

APPENDIX A - MDE FINFISH COMMUNITY SURVEY FIELD REPORT

June 5, 2000

**The Chalk Point-Patuxent River Oil Spill
Report of the MDE Fish Kill Investigation Section
April 7, 2000 through May 04, 2000**



**Final Report
June 5, 2000**

Chris Lockett, Biologist

Charles Poukish, Section Head

Background

An oil spill occurred on Friday, April 7, 2000 at about 17:30 at the Potomac Electric Power Company's (PEPCO) Chalk Point Power Generating facility in Prince George's County. The spill occurred during testing of an underground pipeline feeding the plant that passes under Swanson Creek and its associated wetlands. Swanson Creek is a tributary to the Patuxent River on the Prince George's County-Charles County dividing line. The total volume of the spill was about 120,000 gallons. It consisted of both heavy #6 and lighter #2 fuel oils.

Initial efforts by PEPCO to contain the spill within Swanson Creek failed. Storms and high Northwesterly winds during the weekend overwhelmed containment efforts. By Monday morning, most of the discharged oil had bypassed the first response retainment barriers and infiltrated the Patuxent River. Accordingly, extensive shoreline contamination expanded from the marshes of Swanson Creek out and onto the eastern shoreline of the Patuxent River between God's Grace point and the vicinity of the Rt. 231 bridge on the Calvert County side.

On Sunday April 9th, at 09:00 hours, the MDE Fish Kill Investigation Section was placed on stand-by alert by Dr. Robert Summers, Director of Technical and Regulatory Services Administration (TARSA). Dr. Summers requested that the Fish Kill Response Unit prepare to contribute expertise and manpower in the forthcoming Natural Resource Damage Assessment (NRDA) activities. At 19:00 hours, the unit was given final orders to report to the Chalk Point Administration Building at 08:30 hours the next morning and begin participating in the development, coordination, and implementation of the multi-agency (NRDA) plan.

During the morning of April 10, oil sludge removal efforts appeared to be concentrated on the Eastern Shore of the Patuxent River at Hallowing Point, in Calvert County. Personnel from the Fish Kill Investigation Section (FKIS) arrived with ecological sampling gear and a 22' Boston Whaler at the Chalk Point facility at 09:00. At that time a large general briefing for the agency heads was underway in the spill control center. Upon completion of the general briefing, smaller meetings were held to address specific areas of concern and follow-up. Mr. Poukish and Mr. Lockett of the (FKIS) attended the aquatic faunal community assessment meeting. This meeting

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was led by Wayne Kicklighter from ENTRIX (PEPCO's contracted environmental consultants). A list of attendees is included in Appendix 1. There was debate ~~also~~ concerning appropriate methodologies for fish, zooplankton, and shellfish monitoring; as well as the best approach to begin bioaccumulation studies for Polynuclear Aromatic Hydrocarbon (PAH) contamination and associated fish health monitoring. The meeting concluded at about 11:15. Some results of that meeting were:

1. It was agreed that fish community assessment surveys should be done in and around the spill area.
2. Trawling sites historically used by PEPCO environmental scientists should be included in the survey to help put the new data into historical context.
3. One site should be at the mouth of Swanson Creek, the area exposed to the most oil.
4. Two sites should be upstream of Swanson Creek, in the Patuxent River.
5. One site should be downstream of Swanson Creek and out of the area presently affected by the spill.
6. In addition to counting, measuring, and identifying fish, samples of certain fish should be collected for histological inspection by Dr. Cindy Driscoll (Md. DNR). If available a predatory species and a bottom dwelling species of economic importance should be evaluated histologically. The targeted species were either striped bass or white perch as predators, and channel catfish as a bottom dweller.
7. Collection of fish samples for PAH (polynuclear aromatic hydrocarbons) analysis was not approved at that time.
8. Monitoring in some form would continue for six to twelve months.
9. PEPCO or ENTRIX employees should accompany investigators in the field to observe their activities.

Trawling for community assessment and histological samples consumed the remainder of the day. Dr. Cindy Driscoll of Md. DNR and Mr. Paul Willenborg of PEPCO joined FKIS.

By the morning of April 11th, heavy oil deposits were reported downstream as far as Marsh Point on the Saint Mary's County side. There were reports of heavy shoreline oil deposits in various tributaries between Long Point and Marsh Point. The Oil Spill Command Center was relocated into a series of trailers behind the power plant. Fish Kill Response personnel met there briefly with Dr. Summers at about 09:00. They were instructed to proceed to the fish and wildlife command trailer and assist as needed. Personnel also met with Mr. Alan Williams, Administrator of the Emergency Operations and Technical Support Program. The unit was assigned to take Mr. Jeff Marshall and Mr. John Smiechowski of MDE's Oil Control Program onto the river to characterize the distribution of the oil on the shoreline in St. Mary's County. They also assisted the U.S. Fish and Wildlife command center by looking for fouled birds and reporting their locations via cellular phone. The boat was made available to shuttle several U.S. F & W shoreline assessors from one beach sector to another.

By the morning of April 12, the lighter oil component of the spill was continuing to encroach further down the Patuxent River. A 200-yard wide by several mile long slick was visible down to the vicinity of Jack Bay (about eight miles downstream of Swanson Creek). The clean up was once again hindered by 20-25 mph winds out of the NW. A meeting took place the previous evening between ENTRIX-PEPCO and various governmental agencies regarding sampling protocols and analysis. Mr. George Harman of MDE was in attendance. Protocols were drafted outlining proposed aquatic community surveys, bioaccumulation studies of fin-fish and oysters (PAH analysis), and histological studies to monitor potential pathological effect. Standard ambient water quality parameters were to be recorded at the surface and bottom at each sample site. The parameters include temperature, salinity, dissolved oxygen, and pH. The policy group originally called for the analysis of fish taken from pound nets in the impacted zone. However, logistical problems inhibited fishing the nets during this period. Furthermore, there were serious questions raised pertaining to the validity of such samples representing true PAH loadings of non-

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captive fish. The FKIS attended more meetings inside the PEPCO offices to better define the sampling protocols and coordinate the sample analysis with ENTRIX/PEPCO. The final meeting was between Harley Speir, MD DNR-Fisheries, Dr. Ralph Markarian and John A. Dimitry of ENTRIX and Charles Poukish and Chris Luckett of FKIS. Dr. Markarian agreed to sampling trawled fish for PAH analysis and that John Dimitry of ENTRIX would coordinate with the lab. By 12:30 it was established that community surveys, field parameter water quality testing, water analysis sampling, and fish sampling for histology and PAH analysis would take place using a combination of three previously trawled sites in addition to a new site to be established further downstream and outside of the impacted area. Mr. John Dimitry of ENTRIX and Mr. Paul Willenborg of PEPCO accompanied the FKIS personnel during this sample run.

On April 14, the four previous trawl sites were again visited with the assistance of Dr. Cindy Driscoll of the DNR Cooperative Lab. Both community assessment and white perch histopathology sampling were performed from stations 1,3,4&5, (attachment). Additionally, white perch, striped bass, channel catfish and blue crabs were sampled from a fyke net near Trent Hall Point. Three specimens each of channel catfish, and white perch were wrapped whole in aluminum foil, placed on ice and labeled for potential PAH analysis. Two separate white perch and two striped bass were necropsied in the field and prepared for histological analysis. One fillet from each striped bass was also wrapped in aluminum foil and placed on ice for future PAH analysis. Eight crabs were delivered to the University of Maryland research vessel Orion (currently working on site) for their ongoing crab impact study. All the fish tissue samples for PAH analysis were delivered to the PEPCO/ENTRIX field station at Hallowing Point and archived in the freezer. Copies of the field sheets were given to Mr. Paul Willenborg of PEPCO. Two ENTRIX chain of custody forms were released to Matthew Barczyk at the Hallowing Point Lab on Wednesday April 19th.

