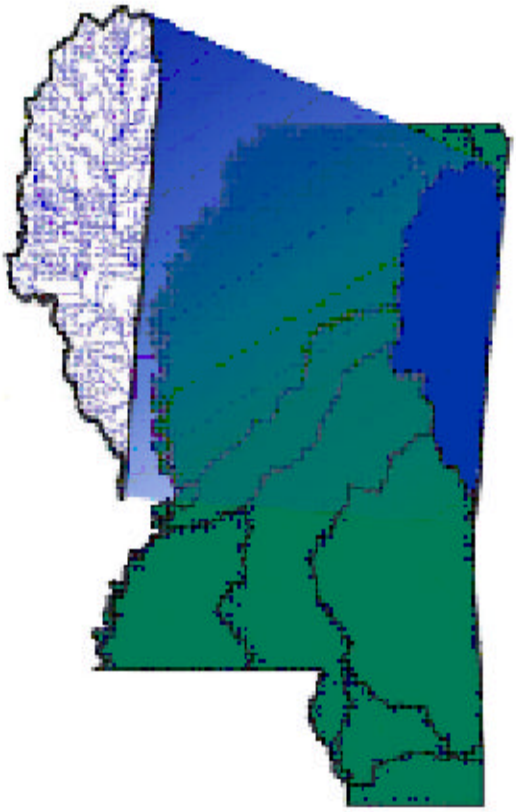
BASIN GROUP 1

TOMBIGBEE RIVER BASIN

DATA COLLECTION PLAN

1999-2000



BASIN TEAM FOR THE TOMBIGBEE RIVER BASIN

FORWARD

This Tombigbee River Basin Data Collection Plan represents a collaborative effort on the part of a number of State and Federal agencies to address water quality issues. The State and Federal agencies that participated in this effort are collectively referred to as the Basin Team and include the following agencies:

1. Mississippi Department of Environmental Quality
2. Mississippi Department of Wildlife, Fisheries and Parks
3. Mississippi Department of Agriculture and Commerce
4. Mississippi Forestry Commission
5. Mississippi Soil & Water Conservation Commission
6. Mississippi State University, Cooperative Extension Service
7. United States Army Corps of Engineers, Mobile District
8. United States Fish & Wildlife Service
9. United States Geological Survey
10. Natural Resources Conservation Service, USDA
11. Tombigbee River Valley Water Management District

In addition to the Basin Team, participation by local stakeholders and stakeholder groups was instrumental in the development of this plan. During the initial stakeholders meeting held in Columbus, Mississippi on November 9, 1998, a number of public-generated issues and comments were submitted for consideration during the development of this plan. Another stakeholder meeting was held April 13, 1999 in Columbus, Mississippi where comments were requested for the Proposed Data Collection Plan. Comments were received from the Basin Team and Stakeholders and they were incorporated in this plan where possible. Although the Data Collection Plan has been established for this phase of the Basin Cycle, comments are welcome. Comments may be submitted in written or verbal form to the following address:

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DATA COLLECTION PLAN CONTENTS

OVERVIEW OF TOMBIGBEE RIVER BASIN
DATA COLLECTION PLAN
1999

Background

Strategic data collection is one of the core activities of the Mississippi Basinwide Approach to Water Quality Management. Data collection in the basin planning process has four primary purposes. These are: (1) describing the watershed, (2) supporting control strategy development, (3) measuring success of ongoing management activities, and (4) involving the public. Preparation of this Data Collection Plan addresses the final step of Phase 1, planning for the Tombigbee River Basin.

Identification of Issues

Initially, the Basin Planning Team, whose members consist of technical personnel familiar with water resource issues related to the Tombigbee River Basin, prepared a comprehensive list of issues. Subsequently, a public meeting was held in Columbus, Mississippi on November 9, 1998 for the dual purposes of informing the public about the Basinwide Approach to Water Quality Management and seeking input from the public about its concerns related to the Tombigbee River Basin. During the meeting, a survey was distributed to all attendees who were asked to rate the importance of an initial list of issue categories and to list any additional issues of concern (Appendix A). The results of this survey were collated and reviewed by the Basin Team (Appendix B). From this information, the Basin Planning Committee, in collaboration with the Basin Team, decided to address the following issues:

1. Condition of Section 303(d) Evaluated Waters
2. Determining Cause of Impairment of Selected Streams
3. Assessment of Buttahatchie River
4. Assessment of Aliceville Pool of Tennessee-Tombigbee Waterway
5. Total Maximum Daily Load (TMDL) for Town Creek and Chiwapa Creek
6. Protection of Noxubee Wildlife Refuge
7. Assessment of Luxapalila Creek
8. Wasteload Allocation Studies on Selected Streams
9. Determining Water Quality Condition of Old River Section of Tombigbee River
10. Determining Water Quality Condition of Tennessee-Tombigbee Waterway near Aberdeen

Purpose of the Data Collection Plan

The Basin Team has reviewed each issue in detail, identifying available data, data needs, and resources needed to adequately address these issues.

Within this Data Collection Plan, each issue is addressed individually using a standard format that addresses a description of the issue, sampling approach, location of monitoring stations, sampling frequency, special considerations, and the responsible agencies.

ISSUE 1. CONDITION OF SECTION 303(d) EVALUATED WATERS

Issue Description

Section 303(d) Evaluated Waters are those waters listed as AEvaluated@ on the State's 1996 and 1998 Section 303(d) List of Waterbodies that was prepared pursuant to Section 303(d) of the Clean Water Act. Evaluated waters are those waters for which no monitoring data exist that can be used to determine whether or not the waterbody is impaired. Generally, evaluated waters are drainage areas thought to be potentially impacted as defined by the State=s Nonpoint Source Assessment Document of 1989 and 1998. The potential causes of impairment are those pollutants associated with agricultural, silvicultural, and other land use practices (e.g., sediment, nutrients, bacteria, pesticides, and organic enrichment).

Due to the existence of the evaluated waters on the State=s Section 303(d) List, the State is committed to collect the data necessary to determine their condition. Based upon this data, the State can then determine if these waterbodies are actually impaired.

