water quality samples are collected on a year-round basis by Betz•Converse•Murdoch•Inc. (BCM) personnel twice per month from April through November and once per month for the remainder of the year. These samples are analyzed in BCM's laboratory for total dissolved solids, ammonia, nitrite, nitrate, phosphorous and Biochemical Oxygen Demand. All analyses are performed in accordance with the current procedures approved by the United States Environmental Protection Agency. BCM technicians sample temperature, dissolved oxygen, specific conductance and pH in the field while collecting samples for laboratory analyses. Bacteriological samples are collected at ten of the sites periodically and are also analyzed at BCM's laboratory. Several times during the year water samples from public drinking water fountains are taken and analyzed for bacteriological parameters (April, June and August). All samples are delivered to the lab within 24 hours (most within 8 hours). Samples are preserved by refrigeration from collection to analysis.

Data and Results

The following tables and graphs present the data collected from the three lakes and their tributaries (13 stations) during the period March 20, 1980 to September 15, 1980. Drinking water samples were taken April 17, 1980, June 19, 1980 and August 13, 1980 at the following four sites:

1. office at Prompton
2. office at F.E. Walter
3. building near dam at F.E. Walter
4. office at Beltzville

Since there was no evidence of any fecal coliforms or total coliforms in any of the twelve (four sites - three times) drinking water samples collected this year to date, no tabular presentation of these results is made.

The results indicate that all three lakes remain in relatively good water quality and may, in fact, be improving based on the data presented in the 1978 and 1979 annual Corps' reports. The only levels that were slightly elevated were the March 20 phosphorus samples at Prompton Lake. These readings were probably due to lake turnover releasing bottom sediment nutrients or due to a storm event and should be considered a natural occurance similar to that which occurred in March of 1979.

APPENDIX 1

PROMPTON LAKE

WATER QUALITY DATA

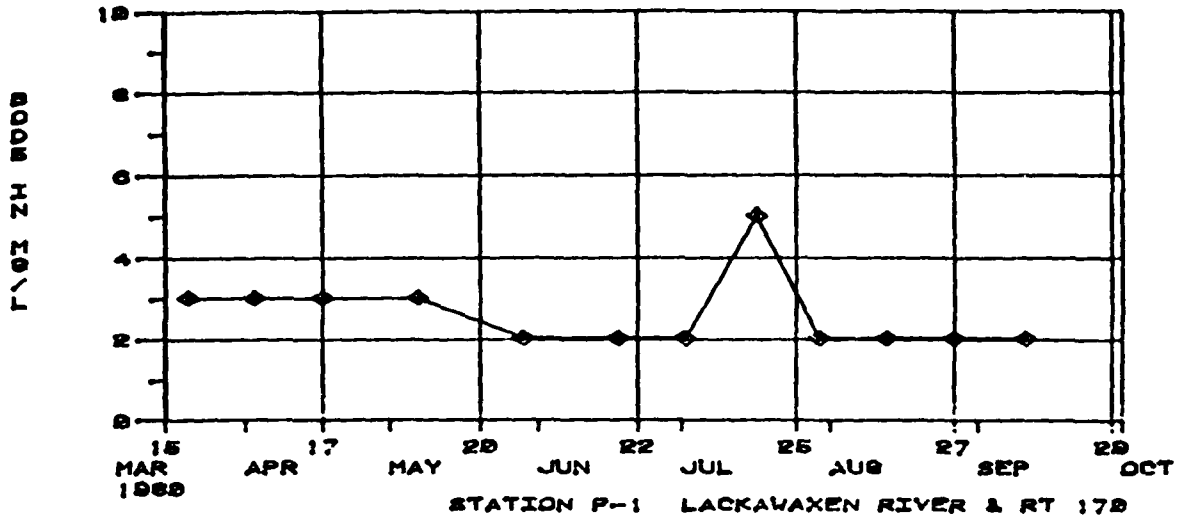
WATER QUALITY DATA — PROMPTON LAKE — 1980

