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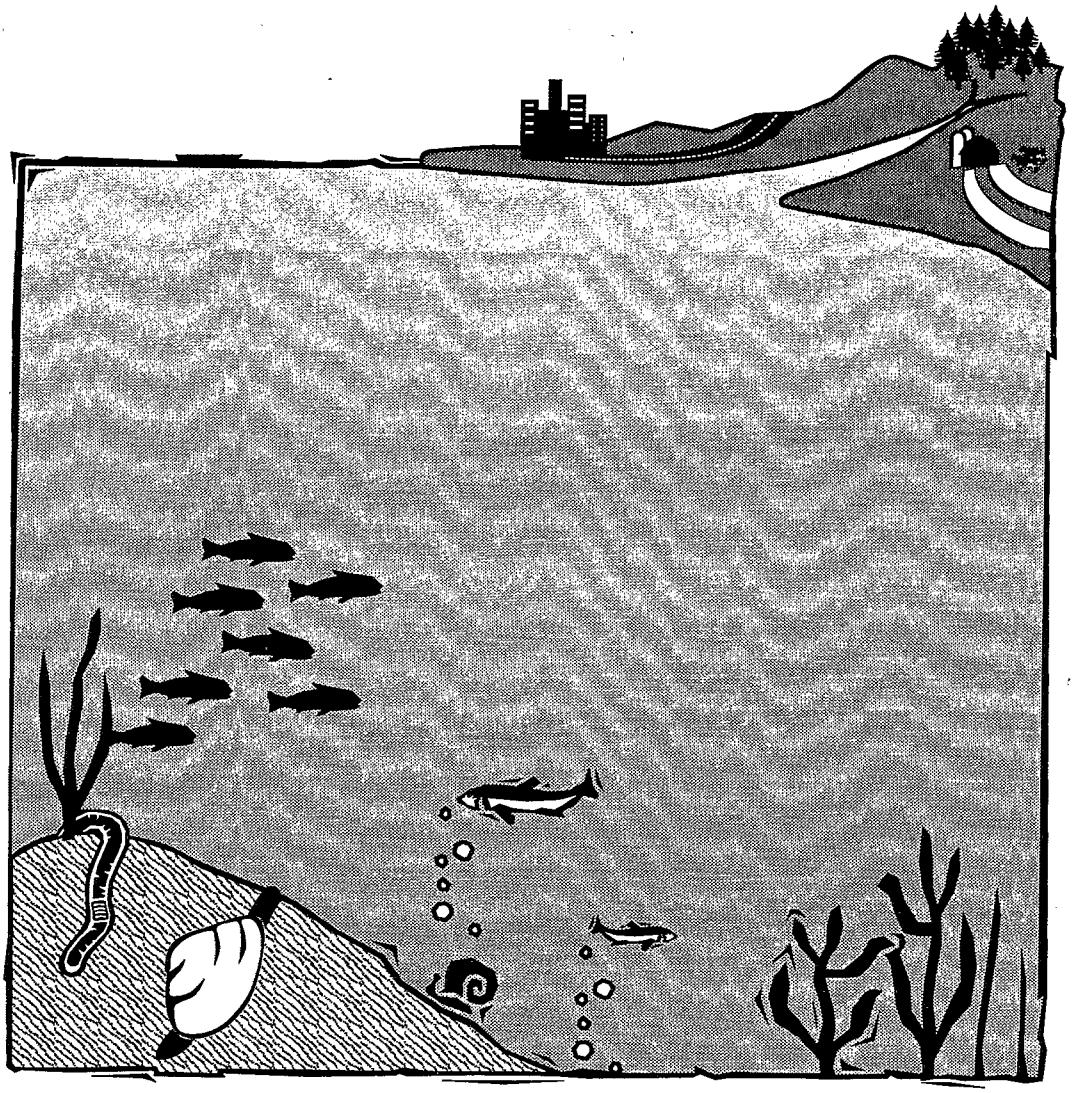
The Incidence And Severity Of Sediment Contamination In Surface Waters Of The United States

Volume 2: Data Summaries For Areas Of Probable Concern



The Incidence And Severity Of Sediment Contamination In Surface Waters Of The United States

Volume 2: Data Summaries For Areas Of Probable Concern

September 1997

Office of Science and Technology
United States Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

The *National Sediment Quality Survey* is a screening-level assessment of sediment quality that compiles and evaluates sediment chemistry data and related biological data taken from existing databases. The data and information contained in this document could be used in various EPA regulatory programs for priority setting or other purposes after further evaluation for program-specific criteria. However, this document has no immediate or direct regulatory consequence. It does not in itself establish any legally binding requirements, establish or affect legal rights or obligations, or represent a determination of any party's liability.

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Introduction

The Water Resources Development Act (WRDA) of 1992 directed the U.S. Environmental Protection Agency (EPA), in consultation with the National Oceanic and Atmospheric Administration and the U.S. Army Corps of Engineers, to conduct a comprehensive national survey of data regarding the quality of sediments in the United States. The Act required EPA to compile all existing information on the quantity, chemical and physical composition, and geographic location of pollutants in sediment, including the probable sources of such pollutants and identification of those sediments which are contaminated. The Act further required EPA to report to the Congress the findings, conclusions, and recommendations of such survey, including recommendations for actions necessary to prevent contamination of aquatic sediments and to control sources of contamination.

To comply with the WRDA mandate, EPA's Office of Science and Technology initiated the National Sediment Inventory (NSI). The goals of the NSI are to compile sediment quality information from available electronic databases, gather information from available electronic databases and published reports on sediment contaminant sources, develop screening-level assessment protocols to identify potentially contaminated sediment, and produce biennial reports to Congress on the incidence and severity of sediment contamination nationwide. *The Incidence And Severity Of Sediment Contamination In Surface Waters Of The United States* is the first of these reports to Congress. EPA produced this report to Congress in four volumes:

- **Volume 1:** ***National Sediment Quality Survey***—Screening analysis to qualitatively assess the probability of associated adverse human health or ecological effects based on a weight- of-evidence evaluation.
- **Volume 2:** ***Data Summaries For Areas Of Probable Concern***—Sampling station location maps and chemical and biological summary data for watersheds containing areas of probable concern for sediment contamination.
- **Volume 3:** ***National Sediment Contaminant Point Source Inventory***—Screening analysis to identify probable point source contributors of sediment pollutants.
- **Volume 4:** ***National Sediment Contaminant Nonpoint Source Inventory***—Screening analysis to identify probable nonpoint source contributors of sediment pollutants (in preparation for subsequent biennial reports).

As part of the NSI data evaluation, EPA evaluated more than 21,000 sampling stations nationwide. Data for each sampling station were collected during the period of 1980 to 1993 by a wide variety of federal, state, regional, local, and other monitoring programs. The approach used to evaluate the NSI data focuses on the risk to benthic organisms exposed directly to contaminated sediments and the risk to human consumers of organisms exposed to sediment contaminants. EPA analyzed three types of data, alone and in combination, for the NSI evaluation—sediment chemistry data, chemical residue levels in edible tissue of aquatic organisms, and sediment toxicity data. Using the evaluation techniques described in detail in Volume 1 of this report to Congress, EPA associated sampling stations with their "probability of adverse effects." Each sampling station was classified into one of three categories, or tiers, based on this evaluation:

- Tier 1: associated adverse effects are probable.
- Tier 2: associated adverse effects are possible, but expected infrequently.
- Tier 3: no indication of associated adverse effects (any sampling station not categorized as Tier 1 or Tier 2; includes sampling stations for which substantial data were available, as well as sampling stations for which limited data were available).

Although sampling stations are an important unit of assessment, the most significant contamination problems exist where multiple contaminated locations are in close proximity or are distributed throughout a discrete hydrologic unit. A single "hot spot" might not affect a benthic community or accumulation of contaminants in resident fish tissue to a great extent. Widespread contamination, however, is more likely to adversely affect benthic communities and lead to a greater extent of contaminant accumulation in resident fish.

The NSI data evaluation identified 96 watersheds throughout the United States that contain areas of probable concern for sediment contamination (APCs). An APC is defined by a watershed that contains 10 or more Tier 1 sampling stations and in which at least 75 percent of all sampling stations have been classified as Tier 1 or Tier 2. These dual criteria are based on empirical observation of the data. Watersheds with 10 or more Tier 1 sampling stations include the upper 10 percent of all watersheds evaluated. In addition, because approximately 75 percent of all sampling stations nationwide were classified as Tier 1 or Tier 2, at least the same percentage of stations in a watershed had to be classified as Tier 1 or Tier 2 before a watershed could be identified as containing an APC. EPA recommends further investigation of the human and ecological risks from sediment contamination in these watersheds. For further discussion of watersheds containing APCs, please refer to Chapter 3 in Volume 1 of this report, under the heading "Watershed Analysis".

This document presents summary data related to each of the 96 watersheds containing APCs in the NSI data evaluation. The first section of this document, Classification of Sampling Stations by Watershed, presents the U.S. Geological Survey (USGS) cataloging unit number and name for each watershed identified as containing an APC. It also identifies the state(s) in which the watershed is located and the number of Tier 1, Tier 2, and Tier 3 sampling stations located in the watershed. (State abbreviations presented in parentheses indicate that no NSI sampling stations occur in that state even though at least part of the watershed is located in the state.)

The remainder of this document presents specific information for each watershed containing APCs. The watersheds are presented in the order of their USGS cataloging unit number, which follow a general geographic pattern of northeast to southeast to west. The USGS cataloging unit name and number for each watershed is presented at the top of the first page of each summary. The first page of each watershed summary presents general information concerning the watershed—USGS accounting unit in which it is located; state(s) in which it is located; political boundaries (counties that include at least part of the watershed); major waterways; and number of Tier 1, Tier 2, and Tier 3 sampling stations in the watershed—and a map identifying the location of the watershed relative to the primary state in which it is located. The second page of each summary presents a map identifying the location of major waterways (RF1) in the watershed and the location of Tier 1, Tier 2, and Tier 3 sampling stations in the watershed. The location of sampling stations is plotted using latitude and longitude coordinates provided in the source data. EPA did not attempt to verify these locations. Recent attempts by other users of NSI data to verify sampling station locations have suggested that some coordinates are, in fact, in error. The precise location of measured elevated levels of contaminants in sediment or fish, or sediment toxicity should be included in the initial stage of further investigation. Following the watershed map is a table listing the data sources used in the evaluation of sampling stations in the watershed. In addition to the sources of data, this table presents the agency code for the agency responsible for collecting the data, the name of the monitoring program, the number of stations in the watershed that were sampled as part of the monitoring program, and the sampling period or date. A series of tables follows the list of data sources. Depending on the types of data collected, all of the tables might not be presented for a given watershed; for example, if toxicity data were not collected, a "Biotoxicity Data" table is not included.

The table titled "Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2" presents the following information for each chemical:

- Total number of stations in the watershed where the chemical was measured.
- Total number of stations in the watershed classified as either Tier 1 or Tier 2 due to the chemical for either aquatic life effects, human health effects, or both. (Note: A station can be classified as Tier 1 or Tier 2 due to several chemicals.)
- Number of sampling stations in the watershed classified as Tier 1 due to the chemical for either aquatic life effects, human health effects, or both.

- Number of sampling stations in the watershed classified as Tier 2 due to the chemical for either aquatic life effects, human health effects, or both.
- Number of sampling stations in the watershed classified as Tier 1 or Tier 2 for aquatic life effects due to the chemical.
- Number of sampling stations in the watershed classified as Tier 1 or Tier 2 for human health effects due to the chemical.

The table titled "Sediment Chemistry Data: Chemical Summary" presents the following information for each chemical measured in the sediment:

- Total number of observations in the watershed.
- Mean and median concentration of all observations in the watershed (assuming zero for nondetects).
- Number of detected observations in the watershed.
- Maximum and minimum concentration of detected observations in the watershed.

The table titled "Tissue Residue Data: Chemical Summary" presents the following information for each chemical measured in fish tissue (if any):

- Total number of observations in the watershed.
- Mean and median concentration of all observations in the watershed (assuming zero for nondetects).
- Number of detected observations in the watershed.
- Maximum and minimum concentration of detected observations in the watershed.

The tissue residue table presents data evaluation results only for those species which are considered demersal, resident, and edible. These are the only species evaluated for this report to Congress, although the NSI also includes data for species that are considered pelagic, migratory, and/or nonedible.

The table titled "Biotoxicity Data" presents information about toxicity tests (if any). The toxicity test results presented in the table are grouped under the monitoring programs responsible for collecting the data, and include:

- Sampling station latitude and longitude
- Sampling date (year-month-day)
- Test species name
- Type (i.e., sediment phase) of test
  - Liquid-phase (L)
  - Elutriate-phase (E)
  - Suspended particulate-phase (P)
  - Solid-phase (S)
- Percent mortality in test and control
- Whether the toxicity results indicate significant toxicity.

Classification of Sampling Stations by Watershed

CU- **01090001** CU Name- **Charles**
State(s): MA #Tier1- **195** #Tier2- **402** #Tier3- **111**

CU- **01090002** CU Name- **Cape Cod**
State(s): MA (RI) #Tier1- **15** #Tier2- **73** #Tier3- **20**

CU- **01090004** CU Name- **Narragansett**
State(s): RI MA #Tier1- **28** #Tier2- **20** #Tier3- **.**

CU- **02030103** CU Name- **Hackensack-Passaic**
State(s): NJ NY #Tier1- **43** #Tier2- **58** #Tier3- **2**

CU- **02030104** CU Name- **Sandy Hook-Staten Island**
State(s): NJ NY #Tier1- **60** #Tier2- **21** #Tier3- **19**

CU- **02030105** CU Name- **Raritan**
State(s): NJ #Tier1- **13** #Tier2- **37** #Tier3- **15**

CU- **02030202** CU Name- **Southern Long Island**
State(s): NY #Tier1- **11** #Tier2- **24** #Tier3- **8**

CU- **02040105** CU Name- **Middle Delaware-Musconetcong**
State(s): NJ PA #Tier1- **11** #Tier2- **26** #Tier3- **11**

CU- **02040202** CU Name- **Lower Delaware**
State(s): NJ PA #Tier1- **18** #Tier2- **29** #Tier3- **10**

CU- **02040203** CU Name- **Schuylkill**
State(s): PA #Tier1- **12** #Tier2- **23** #Tier3- **9**

CU- **02040301** CU Name- **Mullica-Toms**
State(s): NJ #Tier1- **10** #Tier2- **22** #Tier3- **10**

CU- **02060003** CU Name- **Gunpowder-Patapsco**
State(s): MD (PA) #Tier1- **17** #Tier2- **7** #Tier3- **5**

CU- **02070004** CU Name- **Conococheague-Opequon**
State(s): MD VA WV (PA) #Tier1- **11** #Tier2- **12** #Tier3- **6**

CU- **03040201** CU Name- **Lower Pee Dee**
State(s): SC NC #Tier1- **11** #Tier2- **20** #Tier3- **3**

CU- **03060101** CU Name- **Seneca**
State(s): SC NC #Tier1- **10** #Tier2- **3** #Tier3- **3**

CU- **03060106** CU Name- **Middle Savannah**
State(s): SC GA #Tier1- **20** #Tier2- **11** #Tier3- **5**

CU- **03080103** CU Name- **Lower St. Johns**
State(s): FL #Tier1- **32** #Tier2- **111** #Tier3- **45**

CU- 03130002 CU Name- **Middle Chattahoochee-Lake Harding**
State(s): GA (AL) #Tier1- **21** #Tier2- **4** #Tier3- **2**

CU- 03140102 CU Name- **Choctawhatchee Bay**
State(s): FL #Tier1- **19** #Tier2- **23** #Tier3- **9**

CU- 03140107 CU Name- **Perdido Bay**
State(s): AL FL #Tier1- **10** #Tier2- **24** #Tier3- **4**

CU- 03160205 CU Name- **Mobile Bay**
State(s): AL #Tier1- **31** #Tier2- **43** #Tier3- **7**

CU- 04030102 CU Name- **Door-Kewaunee**
State(s): WI #Tier1- **12** #Tier2- **5** #Tier3- **3**

CU- 04030108 CU Name- **Menominee**
State(s): WI MI #Tier1- **12** #Tier2- **6** #Tier3- **3**

CU- 04030204 CU Name- **Lower Fox**
State(s): WI #Tier1- **49** #Tier2- **2** #Tier3- **.**

CU- 04040001 CU Name- **Little Calumet-Galien**
State(s): IN IL (MI) #Tier1- **45** #Tier2- **26** #Tier3- **18**

CU- 04040002 CU Name- **Pike-Root**
State(s): IL WI #Tier1- **34** #Tier2- **30** #Tier3- **8**

CU- 04040003 CU Name- **Milwaukee**
State(s): WI #Tier1- **60** #Tier2- **16** #Tier3- **14**

CU- 04050001 CU Name- **St. Joseph**
State(s): MI IN #Tier1- **17** #Tier2- **9** #Tier3- **6**

CU- 04060103 CU Name- **Manistee**
State(s): MI #Tier1- **11** #Tier2- **3** #Tier3- **.**

CU- 04090002 CU Name- **Lake St. Clair**
State(s): MI #Tier1- **13** #Tier2- **5** #Tier3- **1**

CU- 04090004 CU Name- **Detroit**
State(s): MI #Tier1- **85** #Tier2- **29** #Tier3- **1**

CU- 04100001 CU Name- **Ottawa-Stony**
State(s): MI OH #Tier1- **13** #Tier2- **15** #Tier3- **1**

CU- 04100002 CU Name- **Raisin**
State(s): MI (OH) #Tier1- **18** #Tier2- **19** #Tier3- **1**

CU- 04100010 CU Name- **Cedar-Portage**
State(s): OH MI #Tier1- **13** #Tier2- **39** #Tier3- **4**

CU- 04100012 CU Name- **Huron-Vermilion**
State(s): OH #Tier1- **10** #Tier2- **35** #Tier3- **.**

CU- 04110001 CU Name- **Black-Rocky**

State(s): OH #Tier1- **24** #Tier2- **31** #Tier3- **4**

CU- **04110003** CU Name- **Ashtabula-Chagrin**
State(s): OH #Tier1- **10** #Tier2- **18** #Tier3- **3**

CU- **04120101** CU Name- **Chautauqua-Conneaut**
State(s): OH PA NY #Tier1- **21** #Tier2- **86** #Tier3- **3**

CU- **04120103** CU Name- **Buffalo-Eighteenmile**
State(s): NY #Tier1- **59** #Tier2- **33** #Tier3- **9**

CU- **04120104** CU Name- **Niagara**
State(s): NY #Tier1- **24** #Tier2- **16** #Tier3- **1**

CU- **04130001** CU Name- **Oak Orchard-Twelvemile**
State(s): NY #Tier1- **39** #Tier2- **46** #Tier3- **1**

CU- **04150301** CU Name- **Upper St. Lawrence**
State(s): NY #Tier1- **21** #Tier2- **5** #Tier3- **5**

CU- **05030101** CU Name- **Upper Ohio**
State(s): OH PA WV #Tier1- **12** #Tier2- **29** #Tier3- **12**

CU- **05030102** CU Name- **Shenango**
State(s): PA OH #Tier1- **11** #Tier2- **1** #Tier3- **3**

CU- **05040001** CU Name- **Tuscarawas**
State(s): OH #Tier1- **10** #Tier2- **53** #Tier3- **15**

CU- **05120109** CU Name- **Vermilion**
State(s): IL (IN) #Tier1- **12** #Tier2- **16** #Tier3- **.**

CU- **05120111** CU Name- **Middle Wabash-Busseron**
State(s): IL IN #Tier1- **15** #Tier2- **17** #Tier3- **1**

CU- **06010104** CU Name- **Holston**
State(s): TN #Tier1- **12** #Tier2- **2** #Tier3- **1**

CU- **06010201** CU Name- **Watts Bar Lake**
State(s): TN #Tier1- **63** #Tier2- **7** #Tier3- **19**

CU- **06010207** CU Name- **Lower Clinch**
State(s): TN #Tier1- **61** #Tier2- **14** #Tier3- **4**

CU- **06020001** CU Name- **Middle Tennessee-Chickamauga**
State(s): TN GA (AL) #Tier1- **47** #Tier2- **29** #Tier3- **18**

CU- **06020002** CU Name- **Hiwassee**
State(s): TN NC GA #Tier1- **13** #Tier2- **17** #Tier3- **3**

CU- **06030001** CU Name- **Guntersville Lake**
State(s): AL TN (GA) #Tier1- **25** #Tier2- **46** #Tier3- **21**

CU- **06030005** CU Name- **Pickwick Lake**
State(s): AL TN (MS) #Tier1- **49** #Tier2- **9** #Tier3- **11**

CU- 06040001 CU Name- **Lower Tennessee-Beech**
State(s): TN (MS) #Tier1- **15** #Tier2- **6** #Tier3- **4**

CU- 06040005 CU Name- **Kentucky Lake**
State(s): TN KY #Tier1- **15** #Tier2- **14** #Tier3- **1**

CU- 07010206 CU Name- **Twin Cities**
State(s): MN WI #Tier1- **26** #Tier2- **2** #Tier3- **7**

CU- 07040001 CU Name- **Rush-Vermillion**
State(s): MN WI #Tier1- **13** #Tier2- **1** #Tier3- **.**

CU- 07040003 CU Name- **Buffalo-Whitewater**
State(s): MN WI #Tier1- **17** #Tier2- **3** #Tier3- **6**

CU- 07070003 CU Name- **Castle Rock**
State(s): WI #Tier1- **20** #Tier2- **.** #Tier3- **2**

CU- 07080101 CU Name- **Copperas-Duck**
State(s): IA IL #Tier1- **17** #Tier2- **5** #Tier3- **5**

CU- 07090006 CU Name- **Kishwaukee**
State(s): IL (WI) #Tier1- **10** #Tier2- **24** #Tier3- **.**

CU- 07120003 CU Name- **Chicago**
State(s): IL IN #Tier1- **64** #Tier2- **36** #Tier3- **3**

CU- 07120004 CU Name- **Des Plaines**
State(s): IL WI #Tier1- **61** #Tier2- **43** #Tier3- **6**

CU- 07120006 CU Name- **Upper Fox**
State(s): IL WI #Tier1- **15** #Tier2- **40** #Tier3- **5**

CU- 07130001 CU Name- **Lower Illinois-Senachwine Lake**
State(s): IL #Tier1- **11** #Tier2- **10** #Tier3- **.**

CU- 07140101 CU Name- **Cahokia-Joachim**
State(s): IL MO #Tier1- **18** #Tier2- **34** #Tier3- **4**

CU- 07140106 CU Name- **Big Muddy**
State(s): IL #Tier1- **23** #Tier2- **65** #Tier3- **6**

CU- 07140201 CU Name- **Upper Kaskaskia**
State(s): IL #Tier1- **31** #Tier2- **24** #Tier3- **.**

CU- 07140202 CU Name- **Middle Kaskaskia**
State(s): IL #Tier1- **13** #Tier2- **22** #Tier3- **3**

CU- 08010100 CU Name- **Lower Mississippi-Memphis**
State(s): TN KY MO AR MS #Tier1- **14** #Tier2- **3** #Tier3- **3**

CU- 08030209 CU Name- **Deer-Steele**
State(s): MS (LA) #Tier1- **11** #Tier2- **10** #Tier3- **.**

CU- **08040207** CU Name- **Lower Ouachita**
State(s): LA #Tier1- **12** #Tier2- **.** #Tier3- **.**

CU- **08080206** CU Name- **Lower Calcasieu**
State(s): LA #Tier1- **26** #Tier2- **52** #Tier3- **22**

CU- **08090100** CU Name- **Lower Mississippi-New Orleans**
State(s): LA #Tier1- **16** #Tier2- **34** #Tier3- **1**

CU- **10270104** CU Name- **Lower Kansas**
State(s): KS MO #Tier1- **12** #Tier2- **15** #Tier3- **2**

CU- **11070207** CU Name- **Spring**
State(s): KS MO OK #Tier1- **10** #Tier2- **25** #Tier3- **6**

CU- **11070209** CU Name- **Lower Neosho**
State(s): OK (AR) #Tier1- **13** #Tier2- **3** #Tier3- **4**

CU- **12040104** CU Name- **Buffalo-San Jacinto**
State(s): TX #Tier1- **10** #Tier2- **23** #Tier3- **3**

CU- **17010303** CU Name- **Coeur D'Alene Lake**
State(s): ID (WA) #Tier1- **10** #Tier2- **13** #Tier3- **.**

CU- **17030003** CU Name- **Lower Yakima**
State(s): WA #Tier1- **23** #Tier2- **19** #Tier3- **5**

CU- **17090012** CU Name- **Lower Willamette**
State(s): OR #Tier1- **21** #Tier2- **51** #Tier3- **4**

CU- **17110002** CU Name- **Strait Of Georgia**
State(s): WA #Tier1- **32** #Tier2- **168** #Tier3- **63**

CU- **17110013** CU Name- **Duwamish**
State(s): WA #Tier1- **48** #Tier2- **69** #Tier3- **10**

CU- **17110014** CU Name- **Puyallup**
State(s): WA #Tier1- **12** #Tier2- **6** #Tier3- **1**

CU- **17110019** CU Name- **Puget Sound**
State(s): WA #Tier1- **418** #Tier2- **851** #Tier3- **114**

CU- **18030012** CU Name- **Tulare-Buena Vista Lakes**
State(s): CA #Tier1- **10** #Tier2- **5** #Tier3- **5**

CU- **18050003** CU Name- **Coyote**
State(s): CA #Tier1- **18** #Tier2- **6** #Tier3- **.**

CU- **18050004** CU Name- **San Francisco Bay**
State(s): CA #Tier1- **19** #Tier2- **37** #Tier3- **8**

CU- **18070104** CU Name- **Santa Monica Bay**
State(s): CA #Tier1- **79** #Tier2- **31** #Tier3- **22**

CU- **18070105** CU Name- **Los Angeles**

State(s): CA #Tier1- **14** #Tier2- **19** #Tier3- **4**

CU- 18070107 CU Name- **San Pedro Channel Islands**
State(s): CA #Tier1- **14** #Tier2- **10** #Tier3- **1**

CU- 18070201 CU Name- **Seal Beach**
State(s): CA #Tier1- **63** #Tier2- **339** #Tier3- **40**

CU- 18070204 CU Name- **Newport Bay**
State(s): CA #Tier1- **24** #Tier2- **68** #Tier3- **16**

CU- 18070301 CU Name- **Aliso-San Onofre**
State(s): CA #Tier1- **10** #Tier2- **22** #Tier3- **.**

CU- 18070304 CU Name- **San Diego**
State(s): CA #Tier1- **53** #Tier2- **51** #Tier3- **3**

Charles 01090001

Watershed Summary Information

Accounting Unit Name: Mass.-Rhode Island Coastal

State(s): MA

Political Boundaries: Essex, Middlesex, Suffolk, Norfolk, Plymouth

Major Waterways:
Charles R
Ipswich R
Neponset R
Parker R
Saugus R

Number of Stations in Watershed:
Tier1 - 195
Tier2 - 402
Tier3 - 111

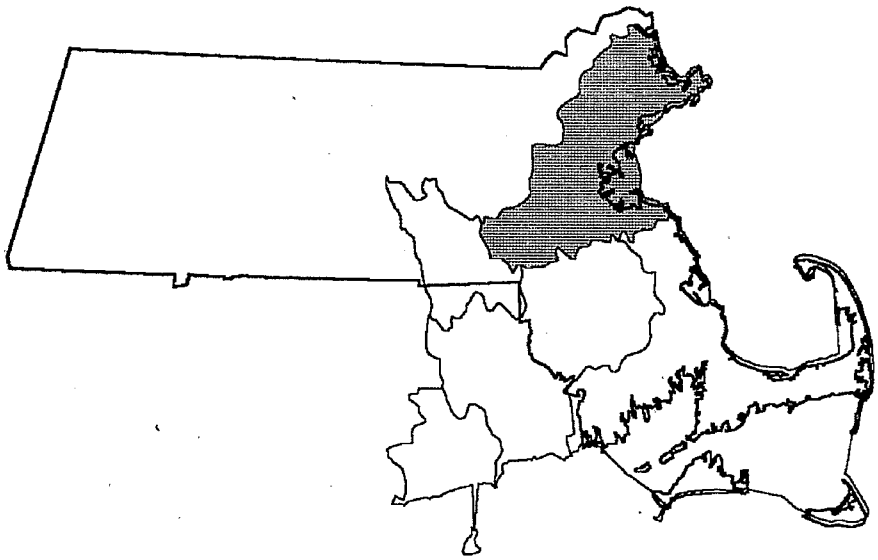

Figure 1. Watershed Location Map

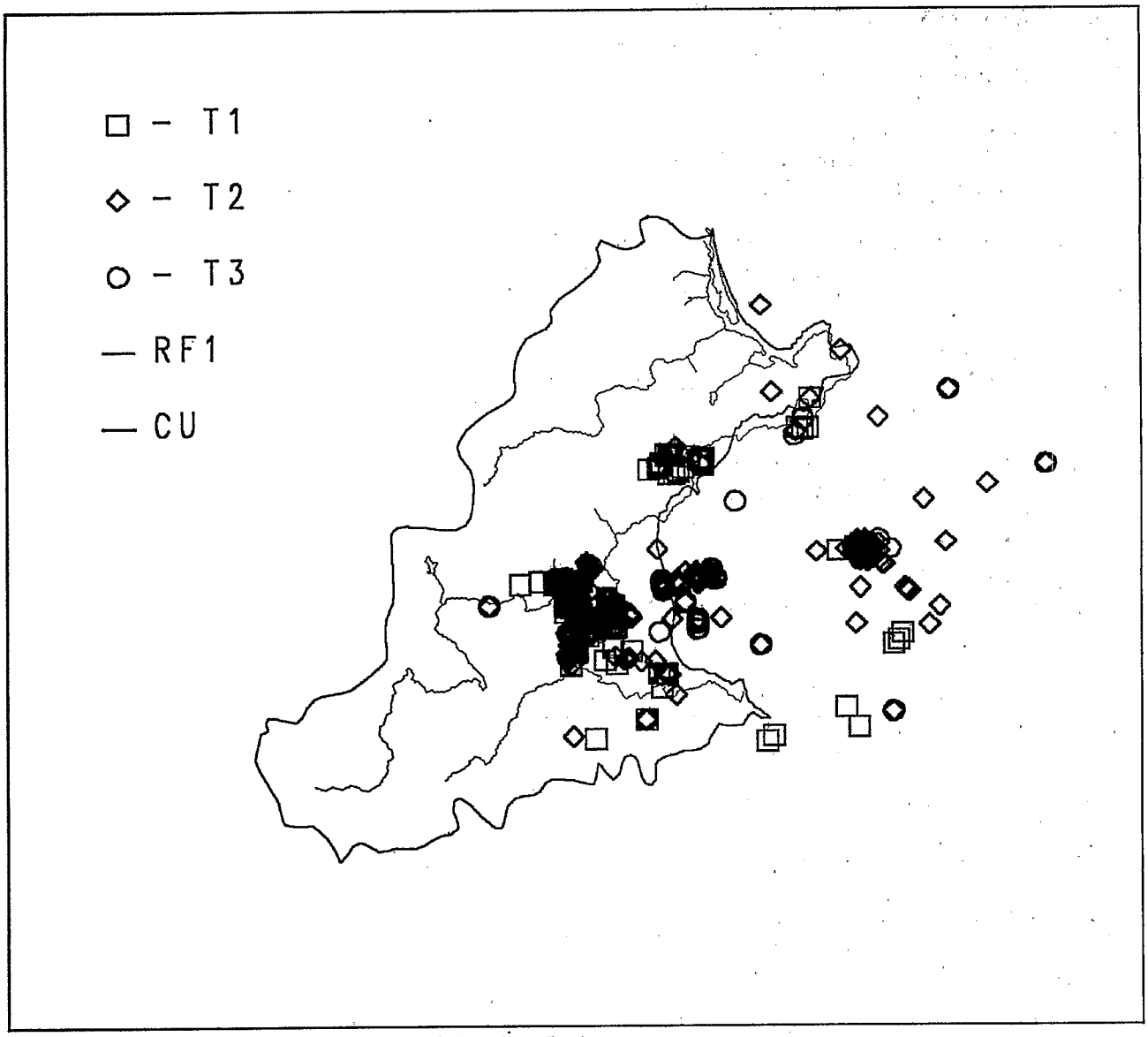

Figure 2. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 32 Date Range: 1984-90

Source: **MASSBAY** Agency:
Monitoring Program:
Num. of Stations: 89 Date Range: 1981-90

Source: **MASSBAY** Agency: **Appx in Battelle, Shea et**
Monitoring Program: **Battelle, 1984**
Num. of Stations: 10 Date Range: 1983

Source: **MASSBAY** Agency: **ACE**
Monitoring Program: **U.S. ARMY COE (1981)**
Num. of Stations: 3 Date Range: 1980

Source: **MASSBAY** Agency: **Batelle**
Monitoring Program: **Battelle, 1987 a and b**
Num. of Stations: 135 Date Range: 1987

Source: **MASSBAY** Agency: **Bay State Environmental C**
Monitoring Program: **ACE_NED permit file 25-86-290**
Num. of Stations: 1 Date Range: 1985

Source: **MASSBAY** Agency: **Boston Edison**
Monitoring Program: **ACE_NED permit file 09-89-530**
Num. of Stations: 11 Date Range: 1980

Source: **MASSBAY** Agency: **COASTAL OIL INC**
Monitoring Program: **ACE_NED permit file 1989-2911**
Num. of Stations: 3 Date Range: 1990

Source: **MASSBAY** Agency: **COE-NED**
Monitoring Program: **ACE_NED permit file Navigatio**
Num. of Stations: 30 Date Range: 1986-90

Source: **MASSBAY** Agency: **CORTEU ASSOCIATES**
Monitoring Program: **ACE_NED permit file 199101096**
Num. of Stations: 2 Date Range: 1991

Source: **MASSBAY** Agency: **DWPC**
Monitoring Program: **MASS. DEQE (1982)**
Num. of Stations: 2 Date Range: 1981

Source: **MASSBAY** Agency: **EPA**
Monitoring Program: **NOLAN, et al. (1981)**
Num. of Stations: 3 Date Range: 1980

Source: **MASSBAY** Agency: **HULL**
Monitoring Program: **ACE_NED permit file 25-81-374**
Num. of Stations: 7 Date Range: 1981

Source: **MASSBAY** Agency: **INDEPENDENT CEM. COR**
Monitoring Program: **ACE_NED permit file 20-87-200**
Num. of Stations: 3 Date Range: 1987

Source: **MASSBAY** Agency: **Long Wharf**
Monitoring Program: **ACE_NED permit file 727-3160**
Num. of Stations: 16 Date Range: 1986

Source: **MASSBAY** Agency: **MA DPW**
Monitoring Program: **ACE_NED permit file MA DPW Be**
Num. of Stations: 11 Date Range: 1988

Source: **MASSBAY** Agency: **MADPW**
Monitoring Program: **ACE_NED permit file 25-86-100**

Num. of Stations: 37 Date Range: 1984

Source: MASSBAY Agency: MASP
Monitoring Program: RYAN, et al. (1982)
Num. of Stations: 14 Date Range: 1981-82

Source: MASSBAY Agency: MBTA
Monitoring Program: ACE_NED permit file 83-1064
Num. of Stations: 6 Date Range: 1989

Source: MASSBAY Agency: MDC
Monitoring Program: GCA CORP. (1982)
Num. of Stations: 14 Date Range: 1982

Source: MASSBAY Agency: MWRA
Monitoring Program: ACE_NED permit file 24-87-912
Num. of Stations: 4 Date Range: 1987

Source: MASSBAY Agency: USACOE-dredge
Monitoring Program: MacDonald, 1991
Num. of Stations: 100 Date Range: 1983-88

Source: MASSBAY Agency: USDT
Monitoring Program: JASON M. CORTELL & ASSOC.(198
Num. of Stations: 31 Date Range: 1982

Source: MASSBAY Agency: USGS
Monitoring Program: Bothner A
Num. of Stations: 29 Date Range: 1987

Source: ODES Agency: BH
Monitoring Program: Boston Harbor
Num. of Stations: 42 Date Range: 1983-88

Source: ODES Agency: MA
Monitoring Program: Massachusetts Bay
Num. of Stations: 66 Date Range: 1982-90

Source: SEACOE Agency: NOAA84
Monitoring Program: Benthic Surveillance 1984
Num. of Stations: 7 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	673	428	.	428	.	401	.	27
Copper	676	422	.	422	.	422	.	.
Mercury	579	362	146	216	146	216	.	.
Chromium	678	358	44	314	44	314	.	.
Nickel	632	315	.	315	.	315	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	417	281	14	267	14	240	.	27
Zinc	678	278	.	278	.	278	.	.
Cadmium	633	236	.	236	.	236	.	.
Polychlorinated biphenyls	94	89	35	54	17	39	18	71
Benzo(a)pyrene	91	54	1	53	1	45	.	54
Dibenzo(a,h)anthracene	90	49	5	44	5	44	.	46
Benzo(a)anthracene	83	46	3	43	3	33	.	31
Pyrene	91	46	3	43	3	43	.	.
Chrysene	89	46	.	46	.	46	.	.
Silver	131	45	20	25	20	25	.	.
Fluorene	89	41	1	40	1	40	.	.
DDT	78	38	7	31	7	31	.	1
Anthracene	84	38	2	36	2	36	.	.
Naphthalene	65	28	2	26	2	26	.	.
Dieldrin	51	28	.	28	.	2	.	28
Chlordane	73	24	.	24	.	24	.	2
BHC	48	16	1	15	1	15	.	.
Fluoranthene	91	16	.	16	.	16	.	.
Acenaphthylene	26	15	.	15	.	15	.	.
Phenanthrene	62	15	.	15	.	15	.	.
Indeno(1,2,3-cd)pyrene	49	13	.	13	.	.	.	13
Benzo(a)anthracene/Chrysene	14	12	.	12	.	12	.	9
Aldrin	44	11	.	11	.	.	.	11
HMW_PAHs	7	5	.	5	.	5	.	.
Heptachlor epoxide	47	4	.	4	.	.	.	4
Acenaphthene	46	3	.	3	.	3	.	.
Benzo(b)fluoranthene	35	3	.	3	.	.	.	3
Methylnaphthalene, 2-	15	2	1	1	1	1	.	.
Heptachlor	42	2	.	2	.	.	.	2
LMW_PAHs	7	2	.	2	.	2	.	.
Bis(2-ethylhexyl)phthalate	9	1	1	.	1	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	76	28.71	15.15	54	392.90	1.30
Acenaphthylene	43	20.70	8.62	24	95.86	5.39
Aldrin	21	1.56	0.40	15	10.00	0.02
Anthracene	91	174.16	92.00	72	3777.70	6.10
Antimony	83	10533.81	2700.00	65	120000.0	150.00
Arsenic	455	15209.37	11000.00	448	175699.9	5.00
Benzo(a)anthracene	77	427.32	410.00	68	2691.10	8.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)anthracene/Chrysene	22	115.45	145.00	12	290.00	130.00
Benzo(a)pyrene	99	309.39	263.33	80	1700.00	3.05
Benzo(b)fluoranthene	34	114.94	0.00	15	667.11	15.47
Benzo(ghi)perylene	55	161.53	150.00	36	450.00	22.78
Benzo(k)fluoranthene	31	92.87	0.00	12	721.43	32.66
Benzoic acid	9	0.00	0.00	0	.	.
Benzyl alcohol	9	0.00	0.00	0	.	.
Biphenyl	47	83.91	21.00	47	1323.80	0.83
Bis(2-ethylhexyl)phthalate	9	800.00	0.00	1	7200.00	7200.00
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	9	0.00	0.00	0	.	.
BHC	28	2.16	0.95	24	15.00	0.20
Cadmium	661	1508.52	222.00	517	35060.00	10.00
Chlordane	64	2.97	2.25	62	12.10	0.10
Chromium	717	131665.6	58579.99	683	2950000	30.00
Chrysene	98	384.43	265.00	78	2200.00	11.00
Copper	715	73556.94	31000.00	709	3400000	200.00
Cresol, o	9	0.00	0.00	0	.	.
Cresol, p-	9	0.00	0.00	0	.	.
Di-n-butyl phthalate	9	48.89	0.00	1	440.00	440.00
Di-n-octyl phthalate	9	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	102	86.40	44.00	81	910.00	1.80
Dibenzofuran	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dieldrin	35	3.87	1.70	30	16.00	0.17
Diethyl phthalate	9	0.00	0.00	0	.	.
Dimethyl phthalate	9	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	9	0.00	0.00	0	.	.
DDT	261	8.27	3.15	243	357.72	0.16
Fluoranthene	99	619.72	470.00	81	5001.20	6.40
Fluorene	95	56.41	34.00	76	1017.30	1.20
Heptachlor	16	0.73	0.50	11	3.00	0.39
Heptachlor epoxide	29	1.18	0.80	22	3.40	0.24
Hexachlorobenzene	66	1.21	0.83	55	6.10	0.10
Hexachlorobutadiene	9	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
HMW_PAHs	7	3171.43	4100.00	5	6800.00	2500.00
Indeno(1,2,3-cd)pyrene	55	159.95	150.00	36	540.00	19.00
Isophorone	9	0.00	0.00	0	.	.
Lead	731	111698.2	50000.00	707	1880000	130.00
LMW_PAHs	7	356.71	37.00	4	1500.00	37.00
Mercury	626	590.48	200.00	537	14000.00	3.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methylnaphthalene, 2-	15	1294.67	0.00	2	19000.00	420.00
Mirex/Dechlorane	31	1.67	1.58	31	4.43	0.29
Naphthalene	73	318.63	100.00	64	6723.30	0.72
Nickel	664	23673.69	17730.50	632	673600.0	40.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	99	355.86	250.00	80	2851.20	3.70
Phenol	9	0.00	0.00	0	.	.
Polychlorinated biphenyls	163	129.29	19.00	115	9881.00	2.28
Pyrene	99	658.35	460.00	80	4631.60	9.80
Silver	133	1909.81	975.00	87	12000.00	16.00
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Zinc	740	158237.1	98000.00	740	2156000	30.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	27	3.14	0.00	12	11.00	3.00
Anthracene	27	61.04	0.00	6	1300.00	18.00
Antimony	18	58.89	0.00	2	830.00	230.00
Arsenic	27	8885.19	8700.00	27	10000.00	7800.00
Benzo(a)anthracene	27	216.52	95.00	19	1800.00	18.00
Benzo(a)pyrene	27	28.59	0.00	4	390.00	11.00
Benzo(b)fluoranthene	9	17.67	0.00	4	46.00	25.00
Benzo(k)fluoranthene	9	17.67	0.00	4	59.00	26.00
Biphenyl	27	42.59	0.00	12	310.00	17.00
BHC	27	2.17	1.80	20	7.60	1.30
Cadmium	27	1362.96	1300.00	27	1900.00	760.00
Chlordane	27	28.31	29.00	27	65.00	6.90
Chromium	27	1967.41	1900.00	27	5600.00	620.00
Chrysene	27	207.79	260.00	23	480.00	5.40
Copper	27	12618.52	12000.00	27	18000.00	9600.00
Dibenzo(a,h)anthracene	27	0.00	0.00	0	.	.
Dieldrin	27	21.30	21.00	26	57.00	2.40
DDT	162	18.94	6.45	100	120.00	1.90
Fluoranthene	27	684.07	690.00	26	2000.00	130.00
Fluorene	27	63.48	0.00	12	590.00	27.00
Heptachlor	27	1.91	1.60	14	11.00	1.60
Heptachlor epoxide	27	3.23	0.00	12	14.00	1.70
Hexachlorobenzene	6	4.65	1.60	6	12.00	0.38
Indeno(1,2,3-cd)pyrene	9	0.00	0.00	0	.	.
Lead	27	10625.93	10000.00	27	19000.00	3900.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Manganese	18	11077.78	9150.00	18	38000.00	4600.00
Mercury	27	251.85	220.00	27	450.00	140.00
Mirex/Dechlorane	27	1.64	0.00	8	25.00	0.31
Naphthalene	27	72.70	78.00	15	210.00	47.00
Nickel	27	1153.70	940.00	27	6700.00	570.00
Polychlorinated biphenyls	18	380.63	304.80	18	906.00	106.33
Pyrene	27	425.93	390.00	22	3200.00	43.00
Selenium	27	1981.48	2000.00	27	2900.00	1200.00
Silver	27	1010.74	1100.00	27	1900.00	340.00
Tin	27	294.07	280.00	26	480.00	110.00
Zinc	27	122185.2	120000.0	27	160000.0	85000.00

Cape Cod 01090002

Watershed Summary Information

Accounting Unit Name: Mass.-Rhode Island Coastal

State(s): MA (RI)

Political Boundaries: Plymouth, Barnstable, Bristol, Dukes, Newport, Nantucket

Major Waterways:
West Port R, E Branch
Acushnet R
Mattapoisett R
Slocums R
Weweantic R

Number of Stations in Watershed:
Tier1 - 15
Tier2 - 73
Tier3 - 20

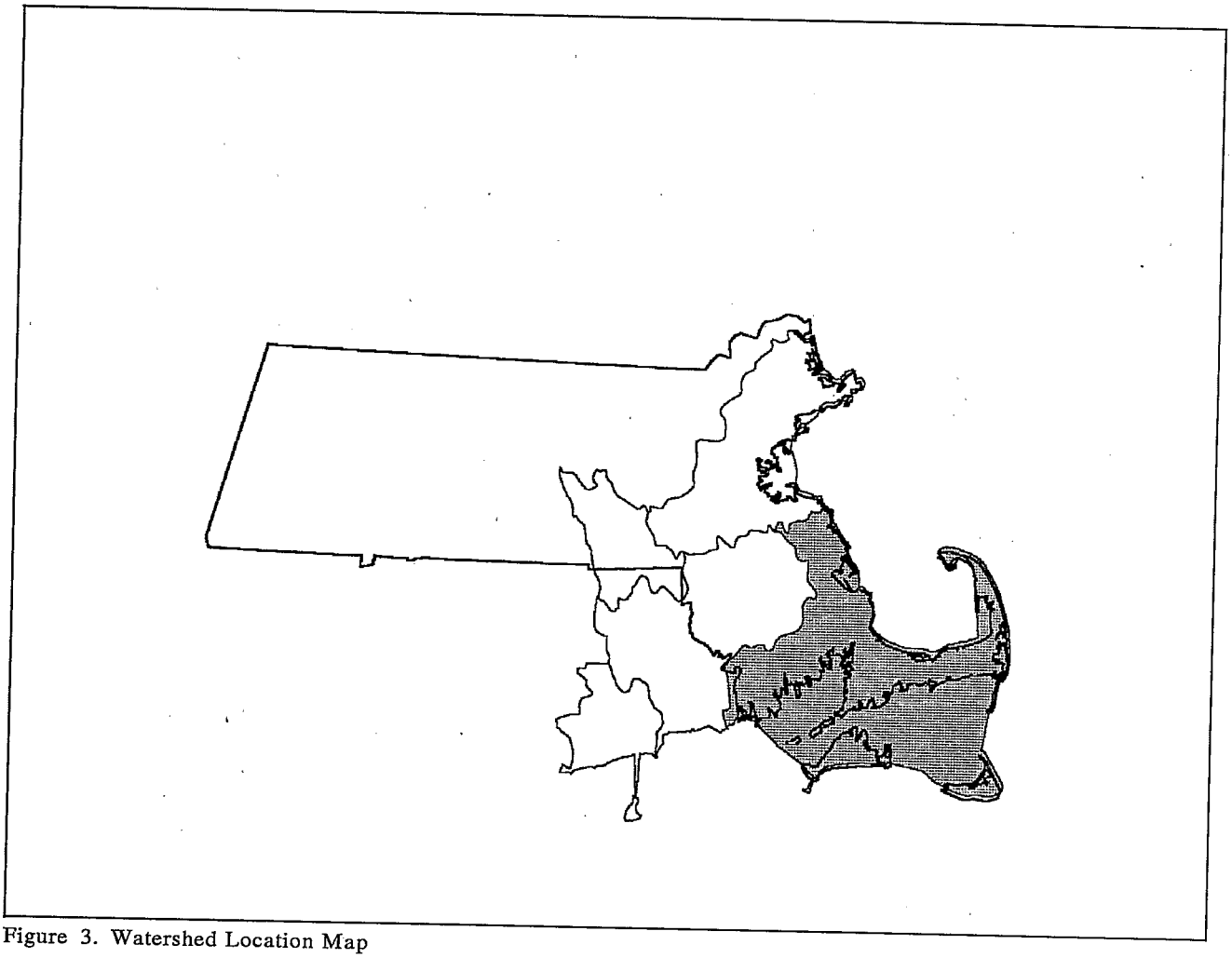

Figure 3. Watershed Location Map

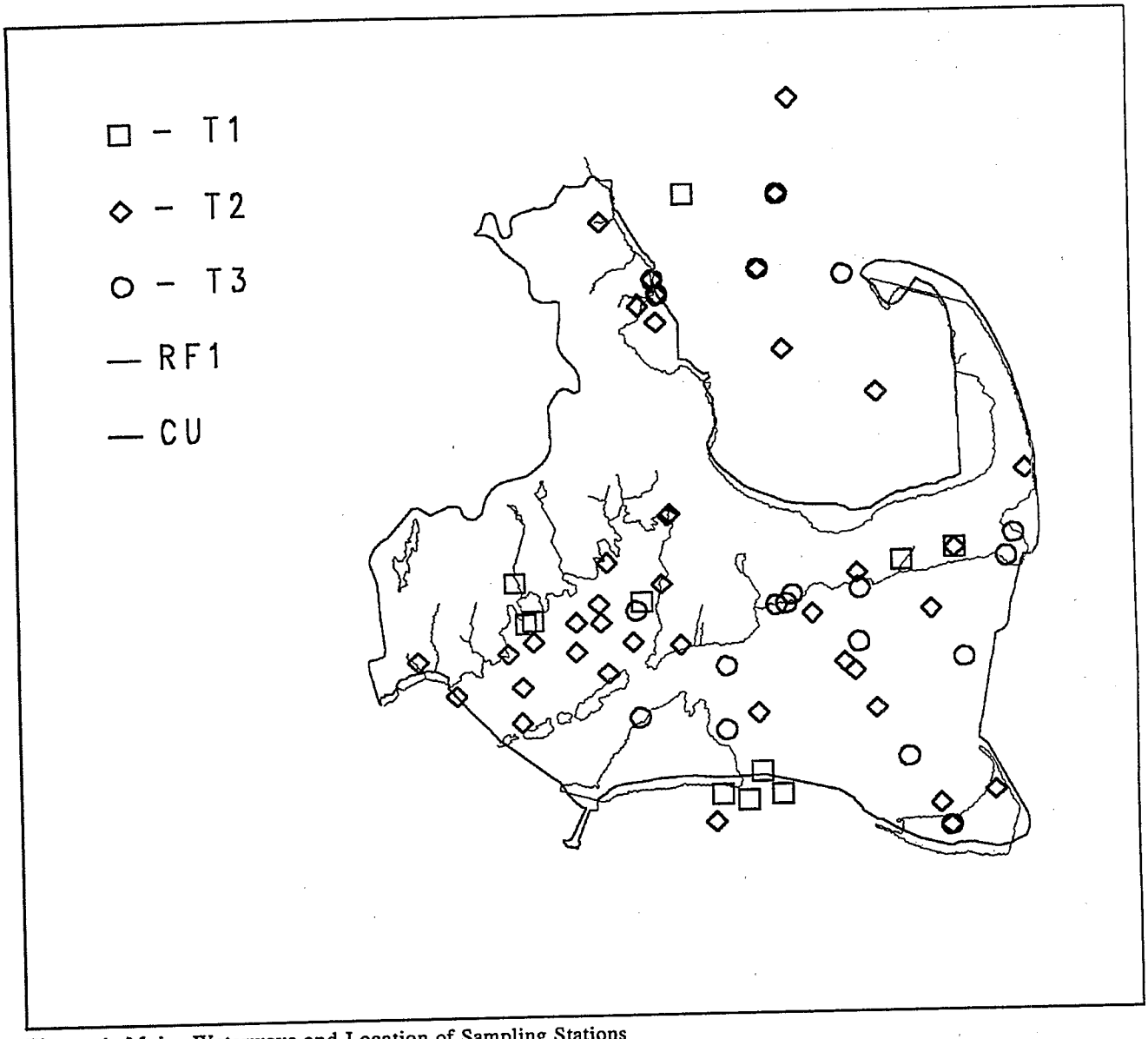

Figure 4. Major Waterways and Location of Sampling Stations
(Subsequent data review indicates that the four Tier 1 sampling stations off Martha's Vineyard may, in fact, be located within Buzzards Bay.)

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 30 Date Range: 1984-91

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 16 Date Range: 1990-91

Source: **MASSBAY** Agency: **Appx in Battelle, Shea et**
Monitoring Program: **Battelle, 1984**
Num. of Stations: 5 Date Range: 1983

Source: **MASSBAY** Agency: **USACOE-dredge**
Monitoring Program: **MacDonald, 1991**
Num. of Stations: 45 Date Range: 1982-87

Source: **ODES** Agency: **BH**
Monitoring Program: **Boston Harbor**
Num. of Stations: 6 Date Range: 1983

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 6 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	106	46	.	46	.	46	.	.
Lead	108	42	.	42	.	42	.	.
Polychlorinated biphenyls	42	41	8	33	8	17	.	41
Benzo(a)pyrene	47	38	.	38	.	12	.	38
Chromium	105	34	2	32	2	32	.	.
Mercury	94	33	6	27	6	27	.	.
Nickel	87	33	.	33	.	33	.	.
Dibenzo(a,h)anthracene	38	29	3	26	3	25	.	19
DDT	52	27	1	26	1	26	.	3
Arsenic	73	21	.	21	.	21	.	.
Benzo(a)anthracene	48	20	1	19	1	19	.	8
Pyrene	44	17	1	16	1	16	.	.
Cadmium	105	17	.	17	.	17	.	.
Chrysene	47	17	.	17	.	17	.	.
Zinc	83	13	.	13	.	13	.	.
Fluorene	42	12	1	11	1	11	.	.
Anthracene	37	12	.	12	.	12	.	.
Acenaphthylene	25	11	.	11	.	11	.	.
Dieldrin	38	11	.	11	.	.	.	11
Naphthalene	36	10	3	7	3	7	.	.
Silver	54	8	1	7	1	7	.	.
BHC	32	8	.	8	.	8	.	.
Aldrin	33	5	.	5	.	.	.	5
Methylnaphthalene, 2-	19	5	.	5	.	5	.	.
Heptachlor epoxide	38	2	.	2	.	.	.	2
HMW_PAHs	6	1	1	.	1	.	.	.
LMW_PAHs	6	1	1	.	1	.	.	.
Benzo(b)fluoranthene	15	1	.	1	.	.	.	1
Chlordane	34	1	.	1	.	1	.	1
Fluoranthene	47	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Heptachlor	30	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	30	1	.	1	.	.	.	1
Phenanthrene	42	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	39	15.84	1.72	25	390.00	0.33
Acenaphthylene	33	6.00	2.19	25	20.79	1.00
Aldrin	35	0.54	0.00	13	6.85	0.30
Anthracene	63	42.41	14.73	55	522.71	0.70
Antimony	56	800.32	493.00	46	14100.00	68.00
Arsenic	97	6913.47	4400.00	97	51250.00	440.00
Benzo(a)anthracene	69	137.86	54.00	61	2700.00	3.07
Benzo(a)pyrene	69	97.36	47.12	62	1300.00	2.14
Benzo(b)fluoranthene	23	49.51	46.48	23	120.00	5.65
Benzo(ghi)perylene	39	42.42	17.06	31	671.00	0.90
Benzo(k)fluoranthene	22	35.82	34.08	22	77.50	3.66
Biphenyl	44	5.45	1.90	32	54.00	0.53
BHC	32	0.51	0.00	11	5.00	0.09
Cadmium	130	469.40	195.00	94	7000.00	9.00
Chlordane	40	0.66	0.00	19	8.00	0.34
Chromium	127	48030.94	28700.00	125	856000.0	990.00
Chrysene	68	141.94	66.00	61	2200.00	4.58
Copper	132	38680.76	15000.00	125	1500000	492.00
Dibenzo(a,h)anthracene	58	65.53	18.00	45	860.00	1.38
Dieldrin	46	1.27	0.23	25	16.00	0.20
DDT	232	3.45	0.50	140	240.00	0.02
Fluoranthene	69	237.12	110.00	63	5000.00	8.22
Fluorene	56	30.00	6.15	39	1000.00	0.52
Heptachlor	31	2.78	0.00	11	72.10	0.16
Heptachlor epoxide	43	0.41	0.00	21	4.86	0.07
Hexachlorobenzene	56	1.06	0.28	37	20.00	0.02
HMW_PAHs	6	2666.67	0.00	1	16000.00	16000.00
Indeno(1,2,3-cd)pyrene	40	44.67	18.88	32	675.00	2.00
Lead	134	31615.09	23050.00	115	282000.0	2750.00
LMW_PAHs	6	2000.00	0.00	1	12000.00	12000.00
Mercury	120	452.80	80.00	108	18900.00	4.49
Methylnaphthalene, 2-	19	44.55	0.00	7	420.00	14.00
Mirex/Dechlorane	36	0.28	0.24	20	0.86	0.11
Naphthalene	55	164.82	13.02	50	6700.00	1.20
Nickel	113	12600.06	11000.00	92	62700.00	2100.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Phenanthrene	66	142.23	61.18	66	2900.00	1.76
Polychlorinated biphenyls	54	215.08	23.57	54	4110.52	0.83
Pyrene	67	238.10	103.89	65	4600.00	0.95
Silver	80	494.01	280.00	70	6940.00	8.69
Zinc	109	76047.48	56000.00	109	613000.0	4000.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
41.3157	70.1182	91-09-12	Ampelisca Abdita	S	30.00	9.00	Yes
41.3333	70.0167	91-07-24	Ampelisca Abdita	S	9.00	5.00	no
41.3833	70.1767	90-08-05	Ampelisca Abdita	S	16.70	6.80	no
41.4417	70.9000	91-07-29	Ampelisca Abdita	S	25.00	16.00	no
41.4462	70.6785	91-07-29	Ampelisca Abdita	S	25.00	16.00	no
41.4503	70.4568	91-07-30	Ampelisca Abdita	S	28.30	16.00	no
41.4540	70.2352	91-07-26	Ampelisca Abdita	S	38.00	16.00	Yes
41.5217	70.2938	90-08-16	Ampelisca Abdita	S	14.00	11.00	no
41.5250	70.0718	90-08-05	Ampelisca Abdita	S	18.40	6.80	no
41.5303	71.0943	91-08-09	Ampelisca Abdita	S	20.00	11.00	no
41.5840	70.7967	91-09-13	Ampelisca Abdita	S	5.00	9.00	no
41.5922	70.3525	91-07-30	Ampelisca Abdita	S	32.00	7.70	Yes
41.5957	70.1303	91-07-26	Ampelisca Abdita	S	48.00	16.00	Yes
41.6425	70.9117	90-08-15	Ampelisca Abdita	S	57.00	11.00	Yes

Narragansett 01090004

Watershed Summary Information

Accounting Unit Name: Mass.-Rhode Island Coastal

State(s): RI MA

Political Boundaries: Bristol, Bristol, Providence, Kent, Washington, Plymouth, Newport

Major Waterways:
Seekonk R
Taunton R
Palmer R
Pawtuxet R
Nemasket R

Number of Stations in Watershed:
Tier1 - 28
Tier2 - 20
Tier3 - .

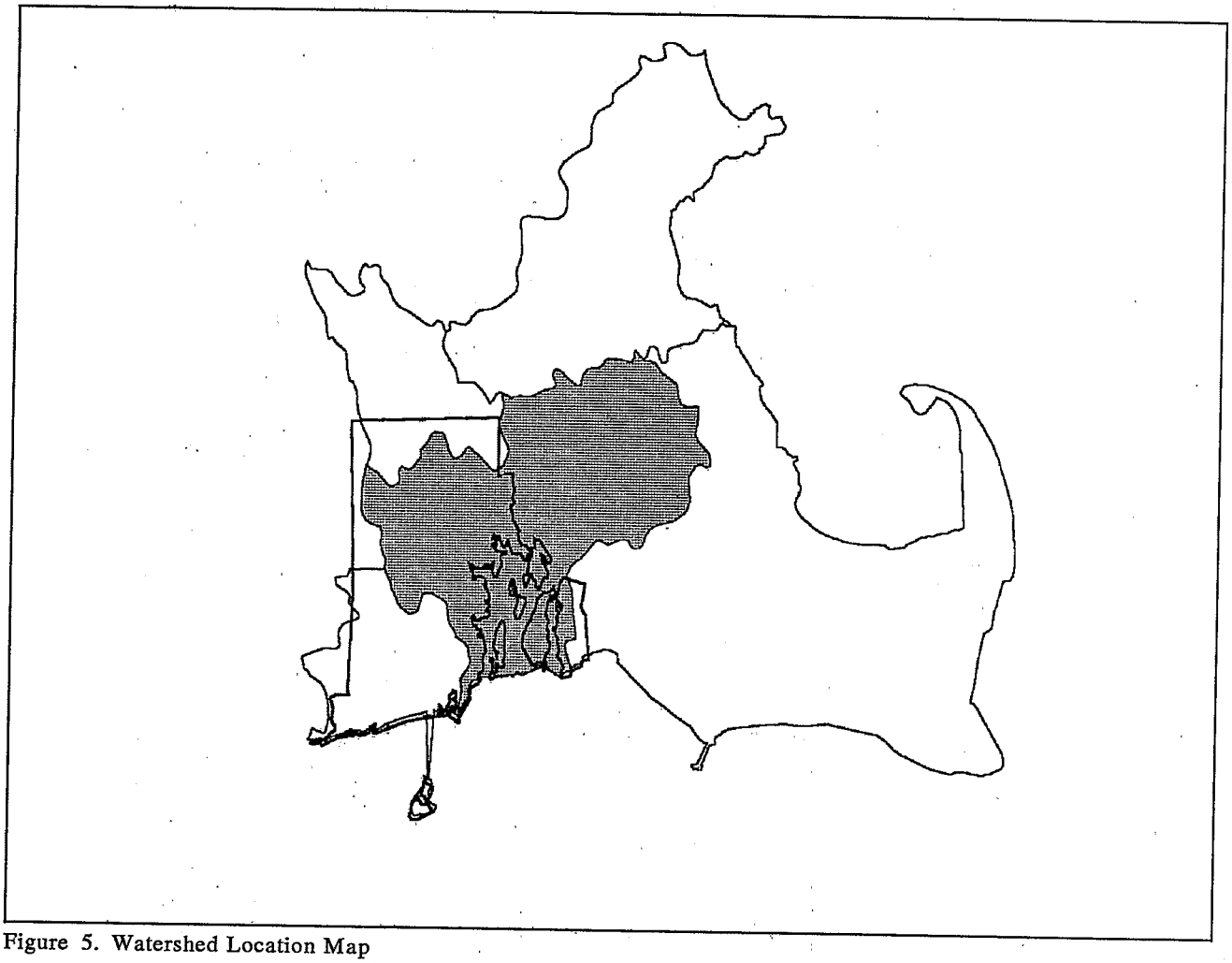

Figure 5. Watershed Location Map

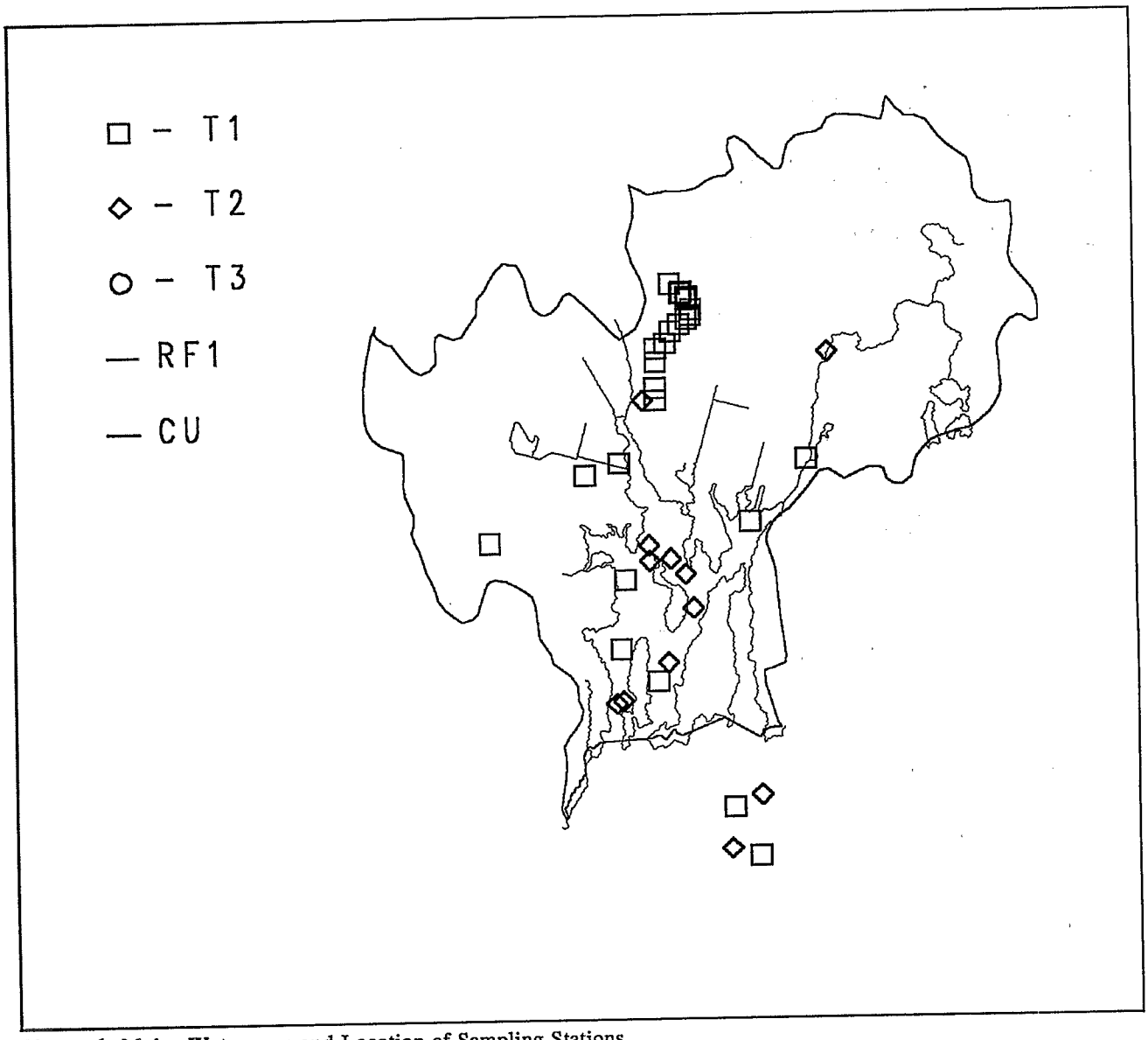

Figure 6. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 17 Date Range: 1984-89

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 4 Date Range: 1990-91

Source: **MASSBAY** Agency: **USACOE-dredge**
Monitoring Program: **MacDonald, 1991**
Num. of Stations: 3 Date Range: 1986

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 4 Date Range: 1985

Source: **STORET** Agency: **11112500**
Monitoring Program: **USEPA Region 1 Data**
Num. of Stations: 18 Date Range: 1980-81

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	48	45	.	45	.	45	.	.
Lead	48	45	.	45	.	45	.	.
Nickel	48	40	.	40	.	40	.	.
Chromium	48	36	10	26	10	26	.	.
Zinc	48	30	.	30	.	30	.	.
Silver	43	28	16	12	16	12	.	.
Mercury	34	28	8	20	8	20	.	.
Benzo(a)pyrene	24	24	.	24	.	18	.	24
Cadmium	47	23	.	23	.	23	.	.
Polychlorinated biphenyls	23	21	4	17	4	15	.	21
Arsenic	26	21	.	21	.	21	.	.
DDT	27	20	1	19	1	19	.	2
Benzo(a)anthracene	23	20	.	20	.	20	.	4
Dibenzo(a,h)anthracene	20	19	2	17	2	17	.	16
Pyrene	24	19	.	19	.	19	.	.
Chrysene	24	16	.	16	.	16	.	.
Anthracene	17	13	.	13	.	13	.	.
Naphthalene	23	13	.	13	.	13	.	.
Dieldrin	23	10	.	10	.	2	.	10
Fluorene	21	10	.	10	.	10	.	.
BHC	19	8	2	6	2	6	.	.
Aldrin	18	6	.	6	.	.	.	6
Acenaphthylene	9	5	.	5	.	5	.	.
Chlordane	27	5	.	5	.	5	.	2
Methylnaphthalene, 2-	6	5	.	5	.	5	.	.
HMW_PAHs	4	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	11	2	.	2	.	.	.	2
Acenaphthene	18	1	.	1	.	1	.	.
Endosulfan mixed isomers	2	1	.	1	.	1	.	.
Fluoranthene	24	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
LMW_PAHs	4	1	.	1	.	1	.	.
Phenanthrene	24	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	22	12.70	7.58	20	53.00	2.50
Acenaphthylene	10	19.36	17.00	10	54.34	2.00
Aldrin	42	1.23	0.00	17	8.72	0.16
Anthracene	31	99.21	73.00	30	326.78	13.00
Antimony	35	1069.00	810.00	32	2500.00	371.00
Arsenic	42	10733.43	8660.00	42	38000.00	4790.00
Benzo(a)anthracene	38	173.25	136.00	38	546.00	2.90
Benzo(a)pyrene	39	174.67	118.54	39	700.00	6.55
Benzo(b)fluoranthene	4	117.99	115.08	4	226.78	15.00
Benzo(ghi)perylene	10	173.10	174.01	10	409.00	6.45
Benzo(k)fluoranthene	5	43.35	13.00	5	114.51	6.30
Biphenyl	22	20.38	15.50	22	78.90	1.90
BHC	40	0.75	0.00	15	10.21	0.14
Cadmium	77	34458.86	637.00	71	277000.0	60.00
Chlordane	56	2.35	1.20	49	16.00	0.27
Chromium	78	401558.6	92700.00	76	5844000	8000.00
Chrysene	39	175.40	142.93	39	662.00	6.45
Copper	77	966502.4	88000.00	77	7592000	10000.00
Dibenzo(a,h)anthracene	33	72.03	58.00	30	330.00	6.90
Dieldrin	56	1.67	0.94	40	22.00	0.20
DDT	191	2.37	1.00	139	31.00	0.20
Endosulfan mixed isomers	20	0.66	0.00	2	11.00	2.20
Endrin	20	0.38	0.00	1	7.50	7.50
Fluoranthene	39	287.55	220.00	39	980.00	12.00
Fluorene	32	22.44	16.16	31	69.70	1.70
Heptachlor	40	0.40	0.00	16	5.01	0.17
Heptachlor epoxide	31	0.16	0.00	5	2.00	0.20
Hexachlorobenzene	27	0.96	0.52	25	3.00	0.09
HMW_PAHs	4	700.00	500.00	2	1800.00	1000.00
Indeno(1,2,3-cd)pyrene	13	154.09	85.00	12	485.00	7.30
Lead	78	180045.7	72650.00	78	999000.0	10000.00
LMW_PAHs	4	177.50	0.00	1	710.00	710.00
Mercury	49	475.71	220.00	46	3700.00	23.00
Methoxychlor	17	0.00	0.00	0	.	.
Methylnaphthalene, 2-	6	37.90	21.00	6	93.60	12.00
Mirex/Dechlorane	38	0.32	0.00	15	2.00	0.14

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Naphthalene	34	51.08	41.00	31	133.88	2.25
Nickel	78	648724.0	28161.50	73	22810000	6700.00
Phenanthrene	39	162.80	110.00	39	930.00	6.10
Polychlorinated biphenyls	38	68.64	38.29	38	320.00	0.56
Pyrene	39	324.11	260.00	39	1200.00	11.00
Silver	68	20195.46	2000.00	62	257000.0	150.00
Toxaphene	20	0.00	0.00	0	.	.
Zinc	78	706010.5	147000.0	78	20820000	18000.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
41.4983	71.4023	90-09-24	Ampelisca Abdita	S	6.00	6.00	no
41.6982	71.2057	91-08-11	Ampelisca Abdita	S	24.00	11.00	no
41.7667	71.1232	91-08-10	Ampelisca Abdita	S	40.00	11.00	Yes

Hackensack-Passaic 02030103

Watershed Summary Information

Accounting Unit Name:	Lower Hudson
State(s):	NJ NY
Political Boundaries:	Bergen, Passaic, Morris, Rockland, Essex, Somerset, Orange, Hudson, Union
Major Waterways:	Passaic R Whippany R Ramapo R Pompton Cr Oradell Res
Number of Stations in Watershed:	Tier1 - 43 Tier2 - 58 Tier3 - 2

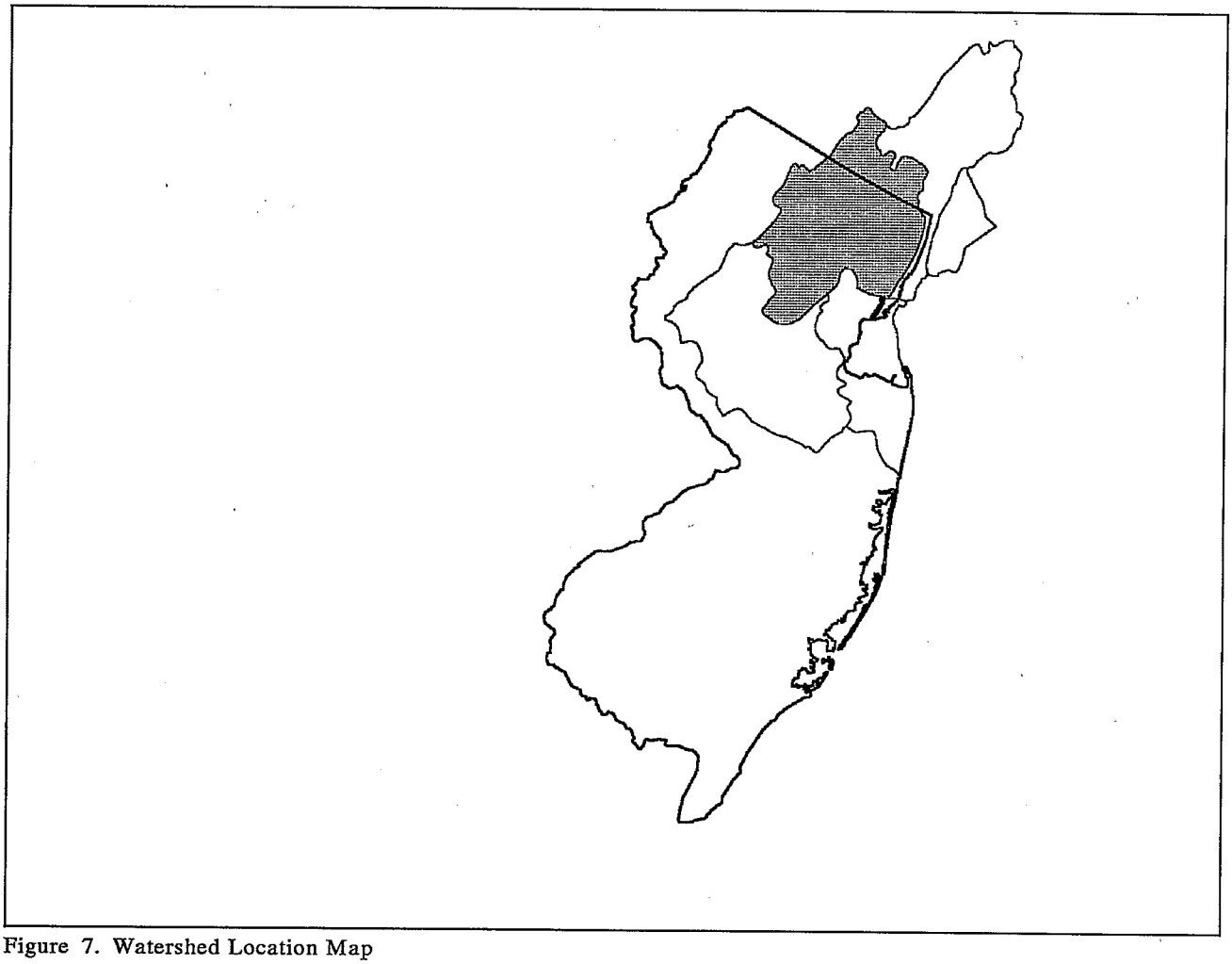

Figure 7. Watershed Location Map

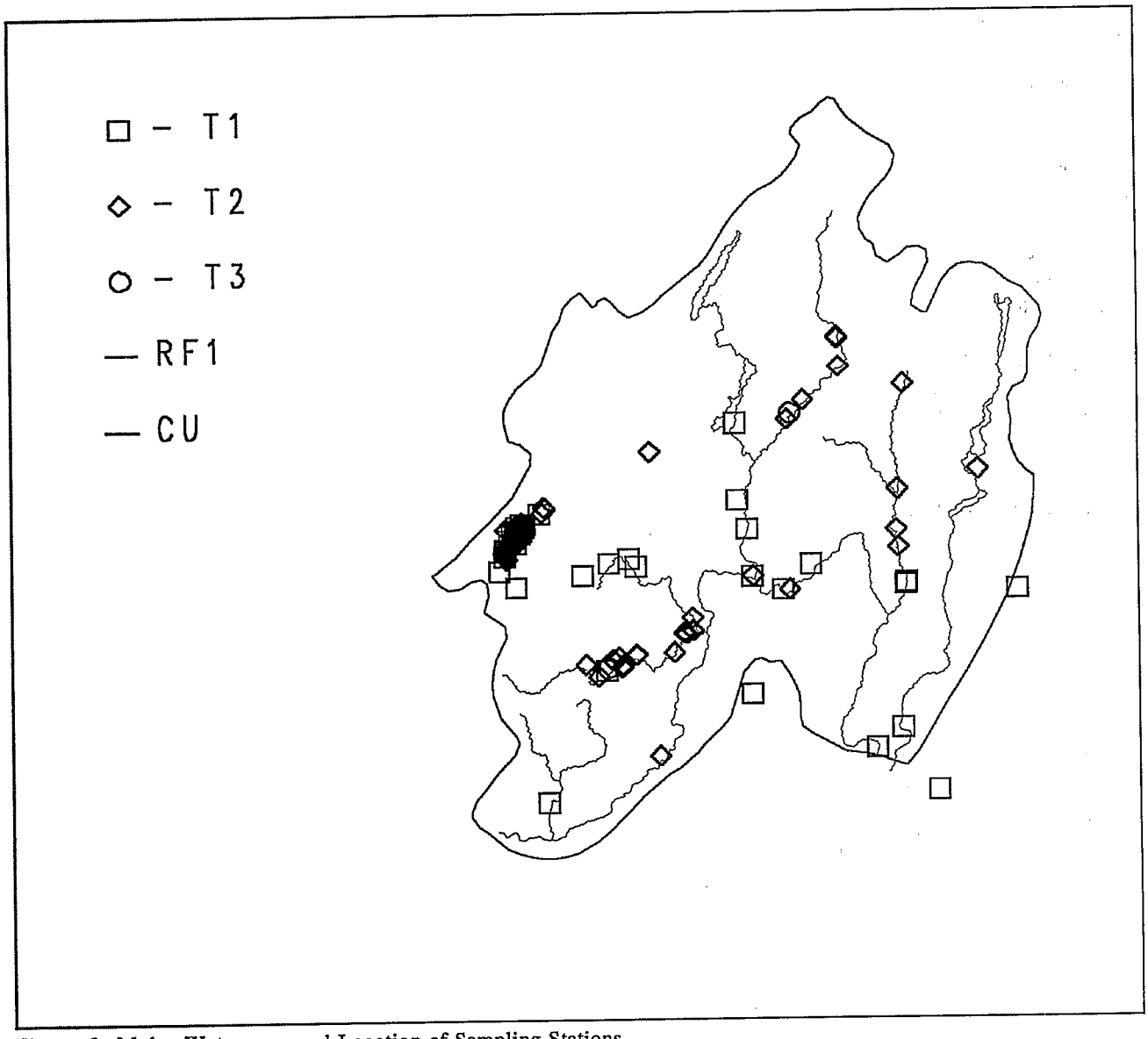

Figure 8. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 3 Date Range: 1986-89

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 2 Date Range: 1990

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **1111H030**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 5 Date Range: 1981-83

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 74 Date Range: 1980-93

Source: **STORET** Agency: **21NJDEP1**
Monitoring Program: **New Jersey Dept Environ Protection Data - Div of Water Resources**
Num. of Stations: 17 Date Range: 1980-81

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 1 Date Range: 1991-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	99	75	.	75	.	75	.	.
Lead	100	61	.	61	.	61	.	.
DDT	80	60	23	37	23	37	.	15
Mercury	103	60	21	39	21	39	.	.
Cadmium	99	53	.	53	.	53	.	.
Polychlorinated biphenyls	63	47	13	34	12	16	1	46
Chlordane	77	44	.	44	.	44	.	30
Zinc	100	41	.	41	.	41	.	.
Arsenic	98	28	2	26	2	26	.	.
Chromium	99	26	8	18	8	18	.	.
Pyrene	63	24	4	20	4	20	.	.
Phenanthrene	63	22	9	13	9	13	.	.
Nickel	49	22	.	22	.	22	.	.
Fluoranthene	63	21	3	18	3	18	.	.
Chrysene	63	20	4	16	4	16	.	.
Benzo(a)anthracene	63	17	6	11	6	11	.	17
Benzo(a)pyrene	63	17	4	13	4	13	.	17
Bis(2-ethylhexyl)phthalate	58	17	2	15	2	15	.	2
Benzo(b)fluoranthene	61	15	.	15	.	1	.	15
Anthracene	62	13	4	9	4	9	.	.
Indeno(1,2,3-cd)pyrene	63	13	.	13	.	10	.	13
Dieldrin	80	12	.	12	.	7	.	10
Diazinon/Spectracide	66	10	.	10	.	10	.	.
Mirex/Dechlorane	64	10	.	10	.	.	.	10
Fluorene	63	9	4	5	4	5	.	.
Naphthalene	62	7	2	5	2	5	.	.
Benzo(ghi)perylene	63	7	.	7	.	7	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dibenzo(a,h)anthracene	63	6	6	.	6	.	.	6
Nitrosodiphenylamine, N-	58	6	.	6	.	6	.	.
Acenaphthene	62	5	2	3	2	3	.	.
Acenaphthylene	63	4	2	2	2	2	.	.
Silver	8	4	2	2	2	2	.	.
Diethyl phthalate	58	2	1	1	1	1	.	.
BHC	79	2	.	2	.	2	.	.
Malathion	66	2	.	2	.	2	.	.
Dioxins	19	1	1	.	.	.	1	.
Aldrin	78	1	.	1	.	.	.	1
Benzo(k)fluoranthene	61	1	.	1	.	1	.	.
Di-n-butyl phthalate	58	1	.	1	.	1	.	.
Heptachlor	80	1	.	1	.	.	.	1
Heptachlor epoxide	80	1	.	1	.	.	.	1
Methylnaphthalene, 2-	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	79	160.01	0.00	13	5120.00	39.00
Acenaphthylene	75	44.85	0.00	4	2400.00	21.00
Aldrin	143	0.05	0.00	6	2.50	0.20
Anthracene	80	381.31	0.00	19	8000.00	25.00
Antimony	6	2640.50	1671.50	4	6500.00	843.00
Arsenic	160	6538.84	2000.00	125	120000.0	100.00
Benzo(a)anthracene	81	893.98	0.00	25	29100.00	58.50
Benzo(a)pyrene	81	542.35	0.00	23	8900.00	150.00
Benzo(b)fluoranthene	73	213.01	0.00	15	5500.00	130.00
Benzo(ghi)perylene	75	311.76	0.00	13	9080.00	92.00
Benzo(k)fluoranthene	73	153.32	0.00	10	4700.00	72.00
Biphenyl	11	187.93	104.00	10	860.00	3.20
Bis(2-ethylhexyl)phthalate	70	352.14	0.00	18	9500.00	200.00
Bromophenyl phenyl ether, 4-	70	0.00	0.00	0	.	.
Butyl benzyl phthalate	70	5.29	0.00	1	370.00	370.00
BHC	150	0.03	0.00	6	2.60	0.10
Cadmium	179	3151.94	0.00	82	200000.0	50.00
Chlordane	144	16.04	3.00	106	510.00	0.42
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	175	46207.39	9000.00	155	610000.0	947.00
Chrysene	81	782.09	0.00	27	18400.00	69.10
Copper	178	202492.4	24565.00	173	16000000	1000.00
Di-n-butyl phthalate	70	160.29	0.00	20	3400.00	200.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-octyl phthalate	70	0.00	0.00	0	.	.
Diazinon/Spectracide	115	0.09	0.00	26	3.10	0.10
Dibenzo(a,h)anthracene	81	146.03	0.00	12	5740.00	7.80
Dichlorobenzene, 1,2-	70	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	70	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	70	0.00	0.00	0	.	.
Dieldrin	156	0.54	0.00	77	6.40	0.10
Diethyl phthalate	70	15.86	0.00	2	910.00	200.00
Dimethyl phthalate	70	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	70	0.00	0.00	0	.	.
Dioxins	18	0.00	0.00	0	.	.
DDT	473	8.40	1.20	337	410.00	0.04
Endosulfan mixed isomers	137	0.03	0.00	1	4.60	4.60
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	139	0.00	0.00	0	.	.
Ethion/Bladen	115	0.00	0.00	0	.	.
Fluoranthene	81	1264.33	0.00	32	42200.00	101.00
Fluorene	81	76.51	0.00	15	1280.00	4.00
Heptachlor	146	0.12	0.00	16	7.50	0.10
Heptachlor epoxide	145	0.25	0.00	28	10.00	0.10
Hexachlorobenzene	78	0.06	0.00	6	1.50	0.16
Hexachlorobutadiene	70	0.00	0.00	0	.	.
Hexachloroethane	70	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	75	405.08	0.00	14	15100.00	71.00
Isophorone	70	0.00	0.00	0	.	.
Lead	180	100708.4	32360.00	161	2900000	7622.00
Malathion	114	0.11	0.00	5	11.00	0.10
Mercury	174	669.17	100.00	140	32000.00	10.00
Methoxychlor	139	0.01	0.00	1	1.10	1.10
Methylnaphthalene, 2-	1	258.00	258.00	1	258.00	258.00
Mirex/Dechlorane	128	75.84	0.00	44	7100.00	0.10
Naphthalene	80	104.19	0.00	13	2000.00	15.00
Nickel	102	11655.83	10000.00	60	100000.0	1744.00
Nitrosodiphenylamine, N-	70	33.71	0.00	6	1000.00	200.00
Pentachlorophenol	70	0.00	0.00	0	.	.
Phenanthrene	81	706.91	0.00	33	12800.00	35.00
Phenol	70	5.29	0.00	1	370.00	370.00
Polychlorinated biphenyls	129	126.86	10.00	88	4100.00	1.00
Pyrene	81	1242.56	0.00	32	31800.00	117.00
Silver	11	1754.55	640.00	7	6100.00	190.00
Toxaphene	139	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	70	0.00	0.00	0	.	.
Zinc	180	225280.7	70000.00	178	7100000	5549.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	1	0.00	0.00	0	.	.
BHC	2	2.62	2.62	1	5.25	5.25
Chlordane	2	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	1	4.59	4.59	1	4.59	4.59
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	23.80	23.80	1	23.80	23.80
Dioxins	2	0.00	0.00	2	0.00	0.00
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	6.57	6.57	1	6.57	6.57
Hexachlorobenzene	1	2.56	2.56	1	2.56	2.56
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	1	140.00	140.00	1	140.00	140.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	5.90	5.90	1	5.90	5.90
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1	1833.00	1833.00	1	1833.00	1833.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
40.7500	74.0867	90-08-01	Ampelisca Abdita	S	20.00	9.00	no
40.8833	73.9428	90-08-12	Ampelisca Abdita	S	9.00	6.00	no

