TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT

For DISSOLVED OXYGEN in the

TAYLORS CREEK

In the Ogeechee River Basin

(HUC 3060203)

Liberty County, Georgia

EPA United States Environmental Protection Agency

Region 4 serving the southeast

APPROVAL PAGE

for OXYGEN DEMANDING MATERIAL in

Taylors Creek, GA

Georgia=s final 1998 303(d) list identified Taylors Creek near Hinesville, GA as not supporting its designated use, with the pollutant of concern being oxygen demanding material and its influence on instream dissolved oxygen. This total maximum daily load (TMDL) is being established pursuant to the 1998 Georgia 303(d) list and the Consent Decree in the Georgia TMDL Lawsuit.

The TMDL calculation was made using the WASP5 model. The model load was adjusted until the predicted dissolved oxygen concentration met the daily average 5 mg/l in Taylors Creek. The maximum daily load of oxygen demanding material is given in biological oxygen demand (BOD).

Since a TMDL is the sum of wasteload allocations (WLA) plus load allocation (LA) and a margin of safety (MOS), the TMDL can be represented as: TMDL = WLA + LA + MOS

Wasteload Allocation (kg/day)	**Load Allocation (kg/day)**	**Margin of Safety**	**Total Maximum Daily Load (kg/day)**
216	20.7	Implicit	236.7

Therefore the TMDL for Taylors Creek is

TMDL = 216 kg/day + 20 kg/day = 236.7 kg/day BOD

APPROVED BY:

_____ _____

Robert F. McGhee, Director Date

Water Management Division

EPA-Region 4

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Introduction

Section 303(d) of the Clean Water Act (CWA) as Amended by the Water Quality Act of 1987, Public Law 100-4, and the United States Environmental Protection Agency's (USEPA/EPA) Water Quality Planning and Management Regulations [Title 40 of the Code of Federal Regulation (40 CFR), Part 130] require each State to identify those waters within its boundaries not meeting water quality standards applicable to the water's designated uses. The identified waters are prioritized based on the severity of pollution with respect to designated use classifications. Total maximum daily loads (TMDLs) for all pollutants violating or causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality standards with seasonal variations and margins of safety. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (USEPA, 1991).

Problem Definition

Georgia's final 1998 Section 303(d) list identified Taylors Creek, located approximately 30 miles from Georgia's Atlantic coast, a tributary to the Canoochee River, which flows into the Ogeechee River just east of the City of Hinesville/Fort Stewart area as not supporting its designated use. The pollutant of concern was identified as oxygen demanding materials (biological oxygen demand, sediment oxygen demand, nitrification) and its impacts on low dissolved oxygen concentrations in the segment. The primary pollutant source is the Hinesville/Fort Stewart municipal wastewater treatment plant. This TMDL will consider the effects of the wastewater treatment plant on instream dissolved oxygen concentrations due to oxygen demanding materials. Since the State of Georgia's listing of Taylors Creek, GAEPD discovered that an error, the cold water dissolved oxygen standard, was used to evaluate and list this segment of Taylors

Creek as impaired. GAEPD has determined that Taylors Creek should not have been listed because water quality data supports the warm water standard. Therefore, the stream will be evaluated using the Georgia warm water standard for dissolved oxygen of no less than 4 mg/l instantaneous dissolved oxygen and a daily average of 5 mg/l dissolved oxygen.

This TMDL is being established pursuant to the 1998 Georgia 303(d) list and the Consent Decree in the Georgia TMDL lawsuit that requires TMDLs to be developed for all waters on the current 303 (d) list according to certain conditions prescribed by the Consent Decree. The total maximum daily load of oxygen demanding materials to this segment of Taylors Creek will be determined using a critical flow and summer time water temperatures.

Target Identification

The target level for the development of the Dissolved Oxygen TMDL in the Taylors Creek segment is the numeric criterion established in Georgia's Rules and Regulations for Water Quality Control, Chapter 391-3-6, Revised July 6, 1999. Georgia Regulation 391-306-.03(6)(ii) establishes the freshwater criteria for Dissolved Oxygen as a daily average of 5.0 mg/l and no less than 4.0 mg/l at all times for water supporting warm water species of fish.