Sample Date	Site #	BOD	TP-P	NH4-N	NO3-N	NO2-N	Dissolved Solids	DO	pH	Temp	Cond	Fecal Coli	Total Coli	Fecal Strep
3/20	1	3	0.11	0.52	0.54	0.01	75	12.5	7.1	2	75			
3/20	2	4	0.13	0.64	0.62	<0.01	58	12.8	7.1	2	65			
3/20	3	4	0.21	0.52	0.67	0.02	71	7.8	6.9	3	75			
4/3	1	<3	0.05	0.33	0.59	<0.01	11	13.8	6.1	4	45			
4/3	2	<3	0.03	0.35	0.56	0.01	29	13.0	7.0	4	53			
4/3	3	<3	0.05	0.36	0.56	<0.01	1	15.0	6.8	4	51			
4/17	1	<3	0.02	0.13	0.56	0.01	36	13.0	6.8	4	60			
4/17	2	<3	0.07	0.12	0.49	0.01	47	11.5	6.7	5	75			
4/17	3	<3	0.04	0.12	0.51	0.02	57	12.8	6.7	4	65			
5/8	1	3	<0.01	<0.10	0.34	0.01	71	7.2	6.1	10	40			
5/8	2	3	0.02	0.23	0.17	<0.01	66	7.0	7.0	14	42			
5/8	3	4	0.04	0.19	0.27	<0.01	61	6.9	6.8	13	55			
5/29	1	<2	0.08	<0.10	0.25	<0.01	50	8.5	7.2	12	65	60	180	112
5/29	2	<2	0.02	0.10	0.13	<0.01	46	6.8	7.2	17	60	24	100	3
5/29	3	<2	0.03	<0.10	0.11	<0.01	49	7.8	7.2	17	58			
6/19	1	<2	<0.01	<0.10	0.25	0.01	56	9.0	6.9	17	77	32	300	0
6/19	2	<2	<0.01	<0.10	0.08	<0.01	72	8.6	7.2	22	72	17	71	0
6/19	3	<3	<0.03	<0.10	0.14	<0.01	102	7.0	7.2	20	72			
7/3	1	2	<0.01	<0.10	0.38	<0.01	46	8.8	6.1	19	81			
7/3	2	3	0.01	<0.10	<0.01	<0.01	54	8.0	5.8	23	76			
7/3	3	2	<0.01	<0.10	<0.01	<0.01	49	8.2	5.9	22	74			
7/17	1	5	0.02	<0.10	<0.01	<0.01	49	7.9	6.7	20	77	72	1100	200
7/17	2	4	<0.01	<0.10.	<0.01	<0.01	55	7.7	8.1	25	73	50	780	15
7/17	3	4	<0.01	<0.10	<0.01	<0.01	49	8.0	7.2	21	73			
7/30	1	<2	<0.01	<0.10	0.26	0.01	63	7.8	6.1	23	79			
7/30	2	3	<0.01	<0.10	0.12	0.01	58	6.0	7.5	26	88			
7/30	3	3	<0.01	<0.10	0.16	0.02	109	5.6	7.3	24	83			
8/13	1	<2	0.01	0.11	0.23	0.08	61	7.6	5.8	23	79	100	180	300
8/13	2	6	0.03	<0.10	0.06	<0.01	84	6.8	7.4	26	82	10	50	130
8/13	3	5	0.03	<0.10	0.09	0.08	64	5.4	5.6	25	83			
8/27	1	<2	0.05	<0.10	0.13	<0.01	76	12.0	5.1	19				
8/27	2	<2	0.04	<0.10	0.57	0.04	46	11.8	6.3	20				
8/27	3	<2	0.05	<0.10	0.11	0.01	53	10.8	5.0	22				
9/15	1	<2	<0.01	<0.10	0.27	<0.10	2772*	7.7	7.3	16	94			
9/15	2	3	<0.01	<0.10	0.10	<0.10	3836*	5.8	7.4	22	92			
9/15	3	<2	0.04	<0.10	0.15	<0.10	64	6.4	7.7	21	88			

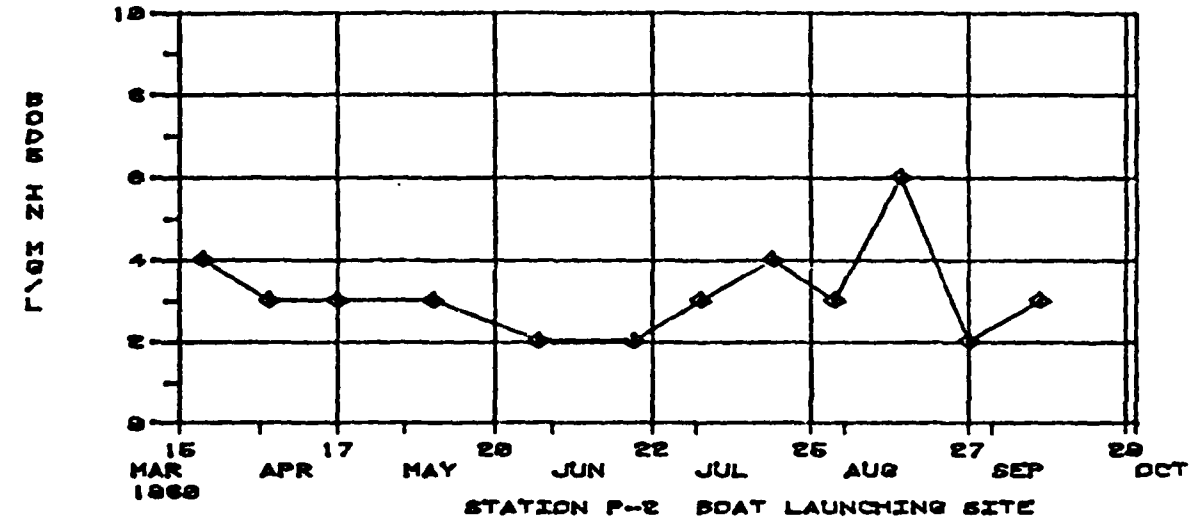
All units are mg/l except: pH in pH units, Temperature in degrees centigrade, Conductivity in umhos/cm and the bacteriological results in #/100 ml.

* Suspect contamination.

