

APPENDIX C

**EPD 10 OCTOBER 2008 REQUEST LETTER
AND UPDATED WATER QUALITY ANALYSIS**

Georgia Department of Natural Resources

2 Martin Luther King Jr., Drive, Suite 1152 East Floyd Tower, Atlanta, Georgia 30334

Noel Holcomb, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division
(404) 656-4713

October 10, 2008

Colonel Byron G. Jorns, District Commander
Department of the Army
Mobile District, U. S. Army Corps of Engineers
ATTN: CESAM-DE
Post Office Box 2288
Mobile, Alabama 36628-0001

Dear Colonel Jorns:

As you may recall, during the months of March through May 2008, the Corps took steps to reduce releases from Buford Dam to achieve minimum flows at Peachtree Creek of less than 750 cfs. This action was taken at our request to conserve critically needed storage in Lake Lanier and was recommended after careful analysis showed reduced flows would not adversely affect water quality or threaten water intakes below the dam. Water quality data collected during the period when reduced flows were in effect indicated no adverse water quality impacts associated with the reduced flows, and no other adverse impacts have either been observed or reported.

We would like to request that releases from Buford Dam be reduced to achieve a minimum flow of 650 cfs at Peachtree Creek beginning November 1, 2008 and continuing through April 30, 2009. This request is supported by the results of our water quality modeling analysis that demonstrates no adverse water quality impacts would be expected if these reductions were in effect November 1, 2008 through at least April 30, 2009. This request is also supported by water quality monitoring data we have collected at Capps Ferry Bridge since March 2008 that show no adverse impacts occurred as a result of reductions in flow between March through May 2008. In addition, these monitoring data also verify the accuracy of our modeling results.

In your letter of May 14, 2008 (attached), EPD was asked to take the following actions to provide additional information if reductions in flows would be requested into the summer months beyond May 31, 2008:

- 1) The EPDRIV 1 hydrodynamic and water quality model must be continually updated and compared to the continuous water quality data collected at Capps Ferry to verify that the model assumptions are appropriate and that outputs are appropriate for estimating impacts and predicting potential problem areas;
- 2) EPD must take additional efforts to estimate the instantaneous flow immediately above Peachtree Creek including installation of a stream gage or collection of real-time instantaneous water withdrawal data from the City of Atlanta water intake;
- 3) EPD must provide a more detailed monitoring and adaptive management plan with clear triggers for returning flow requirements to 750 cfs during the summer months. This plan should include sharing monitoring data with the Corps and EPA weekly and verifying that the effluent discharges assumed in the model are accurate representations of actual discharges.

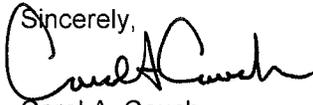
Since your May 14, 2008 letter stated that that these actions were needed only if flows were to be reduced through the summer months we believe that taking these actions is not as critically important during the winter months as they would be during the summer months. Nevertheless, in recognition of

Colonel Byron Jorns
October 10, 2008
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the importance of ensuring that stakeholder concerns are addressed in an appropriate and meaningful fashion, we have analyzed these issues carefully for the period November through April and are providing you with the results of our analysis in Attachment A. The information presented in Attachment A captures most of the issues we have discussed with many of these stakeholders during the last few weeks regarding our intent to submit this request. While there may be other stakeholder concerns or questions raised while this request is under consideration that will need our response, we believe Attachment A adequately addresses most of the issues raised so far.

In closing, I would just like to remind you of the important benefits associated with requesting reduced flows at Peachtree Creek. If granted, this action alone would add approximately 11.70 billion gallons of water to storage in Lake Lanier, an amount equivalent to the entire water supply demands of Dekalb County from November through April. Combined with the storage that is being added to Lake Lanier each day as a result of the implementation of stringent drought conservation measures currently in effect for all of the water systems that withdraw water from Lake Lanier or the Chattahoochee River from Buford Dam to Peachtree Creek, this would result in the addition of approximately 20.64 billion gallons of water to Lake Lanier; enough to meet the water supply needs of Cobb and Gwinnett Counties for the same time period.

We therefore request that releases from Buford Dam use 650 cfs rather than 750 cfs as the minimum flow at Peachtree Creek beginning November 1, 2008 and continuing through March 31, 2009.

Sincerely,

Carol A. Couch
Director

Attachments

ATTACHMENT A
Supplemental Information
Letter from Carol Couch to Colonel Byron Jorns
October 10, 2008

1) The EPDRIV 1 hydrodynamic and water quality model must be continually updated and compared to the continuous water quality data collected at Capps Ferry to verify that the model assumptions are appropriate and that outputs are appropriate for estimating impacts and predicting potential problem areas.

Dissolved Oxygen - As requested, we have updated the EPDRIV 1 model using 2007 meteorological, withdrawal and discharge information and compared the model results to dissolved oxygen (DO) data collected at Capps Ferry Bridge and the USGS Fairburn gage at Highway 92.

Figure 1 depicts the profile of predicted DO concentrations from Buford Dam to West Point Lake. The model predicts that the minimum DO concentration occurs near the Dog River confluence. Capps Ferry, which is approximately 4 miles downstream of the Dog River confluence represents the first available location to monitor the point at which minimum DO concentrations are expected.

Figure 2 shows all continuous DO monitoring data collected by EPD at Capps Ferry and minimum DO concentrations observed by the USGS at the USGS Fairburn gage at Highway 92 ten miles upstream from Capps Ferry. The data presented in Figure 2 includes all data collected from Capps Ferry, including data that we have determined were not usable due to problems associated with siltation of the sampling equipment. Each color in Figure 2 represents data collected from a different DO monitoring sonde. Data are collected continuously by a single sonde that is retrieved manually and replaced with another sonde on a weekly basis. Field observation and analysis of data from the sondes at the time of retrieval each week indicated that siltation of the sonde membranes was resulting in false low DO readings. This is indicated on Figure 2 by the light blue lines from Sonde 40415 that became progressively lower during the course of each weekly deployment. During the first week in August 2008, EPD began deploying luminescent dissolved oxygen (LDO) sondes instead of membrane sondes because LDO sondes are less prone to siltation effects. As shown in Figure 2, the accuracy and quality of the data improved as confirmed by the high degree of correlation with the USGS Fairburn gage data. Additionally, in order to minimize the effects of siltation on the sondes, and obtain more representative samples of water flowing past Capps Ferry, EPD has also moved the location of the sonde closer to the main channel.

As shown in Figure 2, during the time that reduced flows were in effect between March and May 2008, there were no violations of the State's instream standards for dissolved oxygen as a result of the reduced flows. As explained in EPD's letter of April 25, 2008, the only time low dissolved oxygen concentrations were observed during the reduced flow period was on April 12, 2008 as a result of a combined sewer overflow event in the City of Atlanta on April 11, 2008.

The DO data collected at Capps Ferry and the Fairburn gage generally validate the model results. Figure 3 compares the results of the 2008 DO monitoring at Capps Ferry to the 2007 EPDRIV1 model predictions, excluding unusable data as discussed above. Figure 4 presents the 2007 daily average DO monitoring data from the USGS Fairburn gage and instantaneous readings collected by EPD at the Fairburn gage plotted against the results of the 2007 EPDRIV 1 model predictions at the same location. As shown there is generally good correlation between the actual data and the model at both locations thus validating the model.

Therefore, we believe this demonstrates that at flows of 650 cfs at Peachtree Creek, the updated model is validated by data collected at Capps Ferry and the USGS Fairburn gage and that water quality standards are protected.

Ammonia Toxicity - In addition to DO, the updated model results also show that the predicted in-stream ammonia concentrations will be far below maximum allowable concentrations. As shown in Figure 5, the model predicts that ammonia concentrations will peak approximately ten miles downstream of Peachtree Creek at the Interstate 20 crossing of the Chattahoochee River. Predicted

ammonia concentrations at this location are shown in Figure 6 and, in Figure 7, the predicted concentrations are compared to the maximum allowable ammonia concentrations. There is no single number in-stream standard for ammonia; instead the maximum in-stream concentration of ammonia allowed depends upon the temperature and pH of the receiving stream. Figure 7 shows what the model predicts the maximum allowable ammonia concentration would be for selected pH. Variations in the maximum allowable concentration for each selected pH is attributable to in-stream temperature variations. As shown in Figure 7, ammonia concentrations will be substantially below allowable limits.

Temperature - Besides DO and ammonia, we have also evaluated the impact that reduced flows of 650 cfs at Peachtree Creek would have upon water temperature and the potential effects on the trout fishery between Buford Dam and Peachtree Creek. Our assessment included temperature modeling using EPDRiv1 from Buford Dam to Peachtree Creek and consultation with the Wildlife Resources Division of the Georgia Department Natural Resources (WRD). Temperature modeling results provided in Figure 8 show that at State Road 400, which is just upstream from Bull Sluice Lake, temperatures remain well within a range that would protect long-term trout survival if flows were reduced to 650 cfs at Peachtree Creek from November through April. As shown in Figure 9, the model predicts that temperature excursions beginning in late March at Peachtree Creek become more frequent and of longer duration indicating a lower likelihood of trout survival. This would indicate the need to coordinate closely with WRD to ensure an adaptive management strategy is in place by mid-March that protects critical priorities for the fishery.

2) EPD must take additional efforts to estimate the instantaneous flow data immediately above Peachtree Creek including installation of a stream gage or collection of real-time instantaneous water withdrawal data from the City of Atlanta water intake.