Fish community monitoring continued twice a week during the weeks of April 17th, 24th and May 1st. All four established trawl sites were attempted on April 19th, 21st, 25th, 27th, May 2 and 4th. Most attempts were successful with the exception of one. Site number #1 (red day marker #32) was not sampled on the 21st of April due to severe lightning near the station. Resource damage assessment operations ceased for the day as severe thunderstorms approached. Histological samples were limited to four white perch and two hogchokers during this period. Three specimens displayed external tumor-like lesions from sites #4 and #5 on the 19th and site #3 on May 4th. The third white perch displayed a large hemorrhaged eye from site #1 on the 25th. The two hogchokers displayed large skin lesions at site #1 on May 2. No fish bioaccumulation tissue samples were retained during this sample period.

On May 10, a second round of PAH tissue sampling was conducted by PEPCO personnel with the assistance of FKIS personnel. Community monitoring and fish histology sampling was also accomplished for sites #1,3, and 4 before time constraints ended sampling for the day. PEPCO personnel completed the PAH sampling and community monitoring round on May 12. They retained custody of the PAH samples and assumed all future community monitoring efforts as part of their routine seasonal monitoring program.

Methods

A standard 18' otter trawl with the 1/2" cod end bag removed to facilitate capture of larger fish was deployed for six minutes at each station. Four stations were sampled each day. Those stations were as follows:

- #1. Approximately four miles upstream of Swanson Creek in the Patuxent River channel near Potts point and red daymarker #32.
- #2. Approximately one mile upstream of Swanson Creek in the Patuxent River channel immediately upstream of overhead power lines.

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- #3. At the mouth of Swanson Creek in the Patuxent River.
- #4. Approximately one mile south of the route 231 Bridge in the Patuxent River channel near the red daymarker #24.
- #5. Approximately 11 miles south of Swanson Creek in the Patuxent River channel at Broomes Island and near the red daymarker #16.

All fish were identified to species, counted and measured to the closest cm. The histological fish samples included the heart, brain, nares, eye, liver, spleen, intestine, gonads, lateral line, skin and portions of the head and caudal kidneys. The tissue was then preserved in 10% formalin.

Fish sampled whole for PAH analyses were double wrapped in Aluminum foil, and frozen in the field with dry ice.

The Hydrolab Scout 2 multi-parameter water analysis instrument was deployed for basic water chemistry characterization. John Dimitry of ENTRIX collected the water samples and retained custody of them and the whole fish samples.

Discussion-Results

Data sheets for all community monitoring trawls and fish histology, water, and tissue sampling done by this section are contained in Appendix two. Figures 1-4 display species distribution and frequency data for FKIS community monitoring trawls. Most trawled fish appeared normal. A small percentage of the white perch displayed some form of skin anomaly, including scale loss, petechia under scales and fins, lesions, or tumor-like growths. Many of these were included in the histological samples. Several white perch displayed moderate to severe scale loss attributed to previous handling by scientific or commercial fishery personnel.

The targeted predator white perch was captured at all trawling stations in sufficient numbers for sample analysis. Only two targeted channel catfish were captured in bottom trawls. They were not kept as samples. Hogchokers were abundant in all trawling sites. Croakers were found at all sites during the sample period.

A few dead fish were found scattered throughout the area during the post spill investigation period. Most of these were gizzard shad found in numbers not unlike those found in areas more removed from the Patuxent River. Additionally, a few white perch and croaker were found scattered over time. They also were found throughout the state in about the same numbers and can likely be attributed as the discards of fishing activities.

Stations number one through four were sampled on April 10. Station number four was considered out of the impacted zone at that time. By April 12, station number four was in the middle of the impacted zone and station number five was established in keeping with the initial objective of maintaining a site downstream and out of the impacted area. Due to time constraints station number two was not sampled on April 12, but was replaced by station five.

Hydrolab data does not reveal anything unusual about the sampling sites. Dissolved oxygen is near or above saturation at most sites. It is interesting to note how well mixed the river is throughout the sample area.

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on April 11

The Saint Mary's County survey conducted with MDE oil control program personnel identified about six swans with oil deposits. One was very heavily oiled on its head and body. A very badly oiled coot, a lightly oiled osprey, and dozens of ducks were observed oiled to various degrees. Deposits of heavy, black, tarry oil were visible on the Saint Mary's County side of the river and its tributaries. The size of the deposits varied from small clumps to areas in excess of two yards wide by one hundred yards long. Some deposits were on sandy beaches and others were observed in small tidal wetland creeks.

The field crew was unable to enter Swanson Creek more than 200 yards by boat due to shallow water and the presence of containment booms.

Conclusions

The three primary goals of the response assessment plan were achieved. They include; 1) the documentation of fish communities in the impact zone, 2) the collection of histological baseline data, and 3) the collection of fish tissue from the wild population for PAH analysis.

Based on field observations, no major acute impacts to the fish community were evident in the main branch of the Patuxent River immediately after the spill or during the study period. DNR shoreline assessment teams reported observing a small, localized mortality of mummichogs (200-300 individuals) near the Swanson Creek discharge site on Monday April 10th.

Station 1 Patuxent River R-32

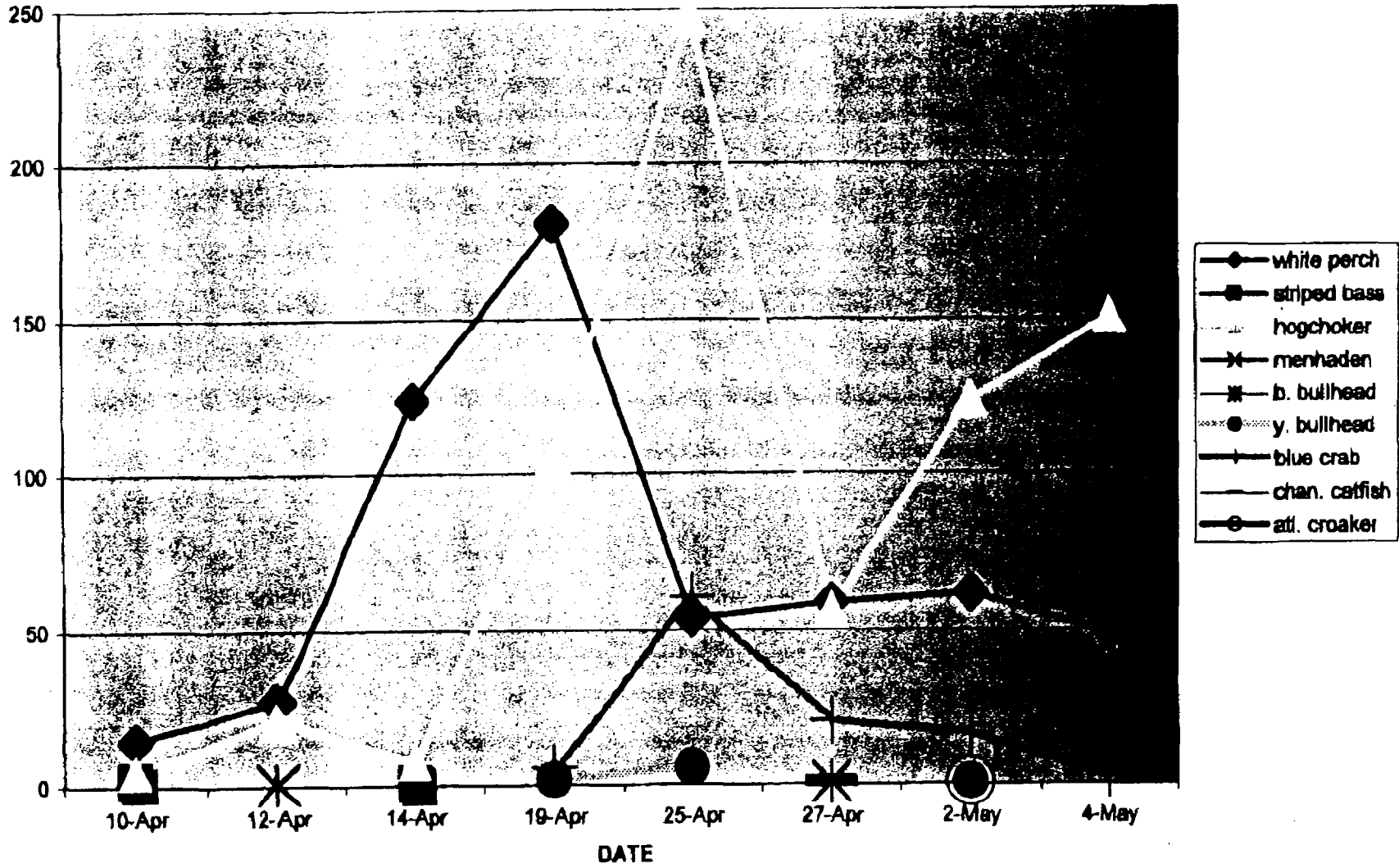


Figure 1

Station 3 Patuxent River Swanson Crk.

