

Calibration and Verification  
of Upper Potomac River Model  
Volume II

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Appendix A- Calibration Results: October 1984

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## Appendix A- Calibration Results: October 1984

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity

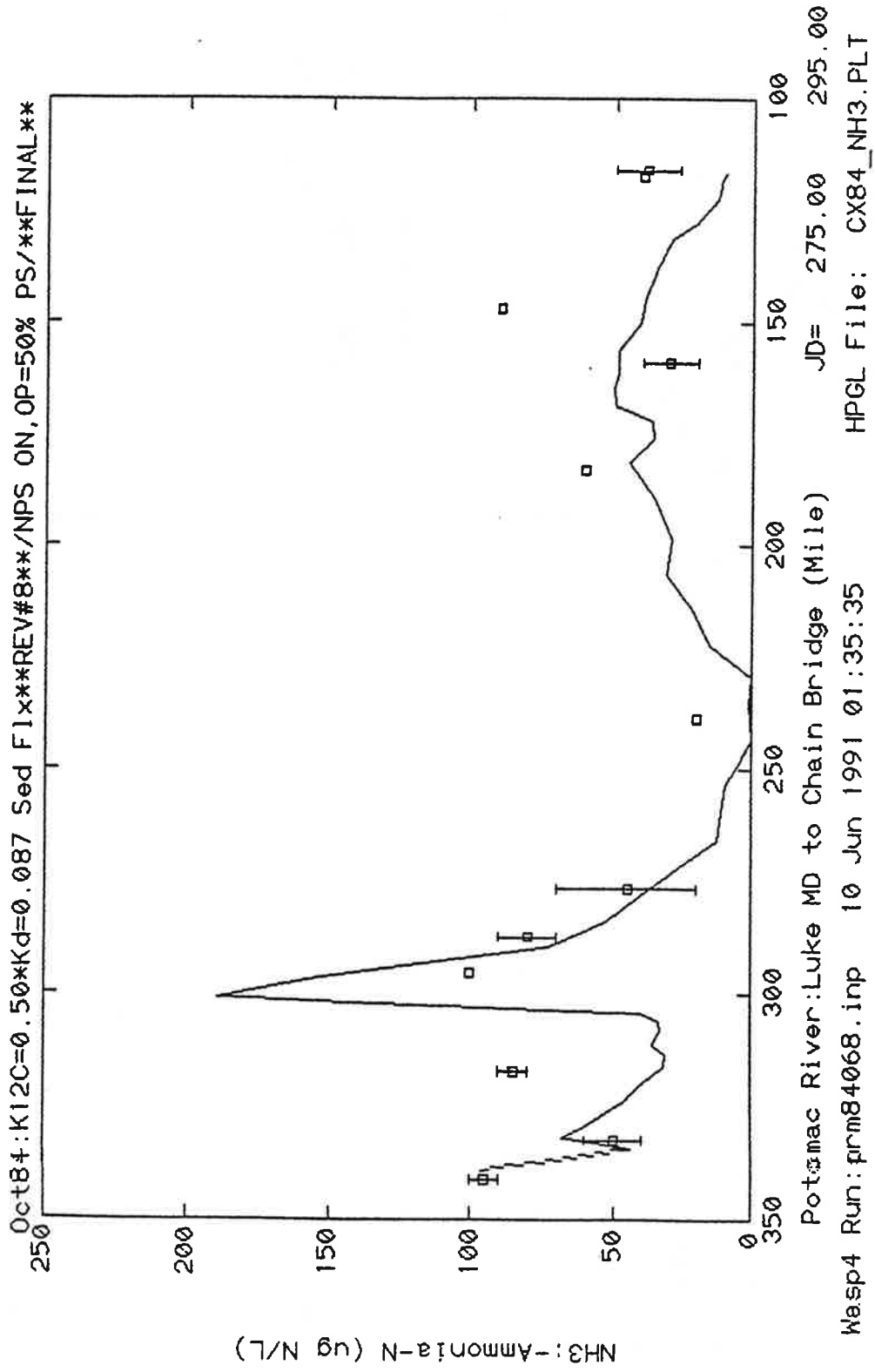


FIGURE A-1: October 1984 calibration for Ammonia

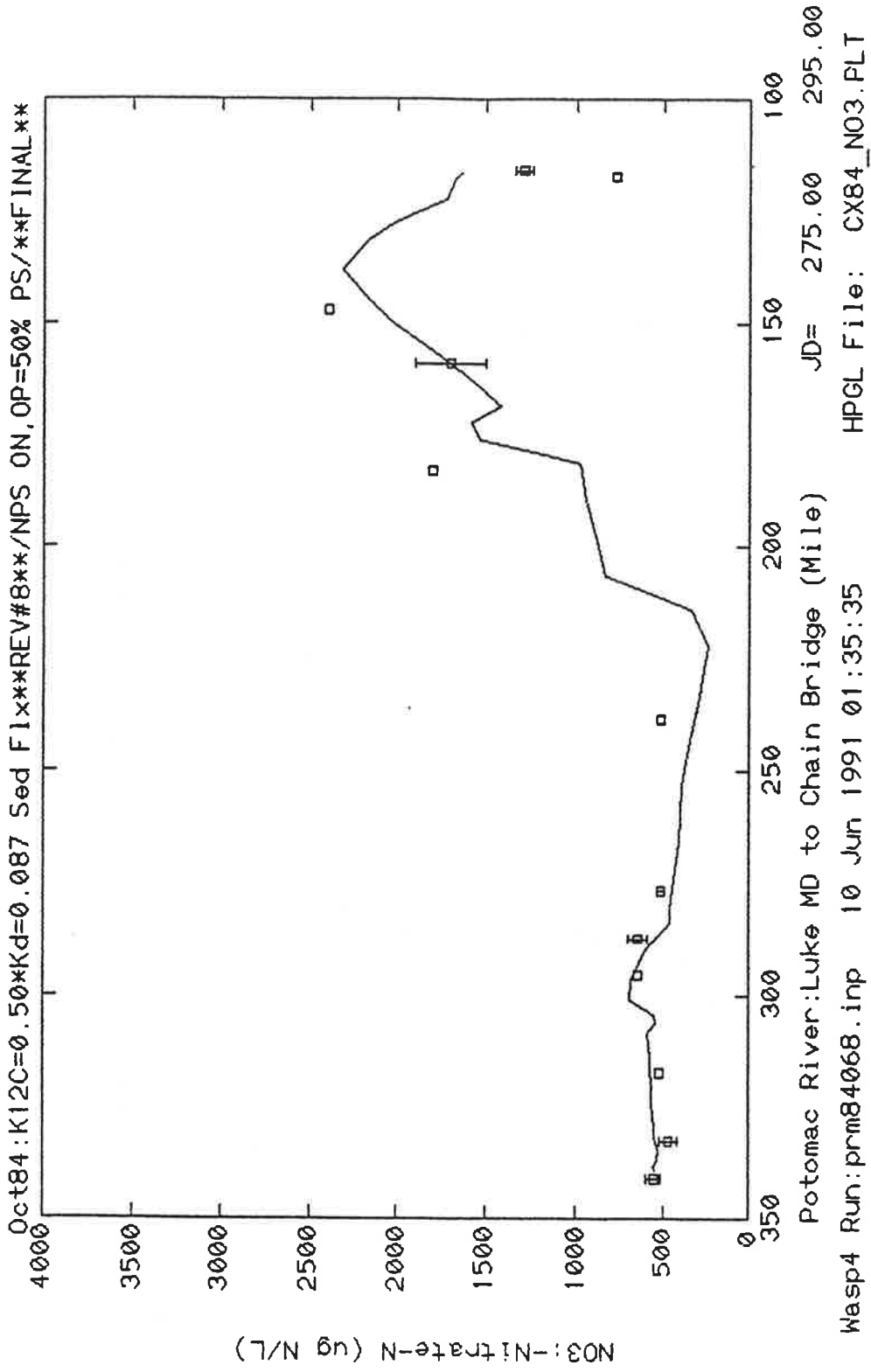


FIGURE A-2: October 1984 calibration for Nitrate

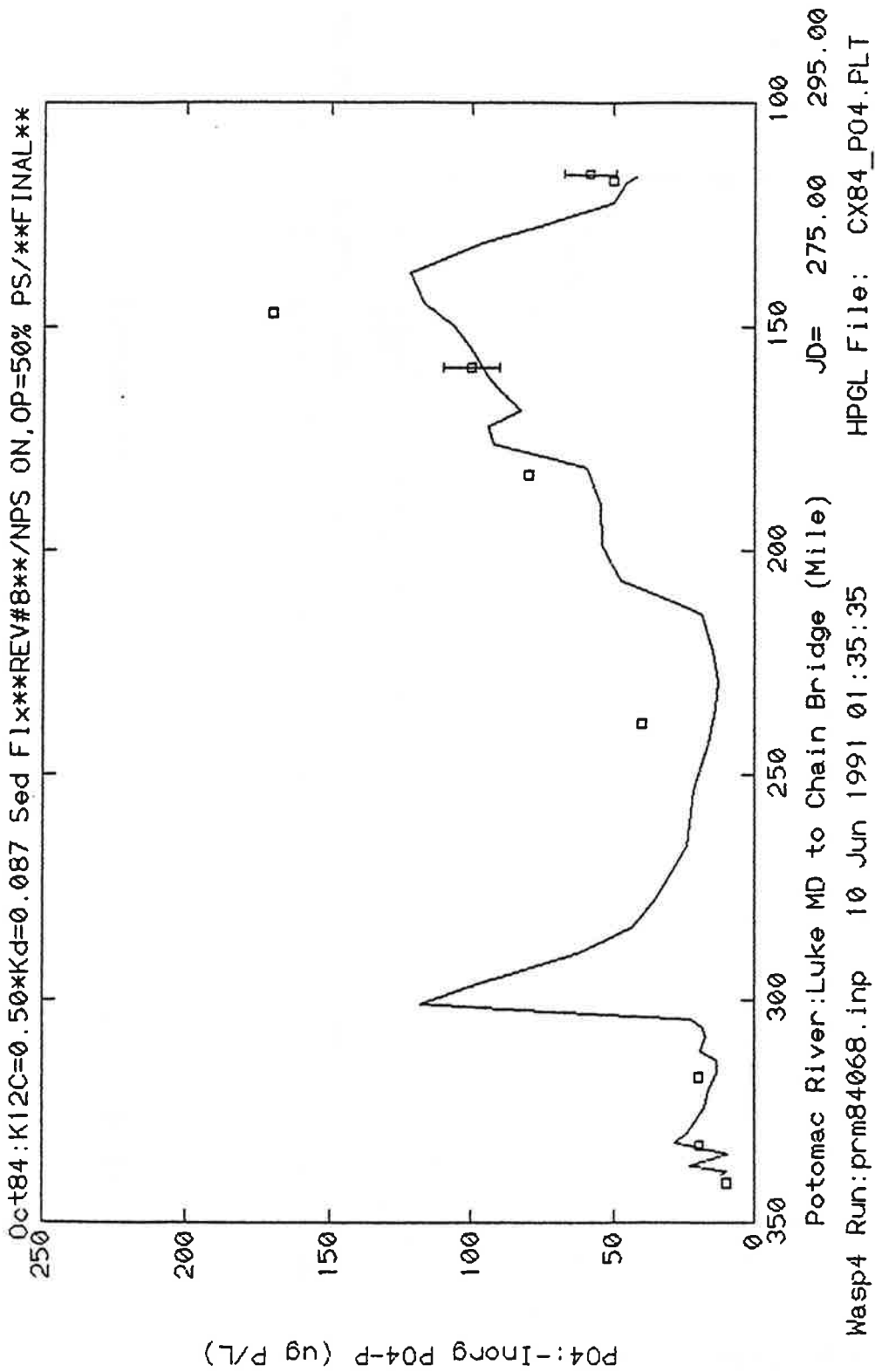


FIGURE A-3: October 1984 calibration for Phosphate

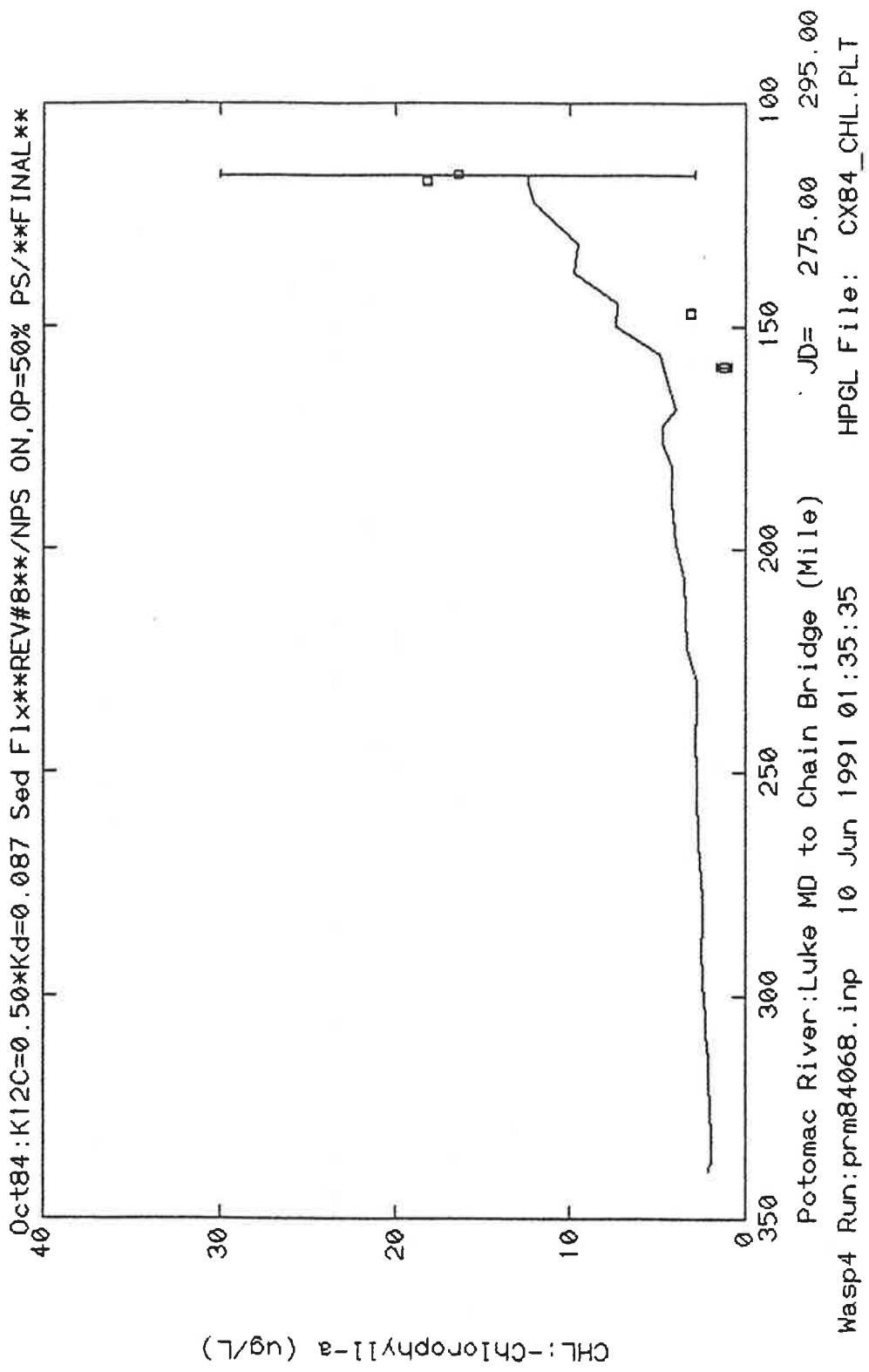


FIGURE A-4: October 1984 calibration for Chlorophyll



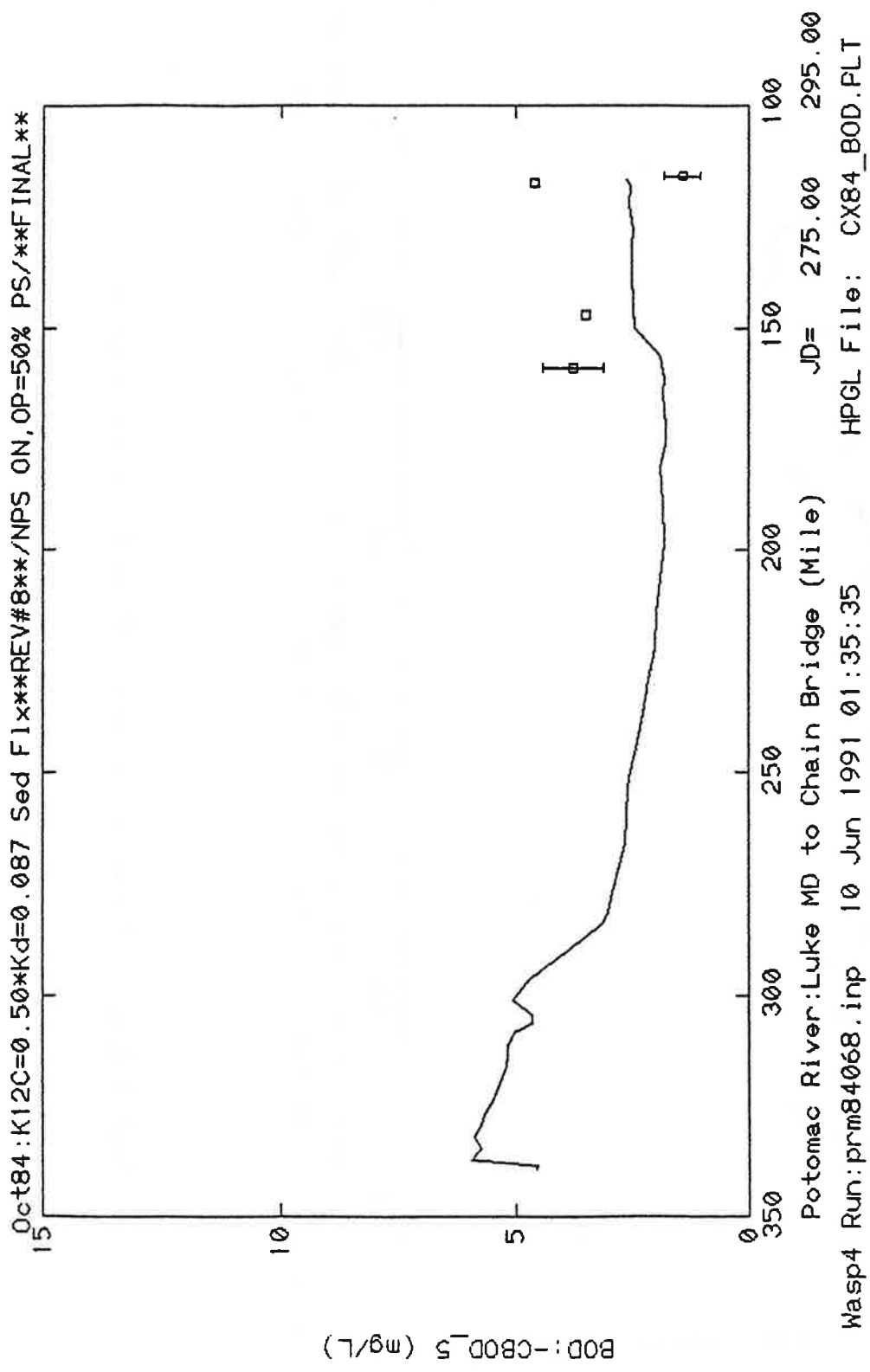


FIGURE A-5: October 1984 calibration for BOD

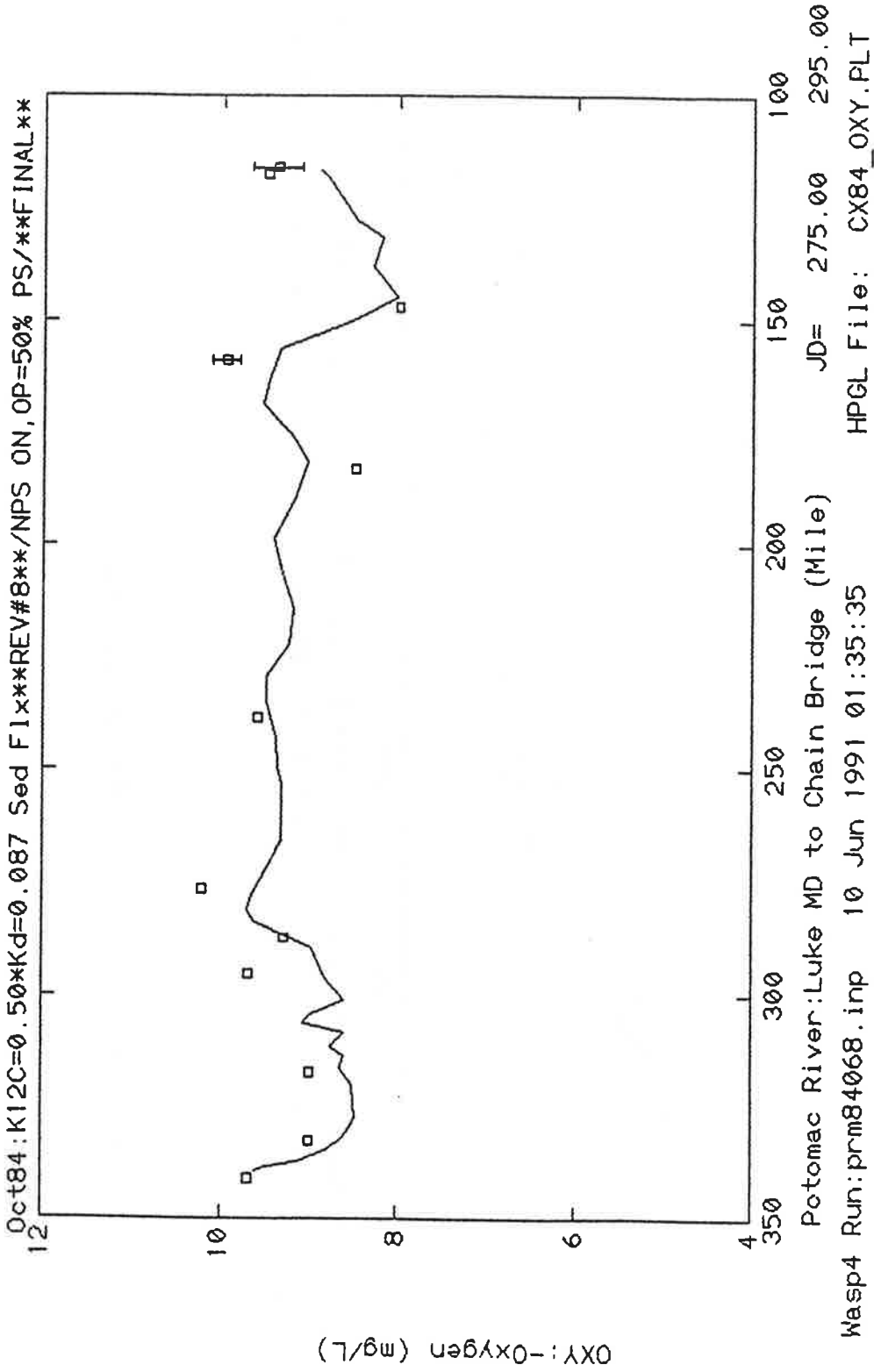
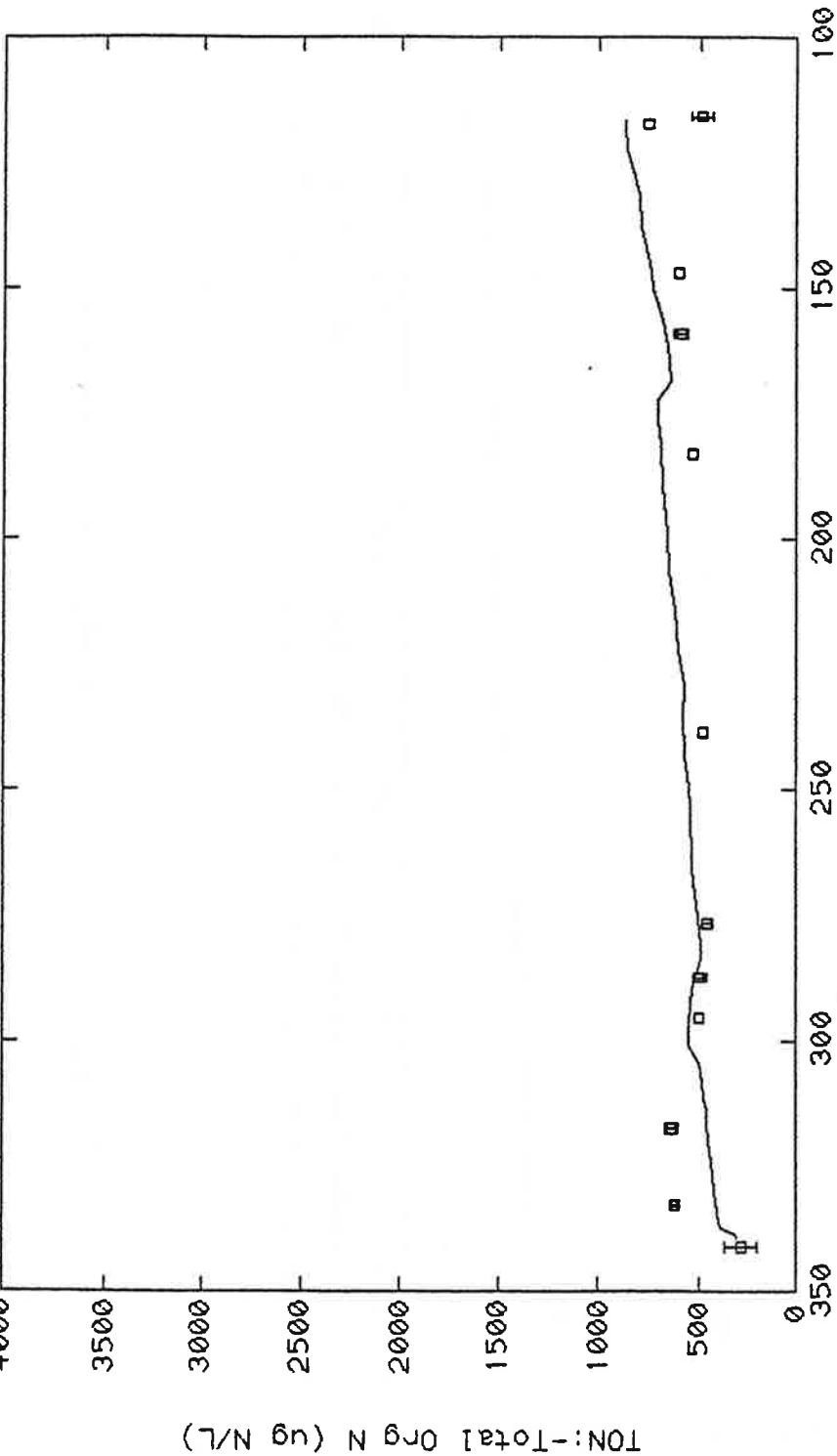


FIGURE A-6: October 1984 calibration for Diss. Oxygen

Oct84:K12C=0.50\*Kd=0.087 Sed F1x\*\*REV#8\*\*/NPS ON,OP=50% PS/\*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 275.00 295.00  
Wasp4 Run:prm84068.inp 10 Jun 1991 01:35:35 HPGL File: CX84\_TON.PLT

FIGURE A-7: October 1984 calibration for Total Organic Nitrogen

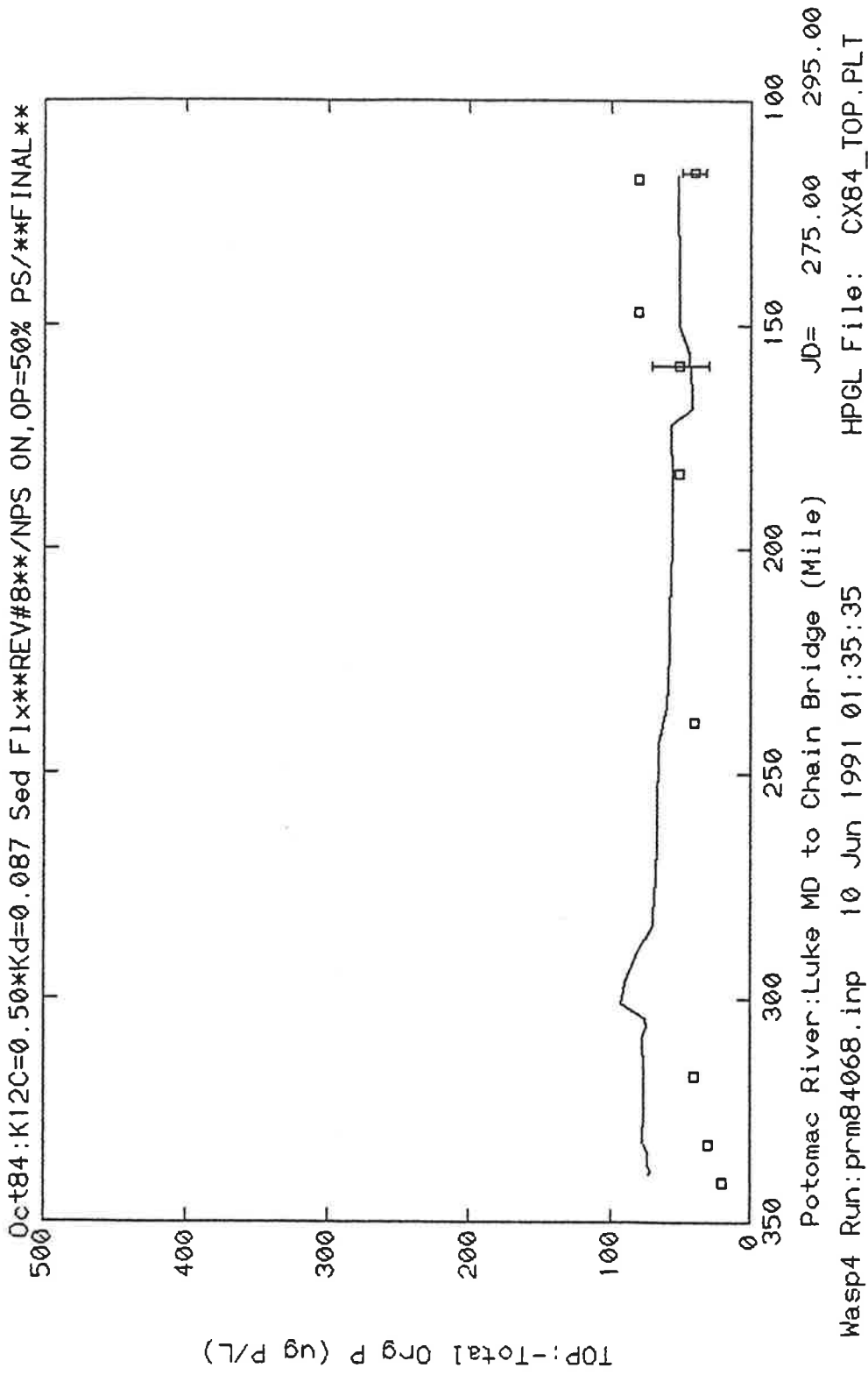
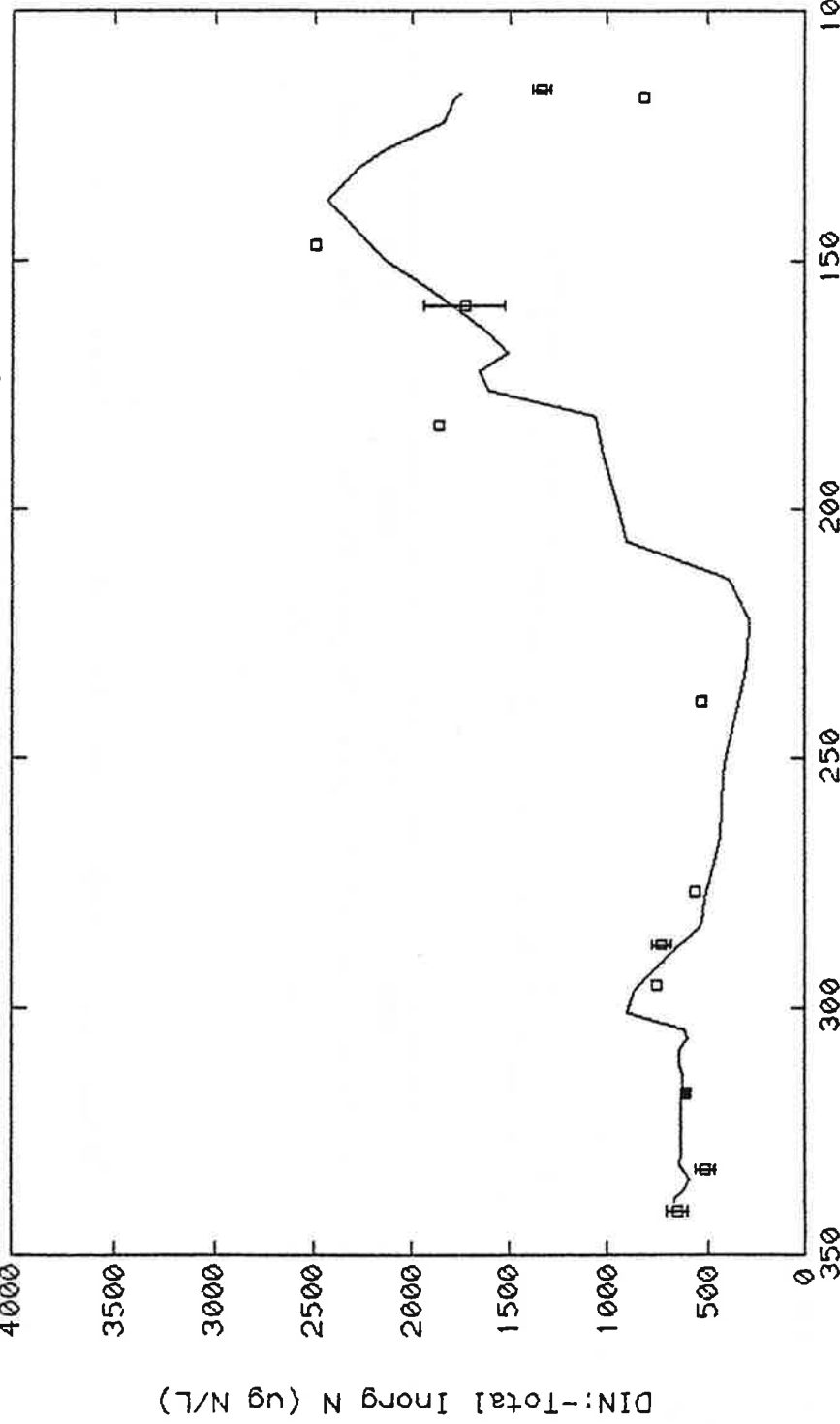


FIGURE A-8: October 1984 calibration for Total Organic Phosphorus

Oct84:K12C=0.50\*Kd=0.087 Sed F1x\*\*REV#8\*\*/NPS ON,OP=50% PS/\*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 275.00 295.00  
Wasp4 Run:prn84068.inp 10 Jun 1991 01:35:35 HPGL File: CX84\_DIN.FLT

FIGURE A-9: October 1984 calibration for Diss. Inorganic Nitrogen

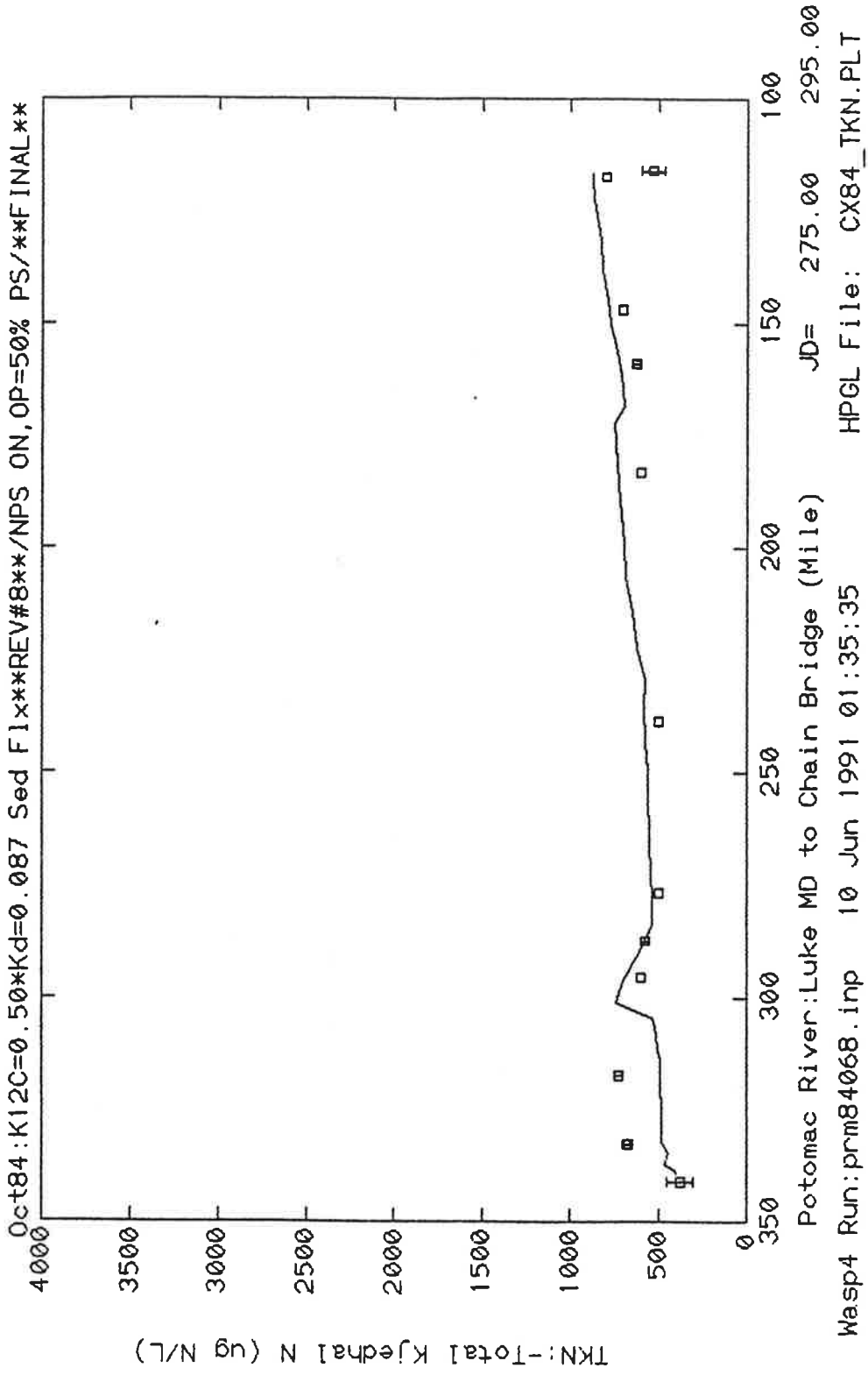


FIGURE A-10: October 1984 calibration for Total Kjeldahl Nitrogen

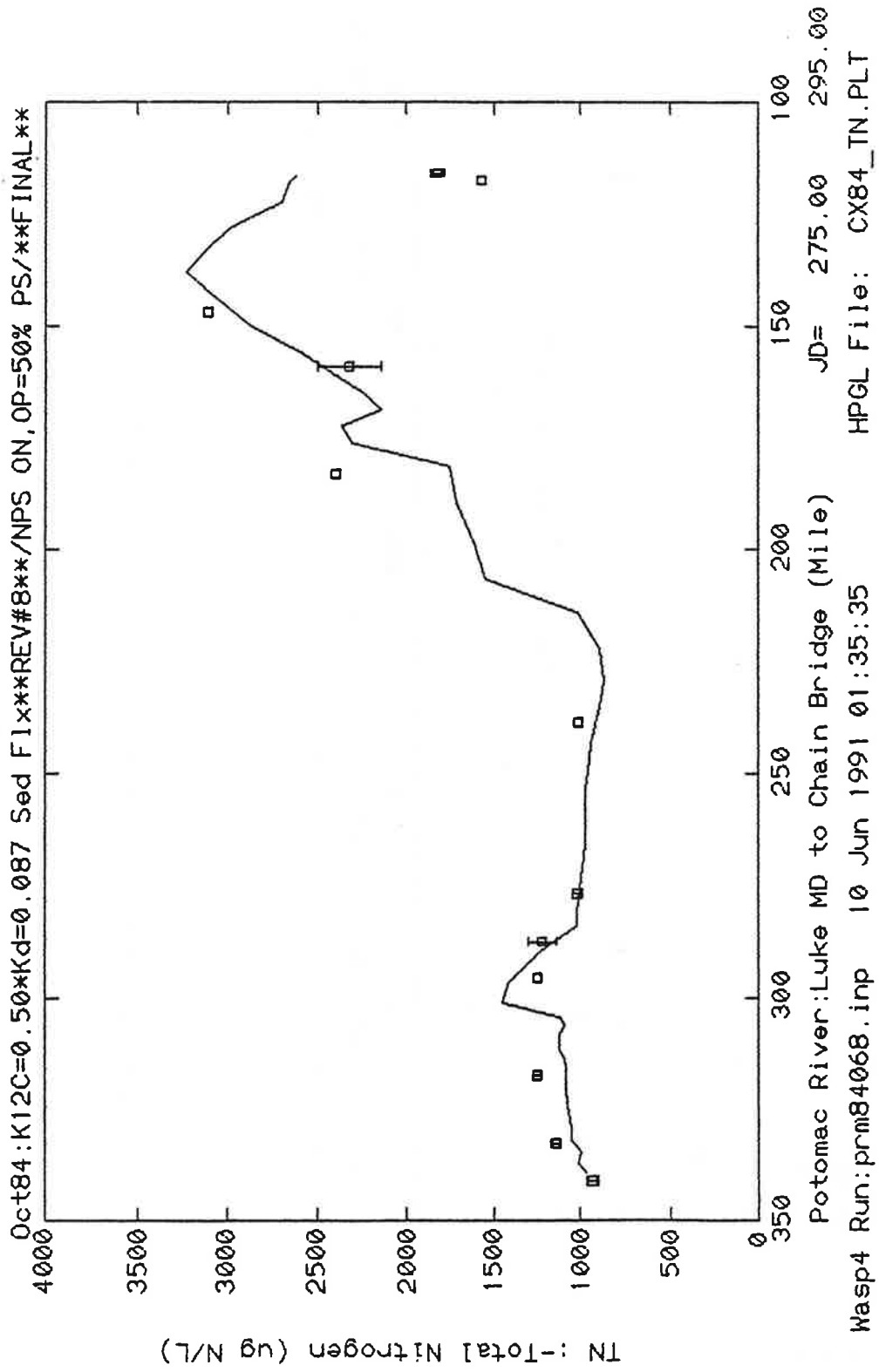


FIGURE A-11: October 1984 calibration for Total Nitrogen

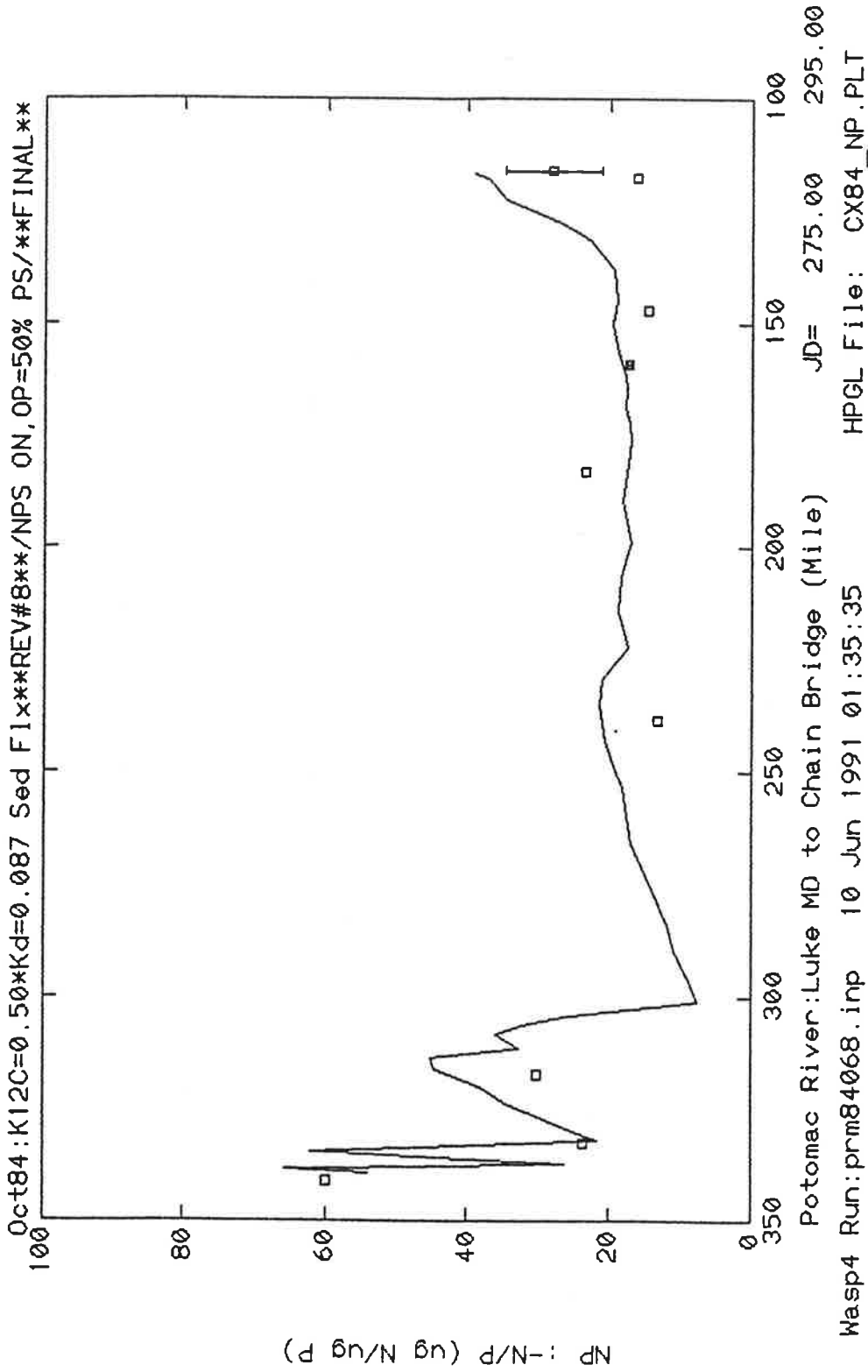


FIGURE A-12: October 1984 calibration for N/P Ratio



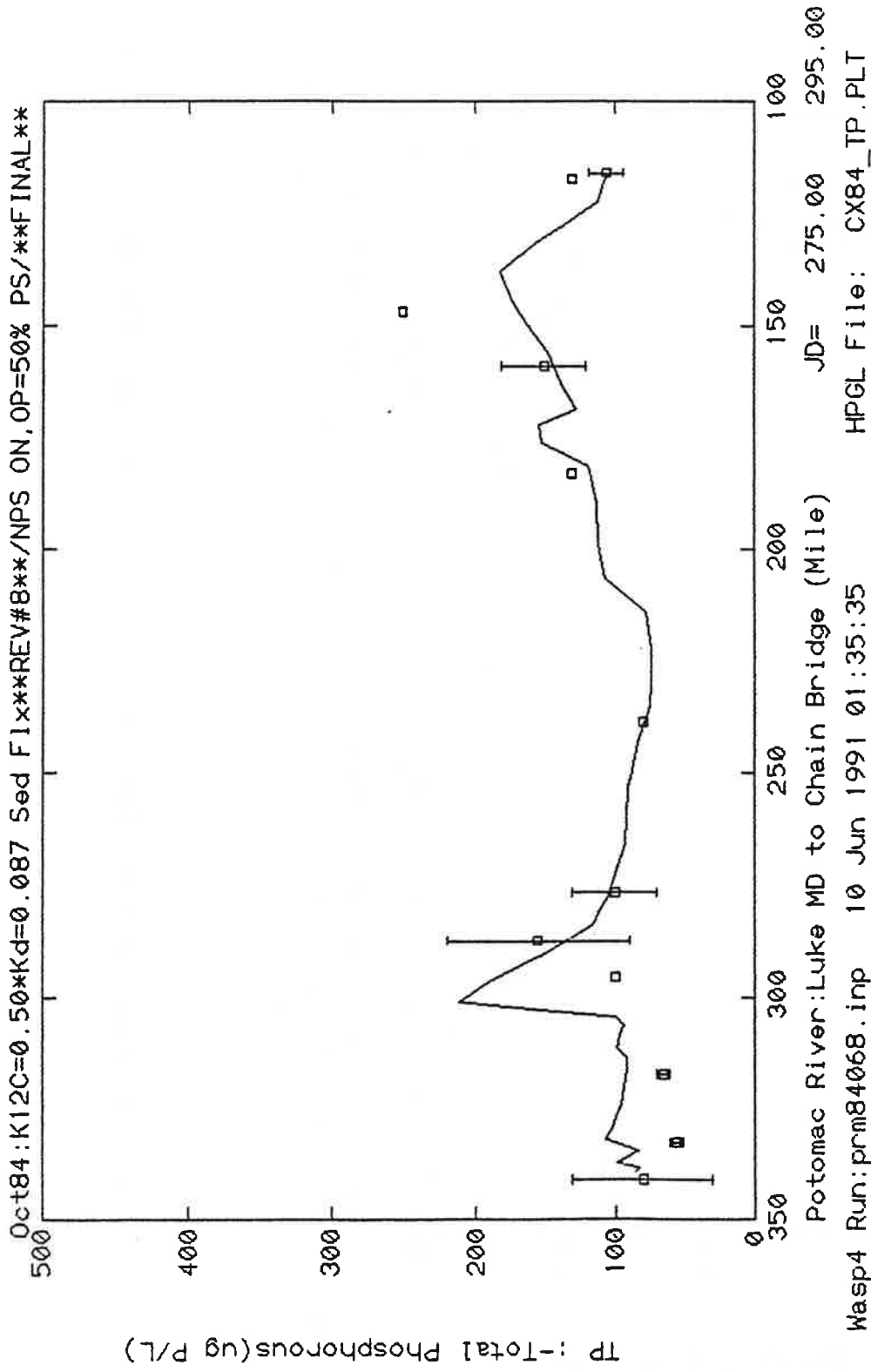


FIGURE A-13: October 1984 calibration for Total Phosphorus

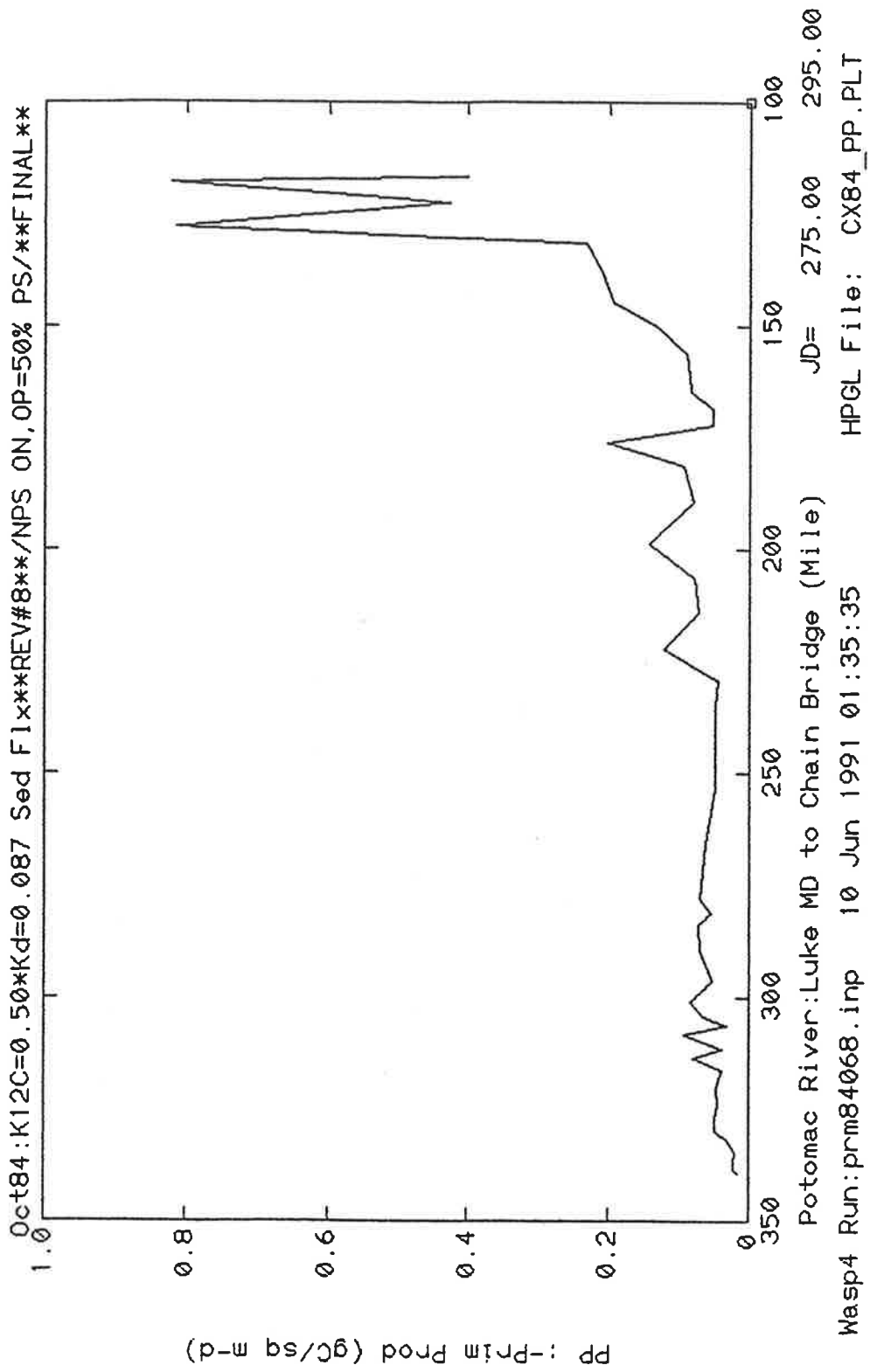


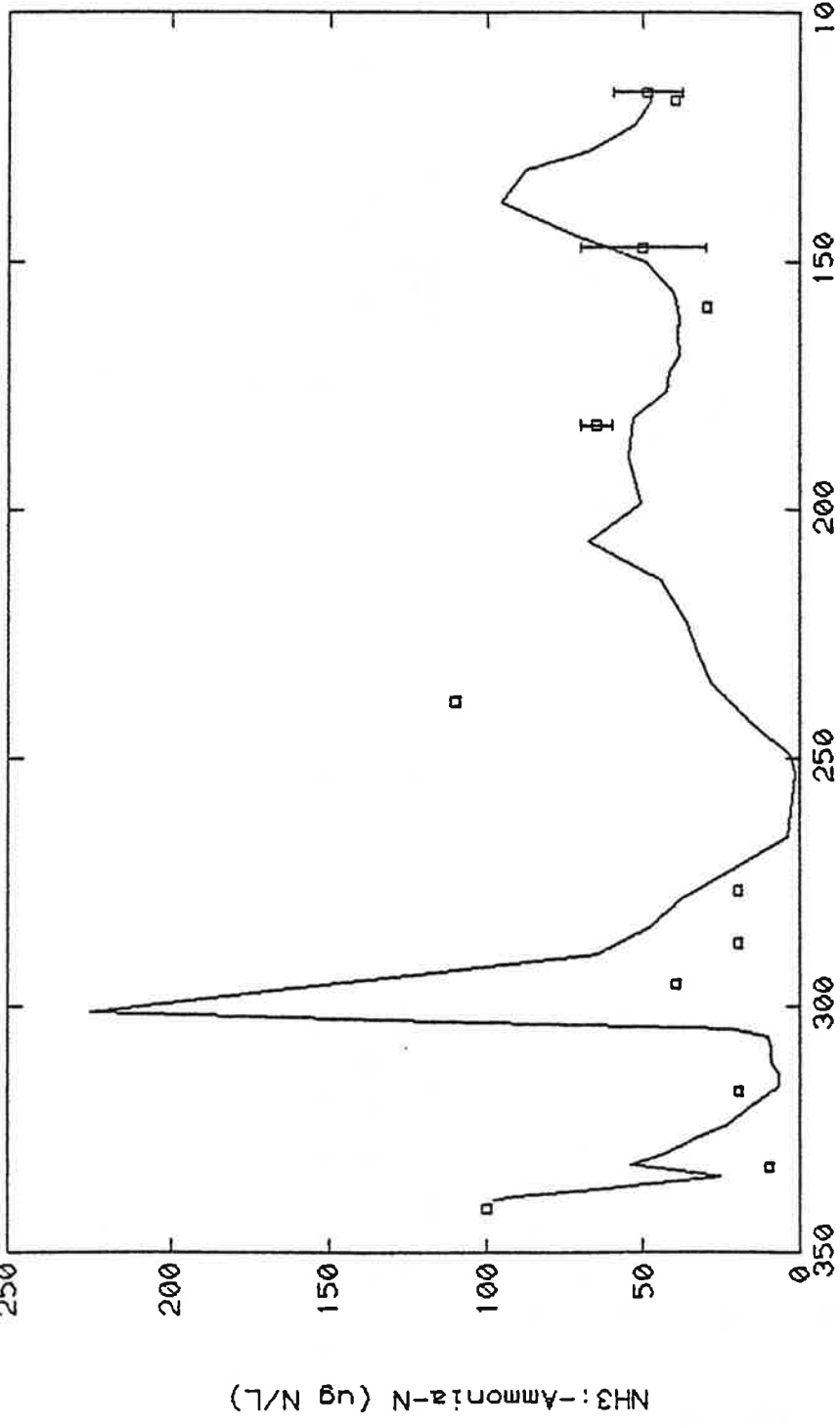
FIGURE A-14: October 1984 calibration for Primary Productivity

Appendix B- Calibration Results: September 1986

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity



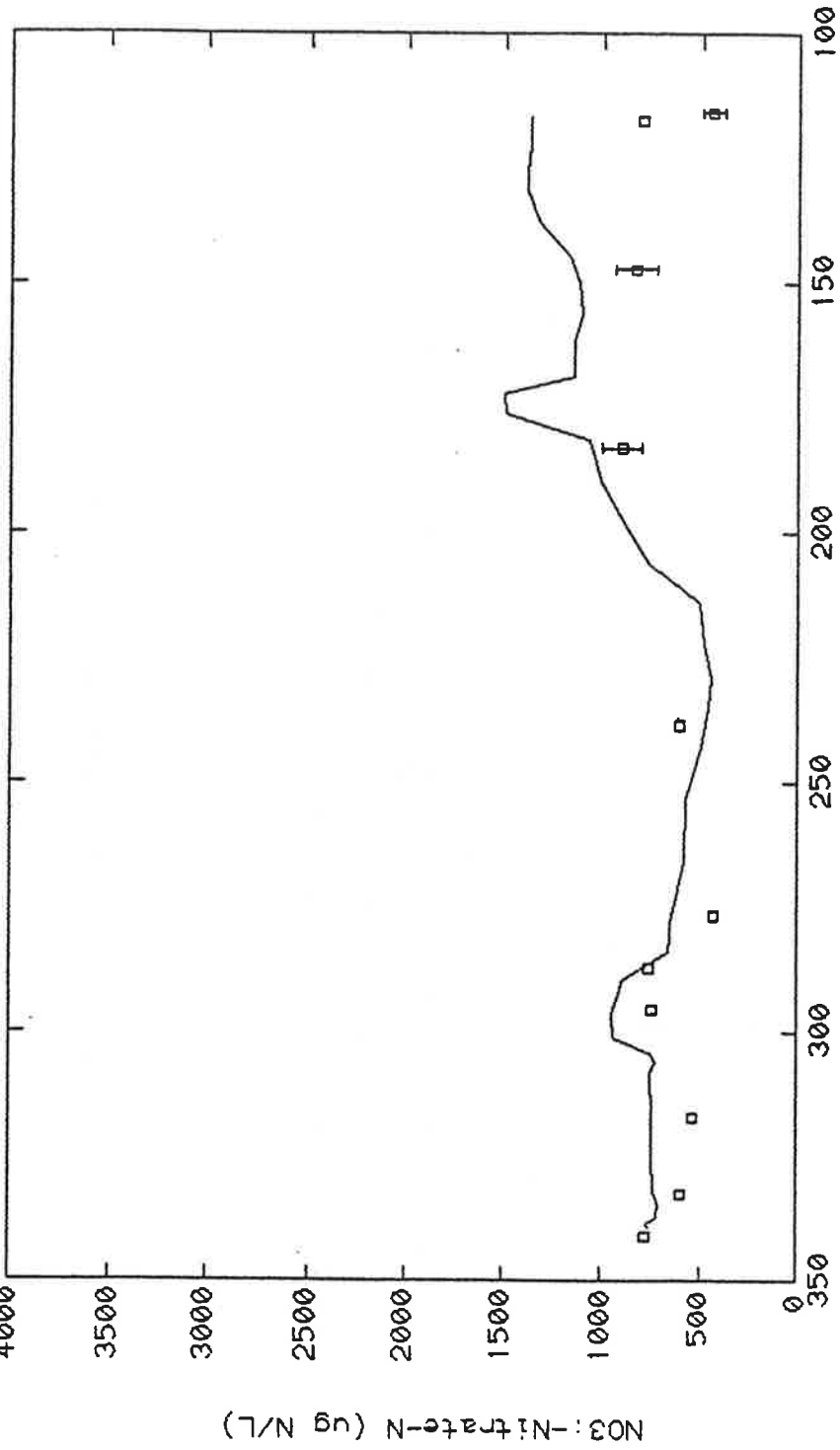
Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:prm86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_NH3.PLT

FIGURE B-1: September 1986 calibration for Ammonia

Sep86:K12C=0.50\*Kd=0.087 Sed Flx\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:prm86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_N03.PLT

FIGURE B-2: September 1986 calibration for Nitrate

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*

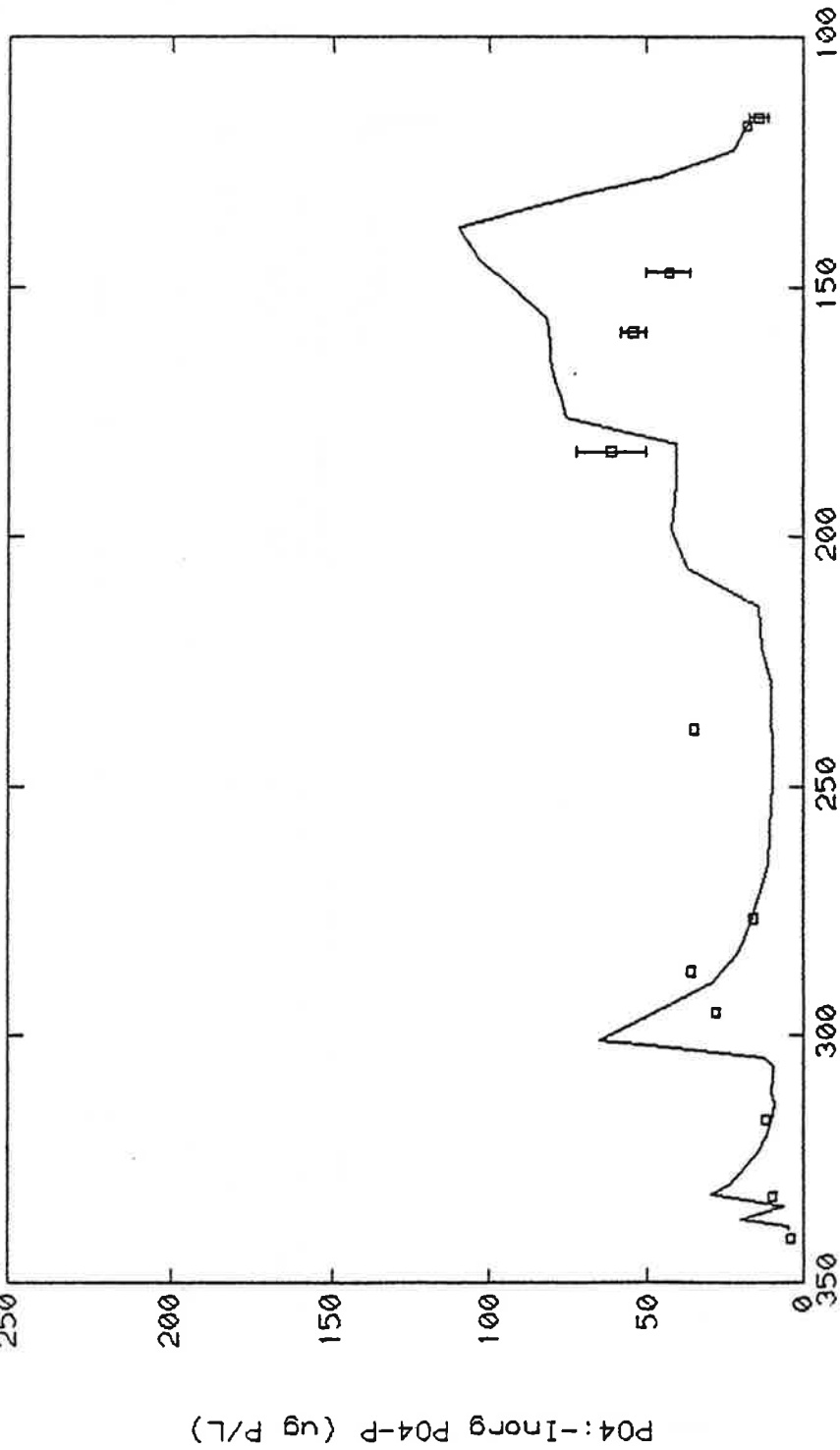
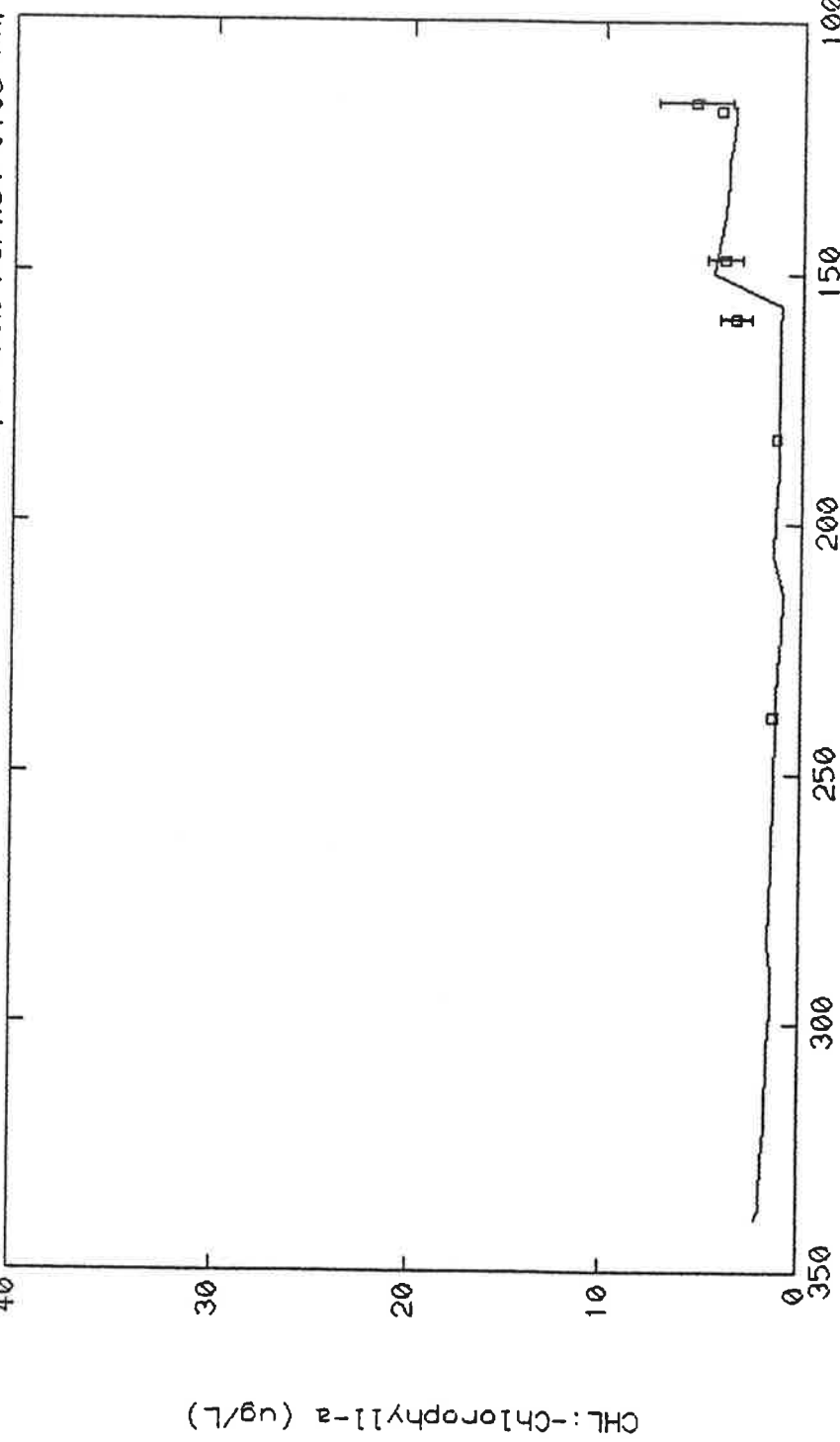


FIGURE B-3: September 1986 calibration for Phosphate

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:prn86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_CHL.PLT