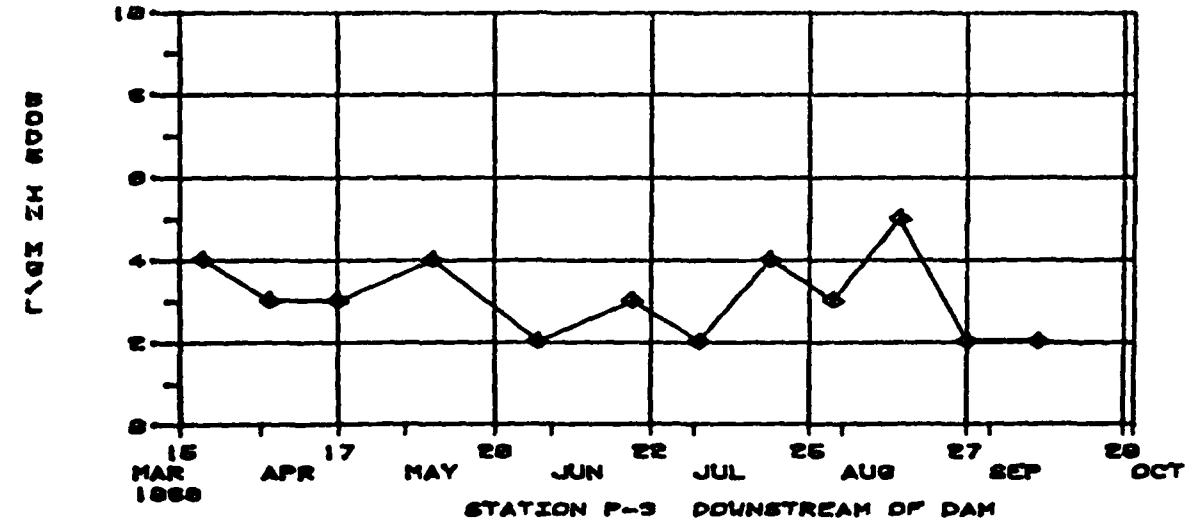
PROMPTON WATER QUALITY DATA FOR 1980



STATION P-1 LACKAWAXEN RIVER & RT 170

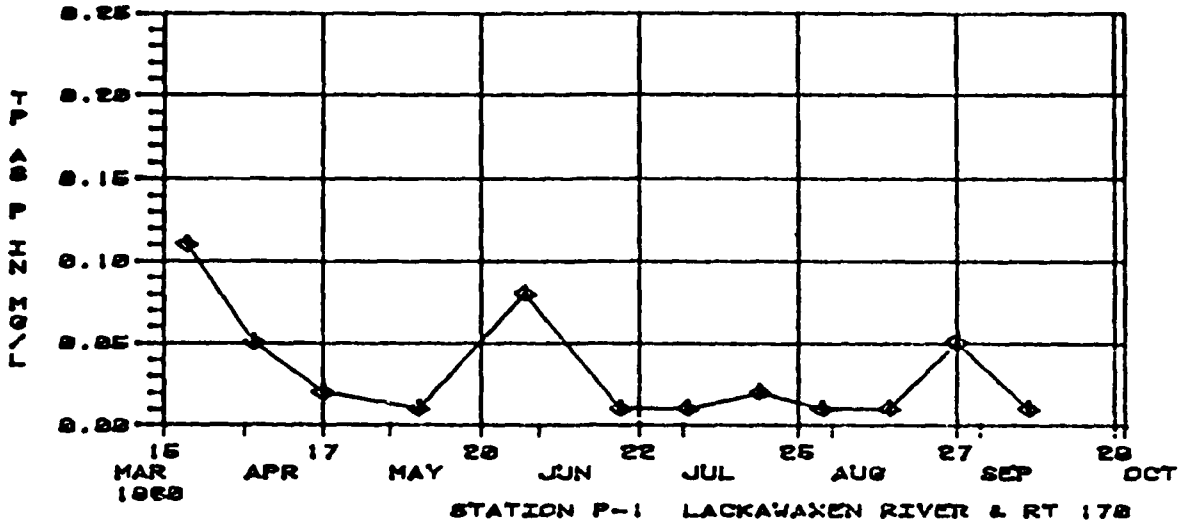


STATION P-2 BOAT LAUNCHING SITE



STATION P-3 DOWNSTREAM OF DAM

PROMPTON WATER QUALITY DATA FOR 1980



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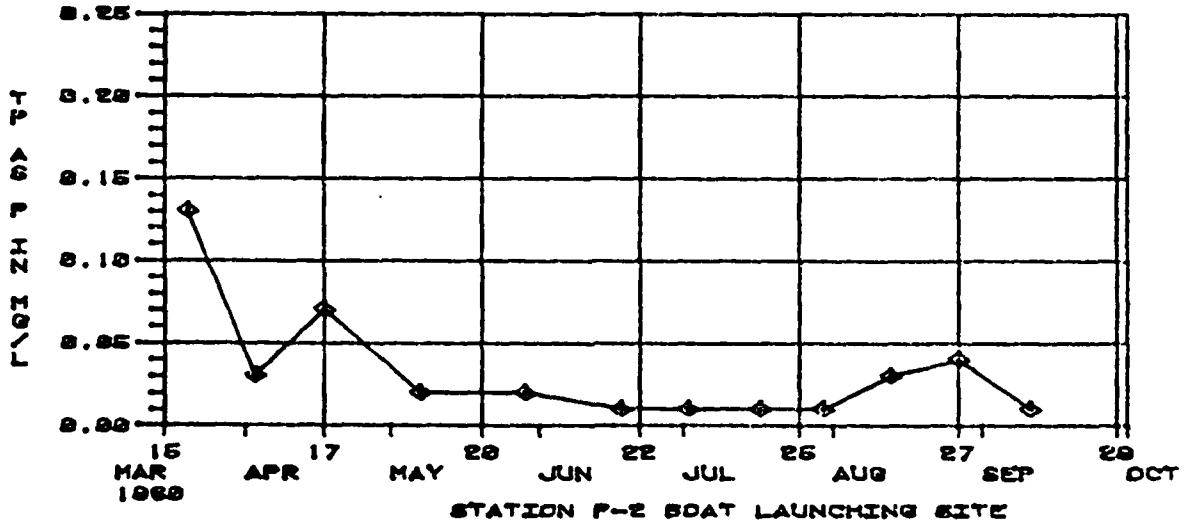