Sandy Hook-Staten Island 02030104

Watershed Summary Information

Accounting Unit Name:	Lower Hudson
State(s):	NJ NY
Political Boundaries:	Monmouth, Richmond, Middlesex, Essex, Union, Hudson
Major Waterways:	Navesink R
Number of Stations in Watershed:	Tier1 - 60 Tier2 - 21 Tier3 - 19

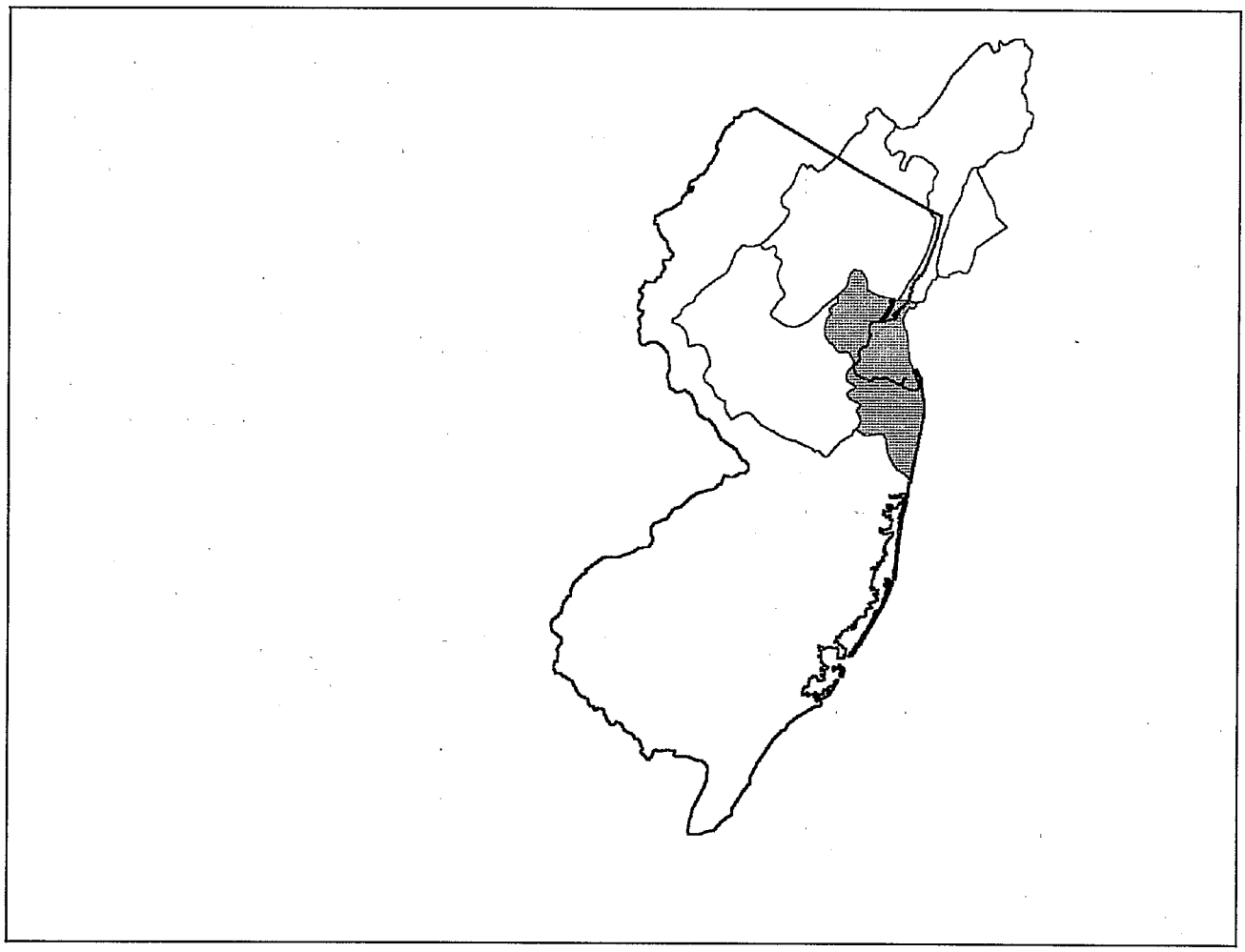

Figure 9. Watershed Location Map

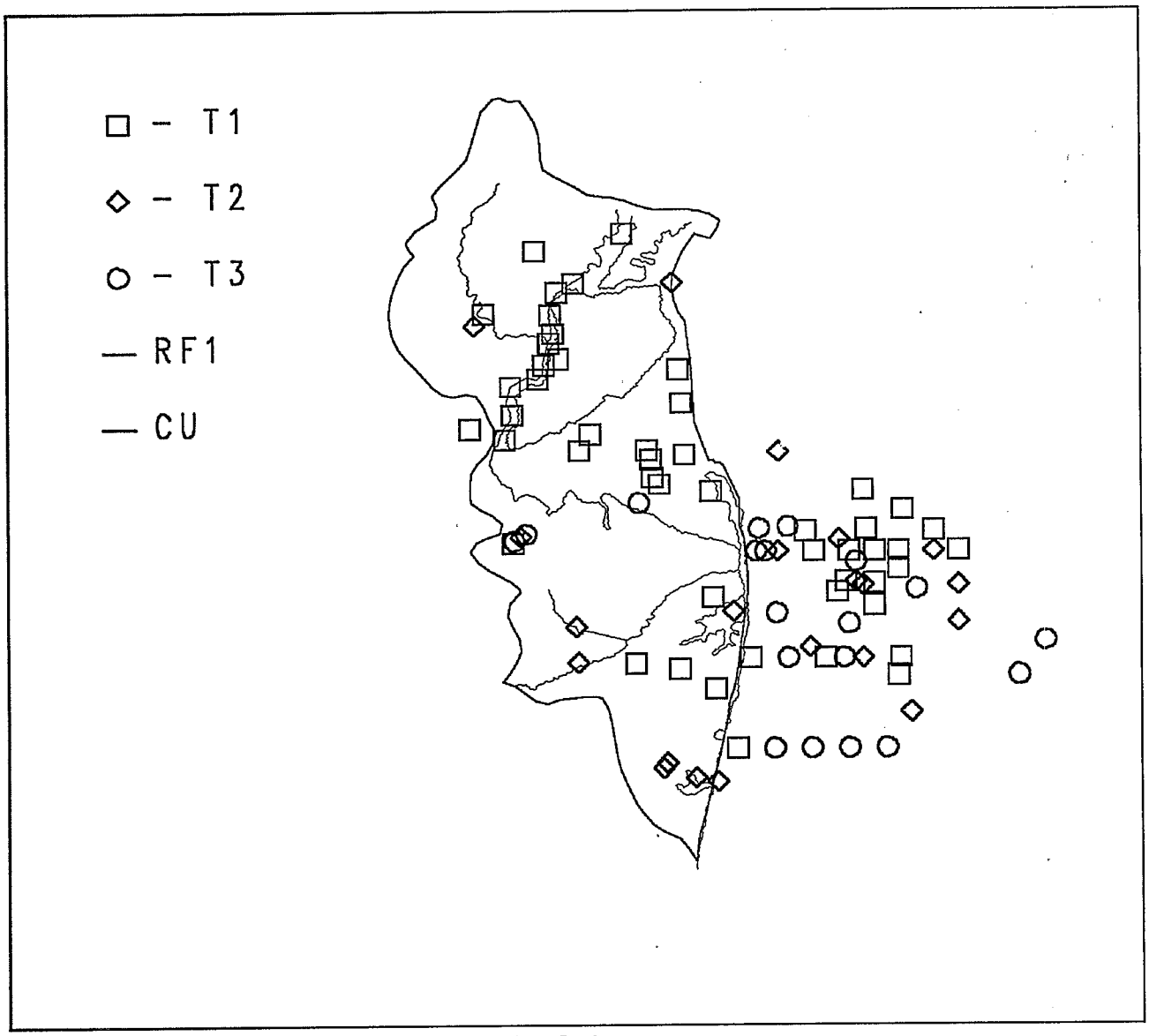

Figure 10. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 16 Date Range: 1984-91

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 5 Date Range: 1990-91

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 4 Date Range: 1985

Source: **STORET** Agency: **1111H030**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 62 Date Range: 1980-88

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 7 Date Range: 1980-90

Source: **STORET** Agency: **21NJDEP1**
Monitoring Program: **New Jersey Dept Environ Protection Data - Div of Water Resources**
Num. of Stations: 5 Date Range: 1983-84

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 1 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	92	64	53	11	53	11	.	.
Copper	91	62	.	62	.	62	.	.
Lead	92	62	.	62	.	62	.	.
Arsenic	71	53	3	50	3	50	.	.
Chromium	94	51	9	42	9	42	.	.
Zinc	93	51	.	51	.	51	.	.
Silver	84	45	37	8	37	8	.	.
Nickel	70	43	.	43	.	43	.	.
Cadmium	92	42	.	42	.	42	.	.
Pyrene	44	40	8	32	8	32	.	.
DDT	41	35	17	18	17	18	.	8
Benzo(a)anthracene	37	34	6	28	6	28	.	27
Chrysene	36	33	2	31	2	31	.	.
Benzo(a)pyrene	35	32	4	28	4	27	.	32
Naphthalene	31	30	1	29	1	29	.	.
Anthracene	35	29	5	24	5	24	.	.
Polychlorinated biphenyls	35	28	19	9	19	4	.	28
Chlordane	36	27	.	27	.	26	.	9
Fluorene	26	26	1	25	1	25	.	.
Bis(2-ethylhexyl)phthalate	27	25	20	5	20	5	.	20
Dibenzo(a,h)anthracene	25	21	4	17	4	17	.	21
Fluoranthene	46	21	3	18	3	18	.	.
Acenaphthylene	17	16	2	14	2	14	.	.
Dieldrin	34	16	.	16	.	5	.	15
Phenanthrene	41	15	3	12	3	12	.	.
BHC	34	14	.	14	.	14	.	.
Benzo(b)fluoranthene	13	10	.	10	.	.	.	10

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Acenaphthene	27	8	.	8	.	8	.	.
Methylnaphthalene, 2-	8	7	.	7	.	7	.	.
Aldrin	28	5	.	5	.	.	.	5
Diazinon/Spectracide	6	5	.	5	.	5	.	.
Indeno(1,2,3-cd)pyrene	16	5	.	5	.	1	.	5
HMW_PAHs	4	4	.	4	.	4	.	.
LMW_PAHs	4	4	.	4	.	4	.	.
Dichlorobenzene, 1,4-	5	2	2	.	2	.	.	.
Benzo(ghi)perylene	15	1	.	1	.	1	.	.
Endosulfan mixed isomers	6	1	.	1	.	1	.	.
Trichlorobenzene, 1,2,4-	2	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	46	86.02	41.50	46	1770.00	13.10
Acenaphthylene	23	188.25	59.00	22	1900.00	8.00
Aldrin	42	0.69	0.00	15	8.00	0.24
Anthracene	57	422.32	250.00	55	4600.00	4.60
Antimony	85	3225.85	1600.00	55	49100.00	400.00
Arsenic	137	16535.01	11000.00	129	140000.0	1000.00
Benzene	10	0.85	0.55	10	3.40	0.10
Benzo(a)anthracene	59	885.51	555.00	59	5000.00	26.00
Benzo(a)pyrene	57	699.69	581.60	55	2500.00	16.00
Benzo(b)fluoranthene	15	502.14	529.48	15	1300.00	3.40
Benzo(ghi)perylene	21	385.14	400.00	18	1060.00	62.00
Benzo(k)fluoranthene	15	458.97	400.00	15	1300.00	3.40
Biphenyl	39	53.05	48.00	38	240.00	6.00
Bis(2-ethylhexyl)phthalate	27	26063.59	16000.00	27	98000.00	68.00
BHC	58	0.47	0.00	20	7.00	0.13
Cadmium	186	1771.88	0.00	72	22000.00	329.00
Chlordane	66	6.11	3.98	59	82.00	0.29
Chlorobenzene	3	96.03	3.10	3	284.00	1.00
Chromium	190	95750.03	44850.00	175	760000.0	1000.00
Chrysene	58	929.61	630.75	58	7100.00	31.00
Copper	187	116825.5	37000.00	159	860000.0	600.00
Di-n-butyl phthalate	12	246.17	140.00	12	740.00	89.00
Di-n-octyl phthalate	11	1363.09	650.00	11	4200.00	24.00
Diazinon/Spectracide	18	0.19	0.00	8	0.90	0.20
Dibenzo(a,h)anthracene	50	127.56	110.00	46	380.00	35.76
Dichlorobenzene, 1,2-	2	40.00	40.00	2	48.00	32.00
Dichlorobenzene, 1,3-	3	33.57	28.00	3	65.00	7.70

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichlorobenzene, 1,4-	5	227.60	65.00	5	500.00	28.00
Dichloroethene, trans-1,2-	3	1.70	1.80	3	1.90	1.40
Dichloromethane	14	34.05	8.25	14	271.00	0.20
Dichloropropane, 1,2-	2	1.10	1.10	2	1.50	0.70
Dieldrin	62	2.77	1.95	52	13.00	0.20
Diethyl phthalate	9	38.56	32.00	9	80.00	13.00
DDT	283	664.26	5.20	248	148000.0	0.11
Endosulfan mixed isomers	17	0.34	0.00	1	5.70	5.70
Endosulfan, alpha-	4	0.00	0.00	0	.	.
Endosulfan, beta-	4	0.00	0.00	0	.	.
Endrin	21	0.00	0.00	0	.	.
Ethion/Bladen	17	0.01	0.00	1	0.10	0.10
Ethylbenzene	4	1.72	1.55	4	3.00	0.80
Fluoranthene	68	1448.32	735.74	68	19900.00	2.50
Fluorene	47	125.11	69.00	47	2320.00	26.00
Heptachlor	50	0.51	0.00	22	5.00	0.20
Heptachlor epoxide	38	0.38	0.00	13	2.20	0.10
Hexachlorobenzene	47	1.44	1.10	43	9.00	0.20
HMW_PAHs	4	2675.00	2550.00	4	3300.00	2300.00
Indeno(1,2,3-cd)pyrene	22	345.88	370.75	18	912.00	64.00
Isophorone	2	10.60	10.60	2	15.00	6.20
Lead	186	118574.2	62000.00	151	1100000	680.00
LMW_PAHs	4	822.50	745.00	4	1100.00	700.00
Malathion	17	0.01	0.00	1	0.10	0.10
Mercury	189	1681.16	500.00	116	31000.00	10.00
Methoxychlor	21	0.42	0.00	1	8.90	8.90
Methylnaphthalene, 2-	8	104.20	86.50	7	274.00	22.60
Mirex/Dechlorane	51	1.03	0.60	27	6.40	0.31
Naphthalene	53	222.38	210.00	53	820.00	2.00
Nickel	118	27115.88	30050.00	90	120000.0	3700.00
Phenanthrene	63	716.93	380.00	63	11800.00	4.60
Phenol	2	58.50	58.50	2	76.00	41.00
Polychlorinated biphenyls	82	176.99	5.00	47	4300.00	1.00
Pyrene	66	1714.04	955.00	66	14900.00	5.30
Silver	165	3176.02	0.00	76	36000.00	790.00
Tetrachloromethane	5	5.36	2.50	5	12.00	0.70
Toluene	8	2.92	1.75	8	6.80	1.10
Toxaphene	21	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	70.50	70.50	2	120.00	21.00
Trichloroethane, 1,1,1-	2	0.80	0.80	2	1.00	0.60
Trichloroethene	5	5.08	5.40	5	9.80	0.90
Trichloromethane/Chloroform	4	1.67	1.00	4	4.30	0.40
Zinc	194	204238.3	102000.0	193	1800000	4400.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cadmium	4	317.50	320.00	4	360.00	270.00
Chromium	4	2530.00	2145.00	4	4780.00	1050.00
Lead	4	942.50	905.00	4	1150.00	810.00
Mercury	4	0.00	0.00	0	.	.

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
40.1897	74.0317	90-08-10	Ampelisca Abdita	S	26.60	6.80	no
40.3433	73.9867	90-08-09	Ampelisca Abdita	S	10.80	6.80	no
40.5112	74.3000	91-08-04	Ampelisca Abdita	S	73.00	16.00	Yes
40.6467	74.0583	90-07-30	Ampelisca Abdita	S	17.00	9.00	no

Raritan 02030105

Watershed Summary Information

Accounting Unit Name: Lower Hudson

State(s): NJ

Political Boundaries: Somerset, Hunterdon, Middlesex, Morris, Mercer, Monmouth, Union

Major Waterways:
Millstone R
Raritan R, S Br
South R
Stony Bk
Manalapan Bk

Number of Stations in Watershed:
Tier1 - 13
Tier2 - 37
Tier3 - 15

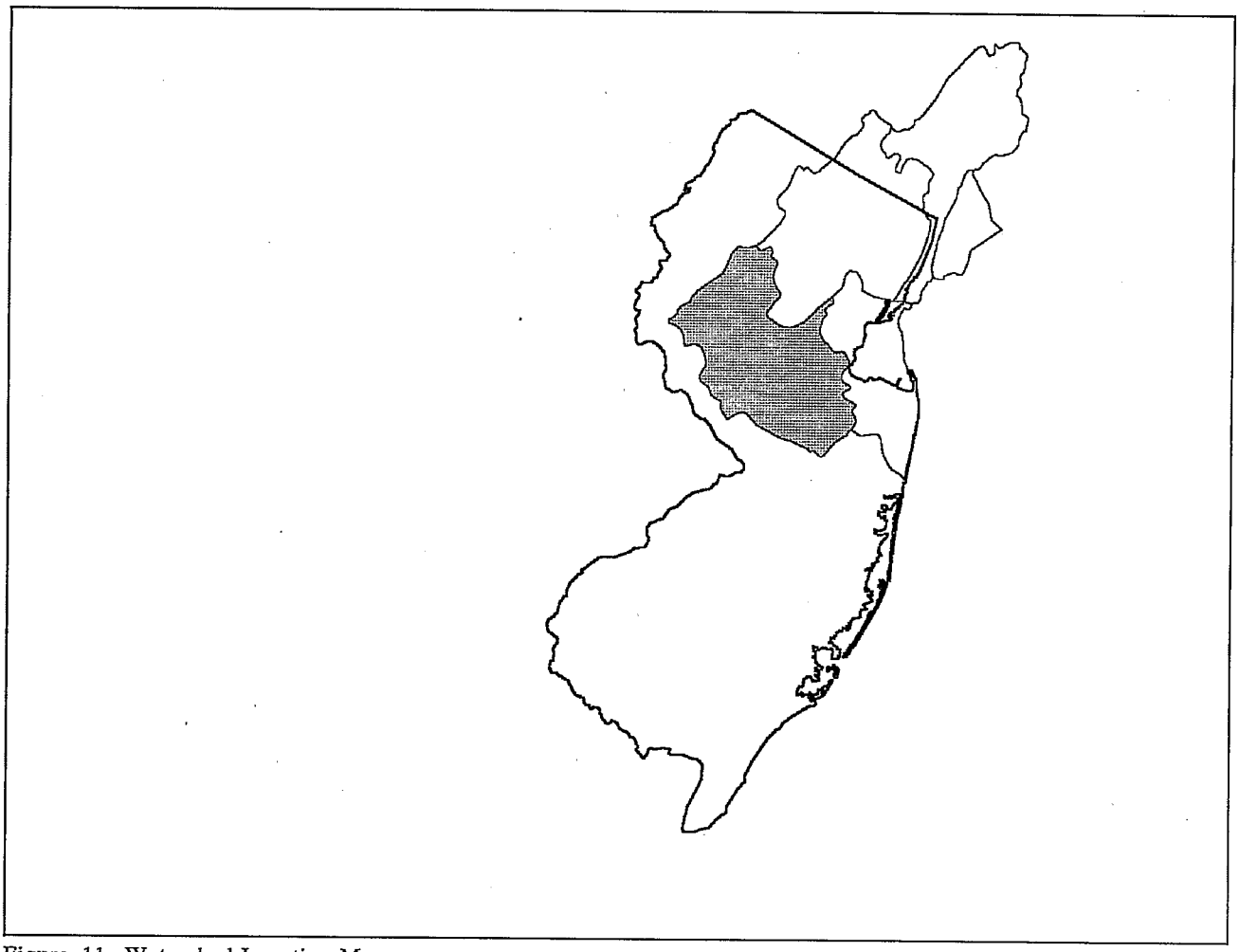

Figure 11. Watershed Location Map

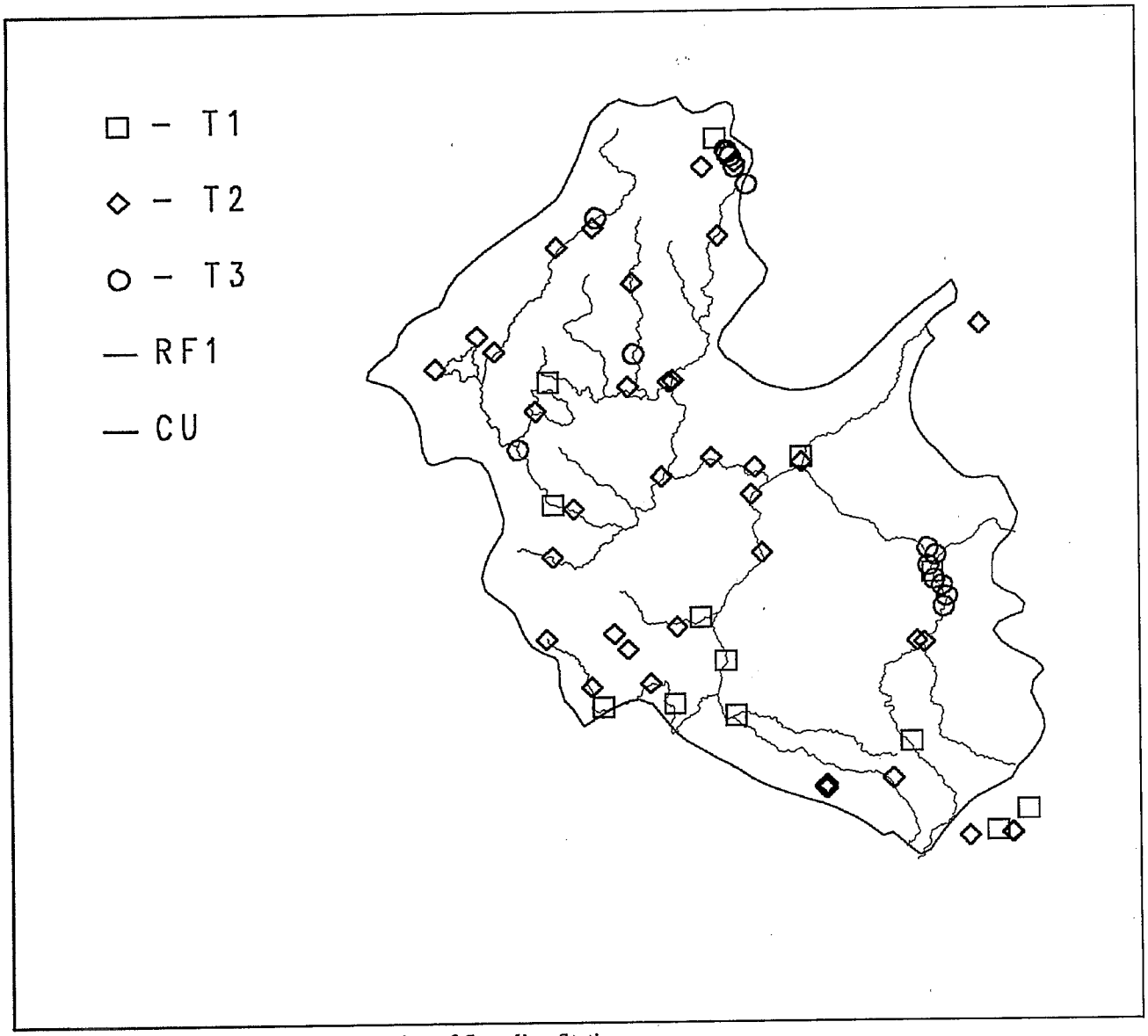

Figure 12. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11FWS
Monitoring Program: US Fish & Wildlife Service Data - USEPA Hq Backdata Study
Num. of Stations: 1 Date Range: 1980-86

Source: STORET Agency: 112WRD
Monitoring Program: US Geological Survey Data
Num. of Stations: 40 Date Range: 1980-92

Source: STORET Agency: 21NJDEP1
Monitoring Program: New Jersey Dept Environ Protection Data - Div of Water Resources
Num. of Stations: 24 Date Range: 1980-84

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	48	29	4	25	3	7	1	28
DDT	49	25	5	20	5	20	.	6
Chlordane	47	25	.	25	.	24	.	21
Copper	46	24	.	24	.	24	.	.
Lead	56	23	.	23	.	23	.	.
Arsenic	53	22	.	22	.	21	.	1
Nickel	55	19	.	19	.	19	.	.
Zinc	56	18	.	18	.	18	.	.
Cadmium	56	13	.	13	.	13	.	.
Mercury	53	12	1	11	1	11	.	.
Chromium	55	10	1	9	1	9	.	.
Dieldrin	45	7	.	7	.	3	.	6
Diazinon/Spectracide	34	6	.	6	.	6	.	.
Bis(2-ethylhexyl)phthalate	13	4	1	3	1	3	.	1
Benzo(a)pyrene	12	3	.	3	.	.	.	3
Aldrin	45	2	.	2	.	.	.	2
Butyl benzyl phthalate	11	2	.	2	.	2	.	.
Fluoranthene	13	2	.	2	.	2	.	.
Phenanthrene	13	2	.	2	.	2	.	.
Naphthalene	9	1	1	.	1	.	.	.
Anthracene	9	1	.	1	.	1	.	.
BHC	46	1	.	1	.	1	.	.
Dibenzo(a,h)anthracene	10	1	.	1	.	1	.	1
Heptachlor epoxide	46	1	.	1	.	.	.	1
Pyrene	13	1	.	1	.	1	.	.
Toxaphene	46	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	9	0.00	0.00	0	.	.
Acenaphthylene	9	0.00	0.00	0	.	.
Aldrin	130	0.02	0.00	4	1.90	0.10
Anthracene	9	23.33	0.00	1	210.00	210.00
Arsenic	126	5003.54	2000.00	90	31000.00	42.00
Benzene	1	6.00	6.00	1	6.00	6.00
Benzo(a)anthracene	10	5.50	0.00	1	55.00	55.00
Benzo(a)pyrene	12	8.92	0.00	3	40.00	27.00
Benzo(b)fluoranthene	9	0.00	0.00	0	.	.
Benzo(ghi)perylene	9	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(k)fluoranthene	9	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	13	765.38	0.00	4	7000.00	480.00
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	11	1051.82	0.00	2	6870.00	4700.00
BHC	147	0.01	0.00	1	1.60	1.60
Cadmium	158	136.49	0.00	23	3000.00	34.00
Chlordane	142	8.46	2.00	94	180.00	1.00
Chromium	158	18399.11	6000.00	128	340000.0	270.00
Chrysene	10	6.50	0.00	1	65.00	65.00
Copper	148	18885.14	10000.00	134	280000.0	1000.00
Di-n-butyl phthalate	13	94.85	0.00	4	490.00	33.00
Di-n-octyl phthalate	9	0.00	0.00	0	.	.
Diazinon/Spectracide	106	0.06	0.00	17	2.20	0.10
Dibenzo(a,h)anthracene	10	3.00	0.00	1	30.00	30.00
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dichloromethane	1	79.00	79.00	1	79.00	79.00
Dieldrin	139	0.27	0.00	66	6.30	0.10
Diethyl phthalate	13	22.77	0.00	4	110.00	33.00
Dimethyl phthalate	9	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	9	0.00	0.00	0	.	.
DDT	420	3.56	0.30	276	206.00	0.10
Endosulfan mixed isomers	123	0.03	0.00	7	1.60	0.10
Endosulfan, alpha-	8	0.00	0.00	0	.	.
Endosulfan, beta-	8	0.00	0.00	0	.	.
Endrin	130	0.02	0.00	3	1.00	0.80
Ethion/Bladen	106	0.00	0.00	0	.	.
Ethylbenzene	1	3.00	3.00	1	3.00	3.00
Fluoranthene	13	52.38	0.00	5	400.00	20.00
Fluorene	10	0.67	0.00	1	6.70	6.70
Heptachlor	131	0.01	0.00	4	0.40	0.20
Heptachlor epoxide	130	0.03	0.00	15	0.80	0.10
Hexachlorobenzene	9	0.00	0.00	0	.	.
Hexachlorobutadiene	9	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	10	4.70	0.00	1	47.00	47.00
Isophorone	9	0.00	0.00	0	.	.
Lead	158	38666.23	12540.00	109	1700000	1510.00
Malathion	106	0.00	0.00	0	.	.
Mercury	138	60.67	5.00	69	4000.00	10.00
Methoxychlor	130	0.00	0.00	0	.	.
Mirex/Dechlorane	131	0.02	0.00	5	1.30	0.10
Naphthalene	9	54.44	0.00	1	490.00	490.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Nickel	157	8271.02	0.00	63	80000.00	650.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	13	33.15	0.00	5	250.00	27.00
Phenol	9	0.00	0.00	0	.	.
Polychlorinated biphenyls	184	11.25	0.00	79	480.00	1.00
Pyrene	13	42.23	0.00	5	320.00	13.00
Silver	13	0.00	0.00	0	.	.
Toluene	1	76.00	76.00	1	76.00	76.00
Toxaphene	131	0.08	0.00	1	10.00	10.00
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Zinc	158	72885.13	40000.00	157	1100000	1000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	10.00	10.00	2	10.00	10.00
Arsenic	6	51.77	45.00	6	84.60	26.00
BHC	12	10.00	10.00	12	10.00	10.00
Cadmium	6	31.30	30.00	6	42.30	20.00
Chlordane	24	58.75	50.00	24	140.00	10.00
Copper	6	957.13	1075.00	6	1420.00	394.80
Dieldrin	6	25.00	25.00	6	40.00	10.00
DCPA/Dacthal	6	16.67	15.00	6	30.00	10.00
DDT	14	115.71	120.00	14	260.00	20.00
Endrin	6	18.33	10.00	6	40.00	10.00
Heptachlor	6	10.00	10.00	6	10.00	10.00
Heptachlor epoxide	2	25.00	25.00	2	40.00	10.00
Hexachlorobenzene	6	10.00	10.00	6	10.00	10.00
Lead	6	331.73	325.20	6	470.00	210.00
Mercury	6	201.07	190.00	6	338.40	110.00
Mirex/Dechlorane	6	10.00	10.00	6	10.00	10.00
Polychlorinated biphenyls	20	630.00	425.00	20	2440.00	80.00
Selenium	6	10770.10	448.30	6	35000.00	360.00
Toxaphene	6	128.33	100.00	6	270.00	100.00
Zinc	6	19210.00	19760.00	6	20900.00	16430.00

Southern Long Island 02030202

Watershed Summary Information

Accounting Unit Name:	Long Island
State(s):	NY
Political Boundaries:	Suffolk, Nassau, Kings, Queens
Major Waterways:	Peconic R Carmans Cr Connet Quot R
Number of Stations in Watershed:	Tier1 - 11 Tier2 - 24 Tier3 - 8

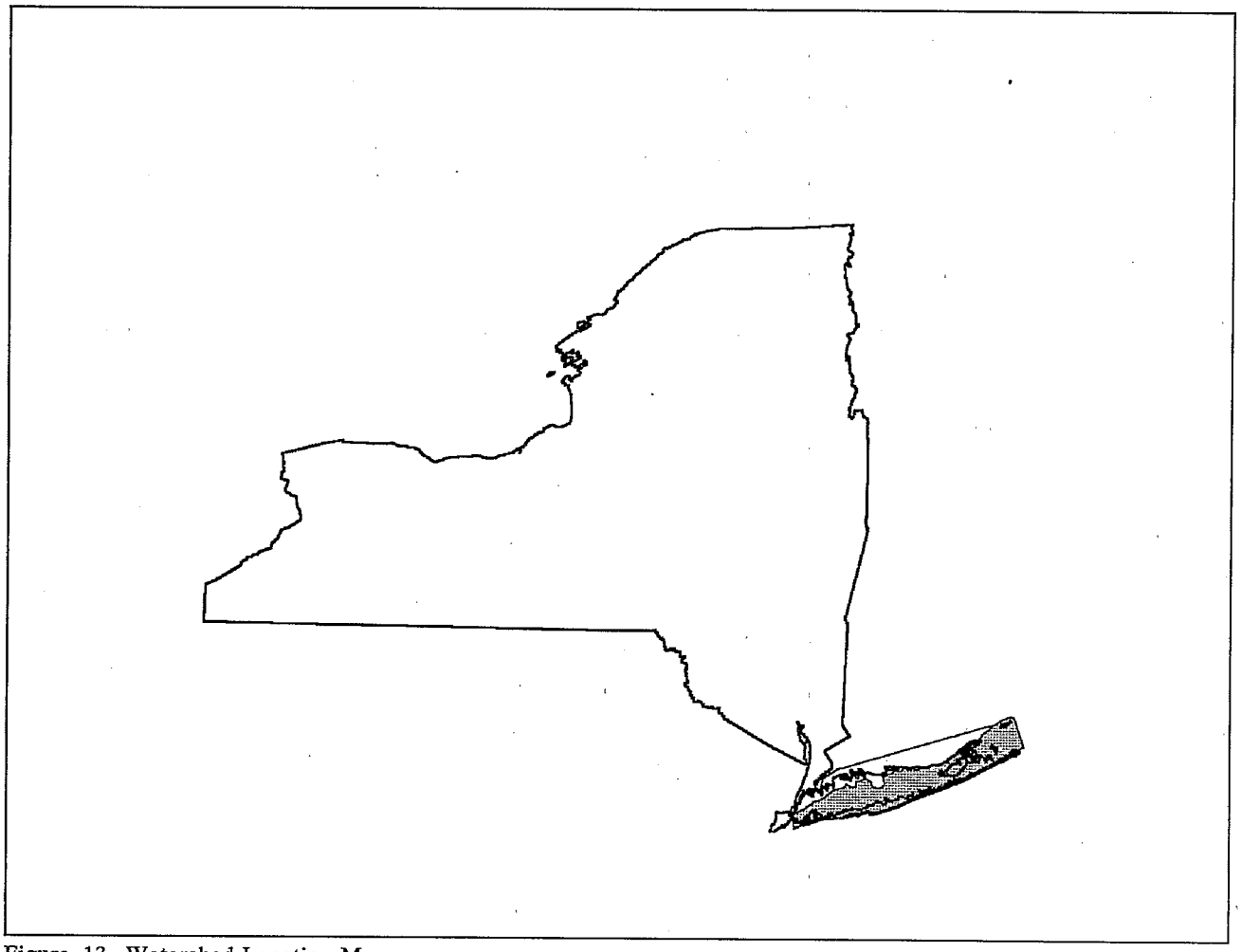

Figure 13. Watershed Location Map

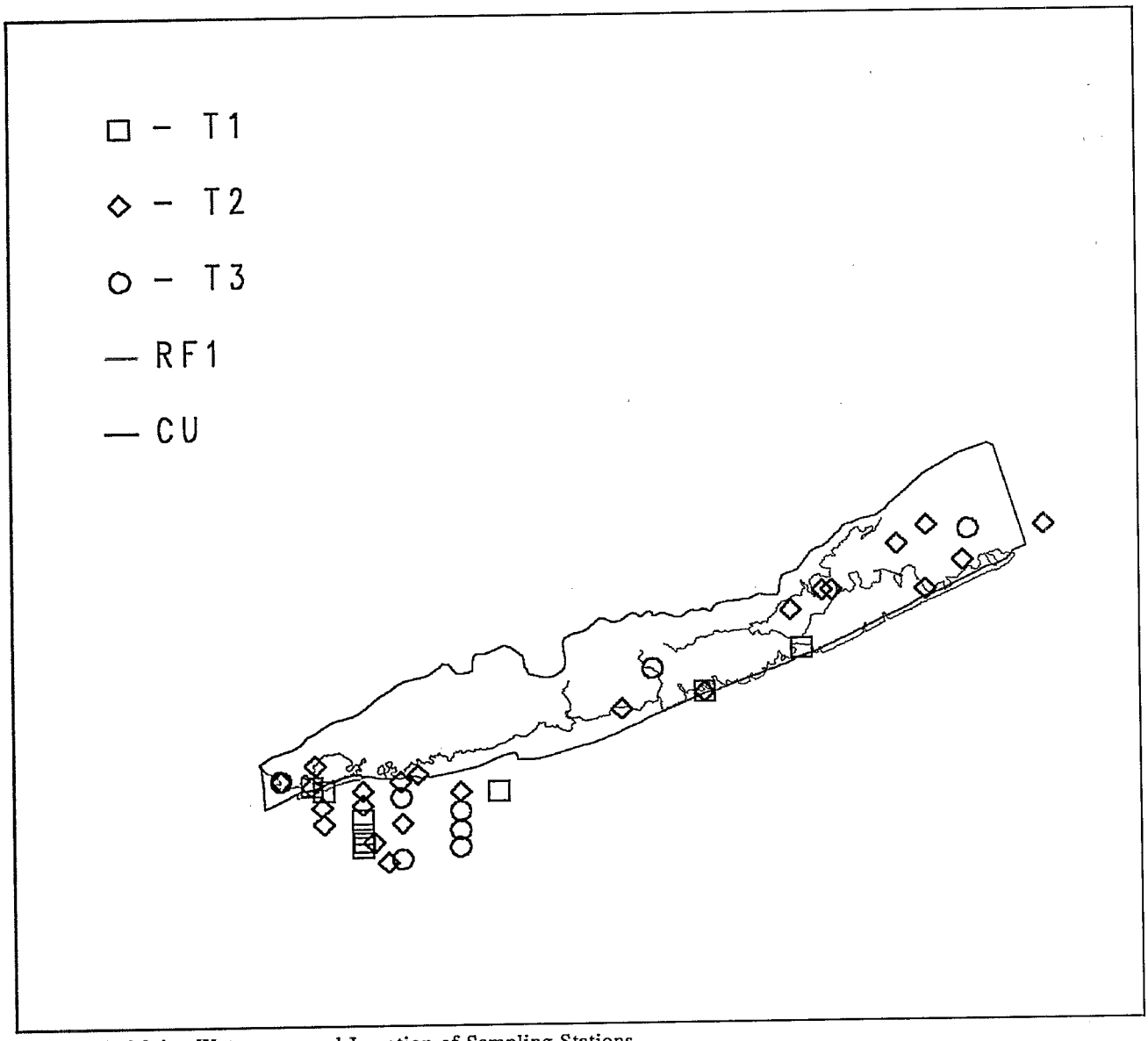

Figure 14. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 9 Date Range: 1986-90

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 9 Date Range: 1990-91

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: **STORET** Agency: **1111H030**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 19 Date Range: 1980-88

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1986

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **21NYDEC1**
Monitoring Program: **New York State Dept of Environ Conserv Data**
Num. of Stations: 1 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	37	23	.	23	.	23	.	.
Copper	40	20	.	20	.	20	.	.
Mercury	32	19	7	12	7	12	.	.
Arsenic	35	16	.	16	.	16	.	.
Chromium	38	13	1	12	1	12	.	.
Benzo(a)pyrene	16	13	.	13	.	6	.	13
Silver	40	12	4	8	4	8	.	.
Nickel	35	11	.	11	.	11	.	.
Zinc	40	10	.	10	.	10	.	.
DDT	19	9	4	5	4	5	.	.
Polychlorinated biphenyls	12	9	1	8	1	4	.	9
Cadmium	39	9	.	9	.	9	.	.
Naphthalene	14	9	.	9	.	9	.	.
Dibenzo(a,h)anthracene	14	7	1	6	1	6	.	6
Benzo(a)anthracene	19	7	.	7	.	7	.	1
BHC	18	7	.	7	.	7	.	.
Pyrene	19	7	.	7	.	7	.	.
Chrysene	18	6	.	6	.	6	.	.
Bis(2-ethylhexyl)phthalate	5	3	2	1	2	1	.	2
Aldrin	16	3	.	3	.	.	.	3
Butyl benzyl phthalate	3	3	.	3	.	3	.	.
Dieldrin	18	3	.	3	.	.	.	3
Anthracene	12	2	.	2	.	2	.	.
Chlordane	19	2	.	2	.	2	.	.
Fluorene	14	2	.	2	.	2	.	.
Fluoranthene	20	1	.	1	.	1	.	.
HMW_PAHs	3	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Methylnaphthalene, 2-	9	1	.	1	.	1	.	.
Phenanthrene	15	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	12	6.56	0.00	5	36.00	1.94
Acenaphthylene	9	0.96	1.20	5	2.77	1.20
Aldrin	18	0.24	0.00	6	1.30	0.35
Anthracene	14	43.92	9.88	11	300.00	1.40
Antimony	35	609.26	0.00	17	5500.00	150.00
Arsenic	54	8920.00	6220.00	54	52000.00	1800.00
Benzene	3	0.37	0.40	3	0.40	0.30
Benzo(a)anthracene	24	75.10	23.00	19	380.00	7.50
Benzo(a)pyrene	22	92.36	29.00	20	510.00	5.80
Benzo(b)fluoranthene	4	47.66	26.92	4	120.00	16.78
Benzo(ghi)perylene	15	12.57	5.10	8	83.40	5.10
Benzo(k)fluoranthene	6	32.66	18.51	6	120.00	4.20
Biphenyl	11	9.54	0.00	5	53.00	2.24
Bis(2-ethylhexyl)phthalate	5	2492.00	980.00	5	7100.00	81.00
Butyl benzyl phthalate	3	1833.33	1900.00	3	2200.00	1400.00
BHC	20	0.97	0.06	10	7.60	0.12
Cadmium	60	935.08	55.00	31	31000.00	50.00
Chlordane	24	1.32	0.44	15	11.00	0.34
Chromium	63	53484.92	33500.00	61	740000.0	3100.00
Chrysene	24	91.06	31.85	20	420.00	6.90
Copper	62	55320.48	15400.00	58	1400000	670.00
Di-n-butyl phthalate	5	137.00	170.00	5	230.00	30.00
Dibenzo(a,h)anthracene	19	77.86	8.30	11	810.00	7.30
Dichloromethane	5	1.02	0.90	5	1.90	0.60
Dieldrin	20	1.05	0.00	9	9.30	0.20
Diethyl phthalate	3	30.33	27.00	3	45.00	19.00
DDT	105	3.35	0.00	49	46.00	0.10
Ethylbenzene	2	2.60	2.60	2	4.90	0.30
Fluoranthene	26	159.03	61.12	21	690.00	12.00
Fluorene	16	13.62	1.32	8	100.00	2.64
Heptachlor	14	0.13	0.00	2	1.10	0.77
Heptachlor epoxide	20	0.27	0.00	9	1.60	0.12
Hexachlorobenzene	23	0.41	0.10	12	2.00	0.10
HMW_PAHs	3	1033.33	0.00	1	3100.00	3100.00
Indeno(1,2,3-cd)pyrene	11	16.42	0.00	5	84.30	14.05
Lead	60	67163.33	31250.00	58	1100000	6500.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
LMW_PAHs	3	0.00	0.00	0	.	.
Mercury	54	422.93	110.00	37	6300.00	14.00
Methylnaphthalene, 2-	9	10.67	0.00	3	65.00	14.00
Mirex/Dechlorane	19	1.00	0.18	10	6.00	0.18
Naphthalene	19	58.65	22.00	17	190.00	3.70
Nickel	44	12990.45	11000.00	35	76000.00	3180.00
Phenanthrene	21	99.40	57.00	20	430.00	5.80
Phenol	1	49.00	49.00	1	49.00	49.00
Polychlorinated biphenyls	19	29.01	4.97	14	240.00	0.17
Pyrene	25	196.04	67.00	24	1300.00	11.00
Silver	60	1555.04	7.50	30	50000.00	15.00
Tetrachloromethane	2	1.30	1.30	2	2.30	-0.30
Toluene	3	40.83	1.90	3	120.00	0.60
Trichloroethane, 1,1,1-	1	0.40	0.40	1	0.40	0.40
Trichloroethene	2	0.80	0.80	2	1.10	0.50
Trichloromethane/Chloroform	1	0.50	0.50	1	0.50	0.50
Zinc	66	105939.4	49550.00	66	1900000	4400.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
40.6158	73.8875	91-08-03	Ampelisca Abdita	S	25.00	16.00	no
40.7408	72.9978	90-08-19	Ampelisca Abdita	S	9.60	2.80	no
40.9567	72.5033	90-08-08	Ampelisca Abdita	S	37.20	6.80	Yes
41.0000	72.3833	91-08-15	Ampelisca Abdita	S	14.00	10.70	no
41.0000	72.4117	90-07-30	Ampelisca Abdita	S	53.00	9.00	Yes
41.0617	72.0017	90-09-11	Ampelisca Abdita	S	7.00	6.00	no
41.1315	71.9855	91-09-05	Ampelisca Abdita	S	15.00	4.00	no

Middle Delaware-Musconetcong 02040105

Watershed Summary Information

Accounting Unit Name: Upper Delaware

State(s): NJ PA

Political Boundaries: Warren, Sussex, Northampton, Bucks, Hunterdon, Mercer, Morris, Somerset, Monmouth, Monroe

Major Waterways:
Delaware R
Paulins Kill
Musconetcong R
Pohatcong R
Tohickon Cr

Number of Stations in Watershed:
Tier1 - 11
Tier2 - 26
Tier3 - 11

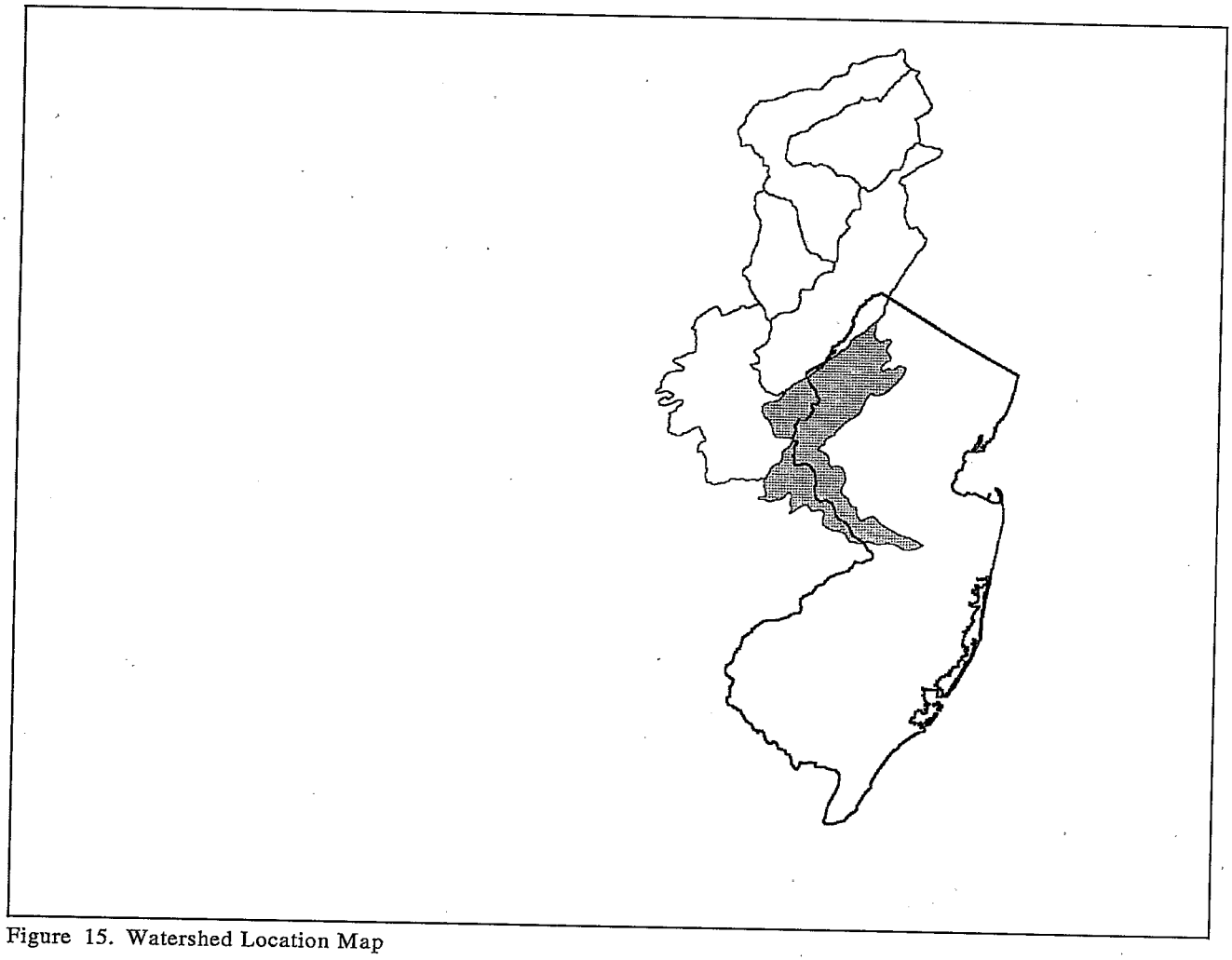

Figure 15. Watershed Location Map

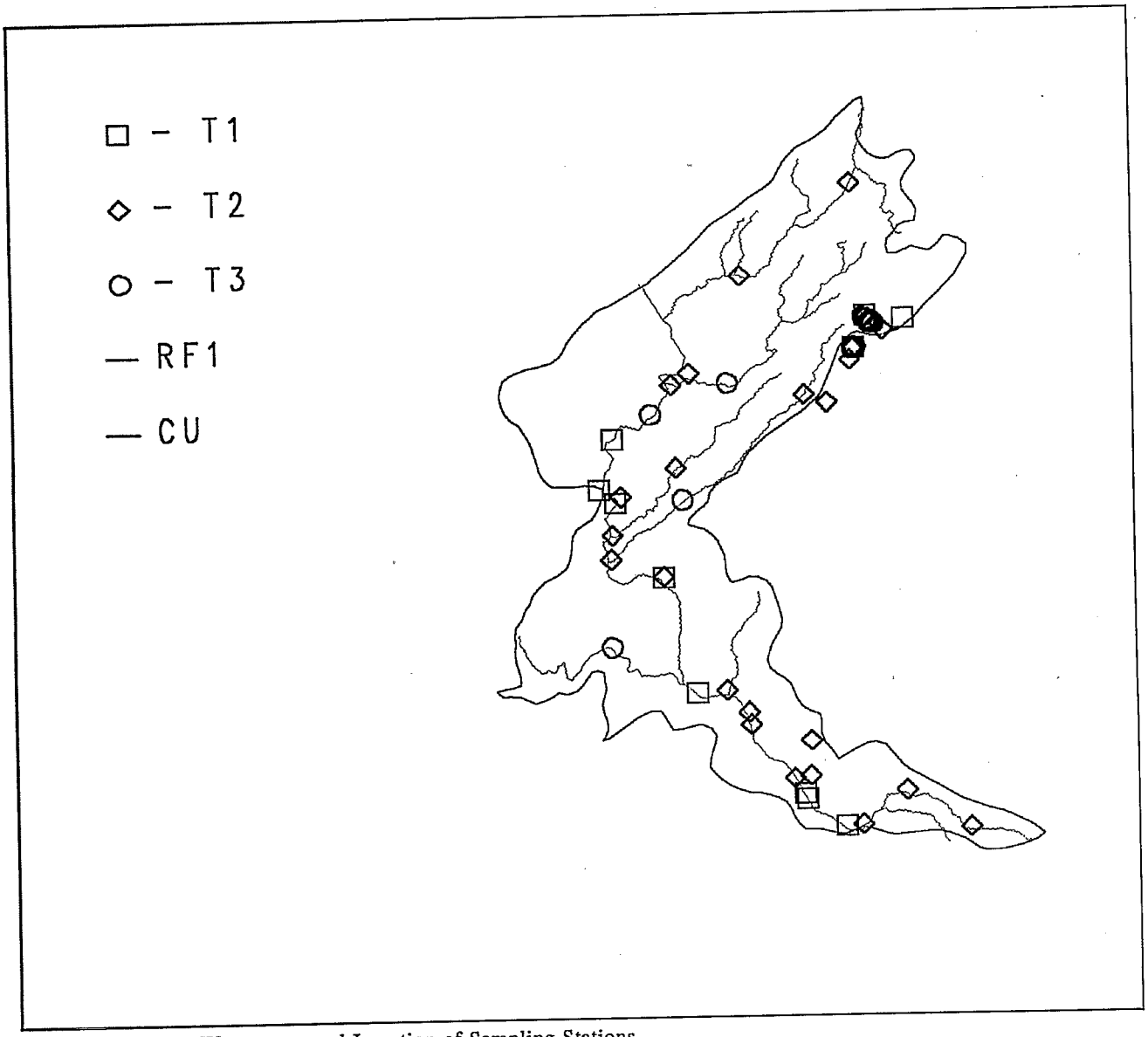

Figure 16. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11121XWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 4 Date Range: 1988-89

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 25 Date Range: 1980-92

Source: **STORET** Agency: **21NJDEP1**
Monitoring Program: **New Jersey Dept Environ Protection Data - Div of Water Resources**
Num. of Stations: 14 Date Range: 1980

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 5 Date Range: 1982-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	33	21	8	13	1	3	7	14
Chlordane	34	16	.	16	.	15	.	10
DDT	33	15	1	14	1	13	.	1
Copper	45	11	.	11	.	11	.	.
Lead	45	11	.	11	.	10	.	1
Zinc	42	9	.	9	.	9	.	.
Arsenic	38	7	.	7	.	7	.	.
Cadmium	46	6	.	6	.	6	.	.
Dieldrin	32	5	.	5	.	1	.	4
Mercury	40	4	1	3	1	3	.	.
Nickel	42	4	.	4	.	4	.	.
Chromium	45	3	1	2	1	2	.	.
Fluoranthene	6	3	1	2	1	2	.	.
Phenanthrene	4	3	1	2	1	2	.	.
Pyrene	6	3	1	2	1	2	.	.
Benzo(a)anthracene	6	2	1	1	1	1	.	2
Chrysene	6	2	1	1	1	1	.	.
Benzo(ghi)perylene	4	2	.	2	.	2	.	.
Diazinon/Spectracide	19	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	6	2	.	2	.	1	.	2
Fluorene	6	1	1	.	1	.	.	.
Naphthalene	6	1	1	.	1	.	.	.
Anthracene	6	1	.	1	.	1	.	.
Benzo(a)pyrene	6	1	.	1	.	1	.	1
Benzo(b)fluoranthene	6	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	4	0.00	0.00	0	.	.
Acenaphthylene	4	0.00	0.00	0	.	.
Aldrin	52	0.01	0.00	2	0.60	0.10
Anthracene	4	210.00	0.00	1	840.00	840.00
Arsenic	59	3696.36	1681.00	39	56180.00	336.00
Benzo(a)anthracene	4	942.50	335.00	2	3100.00	670.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)pyrene	4	107.50	0.00	1	430.00	430.00
Benzo(b)fluoranthene	4	700.00	0.00	1	2800.00	2800.00
Benzo(ghi)perylene	4	725.00	550.00	2	1800.00	1100.00
Benzo(k)fluoranthene	4	185.00	0.00	1	740.00	740.00
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	58	0.00	0.00	0	.	.
Cadmium	74	174.34	0.00	15	4600.00	34.00
Chlordane	58	4.13	1.00	31	51.00	1.00
Chromium	73	23810.36	3000.00	62	1100000	400.00
Chrysene	4	932.50	365.00	2	3000.00	730.00
Copper	73	13898.01	4535.00	63	180000.0	1000.00
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Diazinon/Spectracide	40	0.11	0.00	2	4.20	0.30
Dibenzo(a,h)anthracene	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dieldrin	55	0.19	0.00	20	3.50	0.10
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
DDT	169	1.11	0.10	92	32.00	0.10
Endosulfan mixed isomers	50	0.01	0.00	1	0.30	0.30
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	52	0.00	0.00	0	.	.
Ethion/Bladen	39	0.00	0.00	0	.	.
Fluoranthene	4	2562.50	1075.00	3	8100.00	850.00
Fluorene	4	210.00	0.00	1	840.00	840.00
Heptachlor	52	0.00	0.00	0	.	.
Heptachlor epoxide	52	0.01	0.00	1	0.30	0.30
Hexachlorobenzene	2	0.00	0.00	0	.	.
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	4	285.00	215.00	2	710.00	430.00
Isophorone	2	0.00	0.00	0	.	.
Lead	73	22842.33	10440.00	54	270000.0	740.00
Malathion	39	0.00	0.00	0	.	.
Mercury	66	34.85	0.00	25	780.00	10.00
Methoxychlor	52	0.08	0.00	2	3.10	1.00
Mirex/Dechlorane	50	0.02	0.00	1	1.00	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Naphthalene	4	1600.00	0.00	1	6400.00	6400.00
Nickel	74	3417.73	0.00	26	36000.00	900.00
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	4	1080.00	410.00	3	3500.00	360.00
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	66	7.89	0.00	29	230.00	1.00
Pyrene	4	2460.00	1020.00	3	7800.00	640.00
Silver	2	0.00	0.00	0	.	.
Toxaphene	52	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Zinc	74	70673.11	39000.00	72	574900.0	5000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	4	0.00	0.00	0	.	.
Aldrin	17	0.00	0.00	0	.	.
Aniline	2	0.00	0.00	0	.	.
Anthracene	4	0.00	0.00	0	.	.
Antimony	4	0.00	0.00	0	.	.
Arsenic	15	0.00	0.00	0	.	.
Benzidine	2	0.00	0.00	0	.	.
Benzo(a)anthracene	4	0.00	0.00	0	.	.
Benzo(a)pyrene	4	0.00	0.00	0	.	.
Benzo(b)fluoranthene	4	0.00	0.00	0	.	.
Benzo(k)fluoranthene	4	0.00	0.00	0	.	.
Benzoic acid	1	0.00	0.00	0	.	.
Benzyl alcohol	2	0.00	0.00	0	.	.
Beryllium	2	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	40	0.00	0.00	0	.	.
Cadmium	18	271.17	77.50	14	1210.00	17.00
Chlordane	29	30.69	0.00	9	300.00	3.00
Chloronaphthalene, 2-	2	0.00	0.00	0	.	.
Chlorophenol, 2-	2	0.00	0.00	0	.	.
Chromium	18	309.00	165.50	12	1060.00	104.00
Chrysene	4	0.00	0.00	0	.	.
Copper	18	2371.44	1870.00	16	7010.00	552.00
Cresol, o	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cresol, p-	2	0.00	0.00	0	.	.
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	4	0.00	0.00	0	.	.
Dibenzofuran	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	2	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	2	0.00	0.00	0	.	.
Dieldrin	15	1.80	0.00	2	18.00	9.00
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	2	0.00	0.00	0	.	.
DDT	81	18.28	0.00	19	400.00	10.00
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	15	0.00	0.00	0	.	.
Fluoranthene	4	0.00	0.00	0	.	.
Fluorene	2	0.00	0.00	0	.	.
Heptachlor	11	0.00	0.00	0	.	.
Heptachlor epoxide	11	0.00	0.00	0	.	.
Hexachlorobenzene	2	0.00	0.00	0	.	.
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	4	0.00	0.00	0	.	.
Isophorone	2	0.00	0.00	0	.	.
Lead	18	737.11	285.00	17	4080.00	55.00
Mercury	6	186.33	135.00	5	640.00	18.00
Methoxychlor	17	594.71	0.00	4	4700.00	480.00
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Naphthalene	4	0.00	0.00	0	.	.
Nickel	4	0.00	0.00	0	.	.
Nitrobenzene	2	0.00	0.00	0	.	.
Nitrophenol, 4	2	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	2	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	41	56.34	0.00	11	390.00	60.00
Pyrene	4	0.00	0.00	0	.	.
Selenium	4	150.00	60.00	2	480.00	120.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Silver	4	0.00	0.00	0	.	.
Toxaphene	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	2	0.00	0.00	0	.	.
Zinc	4	7875.00	7700.00	4	9500.00	6600.00

Lower Delaware 02040202

Watershed Summary Information

Accounting Unit Name: Lower Delaware

State(s): NJ PA

Political Boundaries: Gloucester, Philadelphia, Delaware, Camden, Burlington, Chester, New Castle, Montgomery, Bucks

Major Waterways:
Delaware R
Schuylkill R
Rancocas Cr
Rancocas Cr, S Br
Darby Cr

Number of Stations in Watershed:
Tier1 - 18
Tier2 - 29
Tier3 - 10

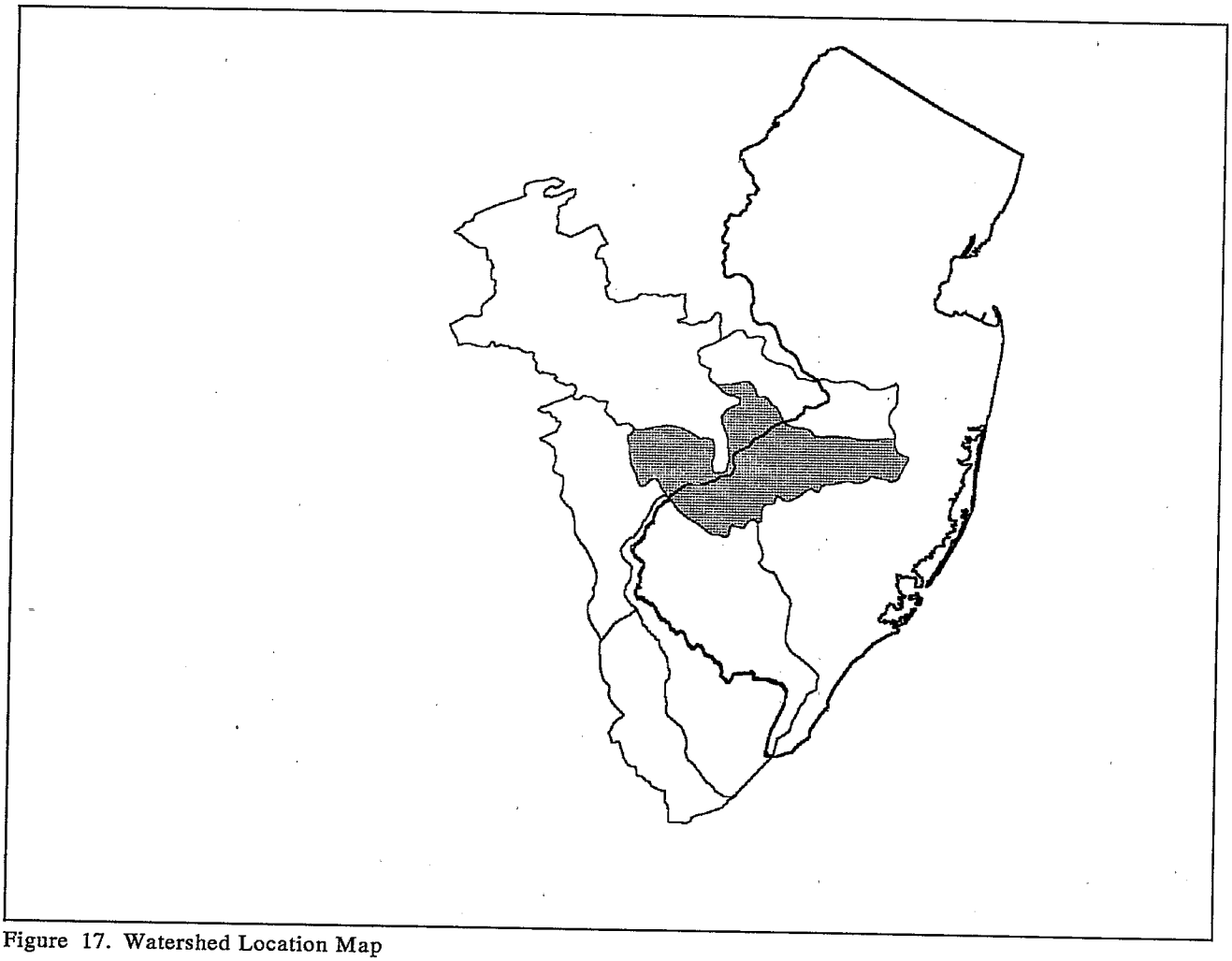

Figure 17. Watershed Location Map

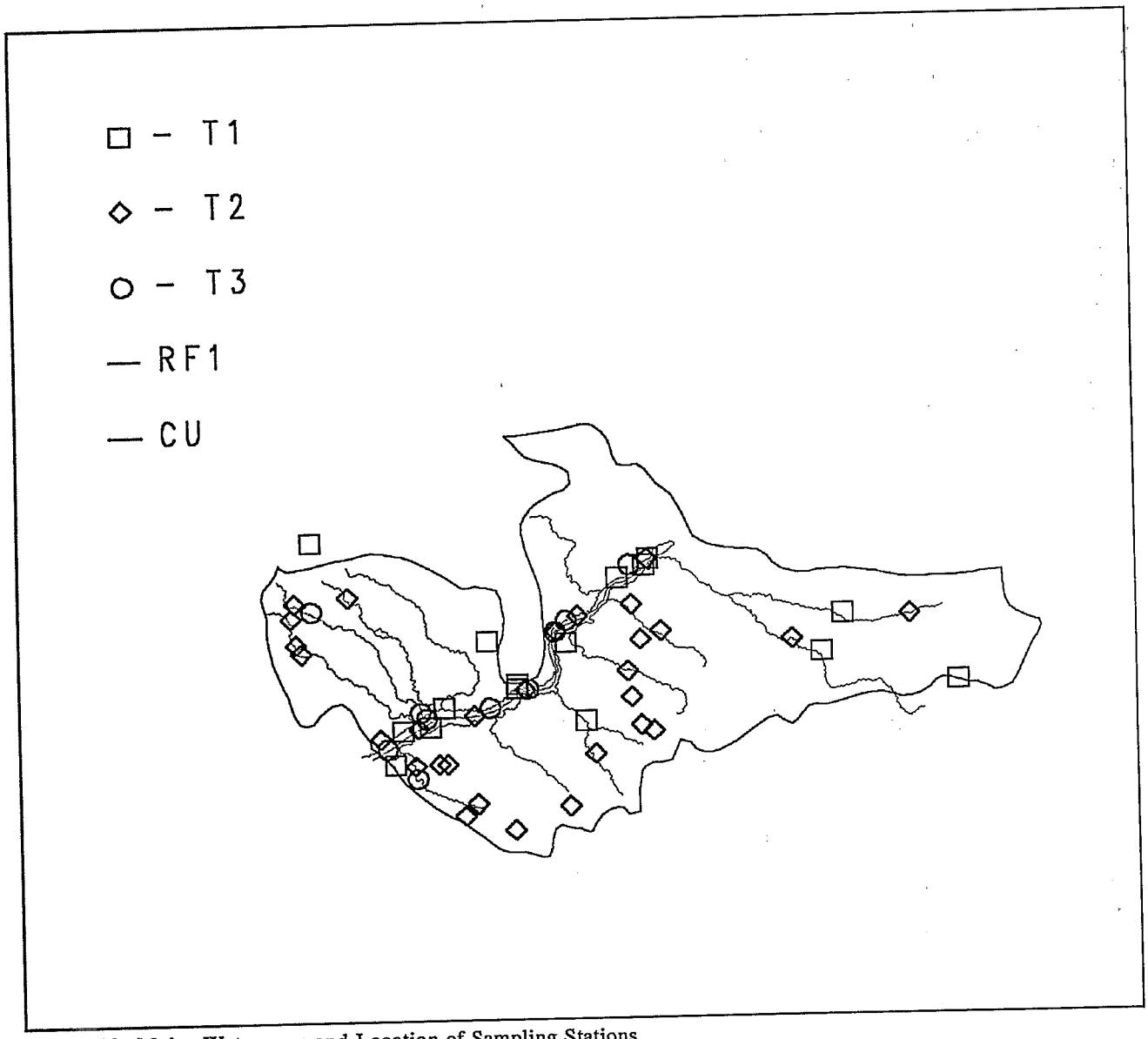

Figure 18. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: EMAP-VA Agency: EMAPVA
Monitoring Program: EMAP-VA Province
Num. of Stations: 3 Date Range: 1990-91

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 4 Date Range: 1986-87

Source: STORET Agency: 11FWS
Monitoring Program: US Fish & Wildlife Service Data - USEPA Hq Backdata Study
Num. of Stations: 1 Date Range: 1981-86

Source: **STORET** Agency: **1111H100**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 1 Date Range: 1981

Source: **STORET** Agency: **11121XWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 3 Date Range: 1989

Source: **STORET** Agency: **11131DWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 4 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 30 Date Range: 1980-92

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 3 Date Range: 1980-88

Source: **STORET** Agency: **31DELRBC**
Monitoring Program: **Delaware River Basin Commission Data**
Num. of Stations: 8 Date Range: 1980-85

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	46	32	12	20	2	7	10	22
DDT	52	32	5	27	5	20	.	15
Chlordane	45	26	.	26	.	19	.	25
Dieldrin	46	18	.	18	.	9	.	16
Lead	36	18	.	18	.	17	.	1
Cadmium	37	12	.	12	.	11	.	1
Zinc	34	11	.	11	.	11	.	.
Arsenic	33	10	.	10	.	9	.	1
Copper	36	10	.	10	.	9	.	1
Mercury	37	8	1	7	1	6	.	1
Chromium	39	7	1	6	1	6	.	.
Diazinon/Spectracide	14	7	.	7	.	7	.	.
Nickel	25	6	.	6	.	6	.	.
Aldrin	40	5	.	5	.	.	.	5
Dioxins	4	4	4	.	.	.	4	.
Naphthalene	12	3	1	2	1	2	.	.
Benzo(a)pyrene	11	3	.	3	.	2	.	3
Benzo(a)anthracene	11	2	.	2	.	2	.	2
BHC	44	2	.	2	.	2	.	.
Methylnaphthalene, 2-	3	2	.	2	.	2	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Pyrene	12	2	.	2	.	2	.	.
Bis(2-ethylhexyl)phthalate	6	1	1	.	1	.	.	1
Di-n-butyl phthalate	7	1	1	.	1	.	.	.
Dichlorobenzene, 1,4-	9	1	1	.	1	.	.	.
Acenaphthylene	6	1	.	1	.	1	.	.
Anthracene	11	1	.	1	.	1	.	.
Chrysene	10	1	.	1	.	1	.	.
Dibenzo(a,h)anthracene	10	1	.	1	.	1	.	1
Dichlorobenzene, 1,2-	9	1	.	1	.	1	.	.
Ethylbenzene	5	1	.	1	.	1	.	.
Fluoranthene	12	1	.	1	.	1	.	.
Fluorene	11	1	.	1	.	1	.	.
Heptachlor epoxide	44	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	11	1	.	1	.	.	.	1
Nitrosodiphenylamine, N-	9	1	.	1	.	1	.	.
Phenanthrene	9	1	.	1	.	1	.	.
Toxaphene	35	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	1.81	0.00	1	12.70	12.70
Acenaphthylene	6	4.30	0.00	1	25.80	25.80
Acrylonitrile	4	0.00	0.00	0	.	.
Aldrin	64	0.82	0.00	9	32.00	0.10
Anthracene	9	30.48	0.00	4	150.00	19.80
Antimony	10	1639.00	0.00	4	9300.00	285.00
Arsenic	56	7305.00	4000.00	47	44000.00	1000.00
Benzene	8	1.14	0.60	4	3.90	1.20
Benzo(a)anthracene	8	41.88	0.00	2	205.00	130.00
Benzo(a)pyrene	9	217.11	0.00	4	1270.00	47.00
Benzo(b)fluoranthene	4	0.00	0.00	0	.	.
Benzo(ghi)perylene	8	20.03	0.00	2	132.00	28.20
Benzo(k)fluoranthene	4	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	10	6030.00	625.00	5	48700.00	1250.00
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	5	0.00	0.00	0	.	.
BHC	77	0.03	0.00	5	1.00	0.10
Cadmium	66	810.52	0.00	17	12000.00	145.00
Chlordane	62	14.72	4.50	39	130.00	1.00
Chlorobenzene	6	6.33	0.00	2	37.00	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chromium	74	66543.24	7000.00	59	3051000	2000.00
Chrysene	7	45.16	0.00	2	252.00	64.10
Copper	66	16723.79	6500.00	58	110000.0	1000.00
Di-n-butyl phthalate	9	2893.33	0.00	4	14700.00	890.00
Di-n-octyl phthalate	5	0.00	0.00	0	.	.
Diazinon/Spectracide	36	0.18	0.00	13	1.40	0.10
Dibenzo(a,h)anthracene	7	5.16	0.00	1	36.10	36.10
Dibromochloromethane	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	21.67	0.00	1	130.00	130.00
Dichlorobenzene, 1,3-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	6	83.33	0.00	1	500.00	500.00
Dichloroethane 1,1-	4	0.00	0.00	0	.	.
Dichloroethane 1,2-	4	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	4	0.00	0.00	0	.	.
Dichloromethane	7	17.54	11.00	5	48.00	6.80
Dichloropropane, 1,2-	4	0.00	0.00	0	.	.
Dieldrin	69	1.80	0.30	44	64.00	0.10
Diethyl phthalate	9	51.89	0.00	4	170.00	67.00
Dimethyl phthalate	5	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	5	0.00	0.00	0	.	.
DDT	221	5.98	1.40	158	210.00	0.04
Endosulfan mixed isomers	60	0.03	0.00	7	0.60	0.10
Endosulfan, alpha-	4	0.00	0.00	0	.	.
Endosulfan, beta-	4	0.00	0.00	0	.	.
Endrin	62	0.01	0.00	1	0.60	0.60
Ethion/Bladen	37	0.00	0.00	0	.	.
Ethylbenzene	7	3.27	0.00	3	12.00	4.40
Fluoranthene	10	112.21	0.00	4	630.00	90.10
Fluorene	8	5.15	0.00	2	30.50	10.70
Heptachlor	65	0.01	0.00	6	0.20	0.10
Heptachlor epoxide	66	0.09	0.00	15	1.20	0.10
Hexachlorobenzene	8	0.00	0.00	0	.	.
Hexachlorobutadiene	5	0.00	0.00	0	.	.
Hexachloroethane	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	8	22.94	0.00	2	147.00	36.50
Isophorone	6	36.67	0.00	1	220.00	220.00
Lead	66	53865.15	30000.00	52	300000.0	10000.00
Malathion	37	0.00	0.00	0	.	.
Mercury	62	63.36	10.00	32	980.00	10.00
Methoxychlor	57	0.23	0.00	1	13.00	13.00
Methylnaphthalene, 2-	3	18.13	23.30	2	31.10	23.30
Mirex/Dechlorane	61	0.01	0.00	2	0.70	0.10
Naphthalene	10	119.47	0.00	4	670.00	62.00
Nickel	58	6220.69	0.00	17	60000.00	5000.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Nitrosodiphenylamine, N-	6	8.83	0.00	1	53.00	53.00
Pentachlorophenol	5	0.00	0.00	0	.	.
Phenanthrene	12	120.91	23.50	6	570.00	47.00
Phenol	5	0.00	0.00	0	.	.
Polychlorinated biphenyls	87	15.55	0.00	38	600.00	0.15
Pyrene	13	211.80	27.00	7	1300.00	27.00
Silver	11	10.82	0.00	1	119.00	119.00
Tetrachloroethane, 1,1,2,2-	4	0.00	0.00	0	.	.
Tetrachloroethene	4	0.00	0.00	0	.	.
Tetrachloromethane	4	0.00	0.00	0	.	.
Toluene	8	9.98	6.75	6	25.00	5.30
Toxaphene	62	0.00	0.00	0	.	.
Tribromomethane/Bromoform	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	5	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	5	1.36	0.00	1	6.80	6.80
Trichloroethane, 1,1,2-	4	0.00	0.00	0	.	.
Trichloroethene	4	0.00	0.00	0	.	.
Trichlorofluoromethane	4	0.00	0.00	0	.	.
Trichloromethane/Chloroform	4	0.00	0.00	0	.	.
Zinc	66	95978.79	42500.00	64	530000.0	7000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Aldrin	7	2.86	0.00	2	10.00	10.00
Aniline	3	0.00	0.00	0	.	.
Anthracene	3	0.00	0.00	0	.	.
Antimony	3	0.00	0.00	0	.	.
Arsenic	11	83.56	70.00	6	344.30	70.00
Benzidine	3	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	3	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Benzoic acid	3	0.00	0.00	0	.	.
Benzyl alcohol	3	0.00	0.00	0	.	.
Beryllium	3	0.00	0.00	0	.	.
Biphenyl	7	3.90	0.00	3	18.30	4.29
Bis(2-chloroethyl)ether	3	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	3	0.00	0.00	0	.	.
Butyl benzyl phthalate	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	39	3.78	0.00	16	15.30	2.78
Cadmium	11	4156.15	30.00	8	45000.00	9.00
Chlordane	47	2123.62	30.00	44	74880.00	5.80
Chloronaphthalene, 2-	3	0.00	0.00	0	.	.
Chlorophenol, 2-	3	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	7	13.09	13.60	7	23.00	2.50
Chromium	5	19.60	0.00	1	98.00	98.00
Chrysene	3	0.00	0.00	0	.	.
Copper	11	49236.98	830.00	8	536000.0	482.00
Cresol, o	3	0.00	0.00	0	.	.
Cresol, p-	3	0.00	0.00	0	.	.
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	3	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.
Dibenzofuran	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	3	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	3	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	3	0.00	0.00	0	.	.
Dicofol/Kelthane	7	3.18	0.00	3	10.40	3.69
Dieldrin	18	46.32	20.00	13	450.00	6.89
Diethyl phthalate	3	0.00	0.00	0	.	.
Dimethyl phthalate	3	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	3	0.00	0.00	0	.	.
Dioxins	18	0.00	0.00	16	0.01	0.00
DCPA/Dacthal	6	10.00	10.00	6	10.00	10.00
DDT	42	19426.35	100.00	28	516400.0	10.00
Endosulfan, alpha-	3	0.00	0.00	0	.	.
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	18	3.33	0.00	6	10.00	10.00
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	3	0.00	0.00	0	.	.
Heptachlor	17	4.12	0.00	6	20.00	10.00
Heptachlor epoxide	13	5.03	0.00	4	36.80	8.60
Hexachlorobenzene	16	4.09	0.00	7	10.00	5.38
Hexachlorobutadiene	10	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Isophorone	3	0.00	0.00	0	.	.
Isopropalin	7	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	11	8513.35	156.00	9	92000.00	90.00
Mercury	17	1481.07	70.00	17	24000.00	30.00
Methoxychlor	12	0.22	0.00	1	2.66	2.66
Mirex/Dechlorane	13	4.85	3.01	7	10.00	3.01
Naphthalene	3	0.00	0.00	0	.	.
Nickel	3	0.00	0.00	0	.	.
Nitrobenzene	3	0.00	0.00	0	.	.
Nitrophenol, 4	3	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	3	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Pentachlorobenzene	7	3.23	0.00	3	9.47	5.41
Pentachloronitrobenzene/Quin	7	0.00	0.00	0	.	.
Pentachlorophenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	52	578.17	200.00	36	4413.00	0.90
Pyrene	3	0.00	0.00	0	.	.
Selenium	9	4203.19	438.20	9	35000.00	160.00
Silver	3	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	7	1.49	0.00	2	6.18	4.25
Toxaphene	9	88.89	100.00	6	200.00	100.00
Trichlorobenzene, 1,2,4-	10	0.33	0.00	1	3.30	3.30
Trichlorophenol, 2,4,5-	3	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	7	0.00	0.00	0	.	.
Zinc	9	28497.78	17790.00	9	90140.00	5600.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
39.8348	75.3508	91-08-10	Ampelisca Abdita	S	21.00	11.00	no
39.8813	75.1833	90-08-08	Ampelisca Abdita	S	7.00	6.00	no
39.9722	75.1002	91-08-10	Ampelisca Abdita	S	34.00	11.00	Yes

Schuylkill 02040203

Watershed Summary Information

Accounting Unit Name: Lower Delaware

State(s): PA

Political Boundaries: Montgomery, Berks, Chester, Philadelphia, Lehigh, Schuylkill, Bucks, Carbon, Lebanon

Major Waterways:
Schuylkill R
Perkiomen Cr
Tulpehocken Cr
Little Schuylkill R
Maiden Cr

Number of Stations in Watershed:
Tier1 - 12
Tier2 - 23
Tier3 - 9

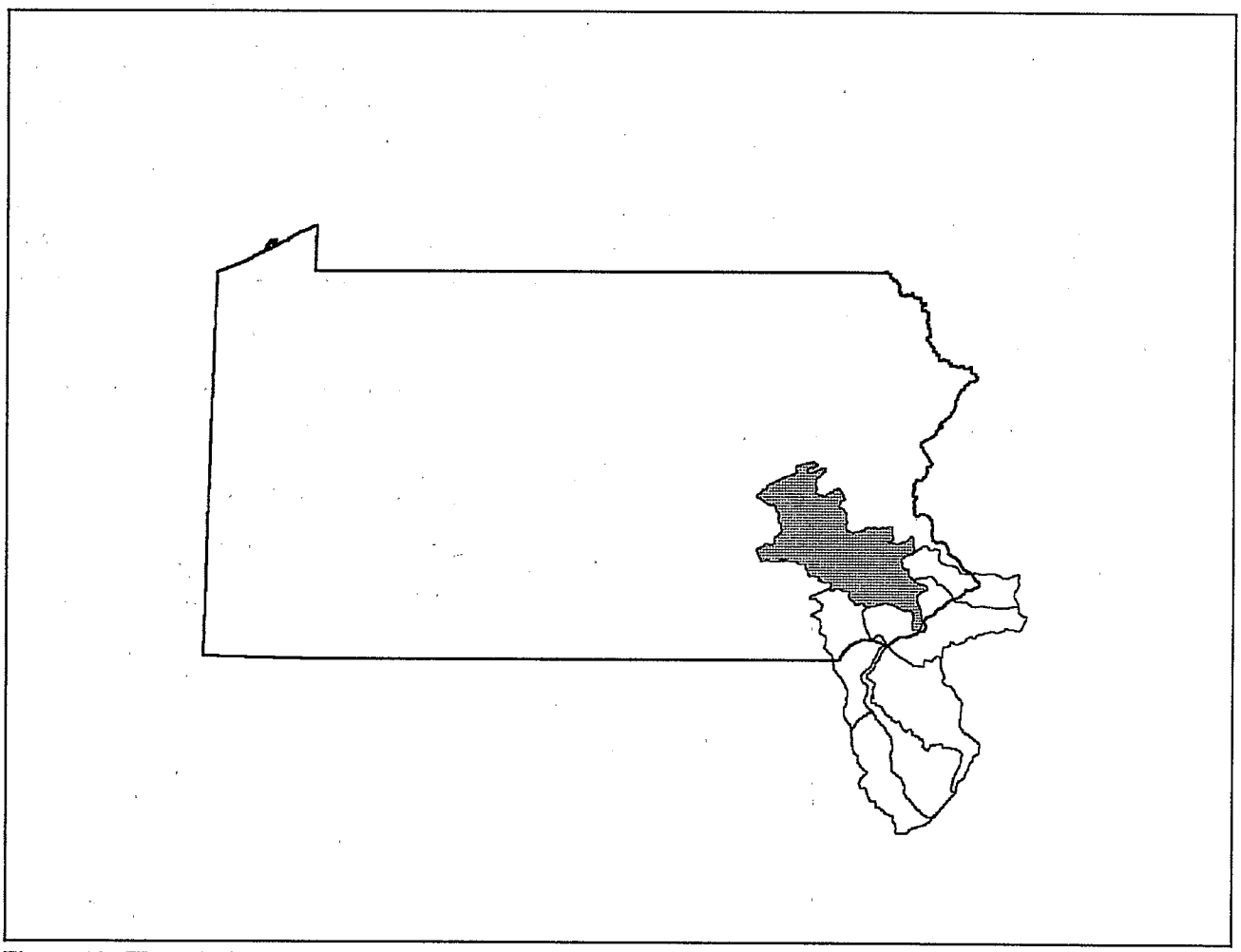

Figure 19. Watershed Location Map

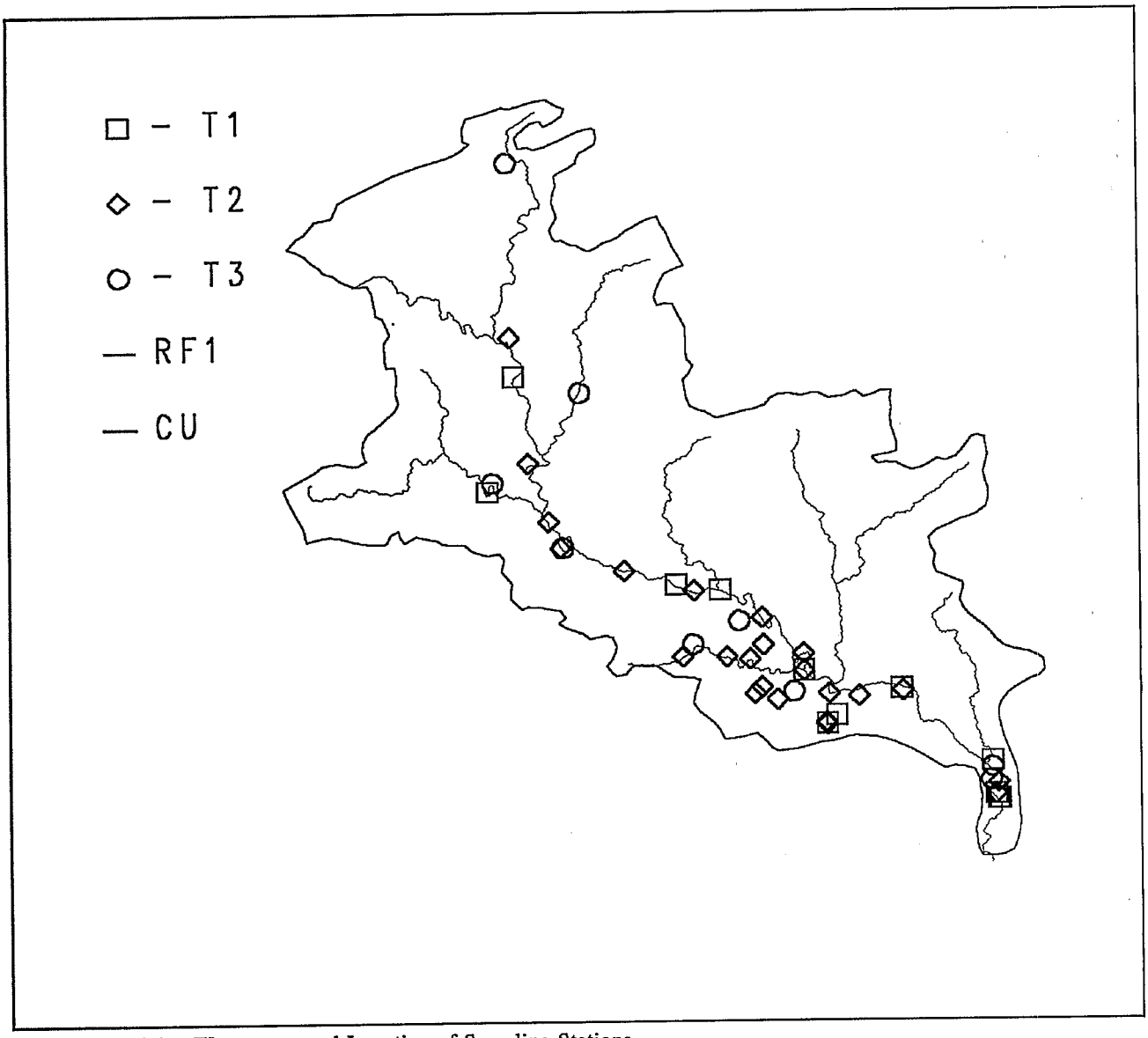

Figure 20. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984-86

Source: **STORET** Agency: **11121XWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 8 Date Range: 1986