FIGURE B-4: September 1986 calibration for Chlorophyll



Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*

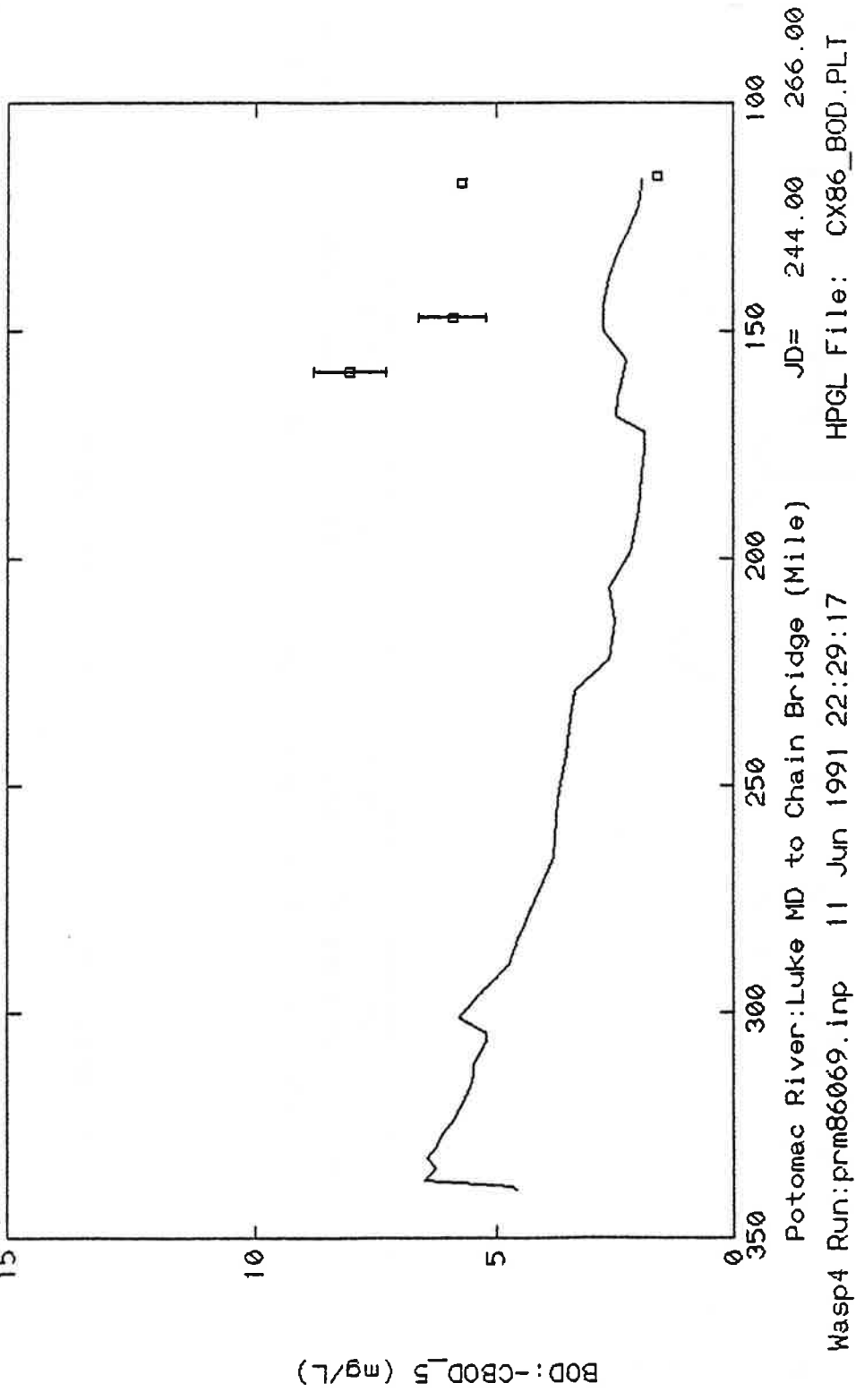
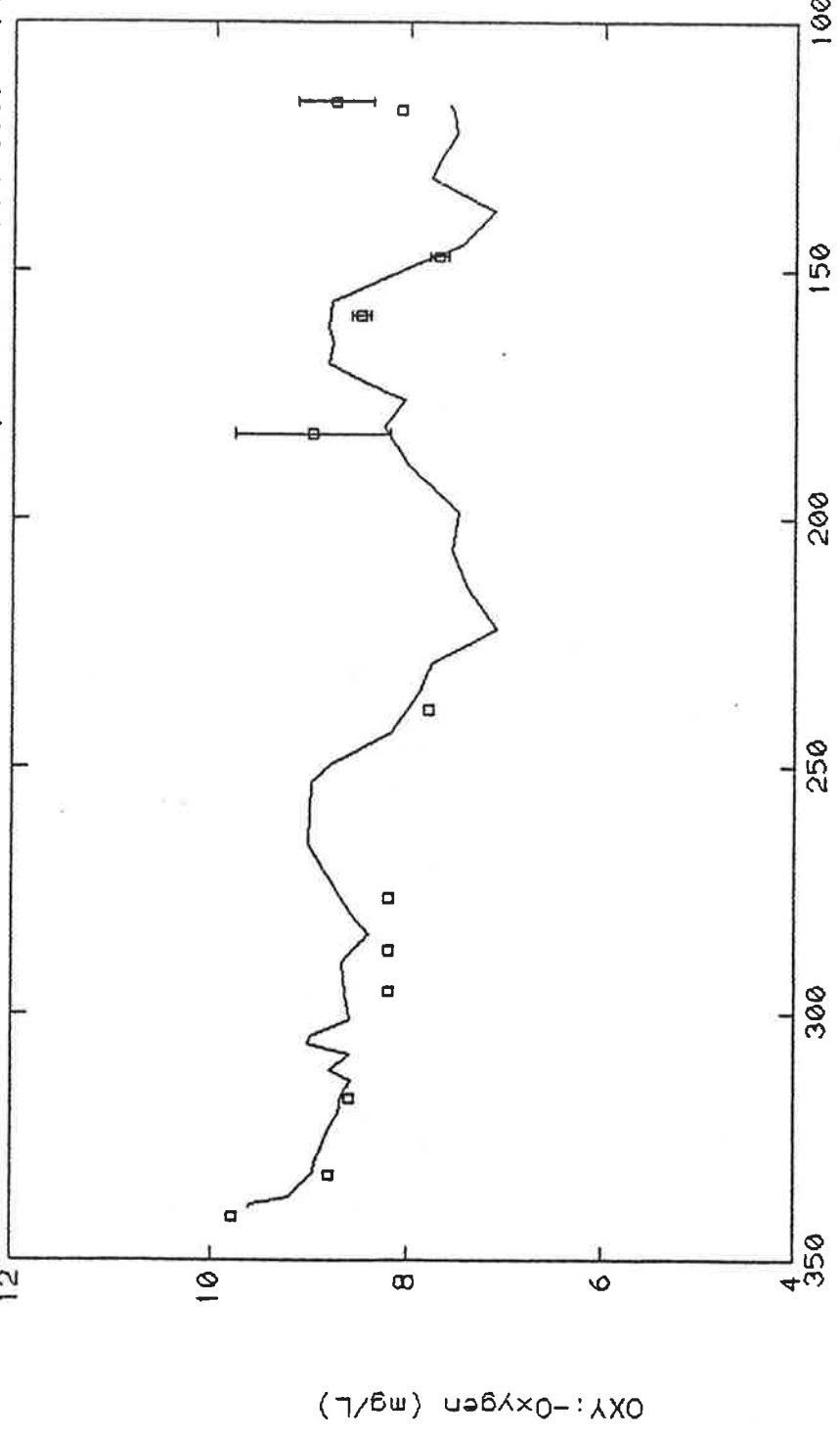


FIGURE B-5: September 1986 calibration for BOD

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run:prn86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_OXY.PLT

FIGURE B-6: September 1986 calibration for Diss. Oxygen

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*

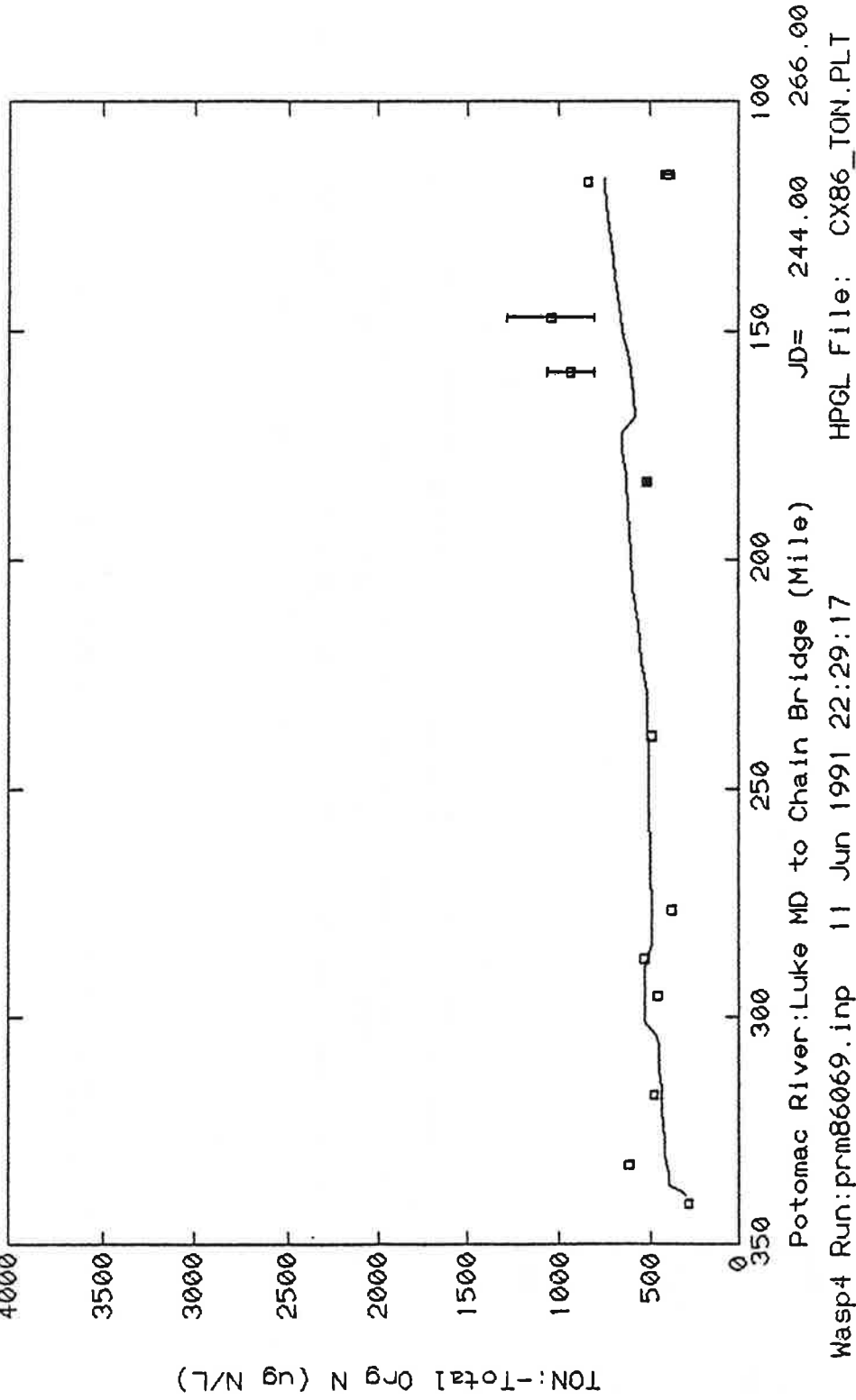
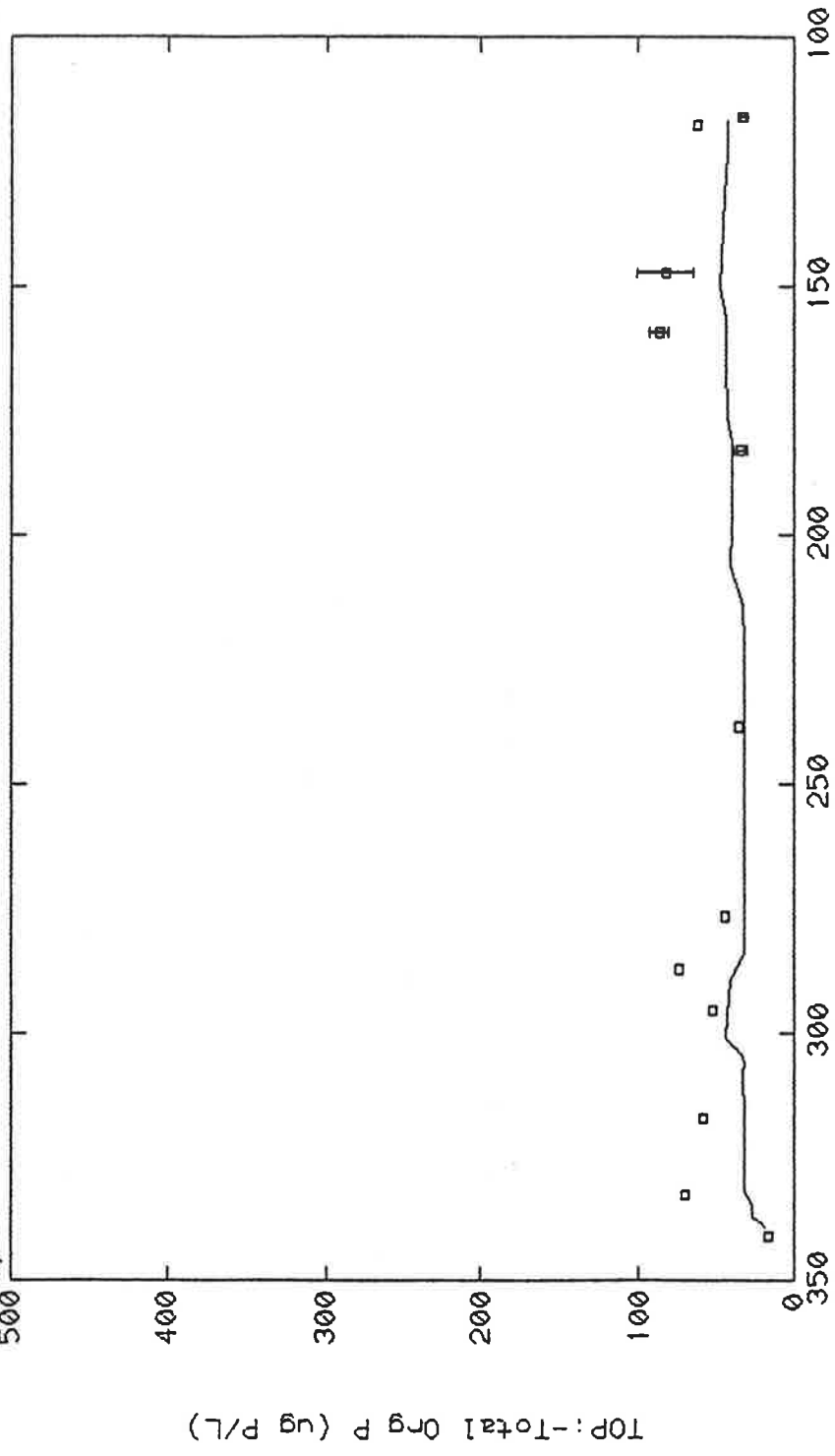


FIGURE B-7: September 1986 calibration for Total Organic Nitrogen

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run: prm86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_TOP.PLT

FIGURE B-8: September 1986 calibration for Total Organic Phosphorus

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*

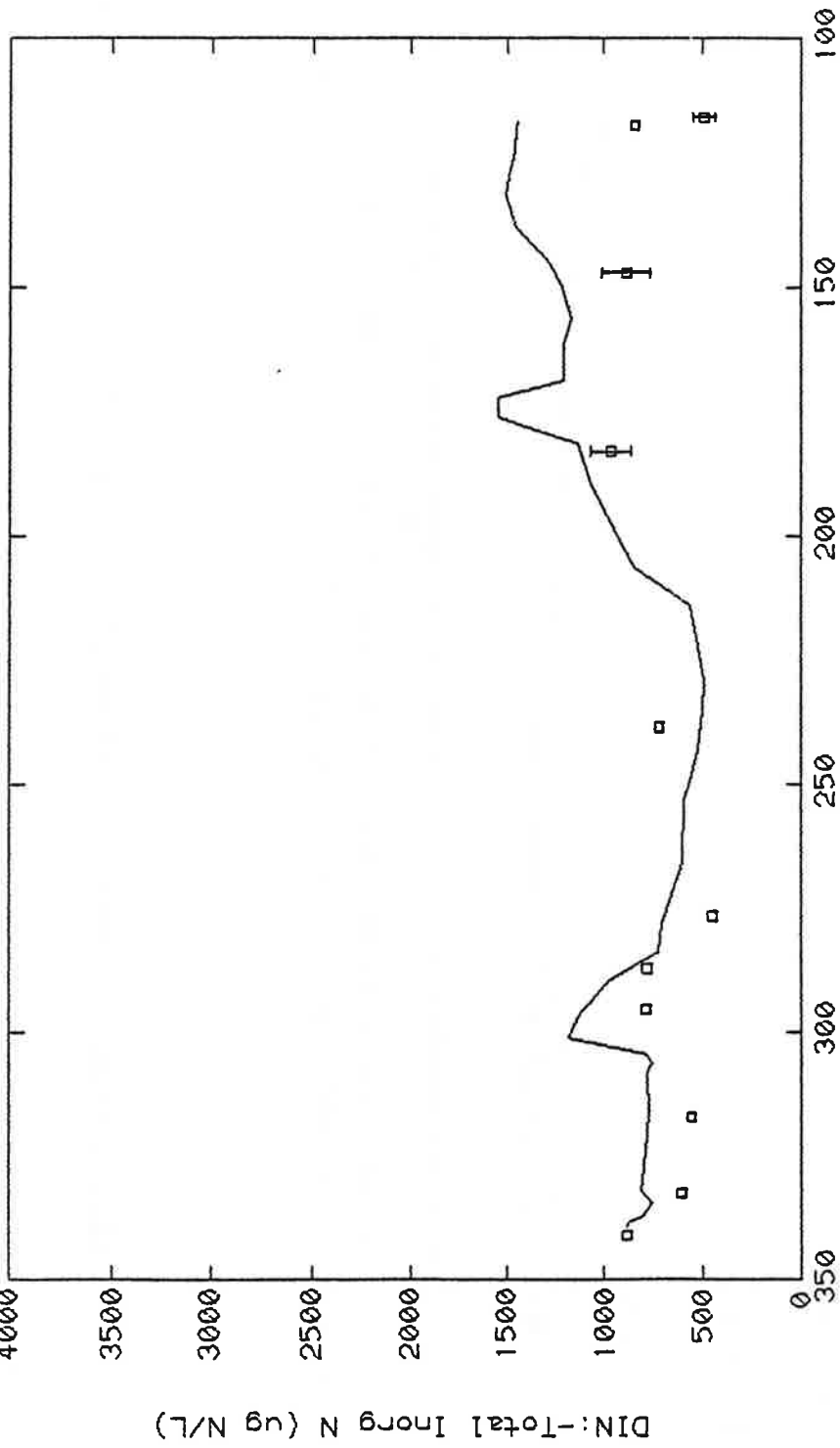
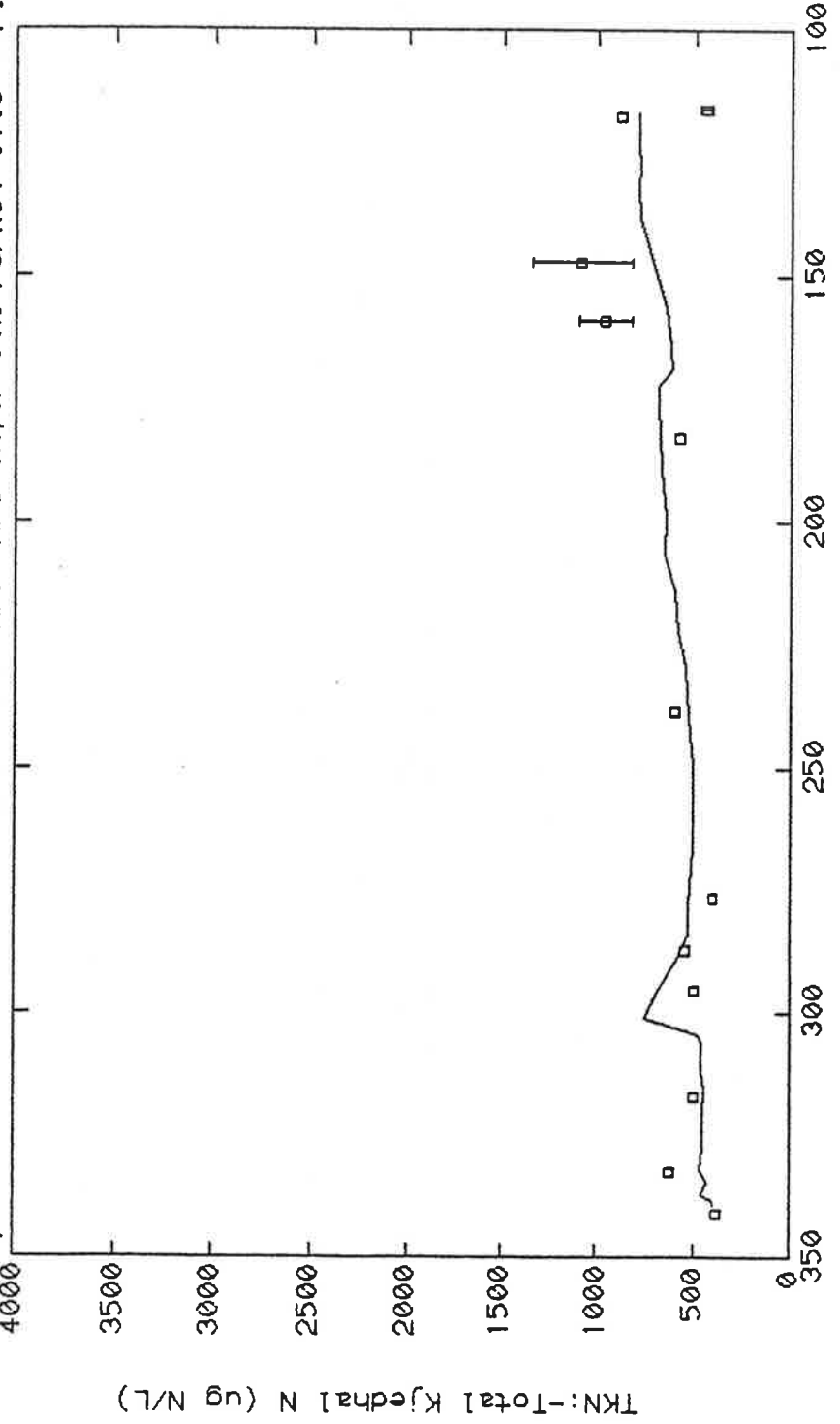


FIGURE B-9: September 1986 calibration for Diss. Inorganic Nitrogen

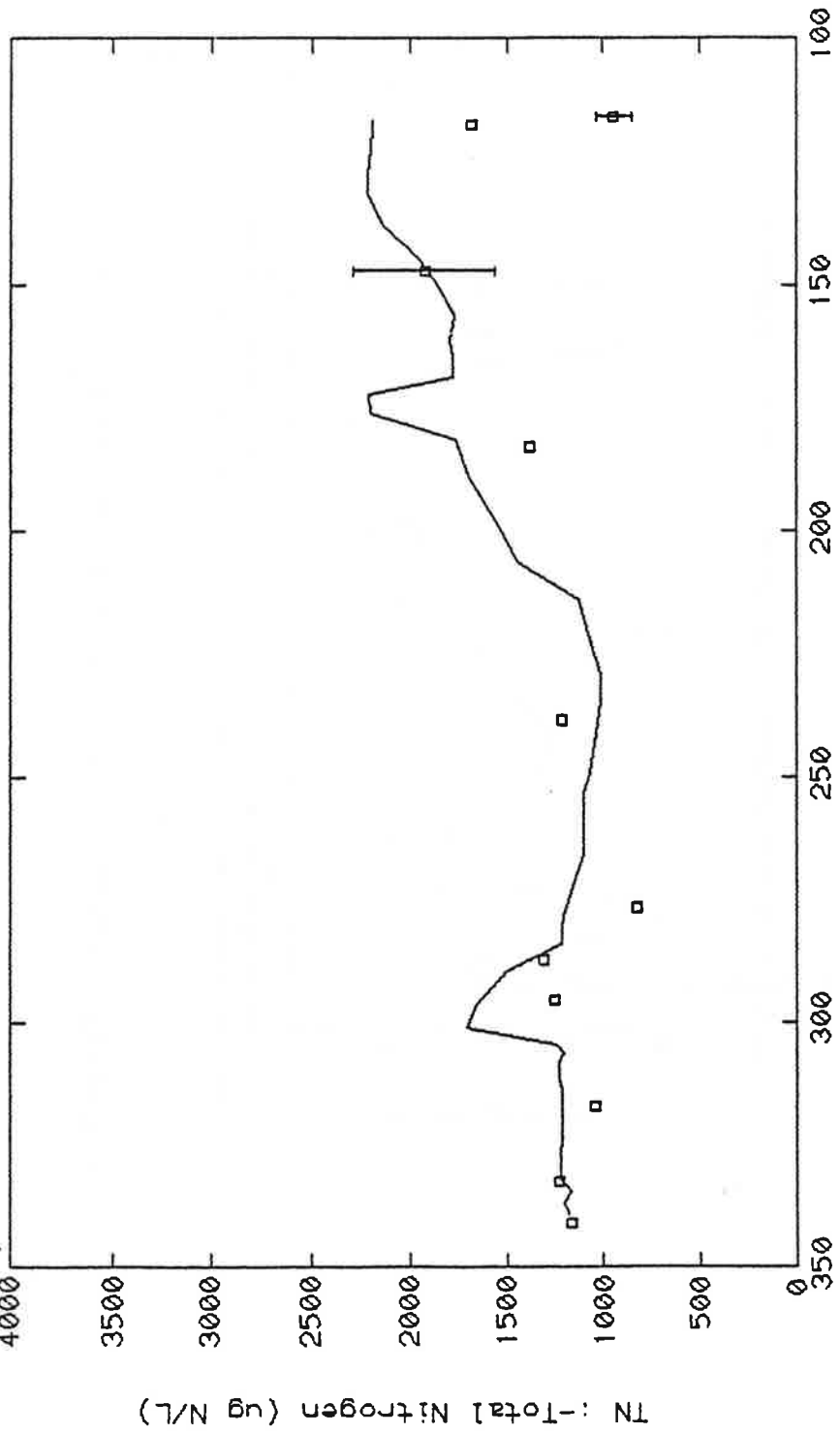
Sep86:K12C=0.50\*Kd=0.087 Sed Flx\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run:prn86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_TKN.PLT

FIGURE B-10: September 1986 calibration for Total Kjeldahl Nitrogen

Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:prim86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_TN.PLT

FIGURE B-11: September 1986 calibration for Total Nitrogen

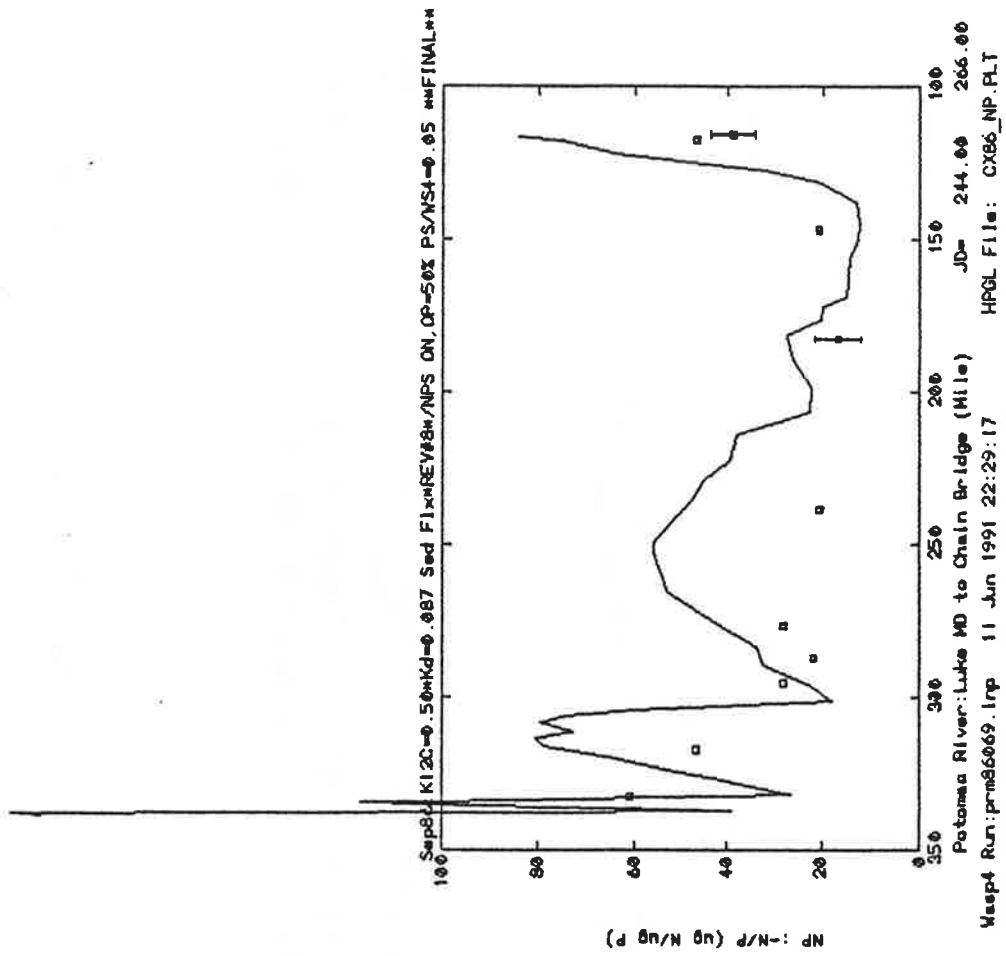
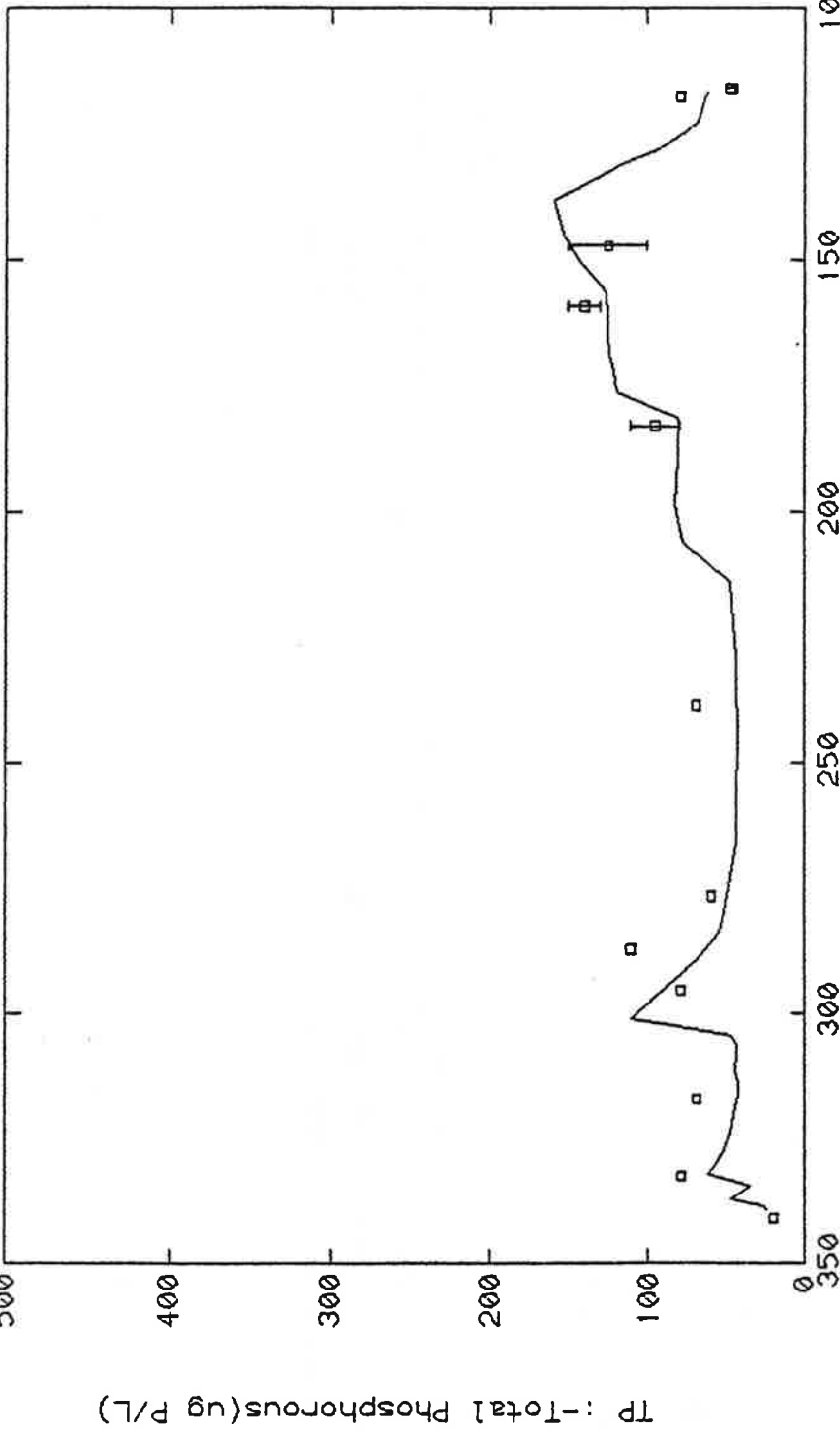


FIGURE B-12: September 1986 calibration for N/P Ratio



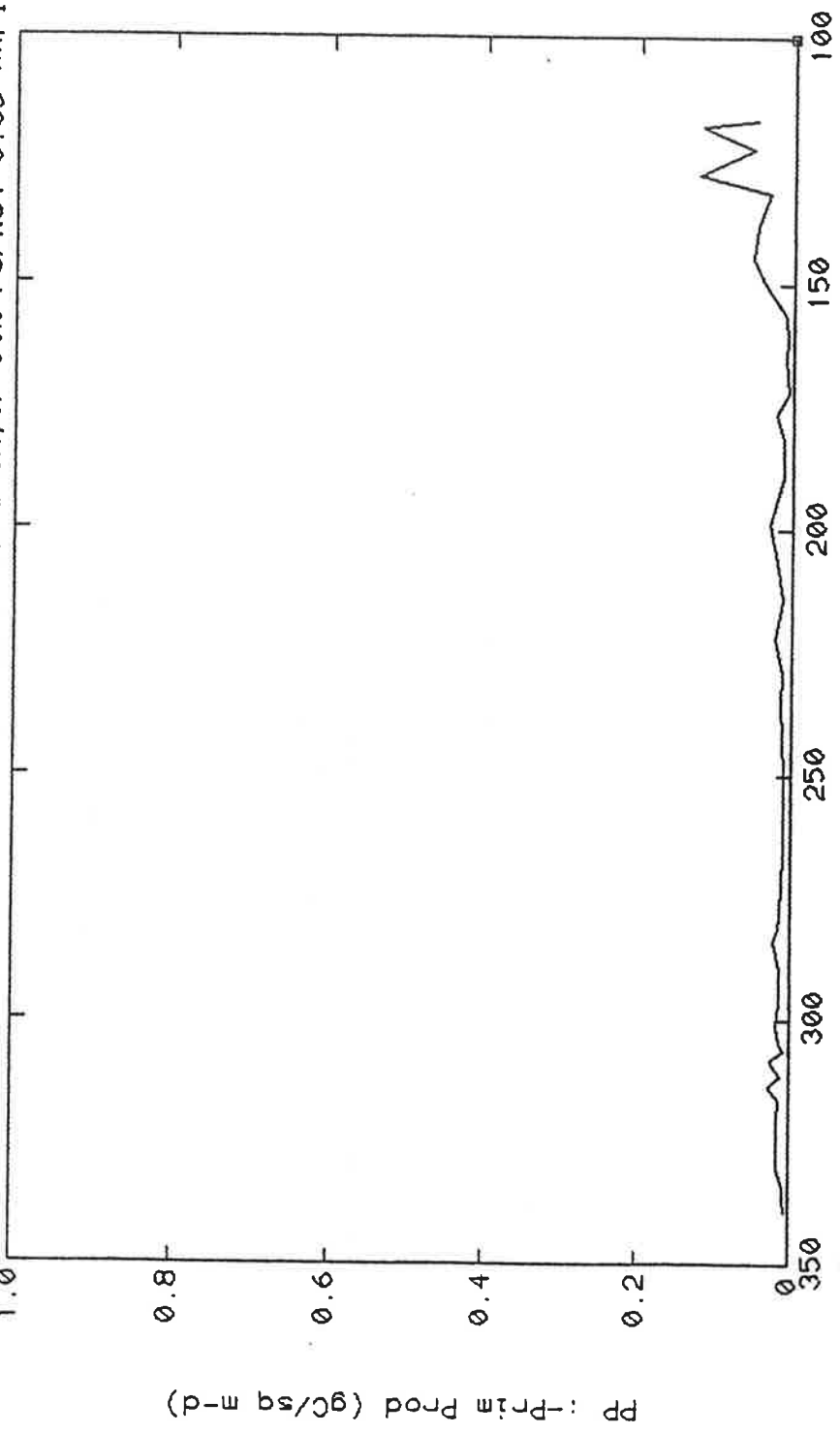
Sep86:K12C=0.50\*Kd=0.087 Sed F1x\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:prn86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_TP.PLT

FIGURE B-13: September 1986 calibration for Total Phosphorus

Sep86:K12C=0.50\*Kd=0.087 Sed Flx\*REV#8\*/NPS ON,OP=50% PS/WS4=0.05 \*\*FINAL\*\*



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run: prm86069.inp 11 Jun 1991 22:29:17 HPGL File: CX86\_PP.PLT

FIGURE B-14: September 1986 calibration for Primary Productivity

Appendix C- Verification Results: September 1985

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity



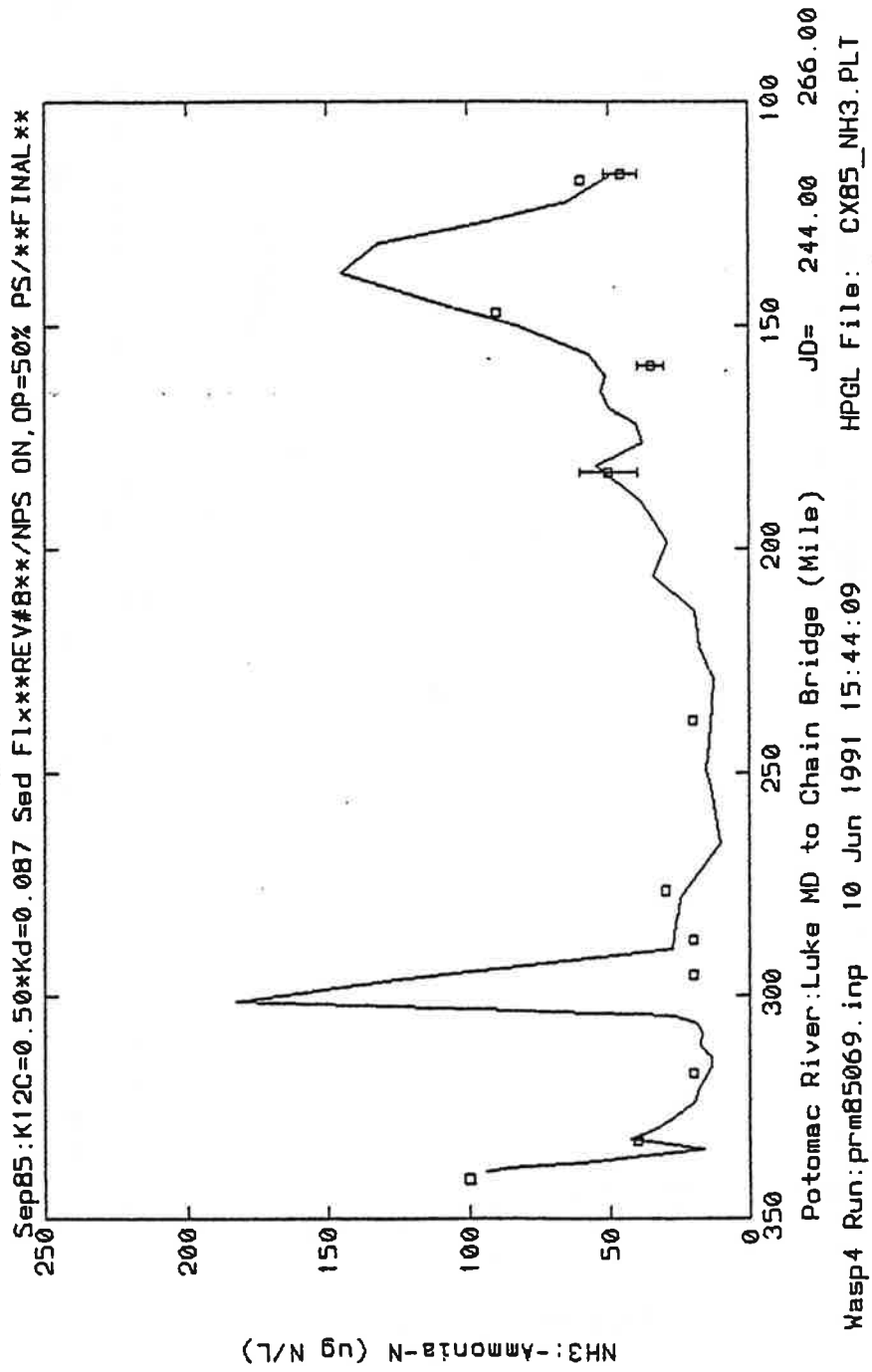


FIGURE C-1: September 1985 verification for Ammonia

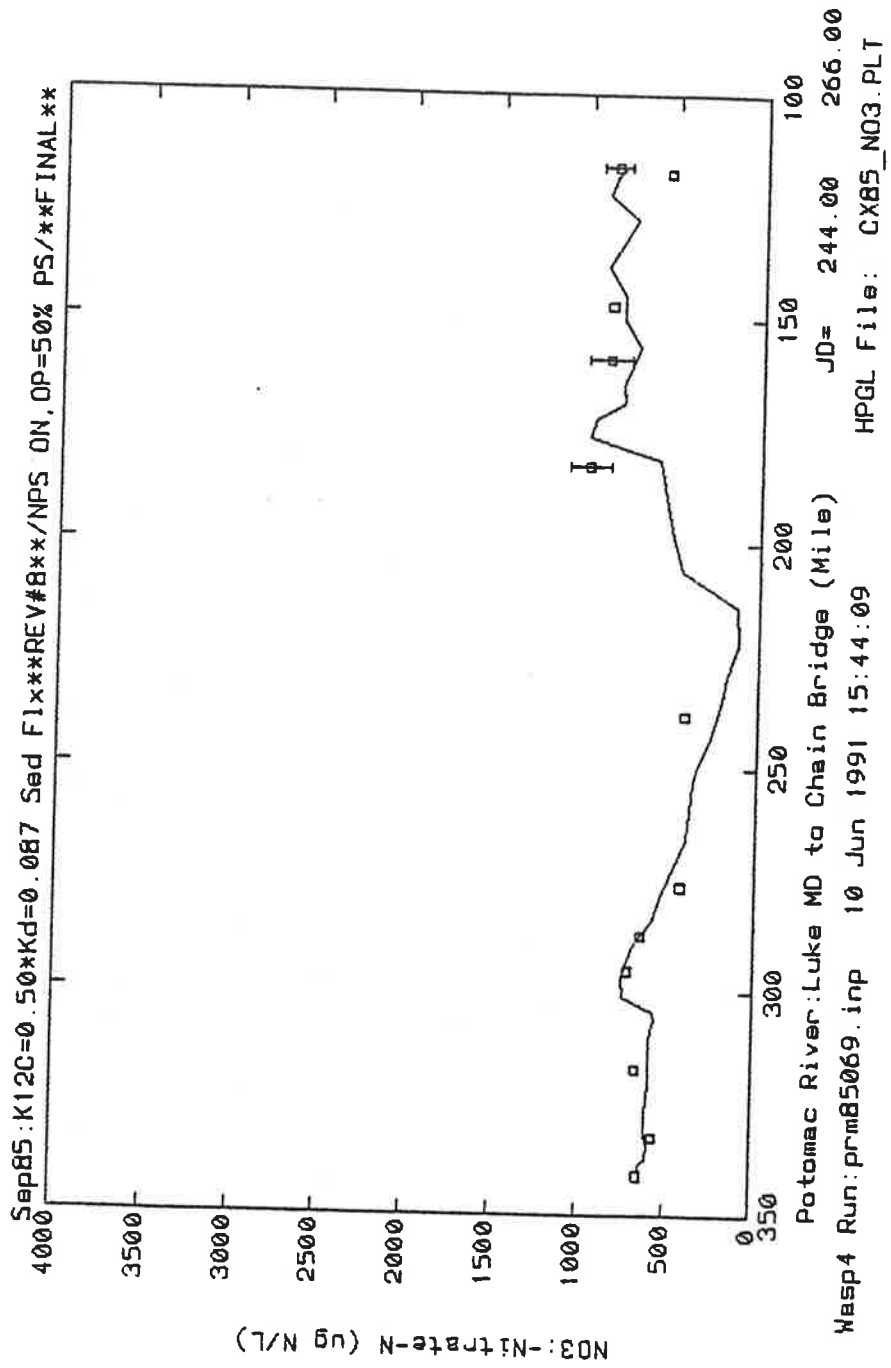


FIGURE C-2: September 1985 verification for Nitrate

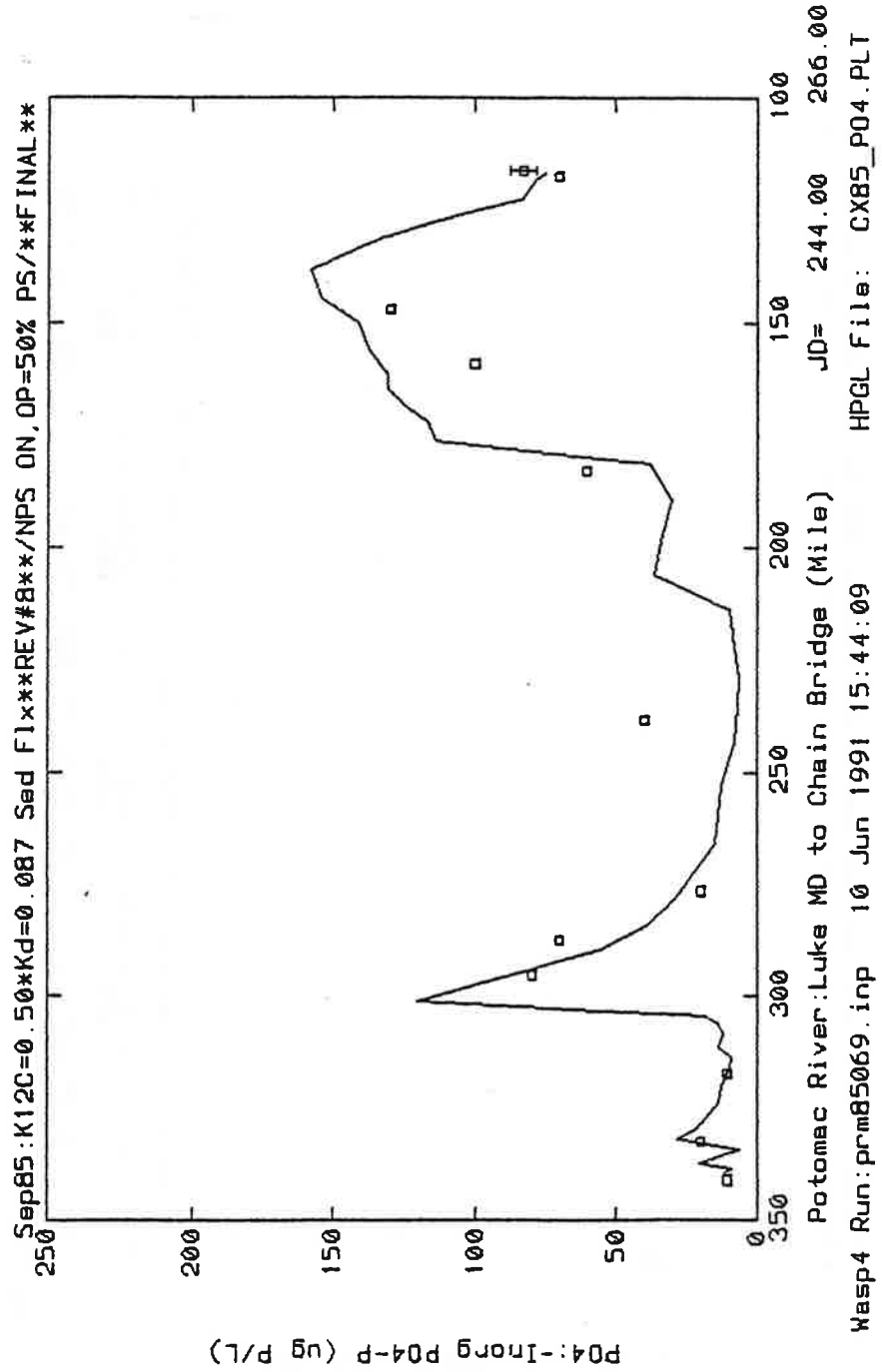


FIGURE C-3: September 1985 verification for Phosphate

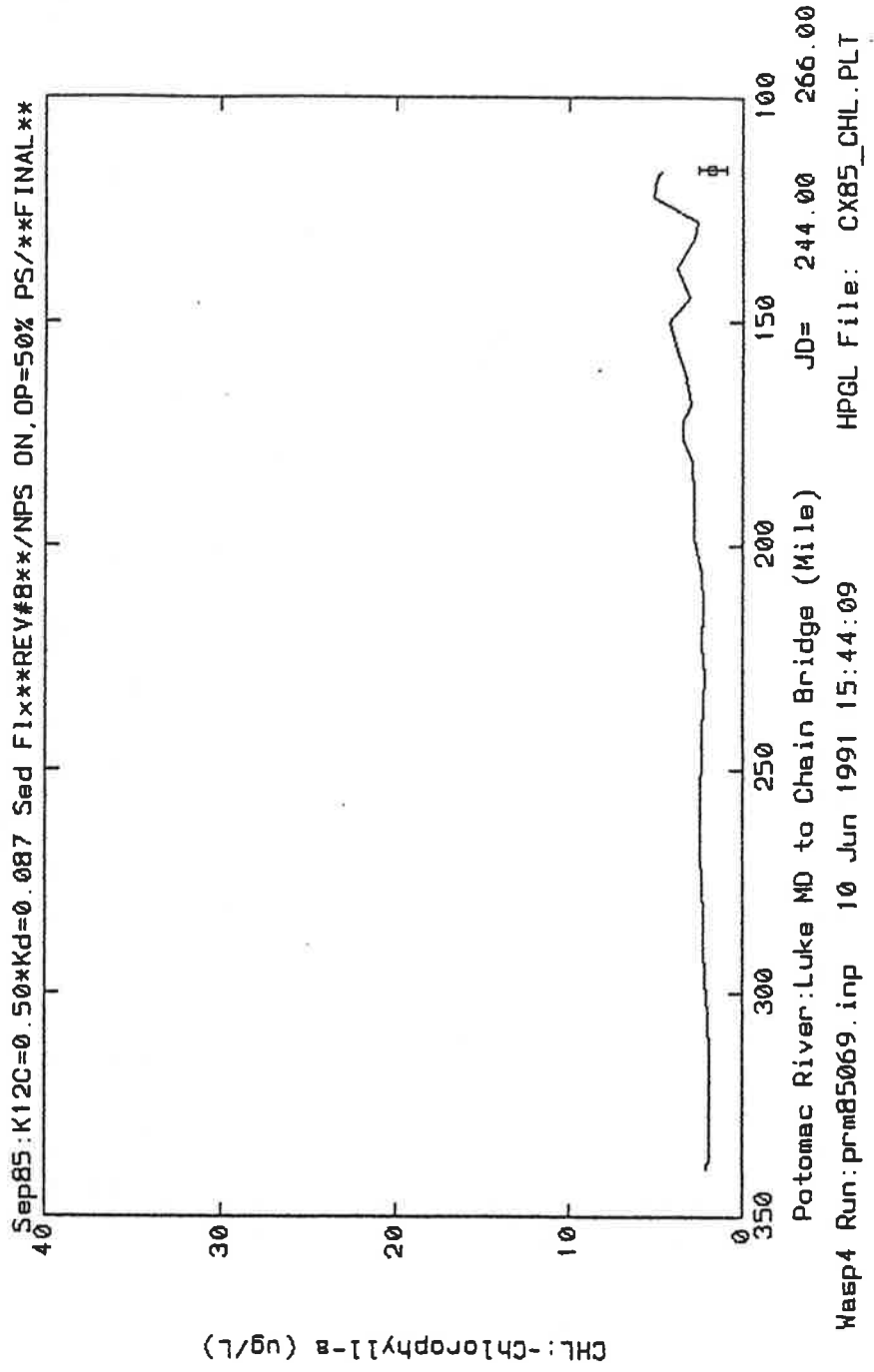


FIGURE C-4: September 1985 verification for Chlorophyll



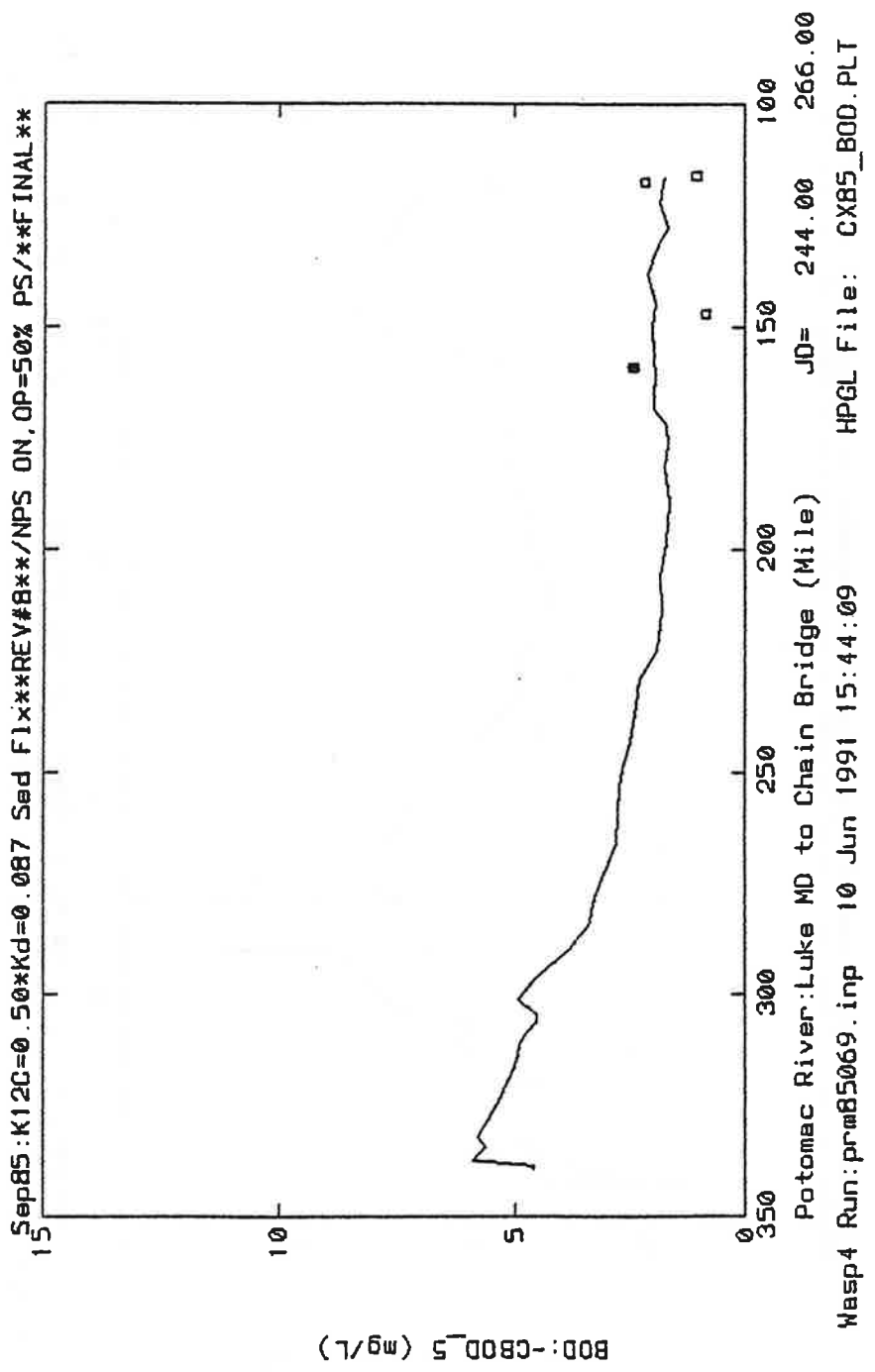


FIGURE C-5: September 1985 verification for BOD

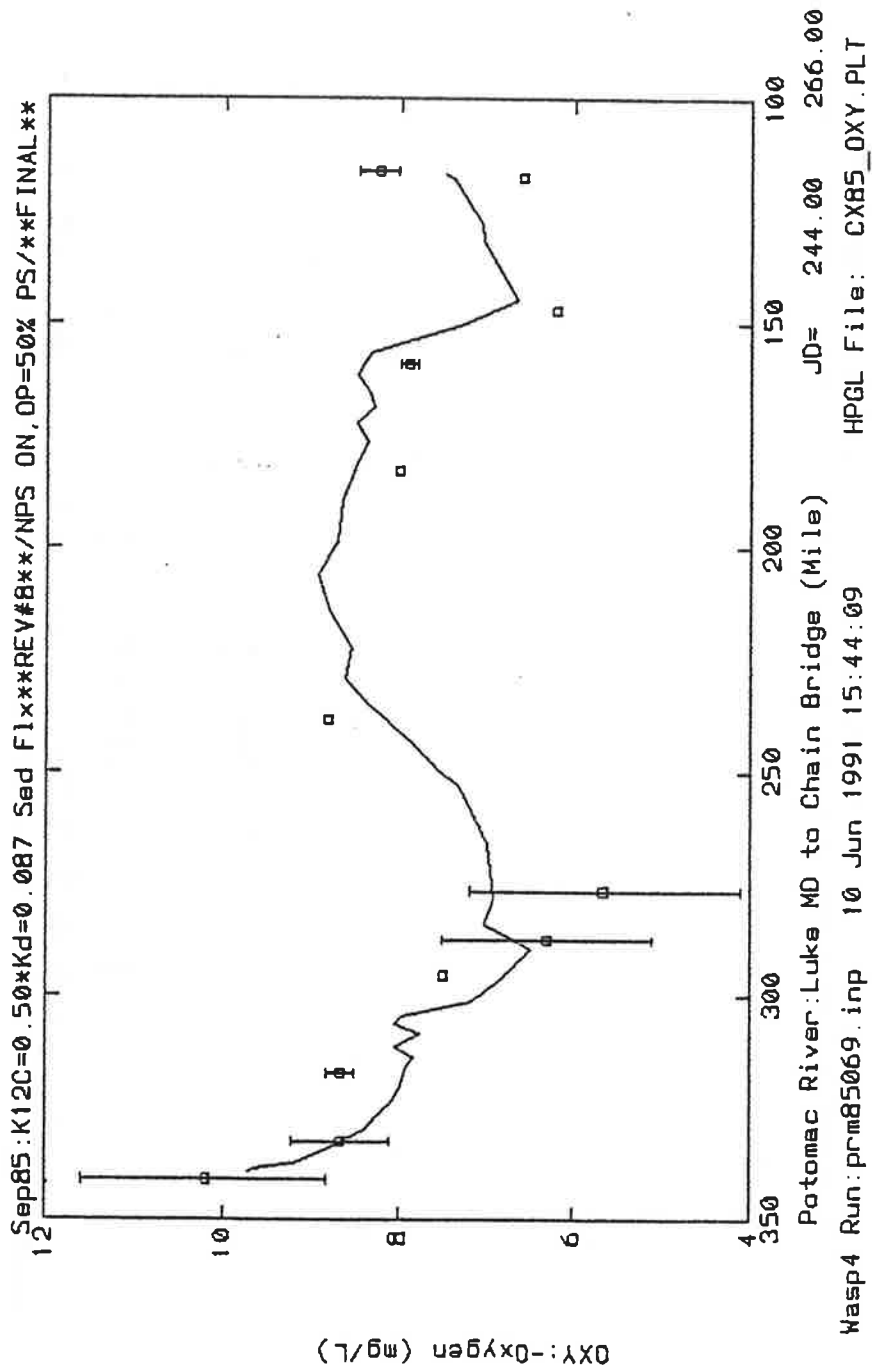


FIGURE C-6: September 1985 verification for Diss. Oxygen

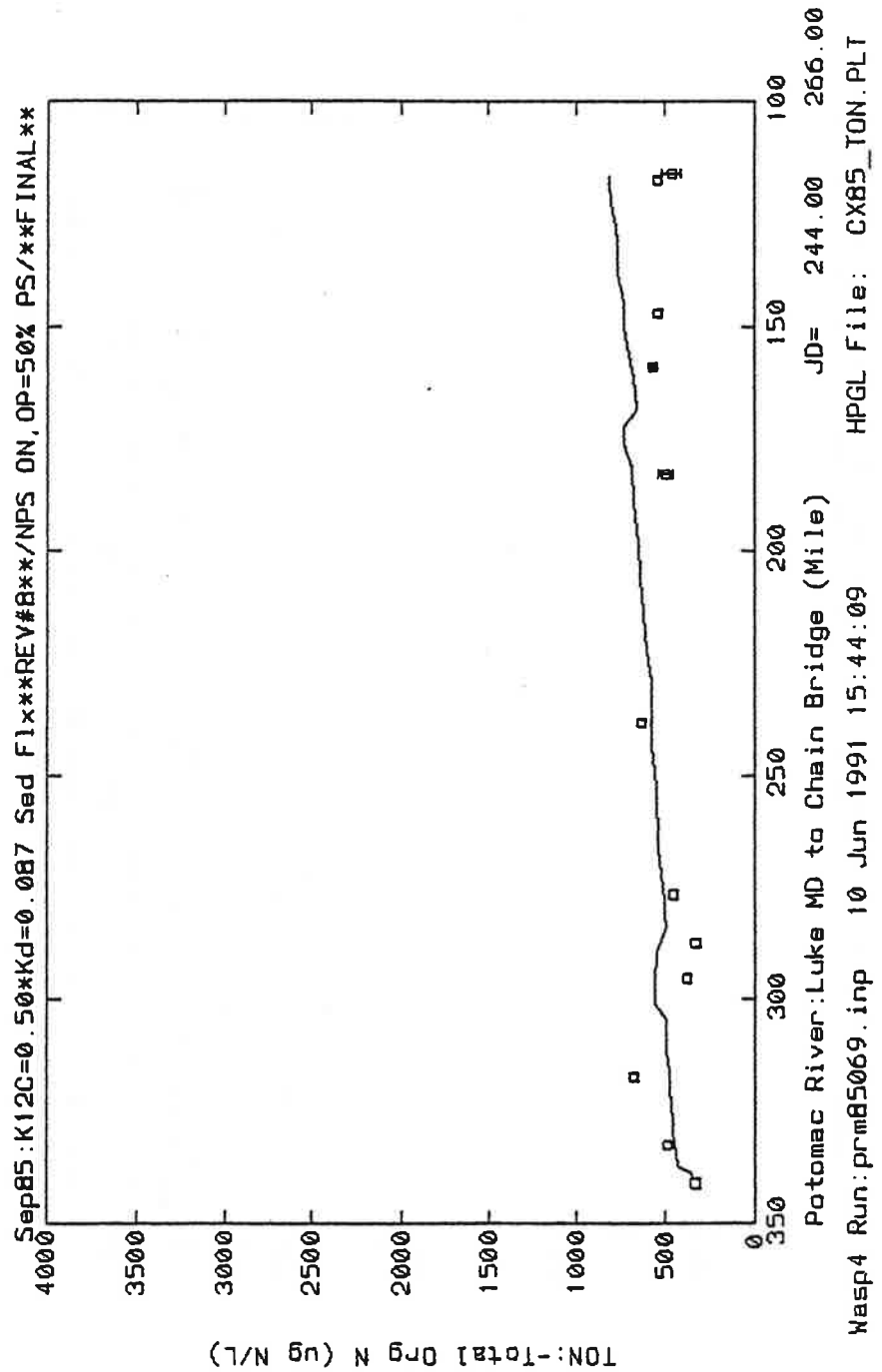
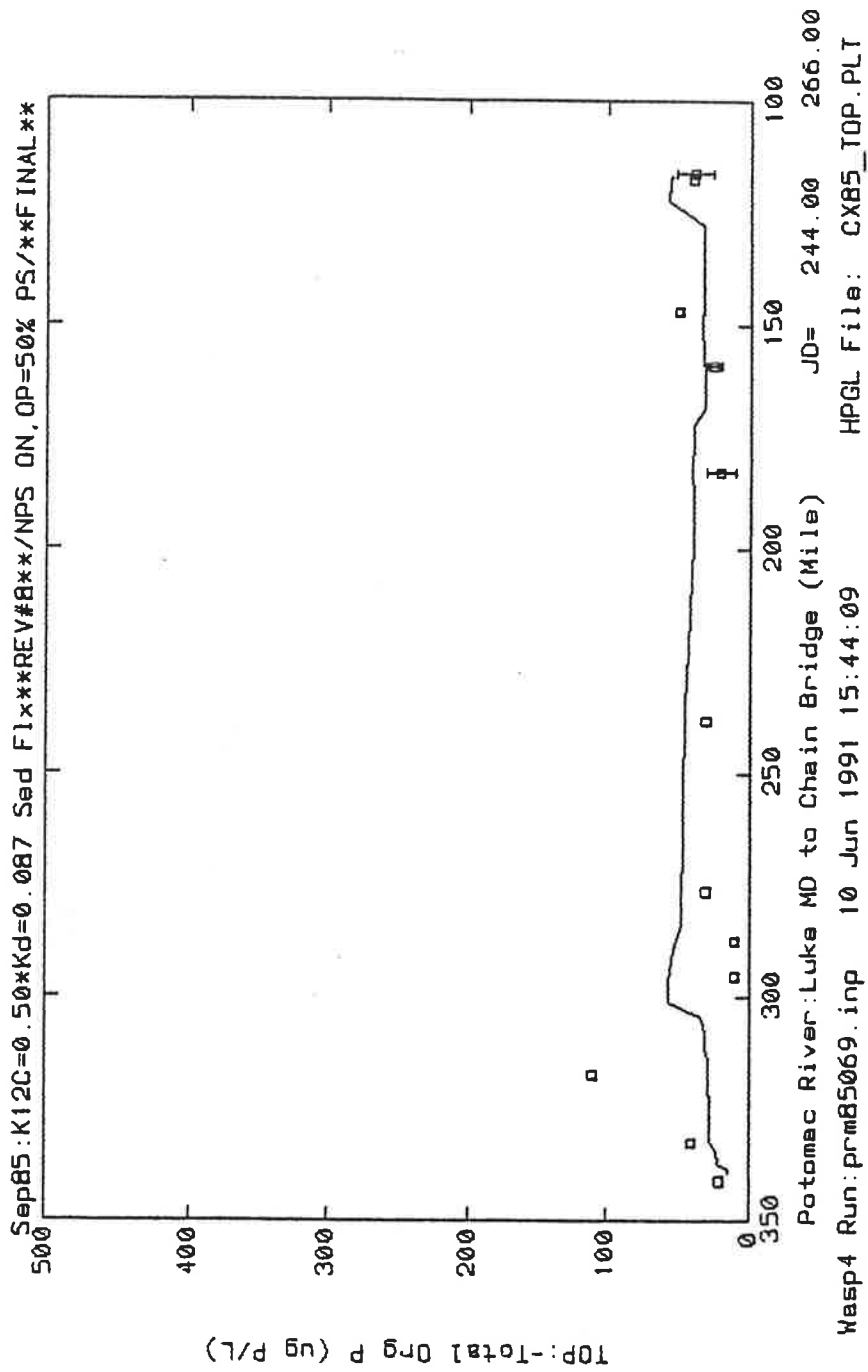
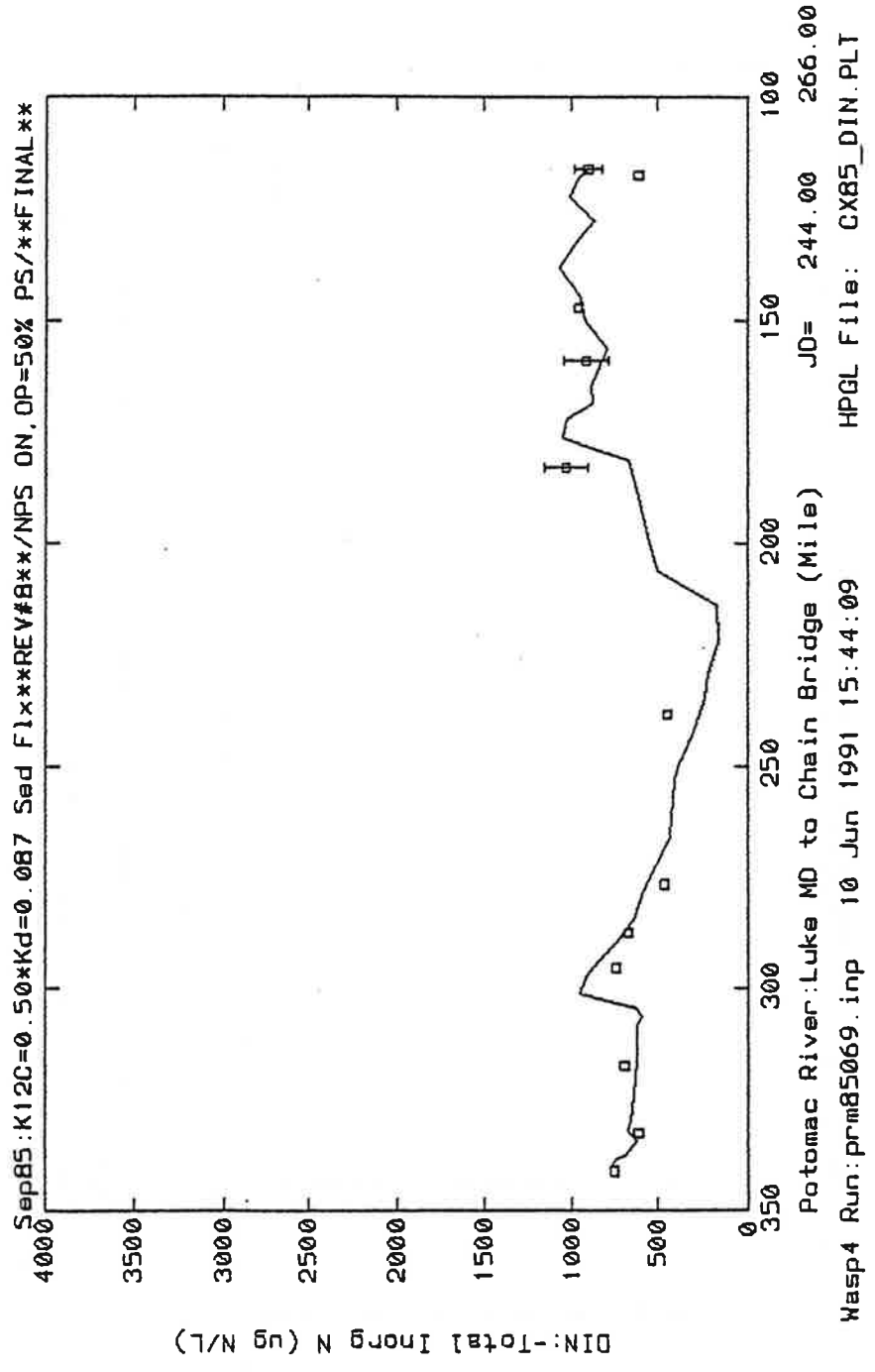