Sampling Approach

Larval forms of aquatic insects (i.e., macroinvertebrates) serve as excellent indicators of the overall health of an aquatic ecosystem and will be analyzed at each monitoring site using a screening level Rapid Biological Assessment (RBA) Protocol III approach. This approach examines biological diversity, relative sensitivity or tolerance to pollution of the overall biological community and community balance, and compares these findings to a Aleast impaired@ reference station. At the time of biological sampling, the water in the stream will also be analyzed for traditional water chemistry parameters such as dissolved oxygen, suspended solids, and nutrients.

Location of Monitoring Stations

There are 45 evaluated waterbodies (drainage areas) that need to be assessed in the Tombigbee River Basin. The locations of the evaluated waters in the Tombigbee River Basin are shown on page 7. The drainage areas to be assessed are based upon 11-digit watersheds developed by the Natural Resources Conservation Service. Water quality in these watersheds will be determined by a sampling program that will be performed at the most accessible downstream site nearest each watershed=s boundary. Where needed, additional sites will be included in watersheds having more than one significant stream.

Sampling Frequency

A RBA and water chemistry profile will be conducted once during the 1999 summer low-flow season. Where stream access is unavailable for a RBA, water chemistry sampling will be performed quarterly.

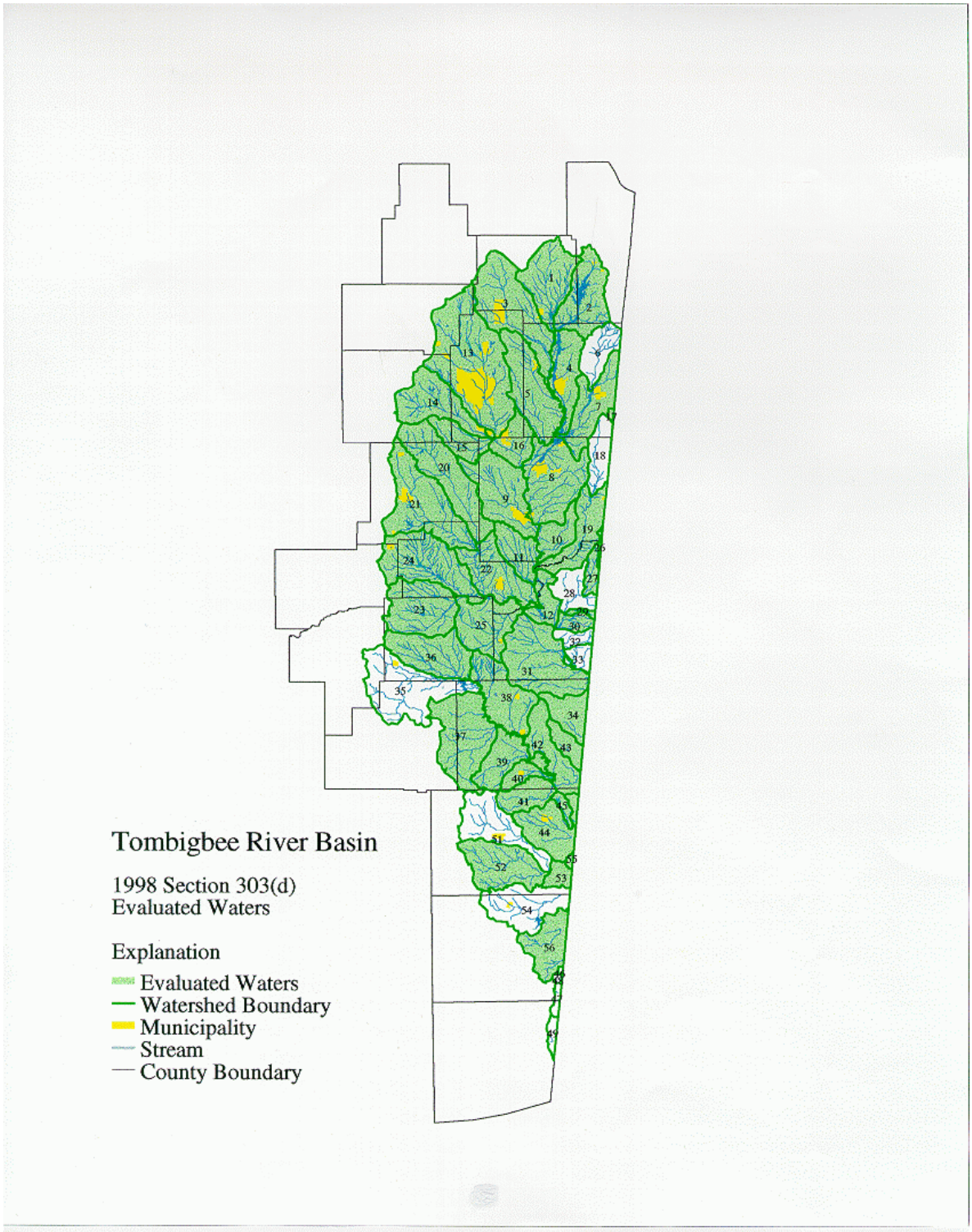
Special Considerations

Because of the intrinsic linkage of the aquatic health indicators (macroinvertebrates) with the quality of water, an attempt will be made to establish the following relationships:

1. Linking pollutant causes and sources to existing impairments where found
2. Identifying land-use in the watershed upstream of the sampling station.

Responsible Agencies

MDEQ is responsible for monitoring the evaluated waters. Field Services Division=s Biological Section will perform the RBAs and will monitor for physical and chemical parameters. The Chemical Services Section will be responsible for all chemical analyses. Surface Water Division=s Water Quality Assessment Branch, in coordination with the Field Services Division, will compile, manage and interpret the data to determine if a waterbody=s designated use is supported. If the use is supported and water quality standards are met, the waterbody will be removed from the Section 303(d) List.