Source: **STORET** Agency: **11131DWQ**
Monitoring Program: **USEPA Region 3 Environ Services Div.**
Num. of Stations: 7 Date Range: 1981-86

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 13 Date Range: 1981-87

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 13 Date Range: 1980-92

Source: **STORET** Agency: **31DELRBC**
Monitoring Program: **Delaware River Basin Commission Data**
Num. of Stations: 1 Date Range: 1985

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	32	17	11	6	.	.	11	6
Lead	22	16	.	16	.	10	.	6
Chlordane	39	11	.	11	.	5	.	9
Nickel	11	11	.	11	.	11	.	.
Arsenic	23	8	.	8	.	6	.	2
Cadmium	22	8	.	8	.	8	.	.
Dieldrin	38	8	.	8	.	2	.	7
Copper	14	6	.	6	.	6	.	.
Zinc	7	6	.	6	.	6	.	.
Chromium	20	5	1	4	1	4	.	.
Mercury	20	5	.	5	.	5	.	.
DDT	37	3	.	3	.	1	.	2
Silver	6	3	.	3	.	3	.	.
Dioxins	2	2	2	.	.	.	2	.
BHC	39	1	.	1	.	.	.	1
Heptachlor epoxide	37	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	6	0.00	0.00	0	.	.
Acenaphthylene	6	0.00	0.00	0	.	.
Acrylonitrile	6	0.00	0.00	0	.	.
Aldrin	18	0.00	0.00	0	.	.
Anthracene	6	0.00	0.00	0	.	.
Antimony	6	0.00	0.00	0	.	.
Arsenic	17	7993.53	470.00	16	40000.00	250.00
Benzene	6	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)anthracene	6	0.00	0.00	0	.	.
Benzo(a)pyrene	6	0.00	0.00	0	.	.
Benzo(b)fluoranthene	6	0.00	0.00	0	.	.
Benzo(ghi)perylene	6	0.00	0.00	0	.	.
Benzo(k)fluoranthene	6	0.00	0.00	0	.	.
Biphenyl	10	17.61	16.90	8	42.20	9.30
Bis(2-ethylhexyl)phthalate	6	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	6	0.00	0.00	0	.	.
Butyl benzyl phthalate	6	0.00	0.00	0	.	.
BHC	56	0.00	0.00	1	0.10	0.10
Cadmium	16	3502.50	2725.00	13	14500.00	480.00
Chlordane	38	0.95	0.00	6	13.00	1.00
Chlorobenzene	6	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	10	4.47	0.00	2	25.70	19.00
Chromium	17	67252.94	31900.00	15	393000.0	9800.00
Chrysene	6	0.00	0.00	0	.	.
Copper	6	138700.0	116500.0	6	347000.0	30700.00
Di-n-butyl phthalate	6	0.00	0.00	0	.	.
Di-n-octyl phthalate	6	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	6	0.00	0.00	0	.	.
Dibenzofuran	2	0.00	0.00	0	.	.
Dibromochloromethane	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	6	0.00	0.00	0	.	.
Dichloroethane 1,1-	6	0.00	0.00	0	.	.
Dichloroethane 1,2-	6	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	6	0.00	0.00	0	.	.
Dichloromethane	6	0.00	0.00	0	.	.
Dichloropropane, 1,2-	6	0.00	0.00	0	.	.
Dieldrin	28	0.24	0.00	9	4.80	0.10
Diethyl phthalate	6	0.00	0.00	0	.	.
Dimethyl phthalate	6	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	6	0.00	0.00	0	.	.
DDT	62	0.23	0.00	18	3.20	0.10
Endosulfan mixed isomers	12	0.03	0.00	2	0.30	0.10
Endosulfan, alpha-	6	0.00	0.00	0	.	.
Endosulfan, beta-	6	0.00	0.00	0	.	.
Endrin	28	0.00	0.00	1	0.10	0.10
Ethylbenzene	6	0.00	0.00	0	.	.
Fluoranthene	6	0.00	0.00	0	.	.
Fluorene	6	0.00	0.00	0	.	.
Heptachlor	28	0.00	0.00	1	0.10	0.10
Heptachlor epoxide	28	0.17	0.00	6	3.80	0.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobenzene	16	0.00	0.00	0	.	.
Hexachlorobutadiene	16	0.00	0.00	0	.	.
Hexachloroethane	6	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	6	0.00	0.00	0	.	.
Isophorone	6	0.00	0.00	0	.	.
Lead	16	192831.2	134000.0	16	590000.0	20800.00
Mercury	16	191.88	100.00	9	680.00	100.00
Methoxychlor	22	0.59	0.00	1	13.00	13.00
Mirex/Dechlorane	22	0.01	0.00	1	0.20	0.20
Naphthalene	6	0.00	0.00	0	.	.
Nickel	16	75112.50	66800.00	16	159000.0	32100.00
Nitrosodiphenylamine, N-	6	0.00	0.00	0	.	.
Pentachlorobenzene	10	0.00	0.00	0	.	.
Pentachlorophenol	6	0.00	0.00	0	.	.
Phenanthrene	6	0.00	0.00	0	.	.
Phenol	6	0.00	0.00	0	.	.
Polychlorinated biphenyls	35	1.49	0.00	10	18.00	0.06
Pyrene	6	0.00	0.00	0	.	.
Silver	6	966.67	595.00	3	2570.00	1190.00
Tetrachlorobenzene, 1,2,4,5-	10	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	7	0.00	0.00	0	.	.
Tetrachloroethene	6	0.00	0.00	0	.	.
Tetrachloromethane	6	0.00	0.00	0	.	.
Toluene	6	0.00	0.00	0	.	.
Toxaphene	18	0.00	0.00	0	.	.
Tribromomethane/Bromoform	6	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	16	2.12	0.00	2	17.30	16.60
Trichloroethane, 1,1,1-	6	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	6	0.00	0.00	0	.	.
Trichloroethene	6	0.00	0.00	0	.	.
Trichlorofluoromethane	6	0.00	0.00	0	.	.
Trichloromethane/Chloroform	6	0.00	0.00	0	.	.
Zinc	6	532166.7	537000.0	6	843000.0	189000.0

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Alachlor/Lasso	6	0.00	0.00	0	.	.
Aldrin	37	0.00	0.00	0	.	.
Arsenic	35	210.86	0.00	2	6880.00	500.00
Beryllium	6	0.00	0.00	0	.	.
Biphenyl	8	27.83	2.54	4	101.00	5.07

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	90	2.36	0.00	3	200.00	5.04
Cadmium	40	189.80	97.00	36	1590.00	3.00
Chlordane	76	159.75	34.60	45	2500.00	13.00
Chlorobenzilate	5	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	8	2.71	0.00	2	14.00	7.66
Chromium	34	609.91	329.50	29	3860.00	13.00
Copper	34	4434.82	3010.00	32	36200.00	403.00
Dicofol/Kelthane	8	0.58	0.00	1	4.66	4.66
Dieldrin	43	15.02	0.00	14	160.00	11.00
Dioxins	4	0.00	0.00	4	0.00	0.00
DDT	216	27.18	0.00	47	1000.00	9.70
Endrin	44	3.12	0.00	2	133.00	4.45
Heptachlor	22	0.00	0.00	0	.	.
Heptachlor epoxide	22	0.00	0.00	0	.	.
Hexachlorobenzene	8	2.63	0.00	2	18.30	2.72
Hexachlorobutadiene	8	0.00	0.00	0	.	.
Isopropalin	8	0.00	0.00	0	.	.
Lead	40	1540.90	637.00	33	8370.00	109.00
Mercury	16	108.56	35.50	9	540.00	22.00
Methoxychlor	44	0.00	0.00	0	.	.
Mirex/Dechlorane	11	0.00	0.00	0	.	.
Pentachlorobenzene	8	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	8	0.00	0.00	0	.	.
Polychlorinated biphenyls	42	1059.76	935.00	36	3804.00	110.00
Tetrachlorobenzene, 1,2,4,5-	8	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	8	0.36	0.00	1	2.90	2.90
Trifluralin/Treflan	8	0.00	0.00	0	.	.
Zinc	1	30600.00	30600.00	1	30600.00	30600.00

Mullica-Toms 02040301

Watershed Summary Information

Accounting Unit Name:	New Jersey Coastal
State(s):	NJ
Political Boundaries:	Ocean, Burlington, Atlantic, Monmouth, Camden, New Castle
Major Waterways:	Mullica R Wading R Metedconk R Wading R, W Br Manasquan R
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 22 Tier3 - 10

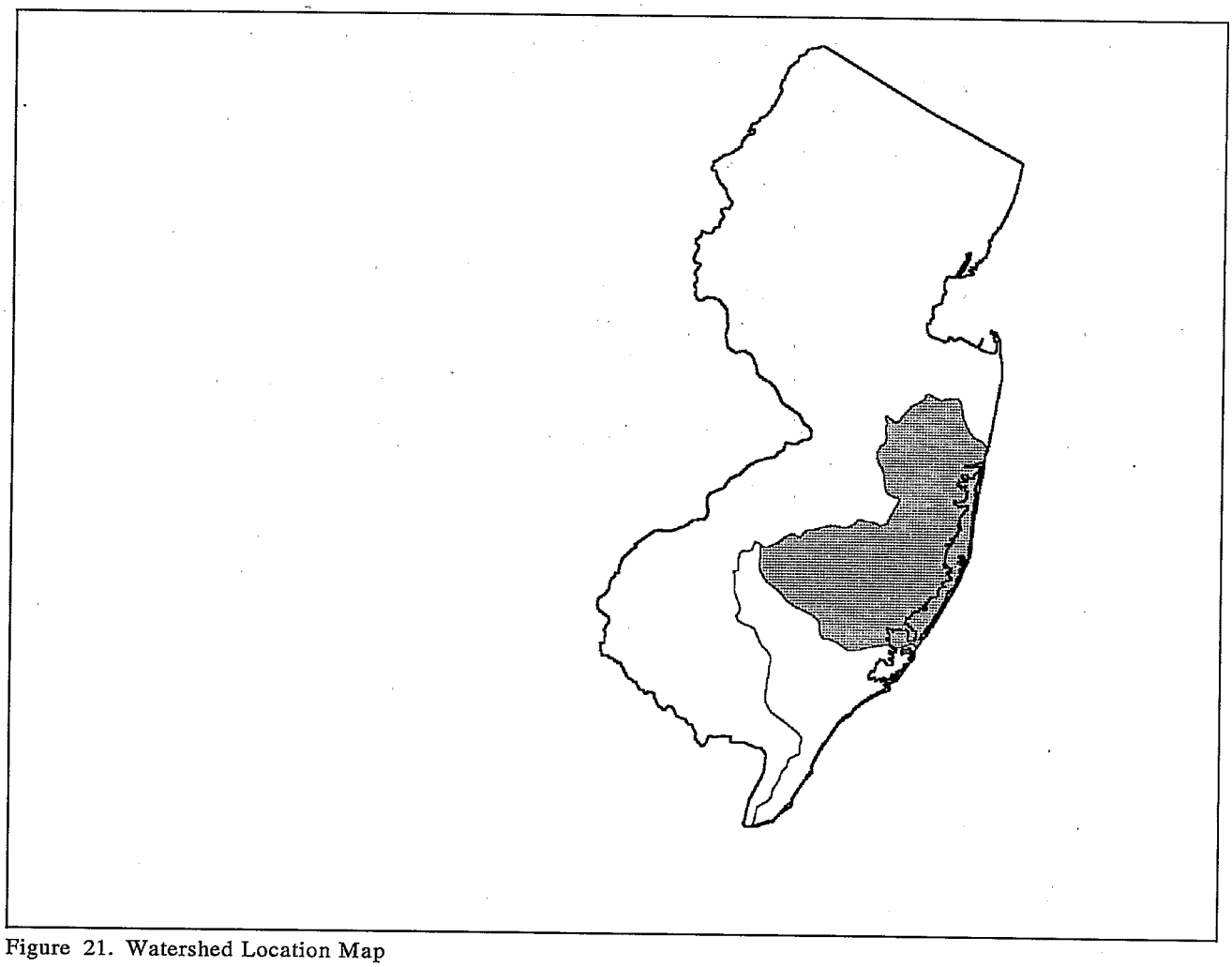

Figure 21. Watershed Location Map

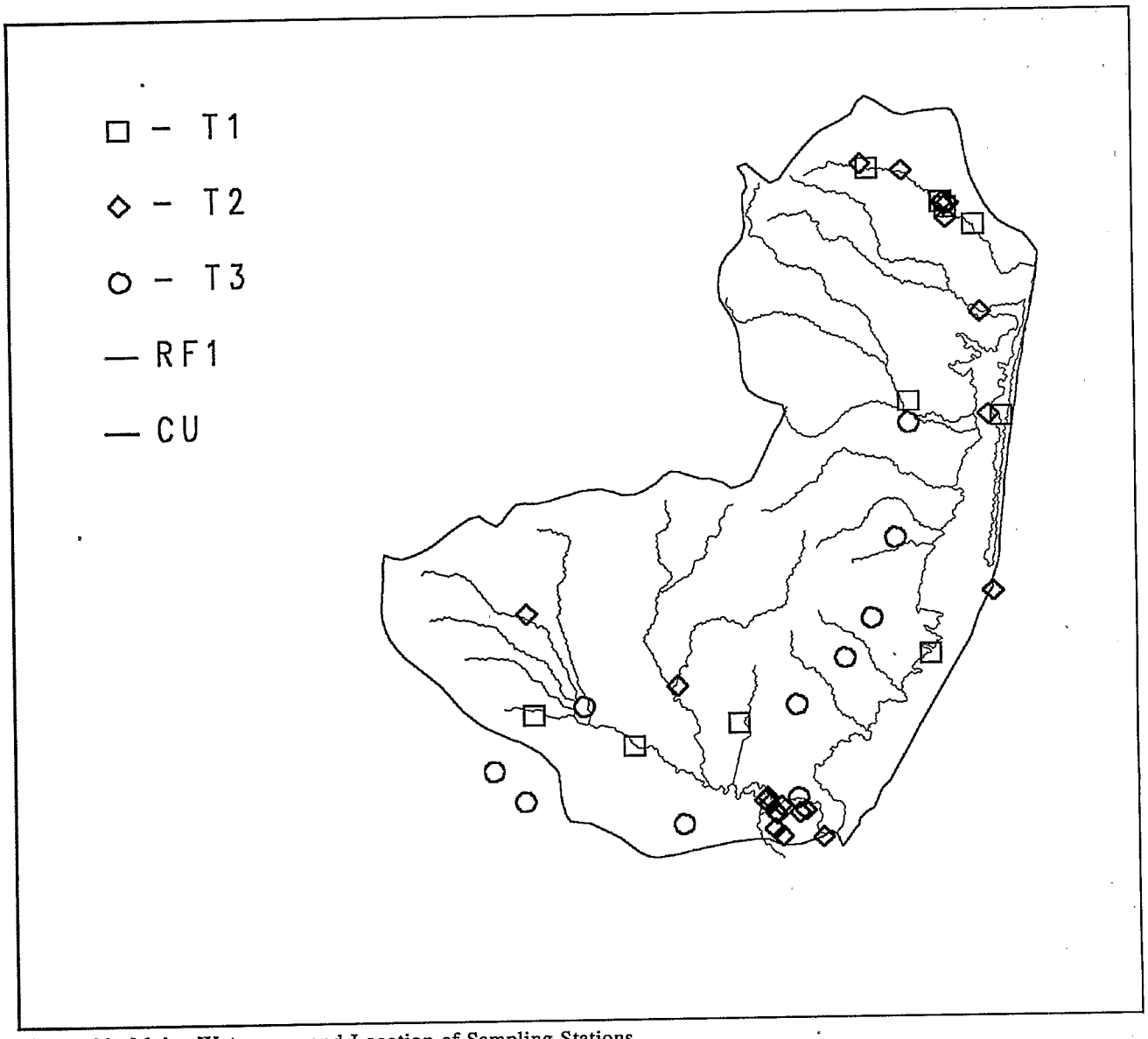

Figure 22. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 6 Date Range: 1985-91

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 4 Date Range: 1990-91

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984

Source: **STORET** Agency: **1111H030**
Monitoring Program: **USEPA Region 2 Data**
Num. of Stations: 2 Date Range: 1987-88

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 15 Date Range: 1981-92

Source: **STORET** Agency: **21NJDEP1**
Monitoring Program: **New Jersey Dept Environ Protection Data - Div of Water Resources**
Num. of Stations: 13 Date Range: 1980-83

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	28	17	.	17	.	13	.	4
Lead	36	14	.	14	.	13	.	1
Benzo(a)pyrene	14	13	.	13	.	5	.	13
Mercury	32	12	2	10	2	10	.	.
Polychlorinated biphenyls	17	12	2	10	.	6	2	10
Chromium	30	12	.	12	.	12	.	.
Copper	36	11	.	11	.	11	.	.
DDT	18	10	2	8	2	8	.	2
Nickel	26	9	.	9	.	9	.	.
Zinc	39	9	.	9	.	9	.	.
Anthracene	11	8	.	8	.	8	.	.
Bis(2-ethylhexyl)phthalate	7	7	4	3	4	3	.	5
Benzo(a)anthracene	13	7	.	7	.	7	.	4
Chrysene	14	6	.	6	.	6	.	.
Cadmium	39	5	.	5	.	5	.	.
Naphthalene	9	5	.	5	.	5	.	.
Pyrene	16	5	.	5	.	5	.	.
Acenaphthylene	5	4	.	4	.	4	.	.
Chlordane	19	4	.	4	.	4	.	3
Dibenzo(a,h)anthracene	8	4	.	4	.	4	.	2
Dieldrin	15	4	.	4	.	2	.	4
Fluoranthene	17	4	.	4	.	4	.	.
Silver	18	4	.	4	.	4	.	.
BHC	19	3	1	2	1	2	.	.
Phenanthrene	16	3	1	2	1	2	.	.
Fluorene	12	3	.	3	.	3	.	.
Acenaphthene	5	2	.	2	.	2	.	.
Dioxins	2	1	1	.	.	.	1	.
Benzo(b)fluoranthene	4	1	.	1	.	.	.	1
Diethyl phthalate	8	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Heptachlor	13	1	.	1	.	.	.	1
Methylnaphthalene, 2-	2	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	63.93	7.00	6	400.00	3.00
Acenaphthylene	7	15.21	12.78	6	35.42	6.00
Aldrin	31	0.19	0.00	4	2.00	1.00
Anthracene	18	68.70	44.94	17	280.00	8.00
Antimony	22	2458.82	392.00	15	47000.00	161.00
Arsenic	45	6187.56	4600.00	37	34900.00	370.00
Benzo(a)anthracene	19	119.00	74.20	19	490.00	17.00
Benzo(a)pyrene	21	90.56	69.60	20	300.00	27.00
Benzo(b)fluoranthene	6	88.08	61.21	6	185.26	52.41
Benzo(ghi)perylene	11	67.28	50.57	10	256.00	26.00
Benzo(k)fluoranthene	3	96.65	89.72	3	145.89	54.35
Biphenyl	7	7.68	6.29	6	19.86	5.00
Bis(2-ethylhexyl)phthalate	7	2958.57	3800.00	7	4230.00	930.00
BHC	34	0.23	0.00	9	4.20	0.01
Cadmium	57	259.12	0.00	19	2790.00	200.00
Chlordane	37	2.73	0.80	24	38.00	0.08
Chromium	48	45032.71	18000.00	44	240000.0	1000.00
Chrysene	21	125.59	85.83	21	630.00	36.60
Copper	55	14407.27	5000.00	46	151000.0	1000.00
Di-n-butyl phthalate	8	310.88	285.00	8	540.00	130.00
Di-n-octyl phthalate	1	40.00	40.00	1	40.00	40.00
Diazinon/Spectracide	17	0.01	0.00	1	0.10	0.10
Dibenzo(a,h)anthracene	11	13.20	7.69	9	53.00	1.20
Dichloroethane 1,2-	1	21.00	21.00	1	21.00	21.00
Dichloroethene, trans-1,2-	1	2.00	2.00	1	2.00	2.00
Dichloromethane	7	59.00	40.00	7	163.00	6.00
Dieldrin	29	0.78	0.00	11	12.00	0.10
Diethyl phthalate	8	101.75	87.00	8	200.00	27.00
DDT	144	4.36	0.56	110	140.00	0.05
Endosulfan mixed isomers	23	0.18	0.00	3	1.90	0.50
Endrin	23	0.00	0.00	0	.	.
Ethion/Bladen	17	0.00	0.00	0	.	.
Ethylbenzene	1	3.00	3.00	1	3.00	3.00
Fluoranthene	24	254.93	115.86	24	2250.00	15.00
Fluorene	15	46.04	10.63	13	520.00	3.30
Heptachlor	28	0.31	0.00	5	7.00	0.20

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor epoxide	32	0.23	0.00	6	2.00	0.10
Hexachlorobenzene	16	0.50	0.31	13	2.00	0.15
Indeno(1,2,3-cd)pyrene	13	71.23	65.15	11	267.00	30.00
Lead	54	22200.00	10000.00	32	206000.0	7600.00
Malathion	17	0.00	0.00	0	.	.
Mercury	47	199.11	20.00	28	2700.00	10.00
Methoxychlor	23	0.00	0.00	0	.	.
Methylnaphthalene, 2-	2	30.35	30.35	2	41.00	19.70
Mirex/Dechlorane	28	0.06	0.00	1	1.76	1.76
Naphthalene	16	31.08	27.73	16	70.00	9.53
Nickel	45	9773.33	0.00	19	36100.00	12500.00
Phenanthrene	23	167.64	69.00	23	2050.00	20.00
Polychlorinated biphenyls	34	12.82	1.50	19	82.88	0.93
Pyrene	23	222.74	111.14	23	1470.00	27.00
Silver	26	339.50	215.00	15	1400.00	170.00
Tetrachloroethene	1	3.00	3.00	1	3.00	3.00
Toluene	2	34.00	34.00	2	55.00	13.00
Toxaphene	23	0.00	0.00	0	.	.
Trichloroethene	1	2.00	2.00	1	2.00	2.00
Zinc	57	68564.91	17000.00	48	423000.0	1000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Arsenic	6	1385.00	970.00	6	3110.00	520.00
Biphenyl	1	0.00	0.00	0	.	.
BHC	4	0.00	0.00	0	.	.
Cadmium	10	225.00	160.00	10	790.00	20.00
Chlordane	4	28.93	23.57	4	64.66	3.92
Chlorpyrifos/Dursban	2	1.45	1.45	1	2.91	2.91
Chromium	10	190.00	95.00	6	510.00	70.00
Copper	8	6542.50	2350.00	8	20520.00	1200.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	2	13.08	13.08	2	19.25	6.90
Dioxins	4	0.00	0.00	3	0.00	0.00
DDT	1	59.92	59.92	1	59.92	59.92
Endrin	2	0.00	0.00	0	.	.
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	2	4.04	4.04	1	8.07	8.07
Hexachlorobenzene	2	0.00	0.00	0	.	.
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	2	1.06	1.06	1	2.11	2.11

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	10	668.00	0.00	4	6330.00	90.00
Manganese	8	2428.75	2185.00	8	4680.00	1510.00
Mercury	12	113.33	45.00	7	680.00	40.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Nickel	8	1197.50	1205.00	8	2110.00	360.00
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	2	250.25	250.25	2	480.00	20.50
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Zinc	10	140161.0	17790.00	10	790000.0	10000.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
39.5037	74.3847	91-07-24	Ampelisca Abdita	S	15.00	5.00	no
39.5417	74.4083	90-08-11	Ampelisca Abdita	S	44.00	6.80	Yes
39.9433	74.1018	90-08-10	Ampelisca Abdita	S	13.40	6.80	no
40.0517	74.1108	91-08-05	Ampelisca Abdita	S	16.00	10.00	no

Gunpowder-Patapsco 02060003

Watershed Summary Information

Accounting Unit Name: Upper Chesapeake

State(s): MD (PA)

Political Boundaries: Baltimore, Carroll, Baltimore City, Harford, Howard, Anne Arundel, Kent, York, Chester

Major Waterways:
Patapsco R
Gunpowder Falls
Patapsco R, N Br
Winters Run
Little Gunpowder Falls

Number of Stations in Watershed:
Tier1 - 17
Tier2 - 7
Tier3 - 5

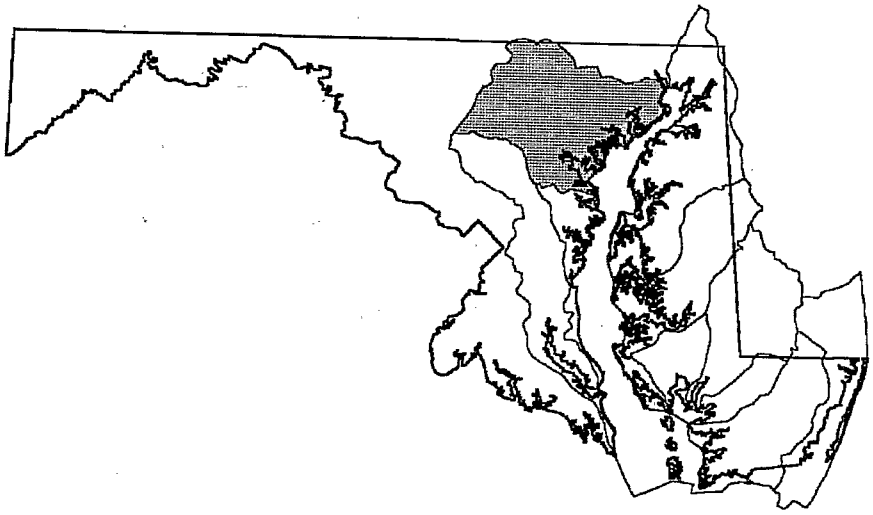

Figure 23. Watershed Location Map

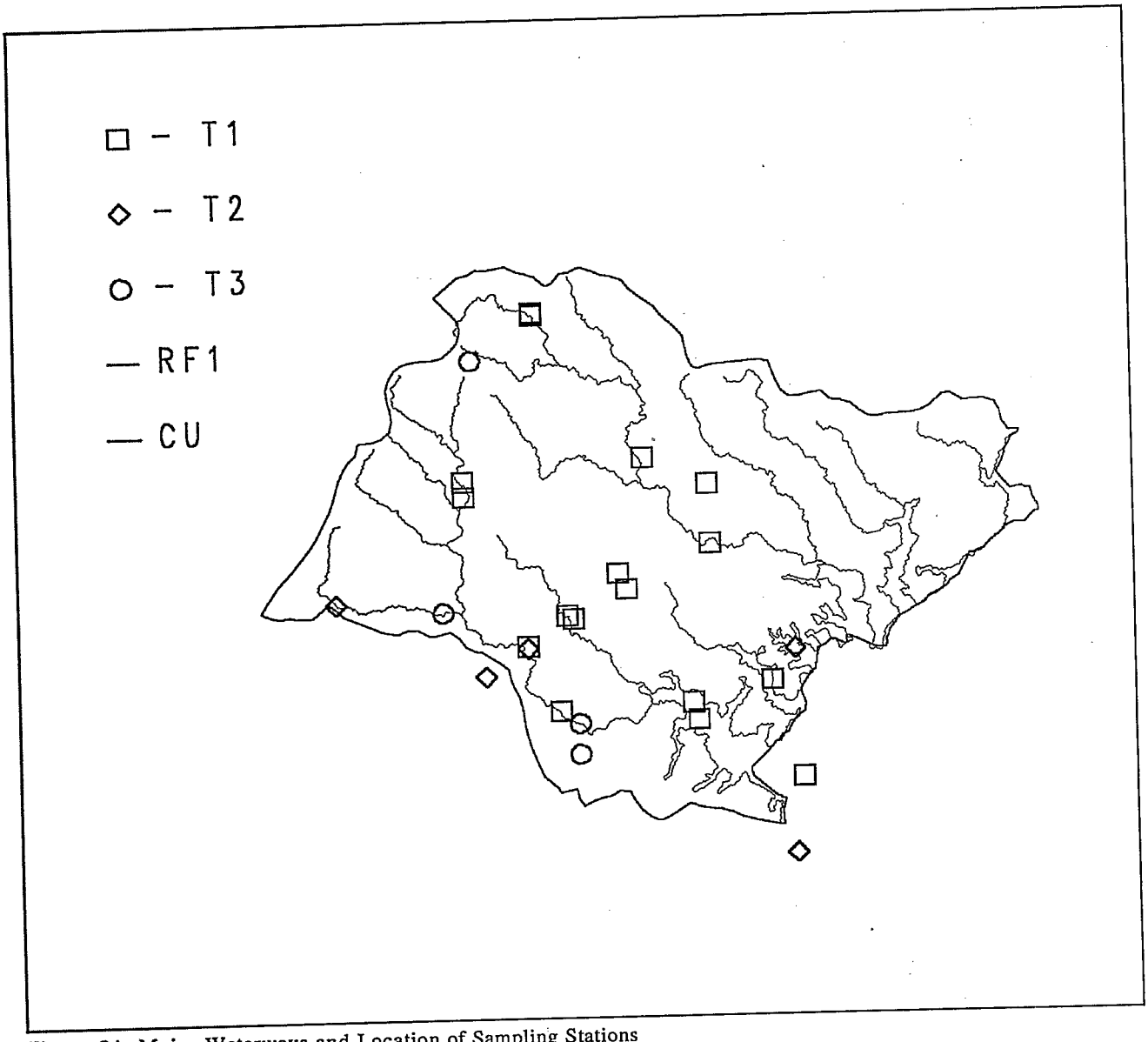

Figure 24. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 5 Date Range: 1986-89

Source: **EMAP-VA** Agency: **EMAPVA**
Monitoring Program: **EMAP-VA Province**
Num. of Stations: 3 Date Range: 1990

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 8 Date Range: 1987-89

Source: **STORET** Agency: **21MD**
Monitoring Program: **Maryland Dept of Natural Resources Data - Tidewater Administration**
Num. of Stations: 8 Date Range: 1980-82

Source: **STORET** Agency: **21MDOEP**
Monitoring Program: **Water Monitoring Data MD Office of Environ Pgms**
Num. of Stations: 5 Date Range: 1980-83

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	23	20	.	20	.	8	.	12
Polychlorinated biphenyls	25	19	15	4	2	3	13	6
Arsenic	23	18	.	18	.	8	.	10
Chlordane	18	11	.	11	.	4	.	8
BHC	23	10	.	10	.	6	.	4
DDT	25	10	.	10	.	7	.	3
Chromium	23	8	3	5	3	5	.	.
Mercury	23	8	2	6	2	6	.	.
Copper	23	8	.	8	.	8	.	.
Dieldrin	24	8	.	8	.	.	.	8
Naphthalene	10	8	.	8	.	8	.	.
Nickel	8	8	.	8	.	8	.	.
Zinc	23	8	.	8	.	8	.	.
Dibenzo(a,h)anthracene	10	6	1	5	1	5	.	2
Anthracene	10	6	.	6	.	6	.	.
Benzo(a)anthracene	8	6	.	6	.	6	.	1
Benzo(a)pyrene	10	6	.	6	.	6	.	6
Cadmium	23	6	.	6	.	6	.	.
Chrysene	8	6	.	6	.	6	.	.
Fluorene	8	6	.	6	.	6	.	.
Pyrene	9	6	.	6	.	6	.	.
Hexachlorobenzene	23	4	.	4	.	.	.	4
Toxaphene	17	4	.	4	.	.	.	4
Silver	8	3	1	2	1	2	.	.
Acenaphthylene	7	3	.	3	.	3	.	.
Heptachlor epoxide	20	2	.	2	.	.	.	2
Benzo(b)fluoranthene	4	1	.	1	.	.	.	1
DCPA/Dacthal	13	1	.	1	.	.	.	1
Heptachlor	23	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	7	1	.	1	.	.	.	1
Methylnaphthalene, 2-	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	15	50.70	48.00	12	120.00	25.56
Acenaphthylene	11	59.48	64.32	7	140.00	19.30
Aldrin	7	0.09	0.00	1	0.60	0.60
Anthracene	17	177.86	150.00	13	932.46	90.10
Antimony	12	15252.83	4260.00	12	123000.0	984.00
Arsenic	17	20734.12	22000.00	16	37800.00	3000.00
Benzo(a)anthracene	15	289.14	250.00	13	653.25	160.00
Benzo(a)pyrene	17	277.67	220.00	13	670.76	140.00
Benzo(b)fluoranthene	8	341.91	240.00	6	789.68	140.00
Benzo(ghi)perylene	11	189.71	150.00	7	513.46	110.00
Benzo(k)fluoranthene	8	270.90	190.00	6	719.67	79.00
Biphenyl	12	103.30	97.19	12	173.00	56.00
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	61	0.26	0.08	52	4.40	0.01
Cadmium	17	1408.24	620.00	16	4870.00	400.00
Chlordane	15	3.71	1.80	14	20.00	0.31
Chromium	17	204588.2	120000.0	17	541000.0	6000.00
Chrysene	15	475.59	390.00	13	1671.97	190.00
Copper	17	103741.2	57000.00	17	272000.0	7000.00
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Diazinon/Spectracide	4	0.03	0.00	1	0.10	0.10
Dibenzo(a,h)anthracene	14	55.66	33.45	10	266.06	11.00
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dieldrin	14	1.15	0.49	8	3.89	0.10
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
DDT	69	3.60	2.20	54	20.00	0.10
Endosulfan mixed isomers	4	0.00	0.00	0	.	.
Endrin	4	0.00	0.00	0	.	.
Ethion/Bladen	4	0.00	0.00	0	.	.
Fluoranthene	16	888.71	915.00	14	2100.00	86.00
Fluorene	15	136.20	130.00	13	435.31	82.90
Heptachlor	10	0.24	0.00	4	0.81	0.30
Heptachlor epoxide	7	0.00	0.00	0	.	.
Hexachlorobenzene	17	1.75	1.30	12	12.40	0.36
Hexachlorobutadiene	2	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	11	196.84	150.00	7	601.26	74.00
Isophorone	2	0.00	0.00	0	.	.
Lead	17	97058.82	82000.00	16	217000.0	20000.00
Malathion	4	0.00	0.00	0	.	.
Mercury	17	340.71	230.00	16	1064.00	10.00
Methoxychlor	4	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	316.00	316.00	1	316.00	316.00
Mirex/Dechlorane	11	0.64	0.00	4	3.20	1.20
Naphthalene	17	418.03	440.00	15	1060.74	86.60
Nickel	15	72540.00	67600.00	15	136000.0	49000.00
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	16	506.13	545.00	14	1377.78	47.50
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	16	89.58	30.80	13	313.44	1.87
Pyrene	16	756.76	848.54	14	1675.61	82.60
Silver	15	1084.67	660.00	14	3900.00	540.00
Toxaphene	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Zinc	17	427941.2	420000.0	17	797000.0	26000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	68	0.00	0.00	0	.	.
Arsenic	68	29.85	0.00	22	170.00	60.00
BHC	136	22060.29	0.00	38	1000000	1.00
Cadmium	67	210.36	180.00	66	500.00	14.00
Chlordane	36	85.50	73.00	34	419.00	8.00
Chromium	68	264.41	110.00	39	900.00	110.00
Copper	68	558.53	655.00	64	1260.00	30.00
Dieldrin	68	102944.0	3.00	54	1000000	1.00
DCPA/Dacthal	68	29412.66	0.00	17	1000000	1.00
DDT	203	34491.65	4.00	129	1000000	1.00
Endosulfan, alpha-	36	0.06	0.00	1	2.00	2.00
Endrin	68	0.00	0.00	0	.	.
Heptachlor	68	14706.01	0.00	6	1000000	1.00
Heptachlor epoxide	68	1.46	0.00	20	33.00	1.00
Hexachlorobenzene	68	102941.4	0.00	15	1000000	1.00
Lead	68	1580.88	1450.00	57	5400.00	500.00
Mercury	68	71.47	63.00	68	160.00	24.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	68	0.01	0.00	1	1.00	1.00
Mirex/Dechlorane	68	0.00	0.00	0	.	.
Polychlorinated biphenyls	132	81.12	16.50	68	880.00	10.00
Toxaphene	68	44123.78	0.00	5	1000000	145.00
Zinc	68	14163.82	13600.00	68	33200.00	4950.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-VA Province							
39.2463	76.5570	90-08-15	Ampelisca Abdita	S	33.00	11.00	Yes
39.2700	76.4433	90-07-26	Ampelisca Abdita	S	10.00	14.00	no
39.3050	76.4100	90-08-05	Ampelisca Abdita	S	8.00	14.00	no

Conococheague-Opequon 02070004

Watershed Summary Information

Accounting Unit Name: Potomac

State(s): MD VA WV (PA)

Political Boundaries: Washington, Franklin, Berkeley, Morgan, Frederick, Fulton, Jefferson, Adams, Clarke

Major Waterways:
Potomac R
Conococheague Cr
Licking Cr
Sleepy Cr
Opequon Cr

Number of Stations in Watershed:
Tier1 - 11
Tier2 - 12
Tier3 - 6

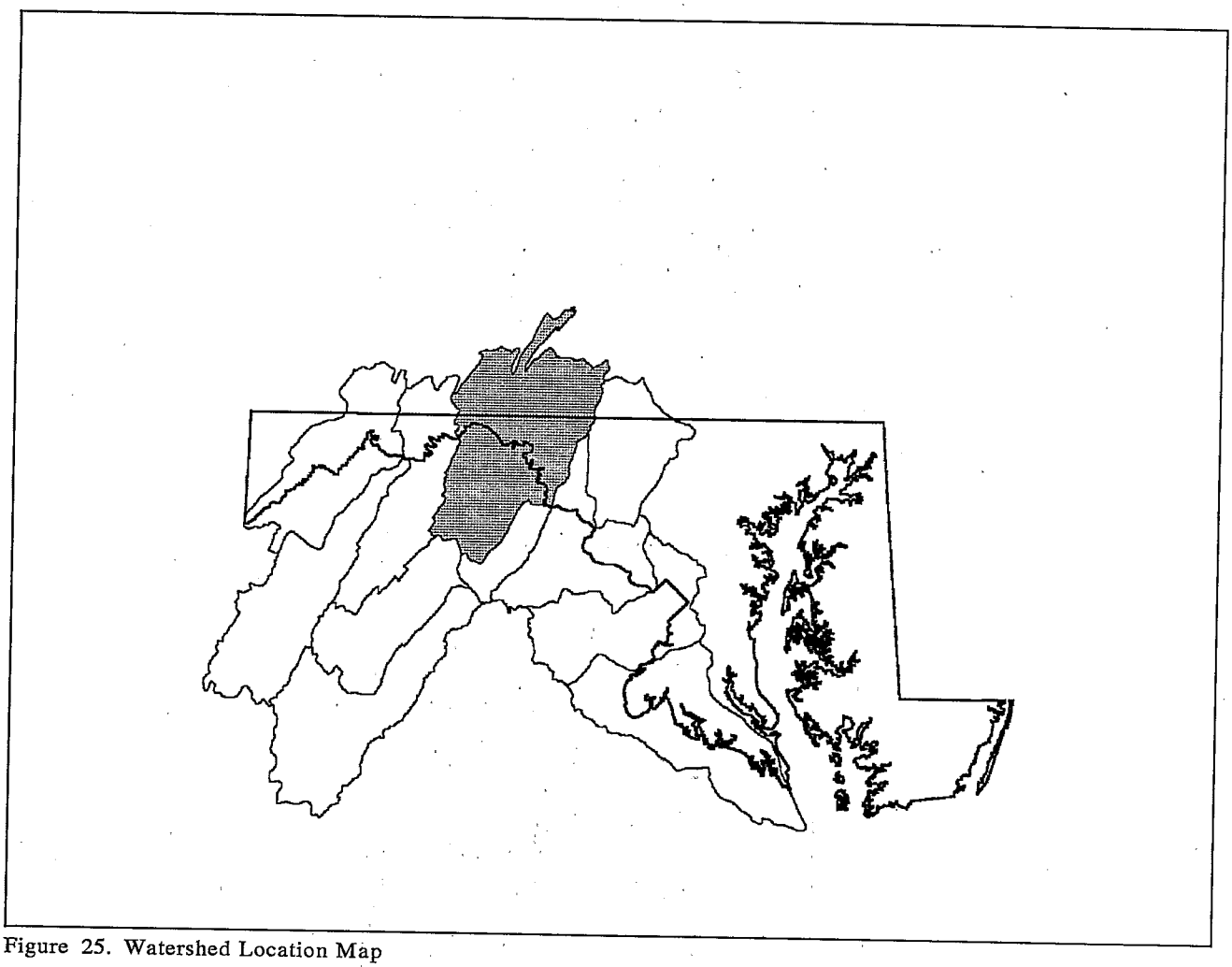

Figure 25. Watershed Location Map

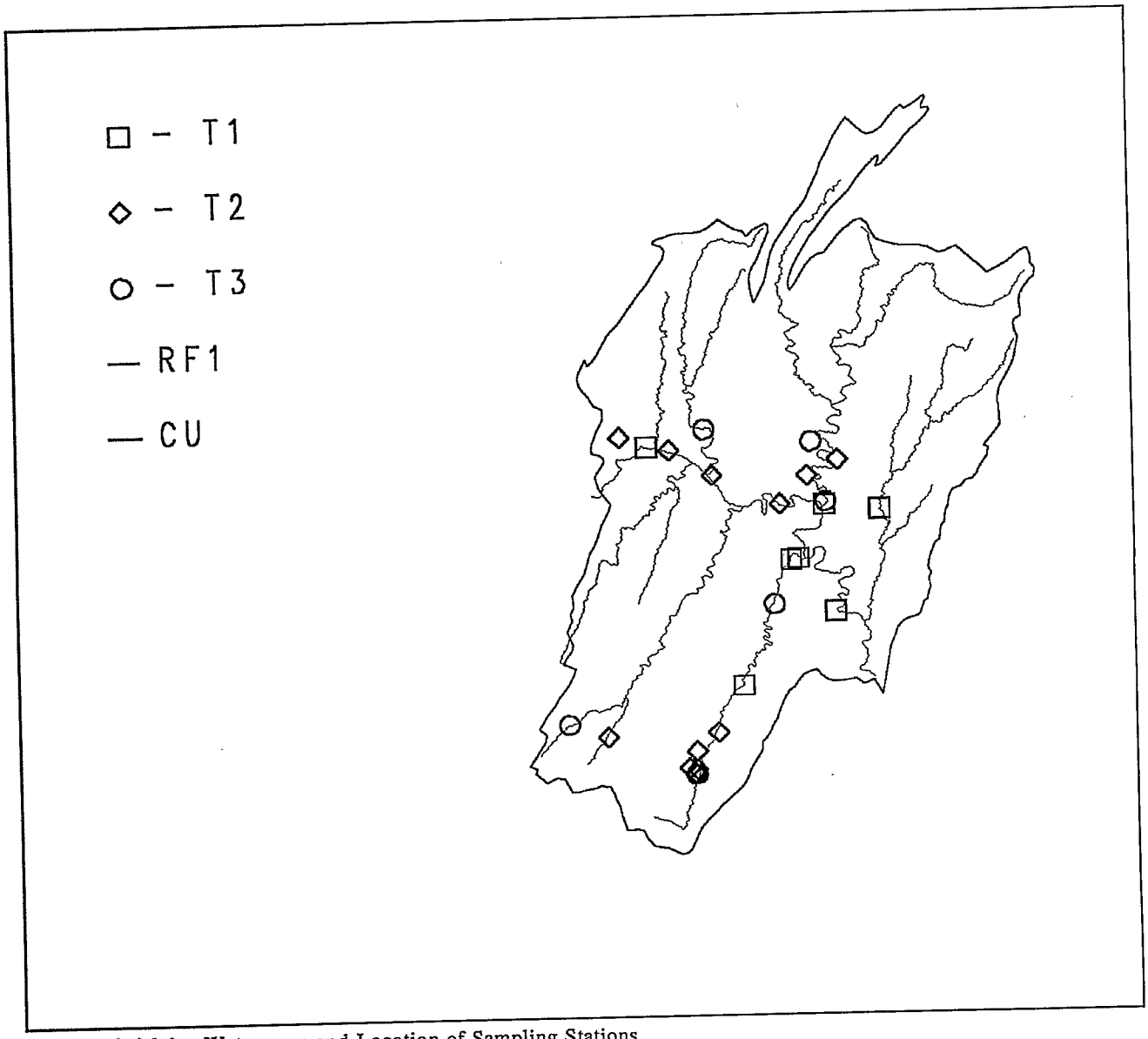

Figure 26. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 1 Date Range: 1987

Source: STORET Agency: 112WRD
Monitoring Program: US Geological Survey Data
Num. of Stations: 9 Date Range: 1986-87

Source: STORET Agency: 21MD
Monitoring Program: Maryland Dept of Natural Resources Data - Tidewater Administration
Num. of Stations: 4 Date Range: 1980-82

Source: **STORET** Agency: **21MDOEP**
Monitoring Program: **Water Monitoring Data MD Office of Environ Pgms**
Num. of Stations: 4 Date Range: 1980-83

Source: **STORET** Agency: **21VASWCB**
Monitoring Program: **Virginia State Water Control Board Data**
Num. of Stations: 8 Date Range: 1981-92

Source: **STORET** Agency: **21WV7IWQ**
Monitoring Program: **W.Virginia Dept of Natural Resources Water, Sediment & Tissue Data**
Num. of Stations: 3 Date Range: 1981-83

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	19	13	.	13	.	4	.	9
Polychlorinated biphenyls	19	12	11	1	.	.	11	1
Arsenic	18	12	.	12	.	5	.	7
Dieldrin	18	8	.	8	.	.	.	8
BHC	18	5	.	5	.	1	.	5
DDT	17	5	.	5	.	4	.	1
Nickel	7	5	.	5	.	5	.	.
Copper	19	4	.	4	.	4	.	.
Chromium	18	3	.	3	.	3	.	.
Cadmium	19	2	.	2	.	2	.	.
Chlordane	14	2	.	2	.	1	.	2
Heptachlor epoxide	17	2	.	2	.	.	.	2
Mercury	22	2	.	2	.	2	.	.
Toxaphene	16	2	.	2	.	.	.	2
Dioxins	1	1	1	.	.	.	1	.
Zinc	18	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	7	0.00	0.00	0	.	.
Arsenic	10	10100.00	11850.00	7	26000.00	6900.00
BHC	43	0.07	0.04	38	0.86	0.00
Cadmium	10	490.00	0.00	3	2200.00	1000.00
Chlordane	7	3.43	0.00	1	24.00	24.00
Chromium	10	70910.00	43100.00	10	240000.0	7000.00
Copper	10	35860.00	18500.00	10	89900.00	6000.00
Diazinon/Spectracide	7	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dieldrin	7	0.20	0.10	6	0.50	0.10
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.
DDT	21	2.23	0.50	18	12.00	0.10
Endosulfan mixed isomers	7	0.00	0.00	0	.	.
Endrin	7	0.66	0.10	4	3.60	0.10
Ethion/Bladen	7	0.00	0.00	0	.	.
Heptachlor	7	0.04	0.00	1	0.30	0.30
Heptachlor epoxide	7	0.17	0.00	2	1.10	0.10
Lead	10	49940.00	32200.00	10	194000.0	9000.00
Malathion	7	0.00	0.00	0	.	.
Mercury	10	162.00	0.00	3	600.00	430.00
Methoxychlor	7	0.00	0.00	0	.	.
Mirex/Dechlorane	7	0.00	0.00	0	.	.
Nickel	8	36000.00	33400.00	8	101000.0	7000.00
Polychlorinated biphenyls	6	2.50	0.00	1	15.00	15.00
Silver	4	0.00	0.00	0	.	.
Toxaphene	7	2.86	0.00	1	20.00	20.00
Zinc	10	99210.00	68000.00	10	270000.0	30000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Aldrin	44	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Arsenic	45	56.44	50.00	25	200.00	30.00
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Beryllium	1	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	101	49506.57	0.00	16	1000000	3.00
Cadmium	47	232.77	230.00	39	740.00	30.00
Chlordane	45	26.42	0.00	22	350.00	3.00
Chloronaphthalene, 2-	1	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	47	461.70	440.00	31	1900.00	130.00
Chrysene	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Copper	48	1330.21	770.00	48	6200.00	360.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	1	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	48	20839.18	1.50	30	1000000	1.00
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
Dioxins	2	0.00	0.00	2	0.01	0.00
DCPA/Dacthal	39	0.00	0.00	0	.	.
DDT	153	6555.86	1.00	79	1000000	1.00
Endosulfan, alpha-	18	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	46	0.61	0.00	3	20.00	4.00
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	41	0.05	0.00	2	1.00	1.00
Heptachlor epoxide	41	48781.05	0.00	8	1000000	2.00
Hexachlorobenzene	46	0.24	0.00	9	2.00	1.00
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	48	946.25	930.00	29	2900.00	670.00
Mercury	58	158.14	125.00	58	850.00	27.00
Methoxychlor	45	0.00	0.00	0	.	.
Mirex/Dechlorane	40	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	1	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	1	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Pentachlorophenol	4	0.00	0.00	0	.	.
Polychlorinated biphenyls	100	80.75	0.00	49	1170.00	0.18
Pyrene	1	0.00	0.00	0	.	.
Selenium	1	200.00	200.00	1	200.00	200.00
Silver	3	66.67	0.00	1	200.00	200.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	40	25000.00	0.00	1	1000000	1000000
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	41	17016.10	12900.00	41	84100.00	8900.00

Lower Pee Dee 03040201

Watershed Summary Information

Accounting Unit Name: Lower Pee Dee

State(s): SC NC

Political Boundaries: Chesterfield, Florence, Marlboro, Darlington, Anson, Richmond, Marion, Dillon, Georgetown, Horry, Williamsburg, Scotland

Major Waterways:
Pee Dee R
Jeffries Cr
Thompson Cr
Black Cr
L Robertson

Number of Stations in Watershed:
Tier1 - 11
Tier2 - 20
Tier3 - 3

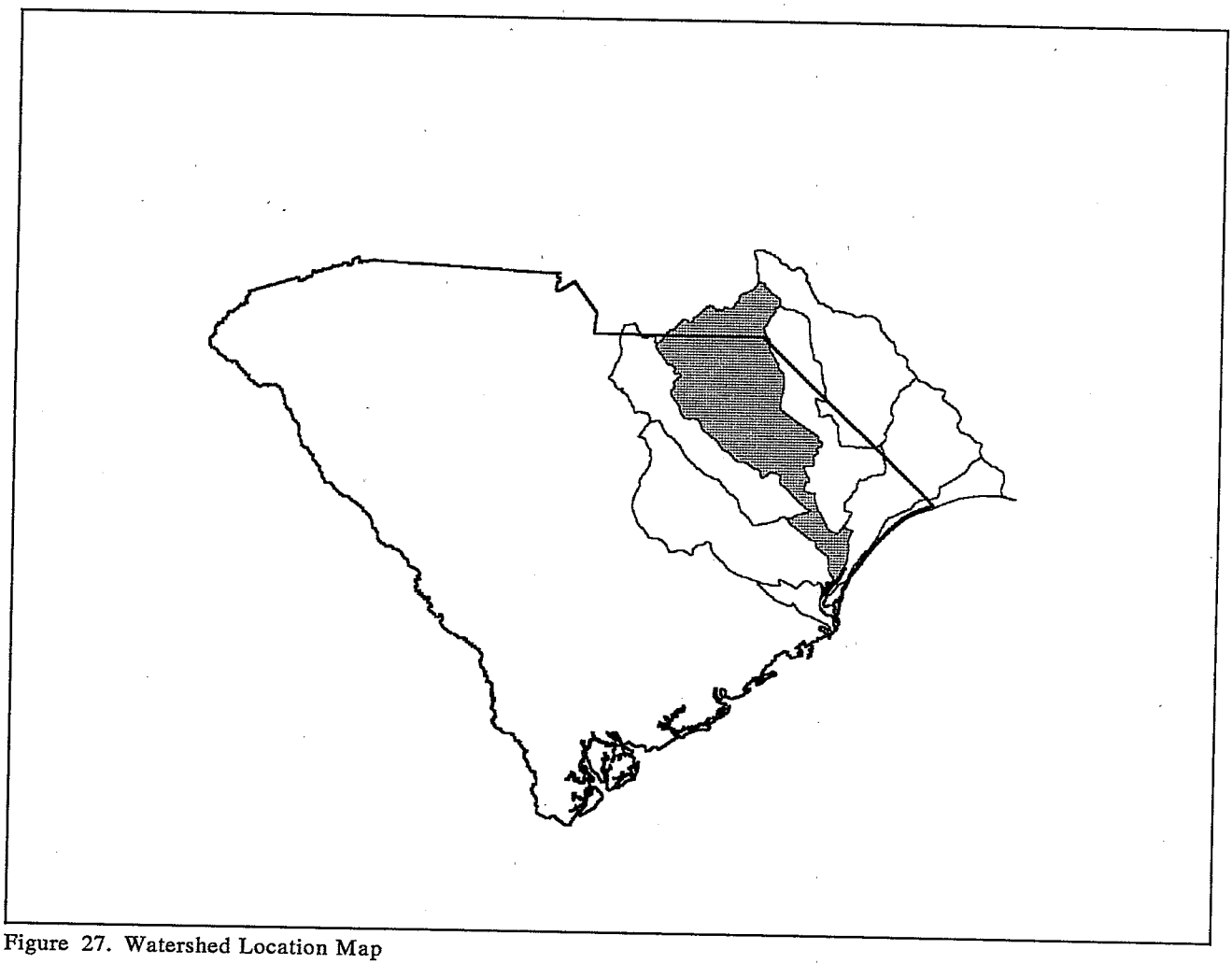

Figure 27. Watershed Location Map

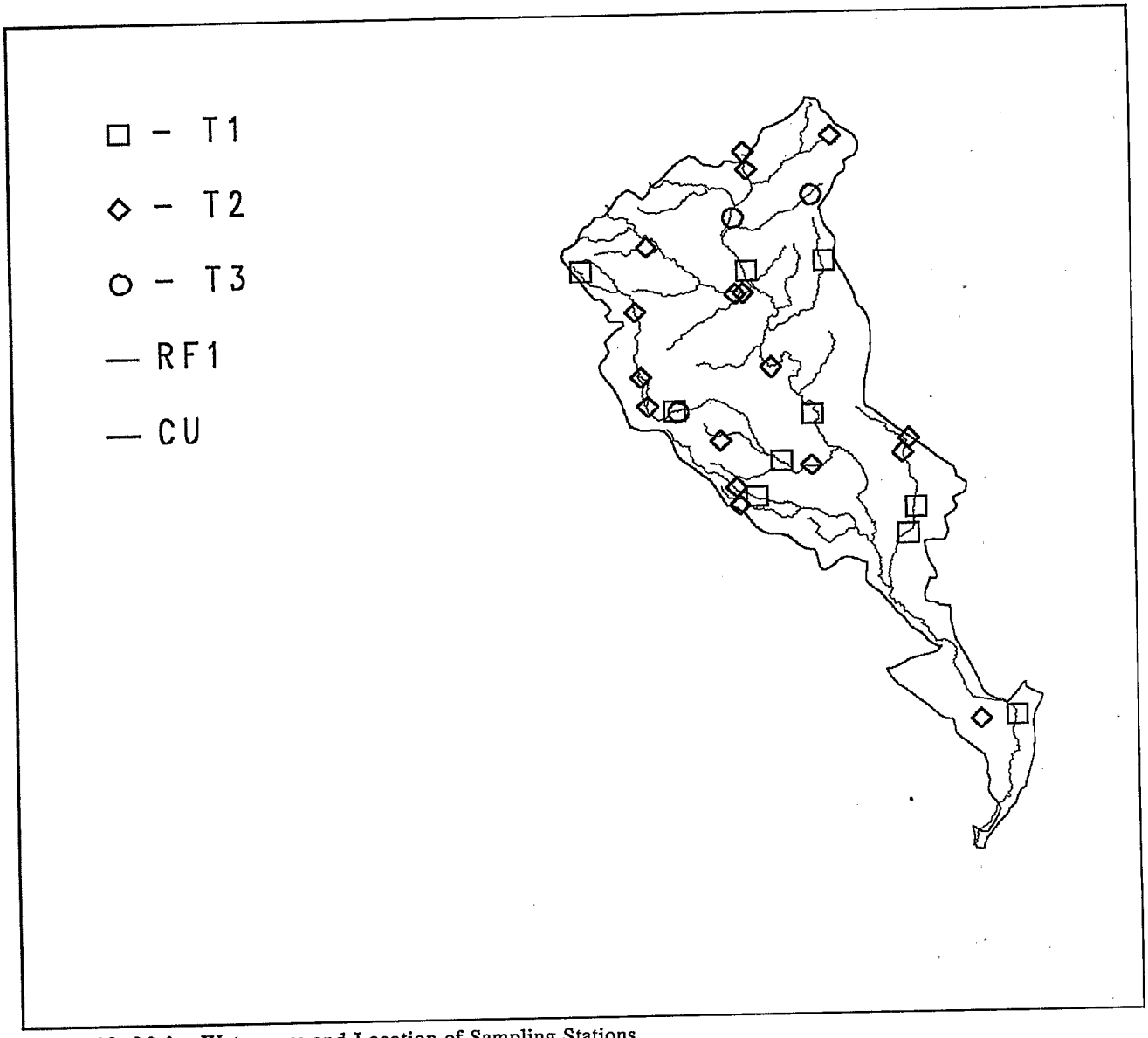

Figure 28. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **NC**
Monitoring Program: **North Carolina**
Num. of Stations: 3 Date Range: 1980-87

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1980-82

Source: **STORET** Agency: **21NC01WQ**
Monitoring Program: **N.Carolina Dept of Natural Resources And Communty Developmnt Data**
Num. of Stations: 5 Date Range: 1980-92

Source: **STORET** Agency: **21SC60WQ**
Monitoring Program: **SC Dept of Health & Environmental Control Biostoret Data**
Num. of Stations: 24 Date Range: 1980-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	28	21	5	16	5	16	.	4
Mercury	32	17	1	16	1	15	.	2
Lead	31	12	.	12	.	8	.	6
Copper	31	9	.	9	.	9	.	.
Polychlorinated biphenyls	25	8	7	1	2	1	5	3
Cadmium	30	6	.	6	.	6	.	.
BHC	27	5	1	4	1	2	.	3
Chlordane	17	5	.	5	.	5	.	4
Nickel	29	4	.	4	.	4	.	.
Toxaphene	24	3	.	3	.	1	.	3
Zinc	30	3	.	3	.	3	.	.
Dioxins	2	2	2	.	.	.	2	.
Arsenic	5	1	.	1	.	1	.	.
Diazinon/Spectracide	21	1	.	1	.	1	.	.
Methylnaphthalene, 2-	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	16	0.00	0.00	0	.	.
Acenaphthylene	16	0.00	0.00	0	.	.
Aldrin	145	0.00	0.00	0	.	.
Anthracene	16	0.00	0.00	0	.	.
Arsenic	12	3025.00	2400.00	6	7700.00	4800.00
Benzene	15	0.00	0.00	0	.	.
Benzo(a)anthracene	16	0.00	0.00	0	.	.
Benzo(a)pyrene	16	0.00	0.00	0	.	.
Benzo(b)fluoranthene	16	0.00	0.00	0	.	.
Benzo(ghi)perylene	16	0.00	0.00	0	.	.
Benzo(k)fluoranthene	16	0.00	0.00	0	.	.
Benzoic acid	16	0.00	0.00	0	.	.
Benzyl alcohol	16	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Bis(2-ethylhexyl)phthalate	16	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	16	0.00	0.00	0	.	.
Butyl benzyl phthalate	15	0.00	0.00	0	.	.
BHC	307	0.07	0.00	3	14.90	0.60
Cadmium	159	70.06	0.00	14	1400.00	270.00
Chlordane	77	1.18	0.00	9	22.40	3.17
Chlorobenzene	12	0.00	0.00	0	.	.
Chromium	159	7798.11	4600.00	99	43000.00	1000.00
Chrysene	16	0.00	0.00	0	.	.
Copper	159	17239.62	6500.00	114	340000.0	1200.00
Cresol, o	16	0.00	0.00	0	.	.
Cresol, p-	16	0.00	0.00	0	.	.
Di-n-butyl phthalate	16	0.00	0.00	0	.	.
Di-n-octyl phthalate	16	0.00	0.00	0	.	.
Diazinon/Spectracide	94	0.16	0.00	1	14.70	14.70
Dibenzo(a,h)anthracene	16	0.00	0.00	0	.	.
Dibenzofuran	16	0.00	0.00	0	.	.
Dibromochloromethane	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	20	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	20	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	20	0.00	0.00	0	.	.
Dichloroethane 1,1-	14	0.00	0.00	0	.	.
Dichloroethane 1,2-	14	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	14	0.00	0.00	0	.	.
Dichloromethane	14	0.00	0.00	0	.	.
Dichloropropane, 1,2-	14	0.00	0.00	0	.	.
Dieldrin	145	0.00	0.00	1	0.10	0.10
Diethyl phthalate	16	0.00	0.00	0	.	.
Dimethyl phthalate	16	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	16	0.00	0.00	0	.	.
DDT	812	2.64	0.00	114	1070.00	0.20
Endosulfan mixed isomers	2	0.00	0.00	0	.	.
Endosulfan, alpha-	65	0.00	0.00	0	.	.
Endosulfan, beta-	66	0.00	0.00	0	.	.
Endrin	144	0.22	0.00	2	26.40	4.94
Ethion/Bladen	94	0.00	0.00	0	.	.
Ethylbenzene	14	0.00	0.00	0	.	.
Fluoranthene	16	0.00	0.00	0	.	.
Fluorene	16	0.00	0.00	0	.	.
Heptachlor	144	0.00	0.00	0	.	.
Heptachlor epoxide	144	0.00	0.00	0	.	.
Hexachlorobenzene	62	0.18	0.00	1	11.10	11.10
Hexachlorobutadiene	16	0.00	0.00	0	.	.
Hexachloroethane	15	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Indeno(1,2,3-cd)pyrene	16	0.00	0.00	0	.	.
Isophorone	16	0.00	0.00	0	.	.
Lead	158	17533.54	9700.00	114	160000.0	1700.00
Malathion	94	0.00	0.00	0	.	.
Mercury	158	65.63	0.00	30	2200.00	20.00
Methoxychlor	138	0.00	0.00	0	.	.
Methylnaphthalene, 2-	16	35.81	0.00	1	573.00	573.00
Mirex/Dechlorane	68	0.00	0.00	0	.	.
Naphthalene	16	0.00	0.00	0	.	.
Nickel	158	3668.35	0.00	65	23000.00	2000.00
Nitrosodiphenylamine, N-	16	0.00	0.00	0	.	.
Pentachlorophenol	16	0.00	0.00	0	.	.
Phenanthrene	15	0.00	0.00	0	.	.
Phenol	16	0.00	0.00	0	.	.
Polychlorinated biphenyls	528	10.02	0.00	13	2643.00	10.00
Pyrene	16	0.00	0.00	0	.	.
Silver	7	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	14	0.00	0.00	0	.	.
Tetrachloroethene	14	0.00	0.00	0	.	.
Tetrachloromethane	13	0.00	0.00	0	.	.
Toluene	14	0.00	0.00	0	.	.
Toxaphene	144	49.39	0.00	3	7030.00	20.70
Tribromomethane/Bromoform	15	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	16	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	14	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	14	0.00	0.00	0	.	.
Trichloroethene	14	1.43	0.00	1	20.00	20.00
Trichlorofluoromethane	14	0.00	0.00	0	.	.
Trichloromethane/Chloroform	15	0.00	0.00	0	.	.
Zinc	157	103754.1	20000.00	137	11000000	1400.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	31	0.00	0.00	0	.	.
Arsenic	19	0.00	0.00	0	.	.
Biphenyl	2	0.00	0.00	0	.	.
BHC	72	2.60	0.00	10	60.00	0.00
Cadmium	70	45.56	0.00	9	1200.00	110.00
Chlordane	42	4.39	0.00	14	30.60	0.00
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	69	183.62	0.00	12	2300.00	280.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Copper	99	568.28	130.00	83	8600.00	0.00
Diazinon/Spectracide	6	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	33	0.29	0.00	2	4.76	4.76
Dioxins	3	0.00	0.00	3	0.01	0.00
DDT	155	22.59	0.00	81	208.70	0.00
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	33	0.94	0.00	3	21.40	4.73
Ethion/Bladen	6	0.00	0.00	0	.	.
Heptachlor	19	0.00	0.00	0	.	.
Heptachlor epoxide	19	0.00	0.00	0	.	.
Hexachlorobenzene	32	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	70	688.57	0.00	22	3200.00	1400.00
Malathion	6	0.00	0.00	0	.	.
Manganese	1	0.00	0.00	0	.	.
Mercury	100	244.50	80.00	76	2050.00	20.00
Methoxychlor	28	0.00	0.00	0	.	.
Mirex/Dechlorane	32	0.00	0.00	0	.	.
Nickel	64	295.47	0.00	12	2900.00	510.00
Parathion ethyl	6	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	47	207.69	0.00	22	980.00	84.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Tin	5	8800.00	0.00	2	24000.00	20000.00
Toxaphene	27	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	8.52	8.52	2	8.52	8.52
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	100	16040.00	11000.00	100	120000.0	2800.00

Seneca 03060101

Watershed Summary Information

Accounting Unit Name:	Savannah
State(s):	SC NC
Political Boundaries:	Pickens, Oconee, Anderson, Transylvania, Jackson, Hart
Major Waterways:	Seneca R Keowee R Cane Cr L Keowee Hartwell Res
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 3 Tier3 - 3

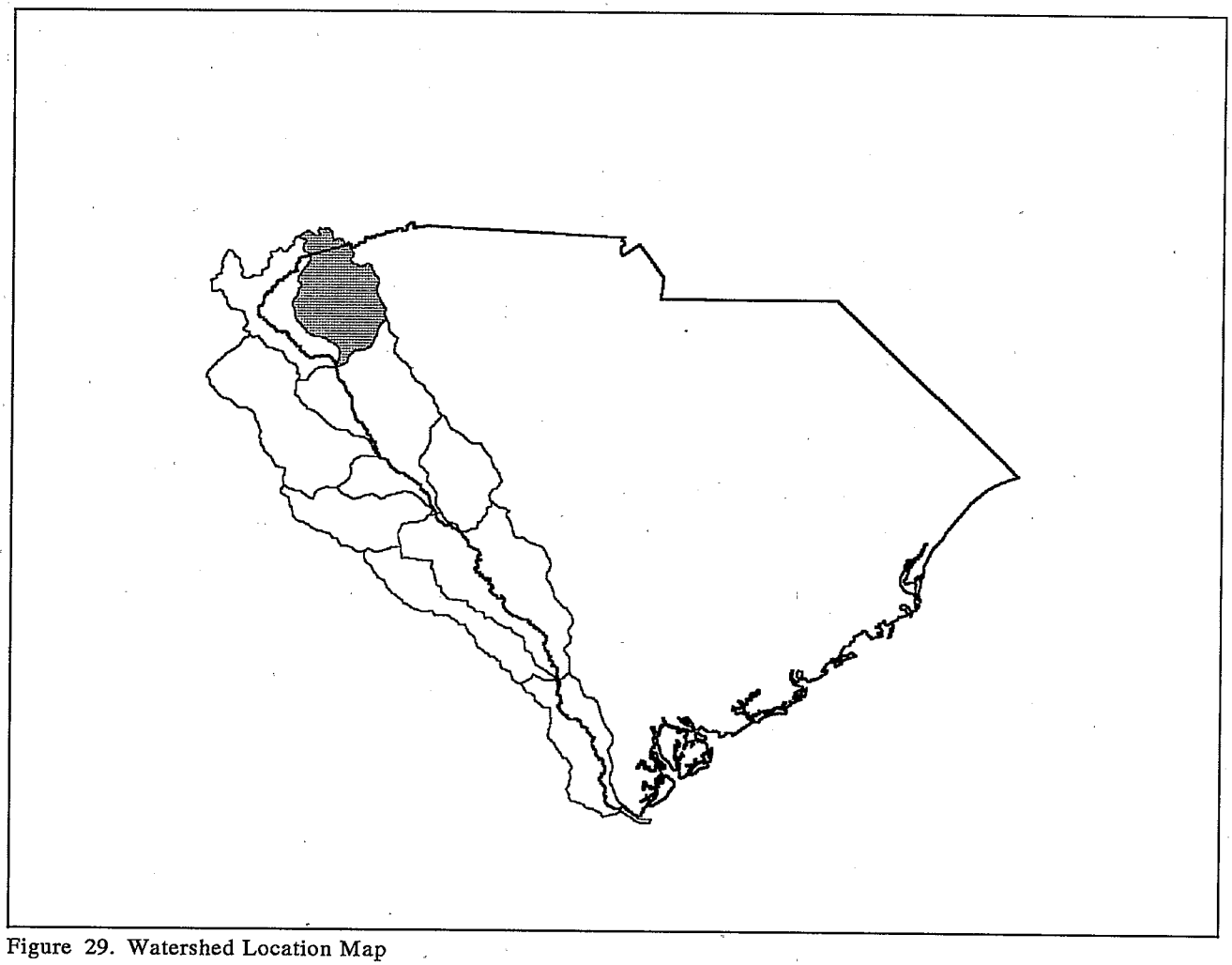

Figure 29. Watershed Location Map

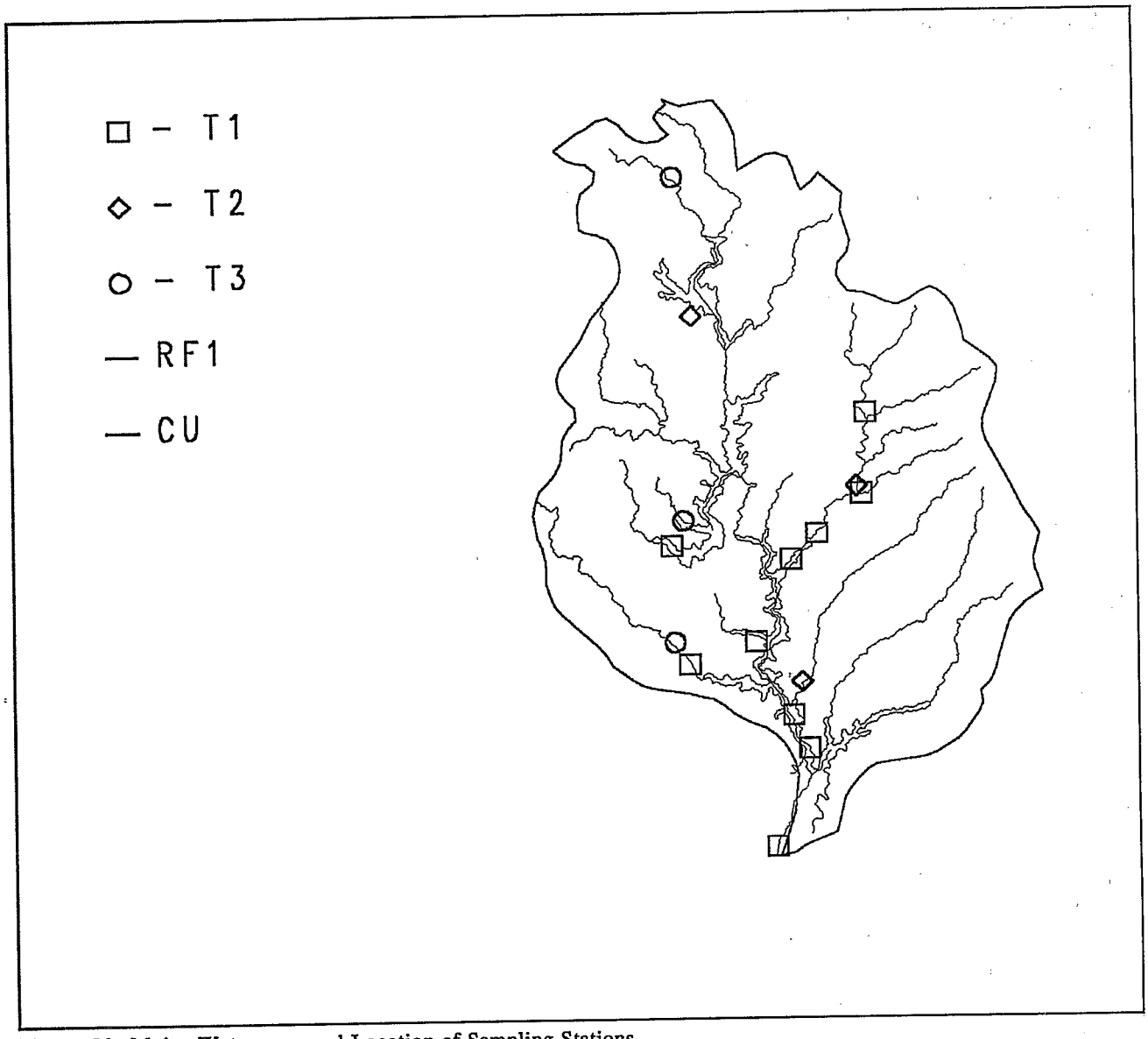

Figure 30. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **21NC01WQ**
Monitoring Program: **N.Carolina Dept of Natural Resources And Communty Developmnt Data**
Num. of Stations: 1 Date Range: 1985

Source: **STORET** Agency: **21SC60WQ**
Monitoring Program: **SC Dept of Health & Environmental Control Biostoret Data**
Num. of Stations: 15 Date Range: 1980-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	13	11	9	2	6	2	6	5
Copper	12	6	.	6	.	6	.	.
Lead	11	6	.	6	.	2	.	4
DDT	10	3	3	.	3	.	.	3
Cadmium	11	3	.	3	.	3	.	.
Nickel	9	3	.	3	.	3	.	.
Mercury	11	2	1	1	1	1	.	.
Chromium	11	2	.	2	.	2	.	.
Zinc	12	2	.	2	.	2	.	.
Arsenic	2	1	1	.	1	.	.	.
BHC	10	1	.	1	.	.	.	1
Toxaphene	10	1	.	1	.	1	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Aldrin	51	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Arsenic	2	315000.0	315000.0	1	630000.0	630000.0
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Benzoic acid	1	0.00	0.00	0	.	.
Benzyl alcohol	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
BHC	117	0.00	0.00	0	.	.
Cadmium	55	1005.45	0.00	4	50000.00	1500.00
Chlordane	33	0.00	0.00	0	.	.
Chromium	55	35572.73	16000.00	51	210000.0	2900.00
Chrysene	1	0.00	0.00	0	.	.
Copper	57	24768.42	9500.00	42	720000.0	1000.00
Diazinon/Spectracide	43	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibenzofuran	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dieldrin	51	0.00	0.00	0	.	.
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
DDT	301	0.65	0.00	7	45.70	16.00
Endosulfan, alpha-	33	0.00	0.00	0	.	.
Endosulfan, beta-	33	0.00	0.00	0	.	.
Endrin	51	0.00	0.00	0	.	.
Ethion/Bladen	43	0.55	0.00	1	23.80	23.80
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	51	0.00	0.00	0	.	.
Heptachlor epoxide	51	0.00	0.00	0	.	.
Hexachlorobenzene	27	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	55	12036.36	0.00	26	110000.0	5000.00
Malathion	43	0.00	0.00	0	.	.
Mercury	55	120.91	0.00	3	6250.00	200.00
Methoxychlor	49	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	0.00	0.00	0	.	.
Mirex/Dechlorane	33	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	55	7172.73	6000.00	37	40000.00	2000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenanthrene	1	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	249	561.04	0.00	49	64300.00	11.70
Pyrene	1	0.00	0.00	0	.	.
Toxaphene	51	8.12	0.00	1	414.00	414.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Zinc	53	51833.96	30000.00	51	200000.0	3100.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	12	0.00	0.00	0	.	.
BHC	28	2.21	0.00	3	33.00	6.00
Cadmium	13	0.00	0.00	0	.	.
Chlordane	12	0.65	0.00	1	7.80	7.80
Chromium	13	453.08	0.00	5	1500.00	790.00
Copper	13	620.00	460.00	7	2000.00	460.00
Diazinon/Spectracide	2	0.00	0.00	0	.	.
Dieldrin	12	0.00	0.00	0	.	.
DDT	56	22.31	0.00	27	142.00	5.20
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	12	0.53	0.00	1	6.40	6.40
Ethion/Bladen	2	0.00	0.00	0	.	.
Heptachlor	6	0.00	0.00	0	.	.
Heptachlor epoxide	6	0.00	0.00	0	.	.
Hexachlorobenzene	12	0.00	0.00	0	.	.
Lead	13	1823.08	2000.00	11	3900.00	1200.00
Malathion	2	0.00	0.00	0	.	.
Mercury	13	19.23	0.00	1	250.00	250.00
Methoxychlor	12	0.00	0.00	0	.	.
Mirex/Dechlorane	12	0.00	0.00	0	.	.
Nickel	4	985.00	970.00	3	2000.00	540.00
Parathion ethyl	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	73	4835.05	1920.00	60	43900.00	160.00
Tin	1	0.00	0.00	0	.	.
Toxaphene	12	0.00	0.00	0	.	.
Zinc	13	24184.62	16000.00	13	78000.00	10800.00

Middle Savannah 03060106

Watershed Summary Information

Accounting Unit Name:	Savannah
State(s):	SC GA
Political Boundaries:	Aiken, Burke, Allendale, Barnwell, Columbia, Richmond, Screven, Mccormick, Edgefield, Mcduffie
Major Waterways:	Savannah R Horse Cr Lower Three Runs Kiokee Cr Upper Three Runs
Number of Stations in Watershed:	Tier1 - 20 Tier2 - 11 Tier3 - 5

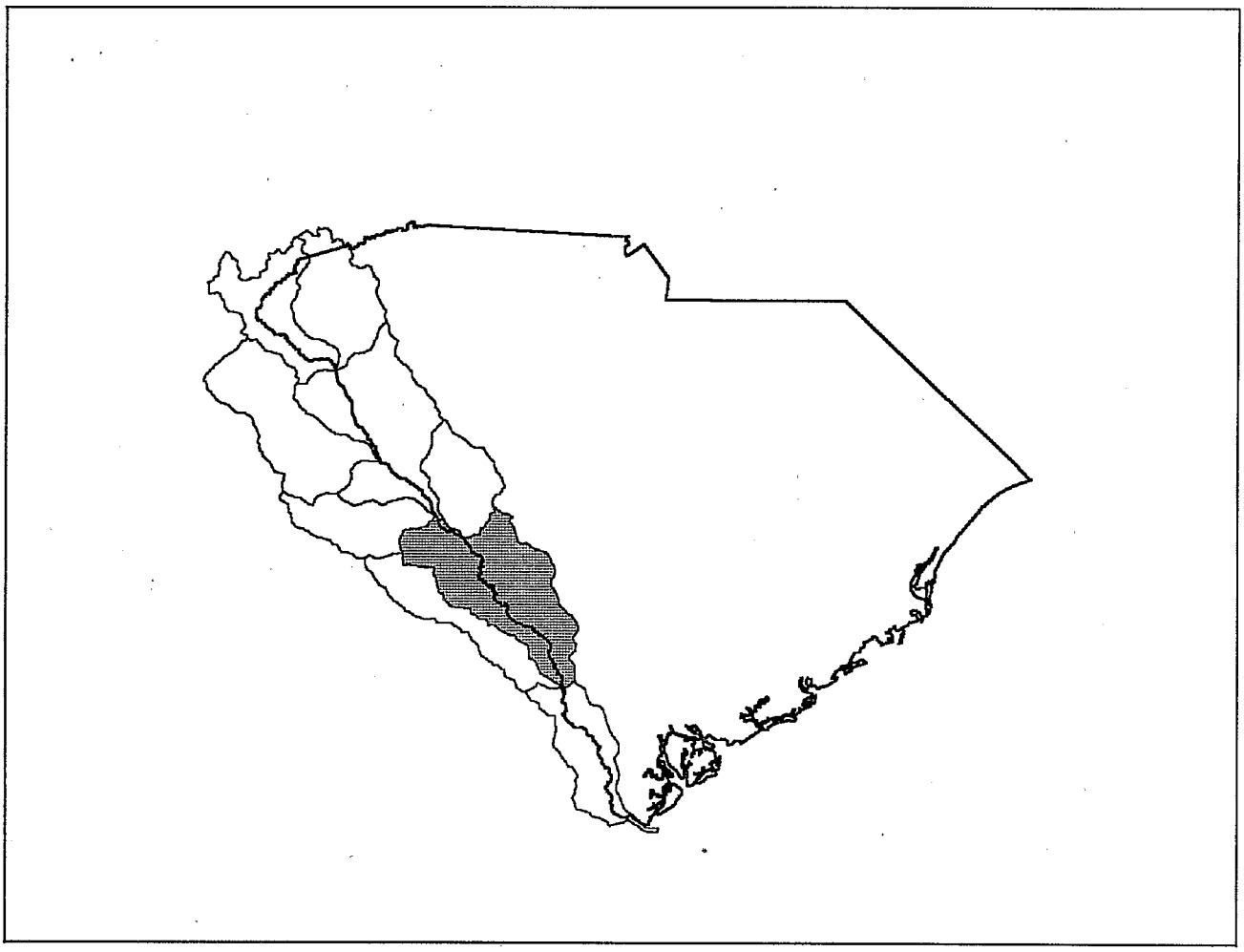

Figure 31. Watershed Location Map

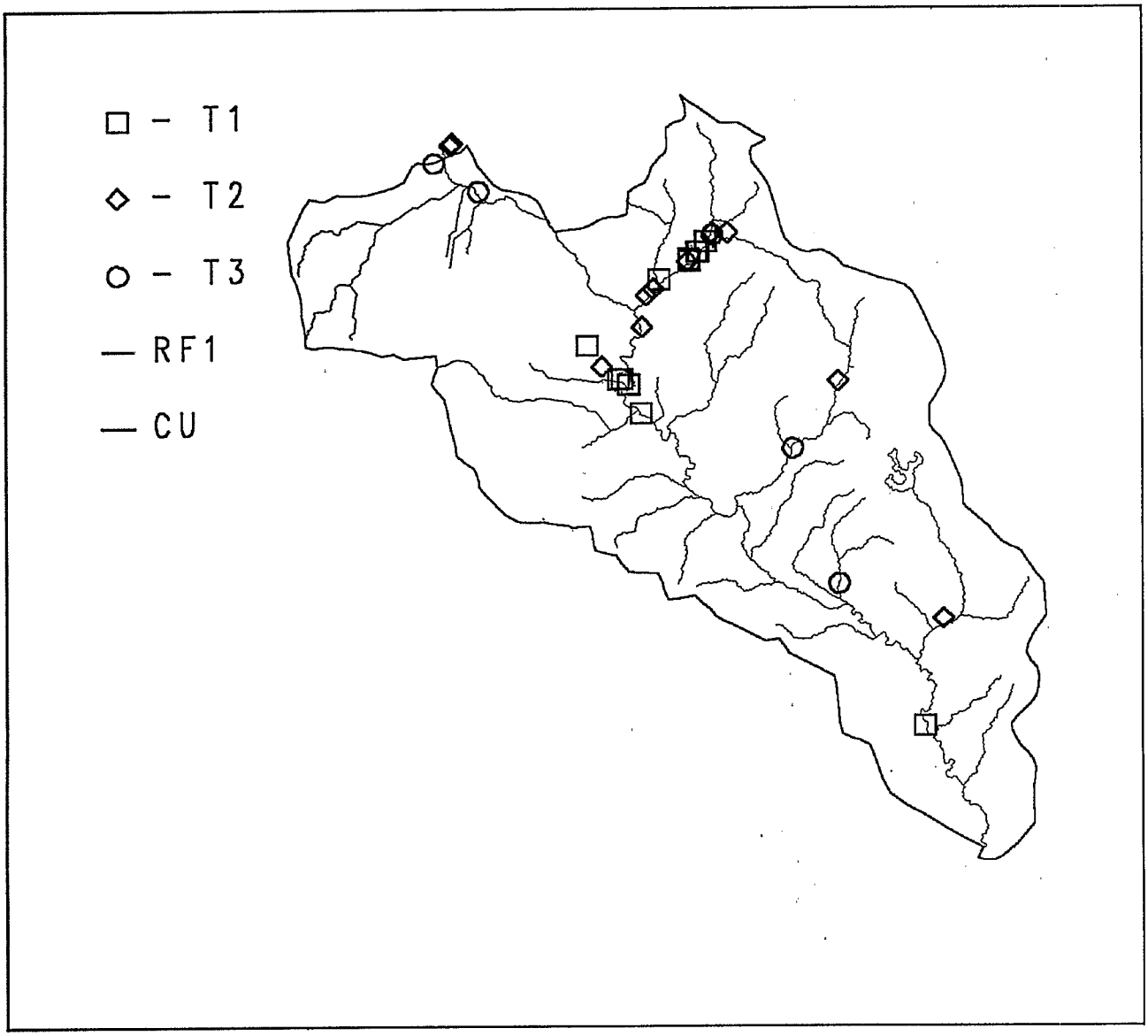

Figure 32. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **GA**
Monitoring Program: **Georgia**
Num. of Stations: 2 Date Range: 1984-88

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984-88

Source: **STORET** Agency: **11COESAV**
Monitoring Program: **Corps of Engineers Savannah District Stream Flow Data**
Num. of Stations: 3 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **21GAEPD**
Monitoring Program: **GA Dept of Nat Resources Resources Data**
Num. of Stations: 4 Date Range: 1980-93

