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Methodology for Establishing Surface Water Quality Priorities for Texas River Basins

The Texas Natural Resource Conservation Commission (TNRCC) identifies water bodies in the State of Texas that may require a total maximum daily load (TMDL) allocation to address the cause and source of a water quality impairment. The methodology to identify these impaired and threatened water bodies is described in this document. This methodology meets the requirements of the Clean Water Act under §303(d)(1)(A) and 40 Code of Federal Regulations (CFR) §130.7, as well as the EPA Region 6 §303(d) Listing Regional Guidance (draft, 2/17/98).

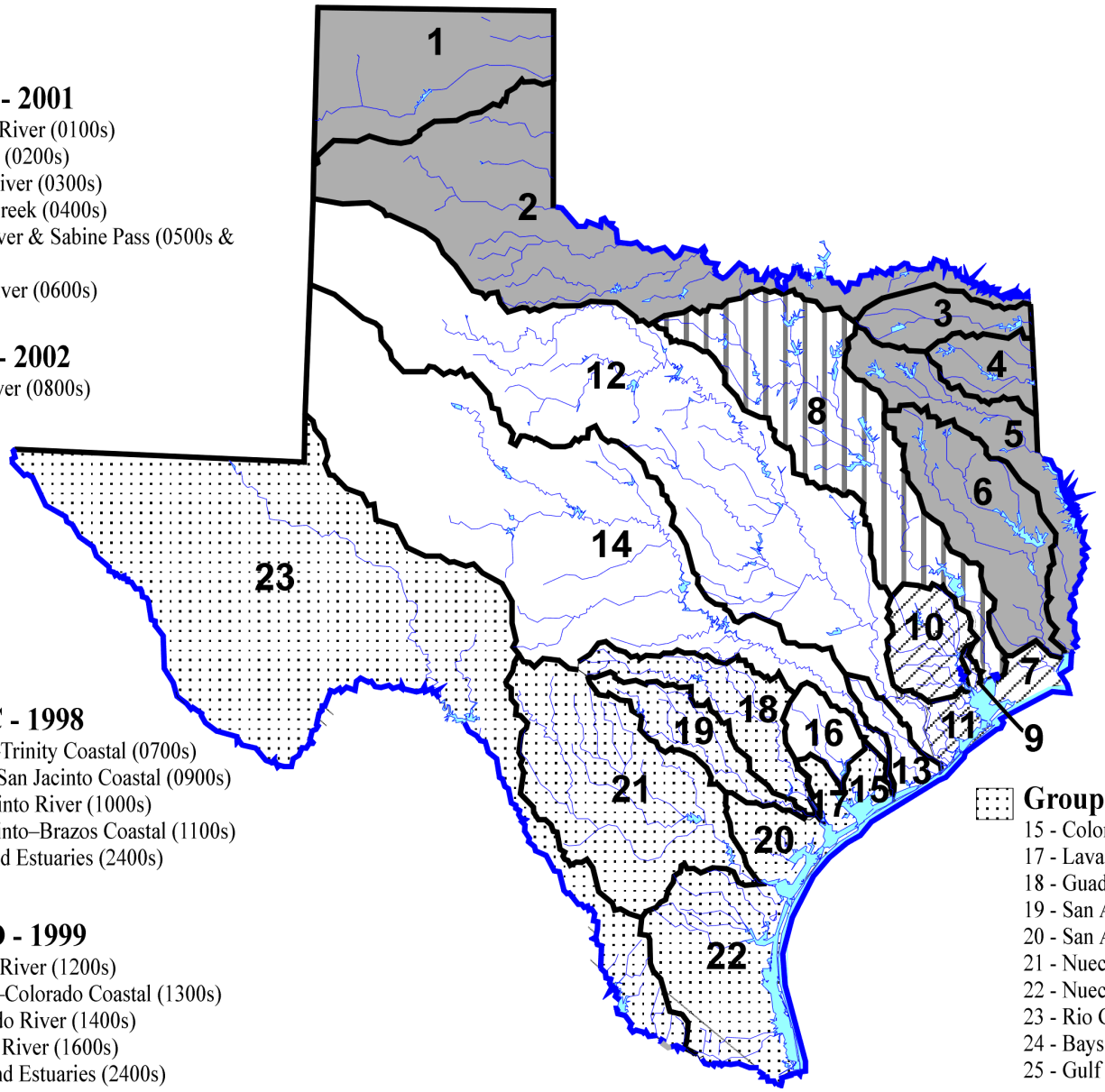
Water bodies identified as impaired or threatened are compiled into what is known as the 303(d) List, named after the relevant section of the Clean Water Act (CWA). The methodology used to identify impaired and threatened water bodies was established during the preparation of the Texas 1998 CWA §303(d) List (6/21/98). Refinements to the methodology are made annually if necessary as methods, tools, and federal guidance for assessing water quality improve or change. The criteria and guidance for listing developed by the TNRCC and accepted by the EPA provide consistency and predictability to the listing process. Currently, the 303(d) list is developed over an eight month period and a final list is submitted to the U.S. Environmental Protection Agency (EPA) Region 6 in April. The major changes in methodology for the 1999 303(d) List compared to the 1998 303(d) List include the focus on different priority river basins and the extended time for public comment.