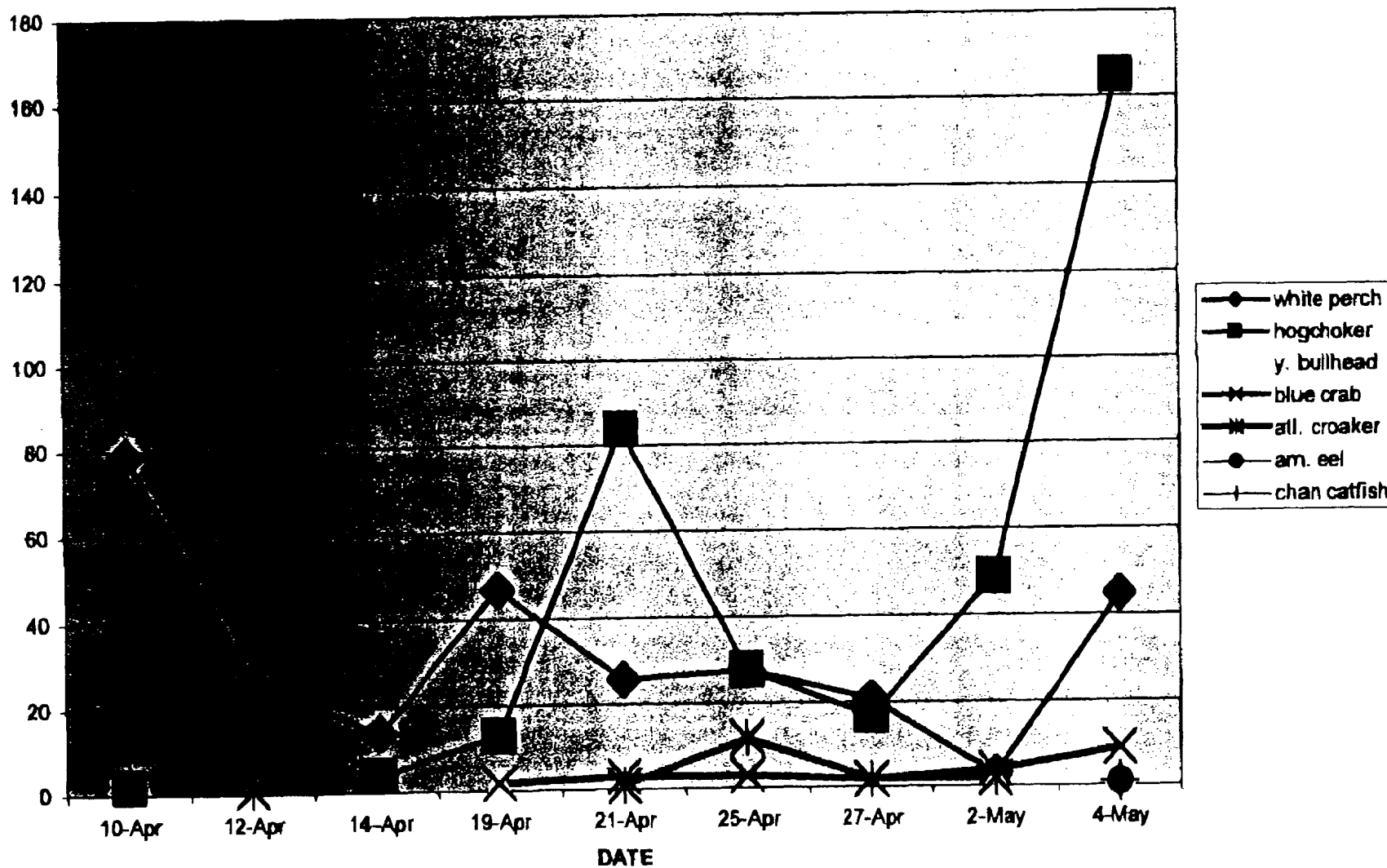


Figure 2

Station 4 Patuxent River Rt 231

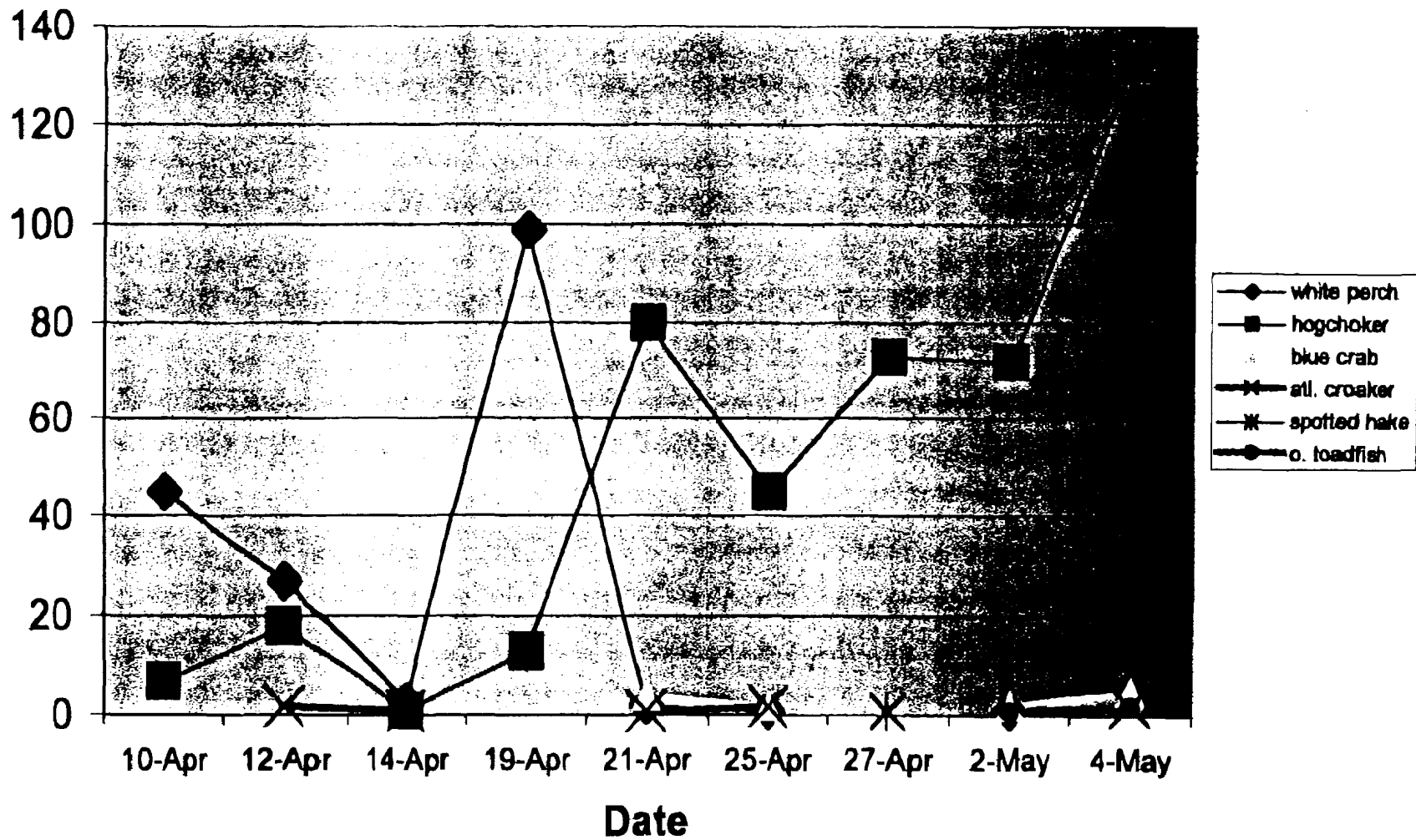


Figure 3

Station 5, Broomes Isl- Patuxent River

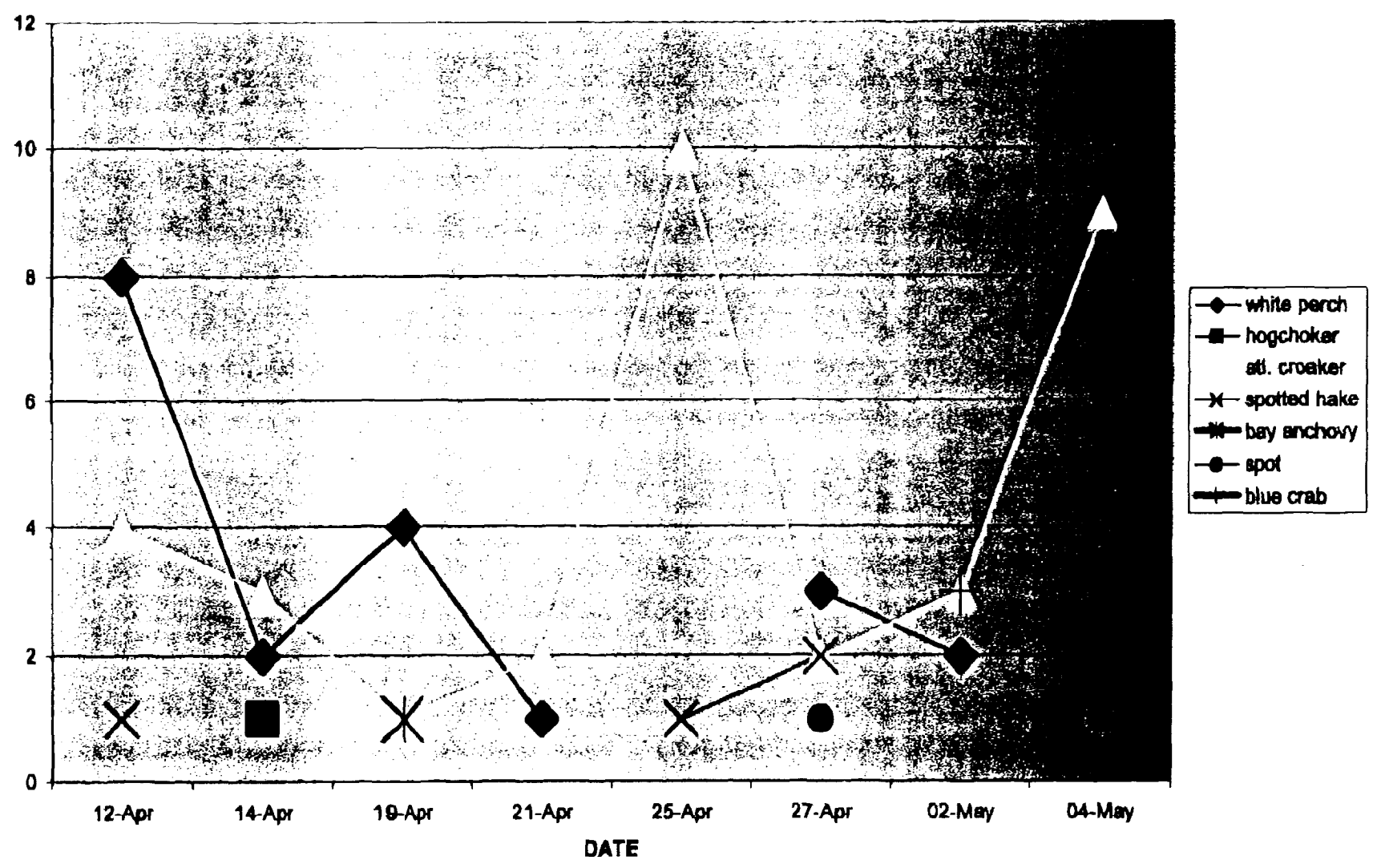


Figure 4

Appendix One

List of attendees to morning meeting on April 10, 2000. Meeting was to plan initial response for fish and shellfish assessment.

<u>Name</u>	<u>Representing</u>	<u>Phone</u>
Billy Moore	PEPCO	(202) 872-3430
Ed Krueger	PEPCO	(202) 331-8539
Tim Klares	PEPCO	(301) 855-1295
Paul Willenborg	PEPCO	(301) 855-1295
Ann Wearmouth	PEPCO	(301) 855-1309
Shelle Perrie	PEPCO	(301) 855-1402
Jonathan Mcknight	Md. DNR	(410) 729-8776
Cindy P. Driscoll	Md. DNR	(410) 226-5193
Harley Spair	Md. DNR	(410) 260-8303
Phil Jones	Md. DNR	(410) 260-8295
Eric Schweab	Md. DNR	(410) 260-8281
Richard Doleah	Md. DNR	(410) 260-8582
Carolyn Watson	Md. DNR	(410) 260-8113
Wayne Kicklighter	ENTRIX	(304) 535-1620
Bill Beatty	MDE	(410) 974-3238
Charles Poukish	MDE	(410) 974-3238
Chris Lockett	MDE	(410) 974-3238
John McKay	MDE	(410) 974-3238
William Evans	MDE	(410) 974-3238
Tom Broenan	NOAA	(301) 713-3038 x186
Carol Ann Manen	NOAA	(301) 713-3038 x196
Robert Burr	USDOJ	(215) 597-5378
Dan Murphy	USFWS	(410) 573-4521
Ken Rubin	Morgan, Lewis & Bockius	(202) 467-7140

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/10/00		Investigator: C. Poukish C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)		
Location: R-32	Depth: 4-9.5 Ft.	Tide: Ebb	County: Charles/P.G.			Lat: Start 38 34.231	Long: Start 76 40.608			
Time: 1330- Six minutes	Sample Gear: 16ft Otter Trawl		Station #: 1		Weather: Sunny, 68F	Stop 38 33.974	Stop 76 40.611			
Notes: Three histological samples taken of white perch as numbered below. Cindy Driscoll (DNR) kept the fish samples>										

OOCPPAWP07	17.5cm	Female	2mm prolif. lesion on dorsal surf, 2cm post. to head.
OOCPPAWP08	17.0cm	Female	No significant lesions (NSL)