Source: **STORET** Agency: **21SC60WQ**
Monitoring Program: **SC Dept of Health & Environmental Control Biostoret Data**
Num. of Stations: 24 Date Range: 1980-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	30	22	19	3	12	4	8	14
Mercury	31	17	11	6	11	5	.	2
Copper	28	17	.	17	.	17	.	.
Lead	28	17	.	17	.	15	.	3
Cadmium	28	16	.	16	.	16	.	.
Nickel	27	13	.	13	.	13	.	.
DDT	28	12	3	9	3	8	.	5
Zinc	28	12	.	12	.	12	.	.
Chromium	29	11	10	1	10	1	.	.
Arsenic	20	8	3	5	3	5	.	.
Dioxins	4	4	4	.	.	.	4	.
BHC	28	4	.	4	.	1	.	3
Chlordane	20	4	.	4	.	3	.	3
Fluoranthene	12	3	2	1	2	1	.	1
Pyrene	12	3	2	1	2	1	.	1
Benzo(a)anthracene	12	2	2	.	2	.	.	2
Chrysene	12	2	2	.	2	.	.	1
Naphthalene	12	2	2	.	2	.	.	1
Bis(2-ethylhexyl)phthalate	11	2	1	1	1	1	.	1
Phenanthrene	11	2	1	1	1	1	.	.
Silver	17	2	1	1	1	1	.	.
Aldrin	25	2	.	2	.	.	.	2
Dieldrin	28	2	.	2	.	.	.	2
Acenaphthylene	10	1	1	.	1	.	.	.
Anthracene	11	1	1	.	1	.	.	.
Diethyl phthalate	11	1	1	.	1	.	.	.
Fluorene	11	1	1	.	1	.	.	1
Acenaphthene	11	1	.	1	.	1	.	.
Cresols	2	1	.	1	.	1	.	.
Di-n-butyl phthalate	10	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Heptachlor epoxide	27	1	.	1	.	.	.	1
Nitrosodiphenylamine, N-	10	1	.	1	.	1	.	.
Pentachlorophenol	12	1	.	1	.	1	.	.
Phenol	12	1	.	1	.	1	.	.
Toxaphene	25	1	.	1	.	1	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	25	16.00	0.00	1	400.00	400.00
Acenaphthylene	20	88600.00	0.00	1	1772000	1772000
Aldrin	106	0.05	0.00	2	2.91	2.30
Anthracene	25	47626.00	0.00	2	1190000	650.00
Antimony	16	13250.00	14500.00	9	40000.00	13000.00
Arsenic	46	15187.61	1030.00	26	220000.0	600.00
Benzene	23	0.00	0.00	0	.	.
Benzo(a)anthracene	28	10564.64	0.00	3	291000.0	380.00
Benzo(a)pyrene	18	0.00	0.00	0	.	.
Benzo(b)fluoranthene	18	0.00	0.00	0	.	.
Benzo(ghi)perylene	18	0.00	0.00	0	.	.
Benzo(k)fluoranthene	18	0.00	0.00	0	.	.
Benzoic acid	17	0.00	0.00	0	.	.
Benzyl alcohol	17	0.00	0.00	0	.	.
Biphenyl	5	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	21	1038.10	0.00	3	12300.00	1700.00
Bromophenyl phenyl ether, 4-	18	0.00	0.00	0	.	.
Butyl benzyl phthalate	12	60.83	0.00	1	730.00	730.00
BHC	258	0.01	0.00	1	2.93	2.93
Cadmium	124	1020.16	0.00	24	33000.00	700.00
Chlordane	69	1.68	0.00	3	108.00	3.00
Chlorobenzene	15	0.00	0.00	0	.	.
Chromium	130	530235.7	14000.00	117	12000000	1000.00
Chrysene	28	10492.14	0.00	4	288000.0	380.00
Copper	128	32710.39	5150.00	88	1100000	1000.00
Cresol, o	14	0.00	0.00	0	.	.
Cresol, p-	16	0.00	0.00	0	.	.
Cresols	9	755.56	0.00	1	6800.00	6800.00
Di-n-butyl phthalate	24	151.25	0.00	2	1870.00	1760.00
Di-n-octyl phthalate	15	0.00	0.00	0	.	.
Diazinon/Spectracide	69	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	18	0.00	0.00	0	.	.
Dibenzofuran	23	18.26	0.00	1	420.00	420.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibromochloromethane	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	20	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	21	0.71	0.00	1	15.00	15.00
Dichlorobenzene, 1,4-	21	2.10	0.00	1	44.00	44.00
Dichloroethane 1,1-	18	0.11	0.00	1	2.00	2.00
Dichloroethane 1,2-	15	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	15	0.00	0.00	0	.	.
Dichloromethane	15	0.00	0.00	0	.	.
Dichloropropane, 1,2-	15	0.00	0.00	0	.	.
Dieldrin	109	0.00	0.00	0	.	.
Diethyl phthalate	23	29.13	0.00	1	670.00	670.00
Dimethyl phthalate	18	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	18	0.00	0.00	0	.	.
DDT	564	3.03	0.00	47	504.30	1.00
Endosulfan mixed isomers	1	0.00	0.00	0	.	.
Endosulfan, alpha-	41	0.00	0.00	0	.	.
Endosulfan, beta-	41	0.00	0.00	0	.	.
Endrin	103	0.00	0.00	0	.	.
Ethion/Bladen	68	0.00	0.00	0	.	.
Ethylbenzene	15	0.00	0.00	0	.	.
Fluoranthene	28	93282.18	0.00	6	2602000	395.00
Fluorene	25	78222.80	0.00	2	1955000	570.00
Heptachlor	98	0.00	0.00	0	.	.
Heptachlor epoxide	99	0.05	0.00	1	4.70	4.70
Hexachlorobenzene	52	0.00	0.00	0	.	.
Hexachlorobutadiene	17	0.00	0.00	0	.	.
Hexachloroethane	18	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	18	0.00	0.00	0	.	.
Isophorone	18	0.00	0.00	0	.	.
Lead	125	36386.64	6000.00	74	360000.0	3600.00
Malathion	68	0.00	0.00	0	.	.
Mercury	122	1165.76	0.00	28	25500.00	7.00
Methoxychlor	88	0.00	0.00	0	.	.
Methylnaphthalene, 2-	18	0.00	0.00	0	.	.
Mirex/Dechlorane	55	0.00	0.00	0	.	.
Naphthalene	27	46215.22	0.00	3	1247000	332.00
Nickel	115	6123.57	0.00	56	39000.00	2000.00
Nitrosodiphenylamine, N-	18	16.67	0.00	1	300.00	300.00
Pentachlorophenol	40	42.50	0.00	1	1700.00	1700.00
Phenanthrene	28	143654.3	0.00	4	4019000	950.00
Phenol	31	20.10	0.00	1	623.00	623.00
Polychlorinated biphenyls	351	111.64	0.00	24	9170.00	25.20
Pyrene	28	56027.46	0.00	6	1556000	427.00
Silver	25	528.00	0.00	3	5900.00	3200.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tetrachloroethane, 1,1,2,2-	15	0.00	0.00	0	.	.
Tetrachloroethene	18	0.00	0.00	0	.	.
Tetrachloromethane	15	0.00	0.00	0	.	.
Toluene	22	8.48	0.00	3	173.00	4.65
Toxaphene	109	1.82	0.00	1	198.00	198.00
Tribromomethane/Bromoform	15	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	20	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	17	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	15	0.00	0.00	0	.	.
Trichloroethene	16	0.00	0.00	0	.	.
Trichlorofluoromethane	15	0.00	0.00	0	.	.
Trichloromethane/Chloroform	23	0.00	0.00	0	.	.
Xylenes	8	0.38	0.00	1	3.00	3.00
Zinc	126	143159.7	14000.00	116	2600000	1500.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Aldrin	46	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	3	0.00	0.00	0	.	.
Arsenic	13	0.00	0.00	0	.	.
Barium	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Beryllium	3	0.00	0.00	0	.	.
Biphenyl	4	6.25	6.25	2	12.50	12.50
Bis(2-chloroethyl)ether	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	119	2.77	0.00	8	100.00	3.00
Cadmium	57	0.00	0.00	0	.	.
Chlordane	59	2354.09	0.00	22	138000.0	3.90
Chloronaphthalene, 2-	1	0.00	0.00	0	.	.
Chlorophenol, 2-	1	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	57	755.96	0.00	22	5100.00	210.00
Chrysene	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Copper	57	620.53	410.00	29	2900.00	410.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Diazinon/Spectracide	10	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	1	0.00	0.00	0	.	.
Dichlorophenoxyacetic acid,	5	0.00	0.00	0	.	.
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	49	0.86	0.00	2	21.10	21.10
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	1	0.00	0.00	0	.	.
Dioxins	6	0.01	0.00	6	0.03	0.00
Diphenylhydrazine, 1,2-	1	0.00	0.00	0	.	.
DDT	218	72.66	0.00	83	6300.00	5.40
Endosulfan, alpha-	6	0.00	0.00	0	.	.
Endosulfan, beta-	6	0.00	0.00	0	.	.
Endrin	48	0.00	0.00	0	.	.
Ethion/Bladen	8	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	21	0.00	0.00	0	.	.
Heptachlor epoxide	21	0.00	0.00	0	.	.
Hexachlorobenzene	48	0.00	0.00	0	.	.
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	47	891.49	0.00	19	4200.00	900.00
Malathion	8	0.00	0.00	0	.	.
Manganese	1	1400.00	1400.00	1	1400.00	1400.00
Mercury	64	262.66	0.00	31	1650.00	80.00
Methoxychlor	48	0.00	0.00	0	.	.
Mirex/Dechlorane	48	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	39	789.74	0.00	17	3400.00	1000.00
Nitrobenzene	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Nitrophenol, 4	1	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	1	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Parathion ethyl	8	0.00	0.00	0	.	.
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Pentachlorophenol	13	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	204	164.73	0.00	59	4210.00	70.00
Pyrene	1	0.00	0.00	0	.	.
Selenium	4	0.00	0.00	0	.	.
Silver	3	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	3	8.00	12.00	2	12.00	12.00
Tin	9	2666.67	0.00	1	24000.00	24000.00
Toxaphene	46	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	4	52.00	52.00	2	104.00	104.00
Trichlorophenol, 2,4,6-	1	0.00	0.00	0	.	.
Trichlorophenoxypropionic ac	5	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Vanadium	1	0.00	0.00	0	.	.
Zinc	47	13291.49	14000.00	46	28000.00	3800.00

Lower St. Johns 03080103

Watershed Summary Information

Accounting Unit Name:	St. Johns
State(s):	FL
Political Boundaries:	Duval, Putnam, St Johns, Clay, Flagler, Volusia
Major Waterways:	St Johns R Oklawaha R Dunns Cr Crescent L L Disston
Number of Stations in Watershed:	Tier1 - 32 Tier2 - 111 Tier3 - 45

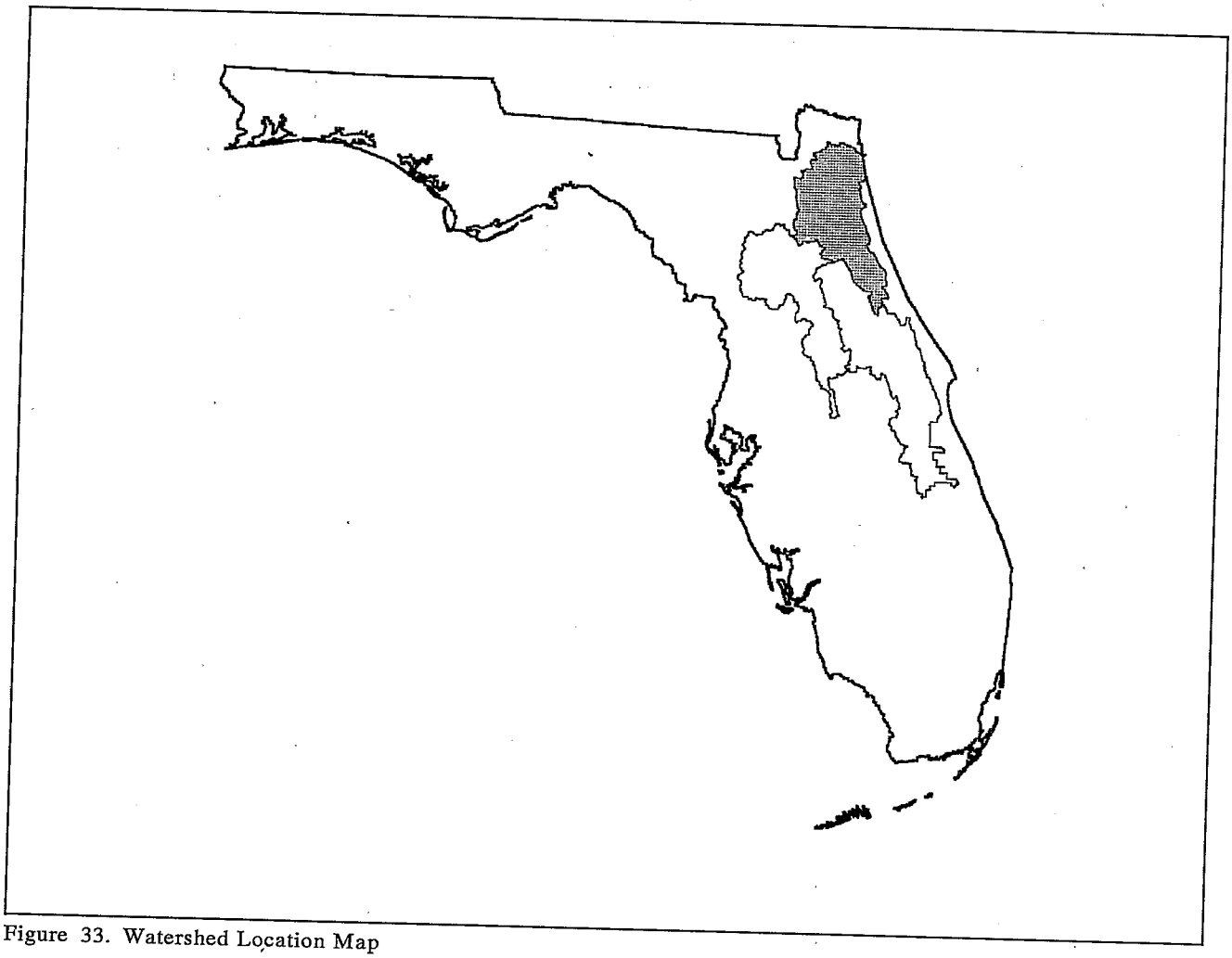

Figure 33. Watershed Location Map

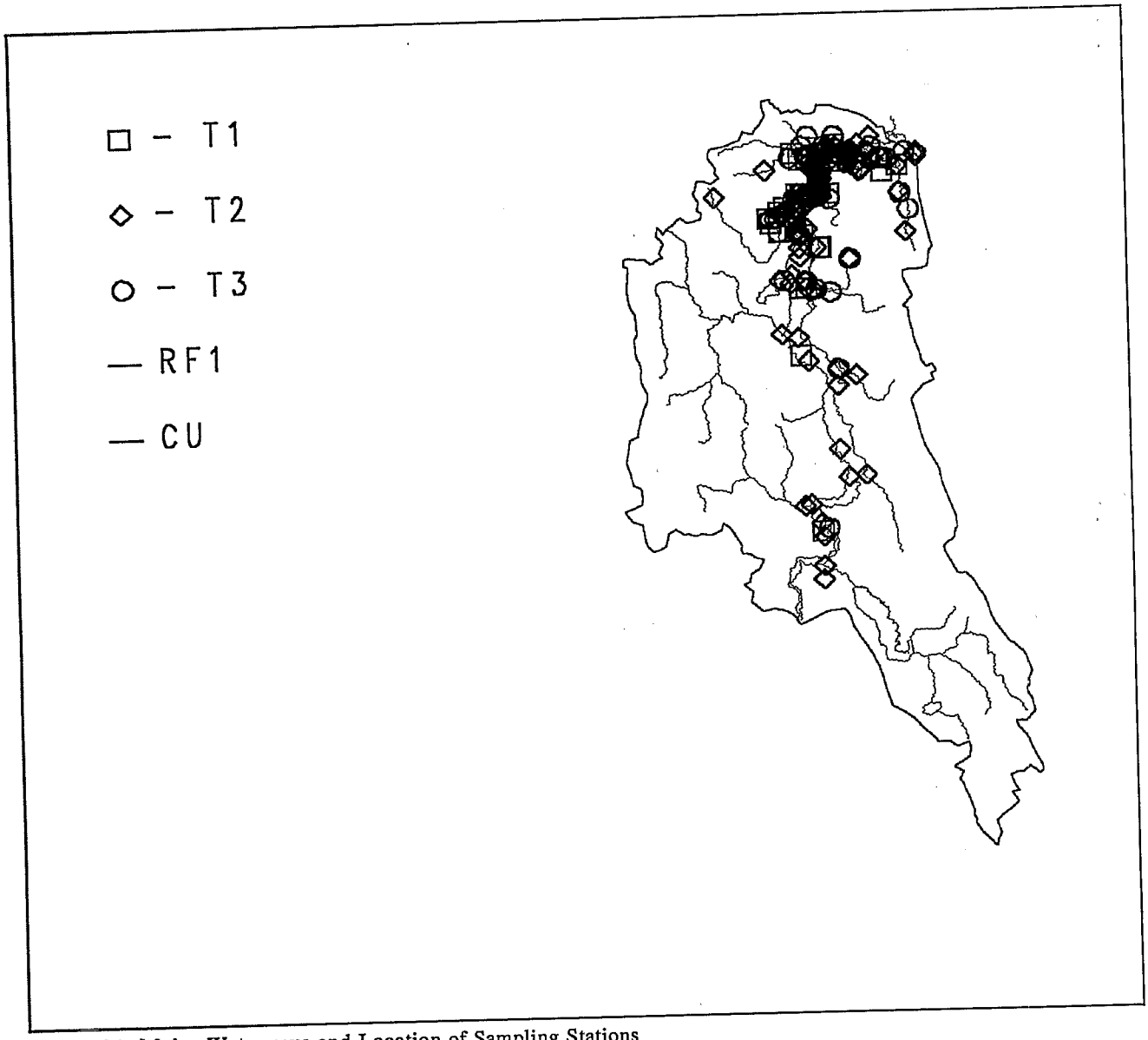

Figure 34. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 11 Date Range: 1984-87

Source: **ODES** Agency: **FL**
Monitoring Program: **Florida**
Num. of Stations: 3 Date Range: 1984-88

Source: **REGION 4** Agency: **FL DER**
Monitoring Program: **FL DER**
Num. of Stations: 98 Date Range: 1982-88

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984-87

Source: **STORET** Agency: **1114PEST**
Monitoring Program: **USEPA SE Environ Water Lab Data**
Num. of Stations: 1 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 16 Date Range: 1982-84

Source: **STORET** Agency: **21FLA**
Monitoring Program: **Fla Dept Environmental Regulation (Protection) Water, Sediment & Tissue Data**
Num. of Stations: 54 Date Range: 1982-86

Source: **STORET** Agency: **21FLSJWM**
Monitoring Program: **Surface Water Quality - St. Johns River Water Management District**
Num. of Stations: 3 Date Range: 1992-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Pyrene	94	61	11	50	11	50	.	.
Lead	165	55	.	55	.	55	.	.
Benzo(a)pyrene	81	53	10	43	10	38	.	53
Chrysene	81	47	.	47	.	47	.	.
Copper	159	47	.	47	.	47	.	.
DDT	97	44	3	41	3	41	.	.
Cadmium	160	44	.	44	.	44	.	.
Mercury	132	42	7	35	7	35	.	.
Benzo(a)anthracene	85	41	7	34	7	33	.	20
Chlordane	110	40	.	40	.	40	.	6
Anthracene	75	38	2	36	2	36	.	.
Fluorene	60	25	2	23	2	23	.	.
Polychlorinated biphenyls	68	23	5	18	.	12	5	18
Fluoranthene	94	20	.	20	.	20	.	.
Zinc	125	20	.	20	.	19	.	1
Dibenzo(a,h)anthracene	20	17	4	13	4	13	.	14
Acenaphthene	55	14	5	9	5	9	.	.
Naphthalene	51	14	.	14	.	14	.	.
Chromium	69	11	.	11	.	11	.	.
Nickel	103	11	.	11	.	11	.	.
Benzo(b)fluoranthene	40	10	.	10	.	1	.	10
Acenaphthylene	44	9	1	8	1	8	.	.
Arsenic	23	8	.	8	.	7	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Phenanthrene	85	7	.	7	.	7	.	.
Benzo(ghi)perylene	53	4	.	4	.	4	.	.
Dieldrin	51	4	.	4	.	.	.	4
Indeno(1,2,3-cd)pyrene	11	3	.	3	.	1	.	3
Dioxins	5	2	2	.	.	.	2	.
Heptachlor	51	2	.	2	.	.	.	2
Aldrin	58	1	.	1	.	.	.	1
Benzo(k)fluoranthene	40	1	.	1	.	1	.	1
Heptachlor epoxide	49	1	.	1	.	.	.	1
Hexachlorobenzene	9	1	.	1	.	1	.	1
Silver	24	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	65	120.41	30.00	41	865.00	1.60
Acenaphthylene	49	56.61	0.00	14	841.00	8.70
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	58	0.00	0.00	0	.	.
Anthracene	84	161.01	45.50	64	2365.00	1.00
Antimony	6	1133.33	1300.00	5	1700.00	1000.00
Arsenic	55	2914.16	2000.00	42	12000.00	480.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	102	386.83	69.50	67	6800.00	2.20
Benzo(a)pyrene	95	451.17	140.00	68	3520.00	21.00
Benzo(b)fluoranthene	47	430.60	86.00	30	4950.00	50.00
Benzo(ghi)perylene	62	288.38	0.00	27	6100.00	40.00
Benzo(k)fluoranthene	45	291.86	67.50	28	6940.00	43.50
Biphenyl	12	82.66	29.62	12	625.00	1.60
Bis(2-ethylhexyl)phthalate	4	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	4	0.00	0.00	0	.	.
Butyl benzyl phthalate	4	0.00	0.00	0	.	.
BHC	26	0.00	0.00	0	.	.
Cadmium	233	531.85	253.33	203	6150.00	0.04
Chlordane	116	5.28	0.00	55	100.00	0.24
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	100	19344.42	2000.00	99	98000.00	1.35
Chrysene	94	316.92	145.00	78	2800.00	2.50
Copper	231	13217.08	5675.00	223	296100.0	0.72
Di-n-butyl phthalate	4	140.00	0.00	1	560.00	560.00
Di-n-octyl phthalate	4	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	28	1180.74	122.00	26	29600.00	2.70

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	4	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	50	0.26	0.00	7	2.80	0.63
Diethyl phthalate	4	0.00	0.00	0	.	.
Dimethyl phthalate	4	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	6	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	268	3.26	0.13	135	77.00	0.11
Endosulfan mixed isomers	6	0.00	0.00	0	.	.
Endosulfan, alpha-	35	0.00	0.00	0	.	.
Endosulfan, beta-	34	0.00	0.00	0	.	.
Endrin	12	0.00	0.00	0	.	.
Ethion/Bladen	2	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	110	798.22	200.00	101	10900.00	6.90
Fluorene	70	73.51	7.84	39	1480.00	6.00
Heptachlor	49	3.28	0.00	6	88.00	1.10
Heptachlor epoxide	47	0.18	0.00	6	2.00	1.00
Hexachlorobenzene	6	163.33	0.00	1	980.00	980.00
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Hexachloroethane	4	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	16	225.15	166.50	12	797.00	62.00
Isophorone	4	0.00	0.00	0	.	.
Lead	241	26360.35	9650.00	209	425333.3	0.65
Malathion	2	0.00	0.00	0	.	.
Mercury	216	233.88	40.15	174	22700.00	0.04
Methoxychlor	9	0.00	0.00	0	.	.
Methylnaphthalene, 2-	29	0.00	0.00	0	.	.
Mirex/Dechlorane	26	0.37	0.00	3	9.00	0.15
Naphthalene	61	54.36	0.62	31	580.00	0.62
Nickel	174	4545.20	42.33	127	32100.00	0.69
Nitrosodiphenylamine, N-	4	0.00	0.00	0	.	.
Pentachlorophenol	19	0.00	0.00	0	.	.
Phenanthrene	97	294.36	109.00	81	3380.00	1.70
Phenol	17	0.00	0.00	0	.	.
Polychlorinated biphenyls	256	3.89	0.00	29	188.60	1.80
Pyrene	108	867.64	335.00	97	8470.00	3.75

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Silver	41	170.43	79.00	40	912.00	0.03
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	58	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	4	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	160	56399.70	16000.00	160	702566.7	1.60

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	1	9.70	9.70	1	9.70	9.70
Antimony	1	220.00	220.00	1	220.00	220.00
Arsenic	9	14229.63	15000.00	9	19000.00	8866.67
Benzo(a)anthracene	4	151.00	135.00	4	270.00	64.00
Biphenyl	5	40.00	0.00	1	200.00	200.00
BHC	12	2.15	2.25	9	4.90	0.81
Cadmium	9	1010.74	930.00	9	1566.67	520.00
Chlordane	17	16.06	9.70	17	45.50	4.53
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	9	545.19	500.00	9	930.00	410.00
Chrysene	1	190.00	190.00	1	190.00	190.00
Copper	9	52111.11	50000.00	9	66000.00	36000.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	12	11.15	7.35	11	24.00	2.80
Dioxins	6	0.00	0.00	5	0.00	0.00
DDT	28	26.72	12.50	28	96.00	2.80
Endrin	2	0.00	0.00	0	.	.
Fluoranthene	2	230.00	230.00	2	300.00	160.00
Heptachlor	7	4.10	4.80	5	10.00	3.60
Heptachlor epoxide	6	6.48	6.45	4	17.00	5.10
Hexachlorobenzene	6	1.68	0.28	4	5.70	0.21
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	3	6.80	10.20	2	10.20	10.20
Lead	9	895.56	950.00	9	1300.00	550.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Manganese	6	13394.44	14000.00	6	20000.00	8300.00
Mercury	13	97.31	100.00	13	130.00	60.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	5	4.12	1.90	3	13.00	1.90
Nickel	9	1733.33	1800.00	9	2200.00	1500.00
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	10	248.39	243.30	10	485.52	54.40
Pyrene	2	145.00	145.00	2	190.00	100.00
Selenium	9	2366.67	2400.00	9	3000.00	1900.00
Silver	9	607.41	620.00	9	976.67	340.00
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Tin	9	456.67	490.00	9	790.00	230.00
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Zinc	9	2955556	2900000	9	4200000	1900000

Middle Chattahoochee-Lake Harding 03130002

Watershed Summary Information

Accounting Unit Name: Apalachicola

State(s): GA (AL)

Political Boundaries: Harris, Troup, Douglas, Lee, Carroll, Chambers, Fulton, Coweta, Heard, Cobb, Muscogee, Meriwether, Randolph, Paulding

Major Waterways:
Chattahoochee R
Sweetwater Cr
Flat Shoal Cr
West Pont L
L Harding

Number of Stations in Watershed:
Tier1 - 21
Tier2 - 4
Tier3 - 2

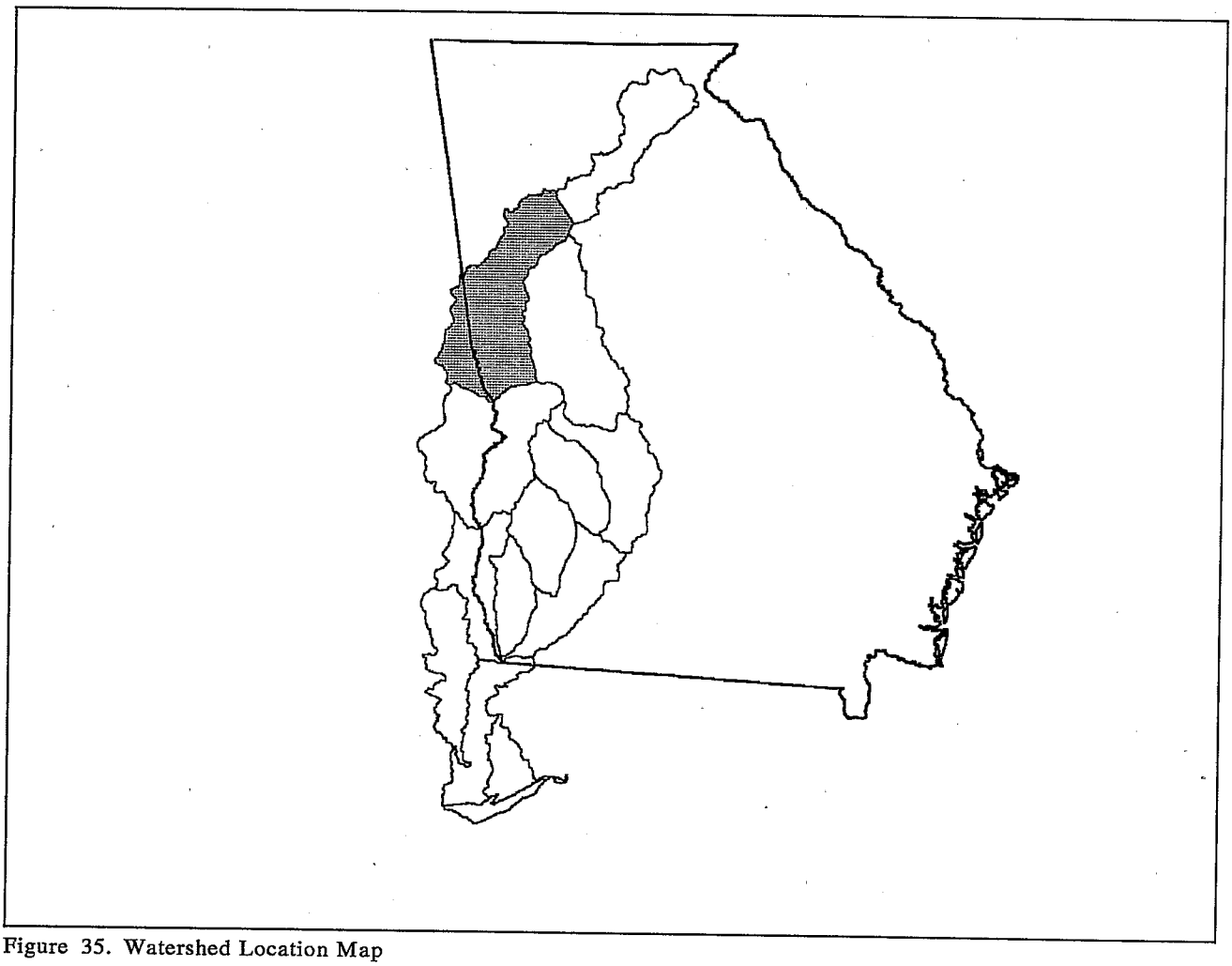

Figure 35. Watershed Location Map

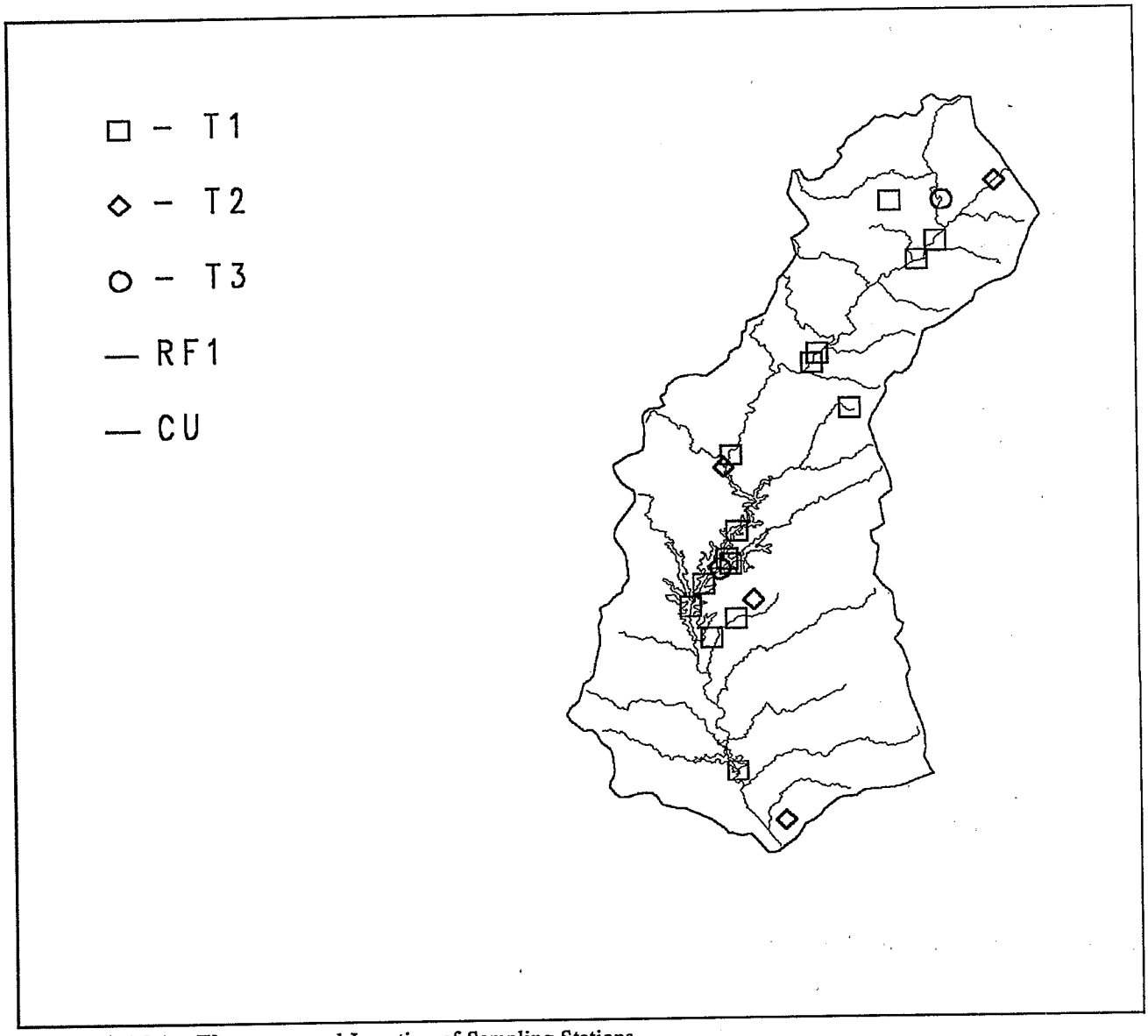

Figure 36. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **GA**
Monitoring Program: **Georgia**
Num. of Stations: 3 Date Range: 1988

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1988

Source: **STORET** Agency: **21GAEPD**
Monitoring Program: **GA Dept of Nat Resources Resources Data**
Num. of Stations: 21 Date Range: 1980-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	24	22	19	3	2	4	19	3
Chlordane	19	14	3	11	.	3	3	11
Dieldrin	19	11	1	10	.	2	1	10
Dioxins	6	6	6	.	.	.	6	.
DDT	17	6	2	4	1	3	1	4
Cadmium	12	6	.	6	.	6	.	.
Copper	12	6	.	6	.	6	.	.
Lead	12	5	.	5	.	5	.	.
Zinc	12	4	.	4	.	4	.	.
Chromium	12	3	.	3	.	3	.	.
Mercury	17	3	.	3	.	3	.	.
Bis(2-ethylhexyl)phthalate	9	2	1	1	1	1	.	1
Arsenic	12	2	.	2	.	2	.	.
Fluoranthene	6	2	.	2	.	2	.	.
Nickel	10	2	.	2	.	2	.	.
Pyrene	7	2	.	2	.	2	.	.
Silver	9	1	1	.	1	.	.	.
Benzo(b)fluoranthene	5	1	.	1	.	.	.	1
Benzoic acid	1	1	.	1	.	1	.	.
Hexachlorobenzene	8	1	.	1	.	1	.	.
Pentachlorophenol	6	1	.	1	.	1	.	.
Phenanthrene	4	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	5	0.00	0.00	0	.	.
Acenaphthylene	5	0.00	0.00	0	.	.
Acetone	1	0.00	0.00	0	.	.
Acrylonitrile	3	0.00	0.00	0	.	.
Aldrin	33	0.00	0.00	0	.	.
Anthracene	5	0.00	0.00	0	.	.
Antimony	18	1033.33	0.00	2	14000.00	4600.00
Arsenic	42	6442.86	0.00	17	35000.00	1800.00
Benzene	8	0.00	0.00	0	.	.
Benzo(a)anthracene	5	0.00	0.00	0	.	.
Benzo(a)pyrene	5	0.00	0.00	0	.	.
Benzo(b)fluoranthene	7	42.00	0.00	1	294.00	294.00
Benzo(ghi)perylene	5	0.00	0.00	0	.	.
Benzo(k)fluoranthene	5	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzoic acid	2	540.00	540.00	1	1080.00	1080.00
Bis(2-ethylhexyl)phthalate	16	464.38	0.00	4	5533.00	239.00
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	5	0.00	0.00	0	.	.
BHC	109	0.00	0.00	0	.	.
Cadmium	42	940.48	0.00	8	16000.00	1600.00
Chlordane	45	39.99	0.00	20	292.00	8.50
Chlorobenzene	2	0.00	0.00	0	.	.
Chromium	47	26772.34	22000.00	46	71000.00	5100.00
Chrysene	5	0.00	0.00	0	.	.
Copper	54	17103.70	12000.00	43	64000.00	3800.00
Di-n-butyl phthalate	9	36.67	0.00	1	330.00	330.00
Di-n-octyl phthalate	5	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	5	0.00	0.00	0	.	.
Dibenzofuran	3	0.00	0.00	0	.	.
Dibromochloromethane	4	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	5	0.00	0.00	0	.	.
Dichloroethane 1,1-	4	0.00	0.00	0	.	.
Dichloroethane 1,2-	2	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	2	0.00	0.00	0	.	.
Dichloromethane	8	0.00	0.00	0	.	.
Dichloropropane, 1,2-	2	0.00	0.00	0	.	.
Dieldrin	33	0.93	0.00	4	13.00	2.60
Diethyl phthalate	5	0.00	0.00	0	.	.
Dimethyl phthalate	5	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	5	0.00	0.00	0	.	.
DDT	82	3.05	0.00	9	85.00	8.00
Endosulfan, alpha-	18	0.00	0.00	0	.	.
Endosulfan, beta-	17	0.00	0.00	0	.	.
Endrin	33	0.00	0.00	0	.	.
Ethylbenzene	3	0.00	0.00	0	.	.
Fluoranthene	11	388.82	0.00	4	1320.00	317.00
Fluorene	5	0.00	0.00	0	.	.
Heptachlor	18	0.00	0.00	0	.	.
Heptachlor epoxide	18	0.00	0.00	0	.	.
Hexachlorobenzene	26	2.88	0.00	1	75.00	75.00
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Hexachloroethane	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	5	0.00	0.00	0	.	.
Isophorone	5	0.00	0.00	0	.	.
Lead	48	36216.67	22500.00	46	120000.0	3800.00
Mercury	34	102.65	0.00	16	400.00	100.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	21	0.00	0.00	0	.	.
Methyl ethyl ketone	2	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	0.00	0.00	0	.	.
Mirex/Dechlorane	18	0.00	0.00	0	.	.
Naphthalene	6	0.00	0.00	0	.	.
Nickel	33	8330.30	7000.00	27	29000.00	4200.00
Nitrosodiphenylamine, N-	5	0.00	0.00	0	.	.
Pentachlorophenol	31	26.21	0.00	7	509.00	20.00
Phenanthrene	8	28.50	0.00	1	228.00	228.00
Phenol	21	0.00	0.00	0	.	.
Polychlorinated biphenyls	161	15.74	0.00	39	445.00	8.01
Pyrene	13	421.77	0.00	4	1730.00	293.00
Silver	17	305.88	0.00	1	5200.00	5200.00
Tetrachloroethene	8	0.00	0.00	0	.	.
Tetrachloromethane	5	0.00	0.00	0	.	.
Toluene	12	1.63	0.00	3	8.80	2.00
Toxaphene	33	0.00	0.00	0	.	.
Tribromomethane/Bromoform	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	5	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	8	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	3	0.00	0.00	0	.	.
Trichloroethene	5	0.00	0.00	0	.	.
Trichlorofluoromethane	3	1.00	0.00	1	3.00	3.00
Trichloromethane/Chloroform	9	0.00	0.00	0	.	.
Zinc	49	105761.2	90000.00	49	325000.0	9300.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Aldrin	55	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	6	0.00	0.00	0	.	.
Arsenic	15	0.00	0.00	0	.	.
Barium	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Benzoic acid	1	0.00	0.00	0	.	.
Beryllium	8	0.00	0.00	0	.	.
Biphenyl	6	5.10	0.00	2	15.30	15.30

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Bis(2-chloroethyl)ether	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	5	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	220	0.57	0.00	6	21.90	18.50
Cadmium	15	0.00	0.00	0	.	.
Chlordane	134	380.42	178.50	109	3790.00	47.00
Chloronaphthalene, 2-	1	0.00	0.00	0	.	.
Chlorophenol, 2-	1	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	6	44.57	45.60	6	64.50	23.60
Chromium	15	0.00	0.00	0	.	.
Chrysene	1	0.00	0.00	0	.	.
Copper	15	1406.67	0.00	5	14000.00	1000.00
Di-n-butyl phthalate	5	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	1	0.00	0.00	0	.	.
Dichlorophenoxyacetic acid,	7	0.00	0.00	0	.	.
Dicofol/Kelthane	3	0.00	0.00	0	.	.
Dieldrin	60	7.20	0.00	15	94.10	10.00
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	1	0.00	0.00	0	.	.
Dioxins	14	0.01	0.01	14	0.03	0.01
Diphenylhydrazine, 1,2-	1	0.00	0.00	0	.	.
DDT	242	54.43	0.00	110	700.00	8.00
Endosulfan, alpha-	46	0.00	0.00	0	.	.
Endosulfan, beta-	46	0.00	0.00	0	.	.
Endrin	58	0.00	0.00	0	.	.
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	49	0.00	0.00	0	.	.
Heptachlor epoxide	49	0.00	0.00	0	.	.
Hexachlorobenzene	13	0.00	0.00	0	.	.
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Isopropalin	3	0.00	0.00	0	.	.
Lead	15	0.00	0.00	0	.	.
Manganese	3	12400.00	8300.00	2	28900.00	8300.00
Mercury	20	49.00	0.00	8	300.00	70.00
Methoxychlor	14	2.56	0.00	2	17.90	17.90
Mirex/Dechlorane	16	8.85	0.00	6	35.50	14.40
Naphthalene	2	0.00	0.00	0	.	.
Nickel	10	0.00	0.00	0	.	.
Nitrobenzene	1	0.00	0.00	0	.	.
Nitrophenol, 4	1	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	1	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorobenzene	3	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Pentachlorophenol	13	2.23	0.00	1	29.00	29.00
Phenol	6	0.00	0.00	0	.	.
Polychlorinated biphenyls	505	210.34	0.00	131	7190.00	30.00
Pyrene	4	0.00	0.00	0	.	.
Selenium	7	1228.57	0.00	1	8600.00	8600.00
Silver	5	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Tin	3	0.00	0.00	0	.	.
Toxaphene	56	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	10.19	16.10	6	17.00	2.58
Trichlorophenol, 2,4,6-	1	0.00	0.00	0	.	.
Trichlorophenoxypropionic ac	7	0.00	0.00	0	.	.
Trifluralin/Treflan	3	0.00	0.00	0	.	.
Vanadium	1	0.00	0.00	0	.	.
Zinc	15	34120.00	16000.00	15	101000.0	4600.00

Choctawhatchee Bay 03140102

Watershed Summary Information

Accounting Unit Name:	Florida Panhandle Coastal
State(s):	FL
Political Boundaries:	Walton, Okaloosa
Major Waterways:	Alaqua Cr Turkey Cr Lafayette Cr Rocky Cr Little Alaqua Cr
Number of Stations in Watershed:	Tier1 - 19 Tier2 - 23 Tier3 - 9

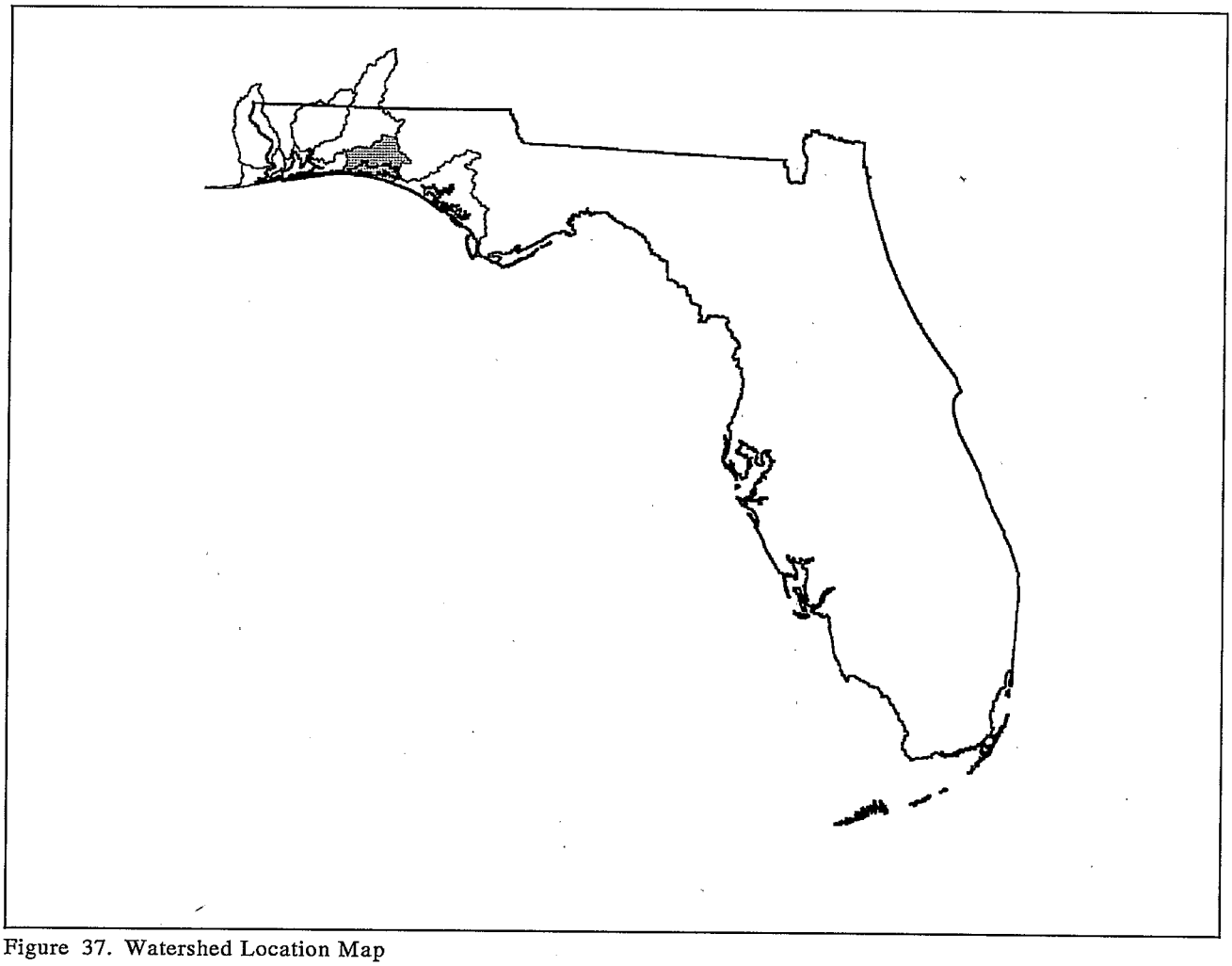

Figure 37. Watershed Location Map

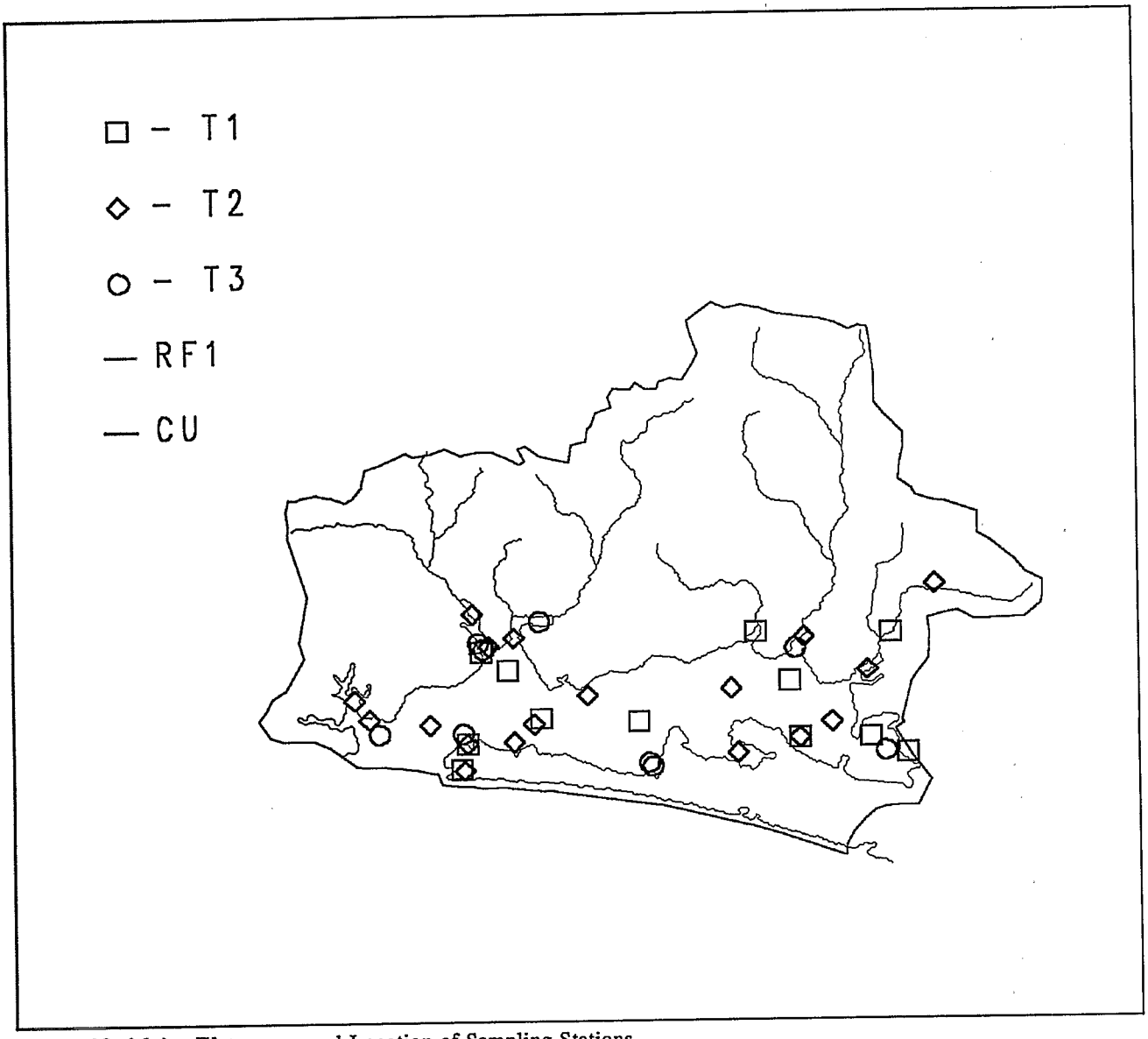

Figure 38. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 15 Date Range: 1986-90

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 1 Date Range: 1992

Source: **ODES** Agency: **FL**
Monitoring Program: **Florida**
Num. of Stations: 2 Date Range: 1986-88

Source: **REGION 4** Agency: **FL DER**
Monitoring Program: **FL DER**
Num. of Stations: 5 Date Range: 1986-90

Source: **REGION 4** Agency: **UNKNOWN**
Monitoring Program:
Num. of Stations: 24 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1980-93

Source: **STORET** Agency: **21FLA**
Monitoring Program: **Fla Dept Environmental Regulation (Protection) Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1981-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	43	34	7	27	7	25	.	2
Lead	49	28	.	28	.	27	.	1
Copper	49	25	.	25	.	25	.	.
Nickel	48	22	.	22	.	22	.	.
Chromium	49	20	.	20	.	20	.	.
DDT	34	17	8	9	8	8	.	7
Mercury	49	14	.	14	.	14	.	.
Dibenzo(a,h)anthracene	17	13	.	13	.	11	.	9
Polychlorinated biphenyls	34	11	2	9	.	8	2	9
BHC	28	11	1	10	1	10	.	.
Benzo(a)pyrene	21	10	1	9	1	7	.	10
Chlordane	34	10	.	10	.	9	.	8
Pyrene	21	9	1	8	1	8	.	.
Dieldrin	32	9	.	9	.	7	.	9
Benzo(a)anthracene	21	8	.	8	.	7	.	8
Fluorene	16	8	.	8	.	8	.	.
Acenaphthene	17	7	.	7	.	7	.	.
Acenaphthylene	16	7	.	7	.	7	.	.
Cadmium	49	7	.	7	.	5	.	2
Chrysene	21	7	.	7	.	7	.	.
Fluoranthene	21	7	.	7	.	7	.	.
Phenanthrene	19	7	.	7	.	7	.	.
Indeno(1,2,3-cd)pyrene	17	6	.	6	.	1	.	6
Silver	21	5	.	5	.	5	.	.
Zinc	48	5	.	5	.	3	.	2
Benzo(b)fluoranthene	13	4	.	4	.	.	.	4
Anthracene	21	3	.	3	.	3	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Aldrin	24	1	.	1	.	.	.	1
Benzo(ghi)perylene	19	1	.	1	.	1	.	.
HMW_PAHs	1	1	.	1	.	1	.	.
LMW_PAHs	1	1	.	1	.	1	.	.
Methylnaphthalene, 2-	3	1	.	1	.	1	.	.
Naphthalene	17	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	18	18.05	9.14	15	85.00	0.66
Acenaphthylene	16	7.18	3.51	12	32.01	0.65
Aldrin	50	0.06	0.00	7	1.75	0.04
Anthracene	22	27.69	19.00	19	95.00	1.58
Antimony	22	730.91	692.50	22	1300.00	220.00
Arsenic	49	31831.16	20006.00	48	191500.0	600.00
Benzo(a)anthracene	25	153.44	23.00	22	1045.00	4.57
Benzo(a)pyrene	25	226.20	38.00	22	1764.60	4.17
Benzo(b)fluoranthene	13	163.47	14.43	10	575.07	6.24
Benzo(ghi)perylene	19	170.73	23.50	16	955.60	0.14
Benzo(k)fluoranthene	13	90.45	16.58	10	392.24	2.66
Biphenyl	14	16.05	10.08	14	82.44	2.79
BHC	97	0.24	0.00	15	5.48	0.04
Cadmium	57	341.56	180.00	56	2500.00	0.22
Chlordane	78	3.27	0.00	28	47.00	0.04
Chromium	49	52163.12	35000.00	49	190000.0	10.70
Chrysene	25	157.11	24.60	22	623.01	6.23
Copper	57	24876.49	15515.00	57	135000.0	2.35
Dibenzo(a,h)anthracene	21	55.06	12.62	20	254.05	1.90
Dieldrin	61	0.69	0.00	22	9.47	0.10
DDT	258	30.64	0.12	134	2244.37	0.03
Endosulfan mixed isomers	27	0.00	0.00	0	.	.
Endosulfan, alpha-	17	0.00	0.00	0	.	.
Endosulfan, beta-	17	0.00	0.00	0	.	.
Endrin	41	0.00	0.00	0	.	.
Fluoranthene	25	263.95	48.94	22	1650.00	13.37
Fluorene	18	22.34	13.50	15	125.52	2.19
Heptachlor	56	0.11	0.00	13	2.80	0.02
Heptachlor epoxide	48	0.03	0.00	5	0.58	0.14
Hexachlorobenzene	23	0.19	0.08	19	0.98	0.03
HMW_PAHs	1	1532.11	1532.11	1	1532.11	1532.11
Indeno(1,2,3-cd)pyrene	15	222.80	94.76	15	956.60	6.22

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	57	39816.77	33260.00	57	159413.0	16.00
LMW_PAHs	1	2499.31	2499.31	1	2499.31	2499.31
Malathion	3	0.00	0.00	0	.	.
Mercury	54	88.70	92.00	53	395.70	0.01
Methoxychlor	40	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	46.97	0.00	1	140.92	140.92
Mirex/Dechlorane	51	0.10	0.00	11	1.80	0.06
Naphthalene	17	14.85	11.49	14	58.41	5.80
Nickel	52	18283.05	14650.00	52	83000.00	1.64
Phenanthrene	25	104.75	45.00	22	597.00	8.00
Polychlorinated biphenyls	152	3.45	0.00	21	111.80	1.40
Pyrene	25	1031.16	114.65	23	19500.00	21.79
Silver	25	447.49	85.00	25	2200.00	0.33
SEM_est	1	2.67	2.67	1	2.67	2.67
Toxaphene	44	0.00	0.00	0	.	.
Zinc	56	67202.19	77705.00	56	213992.0	6.60

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	6	82.30	82.00	6	110.00	53.40
Aldrin	2	1.12	1.12	2	1.83	0.40
Anthracene	8	41.96	41.00	8	63.30	21.20
Antimony	2	120.00	120.00	2	130.00	110.00
Arsenic	18	7130.56	7375.00	18	11700.00	3900.00
Benzo(a)anthracene	15	102.70	53.80	15	347.50	23.00
Benzo(a)pyrene	8	55.98	42.70	8	164.60	28.00
Biphenyl	2	34.00	34.00	2	35.00	33.00
BHC	13	1.52	1.00	13	4.54	0.29
Cadmium	18	3741.11	3600.00	18	7700.00	1150.00
Chlordane	18	34.82	9.32	18	291.84	2.40
Chromium	18	419.44	395.00	18	1070.00	160.00
Chrysene	14	187.44	96.00	14	608.20	50.70
Copper	18	77666.67	75000.00	18	124000.0	36000.00
Dibenzo(a,h)anthracene	4	36.63	37.00	4	42.20	30.30
Dieldrin	18	6.72	5.63	18	28.04	0.68
DDT	86	89.20	12.16	86	1314.86	0.24
Fluoranthene	18	235.16	123.05	18	735.50	23.00
Heptachlor	3	1.17	1.24	3	1.66	0.60
Heptachlor epoxide	17	2.72	1.88	17	9.20	0.95
Hexachlorobenzene	4	0.95	0.99	4	1.62	0.22
Indeno(1,2,3-cd)pyrene	6	44.30	42.75	6	67.30	31.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	18	2864.28	1280.00	18	12510.00	80.00
Manganese	18	11316.67	11000.00	18	18600.00	4800.00
Mercury	18	268.67	240.00	18	452.00	70.00
Mirex/Dechlorane	4	2.06	0.67	4	6.34	0.53
Nickel	18	1200.56	1185.00	18	1770.00	700.00
Polychlorinated biphenyls	12	52.81	38.75	12	155.50	5.60
Pyrene	18	168.96	92.50	18	587.70	20.00
Selenium	18	4263.89	3840.00	18	8660.00	2700.00
Silver	18	3395.00	3405.00	18	7380.00	1150.00
Tin	2	240.00	240.00	2	240.00	240.00
Zinc	18	2540889	2300000	18	4172000	1200000

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
30.4472	86.3872	92-07-09	Ampelisca Abdita	S	3.97	3.00	no

Perdido Bay 03140107

Watershed Summary Information

Accounting Unit Name:	Florida Panhandle Coastal
State(s):	AL FL
Political Boundaries:	Baldwin, Escambia
Major Waterways:	Elevenmile Cr Bayou Marcus Cr Wolf Cr Intracoastal Waterway
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 24 Tier3 - 4

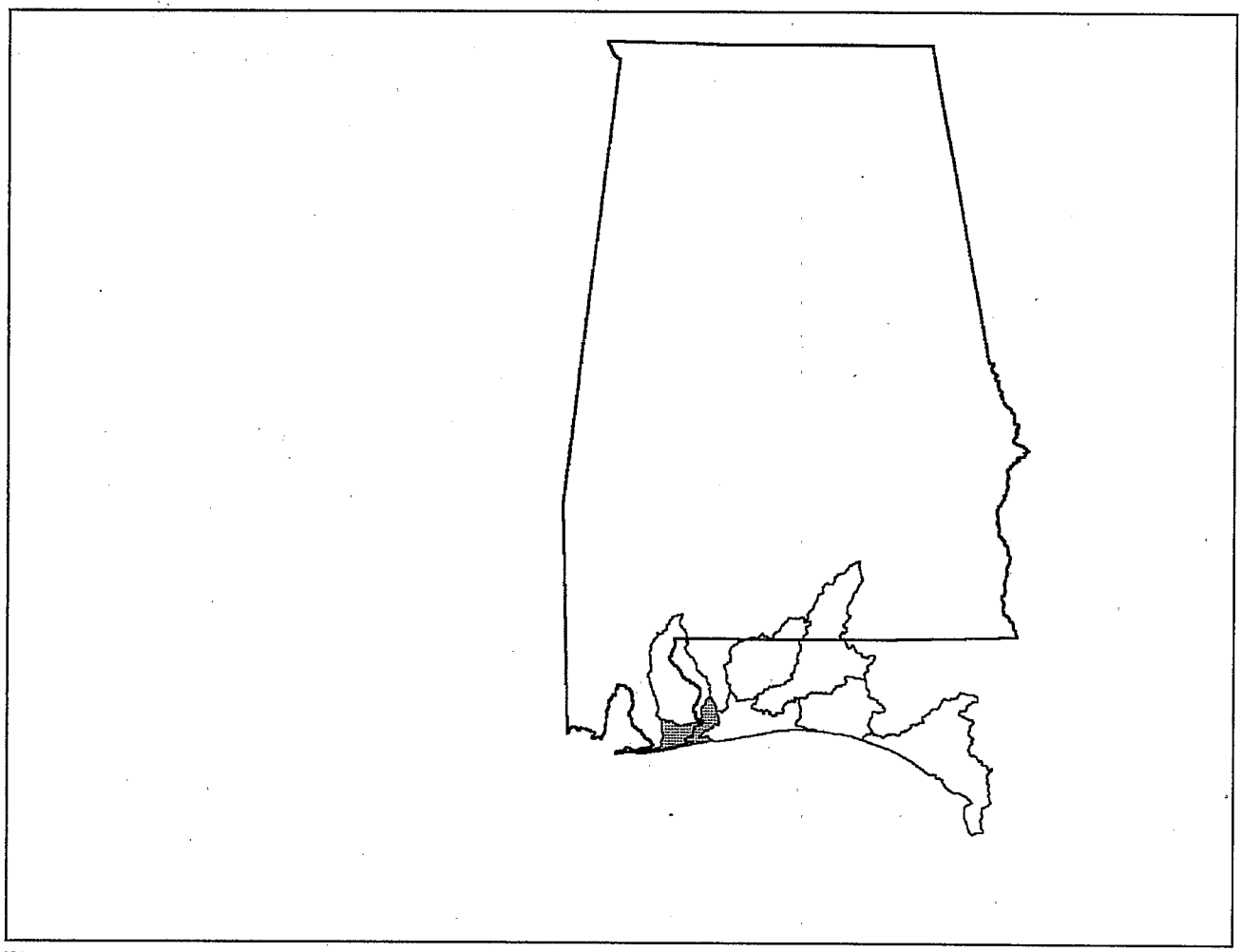

Figure 39. Watershed Location Map

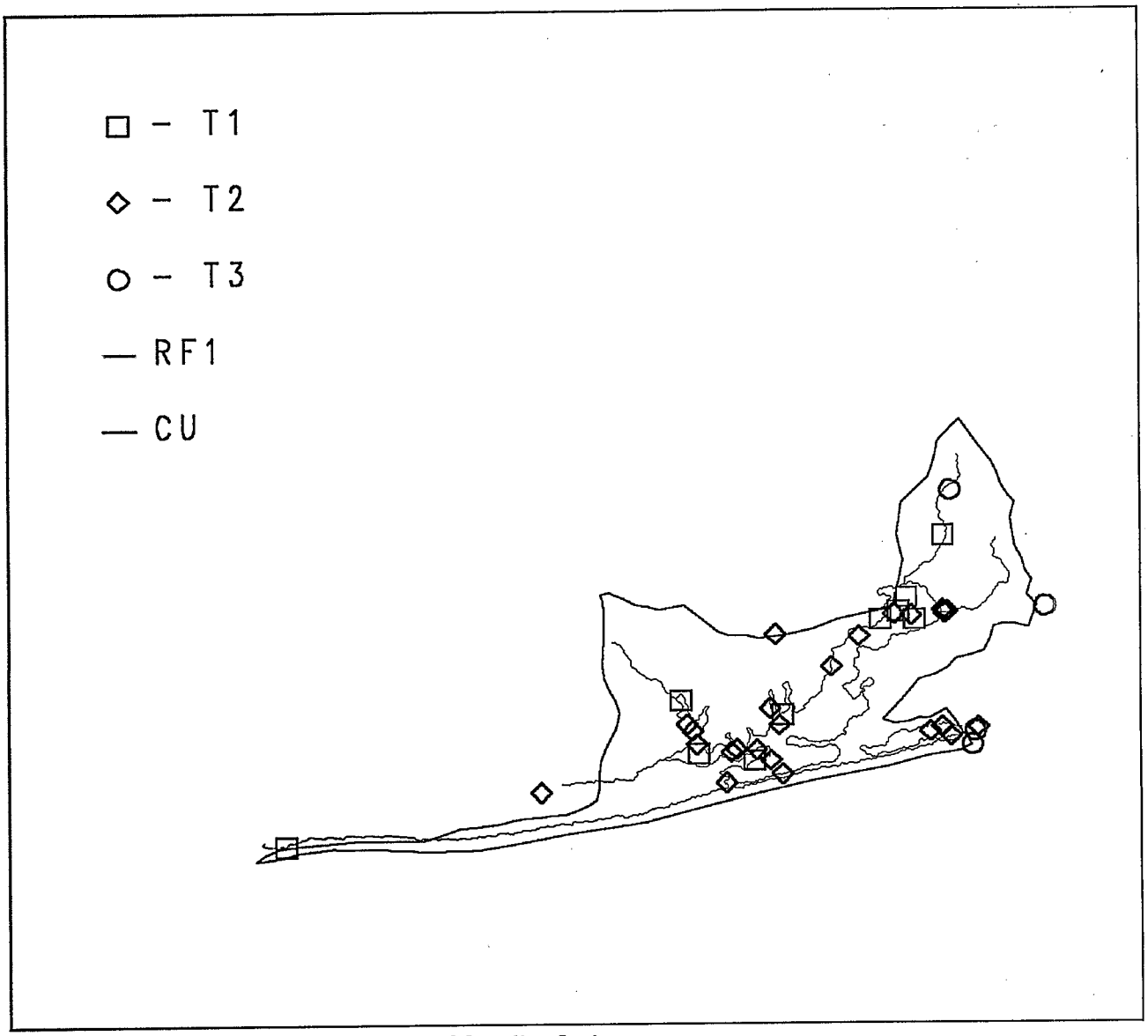

Figure 40. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 7 Date Range: 1991-92

Source: **GOM** Agency: **ADEM (MOBILE)**
Monitoring Program: **ADEM (Mobile)**
Num. of Stations: 13 Date Range: 1990

Source: **REGION 4** Agency: **DEPT OF NAVY**
Monitoring Program: **Dept of Navy**
Num. of Stations: 2 Date Range: 1984

Source: **REGION 4** Agency: **FL DER**
Monitoring Program: **FL DER**
Num. of Stations: 11 Date Range: 1985-89

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1988

Source: **STORET** Agency: **21FLA**
Monitoring Program: **Fla Dept Environmental Regulation (Protection) Water, Sediment & Tissue Data**
Num. of Stations: 4 Date Range: 1980-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	37	16	8	8	8	8	.	.
Chromium	37	11	.	11	.	11	.	.
Arsenic	29	9	.	9	.	9	.	.
Benzo(a)pyrene	11	5	.	5	.	2	.	5
Polychlorinated biphenyls	13	4	1	3	.	1	1	3
Cadmium	37	4	.	4	.	4	.	.
Copper	36	4	.	4	.	4	.	.
Nickel	19	4	.	4	.	4	.	.
Pyrene	11	3	1	2	1	2	.	.
Fluorene	11	3	.	3	.	3	.	.
Lead	37	3	.	3	.	3	.	.
LMW_PAHs	7	3	.	3	.	3	.	.
Methylnaphthalene, 2-	8	3	.	3	.	3	.	.
Benzo(b)fluoranthene	10	2	.	2	.	1	.	2
Chrysene	10	2	.	2	.	2	.	.
Fluoranthene	12	2	.	2	.	2	.	.
SEM_est	7	2	.	2	.	2	.	.
Dioxins	1	1	1	.	.	.	1	.
HMW_PAHs	7	1	.	1	.	1	.	.
Naphthalene	11	1	.	1	.	1	.	.
Phenanthrene	9	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	11	0.00	0.00	0	.	.
Acenaphthylene	11	0.43	0.00	1	4.76	4.76
Aldrin	14	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Anthracene	9	2.06	0.00	3	7.75	4.27
Antimony	8	163.75	55.00	4	600.00	110.00
Arsenic	34	6327.94	2780.00	30	34500.00	440.00
Benzo(a)anthracene	9	5.33	0.00	3	24.01	11.50
Benzo(a)pyrene	11	62.86	0.00	5	366.67	11.59
Benzo(b)fluoranthene	10	49527.22	8.09	5	495000.0	16.17
Benzo(ghi)perylene	11	83.11	1.47	7	500.00	0.72
Benzo(k)fluoranthene	9	63.27	0.00	4	495.00	12.04
Biphenyl	7	8.00	3.25	4	20.51	3.25
BHC	55	0.01	0.00	7	0.14	0.01
Cadmium	44	316.68	125.00	37	4000.00	0.04
Chlordane	47	0.02	0.00	7	0.29	0.01
Chromium	42	30524.17	14405.00	39	137000.0	6.00
Chrysene	10	141.75	7.41	7	675.00	0.83
Copper	42	8832.69	7700.00	41	28000.00	0.85
Dibenzo(a,h)anthracene	7	0.79	0.00	1	5.51	5.51
Dieldrin	14	0.00	0.00	0	.	.
DDT	90	0.02	0.00	7	1.02	0.01
Endosulfan, alpha-	14	0.00	0.00	0	.	.
Endosulfan, beta-	14	0.00	0.00	0	.	.
Endrin	12	0.00	0.00	0	.	.
Fluoranthene	12	84.96	19.13	11	315.00	0.78
Fluorene	11	10.61	0.00	3	50.63	25.27
Heptachlor	14	0.00	0.00	0	.	.
Heptachlor epoxide	13	0.00	0.00	0	.	.
Hexachlorobenzene	12	0.00	0.00	0	.	.
HMW_PAHs	7	362.96	367.86	7	924.16	4.34
Indeno(1,2,3-cd)pyrene	7	7.23	0.00	3	26.13	10.64
Lead	44	11784.51	7800.00	43	46000.00	0.70
LMW_PAHs	7	906.70	87.48	7	2479.99	4.16
Malathion	5	0.00	0.00	0	.	.
Mercury	42	310.14	98.00	37	1210.00	0.02
Methoxychlor	5	0.00	0.00	0	.	.
Methylnaphthalene, 2-	8	19.42	7.32	5	68.21	0.94
Mirex/Dechlorane	12	0.00	0.00	0	.	.
Naphthalene	11	27.77	1.40	7	266.67	0.78
Nickel	20	7796.25	5775.00	18	21750.00	4.60
Phenanthrene	9	50.82	13.75	8	270.00	0.51
Polychlorinated biphenyls	70	0.62	0.00	7	36.00	0.18
Pyrene	11	487.83	45.36	10	3000.00	8.58
Silver	10	32.01	20.00	9	140.00	0.05
SEM_est	7	0.64	0.54	7	1.76	0.12
Toxaphene	14	0.00	0.00	0	.	.
Zinc	43	38761.35	31500.00	41	111000.0	2.55

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	0.00	0.00	0	.	.
Arsenic	1	2.30	2.30	1	2.30	2.30
Biphenyl	1	0.00	0.00	0	.	.
BHC	4	0.00	0.00	0	.	.
Cadmium	1	0.00	0.00	0	.	.
Chlordane	4	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	1	0.30	0.30	1	0.30	0.30
Copper	1	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	3	0.00	0.00	0	.	.
Dioxins	8	0.01	0.01	8	0.03	0.01
DDT	13	3.88	0.00	3	23.20	8.31
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endrin	3	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.88	0.00	1	2.65	2.65
Hexachlorobenzene	3	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	1	0.00	0.00	0	.	.
Mercury	1	50.00	50.00	1	50.00	50.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	3	2.97	4.10	2	4.80	4.10
Nickel	1	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	3	52.27	9.60	3	144.30	2.90
Selenium	1	2.80	2.80	1	2.80	2.80
Silver	1	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Tin	1	1.10	1.10	1	1.10	1.10
Toxaphene	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	1	11.80	11.80	1	11.80	11.80

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
30.2867	87.4998	91-08-14	Ampelisca Abdita	S	7.00	2.00	no
30.2992	87.5115	92-07-12	Ampelisca Abdita	S	4.96	8.00	no
30.3067	87.5513	91-08-16	Ampelisca Abdita	S	18.04	14.00	no
30.3137	87.5860	92-07-12	Ampelisca Abdita	S	3.03	8.00	no
30.3203	87.3300	91-07-19	Ampelisca Abdita	S	16.01	9.00	no
30.3282	87.3030	92-07-10	Ampelisca Abdita	S	96.99	6.00	Yes
30.3318	87.5958	92-07-12	Ampelisca Abdita	S	14.99	8.00	no

Mobile Bay 03160205

Watershed Summary Information

Accounting Unit Name: Mobile Bay-Tombigbee

State(s): AL

Political Boundaries: Mobile, Baldwin

Major Waterways:
Fish R
Fowl R
Polecat Cr
Halls Mill Cr
Magnolia R

Number of Stations in Watershed:
Tier1 - 31
Tier2 - 43
Tier3 - 7

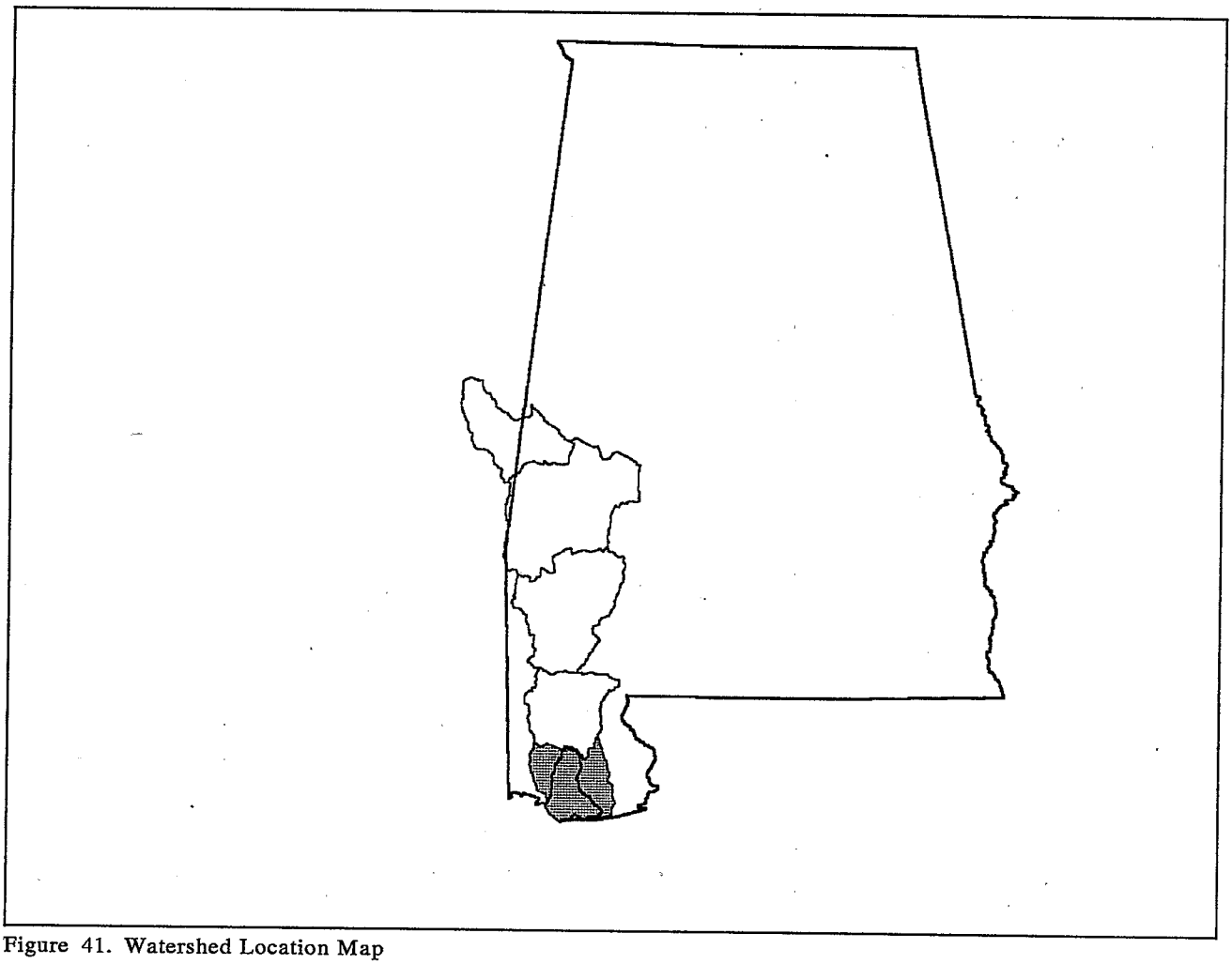

Figure 41. Watershed Location Map

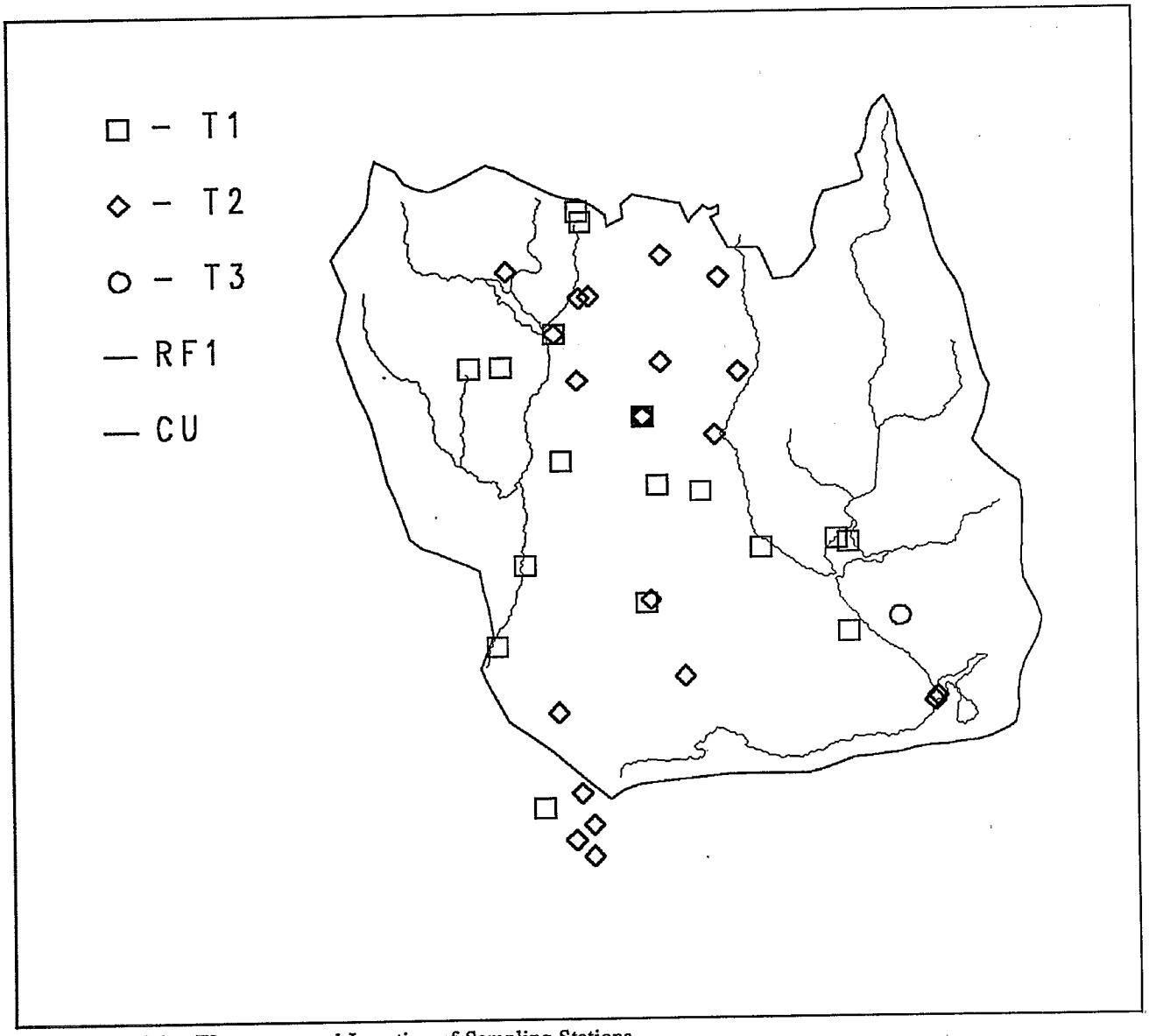

Figure 42. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 7 Date Range: 1984-90

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 5 Date Range: 1991-92

Source: **GOM** Agency: **ADEM (MOBILE)**
Monitoring Program: **ADEM (Mobile)**
Num. of Stations: 22 Date Range: 1990

Source: **ODES** Agency: **AL**
Monitoring Program: **Alabama**
Num. of Stations: 2 Date Range: 1986-88

Source: **REGION 4** Agency: **USACE, SAVANNAH**
Monitoring Program: **USACE, Savannah**
Num. of Stations: 30 Date Range: 1981

Source: **REGION 4** Agency: **USFWS**
Monitoring Program: **USFWS**
Num. of Stations: 11 Date Range: 1988

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: **STORET** Agency: **21FLA**
Monitoring Program: **Fla Dept Environmental Regulation (Protection) Water, Sediment & Tissue Data**
Num. of Stations: 1 Date Range: 1981

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chromium	70	36	.	36	.	36	.	.
Mercury	70	25	11	14	11	14	.	.
Copper	69	24	.	24	.	24	.	.
Cadmium	69	22	.	22	.	20	.	2
Arsenic	59	19	3	16	3	14	.	2
Benzo(a)pyrene	55	19	.	19	.	1	.	19
Dibenzo(a,h)anthracene	55	18	.	18	.	15	.	8
Silver	47	17	10	7	10	7	.	.
Zinc	70	16	.	16	.	15	.	1
DDT	52	15	1	14	1	14	.	4
Polychlorinated biphenyls	46	8	2	6	.	.	2	6
Nickel	47	8	.	8	.	8	.	.
Lead	69	6	.	6	.	6	.	.
Naphthalene	50	5	3	2	3	2	.	.
BHC	45	5	.	5	.	5	.	.
Anthracene	49	4	1	3	1	3	.	.
Benzo(a)anthracene	56	4	.	4	.	4	.	1
Chrysene	56	4	.	4	.	4	.	.
Fluorene	47	3	1	2	1	2	.	.
Fluoranthene	56	3	.	3	.	3	.	.
Pyrene	58	3	.	3	.	3	.	.
Phenanthrene	53	2	1	1	1	1	.	.
Benzo(b)fluoranthene	52	2	.	2	.	.	.	2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	45	2	.	2	.	.	.	2
SEM_est	5	2	.	2	.	2	.	.
Acenaphthylene	42	1	.	1	.	1	.	.
Chlordane	48	1	.	1	.	1	.	1
HMW_PAHs	8	1	.	1	.	1	.	.
LMW_PAHs	7	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	44	0.95	0.00	7	18.52	1.92
Acenaphthylene	42	0.97	0.00	7	26.29	1.11
Acrylonitrile	30	0.00	0.00	0	.	.
Aldrin	41	0.08	0.00	3	1.37	0.63
Anthracene	49	31.52	0.00	15	1200.00	3.46
Antimony	42	150.00	0.00	9	1650.00	300.00
Arsenic	59	11772.64	4900.00	39	106000.0	700.00
Benzene	30	0.00	0.00	0	.	.
Benzo(a)anthracene	54	41.35	0.00	22	1600.00	7.70
Benzo(a)pyrene	54	23.68	0.00	22	640.00	9.72
Benzo(b)fluoranthene	52	25.49	0.00	21	430.00	10.90
Benzo(ghi)perylene	51	16.18	0.00	20	360.00	10.00
Benzo(k)fluoranthene	50	7.59	0.00	19	130.00	6.88
Biphenyl	11	2.61	1.60	7	12.50	1.50
Bis(2-ethylhexyl)phthalate	30	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	30	0.00	0.00	0	.	.
Butyl benzyl phthalate	30	0.00	0.00	0	.	.
BHC	155	0.02	0.00	9	0.50	0.02
Cadmium	69	596.41	300.00	55	6000.00	30.00
Chlordane	60	0.87	0.00	12	30.00	0.10
Chromium	70	54152.43	58500.00	70	120500.0	1900.00
Chrysene	54	65.99	0.00	21	2500.00	8.55
Copper	69	13918.62	14116.00	66	66000.00	500.00
Di-n-butyl phthalate	30	0.00	0.00	0	.	.
Di-n-octyl phthalate	30	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	56	6.79	0.00	18	70.00	3.30
Dibromochloromethane	30	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	30	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	30	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	30	0.00	0.00	0	.	.
Dichloroethane 1,1-	30	0.00	0.00	0	.	.
Dichloroethane 1,2-	30	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichloroethene, trans-1,2-	30	0.00	0.00	0	.	.
Dichloromethane	30	0.00	0.00	0	.	.
Dichloropropane, 1,2-	30	0.00	0.00	0	.	.
Dieldrin	43	0.04	0.00	4	0.75	0.04
Diethyl phthalate	30	0.00	0.00	0	.	.
Dimethyl phthalate	30	0.00	0.00	0	.	.
DDT	188	1.03	0.00	68	30.00	0.01
Endosulfan, alpha-	36	0.00	0.00	0	.	.
Endosulfan, beta-	36	0.00	0.00	0	.	.
Endrin	36	0.00	0.00	0	.	.
Ethylbenzene	30	0.00	0.00	0	.	.
Fluoranthene	54	62.47	0.00	22	2200.00	10.95
Fluorene	47	27.94	0.00	12	1200.00	2.26
Heptachlor	39	0.00	0.00	0	.	.
Heptachlor epoxide	42	0.04	0.00	3	0.72	0.32
Hexachlorobenzene	74	0.02	0.00	6	0.61	0.02
Hexachlorobutadiene	30	0.00	0.00	0	.	.
Hexachloroethane	30	0.00	0.00	0	.	.
HMW_PAHs	8	175.78	76.25	6	909.09	0.92
Indeno(1,2,3-cd)pyrene	41	5.16	0.00	10	49.80	8.44
Isophorone	30	0.00	0.00	0	.	.
Lead	69	16240.20	16397.00	69	100000.0	650.00
LMW_PAHs	7	158.35	29.36	5	1008.56	2.30
Malathion	1	0.00	0.00	0	.	.
Mercury	70	280.89	54.70	40	2550.00	10.00
Methoxychlor	1	0.00	0.00	0	.	.
Methylnaphthalene, 2-	7	3.55	2.75	4	16.00	2.75
Mirex/Dechlorane	9	0.05	0.00	3	0.19	0.13
Naphthalene	50	111.58	0.00	20	1960.00	3.99
Nickel	47	11599.98	6625.00	47	40400.00	625.00
Nitrosodiphenylamine, N-	30	0.00	0.00	0	.	.
Pentachlorophenol	30	0.00	0.00	0	.	.
Phenanthrene	53	90.17	0.00	21	4200.00	6.39
Phenol	30	0.00	0.00	0	.	.
Polychlorinated biphenyls	231	0.23	0.00	10	8.57	0.89
Pyrene	56	63.75	0.00	24	2200.00	10.00
Silver	47	2615.23	96.00	34	33000.00	40.00
SEM_est	5	1.91	2.62	5	3.01	0.07
Tetrachloroethane, 1,1,2,2-	30	0.00	0.00	0	.	.
Tetrachloroethene	30	0.00	0.00	0	.	.
Tetrachloromethane	30	0.00	0.00	0	.	.
Toluene	30	0.00	0.00	0	.	.
Toxaphene	36	0.00	0.00	0	.	.
Tribromomethane/Bromoform	30	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethane, 1,1,1-	30	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	30	0.00	0.00	0	.	.
Trichloroethene	30	0.00	0.00	0	.	.
Trichlorofluoromethane	30	0.00	0.00	0	.	.
Trichloromethane/Chloroform	30	0.00	0.00	0	.	.
Zinc	70	86882.86	79500.00	70	847500.0	3000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	0.00	0.00	0	.	.
Arsenic	14	7833.57	6050.00	12	16000.00	3500.00
Benzo(a)anthracene	6	59.63	55.90	6	98.10	25.60
Benzo(a)pyrene	1	23.50	23.50	1	23.50	23.50
BHC	14	1.32	1.31	12	3.39	0.41
Cadmium	14	2596.48	2490.00	13	4570.00	0.70
Chlordane	14	7.88	7.37	12	19.76	3.53
Chromium	14	655.75	390.00	13	1760.00	0.50
Chrysene	8	94.81	65.40	8	216.70	23.00
Copper	14	93857.49	97500.00	13	187000.0	4.80
Dibenzo(a,h)anthracene	1	21.80	21.80	1	21.80	21.80
Dieldrin	14	6.78	4.75	12	16.76	2.71
DDT	76	45.47	23.68	69	247.14	0.52
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endrin	2	0.00	0.00	0	.	.
Fluoranthene	10	156.62	77.40	10	502.90	21.00
Heptachlor	5	0.66	0.60	5	0.91	0.50
Heptachlor epoxide	14	3.38	2.93	12	9.39	1.00
Hexachlorobenzene	2	0.00	0.00	0	.	.
Lead	14	349.21	356.50	12	680.00	200.00
Manganese	12	13491.67	11150.00	12	26000.00	7700.00
Mercury	14	63.50	68.00	13	160.00	0.03
Mirex/Dechlorane	9	5.45	4.35	9	17.80	1.58
Nickel	14	1230.06	1085.00	13	2400.00	0.90
Polychlorinated biphenyls	11	109.92	102.20	11	229.40	2.20
Pyrene	10	133.24	48.90	10	418.20	21.70
Selenium	14	1738.57	1840.00	12	2780.00	1390.00
Silver	14	1707.22	1995.00	13	2300.00	1.01
Tin	3	67.00	0.99	2	200.00	0.99
Toxaphene	2	0.00	0.00	0	.	.
Zinc	14	1379429	1001500	13	4430000	12.50