FIGURE C-7: September 1985 verification for Total Organic Nitrogen



**FIGURE C-8:** September 1985 verification for Total Organic Phosphorus



**FIGURE C-9:** September 1985 verification for Diss. Inorganic Nitrogen

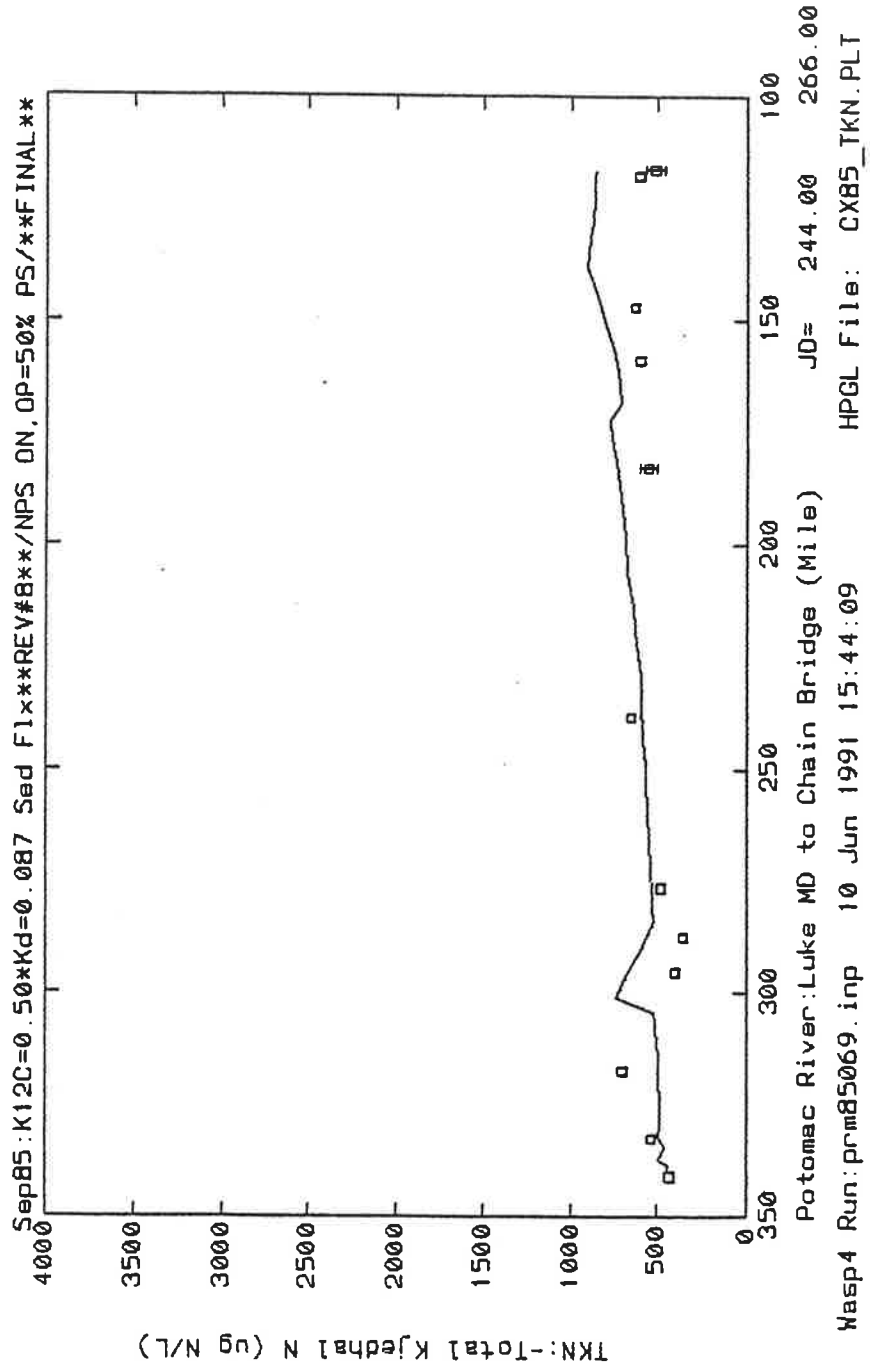


FIGURE C-10: September 1985 verification for Total Kjeldahl Nitrogen

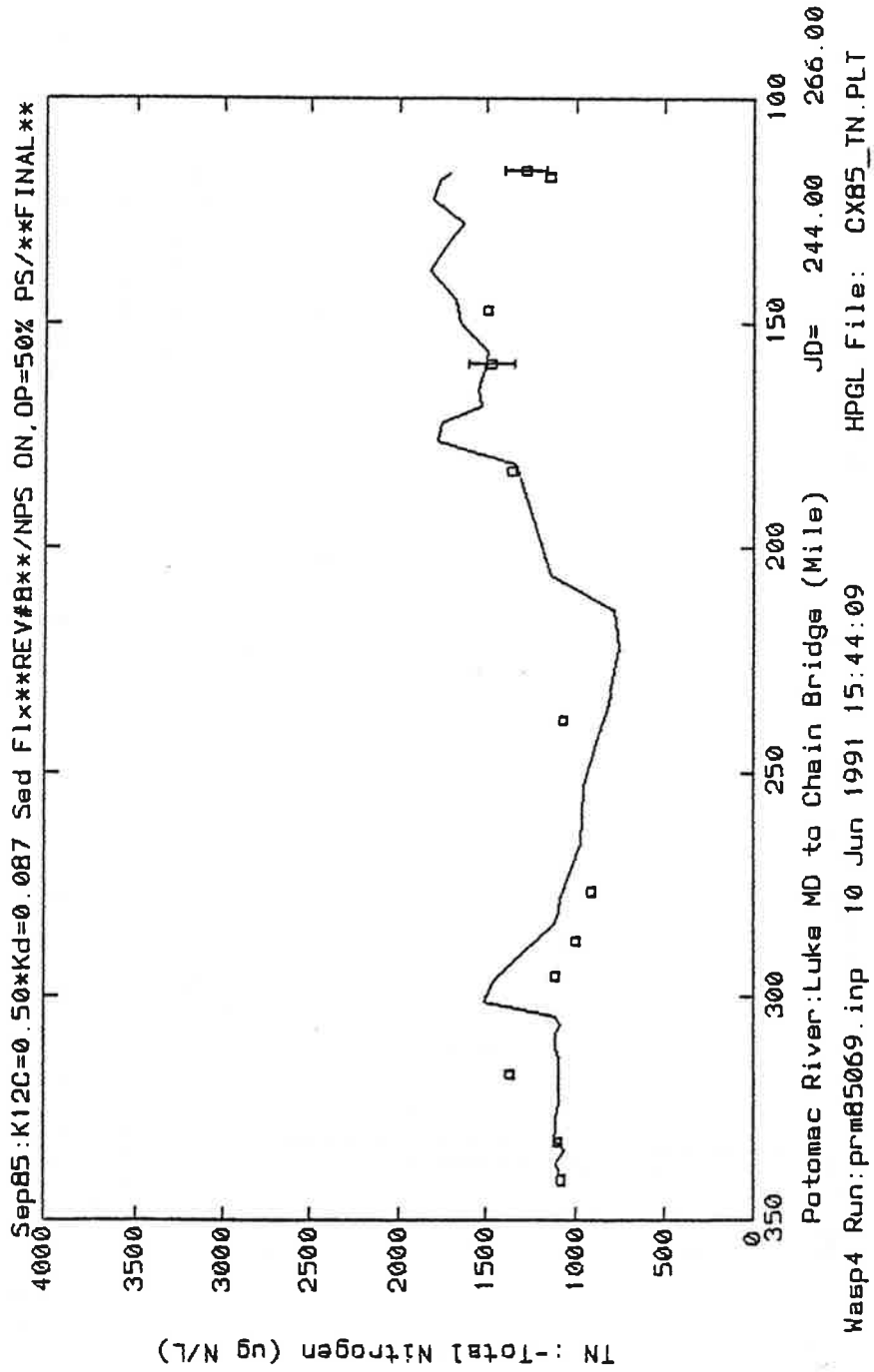
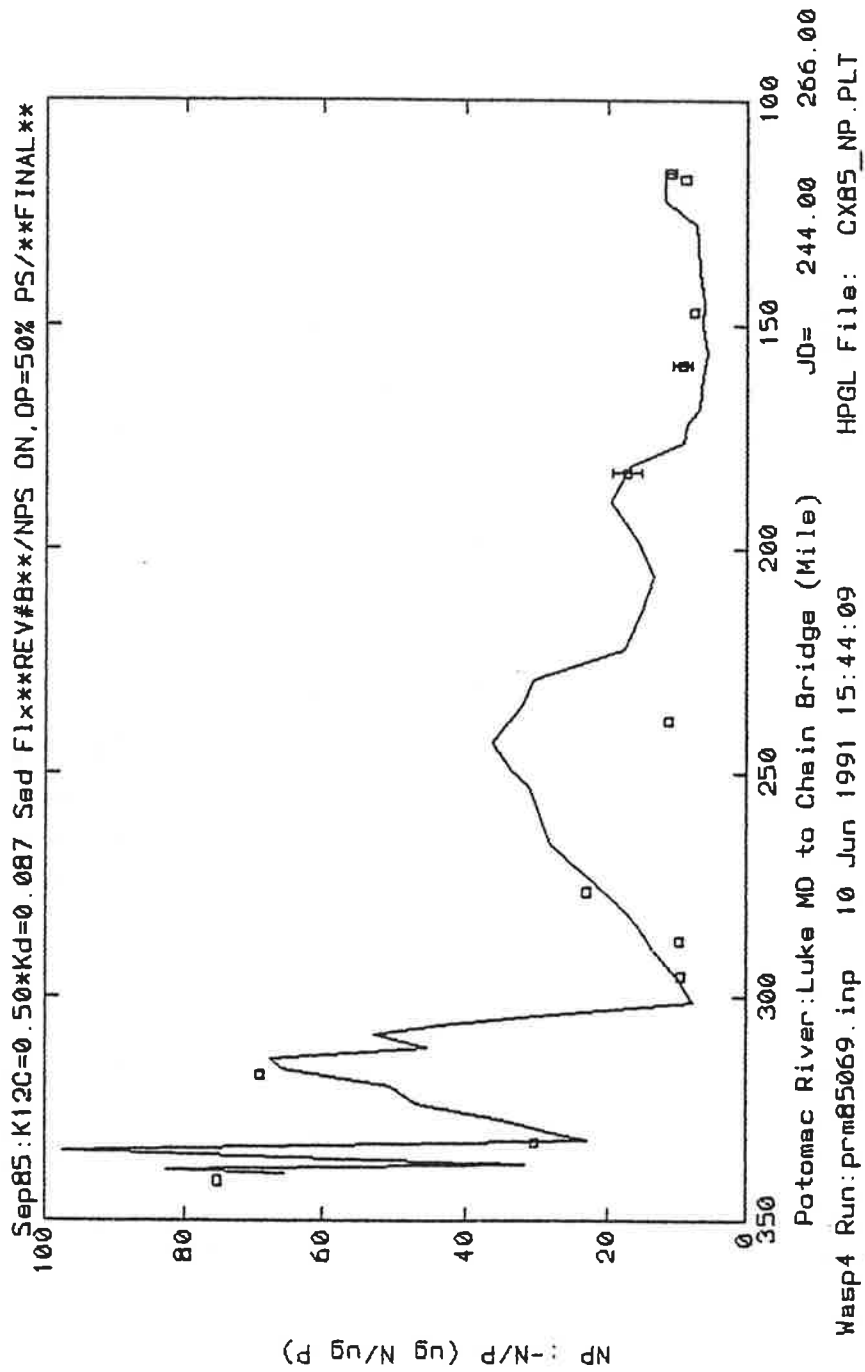


FIGURE C-11: September 1985 verification for Total Nitrogen



**FIGURE C-12:** September 1985 verification for N/P Ratio



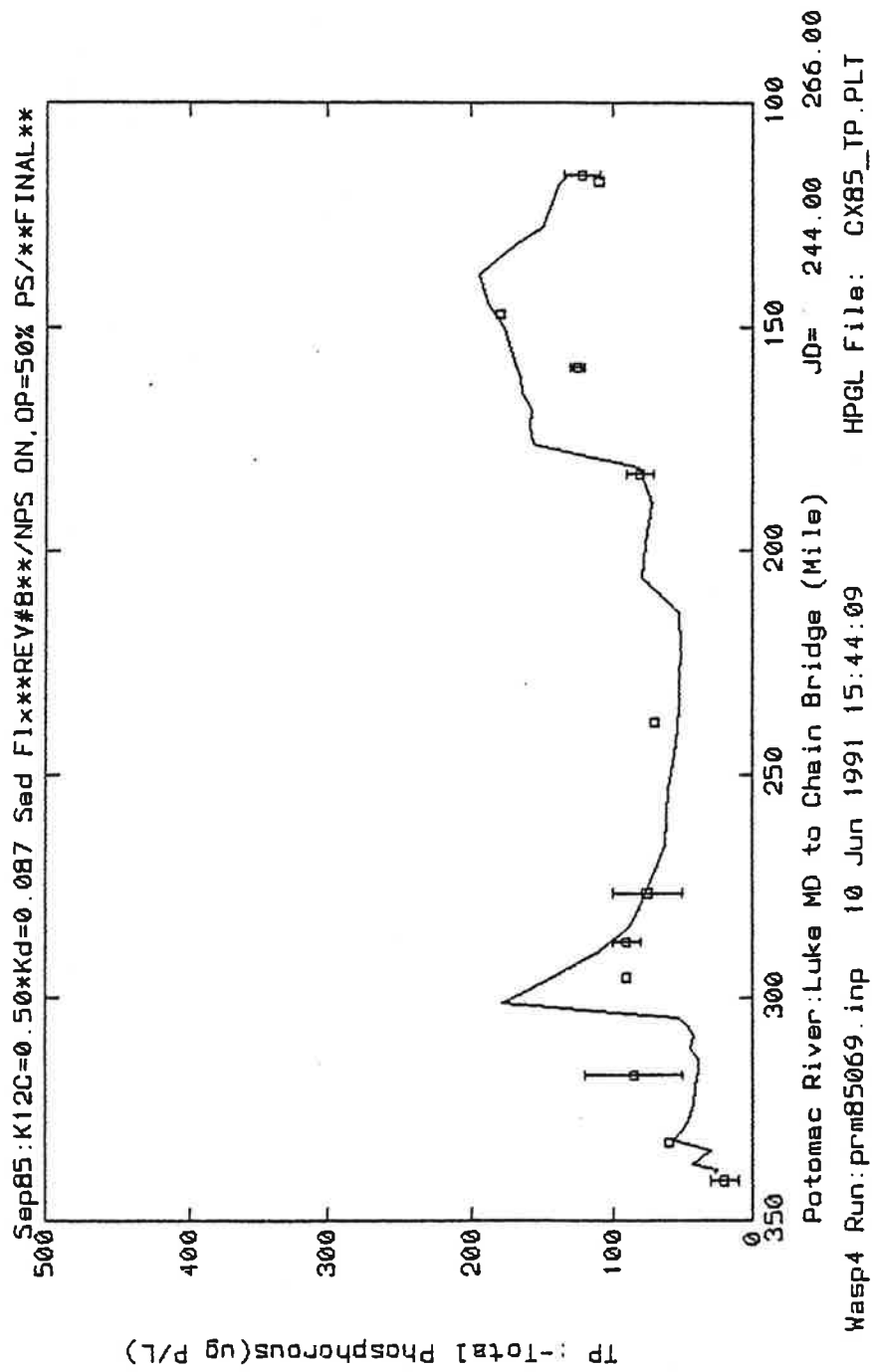


FIGURE C-13: September 1985 verification for Total Phosphorus

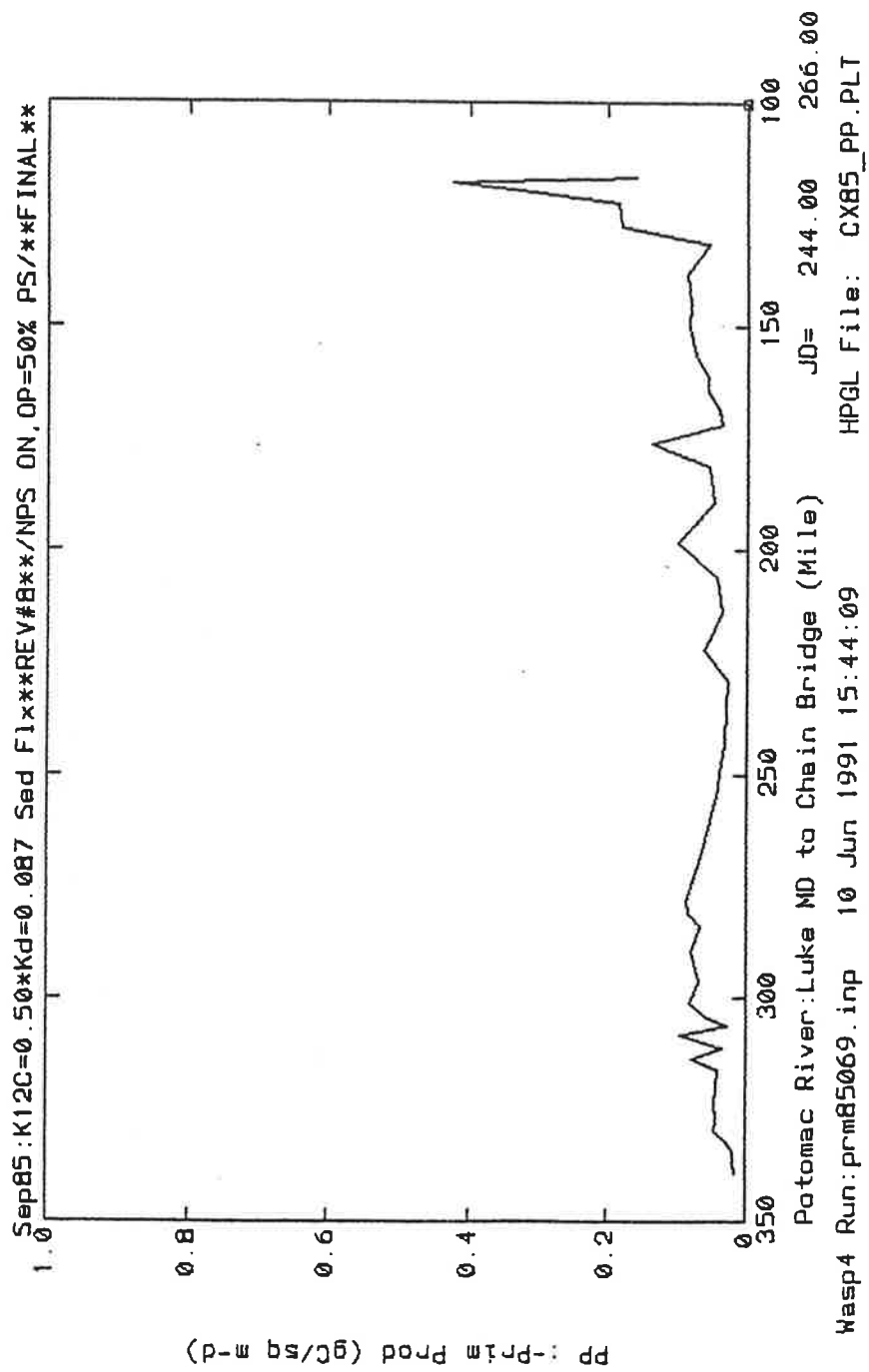


FIGURE C-14: September 1985 verification for Primary Productivity

Appendix D- Verification Results: July 1987

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity



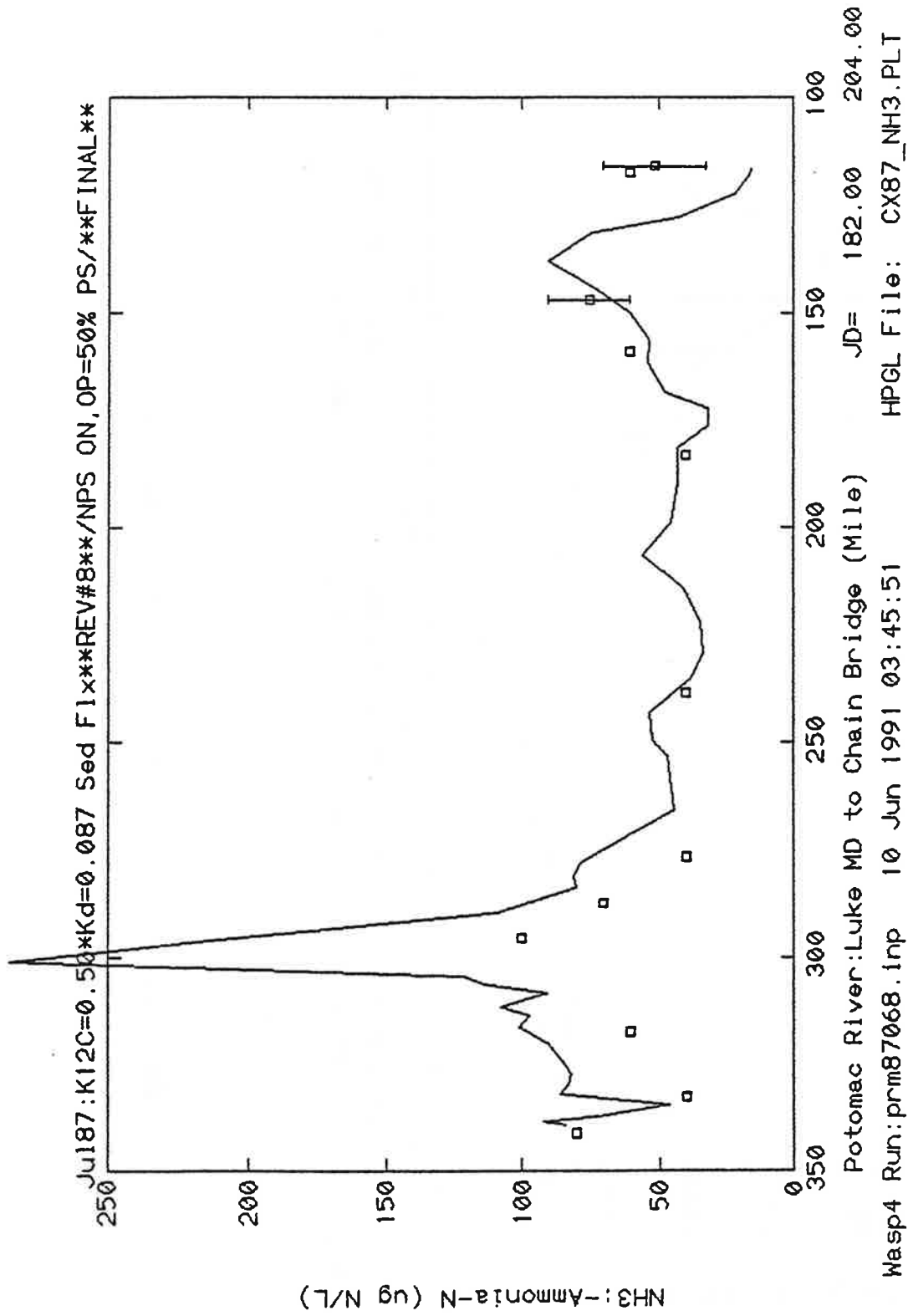


FIGURE D-1: July 1987 verification for Ammonia

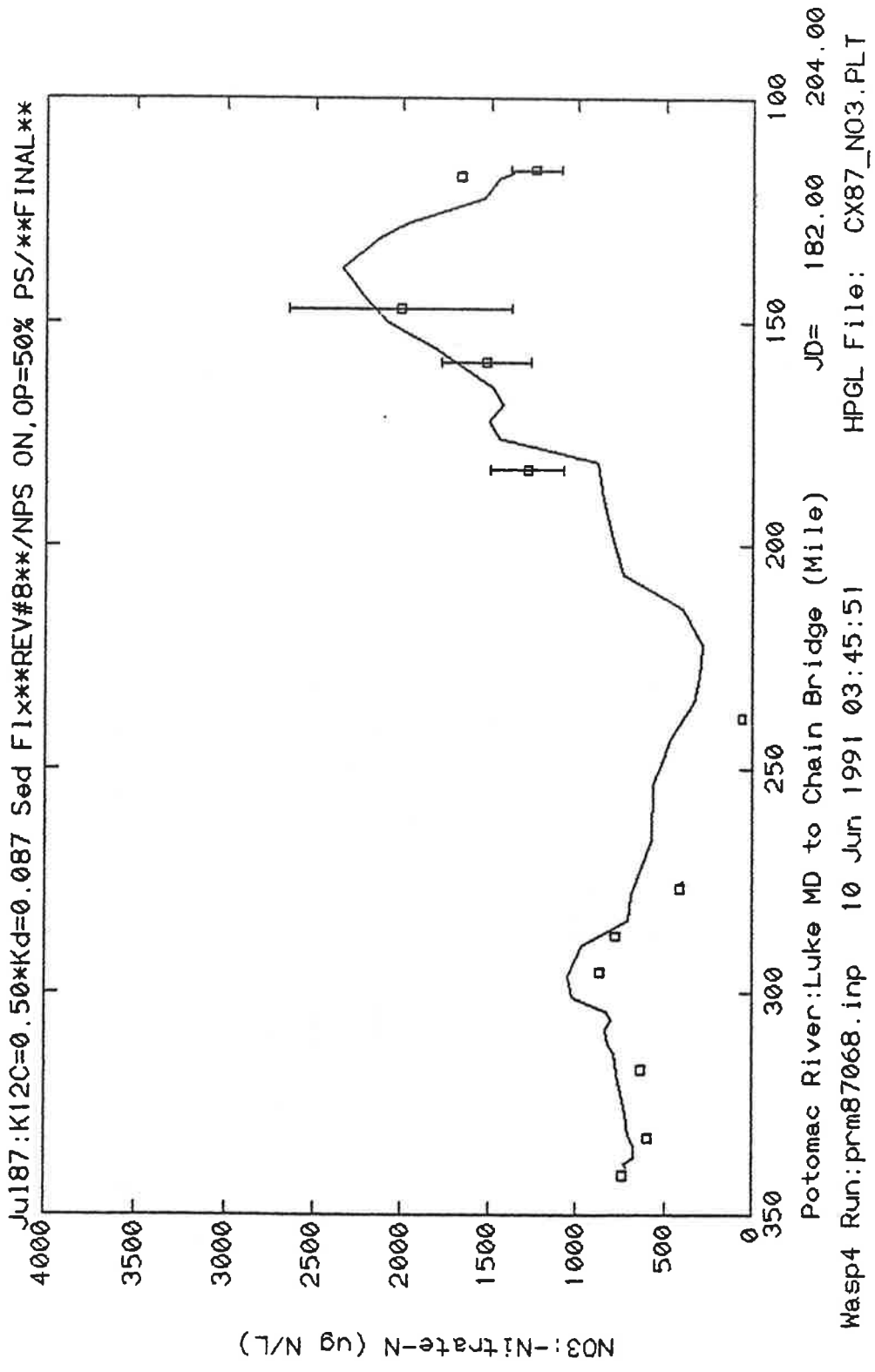


FIGURE D-2: July 1987 verification for Nitrate

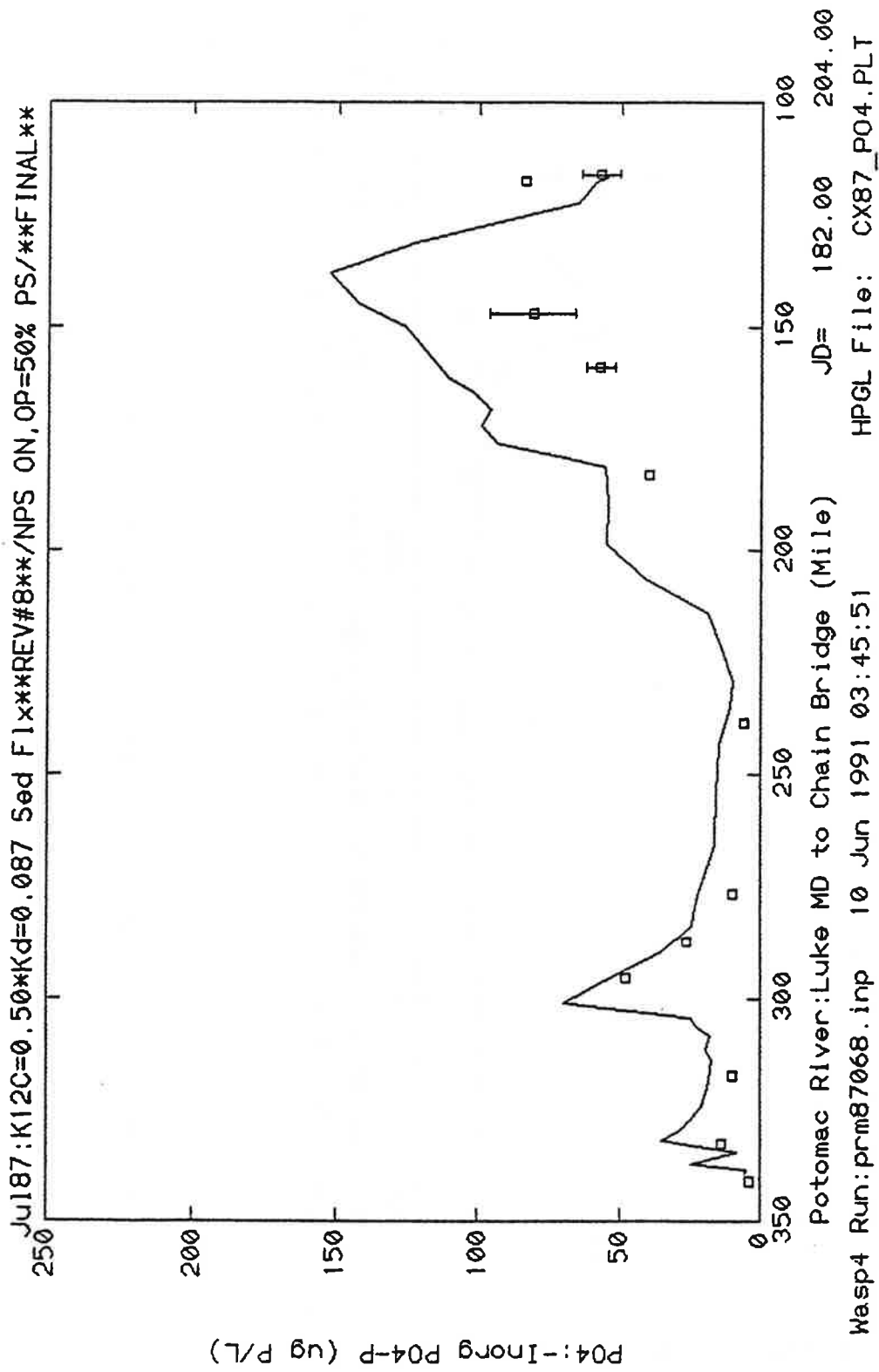
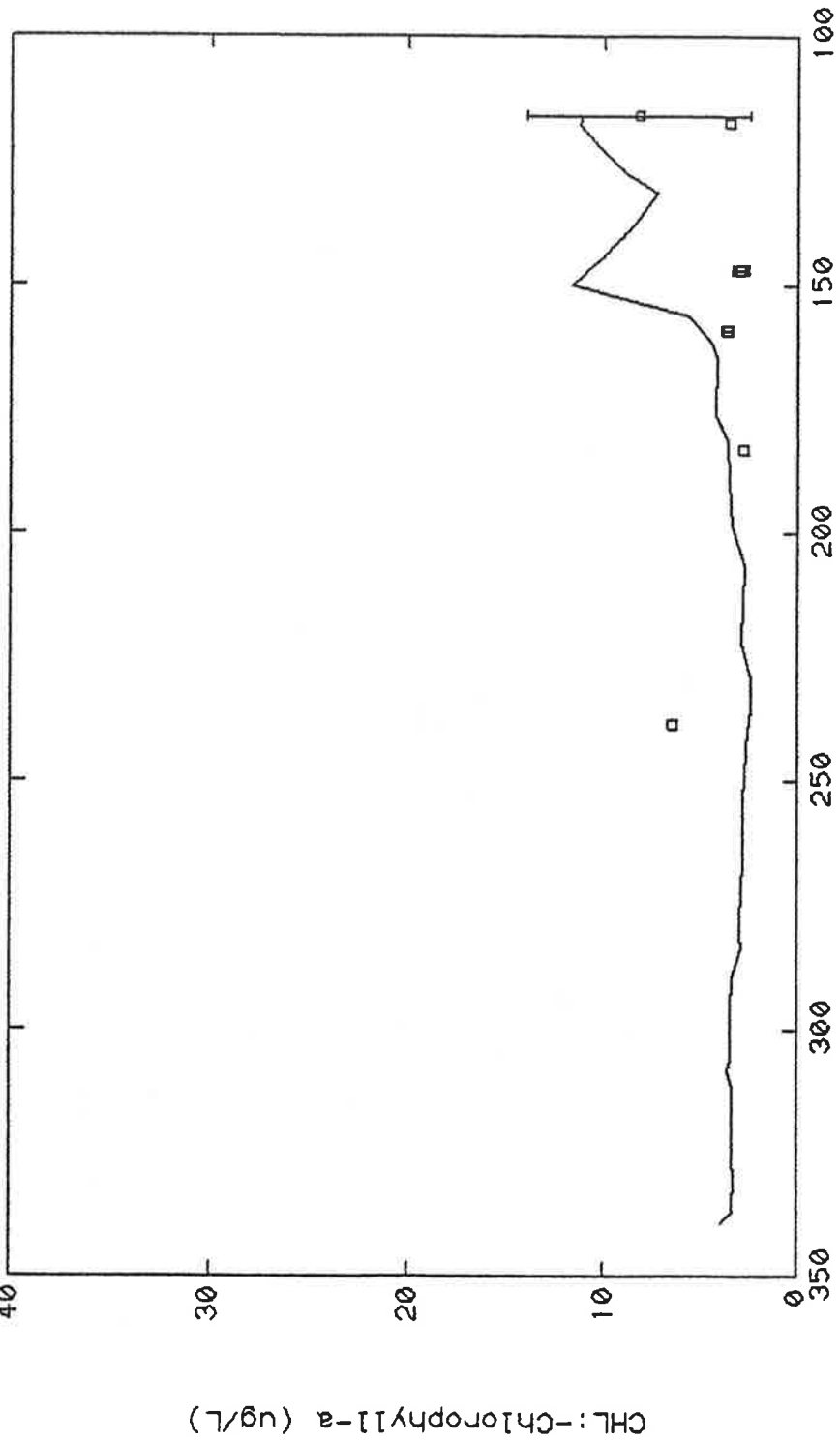


FIGURE D-3: July 1987 verification for Phosphate

Ju187:K12C=0.50\*Kd=0.087 Sed F1x\*\*REV#8\*\*/NPS ON,OP=50% PS/\*\*FINAL\*\*



Potomac River:Luke MD to Chain Bridge (Mile) JD= 182.00 204.00

Wasp4 Run:prn87068.inp 10 Jun 1991 03:45:51

HPGL File: CX87\_CHL.PLT

FIGURE D-4: July 1987 verification for Chlorophyll



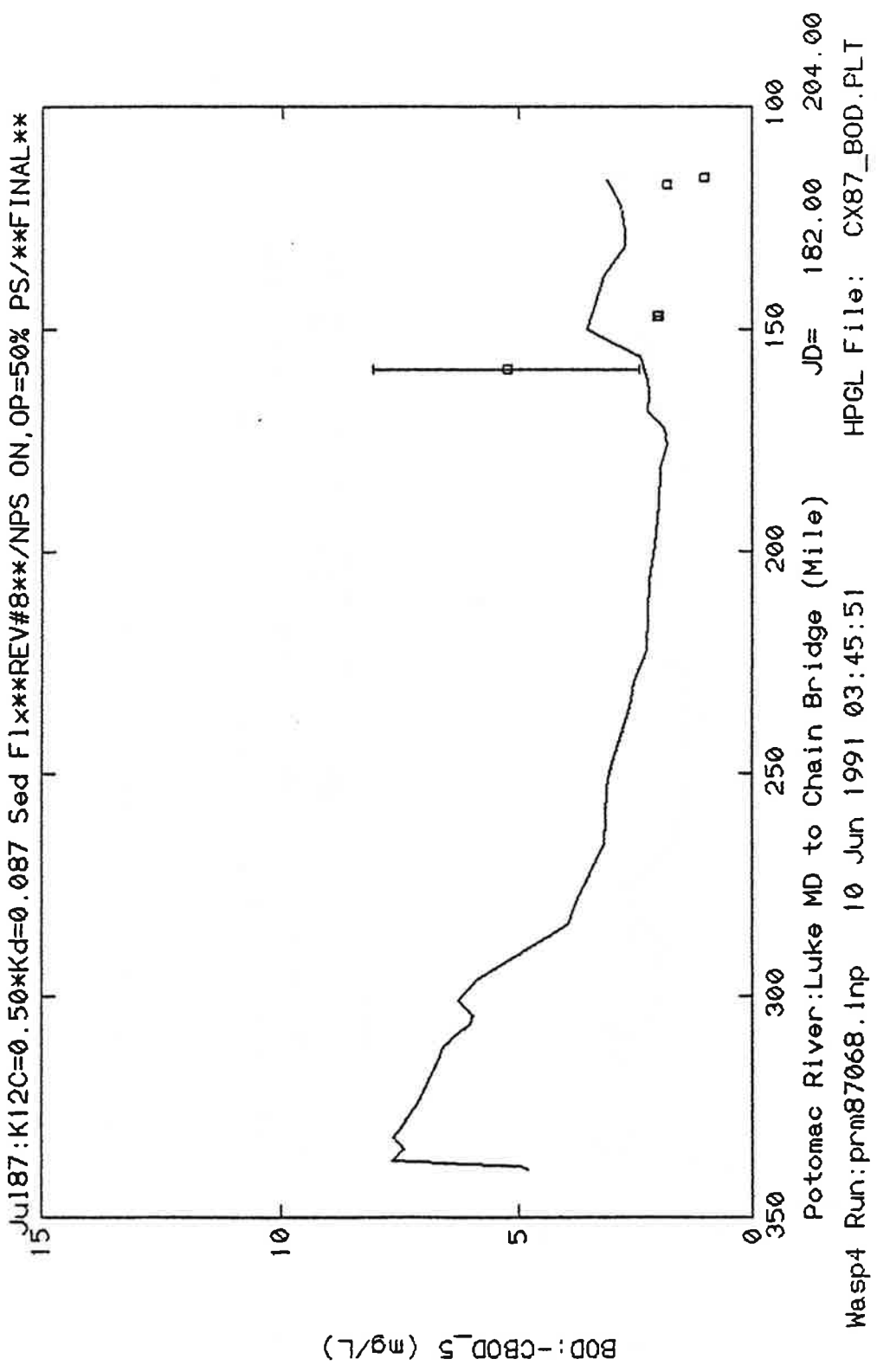


FIGURE D-5: July 1987 verification for BOD

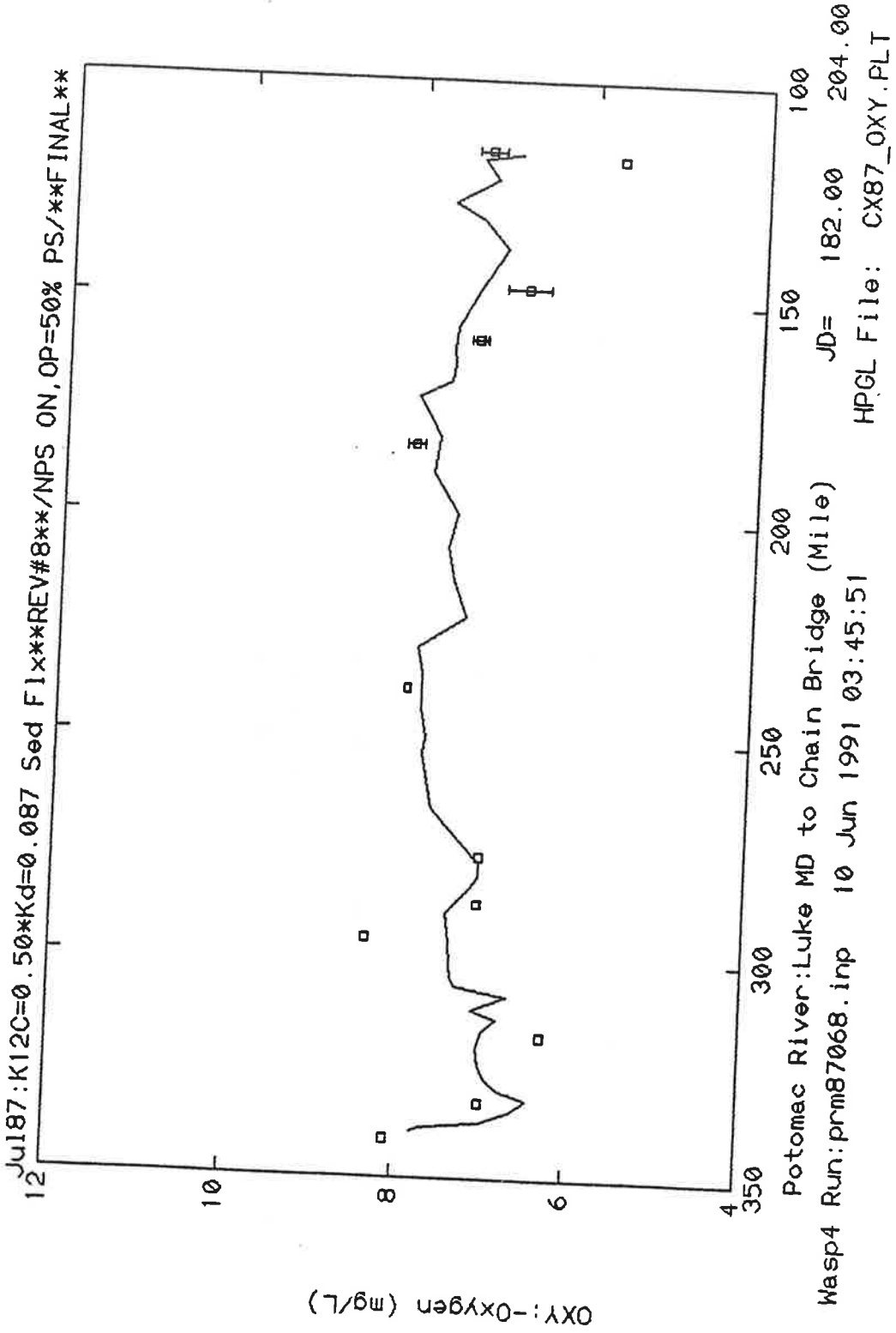


FIGURE D-6: July 1987 verification for Diss. Oxygen

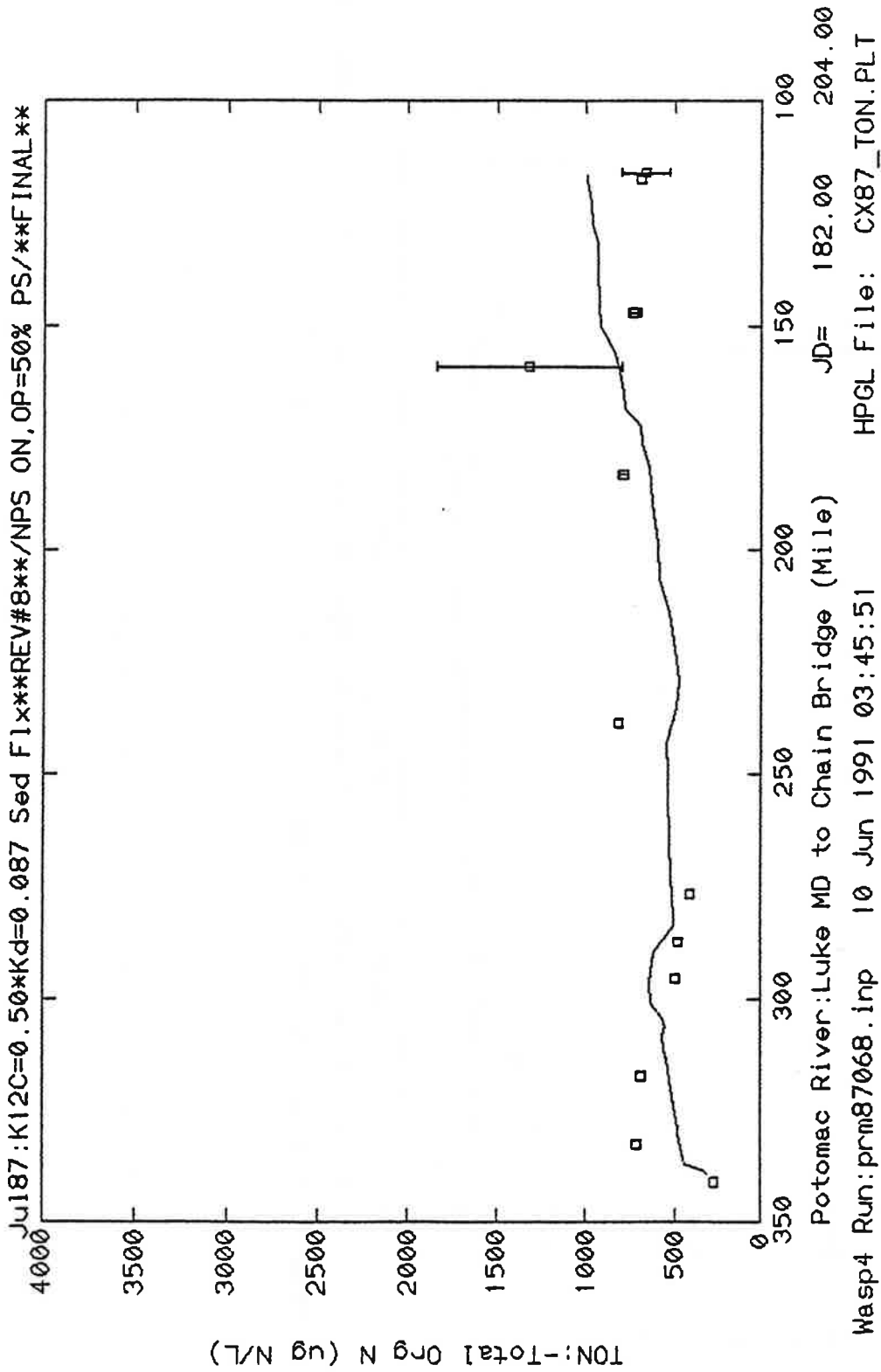


FIGURE D-7: July 1987 verification for Total Organic Nitrogen

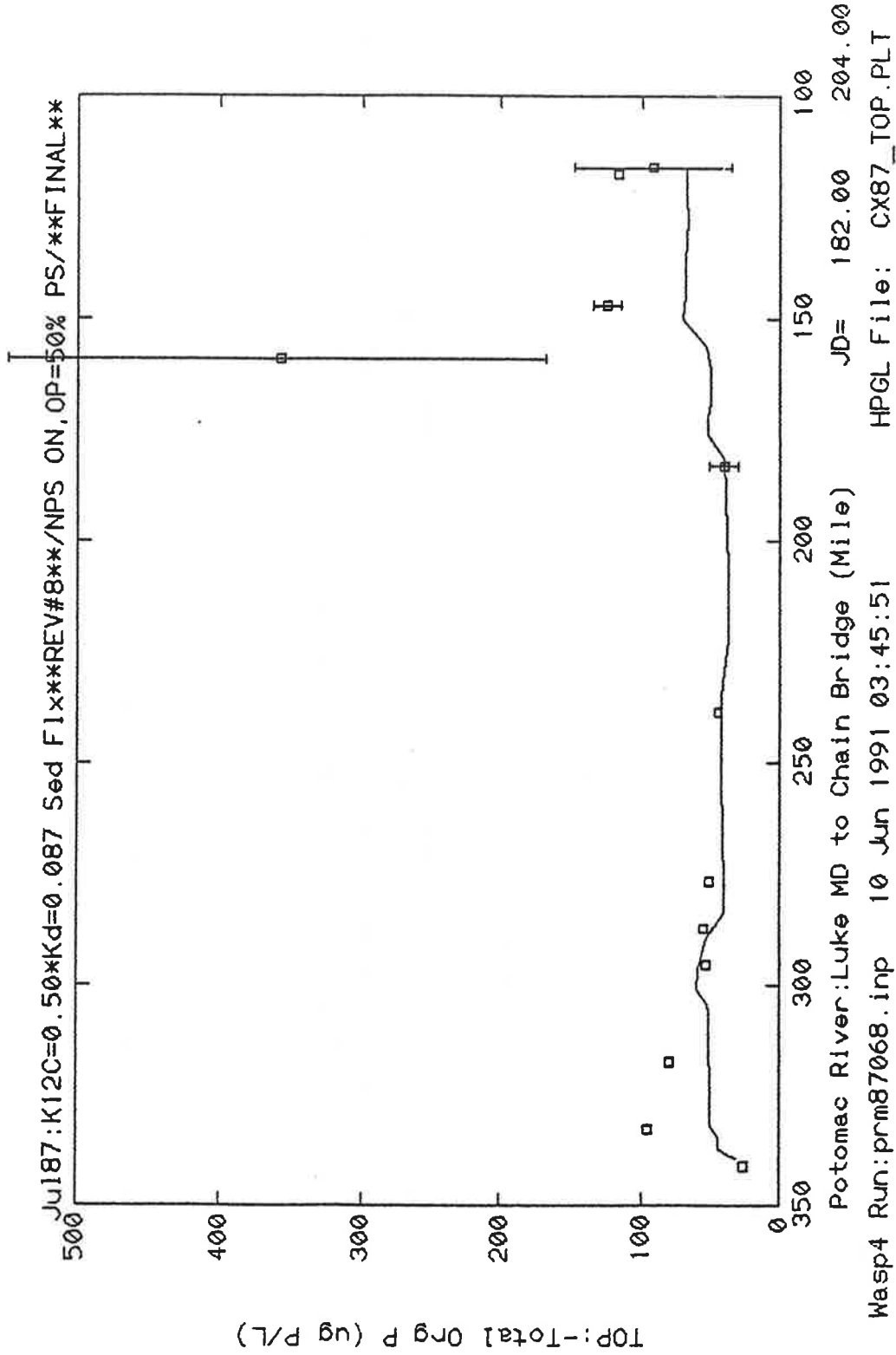
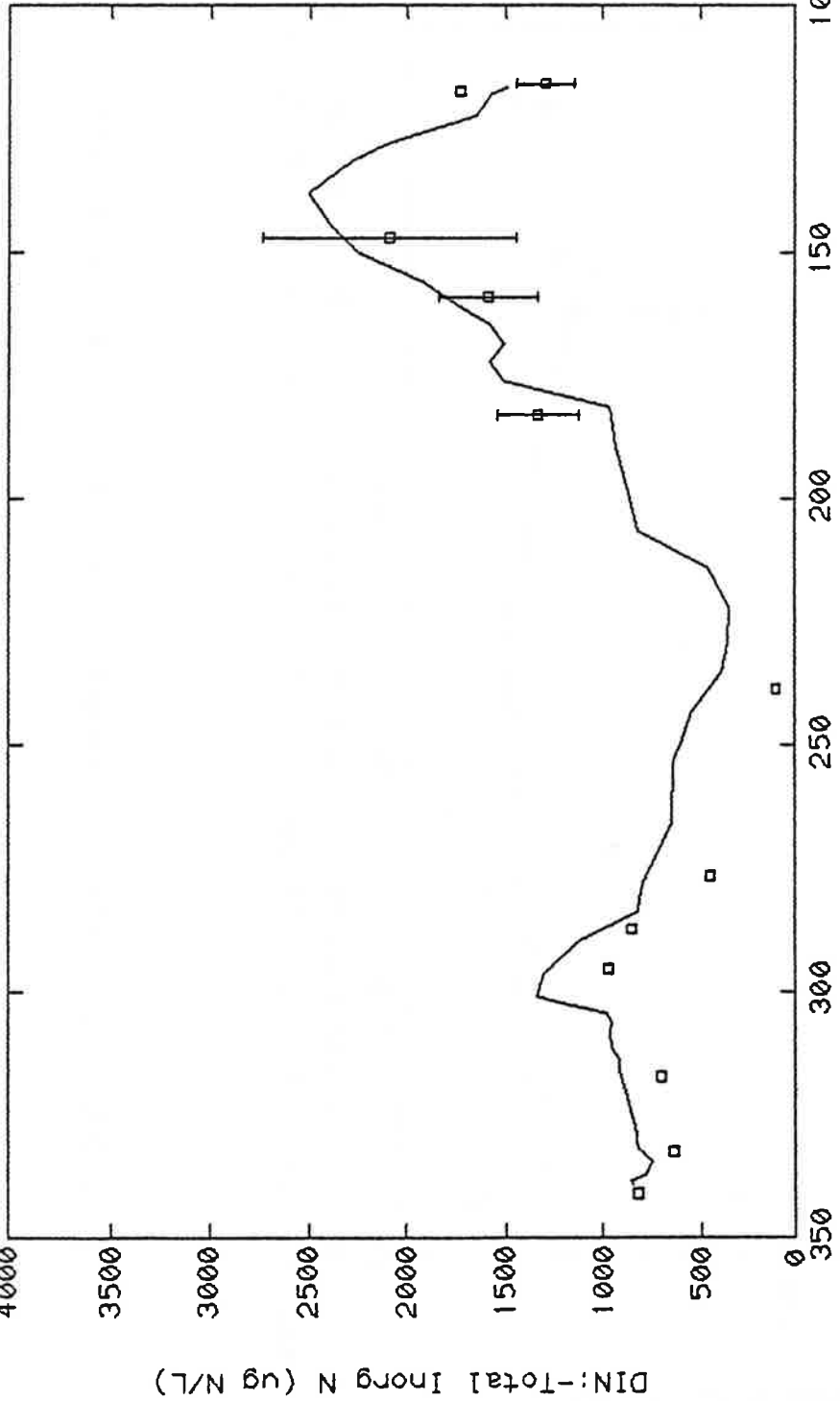


FIGURE D-8: July 1987 verification for Total Organic Phosphorus

Jul187:K12C=0.50\*Kd=0.087 Sed Flx\*\*REV#8\*\*/NPS ON,OP=50% PS/\*\*FINAL\*\*



Potomac River: Luke MD to Chain Bridge (Mile) JD= 182.00 204.00  
Wasp4 Run: prm87068.inp 10 Jun 1991 03:45:51 HPGL File: CX87\_DIN.PLT

FIGURE D-9: July 1987 verification for Diss. Inorganic Nitrogen

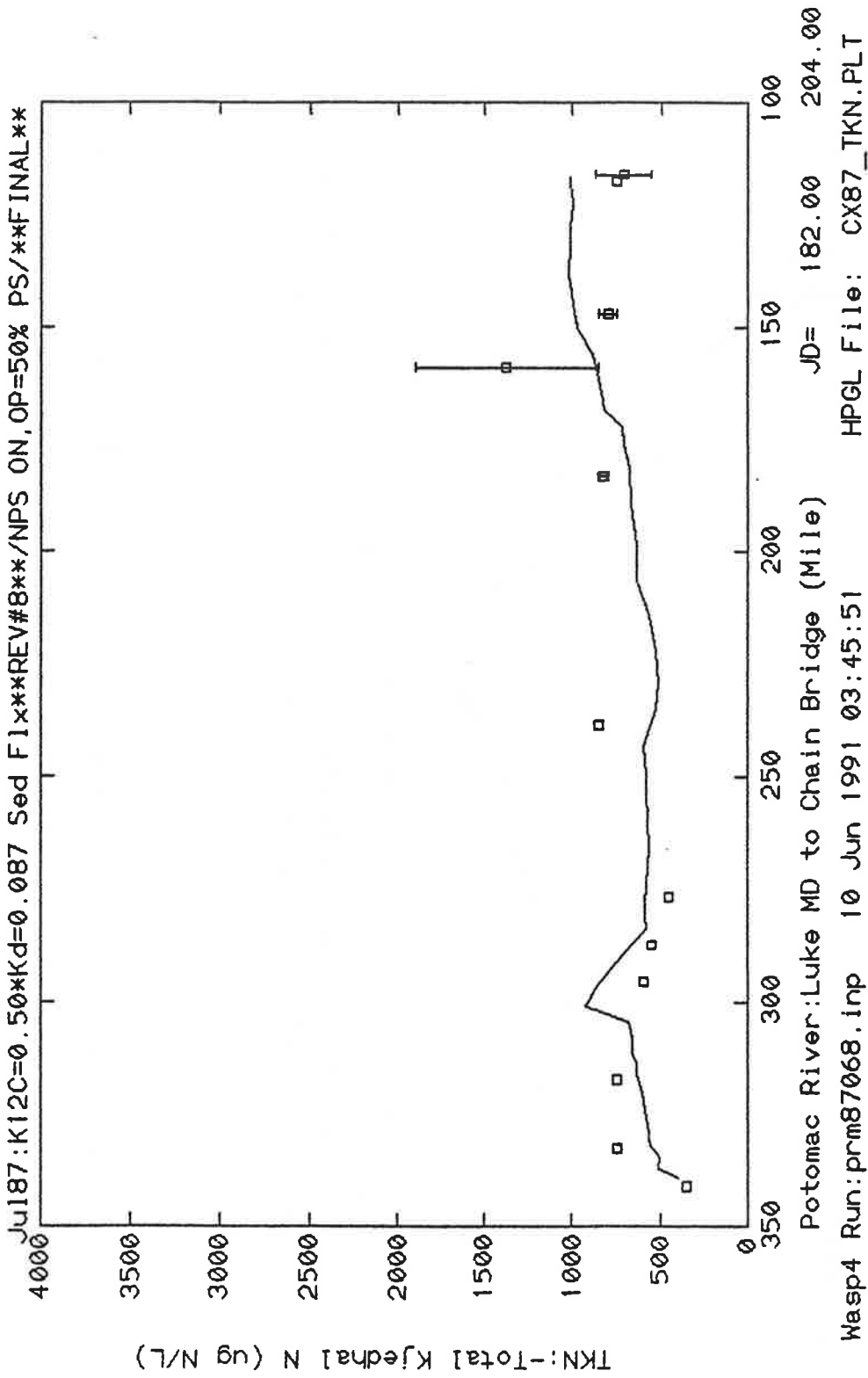


FIGURE D-10: July 1987 verification for Total Kjeldahl Nitrogen

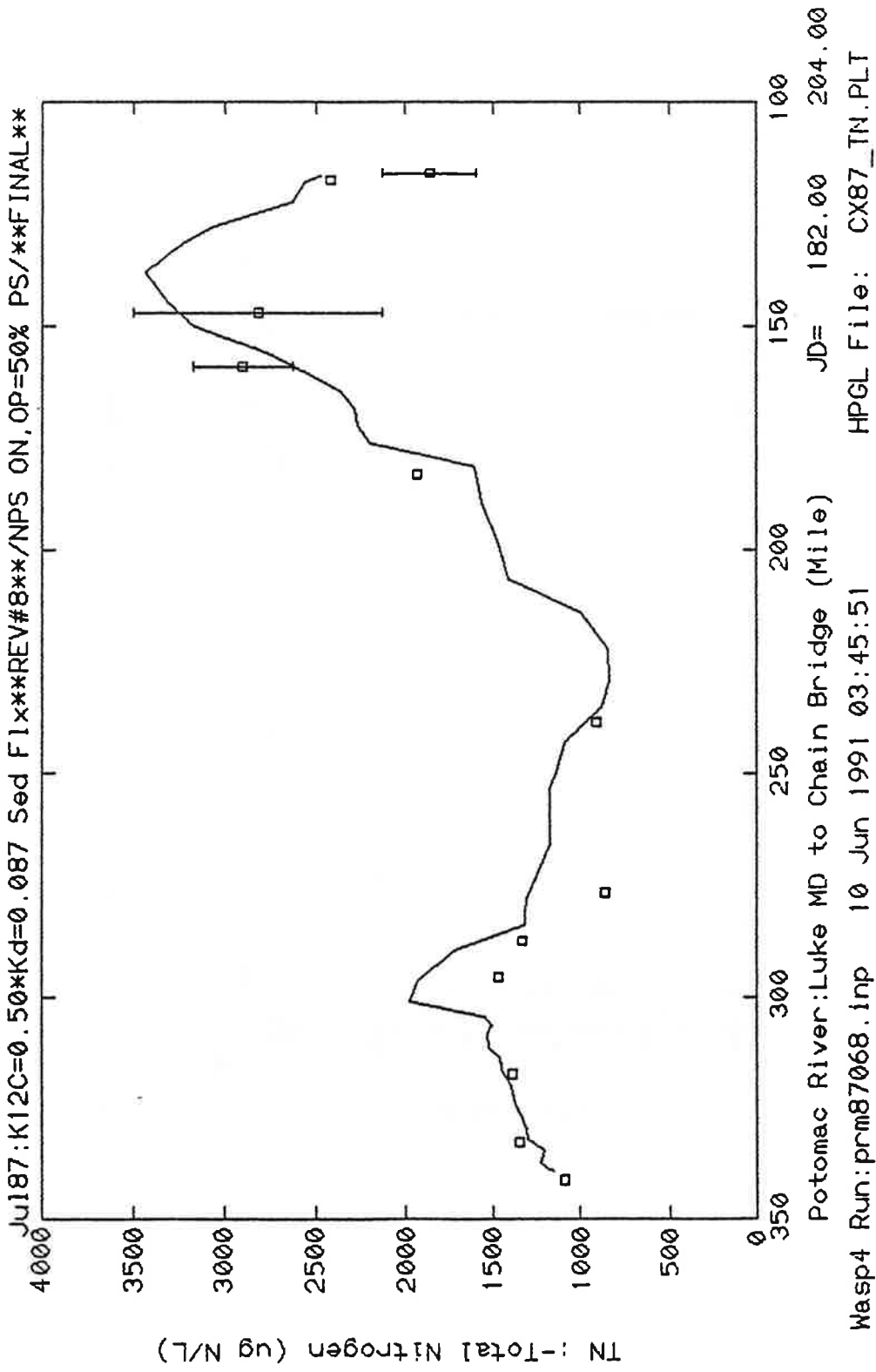


FIGURE D-11: July 1987 verification for Total Nitrogen

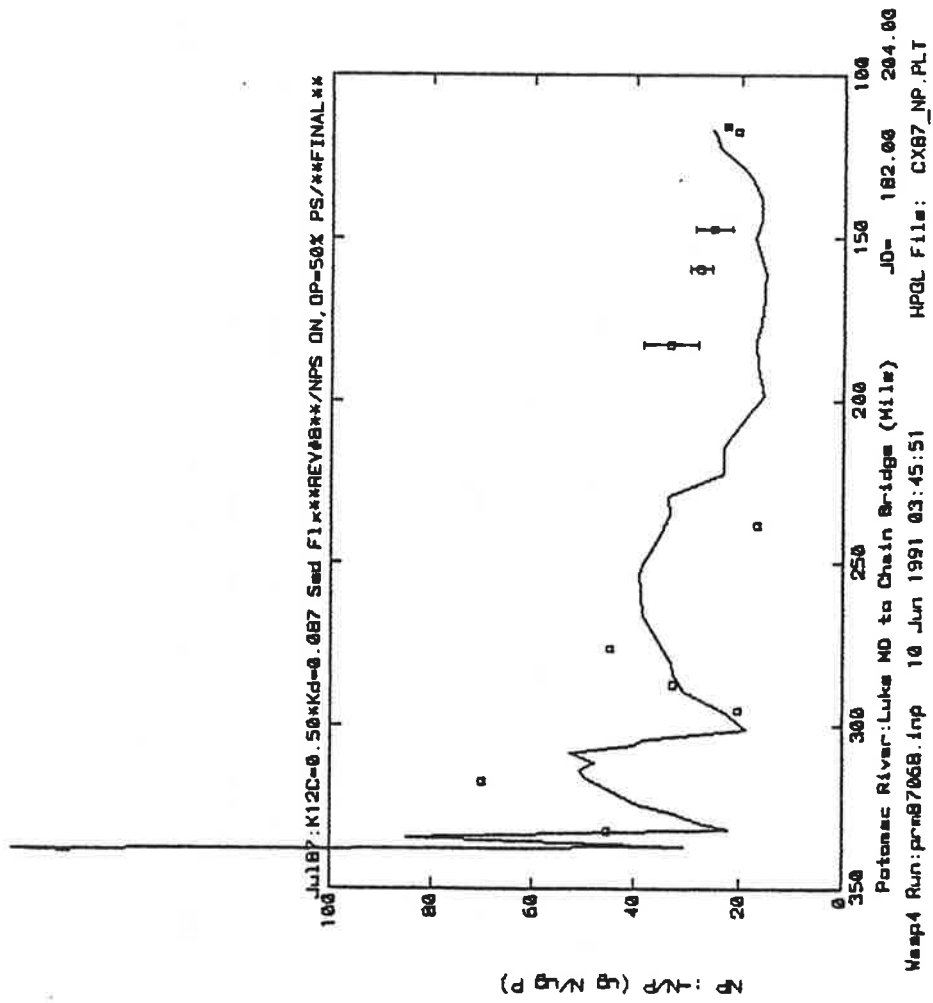


FIGURE D-12: July 1987 verification for N/P Ratio



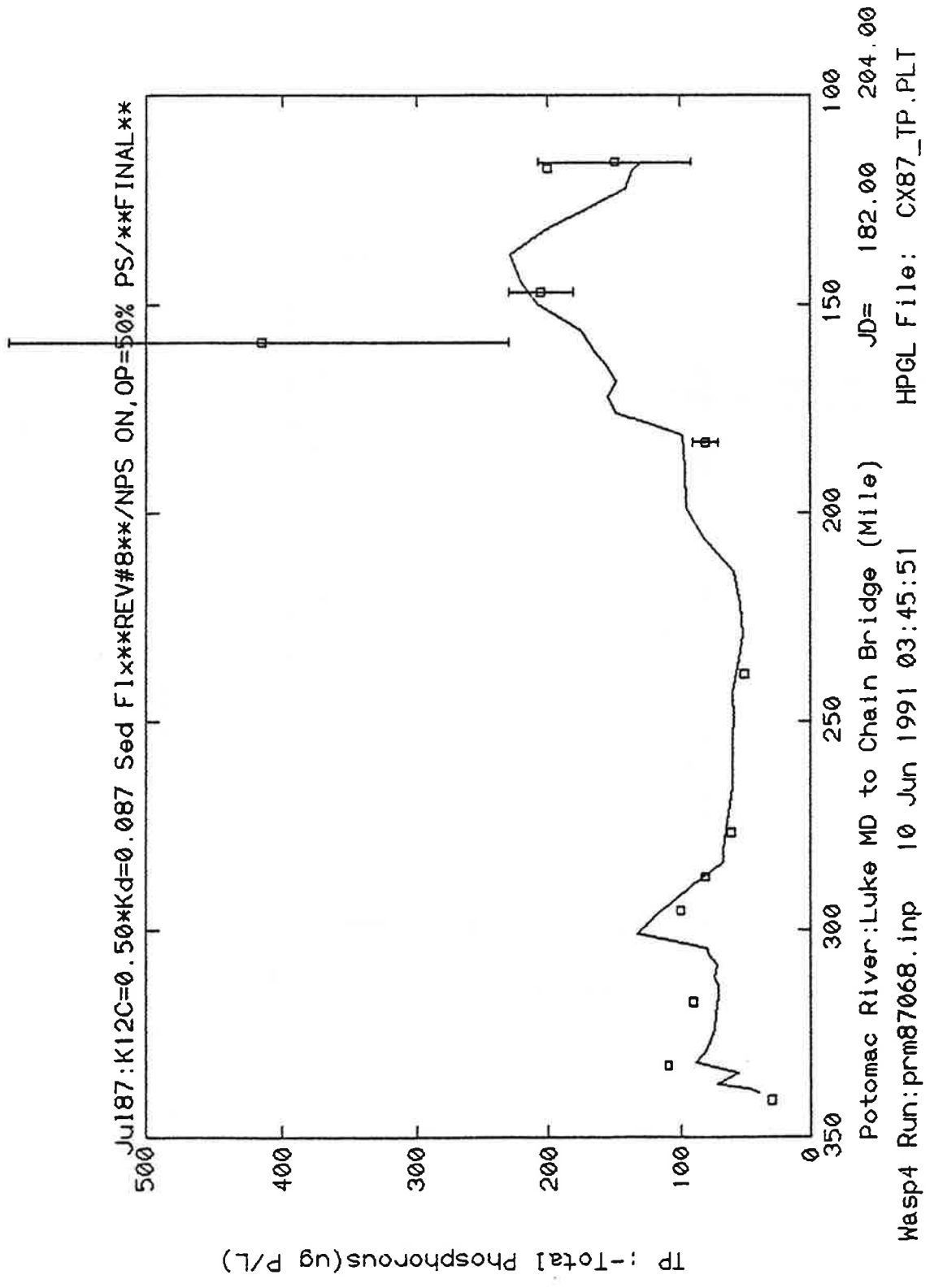


FIGURE D-13: July 1987 verification for Total Phosphorus

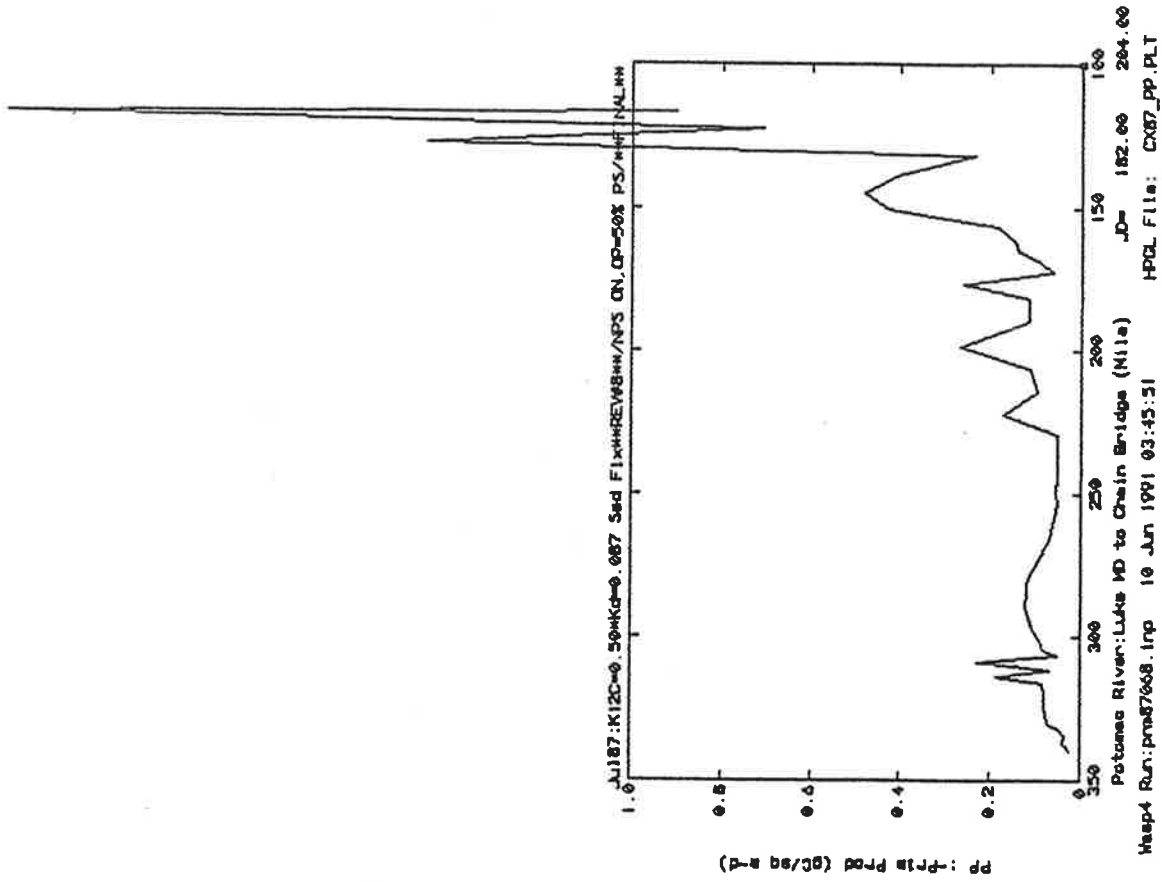
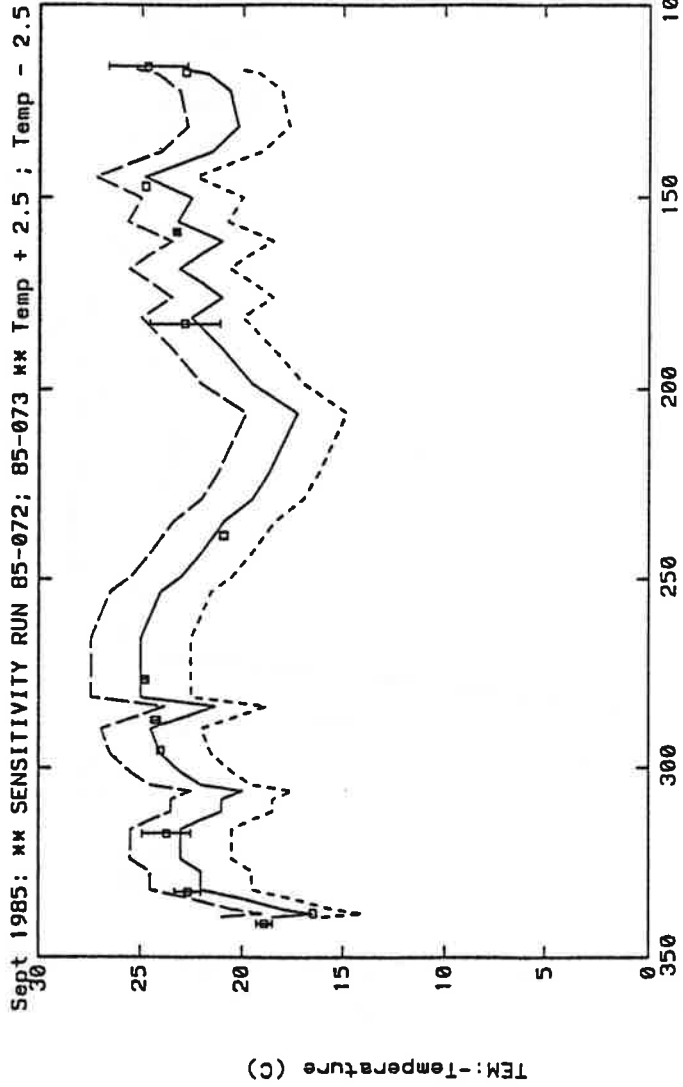


FIGURE D-14: July 1987 verification for Primary Productivity

- Appendix E - Sensitivity Analysis-1 Water Temperature
- Appendix F - Sensitivity Analysis-2 Incident Solar Radiation
- Appendix G - Sensitivity Analysis-3 Sediment Oxygen Demand
- Appendix H - Sensitivity Analysis-4 Benthic Primary Production
- Appendix I - Sensitivity Analysis-5 Non Point Source Input of N,P
- Appendix J - Sensitivity Analysis-6 Nitrification Rate
- Appendix K - Sensitivity Analysis-7 Inorganic Solids Settling Rate

## Appendix E - Sensitivity Analysis-1 Water Temperature

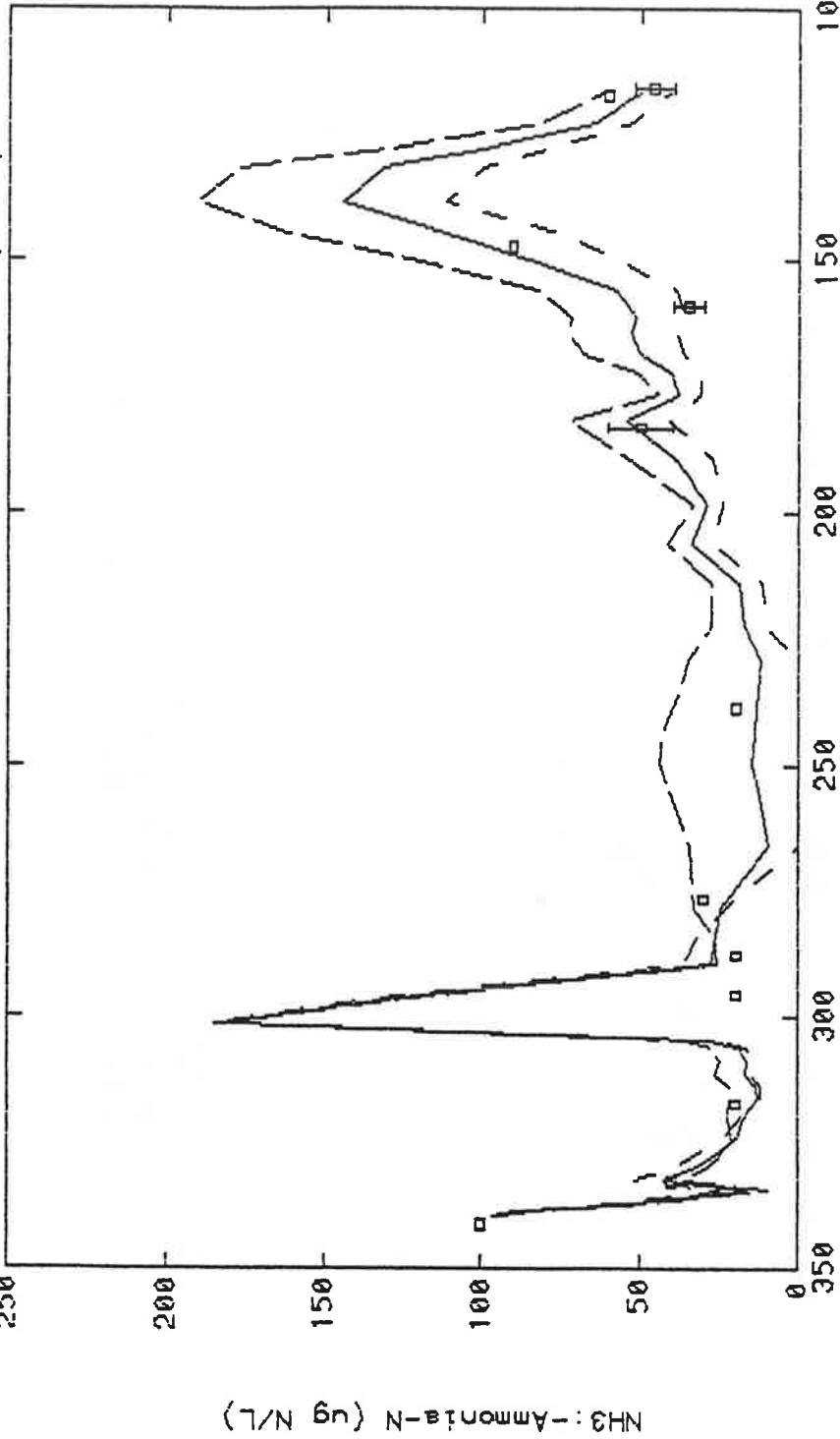
TEM	Water Temperature
NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity



**FIGURE E-1:** September 1985 Sensitivity to Water Temperature

- Base case + 2.5 C
- Base Case
- Base Case - 2.5 C

Sep85: x\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-073: Temp=Temp+2.5C

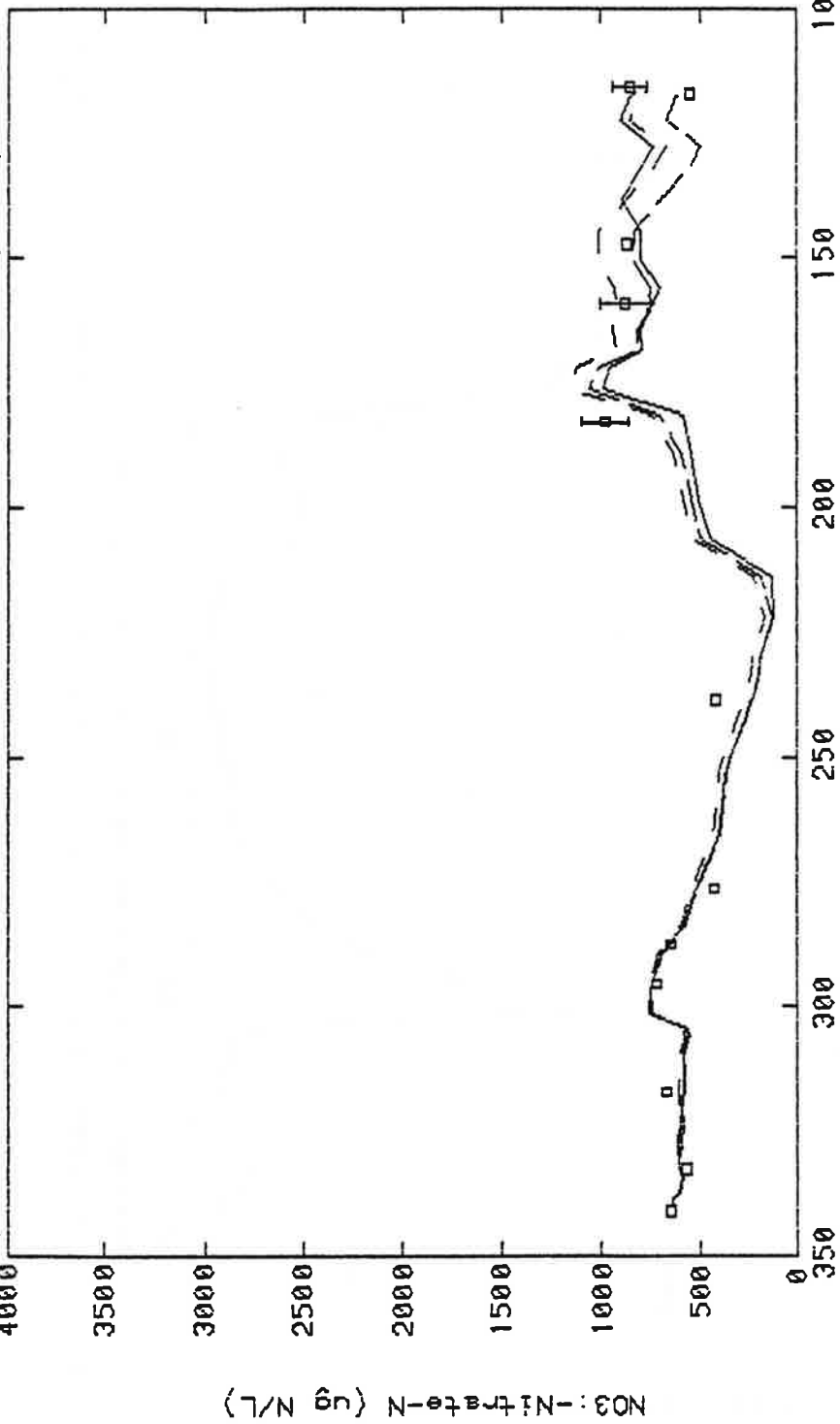


Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85073.inp 12 Jun 1991 00:13:32 HPGL File: CX85\_NH3.PLT

FIGURE E-2: September 1985 sensitivity of Ammonia to Water Temp.