	1999 CWA 303(d) List	**1998 CWA 303(d) List**
Priority Basins	River Basins: Brazos, Colorado, Lavaca, Guadalupe, San Antonio, Nueces, Rio Grande Coastal Basins: Brazos-Colorado, Colorado-Lavaca, Lavaca-Guadalupe, San Antonio-Nueces, Nueces-Rio Grande, and estuaries associated with these basins	River Basins: Trinity, San Jacinto Coastal Basins: Neches–Trinity, Trinity–San Jacinto, San Jacinto–Brazos, and estuaries associated with these basins
Public Comment Period	November 1998 to March 1999 (5 months)	January 1998 to March 1998 (3 months)

The water quality inventory [required under the CWA §305(b)] forms the basis for the 303(d) listing decisions. The assessment guidance for the 305(b) inventory is documented separately in Section 4, "Guidance for Screening and Assessing Texas Surface and Drinking Water Quality Data." Some minor changes were made to the 305(b) assessment guidance for the purposes of the 1999 assessment:

- Criteria to evaluate intensively collected dissolved oxygen data for assessment of aquatic life uses were added.

Figure 1. TNRCC Watershed Management Planning Areas



Group A - 2001
1 - Canadian River (0100s)
2 - Red River (0200s)
3 - Sulphur River (0300s)
4 - Cypress Creek (0400s)
5 - Sabine River & Sabine Pass (0500s & 2400s)
6 - Neches River (0600s)

Group B - 2002
8 - Trinity River (0800s)

Group C - 1998
7 - Neches–Trinity Coastal (0700s)
9 - Trinity–San Jacinto Coastal (0900s)
10 - San Jacinto River (1000s)
11 - San Jacinto–Brazos Coastal (1100s)
24 - Bays and Estuaries (2400s)

Group D - 1999
12 - Brazos River (1200s)
13 - Brazos–Colorado Coastal (1300s)
14 - Colorado River (1400s)
16 - Lavaca River (1600s)
24 - Bays and Estuaries (2400s)

Group E - 2000
15 - Colorado–Lavaca Coastal (1500s)
17 - Lavaca–Guadalupe Coastal (1700s)
18 - Guadalupe River (1800s)
19 - San Antonio River (1900s)
20 - San Antonio–Nueces Coastal (2000s)
21 - Nueces River (2100s)
22 - Nueces–Rio Grande Coastal (2200s)
23 - Rio Grande (2300s)
24 - Bays and Estuaries (2400s)
25 - Gulf of Mexico (2501)

- Criteria to evaluate intensively collected fecal coliform/*E. Coli* data for assessment of contact and noncontact recreation uses were added.
- Differences between point and nonpoint sources of pollution were clarified.
- Criteria for assessing uses for unclassified water bodies were identified.
- Methods for determination of tidal influences in water bodies were provided.
- Screening levels for evaluation of nutrients, chlorophyll *a*, and toxicants in sediment were updated.
- Data on public water supply systems that experience increased costs for demineralization was used as a means of assessing the public water supply concerns.
- Information that clarifies the assessment of the fish consumption use was added.

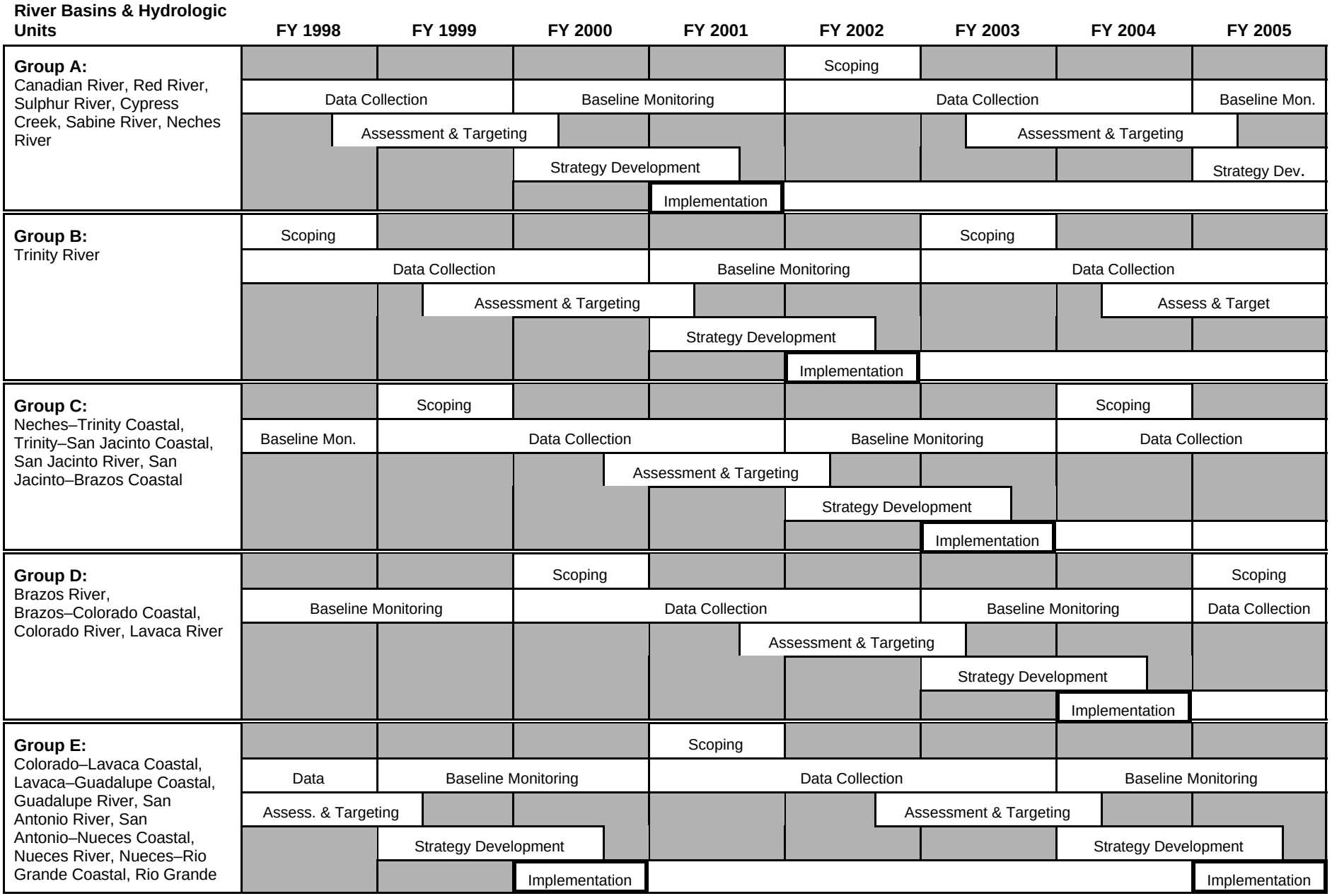
Coordination with the Watershed Management Cycle