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
30.2140	88.0540	91-07-29	Ampelisca Abdita	S	83.00	11.00	Yes
30.2850	87.7523	91-08-16	Ampelisca Abdita	S	11.98	11.00	no
30.3018	87.9657	91-08-18	Ampelisca Abdita	S	2.00	2.00	no
30.3603	87.9942	92-07-29	Ampelisca Abdita	S	13.97	1.00	no
30.5903	88.0535	91-08-22	Ampelisca Abdita	S	12.98	2.00	no

Door-Kewaunee 04030102

Watershed Summary Information

Accounting Unit Name:	Northwestern Lake Michigan
State(s):	WI
Political Boundaries:	Kewaunee, Door, Brown, Sheboygan
Major Waterways:	Ahnapee R Silver Cr Stony Cr School Cr Logan Cr
Number of Stations in Watershed:	Tier1 - 12 Tier2 - 5 Tier3 - 3

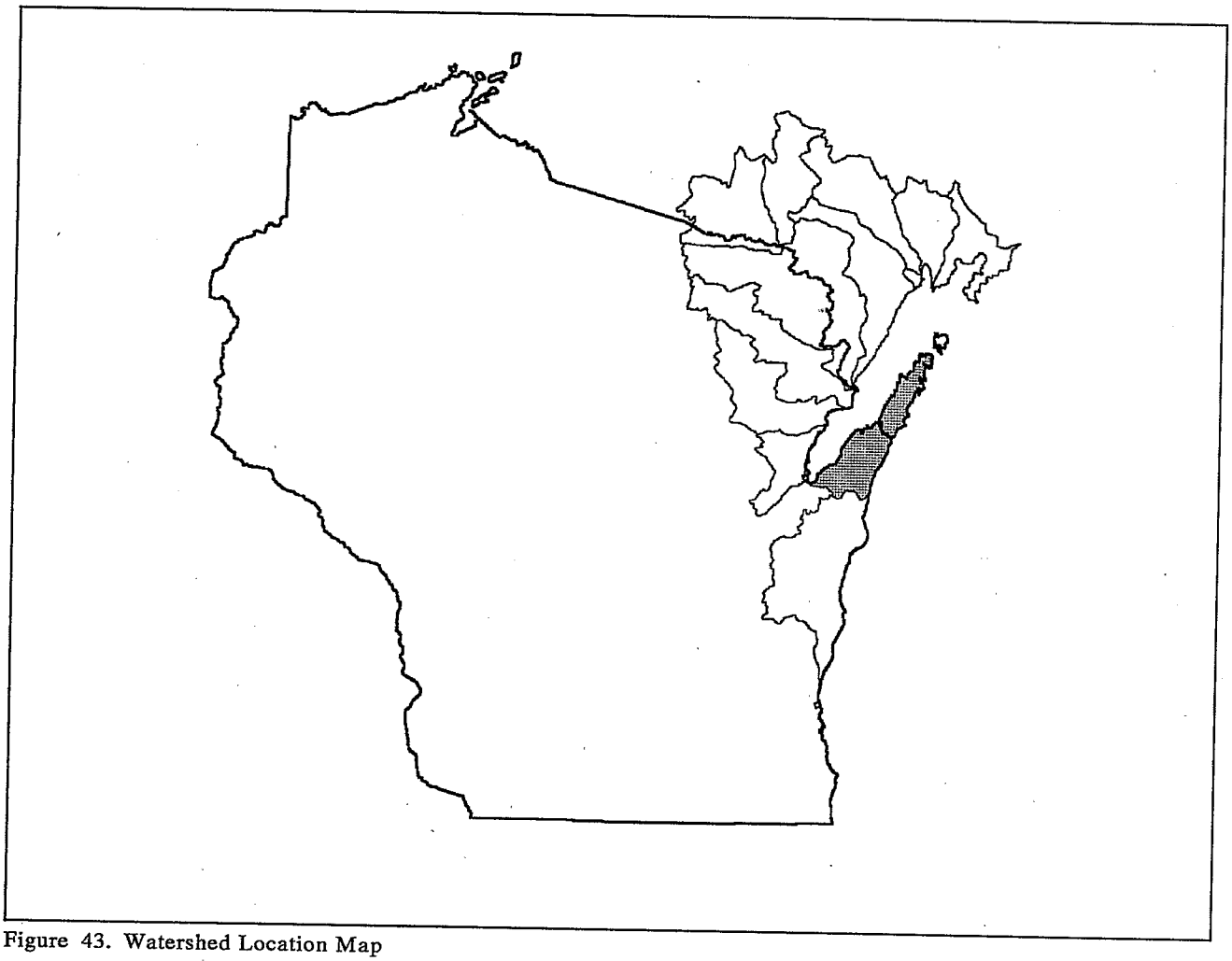

Figure 43. Watershed Location Map

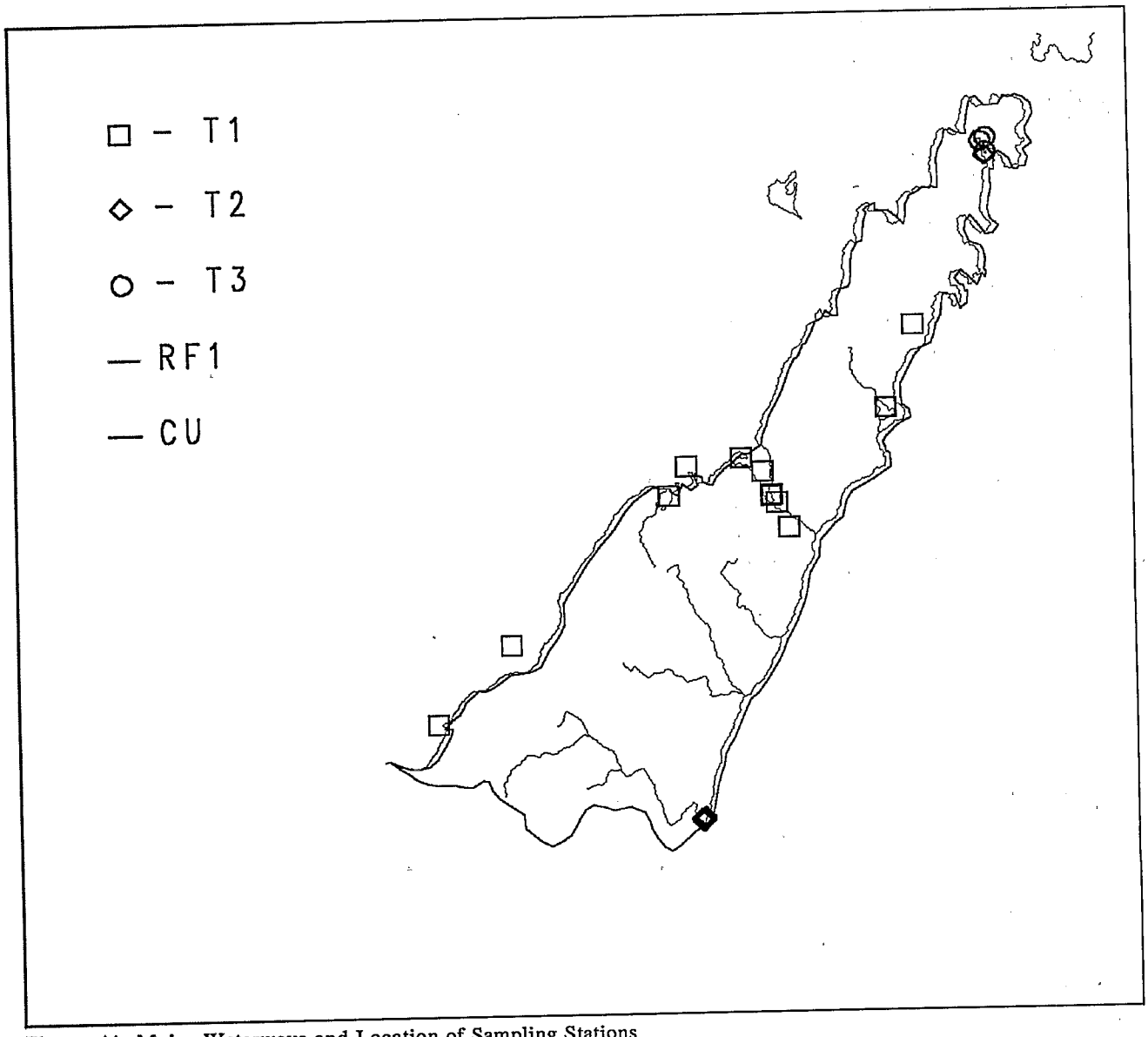

Figure 44. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: GR. LAKE Agency: 22
Monitoring Program: USEPA-ERL-Duluth
Num. of Stations: 1 Date Range: 1988

Source: STORET Agency: 21WIS
Monitoring Program: Wisconsin DNR Div Env Protection Water And Sediment Data
Num. of Stations: 8 Date Range: 1990-91

Source: STORET Agency: 21WITIS
Monitoring Program: Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection
Num. of Stations: 11 Date Range: 1980-86

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	12	12	12	.	1	.	11	1
DDT	11	6	.	6	.	1	.	5
Lead	12	5	.	5	.	2	.	3
Copper	12	4	.	4	.	4	.	.
Dieldrin	9	3	.	3	.	.	.	3
Anthracene	4	1	.	1	.	1	.	.
Cadmium	6	1	.	1	.	1	.	.
Chromium	12	1	.	1	.	1	.	.
Chrysene	4	1	.	1	.	1	.	.
Nickel	1	1	.	1	.	1	.	.
Pyrene	4	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Acenaphthylene	3	0.00	0.00	0	.	.
Anthracene	4	12.50	0.00	1	50.00	50.00
Arsenic	3	2793.33	2700.00	3	4120.00	1560.00
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(ghi)perylene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
BHC	2	0.00	0.00	0	.	.
Cadmium	4	637.50	430.00	4	1410.00	280.00
Chlordane	2	0.16	0.16	2	0.19	0.12
Chromium	9	16443.33	11000.00	9	64990.00	6000.00
Chrysene	4	32.50	0.00	1	130.00	130.00
Copper	9	15712.22	18000.00	9	38000.00	4000.00
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.
Dieldrin	1	0.25	0.25	1	0.25	0.25
Dioxins	2	0.02	0.02	2	0.04	0.00
DDT	4	0.73	0.00	1	2.92	2.92
Endrin	1	0.00	0.00	0	.	.
Fluoranthene	4	95.00	10.00	2	360.00	20.00
Fluorene	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Lead	9	25915.56	16000.00	9	100000.0	5000.00
Mercury	8	53.75	50.00	8	90.00	30.00
Methoxychlor	1	2.70	2.70	1	2.70	2.70

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Nickel	1	34930.00	34930.00	1	34930.00	34930.00
Phenanthrene	4	52.50	25.00	2	160.00	50.00
Polychlorinated biphenyls	1	710.00	710.00	1	710.00	710.00
Pyrene	4	65.00	25.00	2	210.00	50.00
Silver	5	0.00	0.00	0	.	.
Zinc	1	90000.00	90000.00	1	90000.00	90000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Arsenic	7	0.00	0.00	0	.	.
BHC	14	0.00	0.00	0	.	.
Cadmium	7	0.00	0.00	0	.	.
Chlordane	80	1.25	0.00	2	50.00	50.00
Chromium	9	0.00	0.00	0	.	.
Copper	9	1066.67	1000.00	9	1400.00	1000.00
Dieldrin	19	20.00	0.00	4	230.00	20.00
DDT	94	85.96	0.00	18	1800.00	70.00
Endrin	2	0.00	0.00	0	.	.
Hexachlorobenzene	7	0.00	0.00	0	.	.
Lead	9	3888.89	5000.00	7	5000.00	5000.00
Mercury	9	190.00	210.00	9	210.00	100.00
Methoxychlor	7	0.00	0.00	0	.	.
Pentachlorophenol	7	0.00	0.00	0	.	.
Polychlorinated biphenyls	66	8447.42	5000.00	64	55000.00	230.00
Toxaphene	1	0.00	0.00	0	.	.

Menominee 04030108

Watershed Summary Information

Accounting Unit Name: Northwestern Lake Michigan

State(s): WI MI

Political Boundaries: Marinette, Dickinson, Florence, Menominee, Iron, Forest

Major Waterways:
Menominee R
Pine R
Pike R
Sturgeon R
Badwater L

Number of Stations in Watershed:
Tier1 - 12
Tier2 - 6
Tier3 - 3

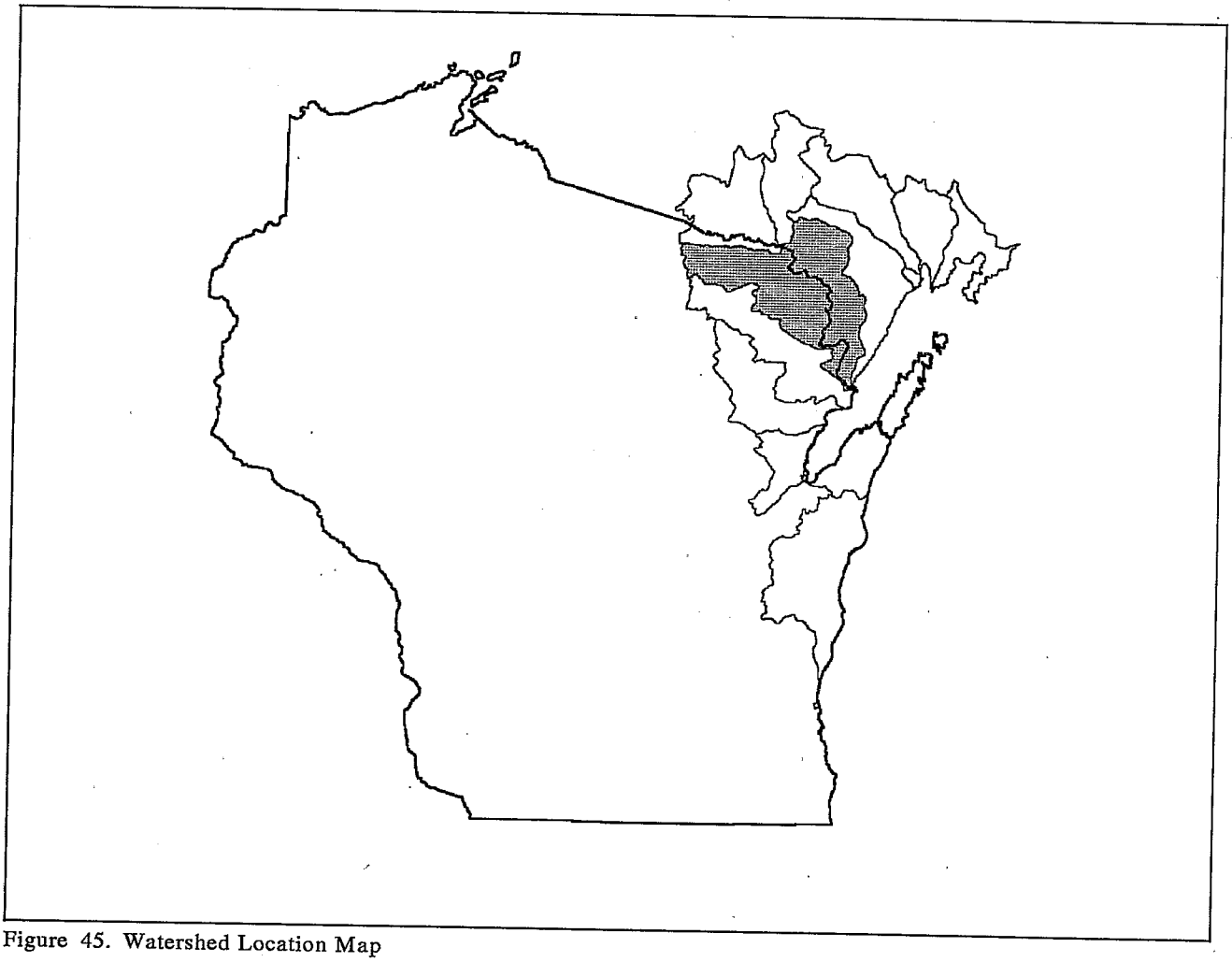

Figure 45. Watershed Location Map

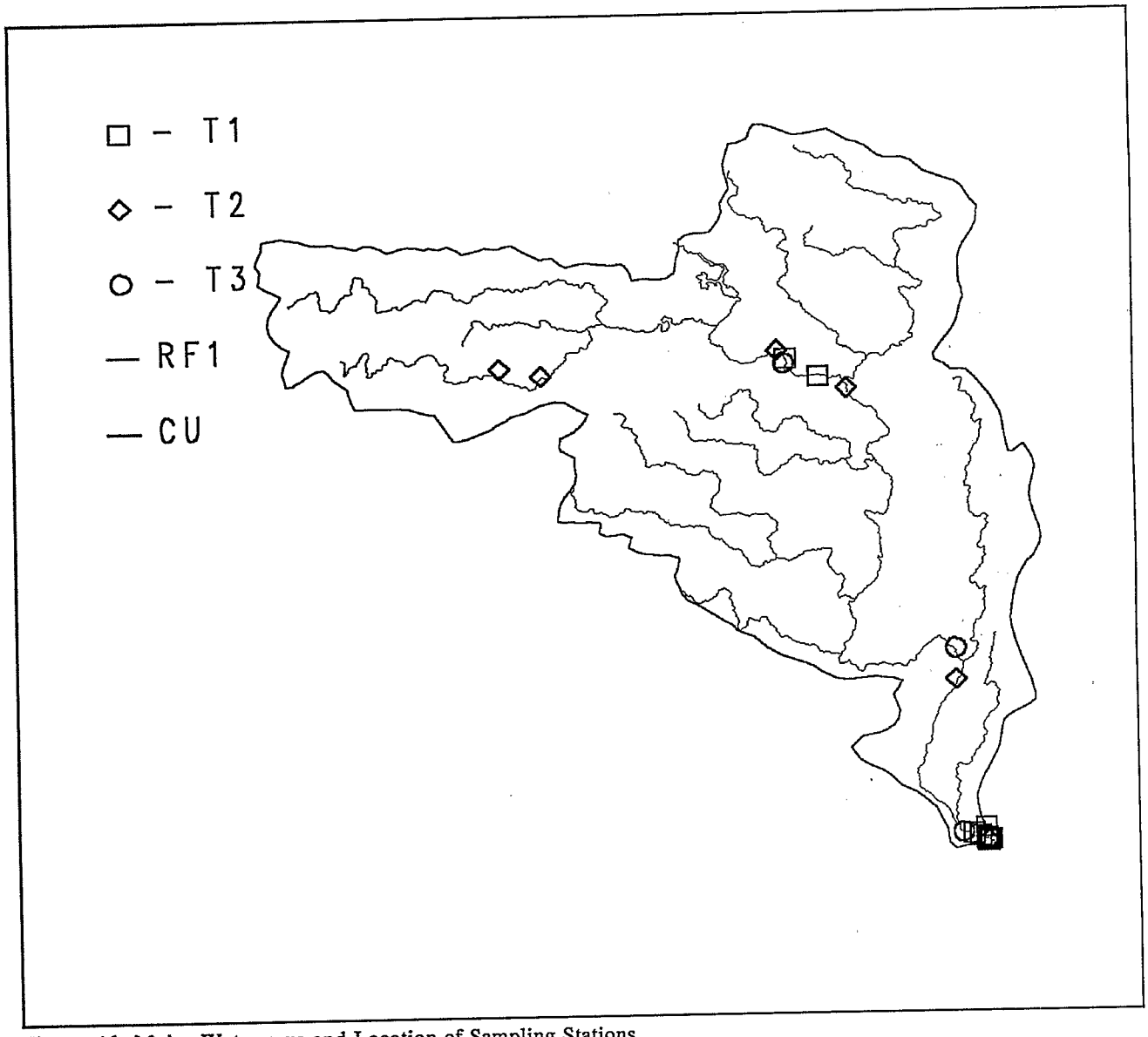

Figure 46. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1986

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1981-92

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 11 Date Range: 1986-92

Source: STORET Agency: 21WITIS
Monitoring Program: Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection
Num. of Stations: 7 Date Range: 1983-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	17	13	5	8	5	6	.	2
Copper	12	10	.	10	.	10	.	.
Pyrene	9	9	2	7	2	7	.	.
Chrysene	9	9	1	8	1	8	.	1
Arsenic	13	8	4	4	4	4	.	.
Lead	11	7	.	7	.	7	.	.
Polychlorinated biphenyls	9	6	5	1	.	.	5	1
Anthracene	9	6	1	5	1	5	.	.
Cadmium	8	5	.	5	.	5	.	.
Benzo(b)fluoranthene	7	4	.	4	.	1	.	4
Fluorene	9	3	1	2	1	2	.	.
Phenanthrene	9	2	2	.	2	.	.	.
Acenaphthene	9	2	1	1	1	1	.	.
Fluoranthene	9	2	1	1	1	1	.	.
Dieldrin	5	2	.	2	.	.	.	2
DDT	11	2	.	2	.	.	.	2
Indeno(1,2,3-cd)pyrene	9	2	.	2	.	1	.	2
Acenaphthylene	9	1	1	.	1	.	.	.
Dibenzo(a,h)anthracene	9	1	1	.	1	.	.	1
Dioxins	1	1	1	.	.	.	1	.
Benzo(ghi)perylene	9	1	.	1	.	1	.	.
Benzo(k)fluoranthene	7	1	.	1	.	1	.	1
Chlordane	5	1	.	1	.	.	.	1
Nickel	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	13	25402.31	0.00	3	330000.0	100.00
Acenaphthylene	13	3846.15	0.00	1	50000.00	50000.00
Aldrin	4	0.00	0.00	0	.	.
Anthracene	13	18551.54	130.00	7	240000.0	130.00
Antimony	1	800.00	800.00	1	800.00	800.00
Arsenic	14	333702.9	33350.00	14	3518000	3000.00
Benzo(b)fluoranthene	10	10459.00	630.00	8	100000.0	190.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(ghi)perylene	13	3656.92	160.00	8	46000.00	130.00
Benzo(k)fluoranthene	10	4908.00	425.00	8	46000.00	160.00
BHC	4	0.00	0.00	0	.	.
Cadmium	10	1110.00	795.00	10	3780.00	300.00
Chlordane	4	0.00	0.00	0	.	.
Chromium	10	21300.00	21000.00	10	32000.00	14000.00
Chrysene	13	15960.77	640.00	11	200000.0	130.00
Copper	17	35588.24	29000.00	17	80000.00	5000.00
Diazinon/Spectracide	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	13	315.38	0.00	1	4100.00	4100.00
Dieldrin	4	0.00	0.00	0	.	.
DDT	18	0.00	0.00	1	0.01	0.01
Endosulfan mixed isomers	4	0.00	0.00	0	.	.
Endrin	4	0.00	0.00	0	.	.
Ethion/Bladen	2	0.00	0.00	0	.	.
Fluoranthene	13	39550.77	1200.00	12	500000.0	120.00
Fluorene	13	15427.69	0.00	4	200000.0	130.00
Heptachlor	4	0.00	0.00	0	.	.
Heptachlor epoxide	4	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	13	4610.00	210.00	9	58000.00	150.00
Lead	17	36764.71	30000.00	17	110000.0	5000.00
Malathion	2	0.00	0.00	0	.	.
Mercury	18	648.33	470.00	18	2600.00	50.00
Methoxychlor	4	0.00	0.00	0	.	.
Mirex/Dechlorane	4	0.00	0.00	0	.	.
Nickel	1	31000.00	31000.00	1	31000.00	31000.00
Phenanthrene	13	70731.54	820.00	11	910000.0	240.00
Polychlorinated biphenyls	4	2.25	0.00	1	9.00	9.00
Pyrene	13	44676.92	890.00	11	570000.0	170.00
Silver	4	25.00	0.00	1	100.00	100.00
Toxaphene	4	0.00	0.00	0	.	.
Zinc	1	77000.00	77000.00	1	77000.00	77000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Arsenic	3	0.00	0.00	0	.	.
Biphenyl	2	0.00	0.00	0	.	.
BHC	5	1.66	0.00	1	8.31	8.31
Cadmium	1	30.00	30.00	1	30.00	30.00
Chlordane	12	33.63	0.00	5	170.00	18.40
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Copper	1	230.00	230.00	1	230.00	230.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	6	38.33	20.00	3	100.00	40.00
Dioxins	4	0.01	0.01	4	0.03	0.00
DDT	17	650.04	0.00	7	8100.00	10.70
Endrin	2	0.00	0.00	0	.	.
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	2	0.00	0.00	0	.	.
Hexachlorobenzene	3	0.00	0.00	0	.	.
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Mercury	16	666.25	575.00	16	1800.00	190.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	2	1.66	1.66	1	3.32	3.32
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	18	2875.76	1500.00	14	17720.00	200.00
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.

Lower Fox 04030204

Watershed Summary Information

Accounting Unit Name: Fox

State(s): WI

Political Boundaries: Brown, Outagamie, Calumet, Winnebago

Major Waterways:
Fox R
East R
Apple Cr
Dutchman Cr
Ashwaubenon Cr

Number of Stations in Watershed:
Tier1 - 49
Tier2 - 2
Tier3 - .

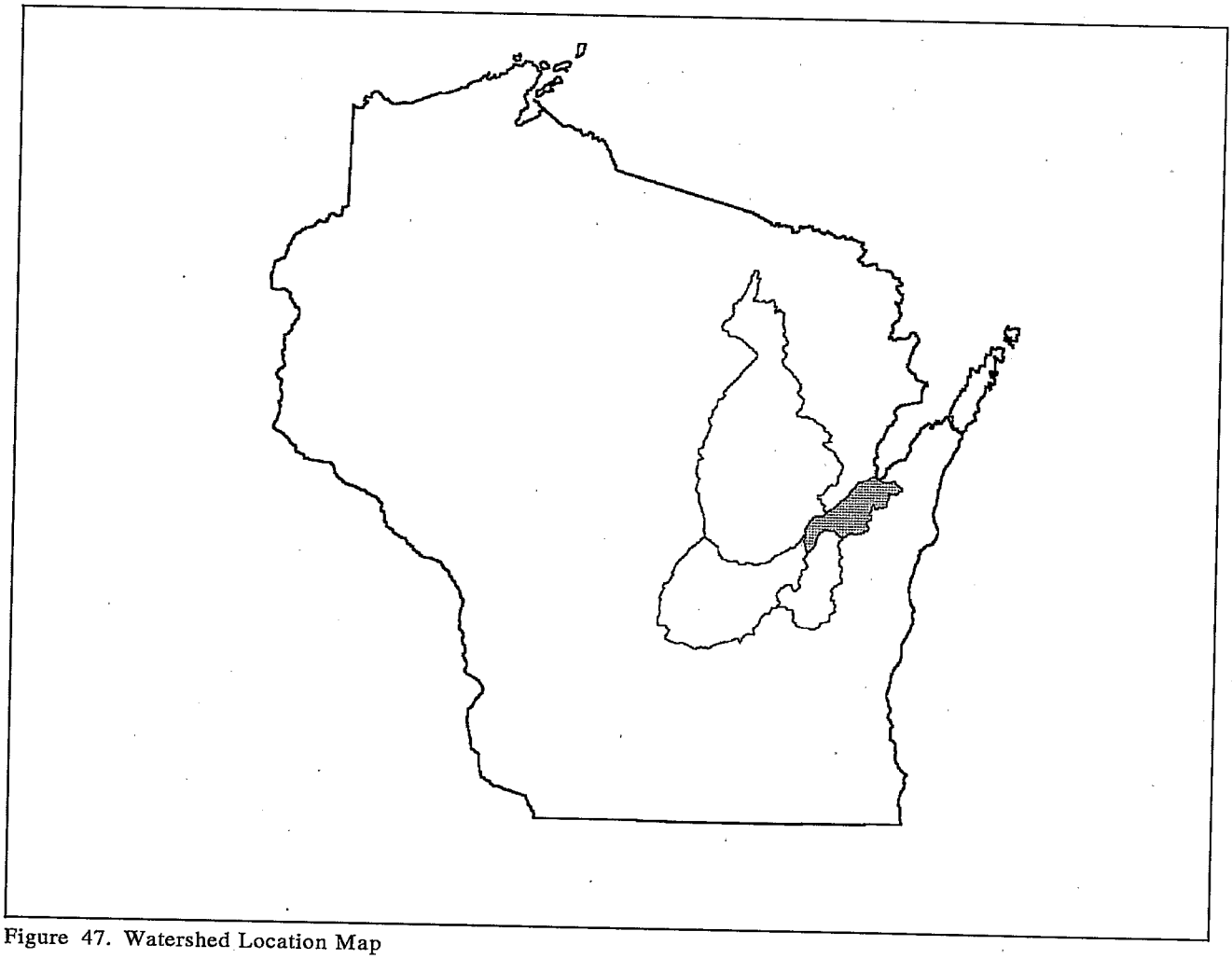

Figure 47. Watershed Location Map

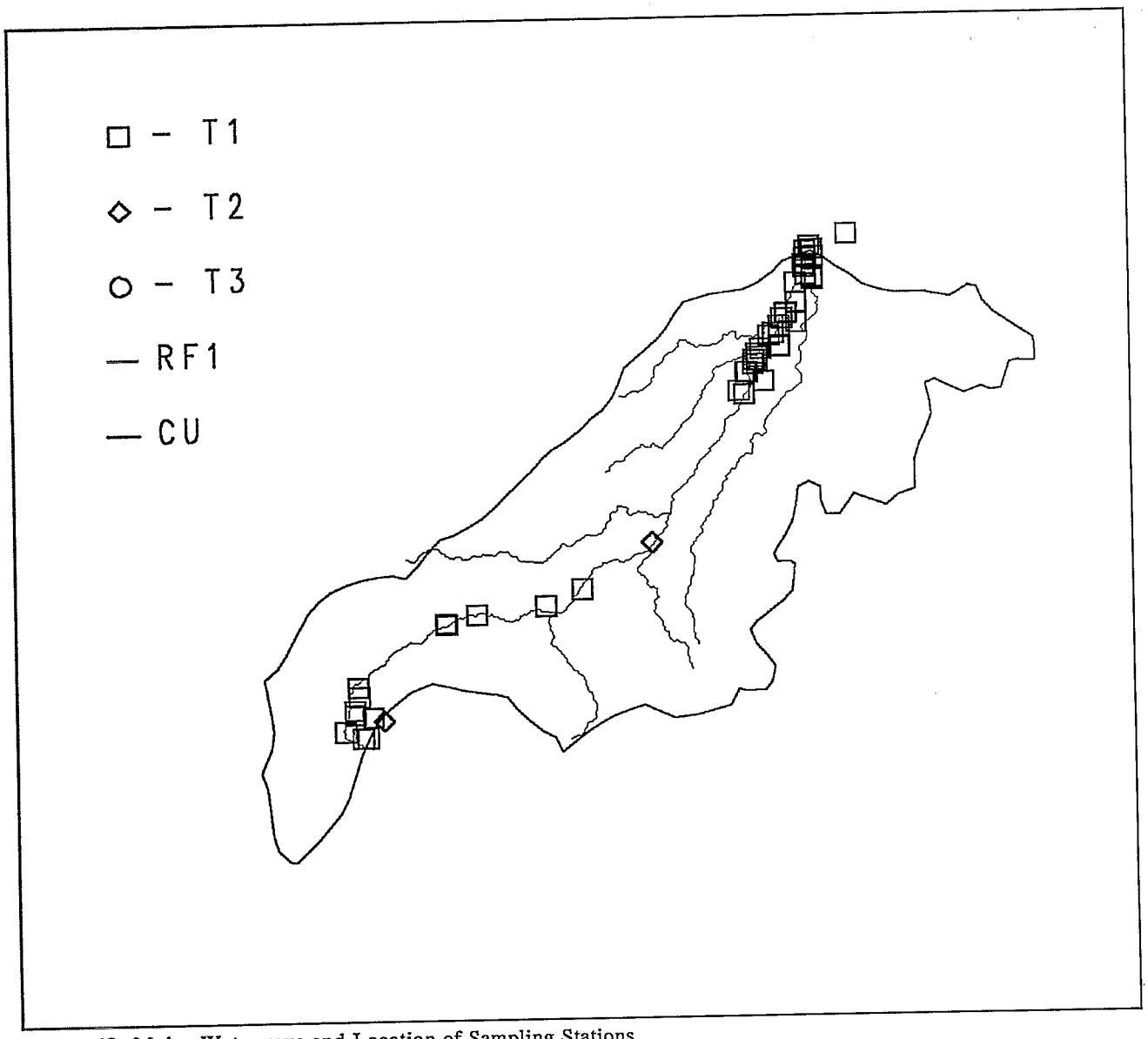

Figure 48. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **GR. LAKE** Agency: **22**
Monitoring Program: **USEPA-ERL-Duluth**
Num. of Stations: 11 Date Range: 1988

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1984-87

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 11 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1981-84

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 10 Date Range: 1980-92

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 15 Date Range: 1980-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	42	42	41	1	21	1	20	22
Copper	37	29	.	29	.	29	.	.
Lead	36	29	.	29	.	28	.	1
Mercury	38	26	21	5	21	5	.	.
DDT	36	24	8	16	8	10	.	15
Chromium	37	21	2	19	2	19	.	.
Cadmium	28	17	.	17	.	17	.	.
Nickel	22	17	.	17	.	17	.	.
Pyrene	19	16	.	16	.	16	.	.
Dioxins	15	14	3	11	.	.	3	11
Zinc	22	14	.	14	.	14	.	.
Anthracene	12	10	1	9	1	9	.	.
Chrysene	12	10	.	10	.	10	.	.
Anthracene&Phenanthrene	9	9	3	6	3	6	.	.
BHC	28	9	.	9	.	8	.	7
Naphthalene	9	8	1	7	1	7	.	.
Benzo(a)pyrene	12	8	.	8	.	8	.	8
Bis(2-ethylhexyl)phthalate	9	6	2	4	2	4	.	2
Fluoranthene	19	6	.	6	.	6	.	.
Hexachlorobenzene	18	6	.	6	.	6	.	1
Benzo(a)anthracene/Chrysene	5	5	2	3	2	3	.	5
Silver	19	5	1	4	1	4	.	.
Dichlorobenzene, 1,2-	6	4	1	3	1	3	.	.
Dichloromethane	11	4	.	4	.	.	.	4
Arsenic	12	3	.	3	.	3	.	.
Heptachlor epoxide	8	3	.	3	.	.	.	3
Acenaphthene	3	2	.	2	.	2	.	.
Dieldrin	26	2	.	2	.	.	.	2
Fluorene	3	2	.	2	.	2	.	.
Chlordane	27	1	.	1	.	1	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dichlorobenzene, 1,4-	6	1	.	1	.	1	.	.
Endosulfan, beta-	4	1	.	1	.	1	.	.
Heptachlor	5	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	70.00	90.00	2	120.00	90.00
Acenaphthylene	1	0.00	0.00	0	.	.
Aldrin	2	0.00	0.00	0	.	.
Anthracene	12	448.33	330.00	11	1600.00	20.00
Anthracene&Phenanthrene	9	805.56	800.00	9	1420.00	170.00
Arsenic	10	6689.00	6650.00	10	10100.00	4900.00
Benzene	3	11.33	12.00	3	14.00	8.00
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)anthracene/Chrysene	5	1202.00	1100.00	5	2010.00	600.00
Benzo(a)pyrene	12	235.83	185.00	9	940.00	80.00
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	9	1333.33	1000.00	8	4100.00	120.00
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	31	56.61	0.00	11	1201.00	0.09
Cadmium	22	1341.36	1170.00	21	3370.00	300.00
Chlordane	24	1.57	0.31	21	31.00	0.08
Chlorobenzene	1	4.00	4.00	1	4.00	4.00
Chromium	34	101390.3	76485.00	34	420000.0	16000.00
Chrysene	12	567.50	585.00	10	1610.00	200.00
Copper	34	70852.94	69875.00	34	200000.0	13000.00
Di-n-butyl phthalate	9	199.67	217.00	8	358.00	100.00
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Diazinon/Spectracide	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	158.33	110.00	5	500.00	30.00
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	6	75.00	65.00	5	200.00	20.00
Dichloromethane	11	4092.91	2249.00	11	13070.00	210.00
Dieldrin	13	0.40	0.23	9	1.27	0.07
Diethyl phthalate	3	60.00	60.00	2	120.00	60.00
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dioxins	23	3550.05	0.01	21	81600.22	0.00
DCPA/Dacthal	2	3.00	3.00	2	4.00	2.00
DDT	48	39.34	8.41	41	355.00	0.40
Endosulfan mixed isomers	2	0.00	0.00	0	.	.
Endosulfan, beta-	4	7.50	6.50	4	14.00	3.00
Endrin	13	0.16	0.16	8	0.58	0.16
Ethion/Bladen	1	0.00	0.00	0	.	.
Fluoranthene	19	503.68	410.00	18	1240.00	20.00
Fluorene	3	53.33	70.00	2	90.00	70.00
Heptachlor	3	56.67	0.00	1	170.00	170.00
Heptachlor epoxide	6	53.50	3.00	4	285.00	2.00
Hexachlorobenzene	9	75.56	33.00	8	420.00	9.00
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	33	172475.2	110000.0	33	1400000	25000.00
Malathion	1	0.00	0.00	0	.	.
Mercury	31	1810.97	1400.00	31	5600.00	30.00
Methoxychlor	13	4.76	3.98	10	17.02	1.82
Mirex/Dechlorane	13	0.00	0.00	0	.	.
Naphthalene	9	258.89	170.00	8	600.00	100.00
Nickel	22	39741.36	38100.00	22	124600.0	6000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenanthrene	12	448.33	330.00	11	1600.00	20.00
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	37	1730.70	824.00	37	14450.00	100.00
Pyrene	19	597.89	620.00	18	1540.00	50.00
Silver	23	503.04	0.00	8	5800.00	300.00
Tetrachloroethene	11	7.09	6.00	11	15.00	3.00
Toluene	11	13.27	10.00	11	57.00	4.00
Toxaphene	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	15.00	15.00	1	30.00	30.00
Zinc	22	166181.8	160000.0	22	338000.0	35000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	27	0.00	0.00	0	.	.
Arsenic	33	0.00	0.00	0	.	.
Biphenyl	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	65	1.13	0.00	6	20.00	4.65
Cadmium	33	18.18	0.00	2	300.00	300.00
Chlordane	180	1.05	0.00	7	60.00	3.63
Chlorpyrifos/Dursban	3	0.00	0.00	0	.	.
Chromium	34	0.00	0.00	0	.	.
Copper	34	1538.24	1450.00	34	2600.00	800.00
Dicofol/Kelthane	3	0.00	0.00	0	.	.
Dieldrin	44	2.02	0.00	5	60.00	0.02
Dioxins	6	0.00	0.01	6	0.01	0.00
DDT	262	75.37	0.00	60	1650.00	42.50
Endrin	32	0.00	0.00	0	.	.
Heptachlor	3	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	33	0.00	0.00	0	.	.
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Isopropalin	3	0.00	0.00	0	.	.
Lead	34	147.06	0.00	1	5000.00	5000.00
Mercury	40	106.00	70.00	36	740.00	10.00
Methoxychlor	34	2.94	0.00	2	50.00	50.00
Mirex/Dechlorane	3	1.07	0.00	1	3.21	3.21
Pentachlorobenzene	3	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Pentachlorophenol	44	0.00	0.00	0	.	.
Polychlorinated biphenyls	175	7913.77	3200.00	173	50000.00	140.00
Selenium	1	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Toxaphene	5	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	3	0.00	0.00	0	.	.

Little Calumet-Galien 04040001

Watershed Summary Information

Accounting Unit Name: Southwestern Lake Michigan

State(s): IN IL (MI)

Political Boundaries: Lake, Porter, Berrien, Cook, La Porte, St Joseph

Major Waterways:
Burns Ditch
Deep R
Little Calumet R
Galien R
Salt Cr

Number of Stations in Watershed:
Tier1 - 45
Tier2 - 26
Tier3 - 18

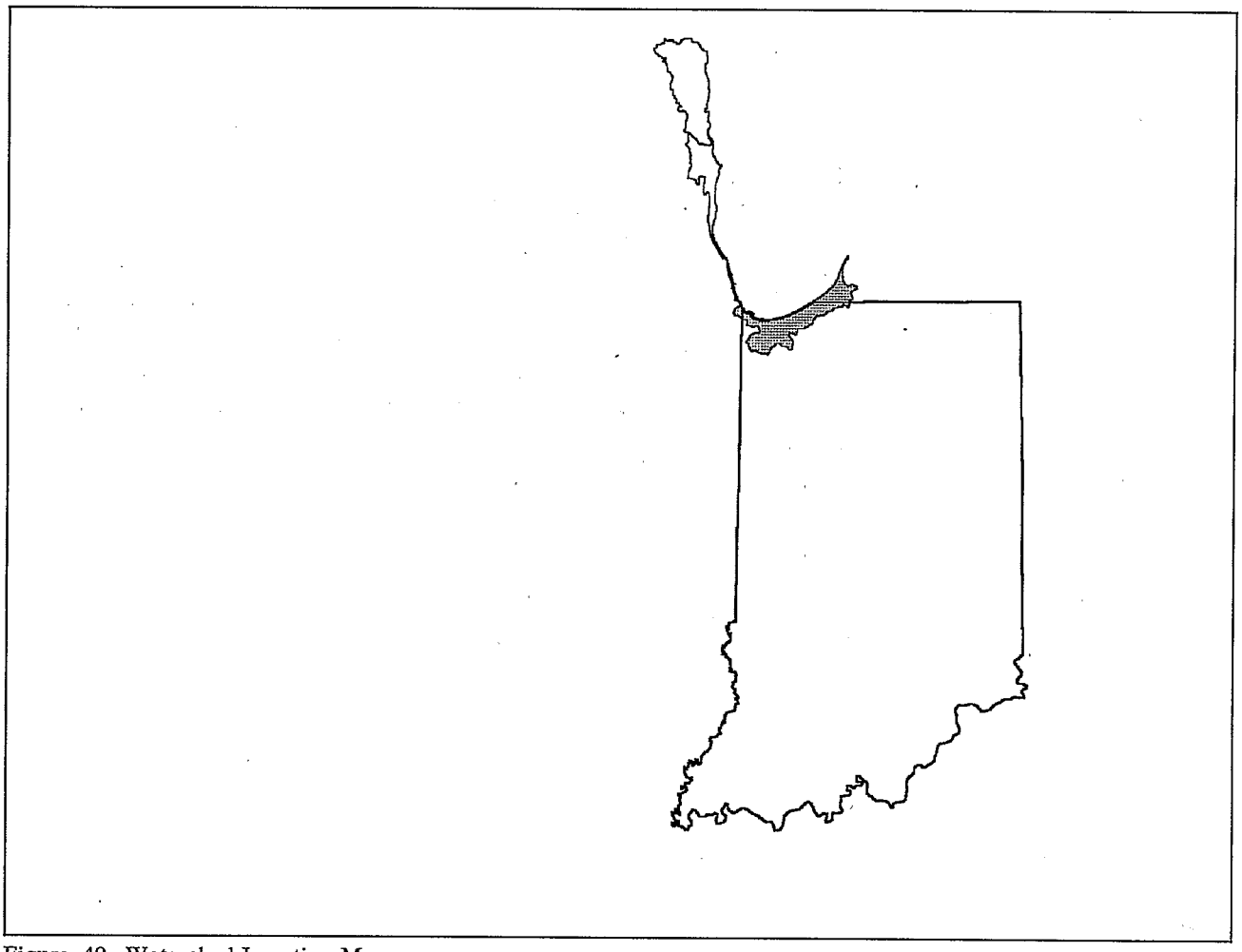

Figure 49. Watershed Location Map

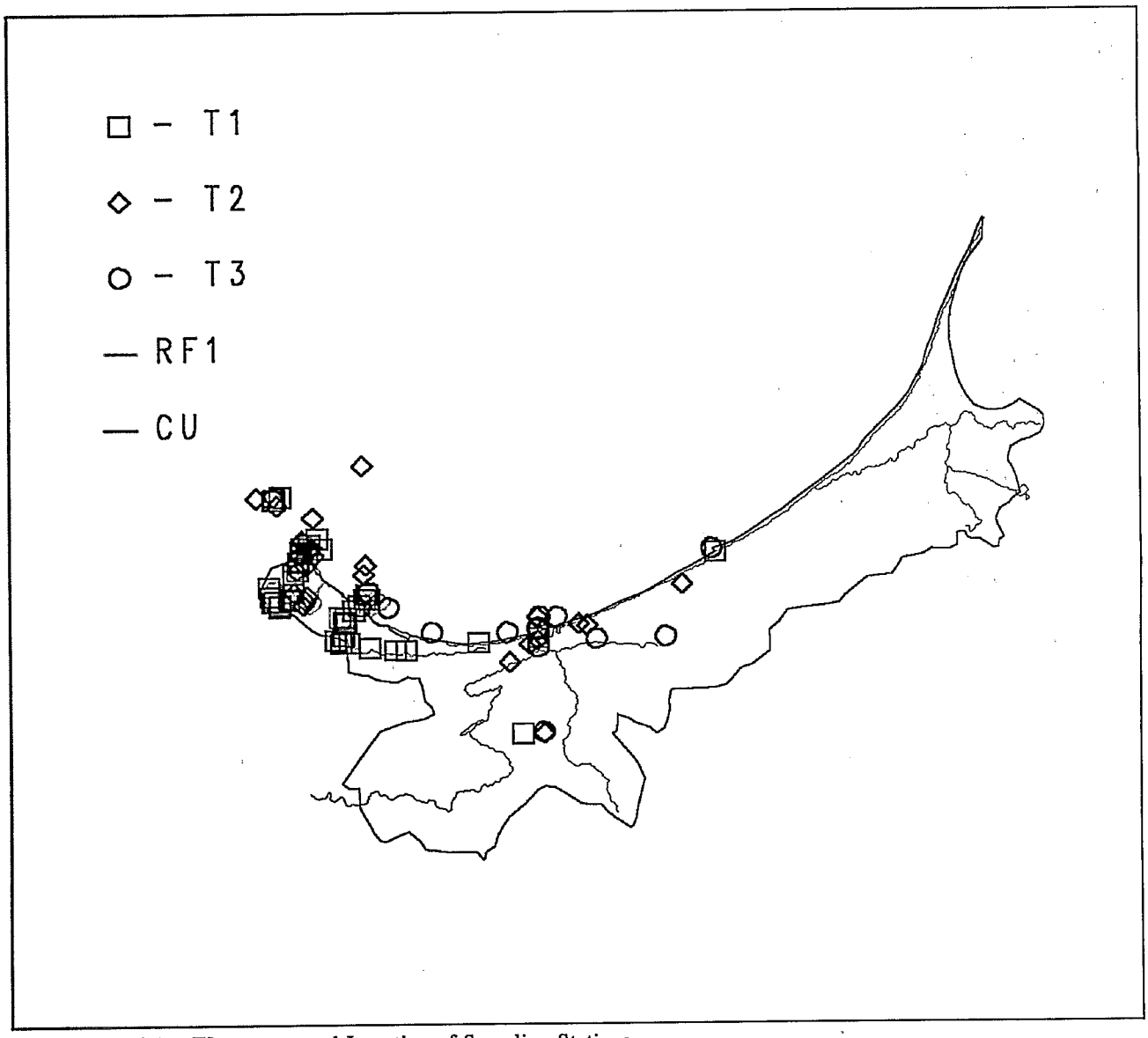

Figure 50. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: ODES Agency: AR
Monitoring Program: GLNPO/ARCS
Num. of Stations: 7 Date Range: 1989

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 2 Date Range: 1984-87

Source: STORET Agency: 11COECHI
Monitoring Program: Corps of Engineers Data Chicago District
Num. of Stations: 34 Date Range: 1980-81

Source: **STORET** Agency: **11140100**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 2 Date Range: 1980

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 11 Date Range: 1980-81

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 6 Date Range: 1980

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 5 Date Range: 1982-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 7 Date Range: 1989-93

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 5 Date Range: 1980-82

Source: **STORET** Agency: **21IND**
Monitoring Program: **Indiana Board of Health General Water Quality & Bioassay Data**
Num. of Stations: 10 Date Range: 1980-88

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	73	53	.	53	.	53	.	.
Arsenic	67	50	4	46	4	43	.	3
Copper	66	48	.	48	.	48	.	.
Polychlorinated biphenyls	71	46	40	6	31	5	9	37
Cadmium	69	44	.	44	.	44	.	.
Mercury	68	34	10	24	10	24	.	.
Chromium	70	28	13	15	13	15	.	.
Zinc	43	26	.	26	.	26	.	.
Nickel	38	20	.	20	.	20	.	.
DDT	35	17	8	9	8	2	.	15
Dieldrin	37	15	3	12	3	1	.	15
Chlordane	30	11	.	11	.	6	.	10
Heptachlor epoxide	30	11	.	11	.	.	.	11
BHC	37	10	7	3	7	.	.	9
Silver	38	10	7	3	7	3	.	.
Bis(2-ethylhexyl)phthalate	13	9	8	1	8	1	.	5
Aldrin	35	8	.	8	.	.	.	8

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Anthracene	10	7	7	.	7	.	.	.
Benzo(a)anthracene	10	7	7	.	7	.	.	7
Benzo(a)pyrene	10	7	7	.	7	.	.	7
Chrysene	10	7	7	.	7	.	.	2
Fluorene	10	7	7	.	7	.	.	.
Naphthalene	10	7	7	.	7	.	.	.
Pyrene	10	7	7	.	7	.	.	.
SEM_est	7	7	7	.	7	.	.	.
Dibenzofuran	10	7	4	3	4	3	.	.
Dioxins	9	7	2	5	.	.	2	5
Benzo(b)fluoranthene	10	7	.	7	.	7	.	7
Benzo(ghi)perylene	7	7	.	7	.	7	.	.
Benzo(k)fluoranthene	10	7	.	7	.	7	.	4
Indeno(1,2,3-cd)pyrene	10	7	.	7	.	7	.	7
Methylnaphthalene, 2-	7	6	6	.	6	.	.	.
Phenanthrene	7	5	5	.	5	.	.	.
Fluoranthene	10	4	4	.	4	.	.	.
Dichlorobenzene, 1,4-	10	3	2	1	2	1	.	.
Hexachlorobenzene	20	2	.	2	.	.	.	2
Butyl benzyl phthalate	10	1	1	.	1	.	.	.
Di-n-octyl phthalate	10	1	.	1	.	1	.	.
Endosulfan, alpha-	13	1	.	1	.	1	.	.
Endosulfan, beta-	13	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	51	19.10	0.00	7	330.00	34.00
Anthracene	7	24128.57	3400.00	7	130000.0	1400.00
Antimony	15	0.00	0.00	0	.	.
Arsenic	96	20242.81	12600.00	89	93000.00	1100.00
Benzo(a)anthracene	7	13600.00	7300.00	7	30000.00	4200.00
Benzo(a)pyrene	7	15271.43	10000.00	7	29000.00	5700.00
Benzo(b)fluoranthene	7	14371.43	8900.00	7	26000.00	5600.00
Benzo(ghi)perylene	7	16042.86	9600.00	7	31000.00	6300.00
Benzo(k)fluoranthene	7	12142.86	10000.00	7	23000.00	4200.00
Bis(2-ethylhexyl)phthalate	10	35710.00	7650.00	10	290000.0	100.00
Butyl benzyl phthalate	7	2285.71	0.00	1	16000.00	16000.00
BHC	117	5.92	0.00	9	290.00	34.00
Cadmium	98	5852.04	1900.00	61	110000.0	300.00
Chlordane	76	8.47	0.00	6	170.00	66.00
Chromium	99	174044.4	32000.00	87	2610000	2600.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chrysene	7	18342.86	9400.00	7	39000.00	5200.00
Copper	95	91348.42	45000.00	81	490000.0	2500.00
Di-n-octyl phthalate	7	6575.71	1900.00	5	37000.00	430.00
Dibenzofuran	7	10345.71	2400.00	7	53000.00	920.00
Dichlorobenzene, 1,4-	7	248.29	110.00	7	930.00	31.00
Dieldrin	53	24.26	0.00	6	343.00	5.00
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dioxins	16	0.10	0.00	6	0.58	0.10
DDT	183	8.18	0.00	24	210.00	1.50
Endosulfan, alpha-	16	2.56	0.00	1	41.00	41.00
Endosulfan, beta-	16	13.44	0.00	2	160.00	55.00
Endrin	51	0.86	0.00	1	44.00	44.00
Fluoranthene	7	20028.57	9600.00	7	56000.00	4800.00
Fluorene	7	11998.57	3200.00	7	61000.00	790.00
Heptachlor	24	0.00	0.00	0	.	.
Heptachlor epoxide	33	30.06	0.00	5	320.00	63.00
Hexachlorobenzene	13	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	7	11000.00	7300.00	7	22000.00	5300.00
Lead	102	483079.4	163000.0	89	15000000	7200.00
Mercury	91	410.63	100.00	59	12000.00	3.00
Methoxychlor	42	0.00	0.00	0	.	.
Methylnaphthalene, 2-	7	4818.57	2000.00	6	20000.00	930.00
Naphthalene	7	8685.71	6300.00	7	24000.00	3600.00
Nickel	66	48780.30	16500.00	53	890000.0	2800.00
Phenanthrene	7	21485.71	9900.00	7	79000.00	3400.00
Polychlorinated biphenyls	283	920.79	0.00	50	43000.00	0.70
Pyrene	7	26500.00	16000.00	7	55000.00	5500.00
Silver	60	1375.73	0.00	19	16000.00	23.00
SEM_est	7	70.10	66.25	7	133.02	40.09
Toxaphene	38	0.00	0.00	0	.	.
Zinc	72	1286044	211000.0	65	7960000	19000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	4	0.00	0.00	0	.	.
Acetone	6	235.00	200.00	6	430.00	130.00
Aldrin	27	2.22	0.00	2	50.00	10.00
Anthracene	5	0.00	0.00	0	.	.
Arsenic	18	161.61	170.00	18	500.00	18.00
Benzene	5	7.20	0.00	2	21.00	15.00
Benzo(a)anthracene	5	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)pyrene	5	0.00	0.00	0	.	.
Benzo(b)fluoranthene	5	0.00	0.00	0	.	.
Benzo(k)fluoranthene	5	0.00	0.00	0	.	.
Benzoic acid	5	0.00	0.00	0	.	.
Benzyl alcohol	5	0.00	0.00	0	.	.
Biphenyl	2	24.45	24.45	2	26.40	22.50
Bis(2-chloroethyl)ether	5	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	5	0.00	0.00	0	.	.
Bromodichloromethane	6	0.00	0.00	0	.	.
Bromomethane	6	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	5	0.00	0.00	0	.	.
BHC	147	14.12	1.00	77	408.00	1.00
Cadmium	23	52.52	19.00	15	280.00	10.00
Carbon disulfide	6	64.83	59.50	6	120.00	16.00
Chlordane	173	311.37	65.00	155	4700.00	1.00
Chlorobenzene	6	0.00	0.00	0	.	.
Chloroethane	6	0.00	0.00	0	.	.
Chloroethene	6	0.00	0.00	0	.	.
Chloromethane	5	0.00	0.00	0	.	.
Chloronaphthalene, 2-	5	0.00	0.00	0	.	.
Chlorophenol, 2-	5	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	18	489.11	435.00	17	980.00	140.00
Chrysene	5	0.00	0.00	0	.	.
Copper	18	1070.11	1125.00	18	1616.00	330.00
Cresol, o	5	0.00	0.00	0	.	.
Cresol, p-	3	5633.33	2900.00	2	14000.00	2900.00
Di-n-butyl phthalate	5	0.00	0.00	0	.	.
Di-n-octyl phthalate	5	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	5	0.00	0.00	0	.	.
Dibenzofuran	4	0.00	0.00	0	.	.
Dibromochloromethane	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	5	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	5	0.00	0.00	0	.	.
Dichloroethane 1,1-	5	0.00	0.00	0	.	.
Dichloroethane 1,2-	6	0.00	0.00	0	.	.
Dichloroethene, 1,1-	6	0.00	0.00	0	.	.
Dichloromethane	5	5.40	7.00	3	11.00	7.00
Dichlorophenol, 2,4-	5	0.00	0.00	0	.	.
Dichloropropane, 1,2-	6	0.00	0.00	0	.	.
Dicofol/Kelthane	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dieldrin	58	162.13	20.50	45	2029.00	1.00
Diethyl phthalate	5	0.00	0.00	0	.	.
Dimethyl phthalate	5	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	5	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	5	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	5	0.00	0.00	0	.	.
Dioxins	6	0.01	0.01	6	0.03	0.01
DDT	150	719.20	90.50	125	16140.00	0.03
Endosulfan, alpha-	6	0.00	0.00	0	.	.
Endosulfan, beta-	6	0.00	0.00	0	.	.
Endrin	31	0.61	0.00	2	18.00	1.00
Ethylbenzene	3	20.67	21.00	3	21.00	20.00
Fluoranthene	5	0.00	0.00	0	.	.
Fluorene	5	0.00	0.00	0	.	.
Heptachlor	29	0.00	0.00	0	.	.
Heptachlor epoxide	52	38.49	2.00	28	600.00	1.00
Hexachlorobenzene	59	34.94	2.00	33	994.00	1.00
Hexachlorobutadiene	7	0.00	0.00	0	.	.
Hexachloroethane	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	5	0.00	0.00	0	.	.
Isophorone	5	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	24	314.58	180.00	14	980.00	70.00
Mercury	22	69.41	58.00	20	164.00	31.00
Methoxychlor	23	0.00	0.00	0	.	.
Methyl ethyl ketone	6	10.17	9.00	3	24.00	18.00
Methyl isobutyl ketone	6	0.00	0.00	0	.	.
Mirex/Dechlorane	17	0.37	0.00	1	6.22	6.22
Naphthalene	5	0.00	0.00	0	.	.
Nitrobenzene	5	0.00	0.00	0	.	.
Nitrophenol, 4	5	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	5	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	5	0.00	0.00	0	.	.
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Pentachlorophenol	5	0.00	0.00	0	.	.
Phenol	5	0.00	0.00	0	.	.
Polychlorinated biphenyls	66	11473.98	1460.50	63	155700.0	100.00
Pyrene	5	0.00	0.00	0	.	.
Styrene	6	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	6	0.00	0.00	0	.	.
Tetrachloroethene	5	11.20	0.00	2	39.00	17.00
Tetrachloromethane	6	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Toluene	4	33.50	34.00	4	56.00	10.00
Toxaphene	21	0.00	0.00	0	.	.
Tribromomethane/Bromoform	6	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	5	30.60	8.00	3	130.00	8.00
Trichloroethane, 1,1,2-	6	0.00	0.00	0	.	.
Trichloroethene	6	0.00	0.00	0	.	.
Trichloromethane/Chloroform	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	5	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	5	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Vinyl acetate	6	0.00	0.00	0	.	.
Xylenes	6	60.83	59.00	6	110.00	9.00
Zinc	11	68681.82	71400.00	11	130000.0	12100.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: GLNPO/ARCS							
41.6458	87.4722	89-08-10	Chironomus Tentans	S	100.00	0.00	Yes
			Hyallella Azteca	S	100.00	7.50	Yes
41.6550	87.4597	89-08-09	Chironomus Tentans	S	100.00	0.00	Yes
			Hyallella Azteca	S	98.75	7.50	Yes
41.6678	87.4361	89-08-09	Chironomus Tentans	S	73.30	0.00	Yes
			Hyallella Azteca	S	100.00	7.50	Yes
41.6736	87.4392	89-08-09	Chironomus Tentans	S	53.30	0.00	Yes
			Hyallella Azteca	S	98.75	7.50	Yes

Pike-Root 04040002

Watershed Summary Information

Accounting Unit Name:	Southwestern Lake Michigan
State(s):	IL WI
Political Boundaries:	Kenosha, Racine, Cook, Milwaukee, Lake, Lake, Waukesha
Major Waterways:	Root R Pike R
Number of Stations in Watershed:	Tier1 - 34 Tier2 - 30 Tier3 - 8

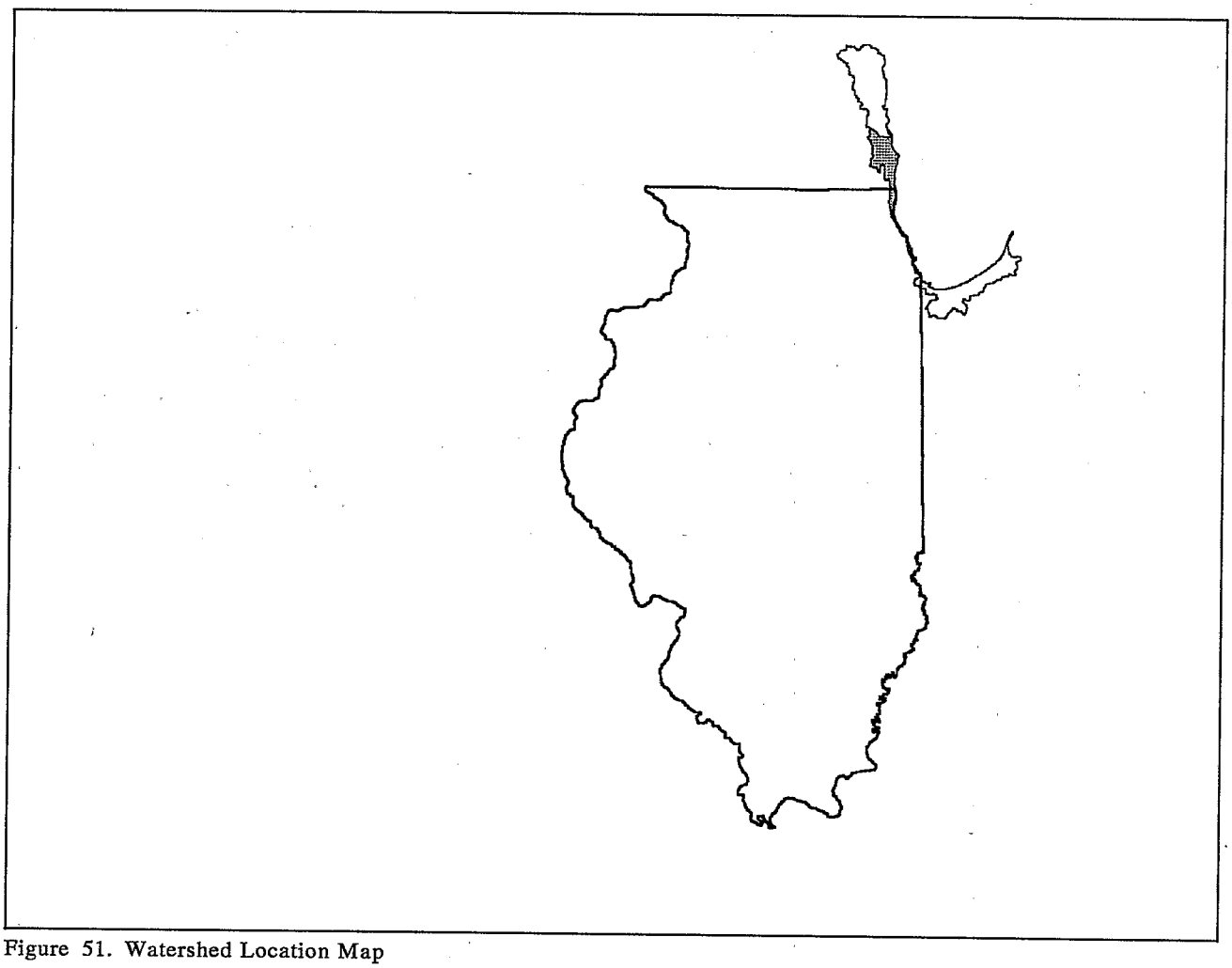

Figure 51. Watershed Location Map

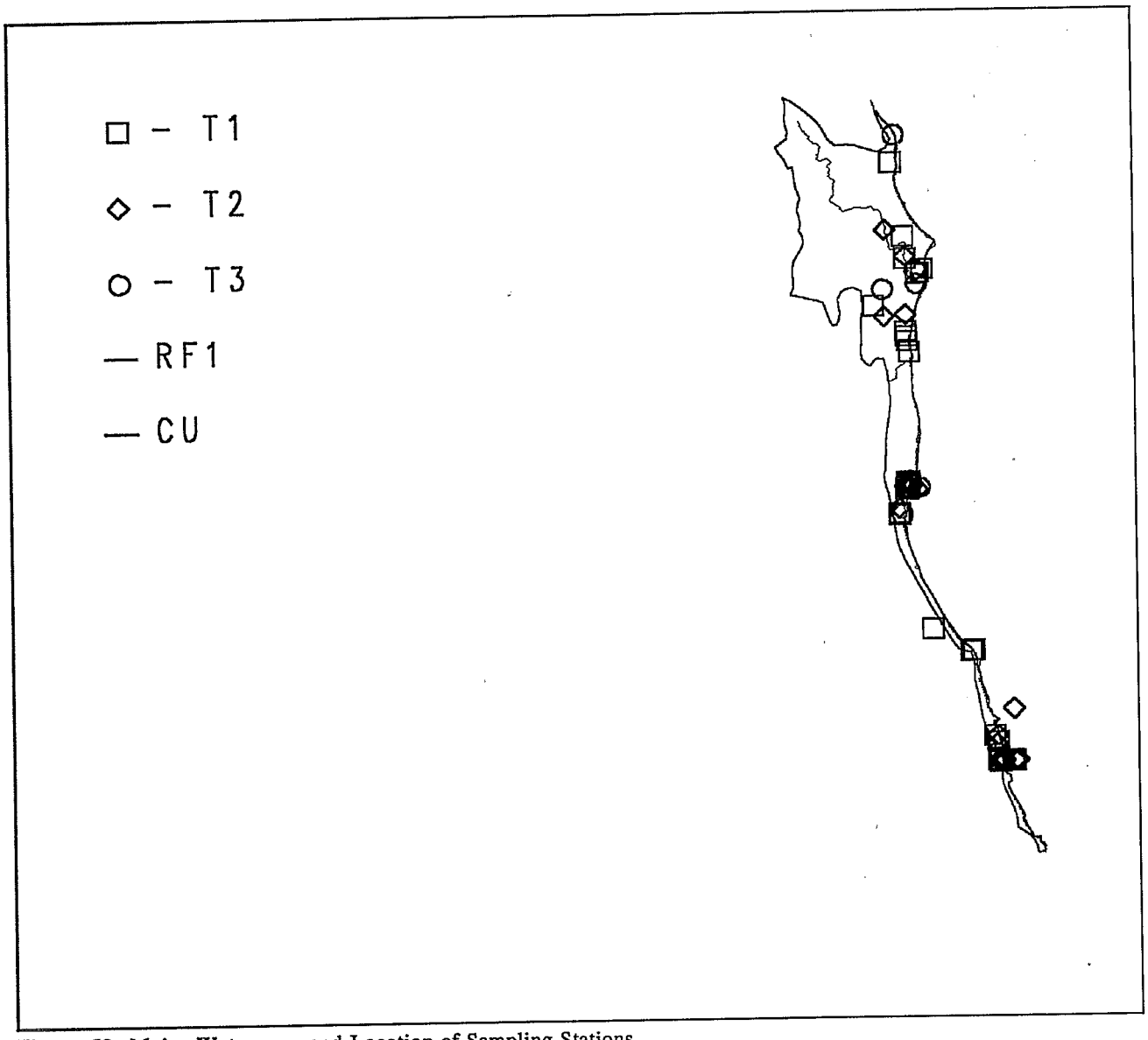

Figure 52. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COECHI**
Monitoring Program: **Corps of Engineers Data Chicago District**
Num. of Stations: 25 Date Range: 1980-81

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 6 Date Range: 1980

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 5 Date Range: 1981-91

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 3 Date Range: 1989-91

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 14 Date Range: 1980-92

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 2 Date Range: 1980-91

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 17 Date Range: 1980-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	61	39	28	11	13	7	15	24
Copper	48	39	.	39	.	39	.	.
Lead	51	37	.	37	.	37	.	.
Arsenic	51	29	1	28	1	27	.	1
Cadmium	51	25	.	25	.	25	.	.
Zinc	36	22	.	22	.	22	.	.
Mercury	54	21	5	16	5	16	.	.
DDT	40	16	3	13	3	1	.	15
Dieldrin	38	15	.	15	.	1	.	15
Chromium	51	11	1	10	1	10	.	.
Nickel	27	8	.	8	.	8	.	.
Chlordane	38	7	.	7	.	.	.	7
Pyrene	8	4	1	3	1	3	.	.
Bis(2-ethylhexyl)phthalate	11	3	1	2	1	2	.	1
Heptachlor epoxide	23	3	.	3	.	.	.	3
Silver	17	2	2	.	2	.	.	.
Fluoranthene	8	2	.	2	.	2	.	.
Heptachlor	24	2	.	2	.	.	.	2
Chrysene	8	1	1	.	1	.	.	.
Aldrin	24	1	.	1	.	.	.	1
Anthracene	8	1	.	1	.	1	.	.
Benzo(b)fluoranthene	8	1	.	1	.	1	.	1
Fluorene	8	1	.	1	.	1	.	.
Hexachlorobenzene	23	1	.	1	.	1	.	.
Indeno(1,2,3-cd)pyrene	8	1	.	1	.	.	.	1
Toluene	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	8	57.50	0.00	1	460.00	460.00
Acenaphthylene	8	0.00	0.00	0	.	.
Aldrin	23	0.00	0.00	0	.	.
Anthracene	8	73.75	0.00	1	590.00	590.00
Antimony	28	5000.00	0.00	2	80000.00	60000.00
Arsenic	67	10717.61	7000.00	64	71000.00	1000.00
Benzo(a)anthracene	7	0.00	0.00	0	.	.
Benzo(a)pyrene	7	0.00	0.00	0	.	.
Benzo(b)fluoranthene	8	450.00	0.00	1	3600.00	3600.00
Benzo(ghi)perylene	8	60.00	0.00	1	480.00	480.00
Benzo(k)fluoranthene	8	237.50	0.00	1	1900.00	1900.00
Benzoic acid	7	0.00	0.00	0	.	.
Benzyl alcohol	7	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	11	549.64	4.00	6	4200.00	4.00
Bromophenyl phenyl ether, 4-	7	0.00	0.00	0	.	.
Butyl benzyl phthalate	7	0.00	0.00	0	.	.
BHC	50	0.00	0.00	0	.	.
Cadmium	67	3161.79	0.00	27	74000.00	1000.00
Chlordane	71	0.00	0.00	0	.	.
Chromium	67	33250.75	16000.00	50	520000.0	4000.00
Chrysene	8	475.00	0.00	1	3800.00	3800.00
Copper	64	68015.63	39000.00	58	600000.0	2000.00
Cresol, o	7	0.00	0.00	0	.	.
Cresol, p-	7	88.57	0.00	1	620.00	620.00
Di-n-butyl phthalate	7	0.00	0.00	0	.	.
Di-n-octyl phthalate	7	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	8	0.00	0.00	0	.	.
Dibenzofuran	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	6	0.00	0.00	0	.	.
Dieldrin	23	0.38	0.00	1	8.70	8.70
Diethyl phthalate	7	0.00	0.00	0	.	.
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	158	28.43	0.00	13	1830.00	0.04
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	23	0.00	0.00	0	.	.
Fluoranthene	8	860.00	0.00	3	5600.00	620.00
Fluorene	8	58.75	0.00	1	470.00	470.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor	25	6.16	0.00	2	82.00	72.00
Heptachlor epoxide	23	0.05	0.00	1	1.10	1.10
Hexachlorobenzene	27	1.81	0.00	1	49.00	49.00
Hexachlorobutadiene	7	0.00	0.00	0	.	.
Hexachloroethane	7	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	8	80.00	0.00	1	640.00	640.00
Isophorone	7	0.00	0.00	0	.	.
Lead	67	444522.4	54000.00	53	12000000	7000.00
Mercury	67	240.04	0.00	31	5000.00	10.00
Methoxychlor	22	0.00	0.00	0	.	.
Methylnaphthalene, 2-	7	0.00	0.00	0	.	.
Naphthalene	7	0.00	0.00	0	.	.
Nickel	44	23113.64	3000.00	22	400000.0	6000.00
Pentachlorophenol	7	0.00	0.00	0	.	.
Phenanthrene	8	475.00	0.00	1	3800.00	3800.00
Phenol	7	0.00	0.00	0	.	.
Polychlorinated biphenyls	248	341.43	0.00	29	19000.00	7.00
Pyrene	8	832.50	290.00	4	4800.00	580.00
Silver	19	1210.53	0.00	2	13000.00	10000.00
Toluene	1	3900.00	3900.00	1	3900.00	3900.00
Toxaphene	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	0.00	0.00	0	.	.
Zinc	55	156200.0	87000.00	41	1400000	15000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	42	0.48	0.00	2	20.00	0.02
Arsenic	18	12.22	0.00	3	140.00	30.00
BHC	76	0.79	0.00	6	10.00	10.00
Cadmium	18	5.00	0.00	1	90.00	90.00
Chlordane	198	26.41	0.00	47	310.00	10.00
Chromium	18	155.56	0.00	3	2200.00	300.00
Copper	18	2014.44	1750.00	18	8600.00	260.00
Dieldrin	74	46.81	31.50	53	450.00	0.03
DDT	280	244.02	0.00	118	6600.00	33.00
Endrin	42	0.00	0.00	0	.	.
Heptachlor	25	0.00	0.00	0	.	.
Heptachlor epoxide	29	8.35	0.02	19	33.00	0.01
Hexachlorobenzene	39	0.00	0.00	2	0.01	0.01
Lead	18	0.00	0.00	0	.	.
Mercury	29	78.41	50.00	28	630.00	10.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	40	0.00	0.00	0	.	.
Mirex/Dechlorane	22	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Polychlorinated biphenyls	90	3237.09	1400.00	77	37000.00	110.00
Toxaphene	25	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	2	0.00	0.00	0	.	.

Milwaukee 04040003

Watershed Summary Information

Accounting Unit Name: Southwestern Lake Michigan

State(s): WI

Political Boundaries: Washington, Ozaukee, Sheboygan, Fond Du Lac, Milwaukee, Dodge

Major Waterways:
Milwaukee R
Milwaukee R, N Br
Cedar Cr
Milwaukee R, W Br
Mink Cr

Number of Stations in Watershed:
Tier1 - 60
Tier2 - 16
Tier3 - 14

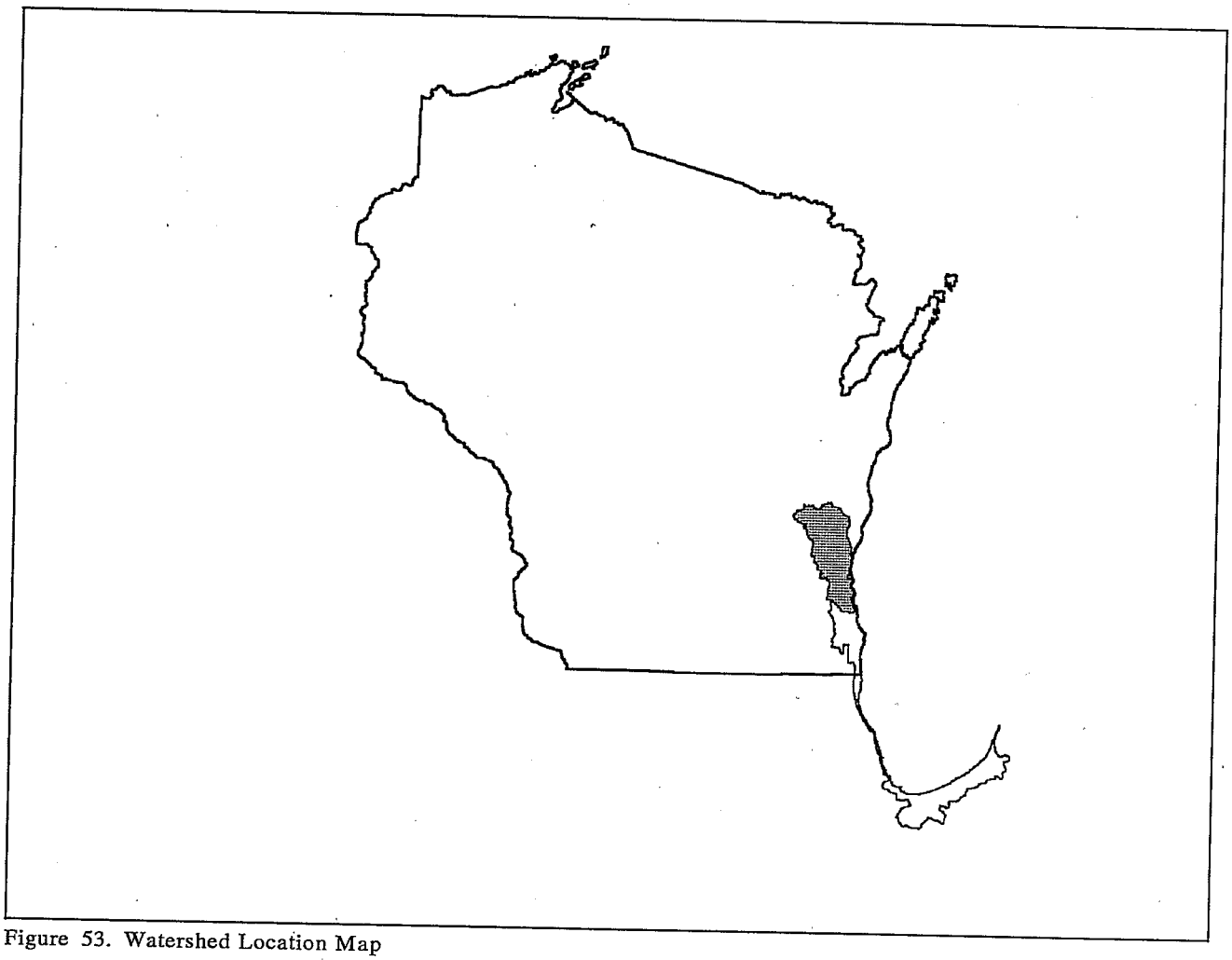

Figure 53. Watershed Location Map

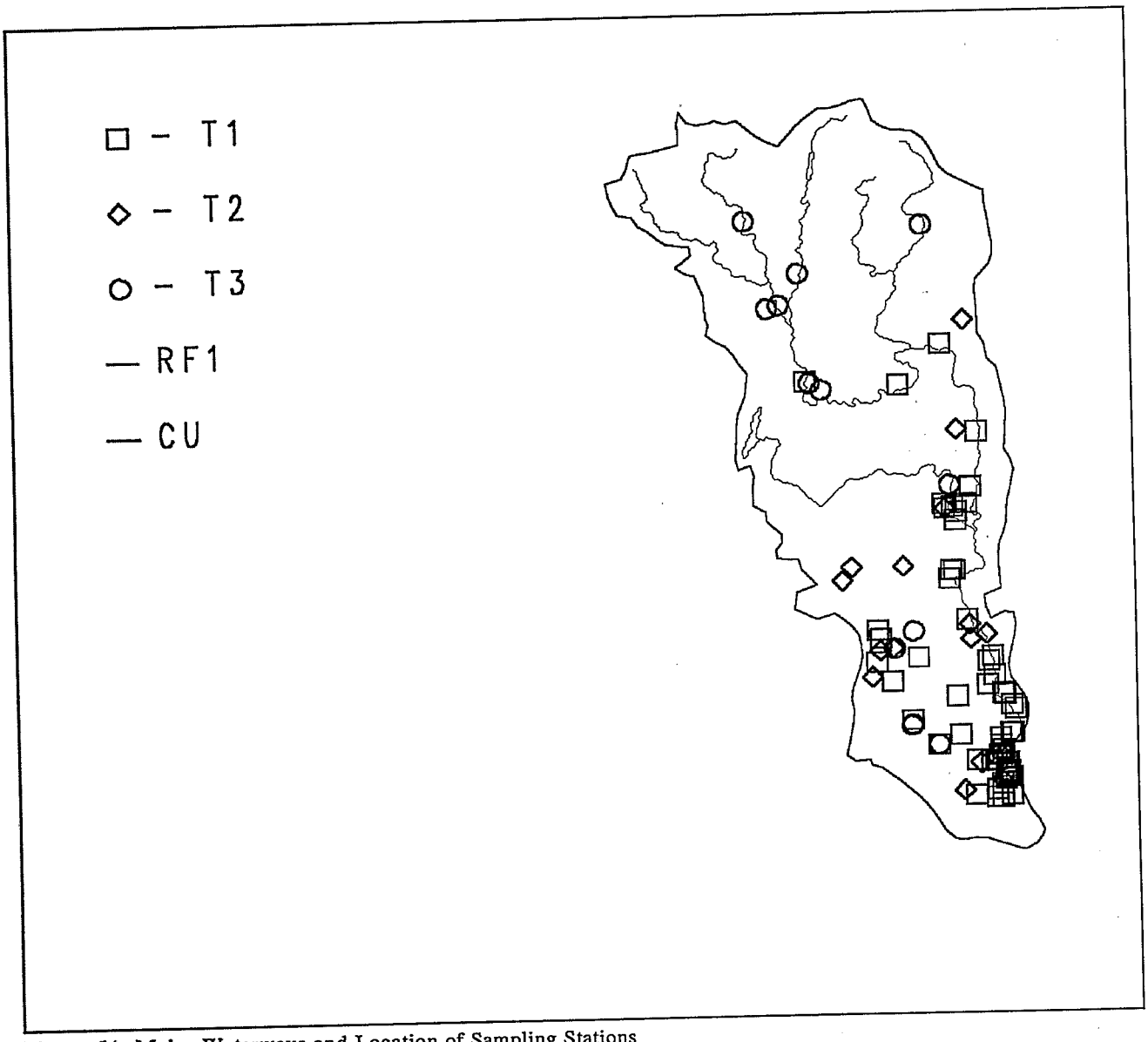

Figure 54. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 19 Date Range: 1980

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 27 Date Range: 1982-89

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 8 Date Range: 1980-93

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 35 Date Range: 1980-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	71	46	43	3	16	2	27	19
Copper	60	43	.	43	.	43	.	.
Cadmium	57	41	.	41	.	41	.	.
Lead	58	37	.	37	.	36	.	1
Zinc	43	34	.	34	.	34	.	.
DDT	54	32	5	27	5	17	.	16
Mercury	61	27	5	22	5	22	.	.
Bis(2-ethylhexyl)phthalate	31	26	10	16	10	16	.	10
Nickel	27	25	.	25	.	25	.	.
Benzo(a)pyrene	32	24	18	6	18	6	.	24
Pyrene	31	24	14	10	14	10	.	.
Fluoranthene	32	24	13	11	13	11	.	.
Indeno(1,2,3-cd)pyrene	32	23	.	23	.	22	.	23
Dieldrin	53	22	.	22	.	13	.	9
Benzo(ghi)perylene	31	20	.	20	.	20	.	.
Arsenic	59	19	2	17	2	17	.	.
Chromium	59	18	4	14	4	14	.	.
Fluorene	31	17	11	6	11	6	.	.
Dibenzo(a,h)anthracene	31	16	16	.	16	.	.	16
Phenanthrene	23	16	11	5	11	5	.	.
Acenaphthene	31	16	8	8	8	8	.	.
Chlordane	51	16	.	16	.	14	.	16
Chrysene	22	14	10	4	10	4	.	.
Benzo(a)anthracene	22	12	8	4	8	4	.	12
Benzo(b)fluoranthene	22	12	.	12	.	1	.	12
Benzo(a)anthracene/Chrysene	10	10	10	.	10	.	.	10
Anthracene	22	10	4	6	4	6	.	.
Acenaphthylene	31	10	2	8	2	8	.	.
Anthracene&Phenanthrene	9	9	9	.	9	.	.	.
Diethyl phthalate	31	9	3	6	3	6	.	.
Naphthalene	30	9	3	6	3	6	.	.
Diazinon/Spectracide	27	7	.	7	.	7	.	.
Benzo(k)fluoranthene	22	5	.	5	.	1	.	5
BHC	42	3	1	2	1	.	.	2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Butyl benzyl phthalate	25	3	.	3	.	3	.	.
Dioxins	2	2	2	.	.	.	2	.
Aldrin	41	2	.	2	.	.	.	2
Dimethylphenol, 2,4-	24	2	.	2	.	2	.	.
Dichlorobenzene, 1,4-	23	1	1	.	1	.	.	.
Di-n-butyl phthalate	30	1	.	1	.	1	.	.
Heptachlor	29	1	.	1	.	.	.	1
Heptachlor epoxide	29	1	.	1	.	.	.	1
Malathion	27	1	.	1	.	1	.	.
Nitrosodiphenylamine, N-	23	1	.	1	.	1	.	.
Toxaphene	32	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	31	401.29	210.00	16	2470.00	210.00
Acenaphthylene	31	151.29	0.00	10	1220.00	110.00
Aldrin	31	4.52	0.00	2	70.00	70.00
Anthracene	22	435.91	0.00	10	2000.00	340.00
Anthracene&Phenanthrene	9	14961.11	15300.00	9	36200.00	1390.00
Antimony	22	500.00	0.00	10	2000.00	1000.00
Arsenic	43	18639.53	7000.00	43	200000.0	1000.00
Benzo(a)anthracene	22	1515.00	615.00	12	8000.00	420.00
Benzo(a)anthracene/Chrysene	10	21389.00	15500.00	10	82900.00	2050.00
Benzo(a)pyrene	32	3408.75	1800.00	24	19100.00	500.00
Benzo(b)fluoranthene	22	1046.36	600.00	12	6100.00	460.00
Benzo(ghi)perylene	31	2323.23	1400.00	22	9100.00	490.00
Benzo(k)fluoranthene	22	1159.09	945.00	13	6000.00	510.00
Bis(2-ethylhexyl)phthalate	31	3578.06	830.00	26	19000.00	220.00
Bromophenyl phenyl ether, 4-	22	0.00	0.00	0	.	.
Butyl benzyl phthalate	25	327.20	0.00	9	2200.00	220.00
BHC	30	0.33	0.00	1	10.00	10.00
Cadmium	43	4676.74	3000.00	41	17500.00	800.00
Chlordane	27	7.19	7.00	15	20.00	2.00
Chromium	44	89545.45	42500.00	43	616000.0	15000.00
Chrysene	22	2492.73	1500.00	14	8800.00	800.00
Copper	44	80204.55	52500.00	44	380000.0	2000.00
Di-n-butyl phthalate	30	209.00	0.00	10	3800.00	100.00
Di-n-octyl phthalate	27	55.56	0.00	5	520.00	140.00
Diazinon/Spectracide	29	0.23	0.00	13	2.20	0.10
Dibenzo(a,h)anthracene	31	1214.84	440.00	16	6250.00	440.00
Dichlorobenzene, 1,2-	22	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichlorobenzene, 1,3-	23	7.83	0.00	1	180.00	180.00
Dichlorobenzene, 1,4-	23	34.35	0.00	1	790.00	790.00
Dieldrin	29	0.45	0.00	13	1.00	1.00
Diethyl phthalate	31	221.29	0.00	10	2400.00	140.00
Dimethyl phthalate	22	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	24	22.92	0.00	2	410.00	140.00
DDT	96	9.01	3.00	70	160.00	0.05
Endosulfan mixed isomers	29	0.03	0.00	1	1.00	1.00
Endrin	29	0.01	0.00	1	0.40	0.40
Ethion/Bladen	24	0.01	0.00	2	0.10	0.10
Fluoranthene	32	8461.25	2575.00	24	64700.00	310.00
Fluorene	31	535.81	250.00	17	2640.00	210.00
Heptachlor	30	6.67	0.00	1	200.00	200.00
Heptachlor epoxide	30	1.34	0.00	2	40.00	0.20
Hexachlorobenzene	22	0.00	0.00	0	.	.
Hexachlorobutadiene	22	0.00	0.00	0	.	.
Hexachloroethane	22	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	32	2674.06	1675.00	23	11000.00	640.00
Isophorone	22	0.00	0.00	0	.	.
Lead	44	188068.2	95000.00	43	838000.0	20000.00
Malathion	29	0.04	0.00	1	1.10	1.10
Mercury	44	305.00	195.00	41	1480.00	40.00
Methoxychlor	29	0.00	0.00	0	.	.
Mirex/Dechlorane	29	0.03	0.00	1	1.00	1.00
Naphthalene	30	293.67	0.00	9	5680.00	220.00
Nickel	27	24592.59	21000.00	26	40000.00	10000.00
Nitrosodiphenylamine, N-	23	26.09	0.00	1	600.00	600.00
Pentachlorophenol	22	0.00	0.00	0	.	.
Phenanthrene	23	2225.22	1400.00	16	9900.00	220.00
Phenol	22	0.00	0.00	0	.	.
Polychlorinated biphenyls	76	1425.37	85.00	46	9660.00	20.00
Pyrene	31	6195.48	2000.00	24	48900.00	290.00
Silver	1	0.00	0.00	0	.	.
Toxaphene	28	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	22	0.00	0.00	0	.	.
Zinc	43	302139.5	220000.0	43	919000.0	73000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	23	0.00	0.00	0	.	.
Arsenic	32	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
BHC	43	1.31	0.00	4	20.00	6.28
Cadmium	30	3.00	0.00	2	50.00	40.00
Chlordane	264	5.48	0.00	23	120.00	30.90
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	31	126.77	0.00	8	800.00	30.00
Copper	32	2069.37	1800.00	32	5000.00	810.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	68	11.09	0.00	16	150.00	0.02
Dioxins	6	6666.69	0.04	6	20000.00	0.02
DDT	397	61.49	0.00	95	1800.00	50.00
Endrin	26	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Hexachlorobenzene	26	0.18	0.00	3	4.69	0.01
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	29	234.48	0.00	2	6000.00	800.00
Mercury	33	64.24	40.00	30	280.00	20.00
Methoxychlor	22	0.00	0.00	0	.	.
Mirex/Dechlorane	1	2.90	2.90	1	2.90	2.90
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Pentachlorophenol	19	0.00	0.00	0	.	.
Polychlorinated biphenyls	130	10805.46	2900.00	104	160000.0	210.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	9	111.11	0.00	1	1000.00	1000.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	7	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	7	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.