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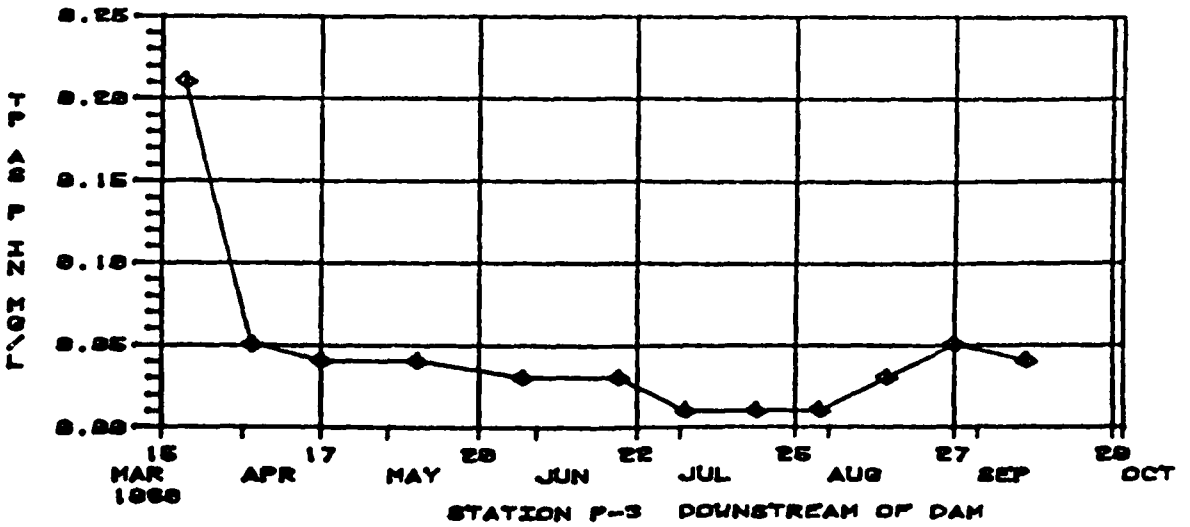

STATION P-3 DOWNSTREAM OF DAM

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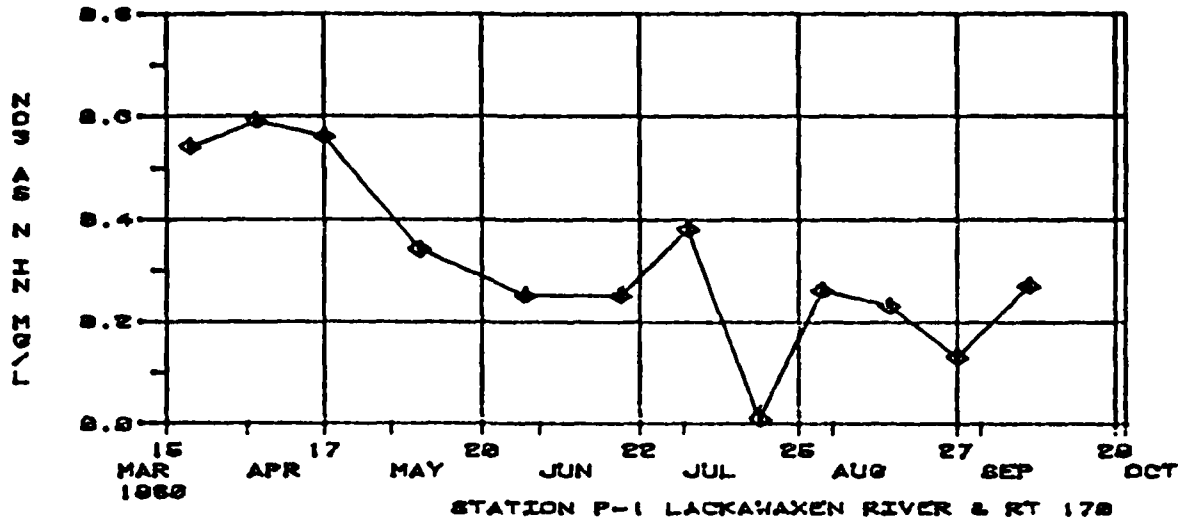

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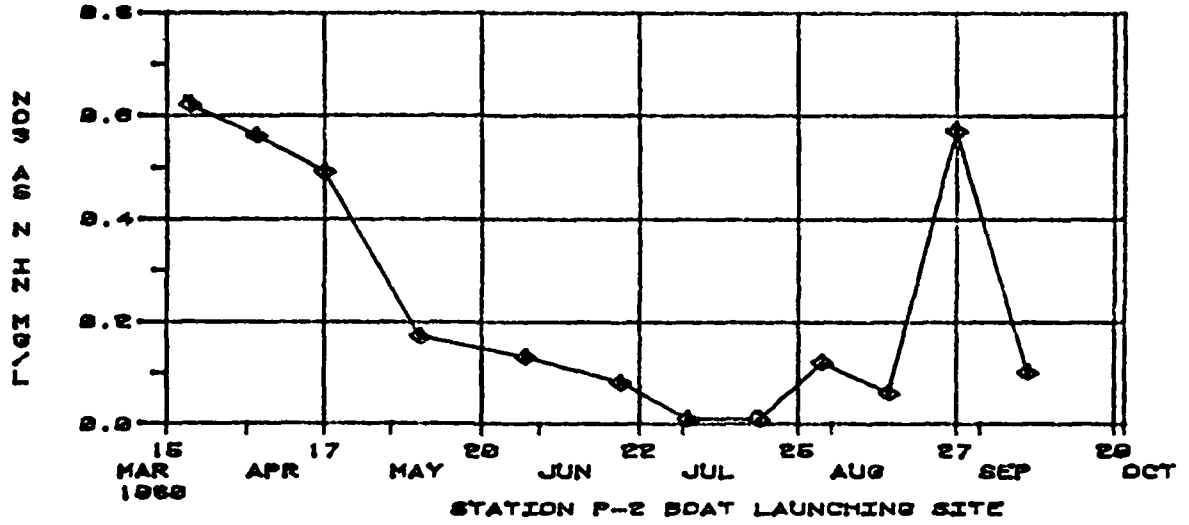