Background

The segment that is impaired is located directly downstream of the conveyance ditch that carries the Hinesville/Fort Stewart Wastewater Treatment Plant (WWTP) discharge to Taylors Creek. The segment listed is a 4-mile section from the confluence of Taylors and Canoochee Creek to the wastewater treatment plant conveyance ditch. In April of 1995, the Georgia Environmental Protection Division (EPD/GAEPD) conducted a field survey of streams in the Hinesville/Fort Stewart area. During the study, dissolved oxygen concentrations of 4.21 mg/l and 4.11 mg/l (@20.2 degrees centigrade and 46% saturation) were documented at two stations on Taylors Creek downstream of the Hinesville/Fort Stewart WWTP

discharge. While these measurements support the instantaneous standard, there is not enough information to support a conclusion for the daily average requirement of the water quality standard.

A depression in dissolved oxygen has been observed downstream of the Fort Stewart/Hinesville facility. The TMDL will use critical conditions to determine the maximum load of oxygen consuming material that can be discharged into Taylors Creek and still meet the water quality standard of 5 mg/l dissolved oxygen.

Numeric Targets and Sources - Model Development

The USEPA's Water Quality Analysis Simulation Program (WASP5) was used to evaluate the impacts of the Hinesville/Fort Stewart WWTP. The model was parameterized using critical low flow conditions (7Q10 Flow) and summer time temperatures. The model included sediment oxygen demand, biological oxygen demand (ultimate), nitrification and reaeration on predicted instream dissolved oxygen concentrations. It should be noted the WASP5 model was applied in steady-state mode (constant load, constant background and environmental conditions). In the future, when more data is available it would be preferable to apply a dynamic model that could account for the influences of changing environmental and flow conditions, and evaluate both the instantaneous and daily average criteria of the water quality standard. Because of the limited data available this TMDL was developed to protect the daily average of 5 mg/l dissolved oxygen.

Table 1 defines the parameters that were input to the WASP5 model. These values were taken from the Hinesville/Fort Stewart WWTP (GA0047180). The model assumes the WWTP is operating at its maximum permitted level. The WWTP permit requires the effluent dissolved oxygen concentration be no lower than 6.0 mg/l.

Table 1 WWTP Parameterization

Parameter	Input Value (Monthly Average)
Discharge Flow	7.15 MGD or 0.31 cms
Ammonia	3 mg/l
BOD * F-Ratio=1.5	15 mg/l
Dissolved Oxygen	6.0 mg/l

The stream was parameterized as illustrated in Table 2. The upstream BOD, dissolved oxygen and water temperature were obtained by reviewing STORET data that was available from an adjacent stream (Mill Creek) of similar size and drainage basin.

Table 2 Constant Stream Parameterization

Parameter	Input Value
Stream Flow	4.35 cfs or 0.12 cms
Dissolved Oxygen	5.0 mg/l
BOD	2.5 mg/l
Water Temperature	26 Degrees C

The WASP model kinetics and environmental parameters are given in Table 3. The BOD decay rate and temperature correction coefficient (THETA) were obtained from: Compilation of Georgia's Current Modeling Guidelines for the Development of Wasteload Allocations and NPDES Permit Limitations. January 1991; Georgia Environmental Protection Division. This publication was developed by EPD and provides State approved rates for developing permits when site-specific data is not available.

Table 3 WASP Kinetics and Constant Environmental Parameters

Parameter	Input Value
BOD Decay	0.2 per day
BOD Theta	1.047
SOD	0.50 g/m^2
Nitrification	0.30 per day
Nitrification Theta	1.05
Reaeration (Calculated By Model)	0.81 per day

For permitting purposes, steady-state models are applied for "critical" environmental conditions that represent lowest expected assimilative capacity. For discharges to riverine systems, critical environmental conditions correspond to drought upstream flows. The assumption behind steady-state modeling is that permit limits that protect water quality during critical conditions will be protective for the large majority of environmental conditions that occur. The WASP model was executed in steady-state mode to develop the TMDL given the above-described critical conditions.