St. Joseph 04050001

Watershed Summary Information

Accounting Unit Name:	Southeastern Lake Michigan
State(s):	MI IN
Political Boundaries:	St Joseph, Elkhart, Branch, Cass, Kalamazoo, Berrien, Lagrange, Noble, Calhoun, St Joseph, Van Buren, Hillsdale, Steuben, Kosciusko
Major Waterways:	St Joseph R Elkhart R Paw Paw R Dowagiac R Prairie R
Number of Stations in Watershed:	Tier1 - 17 Tier2 - 9 Tier3 - 6

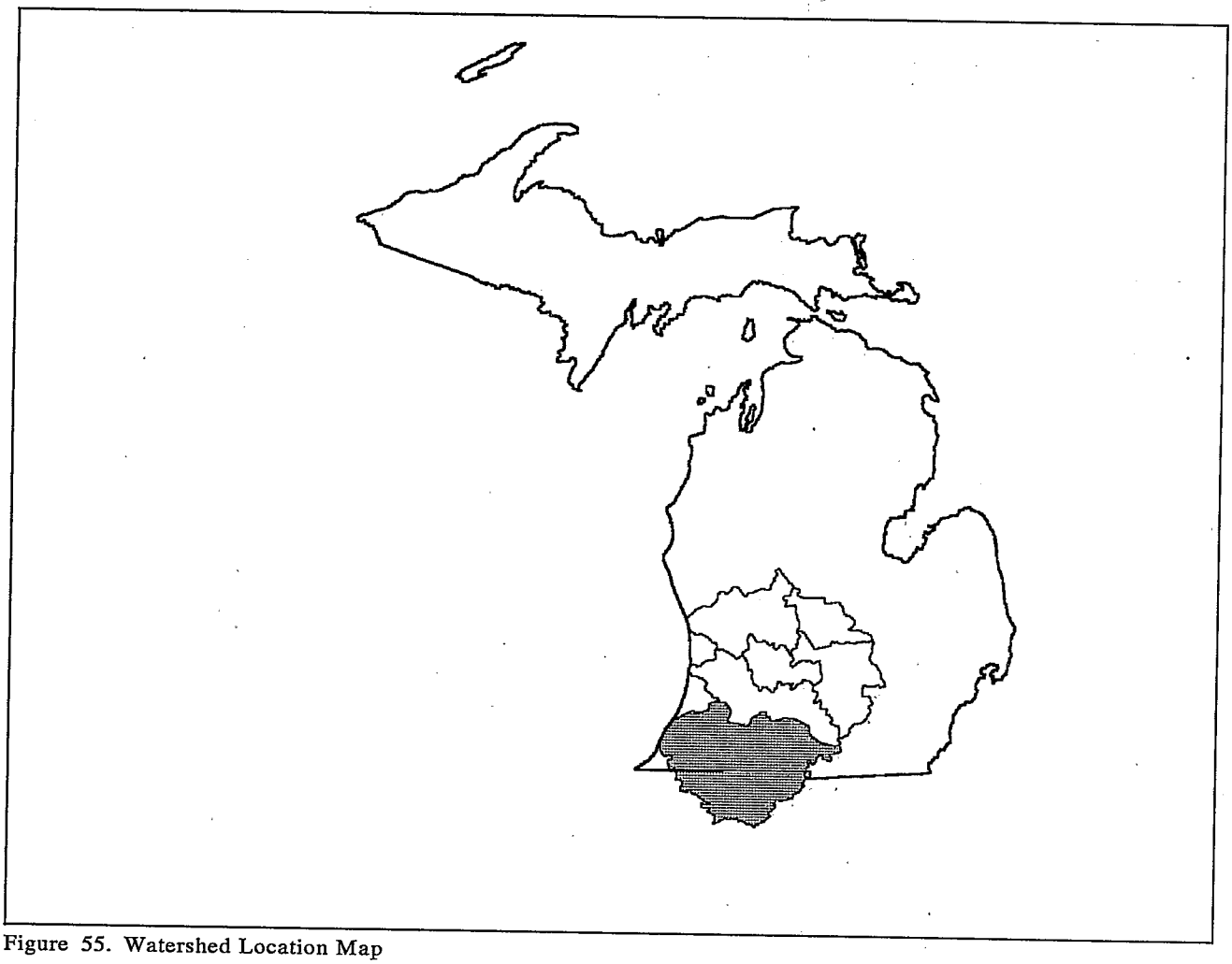

Figure 55. Watershed Location Map

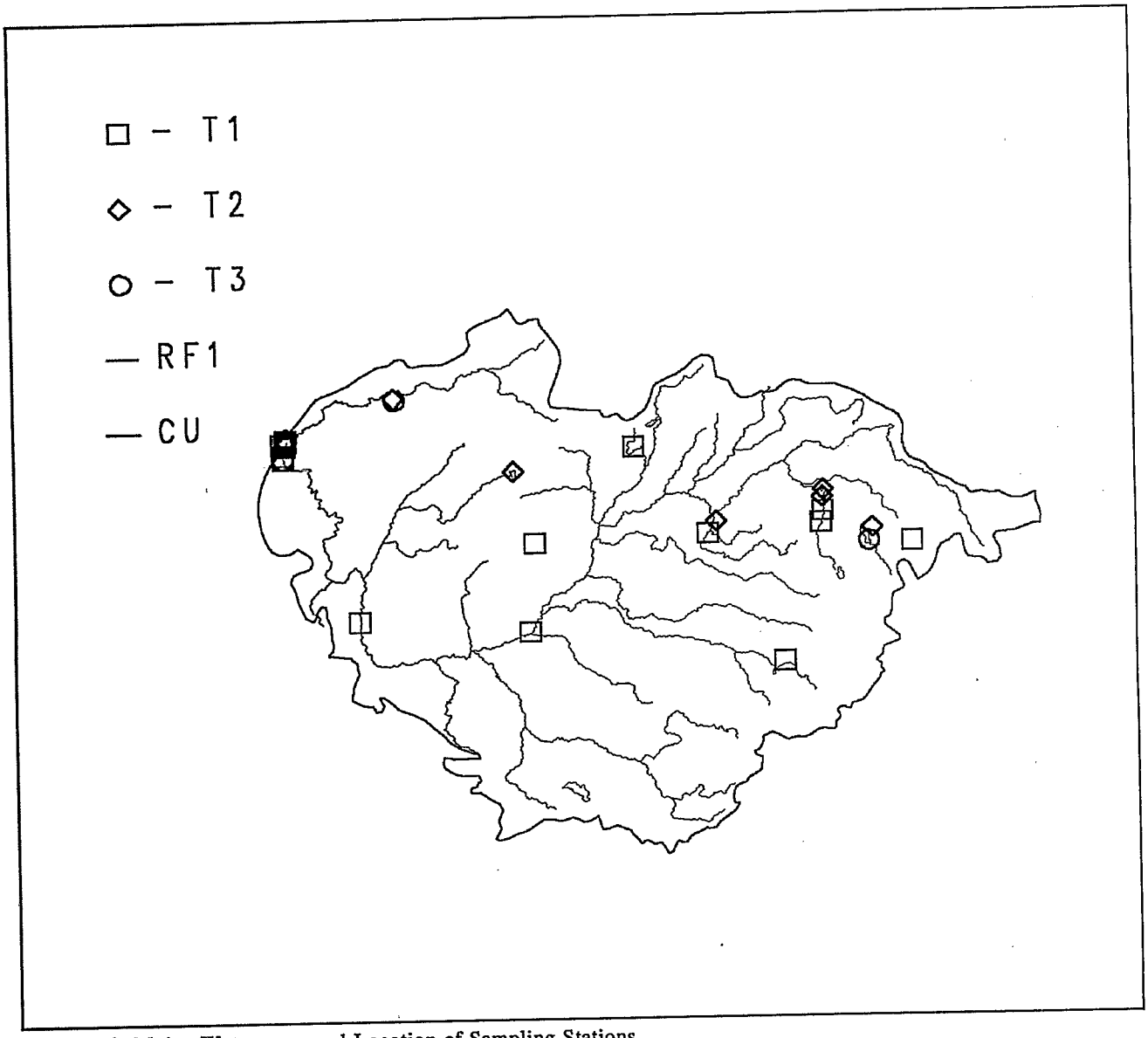

Figure 56. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 15 Date Range: 1981

Source: **STORET** Agency: **21IND**
Monitoring Program: **Indiana Board of Health General Water Quality & Bioassay Data**
Num. of Stations: 3 Date Range: 1980-88

Source: **STORET** Agency: **21MICH**
Monitoring Program: **Michigan Dept of Nat Res Surface Water Quality Data - Surface Water Quality Division**

Num. of Stations: 14 Date Range: 1980

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	27	15	.	15	.	13	.	2
DDT	16	12	7	5	7	2	.	11
Copper	28	10	.	10	.	10	.	.
Zinc	28	9	.	9	.	9	.	.
Pyrene	10	8	5	3	5	3	.	.
Nickel	25	7	.	7	.	7	.	.
Anthracene	8	6	5	1	5	1	.	.
Phenanthrene	6	6	4	2	4	2	.	.
Fluoranthene	9	6	1	5	1	5	.	.
Bis(2-ethylhexyl)phthalate	7	5	3	2	3	2	.	3
Naphthalene	6	5	.	5	.	5	.	.
Benzo(a)anthracene/Chrysene	4	4	2	2	2	2	.	4
BHC	4	4	1	3	1	.	.	4
Cadmium	27	4	.	4	.	4	.	.
Chlordane	16	4	.	4	.	1	.	4
Polychlorinated biphenyls	15	3	3	.	.	.	3	.
Diethyl phthalate	5	3	1	2	1	2	.	.
Anthracene&Phenanthrene	3	3	.	3	.	3	.	.
Arsenic	3	3	.	3	.	.	.	3
Dieldrin	15	3	.	3	.	.	.	3
Fluorene	5	3	.	3	.	3	.	.
Heptachlor epoxide	3	3	.	3	.	.	.	3
Chromium	28	2	1	1	1	1	.	.
Acenaphthene	4	2	.	2	.	2	.	.
Di-n-butyl phthalate	5	2	.	2	.	2	.	.
Hexachlorobenzene	16	2	.	2	.	1	.	2

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	2	335.00	335.00	2	500.00	170.00
Anthracene	6	7200.00	3850.00	6	16200.00	700.00
Anthracene&Phenanthrene	3	423.33	250.00	3	920.00	100.00
Benzo(a)anthracene/Chrysene	4	181500.0	4500.00	4	716000.0	1000.00
Bis(2-ethylhexyl)phthalate	6	2398.33	1555.00	6	7600.00	80.00
BHC	2	1850.00	1850.00	2	3400.00	300.00
Cadmium	24	529.17	0.00	8	4000.00	300.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chlordane	13	46.15	0.00	1	600.00	600.00
Chromium	25	30584.00	8400.00	23	420000.0	4700.00
Copper	25	86720.00	17000.00	22	1600000	2000.00
Di-n-butyl phthalate	4	2000.00	1150.00	4	5500.00	200.00
Dieldrin	12	0.00	0.00	0	.	.
Diethyl phthalate	3	800.00	500.00	3	1600.00	300.00
DDT	49	23.37	0.00	14	400.00	12.00
Fluoranthene	7	3660.00	830.00	7	18900.00	80.00
Fluorene	3	143.33	80.00	3	300.00	50.00
Hexachlorobenzene	13	30.77	0.00	1	400.00	400.00
Lead	24	44250.00	33000.00	21	140000.0	7000.00
Mercury	12	0.00	0.00	0	.	.
Naphthalene	5	134.00	90.00	5	270.00	50.00
Nickel	25	22200.00	8100.00	22	170000.0	5000.00
Phenanthrene	6	8433.33	8750.00	6	16200.00	200.00
Polychlorinated biphenyls	36	0.00	0.00	0	.	.
Pyrene	8	19255.00	5750.00	8	73500.00	490.00
Silver	10	60.00	0.00	2	300.00	300.00
Trichlorobenzene, 1,2,4-	1	40.00	40.00	1	40.00	40.00
Zinc	25	141120.0	80000.00	25	1000000	7000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	2	0.00	0.00	0	.	.
Acetone	2	155.00	155.00	2	160.00	150.00
Aldrin	4	0.00	0.00	0	.	.
Anthracene	2	0.00	0.00	0	.	.
Arsenic	18	75.28	67.50	18	199.00	31.00
Benzene	2	0.00	0.00	0	.	.
Benzo(a)anthracene	2	0.00	0.00	0	.	.
Benzo(a)pyrene	2	0.00	0.00	0	.	.
Benzo(b)fluoranthene	2	0.00	0.00	0	.	.
Benzo(k)fluoranthene	2	0.00	0.00	0	.	.
Benzoic acid	2	0.00	0.00	0	.	.
Benzyl alcohol	2	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	2	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromodichloromethane	2	0.00	0.00	0	.	.
Bromomethane	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	94	15.62	2.00	70	159.00	1.00
Cadmium	22	96.14	30.00	15	820.00	14.00
Carbon disulfide	2	24.50	24.50	2	26.00	23.00
Chlordane	166	349.29	85.50	162	5791.00	2.00
Chlorobenzene	2	0.00	0.00	0	.	.
Chloroethane	2	0.00	0.00	0	.	.
Chloroethene	2	0.00	0.00	0	.	.
Chloromethane	2	0.00	0.00	0	.	.
Chloronaphthalene, 2-	2	0.00	0.00	0	.	.
Chlorophenol, 2-	2	0.00	0.00	0	.	.
Chromium	18	339.33	295.00	16	854.00	180.00
Chrysene	2	0.00	0.00	0	.	.
Copper	18	1129.22	970.00	18	2400.00	600.00
Cresol, o	2	0.00	0.00	0	.	.
Cresol, p-	2	0.00	0.00	0	.	.
Di-n-butyl phthalate	1	3800.00	3800.00	1	3800.00	3800.00
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	2	0.00	0.00	0	.	.
Dibenzofuran	2	0.00	0.00	0	.	.
Dibromochloromethane	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	2	0.00	0.00	0	.	.
Dichloroethane 1,1-	2	0.00	0.00	0	.	.
Dichloroethane 1,2-	2	0.00	0.00	0	.	.
Dichloroethene, 1,1-	2	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	2	0.00	0.00	0	.	.
Dichloropropane, 1,2-	2	0.00	0.00	0	.	.
Dieldrin	32	413.09	78.00	28	5460.00	1.00
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	2	0.00	0.00	0	.	.
DDT	132	446.14	48.50	112	10180.00	0.02
Endosulfan, alpha-	4	0.00	0.00	0	.	.
Endosulfan, beta-	4	0.00	0.00	0	.	.
Endrin	4	0.00	0.00	0	.	.
Fluoranthene	2	0.00	0.00	0	.	.
Fluorene	2	0.00	0.00	0	.	.
Heptachlor	4	0.00	0.00	0	.	.
Heptachlor epoxide	32	62.22	15.00	28	648.00	1.00
Hexachlorobenzene	36	15.36	3.00	29	93.00	1.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	2	0.00	0.00	0	.	.
Isophorone	2	0.00	0.00	0	.	.
Lead	22	1330.36	40.00	11	22700.00	80.00
Mercury	16	135.75	110.00	15	500.00	34.00
Methoxychlor	4	0.00	0.00	0	.	.
Methyl ethyl ketone	2	0.00	0.00	0	.	.
Methyl isobutyl ketone	2	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nitrobenzene	2	0.00	0.00	0	.	.
Nitrophenol, 4	2	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	2	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	44	11631.39	3427.00	44	110300.0	53.00
Pyrene	2	0.00	0.00	0	.	.
Styrene	2	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	2	0.00	0.00	0	.	.
Tetrachloroethene	2	3.00	3.00	1	6.00	6.00
Tetrachloromethane	2	0.00	0.00	0	.	.
Toluene	1	5.00	5.00	1	5.00	5.00
Toxaphene	4	0.00	0.00	0	.	.
Tribromomethane/Bromoform	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	2	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	2	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	2	0.00	0.00	0	.	.
Vinyl acetate	2	0.00	0.00	0	.	.
Xylenes	2	18.50	18.50	2	19.00	18.00
Zinc	10	52320.00	36750.00	10	112000.0	19000.00

Manistee 04060103

Watershed Summary Information

Accounting Unit Name: Northeastern Lake Michigan

State(s): MI

Political Boundaries: Manistee, Kalkaska, Wexford, Crawford, Missaukee, Lake, Mason, Osceola, Otsego

Major Waterways:
Manistee R
Little Manistee R
Pine R
Tippy Dam Pond
Manistee L

Number of Stations in Watershed:
Tier1 - 11
Tier2 - 3
Tier3 - .

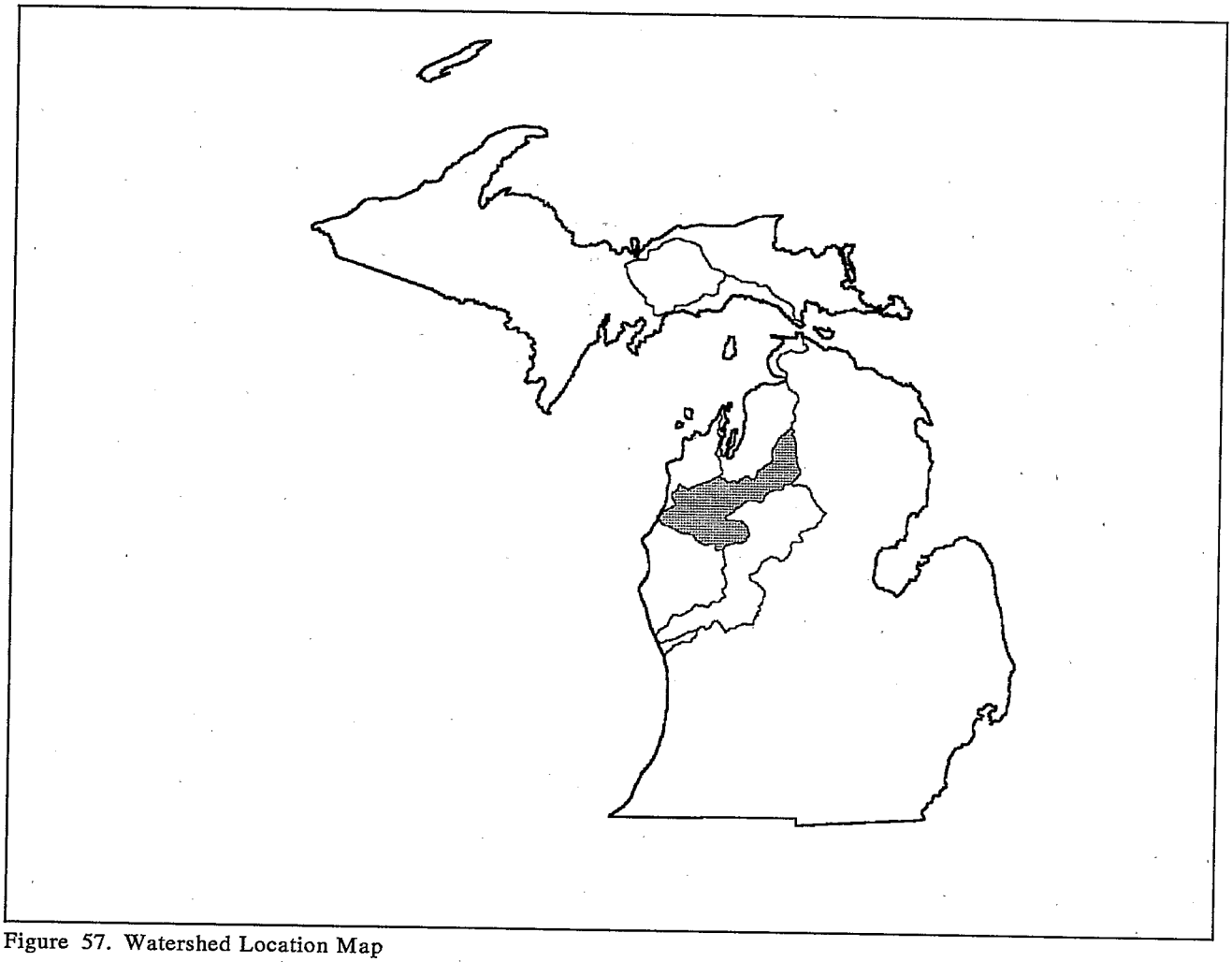

Figure 57. Watershed Location Map

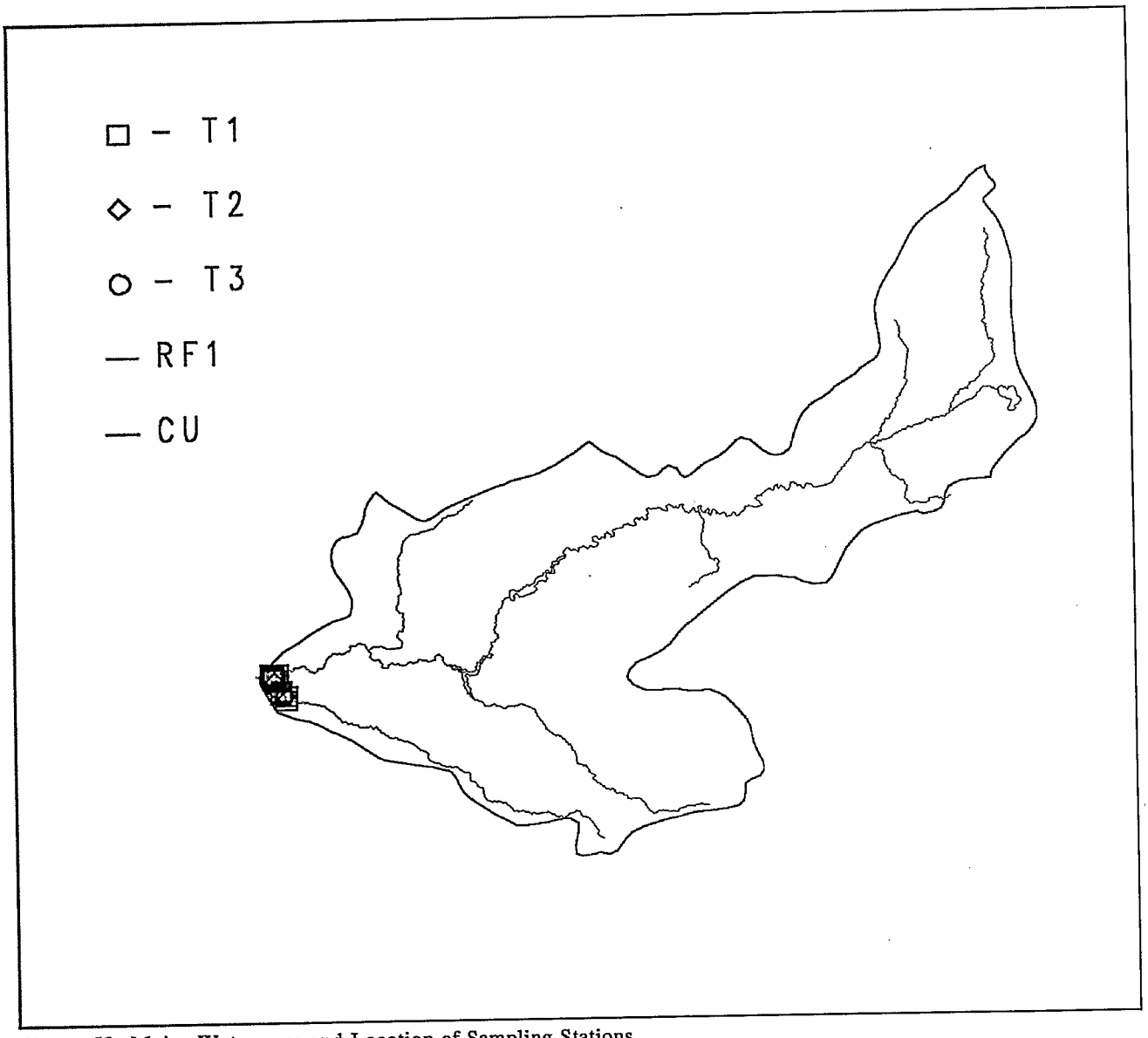

Figure 58. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 1115GLSB
Monitoring Program: USEPA Region 5 Great Lakes Surveillance Branch Data
Num. of Stations: 14 Date Range: 1981

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	14	14	3	11	3	9	.	14
DDT	14	14	2	12	2	12	.	3
Anthracene&Phenanthrene	13	13	8	5	8	5	.	.
Fluoranthene	13	13	.	13	.	13	.	.
Naphthalene	12	12	10	2	10	2	.	.
Pyrene	13	12	4	8	4	8	.	.
Copper	14	10	.	10	.	10	.	.
Mercury	14	9	2	7	2	7	.	.
Lead	14	9	.	9	.	9	.	.
Nickel	14	9	.	9	.	9	.	.
Zinc	14	7	.	7	.	7	.	.
Benzo(a)anthracene/Chrysene	6	6	5	1	5	1	.	6
Acenaphthylene	5	5	2	3	2	3	.	.
Acenaphthene	5	5	1	4	1	4	.	.
Aldrin	6	5	.	5	.	.	.	5
Bis(2-ethylhexyl)phthalate	5	5	.	5	.	5	.	.
BHC	5	5	.	5	.	5	.	.
Fluorene	5	5	.	5	.	5	.	.
Cadmium	14	4	.	4	.	4	.	.
Chlordane	7	3	.	3	.	3	.	.
Benzo(a)pyrene	2	2	1	1	1	1	.	2
Silver	14	2	1	1	1	1	.	.
Dieldrin	3	2	.	2	.	2	.	.
Heptachlor	5	2	.	2	.	.	.	2
Hexachlorobenzene	8	2	.	2	.	2	.	.
Methoxychlor	2	2	.	2	.	2	.	.
Chromium	14	1	.	1	.	1	.	.
Diethyl phthalate	1	1	.	1	.	1	.	.
Dimethyl phthalate	1	1	.	1	.	1	.	.
Endosulfan, beta-	14	1	.	1	.	1	.	.
Heptachlor epoxide	1	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	5	450.00	280.00	5	1400.00	60.00
Acenaphthylene	5	840.00	600.00	5	1850.00	150.00
Aldrin	6	5.67	4.50	5	13.00	2.00
Anthracene&Phenanthrene	13	1944.62	1190.00	13	5100.00	170.00
Benzo(a)anthracene/Chrysene	6	8616.67	3970.00	6	33500.00	880.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)pyrene	2	4640.00	4640.00	2	8160.00	1120.00
Bis(2-ethylhexyl)phthalate	5	1354.00	1500.00	5	1930.00	440.00
BHC	8	3.13	3.00	7	9.00	1.00
Cadmium	14	550.00	450.00	10	2500.00	300.00
Chlordane	7	2.86	2.00	5	9.00	2.00
Chromium	14	38814.29	26000.00	14	230000.0	3100.00
Copper	14	67042.86	51000.00	14	220000.0	7700.00
Di-n-butyl phthalate	13	459.85	407.00	13	1118.00	115.00
Dieldrin	3	0.67	1.00	2	1.00	1.00
Diethyl phthalate	1	610.00	610.00	1	610.00	610.00
Dimethyl phthalate	1	840.00	840.00	1	840.00	840.00
DCPA/Dacthal	11	2.55	3.00	8	8.00	1.00
DDT	64	8.45	4.00	57	63.00	1.00
Endosulfan, alpha-	1	1.00	1.00	1	1.00	1.00
Endosulfan, beta-	14	5.07	3.00	14	19.00	1.00
Endrin	1	6.00	6.00	1	6.00	6.00
Fluoranthene	13	1831.54	1320.00	13	4800.00	120.00
Fluorene	5	250.00	260.00	5	400.00	90.00
Heptachlor	5	3.20	2.00	5	6.00	1.00
Heptachlor epoxide	1	11.00	11.00	1	11.00	11.00
Hexachlorobenzene	8	23.00	3.00	6	88.00	1.00
Lead	14	65857.14	82500.00	13	110000.0	12000.00
Mercury	14	307.14	250.00	10	1100.00	100.00
Methoxychlor	2	23.00	23.00	2	24.00	22.00
Naphthalene	12	2252.50	980.00	12	8600.00	230.00
Nickel	14	25192.86	17500.00	14	150000.0	3500.00
Polychlorinated biphenyls	46	86.41	58.50	46	634.00	9.00
Pyrene	13	3000.77	1350.00	13	16400.00	120.00
Silver	14	528.57	0.00	4	5300.00	300.00
Zinc	14	137428.6	120000.0	14	260000.0	22000.00

Lake St. Clair 04090002

Watershed Summary Information

Accounting Unit Name:	St. Clair-Detroit
State(s):	MI
Political Boundaries:	St Clair, Macomb, Wayne
Major Waterways:	Middle Channel Clinton R South Channel North Channel L St Clair
Number of Stations in Watershed:	Tier1 - 13 Tier2 - 5 Tier3 - 1

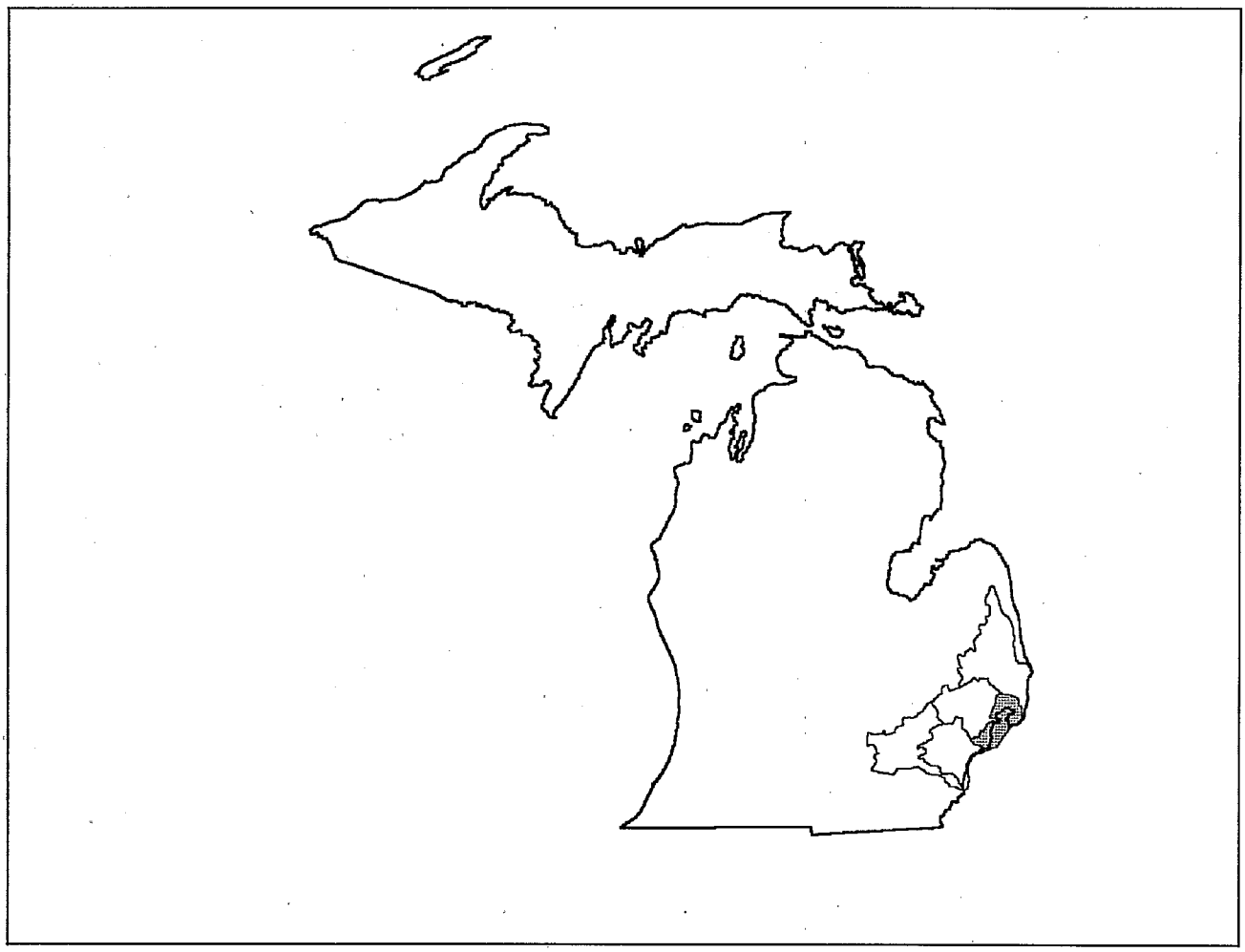

Figure 59. Watershed Location Map

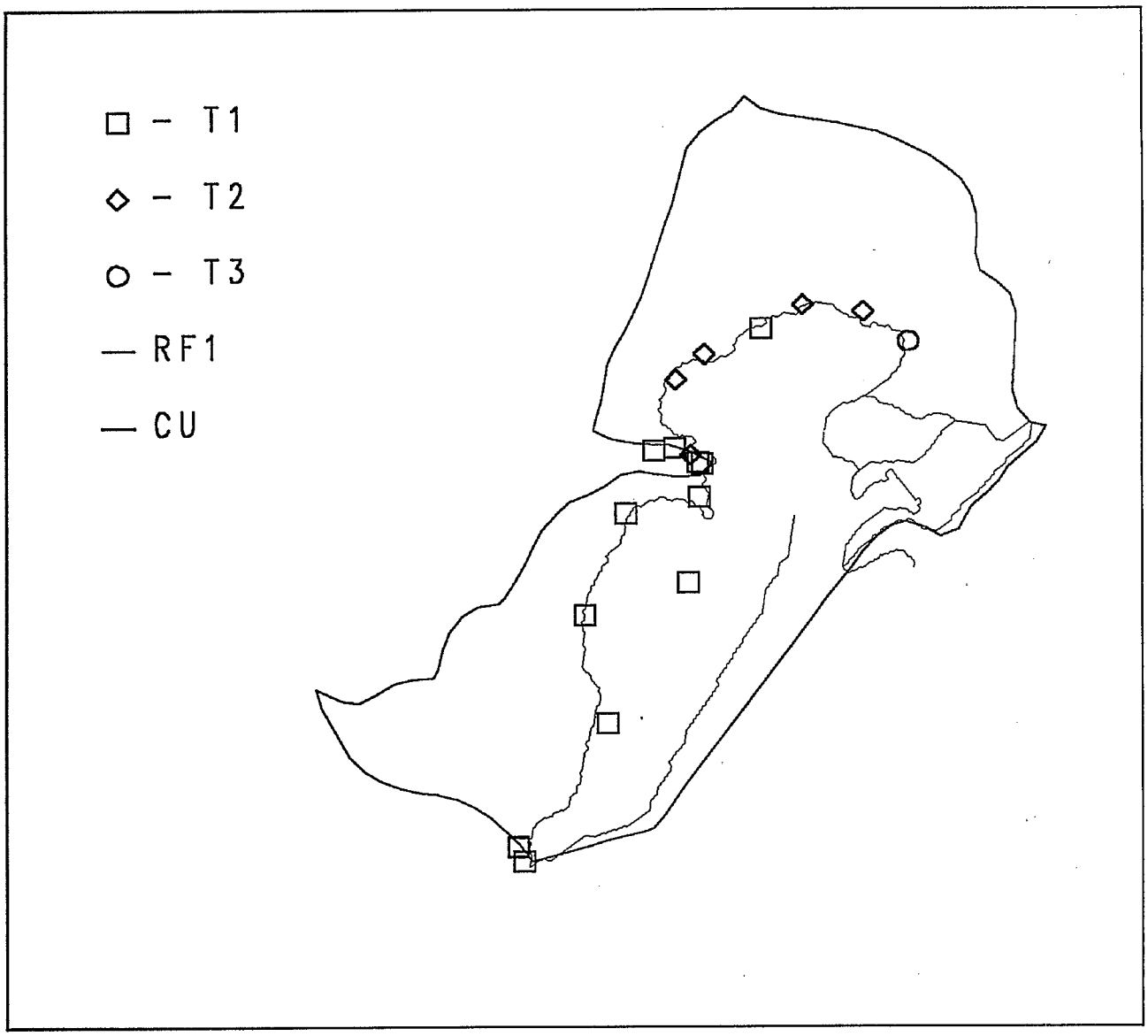

Figure 60. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 17 Date Range: 1981-85

Source: **STORET** Agency: **21MICH**
Monitoring Program: **Michigan Dept of Nat Res Surface Water Quality Data - Surface Water Quality Division**
Num. of Stations: 2 Date Range: 1980-82

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	16	16	10	6	9	6	1	15
DDT	15	15	8	7	8	6	.	9
Copper	17	15	.	15	.	15	.	.
Nickel	17	15	.	15	.	15	.	.
Lead	17	14	.	14	.	14	.	.
Bis(2-ethylhexyl)phthalate	14	13	9	4	9	4	.	9
Pyrene	14	13	1	12	1	12	.	.
Chlordane	14	13	.	13	.	12	.	9
Fluoranthene	14	13	.	13	.	13	.	.
Mercury	17	11	1	10	1	10	.	.
Zinc	17	10	.	10	.	10	.	.
Benzo(a)anthracene/Chrysene	8	8	5	3	5	3	.	8
Silver	17	8	2	6	2	6	.	.
Cadmium	18	8	.	8	.	8	.	.
Phenanthrene	9	8	.	8	.	8	.	.
Di-n-butyl phthalate	13	6	.	6	.	6	.	.
Benzo(a)pyrene	6	5	3	2	3	2	.	5
Chromium	18	5	2	3	2	3	.	.
Dieldrin	6	5	.	5	.	5	.	5
Fluorene	6	5	.	5	.	5	.	.
Naphthalene	6	5	.	5	.	5	.	.
Anthracene	5	4	.	4	.	4	.	.
Arsenic	14	4	.	4	.	4	.	.
BHC	4	4	.	4	.	4	.	2
Anthracene&Phenanthrene	3	3	1	2	1	2	.	.
Diethyl phthalate	6	3	.	3	.	3	.	.
Acenaphthene	3	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	3	2	.	2	.	2	.	2
Aldrin	1	1	.	1	.	.	.	1
Benzo(b)fluoranthene	2	1	.	1	.	.	.	1
Benzo(ghi)perylene	3	1	.	1	.	1	.	.
Butyl benzyl phthalate	3	1	.	1	.	1	.	.
Dichlorobenzene, 1,2-	1	1	.	1	.	1	.	.
Endosulfan, beta-	5	1	.	1	.	1	.	.
Heptachlor epoxide	2	1	.	1	.	.	.	1
Hexachlorobenzene	8	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	4	47.50	45.00	2	100.00	90.00
Acenaphthylene	2	0.00	0.00	0	.	.
Aldrin	1	12.00	12.00	1	12.00	12.00
Anthracene	6	146.67	190.00	4	300.00	180.00
Anthracene&Phenanthrene	3	640.00	400.00	3	1190.00	330.00
Antimony	2	0.00	0.00	0	.	.
Arsenic	16	5175.00	5300.00	15	9500.00	1300.00
Benzene	5	5.40	5.00	3	11.00	5.00
Benzo(a)anthracene	2	0.00	0.00	0	.	.
Benzo(a)anthracene/Chrysene	8	2406.25	2050.00	8	6400.00	400.00
Benzo(a)pyrene	7	1388.57	1200.00	5	2800.00	1000.00
Benzo(b)fluoranthene	3	780.00	0.00	1	2340.00	2340.00
Benzo(ghi)perylene	4	425.00	300.00	2	1100.00	600.00
Bis(2-ethylhexyl)phthalate	15	5179.33	3400.00	13	16200.00	490.00
Butyl benzyl phthalate	4	425.00	400.00	2	900.00	800.00
BHC	4	15.50	15.00	4	29.00	3.00
Cadmium	18	2300.00	450.00	12	13000.00	300.00
Chlordane	13	32.77	17.00	13	196.00	2.00
Chromium	18	65222.22	33500.00	18	280000.0	4700.00
Chrysene	2	0.00	0.00	0	.	.
Copper	18	58850.00	45000.00	18	130000.0	4800.00
Di-n-butyl phthalate	14	1135.71	333.00	12	4000.00	85.00
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	2	0.00	0.00	0	.	.
Dibenzofuran	1	50.00	50.00	1	50.00	50.00
Dichlorobenzene, 1,2-	1	100.00	100.00	1	100.00	100.00
Dichlorobenzene, 1,3-	2	75.00	75.00	2	100.00	50.00
Dichloromethane	11	114.83	1.50	9	940.00	0.90
Dieldrin	5	14.20	4.00	5	47.00	3.00
Diethyl phthalate	7	157.14	100.00	5	300.00	100.00
DCPA/Dacthal	3	16.67	21.00	3	27.00	2.00
DDT	57	36.84	15.00	55	240.00	3.00
Endosulfan, beta-	5	8.20	6.00	5	17.00	3.00
Endrin	2	1.00	1.00	1	2.00	2.00
Fluoranthene	15	976.00	700.00	13	2700.00	200.00
Fluorene	7	131.43	100.00	5	500.00	60.00
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	1	6.00	6.00	1	6.00	6.00
Hexachlorobenzene	7	4.43	3.00	4	17.00	3.00
Indeno(1,2,3-cd)pyrene	4	400.00	350.00	2	900.00	700.00
Lead	18	107811.1	74000.00	18	410000.0	10000.00
Mercury	17	294.12	300.00	15	800.00	100.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	1	9.00	9.00	1	9.00	9.00
Naphthalene	7	144.29	120.00	5	340.00	100.00
Nickel	18	52133.33	32500.00	18	200000.0	6000.00
Phenanthrene	10	548.00	450.00	8	1100.00	200.00
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	31	501.77	223.00	28	2210.00	31.00
Pyrene	15	989.33	700.00	13	3200.00	200.00
Silver	18	1072.22	500.00	10	4200.00	400.00
Tetrachloroethane, 1,1,2,2-	1	12.20	12.20	1	12.20	12.20
Toluene	3	5.33	5.00	3	6.00	5.00
Tribromomethane/Bromoform	1	7.70	7.70	1	7.70	7.70
Trichloroethane, 1,1,1-	2	0.00	0.00	0	.	.
Trichloroethene	3	3.33	0.00	1	10.00	10.00
Trichloromethane/Chloroform	2	0.00	0.00	0	.	.
Zinc	18	193644.4	140000.0	18	590000.0	19000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cadmium	20	0.00	0.00	0	.	.
Chlordane	20	11.50	0.00	1	230.00	230.00
Chromium	20	113.50	120.00	12	400.00	120.00
Dieldrin	20	0.00	0.00	0	.	.
DDT	80	292.60	230.00	61	1920.00	74.00
Heptachlor epoxide	20	0.00	0.00	0	.	.
Hexachlorobenzene	20	25.40	18.50	18	82.00	5.00
Mercury	20	195.50	190.00	18	380.00	100.00
Polychlorinated biphenyls	80	1255.00	1050.00	60	5400.00	310.00
Toxaphene	20	0.00	0.00	0	.	.

Detroit 04090004

Watershed Summary Information

Accounting Unit Name:	St. Clair-Detroit
State(s):	MI
Political Boundaries:	Wayne, Washtenaw, Oakland
Major Waterways:	Detroit R River Rouge Lower River Rouge
Number of Stations in Watershed:	Tier1 - 85 Tier2 - 29 Tier3 - 1

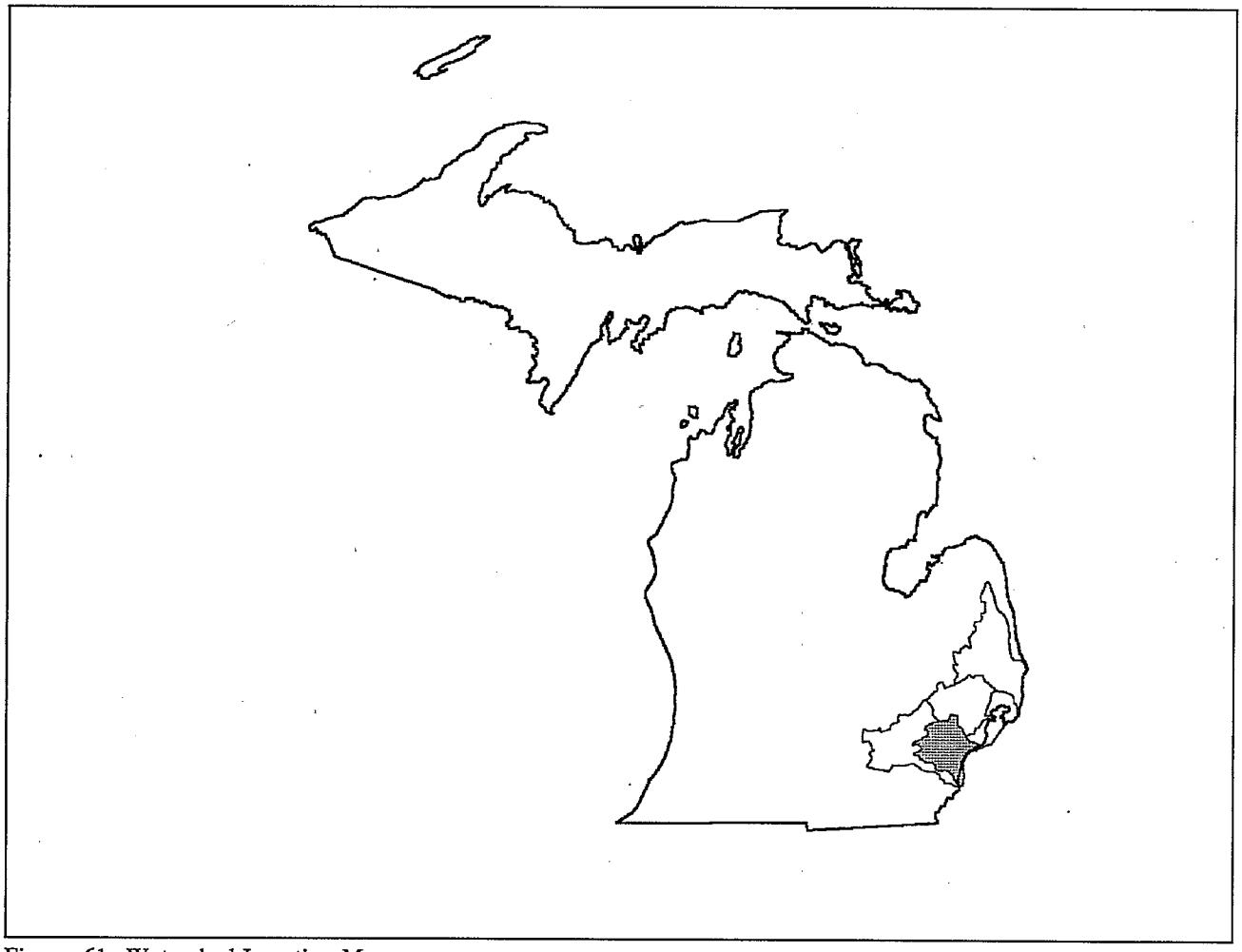

Figure 61. Watershed Location Map

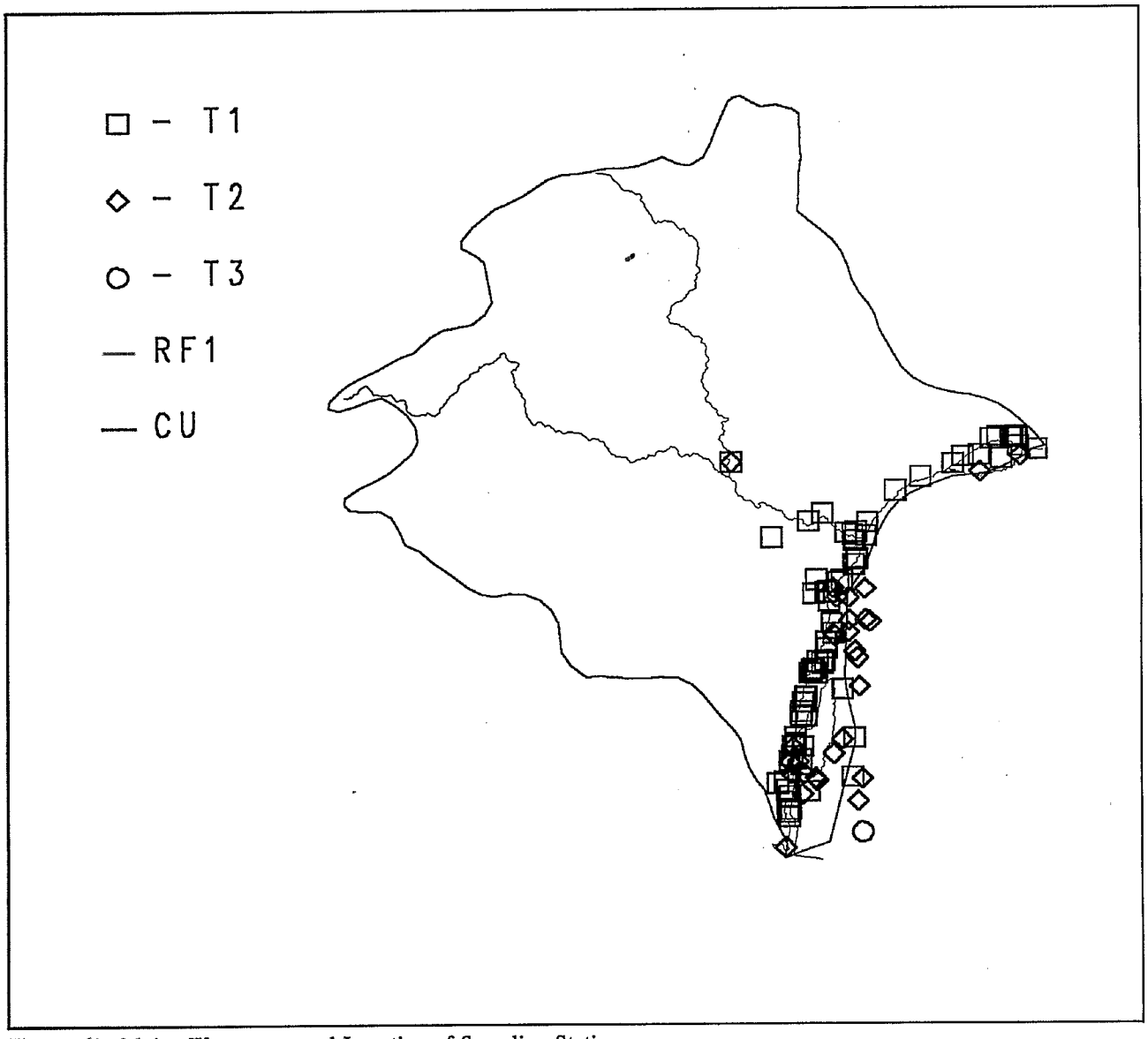

Figure 62. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1985

Source: **STORET** Agency: **11140100**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 52 Date Range: 1982-85

Source: **STORET** Agency: **21MICH**
Monitoring Program: **Michigan Dept of Nat Res Surface Water Quality Data - Surface Water Quality Division**
Num. of Stations: 31 Date Range: 1980-82

Source: **STORET** Agency: **51UGLCC**
Monitoring Program: **EPA And Canada Cooperative EPA Large Lakes Res Lab**
Num. of Stations: 30 Date Range: 1986

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	108	105	74	31	73	28	1	104
Nickel	113	105	.	105	.	105	.	.
Copper	112	97	.	97	.	97	.	.
Zinc	113	93	.	93	.	93	.	.
Lead	109	89	.	89	.	89	.	.
Cadmium	112	79	.	79	.	79	.	.
Mercury	104	69	42	27	42	27	.	.
Chromium	113	69	15	54	15	54	.	.
Fluoranthene	76	67	19	48	19	48	.	.
Pyrene	76	66	37	29	37	29	.	.
Phenanthrene	74	63	44	19	44	19	.	.
Naphthalene	66	51	34	17	34	17	.	.
Arsenic	73	50	.	50	.	50	.	.
DDT	48	48	41	7	41	7	.	40
Bis(2-ethylhexyl)phthalate	71	43	36	7	36	7	.	36
Anthracene	63	43	19	24	19	24	.	.
Benzo(a)pyrene	54	41	28	13	28	13	.	41
Fluorene	60	38	21	17	21	17	.	.
Chlordane	38	36	.	36	.	35	.	28
Indeno(1,2,3-cd)pyrene	54	36	.	36	.	32	.	36
Silver	82	35	16	19	16	19	.	.
Benzo(a)anthracene/Chrysene	34	34	33	1	33	1	.	34
Acenaphthene	55	29	13	16	13	16	.	.
Methylnaphthalene, 2-	28	28	16	12	16	12	.	.
Benzo(ghi)perylene	51	27	.	27	.	27	.	.
Acenaphthylene	41	19	5	14	5	14	.	.
Benzo(b)fluoranthene	29	19	.	19	.	4	.	19
Benzo(a)anthracene	29	18	5	13	5	13	.	17
Chrysene	29	17	4	13	4	13	.	2
Hexachlorobenzene	59	17	.	17	.	17	.	2
Dichlorobenzene, 1,4-	16	12	3	9	3	9	.	.
BHC	10	10	1	9	1	8	.	10
Dieldrin	10	10	.	10	.	9	.	10

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Phenol	43	10	.	10	.	10	.	.
Cresol, p-	17	8	.	8	.	8	.	.
Di-n-butyl phthalate	51	8	.	8	.	8	.	.
Dibenzofuran	18	7	2	5	2	5	.	.
Dimethylphenol, 2,4-	6	6	.	6	.	6	.	.
Ethylbenzene	20	6	.	6	.	6	.	.
Dibenzo(a,h)anthracene	29	5	3	2	3	2	.	5
Dichlorobenzene, 1,2-	6	5	1	4	1	4	.	.
Heptachlor epoxide	6	5	.	5	.	.	.	5
Xylenes	11	4	1	3	1	3	.	.
Aldrin	4	4	.	4	.	.	.	4
Heptachlor	32	2	.	2	.	.	.	2
Diethyl phthalate	31	1	1	.	1	.	.	.
Dioxins	1	1	1	.	.	.	1	.
Butyl benzyl phthalate	31	1	.	1	.	1	.	.
Endosulfan, beta-	7	1	.	1	.	1	.	.
Hexachlorobutadiene	2	1	.	1	.	1	.	1
Methoxychlor	2	1	.	1	.	1	.	.
Toluene	20	1	.	1	.	1	.	.
Trichlorobenzene, 1,2,4-	2	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	84	817.64	0.00	30	42300.00	40.00
Acenaphthylene	70	259.49	0.00	20	4328.00	70.00
Aldrin	4	34.00	36.00	4	49.00	15.00
Anthracene	92	1764.80	89.50	46	53000.00	179.00
Antimony	58	513.79	0.00	1	29800.00	29800.00
Arsenic	103	8431.07	7900.00	85	54000.00	1800.00
Benzene	63	0.83	0.00	6	21.00	2.50
Benzo(a)anthracene	58	2171.16	0.00	28	46270.00	152.00
Benzo(a)anthracene/Chrysene	34	11605.59	8180.00	34	81900.00	570.00
Benzo(a)pyrene	83	5030.72	290.00	49	67500.00	169.00
Benzo(b)fluoranthene	58	2465.05	92.00	29	49250.00	184.00
Benzo(ghi)perylene	80	1744.36	0.00	38	14300.00	167.00
Bis(2-ethylhexyl)phthalate	100	6326.56	0.00	46	175000.0	137.00
Butyl benzyl phthalate	60	39.45	0.00	4	1700.00	145.00
BHC	10	97.20	78.50	10	200.00	15.00
Cadmium	154	6351.38	1649.00	95	96110.00	400.00
Chlordane	37	33.32	21.00	36	149.00	2.00
Chlorobenzene	6	6.22	4.35	6	15.60	2.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chromium	146	97726.58	49200.00	146	630000.0	3500.00
Chrysene	58	2119.34	0.00	25	44780.00	156.00
Copper	150	104569.4	51090.00	142	960000.0	3800.00
Cresol, p-	17	1388.24	630.00	17	6700.00	90.00
Di-n-butyl phthalate	80	511.74	0.00	25	5690.00	137.00
Di-n-octyl phthalate	60	14.02	0.00	3	420.00	122.00
Dibenzo(a,h)anthracene	58	133.79	0.00	6	4179.00	147.00
Dibenzofuran	18	972.78	355.00	18	3620.00	70.00
Dibromochloromethane	2	3.30	3.30	2	3.60	3.00
Dichlorobenzene, 1,2-	6	162.45	110.00	6	500.00	14.70
Dichlorobenzene, 1,3-	4	367.50	230.00	4	940.00	70.00
Dichlorobenzene, 1,4-	16	234.38	195.00	16	900.00	50.00
Dichloroethane 1,1-	2	3001.55	3001.55	2	6000.00	3.10
Dichloroethene, trans-1,2-	2	254.00	254.00	2	500.00	8.00
Dichloromethane	91	16.95	0.00	42	196.00	0.80
Dichloropropane, 1,2-	2	2.45	2.45	2	2.90	2.00
Dieldrin	9	7.67	5.00	9	14.00	3.00
Diethyl phthalate	60	22.18	0.00	2	1194.00	137.00
Dimethylphenol, 2,4-	6	3670.00	345.00	6	20400.00	80.00
DCPA/Dacthal	4	18.75	11.00	4	48.00	5.00
DDT	185	85.36	37.00	184	1302.00	2.00
Endosulfan, beta-	7	8.57	10.00	7	14.00	1.00
Ethylbenzene	20	17.37	4.10	20	201.00	1.90
Fluoranthene	105	5291.38	1400.00	77	119300.0	137.00
Fluorene	89	660.67	0.00	40	12600.00	60.00
Heptachlor	60	0.28	0.00	2	10.00	7.00
Heptachlor epoxide	5	60.20	61.00	5	106.00	7.00
Hexachlorobenzene	58	61.67	11.50	55	1800.00	0.49
Hexachlorobutadiene	1	2000.00	2000.00	1	2000.00	2000.00
Indeno(1,2,3-cd)pyrene	83	1718.43	0.00	41	20900.00	145.00
Isophorone	2	485.00	485.00	2	900.00	70.00
Lead	142	188418.5	64520.00	135	1700000	4300.00
Mercury	134	545.43	200.00	76	3600.00	30.40
Methoxychlor	1	104.00	104.00	1	104.00	104.00
Methylnaphthalene, 2-	28	1677.86	850.00	28	11200.00	170.00
Naphthalene	95	1278.39	213.00	54	16800.00	120.00
Nickel	147	61936.94	38000.00	147	290000.0	4760.00
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	103	4189.01	1020.00	74	85600.00	132.00
Phenol	72	162.61	0.00	18	2460.00	80.00
Polychlorinated biphenyls	373	530.72	50.00	223	6940.00	8.70
Pyrene	105	5003.76	1360.00	76	86100.00	156.00
Silver	113	1084.07	0.00	43	9000.00	300.00
Tetrachloroethane, 1,1,2,2-	8	16.99	18.20	8	27.00	6.60

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tetrachloroethene	6	2.55	2.05	6	4.30	1.50
Toluene	20	245.89	9.50	20	3300.00	2.00
Tribromomethane/Bromoform	4	9.83	10.20	4	13.70	5.20
Trichlorobenzene, 1,2,4-	1	110.00	110.00	1	110.00	110.00
Trichloroethane, 1,1,1-	58	0.05	0.00	2	2.00	1.00
Trichloroethane, 1,1,2-	1	6.30	6.30	1	6.30	6.30
Trichloroethene	73	4.86	0.00	17	50.00	3.00
Trichloromethane/Chloroform	59	0.49	0.00	3	17.00	5.00
Xylenes	11	32.65	11.00	11	181.00	2.00
Zinc	150	480280.0	255900.0	150	3500000	13900.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	1	12.40	12.40	1	12.40	12.40
BHC	2	10.40	10.40	1	20.80	20.80
Chlordane	2	74.55	74.55	2	95.30	53.80
Chlorpyrifos/Dursban	1	9.44	9.44	1	9.44	9.44
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	99.00	99.00	1	99.00	99.00
Dioxins	2	0.02	0.02	2	0.03	0.02
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Hexachlorobenzene	1	25.30	25.30	1	25.30	25.30
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	1	80.00	80.00	1	80.00	80.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	3.98	3.98	1	3.98	3.98
Pentachlorobenzene	1	3.64	3.64	1	3.64	3.64
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1	11120.00	11120.00	1	11120.00	11120.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	3.33	3.33	1	3.33	3.33
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Ottawa-Stony 04100001

Watershed Summary Information

Accounting Unit Name:	Western Lake Erie
State(s):	MI OH
Political Boundaries:	Monroe, Lucas, Wayne, Washtenaw, Fulton
Major Waterways:	Swan Cr Ottawa Cr Stony Cr Swan Cr, N Br
Number of Stations in Watershed:	Tier1 - 13 Tier2 - 15 Tier3 - 1

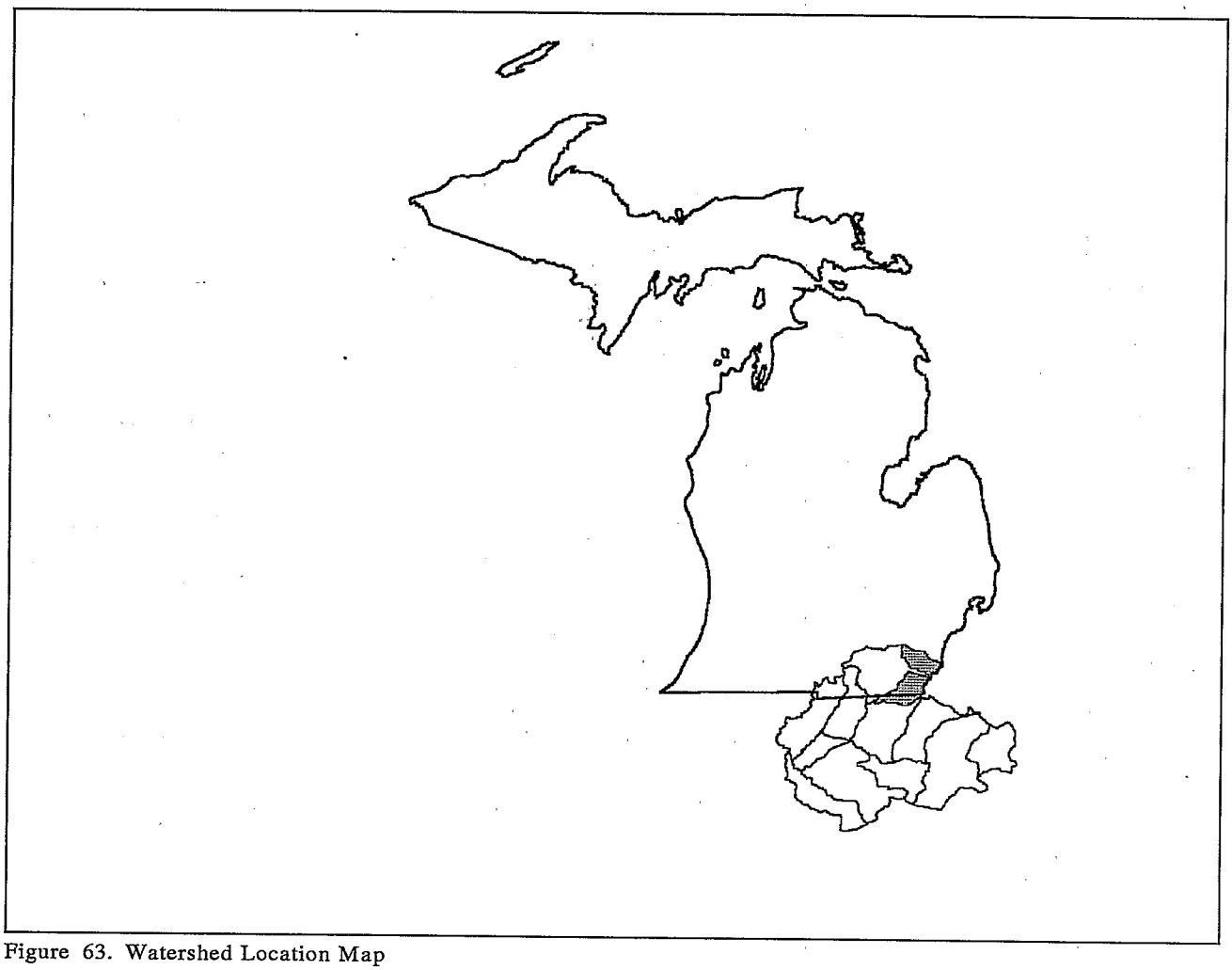

Figure 63. Watershed Location Map

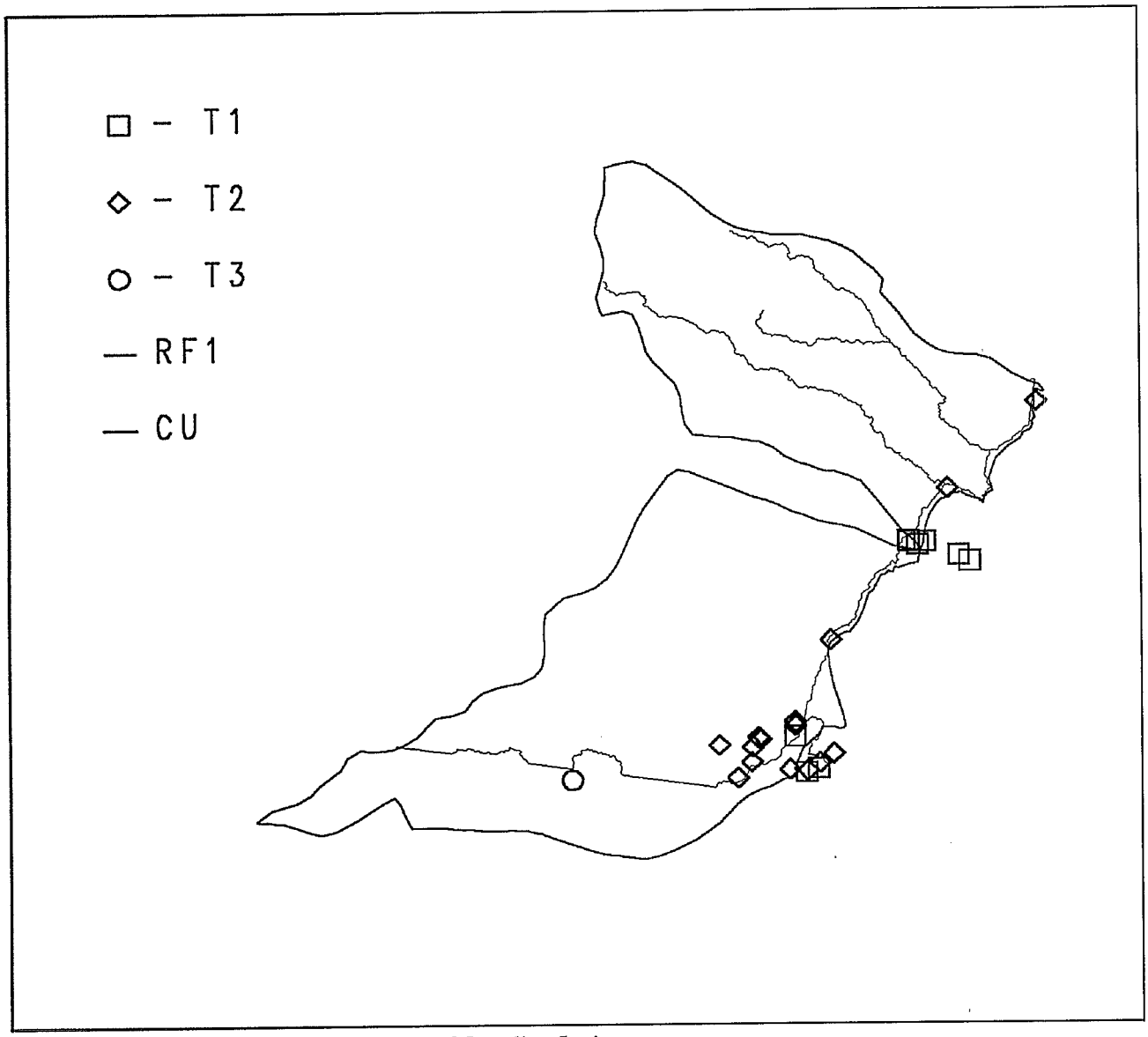

Figure 64. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 3 Date Range: 1983-88

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 7 Date Range: 1981-85

Source: **STORET** Agency: **115LHRES**
Monitoring Program: **Grosse Ile Lab Data EPA Large Lakes Res Lab**
Num. of Stations: 10 Date Range: 1983-84

Source: **STORET** Agency: **21MICH**
Monitoring Program: **Michigan Dept of Nat Res Surface Water Quality Data - Surface Water Quality Division**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 8 Date Range: 1986-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	18	16	.	16	.	16	.	.
Nickel	18	16	.	16	.	16	.	.
Polychlorinated biphenyls	18	15	12	3	11	3	1	14
Lead	17	14	.	14	.	14	.	.
DDT	16	12	3	9	3	8	.	4
Cadmium	19	12	.	12	.	12	.	.
Zinc	18	12	.	12	.	12	.	.
Bis(2-ethylhexyl)phthalate	10	10	3	7	3	7	.	3
Aldrin	11	8	.	8	.	.	.	8
Chromium	19	7	1	6	1	6	.	.
Fluoranthene	8	7	1	6	1	6	.	.
Phenanthrene	7	6	2	4	2	4	.	.
Pyrene	8	6	1	5	1	5	.	.
Chlordane	14	6	.	6	.	5	.	1
Benzo(a)anthracene/Chrysene	5	5	3	2	3	2	.	5
Naphthalene	8	5	3	2	3	2	.	.
Arsenic	10	5	.	5	.	5	.	.
Dieldrin	9	5	.	5	.	4	.	5
Fluorene	8	5	.	5	.	5	.	.
Mercury	14	5	.	5	.	5	.	.
Benzo(a)pyrene	6	4	2	2	2	2	.	4
BHC	12	3	1	2	1	2	.	1
Methylnaphthalene, 2-	3	3	1	2	1	2	.	.
Acenaphthene	5	2	.	2	.	2	.	.
Anthracene	5	2	.	2	.	2	.	.
Benzo(ghi)perylene	5	2	.	2	.	2	.	.
Heptachlor	8	2	.	2	.	.	.	2
Anthracene&Phenanthrene	1	1	1	.	1	.	.	.
Dibenzo(a,h)anthracene	4	1	1	.	1	.	.	1
Cresol, p-	1	1	.	1	.	1	.	.
Dimethylphenol, 2,4-	4	1	.	1	.	1	.	.
Heptachlor epoxide	9	1	.	1	.	.	.	1
Hexachlorobenzene	15	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Indeno(1,2,3-cd)pyrene	4	1	.	1	.	1	.	1
Methoxychlor	10	1	.	1	.	1	.	.
Phenol	5	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	5	28.00	0.00	2	100.00	40.00
Acenaphthylene	3	0.00	0.00	0	.	.
Acrylonitrile	3	0.00	0.00	0	.	.
Aldrin	22	33.84	3.05	16	588.00	1.21
Anthracene	8	103.77	0.00	3	770.00	0.12
Anthracene&Phenanthrene	1	1410.00	1410.00	1	1410.00	1410.00
Arsenic	13	11826.15	8990.00	13	22000.00	4340.00
Benzene	4	3.00	0.00	1	12.00	12.00
Benzo(a)anthracene	6	0.00	0.00	0	.	.
Benzo(a)anthracene/Chrysene	5	4148.00	3660.00	5	12070.00	410.00
Benzo(a)pyrene	9	1772.21	0.00	4	11060.00	739.90
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(ghi)perylene	8	1015.00	0.00	2	7370.00	750.00
Benzo(k)fluoranthene	6	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	13	2638.63	680.00	12	15550.00	0.18
Butyl benzyl phthalate	6	0.00	0.00	0	.	.
BHC	43	4.18	0.00	19	93.00	0.03
Cadmium	21	4267.67	2000.00	20	36000.00	118.00
Chlordane	60	1.28	0.69	54	11.00	0.21
Chlorobenzene	6	0.00	0.00	0	.	.
Chromium	21	61217.62	29500.00	21	490000.0	9000.00
Chrysene	6	0.17	0.00	1	1.05	1.05
Copper	21	115841.4	50990.00	21	1500000	5000.00
Cresol, p-	1	7240.00	7240.00	1	7240.00	7240.00
Di-n-butyl phthalate	11	181.36	0.00	5	1150.00	60.00
Di-n-octyl phthalate	6	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	7	294285.9	0.00	2	2060000	1.05
Dibenzofuran	2	90.00	90.00	2	160.00	20.00
Dibromochloromethane	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	4	15.00	0.00	1	60.00	60.00
Dichloroethane 1,2-	3	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	3	0.00	0.00	0	.	.
Dichloromethane	5	6.44	4.00	5	17.00	1.20

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichloropropane, 1,2-	3	0.00	0.00	0	.	.
Dieldrin	15	7.65	0.31	9	61.15	0.09
Diethyl phthalate	6	0.00	0.00	0	.	.
Dimethyl phthalate	6	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	4	167.50	0.00	1	670.00	670.00
Dioxins	3	0.00	0.00	0	.	.
DCPA/Dacthal	2	9.50	9.50	2	12.00	7.00
DDT	116	7.46	3.17	97	152.00	0.07
Endosulfan, alpha-	7	0.14	0.00	1	1.00	1.00
Endosulfan, beta-	10	1.00	0.00	3	5.00	1.00
Endrin	25	1.13	0.89	19	4.43	0.37
Ethylbenzene	3	0.00	0.00	0	.	.
Fluoranthene	11	987.31	250.00	10	5560.00	0.41
Fluorene	8	118.75	115.00	5	310.00	100.00
Heptachlor	15	3.35	0.10	9	35.02	0.06
Heptachlor epoxide	14	62.37	0.16	8	870.00	0.10
Hexachlorobenzene	22	4.12	0.57	19	63.00	0.29
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	7	440.00	0.00	1	3080.00	3080.00
Isophorone	3	0.00	0.00	0	.	.
Lead	20	58398.00	44745.00	19	135000.0	9180.00
Mercury	16	118.78	100.00	14	500.00	0.03
Methoxychlor	17	11.01	1.02	14	171.00	0.11
Methylnaphthalene, 2-	3	1133.33	130.00	3	3240.00	30.00
Mirex/Dechlorane	3	0.00	0.00	0	.	.
Naphthalene	8	486.33	180.00	6	1920.00	0.65
Nickel	21	48403.33	32000.00	21	170000.0	5000.00
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Pentachlorobenzene	20	0.25	0.20	20	0.62	0.15
Pentachlorophenol	3	0.00	0.00	0	.	.
Phenanthrene	10	531.20	160.00	9	2630.00	0.53
Phenol	5	592.00	0.00	2	2890.00	70.00
Polychlorinated biphenyls	108	705.00	19.03	69	16440.00	6.01
Pyrene	11	887.45	210.00	9	4920.00	0.12
Silver	7	85.71	0.00	2	300.00	300.00
Tetrachloroethane, 1,1,2,2-	4	3.25	0.00	1	13.00	13.00
Tetrachloroethene	3	0.00	0.00	0	.	.
Tetrachloromethane	3	0.00	0.00	0	.	.
Toluene	4	1.25	0.00	1	5.00	5.00
Toxaphene	6	0.00	0.00	0	.	.
Tribromomethane/Bromoform	4	3.25	0.00	1	13.00	13.00
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	3	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethane, 1,1,2-	3	0.00	0.00	0	.	.
Trichloroethene	6	8.50	3.50	3	24.00	7.00
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	3	0.00	0.00	0	.	.
Zinc	21	212633.3	150000.0	21	1000000	21000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cadmium	9	0.00	0.00	0	.	.
Chlordane	9	287.22	230.00	7	710.00	70.00
Chromium	9	36.67	0.00	3	130.00	100.00
Dieldrin	9	15.56	0.00	2	90.00	50.00
DDT	36	252.78	235.00	30	913.00	23.00
Heptachlor epoxide	9	0.00	0.00	0	.	.
Hexachlorobenzene	9	7.56	5.00	5	23.00	5.00
Mercury	9	71.11	0.00	4	200.00	130.00
Polychlorinated biphenyls	36	3919.53	2475.00	29	22450.00	53.00
Toxaphene	9	0.00	0.00	0	.	.