Although it is our understanding that it was needed only as a condition of reduced flows during the summer months, EPD has looked into the possibility of gathering additional data to enable real-time instantaneous flow determinations at Peachtree Creek. Apparently, concern about this issue stems from the historical importance of 750 cfs instantaneous flow at Peachtree Creek as a basis for establishing wasteload allocations for NPDES permitted discharges to the Chattahoochee below Buford Dam as stated in the attached December 28, 1999 letter from EPA. Current NPDES permitted discharges are based on wasteload allocations that used 750 cfs instantaneous flow at Peachtree Creek as the design flow. These wasteload allocations also assumed that the permitted discharges would be discharging at maximum loading. However, based on discharge monitoring data from 2007, these permitted discharges are only discharging at about twelve percent of their maximum loading. Since these permitted discharges are only discharging at approximately twelve percent of their allowable loading, assessment of a minimum instantaneous flow at Peachtree Creek takes on less significance from the standpoint of assuring protection of in-stream standards.

We evaluated the possibility of installing a gage on the Chattahoochee River just upstream from Peachtree Creek as requested. Because of the morphology of the stream channel at this location, this is not an ideal location for a gage because of the difficulty associated with developing a unique rating curve that would be used to calculate flows at the gage. Additionally, if a gage were installed on the Chattahoochee River upstream from Peachtree Creek, there would still have to be adjustments made to the reading from that gage to account for the City of Atlanta withdrawals that would occur between the gage and Peachtree Creek which is what has to be done now with data from the Vinings gage. Even if this were a good location to install a gage, we would still have the same challenges associated with estimating flows at Peachtree Creek that we now have. Therefore we question the value of installing a gage at this location.

With respect to the issue of obtaining real-time withdrawal data from the City of Atlanta intake to estimate flow at Peachtree Creek, we are not sure that obtaining such data will add significant understanding to our assessment of the effect of reduced flows on water quality conditions. As predicted by the model for March 2008 – May 2008 and confirmed by monitoring data at Capps Ferry and the USGS Fairburn gage, during reduced flows of 650 cfs at Peachtree Creek, there were no adverse impacts on water quality or any observed violations of the in-stream standards. Therefore, if reduced releases from Buford Dam to achieve flows of 650 cfs at Peachtree Creek did not result in water quality impairments during March 2008 – May 2008, we are unsure as to what

value collecting real-time data for the purpose of calculating real-time instantaneous flows will have upon assessing whether or not in-stream water quality standards are being protected.

3) EPD must provide a more detailed monitoring and adaptive management plan with clear triggers for returning flow requirements to 750 cfs during the summer months. This plan should include sharing monitoring data with the Corps and EPA weekly and verifying that the effluent discharges assumed in the model are accurate representations of actual discharges.

Finally, in response to Item 3 above, although it is our understanding that additional monitoring and a more formal adaptive management plan was identified as a condition of continuing reduced releases through the summer, EPD nevertheless plans to employ an adaptive management approach November 1, 2008 through March 31, 2009 that includes the following:

- **DO monitoring** - DO monitoring will be continued at Capps Ferry with weekly data retrieval and review. The data will be posted to EPD's website the week following retrieval with DO results plotted against model predictions. Data from the USGS Fairburn gage will also be plotted against model predictions and posted. Prior to posting, each data set will be reviewed by EPD staff for anomalies and examined with respect to events in the watershed such as precipitation, spills or combined sewer overflow events that may have contributed to or be indicators of significant drops in DO concentrations;
- **NPDES permitted discharges** – Within 1 business day of Corps approval of this request for reduced flows, all permittees will be advised that reduced flows are in effect and they will be reminded of the importance of complying with permit conditions that require timely notification to EPD and other parties of conditions at their facilities and in their service areas that could result in water quality impairments;
- **Nutrient monitoring in West Point Lake** – EPD will coordinate with the City of LaGrange in their continuing efforts to monitor nutrients in West Point Lake including coordination of sampling events, data sharing and sampling and laboratory assistance. All data will be evaluated by EPD to determine if there is any indication of increases in nutrient loading that could adversely impact water quality in West Point Lake.
- **Temperature** – EPD will continue to coordinate with WRD to monitor temperature as needed and provide for timely opportunity to intervene in the event that temperatures rise to levels of concern for the fishery. EPD will also continue to communicate with WRD regarding maintenance of adequate river elevations at the intake of the Buford Hatchery. Because significant temperature increases do not begin to occur below Morgan Falls Dam until mid-March, EPD will consult with WRD regarding an appropriate strategy for temperature monitoring and reporting.
- **Water Supply Intakes** - Within 1 business day of Corps approval of this request for reduced flows, all permittees will be advised that reduced flows are in effect, that they should monitor their intakes as needed, and that any indication of problems associated with reduced flows should be reported to EPD immediately;
- **EPD Notice to Corps** - EPD would inform the Corps as soon as possible upon the discovery of any conditions related to the above actions that indicates the need for resumption of flows at Peachtree Creek to 750 cfs.



DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, AL 36628-0001

MAY 14 2008

Inland Environment Team
Planning and Environmental Division

Dr. Carol Couch, Director
Environmental Protection Division
Georgia Department of Natural Resources
2 Martin Luther King Jr. Drive
Suite 1152, East Tower
Atlanta, Georgia 30334

Dear Dr. Couch:

I am writing in regards to your letter dated April 25, 2008, requesting that the U.S. Army Corps of Engineers (Corps), Mobile District, continue to temporarily modify water management operations at Buford Dam to meet a reduced water quality flow requirement in the Chattahoochee River at Peachtree Creek from an instantaneous daily value of 750 cubic feet per second (cfs) to 650 cfs until May 31, 2008. We recently completed our analysis of this request, including agency and basin stakeholder coordination, and determined that continuing this operation through May 31, 2008, would not result in long term significant environmental or human impacts. This determination is also based on incorporation of the monitoring and adaptive management plan during the implementation period.

During our recent coordination efforts, Georgia Environmental Protection Division (EPD) staff indicated that EPD may submit additional requests to continue the temporary reduced water quality flow requirement during the summer based on future conditions. Based on our recent discussions with U.S. Environmental Protection Agency (EPA), and EPD, there are several outstanding issues on which we will need additional information prior to completing our evaluation of any future requests to operate for the reduced water quality flow requirement during the summer months. These issues are:

- 1) The EPDRiv1 hydrodynamic and water quality model must be continually updated and compared to the continuous water quality data collected near Capps Ferry in order to verify that the model assumptions are appropriate and that outputs are appropriate for estimating impacts and predicting potential problem areas.
- 2) EPD must take additional efforts to estimate the instantaneous flow data in the Chattahoochee River immediately upstream of the confluence with Peachtree Creek. Potential methods include installation and maintenance of a real-time stream gage or providing real-time instantaneous water withdrawal data from the City of Atlanta water intake structure located immediately upstream of this point. The withdrawal data could be used in conjunction with the "Vinings" U.S. Geological Survey (USGS) gage No. 02336000 data to better estimate the instantaneous flows at Peachtree Creek.

3) EPD must provide a more detailed monitoring and adaptive management plan with clear triggers for returning the water quality flow requirement to 750 cfs during the summer months. This plan should include sharing monitoring data with the Corps and EPA weekly and verifying that the effluent discharges assumed in the model are accurate representations of actual discharges.

Due to the complexity of some of these issues, the considerable amount of time they may require, and the need for careful scrutiny of reduced minimum water quality flows during the summer months, I recommend that this effort be commenced as soon as possible so as not to delay the consideration of any future reduced water quality flow request. I also recommend that any additional request for reduced water quality flows be submitted well in advance of the desired implementation date to account for the time necessary to assess the request. As always, the Mobile District stands ready to assist in this effort wherever possible.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Daren Payne', with a long horizontal flourish extending to the right.

R. Daren Payne
Lieutenant Colonel
Corps of Engineers
Deputy Commander



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8980

DEC 28 11:09

Lindsay Thomas
Federal Commissioner
ACF/ACT River Basins Commissioner
235 Peachtree Street NE
Suite 900
Atlanta, GA 30303

Dear Mr. Thomas:

This letter is written in response to a personal communication from Heather Hallows, assistant to the Federal Commissioner, regarding flows at Peachtree Creek. A controversy exists as to whether the proposed flows should be modeled as average daily flows or instantaneous flows. Our position on this issue is presented below.

The existing minimum flow requirement of 750 cfs at Peachtree Creek has always been considered by EPA to be an instantaneous flow. This 750 cfs minimum flow requirement has been used to allocate wastewater loads for NPDES permits for dischargers to the Chattahoochee River in the Atlanta Metro-area for more than 20 years. Based on recent conversations with the State of Georgia Environmental Protection Division, Water Protection Branch we have learned that they interpret the existing 750 cfs minimum flow requirement to represent an instantaneous minimum flow per Georgia's Rules and Regulations (391-3-6):

Specific criteria apply at all times when the river flow measured at a point immediately upstream from Peachtree Creek equals or exceeds 750 cfs (Atlanta gage flow minus Atlanta water supply withdrawal).

If one attempted to optimize power generation or provide extra flexibility to the release schedules by adhering to an average daily minimum flow, then the daily instantaneous minimum flow could, of course, become as low as zero. EPA will not support any effort to change the instantaneous flow requirement to an averaged daily flow requirement unless supporting documentation is included that assures the downstream water quality standards will be met.