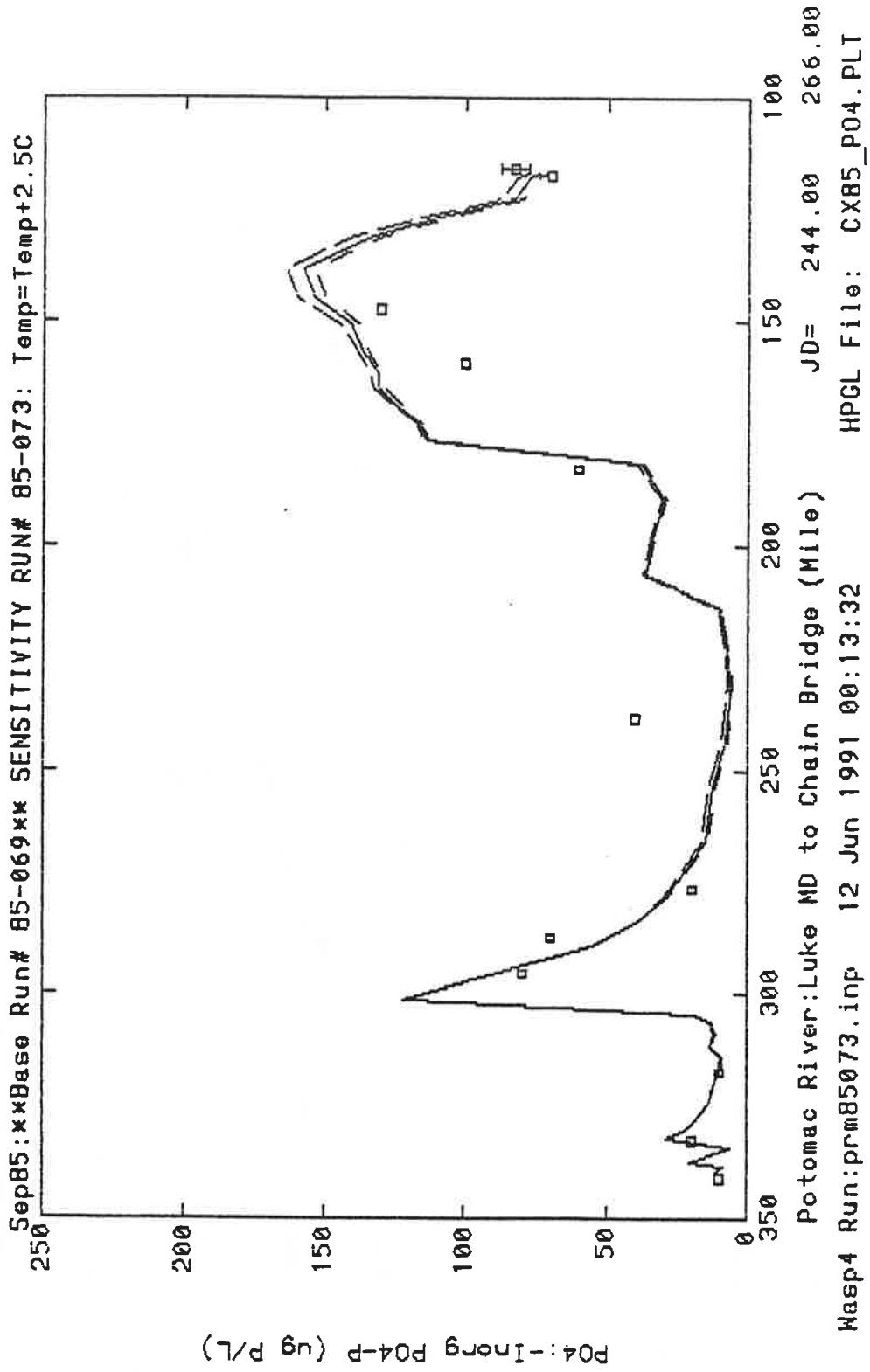
--- Base case + 2.5 C  
 --- Base Case  
 --- Base Case - 2.5 C

Sep85: x0Base Run# 85-069xk SENSITIVITY RUN# 85-073: Temp=Temp+2.5C



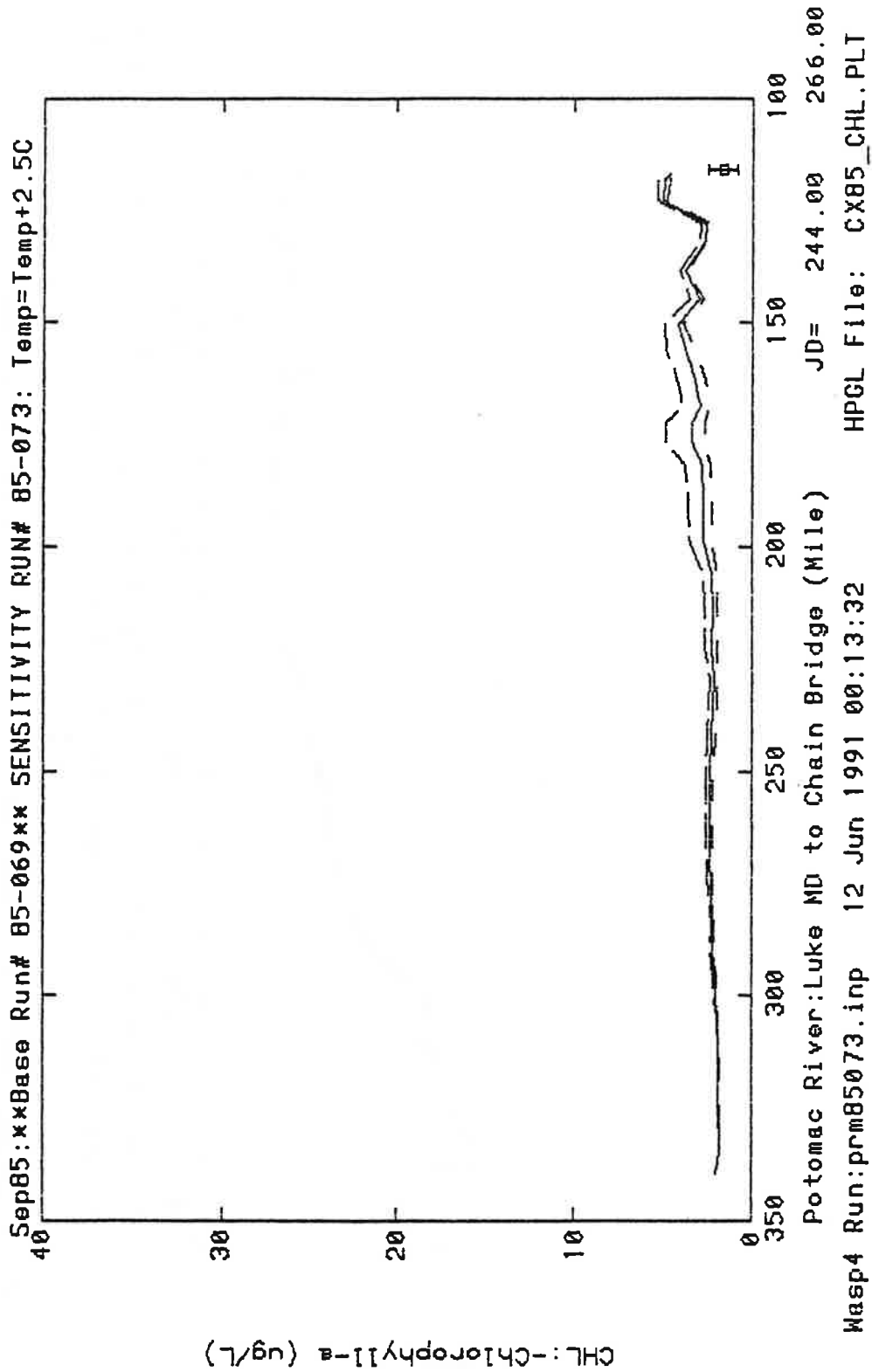
Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85073.inp 12 Jun 1991 00:13:32 HPGL File: CX85\_N03.PLT

FIGURE E-3: September 1985 sensitivity of Nitrate to Water Temp.  
 --- Base case + 2.5 C  
 — Base Case  
 -.- Base Case - 2.5 C



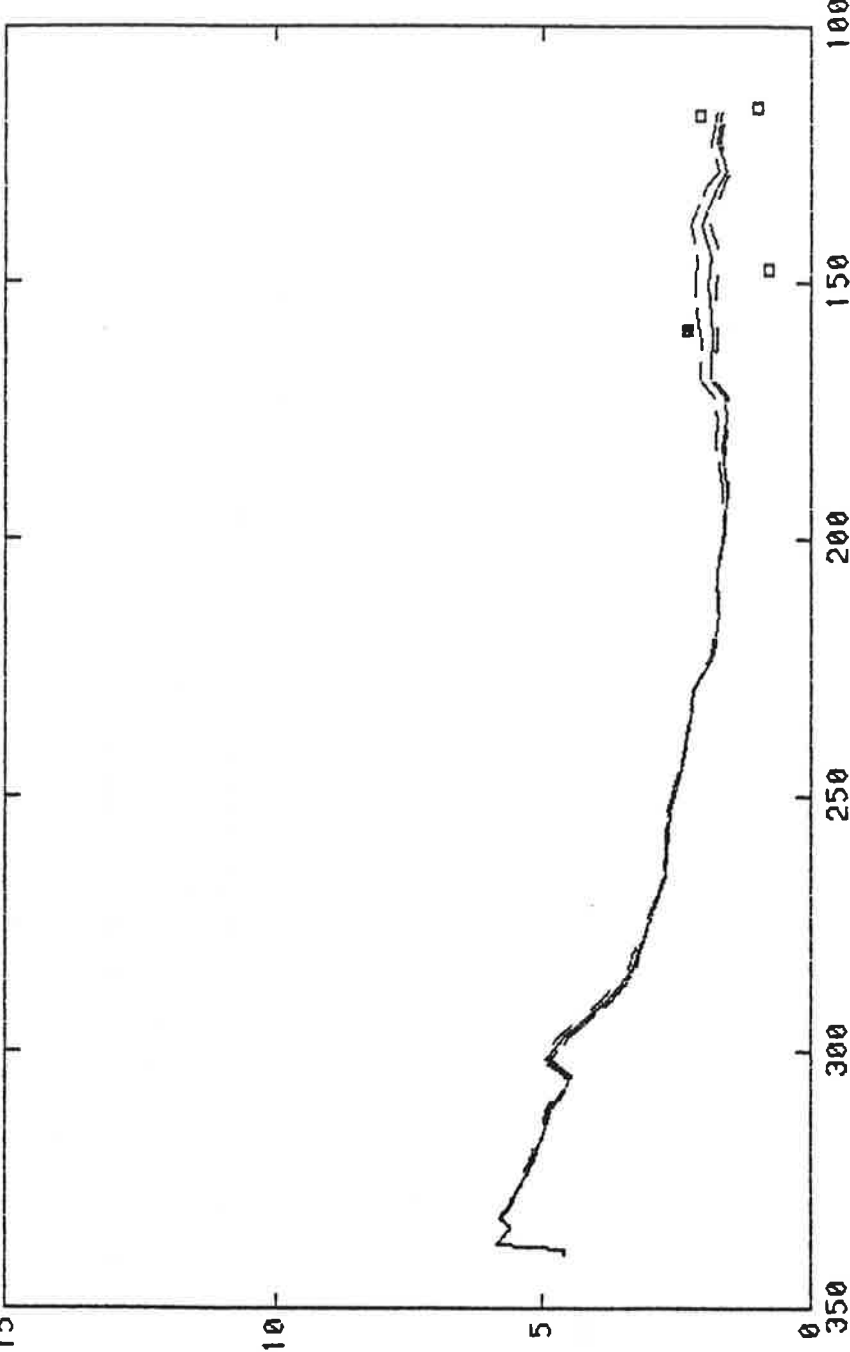
**FIGURE E-4:** September 1985 sensitivity of Phosphate to Water Temp.  
 --- Base case + 2.5 C  
 — Base Case  
 --- Base Case - 2.5 C





**FIGURE E-5:** September 1985 sensitivity of Chlorophyll to Water Temp.

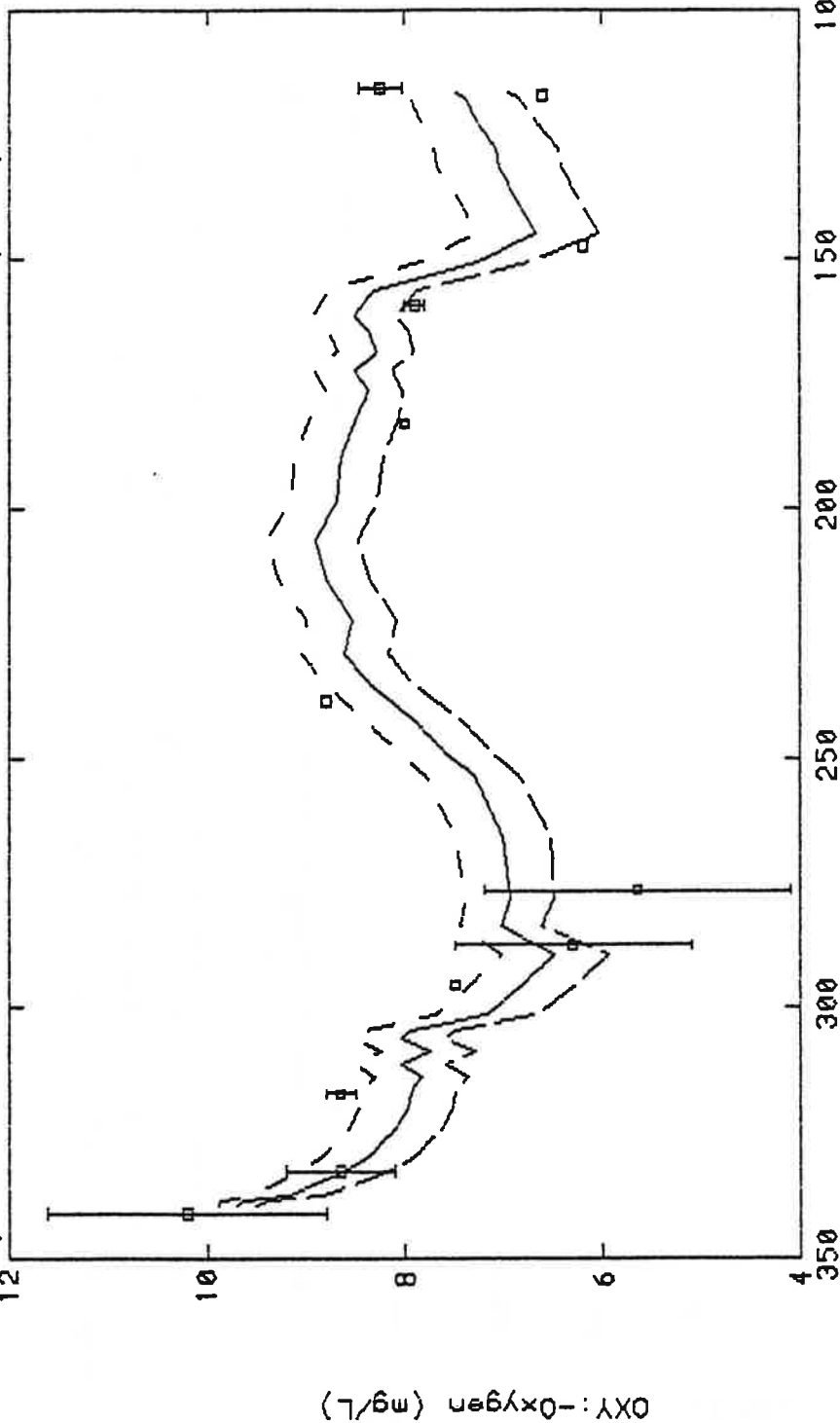
Sep85: \*xBase Run# 85-069\*\* SENSITIVITY RUN# 85-073: Temp=Temp+2.5C



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85073.inp 12 Jun 1991 00:13:32 HPGL File: CX85\_BOD.PLT

FIGURE E-6: September 1985 sensitivity of BOD to Water Temp.  
 --- Base case + 2.5 C  
 — Base Case  
 - - - Base Case - 2.5 C

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-073: Temp=Temp+2.5C



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85073.inp 12 Jun 1991 00:13:32 HPGL File: CX85\_OXY.PLT

FIGURE E-7: September 1985 sensitivity of Diss. Oxygen to Water Temp.  
 --- Base case + 2.5 C  
 — Base Case  
 -.- Base Case - 2.5 C

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-073: Temp=Temp+2.5C

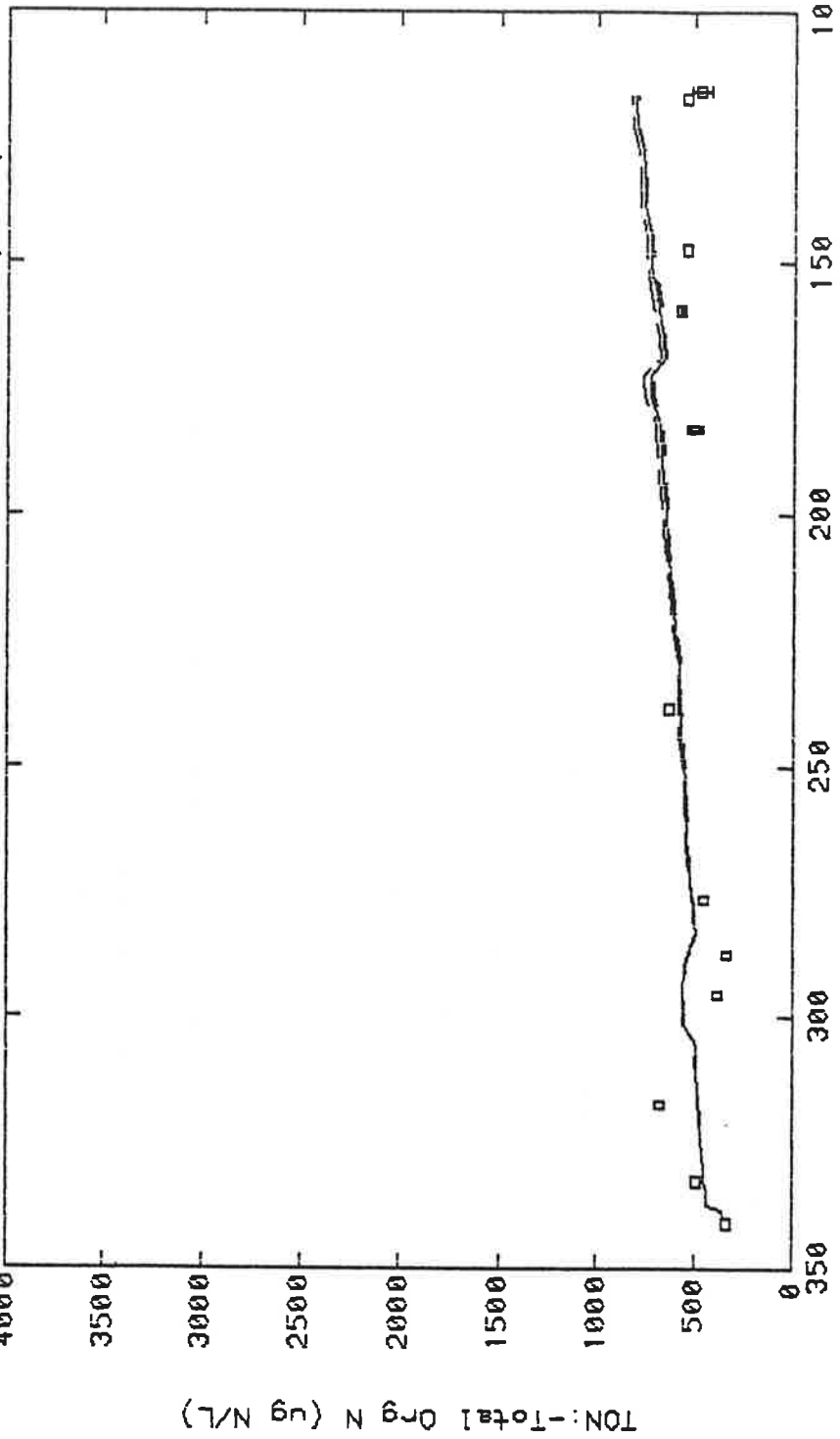


FIGURE E-8: Sep. 1985 sensitivity of Total Org. Nit. to Water Temp.  
 --- Base case + 2.5 C  
 — Base Case  
 -.- Base Case - 2.5 C

Sep85: \*xBase Run# 85-069\*\* SENSITIVITY RUN# 85-073: Temp=Temp+2.5C

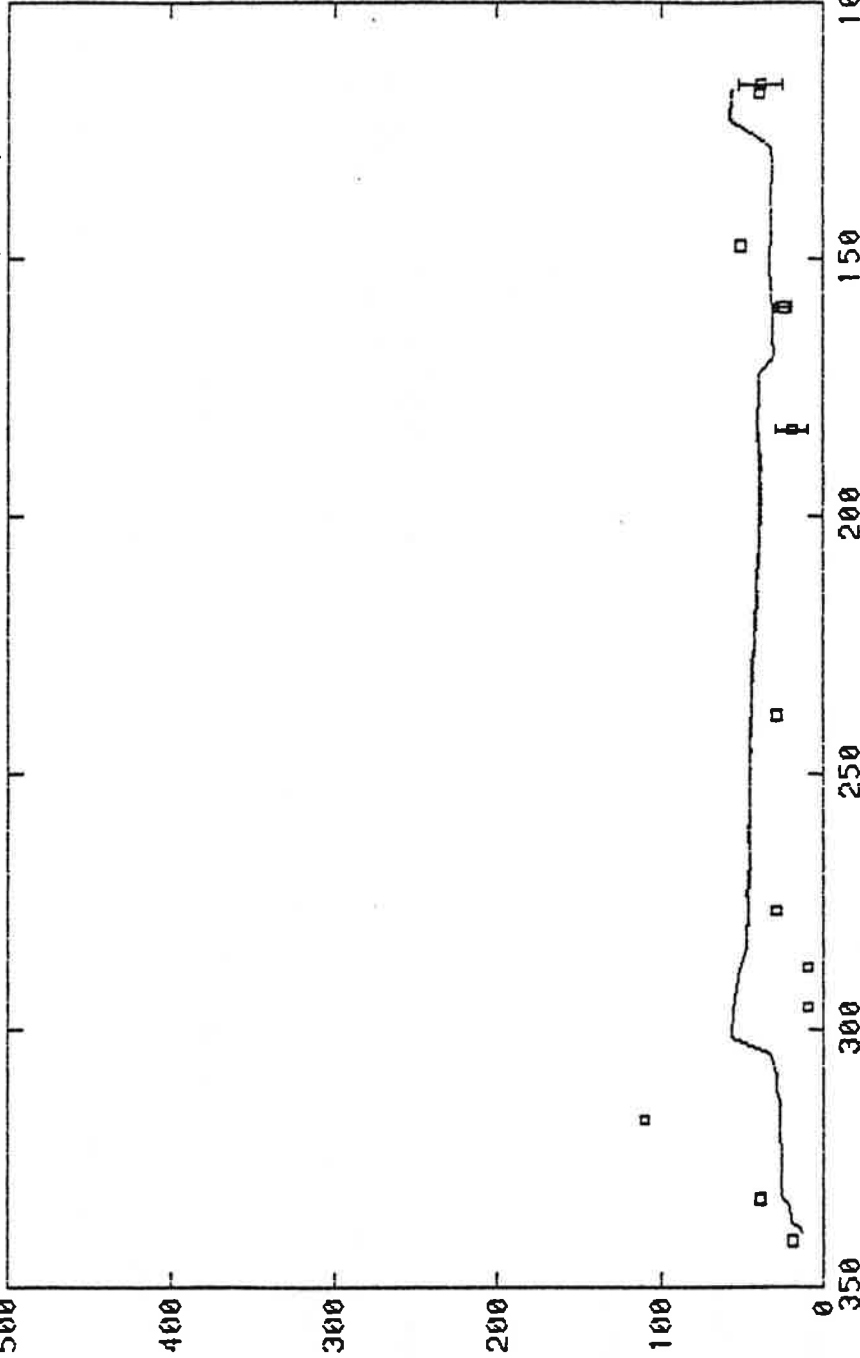


FIGURE E-9: Sep. 1985 sensitivity of Total Org. Phos. to Water Temp.

- Base case + 2.5 C
- Base Case
- ... Base Case - 2.5 C

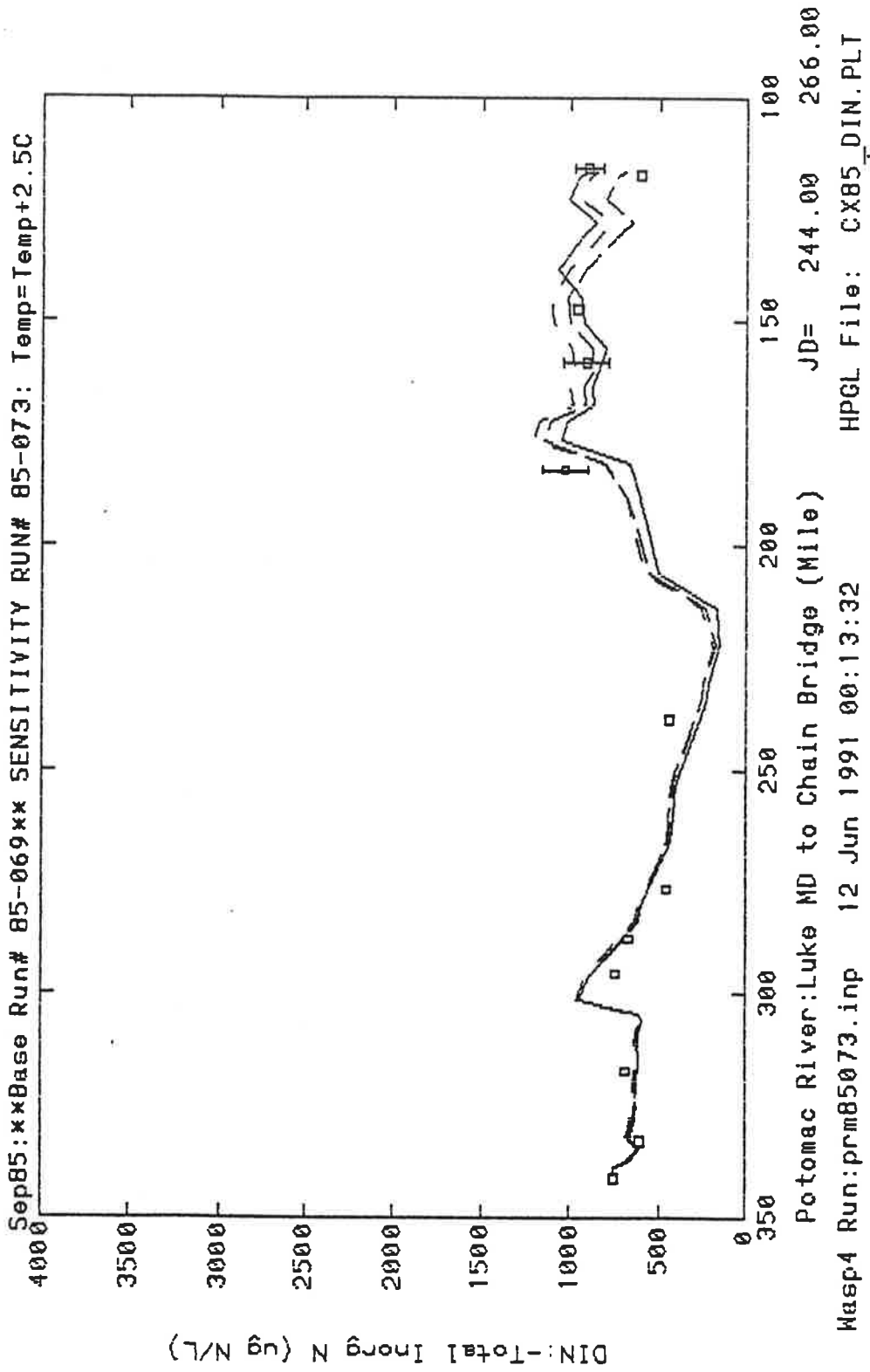


FIGURE E-10: Sep. 1985 sensitivity of Diss. Inor. Nit. to Water Temp.

Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-073: Temp=Temp+2.5C

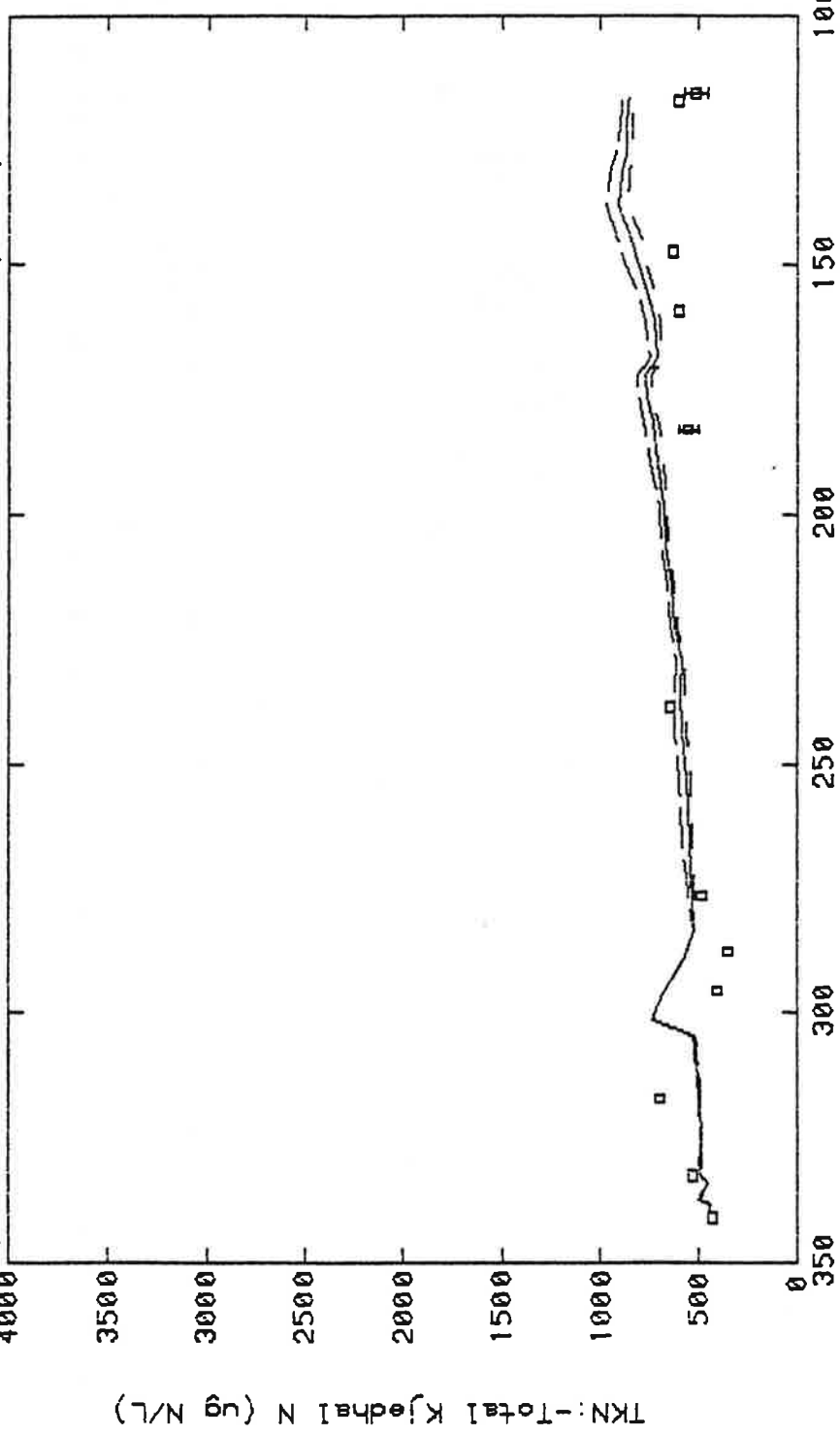
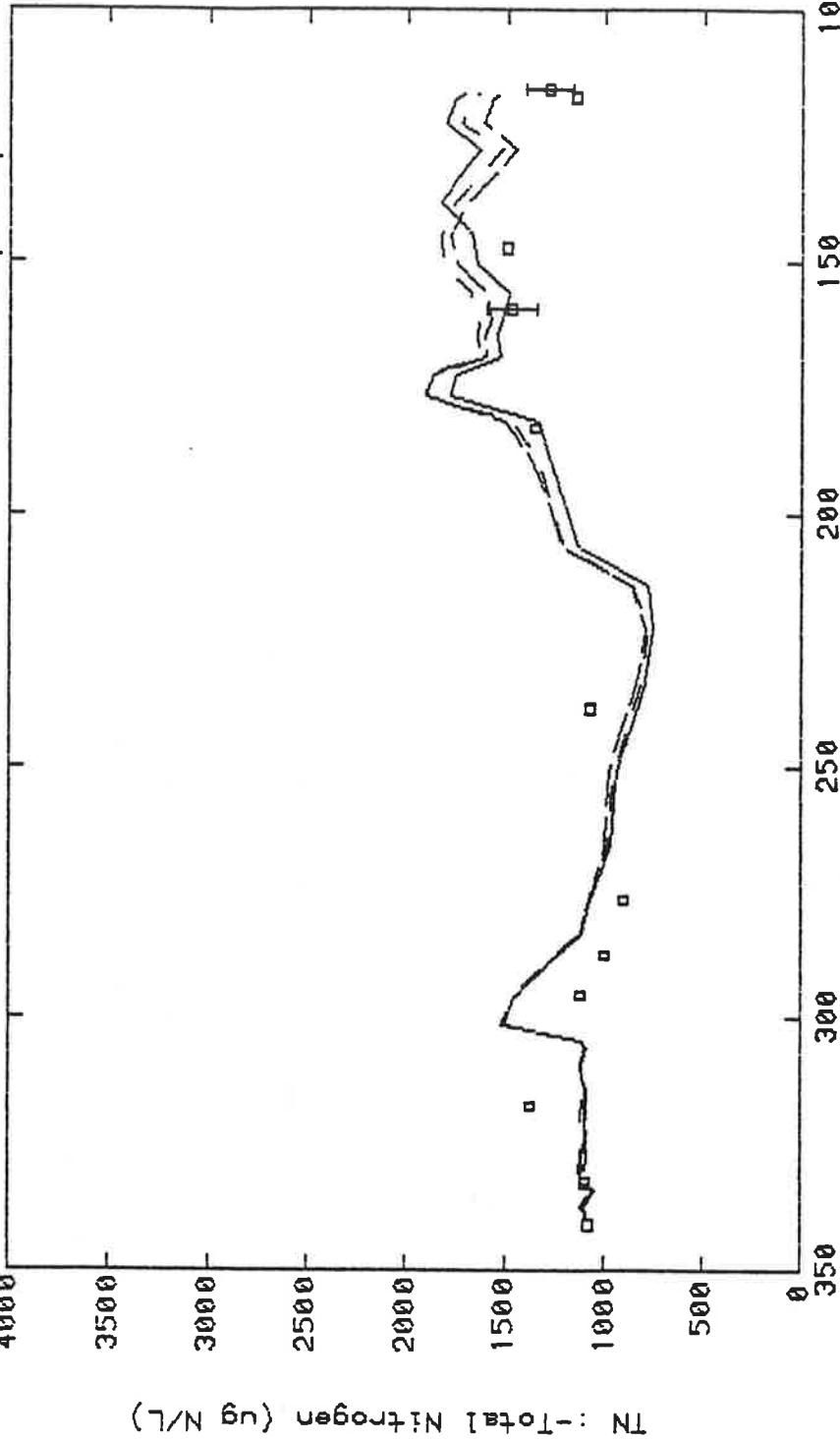


FIGURE E-11: Sep. 1985 sensitivity of TKN to Water Temp.

- Base case + 2.5 C
- Base Case
- Base Case - 2.5 C

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-073: Temp=Temp+2.5C



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85073.inp 12 Jun 1991 00:13:32 HPGl File: CX85\_IN.PLT

FIGURE E-12: September 1985 sensitivity of Total Nitrogen to WaterTemp.

--- Base case + 2.5 C  
 — Base Case  
 ... Base Case - 2.5 C



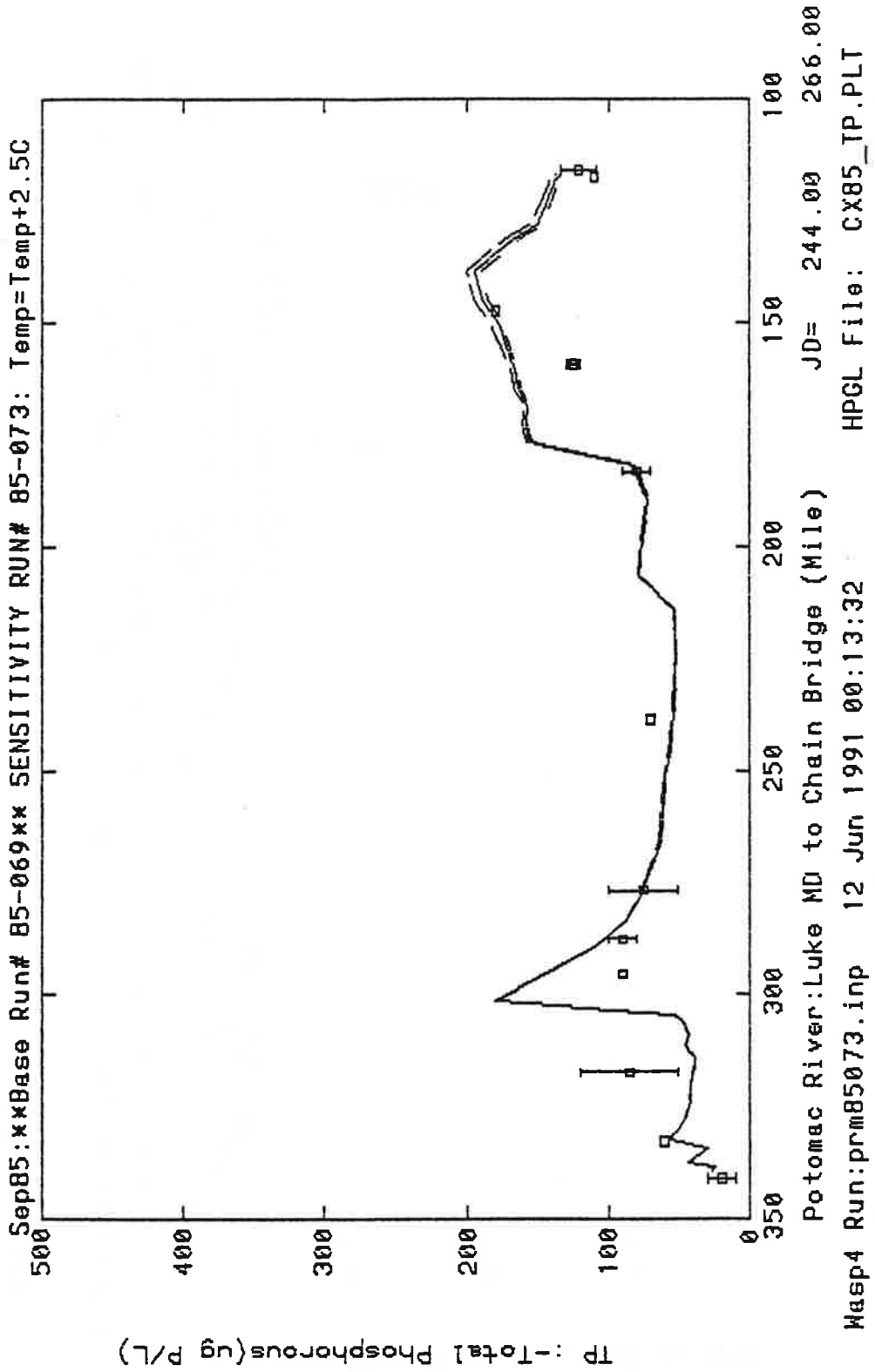


FIGURE E-13: Sep. 1985 sensitivity of Total Phosphorus to Water Temp.

- Base case + 2.5 C
- Base Case
- Base Case - 2.5 C

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-073: Temp=Temp+2.5C

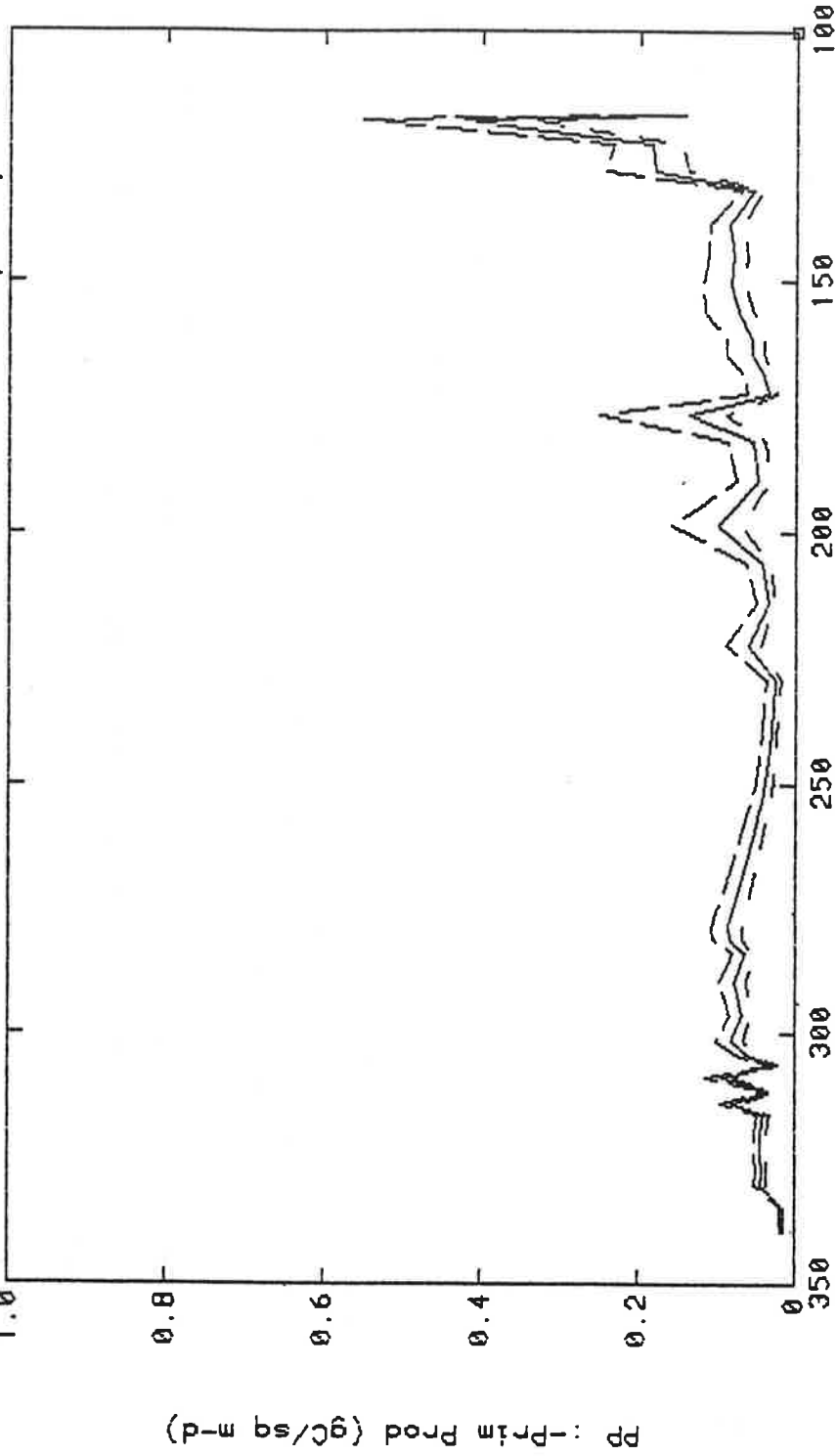
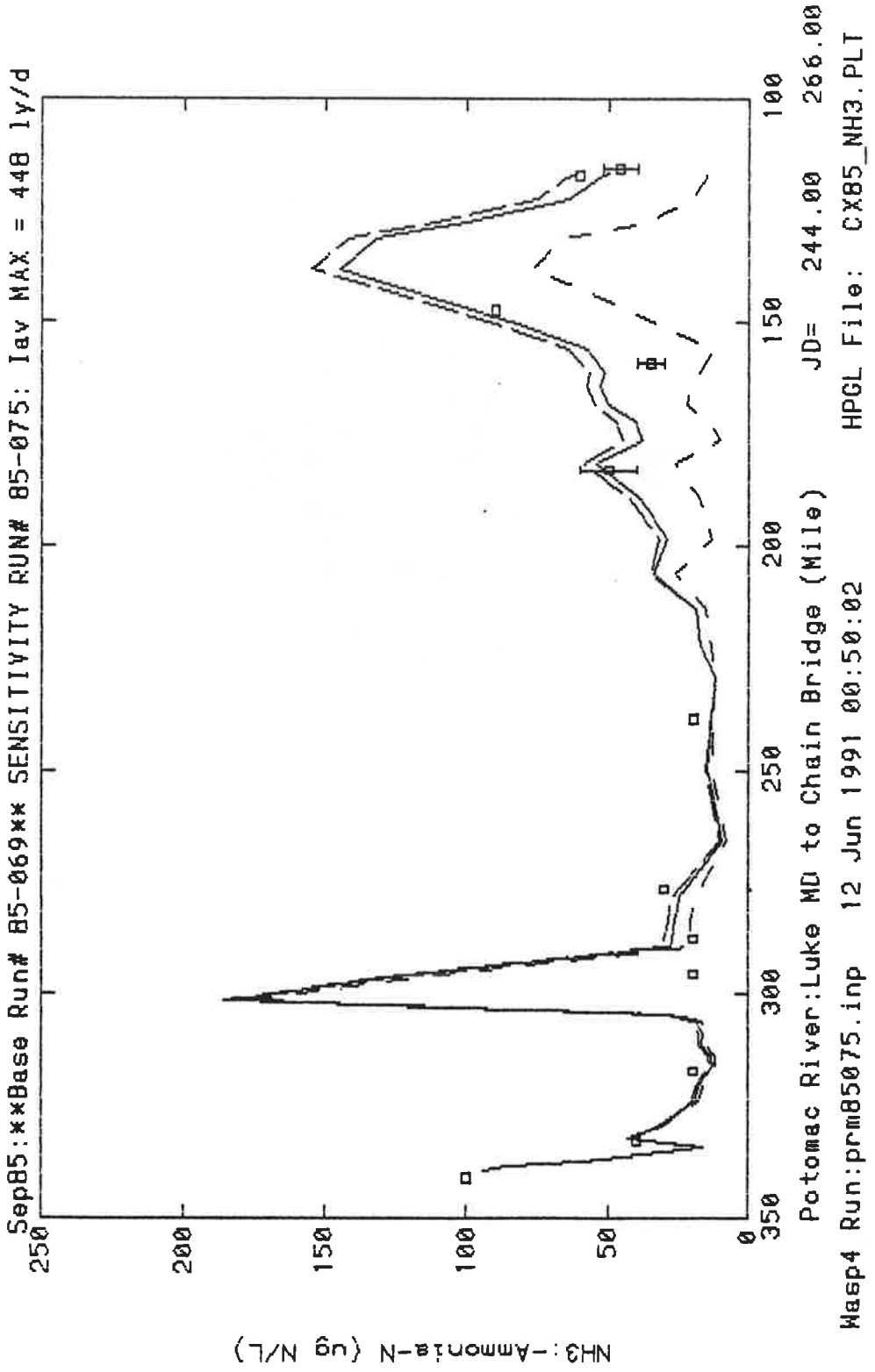


FIGURE E-14: Sep. 1985 sensitivity of Primary Prod. to Water Temp.

- Base case + 2.5 C
- Base Case
- Base Case - 2.5 C

Appendix F - Sensitivity Analysis-2 Incident Solar Radiation

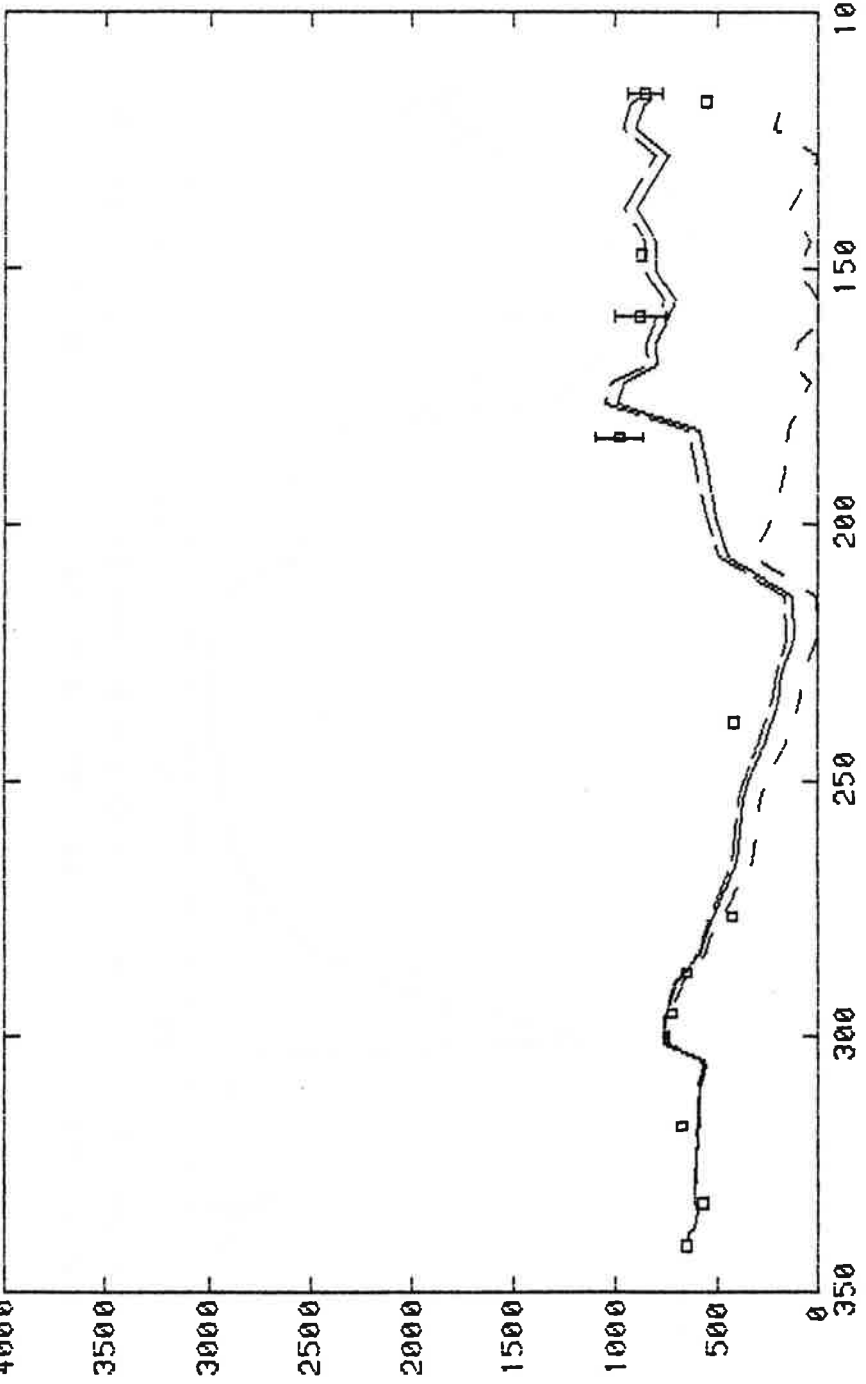
NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity



**FIGURE F-1:** September 1985 sensitivity of Ammonia to Solar Radiation

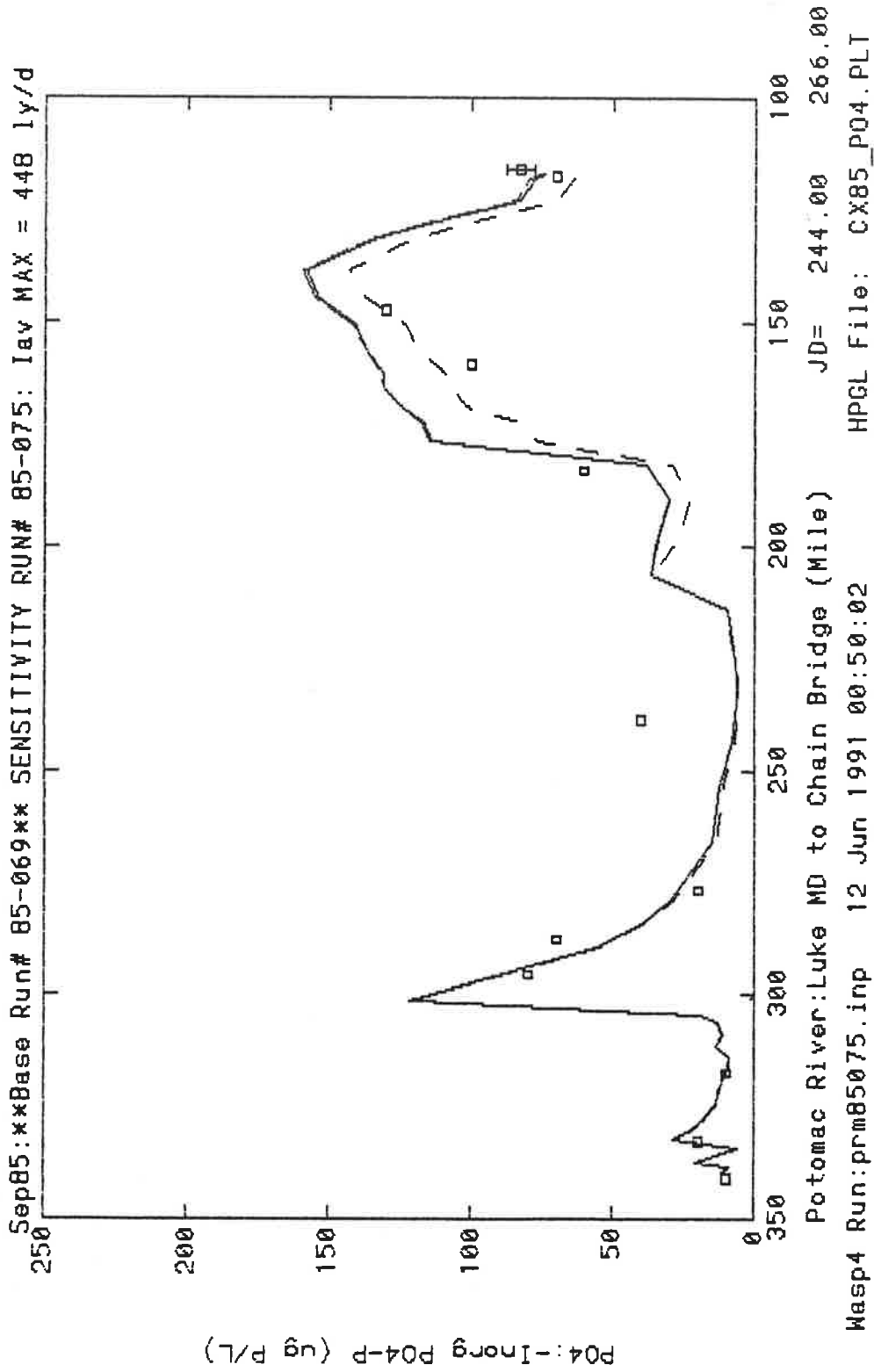
- High est. 448 ly/day
- Base Case 394 ly/day
- Low Est. 335 ly/day

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGL File: CX85\_ND3.PLT

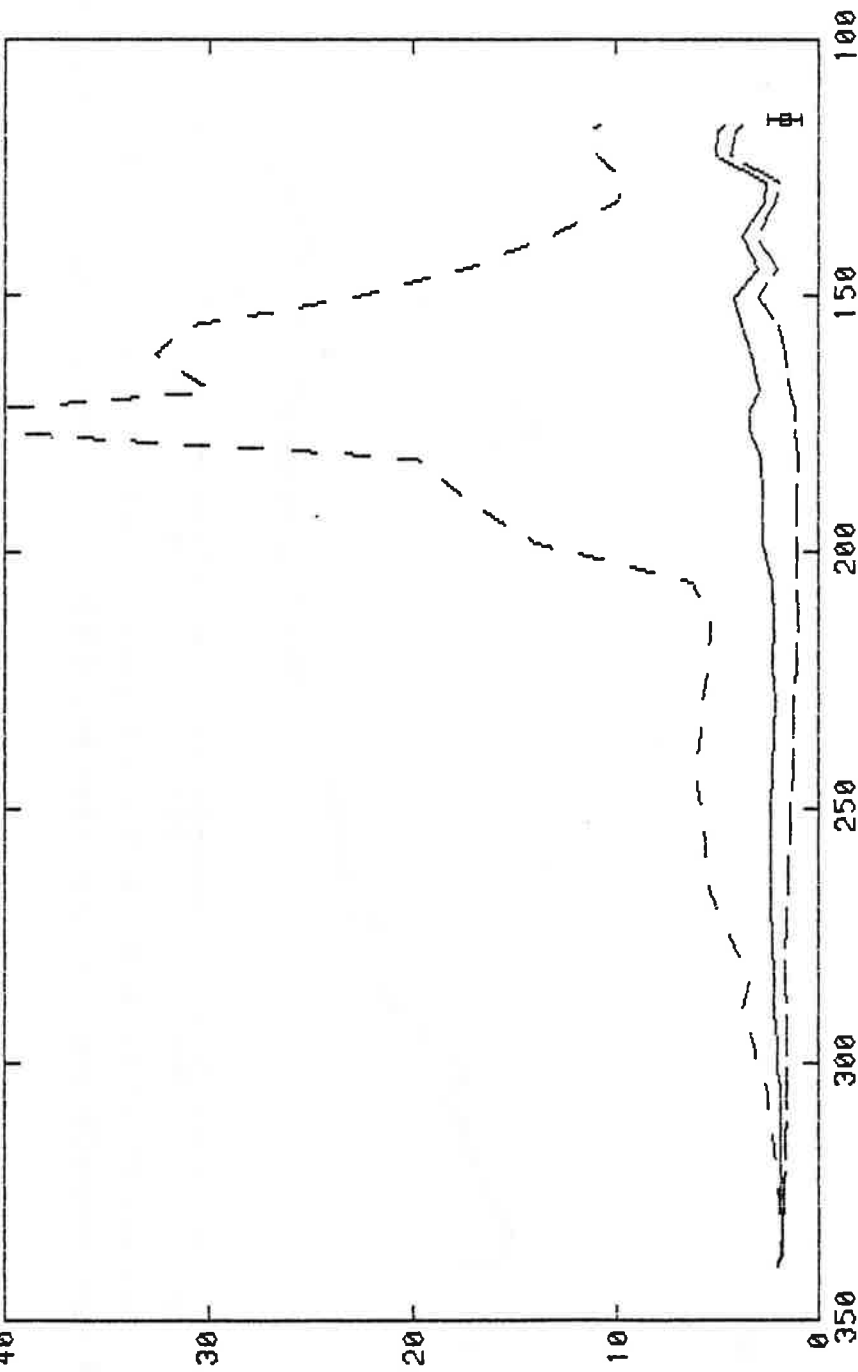
FIGURE F-2: September 1985 sensitivity of Nitrate to Solar Radiation  
 --- High est. 448 ly/day  
 — Base Case 394 ly/day  
 - - - Low Est. 335 ly/day



**FIGURE F-3:** September 1985 sensitivity of Phosphate to Solar Radiation

- High est. 448 ly/day
- Base Case 394 ly/day
- Low Est. 335 ly/day

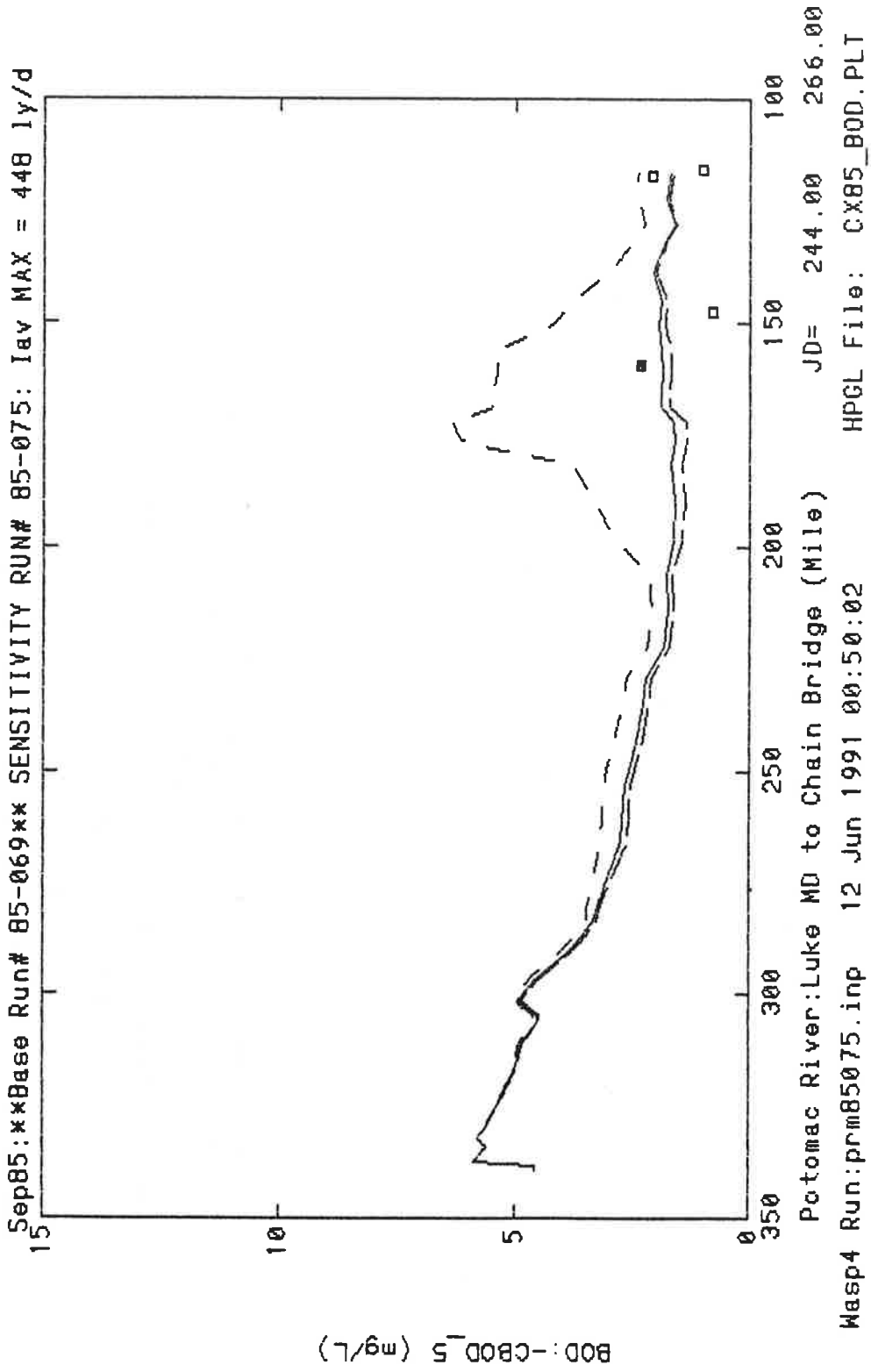
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGCL File: CX85\_CHL.PLT