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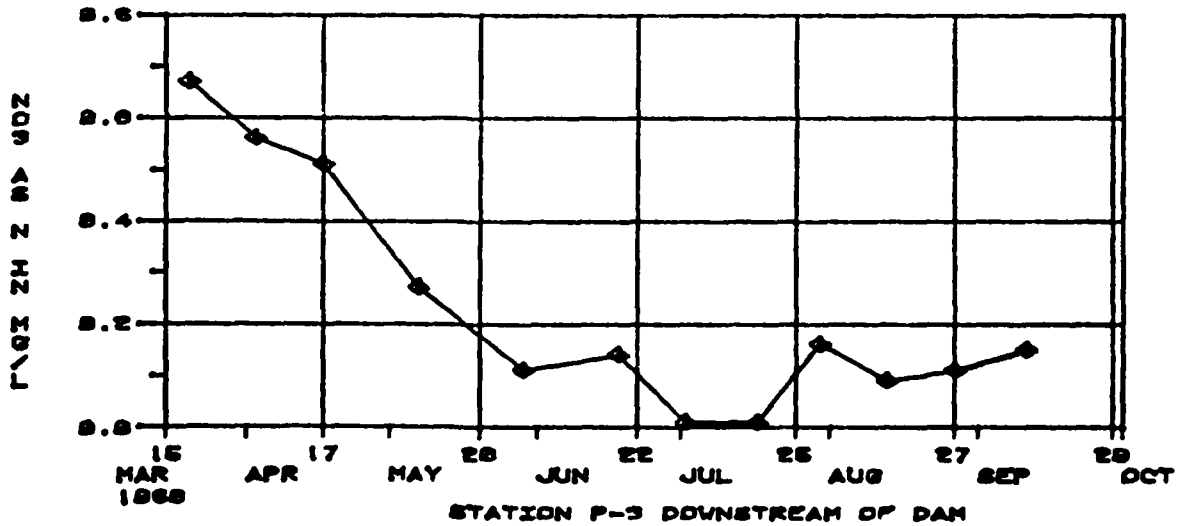

STATION P-3 DOWNSTREAM OF DAM

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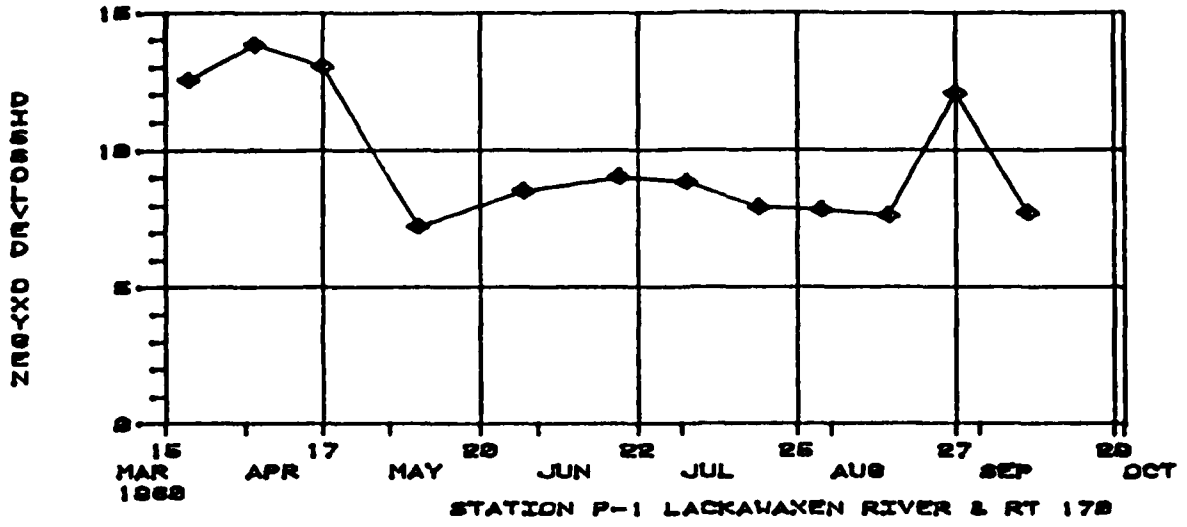