Tombigbee River Basin
1998 Section 303(d)
Evaluated Waters
Explanation
Evaluated Waters
Watershed Boundary
Municipality
Stream
County Boundary

1998 SECTION 303 (d) LIST OF EVALUATED WATERBODIES WITHIN THE TOMBIGBEE RIVER BASIN

WATERBODY NAME	WATERSHED # FROM MAP
Alamuchee Creek Drainage Area near Alamucha	56
Bogue Chitto Drainage Area near Dinsmore	34
Browns Creek Drainage Area near Marietta	01
Bull Mountain Creek Drainage Area near Turon	07
Buttahatchie River Drainage Area near Vinton	19
Catalpa Creek Drainage Area near Stephen	25
Cedar Creek Drainage Area near Aberdeen	09
Chiwapa Creek Drainage Area near Pototoc	14
Chiwapa Creek Drainage Area near Pine Grove	14
Chuquatonchee Creek Drainage Area near Abbott	20
Cowpenna Creek Drainage Area near Nettleton	16
Cumings Creek Drainage Area near Fulton	04
Cypress Creek Drainage Area near Craig Springs	36
Donivan Creek Drainage Area near Kirkville	03
Enondale Drainage Area near Enondale	53
Goodfood Creek Drainage Area near Goodfood	20
Hang Kettle Creek Drainage Area near Vinton	11
Hashuqua Creek Drainage Area near Mashulaville	37
Houlka Creek Drainage Area near Abbott	21
James Creek Drainage Area near Aberdeen	09
Lake Piomingo near Auburn	13
Line Creek Drainage Area near Mhoons Valley	24
Macedonia Creek Drainage Area near Macedonia	39
Mackey=s Creek Drainage Area near Sandy Springs	02
Mantachie Creek Drainage Area near Van Buren	05
Mattubby Creek Drainage Area near Aberdeen	09
McCowers Creek Drainage Area near Columbus	31
McCrary Creek Drainage Area near Columbus	30
McKinley Creek Drainage Area near New Hamilton	10
Mud Creek Drainage Area near Tupelo	13
Noxubee River from Spillway of Bluff Lake to AL State Line	
Piwticfaw Creek Drainage Area near Enondale	52

ISSUE 2. DETERMINING THE CAUSE OF IMPAIRMENT FOR SELECTED STREAMS

Issue Description

The 1998 Section 303(d) List of Waterbodies catalogs waterbodies for which current monitoring data indicate impairment of designated use and violations of water quality standards. The cause(s) of impairment as well as the designated use of the waterbody are provided on the list. In some cases, pollutant specific data indicate that specific water quality standards were violated. However, for some waterbodies the primary monitoring data available (e.g., RBAs) indicate that the health of the aquatic community has been impacted relative to a reference site. Because a RBA does not provide direct information on the specific chemical pollutant causing the impairment, biological impairment (BI) is listed as the cause in those cases. When these situations occur, additional monitoring is required to determine the specific causes of the impairment so that Total Maximum Daily Loads (TMDLs) can be established.

Six waterbodies in the Tombigbee River Basin are not fully supporting their aquatic life use and are listed as Biologically Impaired. All six of these waterbodies receive effluent from municipal wastewater treatment plants. Additional monitoring of these waterbodies will be required to more fully understand the specific causes of impairment.

Sampling Approach

In order to verify impairment, a RBA Protocol III will be performed on the receiving stream. Physical and chemical water quality parameters will also be sampled as will water column metals in an attempt to determine the cause(s) of the biological impairment. Both point and nonpoint pollution sources will be inventoried, and the effluents of point sources, if present, will be sampled for the same suite of physical and chemical water quality parameters that were sampled during previous studies. To assess the potential impact from nonpoint sources of pollution, land use activities will be characterized through aerial photography and/or ground surveys. *After an initial screening it was determined that metals will not be analyzed unless the impairment cannot be determined through conventional chemical sampling.*

Location of Monitoring Stations

The streams for which the cause(s) of impairment will be determined are:

1. James Creek at Aberdeen *This activity has been revised to look only at the nonpoint sources since the POTW discharge will be relocated.*

2. Chiwapa Creek at Shannon

3. Joes Creek at Brooksville

4. Howard Creek near Steens

5. Mayhew Creek near Caledonia

6. Unnamed tributary of Tennessee-Tombigbee Waterway near Columbus *(This site was canceled due to the relocation of the Eka Nobel discharge to the Tenn-Tom Waterway.)*

Sampling at these locations will likely include monitoring at sites upstream and downstream of any point source to assess any impairment caused by the point source.

Sampling Frequency

Monitoring will be performed once in 1999 during the critical conditions of high stream temperature and low flow, which commonly occur from May through October. Data will be collected one-to-two days at each location. *If after the low flow sampling more data are needed, a spring high flow sampling event will be conducted.*

Special Considerations

Because of the intrinsic linkage of the aquatic health indicators (macroinvertebrates) with the quality of water, an attempt will be made to establish the following relationships, where possible:

1. Linking pollutant causes and sources to existing impairments where found.
2. Identifying land-use in the watershed upstream of the sampling station

Responsible Agencies

MDEQ is responsible for monitoring impaired waterbodies. Field Services Division will perform the RBAs. The Water Quality Assessment Branch will monitor for physical and chemical parameters. The Water Quality Assessment Branch will survey land use activities. The Water Quality Assessment Branch and the Field Services Division will compile, manage and interpret the data to determine the cause(s) of impairment.

ISSUE 3. ASSESSMENT OF THE BUTTAHATCHIE RIVER

Issue Description

The Buttahatchie River is reported on the Section 303(d) List as monitored for pathogens (fecal coliform) and the Buttahatchie drainage area is evaluated for pesticides, nutrients, siltation, and organic enrichment/low DO. Sediment loadings from sand and gravel surface mines have caused the Buttahatchie River to change course, and a portion of the river is now a series of lakes. Current monitoring data indicate that high levels of suspended solids exist near the Mississippi/Alabama state line which may be caused by upstream surface mining activities in Alabama. Additionally, ambient water quality sampling has revealed the occurrence of significant nutrient concentrations on the Buttahatchie River near Aberdeen. Maintaining water quality to protect the habitat for the walleye and other threatened/endangered species also needs to be addressed along the Buttahatchie River.