FIGURE F-4: Sep. 1985 sensitivity of Chlorophyll to Solar Radiation

- High est. 448 ly/day
- Base Case 394 ly/day
- ... Low Est. 335 ly/day



**FIGURE F-5:** September 1985 sensitivity of BOD to Solar Radiation

- High est. 448 ly/day
- Base Case 394 ly/day
- Low Est. 335 ly/day



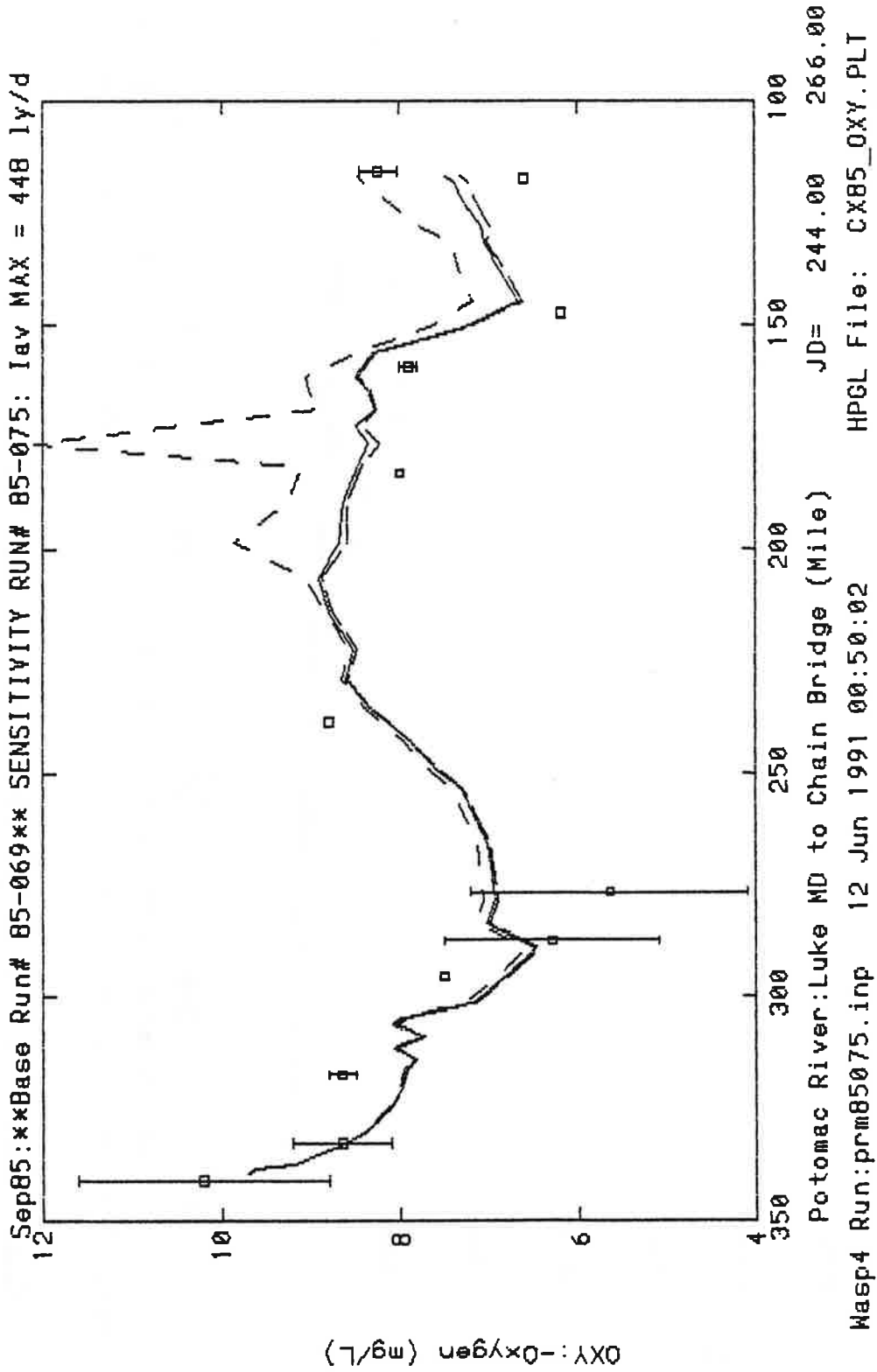
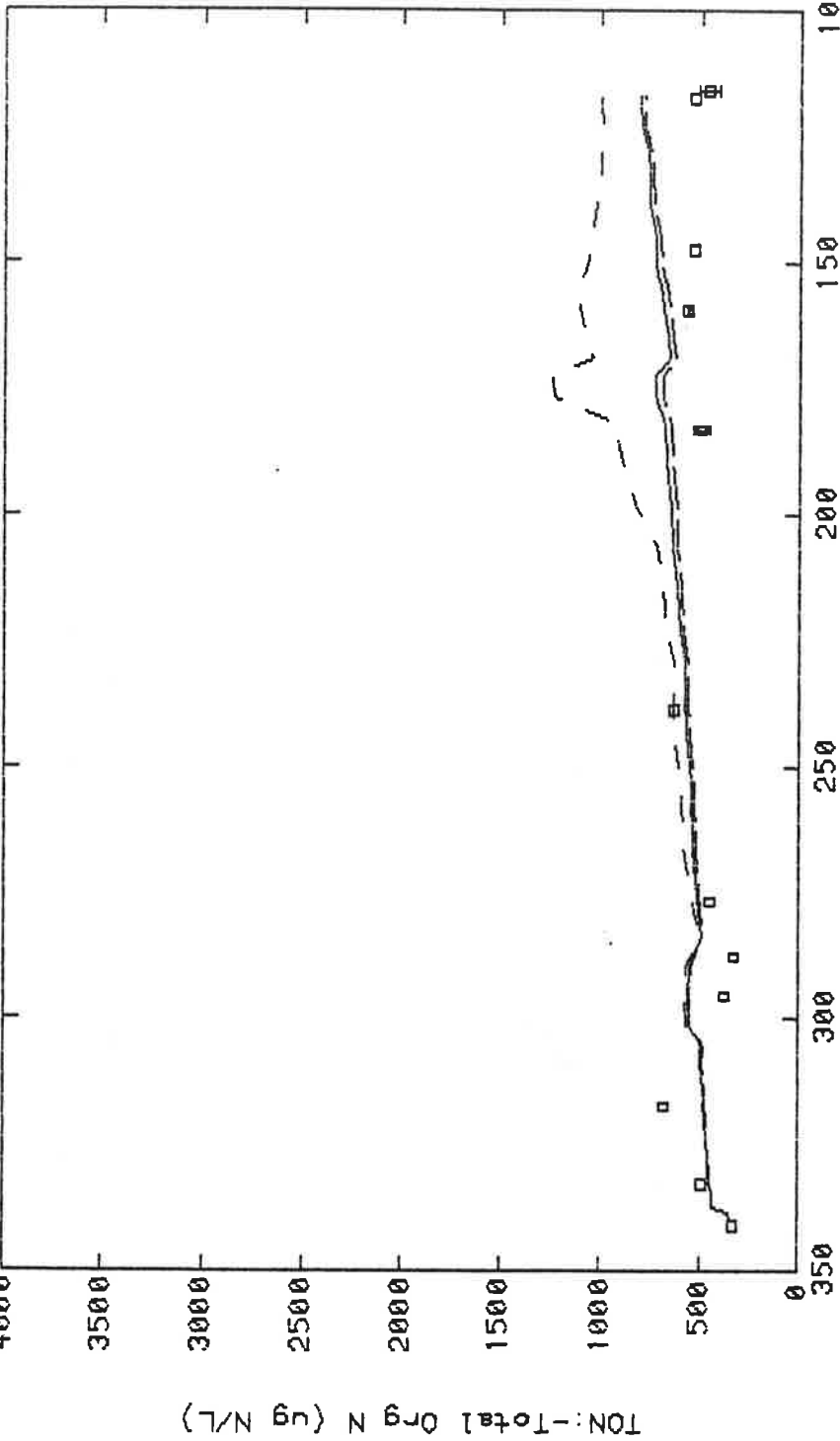


FIGURE F-6: September 1985 sensitivity of DO to Solar Radiation

- High est. 448 ly/day
- Base Case 394 ly/day
- Low Est. 335 ly/day

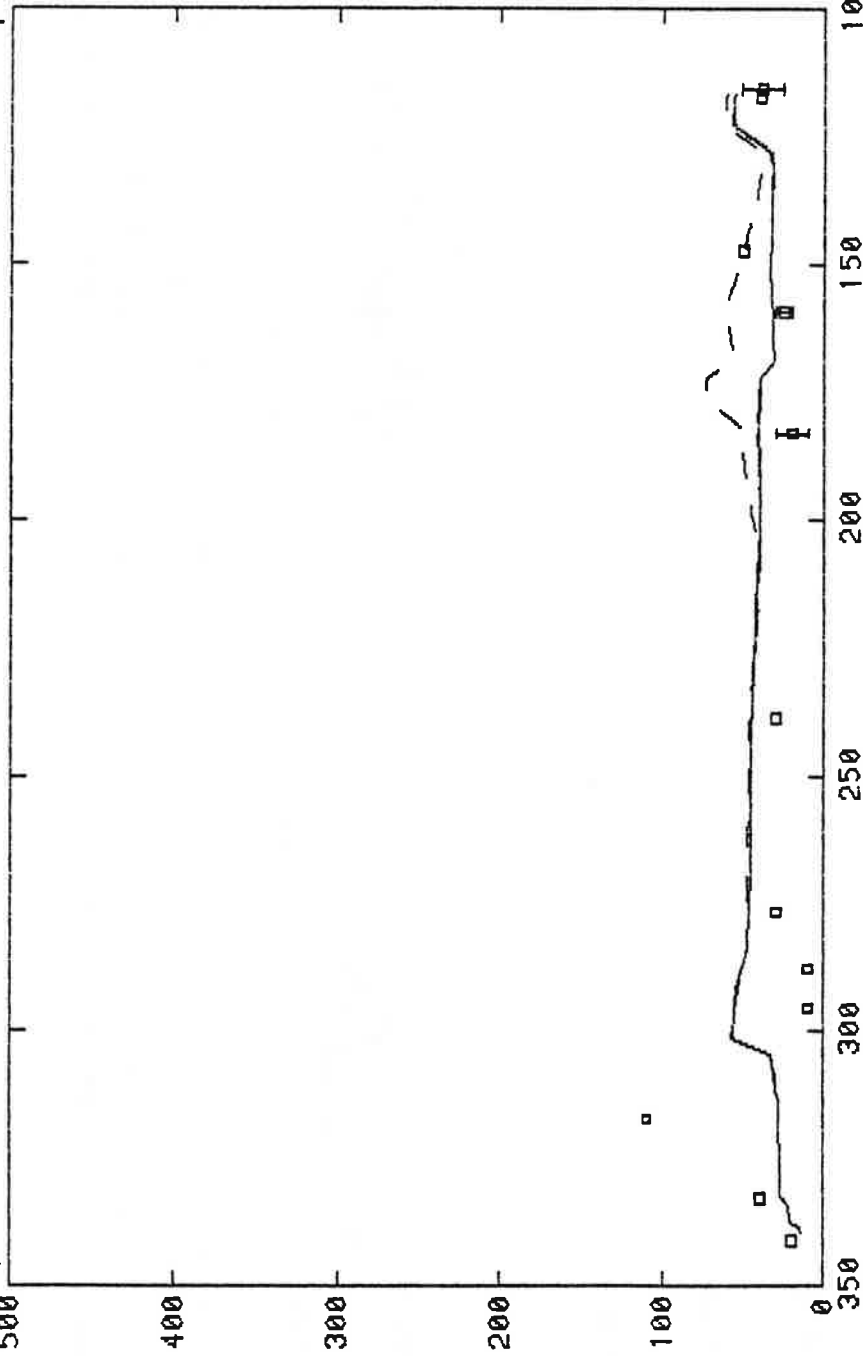
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Masp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGL File: CX85\_TON.PLT

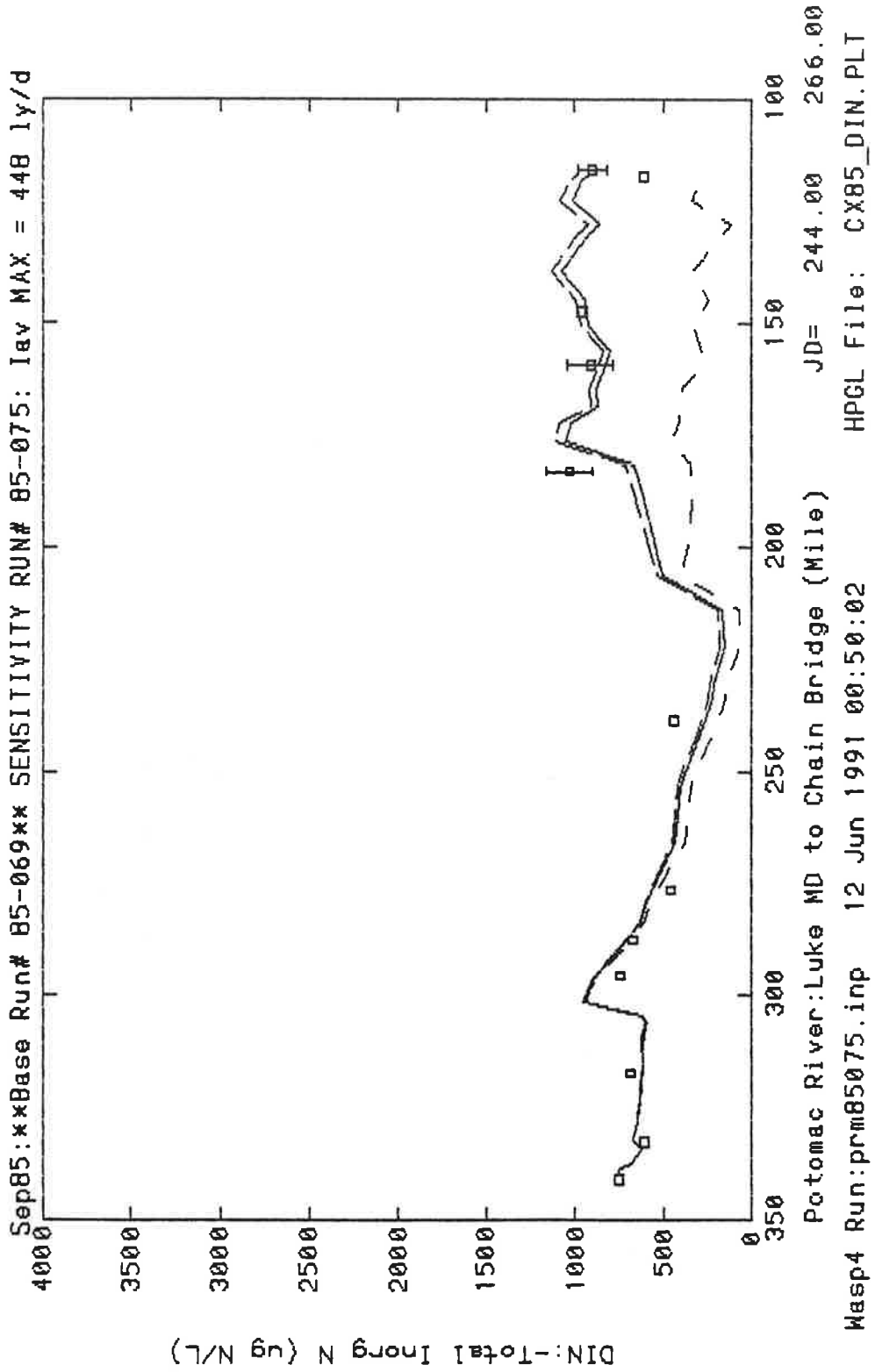
FIGURE F-7: Sep. 1985 sensitivity of Tot Org. Nit. to Solar Radiation  
--- High est. 448 ly/day  
— Base Case 394 ly/day  
- - - Low Est. 335 ly/day

Sep85:\*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



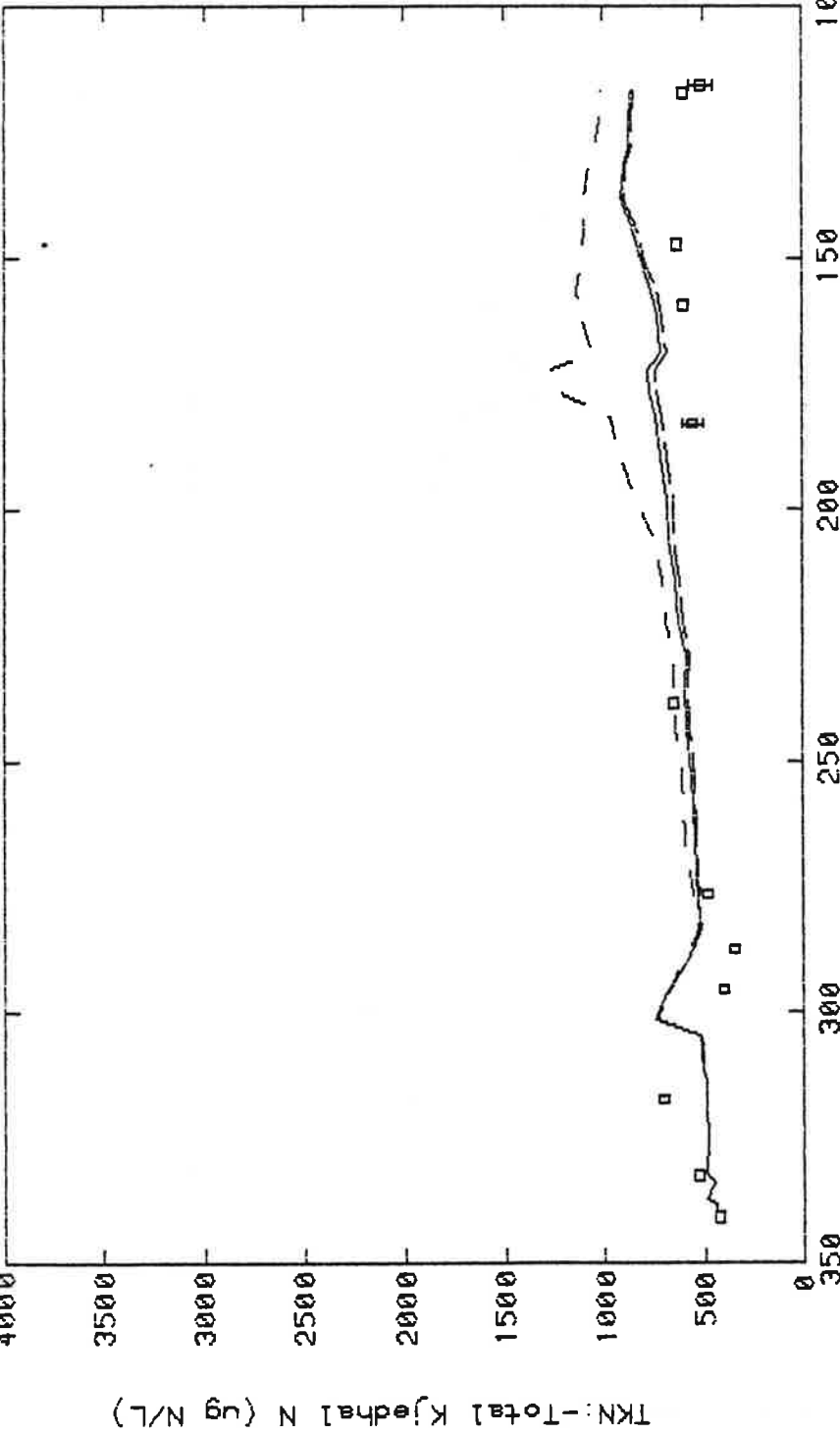
Wasp4 Run:prmm85075.inp 12 Jun 1991 00:50:02 JD= 244.00 266.00  
 HPGL File: CX85\_TOP.PLT

FIGURE F-8: Sep. 1985 sensitivity of Tot Org. Phos. to Solar Radiation  
 --- High est. 448 ly/day  
 — Base Case 394 ly/day  
 -.- Low Est. 335 ly/day



**FIGURE F-9:** Sep. 1985 sens. of Diss. Inor. Nit. to Solar Radiation  
 --- High est. 448 ly/day  
 — Base Case 394 ly/day  
 - - - Low Est. 335 ly/day

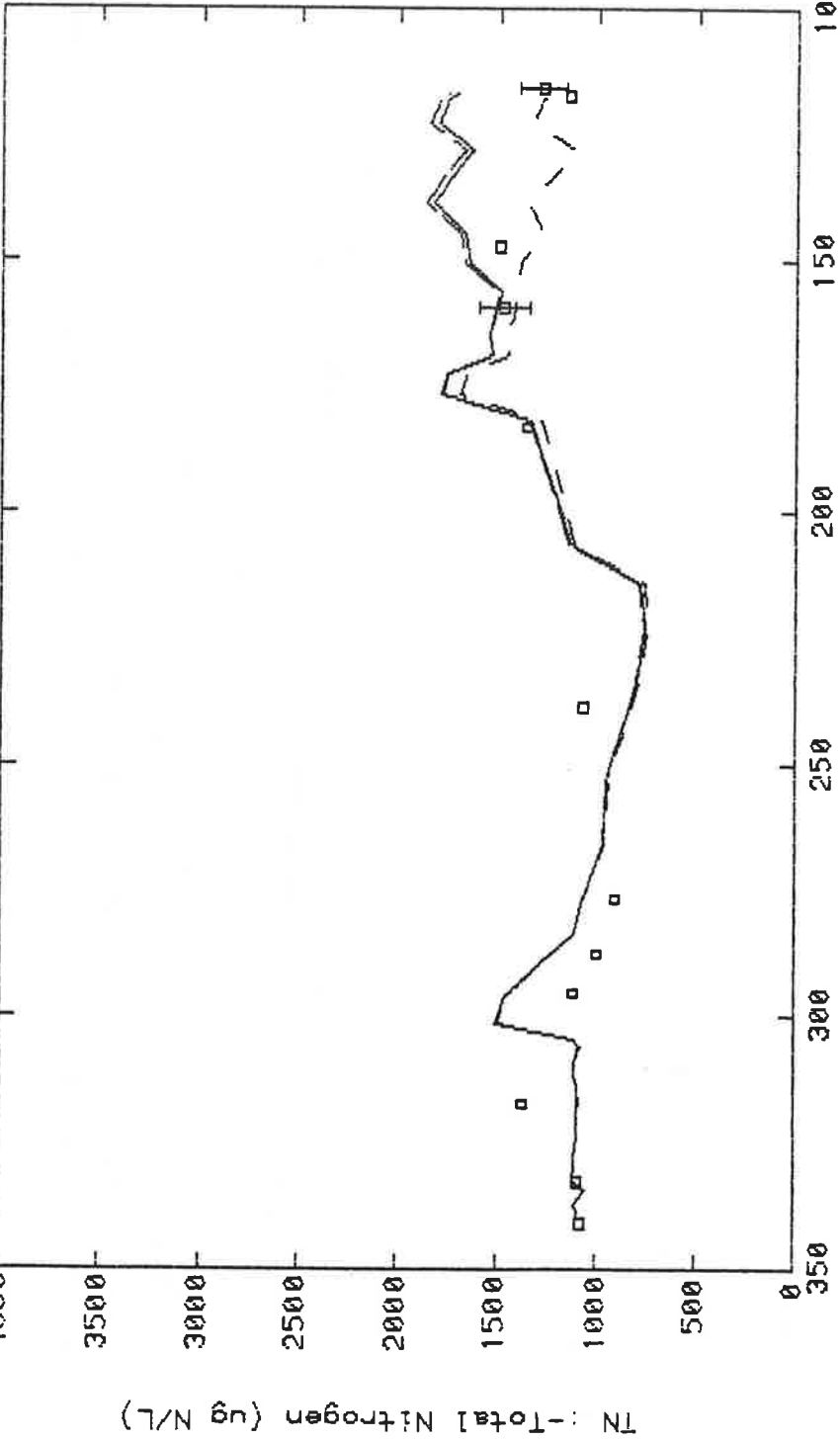
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGL File: CX85\_TKN.PLT

FIGURE F-10: Sep. 1985 sensitivity of TKN to Solar Radiation  
 --- High est. 448 ly/day  
 — Base Case 394 ly/day  
 -.- Low Est. 335 ly/day

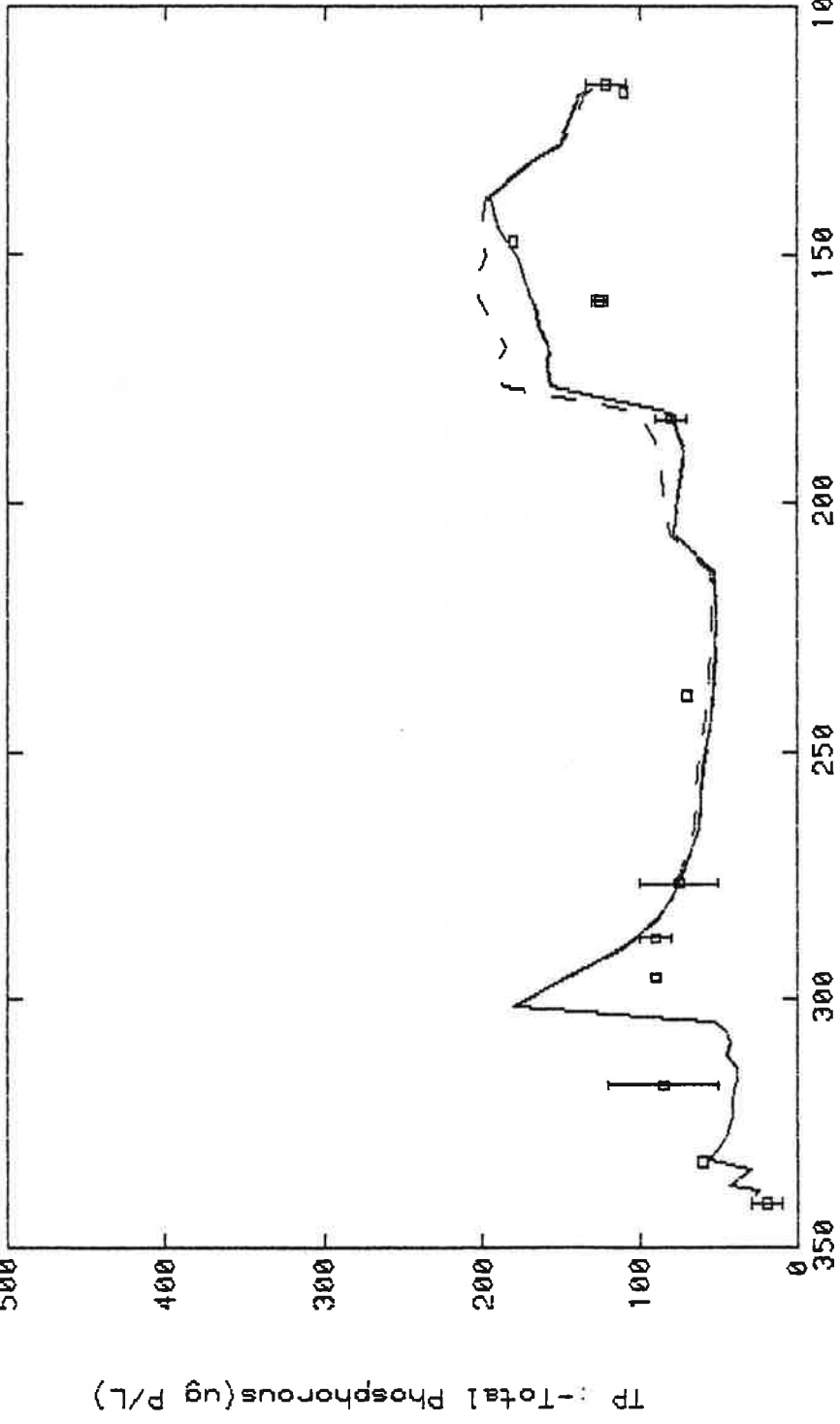
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Masp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGL File: CX85\_TN.PLT

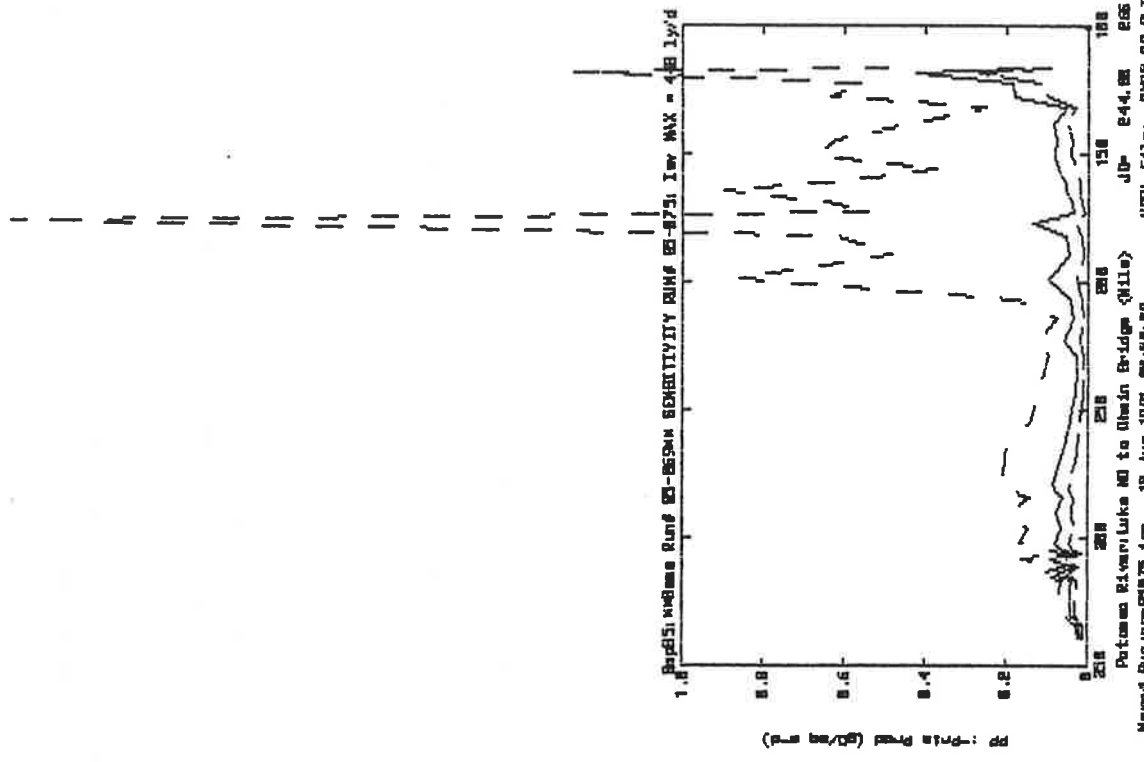
FIGURE F-11: September 1985 sens. of Total Nit. to Solar Radiation  
--- High est. 448 ly/day  
- - - Base Case 394 ly/day  
- . - Low Est. 335 ly/day

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-075: Iav MAX = 448 ly/d



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85075.inp 12 Jun 1991 00:50:02 HPGL File: CX85\_IP.PLT

FIGURE F-12: Sep. 1985 sensitivity of Total Phos. to Solar Radiation  
 --- High est. 448 ly/day  
 — Base Case 394 ly/day  
 -.- Low Est. 335 ly/day

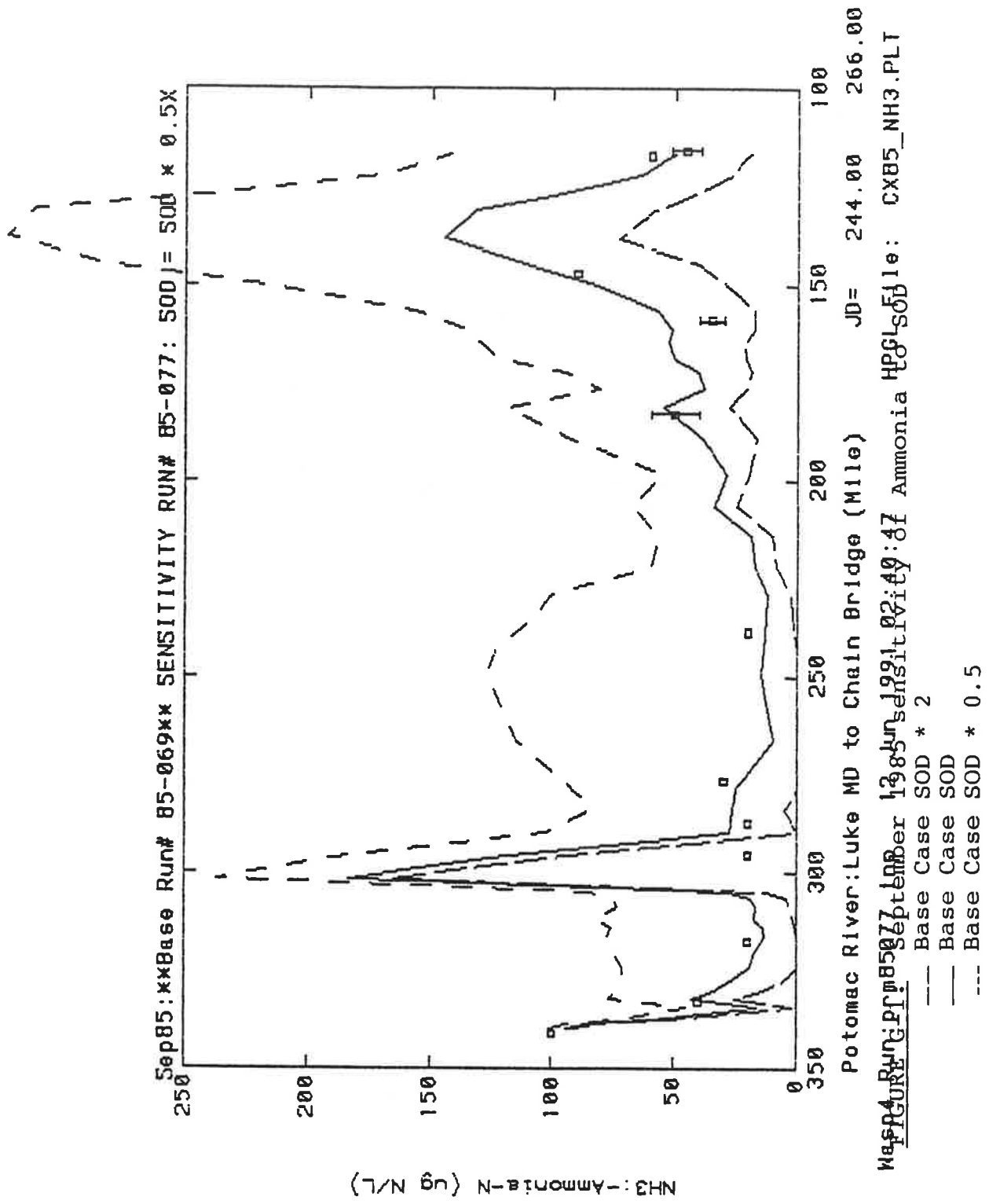


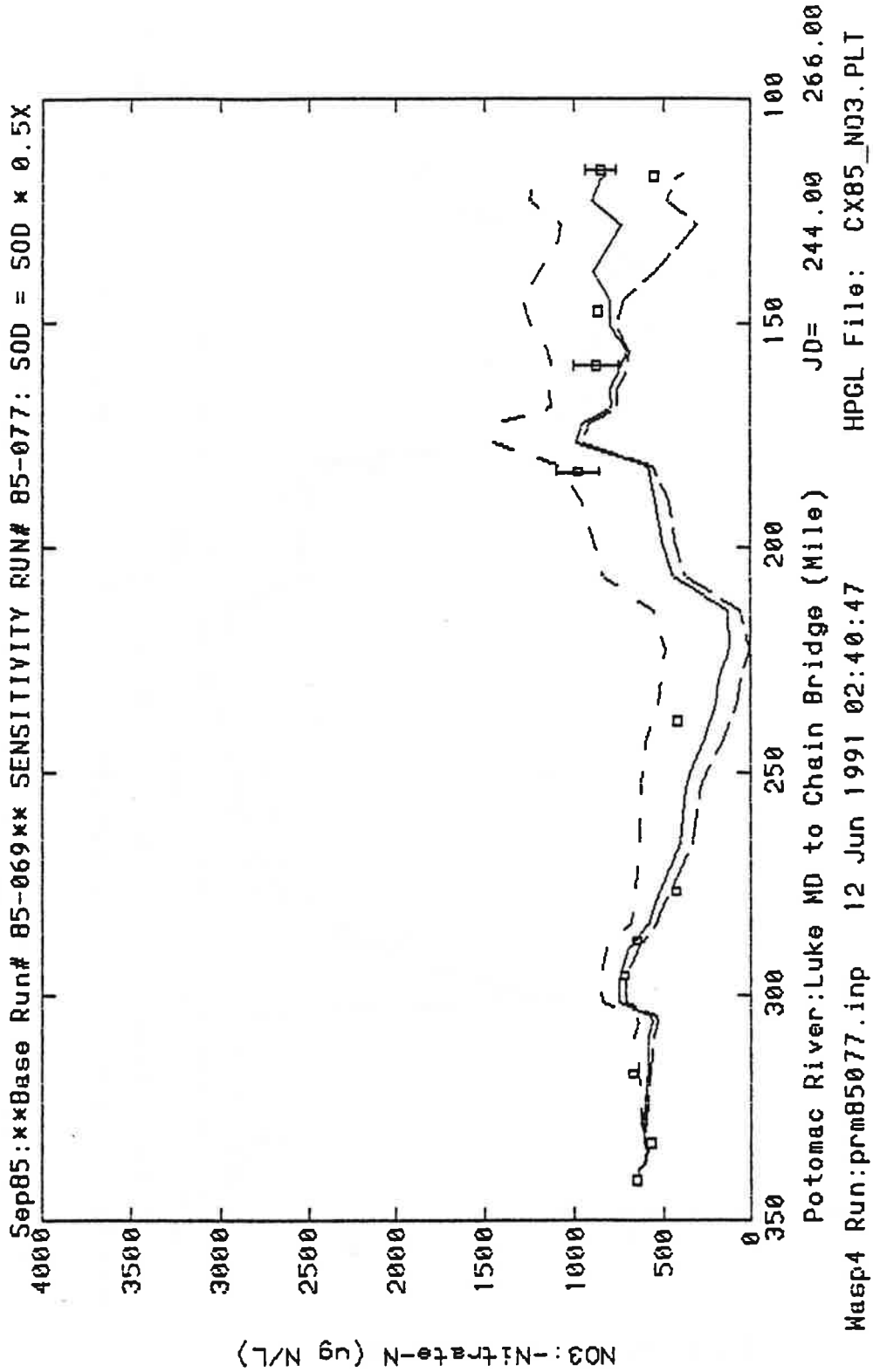
**FIGURE F-13:** Sep. 1985 Sensitivity of Primary Production to Basin Bridge (Mile)  
 High est. 448 ly/day  
 Base Case 394 ly/day  
 Low Est. 335 ly/day



**Appendix G - Sensitivity Analysis-3 Sediment Oxygen Demand**

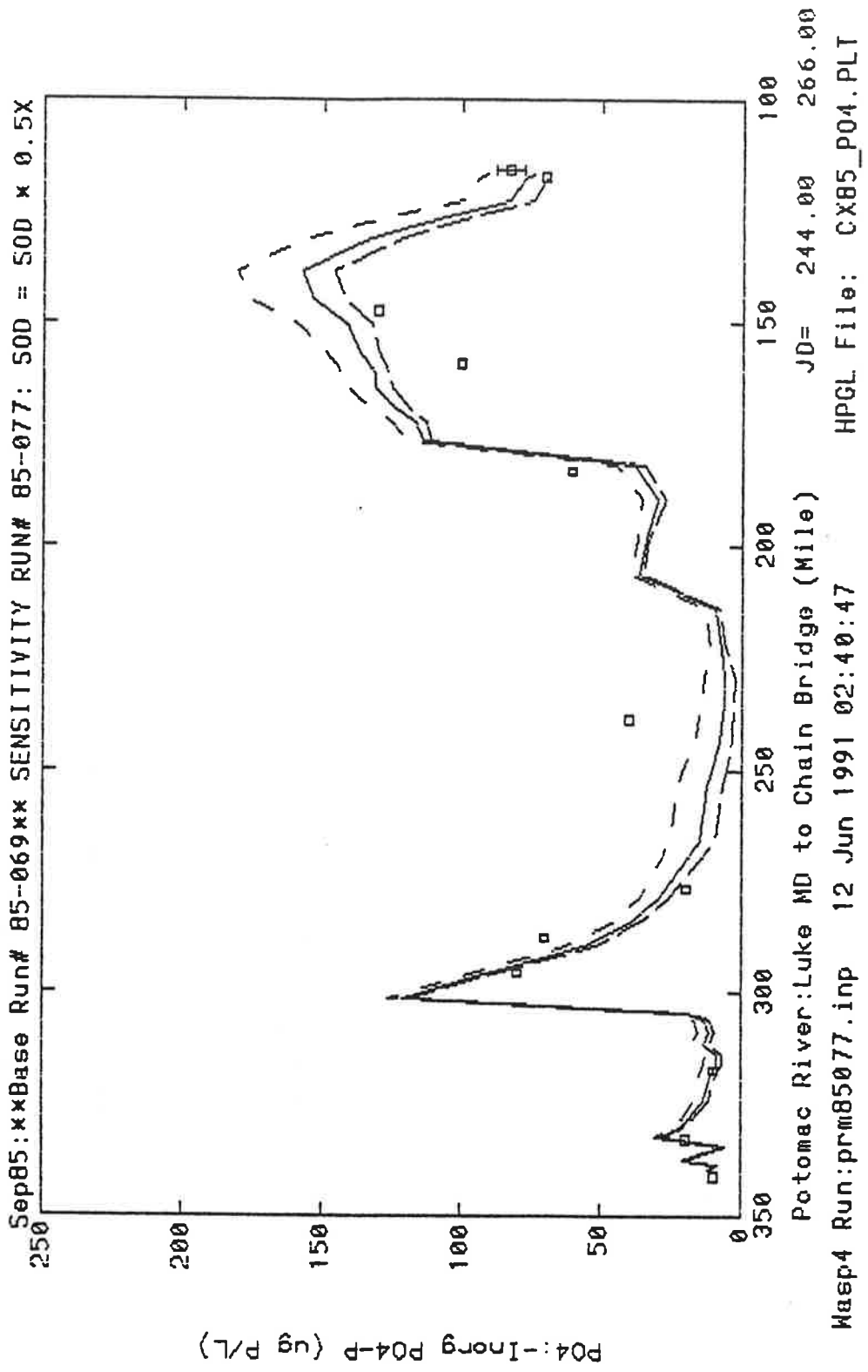
NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity





**FIGURE G-2:** September 1985 sensitivity of Nitrate to SOD

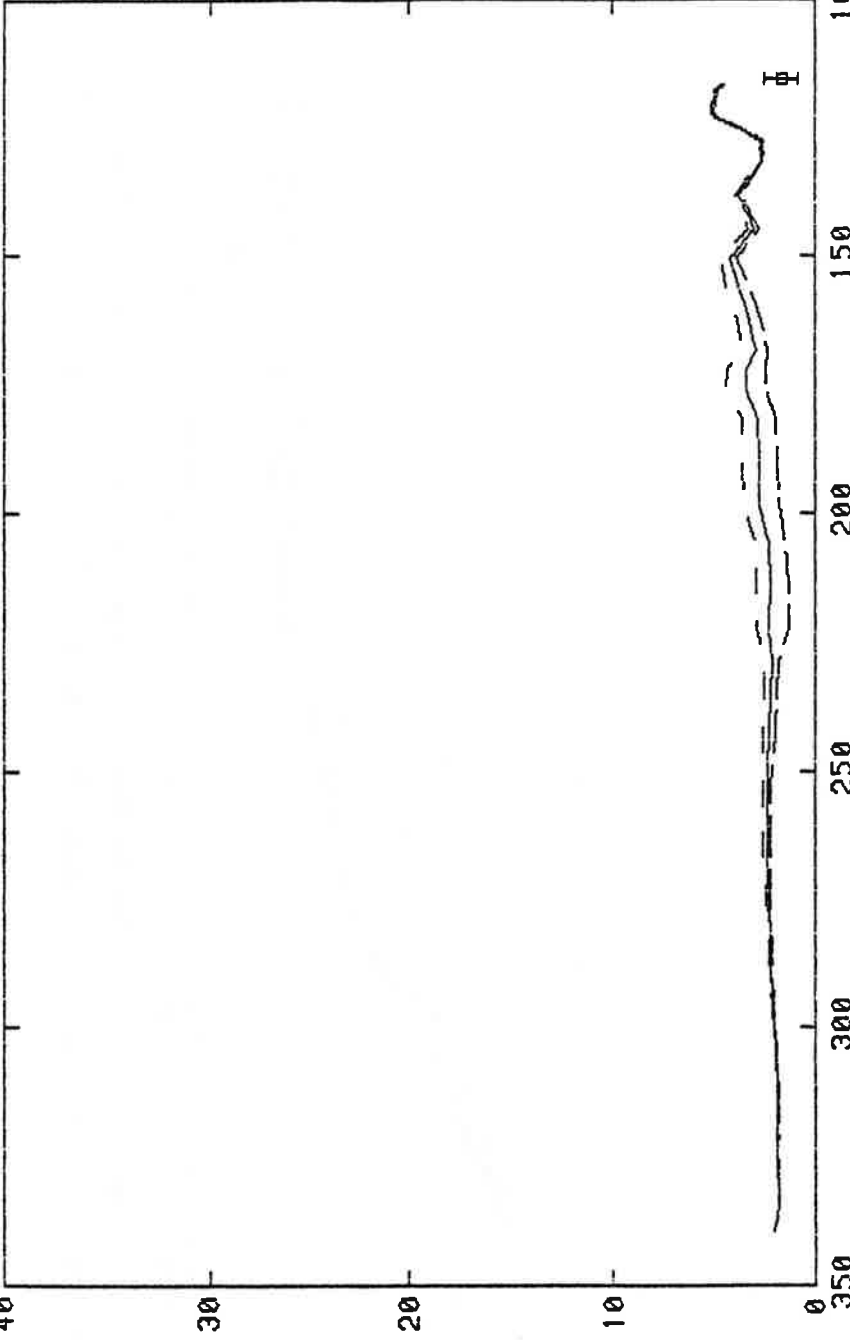
- Base Case SOD \* 2
- Base Case SOD
- .- Base Case SOD \* 0.5



**FIGURE G-3:** September 1985 sensitivity of Phosphate to SOD

- Base Case SOD \* 2
- Base Case SOD
- ... Base Case SOD \* 0.5

Sep85:xxBase Run# B5-069xx SENSITIVITY RUN# B5-077: SOD = SOD \* 0.5X

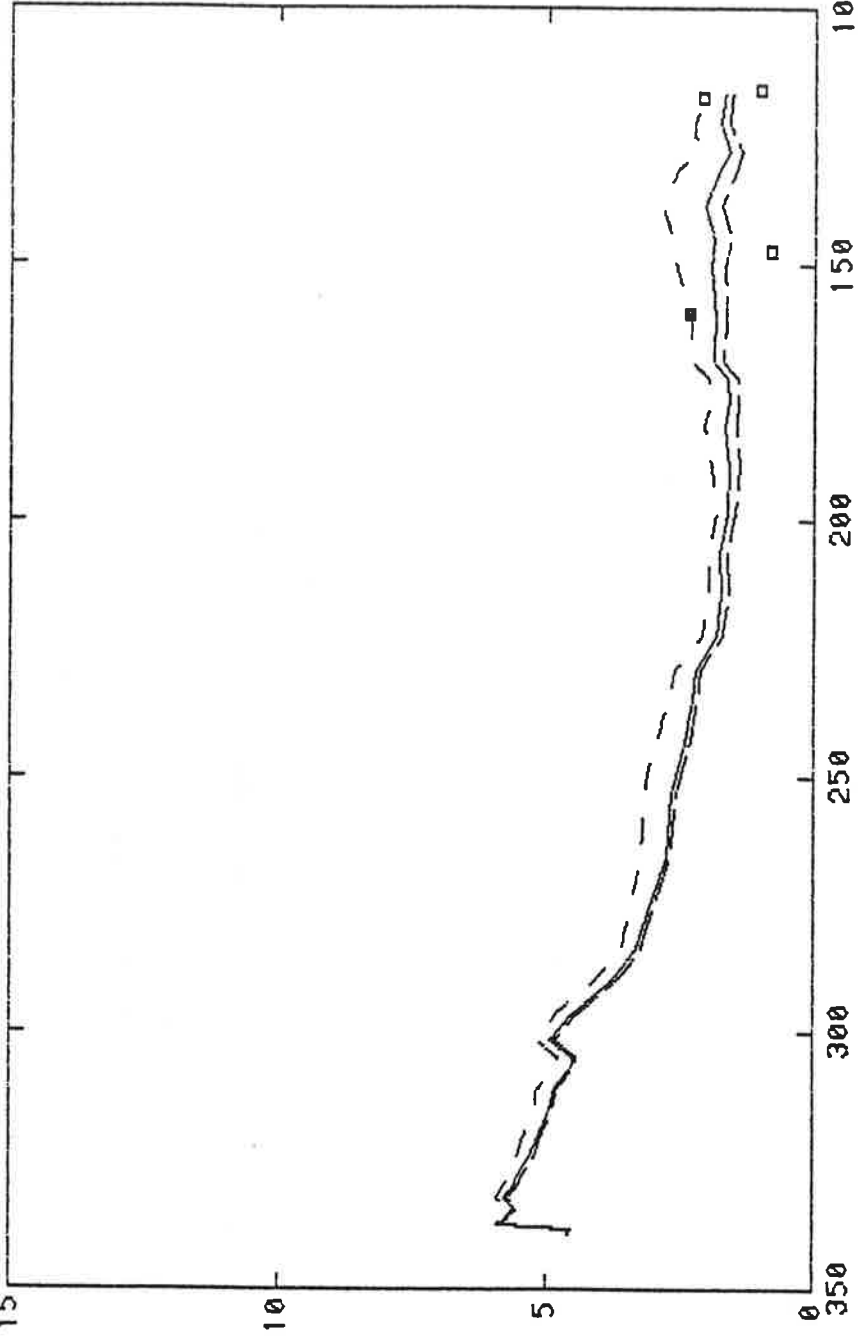


Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Wasp4 Run:pr85077.inp 12 Jun 1991 02:40:47 HPGL File: CX85\_CHL.PLT

FIGURE G-4: Sep. 1985 sensitivity of Chlorophyll to SOD

- Base Case SOD \* 2
- Base Case SOD
- Base Case SOD \* 0.5

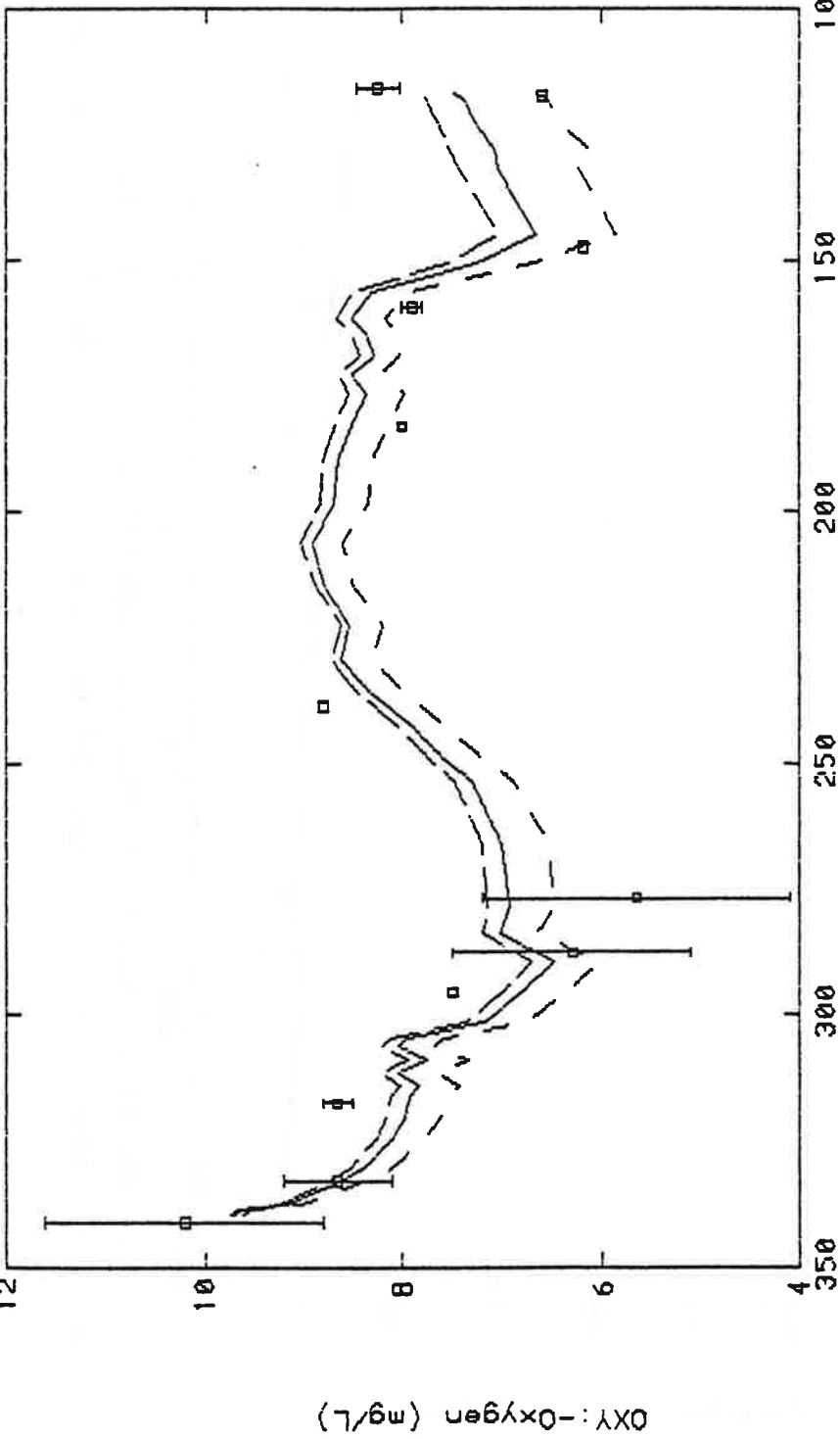
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-077: SOD = SOD \* 0.5X



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85077.inp 12 Jun 1991 02:40:47 HPGL File: CX85\_BOD.PLT

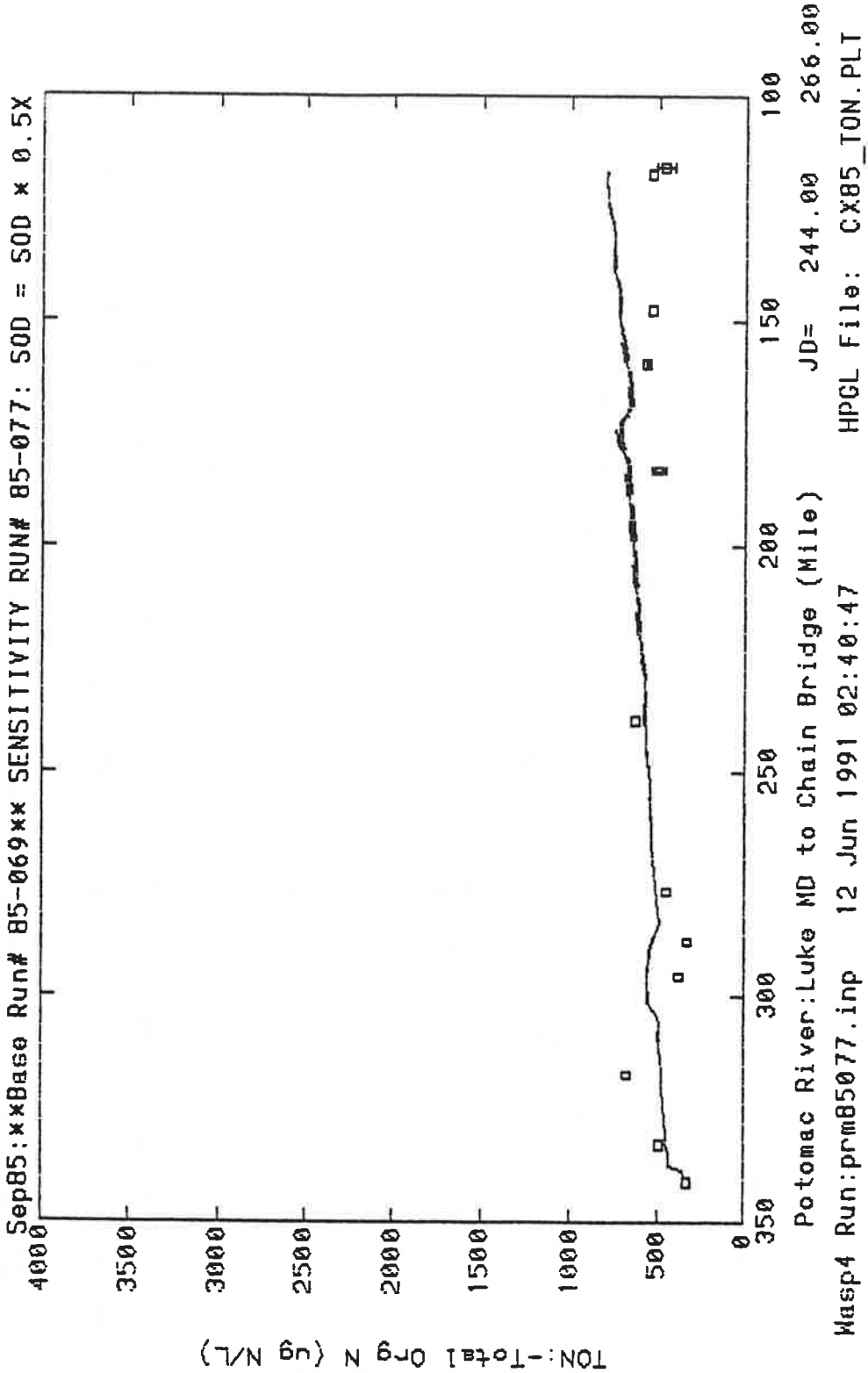
FIGURE G-5: September 1985 sensitivity of BOD to SOD  
 --- Base Case SOD \* 2  
 — Base Case SOD  
 - - - Base Case SOD \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-077: SOD = SOD \* 0.5X



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85077.inp 12 Jun 1991 02:40:47 HPGL File: CX85\_OXY.PLT

FIGURE G-6: September 1985 sensitivity of DO to SOD  
 --- Base Case SOD \* 2  
 — Base Case SOD  
 -.- Base Case SOD \* 0.5



**FIGURE G-7:** Sep. 1985 sensitivity of Tot Org. Nit. to SOD

- Base Case SOD \* 2
- Base Case SOD
- ... Base Case SOD \* 0.5



Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-077: SOD = 500 \* 0.5X

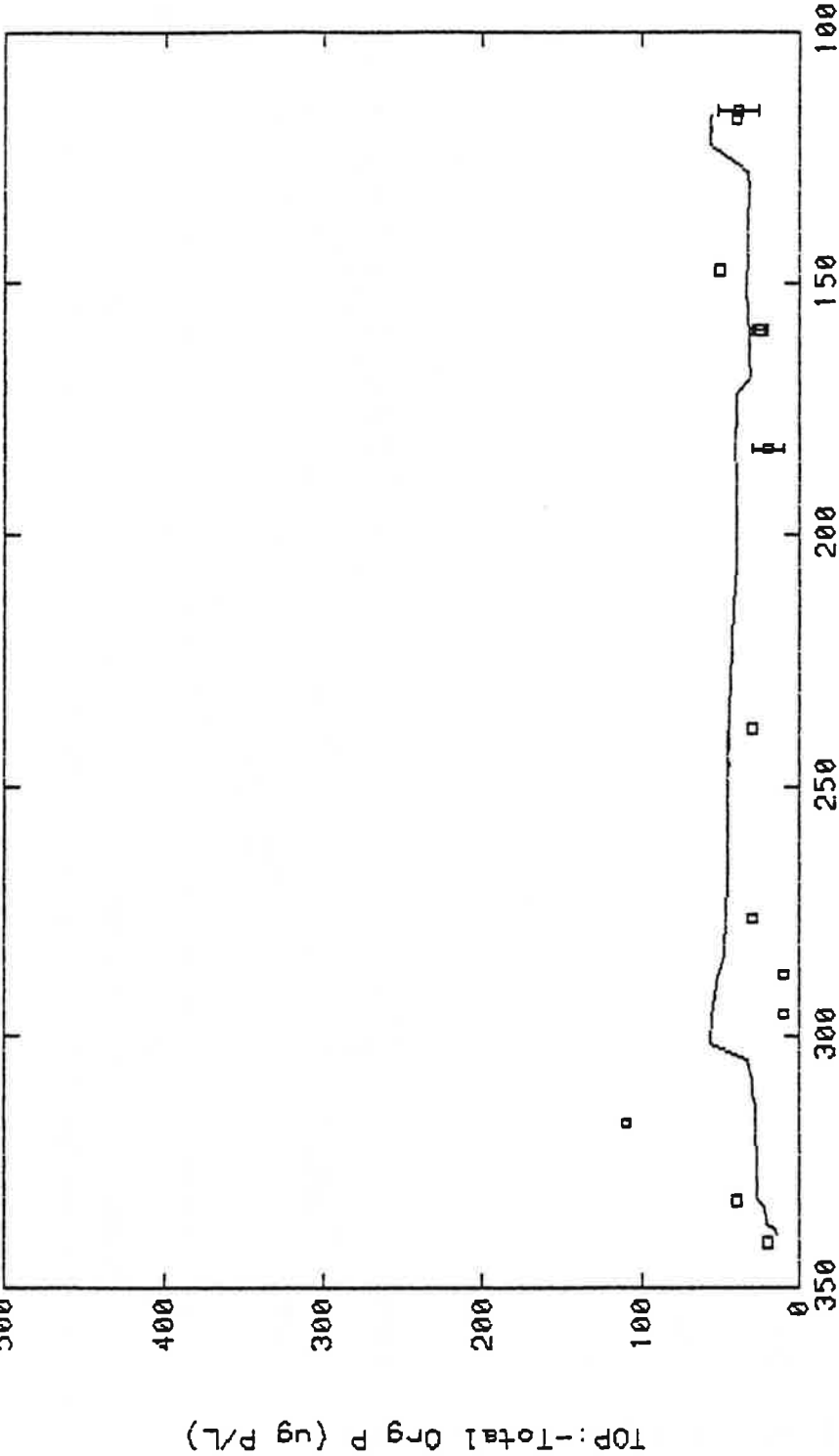
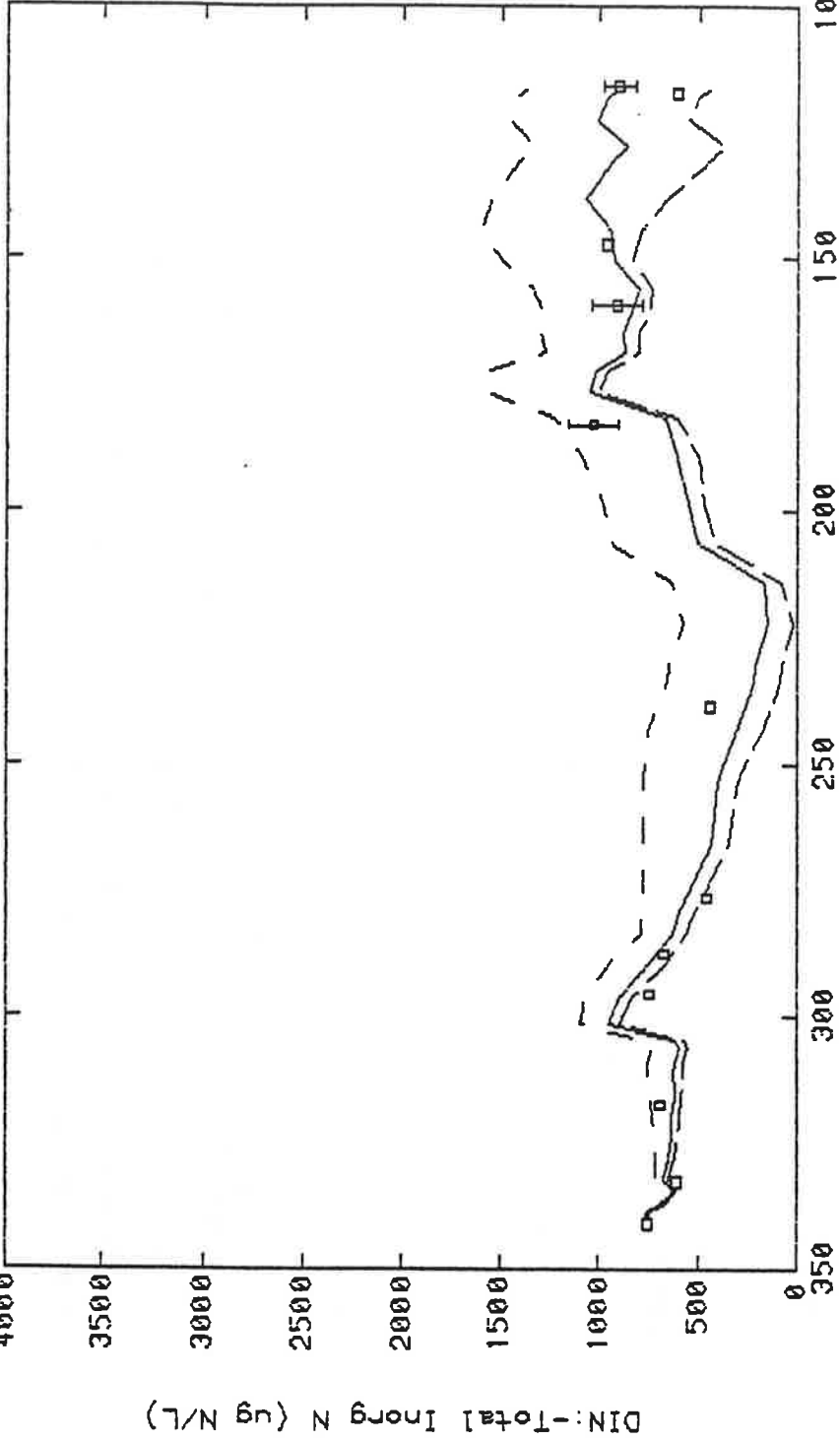


FIGURE G-8: Sep. 1985 sensitivity of Tot Org. Phos. to SOD

- Base Case SOD \* 2
- Base Case SOD
- Base Case SOD \* 0.5

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-077: SOD = 500 \* 0.5X



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85077.inp 12 Jun 1991 02:40:47 HPGL File: CX85\_DIN.PLT

FIGURE G-9: Sep. 1985 sens. of Diss. Inor. Nit. to SOD  
 --- Base Case SOD \* 2  
 — Base Case SOD  
 - - - Base Case SOD \* 0.5

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-077: SOD = 500 \* 0.5X

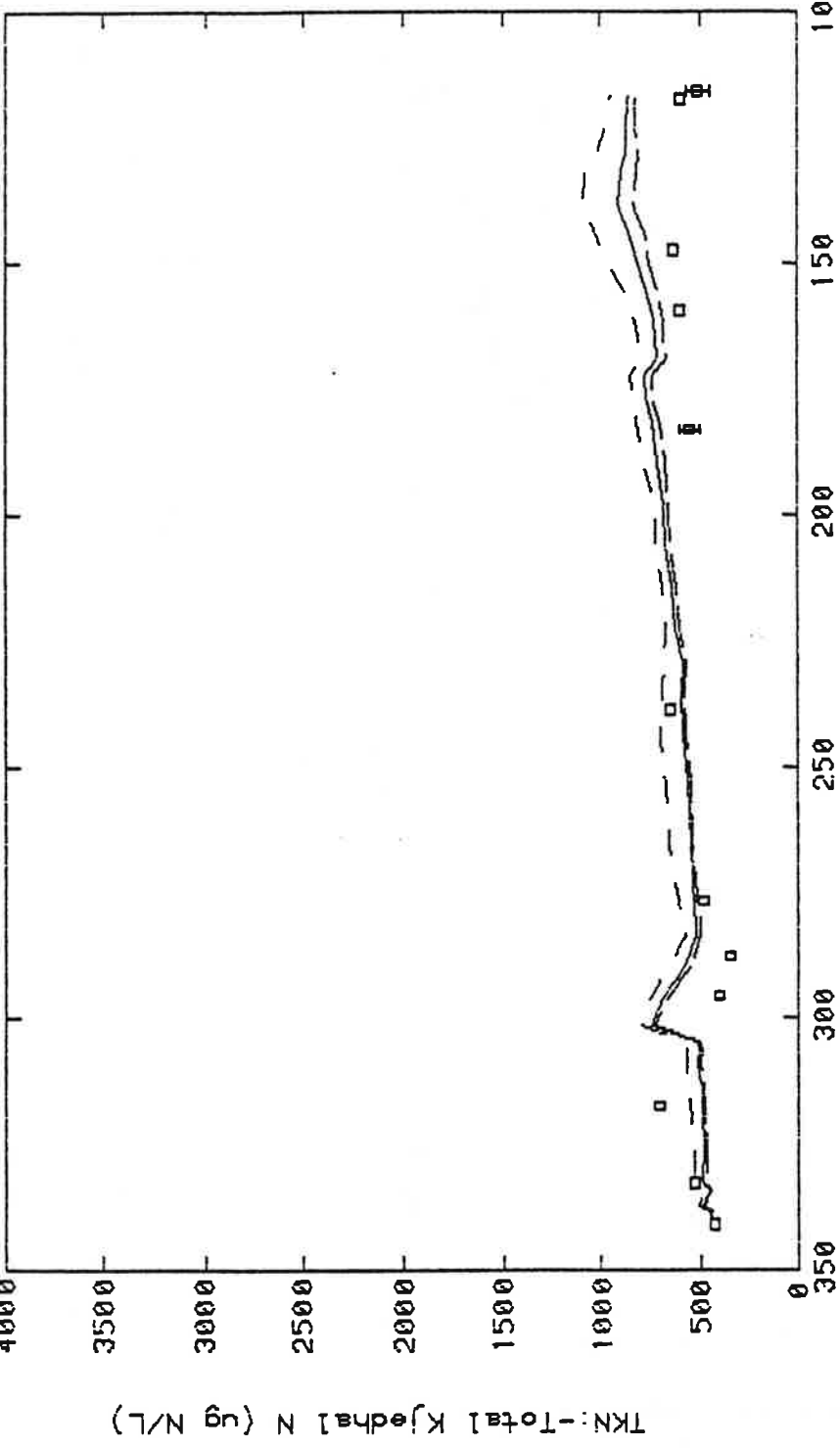
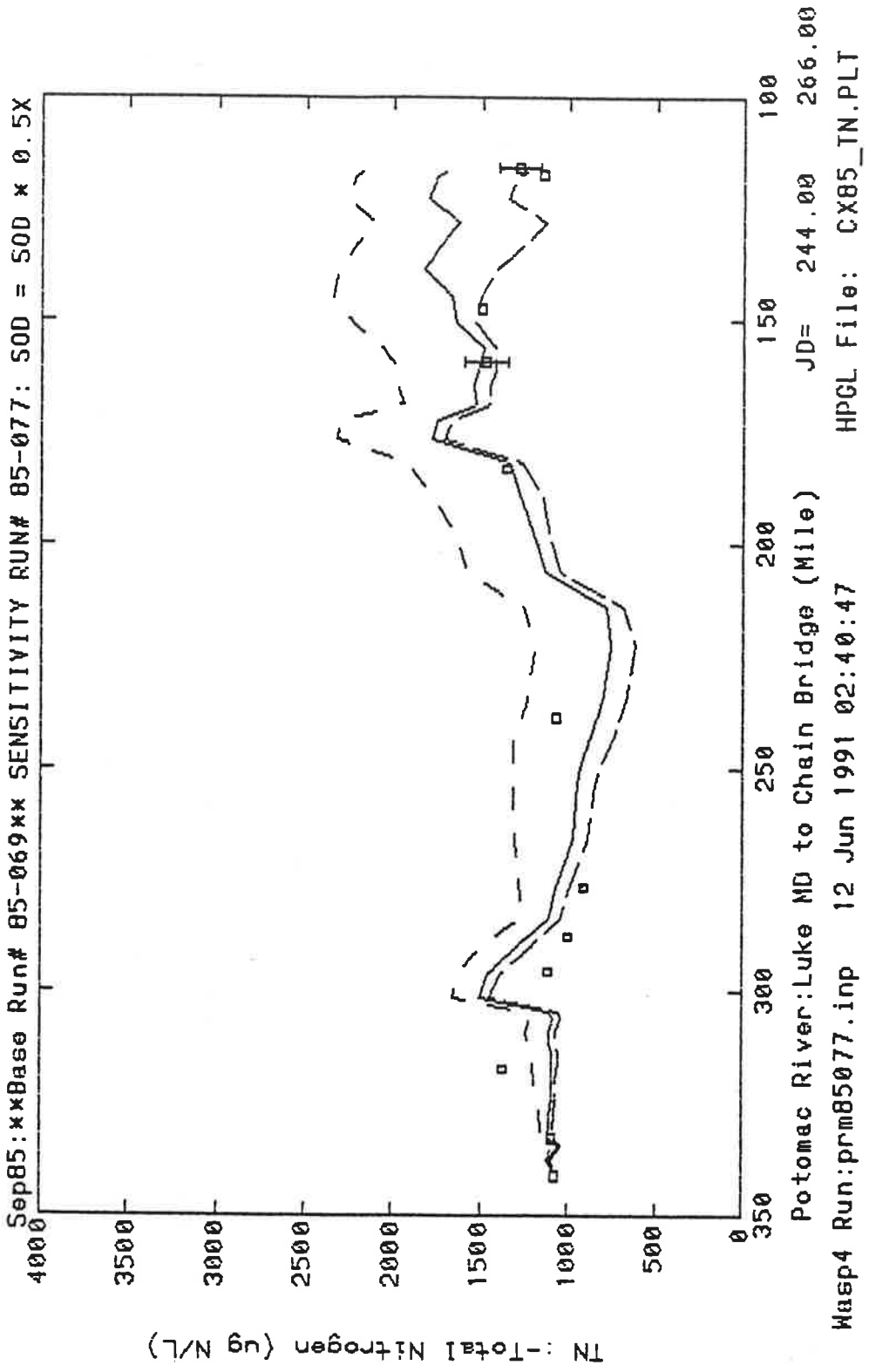
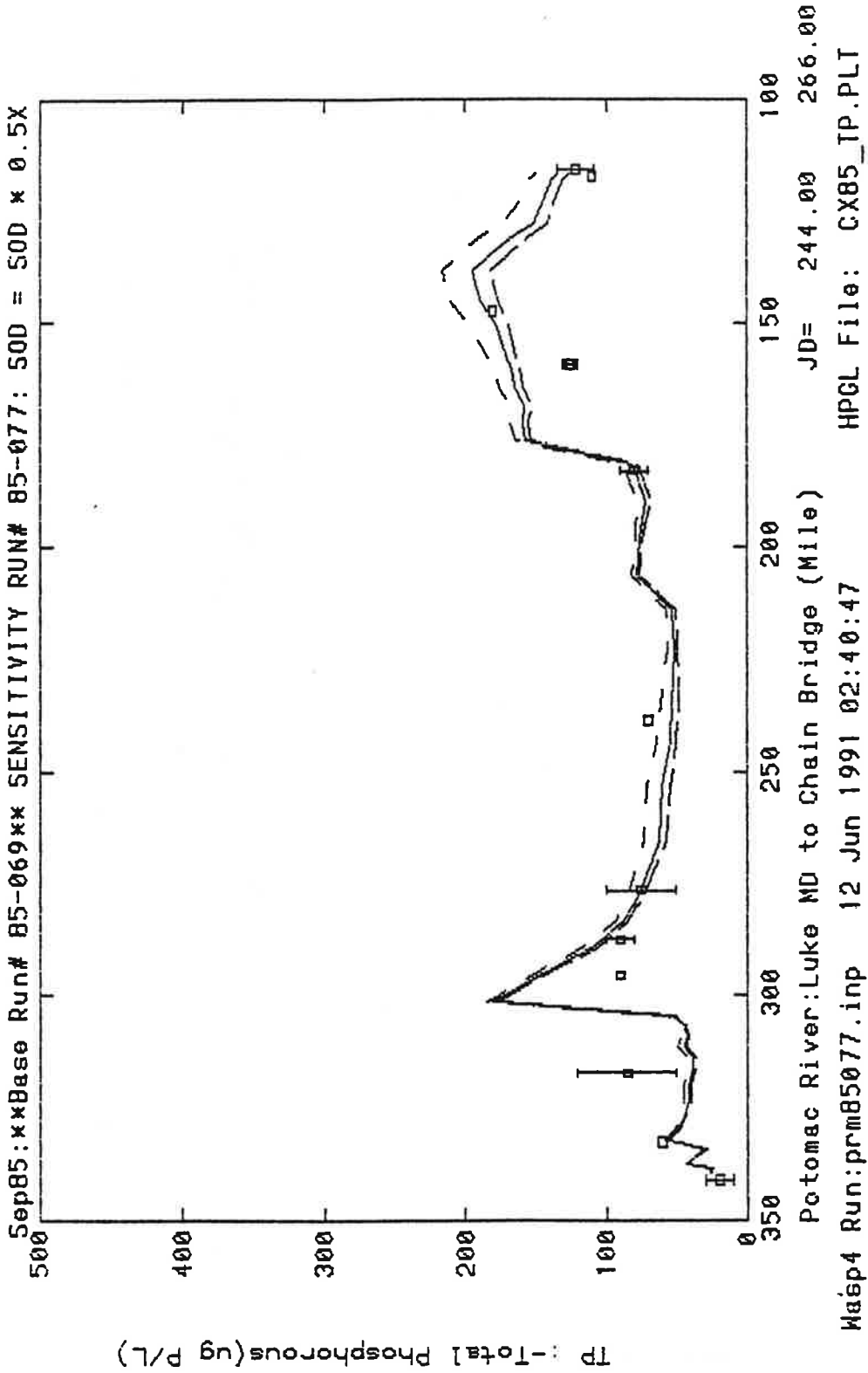