OOCPPAWP09	17.0cm	Male	NSL

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch													2	4	3	1	4	1			
Striped bass														1	1						
Hogchoker								2	2	1											
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

HydroLab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/10/00		Investigator: C. Poukish, C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)			
Location: upstream of power line	Depth: 9.7 Ft.	Tide: Ebb	County: PG			Lat: Start 38 33.140 Stop 38 32.871		Long: Start 76 40.394 Stop 76 40.416			
Time: 1353- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 2		Weather: Sunny 68F				
Notes: three white perch taken for histology: As below. Cindy Driscoll (DNR) kept the fish samples.											

OOCPPAWP10 18.0cm Female NSL
 OOCPPAWP11 18.0cm Female NSL
 OOCPPAWP12 18.0cm Female NSL

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch												1		6	6	5	3	4			
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill		Date: 4/10/00	Investigator: C. Poukish, C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)	
Location: upstream of power line	Depth: 9.7 Ft.	Tide: Ebb	County: PG	Lat:	Start 38 33.140 Stop 38 32.871	Long:	Start 76 40.394 Stop 76 40.416
Time: 1353- Six minutes	Sample Gear: 16ft Otter Trawl		Station #: 2	Weather: Sunny 68F			
Notes: three white perch taken for histology: As below. Cindy Driscoll (DNR) kept the fish samples.							

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/10/00			Investigator: C. Poukish, C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)			
Location: mouth Swanson Creek		Depth: 11.3 Ft.	Tide: Ebb		County: PG			Lat: Start 38 31.986 Stop 38 31.778		Long: Start 76 40.266 Stop 76 40.116		
Time: 1450- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3		Weather: Sunny 68F					

Notes: three white perch and one hogchoker taken for histology: As below. Cindy Driscoll (DNR) kept the fish samples.