The TNRCC updates the state's 303(d) list each year. The basis for the 303(d) listing is the TNRCC's annual assessment of water quality. The assessment is conducted within one of the five basin groups established by the TNRCC for wastewater discharge permitting and watershed management purposes, following a rotating five-year cycle (see Figure 1, TNRCC Watershed Management Planning Areas). The exception to this basin group focus is for those uses and criteria directly related to human health, which are assessed statewide every year. Annual updates to the 303(d) list follow these assessments and coincide with the strategy development phase of the watershed management cycle for each respective basin group (see Figure 2, The Statewide Watershed Management Schedule). Thus, the TNRCC and basin stakeholders are allowed at least four years to address issues identified by a 303(d) listing before the priorities are changed or adjusted in the next listing cycle for a basin group. The TNRCC's intent is to allow sufficient time for addressing the complexity of TMDL analyses and for tracking the status and trends of surface water.

The TNRCC permit-by-basin groups were defined programmatically to equalize permit counts, with each of the five groups to comprising roughly one-fifth of the state's permits. As a result, there are some hydrologically-defined river basins that are divided into two different (but adjacent) permit basin groups. The 303(d) data review and listing process uses the hydrologically-defined basins so that data analyses and TMDL development can be conducted on hydrologically-linked watersheds. This discrepancy between the programmatically- and hydrologically-defined basin groups results in some minor inconsistencies between permit-by-basin groups and 303(d)/TMDL basin planning groups, but does not adversely affect or limit analyses or permitting programs.

Both the 1998 and 1999 303(d) lists have focused on two basin planning groups, rather than one as the management cycle would suggest, to accommodate the transition from the previous approach of revising the entire state list every two years. The priority geographic areas for the 1999 list are Basin Groups D and E. The assessment of these two basin groups bring all basins into synchronization with the watershed management cycle. Beginning with the year 2000 list, which will focus on Basin Group A, only one basin group will be assessed each year.

Figure 2. The Statewide Watershed Management Schedule



March 1998

The Listing Process

Each annual update to the 303(d) list follows the same basic sequence of steps which are:

- selecting acceptable data and information used to develop the state's 303(d) list;
- assessing these data and information to determine which water bodies are threatened or impaired (described in greater detail in "Guidance for Screening and Assessing Texas Surface and Drinking Water Quality Data");
- preparing draft lists;
- revising and finalizing the list based on public input; and
- ranking the water bodies for TMDL development.

Data and Information Used

As required by CWA §303(d) and CFR §130.7(B)(5), the TNRCC considers "all existing and readily available water quality-related data and information" during the development of the 303(d) list. The TNRCC solicits data and information primarily through the established public outreach mechanisms of the Texas Clean Rivers Program (CRP), and through the posting of various draft 303(d) lists on the Internet. At a minimum, all data and information received are considered when planning additional monitoring efforts to identify impaired and threatened water bodies. However, the TNRCC and EPA recognize that there are some boundaries that must be established in the data and information to be used for listing impaired and threatened water bodies. These boundaries are:

- Time limitations. Data collected prior to the most recent five years of data do not adequately reflect current conditions and as a result are not considered.
- Geographic focus. In an effort to focus monitoring, assessment, and public outreach resources more intensively, the TNRCC limits (with a few exceptions) the assessment to priority geographic areas of the state (in the case of the 1999 list, Basin Groups D and E). By targeting assessment activities, the TNRCC and the CRP partners will, over time, be able to perform a better evaluation of waters in the state. This kind of intensive assessment requires more than the obvious resources related to data analysis; it also requires resources related to the solicitation of and response to public input. The trade-off between a less intensive statewide assessment every two years and a more intensive assessment on one part of the state every year was evaluated, and the geographic focus was adopted as part of the statewide watershed management cycle.
- Data quality. In order to increase the data available to the TNRCC for water quality management, CRP staff work closely with local and regional agencies and other interest groups to develop and implement data collection efforts under an established quality assurance/quality control program. Although not initiated to support the 303(d) listing process, the CRP has increased the monitoring resources in Texas and the amount of available water quality data for identifying impaired and threatened water bodies. During the development of the CRP, data quality issues were raised that are relevant to the 303(d) listing process. Chief among these issues was the potential unreliability of data collected without strong quality assurance/quality control measures. Assessment of data collected using consistent and scientifically rigorous water quality sampling methods

ensures a predictable process for all stakeholders. Furthermore, given the regulatory implications associated with the use of water quality data, greater emphasis is placed on requiring the highest quality data feasible. For this reason, the TNRCC requires that data used for the development of the first draft list be collected under a TNRCC-approved quality assurance project plan. Data submitted to the TNRCC for consideration in the listing process and not collected under such a plan must be accompanied by documentation of quality assurance methods used in collecting the data that can be evaluated by TNRCC water quality staff.