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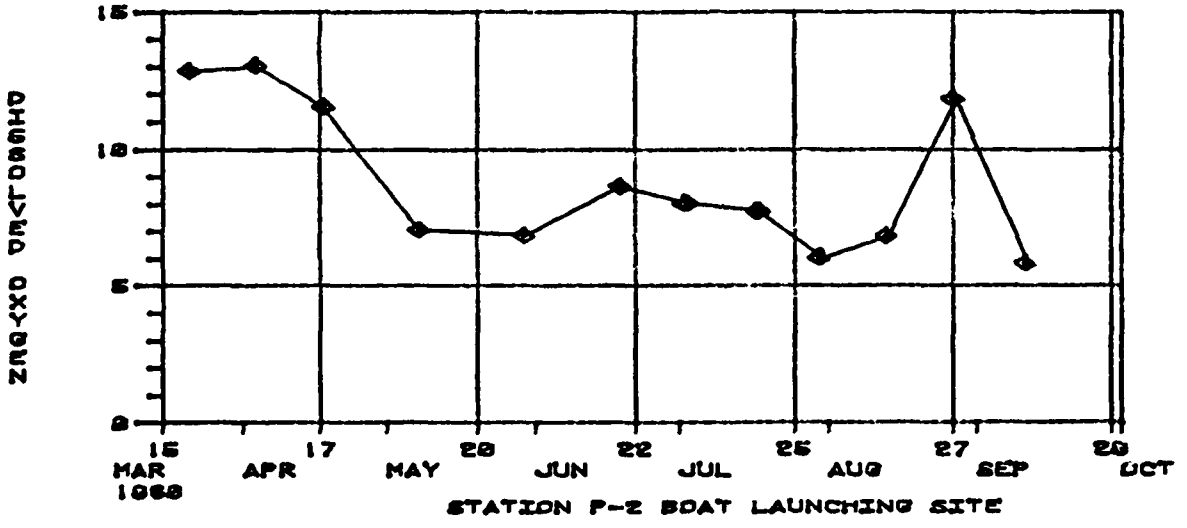

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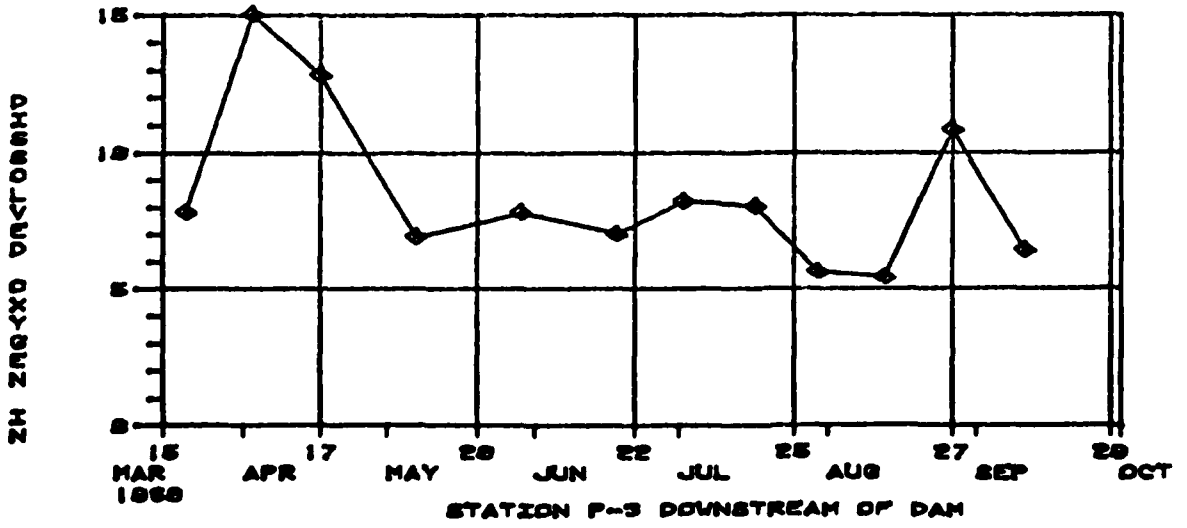

STATION P-3 DOWNSTREAM OF DAM

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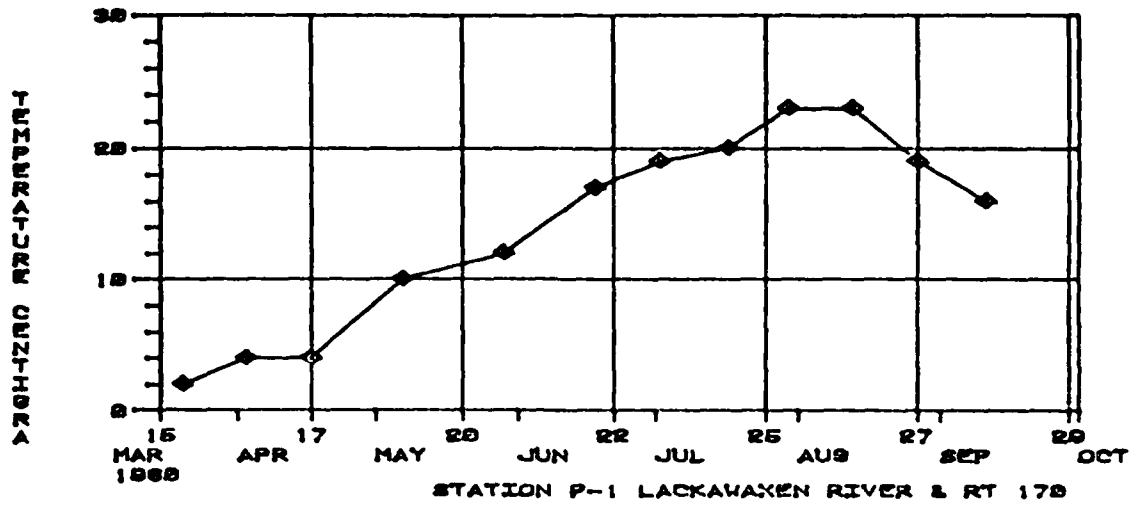