Critical Condition Determination

The most critical condition for this segment of Taylors Creek will be used to determine the TMDL for this segment of the river. Nitrification, BOD, SOD and reaeration will impact dissolved oxygen. The model will predict the critical condition dissolved oxygen concentration in the Taylors Creek listed segment during critical conditions. The Hinesville/Ft. Stewart permit limits will be evaluated using the model to insure compliance with the TMDL determination.

Total Maximum Daily Load (TMDL)

The TMDL is the total amount of pollutant that can be assimilated by the receiving water body while achieving water quality standards. Since the only known point source of oxygen demanding material in this

listed segment of Taylors Creek is the Hinesville/Fort Stewart WWTP, the oxygen demanding load from the plant will be evaluated in the TMDL calculation. This TMDL will be expressed as a loading capacity. If in the future, a point or nonpoint source load of BOD is introduced in the system the total of the WLA (wasteload allocations for point source loadings) and LA (load allocation for nonpoint source loadings) shall not exceed this loading capacity.

Margin of Safety

The margin of safety (MOS) is part of the TMDL development process. There are two basic methods for incorporating the MOS (USEPA, 1991a):

- Implicitly incorporating the MOS using conservative model assumptions to develop allocations, or
- Explicitly specifying a portion of the total TMDL as the MOS; using the remainder for allocations.

The MOS is incorporated implicitly into this modeling process by selecting the critical low flow using summer time water temperatures.

TMDL Calculation

The determination of the total maximum daily load of oxygen demanding materials was made by adjusting the loads and boundaries in the WASP5 model until a 5 mg/l dissolved oxygen value was predicted throughout the entire reach (conveyance ditch to the confluence with Canoochee Creek). Once the TMDL is determined, the load from the Hinesville/Ft. Stewart facility was evaluated to meet the requirements of the TMDL.

The TMDL calculation was made using the WASP5 model. The model load was adjusted until the predicted dissolved oxygen concentration met the daily average 5 mg/l in Taylors Creek. The maximum daily load of oxygen demanding material is given in BOD.

Since a TMDL (Table 4) is the sum of wasteload allocations (WLA) plus load allocation (LA) and a margin

of safety (MOS), the TMDL can be represented as: TMDL = WLA + LA + MOS

Table 4 TMDL Calculation

Wasteload Allocation (kg/day)	Load Allocation (kg/day)	Margin of Safety	Total Maximum Daily Load (kg/day)
216	20.7	Implicit	236.7

Therefore the TMDL for Taylors Creek is

TMDL = 216 kg/day + 20.7 kg/day = 236.7 kg/day BOD

Seasonal Variation

The low flow condition represents the most critical design condition and will provide year round protection of the dissolved oxygen standard.

Allocation of Responsibility and Recommendations

This TMDL establishes the maximum daily load of oxygen consuming materials to this segment of Taylors Creek. The monthly average flow and load (BOD & ammonia) values from the Hinesville/Ft. Stewart permit will be input into the model as described in Table 1. These limits exceeded the assimilative capacity of Taylors Creek. To be consistent with the TMDL calculation (Table 4) the NPDES permit limits should be adjusted as described in Table 5.