OOCPPAWP13 23.0cm Female NSL
 OOCPPAWP14 18.0cm Male NSL
 OOCPPAWP15 22.0cm Male NSL
 OOCPPAHO16 8.0cm

Species	Cm																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch													2	7	7	6	21	17	7	6	6
Hogchoker								2													
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill				Date: 4/10/00		Investigator: C. Poukish, C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)			
Location: R-24, Rt. 231		Depth: 16 Ft.		Tide: Ebb		County: PG		Lat: Start 38 30.315 Stop 38 30.171		Long: Start 76 40.391 Stop 76 40.382		
Time: 1532- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: Sunny 68F					

Notes: three white perch taken for histology: As below. Cindy Discoll (DNR) kept the fish samples.

OOCPPAWP17	21.0cm	Female	NSL
OOCPPAWP18	20.0cm	Female	NSL
OOCPPAWP19	19.0cm	Female	NSL

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															1	5	1 ³	5	12	6	3
Hogchoker								3	2	1			1								
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
Surface 300' from dock	14.27	13.15	133.5	8.64	5.5	9700

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/10/00		Investigator: C. Poukish, C. Lockett, Cindy Driscoll DNR, Paul Willenborg (PEPCO)		
Location: R-24, Rt. 231	Depth: 16 Ft.	Tide: Ebb	County: PG			Lat: Start 38 30.315 Stop 38 30.171		Long: Start 76 40.391 Stop 76 40.382		
Time: 1532- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 4		Weather: Sunny 68F				
Notes: three white perch taken for histology: As below. Cindy Discoll (DNR) kept the fish samples.										

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/12/00			Investigator: C. Poukish Chris Lockett, John Dimitry, Paul Willenborg (PEPCO)			
Location: R-32, God's Grace Pt.		Depth: 7-9 Ft.		Tide: Ebb		County: PG			Lat: Start 38 34.165 Stop 38 34.436		Long: Start 76 40.691 Stop 76 40.709	
Time: 1712- Six minutes			Sample Gear: 16ft Otter Trawl			Station #: 1			Weather: NNW wind 25mph			
Notes: Three white perch taken for histology-Given to B. Coakley DNR. Six white perch sampled for PAH, water samples taken for PAH, nutrients by J. Dimitry ENTRIX as numbered below.												

ENTRIX water samples: PRMC11W, PRMC13W. For nearby samples see supplemental samples sheet attachment.
 ENTRIX fish samples for PAH: 22cm, 16cm, 22cm, 16cm, 17cm, 19cm
 Fish for Histology given to DNR: 20cm, 19cm, 18 cm

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch														1		16	3	3	2	1	
Hogchoker								6	8	3	1	4									
Atlantic menhaden															1						
Brown bullhead															1						
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	2																				

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
surface	14.7	8.65	86	7.17	2.2	4,160
1.2M	14.7	9.3	89	7.1	2.2	4,110

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/12/00		Investigator: C. Poukish C. Lockett, John Dimitry, Paul Willenborg (PEPCO)			
Location: mouth Swansons Creek		Depth: 13 Ft.	Tide: Ebb	County: CA/SM		Lat: Start 38 31.712 Stop 38	Long: Start 76 40.104 Stop 76				
Time: 1632- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 3		Weather: NNW wind 25mph					
Notes: Three white perch taken for histology-Given to B. Coakley DNR. Five white perch sampled for PAH, water samples taken for PAH, nutrients by J. Dimitry ENTRIX as numbered below.											

ENTRIX water samples: PRMC03. For nearby water samples see supplemental samples sheet attachment.
 ENTRIX fish samples for PAH: 18cm, 17cm, 21cm, 18cm, 23cm.
 Fish for histology given to DNR: 20cm, 20cm, 19cm.

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch														1	2	4	6	3	6	2	1
Hogchoker							1	11	8	2	1										
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	43
White perch	1	1																			
Atlantic croaker																					1

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
surface	14.5	9.8	100	8.06	5.6	10,050
2.6	14.3	10.4	102	8.95	5.8	10,330

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/12/00		Investigator: C. Poukish C. Lockett, John Dimitry, Paul Willenborg (PEPCO)			
Location: R-24, Rt. 231	Depth: 13-15 Ft.	Tide: Ebb	County: CA/SM			Lat: Start 38 30.255 Stop 38 30.458		Long: Start 76 40.315 Stop 76 40.367			
Time: 1539- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: NNW wind 25mph				
Notes: Three white perch taken for histology-Given to B. Coakley DNR. Five white perch sampled for PAH, water samples taken for PAH, nutrients by J. Dimitry ENTRIX as numbered below.											

ENTRIX water samples: PRMC07. For nearby samples see supplemental samples sheet attachment.

ENTRIX fish samples for PAH: 18cm, 18cm, 22cm, 17cm, 18cm.

Fish for histology given to DNR: 18cm, 18cm, 19cm.

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															1	5	4	9	6	2	
Hogchoker								6	5	3	2		1	1							
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker						1					1										

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
surface	14.6	10.7	112	8.47	6.6	11,750
3.0	14.15	12.3	114	8.2	7.1	12,460

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/12/00		Investigator: C. Poukish C. Lockett, John Dimitry, Paul Willenborg (PEPCO)			
Location: R-16 Broomes Island		Depth: 31 Ft.	Tide: Ebb	County: CA/SM			Lat: Start 38 23.951 Stop 38 24.075	Long: Start 76 33.441 Stop 76 33.732			
Time: 1402- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5		Weather: NNW wind 25mph				

Notes: Three white perch taken for histology-Given to B. Coakley DNR. Five white perch sampled for PAH, water samples taken for PAH, nutrients by J. Dimitry ENTRIX as numbered below.

ENTRIX water samples: PRMC05. For nearby samples see supplemental samples sheet attachment.

ENTRIX fish samples for PAH: 18cm, 19cm, 19cm, 23cm, 19cm.

Fish for histology given to DNR: 17cm, 19cm, 21cm.

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																	1	1	5		1
Spotted hake											1										
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker										1		1		1			1				

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
surface	12.98	10.46	108.6	8.42	11.3	19,200
9.4 M	12.9	10.6	107.7	8.35	11.4	19,300

Supplemental Water Sample Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill		Date: 04/12/00	Investigator: C. Poukish C. Lockett, John Dimitry, Paul Willenborg (PEPCO)
Taken By: John Dimitry ENTRIX	Analysis: PAH, nutrients	Custody of: ENTRIX	Weather: Cloudy, 60°	Wind: NNW 20-25		

Sample Number	Location	Time	Latitude	Longitude
PR-MC-03w	End of trawl St. #3 Chalk Pt.	16:40	n/a	n/a
PR-MC-05w	Red Daymarker #16 Broomes Is.	14:10	N 38° 24.075	W 076° 33.732
PR-MC-06w	Red daymarker #18, Jacks Bay	14:20	N 38° 25.618	W 076° 36.342
PR-MC-07w	Red daymarker #24	15:50	N 38° 30.458	W 076° 40.367
PR-MC-08w	Just South of Swanson Ck	16:00	N 38° 31.476	W 076° 39.996
PR-MC-10w	Under Power lines	17:02	N 38° 32.749	W 076° 40.445
PR-MC-11w	Red daymarker #32	17:20	N 38° 34.436	W 076° 40.709
PR-MC-12w	+/- four miles N. of Chalk Pt.	17:35	N 38° 35.129	W 076° 40.664
PR-MC-13w	Red daymarker #32 (duplicate)	17:20	N 38° 34.436	W 076° 40.709

All samples taken in two +/- one liter bottles to be split into smaller bottles by ENTRIX.
 Samples to be analyzed by ENTRIX Contractors.