Relevant wasteload allocation formulations, currently considered to be protective, are based on the assumption that the minimum flow in the Chattahoochee River at Peachtree Creek be at or above 750 cfs. Georgia EPD has developed critical condition scenarios whereby this minimum flow is represented as an instantaneous minimum. In order to consider lower flows in the river with current permitted wasteload, a new minimum absolute instantaneous flow would still need to be developed. This new minimum instantaneous flow would have to be protective against acute aquatic life impairment. It would also have to be capable of assimilating wastewater discharges whose current permitted allocations are based on the 750 cfs minimum flow. Otherwise, all relevant permits would need to be revised to reflect the new minimum instantaneous flow.

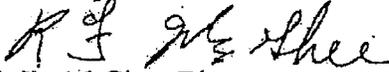
FROM :

FAX NO. :

Feb. 14 2008 04:43PM P2

It is hoped that this provides you with the necessary information regarding EPA Region 4's position on this matter. If you have any questions, please contact me at 404/562-9330.

Sincerely,

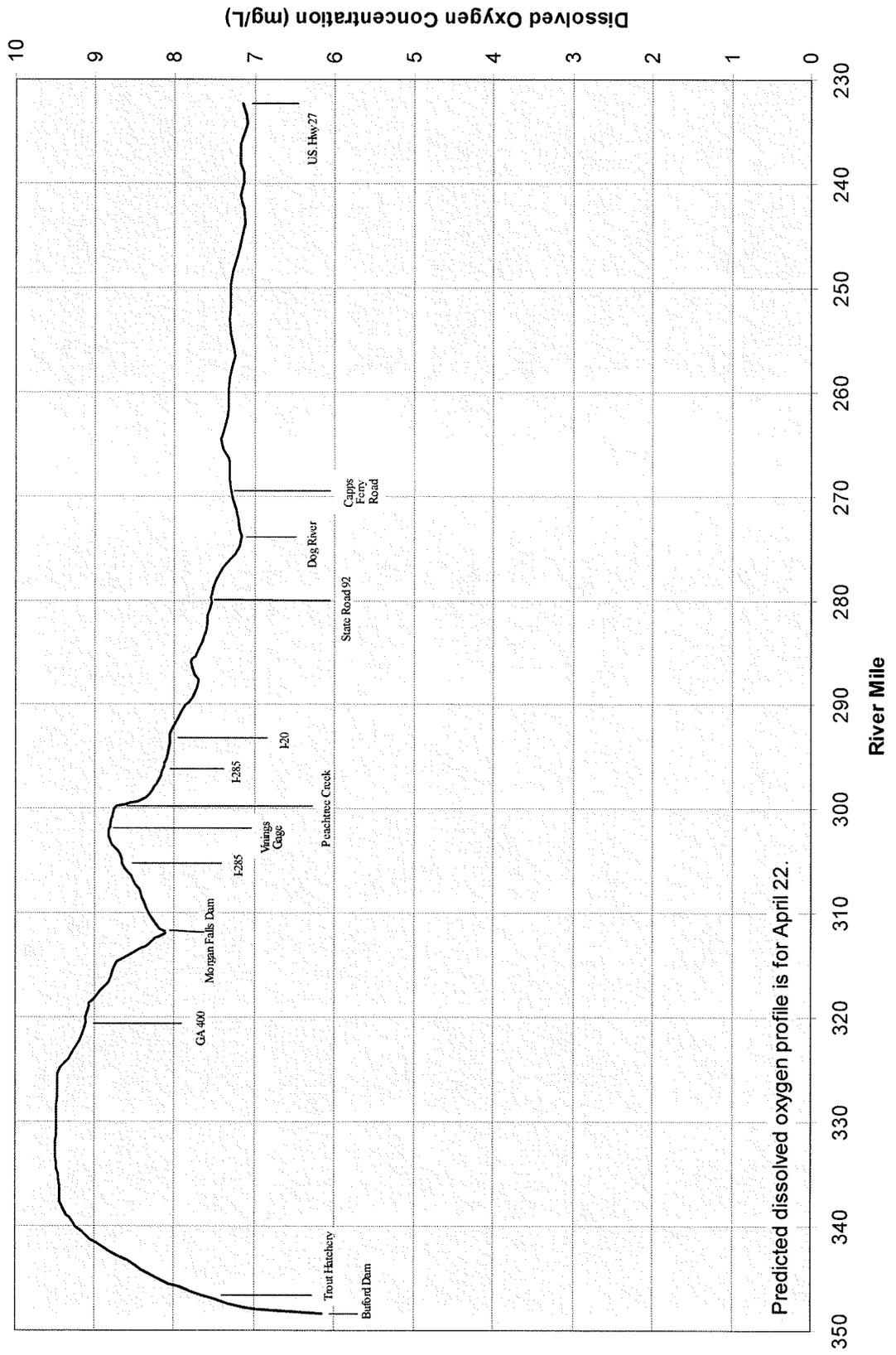


Mike McGhee, Director
Water Management Division

CC: Alan Hallum, Branch Chief
Georgia EPD Water Protection Branch

Pete Conroy, Alternate Federal Commissioner
ACT/ACF River Basins

Figure 1
Predicted Chattoahoochee River Dissolved Oxygen Profile
for Minimum Streamflow of 650 cfs at Peachtree Creek



Predicted dissolved oxygen profile is for April 22.

Figure 2
2008 Uncorrected Continuous Dissolved Oxygen Monitoring Data at Capps Ferry
and 2008 USGS Daily Minimum Dissolved Oxygen and Precipitation Data at Highway 92

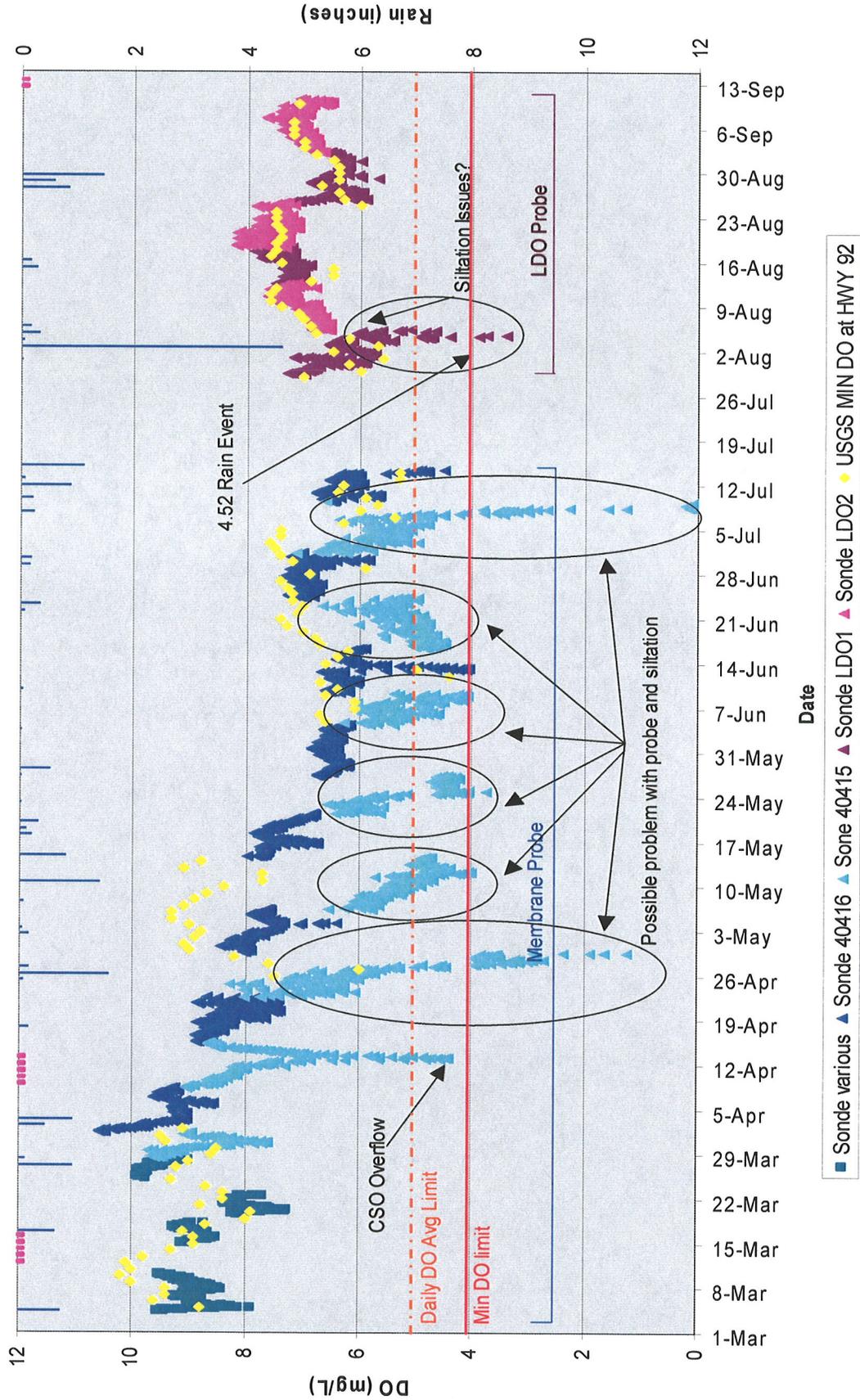


Figure 3
Dissolved Oxygen at Capps Ferry Bridge
2007 Chattanooga River Model Predicted versus 2008 Actual