A section of the Buttahatchie River (the stretch from highway 45 near Columbus to the Alabama state line) is being considered for designation as a scenic stream under a program recently approved by the State legislature. As one of five scenic streams proposed for this designation, focus has been placed on the water quality and habitat of this stream. Headwater information needs to be developed to quantify and characterize the water quality entering the state and a TMDL for pathogens needs to be established for the stream. In-stream erosion and the occurrence of fecal coliform also need to be assessed within the watershed of the Buttahatchie River.

Sampling Approach

The sampling approach for fish and invertebrate studies will target sites used previously for fish and invertebrate studies in the 1980's in order to assess changes in community structure and function. In addition, the approach will monitor the effects of surface mining activities, nutrients, point sources, and will also have a routine ambient monitoring component. The following elements are planned:

1. A search of DWFP records will be made to determine historic fish population study results

2. Fish tissue analysis for pesticides and metals will be performed

3. In-stream water sampling during periods of active mining for suspended solids analysis

4. Sampling for water chemistry (except metals) *After review of this issue, it was determined that metals would be analyzed quarterly.*

5. GIS and file review of mining activities

6. Interpretation of aerial photography for land use activities

7. Inventories of potential contaminant sources

Location of Monitoring Stations

Monitoring stations will be located at sites used previously for fish and invertebrate studies that were performed in the 1980's. One site near Aberdeen will be used for water chemistry monitoring and one site at the state line will be used for biological monitoring. A site near the mouth of the river will be used to evaluate backwater effects from the Tennessee-Tombigbee Waterway.

Sampling Frequency

The main stem of the Buttahatchie River is currently being sampled three times each year for invertebrates by MDEQ. Water chemistry and bacteria will be sampled twice per month. Fish population studies and fish tissue analysis for pesticides will be performed annually. A GIS and file review of mining activities and aerial photography interpretation will be performed as a single event during the study.

Responsible Agencies

MDEQ Field Services Division will conduct fish tissue analyses for pesticides and metals. DWFP will be responsible for fish population studies. MDEQ Office of Geology will provide assistance during the review of mining activities, and MDEQ Water Quality Assessment Branch, with assistance from TVA, will administer the aerial photography effort. *MDEQ Water Quality Assessment Branch will contract the collection of the water samples and MDEQ Field Services Division will perform the analysis of the water samples.*

Special Considerations

The environmental situation along this portion of the Tombigbee River is similar to the situation associated with the Bowie River near Hattiesburg. EPA has recently completed a study of the Bowie River which will be used as a blueprint for a similar study on the Buttahatchie River.

ISSUE 4. ASSESSMENT OF THE ALICEVILLE POOL OF THE TENNESSEE-TOMBIGBEE WATERWAY

Issue Description

A recent study by the Alabama Department of Environmental Management (ADEM) focused on the potential eutrophic conditions of the Aliceville Pool, which straddles the Mississippi-Alabama state line. Because of this study, plans are being developed to assess the Mississippi waters of the Aliceville Pool by focusing on the growth of aquatic macrophytes.

In its study, ADEM used the Trophic State Index (TSI) to classify the Aliceville Pool. Normally, the TSI is based on concentrations of total phosphorus, chlorophyll, and secchi disk depth values. In this particular instance, however, only chlorophyll concentrations were used to determine a TSI because this method was considered by ADEM to give the best estimate of the biotic response of lakes to nutrient enrichment when algae is the dominant plant community. The Trophic State classification scale is:

Oligotrophic	TSI	<40
Mesotrophic	TSI	40-49
Eutrophic	TSI	50-70
Hypereutrophic TSI	>70.	

Numerical scores received under this rating scheme are assigned to the following categories: good (0-59), fair (60-69), or poor (70-100). ADEM reported a mean TSI of 56 for the Aliceville Pool during their study period. This compares favorably with MDEQ/FSD data from 1998, which reveals a TSI of 57. To keep the data in perspective Lake Washington (Washington Co. MS) has a TSI of 78, Ross Barnett Reservoir has a TSI of 57, and Bay Springs has a TSI of 48, these being a good representation of the higher, average and lower TSI values in Mississippi.

Sampling Approach

Historical data collected from the Aliceville Pool and surrounding watersheds, as well as point and nonpoint sources, will be compiled and evaluated for eutrophication potential. Water quality parameters assessed should reflect those performed by ADEM for comparative purposes. These parameters include depth

profiles of temperature, pH, dissolved oxygen, specific conductance, secchi and photic zone readings, turbidity, alkalinity, hardness, total dissolved solids, total suspended solids, ammonia-nitrogen, nitrite-nitrate, total kjeldahl nitrogen (TKN), total phosphorus, orthophosphorus, total organic carbon, chlorophyll-a, Trophic State, and coliforms. Aerial photography will be used as an assessment tool to determine the extent of the macrophytic community. Fish tissue analysis is also planned.

Sampling Frequency

MDEQ Field Services Division plans to coordinate its sampling dates and frequency with that of ADEM=s program. It is anticipated that sampling will occur on a quarterly basis.

Sampling Locations

The Aliceville Pool sampling activity will be performed at three sites yet to be determined. *This has been revised to include five sites.*

Responsible Agencies

MDEQ Field Services Division will conduct the sampling program.

Special Considerations

Coordination with ADEM will be a necessity for an effective assessment program. In addition, Dr. Eric Dibble of Mississippi State University has proposed a study to develop baseline data on plants vs. exposure, which will be used for correlation purposes. To assist this monitoring effort, he has offered to expand his study to include the effect of nutrients on plants. Also, coordination with USCOE for aerial photo coverage will be necessary. *Due to time constraints and available resources this issue will not be coordinated with Dr. Dibble=s study.*

ISSUE 5: TMDL FOR TOWN CREEK AND CHIWAPA CREEK

Issue Description

Stagnation of Town Creek south of Tupelo has been identified as a potential concern by the Basin Team and basin stakeholders. Recent discoveries at the Tupelo Publicly Owned Treatment Works (POTW) indicate that discharges into Town Creek may have occurred in the past with potential adverse impacts. Other NPDES-regulated facilities also discharge into Town Creek in Tupelo. Downstream, the Town Creek segment near Nettleton is listed on the Section 303(d) List as being monitored for pathogens and the drainage area evaluated for pesticides, nutrients, siltation, and organic enrichment/low dissolved oxygen. Monitoring is needed to provide the data necessary to address these 303(d) issues as well as develop a calibrated computer model for wasteload allocations. TMDL development is also needed for the pathogens within the segment near Nettleton. Additionally, 11-25% of the samples examined from a site on Town Creek at the Town of Nettleton had higher than usual levels of TKN, nitrate-nitrite, and phosphorus during the sampling period 1992-97.