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill		Date: 4/14/00	Investigator: C. Poukish Chris Lockett, Dr. Cindy Driscoll	
Location: Trent Hall	Depth: 1 M	Tide: ebb	County: SM		Lat: Start 38 28.225 Stop	Long: Start 76 39.654 Stop	
Time: 1100		Sample Gear: Fyke net		Station #:	Weather: cloudy, 60F		
Notes: collected fish from fisherman (Mr. Daily)—fyke net was fished for two nights							

Samples collected for histology and kept in custody of Dr. Driscoll

- Striped bass #00CPPASB22, 48Cm male-nematode evident in flesh, empty stomach, pale liver
- Striped bass#00CPPASB23, 44.5Cm male-healthy
- White perch #00CPPAWP24, 18Cm female-healthy
- White perch #00CPPAWP25, 19Cm male-healthy

Samples wrapped whole in aluminum foil, labeled, and archived in ENTRIX /PEPCO freezer in custody of Paul Willenborg at Hollowing Point for possible PAH

Annalysis

- Channel Catfish #1 47cm, #2 43cm, #3 46cm
- White perch #1 21cm, #2 21cm, #3 23cm

One fillet was taken from each of the necropsied striped bass and also wrapped in aluminum foil, labeled and archived in the ENTRIX/PEPCO Freezer at Hollowing Point

Eight blue crabs delivered to the University of Maryland Research Vessel Orion on site

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	12.5	12.8	126	8.7	9.0	15,500

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 04/14/2000		Investigator: C. Poukis Chris Lockett		
Location: FYRE NET at TRENT HALL		Depth: 1M	Tide: High-Stack		County: SM	Lat: Start 38°28.225 Stop		Long: Start 76°39.654 Stop		
Time: - Six minutes 1100		Sample Gear: 10ft Otter Trawl FYRE NET			Station #: TRENT HALL Pt.		Weather: Cloudy 60° F			
Notes: COMMERCIAL FISHERMAN PROVIDED SAMPLES TO MDE, ONR. Net has been in water 2 DAYS (MR. DALY)										

SELECTIVE SAMPLE ONLY: NOT COMMUNITY SURVEY
WHOLE FISH
cm

All crabs transferred to The Orion p.

ALSO COLLECTED 8 BLUE CRABS FROM FYRE NET

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																					11
Striped bass																					
hogchoker																					
Channel Cat																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
WHITE PERCH		1																			
Channel CAT	1 at 47cm, 1 at 43cm, 1 at 46cm ← WHOLE FROZEN FOR PAH Analysis																				
STRIPED BASS	1 at 44.5cm, 1 at 48cm ← HISTOLOGY and FROZEN MUSCLE TISSUE ← OOCPPASB22 OOCPPASB23																				

3 WHITE PERCH FROZEN WHOLE FOR PAH Analysis

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
Surf	12.5	12.8	126.0	8.7	9.0	15,500
0.8 m						
Bottom						

WHITE PERCH FOR HISTOLOGY FROM FYRE NET
18cm ♀ OOCPPAWP24
19cm ♂ OOCPPAWP25

HISTOLOGICAL SAMPLES FROM FYRE NET

STRIPED BASS

- Ⓐ 48cm OOCPPASB22 ♂
- Ⓑ 44.5cm OOCPPASB23 ♂

BOTH HAD PALE LIVERS

Ⓑ HASNT FED AT ALL; FULL GALL BLADDER
Ⓐ HISTOLOGY BY LYDSE TO NEMATODE FOUND (1)

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/14/00		Investigator: C. Poukish Chris Luckett, Dr. Cindy Driscoll						
Location: R-32, Potts Pt.	Depth: 15ft.	Tide: ebb	County: CA/PG			Lat: Start 38 34.115 Stop 38 34.409		Long: Start 76 40.702 Stop 76 40.727						
Time: 1408- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 1		Weather: cloudy, 65F, wind N 0-5mph							
Notes: Histology—00CPPAWP30, 19Cm male, 00CPPAWP31, 21Cm female (lesion near vent)—samples kept in Dr. Driscolls custody														

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch													1	6	9	18	29	16	12	12	11
Striped bass																1					
hogchoker								5	3												
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	5	1	3		1																

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	13.7	10.9	110	8.58	5.6	9,940
4.5	13.1	9.84	97	8.11	7.8	13,600

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/14/00		Investigator: C. Poukish Chris Luckett, Dr. Cindy Driscoll		
Location: mouth of Swanson Creek	Depth: 12.6ft.	Tide: ebb	County: CA\CH			Lat: Start 38 31.523 Stop 38 31.759		Long: Start 76 40.020 Stop 76 40.216		
Time: 1335- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 3		Weather: cloudy, 60-65F, wind 0-5mph				
Notes: Orion trawling in vicinity/ visible oil slick ---- Histology- 00CPPAWP28, 21Cm female, 00CPPAWP29, 20Cm female- samples in Dr. Driscolls custody.										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															2	2	2	1	4	1	1
hogchoker							1		3												
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch		1																			

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	14.2	13.5	142	9.04	7.1	12,350
4M	12.8	10.5	104	8.23	9.5	16,300

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill				Date: 4/14/00		Investigator: C. Poukish Chris Lockett, Dr. Cindy Driscoll			
Location: R-24 below Rt. 231 bridge	Depth: 18-20 ft.	Tide: ebb	County: CA/CH			Lat: Start 38 30.209 Stop 38 30.543		Long: Start 76 40.276 Stop 76 40.314				
Time: 1251- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 4		Weather: cloudy, 60F, wind N 0-5mph						
Notes: Histology samples- 00CPPAWP26 female, 00CPPAWP27 male—samples kept in custody of Dr. Driscoll												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
White perch																				2		
hogchoker									1													
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
White perch		1																				
Atlantic croaker													1									

HydroLab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	13.37	11.91	124.4	8.71	9.2	15,800
6.3M	12.56	8.84	88.2	8.04	10.8	18,300

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/14/00		Investigator: C. Poukish Chris Lockett, Dr. Cindy Driscoll				
Location: R-16 Broomes Island		Depth: 34Ft.	Tide: Flood Slk	County: CA/ SM		Lat: Start 38 24.003 Stop 38 24.181		Long: Start 76 33.546 Stop 76 33.846				
Time: 1006 - Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 5		Weather: cloudy, 50F, wind N 0-5						
Notes: Histology samples- 00CPPAWP20 male 20Cm, 00CPPAWP21 female22Cm—kept in custody of Dr. Cindy Driscoll												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																					1
Hogchoker								1													
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	1																				
Croaker									1		1		1								

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	12.55	10.5	110	8.57	11.3	19,100
7.8	12.27	7.37	73	7.71	12.4	20,800

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/19/00		Investigator: C. Poukish Chris Luckett, Matt Barczyk- ENTRIX			
Location: R-32 Potts Point		Depth: 14 ft.	Tide: ebb	County: CAIPG			Lat:	Start 38 34.105 Stop 38 34.281		Long: Start 76 40.722 Stop 76 40.759	
Time: 1248- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 1		Weather: mostly cloudy, 55F, wind 10-15 NNW				
Notes: three white perch displayed abrasive-like lesions, one white perch displayed moderate fungal infection on side											

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch												1		6	11	23	39	39	21	25	8
Yellow bullhead																					
hogchoker							3	53	25	13	4	4	2	1							
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	7	1																			
Yellow bullhead		1			1																
Blue crabs 6																					

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.9	8.2	80	7.0	1.9	3,430
3.3M	13.2	8.8	83	6.98	4.0	7,270

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/19/00		Investigator: C. Poukish Chris Luckett, Matt Barczyk-ENTRIX				
Location: mouth of Swanson Creek		Depth: 13.8 ft.	Tide: ebb		County: CAICH			Lat: Start 38 31.631 Stop 38 31.833		Long: Start 76 40.024 Stop 76 40.105		
Time: 12:13- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3			Weather: cloudy, 55F, wind 10-15 mph NNW				
Notes:												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																3	10	10	11	8	2
Yellow bullhead																					
hogchoker								8	5												
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	1	2																			
Yellow bullhead								1													
Blue crab 2																					

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.2	8.6	86	7.38	5.4	9,700
3.2	12.99	8.2	83	7.3	6.4	11,800

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/19/00		Investigator: C. Poukish Chris Luckett, Matt Barczyk-ENTRIX		
Location: R-24 below Rt. 231 bridge	Depth: 16 ft.	Tide: ebb	County: CAICH			Lat: Start 38 30.215 Stop 38 30.414		Long: Start 76 40.394 Stop 76 40.386		
Time: 11:09- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: overcast, 50F, wind 10-15 mph NNW			
Notes: Histology on white perch with tumor on dorsal-lateral aspect 3mm, risen-white-spongy, 00CPPAWP33 female, 23cm										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															2	5	10	23	16	13	9
hogchoker								5	5	1	1			1							
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	8	3		1																	