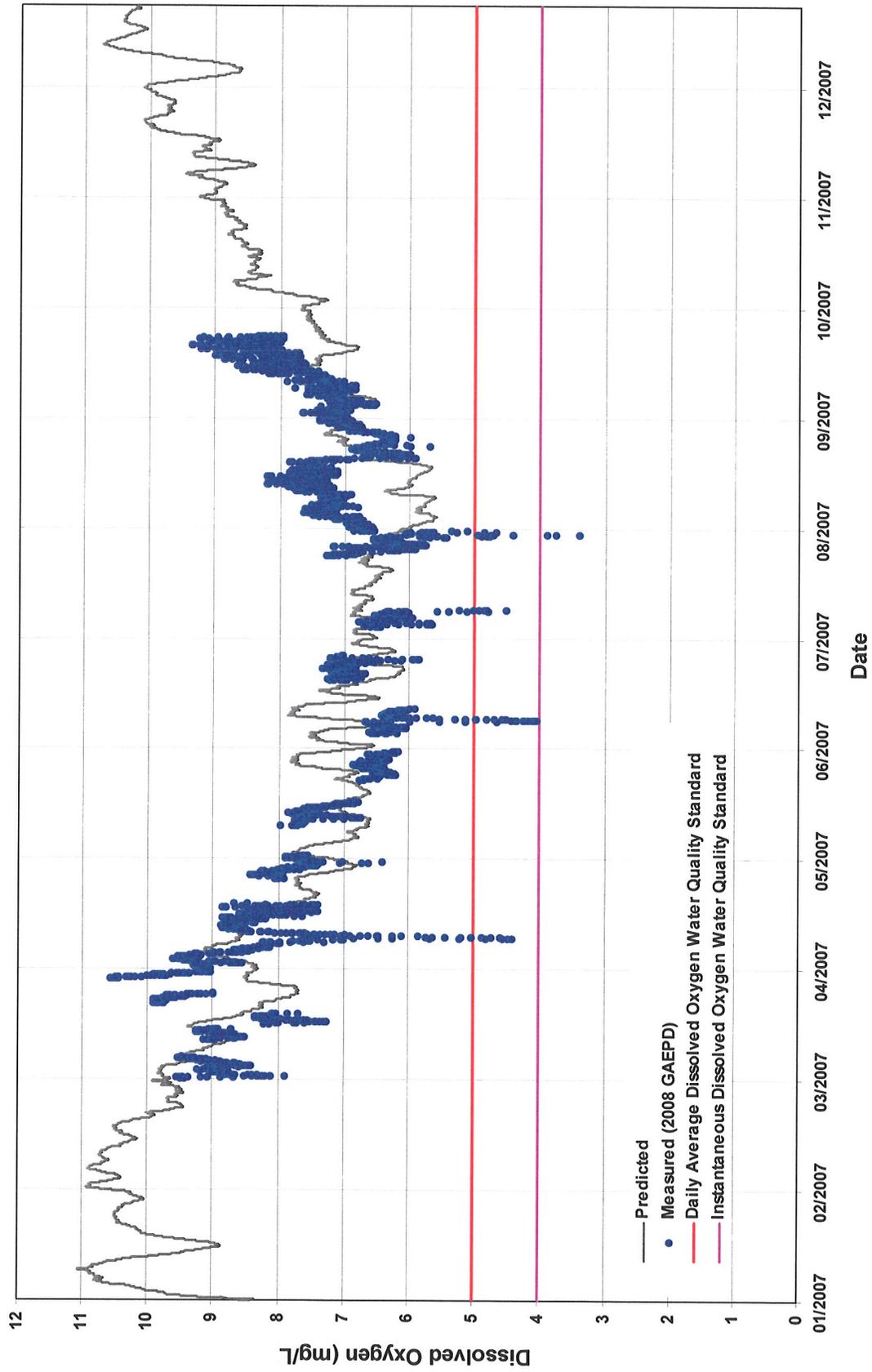


Figure 4
Dissolved Oxygen at USGS Fairburn Gage at Highway 92
2007 Chattanooga River Model Predicted versus 2007 Actual

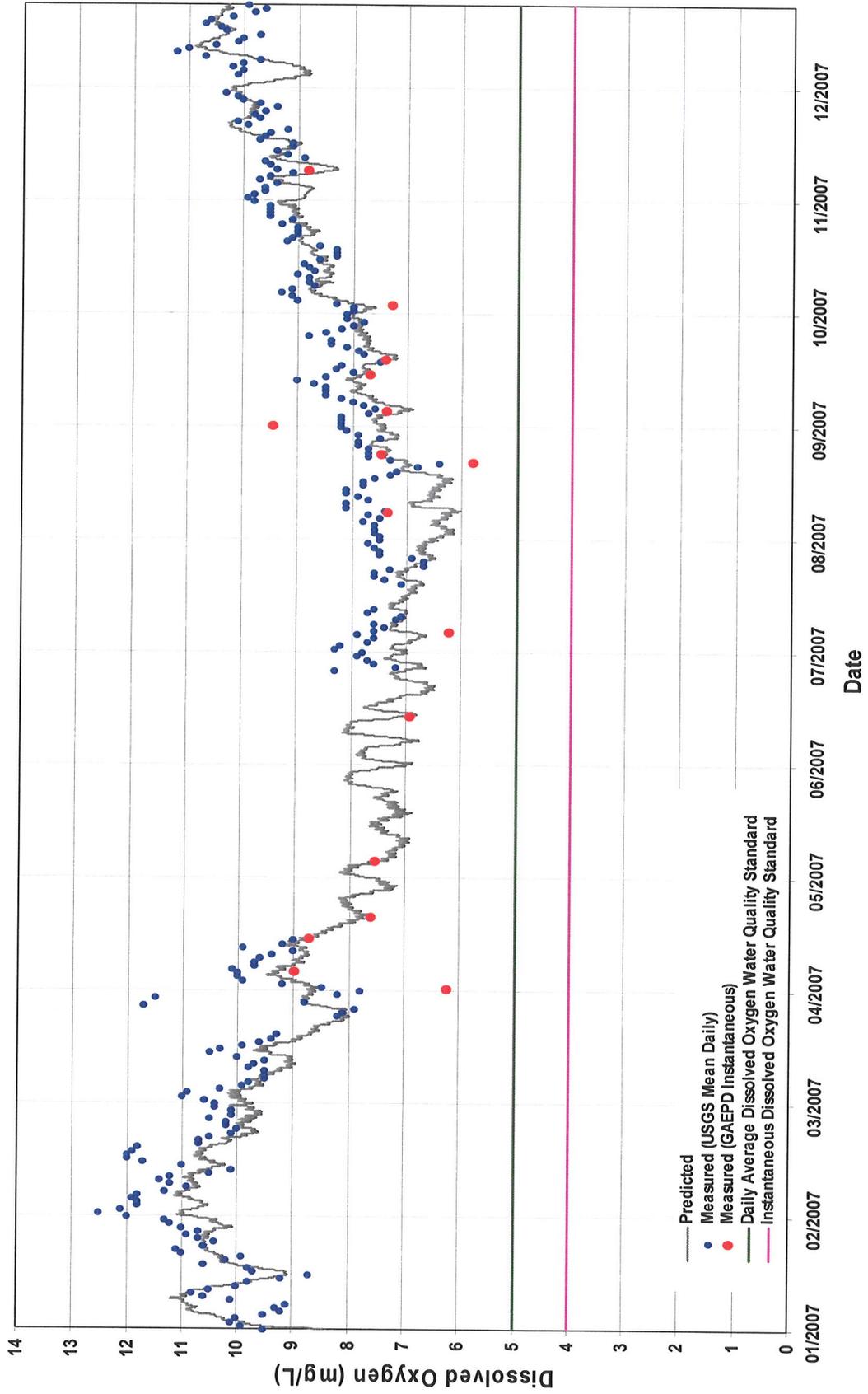


Figure 5
Predicted Chattahoochee River Ammonia Concentration Profile
for Minimum Streamflow of 650 cfs at Peachtree Creek



Figure 6
Predicted Chattahoochee River Maximum Ammonia Concentrations
for Minimum Streamflow of 650 cfs at Peachtree Creek
(Concentrations are at maximum location.)