Upstream of Nettleton, Chiwapa Creek enters Town Creek. Two segments of Chiwapa Creek near Shannon are listed on the 303(d) List as being monitored for biological impairment. In addition, an unnamed tributary of Chiwapa Creek downstream of the Shannon POTW is also listed as being monitored for biological impairment. The entire Chiwapa Creek watershed is listed as evaluated for pesticides, nutrients, siltation, organic enrichment/low dissolved oxygen and pathogens. Monitoring is needed to address these 303(d) issues.

Sampling Approach

A comprehensive monitoring approach is needed to adequately address the above-described issues. This approach includes the following elements:

1. An intensive hydraulic and water quality data collection effort will be performed on Town Creek at Tupelo for model calibration purposes. This survey will be resource-intensive, involving multi-parameter, multi-station and frequent water quality sampling over a period of several days. The data

collection effort will include the wastewater effluent from the Tupelo POTW and any industrial discharges at sites along the receiving stream both upstream and downstream of the discharge. Hydraulic data collection may include a time-of-travel, dispersion and/or flow determination dye tracer study. Extensive physical and chemical data collection over a 24-48 hour period will involve the use of multi-parameter dataloggers and include manual water quality sampling for such parameters as dissolved oxygen, temperature, specific conductance, BOD5, ultimate BOD, solids and nutrients. Other data such as biological community metabolism (primary productivity and respiration), biological assessment (macroinvertebrate) data and bacteria will also be obtained. Following the field study, appropriate data will then be input into a computer model to reflect actual field conditions. This will allow development of a Waste Load Allocation (WLA) designed to protect water quality in the receiving stream.

2. Wasteload allocation investigation studies at the Nettleton and Shannon POTWs will include biological data collection to assess the instream benthic macroinvertebrate community, stream flow measurements, land use surveys, and the collection of a limited amount of physical/chemical data in the stream and in the effluent. Where possible, an attempt will be made to use multi-parameter dataloggers deployed in the stream recording at hourly intervals over a 24-48 hour period to determine the diurnal fluctuations of dissolved oxygen concentrations, temperature, pH, and specific conductance/salinity/total dissolved solids. Effluent and in-stream samples will be taken to evaluate conventional water quality parameters such as biochemical oxygen demand, nutrients, solids and turbidity. Low-flow bacteria sampling will also be performed during this study to be used in support of the development of the bacteria TMDL for the Town Creek near Nettleton segment.

3. To verify the water quality status and identify the specific source, if possible, for biological impairment in Chiwapa Creek, benthic macroinvertebrate sampling using a modified Rapid Biological Assessment (RBA) Protocol III approach, targeted physical/chemical sampling, and land use surveys will be performed. The sampling approach for confirming the 303(d) listing of this evaluated watershed is being addressed under Issue 1.

4. In order to address the Town Creek bacteria TMDL issue at Nettleton, the final element of this sampling approach will include an extensive land use survey and pollution source inventory.

Location of Monitoring Stations

The locations of the monitoring sites to support this issue are described as follows:

1. The survey at Tupelo will include effluent sampling at several sites in Town Creek upstream of Tupelo to downstream of the impacts created by the combined discharges. This will probably include sites down to the Chiwapa Creek confluence near Nettleton.

2. The WLA investigation sites at Nettleton and Shannon will address both effluent sampling and sampling at 2-3 sites in the receiving stream. The sites in the receiving stream will include an upstream (control) site for background conditions, a mixing zone site in the area of expected maximum pollutant assimilation, and a site further downstream in the recovery zone.

3. The water quality sampling on Chiwapa Creek will likely be conducted at several sites within each of the two monitored segments near Shannon. For the watershed issue, sampling is already being performed near Pontotoc and at the base of the watershed near Nettleton as part of the Tombigbee River Basin Fixed Network.

Sampling Frequency and Responsible Agencies

The sampling frequency will be addressed according to the following plan:

1. After initial reconnaissance, the survey at Tupelo will be conducted once in the low stream flow, warm temperature months of August-October 1999. The sampling will be performed over a period of several days by the MDEQ Water Quality Assessment Branch with support from Field Services Division.

2. The WLA investigation studies at Nettleton and Shannon will be carried out by MDEQ Water Quality Assessment Branch and Biological Services Section between the months of May-November 1999 during low-flow, warm temperature conditions, when possible. The investigation may be performed during a single visit to the facility study area for complete sampling over a 1-2 day period, however, a reconnaissance visit prior to the actual sampling event will be necessary.

3. The sampling on the 303(d) monitored segments on Chiwapa Creek will be conducted once during the low-flow summer season and will likely be coordinated with the WLA investigation on the Shannon POTW. The Basin Fixed Network water quality sampling in the Chiwapa Creek watershed will be carried out once during the low-flow summer season in 1999 by MDEQ Field Services Division.

ISSUE 6. PROTECTION OF NOXUBEE WILDLIFE REFUGE

Issue Description

Concern exists regarding the effect on aquatic and terrestrial habitat caused by sewage bypass from the City of Starkville wastewater collection system which enters Hollis Creek and then flows to the Noxubee Wildlife Refuge.

Sampling Approach

The sampling approach developed for this issue incorporates the following elements:

1. Inventory of point sources of pollution
2. Water quality sampling of selected point sources
3. Inventory of other sources of pathogens (e.g., Confined Animal Feeding Operations)
4. Biological sampling (RBA)

Location of Monitoring Stations

Three biological sampling sites used by the U.S. Fish & Wildlife Service (USFWS) are located on Hollis Creek with one control sampling site on Jones Creek. MDEQ will conduct a RBA on nearby Browning Creek.