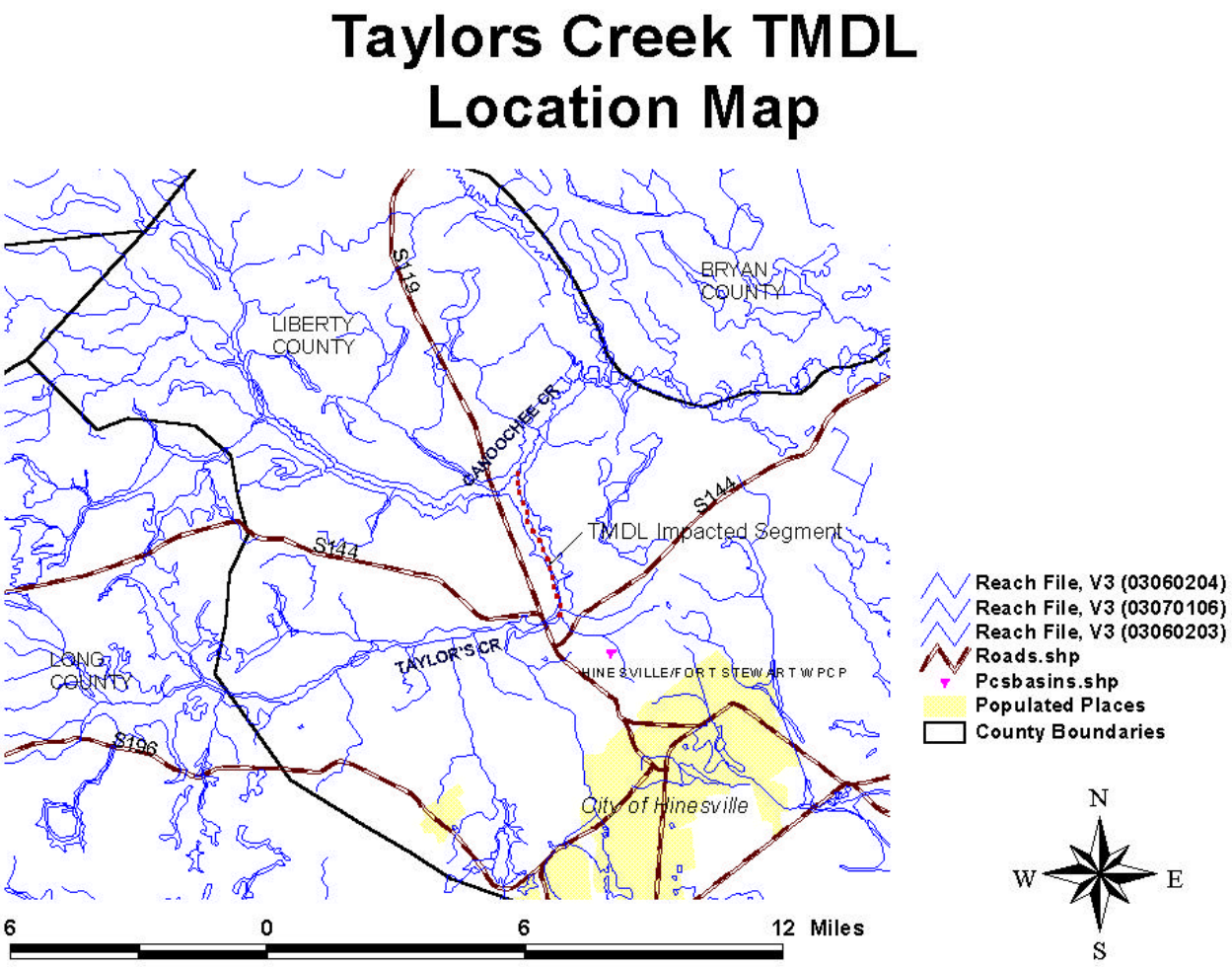
Table 5 NPDES Permit Limits

NPDES Permit	BOD5 Limit	NH3-N Limit	DO minimum limit
Hinesville/Ft. Stewart WPCP - GA0047180	6.0 mg/L	3.0 mg/L	6.0 mg/L

For any other point sources of oxygen demanding in material BOD loadings introduced into the system, the

total of the WLA (wasteload allocations, point source loadings) and LA (load allocation, nonpoint source loadings), shall not exceed this TMDL.

Appendix A -- Site Map



Appendix B – Units Conversion Table

From	To	Multiply by:
Million Gallons per Day (MGD)	Cubic Meters per Second (cms)	0.04381
Cubic Feet per Second (cfs)	Cubic Meters per Second (cms)	0.02832
Pounds (lbs)	Kilograms (Kg)	0.4536
Tons (Short)	Kilograms (Kg)	907.1848
Tons (Long)	Kilograms (Kg)	1016.00