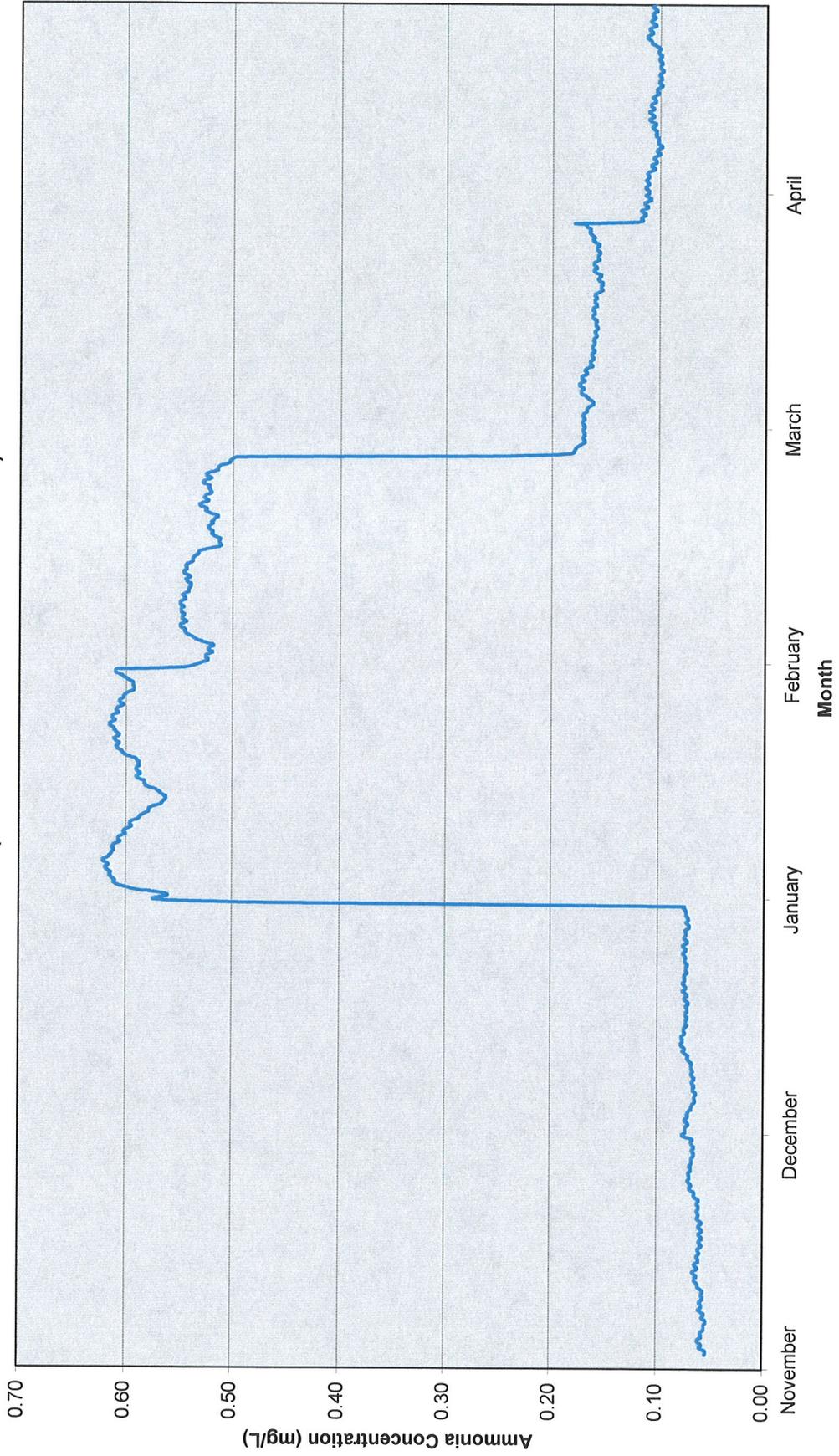


Figure 7
Predicted Ammonia Concentrations at I-20 Compared to
Maximum Allowable Ammonia Concentrations for Selected pH Values
with Flows of 650 cfs at Peachtree Creek

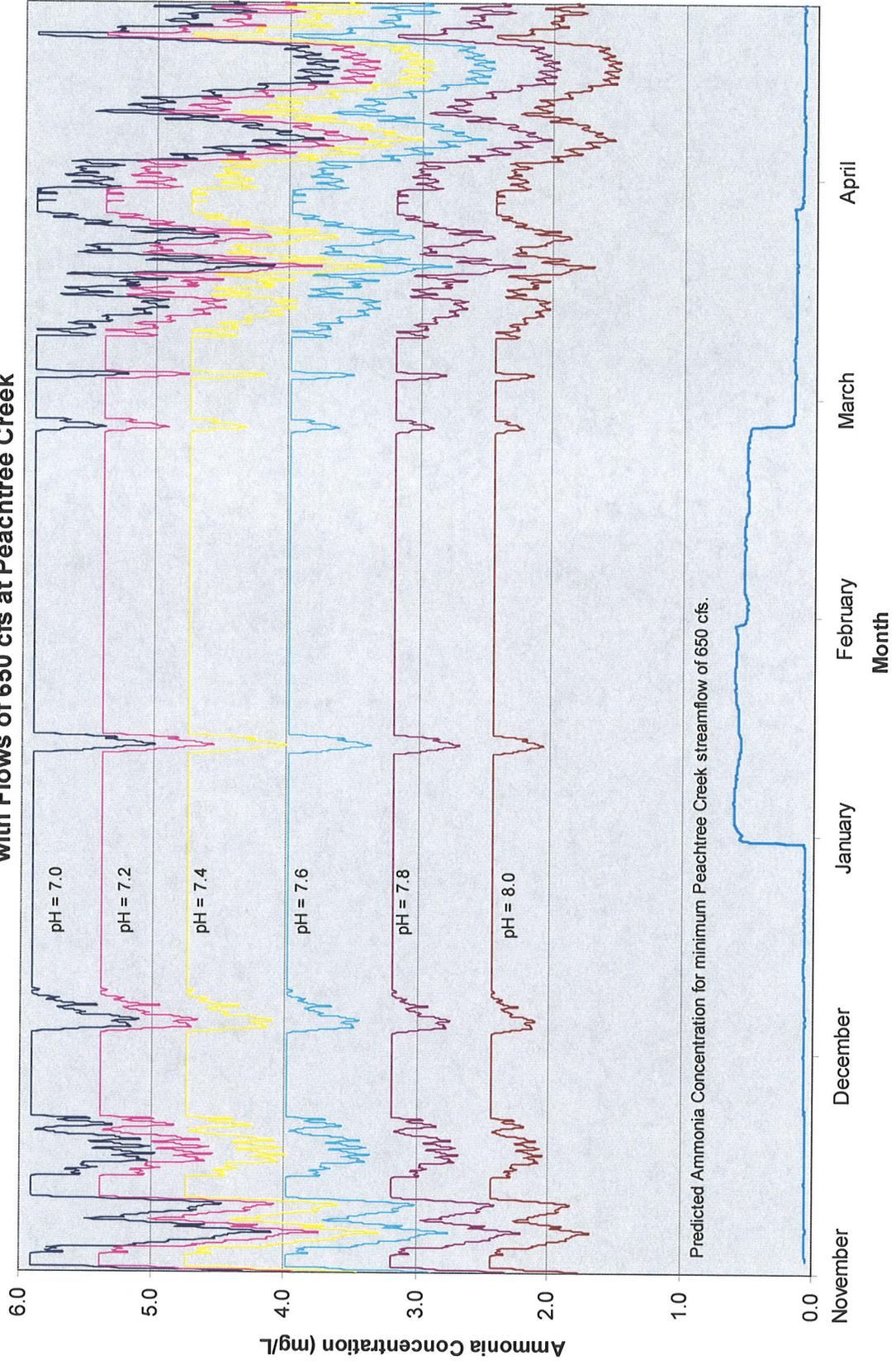


Figure 8
Predicted Chattahoochee River Temperatures at State Road 400
November thru April Low Flow Critical Conditions
Flow at Peachtree Creek = 650 cfs

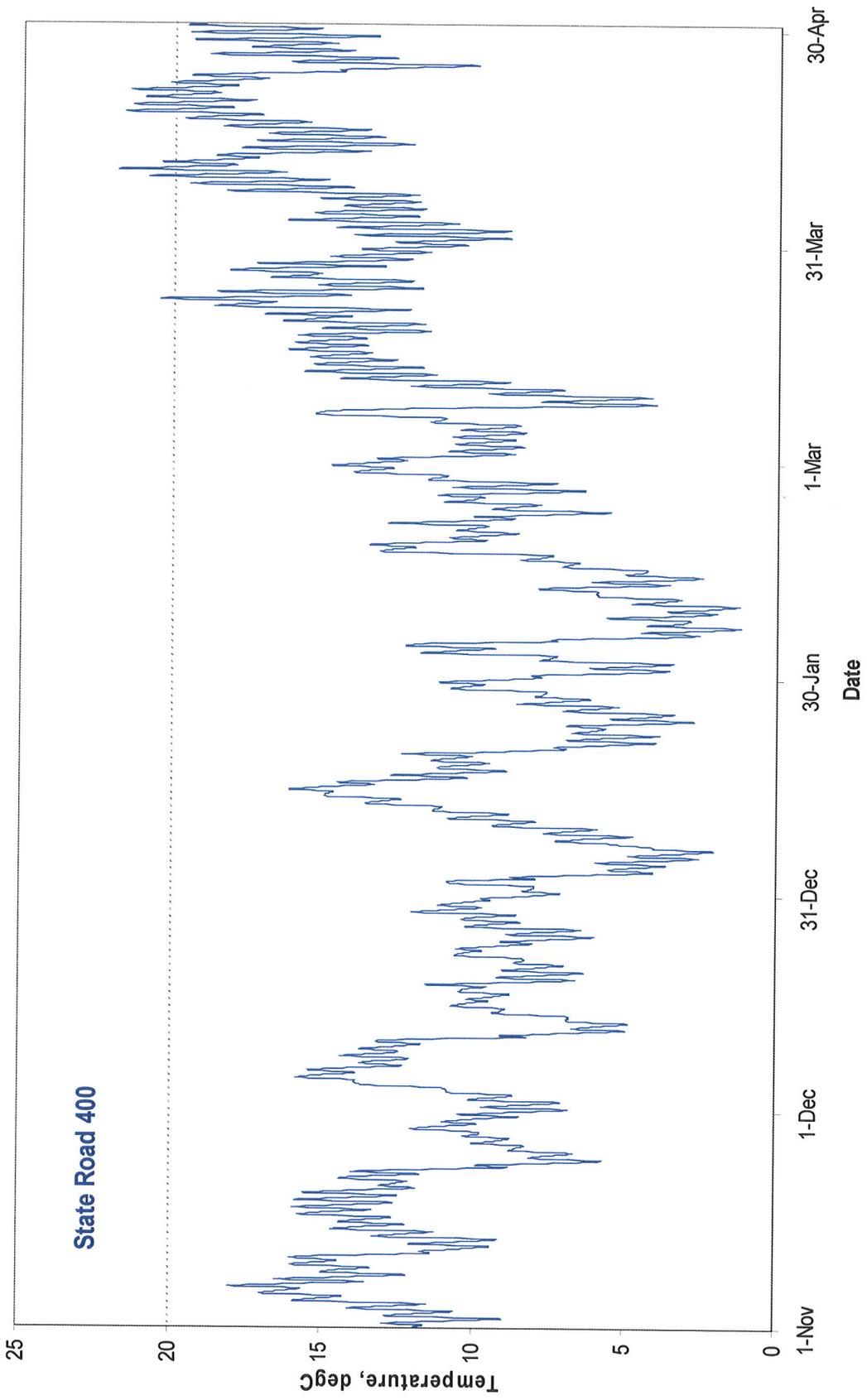


Figure 9
Predicted Chattahoochee River Temperatures at Peachtree Creek
November thru April Low Flow Critical Conditions
Flow at Peachtree Creek = 650 cfs