Sampling Frequency

Browning Creek sampling by USFWS is scheduled for 2000 and MDEQ Field Services Division has scheduled a RBA on Browning Creek in 1999. In addition, physical/chemical and bacteriological monitoring will be performed monthly. Inventories of point and other sources of pollution will be performed as a single event. *The physical/chemical and bacteriological monitoring will be performed by the USGS under contract with the USFWS.*

Responsible Agencies

MDEQ Surface Water Division will conduct point source inventories, point source sampling, and other bacteriological sources inventories. MDEQ Field Services Division will perform biological sampling. USGS under contract from USFWS (Lloyd Inman - contact) has a sampling contract which ends in December 1999 for 3 biological sampling sites on Hollis Creek and one control sampling site on Jones Creek.

Special Considerations

A significant amount of coordination is needed between MDEQ Water Quality Assessment Branch, MDEQ Field Services Division, and USFWS.

ISSUE 7. ASSESSMENT OF LUXAPALLILA CREEK

Issue Description

This stream provides habitat for walleye as well as some rare/threatened/endangered species. The area near the mouth of the stream is used for recreational purposes, so additional monitoring is needed to ensure public health and safety. There is also a U.S. Army Corps of Engineers weir in place, and the effects of this control structure on the water quality and biotic communities needs to be studied.

Sampling Approach

Fish population studies have been performed by the Department of Wildlife, Fisheries and Parks (DWFP). Fish sampling for tissue analysis will occur in this stream near Steens, MS. A RBA will be undertaken at a yet to be determined site on Yellow Creek. Water samples will be collected and analyzed for physical/chemical and bacteriological parameters, as well as for the metal aluminum.

Location of Monitoring Stations

The monitoring sites chosen to address these issues are along Luxapalila Creek near Steens, Water Works Road (in Columbus), and near the mouth of Yellow Creek.

Sampling Frequency

Physical, chemical, and bacteriological samples will be collected twice monthly. Additional water samples for aluminum will be collected on a quarterly basis. Fish tissue sampling, fish population studies, and biological assessments will occur once per year.

Responsible Agencies

MDEQ Water Quality Assessment Branch (WQAB) will conduct inventories of potential contaminant sources and MDEQ Field Services Division will perform fish tissue analyses. DWFP will review historic fish population studies. The Tennessee Valley Authority (TVA) will assist the MDEQ WQAB with an aerial photo analysis.

ISSUE 8. WASTELOAD ALLOCATION STUDIES

Issue Description

Mathematical computer models are used to develop wasteload allocations (WLAs) for wastewater discharges by predicting water quality impacts of pollutants from these sources on the State's freshwater and estuarine waterbodies. The MDEQ water quality-based effluent limitation (WQBEL) process sets forth the conditions for which these mathematical models are used. A cost-effective method for documenting the actual in-stream effect of an existing or potential point source discharge is the comparison of available biological and physical/chemical monitoring data upstream of the existing discharge or prior to effluent release with data collected downstream or after initiation of the discharge. Such studies provide valuable in-stream water quality information needed for WLA decision-making purposes.

The combined use of modeled WLA determinations and in-stream monitoring data ensures that in-stream water quality standards are protected, as well as the biological community. This approach also lessens the incidence of unfair penalties to NPDES permittees that could occur based on incorrect modeling assumptions.

Sampling Approach

NPDES facilities are targeted for WLA studies based on preliminary investigations that incorporate such factors as the potential issuance of stringent effluent limits, permit reissuances with significant increases in discharger flow, new discharges to sensitive waters, and facilities consistently found to be noncompliant with their established permit limits. The actual WLA studies involve biological data collection to assess the in-stream benthic macroinvertebrate community, stream flow measurements, land use surveys, and the limited collection of physical/chemical monitoring data in the stream and effluent. Multi-parameter dataloggers are

also used in-stream to monitor dissolved oxygen, temperature, pH, and specific conductance/salinity/total dissolved solids. This is usually done at hourly intervals over a 24-48 hour period to determine diurnal fluctuations in these parameters. Chemical sampling of the effluent and at in-stream locations generally involves conventional water quality parameters such as biochemical oxygen demand, nutrients, solids, and turbidity.

Location of Study Sites

The locations of the monitoring sites for WLA studies in the Tombigbee River Basin are described as follows:

	Location	Waterbody	Purpose
1.	Aberdeen POTW and Condea Vista (Aberdeen)	James Creek	Support TMDL development
	This event was canceled because both discharges will be relocated from this waterbody.		
2.	Brooksville POTW	Joes Creek	Support TMDL development
3.	Eka Nobel (Columbus)	Unnamed trib. to Tenn-Tom WW	Support TMDL development
	This site was canceled because the discharge has been moved from the waterbody.		
4.	Artesia POTW	Unnamed trib. to Catalpa Creek	Support TMDL development
	This site has been postponed until spring because road construction has dammed the stream.		
5.	Marietta POTW	Big Brown Creek	Winter secondary limits predicted; before/after study for new facility with winter discharge only
6.	Universal Bottling (Columbus)	Unnamed trib. to Tenn-Tom WW	verification of permit limits; wetland discharge
	This site has been canceled because the wetland receiving the effluent has no discharge.		
7.	Golden Triangle Ind. Park (Columbus)		Public concern with Weyerhauser discharge
	This site has been canceled because a reconnaissance visit showed no upstream flow and the treatment plant has plans to upgrade.		

8.	Tupelo POTW; other discharges in Tupelo	Town Creek	Basin Team point source concern
9.	Nettleton POTWs	Town Creek	Support Tupelo Town Creek WLA study and TMDL development
	This site has been canceled because the POTW does not discharge during low flow.		
10.	Shannon POTW	Unnamed trib. of Chiwapa Creek	Support TMDL development
11.	Columbus POTW	McCreary Creek thence Luxapallila Creek	Basin Team point source concern and support Luxapalila issue

Each study will generally involve both effluent sampling and sampling at two-to-three sites in the receiving stream. The receiving stream sites will consist of an upstream (control) site for background conditions, a mixing zone site in the area of expected maximum pollutant impact, and at a site further downstream in the recovery zone.