To assist stakeholders in providing data and information to the TNRCC, a two-page "Guidance for Submitting Data and Information for the 303(d) List" has been developed (see inset box).

Readily Available Data

Data resident in the TNRCC integrated database (surface water quality monitoring module) are used to compile the first draft list. This database consists of water quality data collected by the TNRCC, the U.S. Geological Survey, the International Boundary Water Commission, and various planning agencies under contract through the Texas Clean Rivers Program. Data must also be available in a form that does not require extensive data format manipulation to be useable for decision making. To provide additional consistency and scientific dependability to the 303(d) listing process, emphasis is placed on the need for data to meet minimum quality assurance/quality control procedures established by the TNRCC. Descriptions of the types of data and information used for the listing procedure, and the use made of that data and information, are provided in Table 1, "Water Quality Data and Information."

Other important sources of data and information used to develop the first draft list are:

- Texas Department of Health fish consumption advisories, aquatic life and shellfish waters closures, and fecal coliform data for oyster waters.
- The TNRCC's Water Utilities Division Chemical Monitoring System database on finished drinking water quality for pollutants related to surface water quality. Drinking water system samples are collected under quality assurance project plans in compliance with regulations passed in support of the federal Safe Drinking Water Act.

Other Data and Information

To refine both the first and second draft 303(d) lists, the TNRCC relies on formal public comment periods (see "Public Participation," pages 2-14 and 2-15) to solicit additional data and information to support the listing process. Other data and information can be used to support results of the initial screening analysis to verify partial or nonsupport of a designated use and to determine the priority ranking of water bodies. Data and information identifying water quality concerns that are not part of the TNRCC integrated database are also used to direct future water quality monitoring activities. In all cases, the value and accuracy of these data are evaluated by TNRCC water quality staff on a case-by-case basis. As the state's watershed management cycle matures and becomes institutionalized, the listing process will become more comprehensive as other state, regional, or local entities learn about the schedule and submit additional quality-assured data in a timely manner.

Guidance for Submitting Data and Information for the 303(d) List

The Texas Natural Resource Conservation Commission (TNRCC) water quality staff will evaluate all submissions to determine whether they are applicable and useful for the 303(d) listing process. To be considered "existing and readily available water quality-related data and information" that the TNRCC will use to develop the 1999 303(d) List, these submissions must:

1. Be received in a timely manner, arriving on or before the dates detailed in the 303(d) listing schedule. To influence the final list, submissions must be received by the TNRCC by March 1, 1999 (see address below).
2. Relate to water bodies in a specific geographic focus area. For the 1999 303(d) List, the focus area includes the following: the Brazos, Colorado, Lavaca, Guadalupe, San Antonio, Nueces, Rio Grande, and their associated coastal basins (Basin Groups D and E).
3. Reflect water quality conditions during the period of assessment, that is, the most recent five years. Data from the period June 1, 1993 to May 31, 1998 are used for the generation of the first draft of the 303(d) list.
    - data collected *before* June 1, 1993 precede the five-year assessment period and will not be considered in the assessment.
    - data collected *after* May 1998 and submitted to the TNRCC in a timely manner will be considered, since these data reflect recent conditions; however, data collected during the public comment period are unlikely to affect current listing decisions since the time required for sample collection and processing is often longer than the public comment period.
4. Name or identify specific water bodies of concern (and preferably specific geographic areas within water bodies).
5. State the specific impairment or pollutant of concern.
6. Explicitly describe evidence of impairment or pollution, including a description of how indirect evidence or data were interpreted or analyzed to support the commentor's conclusion of impairment.
7. For numeric data, be accompanied by documentation of quality assurance methods used in collecting the data that can be evaluated by TNRCC water quality staff.
8. For non-numeric information,
    - be scientifically sound and defensible;
    - be verifiable by TNRCC water quality staff (if not verifiable the information may still be used in designing future water quality monitoring programs); and
    - describe events or conditions that are outside the natural range of conditions.

Submissions of the following types will *not* affect 303(d) listing decisions:

1. Generic comments or information concerning large regions or broad water quality issues; specific water bodies and pollutants must be identified.
2. Comments concerning the 303(d) listing *process*, or any other water quality management program or process. These comments on process or programs may be used at other times, when the intent is to focus on process or program structure. For example, (a) comments on screening methodology may be incorporated into a *subsequent* listing cycle at the stage when the methodology is being developed, but will not be considered in the current listing cycle, or (b) comments related to the validity of water quality standards may be considered during the triennial standards review process, but will not affect listing decisions. The listing process identifies violations of *existing* water quality standards, and is not the appropriate mechanism for changes to the standards.

All data and information received, whether or not used in 303(d) listing, may affect activities or programs other than the 303(d) listing process (for example, monitoring plans, development of new processes or programs,

Guidance for Submitting Data and Information for the 303(d) List (continued)

Submissions shall be provided in written form and sent to:

Surface Water Quality Monitoring Team
Water Quality Division, MC-150
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087.

For overnight mail packages, send to:

Patrick Roques
Water Quality Division
Texas Natural Resource Conservation Commission
12100 Park 35 Circle, Bldg. F
Austin, TX 78753.

By fax:

Surface Water Quality Monitoring Team at 512/239-4420

By e-mail

wquality@tnrcc.state.tx.us.

Information must be submitted in writing, fax or by e-mail and cannot be accepted by phone.

Consideration of Additional Lists

The 303(d) listing process is based on, and begins with, the same guidance and data screening procedures developed for the 305(b) water quality inventory. The 305(b) inventory is the basis for the 303(d) listing process, so that the two documents or assessments are fundamentally consistent, with some minor differences that can be explained by the differing purposes and perspectives of the two documents.