Raisin 04100002

Watershed Summary Information

Accounting Unit Name:	Western Lake Erie
State(s):	MI (OH)
Political Boundaries:	Lenawee, Monroe, Washtenaw, Jackson, Hillsdale, Fulton
Major Waterways:	River Raisin Macon Cr Black Cr River Raisin, S Br Saline R
Number of Stations in Watershed:	Tier1 - 18 Tier2 - 19 Tier3 - 1

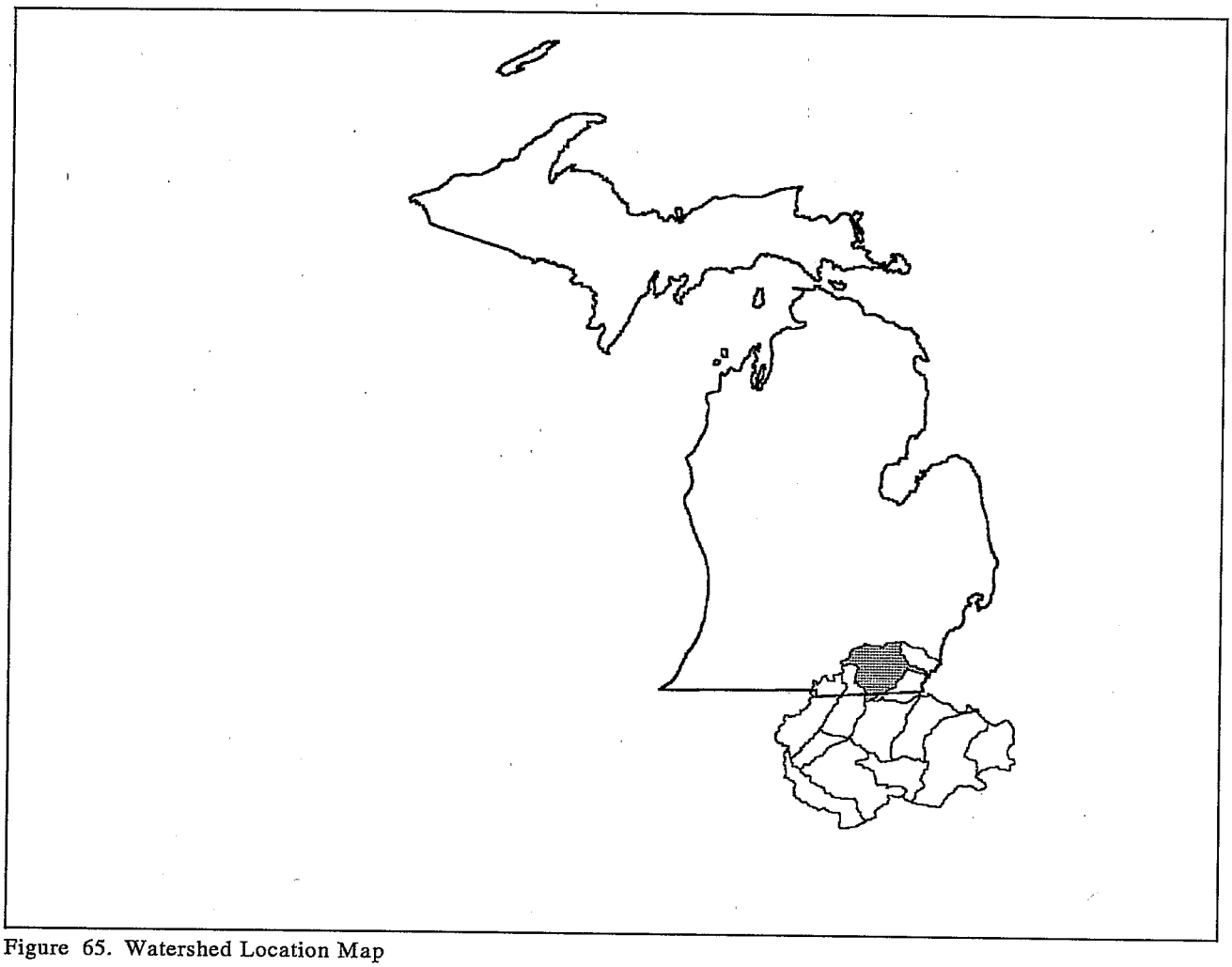

Figure 65. Watershed Location Map

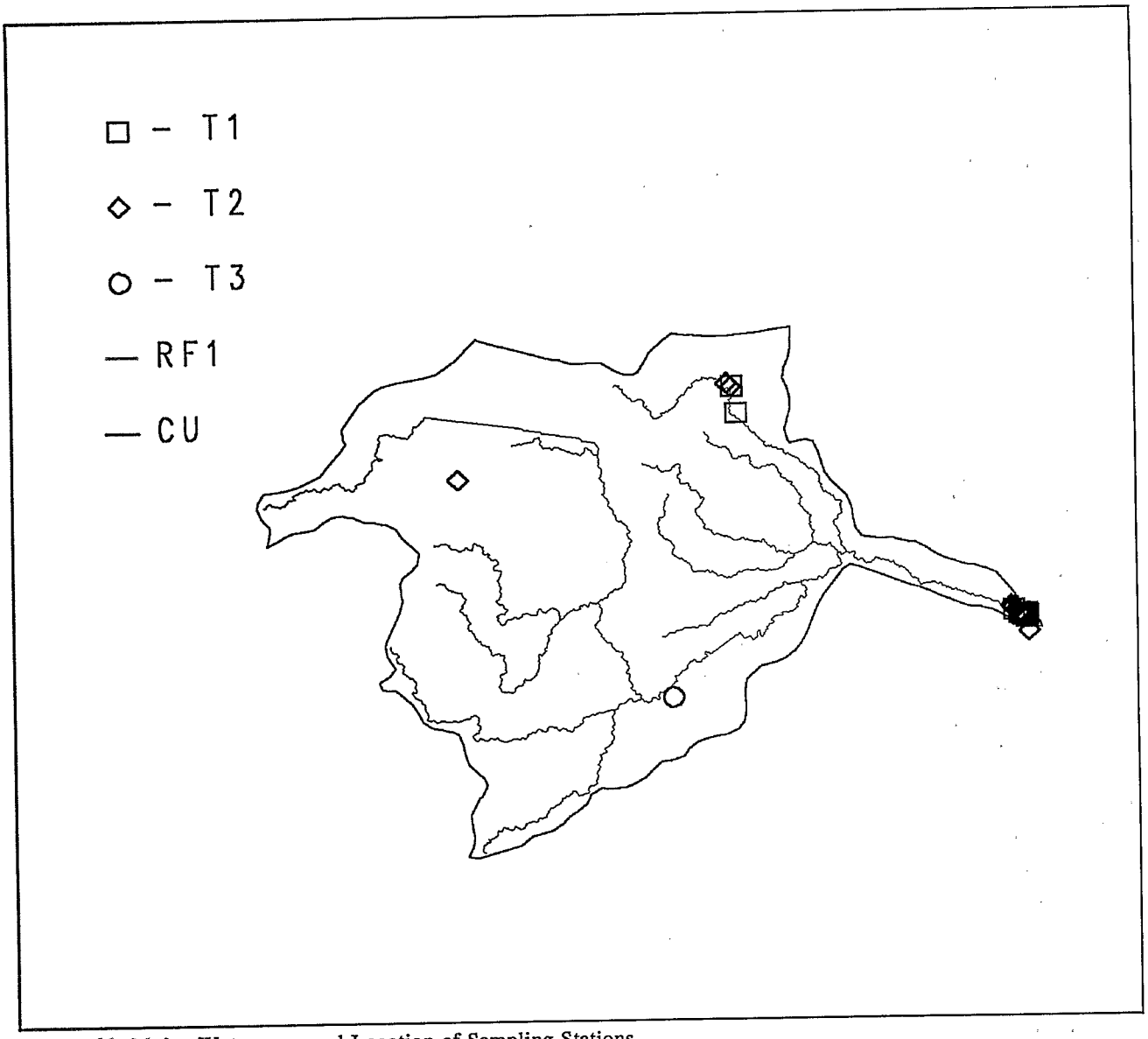

Figure 66. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11140100
Monitoring Program: USEPA Region 5 Data
Num. of Stations: 1 Date Range: 1981

Source: STORET Agency: 1115GLSB
Monitoring Program: USEPA Region 5 Great Lakes Surveillance Branch Data
Num. of Stations: 4 Date Range: 1981

Source: STORET Agency: 115LHRES
Monitoring Program: Grosse Ile Lab Data EPA Large Lakes Res Lab
Num. of Stations: 28 Date Range: 1983-84

Source: **STORET** Agency: **21MICH**
Monitoring Program: **Michigan Dept of Nat Res Surface Water Quality Data - Surface Water Quality Division**
Num. of Stations: 5 Date Range: 1980

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	37	34	17	17	17	8	.	34
DDT	22	20	7	13	7	13	.	3
Chlordane	22	11	.	11	.	11	.	3
Dieldrin	16	10	.	10	.	10	.	9
Aldrin	13	7	.	7	.	.	.	7
Bis(2-ethylhexyl)phthalate	7	6	.	6	.	6	.	.
BHC	15	5	1	4	1	4	.	1
Nickel	9	5	.	5	.	5	.	.
Lead	9	4	.	4	.	4	.	.
Mercury	6	3	1	2	1	2	.	.
Acenaphthene	3	3	.	3	.	3	.	.
Anthracene&Phenanthrene	4	3	.	3	.	3	.	.
Benzo(a)anthracene/Chrysene	3	3	.	3	.	3	.	3
Copper	9	3	.	3	.	3	.	.
Fluoranthene	3	3	.	3	.	3	.	.
Fluorene	3	3	.	3	.	3	.	.
Pyrene	3	3	.	3	.	3	.	.
Naphthalene	4	2	1	1	1	1	.	.
Cadmium	9	2	.	2	.	2	.	.
Zinc	9	2	.	2	.	2	.	.
Butyl benzyl phthalate	4	1	.	1	.	1	.	.
Chromium	5	1	.	1	.	1	.	.
Diethyl phthalate	8	1	.	1	.	1	.	.
Heptachlor	7	1	.	1	.	.	.	1
Heptachlor epoxide	8	1	.	1	.	.	.	1
Methoxychlor	13	1	.	1	.	1	.	.
Toluene	4	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	68.00	64.00	3	100.00	40.00
Aldrin	27	16.55	4.61	27	251.00	0.07
Anthracene&Phenanthrene	4	415.50	465.00	4	712.00	20.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Antimony	1	0.00	0.00	0	.	.
Arsenic	1	0.00	0.00	0	.	.
Benzene	4	22.75	18.00	4	43.00	12.00
Benzo(a)anthracene/Chrysene	3	912.00	840.00	3	1586.00	310.00
Bis(2-ethylhexyl)phthalate	7	1061.14	820.00	6	2500.00	380.00
Butyl benzyl phthalate	4	275.00	0.00	1	1100.00	1100.00
BHC	39	1.09	0.17	39	31.00	0.02
Cadmium	9	277.78	0.00	3	1300.00	200.00
Chlordane	84	2.34	1.75	83	15.00	0.09
Chromium	5	22000.00	14000.00	4	72000.00	6000.00
Copper	9	19333.33	17000.00	8	66000.00	4000.00
Di-n-butyl phthalate	8	93.88	73.50	4	277.00	147.00
Dichlorobenzene, 1,2-	1	20.00	20.00	1	20.00	20.00
Dichloromethane	3	119.00	65.00	3	273.00	19.00
Dieldrin	21	4.03	2.00	20	14.00	0.05
Diethyl phthalate	8	104.75	25.00	4	470.00	50.00
DCPA/Dacthal	3	4.67	5.00	3	6.00	3.00
DDT	144	11.70	6.73	140	223.40	0.18
Endosulfan, beta-	4	8.50	9.00	4	11.00	5.00
Endrin	16	2.87	1.88	16	10.86	0.05
Fluoranthene	3	743.33	850.00	3	920.00	460.00
Fluorene	3	64.67	70.00	3	74.00	50.00
Heptachlor	9	1.44	0.31	9	5.81	0.15
Heptachlor epoxide	9	11.13	0.23	9	96.00	0.05
Hexachlorobenzene	28	1.09	0.22	25	19.02	0.05
Lead	9	58111.11	29000.00	8	170000.0	10000.00
Mercury	6	261.67	135.00	4	1000.00	70.00
Methoxychlor	22	5.22	0.81	22	64.50	0.13
Naphthalene	4	216.00	130.00	4	584.00	20.00
Nickel	9	16444.44	17000.00	8	35000.00	2000.00
Pentachlorobenzene	23	0.20	0.20	23	0.34	0.02
Polychlorinated biphenyls	191	577.10	48.00	179	15620.00	2.07
Pyrene	3	736.67	760.00	3	1060.00	390.00
Silver	8	0.00	0.00	0	.	.
Toluene	4	512.00	221.50	4	1600.00	5.00
Zinc	9	134888.9	80000.00	9	430000.0	6000.00

Cedar-Portage 04100010

Watershed Summary Information

Accounting Unit Name: Western Lake Erie

State(s): OH MI

Political Boundaries: Wood, Ottawa, Sandusky, Hancock, Putnam, Lucas

Major Waterways:
Portage R
Portage R, N Br
Toussaint Cr
Portage R, S Br
Portage R, E Br

Number of Stations in Watershed:
Tier1 - 13
Tier2 - 39
Tier3 - 4

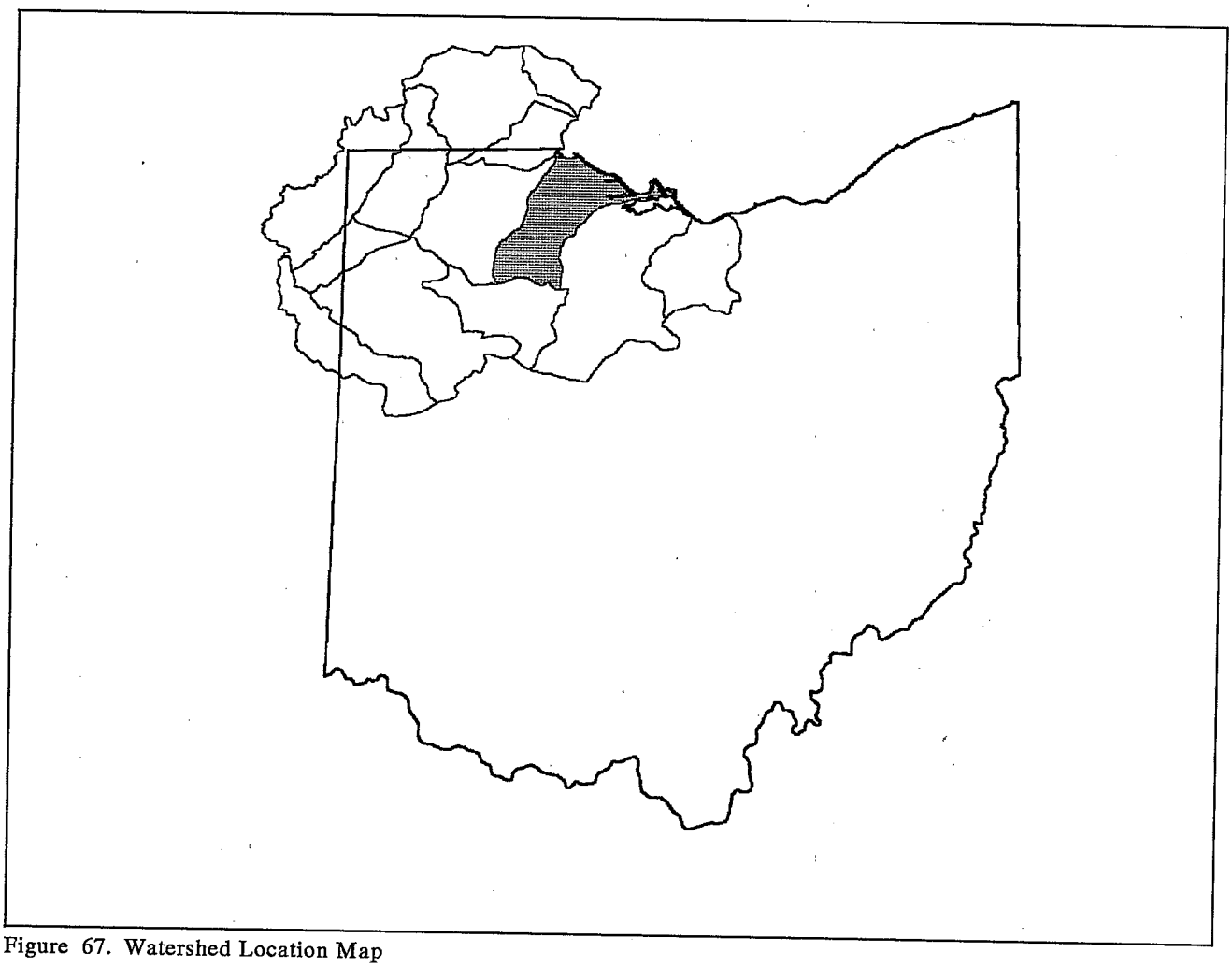

Figure 67. Watershed Location Map

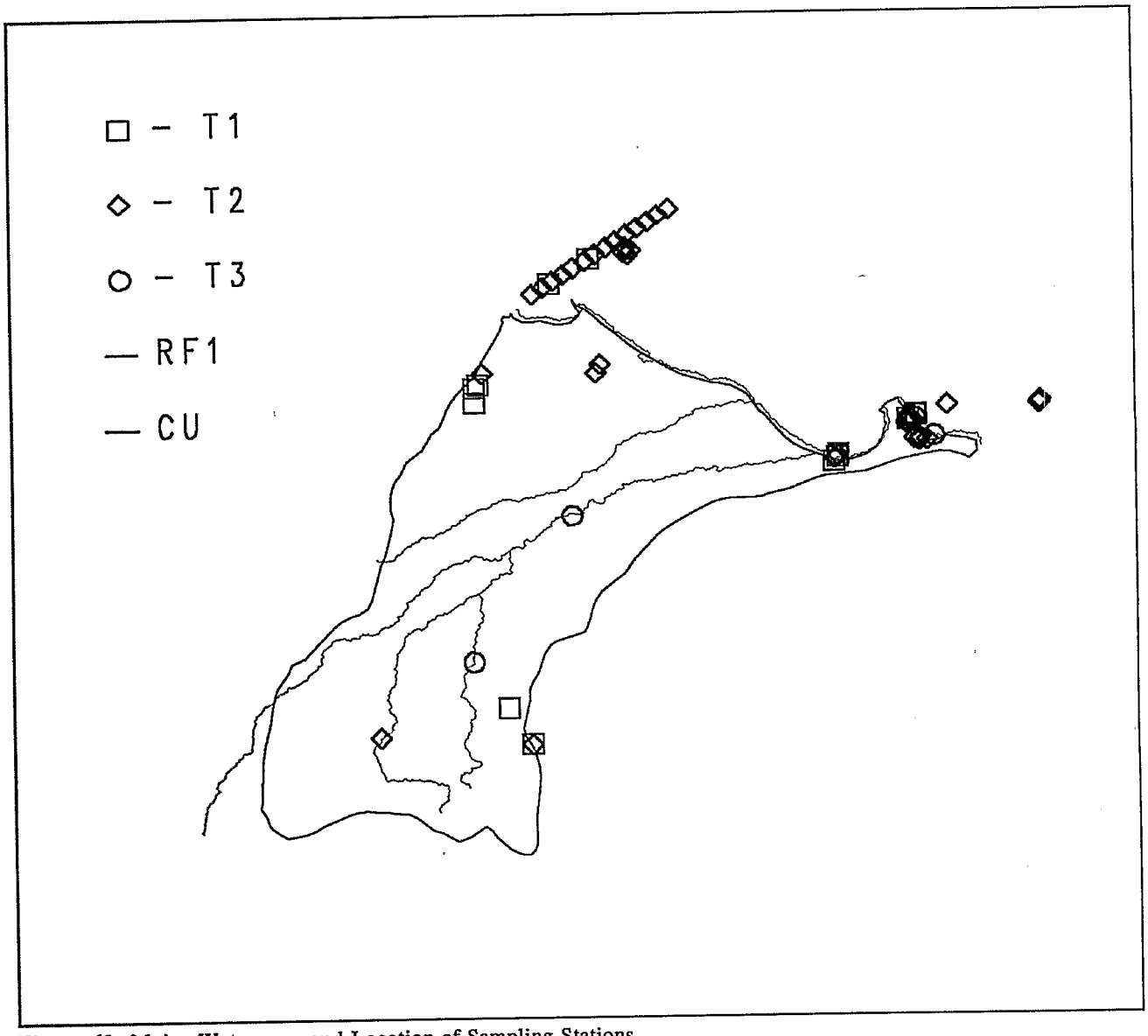

Figure 68. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 41 Date Range: 1981-89

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1981-86

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 2 Date Range: 1982

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 3 Date Range: 1984

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 9 Date Range: 1985-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	54	44	.	44	.	44	.	.
Copper	55	42	.	42	.	42	.	.
Arsenic	52	31	.	31	.	30	.	1
Cadmium	55	29	.	29	.	29	.	.
Mercury	49	27	3	24	3	24	.	.
Lead	55	25	.	25	.	25	.	.
Zinc	55	23	.	23	.	23	.	.
Phenanthrene	33	14	2	12	2	12	.	.
Pyrene	32	12	2	10	2	10	.	.
Bis(2-ethylhexyl)phthalate	33	12	1	11	1	11	.	1
Fluoranthene	32	12	1	11	1	11	.	.
DDT	44	6	3	3	3	2	.	4
Benzo(a)anthracene	31	5	1	4	1	4	.	4
Polychlorinated biphenyls	44	3	3	.	2	.	1	2
Anthracene	31	3	1	2	1	2	.	.
Benzo(a)pyrene	31	3	1	2	1	2	.	3
Chrysene	31	3	1	2	1	2	.	.
Fluorene	24	3	1	2	1	2	.	.
Benzo(b)fluoranthene	18	3	.	3	.	1	.	3
Diethyl phthalate	31	2	2	.	2	.	.	.
BHC	42	2	1	1	1	1	.	2
Naphthalene	24	2	1	1	1	1	.	.
Acenaphthene	24	2	.	2	.	2	.	.
Benzo(ghi)perylene	31	2	.	2	.	2	.	.
Chromium	54	2	.	2	.	2	.	.
Endosulfan, beta-	41	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	31	2	.	2	.	2	.	2
Methylnaphthalene, 2-	2	2	.	2	.	2	.	.
Aldrin	42	1	.	1	.	.	.	1
Benzo(k)fluoranthene	31	1	.	1	.	.	.	1
Dieldrin	42	1	.	1	.	.	.	1
Hexachlorobutadiene	18	1	.	1	.	1	.	.
Selenium	1	1	.	1	.	.	.	1
Silver	8	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Toxaphene	42	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	24	7.08	0.00	2	90.00	80.00
Acenaphthylene	22	0.00	0.00	0	.	.
Acrylonitrile	5	0.00	0.00	0	.	.
Aldrin	45	0.00	0.00	0	.	.
Anthracene	35	60.57	0.00	3	1450.00	100.00
Arsenic	55	10377.62	10000.00	55	26100.00	1000.00
Benzene	13	0.00	0.00	0	.	.
Benzo(a)anthracene	35	221.14	0.00	5	4220.00	170.00
Benzo(a)pyrene	35	267.43	0.00	3	7400.00	620.00
Benzo(b)fluoranthene	18	628.33	0.00	3	10100.00	180.00
Benzo(ghi)perylene	35	325.43	0.00	2	10000.00	1390.00
Benzo(k)fluoranthene	37	93.51	0.00	3	1920.00	770.00
Bis(2-ethylhexyl)phthalate	37	488.27	0.49	20	5990.00	0.19
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	35	0.00	0.00	0	.	.
BHC	180	0.44	0.00	2	50.00	30.00
Cadmium	59	3372.90	1000.00	49	110000.0	160.00
Chlordane	45	0.00	0.00	0	.	.
Chlorobenzene	30	0.00	0.00	0	.	.
Chromium	59	21180.85	19000.00	57	86800.00	1000.00
Chrysene	36	185.26	0.00	4	3660.00	0.38
Copper	59	49008.31	31000.00	59	899000.0	1000.00
Di-n-butyl phthalate	30	0.00	0.00	0	.	.
Di-n-octyl phthalate	35	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	35	0.01	0.00	1	0.38	0.38
Dibenzofuran	1	60.00	60.00	1	60.00	60.00
Dibromochloromethane	17	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	35	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	27	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	18	0.00	0.00	0	.	.
Dichloroethane 1,2-	17	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	17	0.00	0.00	0	.	.
Dichloropropane, 1,2-	17	0.00	0.00	0	.	.
Dieldrin	45	0.00	0.00	0	.	.
Diethyl phthalate	35	100.29	0.00	2	1790.00	1720.00
Dimethyl phthalate	35	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	10	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dioxins	8	0.00	0.00	0	.	.
DDT	151	5.29	0.00	8	400.00	0.04
Endosulfan, alpha-	45	0.00	0.00	0	.	.
Endosulfan, beta-	45	3.56	0.00	3	100.00	0.04
Endrin	45	0.00	0.00	0	.	.
Ethylbenzene	13	0.00	0.00	0	.	.
Fluoranthene	36	688.26	0.00	15	9970.00	0.40
Fluorene	24	69.58	0.00	3	1320.00	160.00
Heptachlor	45	0.00	0.00	0	.	.
Heptachlor epoxide	45	0.00	0.00	0	.	.
Hexachlorobenzene	20	0.70	0.00	2	7.00	7.00
Hexachlorobutadiene	18	1.67	0.00	1	30.00	30.00
Hexachloroethane	18	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	35	320.29	0.00	2	9750.00	1460.00
Isophorone	11	7.27	0.00	1	80.00	80.00
Lead	59	52313.56	25000.00	55	1260000	5000.00
Mercury	52	263.27	200.00	40	2400.00	0.01
Methoxychlor	22	0.00	0.00	0	.	.
Methylnaphthalene, 2-	2	220.00	220.00	2	250.00	190.00
Mirex/Dechlorane	22	0.00	0.00	0	.	.
Naphthalene	24	57.50	0.00	2	930.00	450.00
Nickel	59	31326.95	30000.00	56	109000.0	2000.00
Nitrosodiphenylamine, N-	10	0.00	0.00	0	.	.
Pentachlorophenol	10	0.00	0.00	0	.	.
Phenanthrene	37	419.49	0.19	25	5730.00	0.12
Phenol	10	0.00	0.00	0	.	.
Polychlorinated biphenyls	215	5.42	0.00	7	265.00	99.00
Pyrene	36	583.19	0.47	27	7410.00	0.24
Silver	8	187.50	0.00	2	1000.00	500.00
Tetrachloroethane, 1,1,2,2-	19	1.53	0.00	2	20.00	9.00
Tetrachloroethene	17	0.00	0.00	0	.	.
Tetrachloromethane	17	0.00	0.00	0	.	.
Toluene	13	0.00	0.00	0	.	.
Toxaphene	45	0.00	0.00	0	.	.
Tribromomethane/Bromoform	19	0.26	0.00	2	3.00	2.00
Trichlorobenzene, 1,2,4-	18	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	17	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	17	0.00	0.00	0	.	.
Trichloroethene	19	2.47	0.00	2	25.00	22.00
Trichlorofluoromethane	17	0.00	0.00	0	.	.
Trichloromethane/Chloroform	17	0.00	0.00	0	.	.
Zinc	59	164286.4	100000.0	56	2620000	9000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	10.00	10.00	2	10.00	10.00
Arsenic	4	147.45	155.00	4	177.50	102.30
BHC	8	10.00	10.00	8	10.00	10.00
Cadmium	4	34.79	31.76	4	60.00	15.62
Chlordane	16	26.87	20.00	16	50.00	10.00
Copper	4	720.10	723.95	4	900.00	532.50
Dieldrin	4	37.50	40.00	4	50.00	20.00
DCPA/Dacthal	4	10.00	10.00	4	10.00	10.00
DDT	10	123.00	80.00	10	390.00	10.00
Endrin	4	10.00	10.00	4	10.00	10.00
Heptachlor	4	12.50	10.00	4	20.00	10.00
Heptachlor epoxide	2	10.00	10.00	2	10.00	10.00
Hexachlorobenzene	4	15.00	10.00	4	30.00	10.00
Lead	4	100.04	104.10	4	160.00	31.95
Mercury	4	51.86	52.39	4	70.00	32.66
Mirex/Dechlorane	4	10.00	10.00	4	10.00	10.00
Polychlorinated biphenyls	14	1264.29	1100.00	14	3700.00	100.00
Selenium	4	15573.55	507.30	4	61000.00	279.60
Toxaphene	4	125.00	100.00	4	200.00	100.00
Zinc	4	51005.00	49750.00	4	86410.00	18110.00

Huron-Vermilion 04100012

Watershed Summary Information

Accounting Unit Name: Western Lake Erie

State(s): OH

Political Boundaries: Erie, Huron, Lorain, Crawford, Richland, Ashland

Major Waterways: Huron R
Vermilion R
Huron R, W Br
Huron R, E Br

Number of Stations in Watershed: Tier1 - 10
Tier2 - 35
Tier3 - .

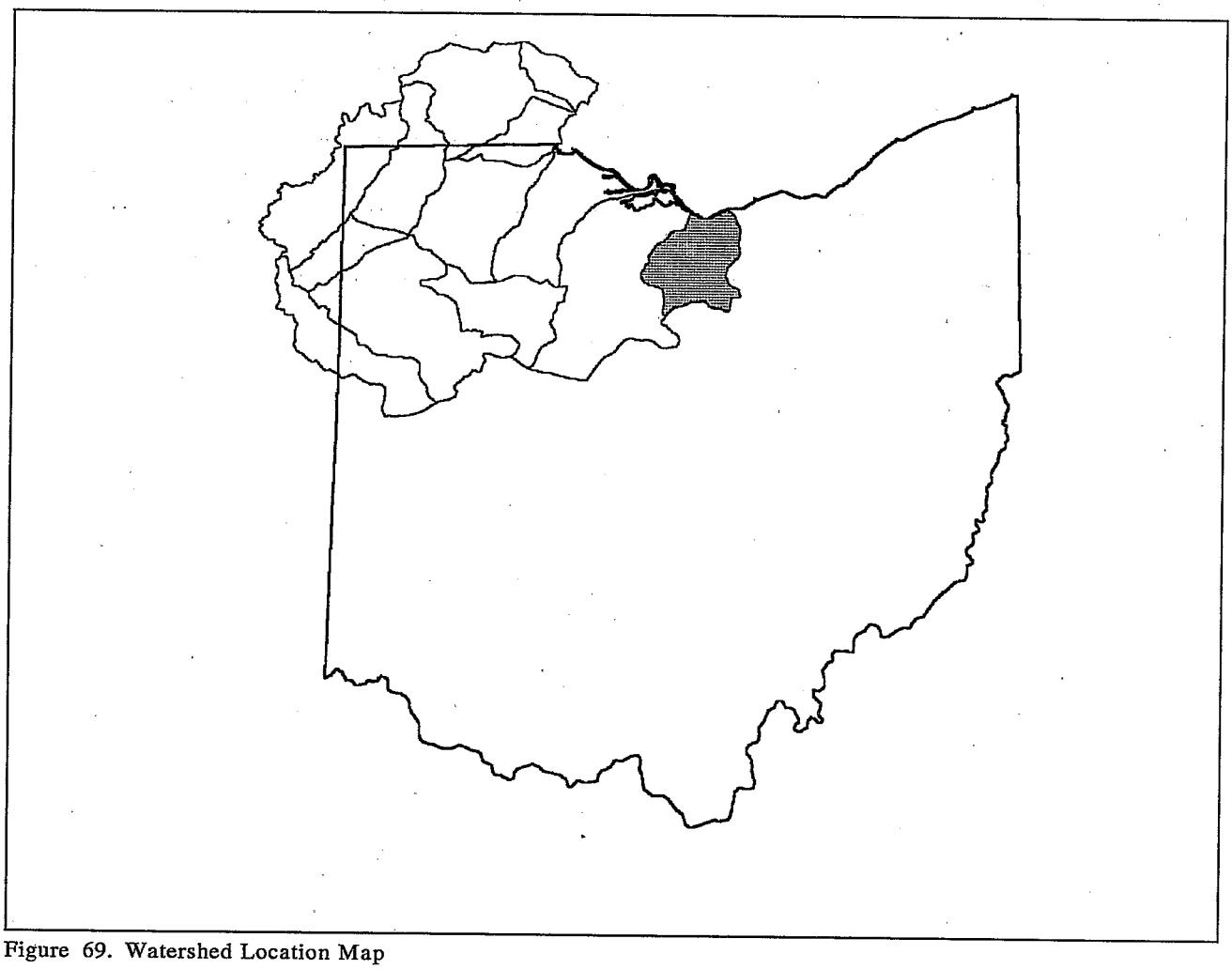

Figure 69. Watershed Location Map

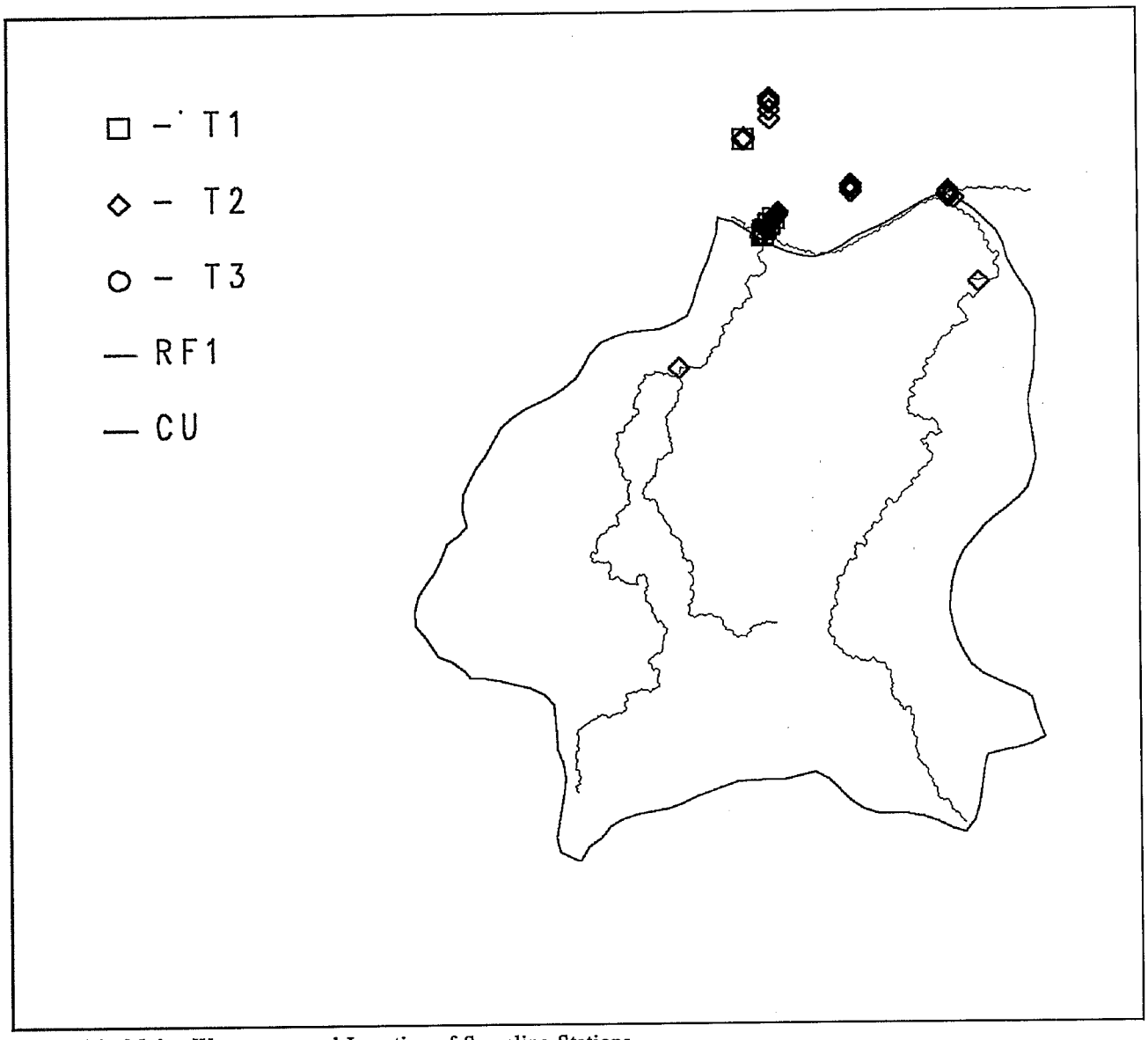

Figure 70. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 26 Date Range: 1981-85

Source: **STORET** Agency: **11COENCD**
Monitoring Program: **Corps of Engineers North Central Division Water & Sediments Data**
Num. of Stations: 17 Date Range: 1980

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 2 Date Range: 1985-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	45	45	.	45	.	45	.	.
Arsenic	45	44	.	44	.	44	.	.
Copper	45	43	.	43	.	43	.	.
Cadmium	45	40	.	40	.	40	.	.
Zinc	45	27	.	27	.	27	.	.
Lead	45	25	.	25	.	25	.	.
Mercury	36	21	.	21	.	21	.	.
Chromium	45	14	.	14	.	14	.	.
Fluoranthene	19	14	.	14	.	14	.	.
Pyrene	19	9	.	9	.	9	.	.
Diethyl phthalate	19	8	5	3	5	3	.	.
Polychlorinated biphenyls	43	8	5	3	5	3	.	8
Phenanthrene	19	4	.	4	.	4	.	.
Benzo(a)anthracene	19	2	.	2	.	2	.	2
Bis(2-ethylhexyl)phthalate	19	2	.	2	.	2	.	.
Anthracene	19	1	.	1	.	1	.	.
Toluene	19	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	26	0.00	0.00	0	.	.
Anthracene	19	15.79	0.00	1	300.00	300.00
Arsenic	67	14224.93	13300.00	67	30300.00	6700.00
Benzene	19	0.00	0.00	0	.	.
Benzo(a)anthracene	19	89.47	0.00	2	900.00	800.00
Benzo(a)pyrene	19	0.00	0.00	0	.	.
Benzo(b)fluoranthene	19	0.00	0.00	0	.	.
Benzo(ghi)perylene	19	0.00	0.00	0	.	.
Benzo(k)fluoranthene	19	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	19	100.00	0.00	2	1100.00	800.00
Butyl benzyl phthalate	19	0.00	0.00	0	.	.
BHC	76	0.00	0.00	0	.	.
Cadmium	67	1551.18	1300.00	67	3700.00	329.00
Chlordane	26	0.00	0.00	0	.	.
Chlorobenzene	19	0.00	0.00	0	.	.
Chromium	67	45120.90	35000.00	67	188000.0	7000.00
Chrysene	19	0.00	0.00	0	.	.
Copper	67	36653.73	33000.00	67	68000.00	16000.00
Di-n-butyl phthalate	19	194.74	0.00	5	900.00	600.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-octyl phthalate	19	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	19	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	19	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	19	0.00	0.00	0	.	.
Dieldrin	19	0.00	0.00	0	.	.
Diethyl phthalate	19	331.58	0.00	8	1100.00	600.00
Dimethyl phthalate	19	0.00	0.00	0	.	.
DDT	57	0.00	0.00	0	.	.
Endosulfan, alpha-	19	0.00	0.00	0	.	.
Endosulfan, beta-	19	0.00	0.00	0	.	.
Endrin	26	0.00	0.00	0	.	.
Ethylbenzene	19	0.00	0.00	0	.	.
Fluoranthene	19	694.74	600.00	14	2200.00	400.00
Heptachlor	26	0.00	0.00	0	.	.
Heptachlor epoxide	26	0.00	0.00	0	.	.
Hexachlorobenzene	19	0.00	0.00	0	.	.
Hexachlorobutadiene	19	0.00	0.00	0	.	.
Hexachloroethane	19	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	19	0.00	0.00	0	.	.
Lead	67	29604.48	23300.00	67	66000.00	10000.00
Mercury	58	144.88	0.00	27	655.00	60.00
Methoxychlor	19	0.00	0.00	0	.	.
Mirex/Dechlorane	26	0.00	0.00	0	.	.
Nickel	67	42098.51	38000.00	67	71000.00	19000.00
Phenanthrene	19	73.68	0.00	4	400.00	300.00
Polychlorinated biphenyls	65	137.38	0.00	11	1690.00	56.00
Pyrene	19	300.00	0.00	9	1500.00	300.00
Silver	7	12.00	0.00	1	84.00	84.00
Toluene	19	178.42	0.00	6	1420.00	120.00
Toxaphene	26	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	19	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	7	0.00	0.00	0	.	.
Zinc	67	292991.0	122000.0	67	2210000	73000.00

Black-Rocky 04110001

Watershed Summary Information

Accounting Unit Name: Southern Lake Erie

State(s): OH

Political Boundaries: Cuyahoga, Lorain, Medina, Erie, Huron, Ashland, Summit

Major Waterways:
Black R
Rocky R
Black R, E Br
Rocky R, W Br
Rocky R, E Br

Number of Stations in Watershed:
Tier1 - 24
Tier2 - 31
Tier3 - 4

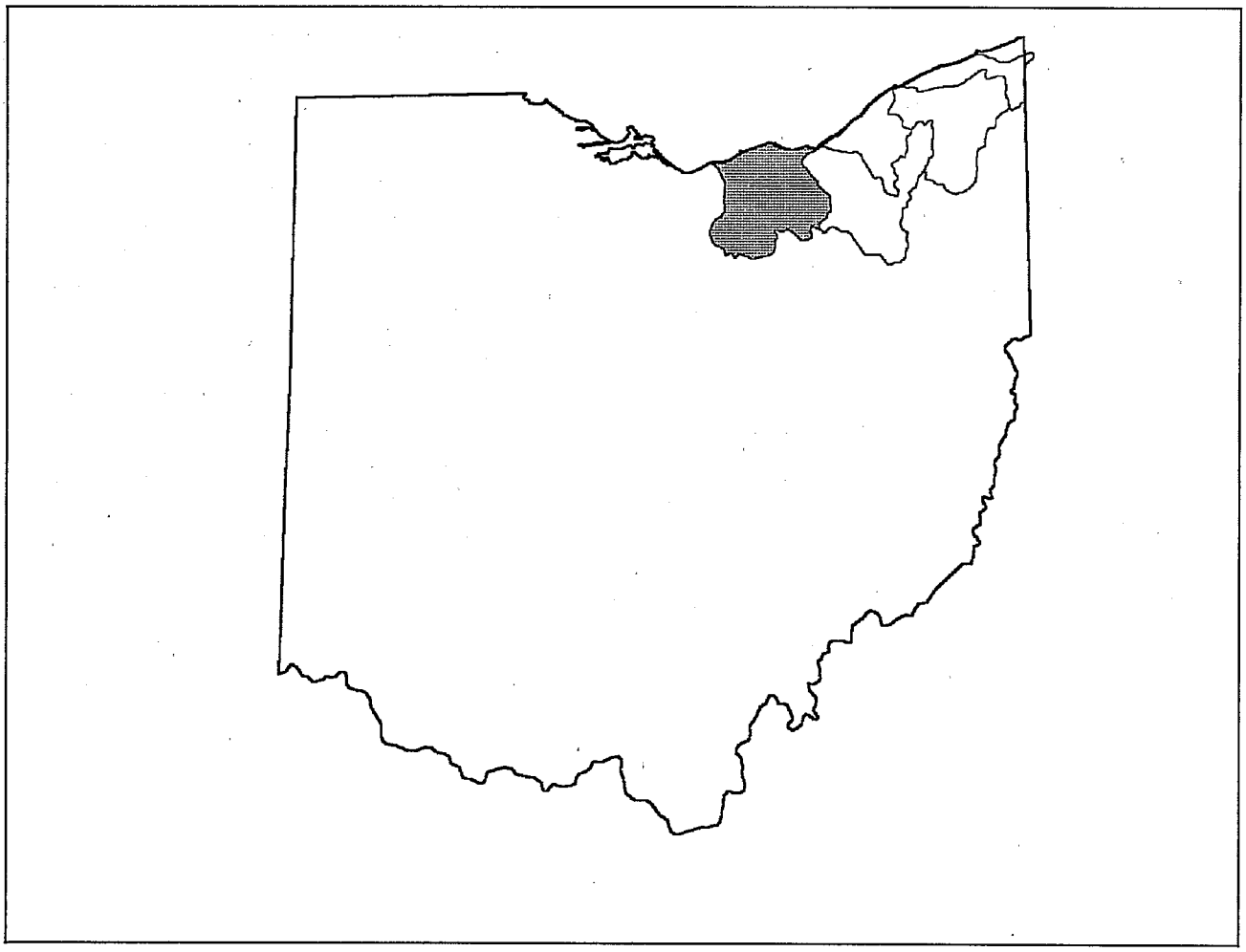

Figure 71. Watershed Location Map

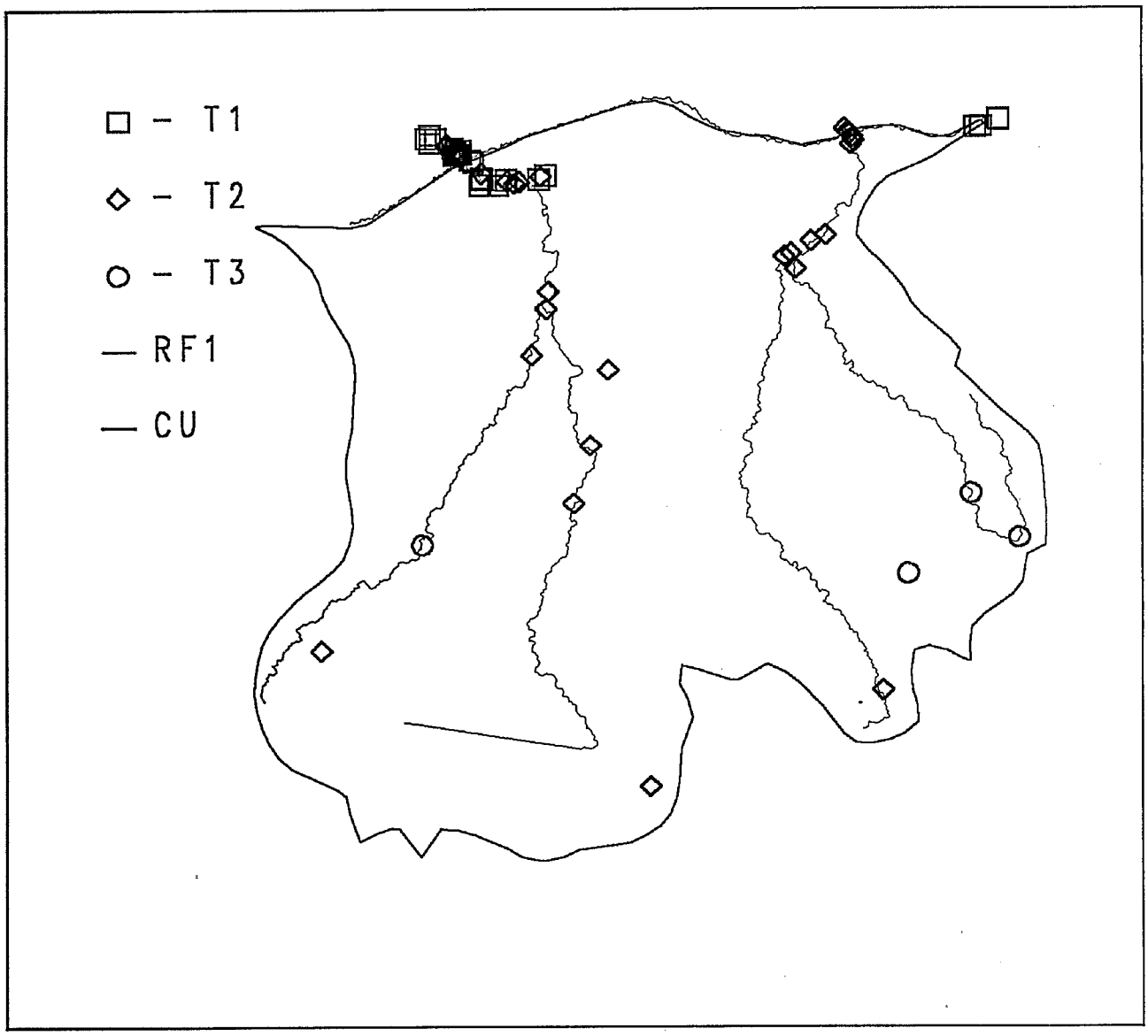

Figure 72. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 24 Date Range: 1981-88

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 10 Date Range: 1982

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 24 Date Range: 1982-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	58	50	.	50	.	50	.	.
Copper	58	43	.	43	.	43	.	.
Cadmium	58	42	.	42	.	42	.	.
Arsenic	43	38	.	38	.	38	.	.
Zinc	58	37	.	37	.	37	.	.
Lead	58	33	.	33	.	33	.	.
Mercury	42	25	2	23	2	23	.	.
Phenanthrene	26	23	11	12	11	12	.	.
Fluoranthene	26	23	9	14	9	14	.	.
Benzo(a)pyrene	25	22	19	3	19	3	.	22
Polychlorinated biphenyls	39	19	12	7	11	7	1	18
Anthracene	26	17	4	13	4	13	.	.
Pyrene	26	15	10	5	10	5	.	.
Chrysene	18	15	4	11	4	11	.	.
Chromium	58	13	.	13	.	13	.	.
Chlordane	34	11	.	11	.	10	.	10
DDT	29	10	7	3	7	3	.	8
Benzo(a)anthracene/Chrysene	8	8	8	.	8	.	.	8
Naphthalene	29	8	8	.	8	.	.	.
Bis(2-ethylhexyl)phthalate	8	8	7	1	7	1	.	7
Fluorene	23	7	4	3	4	3	.	.
Acenaphthene	23	7	2	5	2	5	.	.
BHC	26	7	.	7	.	7	.	7
Benzo(ghi)perylene	22	6	.	6	.	6	.	.
Indeno(1,2,3-cd)pyrene	22	6	.	6	.	6	.	6
Dibenzofuran	5	3	1	2	1	2	.	.
Di-n-butyl phthalate	5	2	.	2	.	2	.	.
Heptachlor epoxide	24	2	.	2	.	.	.	2
Silver	15	2	.	2	.	2	.	.
Acenaphthylene	17	1	1	.	1	.	.	.
Dibenzo(a,h)anthracene	17	1	1	.	1	.	.	1
Dioxins	1	1	1	.	.	.	1	.
Methylnaphthalene, 2-	1	1	1	.	1	.	.	.
Dieldrin	19	1	.	1	.	.	.	1
Hexachlorobenzene	11	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	23	852.23	0.00	10	17000.00	0.32
Acenaphthylene	17	70.59	0.00	1	1200.00	1200.00
Aldrin	36	0.00	0.00	0	.	.
Anthracene	39	674.46	0.72	26	15000.00	0.11
Arsenic	61	14028.34	11290.00	61	61000.00	2020.00
Benzene	21	0.00	0.00	0	.	.
Benzo(a)anthracene	21	0.80	0.49	12	7.46	0.44
Benzo(a)anthracene/Chrysene	8	14962.50	6700.00	8	74900.00	1700.00
Benzo(a)pyrene	38	4175.36	2010.00	30	77700.00	0.18
Benzo(ghi)perylene	22	2173.04	0.00	9	35000.00	1.04
Benzo(k)fluoranthene	16	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	8	10700.00	4600.00	8	33500.00	1900.00
Bromophenyl phenyl ether, 4-	2	900.00	900.00	2	1000.00	800.00
BHC	88	5.80	0.00	8	258.00	1.00
Cadmium	76	5822.35	2000.00	76	59000.00	61.00
Chlordane	46	10.24	0.00	10	116.00	5.00
Chlorobenzene	21	0.00	0.00	0	.	.
Chromium	76	37103.82	19100.00	76	240000.0	5000.00
Chrysene	31	918.36	9.62	27	4199.00	0.70
Copper	76	49094.21	29700.00	76	230000.0	3850.00
Di-n-butyl phthalate	5	1240.00	1200.00	5	1900.00	400.00
Dibenzo(a,h)anthracene	17	482353.0	0.00	2	8200000	1.75
Dibenzofuran	5	2460.06	600.00	5	10600.00	0.30
Dibromochloromethane	16	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	16	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	16	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	2.00	2.00	1	2.00	2.00
Dichloroethane 1,2-	23	0.17	0.00	2	2.00	2.00
Dichloroethene, trans-1,2-	16	0.00	0.00	0	.	.
Dichloromethane	24	0.92	0.00	3	9.00	5.00
Dichloropropane, 1,2-	17	0.12	0.00	1	2.00	2.00
Dieldrin	31	0.00	0.00	0	.	.
DDT	107	10.51	0.00	29	210.00	4.00
Endosulfan, alpha-	16	0.00	0.00	0	.	.
Endosulfan, beta-	16	0.00	0.00	0	.	.
Endrin	36	0.00	0.00	0	.	.
Ethylbenzene	16	0.00	0.00	0	.	.
Fluoranthene	39	3842.88	2599.00	36	55300.00	0.66
Fluorene	23	708.75	0.00	10	12800.00	0.15
Heptachlor	36	0.00	0.00	0	.	.
Heptachlor epoxide	23	0.65	0.00	2	9.00	6.00
Hexachlorobenzene	10	8.40	6.00	9	24.00	2.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Indeno(1,2,3-cd)pyrene	22	2836.47	0.00	8	46800.00	0.99
Lead	76	57092.74	30600.00	73	590000.0	4000.00
Mercury	54	213.14	184.95	46	1600.00	0.01
Methoxychlor	15	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	2600.00	2600.00	1	2600.00	2600.00
Mirex/Dechlorane	5	0.00	0.00	0	.	.
Naphthalene	29	1055.54	0.00	13	21000.00	0.13
Nickel	76	34720.26	27400.00	76	120000.0	6320.00
Pentachlorophenol	5	0.00	0.00	0	.	.
Phenanthrene	39	2016.95	419.90	36	43000.00	0.10
Polychlorinated biphenyls	233	83.03	0.00	29	4093.00	71.00
Pyrene	40	3664.76	0.79	28	45200.00	0.18
Silver	15	269.33	0.00	6	1000.00	140.00
Tetrachloroethane, 1,1,2,2-	17	0.35	0.00	1	6.00	6.00
Tetrachloroethene	20	0.00	0.00	0	.	.
Tetrachloromethane	16	0.00	0.00	0	.	.
Toluene	21	2.73	0.00	3	48.70	0.04
Toxaphene	36	0.00	0.00	0	.	.
Tribromomethane/Bromoform	22	0.09	0.00	1	2.00	2.00
Trichloroethane, 1,1,1-	21	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	16	0.00	0.00	0	.	.
Trichloroethene	23	0.57	0.00	2	11.00	2.00
Trichlorofluoromethane	16	0.00	0.00	0	.	.
Trichloromethane/Chloroform	21	0.00	0.00	0	.	.
Xylenes	5	0.00	0.00	0	.	.
Zinc	76	230035.1	150000.0	76	1300000	25000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	1	7.54	7.54	1	7.54	7.54
BHC	2	30.20	30.20	2	44.50	15.90
Chlordane	2	138.00	138.00	2	164.00	112.00
Chlorpyrifos/Dursban	1	46.70	46.70	1	46.70	46.70
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	64.20	64.20	1	64.20	64.20
Dioxins	2	0.00	0.00	2	0.01	0.00
DDT	1	115.00	115.00	1	115.00	115.00
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	1	0.00	0.00	0	.	.
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Pentachlorobenzene	1	5.21	5.21	1	5.21	5.21
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1	3681.00	3681.00	1	3681.00	3681.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	10.20	10.20	1	10.20	10.20
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Ashtabula-Chagrin 04110003

Watershed Summary Information

Accounting Unit Name:	Southern Lake Erie
State(s):	OH
Political Boundaries:	Ashtabula, Lake, Cuyahoga, Geauga, Portage
Major Waterways:	Chagrin R Ashtabula R Aurora Bk
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 18 Tier3 - 3

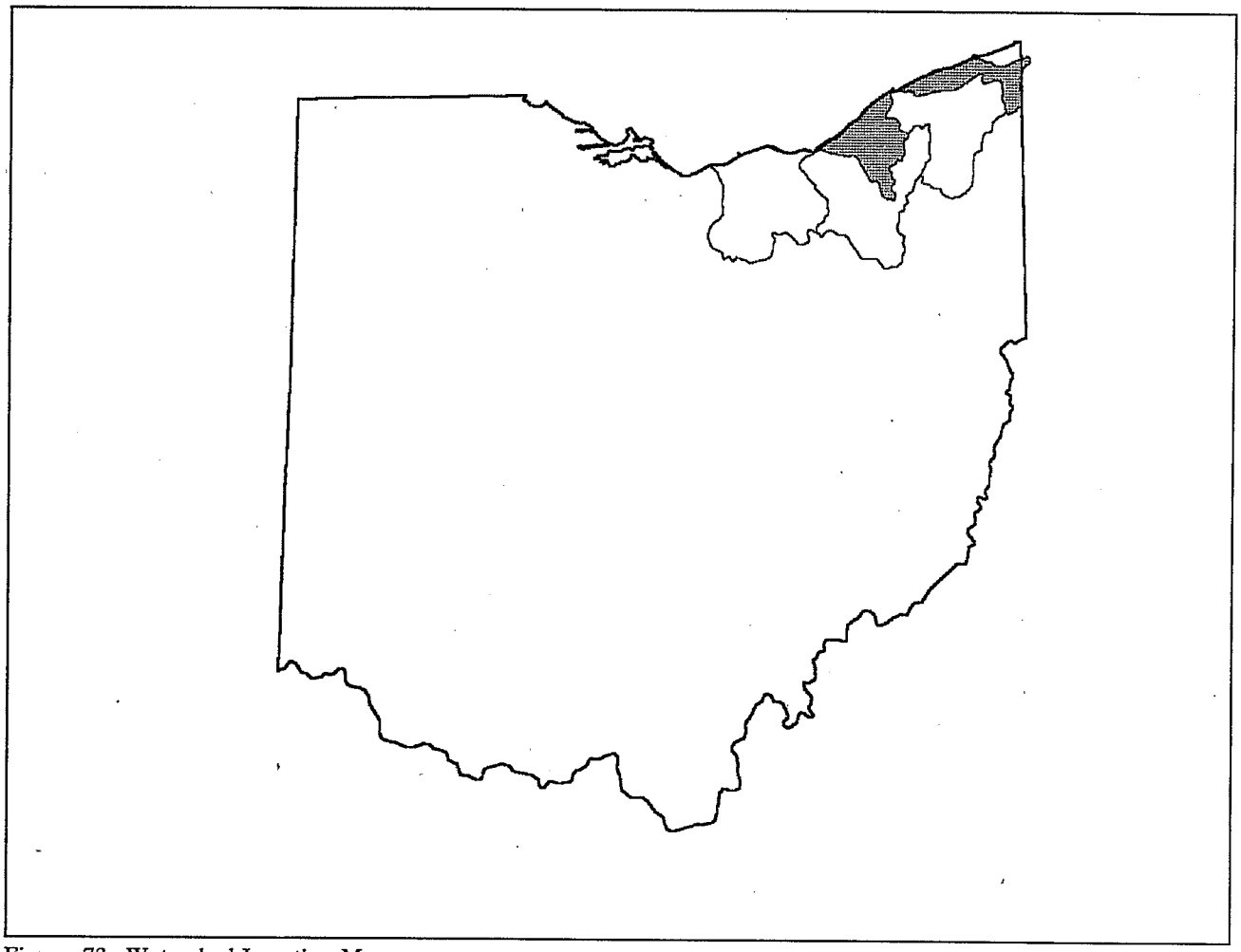

Figure 73. Watershed Location Map

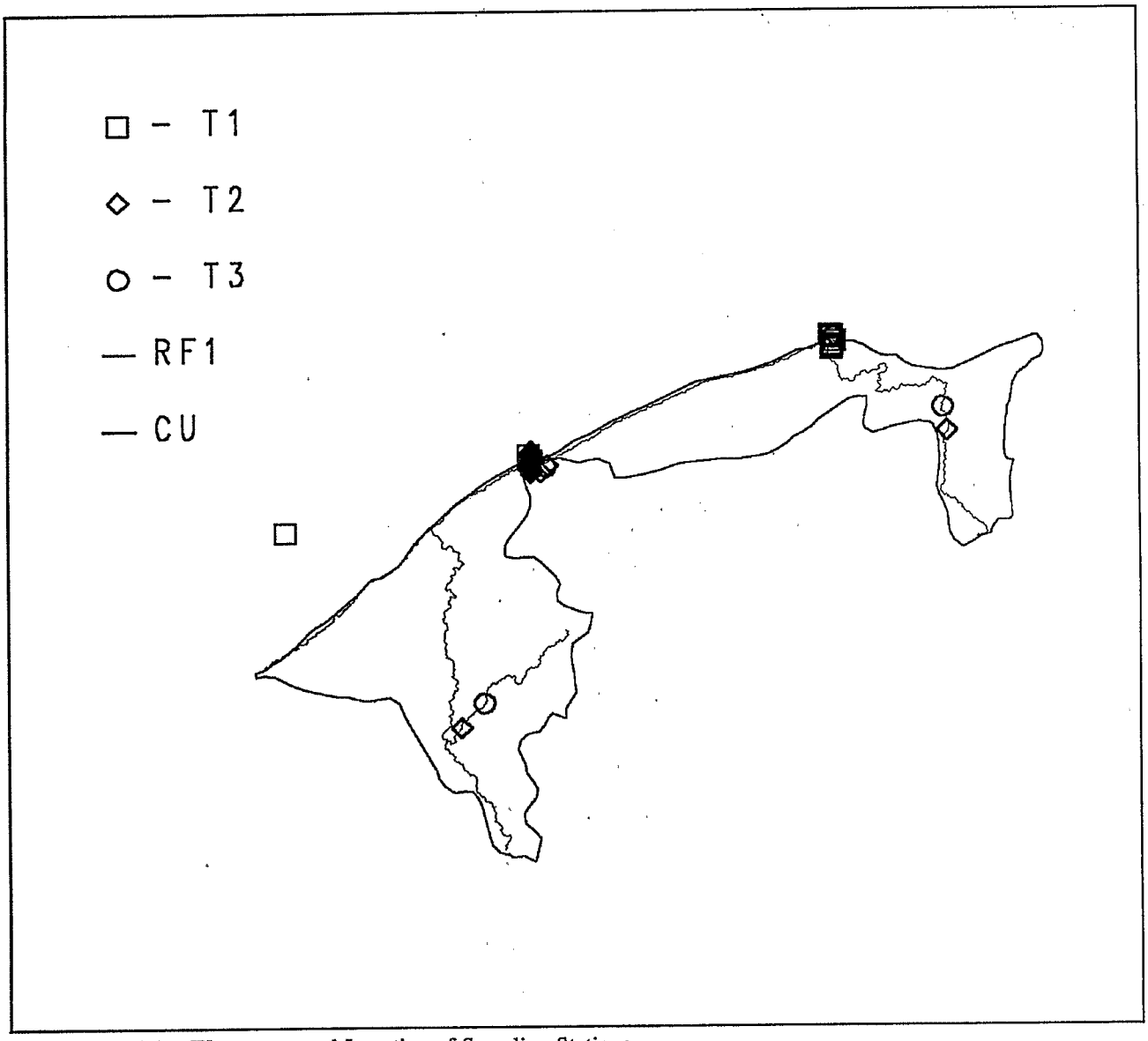

Figure 74. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 20 Date Range: 1981-88

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 7 Date Range: 1982

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 4 Date Range: 1985-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	30	27	.	27	.	27	.	.
Arsenic	24	22	.	22	.	22	.	.
Cadmium	30	22	.	22	.	22	.	.
Copper	30	22	.	22	.	22	.	.
Lead	30	22	.	22	.	22	.	.
Polychlorinated biphenyls	26	14	9	5	9	4	.	14
Bis(2-ethylhexyl)phthalate	15	14	7	7	7	7	.	7
Zinc	30	13	.	13	.	13	.	.
Mercury	11	10	5	5	5	5	.	.
Fluoranthene	16	8	1	7	1	7	.	.
Phenanthrene	16	8	1	7	1	7	.	.
Chromium	30	7	2	5	2	5	.	.
Dichlorobenzene, 1,4-	9	6	6	.	6	.	.	5
Pyrene	16	6	1	5	1	5	.	.
Dichlorobenzene, 1,2-	9	5	5	.	5	.	.	.
Silver	22	5	5	.	5	.	.	.
Trichlorobenzene, 1,2,4-	9	5	3	2	3	2	.	.
DDT	14	5	1	4	1	4	.	.
Dichlorobenzene, 1,3-	9	5	.	5	.	5	.	.
Hexachlorobenzene	14	5	.	5	.	5	.	5
Hexachlorobutadiene	9	5	.	5	.	5	.	2
Benzo(a)anthracene/Chrysene	4	4	2	2	2	2	.	4
Anthracene	12	4	1	3	1	3	.	.
Fluorene	8	4	1	3	1	3	.	.
BHC	13	4	.	4	.	4	.	.
Acenaphthene	5	2	1	1	1	1	.	.
Benzo(a)pyrene	12	2	1	1	1	1	.	2
Naphthalene	7	2	1	1	1	1	.	.
Benzene	12	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	11	2	.	2	.	1	.	2
Acenaphthylene	4	1	1	.	1	.	.	.
Dibenzofuran	2	1	1	.	1	.	.	1
Xylenes	3	1	1	.	1	.	.	.
Benzo(ghi)perylene	11	1	.	1	.	1	.	.
Benzo(k)fluoranthene	9	1	.	1	.	.	.	1
Chlordane	21	1	.	1	.	1	.	1
Cresol, p-	2	1	.	1	.	1	.	.
Dichloromethane	14	1	.	1	.	.	.	1
Dimethylphenol, 2,4-	10	1	.	1	.	1	.	.
Ethylbenzene	12	1	.	1	.	1	.	.
Phenol	10	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Toluene	13	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	5	1344.07	0.34	3	6700.00	0.34
Acenaphthylene	4	9400.00	0.00	1	37600.00	37600.00
Acrylonitrile	6	0.00	0.00	0	.	.
Aldrin	42	0.00	0.00	0	.	.
Anthracene	14	2637.91	0.00	6	35300.00	0.30
Antimony	5	320.00	0.00	2	800.00	800.00
Arsenic	47	13241.91	10500.00	47	55990.00	6170.00
Benzene	14	24.00	0.00	3	208.00	4.10
Benzo(a)anthracene	11	0.17	0.00	1	1.90	1.90
Benzo(a)anthracene/Chrysene	4	18045.00	1180.00	4	69600.00	220.00
Benzo(a)pyrene	14	2478.06	0.00	4	33200.00	1.36
Benzo(b)fluoranthene	8	0.00	0.00	0	.	.
Benzo(ghi)perylene	13	975.38	0.00	2	12200.00	480.00
Benzo(k)fluoranthene	11	233.55	0.00	1	2569.00	2569.00
Bis(2-ethylhexyl)phthalate	17	6548.59	1080.00	14	44690.00	390.00
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	9	20.00	0.00	1	180.00	180.00
BHC	48	0.19	0.00	4	3.00	1.00
Cadmium	52	2028.92	1500.00	50	9000.00	67.60
Chlordane	43	4.95	0.00	1	213.00	213.00
Chlorobenzene	13	34.08	1.50	7	150.00	1.50
Chromium	52	62200.58	38000.00	52	628900.0	8580.00
Chrysene	11	0.25	0.00	2	2.15	0.60
Copper	52	26609.62	23000.00	52	76000.00	8000.00
Cresol, p-	2	46630.00	46630.00	2	93100.00	160.00
Di-n-butyl phthalate	17	143.01	0.00	6	950.00	1.20
Di-n-octyl phthalate	11	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	11	0.00	0.00	0	.	.
Dibenzofuran	2	18570.00	18570.00	2	37100.00	40.00
Dibromochloromethane	8	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	11	7980.00	0.00	5	43990.00	1700.00
Dichlorobenzene, 1,3-	11	3745.36	0.00	5	20000.00	1899.00
Dichlorobenzene, 1,4-	9	49586.67	14990.00	6	220000.0	1300.00
Dichlorobenzenes	3	0.00	0.00	0	.	.
Dichloroethane 1,2-	8	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	8	0.00	0.00	0	.	.
Dichloromethane	14	925.99	0.00	6	12900.00	6.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichloropropane, 1,2-	8	0.00	0.00	0	.	.
Dieldrin	11	0.00	0.00	0	.	.
Diethyl phthalate	11	0.00	0.00	0	.	.
Dimethyl phthalate	11	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	10	2910.00	0.00	1	29100.00	29100.00
Dioxins	6	0.00	0.00	0	.	.
DCPA/Dacthal	4	2.00	2.00	4	2.00	2.00
DDT	47	1.94	0.00	14	31.00	2.00
Endosulfan, alpha-	11	0.00	0.00	0	.	.
Endosulfan, beta-	16	0.56	0.00	5	2.00	1.00
Endrin	42	0.00	0.00	0	.	.
Ethylbenzene	14	7.67	0.00	3	104.00	1.60
Fluoranthene	18	5687.02	2.93	12	98300.00	0.55
Fluorene	8	6300.07	10.25	6	50300.00	0.10
Heptachlor	42	0.00	0.00	0	.	.
Heptachlor epoxide	42	0.00	0.00	0	.	.
Hexachlorobenzene	16	3469.25	1.00	10	32000.00	1.00
Hexachlorobutadiene	11	263.63	0.00	5	2000.00	100.00
Hexachloroethane	11	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	13	1100.77	0.00	2	13800.00	510.00
Isophorone	10	2.00	0.00	1	20.00	20.00
Lead	52	38736.15	36000.00	51	110000.0	6790.00
Mercury	13	1230.76	300.00	13	4700.00	100.00
Methoxychlor	8	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	20.00	20.00	1	20.00	20.00
Mirex/Dechlorane	39	0.00	0.00	0	.	.
Naphthalene	7	52951.64	1.07	6	370600.0	0.10
Nickel	52	32433.27	32000.00	52	65000.00	8600.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	18	7951.79	0.87	12	140100.0	0.25
Phenol	10	710.00	0.00	1	7100.00	7100.00
Polychlorinated biphenyls	109	2375.46	0.00	23	120000.0	2.00
Pyrene	18	3499.20	1.40	10	60300.00	0.80
Silver	42	1248.67	72.50	32	13990.00	50.00
Tetrachloroethane, 1,1,2,2-	9	0.86	0.00	1	7.70	7.70
Tetrachloroethene	9	0.18	0.00	1	1.60	1.60
Tetrachloromethane	8	0.00	0.00	0	.	.
Toluene	15	127.08	0.14	9	1759.00	0.01
Toxaphene	42	0.00	0.00	0	.	.
Tribromomethane/Bromoform	8	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	11	6851.73	0.00	5	35990.00	4399.00
Trichloroethane, 1,1,1-	39	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	8	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethene	8	0.00	0.00	0	.	.
Trichlorofluoromethane	8	0.00	0.00	0	.	.
Trichloromethane/Chloroform	8	0.00	0.00	0	.	.
Xylenes	3	107.90	2.10	3	320.00	1.60
Zinc	52	123200.0	120000.0	52	340000.0	41600.00

Chautauqua-Conneaut 04120101

Watershed Summary Information

Accounting Unit Name: Eastern Lake Erie

State(s): OH PA NY

Political Boundaries: Erie, Chautauqua, Ashtabula, Crawford

Major Waterways:
Conneaut Cr
Elk Cr
Walnut Cr
Canadaway Cr
Chautauqua Cr

Number of Stations in Watershed:
Tier1 - 21
Tier2 - 86
Tier3 - 3

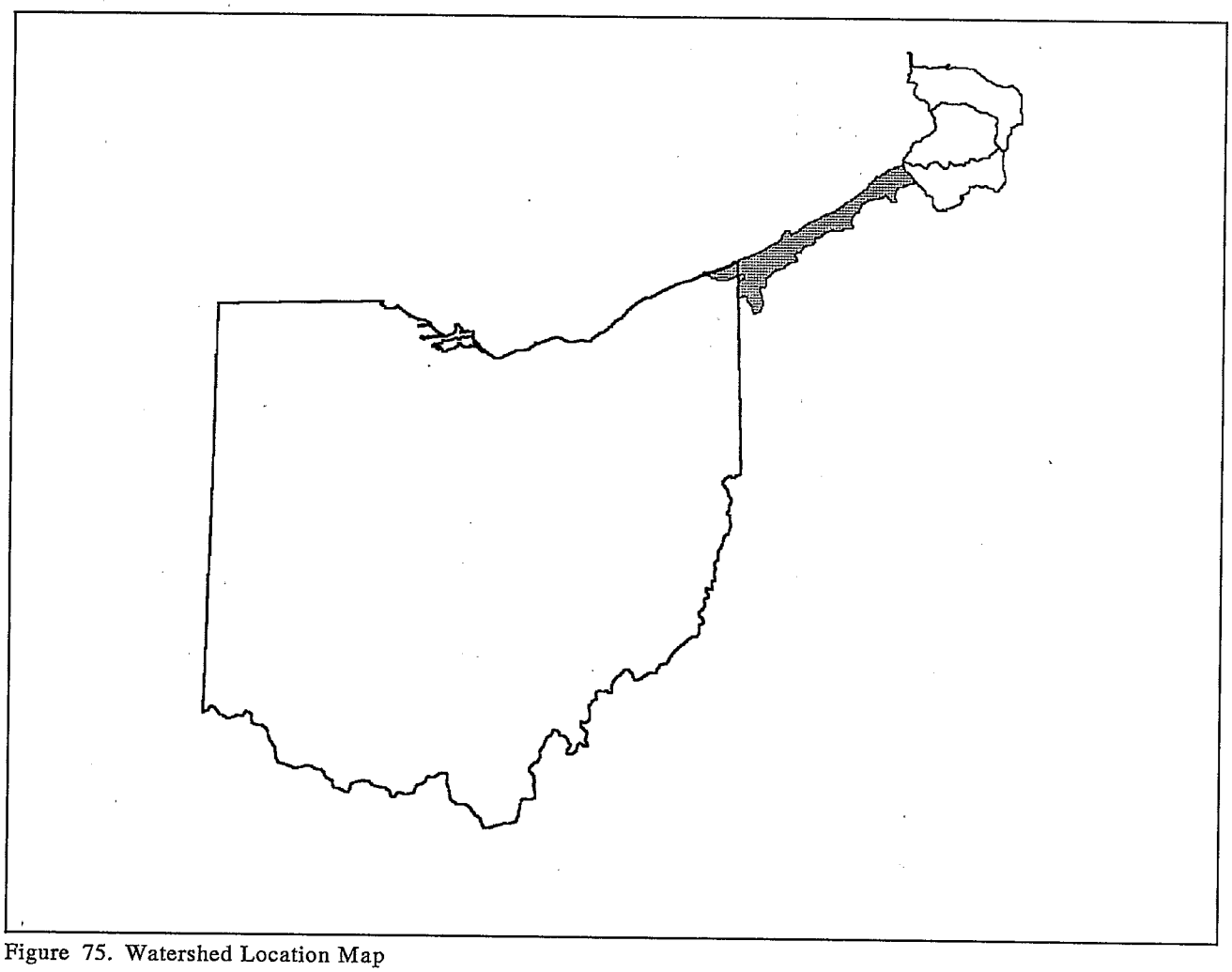

Figure 75. Watershed Location Map

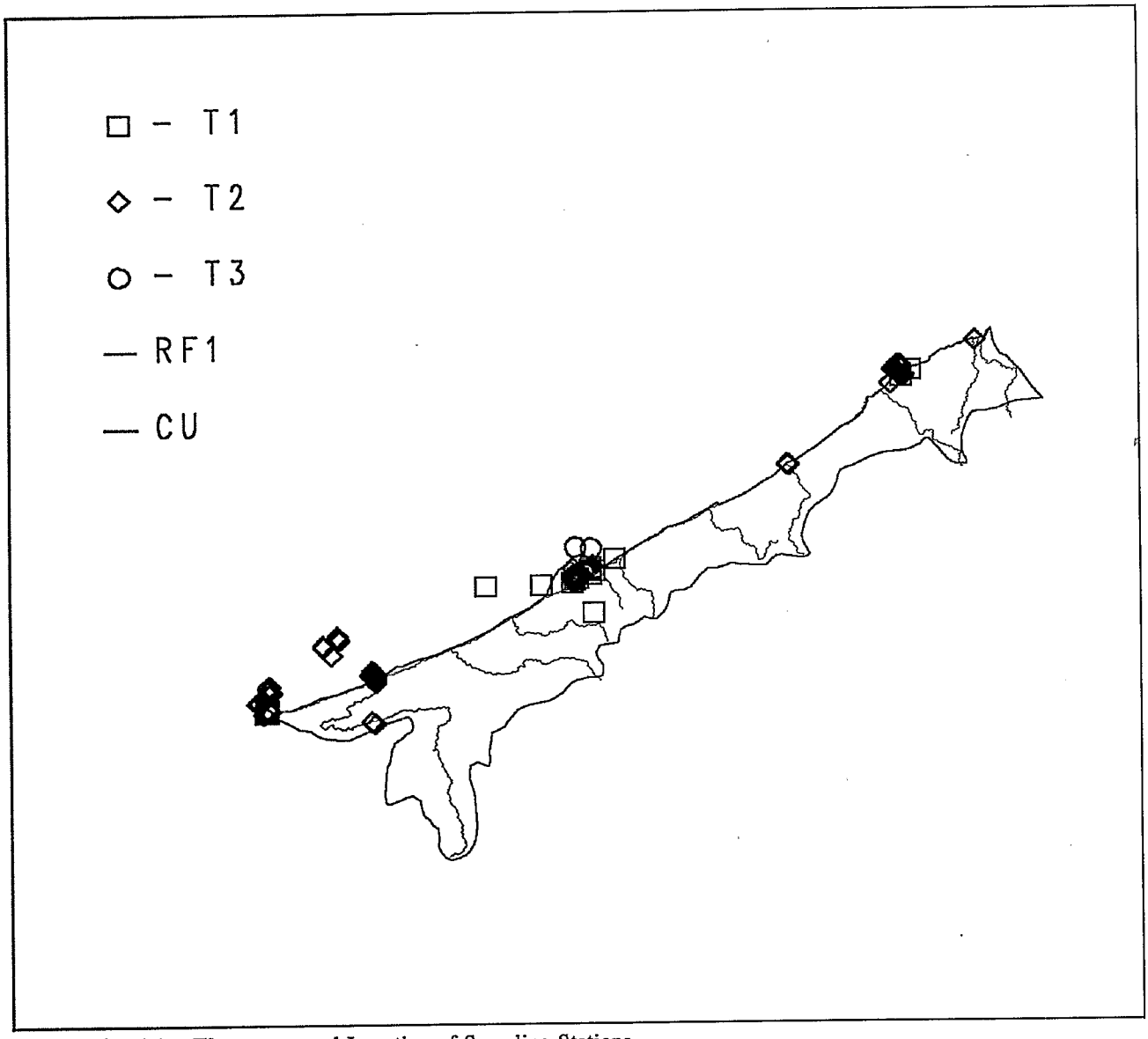

Figure 76. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1989

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 73 Date Range: 1982-89

Source: **STORET** Agency: **11COENCD**
Monitoring Program: **Corps of Engineers North Central Division Water & Sediments Data**
Num. of Stations: 10 Date Range: 1980

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1980-86

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 15 Date Range: 1982

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1987-88

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 2 Date Range: 1987-93

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 6 Date Range: 1985-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	90	83	.	83	.	83	.	.
Copper	97	76	.	76	.	76	.	.
Arsenic	90	65	.	65	.	64	.	1
Cadmium	108	61	.	61	.	61	.	.
Lead	106	34	.	34	.	33	.	1
Polychlorinated biphenyls	108	33	18	15	11	14	7	26
Zinc	94	30	.	30	.	30	.	.
Phenanthrene	71	28	3	25	3	25	.	.
Fluoranthene	70	25	2	23	2	23	.	.
Mercury	101	23	1	22	1	22	.	.
Pyrene	71	22	3	19	3	19	.	.
Bis(2-ethylhexyl)phthalate	55	15	4	11	4	11	.	4
DDT	96	13	.	13	.	13	.	1
Anthracene	65	10	1	9	1	9	.	.
Chromium	106	10	.	10	.	10	.	.
Chlordane	90	8	.	8	.	7	.	4
BHC	89	6	.	6	.	6	.	1
Benzo(a)anthracene	63	5	.	5	.	5	.	5
Dieldrin	83	5	.	5	.	1	.	4
Di-n-butyl phthalate	52	4	.	4	.	4	.	.
Silver	26	4	.	4	.	4	.	.
Benzo(k)fluoranthene	63	3	.	3	.	.	.	3
Benzo(a)anthracene/Chrysene	2	2	2	.	2	.	.	2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Benzo(a)pyrene	66	2	2	.	2	.	.	2
Acenaphthene	44	2	1	1	1	1	.	.
Fluorene	44	2	1	1	1	1	.	.
Methylnaphthalene, 2-	2	2	1	1	1	1	.	.
Acenaphthylene	43	1	1	.	1	.	.	.
Dibenzo(a,h)anthracene	63	1	1	.	1	.	.	1
Aldrin	82	1	.	1	.	.	.	1
Benzo(ghi)perylene	63	1	.	1	.	1	.	.
Hexachlorobutadiene	34	1	.	1	.	1	.	.
Indeno(1,2,3-cd)pyrene	63	1	.	1	.	1	.	1
Naphthalene	43	1	.	1	.	1	.	.
Toluene	44	1	.	1	.	1	.	.
Toxaphene	76	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	44	56.82	0.00	2	2300.00	200.00
Acenaphthylene	43	27.91	0.00	1	1200.00	1200.00
Acrylonitrile	5	0.00	0.00	0	.	.
Aldrin	95	0.00	0.00	0	.	.
Anthracene	73	314.24	0.00	10	17900.00	300.00
Arsenic	125	12230.38	14000.00	114	39000.00	1100.00
Benzene	46	0.18	0.00	5	2.30	1.10
Benzo(a)anthracene	71	30.31	0.00	10	600.00	0.32
Benzo(a)anthracene/Chrysene	2	49650.00	49650.00	2	88000.00	11300.00
Benzo(a)pyrene	74	1117.61	0.00	5	74500.00	0.41
Benzo(b)fluoranthene	30	0.00	0.00	0	.	.
Benzo(ghi)perylene	71	411.27	0.00	1	29200.00	29200.00
Benzo(k)fluoranthene	71	170.67	0.00	8	3269.00	460.00
Bis(2-ethylhexyl)phthalate	73	641.19	0.00	16	13890.00	120.00
Butyl benzyl phthalate	45	0.00	0.00	0	.	.
BHC	367	0.19	0.00	7	14.00	7.00
Cadmium	145	2434.76	1000.00	112	54400.00	200.00
Chlordane	92	1.49	0.00	8	53.00	2.00
Chlorobenzene	72	0.05	0.00	2	2.10	1.80
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	143	21793.50	17000.00	126	140000.0	3000.00
Chrysene	71	0.01	0.00	1	0.73	0.73
Copper	136	29560.22	28000.00	128	120000.0	7000.00
Di-n-butyl phthalate	60	211.67	0.00	9	3500.00	600.00
Di-n-octyl phthalate	57	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibenzo(a,h)anthracene	71	97183.10	0.00	1	6900000	6900000
Dibenzofuran	1	400.00	400.00	1	400.00	400.00
Dibromochloromethane	41	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	70	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	54	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	58	0.00	0.00	0	.	.
Dichlorobenzenes	12	0.00	0.00	0	.	.
Dichloroethane 1,1-	30	0.04	0.00	1	1.20	1.20
Dichloroethane 1,2-	44	0.22	0.00	3	7.10	1.20
Dichloroethene, trans-1,2-	12	0.00	0.00	0	.	.
Dichloromethane	56	5.78	0.00	15	96.00	6.40
Dichloropropane, 1,2-	42	0.05	0.00	1	2.00	2.00
Dieldrin	95	0.01	0.00	1	1.00	1.00
Diethyl phthalate	41	0.00	0.00	0	.	.
Dimethyl phthalate	41	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	17	0.00	0.00	0	.	.
Dioxins	5	0.00	0.00	0	.	.
DCPA/Dacthal	12	0.50	0.00	2	4.00	2.00
DDT	336	0.90	0.00	30	25.00	0.04
Endosulfan, alpha-	95	0.00	0.00	0	.	.
Endosulfan, beta-	102	0.25	0.00	7	10.00	1.00
Endrin	85	0.00	0.00	0	.	.
Ethylbenzene	44	0.10	0.00	3	1.80	1.10
Fluoranthene	78	1304.73	0.00	33	77000.00	0.60
Fluorene	44	479.55	0.00	2	21000.00	100.00
Heptachlor	95	0.00	0.00	0	.	.
Heptachlor epoxide	96	0.00	0.00	0	.	.
Hexachlorobenzene	65	0.78	0.00	13	17.00	1.00
Hexachlorobutadiene	42	4.05	0.00	1	170.00	170.00
Hexachloroethane	41	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	71	549.30	0.00	1	39000.00	39000.00
Isophorone	17	0.00	0.00	0	.	.
Lead	144	29036.18	20000.00	128	187900.0	9000.00
Mercury	135	83.16	67.00	88	800.00	30.00
Methoxychlor	43	0.00	0.00	0	.	.
Methylnaphthalene, 2-	2	2250.00	2250.00	2	4300.00	200.00
Mirex/Dechlorane	43	0.00	0.00	0	.	.
Naphthalene	43	2.34	0.00	2	100.00	0.57
Nickel	133	29634.89	29000.00	121	116500.0	10000.00
Nitrosodiphenylamine, N-	17	0.00	0.00	0	.	.
Pentachlorophenol	17	0.00	0.00	0	.	.
Phenanthrene	79	1239.90	0.00	39	78800.00	0.32
Phenol	17	0.00	0.00	0	.	.
Polychlorinated biphenyls	510	13.03	0.00	74	650.00	0.04

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Pyrene	79	1017.94	0.00	24	58000.00	0.95
Silver	26	288.46	0.00	8	2400.00	300.00
Tetrachloroethane, 1,1,2,2-	45	0.74	0.00	4	13.00	2.10
Tetrachloroethene	13	0.12	0.00	1	1.60	1.60
Tetrachloromethane	41	0.00	0.00	0	.	.
Toluene	53	57.47	0.00	21	2000.00	0.01
Toxaphene	85	0.00	0.00	0	.	.
Tribromomethane/Bromoform	42	0.21	0.00	1	9.00	9.00
Trichlorobenzene, 1,2,4-	42	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	41	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	41	0.00	0.00	0	.	.
Trichloroethene	13	1.31	0.00	1	17.00	17.00
Trichlorofluoromethane	41	0.00	0.00	0	.	.
Trichloromethane/Chloroform	42	0.02	0.00	1	1.00	1.00
Xylenes	3	1.73	1.50	3	2.40	1.30
Zinc	134	120597.8	110000.0	130	430000.0	10000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	10	2.00	0.00	2	10.00	10.00
Arsenic	11	91.48	135.00	6	200.00	135.00
Biphenyl	1	0.00	0.00	0	.	.
BHC	30	4.15	0.00	13	10.00	4.65
Cadmium	12	44.60	49.00	12	71.68	16.00
Chlordane	48	26.64	10.00	35	500.00	5.75
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	6	240.83	279.50	5	435.00	162.00
Copper	12	1314.92	1130.00	11	3240.00	870.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	15	13.27	10.00	9	36.00	10.00
Dioxins	2	0.00	0.00	1	0.00	0.00
DCPA/Dacthal	6	11.67	10.00	6	20.00	10.00
DDT	60	31.68	0.00	27	270.00	10.00
Endrin	15	4.00	0.00	6	10.00	10.00
Heptachlor	13	4.62	0.00	6	10.00	10.00
Heptachlor epoxide	9	2.22	0.00	2	10.00	10.00
Hexachlorobenzene	7	8.57	10.00	6	10.00	10.00
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	12	301.18	125.00	11	2330.00	70.00
Mercury	11	117.98	50.00	11	322.00	20.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	9	0.00	0.00	0	.	.
Mirex/Dechlorane	11	5.45	10.00	6	10.00	10.00
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	29	548.45	300.00	27	4140.00	30.00
Selenium	6	7899.10	498.80	6	45000.00	410.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	6	111.67	100.00	6	170.00	100.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	8	17755.00	14590.00	8	31200.00	12840.00

Buffalo-Eighteenmile 04120103

Watershed Summary Information

Accounting Unit Name: Eastern Lake Erie

State(s): NY

Political Boundaries: Erie, Wyoming, Chautauqua

Major Waterways:
Buffalo Cr
Cazenovia Cr
Cayuga Cr
Eighteenmile Cr
Cazenovia Cr, E Br

Number of Stations in Watershed:
Tier1 - 59
Tier2 - 33
Tier3 - 9

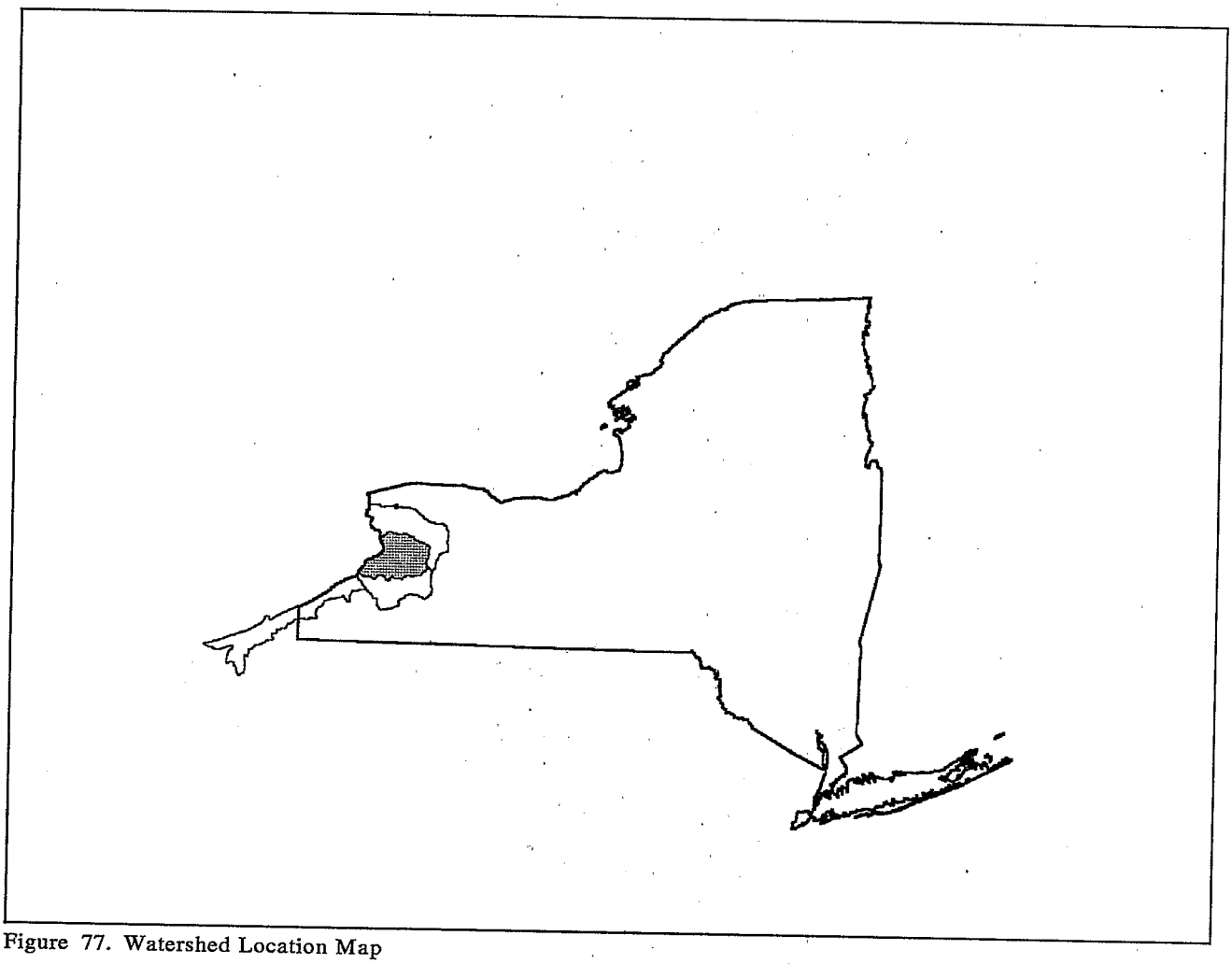

Figure 77. Watershed Location Map

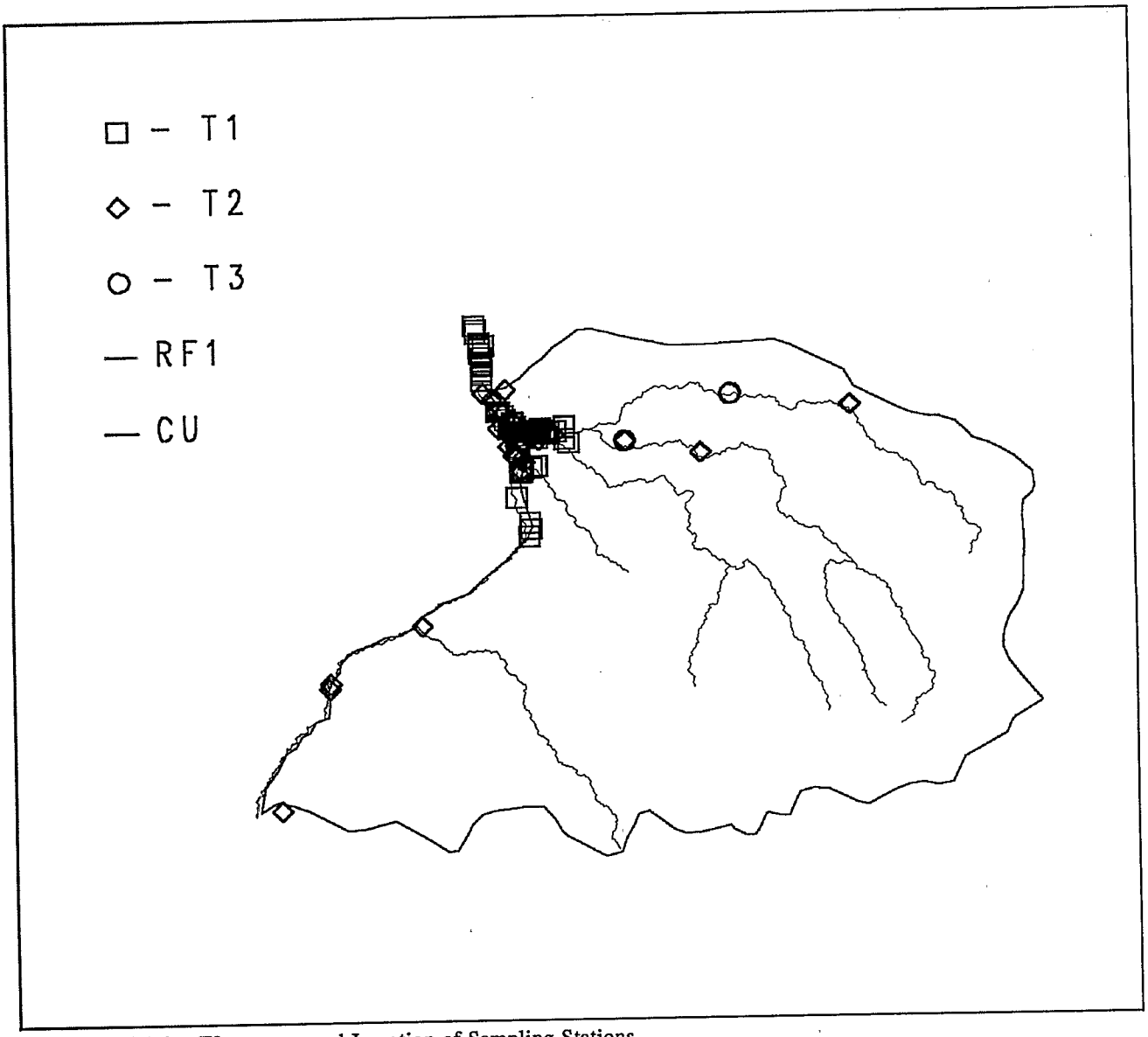

Figure 78. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **AR**
Monitoring Program: **GLNPO/ARCS**
Num. of Stations: 15 Date Range: 1989