Administrative Record

1. Ambrose Jr R.B., Wool, T.A., Connolly J.P. and Schanz R.W. (1988) *WASP4, A Hydrodynamic and Water Quality Model – Model Theory, User's Manual, and Programmer's Guide*. U.S. Environmental Protection Agency. Environmental Research Laboratory, Athens, Georgia. EPA/600/3-87/039. Model available from http://www.epa.gov

2. City of Hinesville-Fort Stewart Regional Water Pollution Control Plant, NPDES Permit No. GA0047180

3. Compilation of Georgia's Current Modeling Guidelines for the Development of Wasteload Allocations and NPDES Permit Limitations. January 1991

4. Rules and Regulations for Water Quality Control, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards

5. STORET Water Quality Data

6. Georgia Environmental Protection Division Stream Monitoring Data

7. On Disk: WASP Input Datasets

8. On Disk: Excel Spreadsheet to calculate TMDL

Response to Public Comment on Proposed TMDL

COMMENT:

Federal district court has held that a TMDL limited to critical condition determinations is inadequate as a matter of law.

Eric E. Huber, EarthJustice Legal Defense Fund, 400 Magazine Street, Suite 401, New Orleans, Louisiana 70130-2453, November 8, 1999

RESPONSE:

This TMDL was limited to the critical low flow high temperature because of the evaluation of a single point source on dissolved oxygen concentrations in Taylors Creek. Any other condition would yield a higher wasteload allocation and would not protect the resource.

COMMENT:

The TMDL states that this is a tributary to the Canoochee River, which flows into the Savannah River. The Canoochee actually flows into the Ogeechee River and then to the Atlantic Ocean.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

This error has been corrected in the final TMDL.

COMMENTS:

The § 303(d) list states that the discharge is to a "drainage canal" which is a tributary to Taylors Creek. The tributary should apparently be included as water quality limited segment on the list.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The drainage canal was not considered in the TMDL because it was not listed. EPA is not aware of data listing this segment.

COMMENT:

The TMDL states that Taylors Creek was listed because it was incorrectly identified as a trout stream. This is not the case. The impairment was identified on the basis of field data showing low DO below the wastewater plant and from calculations which determined the segment to be water quality limited for warm water fish standards due to background conditions and due to the load from wastewater.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

Georgia's delisting request was made because they stated that the cold-water dissolved oxygen standard was applied to this segment of Taylors Creek. Since the listing they realized that the wrong standard was applied. They attempted to present data collected in April of 1997. Their data was less than convincing in supporting the both the minimum instantaneous value of 4 mg/l and a daily average of 5 mg/l.

COMMENT:

The TMDL states that the pollutant of concern is BOD. This should likely also include ammonia since this depletes DO and is present in the calculations and permit. Nutrients may also impact DO through algal impacts and this impact was not addressed.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

Ammonia impacts on dissolved oxygen were included in the model calculations. The TMDL will have a specific ammonia load assigned.

No attempt was made to consider the impacts of algae on dissolved oxygen. There exists no data that would allow the model to be parameterized sufficiently for algae.

COMMENT:

The TMDL states that the source of pollutant load is the Hinesville/Fort Stewart wastewater plant. Other discharges, such as the Fort Stewart WTF, an industrial discharge, and a land application system, may be involved. State files mention moving and/or combining discharges. All of this needs to be addressed and explained in the TMDL.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The Fort Stewart WTF is a land application system that drains to Mill Creek. Mill Creek was not listed as impaired. Upstream data of the Hinesville/Ft. Stewart WPCP indicate acceptable dissolved oxygen values. The records and State files do not support the movement of the outfall.

COMMENT:

Information in State files is either not addressed or conflicts with the TMDL:

a) October 12, 1994 memo regarding 100% mortality in toxicity testing

b) November 26, 1995 memo that states that Taylors Creek is an intermittent stream and has no assimilative capacity for any more discharges

c) January 16, 1996 memo discussing Fort Stewart WTF describing an industrial waste facility and two other facilities and stating that modeling predicts no assimilative capacity is available in Taylors Creek

d) February 8, 1996 memo that states that an April 1995 field investigation found that treated wastewater from the Hinesville/Fort Stewart plant depressed the DO downstream

e) July 22, 1999 proposal for delisting Taylors Creek from the § 303(d) list

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

a) Taylors Creek was not listed for toxicity. This TMDL was developed only for the pollutant of concern for which the segment was listed.

b) It was not proposed that any other dischargers be added to the segment. EPA agrees that there is no additional assimilative capacity available.

c) The TMDL supports this.

d) The model supports depressed dissolved oxygen values downstream of the outfall. The TMDL was developed to protect dissolved oxygen from the outfall to the confluence with the Canoochee Creek.

e) EPA has rejected the delisting proposal by the State of Georgia.