The 305(b) inventory may mention water quality concerns that are worthy of note and technical investigation but do not constitute use impairments. The 303(d) list, on the other hand, identifies known and reasonably verifiable impairments or threats. Other differences arise due to the lack of adopted water quality standards for certain pollutants needed to gauge an impairment (for example, nutrients, sediments), data sets that are too small to support impairment determinations; or subjective information that can not reliably support impairment determinations. Consequently, the 305(b) inventory and 303(d) list are consistent but are not necessarily identical.

In addition to linking the 305(b) water quality inventory and the 303(d) listing process with the statewide watershed management schedule, the TNRCC has also adjusted its procedures for updating the CWA §319 assessment report. The §319 assessment is derived from the 305(b) inventory and the 303(d) list. In the yearly updates of the 305(b) inventory, the TNRCC identifies those water bodies where nonpoint source pollutants are judged to contribute to the impairment of designated uses. This information is incorporated in the final 303(d) list. The 319 assessment report is now updated on an annual basis, subsequent to preparation of the 303(d) list, and focuses on the same priority geographic areas of the state as the 303(d) list. The consistency between the 305(b) water quality inventory, the 319 assessment report, and the 303(d) list allow the state to focus on a common set of water quality priorities.

Table 1. Water Quality Data and Information Used by the TNRCC for the 1999 305(b) Assessment and 303(d) Listing

Type of Data/Information	Category	To Determine	For Water Bodies in Which Basins?
1. Water quality data (numeric values)	A. Instream water quality data collected under a TNRCC-approved Quality Assurance Project Plan (QAPP). Under the existing system, these data are routinely submitted to TNRCC by Clean Rivers Program basin planning agencies, USGS, or TNRCC's monitoring program, & then entered into TNRCC's database.	1) Partial or nonsupport of a designated use determined by computer scan. 2) Segment ranking (High, Medium, Low, Threatened) 3) Monitoring plans	Basin groups D & E
	B. Instream water quality data other than Category A (above). Value & accuracy confirmed by TNRCC.	1) Partial or nonsupport of a designated use or support results of computer scan (in A.1) 2) Segment ranking (High, Medium, Low) 3) Monitoring plans	Basin groups D & E
2. Information (may be based on numeric values but is summary or evaluative in nature)	C. Evaluative (modeling) analyses, water quality studies, anecdotal information. Value & accuracy confirmed by TNRCC.	1) Segment ranking (High, Medium, Low, Threatened) 2) Monitoring plans	Basin groups D & E
	D. Aquatic life closure or consumption advisory & closing of shellfish waters (both from Texas Department of Health).	1) Partial or nonsupport of a designated use 2) Segment ranking (High, Medium, Low) 3) Monitoring plans	All basins
	E. Information from TNRCC Water Utilities on levels of chemicals (exceedances of drinking water standards and detections below the standards) in treated water.	1) Nonsupport of a Public Water Supply Use 2) Segment ranking (High, Medium, Low, Threatened) 3) Monitoring plans	All basins
	F. Evaluative (modeling) analyses, water quality studies, anecdotal information. Value & accuracy cannot be determined by TNRCC.	Monitoring plans	Basin groups D & E

For purposes of the 303(d) list, the TNRCC assesses water quality of reservoirs by using numeric criteria for evaluating specific designated uses and identifying nutrient concerns. This approach determines impairment in a more thorough and defensible manner than the trophic state ranking procedure used in the *State of Texas Reservoir Water Quality Assessment* required under CWA §314.

The CWA §304(l) lists—which identify waters impaired by toxic substances, sources of those substances, and control measures—have become elements of the TNRCC 305(b) inventory and 303(d) listing and wastewater permitting procedures, and no longer have separate identities. The substances and screening levels that would be addressed by 304(l) lists are included in the 305(b) inventory. Any waters impaired by toxic substances are identified in the 305(b) inventory and the 303(d) list. In addition, the TNRCC wastewater permitting process now includes 1) steps for identifying which discharges may be sources of toxic substances, via chemical concentrations and biomonitoring tests, and 2) methods for establishing control measures when needed. The permitting procedures will support and become part of any TMDLs that address relevant toxic substances.

Consideration of Antidegradation Policy

The antidegradation policy in the Texas Surface Water Quality Standards (30 TAC §307.5) is considered in the development of the 303(d) list, development of TMDLs, and implementation of pollutant controls on listed water bodies. Tier 1 of the antidegradation policy contains provisions to protect existing uses for all water bodies, and Tier 2 contains additional provisions to protect high quality waters from degradation. The policy applies to regulatory actions that potentially allow an increase in pollutant loading to waters in the state, and such actions include the development and implementation of TMDLs. In the 303(d) list, water bodies listed as impaired are targeted for TMDLs so that appropriate water-quality-related uses can be restored and then maintained in accordance with Tier 1 of the antidegradation policy. Water bodies listed as threatened are targeted so that existing uses can be maintained (Tier 1) and so that applicable high quality waters are protected from degradation (Tier 2).

Preparation of the First Draft 303(d) and Concerns Lists

At the same time that the TNRCC compiles the first draft of the 303(d) list, the agency compiles a second list, called the concerns list. This list identifies water bodies where data indicate an exceedance of either narrative criteria in surface water or secondary drinking water standards in treated water, but available data and information do not provide sufficient evidence of an actual impairment of the designated use (defined as a violation of a water quality standard).

Evidence of an impairment would result in immediate placement of the water body on the 303(d) list. The concerns list is developed and made available to draw attention to those water bodies with some, but not sufficient, evidence of an impairment and to solicit additional information to support listing.