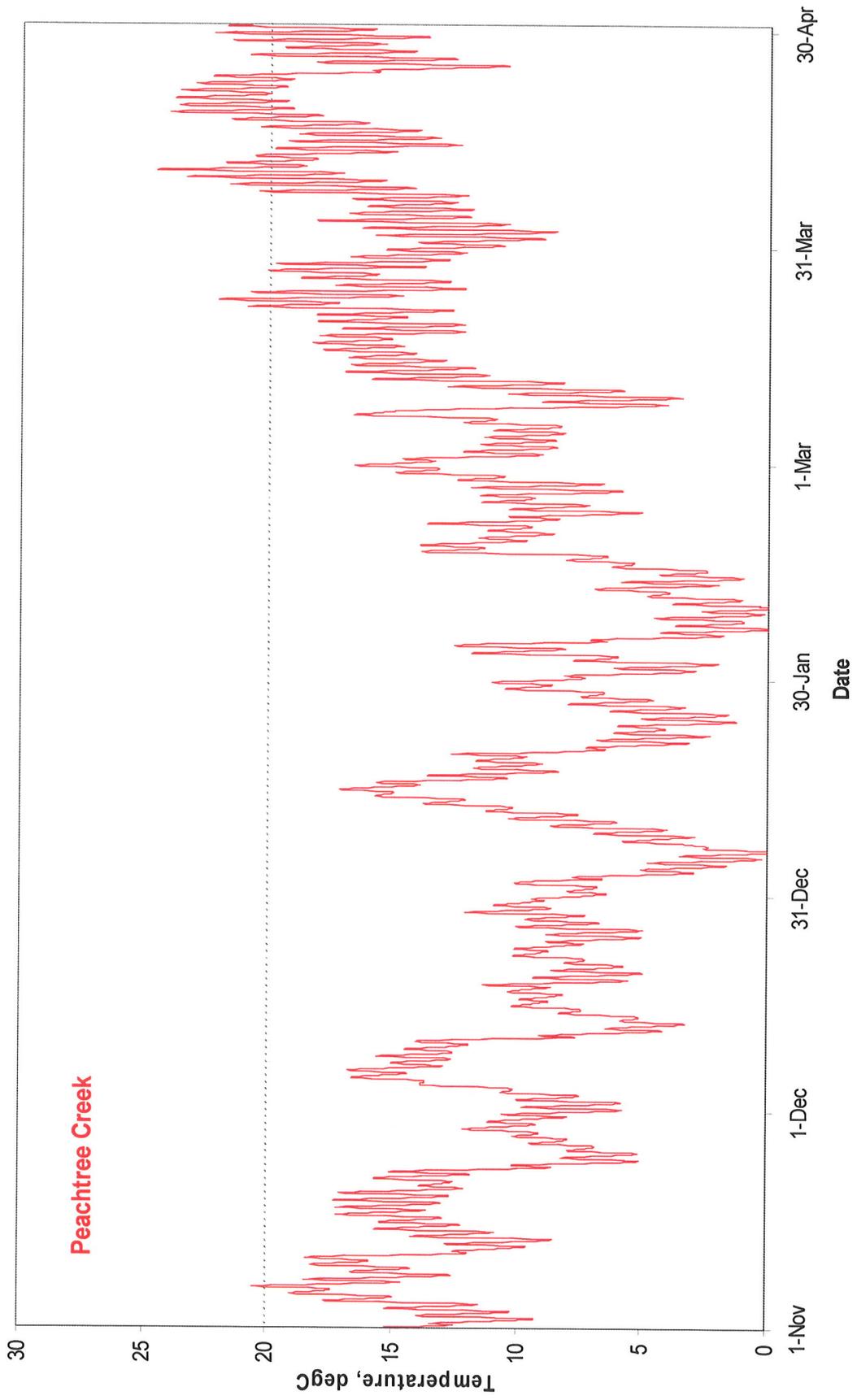


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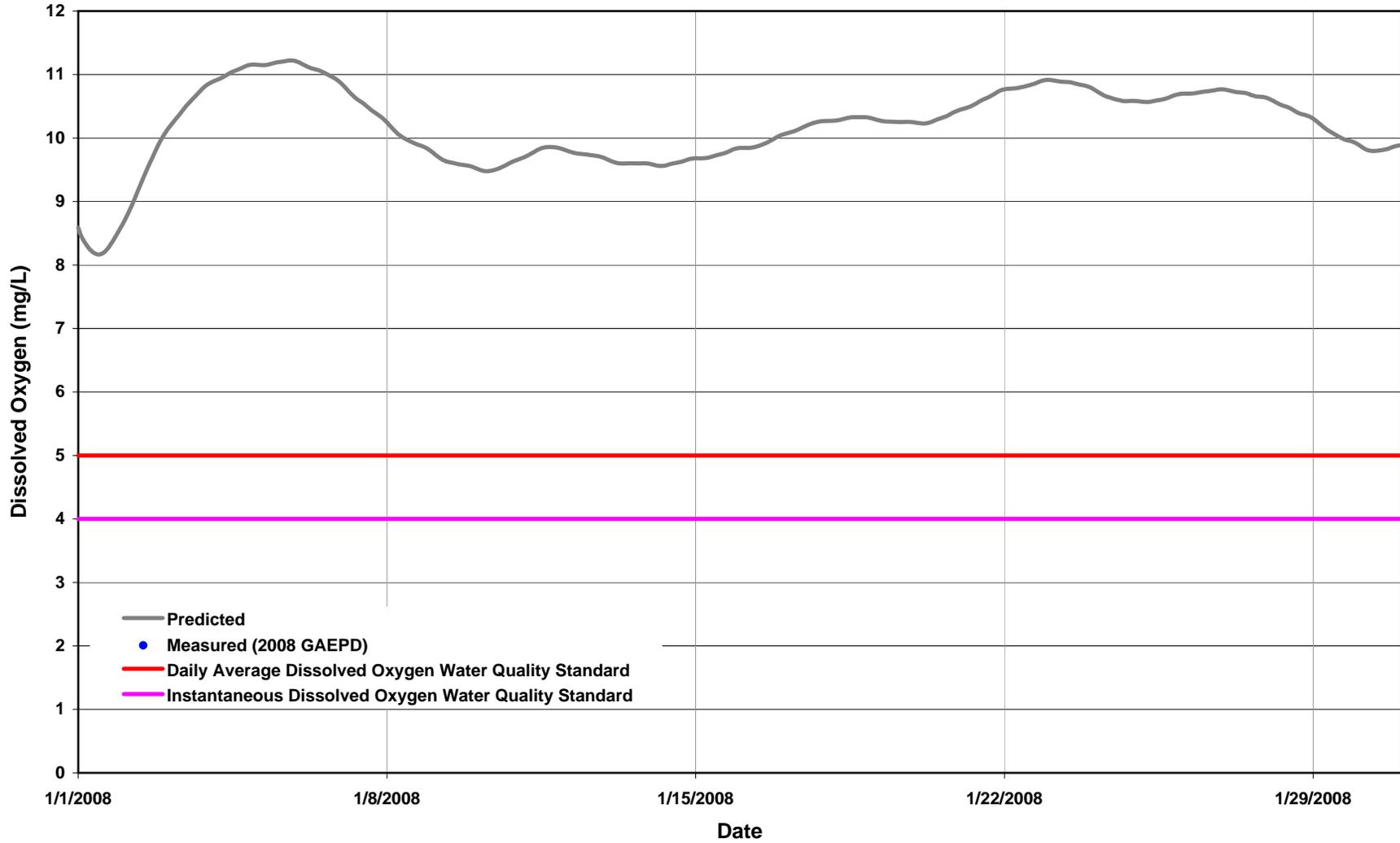