FIGURE G-10: Sep. 1985 sensitivity of TKN to SOD  
 --- Base Case SOD \* 2  
 — Base Case SOD  
 ... Base Case SOD \* 0.5



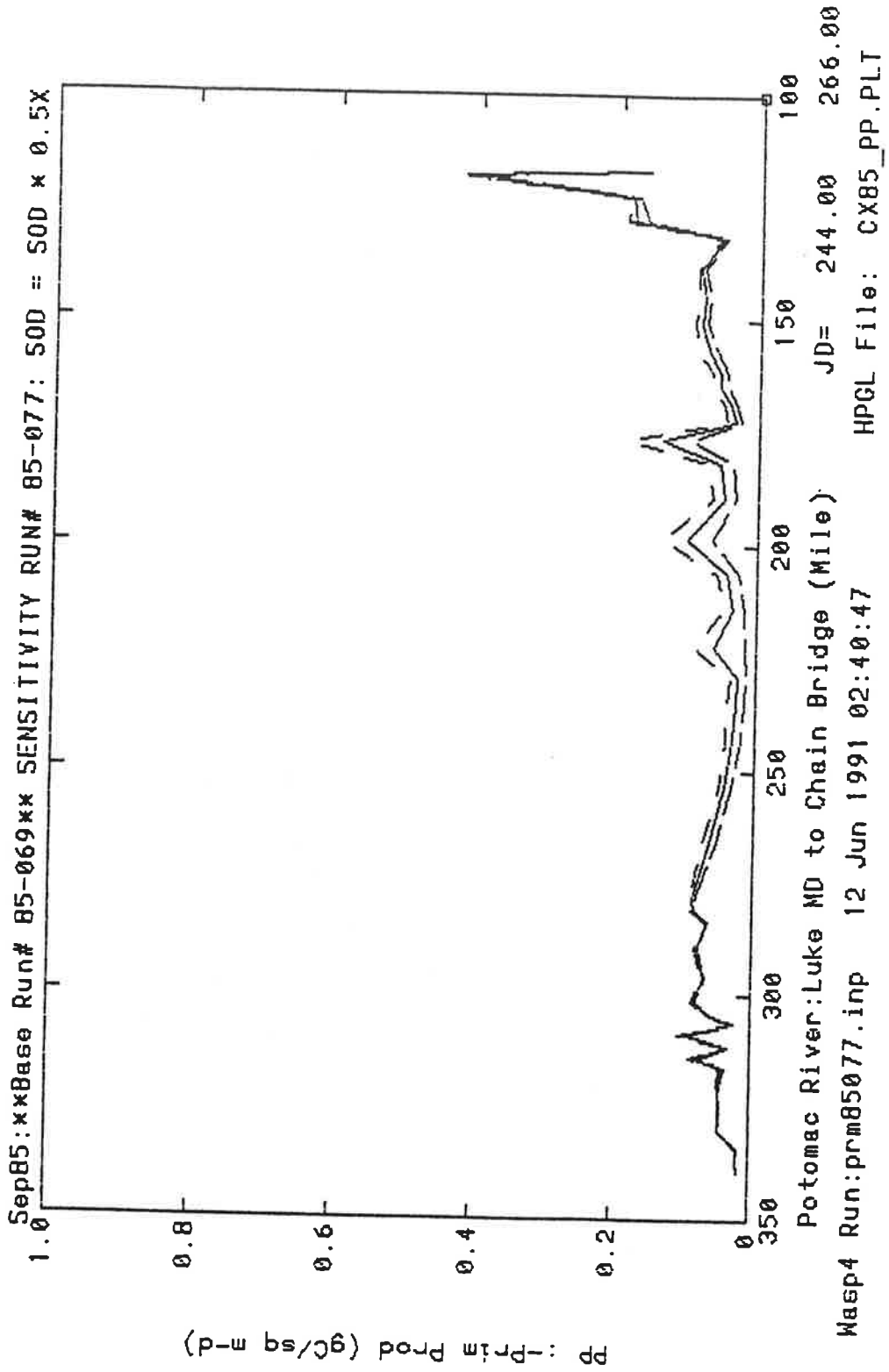
**FIGURE G-11:** September 1985 sens. of Total Nit. to SOD

- Base Case SOD \* 2
- Base Case SOD
- ... Base Case SOD \* 0.5



**FIGURE G-12:** Sep. 1985 sensitivity of Total Phos. to SOD

- Base Case SOD \* 2
- Base Case SOD
- ... Base Case SOD \* 0.5

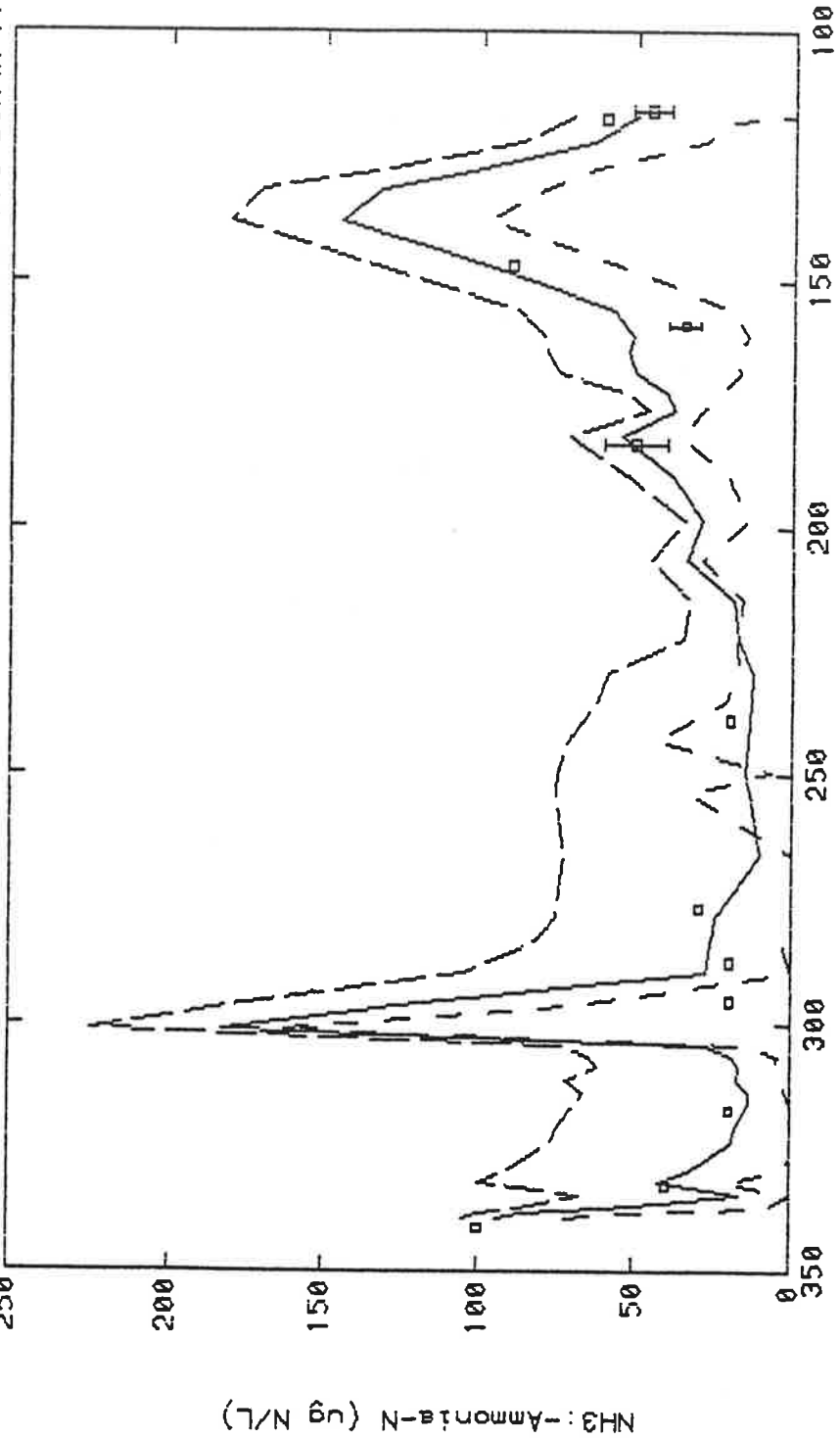


**FIGURE G-13:** Sep. 1985 sensitivity of Primary Prod. to SOD  
 --- Base Case SOD \* 2  
 — Base Case SOD  
 --- Base Case SOD \* 0.5

**Appendix H - Sensitivity Analysis-4 Benthic Primary  
Production**

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd x 0

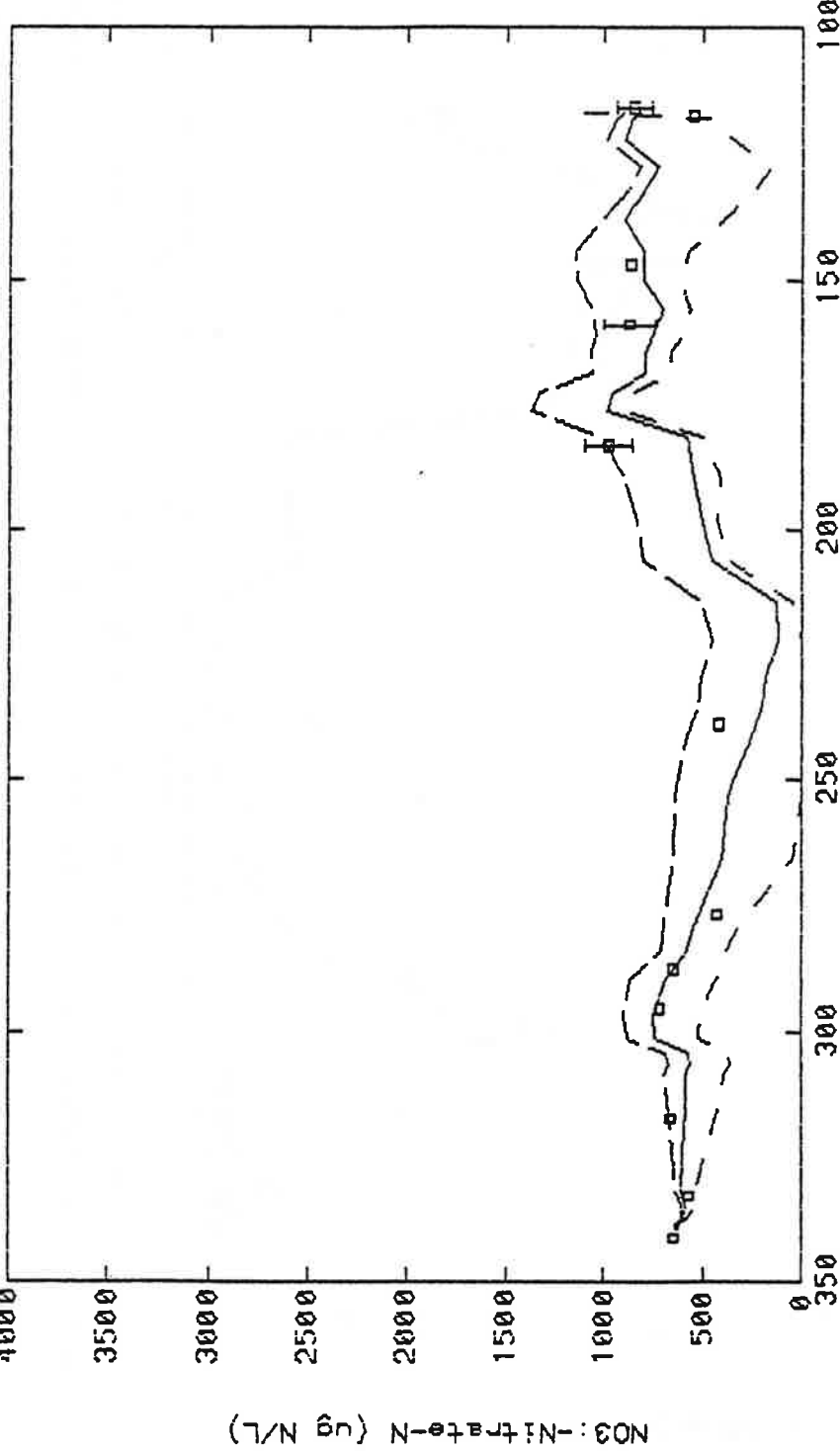


Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_NH3\_PLT

FIGURE H-1: September 1985 sensitivity of Ammonia to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 - - - Base Case Benthic Production \* 0.5



Sep85:\*\0base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



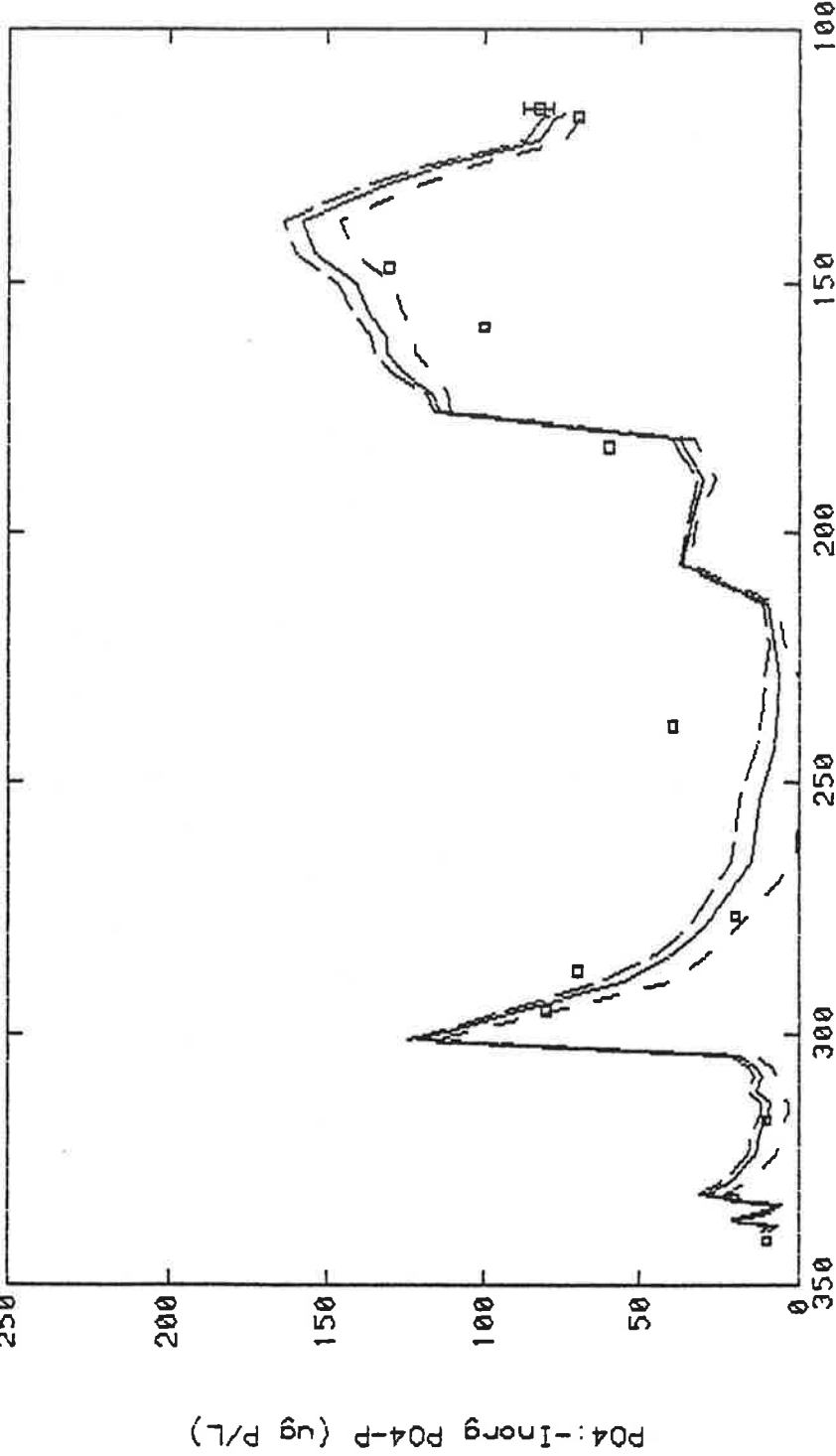
Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Wasp4 Run:prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_N03.PLT

FIGURE H-2: September 1985 sensitivity of Nitrate to Benthic Prod.

- Base Case Benthic Production \* 2
- Base Case Benthic Production
- .- Base Case Benthic Production \* 0.5

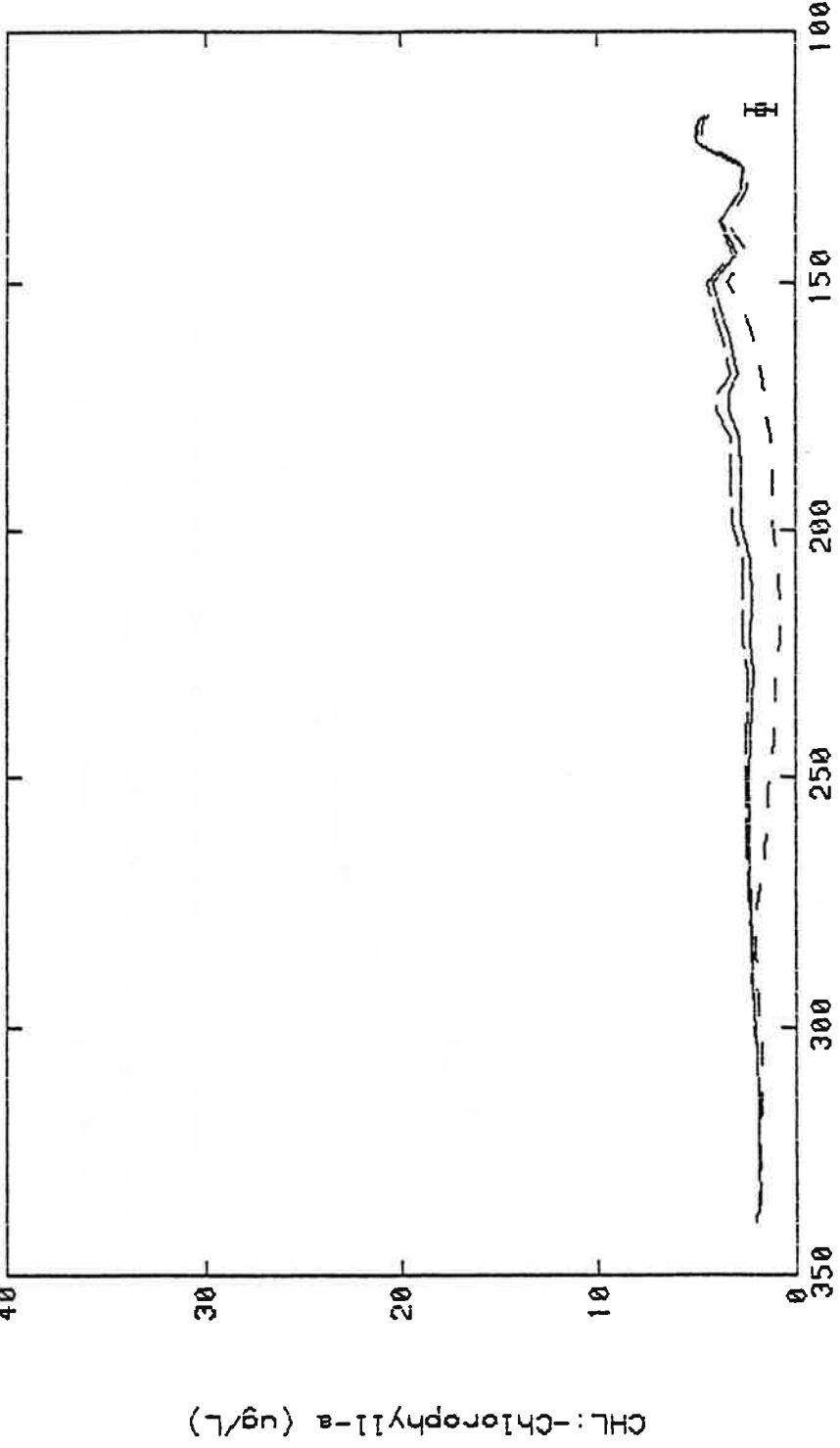
Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_P04.PLT

FIGURE H-3: September 1985 sensitivity of Phosphate to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 ... Base Case Benthic Production \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGI File: CX85\_CHL.PLT

**FIGURE H-4:** Sep. 1985 sensitivity of Chlorophyll to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 - - - Base Case Benthic Production \* 0.5

15 Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd x 0

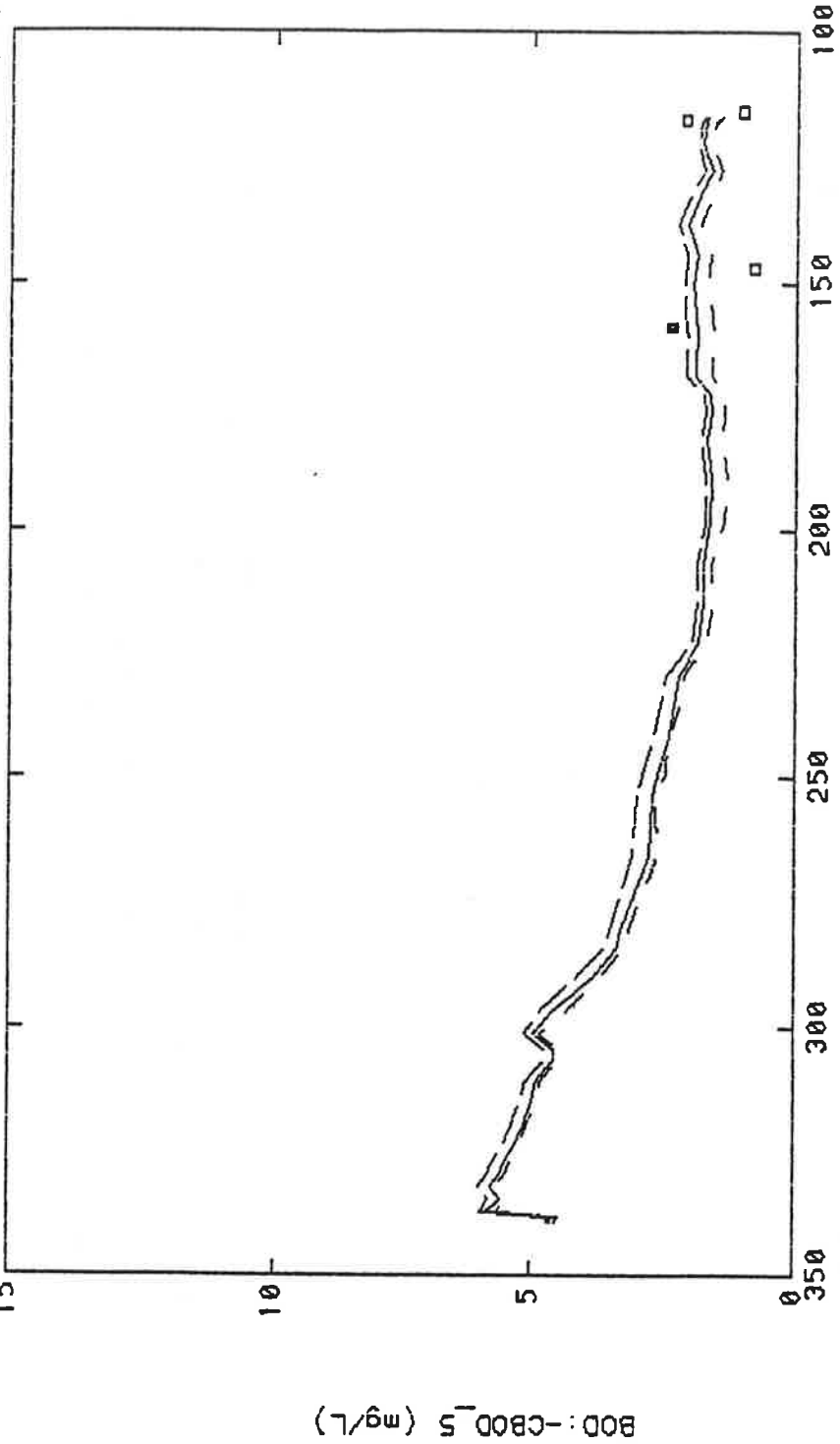
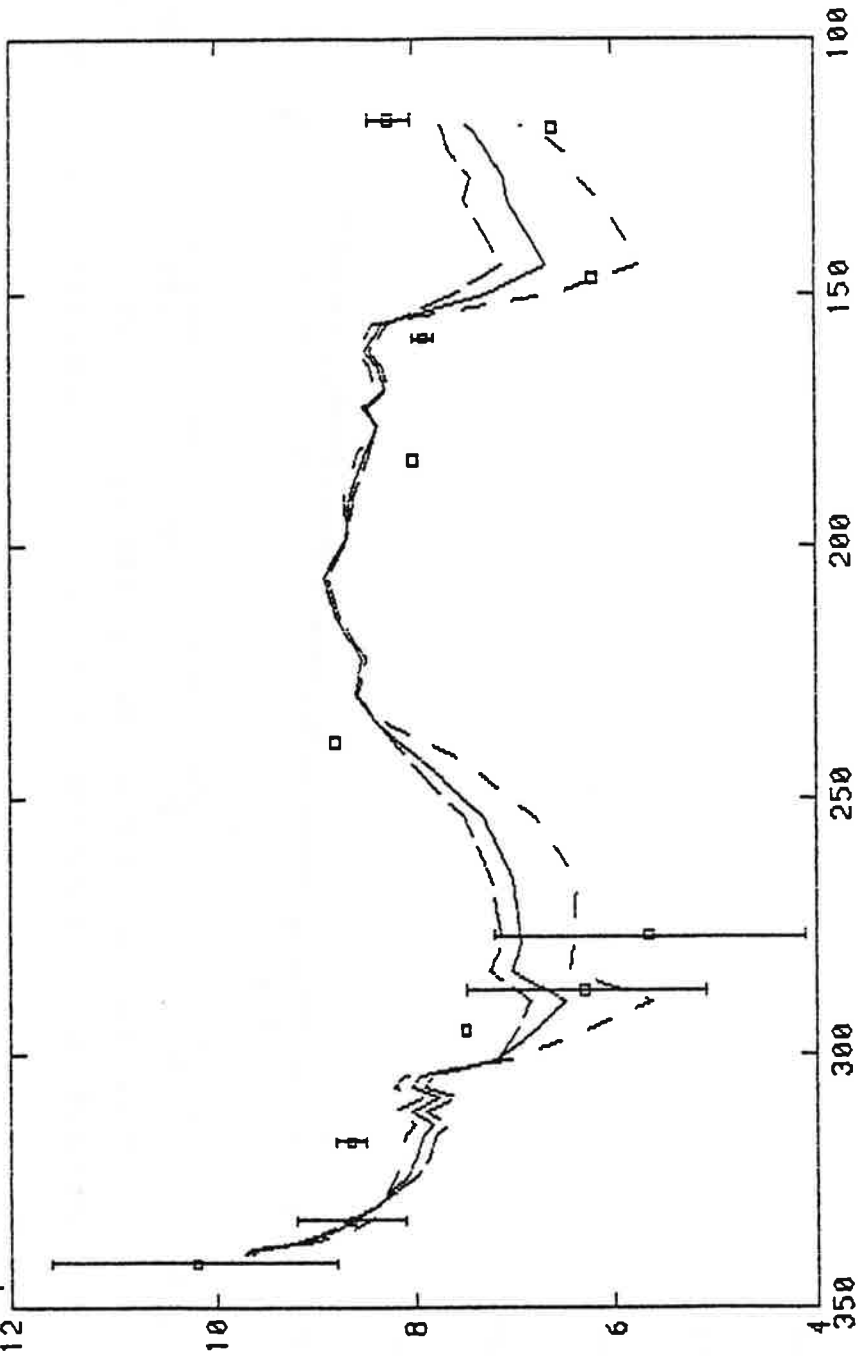


FIGURE H-5: September 1985 sensitivity of BOD to Benthic Prod.

- Base Case Benthic Production \* 2
- Base Case Benthic Production
- Base Case Benthic Production \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0

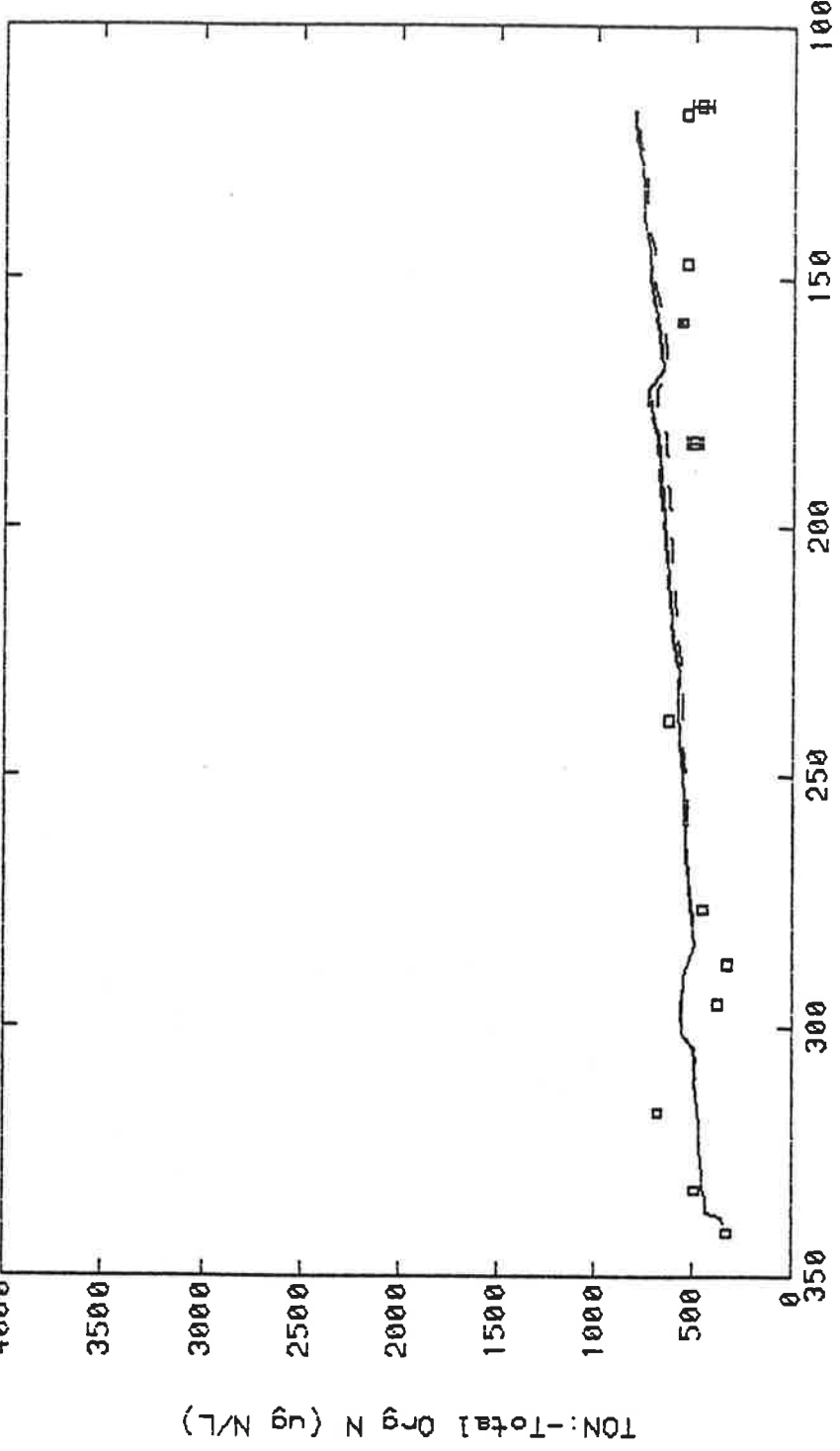


Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
Masp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGl File: CX85\_OXY.PLT

FIGURE H-6: September 1985 sensitivity of DO to Benthic Prod.

--- Base Case Benthic Production \* 2  
— Base Case Benthic Production  
-.- Base Case Benthic Production \* 0.5

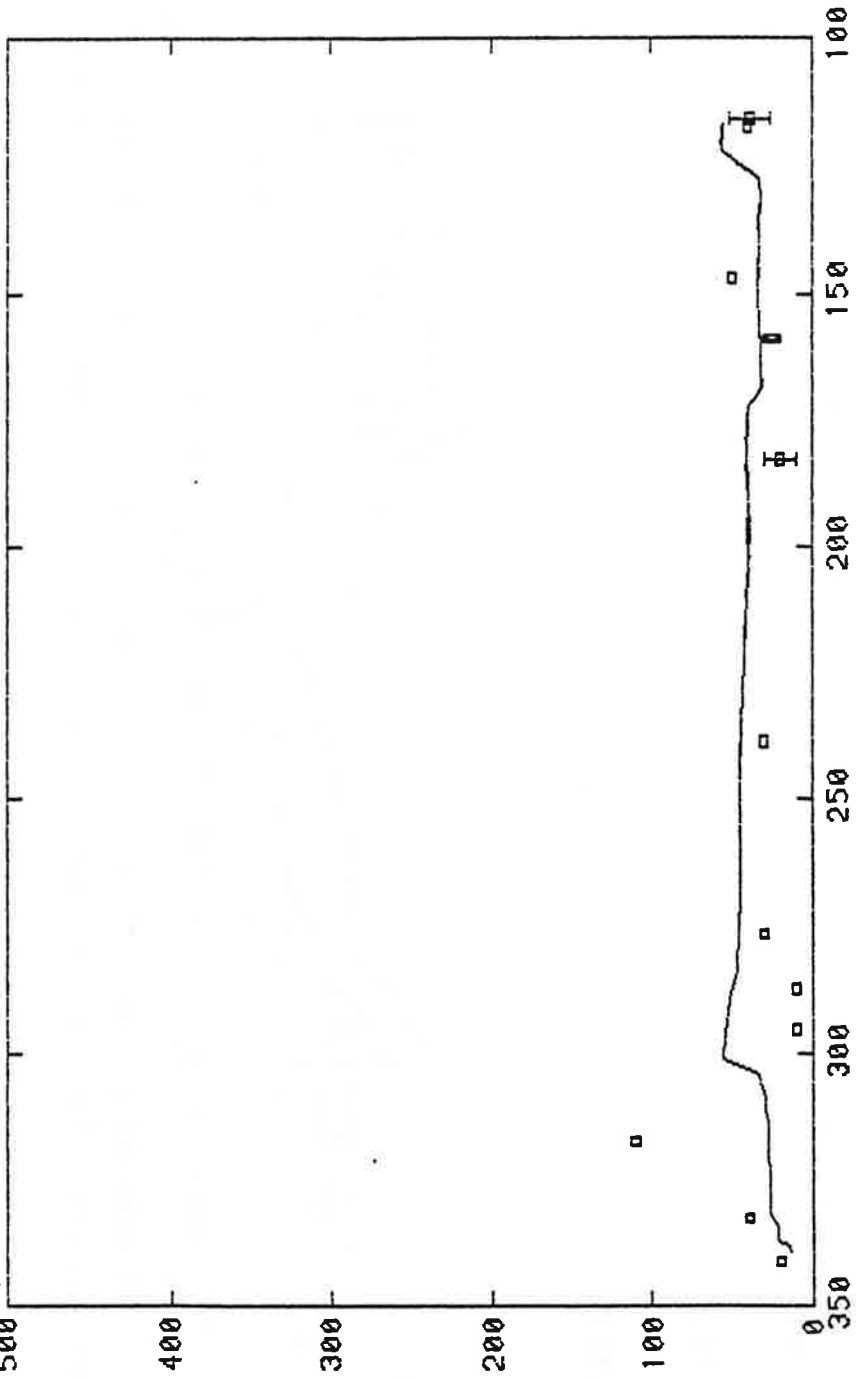
Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18

FIGURE H-7: Sep. 1985 sensitivity of Tot Org. Nit. to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 ... Base Case Benthic Production \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGI File: CX85\_TOP.PLT

**FIGURE H-8:** Sep. 1985 sensitivity of Tot Org. Phos. to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 - - - Base Case Benthic Production  
 . . . Base Case Benthic Production \* 0.5

Sep85: xBase Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0

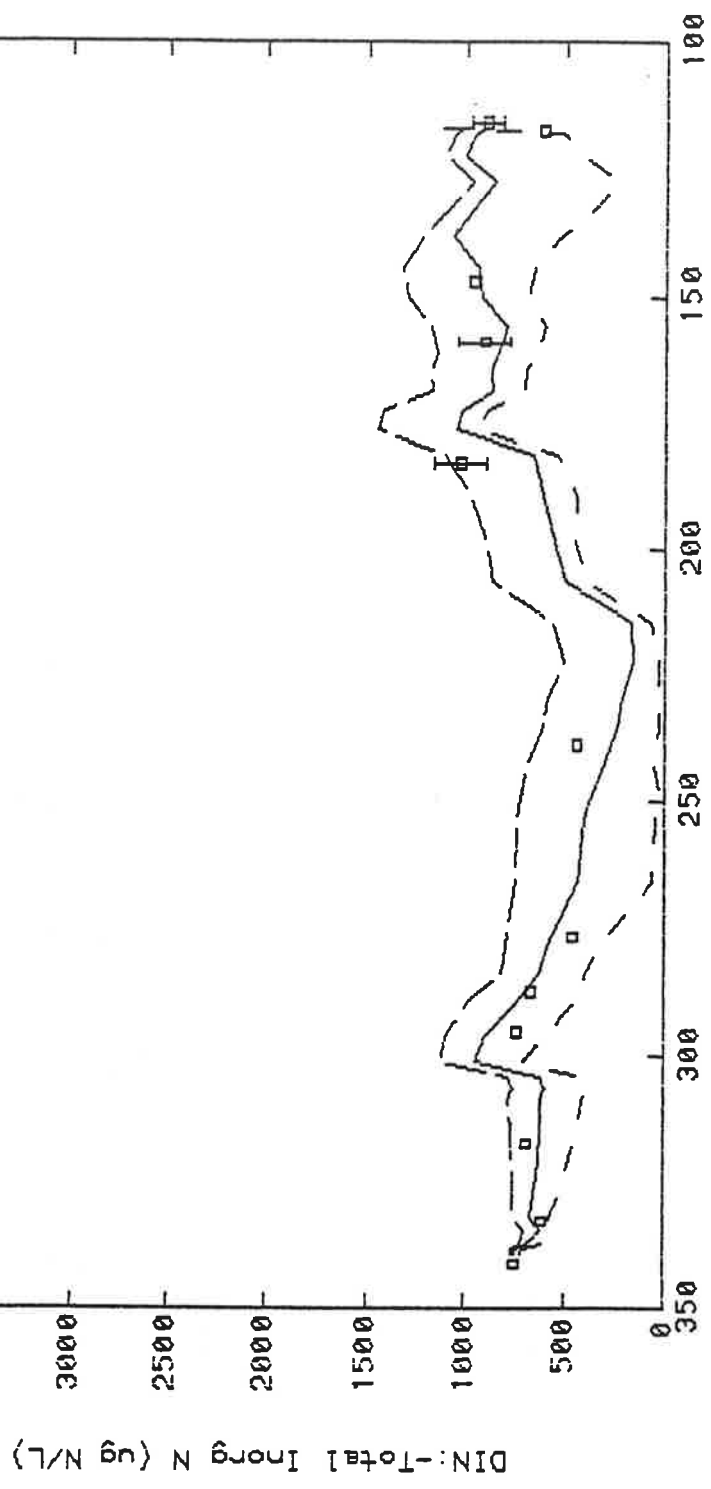
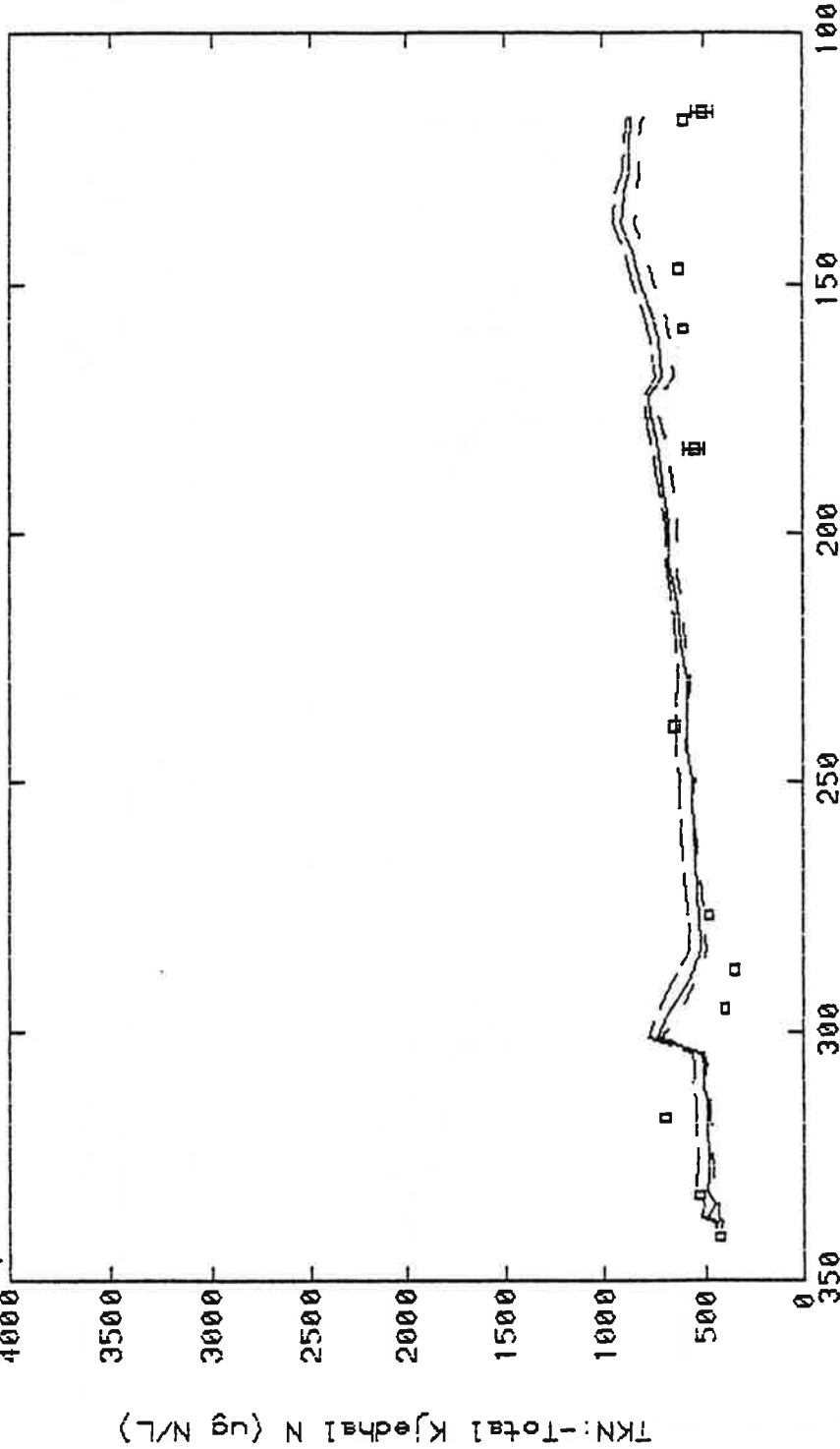


FIGURE H-9: Sep. 1985 sens. of Diss. Inor. Nit. to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 ... Base Case Benthic Production \* 0.5



Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



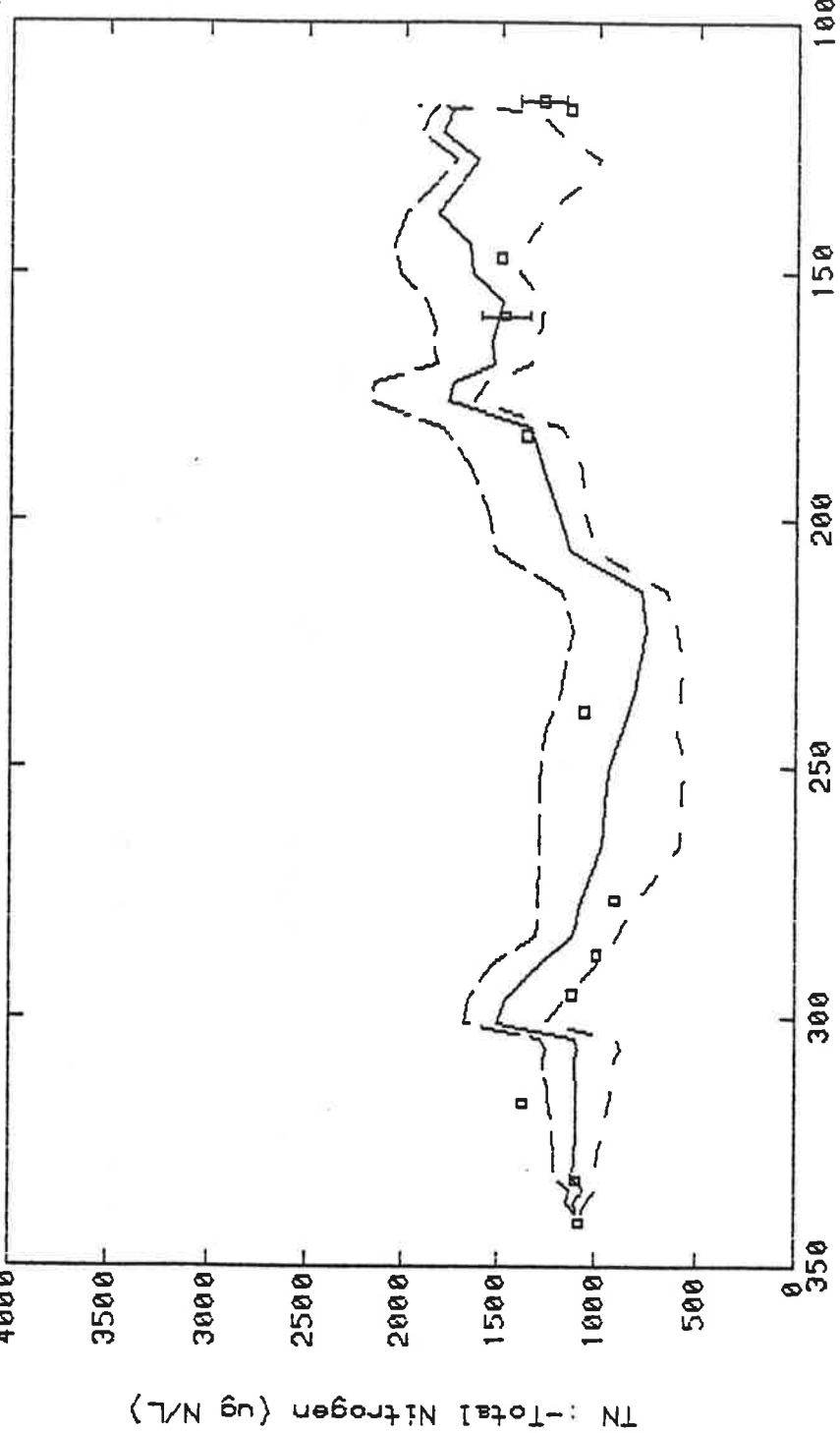
Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_TKN.PLT

FIGURE H-10: Sep. 1985 sensitivity of TKN to Benthic Prod.

- Base Case Benthic Production \* 2
- Base Case Benthic Production
- Base Case Benthic Production \* 0.5

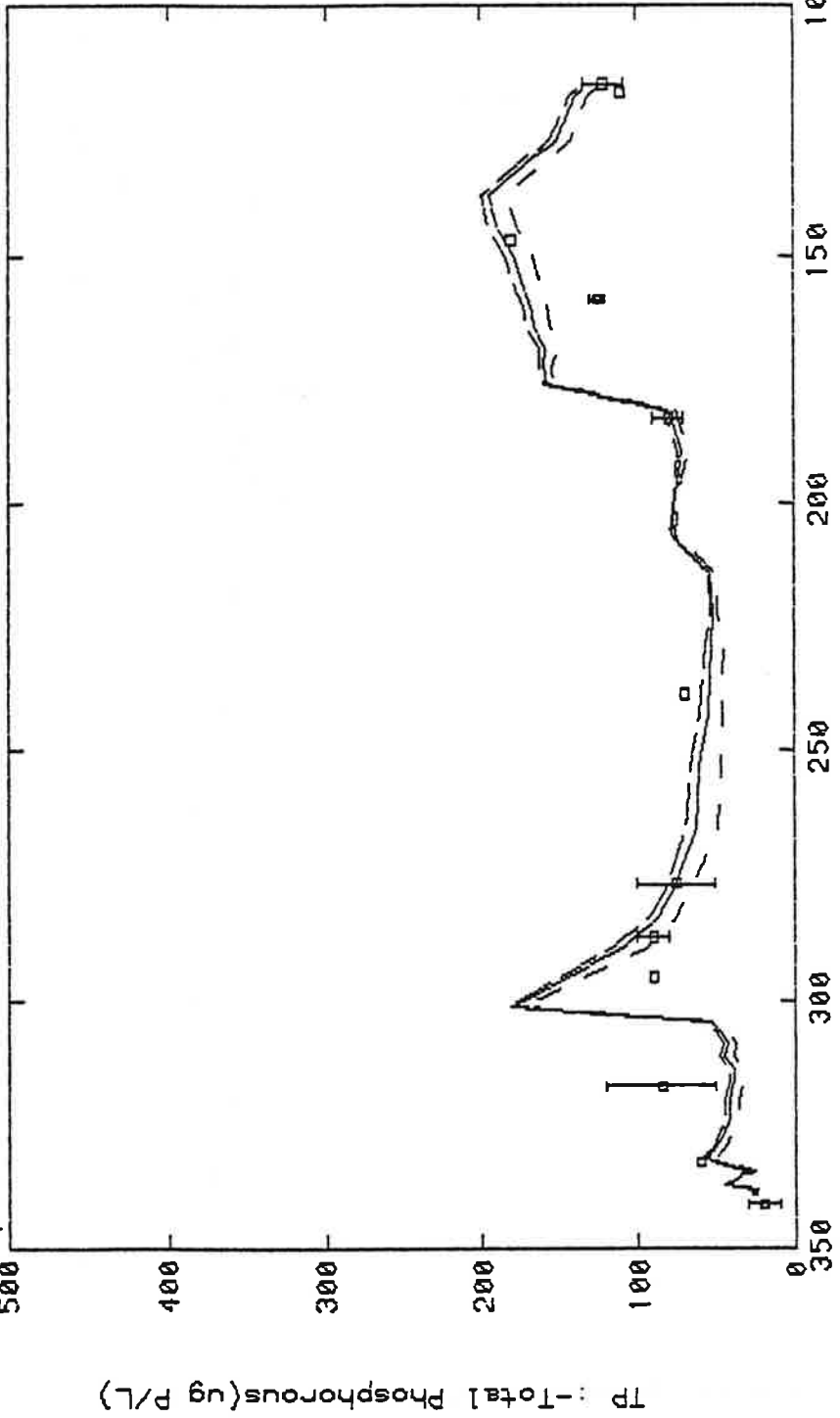
Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_TN.PLT

FIGURE H-11: September 1985 sens. of Total Nit. to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 ——— Base Case Benthic Production  
 -.-.- Base Case Benthic Production \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd x 0



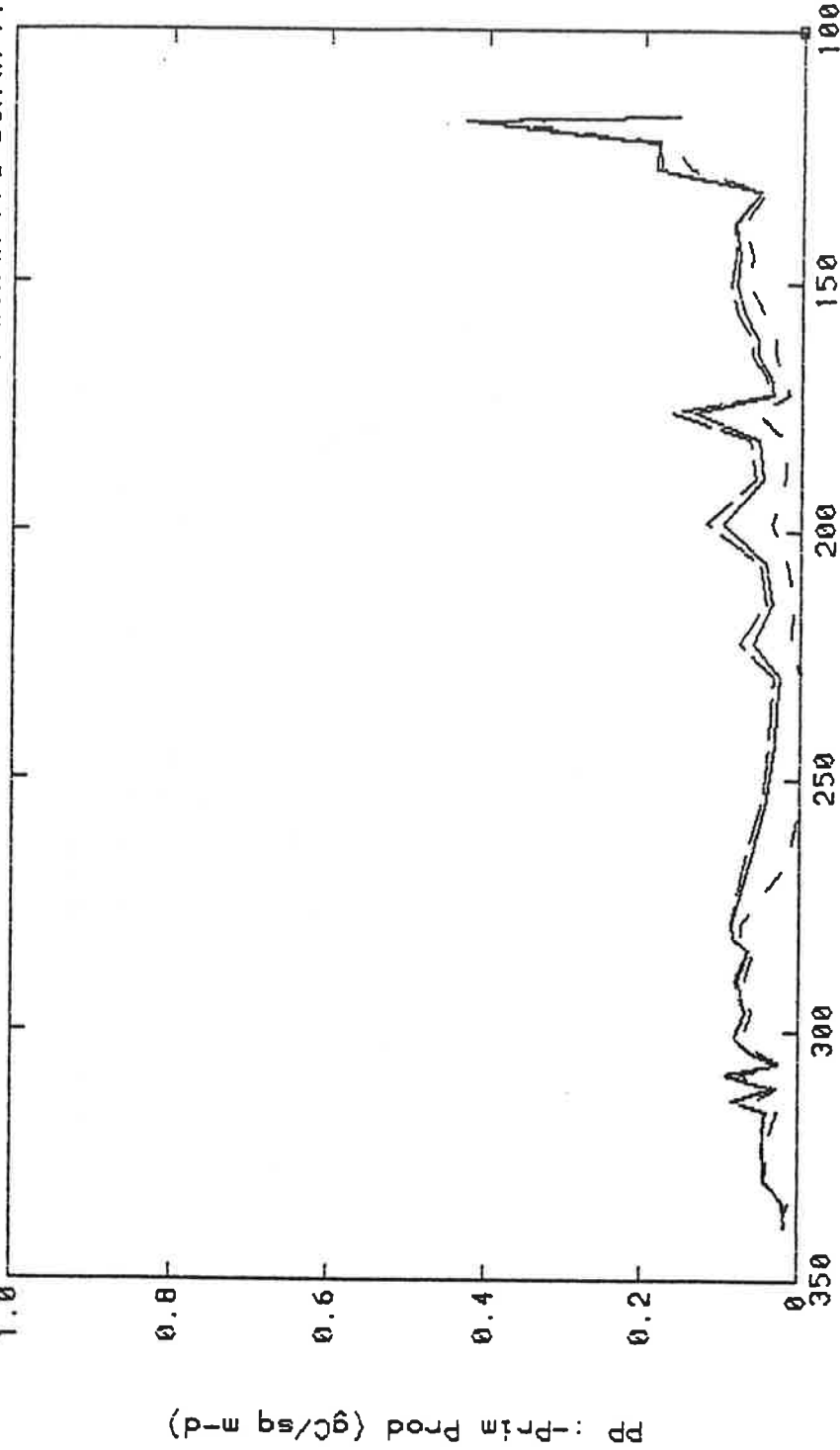
Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Wasp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_TP.PLT

FIGURE H-12: Sep. 1985 sensitivity of Total Phos. to Benthic Prod.

- Base Case Benthic Production \* 2
- Base Case Benthic Production
- .- Base Case Benthic Production \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-079: Benth Prd=Benth Prd \* 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Masp4 Run: prm85079.inp 12 Jun 1991 03:17:18 HPGL File: CX85\_PP.PLT

FIGURE H-13: Sep. 1985 sensitivity of Primary Prod. to Benthic Prod.  
 --- Base Case Benthic Production \* 2  
 — Base Case Benthic Production  
 --- Base Case Benthic Production \* 0.5

Appendix I - Sensitivity Analysis-5 Non Point Source  
Input of N,P

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-081: NPS N03,P04,0N,OP = 0.5

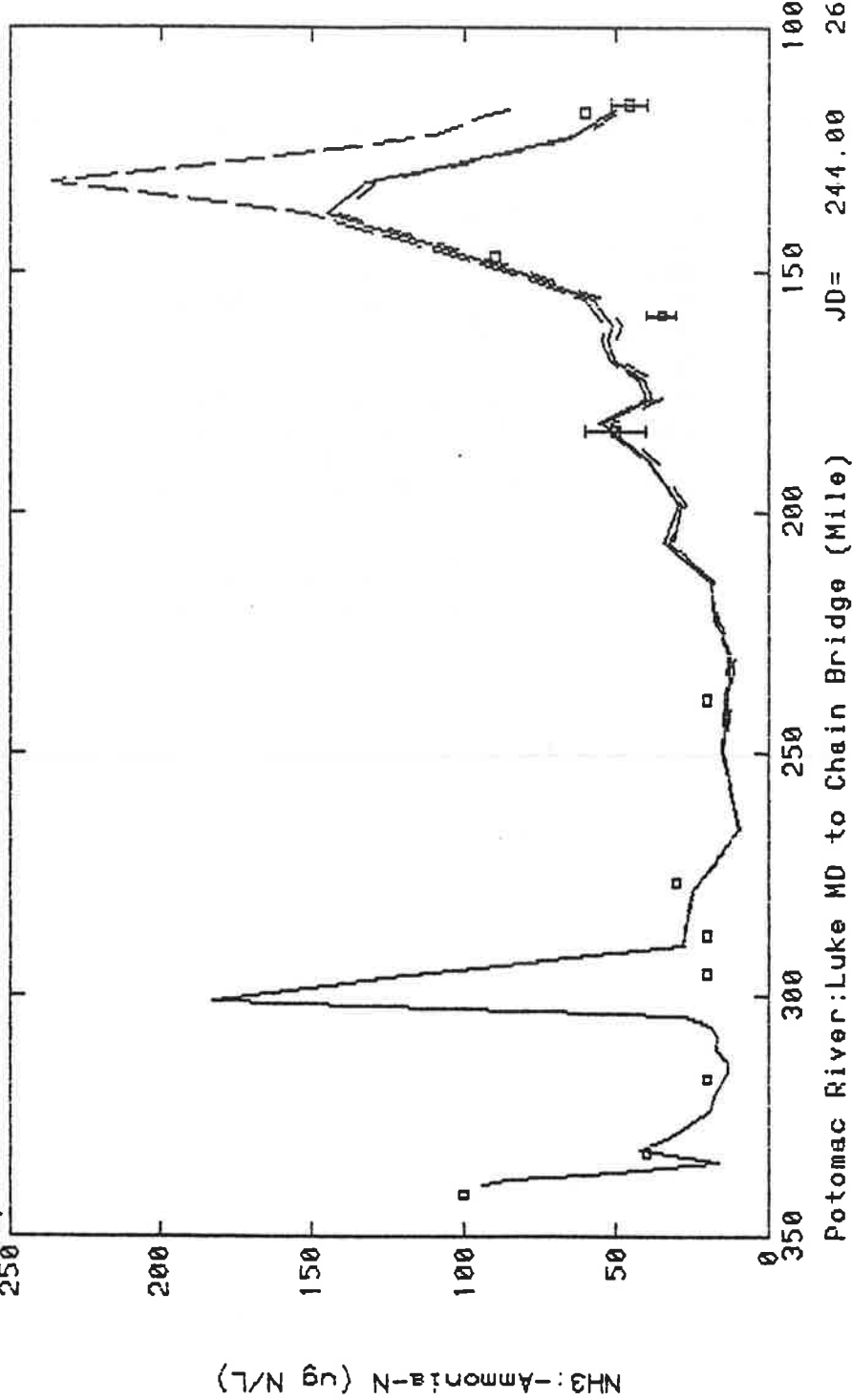


FIGURE I-1: September 1985 sensitivity of Ammonia to NPS Loads

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS N03, P04, ON, OP = 0.5

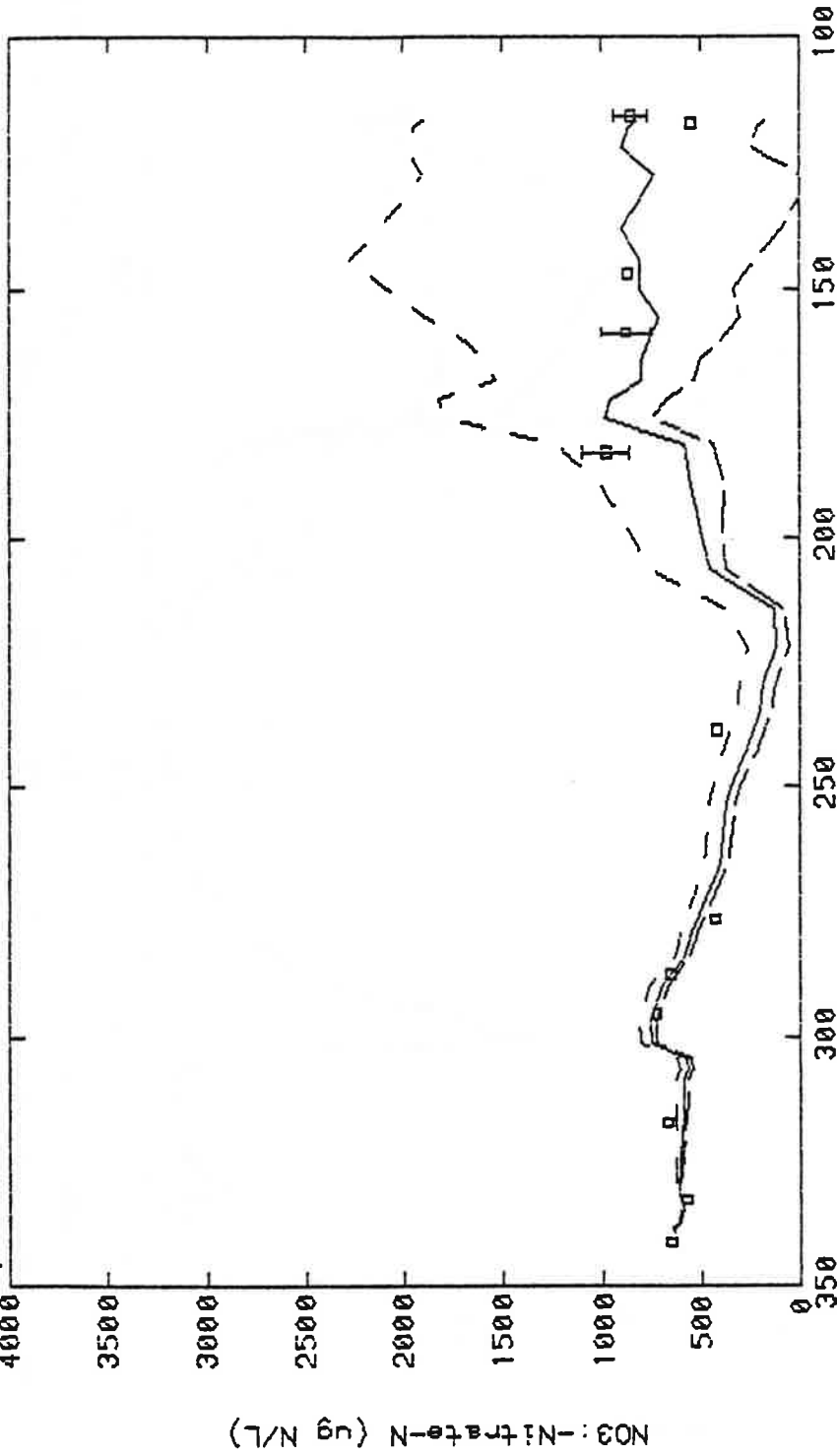
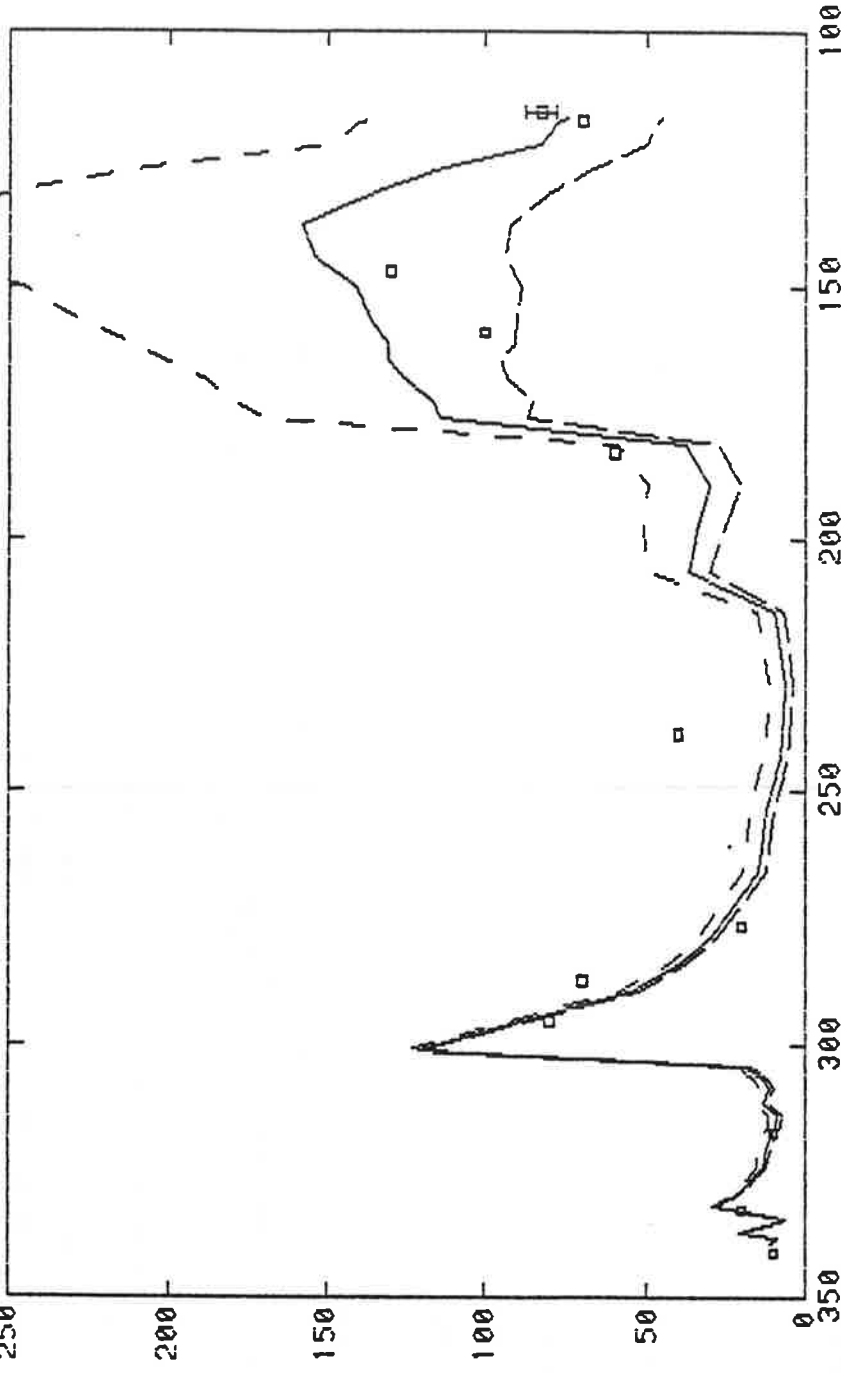


FIGURE I-2: September 1985 sensitivity of Nitrate to NPS Loads

- Base Case Non Point Source Loads \* 2
- Base Case Non Point Source Loads
- ... Base Case Non Point Source Loads \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS /NO3, P04, ON, OP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPGL File: CX85\_P04.PLT

FIGURE I-3: September 1985 sensitivity of Phosphate to NPS Loads

- Base Case Non Point Source Loads \* 2
- Base Case Non Point Source Loads
- Base Case Non Point Source Loads \* 0.5



Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS NO3, P04, ON, OP = 0.5

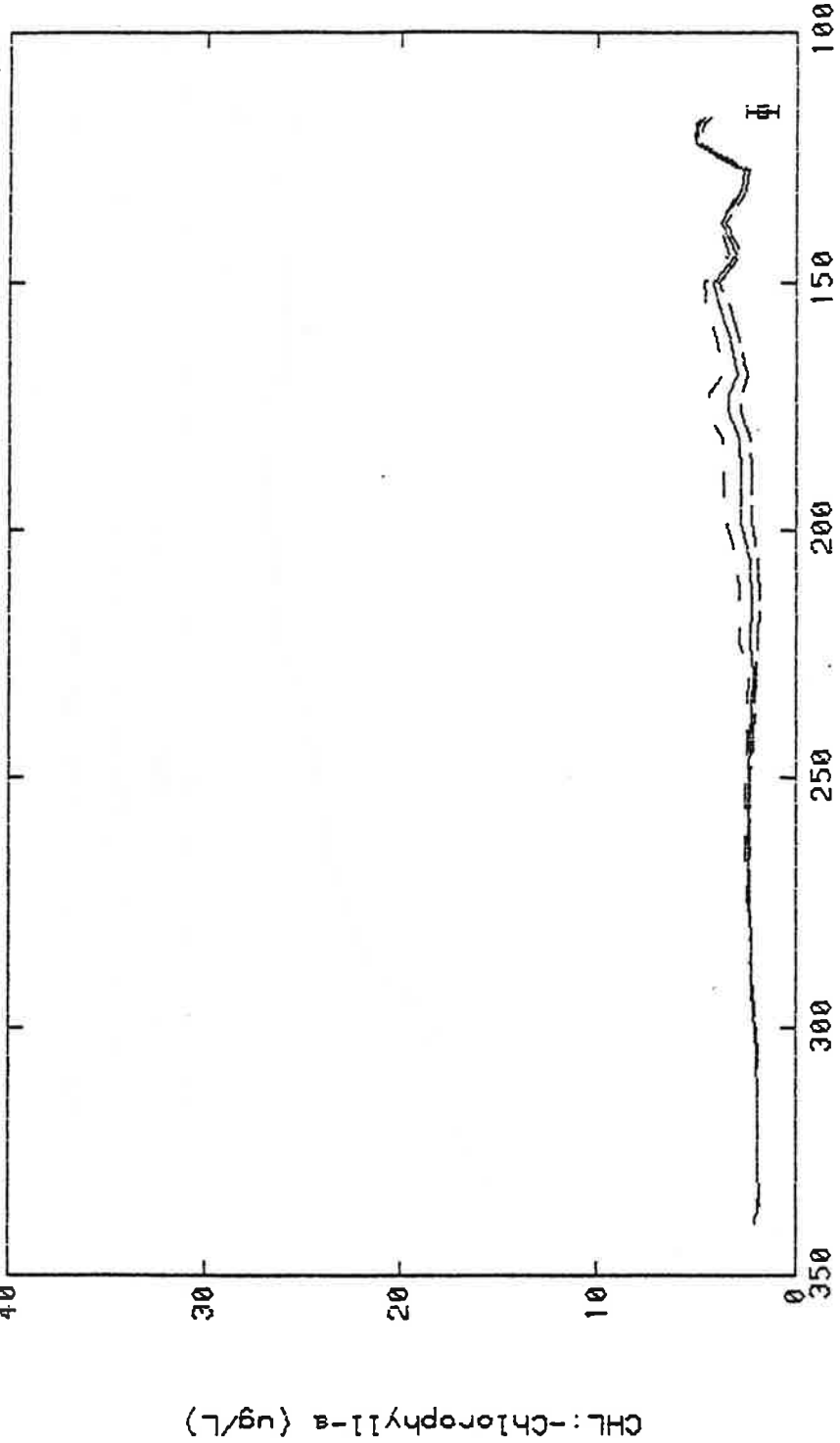


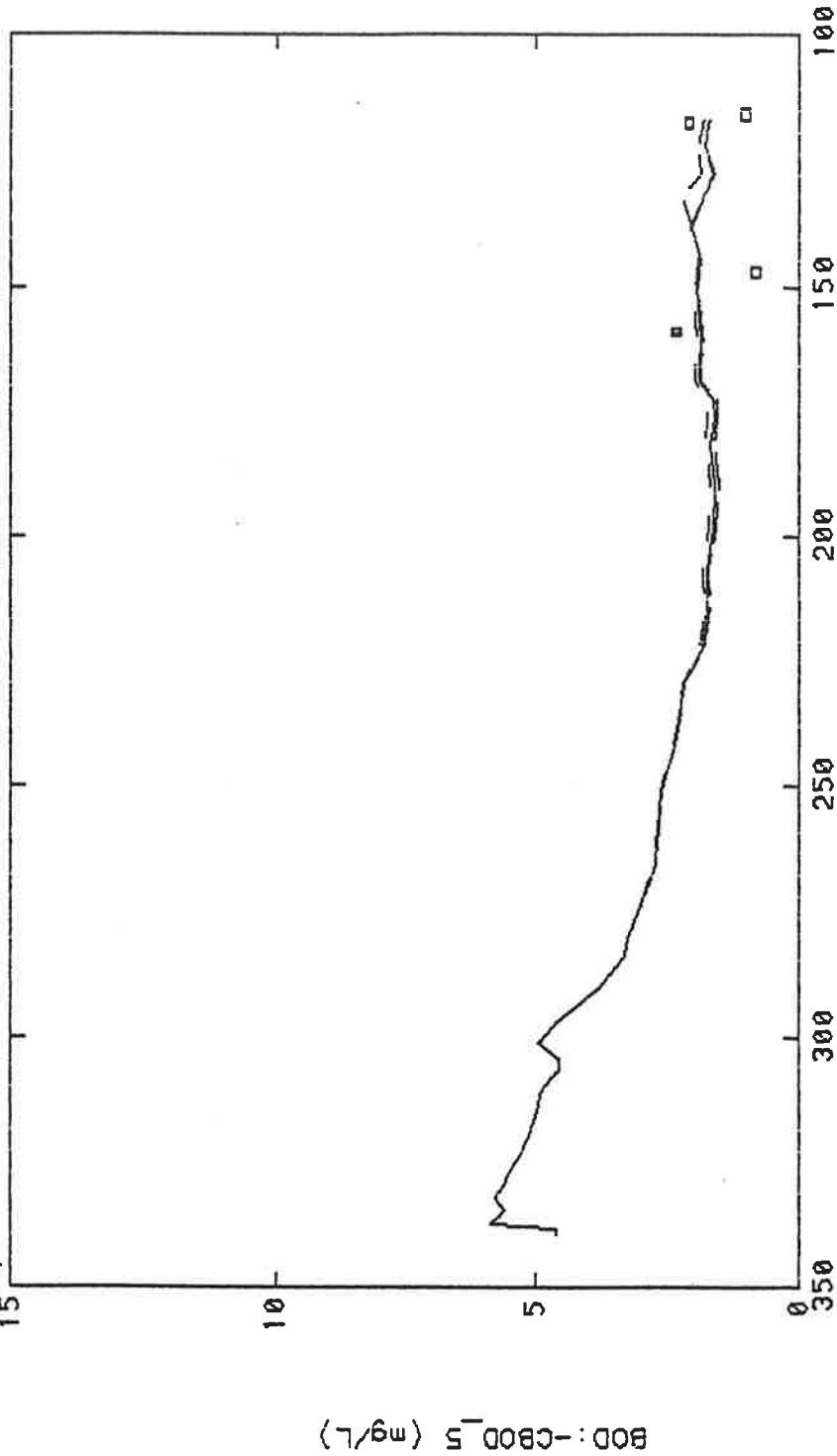
FIGURE I-4: Sep. 1985 sensitivity of Chlorophyll to NPS Loads

--- Base Case Non Point Source Loads \* 2

— Base Case Non Point Source Loads

... Base Case Non Point Source Loads \* 0.5

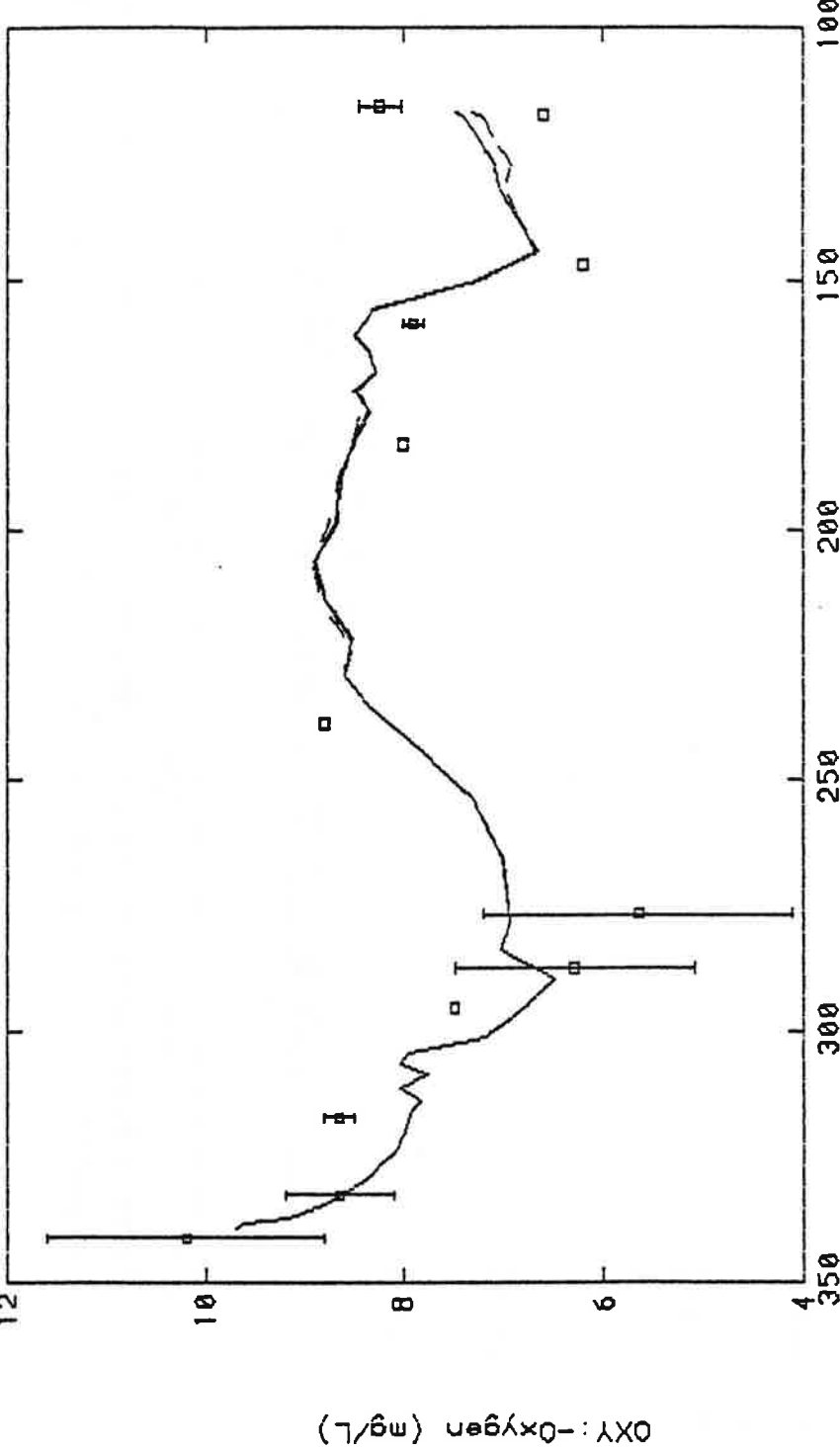
15 Sep85:xxBase Run# 85-062\*\* SENSITIVITY RUN# 85-081: NPS N03,P04,ON,OP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPCL File: CX85\_B0D.PLT

FIGURE I-5: September 1985 sensitivity of BOD to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 --- Base Case Non Point Source Loads  
 --- Base Case Non Point Source Loads \* 0.5

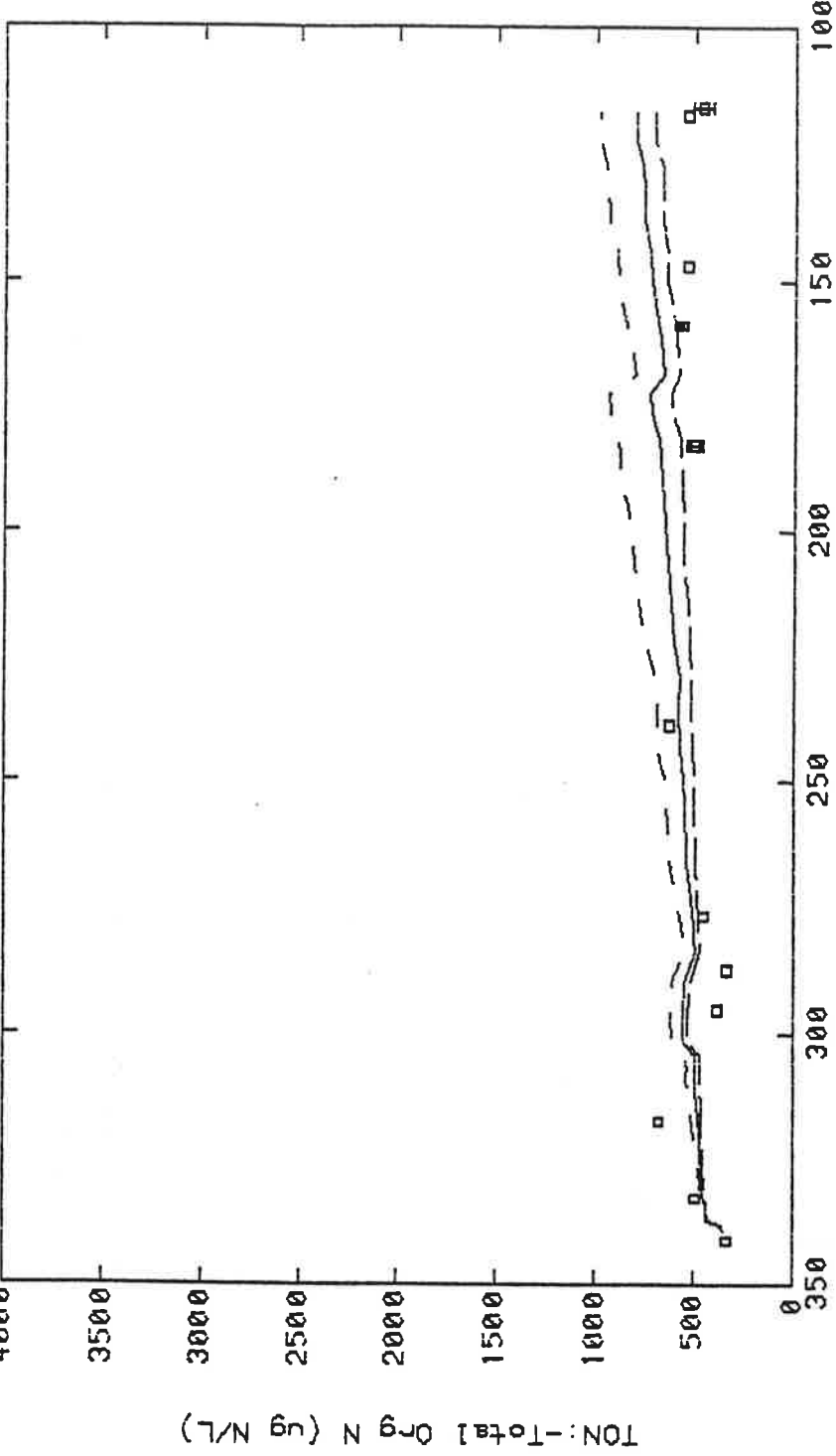
Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-081: NPS N03,P04,ON,OP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPGL File: CX85\_OXY.PLT

FIGURE I-6: September 1985 sensitivity of DO to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 ... Base Case Non Point Source Loads \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS N03, P04, ON, OP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Masp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPGL File: CX85\_TON.PLT

FIGURE I-7: Sep. 1985 sensitivity of Tot Org. Nit. to NPS Loads

- Base Case Non Point Source Loads \* 2
- Base Case Non Point Source Loads
- ... Base Case Non Point Source Loads \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS N03,P04,ON,CP = 0.5

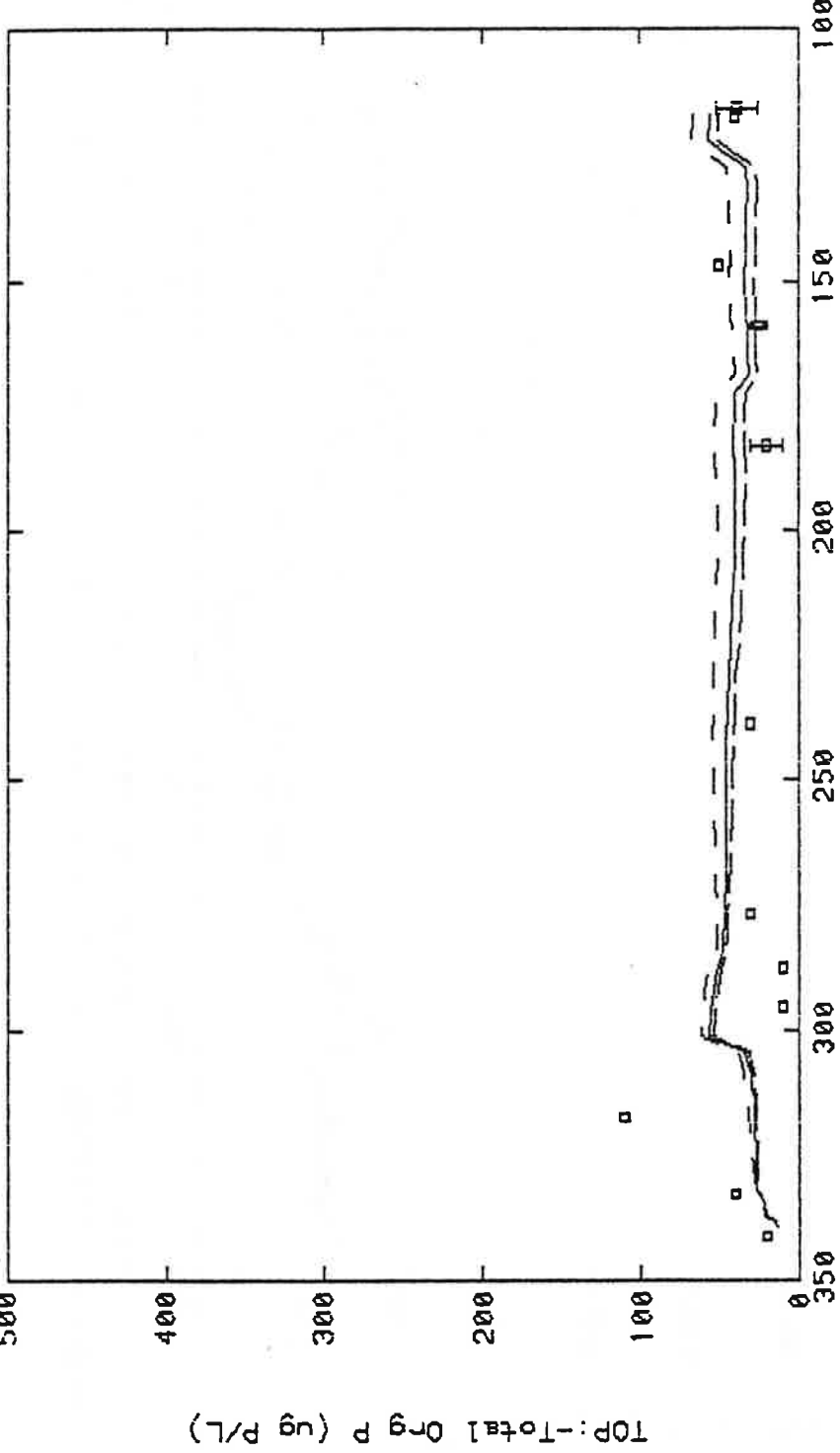


FIGURE I-8: Sep. 1985 sensitivity of Tot Org. Phos. to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 -.- Base Case Non Point Source Loads \* 0.5  
 . . . Base Case Non Point Source Loads \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS M03, P04, OM, OP = 0.5

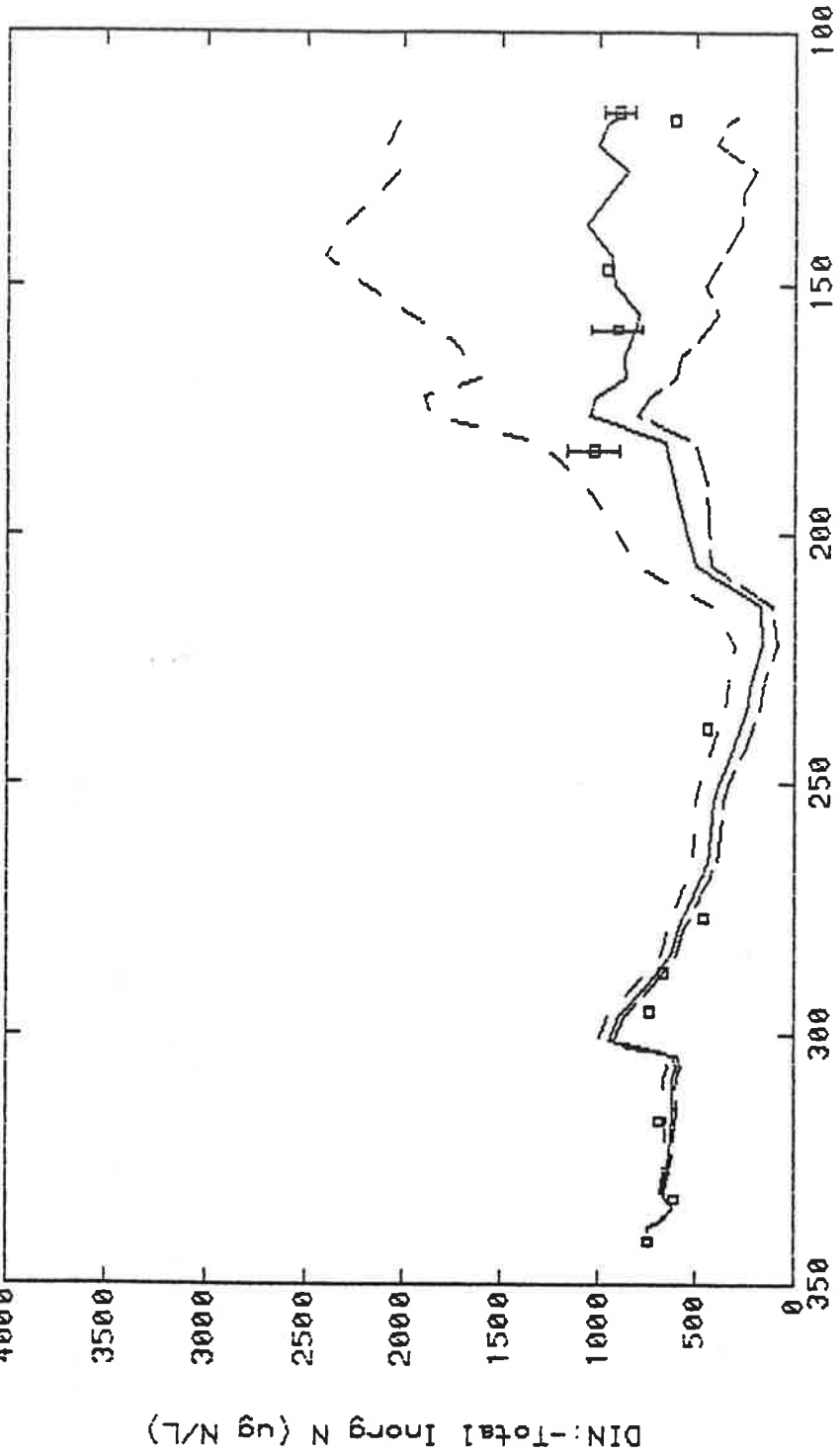
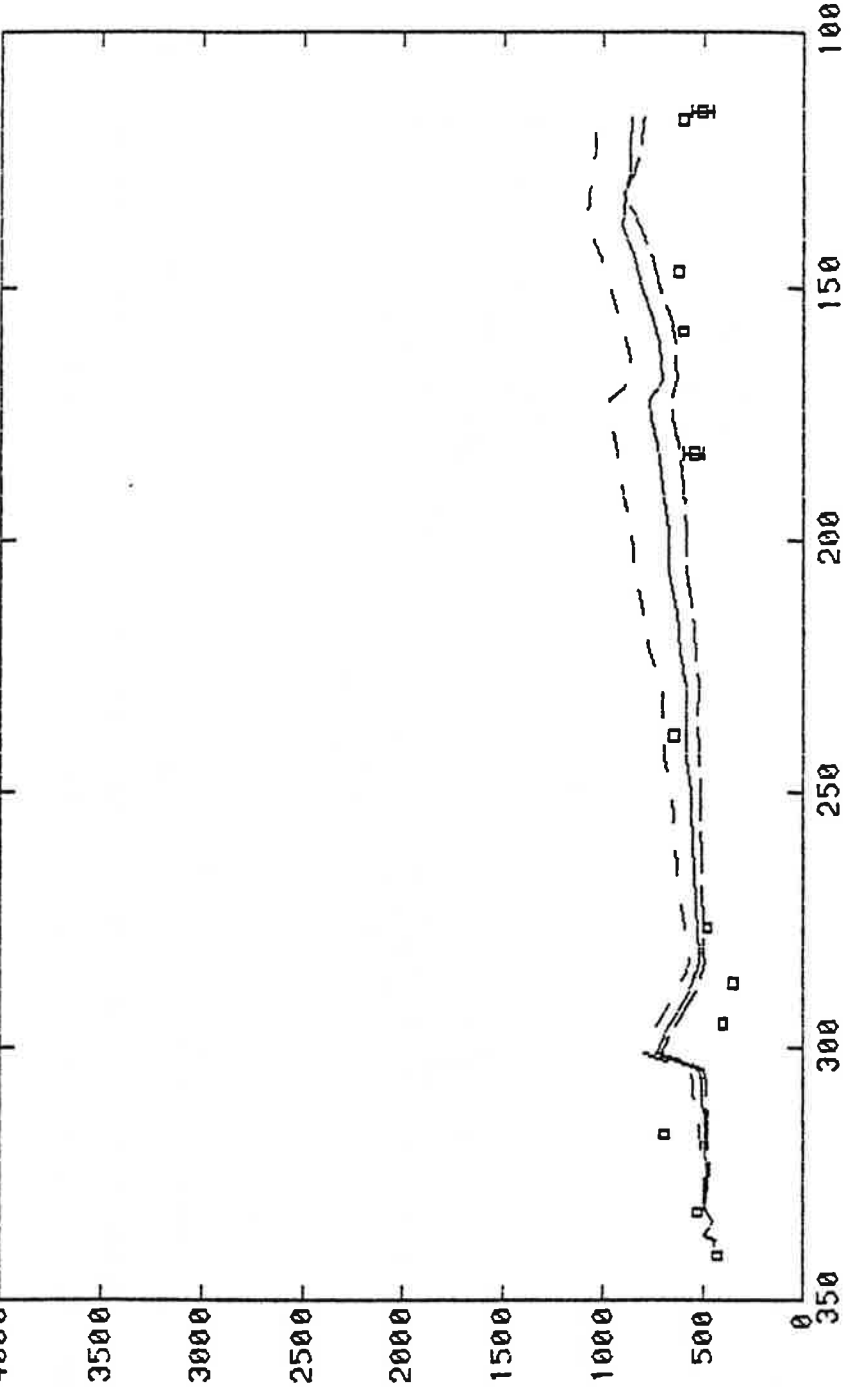


FIGURE I-9: Sep. 1985 sens. of Diss. Inor. Nit. to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 ... Base Case Non Point Source Loads \* 0.5

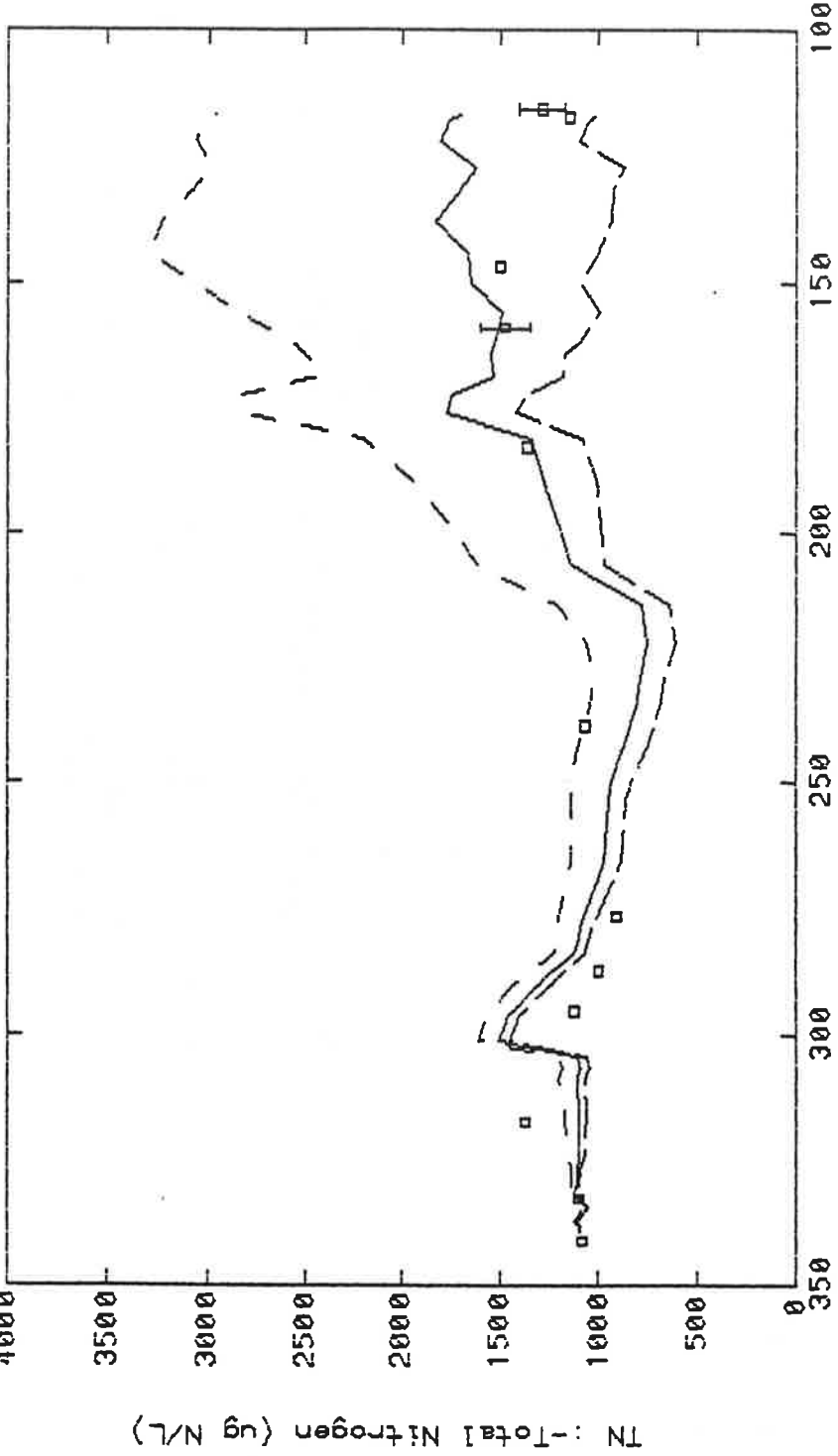
Sep85:\*\0base Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS NO3,P04,ON,OP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPGL File: CX85\_TKN.PLT

FIGURE I-10: Sep. 1985 sensitivity of TKN to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 -.- Base Case Non Point Source Loads \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-081: NPS ND3,P04,ON,CP = 0.5



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85081.inp 12 Jun 1991 05:09:37 HPGL File: CX85\_IN.PLT

FIGURE I-11: September 1985 sens. of Total Nit. to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 -.- Base Case Non Point Source Loads \* 0.5



Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-081: NPS N03,P04,ON,OP = 0.5

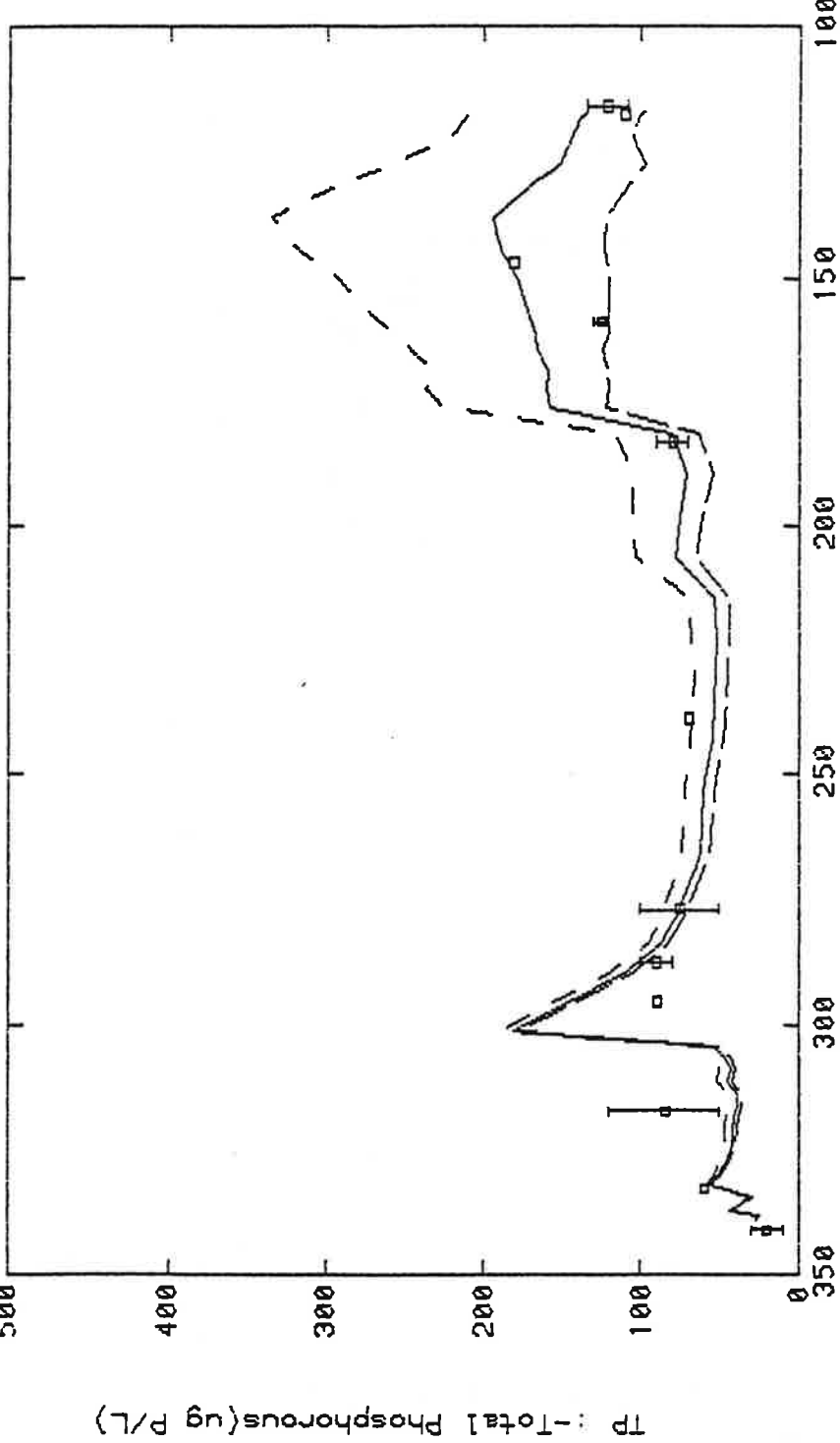
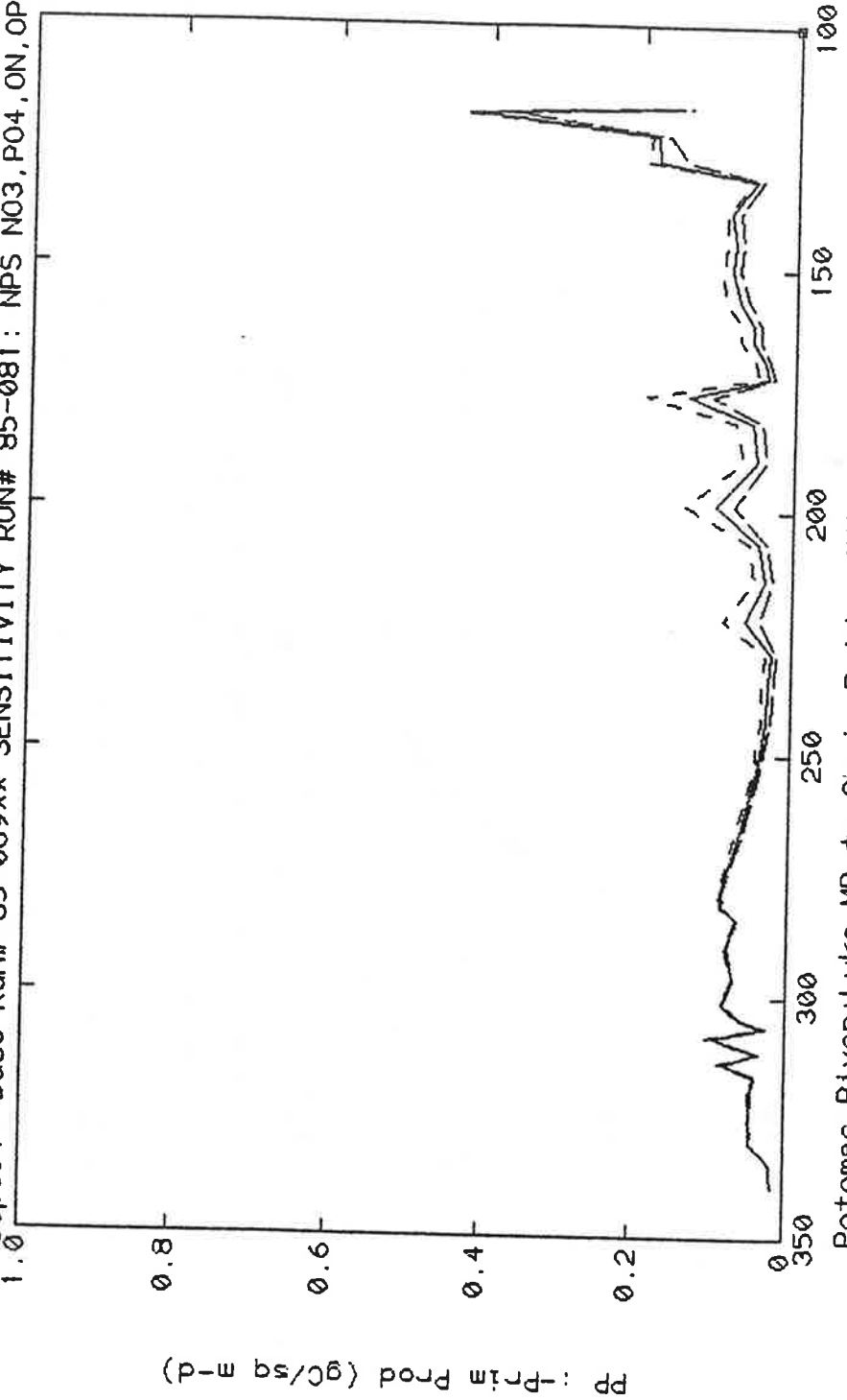


FIGURE I-12: Sep. 1985 sensitivity of Total Phos. to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 --- Base Case Non Point Source Loads  
 --- Base Case Non Point Source Loads \* 0.5

Sep85 : \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-081 : NPS N03,P04,ON,OP = 0.5



waso4 Run: prm85081.inp 12 Jun 1991 05:09:37 JD= 244.00 266.00  
 HPGL File: CX85\_PP.PLT

**FIGURE I-13:** Sep. 1985 sensitivity of Primary Prod. to NPS Loads  
 --- Base Case Non Point Source Loads \* 2  
 — Base Case Non Point Source Loads  
 ... Base Case Non Point Source Loads \* 0.5

Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

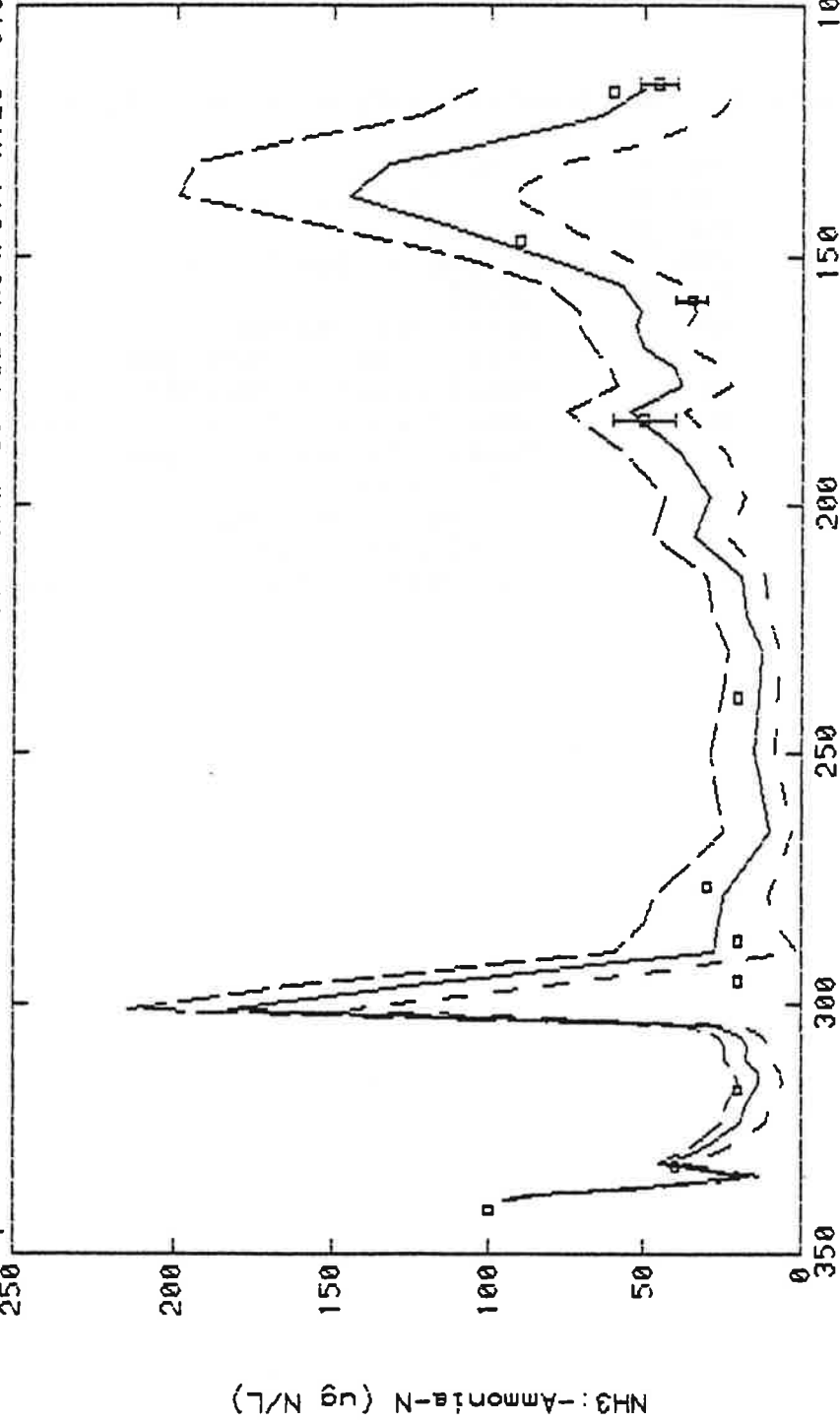


FIGURE J-1: September 1985 sensitivity of Ammonia to Nitrif. Rate

- Base Case Nitrification Rate \* 2
- Base Case Nitrification Rate
- .- Base Case Nitrification Rate \* 0.5

## Appendix J - Sensitivity Analysis-6 Nitrification Rate

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity

Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

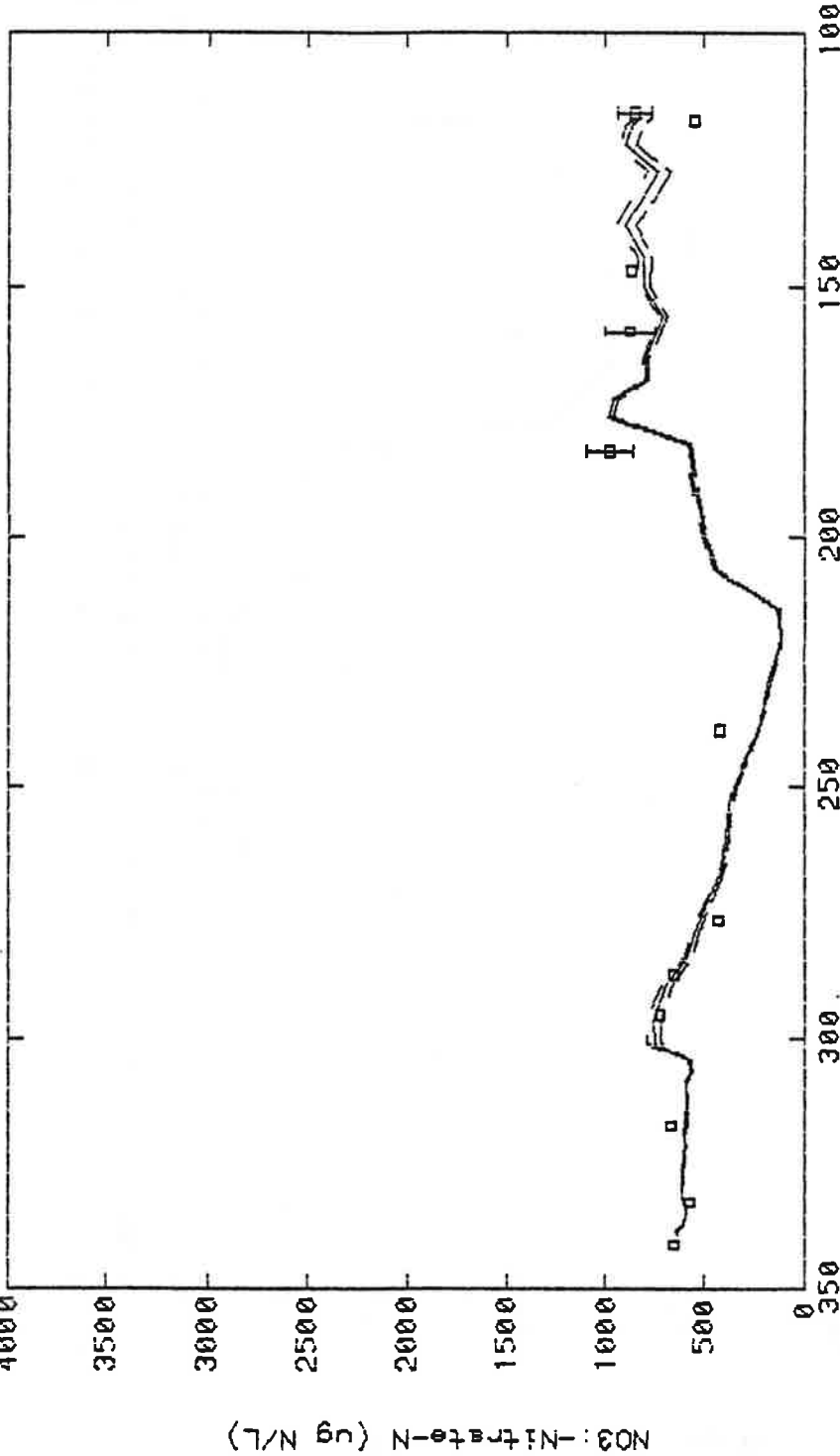
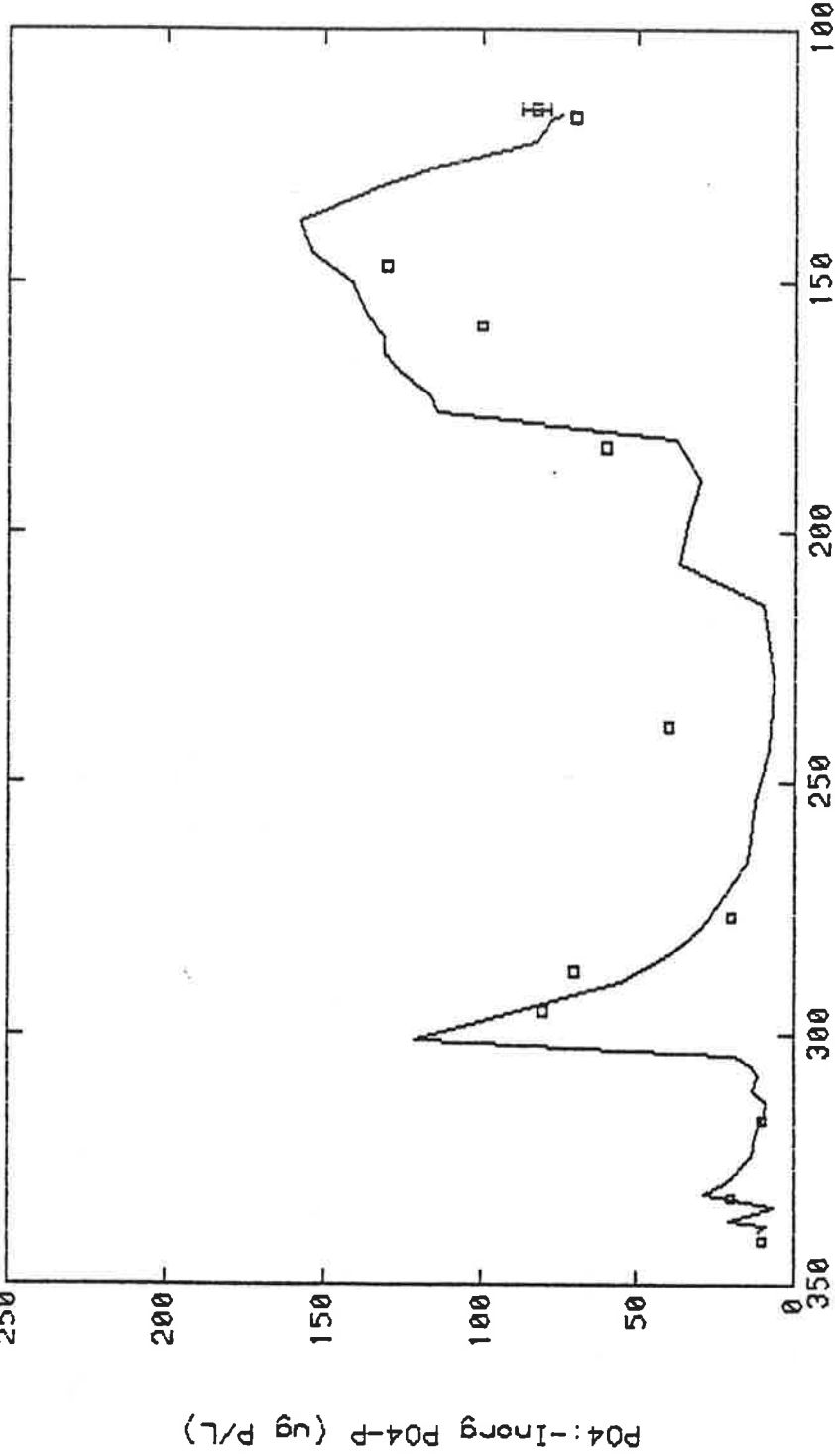


FIGURE J-2: September 1985 sensitivity of Nitrate to Nitrif. Rate  
 --- Base Case Nitration Rate \* 2  
 — Base Case Nitration Rate  
 ... Base Case Nitration Rate \* 0.5

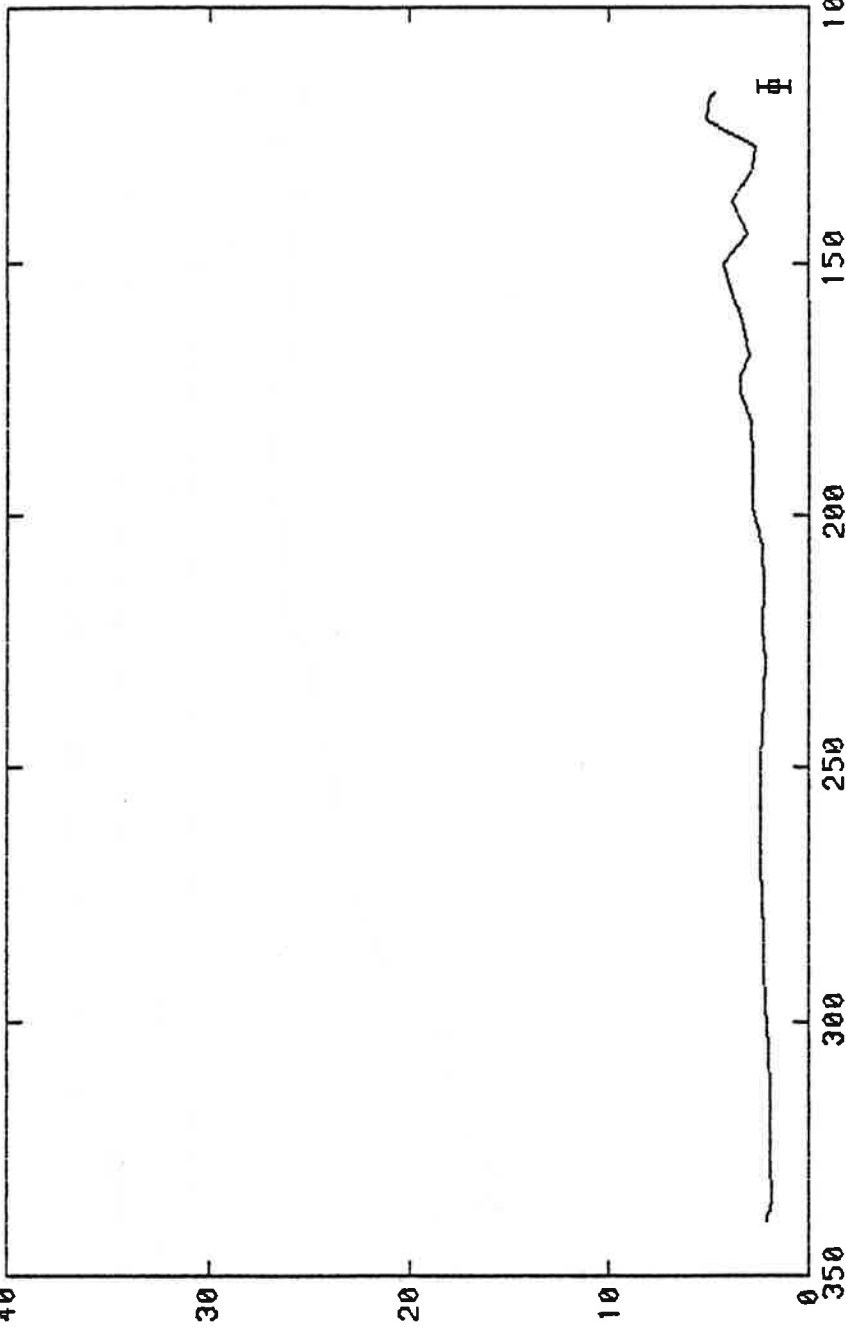
Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0



Wasp4 Run: prm85083.inp 12 Jun 1991 05:46:40 JD= 244.00 266.00  
 HPGl File: CX85\_P04.PLT

FIGURE J-3: September 1985 sensitivity of Phosphate to Nitrif. Rate  
 --- Base Case Nitrification Rate \* 2  
 --- Base Case Nitrification Rate  
 --- Base Case Nitrification Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0



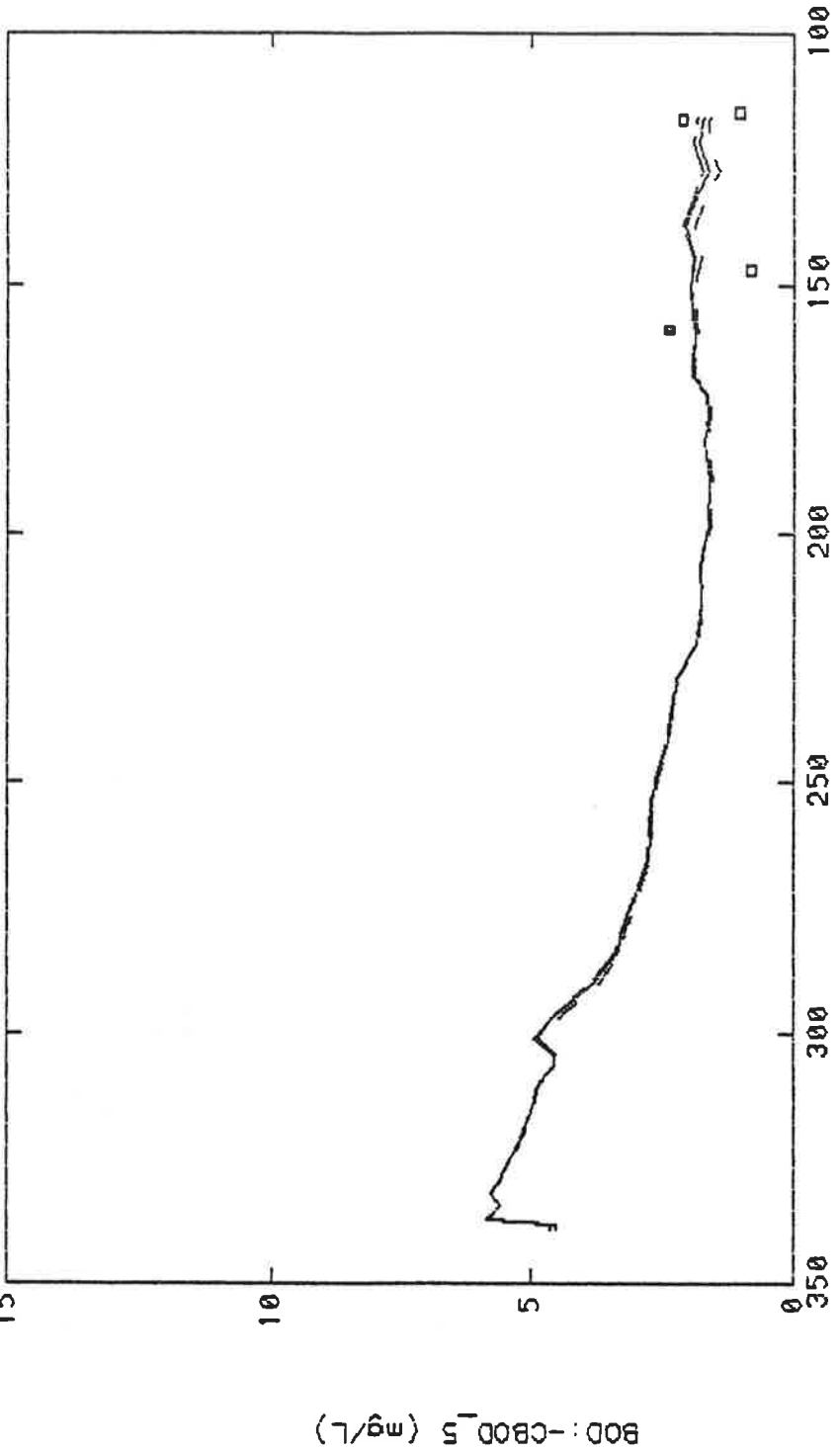
CHL:-Chlorophyll-a (ug/L)

Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Wasp4 Run:prn85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_CHL.PLT

FIGURE J-4: Sep. 1985 sensitivity of Chlorophyll to Nitrif. Rate  
 --- Base Case Nitrification Rate \* 2  
 --- Base Case Nitrification Rate  
 --- Base Case Nitrification Rate \* 0.5

Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

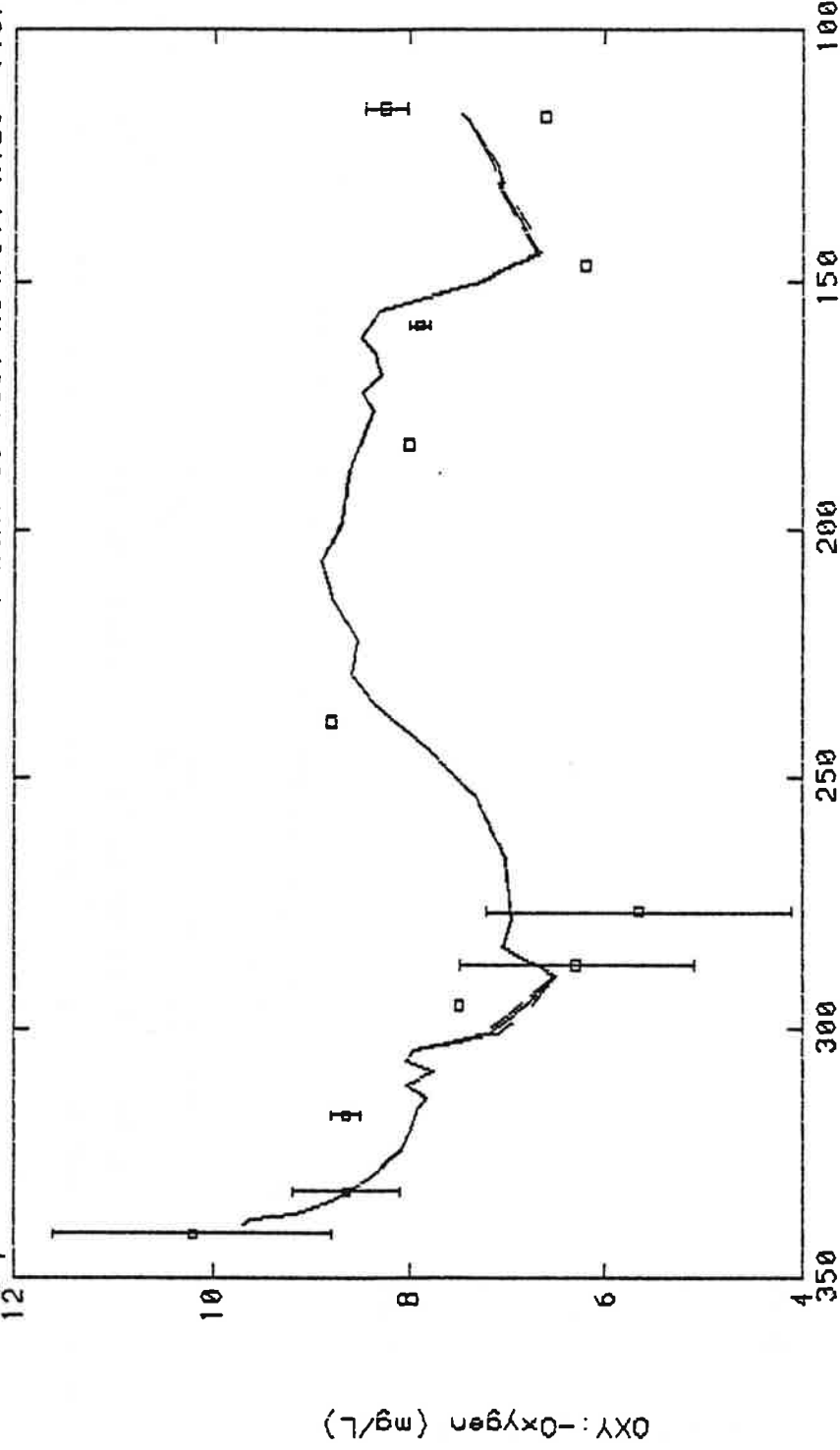


Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_B00.PLT

FIGURE J-5: September 1985 sensitivity of BOD to Nitri. Rate  
 --- Base Case Nitrification Rate \* 2  
 — Base Case Nitrification Rate  
 -.- Base Case Nitrification Rate \* 0.5



Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-083: NitriF: K12C= 0.5/d = 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Masp4 Run: prm85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_OXY.PLT

FIGURE J-6: September 1985 sensitivity of DO to NitriF. Rate

- Base Case NitriFication Rate \* 2
- Base Case NitriFication Rate
- Base Case NitriFication Rate \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

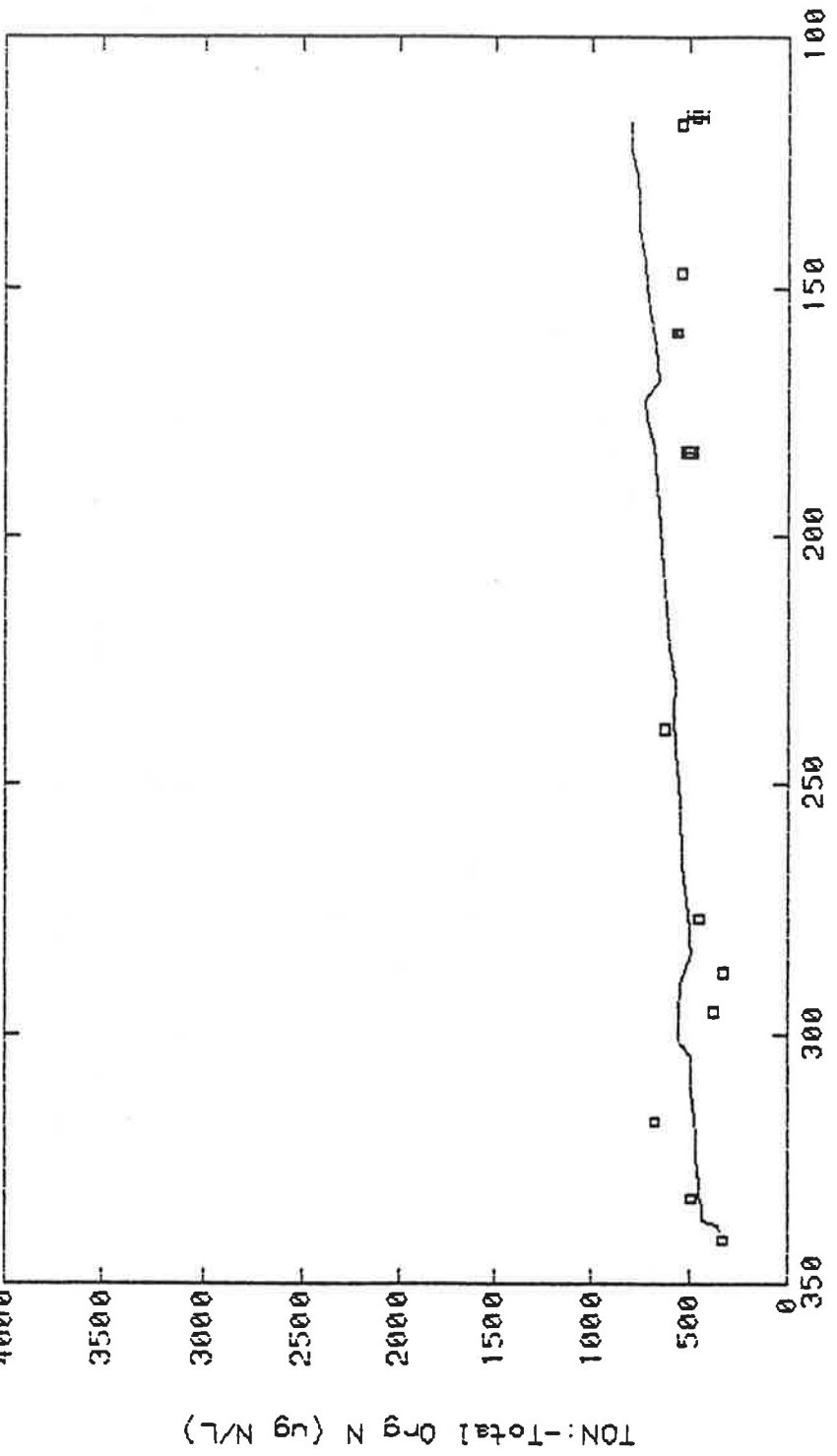
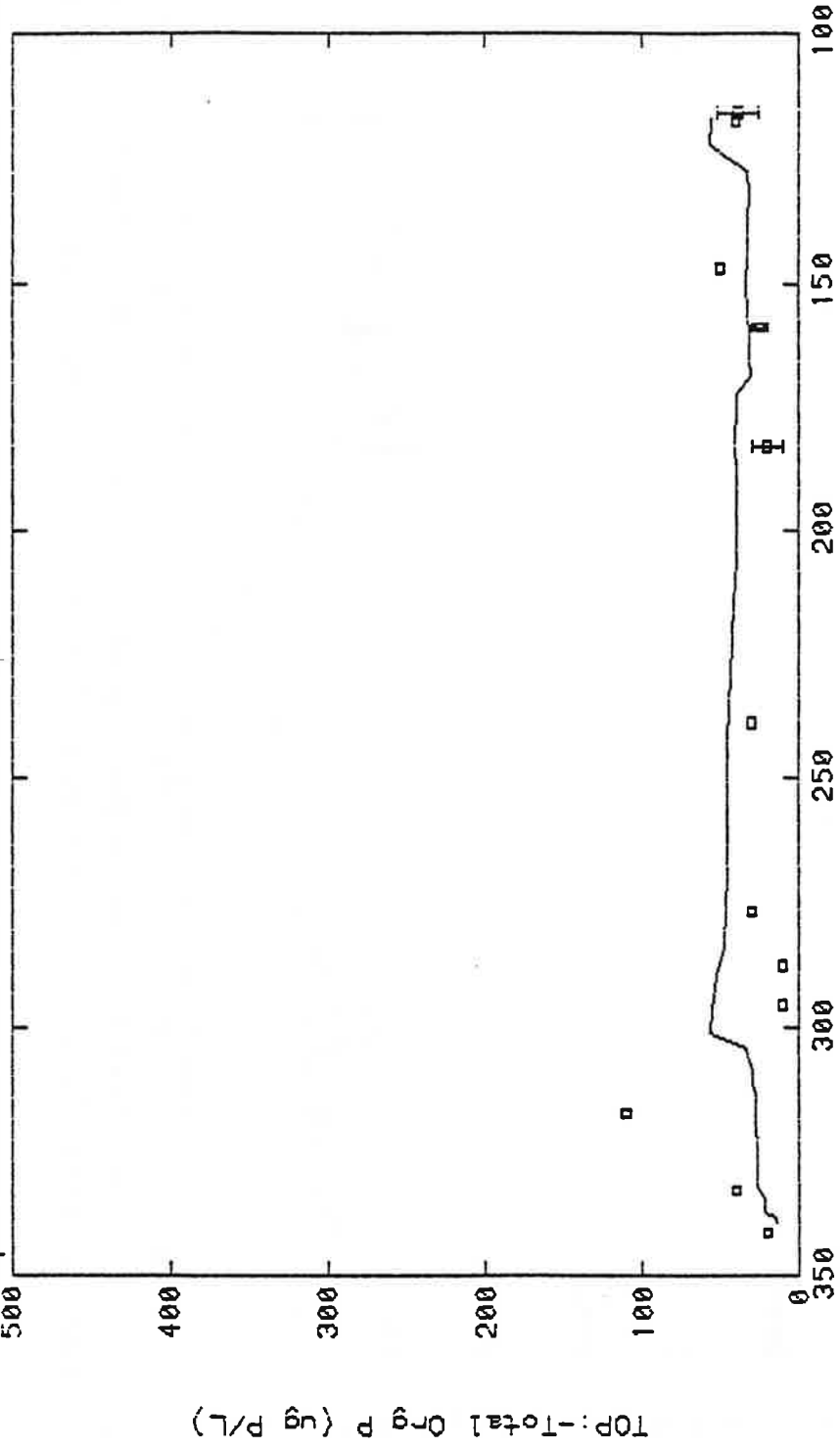


FIGURE J-7: Sep. 1985 sensitivity of Tot Org. Nit. to Nitrif. Rate  
 --- Base Case Nitrification Rate \* 2  
 --- Base Case Nitrification Rate  
 --- Base Case Nitrification Rate \* 0.5