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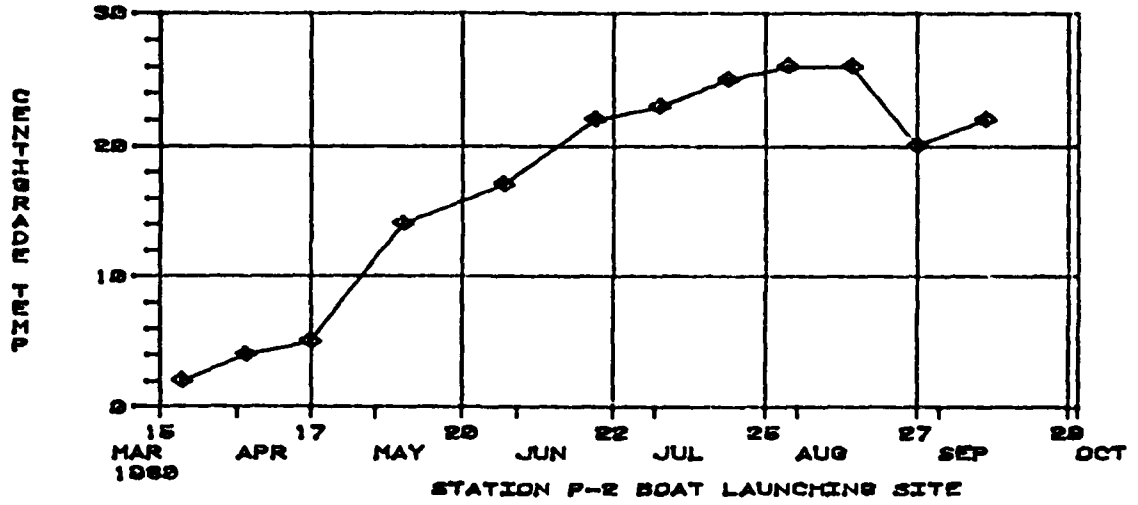

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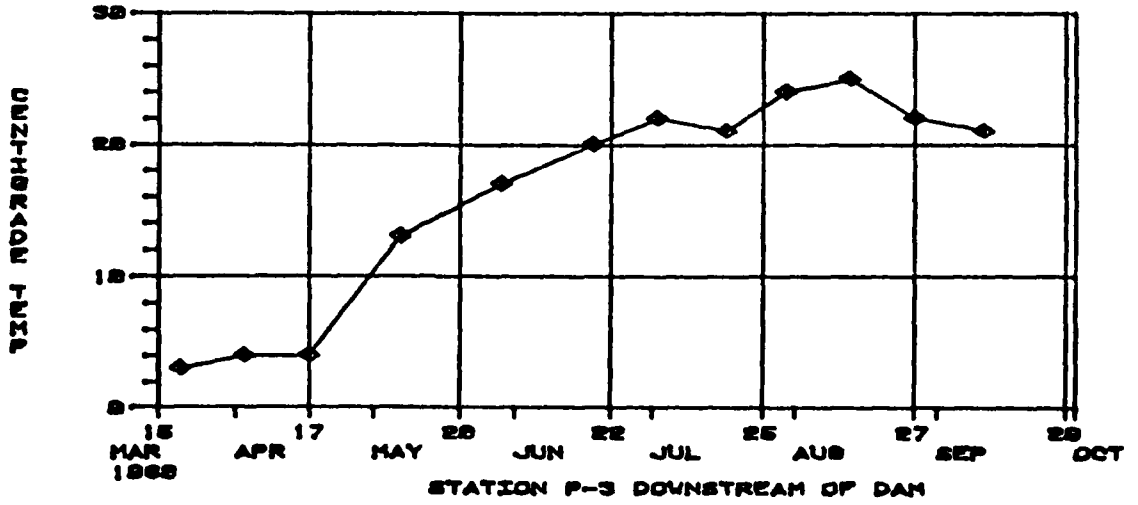
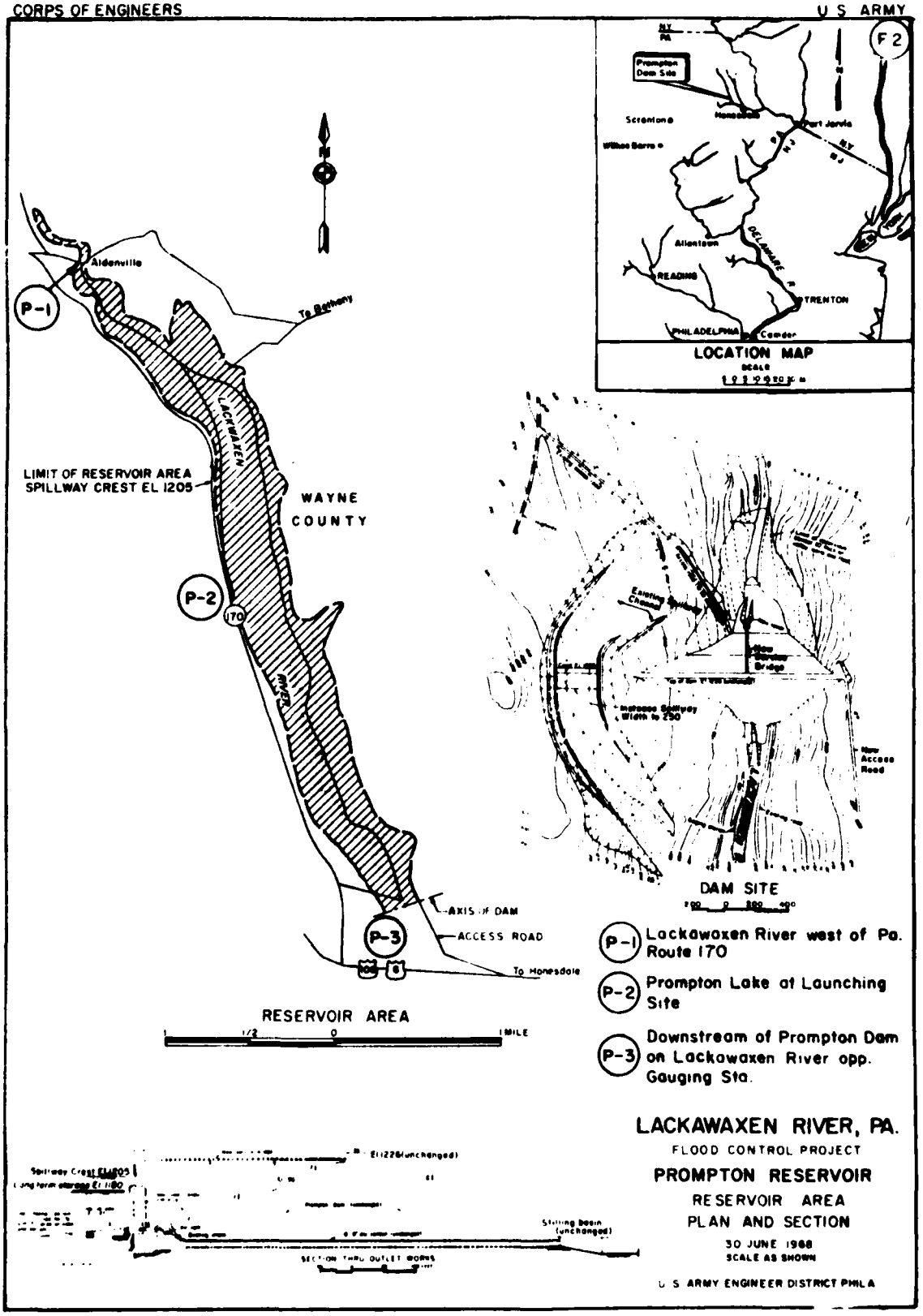