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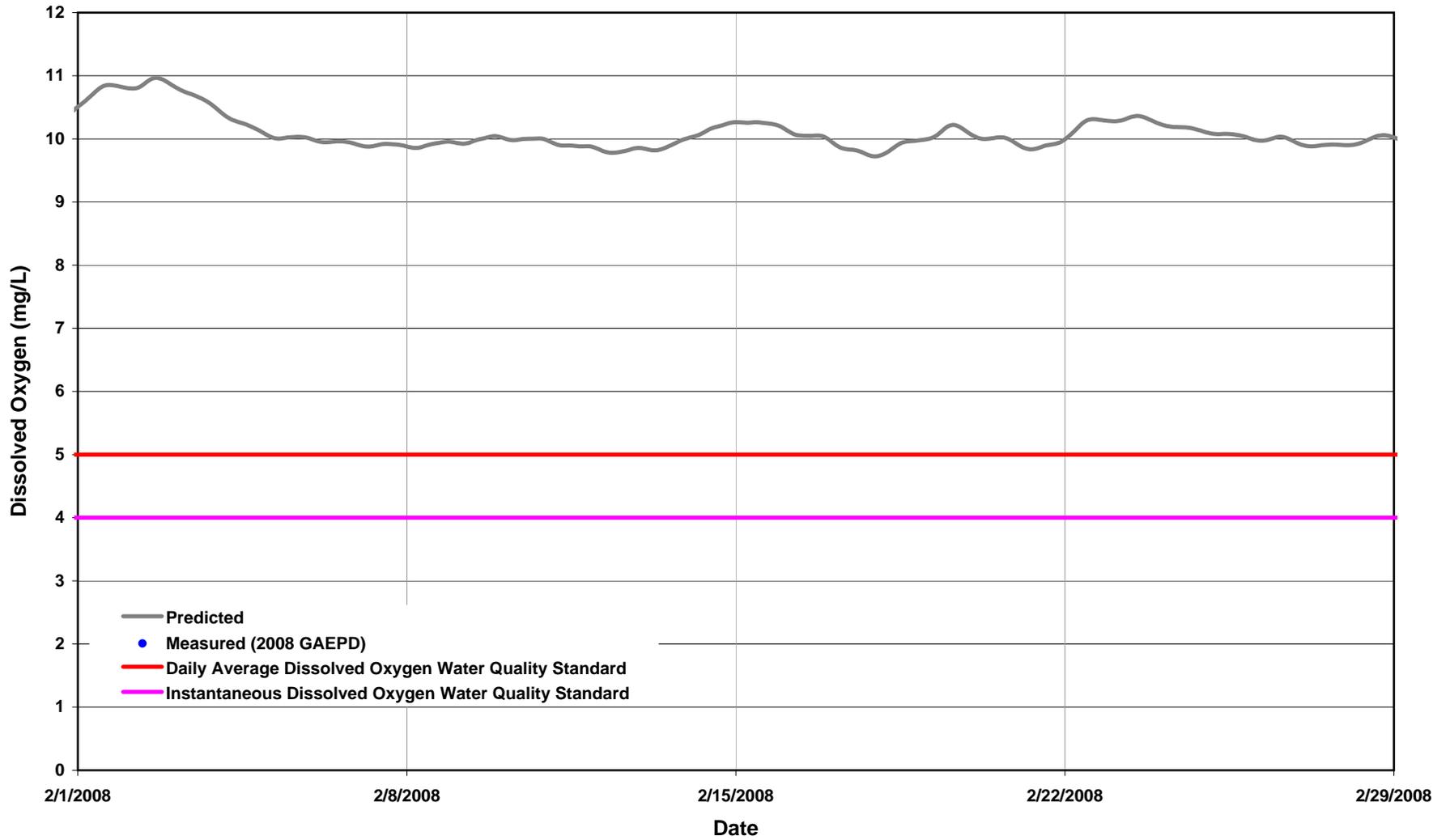


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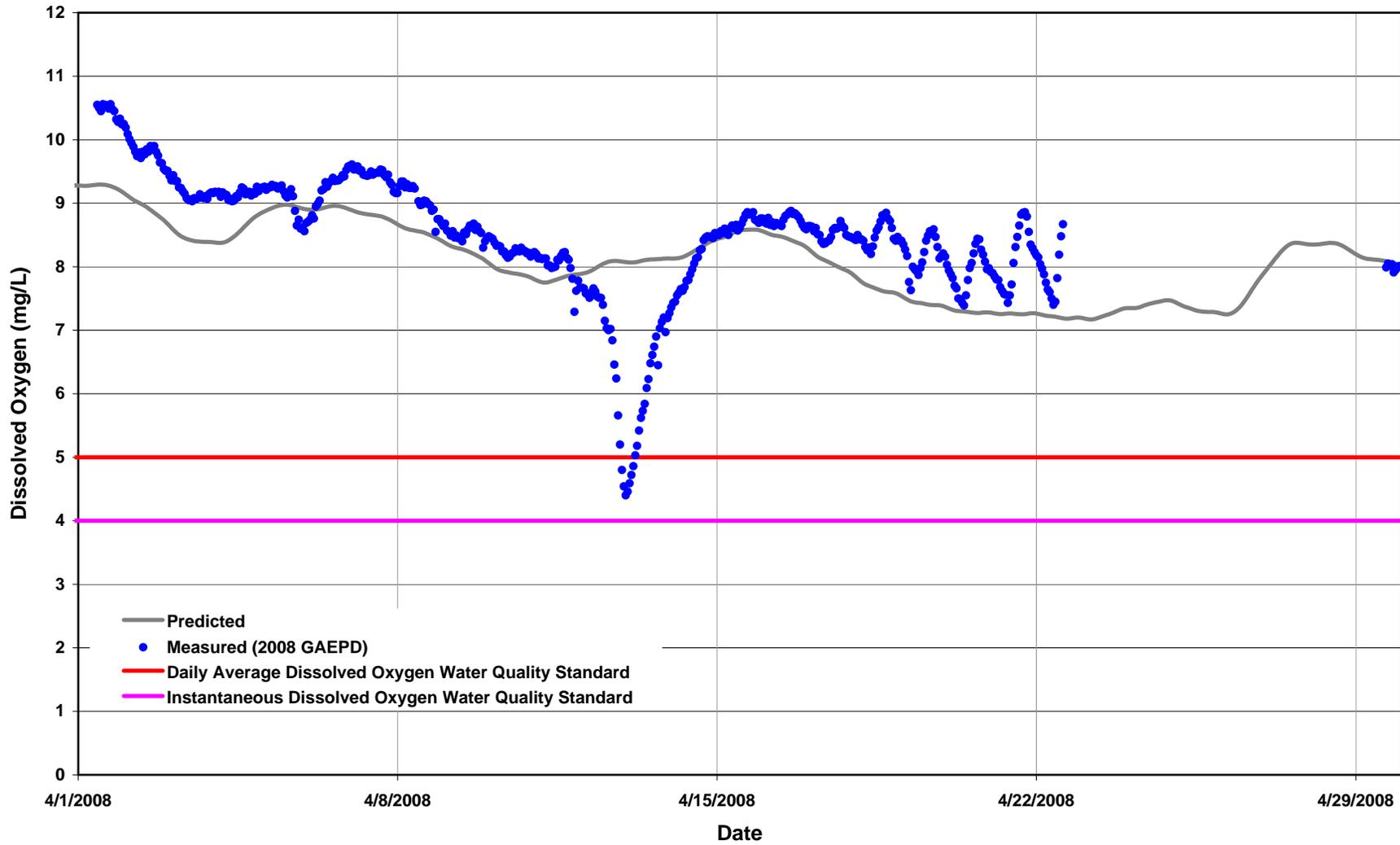


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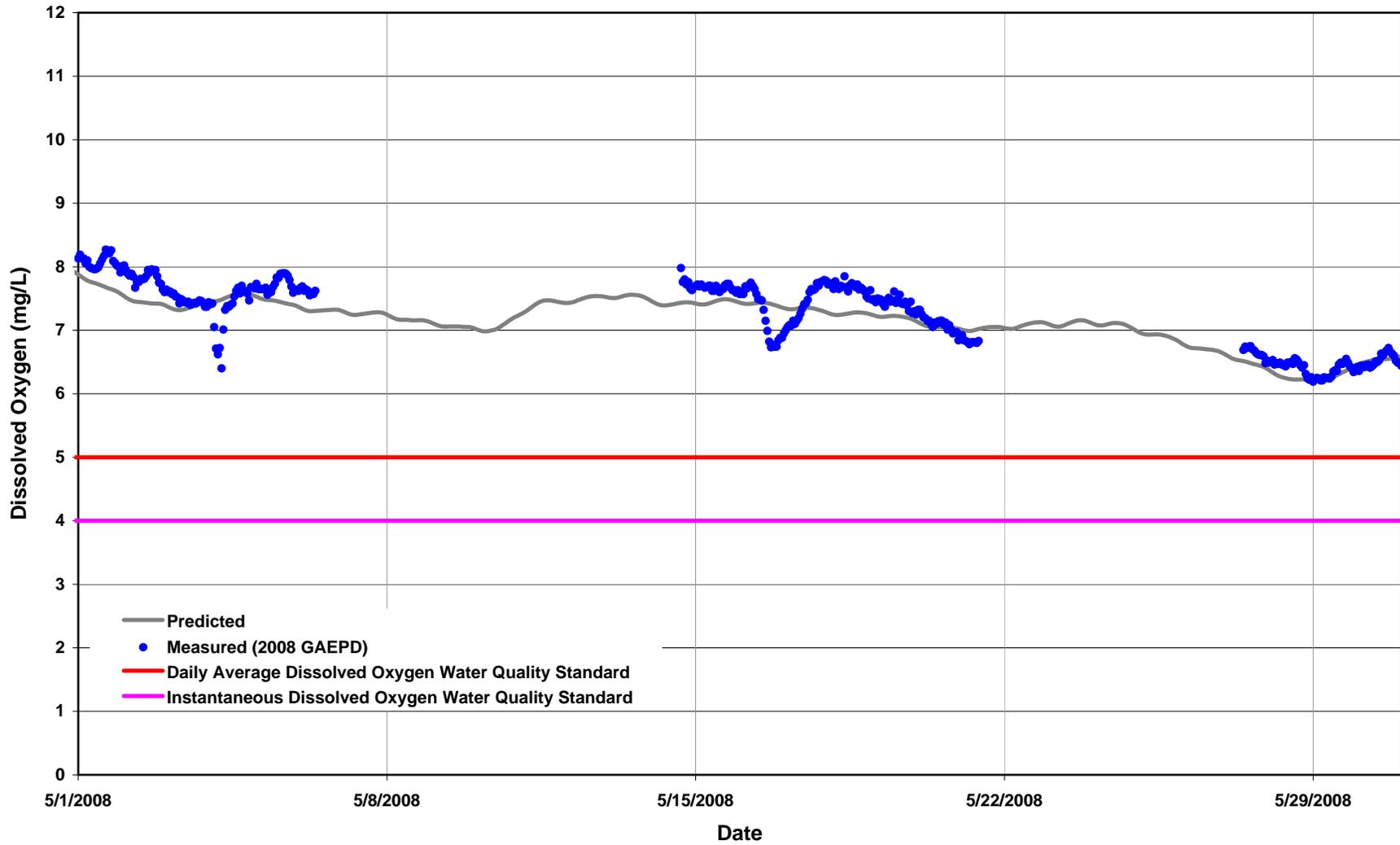