COMMENT:

Typo at line 2 at top of page 2 of the proposed TMDL.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

This correction has been made.

COMMENT:

In the Target Identification section of the TMDL, the citation of Georgia regulations is incorrect. The most recent version is July 6, 1999 and the DO standard is found at 391-3-6-.03(6)(c)(1).

This version of the regulations does not identify Taylors Creek as trout waters.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

This correction has been made.

COMMENT:

EPD has indicated that it is changing the DO standard for this stream to a lower value. The commenter opposes this change.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

Comment noted.

COMMENT:

In the Background section of the TMDL, 2 DO readings should be compared to warm water standards and not to trout standards. These readings should be clarified as whether they were average or minimum readings and identification of time of day of the readings, flow, or other discharge conditions should be made.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The two measurements taken by GA EPD are not sufficient to draw any conclusions on the water quality of Taylors Creek regardless of the time of day the samples were taken. The TMDL was modified to better explain the measurements taken by EPD.

COMMENT:

In the Background section of the TMDL, no mention is made of upstream or background DO. The stream is a WQLS and it requires a TMDL to address the loads.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The upstream portion of Taylors Creek (above the outfall) and Mill Creek have not been identified as impaired. GA EPD data show dissolved oxygen concentrations above 5 mg/l.

COMMENT:

In the Background section of the TMDL, even lower values than the 2 low DO readings would be expected because the 2 readings were not made during low flow and summer. There is no mention of algae that might present a DO problem in the warmer months.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The two measurements taken by GA EPD are not sufficient to draw any conclusions on the water quality of Taylors Creek regardless of the time of day the samples were taken.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, the 7Q10 stream used is shown in Table 2 as 4.35 cfs. EPD files show this value is 0 cfs if the discharge is still to the tributary or 0.38 cfs if it was moved to the proposed location on Taylors Creek.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The 7Q10 flow used for the development of the TMDL was taken from USGS surveys.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, it is stated that "maximum" permit limits were used in the calculations. The numbers in Table 1 from the wastewater discharge permit are monthly average flow and weekly average BOD and NH4, which are much lower.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The use of monthly vs. weekly average conditions is clarified in the final TMDL. The TMDL explicitly defines which values are being used.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, it appears that EPA assumed the discharge is directly to Taylors Creek because the tributary is not accounted for. If the discharge has been moved from this tributary, this needs to be explained.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE

This TMDL was developed for Taylors Creek from where the WWTP conveyance ditch enters the creek. The ditch that leaves the Hinesville/Fort Stewart WWTP is not on Georgia's 303(d) list to be included in this TMDL.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, an F-ratio for BOD is given in Table 1, but the definition of an F-Ratio is not explained. Also, there is no indication if BOD is CBOD, 5-day, or ultimate.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The WASP model assumes all BOD inputs are ultimate BOD values. The F-Ratio is used to convert the WWTP BOD loads from 5-day BOD to ultimate BOD.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, discharges from other area wastewater plants, if they still exist, are not accounted for.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

A review of the facilities and data available for this area indicates that no other facilities are impacting the listed segment.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, Table 2 does not define BOD and NH4 is omitted. There is no background for low DO blackwater as described in EPD documents.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

There exists some monitoring data for the segments upstream of the Hinesville/Fort Stewart WWTP that indicates depressed dissolved oxygen concentrations, but not to the extent that a low dissolved oxygen blackwater condition exists.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, it is not explained if the calculations are being done for the average or minimum DO standard. There is a mix of time units in the modeling.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The TMDL was modified to explicitly state to what conditions (daily/monthly) that the TMDL was developed.