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	12.8	8.75	87	7.62	6.8	12,000
5.5	10.9	8.6	85	7.6	7.7	13,710

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/19/00			Investigator: C. Poukish Chris Luckett, Matt Barczyk-ENTRIX			
Location: R-16 Broomes Island		Depth: 31 ft.	Tide: ebb	County: CA\SM			Lat: Start 38 23.964 Stop 38 24.085			Long: Start 76 33.454 Stop 76 33.761		
Time: 10:08- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5			Weather: overcast, 50F, wind 10-15 NNW				
Notes: one white perch with lesion on ventral right side behind pelvic fins, 3.5 mm size, histology 00CPPAWP32 female												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
White perch																				1		2
Bay anchovy							1															
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	
White perch	1																					
Atlantic croaker					1																	

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	13.1	9.1	94	8.37	11.2	19,000
10M	13.1	10.5	100	8.29	11.3	19,100

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/21/00		Investigator: C. Poukish Chris Luckett, Matt Rowe, Karen Eason		
Location: R-16, Broomes Island	Depth: 30ft.	Tide: high-flood	County: CAISM			Lat: Start 38 24.143 Stop 38 24.025		Long: Start 76 33.834 Stop 76 33.596		
Time: 09:31-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5		Weather: overcast, 60F, wind SSE 5-10mph			
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																		1			
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic Croaker											1									1	

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	13.7	10.3	108	8.49	10.8	18,400
9.9	13.7	9.8	103	8.4	10.9	18,500

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/21/00		Investigator: C. Poukish Chris Luckett, Matt Rowe, Karen Eason		
Location: R-16, Broomes Island	Depth: 30ft.	Tide: high-flood	County: CAISM			Lat: Start 38 24.143 Stop 38 24.025		Long: Start 76 33.834 Stop 76 33.596		
Time: 09:31-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5		Weather: overcast, 60F, wind SSE 5-10mph			
Notes:										

		Cm																				
Species		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																			1			
Atlantic croaker																						
Species		22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic Croaker												1									1	

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.7	10.3	108	8.49	10.8	18,400
9.9	13.7	9.8	103	8.4	10.9	18,500

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/21/00		Investigator: C. Poukish Chris Lockett, Matt Rowe, Karen Eason		
Location: R-24, below Rt. 231	Depth: 24ft.	Tide: ebb	County: CA\CH			Lat: Start 38 30.489 Stop 38 30.268		Long: Start 76 40.405 Stop 76 40.405		
Time: 10:14- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: overcast, periods of rain, 60F, wind SSE 5-10			
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																				1	1
Blue crabs #4																					
hogchoker							2	32	35	7		4									
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker										1											

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	14.3	10.2	105	8.4	7.8	13,570
5M	14.0	10.4	105	8.35	9.1	15,600

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/21/00			Investigator: C. Poukish Chris Lockett, Matt Rowe, Karen Eason			
Location: mouth of Swanson Creek	Depth: 13ft.	Tide: ebb	County: CA\CH			Lat: Start 38 31.601 Stop 38 31.783		Long: Start 76 39.927 Stop 76 39.995				
Time: 10:45- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3			Weather: cloudy, rain, severe lightning				
Notes: one white perch with 2 lesions above lateral line, 3mm wide, irregular, risen, red- one white perch with red lesion above lateral line- 1mm wide.												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															1	2	5	5	7	5	1
Blue crab #3																					
hogchoker							1	33	34	5	3	4	1	1	1	1					
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker				1																	

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
No data						
lightning						

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill				Date: 4/25/00		Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX			
Location: R-32 Potts Pt.		Depth: 14 ft.		Tide: High Ebb		County: CA\PG		Lat: Start 38 34.109 Stop 38 34.240		Long: Start 76 40.747 Stop 76 40.737		
Time: 11:56- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 1			Weather: overcast, scattered showers, 55F, wind NE 15				
Notes: Histological sample-White Perch with hemorrhaged eye 17cm-00CPPAWP35male----1 dead white perch, 1 dead crab												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch														1	4	6	15	14	7	7	
Yellow bullhead																					
hogchoker							5	48	38	6	7	1	2								
Blue crab #61																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch																					
Yellow bullhead			1	1	1	2		1													

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	14.2	9.2	91	7.28	3.1	5,770
4 M	14.3	9.2	94	7.35	4.0	7,280

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/25/00		Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX				
Location: off Swanson Creek	Depth: 12.5 ft.	Tide: High slack	County: CAICH			Lat: Start 38 31.725 Stop 38 31.916		Long: Start 76 40.001 Stop 76 40.170				
Time: 11:16- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3		Weather: overcast, scattered showers, 55F, wind NE 15					
Notes: white perch with hemorrhaged eye, Five white perch with scale loss, reddening , and petechia on fins												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															2	2	5	5	7	4	2
Atlantic croaker																					
hogchoker							1	8	13	4	1		1								
Blue crab #3																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch					1																
Atlantic croaker			1																		

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	14.2	9.4	96	8.02	5.7	10,070
3.9M	13.96	9.0	87	7.9	8.5	14,740

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/25/00		Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX		
Location: R-24, below Rt. 231	Depth: 23 ft.	Tide: High Flood	County: CAICH			Lat: Start 38 30.424 Stop 38 30.563		Long: Start 76 40.424 Stop 76 40.408		
Time: 10:41- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: cloudy, rain, wind NE 15 mph, 55F			
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																	1				
Atlantic croaker																					
hogchoker							2	15	19	2	3	3		1							
Blue crab #2																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker										1		1									

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	14.1	9.7	101	8.34	6.8	12,010
5.7M	13.6	8.0	83	8.02	9.9	17,000

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/25/00		Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX		
Location: R-16, Broomes Island	Depth: 37-38 ft.	Tide: flood	County: CA/SM		Lat: Start 38 23.993 Stop 38 23.850		Long: Start 76 33.583 Stop 76 33.468			
Time: 09:51- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 5		Weather: overcast, rain, wind NE 5mph, 55F				
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Spotted hake													1								
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker						3	1		2	1		2				1					

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	14.0	10.4	110	8.63	9.6	16,500
15.7	13.2	9.0	91	8.18	10.7	18,100

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/27/00		Investigator: C. Poukish Chris Lockett, Tracy MacMillan ENTRIX			
Location: R-32, Potts Point	Depth: 15 ft.	Tide: high slack	County: CA-PG			Lat: Start 38 34.350 Stop 38 34.216		Long: Start 76 40.767 Stop 76 40.674			
Time: 11:42- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 1		Weather: overcast, scattered showers, 55F, wind SE 10-15				
Notes: White perch- 1 18cm with lesion 3mm wide, 1 16cm with tumor on pelvic fin, 12 with petechia on fins (caudal, pelvic, pectoral, anal), 1 9cm hogchoker with lesions on operculum.											