For example, if data indicate high levels of nutrients (a cause for concern), the water body would be placed on the concerns list. The water body would not be placed on the 303(d) list if the TNRCC has no evidence that the aquatic life use is impaired. Additional data or information documenting the impairment of a designated use (in the example, aquatic life) would have to be received before the

public comment period ends to support adding the water body to the 303(d) list. The concerns list accompanies both the first draft and second drafts of the 303(d) list, but not the final list.

The TNRCC identifies water bodies on the 303(d) list and the concerns list by a designated segment number and name. An unclassified water body is identified by the first classified water body downstream in the hydrologic network that receives flow from the unclassified water. The unclassified water body uses the designated segment number of the classified water body with an alphabetic extension (for example, 0806B, 1242A). Each letter extension is used only once under a single parent segment number. This practice allows the list to show more precisely where impairments have been identified in the tributary waters, but not in the parent segment. The TNRCC intends to delineate and identify subwatersheds of segments to enhance watershed management activities. Additional tributaries may be identified and listed in subsequent updates to the list as each basin group is addressed in sequence.

Preparing the 303(d) list and concerns list starts with the previous year's list and includes the following tasks, which can be grouped into five major steps:

1. Delisting any water body in the state if the original basis for listing is no longer valid or if a TMDL has been approved by the EPA;

2. Assessing all state water bodies for selected uses and criteria directly related to human health, by

    - assessing data and information on fish and shellfish advisories and oyster waters criteria, and
    - assessing treated drinking water data to determine impairments in the water body used as the drinking water source;

3. Assessing water bodies in the priority geographic area for all designated uses and numeric and narrative criteria;

4. Assessing water bodies in the priority geographic area to classify water bodies as threatened; and

5. Soliciting public comment.

Delisting of Water Bodies

Starting with the previous year's list, the first task in the annual update of the 303(d) list is to determine if any water bodies can be delisted for one or more of the following reasons:

- more recent data or information refute the original listing;
- water quality has improved to meet standards;
- water quality standards have changed so that the original assessment no longer represents a violation of the standard;

- assessment procedures (for example, screening criteria) have changed so that a reassessment does not show an exceedance of the criteria (as occurred for the 1998 list where water bodies previously listed for partial support of contact recreation use were delisted);
- a TMDL has been approved by the EPA; or
- other control measures are implemented and are stringent enough to qualify as a TMDL equivalent.

The reason for delisting specific water bodies is documented in a separate list entitled "Water Bodies Removed from the List."

Assessment of All State Water Bodies for Selected Designated Uses and Criteria

Each time the 303(d) list is updated, the TNRCC assesses water bodies in the entire state (Basin Groups A through E) for several risk factors associated with human health.

First, to determine if water bodies are safe for fishing and shellfish harvesting the TNRCC reviews fish consumption advisories, aquatic life closures, and shellfish waters closures based on the most recent Texas Department of Health (TDH) report, *Fish Advisories and Bans*. These assessments identify impaired water bodies and are compiled in the initial draft of the 303(d) list. Review of TDH data is consistent with the guidance and procedures used for compiling the 305(b) inventory (see "Guidance for Screening and Assessing Texas Surface and Finished Water Quality Data"). Data or information used for this assessment can be obtained by mail from Mike Ordner, Texas Department of Health, Seafood Safety Division, 1100 West 49th Street, Austin, Texas 78756; by phone at 512/719-0215; or fax 512/719-0220.

Second, the TNRCC assesses water bodies for impairments linked to their use as sources for drinking water. Data collected and assessed by the Water Utilities Division of the TNRCC are used to determine if surface drinking water sources are impaired or threatened based on samples from finished (treated) water supplies. Screening criteria for this analysis are based on:

- Primary drinking water standards. Only data on organic chemicals are used for two reasons: the data on inorganic chemicals in finished drinking water are not readily available for analysis in the current database [since the database was developed for reasons unrelated to the 303(d) list], and exceedances of inorganic chemicals tend to be associated with groundwater sources, rather than with surface waters.
- Secondary drinking water standards for treated water [chlorides, sulfates and total dissolved solids (TDS)].

A water body is listed as impaired if the maximum contaminant level (MCL) for organic pollutants is exceeded. A water body is listed as threatened if exceedances of 50 percent of the MCL for organic pollutants are documented. Exceedances of TDS, chloride, and sulfate criteria result in placement of water bodies on the concerns list. Water bodies that are used as a source for public water supply systems and have increased costs for demineralization are also placed on the concerns list.

Assessment of Water Bodies in the Priority Geographic Areas

The TNRCC Water Quality Division assesses water bodies in the priority geographic areas for attainment of all designated uses and numeric and narrative criteria. Data for conventional and toxic pollutants are assessed to determine if there are violations of numeric surface water quality standards. These assessments identify impaired water bodies that are then compiled in the initial 303(d) list. TNRCC staff also assess water quality described by narrative criteria for which associated numeric data exist. In particular, ambient water and sediment toxicity data are examined; these data help determine support of the narrative criterion that surface waters shall not be toxic to aquatic life. Important water quality data exist for which numeric water quality standards have not been developed; for example, for nutrients in water (associated with narrative criterion concerning aquatic plant growth) and toxicants in sediment and fish tissue. Assessment of available data results in a list of water bodies where elevated levels of these pollutants may be cause for concern; these water bodies are included in the concerns list.

The data screening is consistent with the guidance and procedures used for compiling the §305(b) Water Quality Inventory (see "Guidance for Screening Assessing Texas Surface and Finished Water Quality Data"). Data used to support the preparation of the 303(d) list can be obtained through a request to the TNRCC Surface Water Quality Monitoring Team (by mail at MC150, TNRCC, P.O. Box 13087, Austin, Texas 78711-3087; by phone at 512-239-2310, or by e-mail to *wquality@tnrcc.state.tx.us*).