COMMENT:

In the Numeric Targets and Sources - Model Development section of the TMDL, there is no mention of, nor does it appear that previous studies and modeling by the State (with different results) were taken into account.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

A previous modeling study was conducted by using the GA-DOSAG model. By all accounts of the DOSAG model that was provided to EPA from EPD it was never completed. EPD affirmed this via personal communication. The DOSAG model was not parameterized to look at SOD and nitrification.

COMMENT:

In the Critical Condition Determination section of the TMDL, it is stated that the most critical conditions were used, but this does not appear to be the case. A true critical condition would incorporate background conditions, low flow, maximum permit limits, etc.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

EPA has revised the critical condition section of the TMDL to better explain the critical conditions provided to the model to make the TMDL calculation.

COMMENT:

Page 5 of the TMDL does not mention other known sources of wastewater if they still exist.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The site map shown in Appendix A -- Site Map illustrates all facilities in the area of the listed segment.

COMMENT:

In the Margin of Safety (MOS) section of the TMDL, the standard language that appears in most TMDLs is worthy of reconsideration. It is debatable if critical conditions are really being used. If these conditions are being used, it needs to be decided if this is an acceptable method of applying MOS, since low flows can and do occur, at which time there would be no margin. The commenter encourages EPA to find a way to use an explicit MOS - such as a reserved percentage of the TMDL.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

It has been decided by EPA that the use of a 7Q10 low flow and maximum permit limits is sufficient to protect the receiving streams' water quality. It is acknowledged that in some instances the 7Q10 flow may occur, therefore using the maximum permit limits provides adequate protection.

COMMENT:

In the TMDL Calculation section of the TMDL, there is a typo in the second line - something needs to be deleted.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

This has been corrected.

COMMENT:

In the TMDL Calculation section of the TMDL, the model used the minimum DO standard of 4 mg/l, which should correspond to maximum discharge limits. However, average limits are being used. The discharge should be evaluated to assure compliance with both average and minimum DO standards, using the appropriate match of maximum or average permit limits or discharger load.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

This approach has been used in the final TMDL.

COMMENT:

In the TMDL Calculation section of the TMDL, the TMDL is given in kg/day, as are the permit limits. It would be preferred if this were given in pounds/day or both ways with the conversion factor shown.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

EPA has decided to report all units as metric; a units conversion chart has been attached. See Appendix B – Units Conversion Table.

COMMENT:

In the TMDL Calculation section of the TMDL, it is stated that the determined TMDL is less than the current permitted load for the Hinesville/Fort Stewart plant, but this does not appear to be the case, since daily maximum permit levels were not used. This also does not account for any other dischargers or nonpoint or erosion problems (SOD) mentioned in the State files.

Douglas P. Haines, Executive Director, Georgia Legal Watch, 264 North Jackson Street, Athens, Georgia 30601, December 10, 1999

RESPONSE:

The TMDL calculation for oxygen demanding materials for Taylors Creek is less than the currently allocated load to the Hinesville/Fort Stewart WWPC facility. This is explicitly explained in the final TMDL. The model does take into account oxygen demand exerted by sediment oxygen demand. The listed segment has only one wastewater outfall so no others are included.

References:

Ambrose Jr R.B., Wool, T.A., Connolly J.P. and Schanz R.W. (1988) *WASP4, A Hydrodynamic and Water Quality Model – Model Theory, User's Manual, and Programmer's Guide*. U.S. Environmental Protection Agency. Environmental Research Laboratory, Athens, Georgia. EPA/600/3-87/039.

Compilation of Georgia's Current Modeling Guidelines for the Development of Wasteload Allocations and NPDES Permit Limitations. January 1991

Rules and Regulations for Water Quality Control, Chapter 391-3-6-.03, Water Use Classifications and Water Quality Standards

Sierra Club v. EPA & Hankinson USDC-ND-GA Atlanta Div. #1: 94-CV-2501-MHS

USEPA. Guidance for Water Quality-based Decisions: The TMDL Process. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA/440/4-91-001, April 1991.