Sampling Frequency

These studies are normally carried out between May and November during low-flow, warm temperature conditions. The investigation may involve either a single visit to the study area for all sampling over a one-to-three day period or could include a separate reconnaissance visit prior to the actual sampling event. *If the initial investigation indicates that more data are needed a spring sampling event will be scheduled.*

Responsible Agencies

MDEQ Water Quality Assessment Branch and Field Services Division are responsible for coordinating data collection for wasteload allocation studies.

ISSUE 9. DETERMINING THE WATER QUALITY CONDITION OF THE OLD RIVER SECTION OF THE TOMBIGBEE RIVER

Issue Description

The Tombigbee and Buttahatchie Rivers are among the most biologically diverse systems in the southeast United States and provide the habitat for a number of rare, threatened, and endangered species. Construction of the Tennessee-Tombigbee Waterway altered the Tombigbee River hydrologically, and because of this, the current water quality of the altered river needs to be documented and compared to historic water quality analyses and species inventories that were performed prior to construction of the waterway.

Sampling Approach

The sampling approach to be used for this issue will involve an initial effort to assimilate existing data on threatened and endangered species from both current studies and studies performed prior to construction of the Tennessee-Tombigbee Waterway. In addition, RBAs will be conducted on some of the more natural sections of the river.

This issue has been dropped from this phase of the Basin Cycle due to the limited time and resources that MDEQ and the partner agencies have at this time. This issue was introduced solely by MDEQ personnel and classified as a low priority by the stakeholders and the basin team.

Location of Monitoring Stations

Three monitoring stations will be used for this study at sites yet to be determined.

Sampling Frequency

Sampling will occur annually.

Responsible Agencies

MDEQ Field Services Division will be responsible for sampling and analysis for this issue.

ISSUE 10. DETERMINING WATER QUALITY CONDITION OF THE TENNESSEE-TOMBIGBEE WATERWAY NEAR ABERDEEN

Issue Description

Although computer modeling indicates that the Tennessee-Tombigbee Waterway near Aberdeen can assimilate the permitted wastewater discharge from the City of Aberdeen=s lagoon wastewater treatment facility, further data collection is needed to verify that no impact exists.

Sampling Approach

The sampling approach to assess this issue includes diel dissolved oxygen (DO) studies and DO profiling. In addition, fish tissue studies, nutrient analysis, and chlorophyl-a analysis will be performed.

This issue has been postponed until after the Aberdeen POTW has relocated their outfall.

Location of Monitoring Stations

Monitoring stations upstream and downstream of Aberdeen=s wastewater outfall at sites yet to be determined will be used for the dissolved oxygen studies and nutrient/chlorophyl-a analyses. Fish tissue

collection will be conducted below the Aberdeen Lock and Dam facility.

Sampling Frequency

A single intensive study during low flow, warm weather conditions (July-September) will be performed for this issue. Nutrients and chlorophyl-a analyses will occur over a 4-6 hour period.

Responsible Agencies

MDEQ Water Quality Assessment Branch and Field Services Division will coordinate the monitoring effort for this issue.

ADDITIONAL PUBLIC-GENERATED ISSUES

As discussed previously in this report, the Basin Planning Team (whose members consist of technical personnel familiar with water resource issues related to the Tombigbee River Basin) prepared a comprehensive list of issues related to water quality concerns within the basin. Subsequently, a public meeting was held in Columbus, Mississippi on November 9, 1998 for the dual purposes of informing the public about the Basinwide Approach to Water Quality Management and seeking input from the public about its concerns related to the Tombigbee River Basin. During the meeting, a survey was distributed to all attendees who were asked to rate the importance of an initial list of issue categories and to list any additional issues of concern (Appendix A). The results of this survey and the additional public-generated issues were compiled and reviewed by the Basin Planning Team (Appendix B) and from this information, six categories were established into which each issue was assigned. These public-generated issues not previously addressed are discussed below.

Issue Category: Aquatic Life and Habitat Protection

No additional issues

Issue Category: Water Quality Impacts from Point Sources

Issue #1: Permit violations

Response: In an effort to better accomplish its mission, MDEQ recently established two new divisions within its Office of Pollution Control. One of the newly-created divisions is the Environmental Compliance and Enforcement Division. It is anticipated that the creation of this division will allow compliance and enforcement personnel to more efficiently and effectively address the issue of permit violations.

Issue #2: Potential impacts from Weyerhauser Corporation

Response: The MDEQ Basin Team Coordinator for this basin will contact the stakeholder who raised this issue to gather more specific details. Weyerhauser will then be contacted by the Basin Team Coordinator and asked to meet with the stakeholder.

Issue #3: Environmental effects of concentrated animal feeding operations (e.g., hog farms, dairy farms, etc.)

Response: Confined animal operations, such as hog farms, receive operating permits from MDEQ. These permits require the installation and operation of Ano discharge@ wastewater treatment systems. If properly operated, such systems should have no adverse impacts on the surface waters of the basin. Odor complaints from CAFOs may be addressed to MDEQ=s Air Division.

Issue #4: Water quality of Tibbee Creek at Milton Bottom Road

Response: In an effort to adequately address this issue, the MDEQ Basin Team Coordinator for this basin will contact the stakeholder who submitted this issue in an effort to gather more information.

Issue #5: Spills from barges and waste dumping from recreational boats

Response: The U.S. Coast Guard and U.S. Army Corps of Engineers will be contacted to provide guidance and assistance on this issue.

Issue Category: Protection of Ground/Drinking Water Sources

Issue #1: Use of abandoned wells for sewage disposal

Response: Two programs are currently in place within MDEQ that address the protection of drinking water sources in the State. The new Source Water Assessment Program focuses on determining the relative susceptibility of public water supply wells and surface water intakes to nearby potential contaminant sources. The Wellhead Protection Program focuses on developing management plans and strategies for identified potential contaminant sources in order to reduce the threat of contamination that they present. In order to address this issue, specific locations of abandoned wells used for improper sewage disposal need to be provided to MDEQ.