Assessment of Threatened Water Bodies

As outlined in 40 CFR Section 130.2(j) and in EPA guidance, states are required to identify water-quality limited segments "where it is known that water quality . . . is *not expected to meet* applicable water quality standards." Such water bodies are considered threatened. The TNRCC defines threatened water bodies as those water bodies that are supporting their designated uses and have no exceedances of criteria, but where specific pollutants have been identified that may cause nonsupport of uses and/or criteria within the next four years.

There are three methods used for listing a water body on the 303(d) list as threatened:

- Data from treated drinking water for pollutants (organics only) whose only source is surface water are screened against 50 percent of the MCL for primary drinking water standards. Exceedance of 50 percent of the MCL was chosen based on workgroup discussions for revising the National Primary Drinking Water Regulations. Water bodies with exceedances of 50 percent of the MCLs are placed on the 303(d) list as threatened. This listing is based on the best professional judgment of staff from the Water Utilities Division that treated water at these levels of contamination is nearing an MCL violation. This method was supported when, during the 1998 listing process, one water body identified for an early draft as threatened was subsequently found to be in violation of the MCL based on one additional sample. The water body was then listed as impaired on the final 303(d) list.
- Data indicate that the human health criteria (for toxicants in water) for consumption of fish are exceeded, but available fish/shellfish tissue data have been evaluated by the Texas Department of Health, and through a risk assessment, fish/shellfish are determined

to be safe for consumption. In this context, the fish consumption use is still supported but is threatened based on water column data indicating the potential for bioaccumulation in fish tissue.

- The TNRCC has determined that other reliable, available data and information, such as statistically valid trend analyses indicating declining water quality, justify listing a water body as threatened. To date, however, no trend analyses have been carried out by the TNRCC nor have any been submitted by stakeholders.

The TNRCC and the Clean Rivers Program (CRP) continue to strengthen efforts to collect and identify additional sources of data and information that could be used to determine if a water body's uses are threatened.

Public Participation

The TNRCC actively solicits public comment on the 303(d) list through two main avenues. First, various drafts of the 303(d) list and the concerns list are posted on the TNRCC Internet site. The first draft is posted in early November. The lists are also available through a request to the TNRCC Surface Water Quality Monitoring Team (by mail at MC150, TNRCC, P.O. Box 13087, Austin, Texas 78711-3087; by phone at 512/239-2310, or by e-mail to *wquality@ tnrcc.state.tx.us*).

Second, one large statewide meeting or several smaller meetings in the priority basins are organized by the CRP, at which the first draft of the list is presented to representatives of the basins, numerous local, state, and federal agencies, and other organizations and interest groups. At these meetings, TNRCC staff describe the process and analyses used to develop the list and solicit public comments, data, or any other information relevant to the status of water bodies on the draft 303(d) list and the concerns list. The TNRCC also solicits comments from EPA Region 6 at this early stage of the list development.

Participants at these meetings are asked to provide comments and submissions in written form, via letter, facsimile transmission, or e-mail, to provide for an accurate record of the actual words and concerns of the person or group submitting the comments (see "Guidance for Submitting Data and Information"). Comments received during the six week comment period are considered in the development of the second draft list. Responses to comments received by the TNRCC are summarized and made available by posting to the *Texas Register* within six weeks after EPA approval of the final list.

Development of the Second Draft 303(d) and Concerns Lists

During the comment period on the first draft, TNRCC staff evaluate the data and information received and respond to requests for more information. TNRCC staff modify the list as appropriate, considering sound science, state policies and priorities, and legal requirements. This may result in:

- removal of a water body from the 303(d) list,
- addition to the 303(d) list of other water bodies not on the previous draft list or the concerns list, or

- movement of a water body from the concerns list to the second draft 303(d) list. Data and information received for water bodies on the concerns list are evaluated to determine if exceedances of screening levels for narrative criteria or secondary drinking water standards (in treated water) result in the impairment of a designated use, which justifies inclusion on the 303(d) list.

After incorporating these changes, a second draft list is compiled and then reviewed by an interagency panel. The panel is comprised of technical staff representing the TNRCC (both central and regional offices), the Texas Water Development Board, the Texas State Soil and Water Conservation Board, the Texas Parks and Wildlife Department, and the Texas Department of Health. Each impairment (stressor or pollutant) is assigned a priority ranking, which reflects the priority for TMDL development. The panel relies on the ranking criteria and logic developed by the TNRCC (see "Guidance for Assigning Priority for TMDL Development," Section 3) but also uses the best professional judgement of the members to consider additional aspects such as the degree of exceedance of the water quality standard or criteria, or the level of public concern (as judged, in part, by the interest of local groups in addressing the issue). The assignment of a priority ranking is carried out for all listed pollutants and water bodies in the priority basins, as well as for any new or altered listings in the rest of the state that are related to human health.

Water bodies are assigned an overall ranking, equal to the individual pollutant ranking if there is only one impairment or, for water bodies with more than one impairment, equal to the highest ranking pollutant. However, interstate or international water bodies may be ranked low because of the uncertainty associated with these projects (see "Targeting of Listed Water Bodies"). If there is an effort in progress to address a listed pollutant, then the overall ranking is "underway." Such efforts include TMDL projects, targeted monitoring projects to assess the extent and severity of the problem, and projects to assess the appropriateness of the water quality standard. If the effort underway does not address all listed pollutants, the overall priority will show both the highest priority of the pollutants not addressed and a "U" (for "underway").