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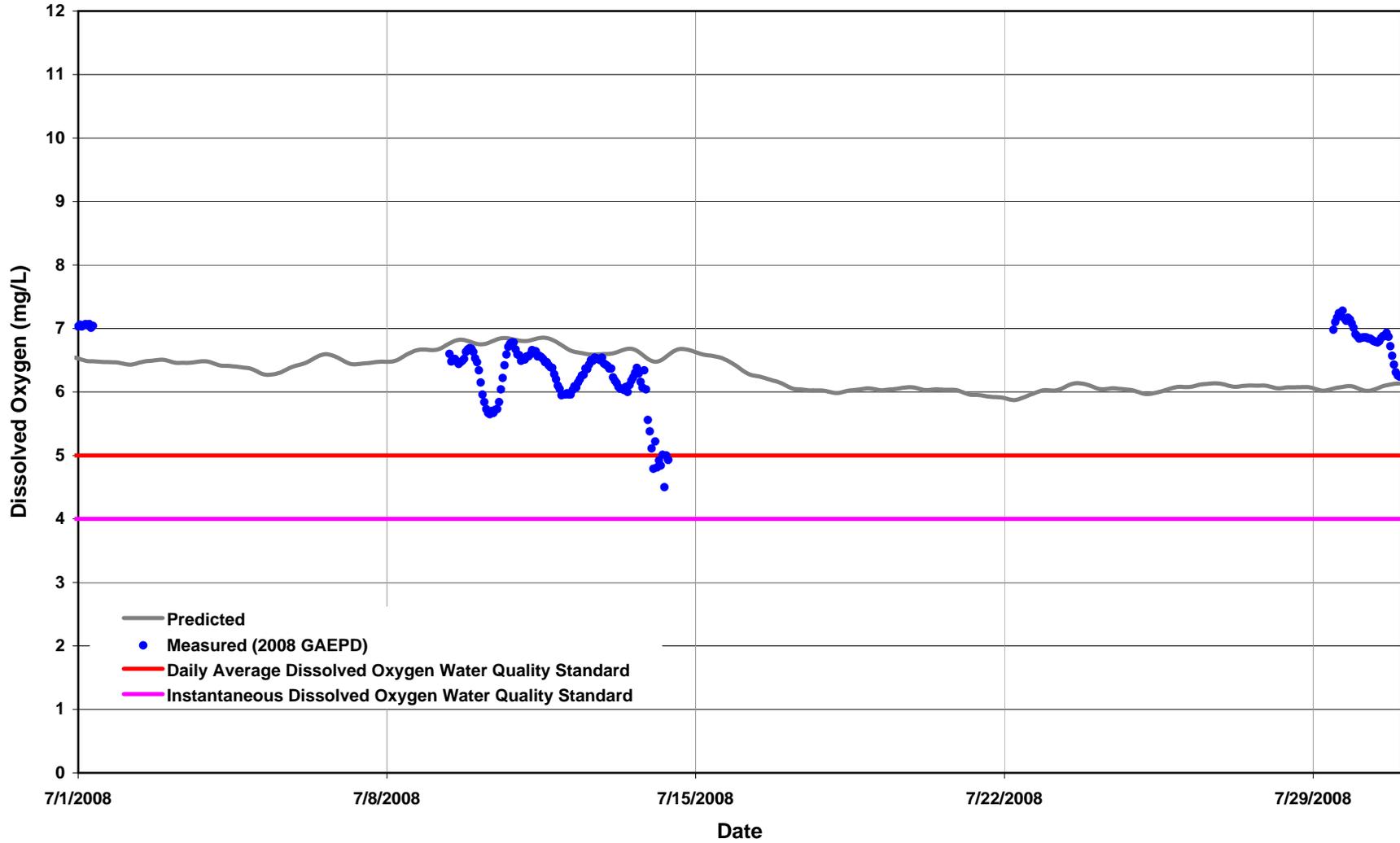


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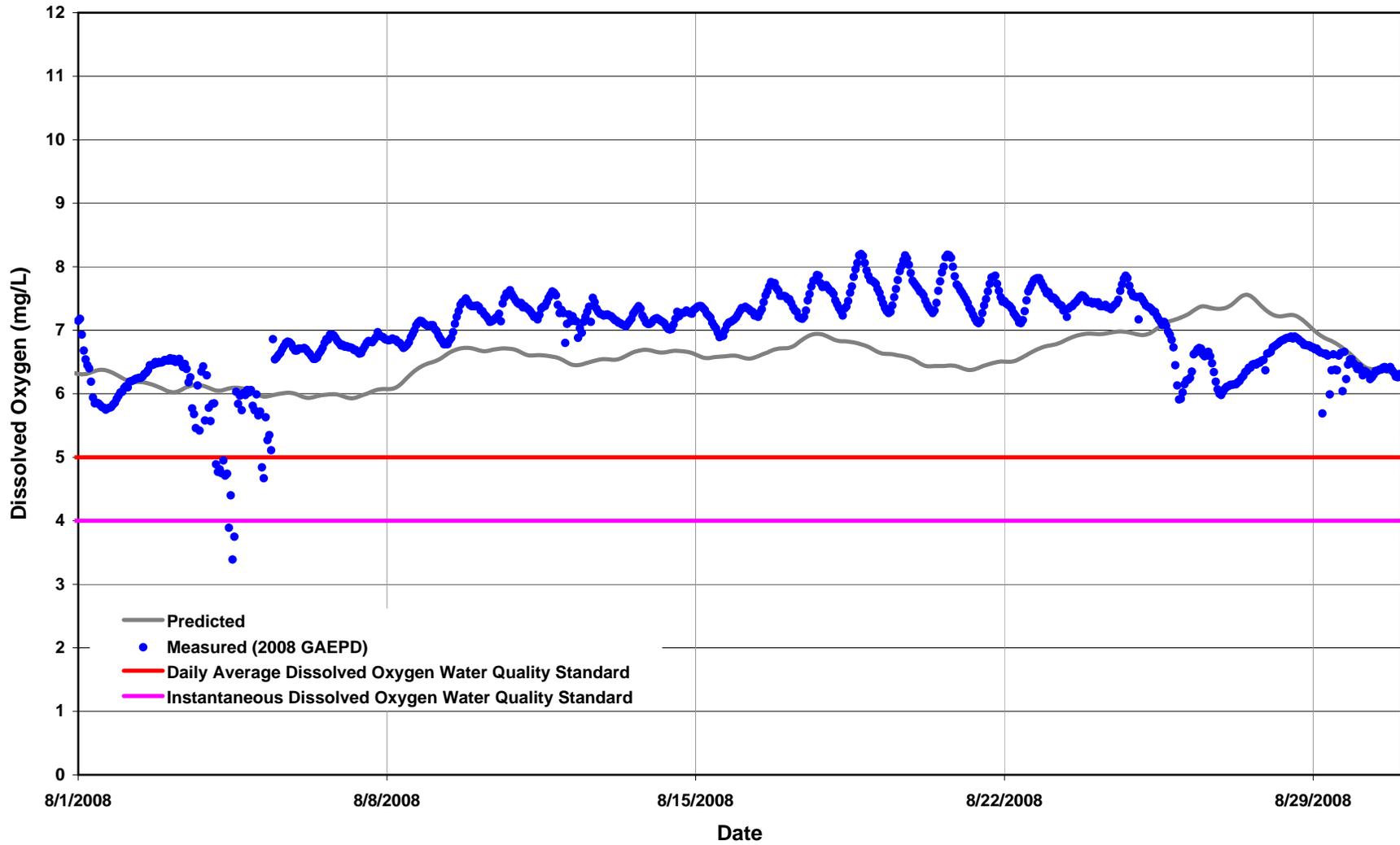


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