Issue #2: Litter problems around Tibbee Creek and Columbus

Response: The AKeep Mississippi Beautiful@ organization will be contacted to provide assistance with this issue.

Issue #3: Aquifer levels

Response: A major element of the focus of the MDEQ Office of Land & Water Resources and the U.S. Geological Survey is the study and projection of water use and ground water levels. Through coordination with these agencies, the City of Tupelo was able to divert surface water from the Tennessee-Tombigbee Waterway for its industrial uses. This additional surface water source provided the relief for the City=s source aquifer which has demonstrated a tremendous rebound in its water level.

Issue Category: Urban Nonpoint Source Impacts

Issue #1: Characterizing and quantifying urban runoff from Columbus and its effect on the recreational area at the mouth of Luxapalila Creek

Response: A review of this issue by the Urban Nonpoint Impacts Data Collection Subcommittee concluded that sufficient national data exists which establishes that impacts to water quality exist due to sediment pulses during construction, nutrient enrichment, bacterial contamination, greater organic loads, higher trace metals and hydrocarbon loads, increased stream temperatures, and debris accumulation. Additionally, it is clear that different source areas such as residential, industrial, commercial, etc. contribute different pollutants at different concentrations. However, great difficulty exists in quantifying urban runoff locally due to the large data gaps that exist. Only the City of Jackson has performed some limited monitoring and the USGS is currently conducting a limited sediment study on a suburban stream in Rankin County (Pelahatchie Bay). Significant additional information is needed to quantify urban nonpoint source runoff. At this time, resource constraints do not allow this issue to be more fully addressed by the State.

Issue Category: Agricultural Nonpoint Source Impacts

Numerous nonpoint source issues, including agricultural nonpoint source impacts, have been incorporated throughout this Data Collection Plan. These have included both Basin Team-generated issues, as wells as public-generated issues.

Issue Category: Hydrologic Modifications

Issue #1: Characterizing and quantifying stream bank erosion and sedimentation basinwide and within the Tennessee-Tombigbee Waterway

Response: Although historic physical/chemical and biological data exist for this issue, a multi-agency approach is necessary to develop the additional data necessary to accurately evaluate this issue. Such an approach should include increased water quality monitoring, fish population studies, and aquatic insect studies. In addition, field assessments of bank failure rates and automated sampling of sedimentation rates would need to be performed. Budgetary constraints and existing program workloads will need to be assessed prior to further consideration of this issue.

GENERAL CONSIDERATIONS AFFECTING THE TOMBIGBEE RIVER BASIN DATA COLLECTION PLAN

General considerations exist which are common to all of the described issues addressed by the Tombigbee River Basin Data Collection Plan. These considerations typically are associated with the large volume of data to be collected, assimilated, analyzed and reported.

Coordination Among the Contributing Programs

The assistance provided by contributing programs, such as MDEQ Field Services Division, MDEQ Water Quality Assessment Branch, U.S. Geological Survey, U.S. Army Corps of Engineers, MS Department of Wildlife, Fisheries, and Parks, and others is essential for the success of the Basinwide Approach to Water Quality Management. In order not to infringe upon the regularly-scheduled duties of the contributing programs, recognition of those established duties as well as periodic increases in the workloads of those programs is important. Because of this, coordination among the contributing programs prior to and during

data collection and sample analysis is important in order to prevent overtaxing the contributing programs.

Assimilation and Management of Collected Analytical Data

The assimilation and management of the collected biological and physical/chemical water quality data into functional databases and ultimately a geographic information system (GIS) is essential in order for the information to benefit potential users. To help in this area, the Surface Water Division of MDEQ is in the planning stage of development of a comprehensive Surface Water Information Management System (SWIMS) which will provide the framework for the effective use of the generated data.

APPENDIX A

TOMBIGBEE RIVER BASIN
STAKEHOLDERS ISSUES SURVEY
NOVEMBER 9, 1998

The following Astarter@ issues have been identified by the Tombigbee River Basin Team for consideration by the Stakeholders Group. The Team would like your input concerning the appropriateness of these issues and would also like to know of any additional issues the Stakeholders Group thinks important. The issues below are not in a priority order.

1. Aquatic Life Use Impairment
2. WQ Impacts from Existing WWTPs
3. WQ Impacts from New Point Sources
4. Protection of Drinking Water Sources
5. Impacts from Animal Operations

6. Non-point Source Impacts (Silviculture, Urban, Unsewered Communities, Agriculture)
7. Impacts from Air Deposition
8. Evaluate Wetlands Protection Needs
9. Monitor AWaters of Concern@
10. Develop maximum pollutant loads (TMDLs)

Of these issues, list the 3 - 5 that are of the greatest concern to you (place *item numbers* of issues in the boxes provided). “ “ “ “ “

Of these issues, list the 3-5 that are of least concern to you.

“ “ “ “ “

What issue/s would you like added to the list above? _____

_____

Now that you=ve heard about the Basin Approach, the Basin Stakeholder Group, and issues identification, what suggestions do you have for the Basin Team?

_____

_____

_____

_____

Please print your name:

APPENDIX B

TOMBIGBEE RIVER BASIN
STAKEHOLDERS ISSUES SURVEY RESULTS
NOVEMBER 9, 1998

During the November 9, 1998 Tombigbee River Basin Stakeholders Meeting, attendees were asked to complete a questionnaire designed to prioritize the environmental issues of greatest and least concern to basin stakeholders. The following list is a compilation of the rankings contained in the individual questionnaires.

Level of Concern	Greatest	Least

1. Aquatic Life Use Impairment	32		12	
2. Water Quality Impacts from Existing Waste Water Treatment Plants	23		13	
3. Water Quality Impacts from New Point Sources		17		14
4. Protection of Drinking Water Sources		44		4
5. Impacts from Animal Operations		29		13
6. Nonpoint Source Impacts		31		7
7. Impacts from Air Deposition	3		33	
8. Evaluate Wetlands Protection Needs	10		24	
9. Monitor AWaters of Concern@		34		6
10. Develop TMDLs		22		13