Public Participation

The availability of the second draft list for review and comment is announced in the *Texas Register* in late January. Interested parties are given 30 days to respond with comments. This revised and ranked second draft 303(d) list is posted to the TNRCC's Internet site, along with the revised concerns list and various supporting documents (such as this methodology). The lists and documents are also available by mail upon request to the Surface Water Quality Monitoring Team (by mail at MC150, TNRCC, P.O. Box 13087, Austin, Texas 78711-3087; by phone at 512-239-2310; by e-mail at *wquality@ tnrcc.state.tx.us*). The TNRCC also works with EPA Region 6 staff in the review of this draft.

Responses to comments received by TNRCC are summarized and made available by publication in the *Texas Register* within six weeks after the approval of the final list by EPA.

Preparation of the Final 303(d) List

Using the same methods and criteria applied to the first draft, information received during the 30-day comment period is reviewed, and the second draft list is revised as needed to create the final 303(d) list. The final list and supporting materials and documents are submitted to EPA Region 6 on April 1. The final submission is also available for public review via Internet posting, and by mail upon request by telephone, mail, or e-mail. The supporting materials include:

- "Methodology for Establishing Surface Water Quality Priorities for Texas River Basins" (this document);
- "Guidance for Screening and Assessing Texas Surface and Finished Water Quality Data" (for the 305(b) water quality inventory);
- "Guidance for Assigning Priority for TMDL Development;"
- A list of water bodies removed from the previous year's list, along with reasons for delisting; and
- A list of other water bodies considered for 1999 listing but not on the final 303(d) list (includes any water bodies shown on the first or second drafts, but which are not on the final list).

A summary of TNRCC responses to comments received during the listing process is made available by publication in the *Texas Register* within six weeks after the approval of the final list by EPA.

Targeting of Listed Water Bodies

In December 1997, the TNRCC made a commitment to develop TMDLs for all the water bodies listed on the 1998 CWA §303(d) List within ten years. To develop a specific, final schedule for prioritizing water bodies on the list for TMDL development, the TNRCC considers the following seven factors:

- priority ranking of each water body
- geographic focus area
- watershed proximity and related pollutants
- local support for TMDL development
- data availability
- international and interstate water bodies
- targeting by strategy

Priority Ranking of Each Water Body

Criteria are developed to rank each water body as a high, medium, or low priority for TMDL development, or as threatened (see "Guidance for Assigning Priority for TMDL Development"). While designated uses and severity of the pollutant are the basis for structuring the criteria, the prioritization methodology is not an attempt to determine the economic or aesthetic value of a water body or the value of its designated use. The priority ranking criteria include elements of risk assessment (that is, they place higher priority on more severe water quality problems) and allow for

programmatic needs (that is, distinguish between situations that are known to require immediate TMDL development and those where more information is required to verify that impairments exist). These rankings are assigned and included on the final 303(d) list.

Geographic Focus Area

Water bodies in the basin group(s) in the geographic focus area for each annual 303(d) update are also the focus for immediate TMDL development. As a general rule, the TNRCC will address impaired water bodies with the highest priority assignments first, within the constraints of the watershed management cycle. If there are no water bodies listed with a high priority within a basin, then TMDL activities will focus on those listed as medium, then on those listed as low, and finally on those listed as threatened. Each basin group will begin a cluster of TMDL actions at five-year intervals; statewide, a different basin group will be initiating TMDLs each year of the five-year cycle.

Watershed Proximity and Related Pollutants

TMDLs may be developed as one project for multiple water bodies in close proximity, or with identical or related impairments. For example, a water body ranked "low" may be targeted early on in the ten-year process because it is closely associated with a water body ranked "high." The TNRCC intends to delineate watersheds and subwatersheds statewide to allow better resolution when defining and confronting water quality issues. Delineation of watersheds will also provide geographic references for water bodies on the list that are more detailed than the current designated segment numbers.

Where possible, impairments will be addressed at the subwatershed level, unless evidence shows that pollutants from other subwatersheds contribute to the impairment of the targeted water body. In general, TMDL analyses and activities will be designed to include all subwatersheds necessary to adequately define or address the issues at hand, but will be limited to those subwatersheds where a TMDL is truly needed and appropriate. That scope may sometimes require that pre-defined subwatersheds be even further subdivided to address very localized issues.

Local Support for TMDL Development

After the submission of the 303(d) list to the EPA in April and the approval of the list by the EPA, the TNRCC seeks additional public input. All other factors being equal, local support for developing a TMDL in a specific water body would accelerate TMDL scheduling for the water body. This final round of public input is also carried out through the established procedures of the Texas Clean Rivers Program for incorporating local priorities.

Data Availability

Although the development of most TMDLs will require additional data collection, the availability of data in certain water bodies make them better candidates for immediate development of a TMDL.

International and Interstate Water Bodies

International/interstate waters will usually be targeted later for TMDL development because of the uncertainty associated with obtaining interstate/international collaboration . As the TNRCC becomes

more proficient in developing TMDLs for watersheds that lie entirely within the state's boundaries, water bodies shared with Mexico and with the states of New Mexico, Oklahoma, Arkansas, and Louisiana will be targeted.

Targeting by Strategy

Finally, the strategy selected for TMDL development will be a factor in determining when a TMDL is initiated. The four strategies proposed by the TNRCC are:

- development of a TMDL (traditional load allocation),
- targeted monitoring for those water bodies where more information is required to verify that impairments exist,
- standards evaluation if evidence suggests that the standards are not appropriate, and
- development of a TMDL equivalent, that is, a project other than a traditional load allocation that addresses the listed impairment. Examples include source water protection activities carried out under the Safe Drinking Water Act or a statewide project to address legacy pollutants.