STATION P-3 DOWNSTREAM OF DAM

PLATE 1

LOCATION MAP AND SAMPLING STATIONS

CORPS OF ENGINEERS U S ARMY



LACKAWAXEN RIVER, PA.

FLOOD CONTROL PROJECT

PROMPTON RESERVOIR

RESERVOIR AREA

PLAN AND SECTION

30 JUNE 1968

SCALE AS SHOWN

U S ARMY ENGINEER DISTRICT PHILA

PLATE 1

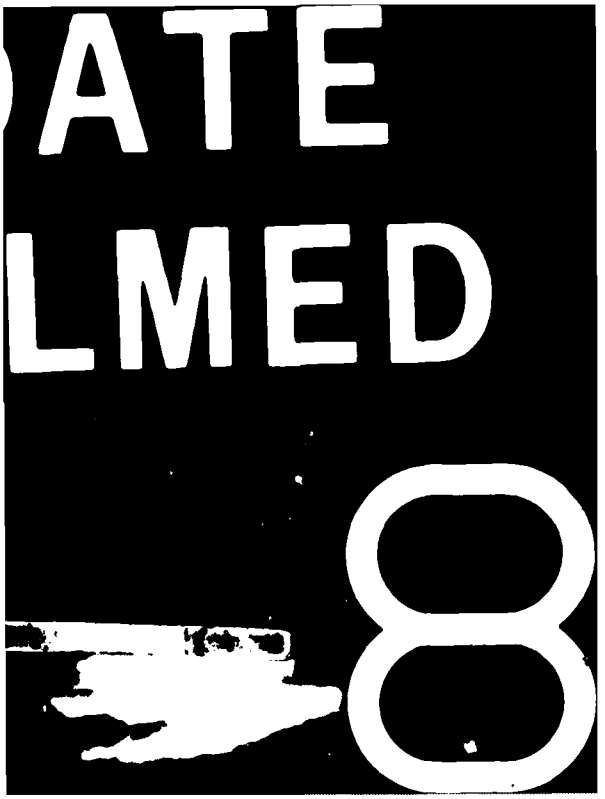
TABLE 1

PROMPTON LAKE - CLIMATOLOGICAL DATA - 1980

TABLE 1
PROMPTON LAKE
CLIMATOLOGICAL DATA - JANUARY TO JUNE 1980

	Precip. (inches)	Total Snow (inches)	Avg. Temp. ($0^{O}F$)	Highest Temp. ($0^{O}F$)	Lowest Temp. ($0^{O}F$)	Days with Precipitation
Jan	93	2.2	20.9	50	2	3
Feb	1.47	14.3	16.7	46	-6	7
Mar	5.64	20.0	26.8	54	-8	5
April	4.75	1.5	42.6	67	18	12
May	1.73	0	54.9	80	30	7
June	3.96	0	58.0	84	30	13

Extracted from the Monthly Summary Report - NOAA. Data collected at Pleasant Mount Station (12 air miles north of Prompton Lake).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