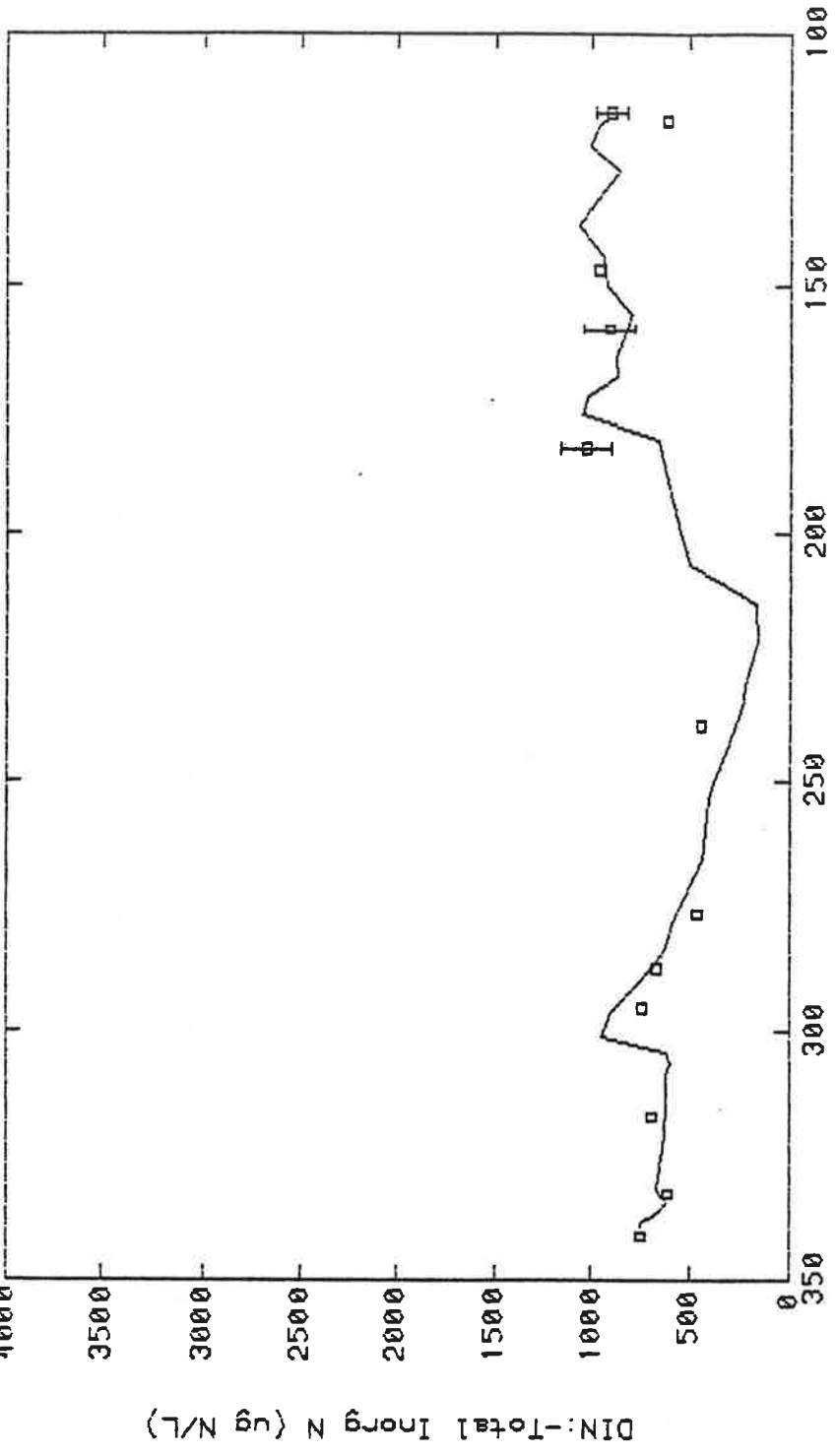
Sep85:xxBase Run# 85-069xx SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_TOP.PLT

FIGURE J-8: Sep. 1985 sensitivity of Tot Org. Phos. to Nitrif. Rate  
 --- Base Case Nitrification Rate \* 2  
 ——— Base Case Nitrification Rate  
 ... Base Case Nitrification Rate \* 0.5

Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_DIN.PLT

FIGURE J-9: Sep. 1985 sens. of Diss. Inor. Nit. to Nitrif. Rate

- Base Case Nitritification Rate \* 2
- \_\_\_ Base Case Nitritification Rate
- ... Base Case Nitritification Rate \* 0.5

Sep85: \*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

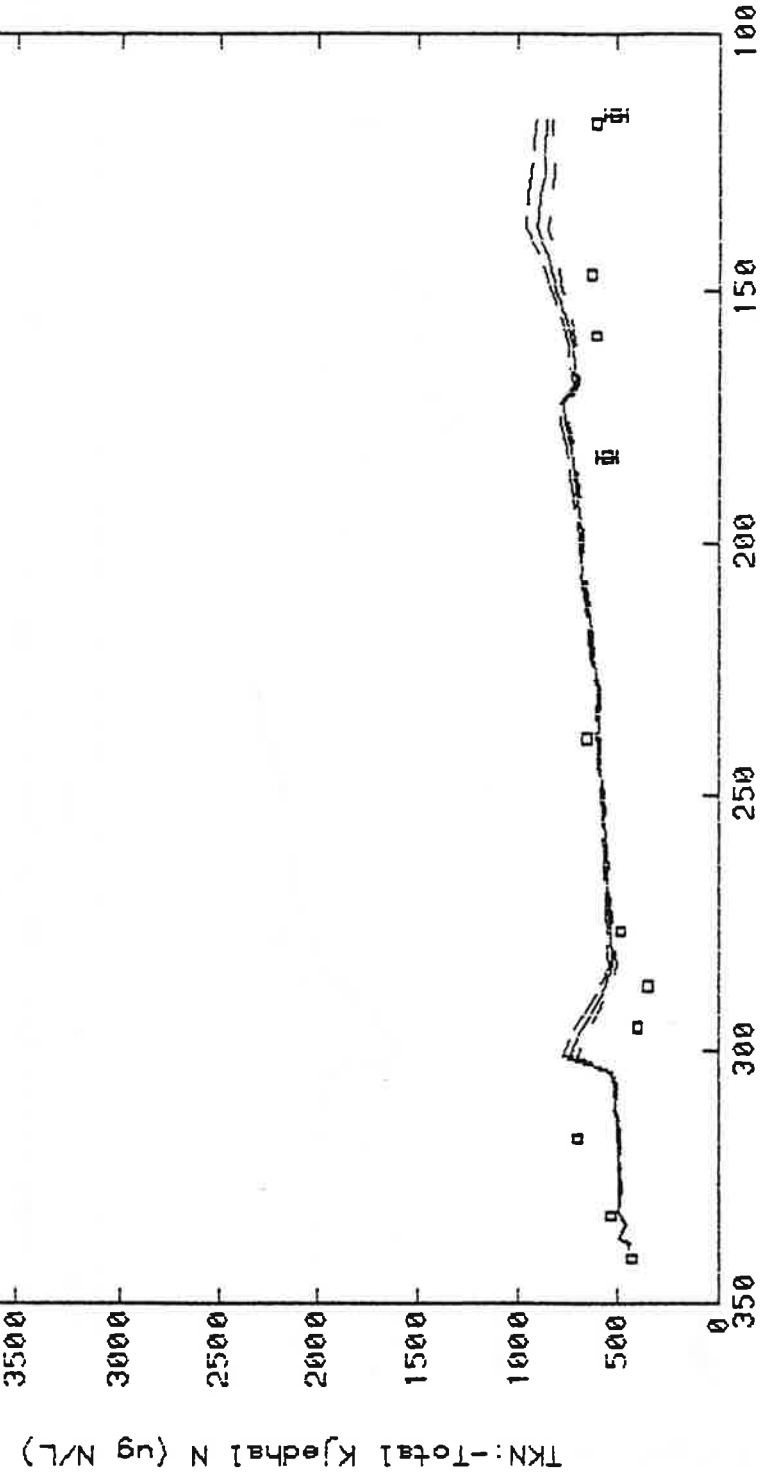
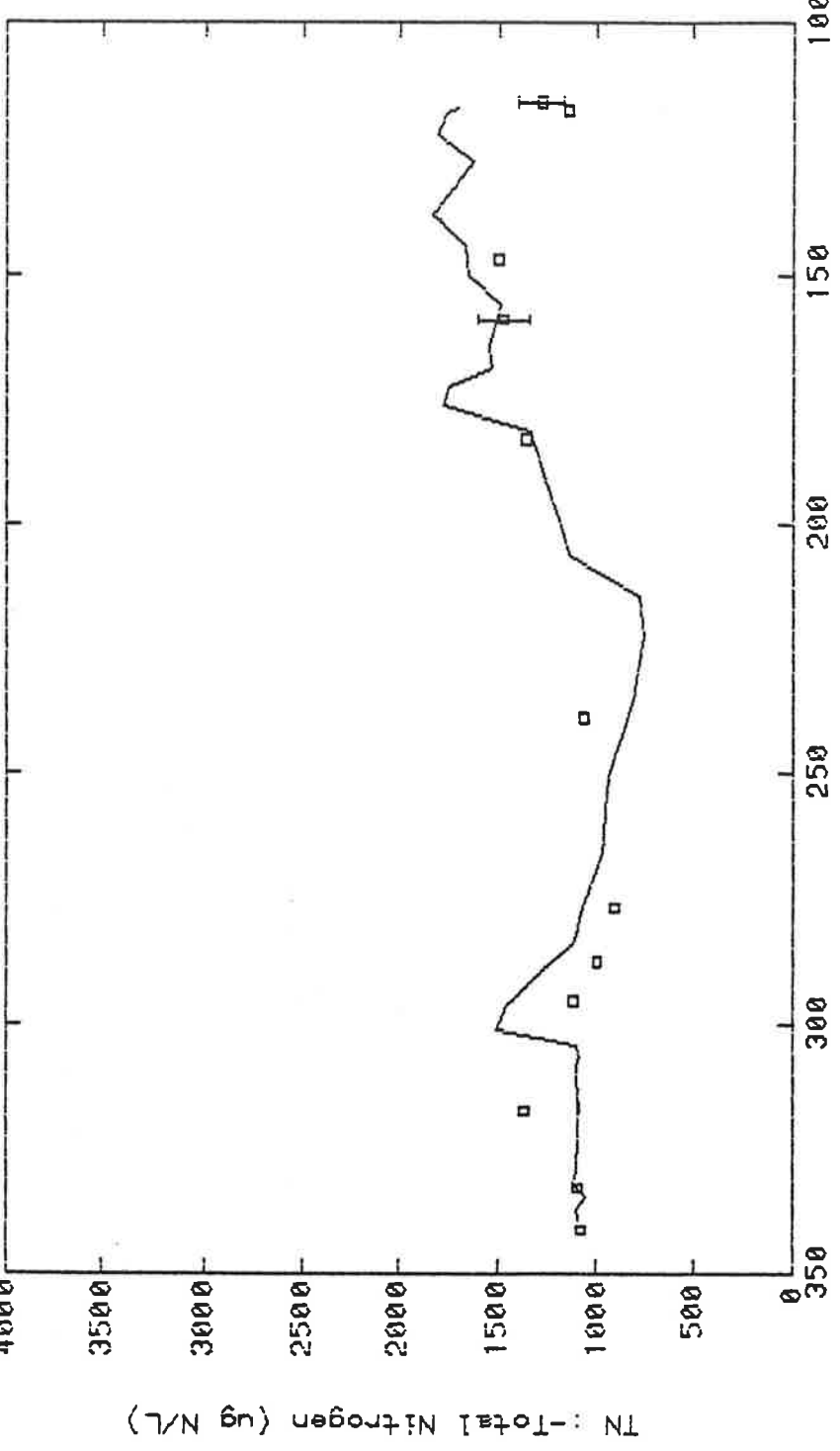


FIGURE J-10: Sep. 1985 sensitivity of TKN to Nitritif. Rate  
 --- Base Case Nitritification Rate \* 2  
 — Base Case Nitritification Rate  
 ... Base Case Nitritification Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 · 266.00  
 Wasp4 Run: prm85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_IN.PLT

FIGURE J-11: September 1985 sens. of Total Nit. to Nitrif. Rate  
 --- Base Case Nitrification Rate \* 2  
 — Base Case Nitrification Rate  
 ··· Base Case Nitrification Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitrif: K12C= 0.5/d = 0

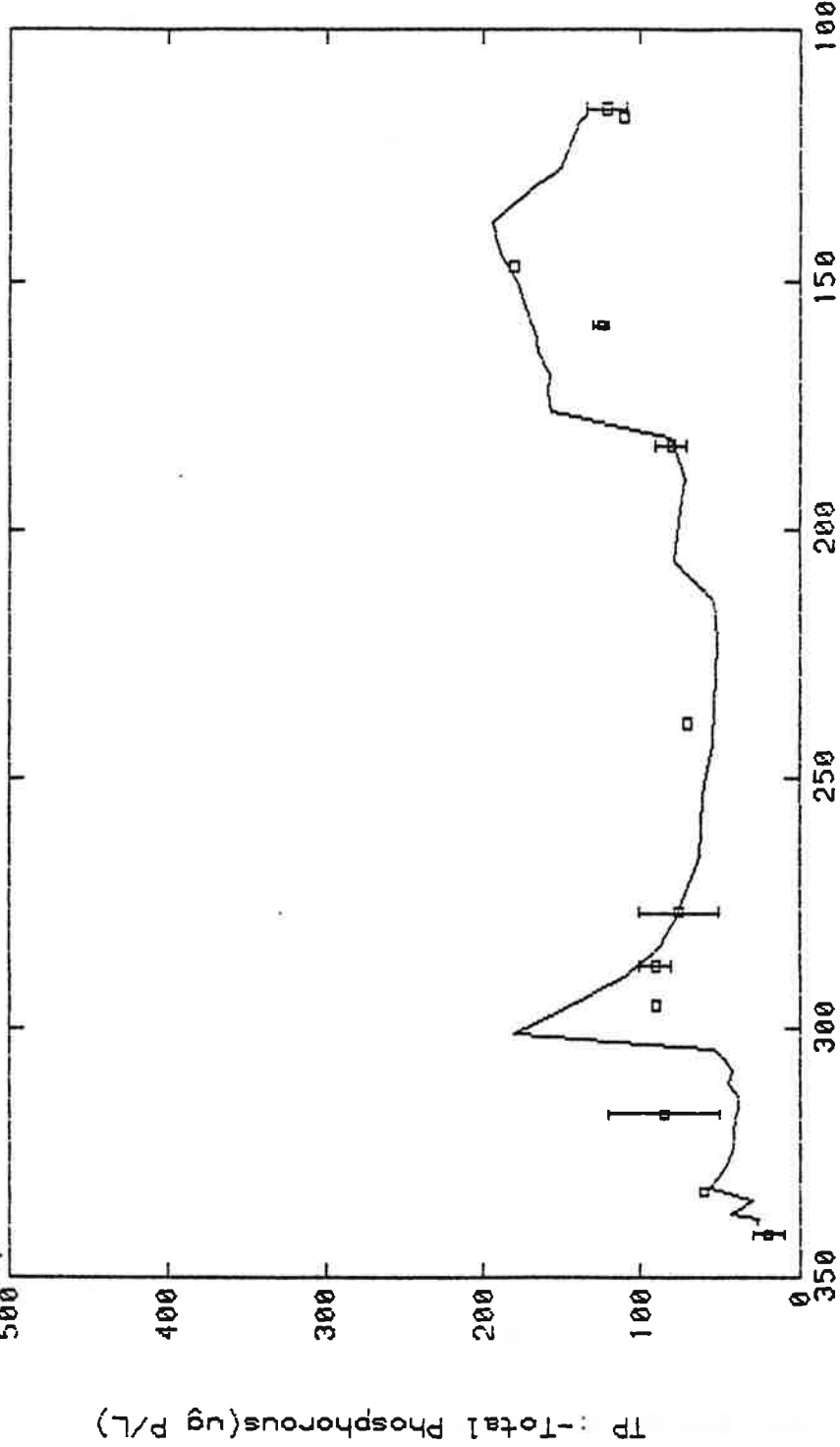
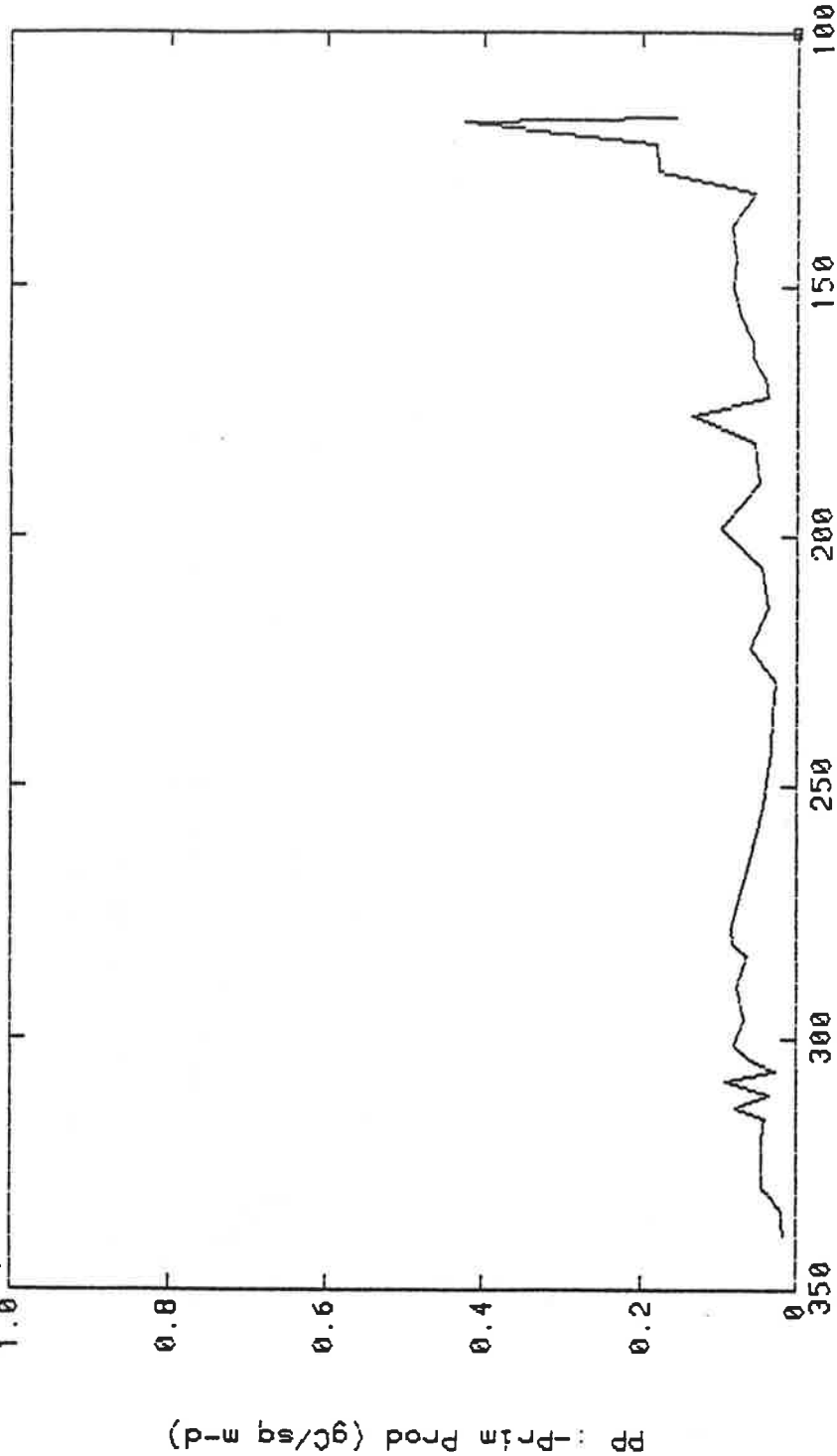


FIGURE J-12: Sep. 1985 sensitivity of Total Phos. to Nitrif. Rate  
 --- Base Case Nitrate Rate \* 2  
 --- Base Case Nitrate Rate  
 --- Base Case Nitrate Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-083: Nitriif: K12C= 0.5/d = 0



Potomac River:Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run:prn85083.inp 12 Jun 1991 05:46:40 HPGL File: CX85\_PP.PLT

FIGURE J-13: Sep. 1985 sensitivity of Primary Prod. to Nitriif. Rate  
 --- Base Case Nitritication Rate \* 2  
 — Base Case Nitritication Rate  
 - - - Base Case Nitritication Rate \* 0.5



Appendix K - Sensitivity Analysis-7 Inorganic Solids  
Settling Rate

NH3_N	Ammonia
NO3_N	Nitrate + Nitrite
PO4_P	Phosphate
CHL	Phytoplankton Chl_a
CBOD5	CBOD5
OXY	Dissolved Oxygen
TON	Total Organic Nitrogen
TOP	Total Organic Phosphorous
DIN	Dissolved Inorganic Nitrogen
TKN	Total Kjeldhal Nitrogen
TN	Total Nitrogen
N/P	Inorganic N/P ratio
TP	Total Phosphorous
PP	Phytoplankton primary productivity

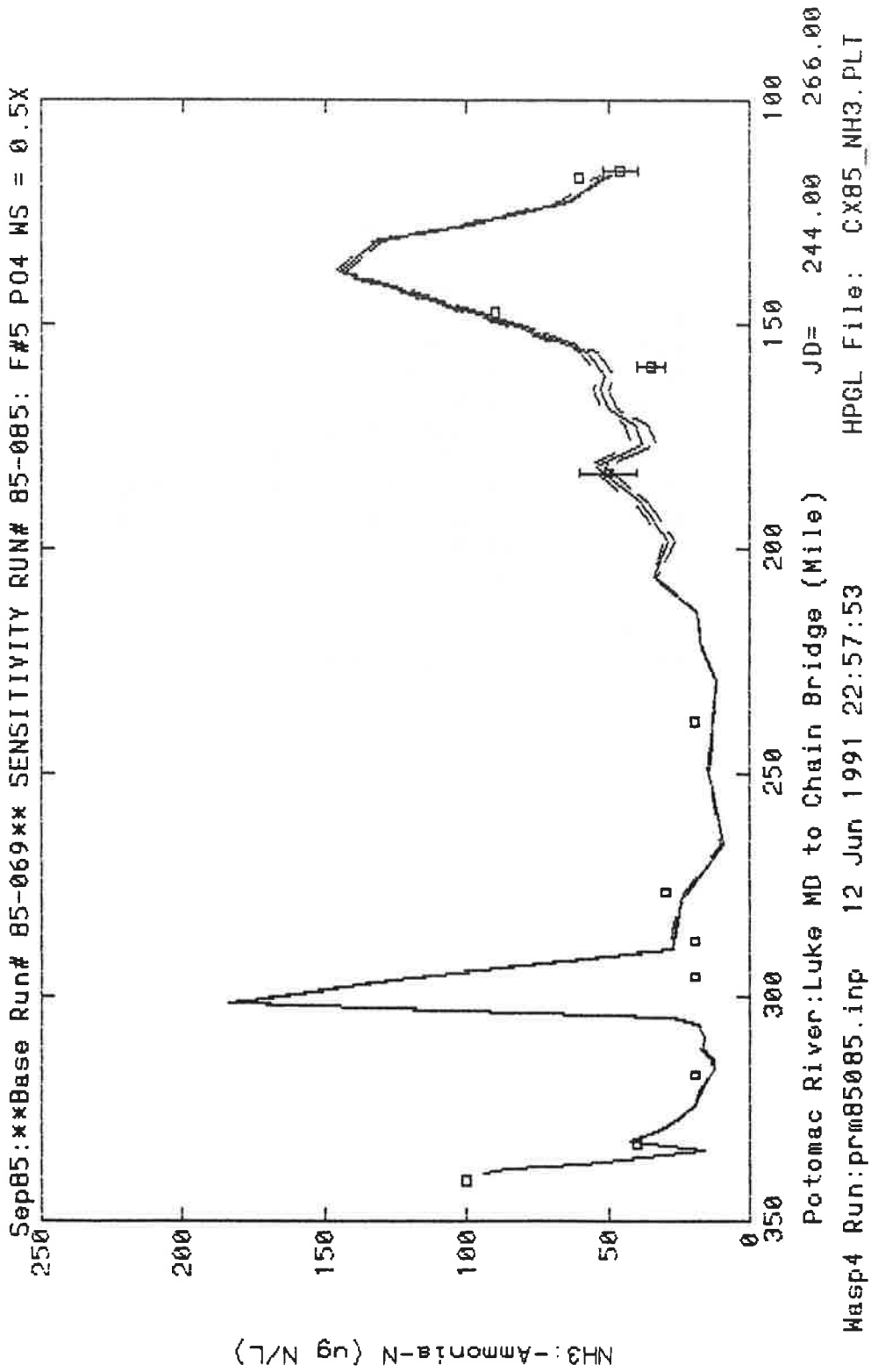


FIGURE K-1: September 1985 sensitivity of Ammonia to Settling Rate

- Base Case Inorg. Solids Settling Rate \* 2
- Base Case Inorg. Solids Settling Rate
- .- Base Case Inorg. Solids Settling Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 WS = 0.5X

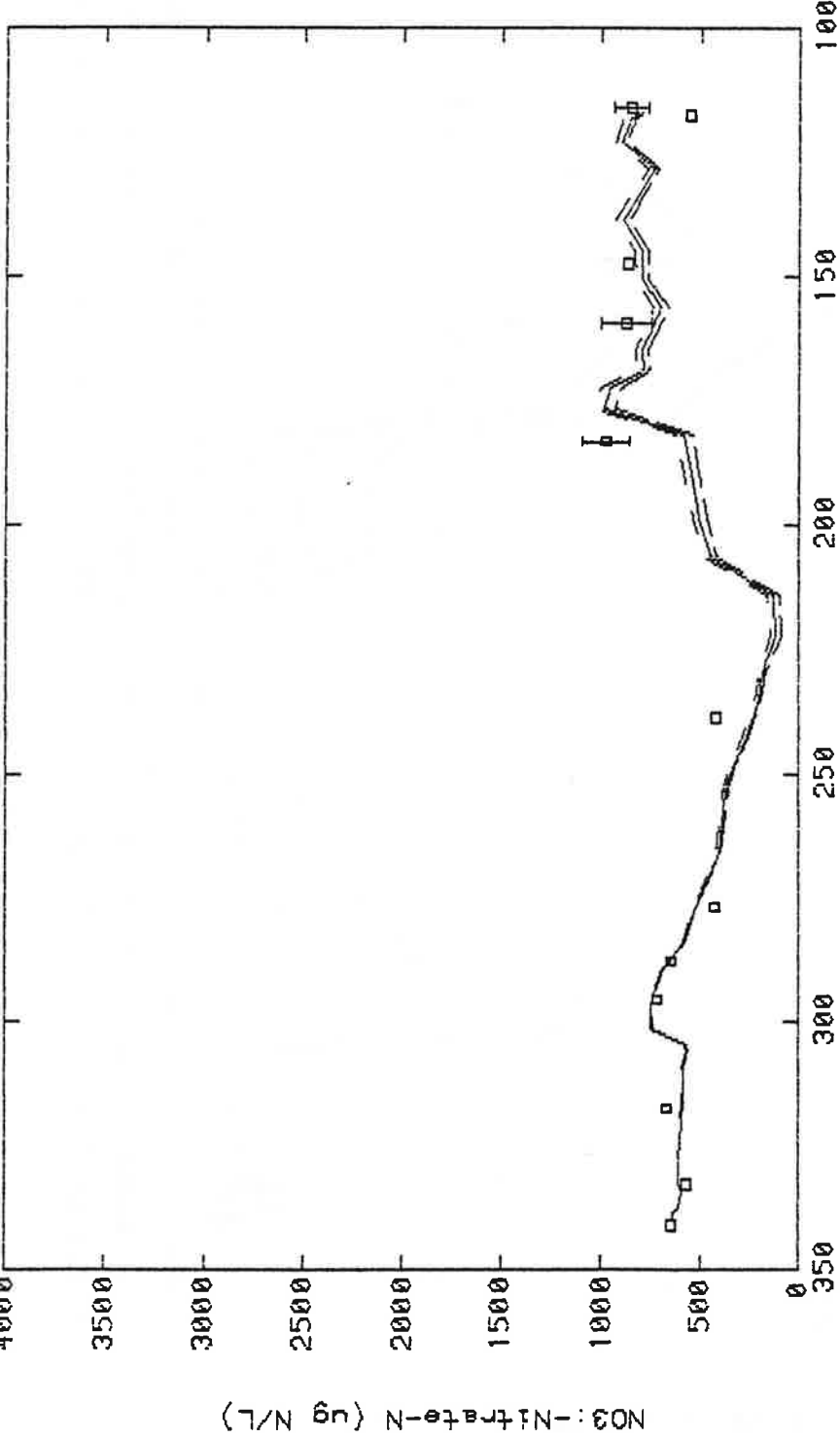


FIGURE K-2: September 1985 sensitivity of Nitrate to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 0.5

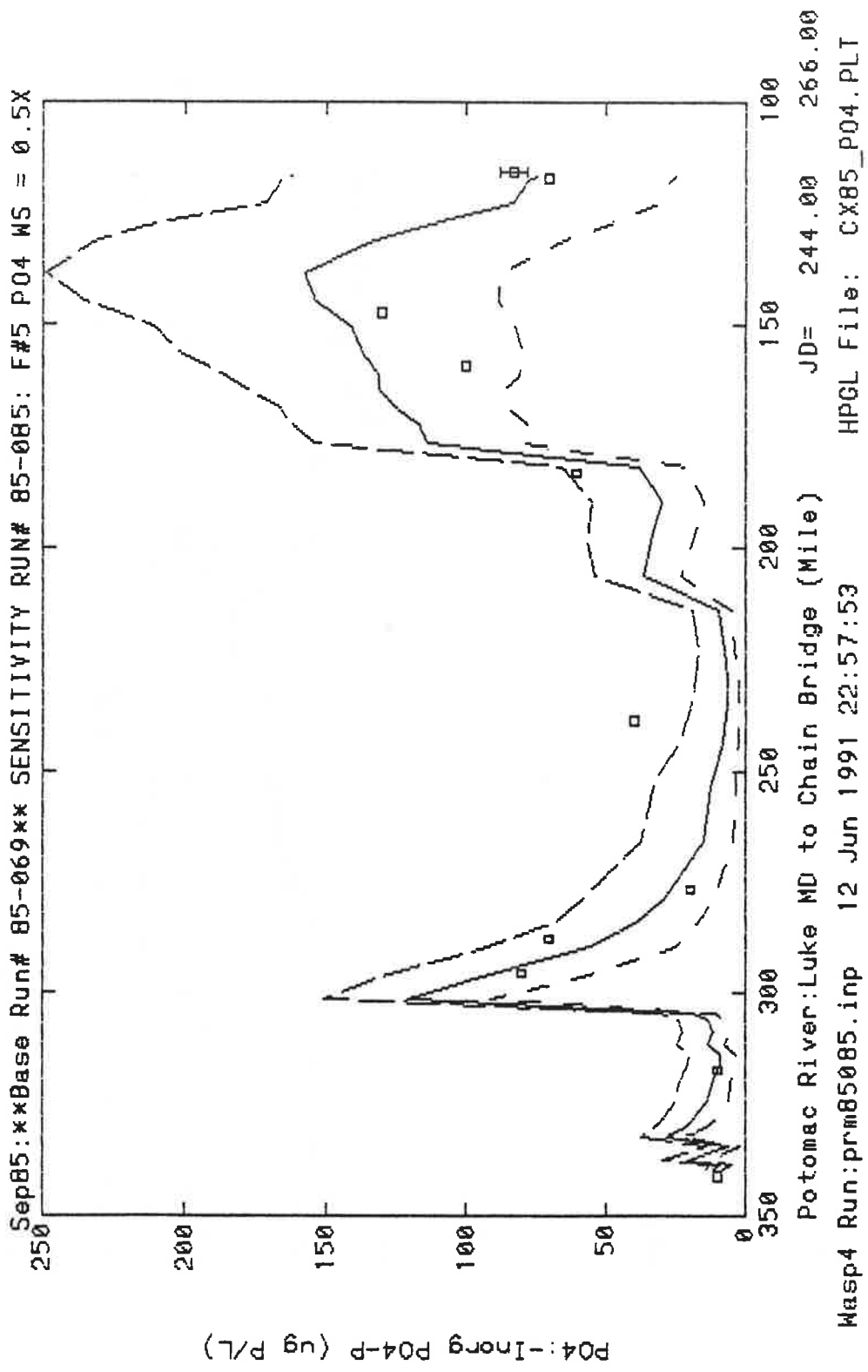
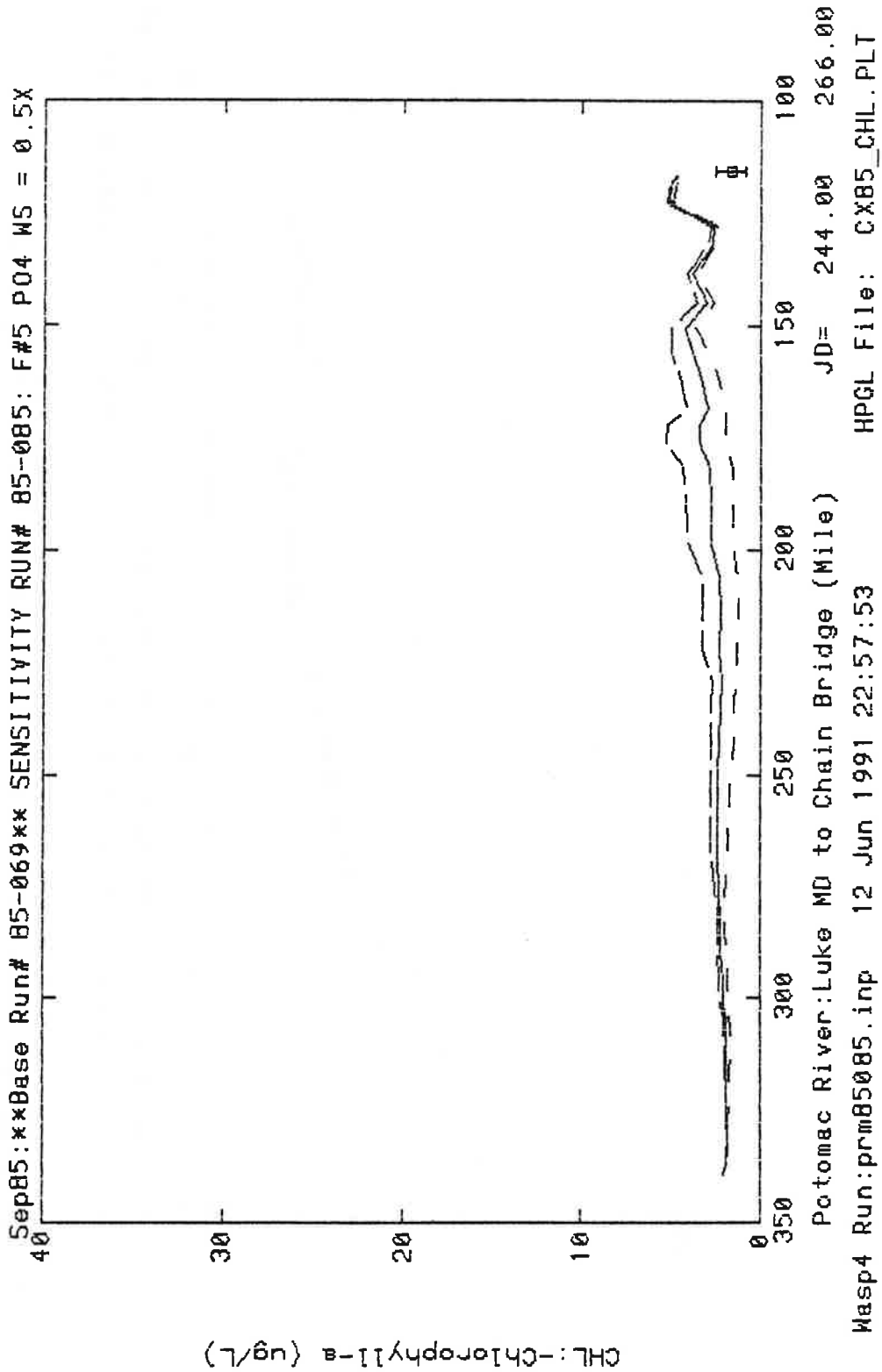


FIGURE K-3: September 1985 sensitivity of Phosphate to Settling Rate

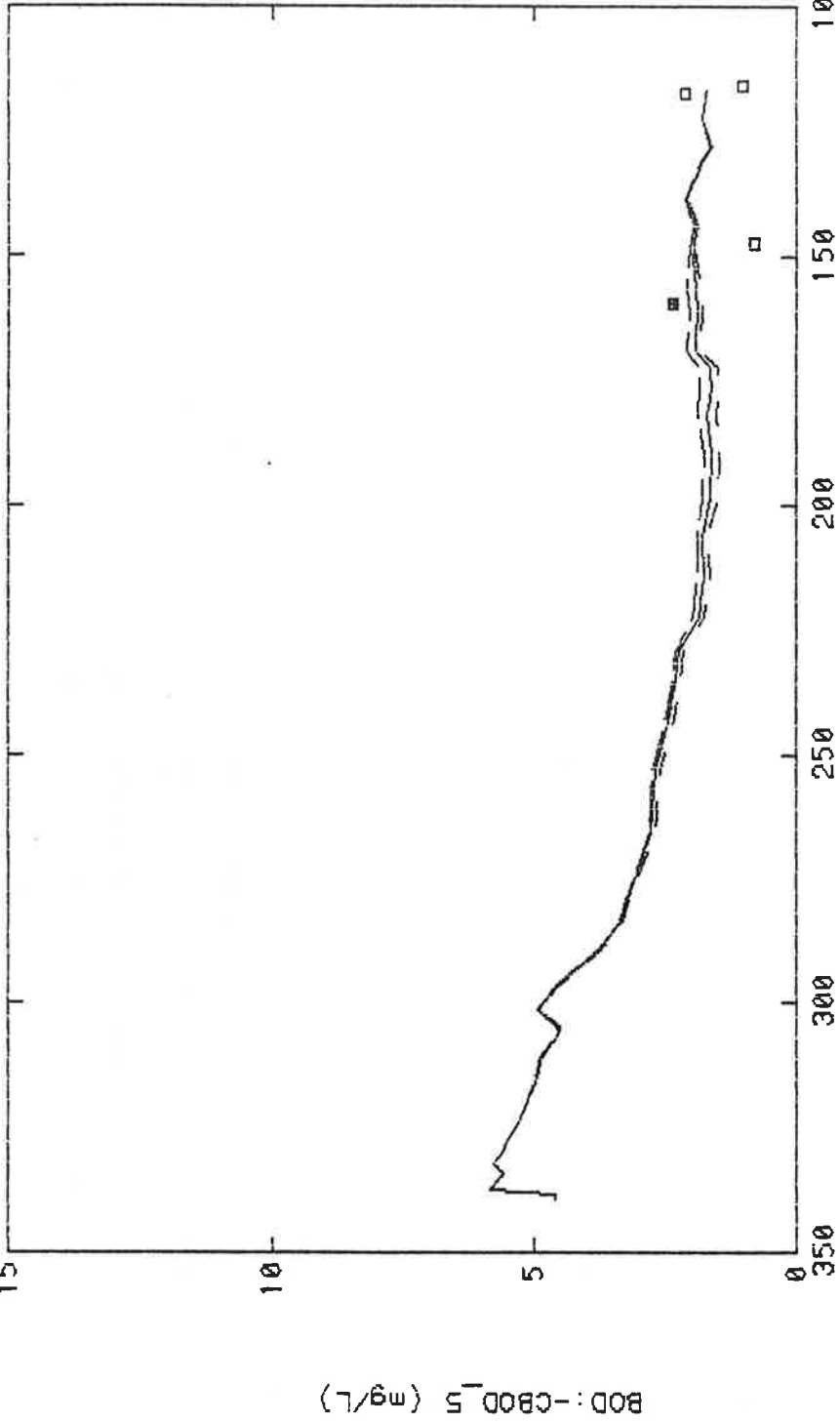
- Base Case Inorg. Solids Settling Rate \* 2
- Base Case Inorg. Solids Settling Rate
- Base Case Inorg. Solids Settling Rate \* 0.5



**FIGURE K-4:** Sep. 1985 sensitivity of Chlorophyll to Settling Rate

- Base Case Inorg. Solids Settling Rate \* 2
- Base Case Inorg. Solids Settling Rate
- Base Case Inorg. Solids Settling Rate \* 0.5

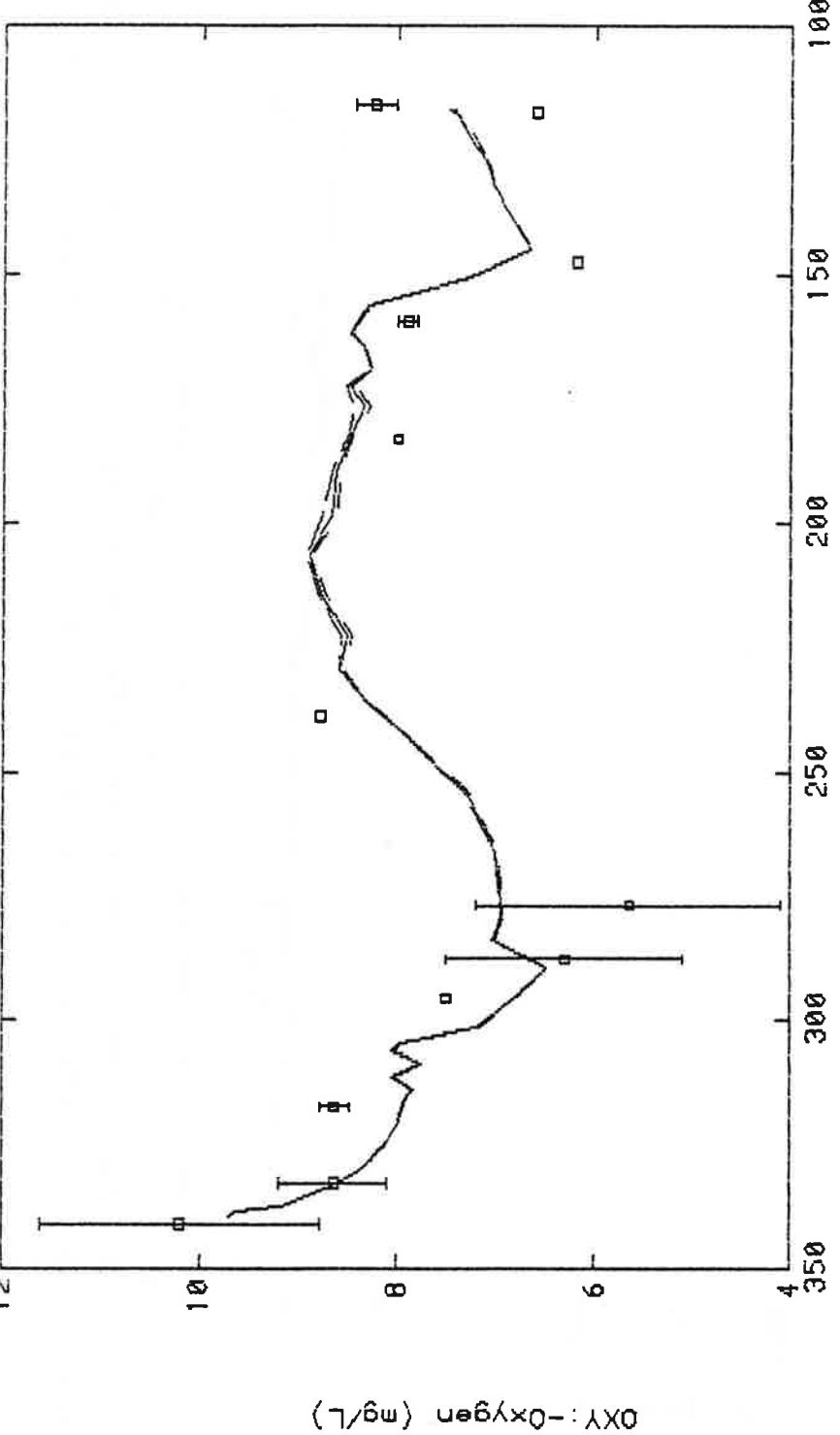
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 MS = 0.5X



Masp4 Run: prm85085.inp 12 Jun 1991 22:57:53 JD= 244.00 266.00  
 HPGI File: CX85\_B0D.PLT

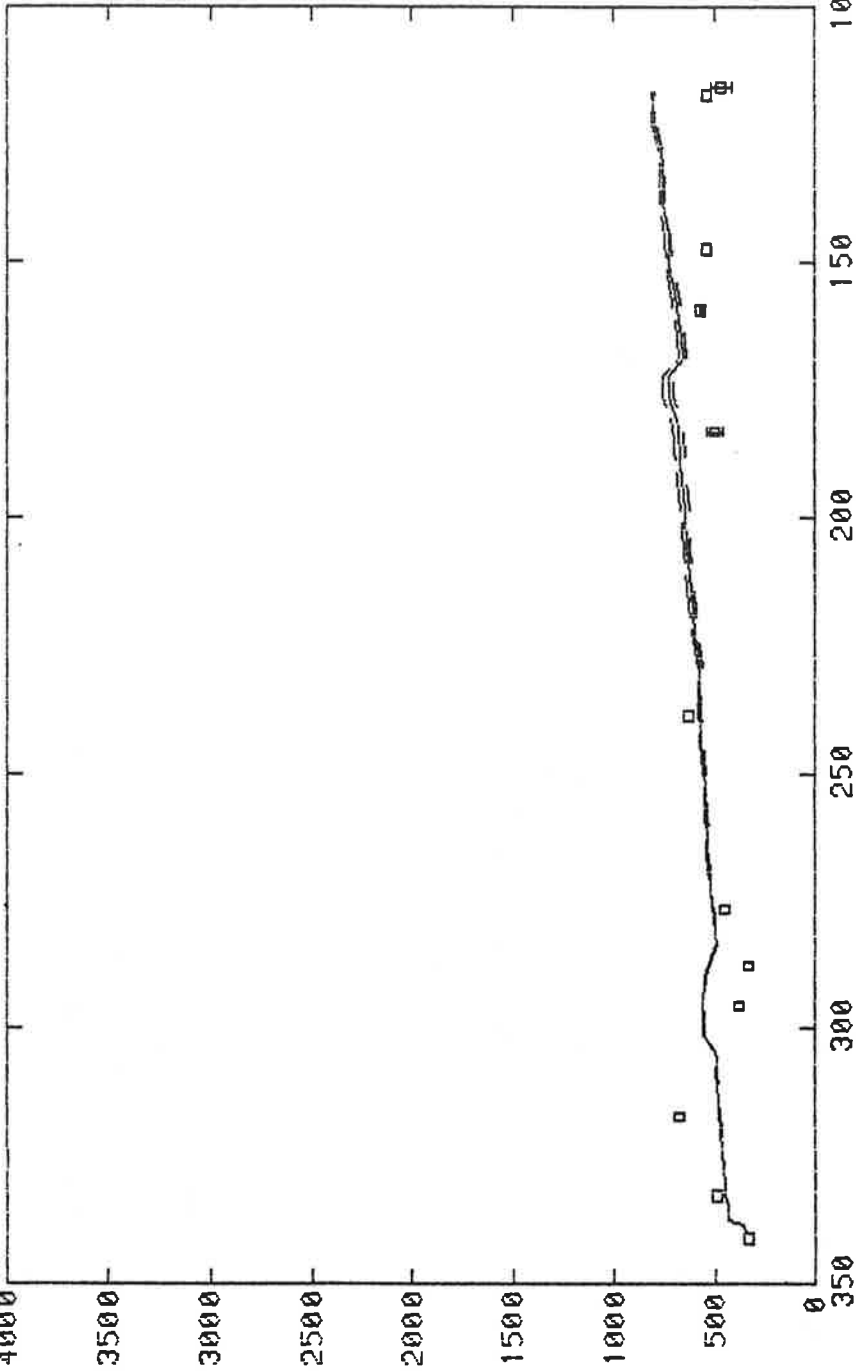
**FIGURE K-5:** September 1985 sensitivity of BOD to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 ... Base Case Inorg. Solids Settling Rate \* 0.5

Sep85:\*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 WS = 0.5X



**FIGURE K-6:** September 1985 sensitivity of DO to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 ... Base Case Inorg. Solids Settling Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 MS = 0.5X



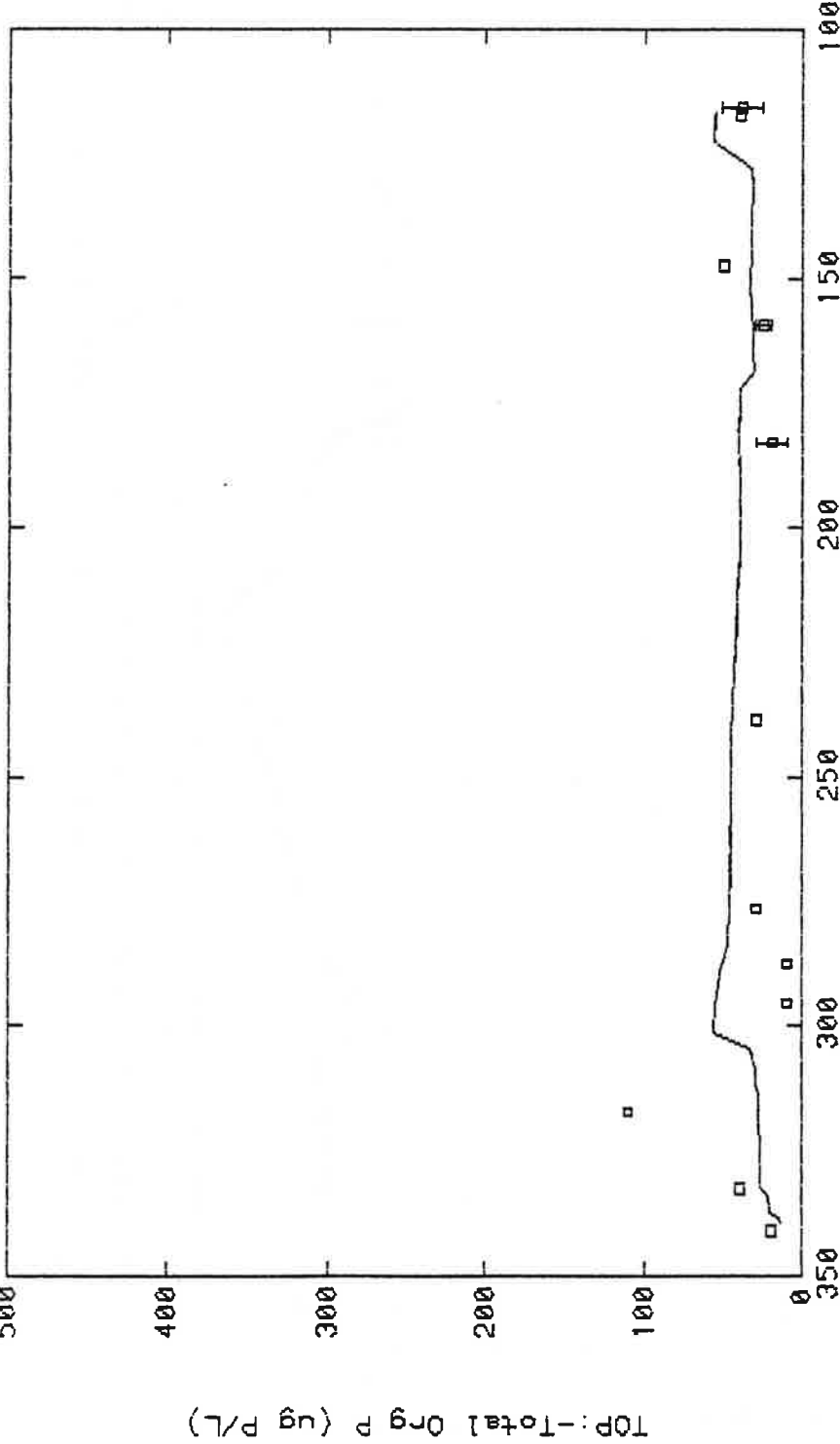
Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00

Masp4 Run: prm85085.inp 12 Jun 1991 22:57:53 HPGI File: CX85\_TON.PLT

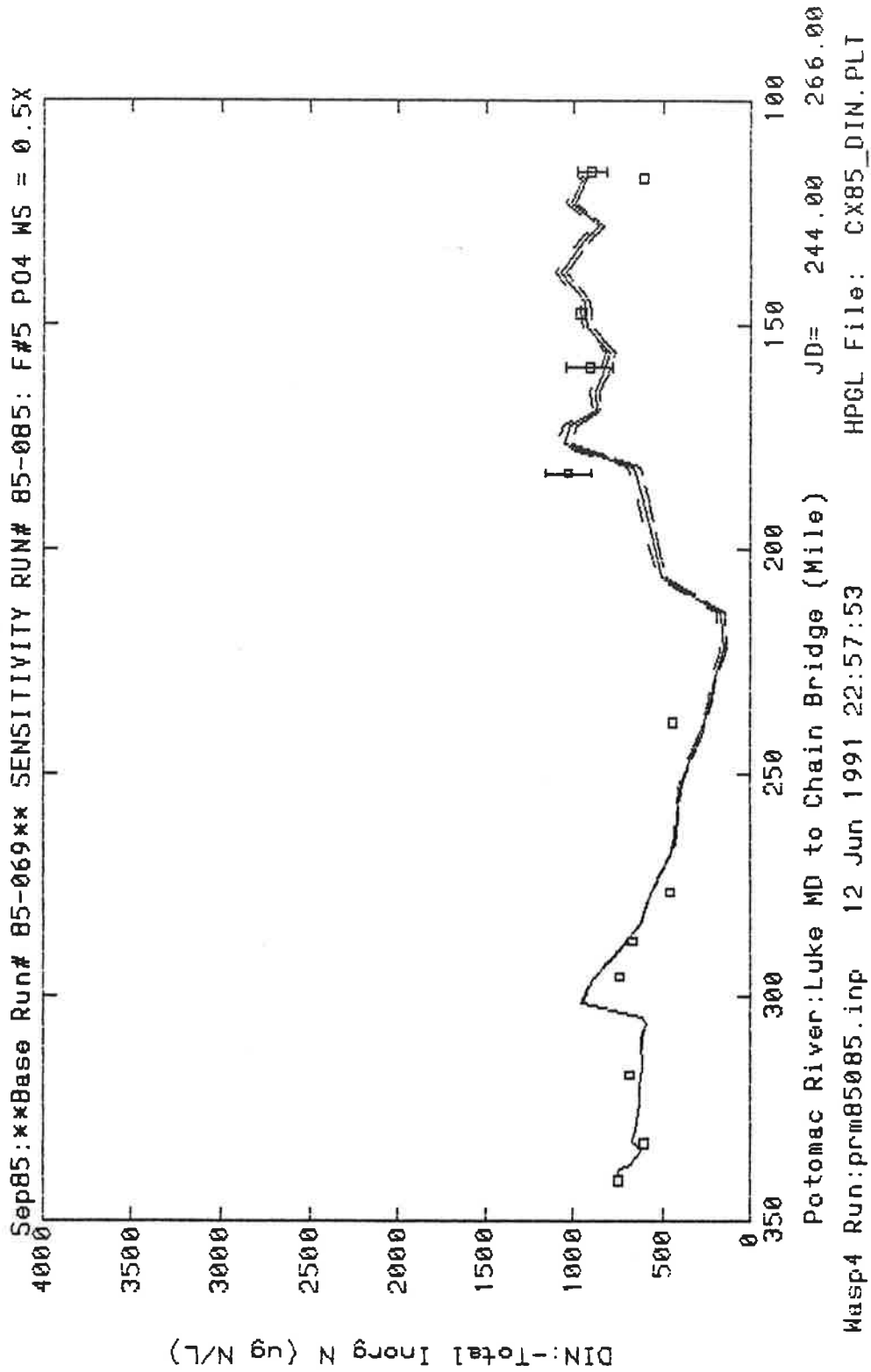
FIGURE K-7: Sep. 1985 sensitivity of Tot Org. Nit. to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 ... Base Case Inorg. Solids Settling Rate \* 0.5



Sep85: \*Base Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 WS = 0.5X

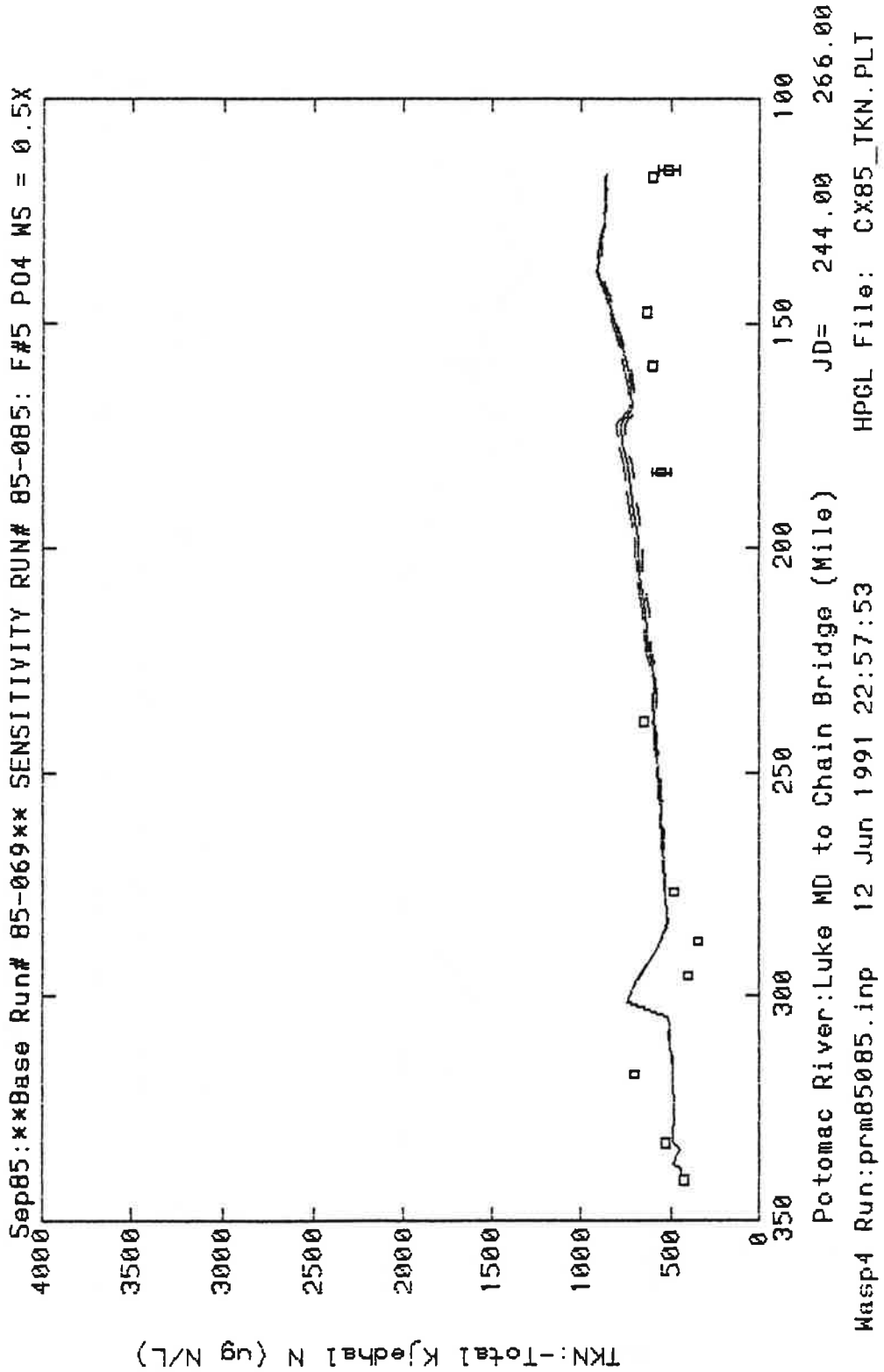


**FIGURE K-8:** Sep. 1985 sensitivity of Tot Org. Phos. to Settling Rate  
--- Base Case Inorg. Solids Settling Rate \* 2  
--- Base Case Inorg. Solids Settling Rate  
--- Base Case Inorg. Solids Settling Rate \* 0.5



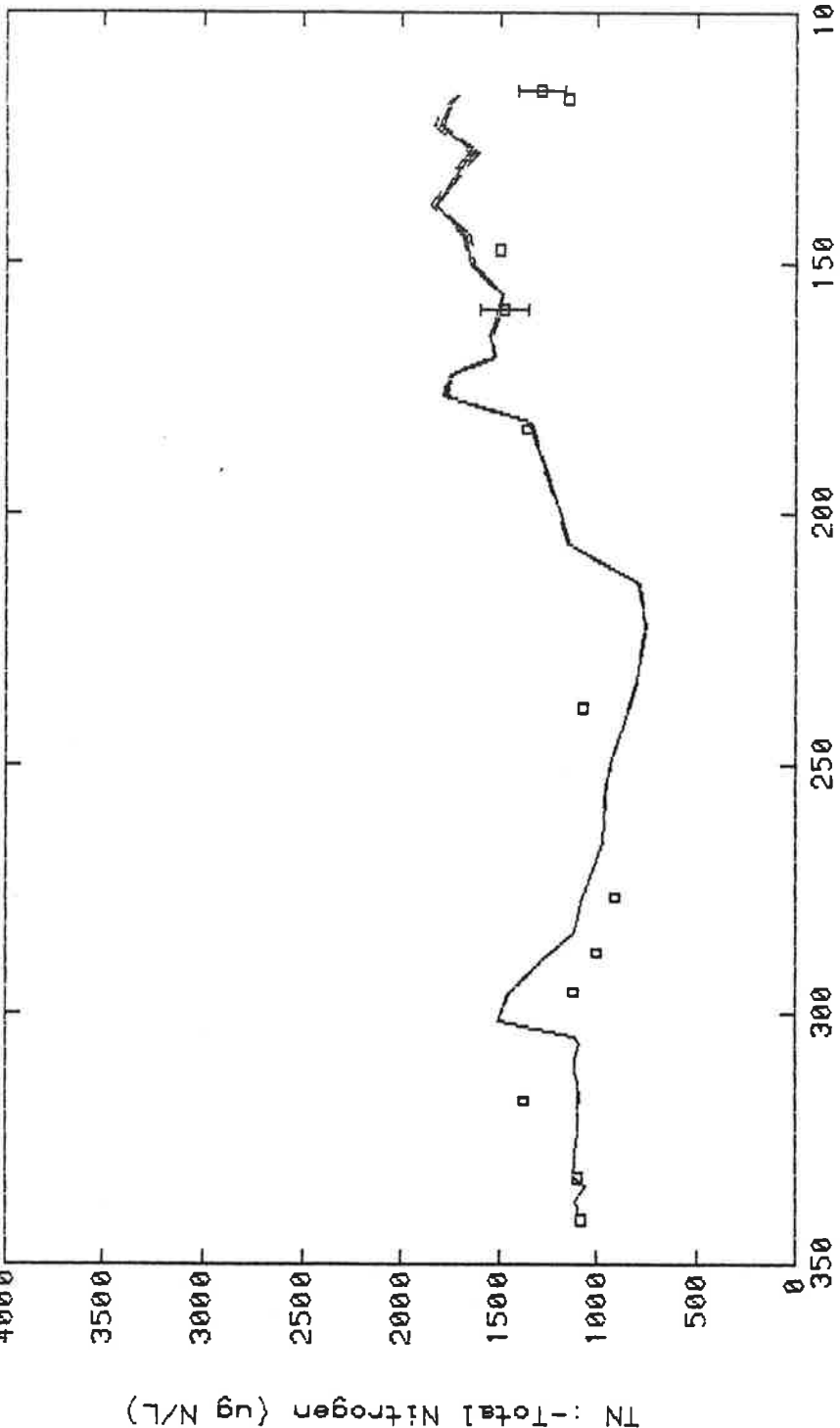
**FIGURE K-9:** Sep. 1985 sens. of Diss. Inorg. Nit. to Settling Rate

- Base Case Inorg. Solids Settling Rate \* 2
- Base Case Inorg. Solids Settling Rate
- ... Base Case Inorg. Solids Settling Rate \* 0.5



**FIGURE K-10:** Sep. 1985 sensitivity of TKN to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 ... Base Case Inorg. Solids Settling Rate \* 0.5

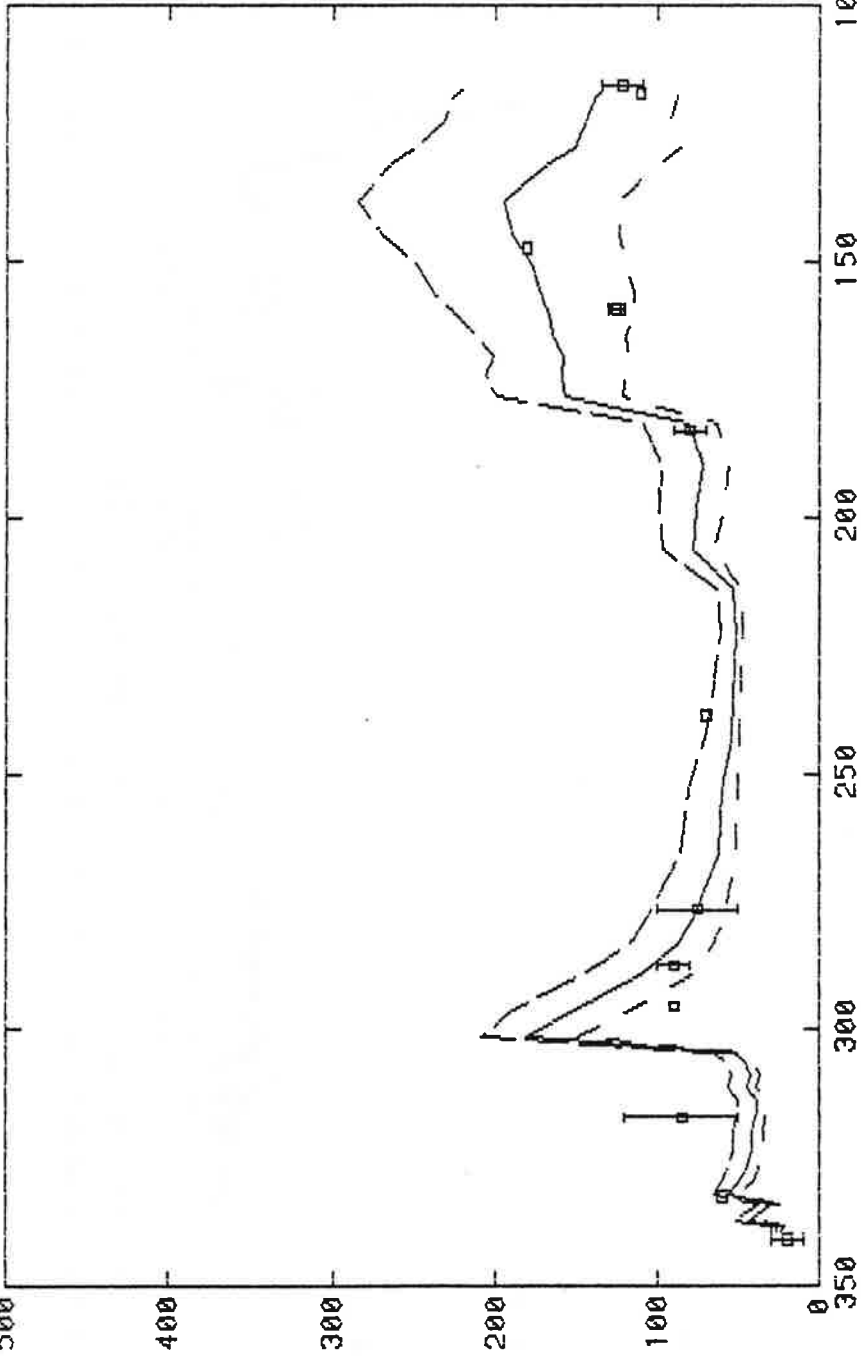
Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 MS = 0.5X



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85085.inp 12 Jun 1991 22:57:53 HPGL File: CX85\_TN.PLT

**FIGURE K-11:** September 1985 sens. of Total Nit. to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 ... Base Case Inorg. Solids Settling Rate \* 0.5

Sep85:\*\*Base Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 WS = 0.5X



Potomac River: Luke MD to Chain Bridge (Mile) JD= 244.00 266.00  
 Wasp4 Run: prm85085.inp 12 Jun 1991 22:57:53 HPGL File: CX85\_IP.PLT

FIGURE K-12: Sep. 1985 sensitivity of Total Phos. to Settling Rate

- Base Case Inorg. Solids Settling Rate \* 2
- Base Case Inorg. Solids Settling Rate
- .- Base Case Inorg. Solids Settling Rate \* 0.5

Sep85:xxBase Run# 85-069\*\* SENSITIVITY RUN# 85-085: F#5 P04 WS = 0.5X

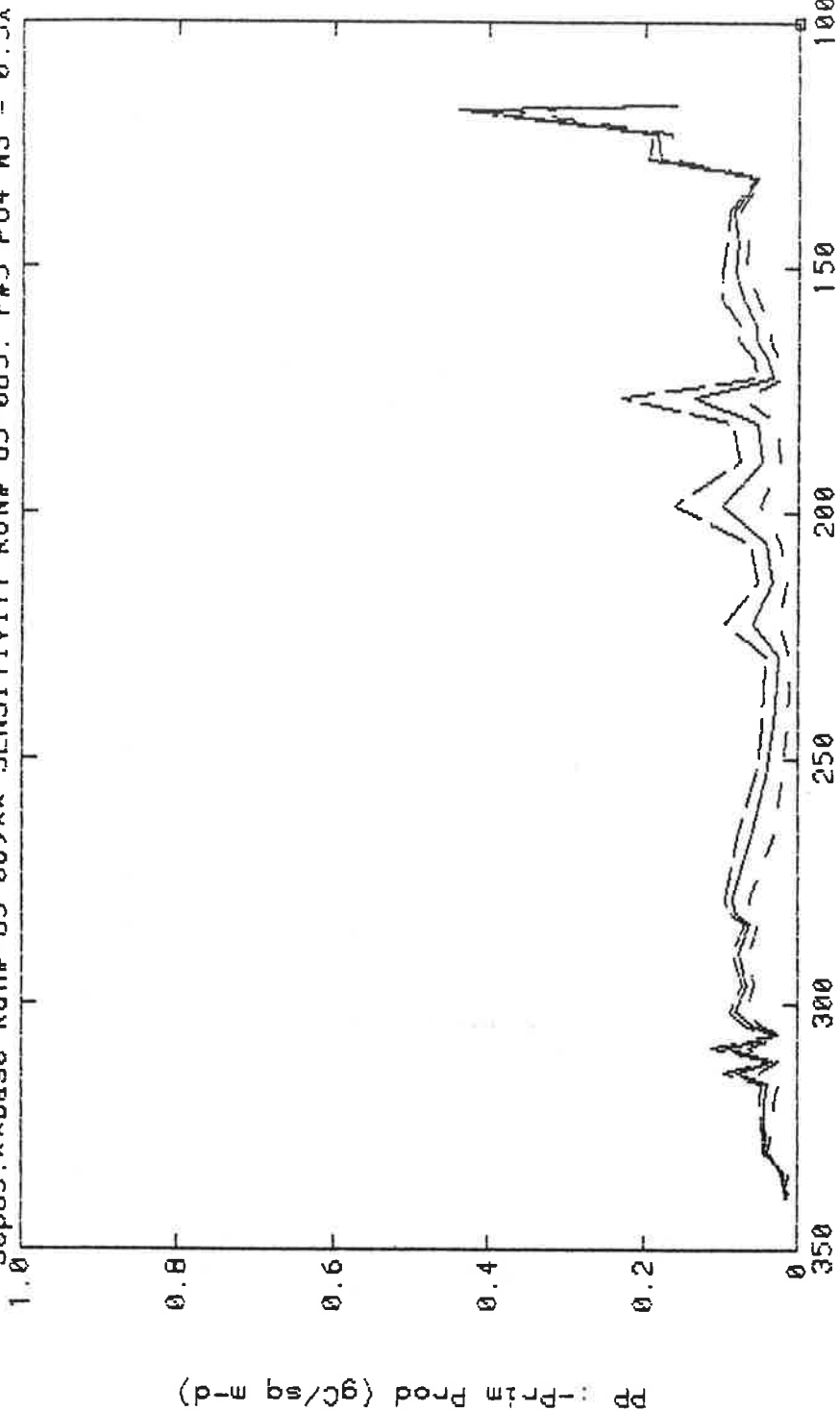


FIGURE K-13: Sep. 1985 sensitivity of Primary Prod. to Settling Rate  
 --- Base Case Inorg. Solids Settling Rate \* 2  
 — Base Case Inorg. Solids Settling Rate  
 - - - Base Case Inorg. Solids Settling Rate \* 0.5