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch														3	5	14	16	13	5	1	2
Channel catfish																					
hogchoker							1	19	27	5	2	1	2								
Blue crab #21																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Channel catfish																			1		
Brown bullhead						1															

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.2	9.89	98	8.08	5.0	9,030
2.9	13.5	9.3	92	7.99	6.6	11,680

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/27/00		Investigator: C. Poukish Chris Luckett, Tracy MacMillan ENTRIX		
Location: off Swanson Creek	Depth: 13ft.	Tide: high flood	County: CA/CH			Lat: Start 38 32.046 Stop 38 31.950		Long: Start 76 40.143 Stop 76 40.111		
Time: 11:02- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 3		Weather: cloudy, scattered showers, 55F, SE wind 10-15				

Notes: white perch- 7 with slight petechia on pectoral and pelvic fins, 1 with tumor on dorsal fin

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															1	2	2	4	5	6	1
Blue crab #2																					
hogchoker							1	4	6	3	1	1		1							
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch			1																		
Atlantic croaker								1	1												

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.4	9.16	93	8.26	7.7	13,420
2.6M	13.4	9.6	96	8.22	7.7	13,410

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/27/00		Investigator: C. Poukish Chris Lockett, Tracy Macmillan ENTRIX				
Location: R-24, below Rt. 231 bridge		Depth: 30-24ft.	Tide: high flood		County: CA\CH			Lat: Start 38 30.593 Stop 38 30.456		Long: Start 76 40.391 Stop 76 40.400		
Time: 10:28- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4			Weather: overcast, scattered showers, 55F, wind SE 10-15				
Notes:												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
hogchoker					1			24	31	5	5	6	1								
Spotted hake													1								
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	13.4	9.6	98	8.45	8.0	13,970
9.1M	13.6	8.1	82	8.13	8.7	15,100

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 4/27/00			Investigator: C. Poukish Chris Luckett, Tracy MacMillan ENTRIX			
Location: R-16, Broomes Island		Depth: 34ft.	Tide: high flood		County: CAISM			Lat: Start 38 23.992 Stop 38 23.901		Long: Start 76 33.565 Stop 76 33.371		
Time: 09:43- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5			Weather: cloudy, scattered showers, 55F, wind SSE 5-8 mph				
Notes: white perch- 2 with petechia on fins and ventral side												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																	1	1	1		
spot																					
Atlantic croaker																					
Spotted hake												1	1								
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
spot	1																				
Atlantic croaker						1			1												

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	13.84	11.4	121	8.96	10.1	17,200
10.4M	13.23	8.5	87	8.17	10.6	18,100

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/2/00			Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX			
Location: R-32, Potts Point		Depth: 13-14ft	Tide: high flood		County: CA\PG			Lat: Start 38 34.094 Stop 38 34.313		Long: Start 76 40.693 Stop 76 40.754		
Time: 11:35-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 1			Weather: partly cloudy, 65F, wind 20mph				
Notes: one white perch with lesion on right side near pectoral fin, Histology 00CPPAHO36, 37—eroded tail, large lesion 8mm, small lesions on #36												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch													1	2	2	8	12	20	11	3	3
Hogchoker +20							2	33	25	12	12	10	8		2						
Blue crab 17																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Yellow bullhead			1																		
Atlantic croaker							1														

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	16.8	8.1	84	7.09	2.4	4,460
3.7M	16.5	8.65	89	7.22	3.6	6,630

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill				Date: 5/2/00		Investigator: C. Poukish Chris Luckett, Bob Nailon ENTRIX						
Location: R-16, Broomes Island		Depth: 30ft.	Tide: flood		County: CA\SM			Lat: Start 38 24.030 Stop 38 23.936		Long: Start 76 33.604 Stop 76 33.438					
Time: 09:42-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5			Weather: cloudy, 60F, wind NW 5mph							
Notes: one white perch with 2cm lesion near vent															

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																		1	1		
Blue crab 3																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker						1				2											

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	15.6	11.0	119	8.96	9.2	15,900
12.5M	13.7	9.2	91	8.3	10.3	17,500

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/2/00			Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX			
Location: R-24, Rt. 231		Depth: 24ft.	Tide: flood		County: CA\CH			Lat: Start 38 30.365 Stop 38 30.493		Long: Start 76 40.465 Stop 76 40.371		
Time: 10:32-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4			Weather: partly cloudy, 60F, wind N 5-10mph				
Notes:												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																		1			
hogchoker							2	27	25	6	3	4	3	2							
Blue crab 2																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Oyster toad	1																				

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	16.3	9.32	99	8.31	5.9	10,490
3.2M	15.7	8.9	94	8.28	6.8	11,940

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/2/00			Investigator: C. Poukish Chris Lockett, Bob Nailon ENTRIX			
Location: mouth of Swanson Creek		Depth: 12ft.	Tide: flood	County: CA\CH			Lat: Start 38 31.824 Stop 38 31.947			Long: Start 76 40.047 Stop 76 40.123		
Time: 11:04- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3			Weather: partly cloudy, 65F, wind N 15-20				
Notes:												

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																	1		1		
hogchoker							3	22	13	6	3		2								
Blue crab 4																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	1																				
Yellow bullhead								1													
Atlantic croaker							1			1											

Hydrolab Readings

<u>Depth</u>	<u>Temp.</u>	<u>D.O.</u>	<u>% Sat.</u>	<u>pH</u>	<u>Salinity</u>	<u>Cond</u>
0.5	16.5	8.75	93	7.9	4.9	8,800
3.0 M	15.97	8.73	91	8.13	6.2	10,410

FISH COMMUNITY ASSESSMENT, PATUXENT RIVER-2000

Station #5

DATE

SPECIES

	white perch	hogchoker	atl. croaker	spotted hake	bay anchovy	spot	blue crab
12-Apr	8		4	1			
14-Apr	2	1	3				
19-Apr	4		1		1		
21-Apr	1		2				
25-Apr			10	1			
27-Apr	3		2	2			1
2-May	2		3				3
4-May			9	1			1

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/4/00		Investigator: C. Poukish Chris Luckett		
Location: R-32, Potts Point	Depth: 14-17ft.	Tide: flood	County: CAIPG			Lat: Start 38 34.371 Stop 38 34.171		Long: Start 76 40.812 Stop 76 40.710		
Time: 12:27- Six minutes		Sample Gear: 16ft Otter Trawl		Station #: 1			Weather: sunny, 70F, wind S 10-15mph			
Notes: one white perch with lesion on left ventral side, 1.5cm wide-22Cm male										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch												1			3	8	7	15	4	4	2
Hogchoker +24							9	31	49	14	11	9	3		1						
Blue crab 3																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch	5																				

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	18.4	7.66	82	7.01	2.0	3,740
4.1M	17.85	7.5	80	7.01	2.9	5,350

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/4/00		Investigator: C. Poukish Chris Luckett		
Location: mouth of Swanson Creek	Depth: 12-13.5ft	Tide: flood	County: CA\CH			Lat: Start 38 32.100 Stop 38 31.913		Long: Start 76 40.327 Stop 76 40.208		
Time: 11:14- Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 3		Weather: sunny, 70F, wind 10-15mph			
Notes: Histology 00CPPAWP38 - 2Cm wide lesion on right ventral side, one white perch observed with 3mm risen red tumor										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch															2	9	13	11	3	5	1
Yellow bullhead																					
Hogchoker +40 (blue crab 9)							4	40	34	15	9	12	7	1	1	1	1				
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
White perch		1																			
Yellow bullhead					1		1				1										
American eel												1									
Channel catfish														1							

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	18.4	9.16	101	8.01	4.0	7,290
3.4M	17.0	8.3	89	8.16	6.1	10,770

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/4/00		Investigator: C. Poukish Chris Luckett		
Location: R-24, Rt. 231	Depth: 26-29ft	Tide: flood	County: CA\CH			Lat: Start 38 30.520 Stop 38 30.291		Long: Start 76 40.434 Stop 76 40.399		
Time: 10:39-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 4		Weather: sunny, 70F, wind 10-15mph			
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
White perch																	3	1		1	1
Oyster toad															1						
Hogchoker +40 (blue crab 5)							3	40	29	7		6	5	3							
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Oyster toad				1																	
Atlantic croaker								1							1						

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	17.6	9.69	107	8.48	5.5	9,870
8M	16.86	9.1	97	8.37	6.7	11,730

Fish-Counting Record-MDE

River: Patuxent River			Study: Oil Spill Damage Assessment from Chalk Point Power Plant spill			Date: 5/4/00		Investigator: C. Poukish Chris Luckett		
Location: R-16, Broomes Island	Depth: 30ft.	Tide: flood	County: CA SM			Lat: Start 38 24.031 Stop 38 23.933		Long: Start 76 33.607 Stop 76 33.405		
Time: 09:52-Six minutes		Sample Gear: 16ft Otter Trawl			Station #: 5		Weather: sunny, 65F, wind 5-10mph			
Notes:										

Cm

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Spotted hake															1						
Atlantic croaker																					
Species	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Atlantic croaker					4	2			1		1	1									
spot						1															

Hydrolab Readings

Depth	Temp.	D.O.	% Sat.	pH	Salinity	Cond
0.5	16.4	11.7	129	9.1	9.3	16,000
9.4M	15.5	9.9	104	8.7	9.6	16,500