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1987

Source: **STORET** Agency: **11COEBUF**
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 22 Date Range: 1989

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 49 Date Range: 1981-82

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 7 Date Range: 1982-88

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 6 Date Range: 1987-93

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	93	82	.	82	.	82	.	.
Nickel	91	80	.	80	.	80	.	.
Lead	91	76	.	76	.	76	.	.
Zinc	92	73	.	73	.	73	.	.
Mercury	85	65	20	45	20	45	.	.
Polychlorinated biphenyls	86	60	29	31	27	26	2	58
DDT	85	55	29	26	29	26	.	27
Cadmium	92	53	.	53	.	53	.	.
Pyrene	76	51	30	21	30	21	.	.
Fluoranthene	79	43	22	21	22	21	.	.
Anthracene&Phenanthrene	42	42	33	9	33	9	.	.
BHC	81	42	11	31	11	31	.	29
Chlordane	82	38	.	38	.	38	.	17
Heptachlor epoxide	80	37	.	37	.	.	.	37
Bis(2-ethylhexyl)phthalate	36	36	20	16	20	16	.	19
Chromium	89	36	3	33	3	33	.	.
Benzo(a)anthracene/Chrysene	35	35	34	1	34	1	.	35
Naphthalene	62	33	12	21	12	21	.	.
Arsenic	34	26	.	26	.	26	.	.
Benzo(a)pyrene	48	25	14	11	14	11	.	25
Acenaphthene	48	24	5	19	5	19	.	.
Benzo(b)fluoranthene	21	19	.	19	.	7	.	19
Fluorene	46	18	9	9	9	9	.	.
Methoxychlor	37	14	.	14	.	14	.	.
Silver	57	13	5	8	5	8	.	.
Dieldrin	49	12	.	12	.	8	.	11
Endosulfan, beta-	71	12	.	12	.	12	.	.
Anthracene	36	11	4	7	4	7	.	.
Methylnaphthalene, 2-	15	11	2	9	2	9	.	.
Benzo(a)anthracene	34	10	2	8	2	8	.	7

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chrysene	34	10	1	9	1	9	.	.
Dichlorobenzene, 1,4-	15	9	5	4	5	4	.	3
Indeno(1,2,3-cd)pyrene	36	8	.	8	.	5	.	8
Benzo(ghi)perylene	37	6	.	6	.	6	.	.
Diethyl phthalate	11	5	3	2	3	2	.	.
Butyl benzyl phthalate	17	5	.	5	.	5	.	.
Toluene	41	5	.	5	.	5	.	.
Acenaphthylene	28	4	2	2	2	2	.	.
Dichlorobenzenes	4	4	2	2	2	2	.	1
Di-n-butyl phthalate	37	4	1	3	1	3	.	.
Dibenzofuran	14	4	1	3	1	3	.	1
Di-n-octyl phthalate	10	4	.	4	.	4	.	.
Dichlorobenzene, 1,2-	3	3	3	.	3	.	.	.
Phenanthrene	36	3	3	.	3	.	.	.
Xylenes	4	3	1	2	1	2	.	.
Dichlorobenzene, 1,3-	28	3	.	3	.	3	.	.
SEM_est	10	3	.	3	.	3	.	.
Benzene	28	2	.	2	.	2	.	1
Cresol, p-	3	2	.	2	.	2	.	.
Ethylbenzene	26	2	.	2	.	2	.	.
Hexachlorobenzene	20	2	.	2	.	2	.	1
Nitrosodiphenylamine, N-	2	2	.	2	.	2	.	.
Dioxins	12	1	1	.	.	.	1	.
Tetrachloroethene	24	1	1	.	1	.	.	1
Trichlorobenzene, 1,2,4-	3	1	1	.	1	.	.	1
Benzo(k)fluoranthene	34	1	.	1	.	1	.	.
Biphenyl	3	1	.	1	.	1	.	.
Chlorobenzene	28	1	.	1	.	1	.	.
Dichloromethane	54	1	.	1	.	.	.	1
Dimethylphenol, 2,4-	1	1	.	1	.	1	.	.
Endosulfan, alpha-	42	1	.	1	.	1	.	.
Endrin	23	1	.	1	.	1	.	.
Pentachlorobenzene	3	1	.	1	.	1	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	50	1080.06	10.00	29	42200.00	0.41
Acenaphthylene	28	164.31	0.00	5	2100.00	0.77
Acrylonitrile	22	0.00	0.00	0	.	.
Aldrin	43	0.00	0.00	0	.	.
Anthracene	36	443.85	0.33	31	4900.00	0.12

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Anthracene&Phenanthrene	45	4703.56	2500.00	45	23500.00	400.00
Arsenic	34	10217.65	10000.00	32	34000.00	4300.00
Benzene	30	71.87	0.00	8	1840.00	14.00
Benzo(a)anthracene	34	269.11	0.97	32	3500.00	0.37
Benzo(a)anthracene/Chrysene	37	17662.16	11900.00	37	80000.00	1100.00
Benzo(a)pyrene	48	11187.53	225.00	47	106500.0	0.37
Benzo(b)fluoranthene	21	18621.90	1200.00	20	124700.0	220.00
Benzo(ghi)perylene	37	1118.25	0.54	25	13200.00	0.40
Benzo(k)fluoranthene	34	469.41	0.00	10	9500.00	340.00
Biphenyl	1	17000.00	17000.00	1	17000.00	17000.00
Bis(2-ethylhexyl)phthalate	36	10609.44	3400.00	36	59000.00	200.00
Butyl benzyl phthalate	17	1692.94	300.00	13	15000.00	10.00
BHC	217	11.94	0.00	51	734.00	0.02
Cadmium	98	1977.19	900.00	77	25000.00	35.00
Chlordane	96	10.63	0.00	46	301.00	1.00
Chlorobenzene	31	1288.69	0.02	16	30970.00	0.02
Chlorpyrifos/Dursban	7	0.00	0.00	0	.	.
Chromium	91	72354.95	40000.00	89	1000000	2000.00
Chrysene	34	359.98	0.99	33	4000.00	0.21
Copper	99	106701.0	46000.00	98	1600000	2500.00
Cresol, p-	3	1833.33	2300.00	3	3000.00	200.00
Di-n-butyl phthalate	40	1041.43	483.00	40	17400.00	70.00
Di-n-octyl phthalate	10	7817.00	930.00	7	38000.00	210.00
Diazinon/Spectracide	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	23	0.17	0.00	3	2.19	0.57
Dibenzofuran	14	3221.64	91.50	9	40000.00	60.00
Dibromochloromethane	30	3.67	0.00	8	50.00	1.00
Dichlorobenzene, 1,2-	6	31683.33	4750.00	6	171900.0	400.00
Dichlorobenzene, 1,3-	31	871.18	0.25	23	10000.00	0.02
Dichlorobenzene, 1,4-	16	705.62	485.00	13	3000.00	54.00
Dichlorobenzenes	6	2575.00	570.00	6	11700.00	140.00
Dichloroethane 1,1-	4	10.50	9.00	4	20.00	4.00
Dichloroethane 1,2-	25	2.76	0.00	3	37.00	2.00
Dichloroethene, trans-1,2-	22	0.00	0.00	0	.	.
Dichloromethane	57	321.82	10.00	35	6900.00	2.00
Dichloropropane, 1,2-	25	0.32	0.00	3	4.00	2.00
Dieldrin	50	6.14	0.00	10	110.00	1.00
Diethyl phthalate	11	423.64	100.00	11	1700.00	30.00
Dimethyl phthalate	10	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	4000.00	4000.00	1	4000.00	4000.00
Dioxins	20	0.00	0.00	10	0.04	0.00
DCPA/Dacthal	16	8.06	5.00	16	36.00	2.00
DDT	322	79.12	6.00	211	16090.00	0.06
Endosulfan, alpha-	46	0.39	0.00	4	15.00	0.11

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan, beta-	78	10.21	0.00	35	153.00	1.00
Endrin	25	11.04	0.00	4	267.00	1.00
Ethion/Bladen	2	0.00	0.00	0	.	.
Ethylbenzene	28	35.04	0.00	6	890.00	1.00
Fluoranthene	81	6149.44	1800.00	80	63900.00	0.45
Fluorene	48	421.88	0.46	25	3400.00	0.37
Heptachlor	34	0.00	0.00	0	.	.
Heptachlor epoxide	85	20.47	2.00	47	301.00	0.05
Hexachlorobenzene	20	130.70	4.00	20	1140.00	1.00
Indeno(1,2,3-cd)pyrene	36	875.21	0.62	30	13000.00	0.30
Lead	96	196889.6	74000.00	89	3300000	10000.00
Malathion	2	0.00	0.00	0	.	.
Mercury	91	892.68	300.00	80	24000.00	8.70
Methoxychlor	39	64.36	0.00	18	640.00	2.00
Methylnaphthalene, 2-	15	427.87	100.00	11	2400.00	45.00
Mirex/Dechlorane	12	0.00	0.00	0	.	.
Naphthalene	65	3732.56	70.00	46	177500.0	0.36
Nickel	96	32012.50	31000.00	95	120000.0	4600.00
Nitrosodiphenylamine, N-	4	5325.00	3600.00	4	13900.00	200.00
Pentachlorobenzene	3	180166.7	300.00	3	540000.0	200.00
Phenanthrene	36	1569.33	1.54	35	23300.00	0.27
Phenol	2	170.00	170.00	2	300.00	40.00
Polychlorinated biphenyls	367	144.35	0.00	117	7500.00	1.00
Pyrene	78	5514.07	1700.00	77	49600.00	0.26
Silver	57	978.95	210.00	34	8500.00	120.00
SEM_est	10	6.59	5.12	10	18.48	0.84
Tetrachloroethane, 1,1,2,2-	26	3.04	0.00	4	36.00	9.00
Tetrachloroethene	25	78.36	0.00	3	1940.00	4.00
Toluene	43	661.41	2.87	28	11390.00	0.04
Toxaphene	43	0.00	0.00	0	.	.
Tribromomethane/Bromoform	31	4.10	0.00	9	70.00	3.00
Trichlorobenzene, 1,2,4-	3	62900.00	5100.00	3	182300.0	1300.00
Trichloroethane, 1,1,1-	24	0.83	0.00	2	10.00	10.00
Trichloroethane, 1,1,2-	22	0.00	0.00	0	.	.
Trichloroethene	25	2.40	0.00	3	50.00	4.00
Trichlorofluoromethane	22	0.00	0.00	0	.	.
Trichloromethane/Chloroform	38	53.87	0.00	16	600.00	2.00
Xylenes	6	361.00	60.00	6	1920.00	20.00
Zinc	97	369680.4	200000.0	97	3300000	22000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	2	0.00	0.00	0	.	.
BHC	4	6.18	4.35	3	16.00	4.13
Chlordane	4	12.43	10.62	3	28.50	3.13
Chlorpyrifos/Dursban	2	6.00	6.00	1	12.00	12.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	2	18.05	18.05	2	22.40	13.70
Dioxins	4	0.00	0.00	3	0.01	0.00
DDT	1	43.60	43.60	1	43.60	43.60
Endrin	2	0.00	0.00	0	.	.
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	2	0.00	0.00	0	.	.
Hexachlorobenzene	2	4.27	4.27	1	8.54	8.54
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Mercury	1	50.00	50.00	1	50.00	50.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Pentachlorobenzene	2	2.91	2.91	1	5.82	5.82
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	2	1804.30	1804.30	2	3029.00	579.60
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: GLNPO/ARCS							
42.8606	78.8489	89-10-07	Chironomus Tentans	S	6.70	13.30	no
			Hyallella Azteca	S	23.75	5.00	no
			Hyallella Azteca	S	28.75	20.00	no
42.8606	78.8703	89-10-08	Chironomus Tentans	S	6.70	13.30	no
			Hyallella Azteca	S	15.00	5.00	no
			Hyallella Azteca	S	17.50	20.00	no
42.8614	78.8336	89-10-07	Chironomus Tentans	S	0.00	13.30	no
			Hyallella Azteca	S	16.25	5.00	no
			Hyallella Azteca	S	31.25	20.00	no
42.8614	78.8456	89-10-08	Chironomus Tentans	S	6.70	13.30	no
			Hyallella Azteca	S	6.25	20.00	no
			Hyallella Azteca	S	7.50	5.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
42.8778	78.8844	89-10-06	Chironomus Tentans	S	6.70	13.30	no
			Hyallella Azteca	S	25.00	5.00	no
			Hyallella Azteca	S	36.25	20.00	no

Niagara 04120104

Watershed Summary Information

Accounting Unit Name:	Eastern Lake Erie
State(s):	NY
Political Boundaries:	Niagara, Erie, Genesee, Wyoming
Major Waterways:	Niagara R Tonawanda Cr Ellicott Cr Murder Cr Little Tonawanda Cr
Number of Stations in Watershed:	Tier1 - 24 Tier2 - 16 Tier3 - 1

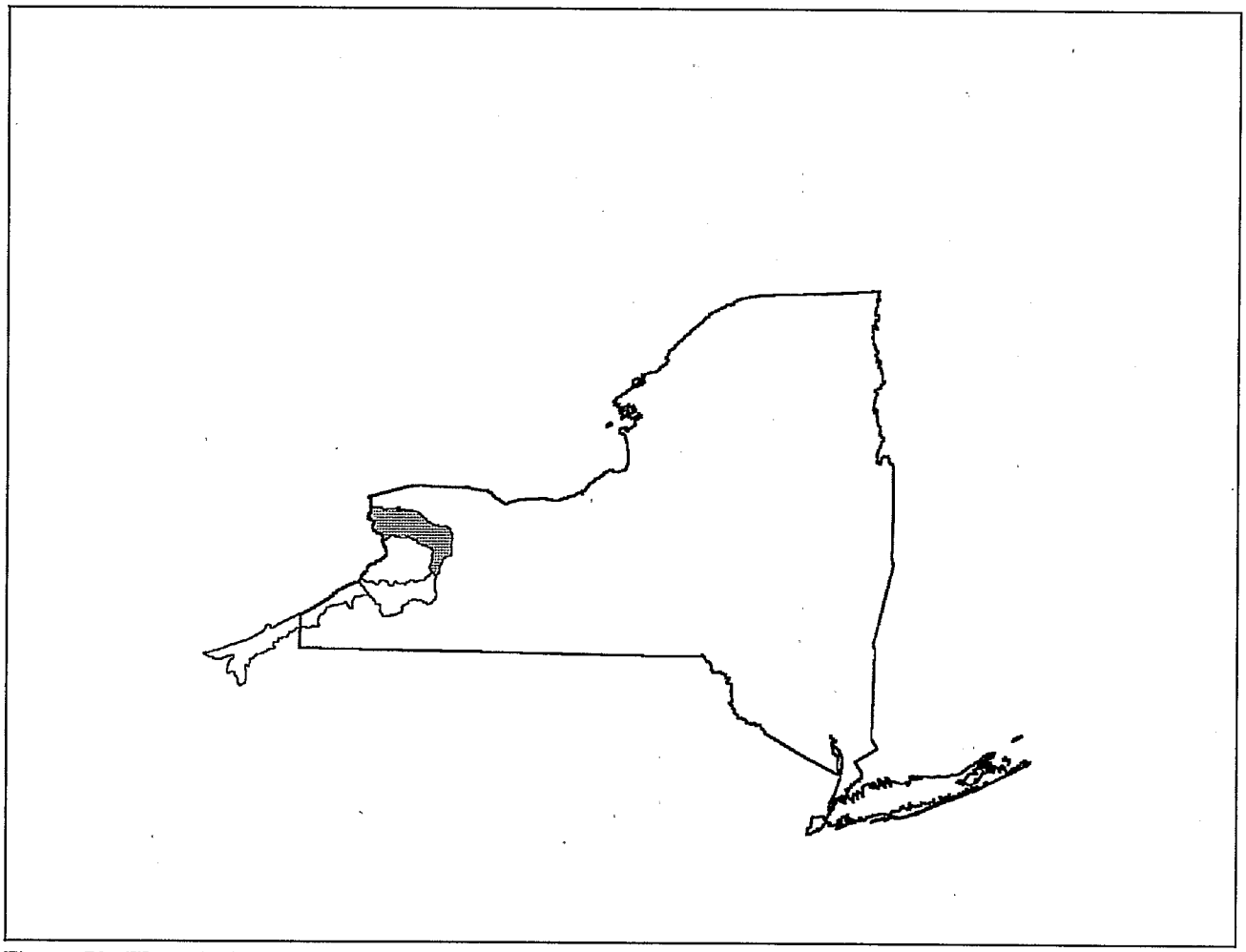

Figure 79. Watershed Location Map

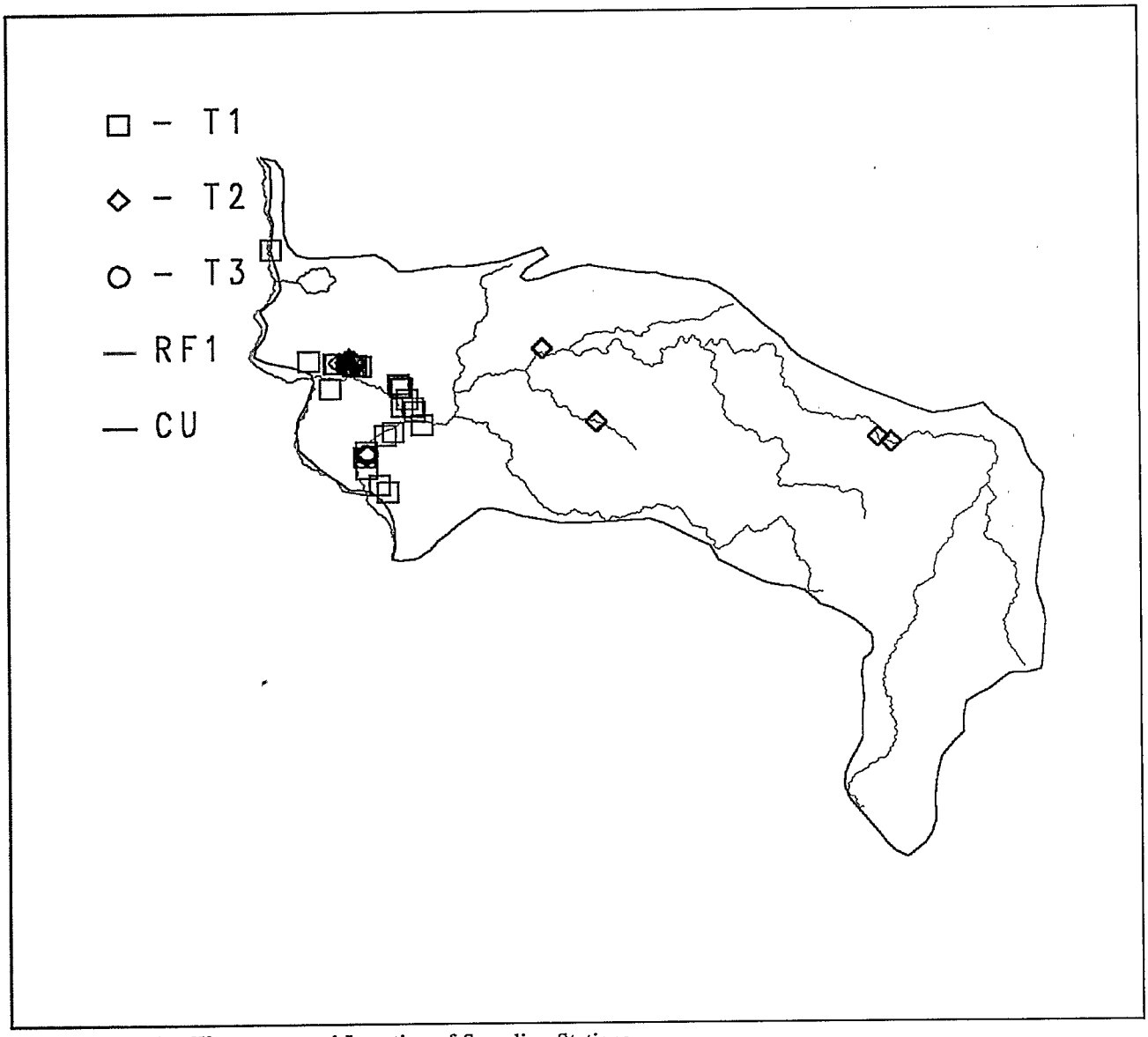

Figure 80. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11BIOACC
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1987

Source: STORET Agency: 11COEBUF
Monitoring Program: **Corps of Engineers Data Buffalo District**
Num. of Stations: 7 Date Range: 1983

Source: STORET Agency: 1115GLSB
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 22 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 5 Date Range: 1982-88

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 4 Date Range: 1987-88

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	34	26	17	9	14	4	3	23
Fluoranthene	24	24	7	17	7	17	.	.
Pyrene	24	23	13	10	13	10	.	.
Bis(2-ethylhexyl)phthalate	23	23	10	13	10	13	.	10
Copper	31	22	.	22	.	22	.	.
Mercury	37	21	5	16	5	16	.	.
Lead	33	20	.	20	.	20	.	.
Nickel	36	20	.	20	.	20	.	.
DDT	30	19	12	7	12	7	.	13
Naphthalene	18	18	10	8	10	8	.	.
Zinc	34	18	.	18	.	18	.	.
Anthracene&Phenanthrene	17	17	14	3	14	3	.	.
BHC	32	17	6	11	6	11	.	7
Cadmium	33	17	.	17	.	17	.	.
Benzo(a)anthracene/Chrysene	15	15	13	2	13	2	.	15
Heptachlor epoxide	29	11	.	11	.	.	.	11
Chromium	32	9	.	9	.	9	.	.
Dichlorobenzene, 1,2-	15	8	6	2	6	2	.	.
Benzo(a)pyrene	8	8	1	7	1	7	.	8
Dieldrin	19	8	1	7	1	4	.	7
Chlordane	23	8	.	8	.	8	.	4
Dichlorobenzene, 1,4-	13	6	6	.	6	.	.	2
Benzo(a)anthracene	7	6	.	6	.	6	.	3
Chrysene	7	6	.	6	.	6	.	.
Hexachlorobenzene	26	6	.	6	.	6	.	1
Phenanthrene	7	6	.	6	.	6	.	.
Acenaphthene	5	5	3	2	3	2	.	.
Anthracene	8	5	1	4	1	4	.	.
Dichlorobenzene, 1,3-	13	4	.	4	.	4	.	.
Silver	7	4	.	4	.	4	.	.
Trichlorobenzene, 1,2,4-	14	4	.	4	.	4	.	.
Dioxins	10	3	3	.	.	.	3	.
Fluorene	3	3	3	.	3	.	.	.
Dichlorobenzenes	6	3	2	1	2	1	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Benzo(b)fluoranthene	7	3	.	3	.	.	.	3
Indeno(1,2,3-cd)pyrene	7	3	.	3	.	.	.	3
Dibenzofuran	2	2	1	1	1	1	.	.
Di-n-butyl phthalate	27	2	.	2	.	2	.	.
Endosulfan, beta-	23	2	.	2	.	2	.	.
Methoxychlor	19	2	.	2	.	2	.	.
Phenol	9	2	.	2	.	2	.	.
Diethyl phthalate	8	1	1	.	1	.	.	.
Xylenes	3	1	1	.	1	.	.	.
Arsenic	9	1	.	1	.	1	.	.
Chlorobenzene	15	1	.	1	.	1	.	.
Endosulfan, alpha-	13	1	.	1	.	1	.	.
Ethylbenzene	9	1	.	1	.	1	.	.
Hexachlorobutadiene	11	1	.	1	.	1	.	1
Mirex/Dechlorane	14	1	.	1	.	.	.	1
Pentachlorobenzene	8	1	.	1	.	1	.	.
Toluene	18	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	628.57	400.00	7	1600.00	200.00
Acrylonitrile	7	0.00	0.00	0	.	.
Aldrin	13	0.00	0.00	0	.	.
Anthracene	9	1304.43	140.00	6	5600.00	100.00
Anthracene&Phenanthrene	23	3605.22	1600.00	23	26300.00	220.00
Arsenic	9	3754.00	3799.00	7	10290.00	1800.00
Benzene	11	2.73	0.00	4	10.00	5.00
Benzo(a)anthracene	7	168.53	159.90	6	440.00	100.00
Benzo(a)anthracene/Chrysene	20	17965.00	8400.00	20	59500.00	700.00
Benzo(a)pyrene	9	6977.76	590.00	9	29600.00	229.90
Benzo(b)fluoranthene	7	202.83	150.00	4	479.90	150.00
Benzo(ghi)perylene	7	0.00	0.00	0	.	.
Benzo(k)fluoranthene	7	461.37	530.00	7	579.90	219.90
Biphenyl	1	900.00	900.00	1	900.00	900.00
Bis(2-ethylhexyl)phthalate	30	4287.63	1650.00	30	23800.00	200.00
Butyl benzyl phthalate	7	0.00	0.00	0	.	.
BHC	72	71.56	0.00	20	3250.00	0.05
Cadmium	36	1268.61	600.00	25	6000.00	200.00
Chlordane	22	8.64	0.00	9	73.00	1.00
Chlorobenzene	16	65.38	1.00	8	1000.00	2.00
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chromium	33	46757.88	25990.00	31	260000.0	70.00
Chrysene	7	568.54	339.90	6	1670.00	209.90
Copper	35	48799.43	29000.00	35	230000.0	2000.00
Di-n-butyl phthalate	28	243.43	57.00	21	1700.00	26.00
Di-n-octyl phthalate	7	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	7	0.00	0.00	0	.	.
Dibenzofuran	2	5650.00	5650.00	2	9600.00	1700.00
Dibromochloromethane	1	11.00	11.00	1	11.00	11.00
Dichlorobenzene, 1,2-	18	2961.11	800.00	11	11700.00	200.00
Dichlorobenzene, 1,3-	17	3152.94	500.00	10	17500.00	500.00
Dichlorobenzene, 1,4-	16	2037.50	700.00	9	21400.00	700.00
Dichlorobenzenes	6	555.00	50.00	6	2800.00	30.00
Dichloroethane 1,1-	1	14.00	14.00	1	14.00	14.00
Dichloromethane	18	437.83	153.00	18	2340.00	4.00
Dichloropropane, 1,2-	1	11.00	11.00	1	11.00	11.00
Dieldrin	18	15.06	0.00	5	260.00	1.00
Diethyl phthalate	8	112.50	0.00	1	900.00	900.00
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.
Dioxins	7	0.00	0.00	0	.	.
DCPA/Dacthal	5	51.20	6.00	5	240.00	1.00
DDT	111	36.54	4.00	74	730.00	1.00
Endosulfan, alpha-	15	4.67	0.00	2	70.00	0.03
Endosulfan, beta-	25	10.24	0.00	12	200.00	2.00
Endrin	15	0.47	0.00	2	4.00	3.00
Ethylbenzene	9	14.00	0.00	2	124.00	2.00
Fluoranthene	31	6802.90	3200.00	31	50000.00	129.90
Fluorene	3	1266.67	600.00	3	2600.00	600.00
Heptachlor	13	0.00	0.00	0	.	.
Heptachlor epoxide	28	48.22	1.01	15	1000.00	0.03
Hexachlorobenzene	23	42.04	4.00	16	480.00	0.02
Hexachlorobutadiene	8	58.75	0.00	1	470.00	470.00
Hexachloroethane	7	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	7	94.27	0.00	3	290.00	179.90
Isophorone	7	0.00	0.00	0	.	.
Lead	37	139293.8	37000.00	36	2100000	4000.00
Mercury	39	356.41	300.00	27	1400.00	100.00
Methoxychlor	18	21.50	0.00	5	282.00	2.00
Mirex/Dechlorane	13	0.00	0.00	0	.	.
Naphthalene	24	754.17	450.00	24	3100.00	200.00
Nickel	40	16311.25	15495.00	32	51000.00	3800.00
Nitrosodiphenylamine, N-	7	0.00	0.00	0	.	.
Pentachlorobenzene	5	456.00	200.00	5	1700.00	40.00
Pentachlorophenol	7	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Phenanthrene	7	331.40	200.00	6	1020.00	129.90
Phenol	9	422.22	0.00	2	3100.00	700.00
Polychlorinated biphenyls	159	533.01	30.00	97	10200.00	3.00
Pyrene	31	5631.57	2800.00	31	38500.00	129.90
Silver	7	1291.43	1000.00	7	3700.00	370.00
Tetrachloroethane, 1,1,2,2-	4	2.75	2.00	4	5.00	2.00
Tetrachloroethene	9	4.22	3.00	9	12.00	2.00
Toluene	18	325.67	3.00	11	5600.00	1.00
Toxaphene	13	0.00	0.00	0	.	.
Tribromomethane/Bromoform	5	4.80	3.00	5	12.00	2.00
Trichlorobenzene, 1,2,4-	11	290.91	0.00	4	1100.00	300.00
Trichloroethane, 1,1,1-	1	8.00	8.00	1	8.00	8.00
Trichloromethane/Chloroform	7	239.57	112.00	7	1190.00	12.00
Xylenes	5	109.40	100.00	5	342.00	2.00
Zinc	38	219041.8	120000.0	38	780000.0	30000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	4	0.00	0.00	0	.	.
BHC	8	0.93	0.00	2	4.05	3.42
Chlordane	8	3.76	3.28	5	10.30	2.99
Chlorpyrifos/Dursban	4	0.00	0.00	0	.	.
Dicofol/Kelthane	4	0.00	0.00	0	.	.
Dieldrin	4	19.87	19.55	4	25.80	14.60
Dioxins	8	0.01	0.01	8	0.03	0.00
DDT	1	58.20	58.20	1	58.20	58.20
Endrin	4	0.00	0.00	0	.	.
Heptachlor	4	0.00	0.00	0	.	.
Heptachlor epoxide	4	0.38	0.00	1	1.51	1.51
Hexachlorobenzene	4	6.54	7.33	3	11.50	5.23
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Isopropalin	4	0.00	0.00	0	.	.
Mercury	3	76.67	80.00	3	120.00	30.00
Methoxychlor	4	0.00	0.00	0	.	.
Mirex/Dechlorane	4	16.40	0.00	1	65.60	65.60
Pentachlorobenzene	4	3.62	3.06	2	8.37	6.11
Pentachloronitrobenzene/Quin	4	0.00	0.00	0	.	.
Polychlorinated biphenyls	4	3429.83	3309.50	4	6346.00	754.30
Tetrachlorobenzene, 1,2,4,5-	4	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	4	0.77	0.00	1	3.09	3.09
Trifluralin/Treflan	4	0.00	0.00	0	.	.

Oak Orchard-Twelvemile 04130001

Watershed Summary Information

Accounting Unit Name: Southwestern Lake Ontario

State(s): NY

Political Boundaries: Monroe, Orleans, Niagara, Genesee

Major Waterways: Oak Orchard Cr
West Cr
Brockport Cr
Eighteenmile Cr
Sandy Cr

Number of Stations in Watershed: Tier1 - 39
Tier2 - 46
Tier3 - 1

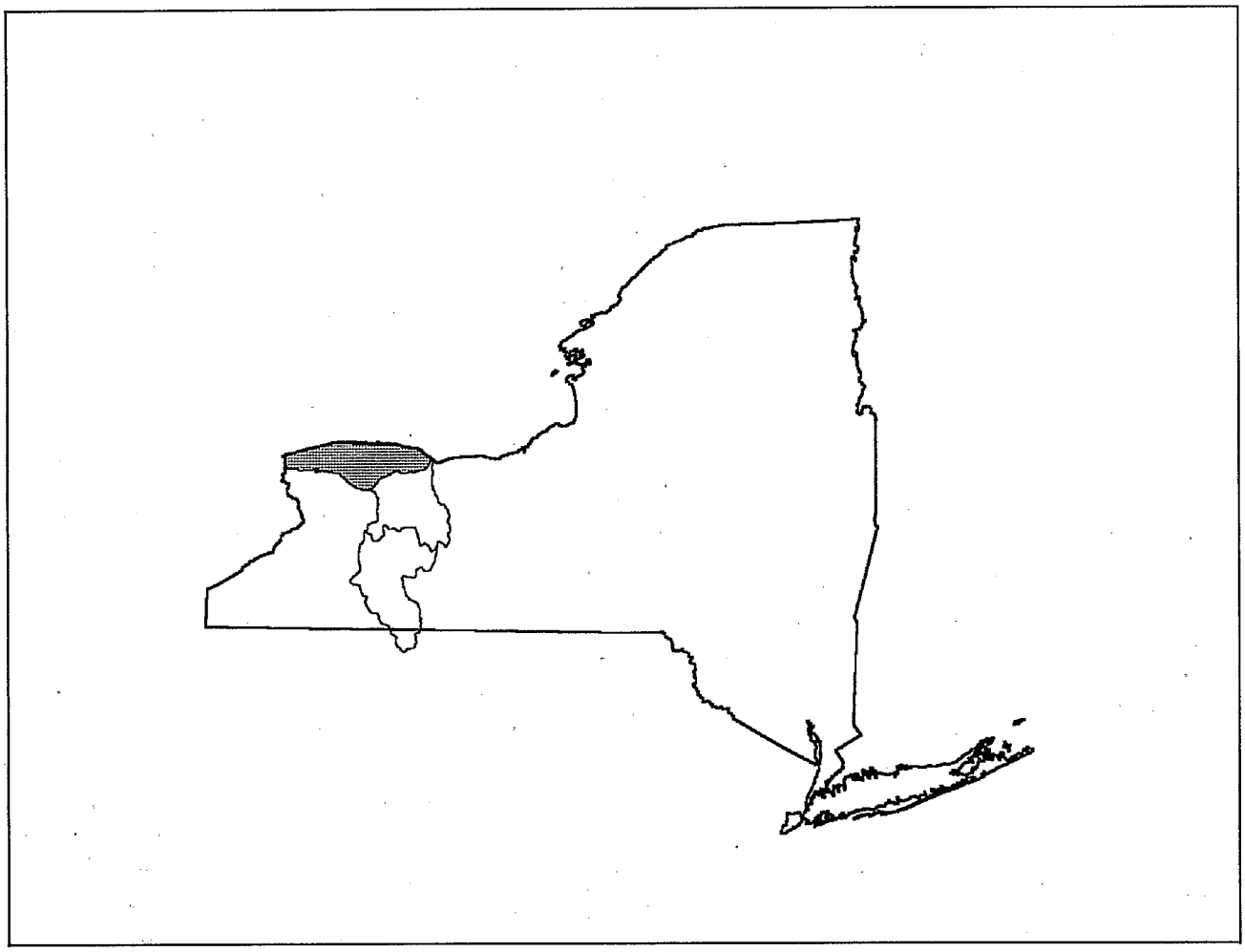

Figure 81. Watershed Location Map

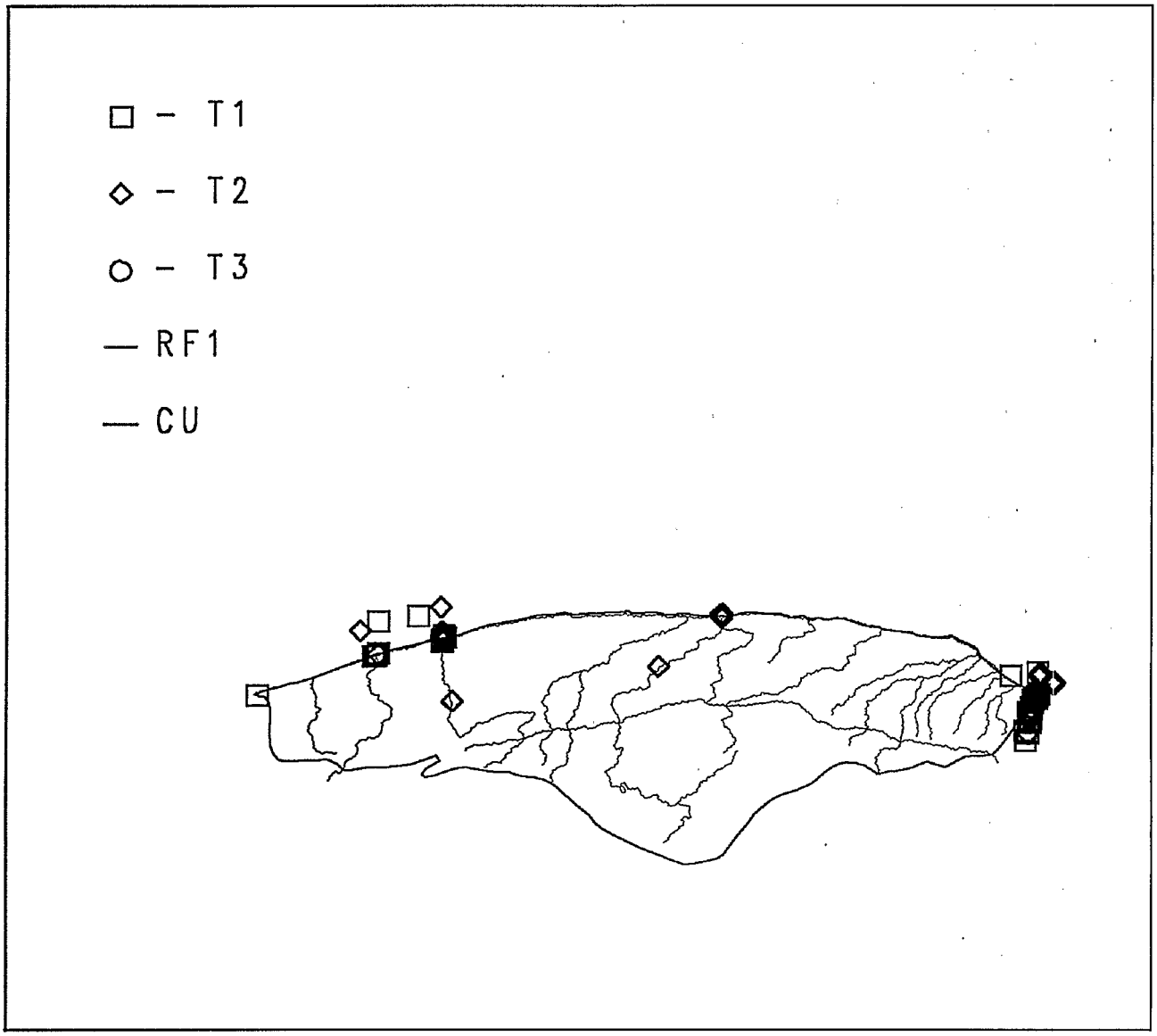

Figure 82. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: GR. LAKE Agency: 26
Monitoring Program: Aqua Tech Environ. Cnslts, Melmore Oh.
Num. of Stations: 1 Date Range: 1984-88

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 2 Date Range: 1987

Source: STORET Agency: 11COEBUF
Monitoring Program: Corps of Engineers Data Buffalo District
Num. of Stations: 43 Date Range: 1981-89

Source: **STORET** Agency: **11COENCD**
Monitoring Program: **Corps of Engineers North Central Division Water & Sediments Data**
Num. of Stations: 17 Date Range: 1980

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 17 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 3 Date Range: 1989-90

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 3 Date Range: 1989-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	82	66	.	66	.	66	.	.
Nickel	82	61	.	61	.	61	.	.
Cadmium	83	58	.	58	.	58	.	.
Mercury	72	40	10	30	10	30	.	.
Lead	82	34	.	34	.	34	.	.
Silver	39	27	20	7	20	7	.	.
Arsenic	61	27	.	27	.	27	.	.
Zinc	82	26	.	26	.	26	.	.
Polychlorinated biphenyls	66	19	4	15	2	9	2	17
DDT	65	16	4	12	4	12	.	5
Benzo(a)anthracene/Chrysene	15	13	1	12	1	12	.	13
Anthracene&Phenanthrene	16	13	.	13	.	13	.	.
BHC	60	12	4	8	4	8	.	6
Bis(2-ethylhexyl)phthalate	16	11	.	11	.	11	.	.
Pyrene	30	11	.	11	.	11	.	.
Fluoranthene	31	10	.	10	.	10	.	.
Dieldrin	61	9	.	9	.	7	.	5
Naphthalene	27	9	.	9	.	9	.	.
Heptachlor	52	8	.	8	.	.	.	8
Chromium	78	7	.	7	.	7	.	.
Acenaphthene	24	6	.	6	.	6	.	.
Benzo(a)pyrene	22	5	3	2	3	2	.	5
Fluorene	25	5	.	5	.	5	.	.
Benzo(b)fluoranthene	5	3	.	3	.	.	.	3
Mirex/Dechlorane	38	3	.	3	.	.	.	3
Dioxins	2	2	2	.	.	.	2	.
Aldrin	52	2	.	2	.	.	.	2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chlordane	61	2	.	2	.	2	.	1
Endosulfan, alpha-	50	2	.	2	.	2	.	.
Hexachlorobutadiene	4	2	.	2	.	2	.	.
Toluene	28	2	.	2	.	2	.	.
Acenaphthylene	18	1	.	1	.	1	.	.
Dichloromethane	26	1	.	1	.	.	.	1
Dimethyl phthalate	2	1	.	1	.	1	.	.
Dimethylphenol, 2,4-	1	1	.	1	.	1	.	.
Heptachlor epoxide	54	1	.	1	.	.	.	1
Methoxychlor	31	1	.	1	.	1	.	.
Trichlorobenzene, 1,2,4-	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	24	11.67	0.00	7	220.00	0.03
Acenaphthylene	18	0.56	0.00	1	10.00	10.00
Acrylonitrile	10	0.00	0.00	0	.	.
Aldrin	75	0.24	0.00	2	16.00	2.00
Anthracene	17	0.00	0.00	0	.	.
Anthracene&Phenanthrene	18	186.39	135.00	18	630.00	0.24
Arsenic	98	6038.74	5450.00	98	14000.00	1499.00
Benzene	17	0.82	0.00	1	14.00	14.00
Benzo(a)anthracene	17	0.00	0.00	0	.	.
Benzo(a)anthracene/Chrysene	16	543.86	475.00	16	2300.00	0.47
Benzo(a)pyrene	22	409.09	0.00	5	2440.00	850.00
Benzo(b)fluoranthene	5	634.00	470.00	4	1350.00	140.00
Benzo(ghi)perylene	17	0.00	0.00	0	.	.
Benzo(k)fluoranthene	17	47.69	0.00	2	810.00	0.81
Bis(2-ethylhexyl)phthalate	16	330.12	310.00	16	1120.00	0.35
Butyl benzyl phthalate	7	87.14	80.00	7	180.00	40.00
BHC	265	1.97	0.00	15	260.00	0.00
Cadmium	124	2441.12	1400.00	107	85000.00	200.00
Chlordane	82	0.43	0.00	9	23.00	0.00
Chlorobenzene	25	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	12	0.00	0.00	0	.	.
Chromium	115	17165.12	12000.00	115	110000.0	1700.00
Chrysene	17	0.03	0.00	1	0.46	0.46
Copper	123	34268.69	23400.00	123	310000.0	8000.00
Di-n-butyl phthalate	19	157.27	70.00	19	660.00	0.07
Diazinon/Spectracide	6	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	17	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibromochloromethane	26	0.12	0.00	1	3.00	3.00
Dichlorobenzene, 1,2-	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dichloroethane 1,1-	2	0.00	0.00	0	.	.
Dichloroethane 1,2-	25	0.00	0.00	2	0.01	0.01
Dichloroethene, trans-1,2-	25	0.00	0.00	0	.	.
Dichloromethane	26	407.36	0.00	9	5860.00	0.53
Dichloropropane, 1,2-	24	0.00	0.00	0	.	.
Dieldrin	82	0.15	0.00	9	4.00	0.00
Diethyl phthalate	8	40.50	40.00	8	100.00	4.00
Dimethyl phthalate	2	996.54	996.54	2	1990.00	3.07
Dimethylphenol, 2,4-	1	60.00	60.00	1	60.00	60.00
DCPA/Dacthal	9	1.33	1.00	9	5.00	0.00
DDT	249	2.91	0.00	61	300.00	0.00
Endosulfan, alpha-	64	0.53	0.00	3	30.00	0.03
Endosulfan, beta-	71	0.13	0.00	8	4.00	0.00
Endrin	63	0.00	0.00	0	.	.
Ethion/Bladen	5	0.00	0.00	0	.	.
Ethylbenzene	18	0.00	0.00	1	0.01	0.01
Fluoranthene	31	110.05	0.00	15	900.00	0.20
Fluorene	25	8.40	0.00	8	50.00	0.05
Heptachlor	73	6.58	0.00	8	310.00	10.00
Heptachlor epoxide	75	18.69	0.00	3	1400.00	0.00
Hexachlorobenzene	9	1.11	1.00	6	5.00	0.00
Hexachlorobutadiene	2	70.00	70.00	2	100.00	40.00
Indeno(1,2,3-cd)pyrene	16	0.00	0.00	0	.	.
Lead	123	42952.75	25000.00	123	400000.0	3800.00
Malathion	6	0.00	0.00	0	.	.
Mercury	111	302.07	100.00	96	3000.00	10.00
Methoxychlor	35	1.31	0.00	3	21.00	12.00
Mirex/Dechlorane	42	2.86	0.00	2	80.00	40.00
Naphthalene	27	27.41	0.00	11	230.00	0.10
Nickel	123	22952.52	17400.00	123	210000.0	8000.00
Phenanthrene	16	37.60	0.00	5	600.00	0.27
Phenol	2	70.30	70.30	2	140.00	0.60
Polychlorinated biphenyls	363	14.23	0.00	57	3300.00	0.01
Pyrene	30	143.12	0.41	18	1570.00	0.18
Silver	39	6343.59	4000.00	31	30000.00	100.00
Tetrachloroethane, 1,1,2,2-	25	0.00	0.00	0	.	.
Tetrachloroethene	24	0.13	0.00	1	3.00	3.00
Tetrachloromethane	15	0.00	0.00	0	.	.
Toluene	28	102.84	0.00	11	1550.00	0.00
Toxaphene	73	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tribromomethane/Bromoform	26	0.08	0.00	1	2.00	2.00
Trichlorobenzene, 1,2,4-	1	160.00	160.00	1	160.00	160.00
Trichloroethane, 1,1,1-	25	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	25	0.00	0.00	0	.	.
Trichloroethene	23	0.00	0.00	0	.	.
Trichlorofluoromethane	25	0.00	0.00	0	.	.
Trichloromethane/Chloroform	25	0.00	0.00	0	.	.
Xylenes	1	0.04	0.04	1	0.04	0.04
Zinc	123	148194.7	92800.00	123	1500000	20000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	3	4.03	0.00	1	12.10	12.10
BHC	6	3.45	3.79	4	7.85	3.42
Chlordane	6	10.79	8.61	4	32.90	2.62
Chlorpyrifos/Dursban	3	4.67	0.00	1	14.00	14.00
Dicofol/Kelthane	3	2.24	0.00	1	6.71	6.71
Dieldrin	3	34.50	18.10	2	85.40	18.10
Dioxins	10	0.03	0.03	10	0.06	0.01
DDT	1	30.90	30.90	1	30.90	30.90
Endrin	3	0.00	0.00	0	.	.
Heptachlor	3	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	3	17.67	9.80	2	43.20	9.80
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Isopropalin	3	0.00	0.00	0	.	.
Mercury	2	90.00	90.00	2	100.00	80.00
Methoxychlor	3	0.00	0.00	0	.	.
Mirex/Dechlorane	3	39.21	37.90	3	73.70	6.03
Pentachlorobenzene	3	2.00	0.00	1	5.99	5.99
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	3	3787.67	1896.00	3	9306.00	161.00
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	3	0.00	0.00	0	.	.

Upper St. Lawrence 04150301

Watershed Summary Information

Accounting Unit Name:	St. Lawrence
State(s):	NY
Political Boundaries:	St Lawrence, Jefferson, Franklin
Major Waterways:	St Lawrence R Oswegatchie R Raquette R Grass R Brandy Bk
Number of Stations in Watershed:	Tier1 - 21 Tier2 - 5 Tier3 - 5

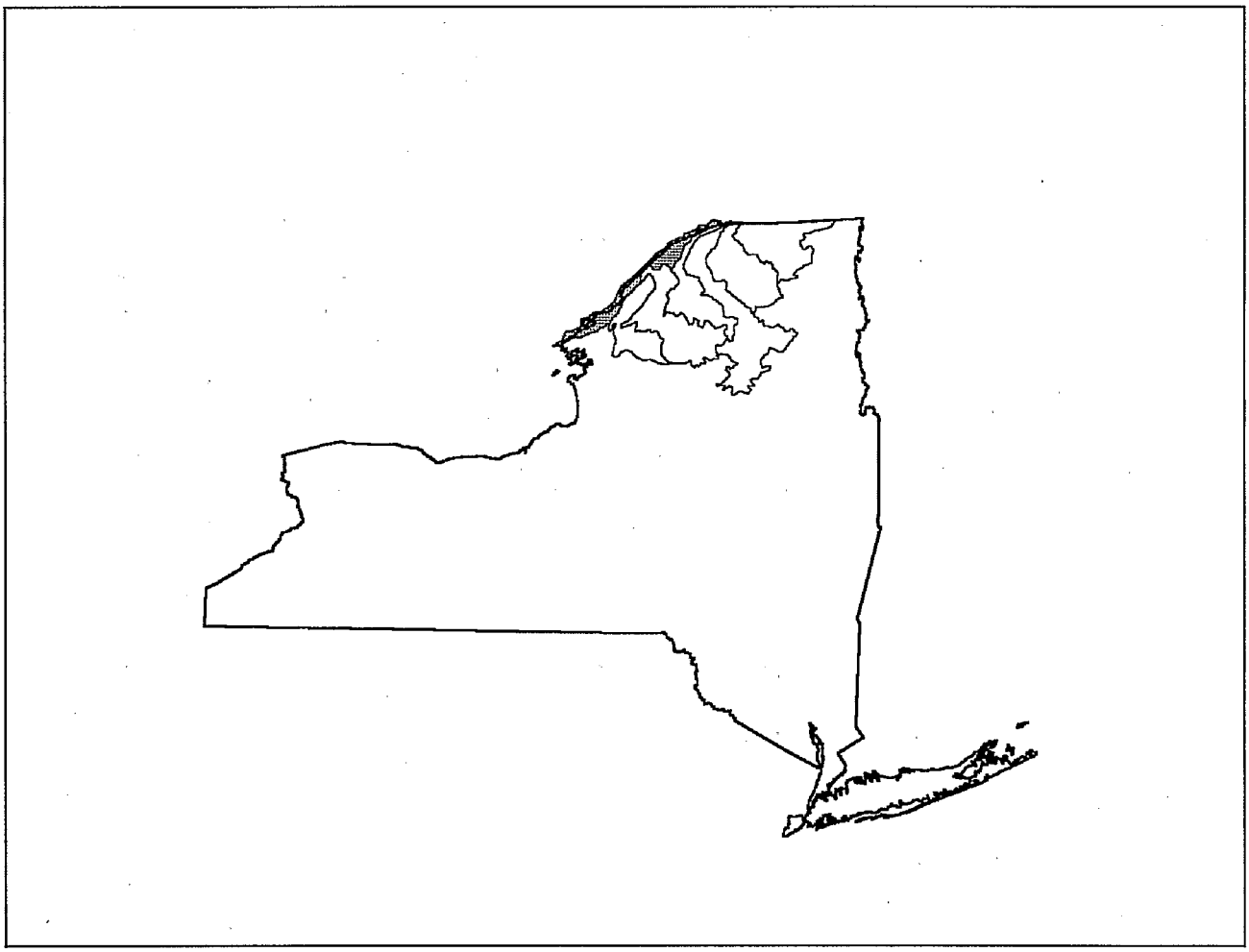

Figure 83. Watershed Location Map

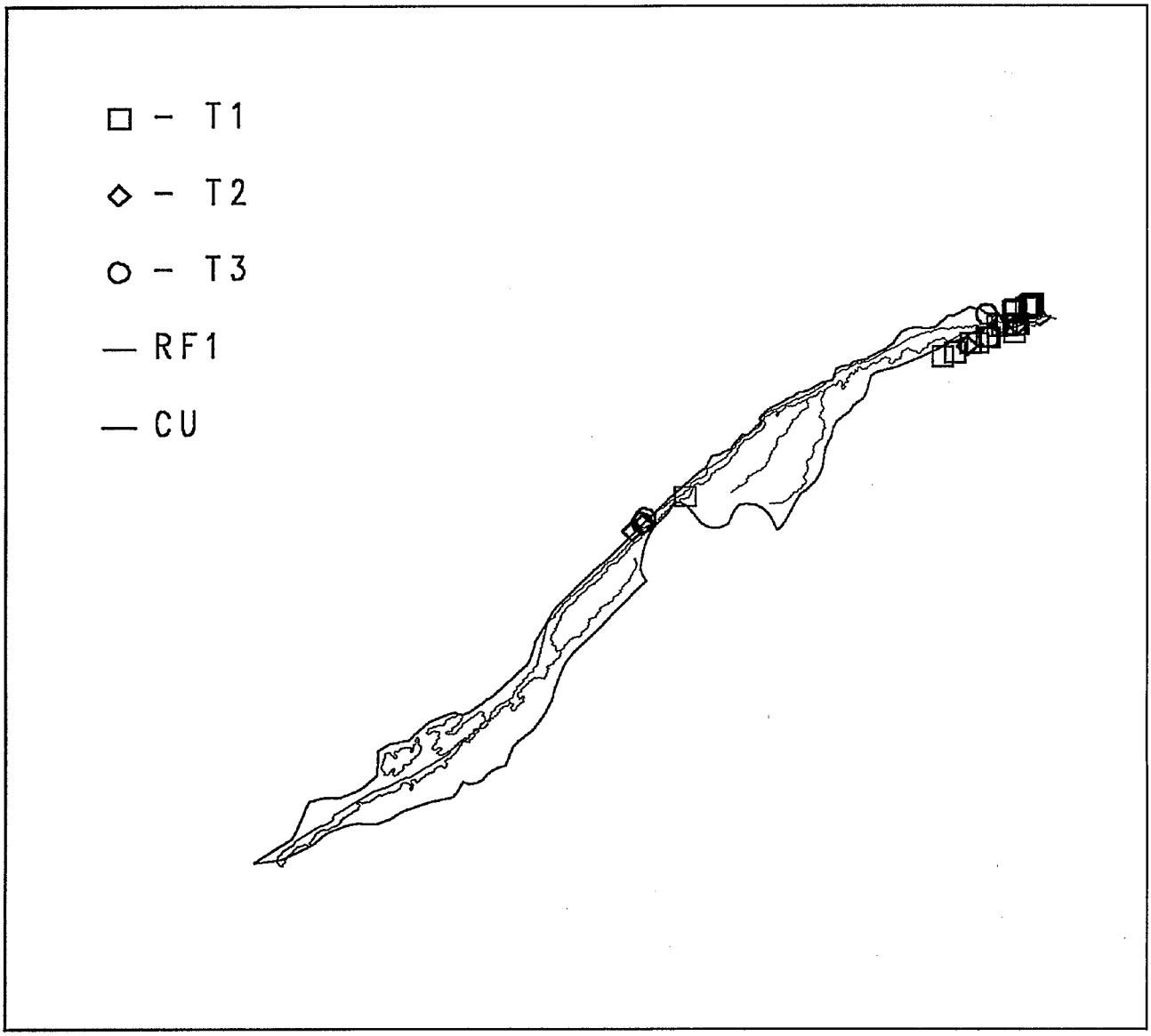

Figure 84. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1987-88

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1984-86

Source: **STORET** Agency: **1115GLSB**
Monitoring Program: **USEPA Region 5 Great Lakes Surveillance Branch Data**
Num. of Stations: 19 Date Range: 1984

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1991

Source: **STORET** Agency: **21NYDECA**
Monitoring Program: **NY Dept of Env. Cons. Water Quality Network Data**
Num. of Stations: 4 Date Range: 1983-92

Source: **STORET** Agency: **21NYDEC1**
Monitoring Program: **New York State Dept of Environ Conserv Data**
Num. of Stations: 2 Date Range: 1983-86

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	29	26	21	5	17	4	4	22
Copper	23	14	.	14	.	14	.	.
Lead	23	14	.	14	.	14	.	.
Mercury	26	13	5	8	5	8	.	.
Phenanthrene	13	13	5	8	5	8	.	.
Fluoranthene	13	13	4	9	4	9	.	.
Nickel	22	13	.	13	.	13	.	.
Pyrene	13	12	4	8	4	8	.	.
Benzo(a)anthracene/Chrysene	11	11	8	3	8	3	.	11
Benzo(a)pyrene	11	11	7	4	7	4	.	11
Zinc	23	11	.	11	.	11	.	.
Anthracene	10	10	4	6	4	6	.	.
Chlordane	17	9	.	9	.	9	.	4
Silver	19	9	.	9	.	9	.	.
Fluorene	8	8	3	5	3	5	.	.
Bis(2-ethylhexyl)phthalate	7	7	4	3	4	3	.	4
Acenaphthene	7	7	2	5	2	5	.	.
Chromium	21	7	.	7	.	7	.	.
BHC	15	6	2	4	2	4	.	3
DDT	12	6	1	5	1	5	.	1
Cadmium	24	6	.	6	.	6	.	.
Naphthalene	5	5	1	4	1	4	.	.
Hexachlorobenzene	14	4	.	4	.	4	.	1
Indeno(1,2,3-cd)pyrene	4	4	.	4	.	3	.	4
Dibenzo(a,h)anthracene	3	3	3	.	3	.	.	3
Dioxins	3	3	3	.	.	.	3	.
Methylnaphthalene, 2-	3	3	1	2	1	2	.	.
Arsenic	19	3	.	3	.	3	.	.
Dieldrin	8	3	.	3	.	.	.	3
Dibenzofuran	7	2	1	1	1	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Heptachlor epoxide	10	2	.	2	.	.	.	2
Tetrachloroethene	2	1	1	.	1	.	.	1
Aldrin	5	1	.	1	.	.	.	1
Benzo(ghi)perylene	1	1	.	1	.	1	.	.
Cresol, p-	1	1	.	1	.	1	.	.
Endosulfan, beta-	5	1	.	1	.	1	.	.
Mirex/Dechlorane	8	1	.	1	.	.	.	1
Toxaphene	5	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	747.14	300.00	7	3700.00	30.00
Aldrin	5	0.00	0.00	0	.	.
Anthracene	11	16327.27	600.00	11	91100.00	200.00
Arsenic	18	4594.44	4750.00	18	10000.00	700.00
Benzene	1	6.40	6.40	1	6.40	6.40
Benzo(a)anthracene/Chrysene	11	56610.91	3700.00	11	268800.0	550.00
Benzo(a)pyrene	11	24965.45	2500.00	11	113100.0	800.00
Benzo(ghi)perylene	1	12600.00	12600.00	1	12600.00	12600.00
Bis(2-ethylhexyl)phthalate	7	4131.43	3620.00	7	8100.00	1300.00
BHC	26	2.81	0.00	6	33.00	2.00
Cadmium	24	442.50	190.00	14	2400.00	110.00
Chlordane	14	14.14	5.50	9	95.00	5.00
Chlorpyrifos/Dursban	5	0.00	0.00	0	.	.
Chromium	22	51513.64	36000.00	22	220000.0	3300.00
Copper	22	51981.82	39500.00	22	250000.0	2800.00
Cresol, p-	1	2500.00	2500.00	1	2500.00	2500.00
Di-n-butyl phthalate	11	524.55	500.00	11	1200.00	100.00
Di-n-octyl phthalate	1	300.00	300.00	1	300.00	300.00
Diazinon/Spectracide	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	9596667	3100000	3	25300000	390000.0
Dibenzofuran	7	678.57	300.00	7	2400.00	50.00
Dichloroethane 1,1-	2	9.10	9.10	2	14.40	3.80
Dichloroethene, trans-1,2-	1	2.30	2.30	1	2.30	2.30
Dichloromethane	16	12.01	12.30	16	17.40	4.80
Dieldrin	5	0.00	0.00	0	.	.
Diethyl phthalate	2	55.00	55.00	2	60.00	50.00
DDT	23	12.30	0.00	9	104.00	1.00
Endosulfan, alpha-	5	0.00	0.00	0	.	.
Endosulfan, beta-	6	4.50	0.00	1	27.00	27.00
Endrin	5	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Ethion/Bladen	2	0.00	0.00	0	.	.
Fluoranthene	13	32946.15	1600.00	13	187900.0	250.00
Fluorene	8	1777.50	350.00	8	8700.00	40.00
Heptachlor	5	0.00	0.00	0	.	.
Heptachlor epoxide	7	39.57	0.00	2	186.00	91.00
Hexachlorobenzene	11	66.64	14.00	11	288.00	3.00
Indeno(1,2,3-cd)pyrene	4	6687.50	4085.00	4	18000.00	580.00
Lead	22	73895.45	55500.00	20	480000.0	3300.00
Malathion	2	0.00	0.00	0	.	.
Mercury	22	650.00	225.00	19	5080.00	40.00
Methoxychlor	5	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	65533.33	200.00	3	196300.0	100.00
Mirex/Dechlorane	5	0.00	0.00	0	.	.
Naphthalene	5	206.00	100.00	5	700.00	40.00
Nickel	22	38354.55	26500.00	21	160000.0	2300.00
Phenanthrene	13	10830.00	700.00	13	57300.00	110.00
Polychlorinated biphenyls	229	2152.35	0.00	85	197500.0	0.01
Pyrene	13	20926.92	1050.00	13	107200.0	150.00
Silver	19	614.21	600.00	11	1500.00	300.00
Tetrachloroethane, 1,1,2,2-	5	8.38	7.10	5	19.10	2.20
Tetrachloroethene	2	1752.35	1752.35	2	3500.00	4.70
Toluene	10	170.43	40.10	10	770.30	3.30
Toxaphene	5	0.00	0.00	0	.	.
Zinc	22	259118.2	115000.0	22	1700000	9600.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	1	10.00	10.00	1	10.00	10.00
Arsenic	1	53.00	53.00	1	53.00	53.00
Biphenyl	5	0.00	0.00	0	.	.
BHC	14	3.82	1.43	7	10.00	2.87
Cadmium	1	16.43	16.43	1	16.43	16.43
Chlordane	18	9.55	10.00	13	38.50	3.01
Chlorpyrifos/Dursban	5	0.00	0.00	0	.	.
Copper	1	742.00	742.00	1	742.00	742.00
Dicofol/Kelthane	5	0.00	0.00	0	.	.
Dieldrin	7	19.56	12.60	7	43.00	5.55
Dioxins	8	0.01	0.00	8	0.02	0.00
DCPA/Dacthal	2	10.00	10.00	2	10.00	10.00
DDT	7	59.36	42.10	7	150.00	10.00
Endrin	7	2.86	0.00	2	10.00	10.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor	7	2.86	0.00	2	10.00	10.00
Heptachlor epoxide	6	2.53	0.00	2	10.00	5.17
Hexachlorobenzene	7	6.26	10.00	4	12.70	10.00
Hexachlorobutadiene	5	0.00	0.00	0	.	.
Isopropalin	5	0.00	0.00	0	.	.
Lead	1	185.50	185.50	1	185.50	185.50
Mercury	4	135.48	130.95	4	170.00	110.00
Methoxychlor	5	0.00	0.00	0	.	.
Mirex/Dechlorane	7	46.45	10.00	7	137.00	5.53
Pentachlorobenzene	5	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	5	0.00	0.00	0	.	.
Polychlorinated biphenyls	12	2699.72	300.00	12	12030.00	100.00
Selenium	1	318.00	318.00	1	318.00	318.00
Tetrachlorobenzene, 1,2,4,5-	5	0.00	0.00	0	.	.
Toxaphene	2	100.00	100.00	2	100.00	100.00
Trichlorobenzene, 1,2,4-	5	0.00	0.00	0	.	.
Trifluralin/Treflan	5	0.00	0.00	0	.	.
Zinc	1	13620.00	13620.00	1	13620.00	13620.00

Upper Ohio 05030101

Watershed Summary Information

Accounting Unit Name: Upper Ohio-Beaver

State(s): OH PA WV

Political Boundaries: Washington, Beaver, Jefferson, Hancock, Allegheny, Columbiana, Mahoning, Brooke, Carroll

Major Waterways:
Ohio R
Chartiers Cr
Little Beaver Cr
Yellow Cr
Little Beaver Cr, M Fk

Number of Stations in Watershed:
Tier1 - 12
Tier2 - 29
Tier3 - 12

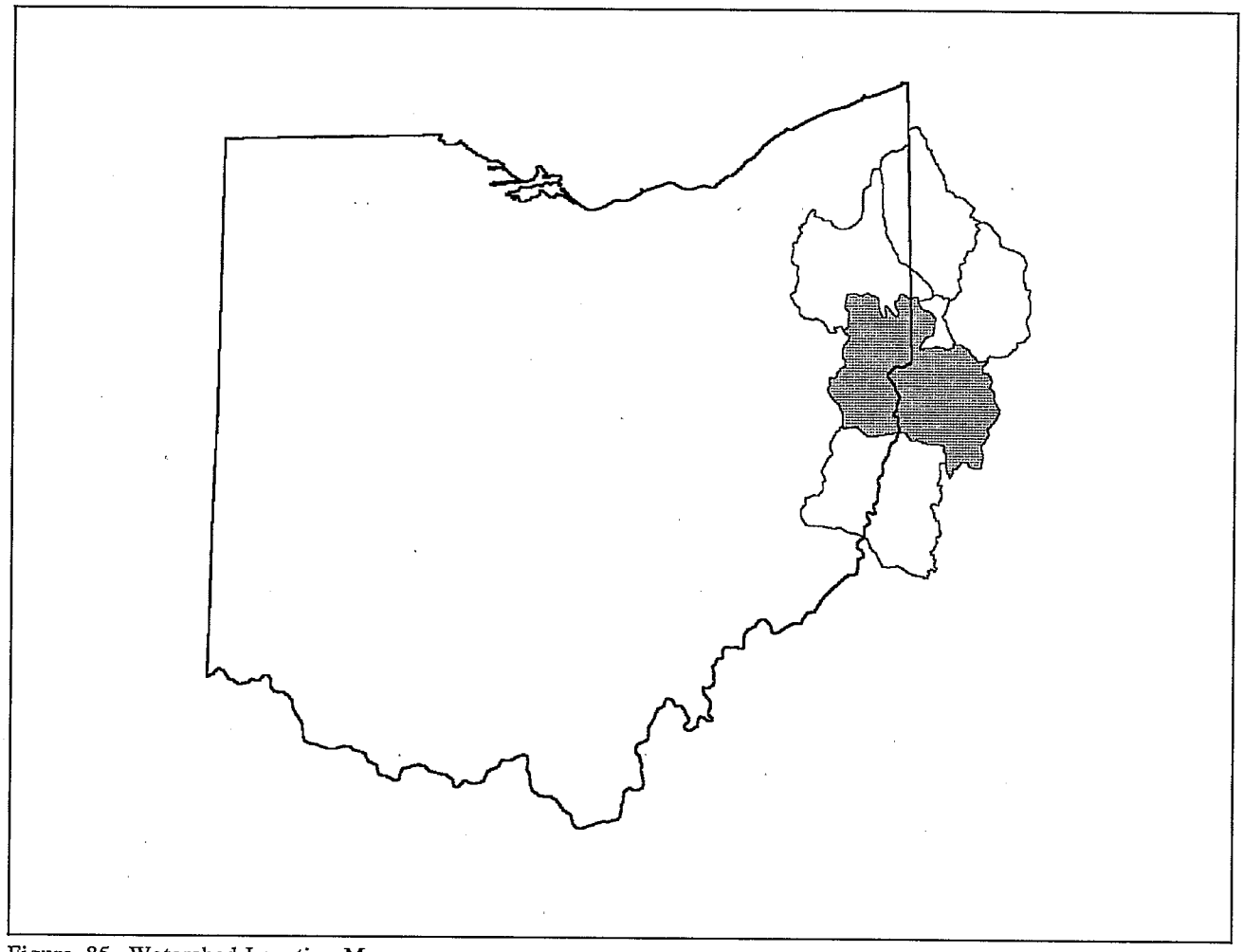

Figure 85. Watershed Location Map

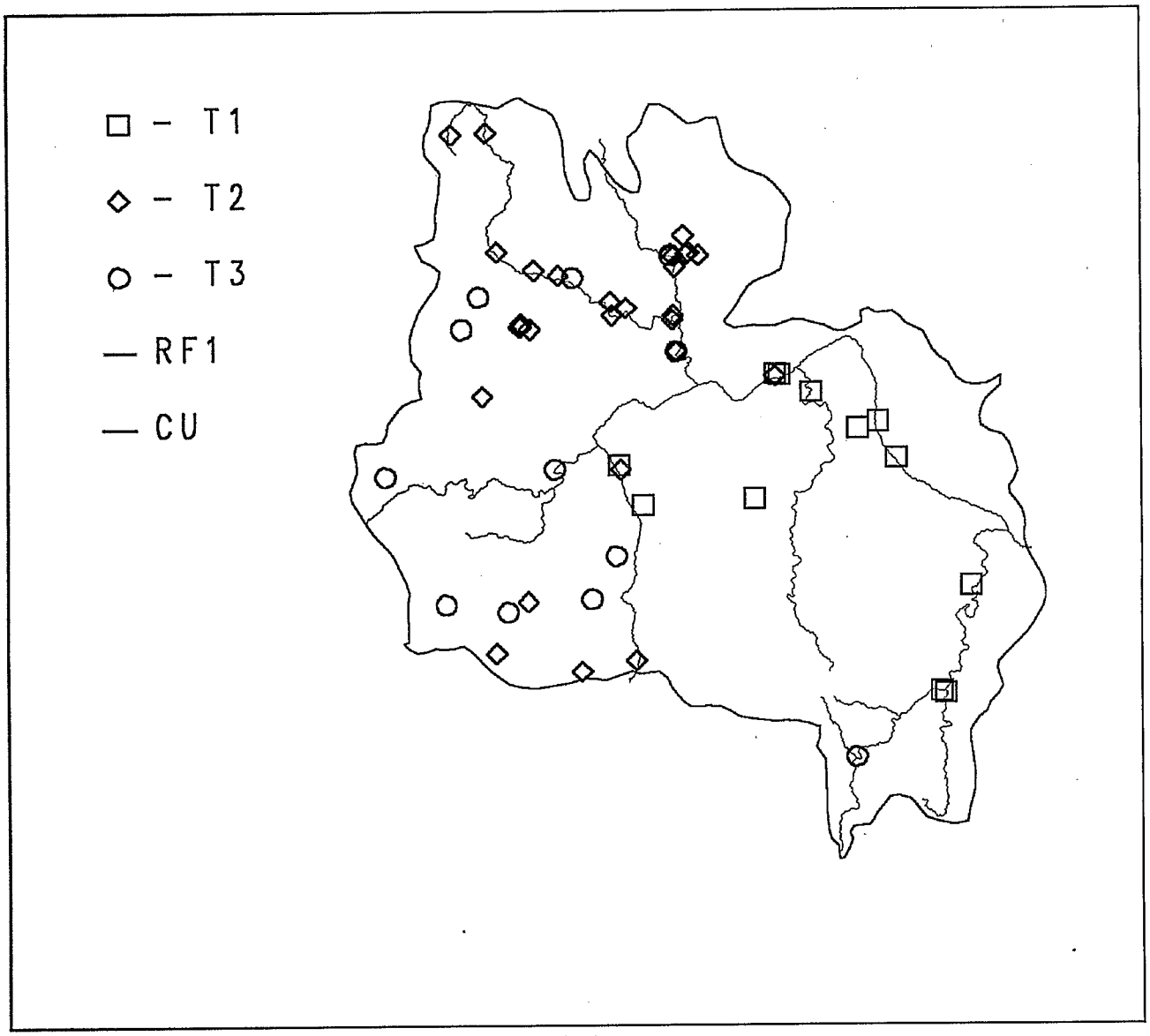

Figure 86. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11COEHUN
Monitoring Program: Corps of Engineers Huntington, WV District Water Column Data
Num. of Stations: 3 Date Range: 1980

Source: STORET Agency: 112WRD
Monitoring Program: US Geological Survey Data
Num. of Stations: 15 Date Range: 1980-81

Source: STORET Agency: 21OHIO
Monitoring Program: Ohio EPA Water, Sediment, Tissue And Drinking Water Data
Num. of Stations: 22 Date Range: 1985-87

Source: **STORET** Agency: **21PA**
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 8 Date Range: 1985-92

Source: **STORET** Agency: **21WV7IWQ**
Monitoring Program: **W.Virginia Dept of Natural Resources Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1982

Source: **STORET** Agency: **31ORWUNT**
Monitoring Program: **USEPA SE Environ Water Lab Data**
Num. of Stations: 3 Date Range: 1980-88

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	23	20	.	20	.	20	.	.
Polychlorinated biphenyls	13	12	12	.	.	.	12	.
Zinc	43	10	.	10	.	10	.	.
Chlordane	13	9	.	9	.	.	.	9
Copper	41	7	.	7	.	7	.	.
Lead	46	6	.	6	.	6	.	.
Cadmium	45	4	.	4	.	4	.	.
Dieldrin	13	1	.	1	.	.	.	1
Hexachlorobenzene	5	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Arsenic	30	1823.27	1605.00	25	5990.00	291.00
Cadmium	44	295.06	108.50	26	4670.00	74.30
Chromium	47	9373.19	7090.00	39	40000.00	3790.00
Copper	43	12483.72	8000.00	33	134000.0	4000.00
Lead	47	22022.77	14500.00	43	193000.0	6440.00
Mercury	7	1.43	0.00	1	10.00	10.00
Nickel	27	36777.78	21000.00	27	340000.0	12000.00
Zinc	47	114589.4	69000.00	47	510000.0	20000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	15	0.00	0.00	0	.	.
Arsenic	4	0.00	0.00	0	.	.
BHC	27	0.22	0.00	1	6.00	6.00
Cadmium	14	51.64	28.00	11	179.00	19.00
Chlordane	195	87.50	50.00	159	2000.00	10.00
Chromium	7	273.86	219.00	7	488.00	89.00
Copper	7	2291.43	1980.00	7	4920.00	1190.00
Dieldrin	25	1.20	0.00	2	20.00	10.00
DDT	104	14.01	0.00	29	160.00	10.00
Endrin	15	0.00	0.00	0	.	.
Heptachlor	9	0.00	0.00	0	.	.
Heptachlor epoxide	16	0.00	0.00	0	.	.
Hexachlorobenzene	26	3.46	0.00	2	80.00	10.00
Lead	14	257.07	212.00	14	980.00	46.00
Mercury	18	118.89	90.00	17	380.00	50.00
Methoxychlor	10	0.00	0.00	0	.	.
Mirex/Dechlorane	4	0.00	0.00	0	.	.
Polychlorinated biphenyls	44	2493.41	2150.00	44	12000.00	200.00
Zinc	4	59100.00	68700.00	4	83700.00	15300.00

Shenango 05030102

Watershed Summary Information

Accounting Unit Name:	Upper Ohio-Beaver
State(s):	PA OH
Political Boundaries:	Mercer, Lawrence, Trumbull, Crawford, Ashtabula
Major Waterways:	Shenango R Neshannock Cr Pymatuning Cr Pymatuning Res
Number of Stations in Watershed:	Tier1 - 11 Tier2 - 1 Tier3 - 3

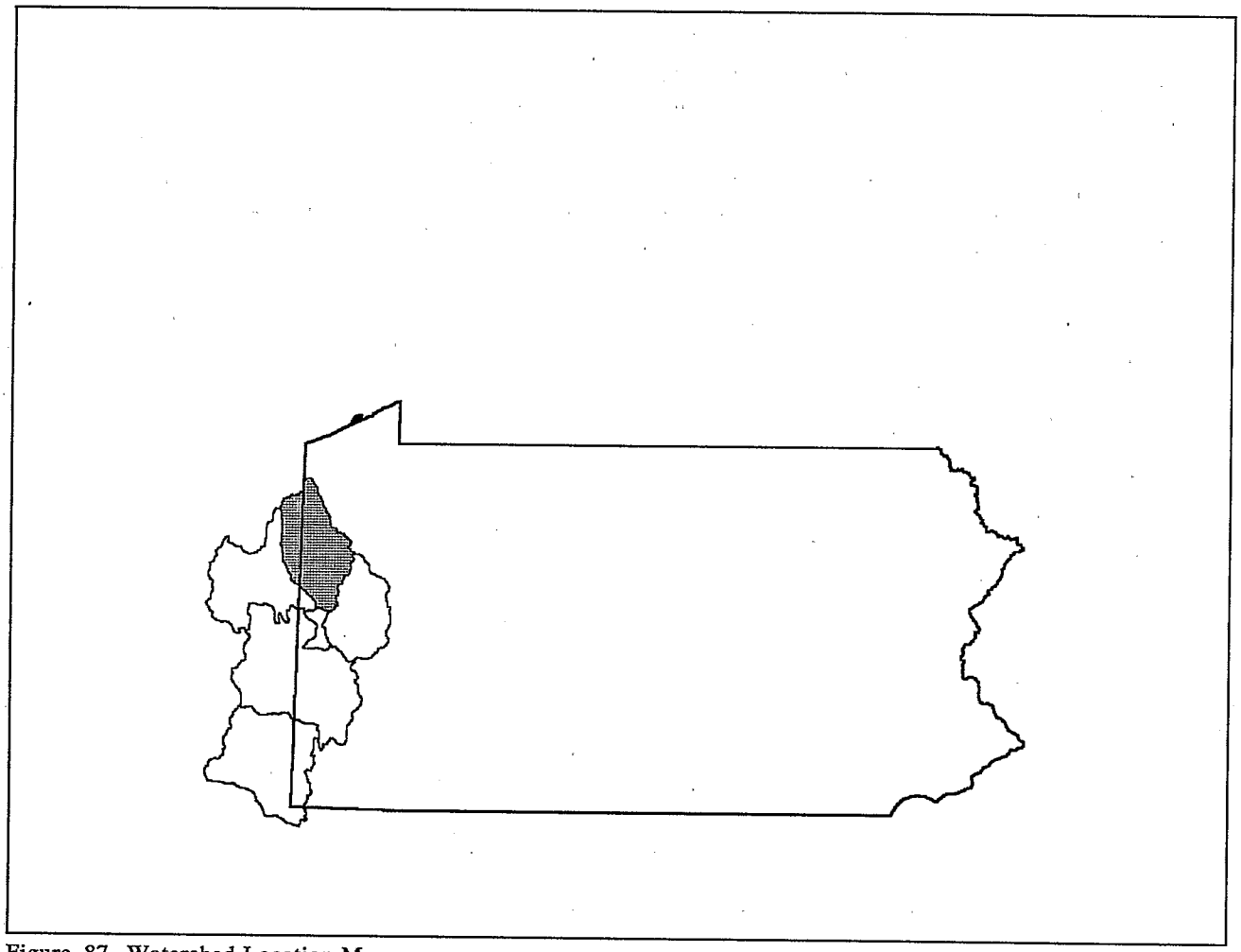

Figure 87. Watershed Location Map

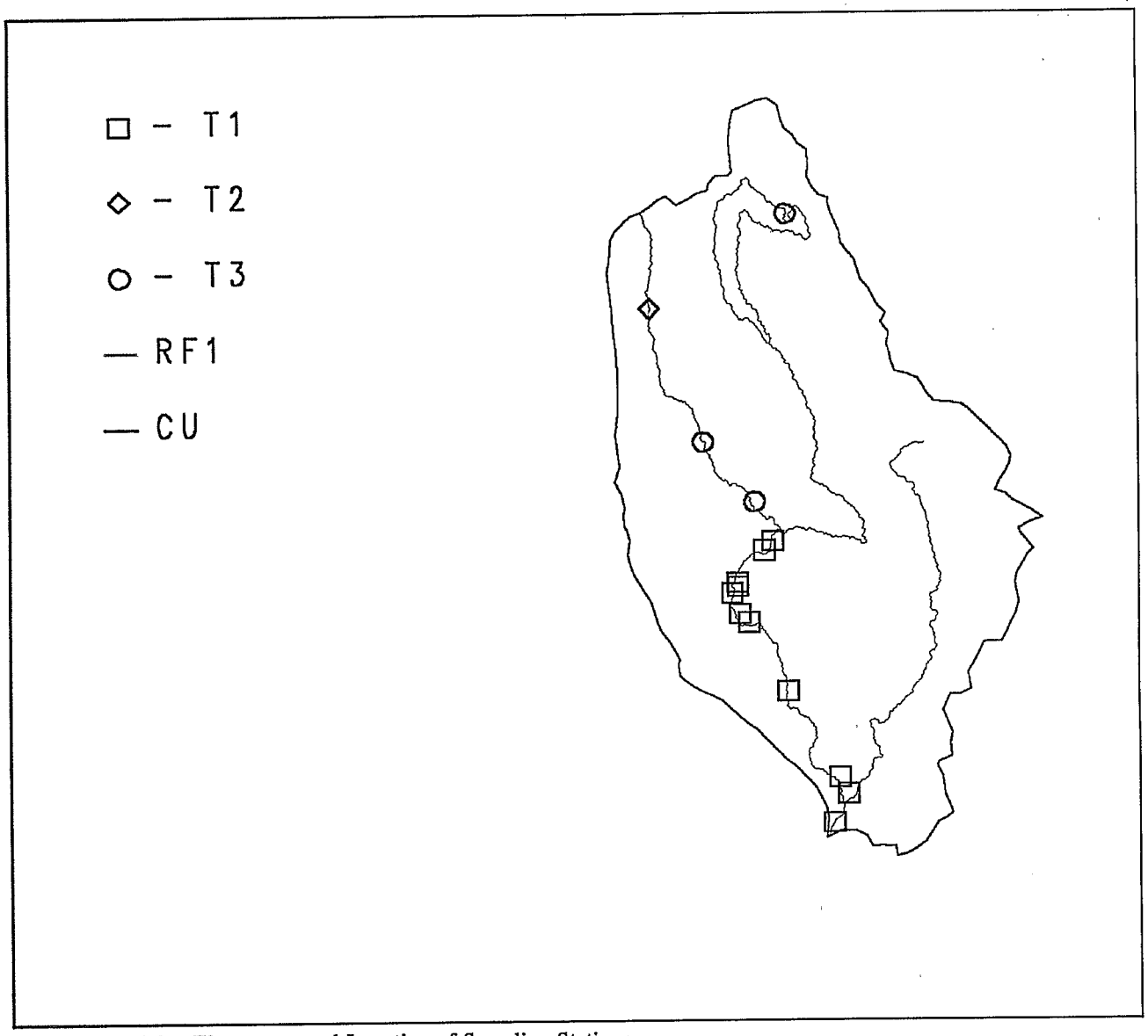

Figure 88. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11COEHUN
Monitoring Program: **Corps of Engineers Huntington, WV District Water Column Data**
Num. of Stations: 1 Date Range: 1987

Source: STORET Agency: 21OHIO
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 2 Date Range: 1985

Source: STORET Agency: 21PA
Monitoring Program: **Pennsylvania Dept of Environmental Resources Data**
Num. of Stations: 12 Date Range: 1980-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	13	11	11	.	.	.	11	.
Chlordane	13	8	.	8	.	.	.	8
Dieldrin	13	2	.	2	.	.	.	2
Lead	7	2	.	2	.	1	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	1	0.00	0.00	0	.	.
Arsenic	2	3695.00	3695.00	2	4690.00	2700.00
BHC	4	0.00	0.00	0	.	.
Cadmium	2	57.90	57.90	2	83.80	32.00
Chlordane	1	0.00	0.00	0	.	.
Chromium	2	7175.00	7175.00	2	7710.00	6640.00
Copper	2	10320.00	10320.00	2	13100.00	7540.00
Dieldrin	1	0.00	0.00	0	.	.
DDT	3	0.00	0.00	0	.	.
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Lead	2	21755.00	21755.00	2	35300.00	8210.00
Nickel	2	12550.00	12550.00	2	13100.00	12000.00
Polychlorinated biphenyls	6	0.00	0.00	0	.	.
Toxaphene	1	0.00	0.00	0	.	.
Zinc	2	55050.00	55050.00	2	63500.00	46600.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	28	0.00	0.00	0	.	.
Arsenic	6	0.00	0.00	0	.	.
BHC	56	0.00	0.00	0	.	.
Cadmium	11	54.45	23.00	11	310.00	10.00
Chlordane	46	90.63	0.00	22	600.00	13.00
Chromium	11	319.91	224.00	10	810.00	114.00
Copper	11	2454.09	2770.00	10	4330.00	845.00
Dieldrin	28	2.46	0.00	3	45.00	10.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
DDT	153	4.87	0.00	10	130.00	38.00
Endrin	28	0.00	0.00	0	.	.
Heptachlor	19	0.00	0.00	0	.	.
Heptachlor epoxide	19	0.00	0.00	0	.	.
Lead	11	409.45	220.00	11	1880.00	50.00
Mercury	3	49.67	0.00	1	149.00	149.00
Methoxychlor	28	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	28	877.29	630.00	23	2600.00	82.00

Tuscarawas 05040001

Watershed Summary Information

Accounting Unit Name: Muskingum

State(s): OH

Political Boundaries: Tuscarawas, Harrison, Stark, Belmont, Carroll, Guernsey, Wayne, Summit, Coshocton, Medina

Major Waterways:
Tuscarawas R
Conotton Cr
Sugar Cr
Piedmont Res
Clendening Res

Number of Stations in Watershed:
Tier1 - 10
Tier2 - 53
Tier3 - 15

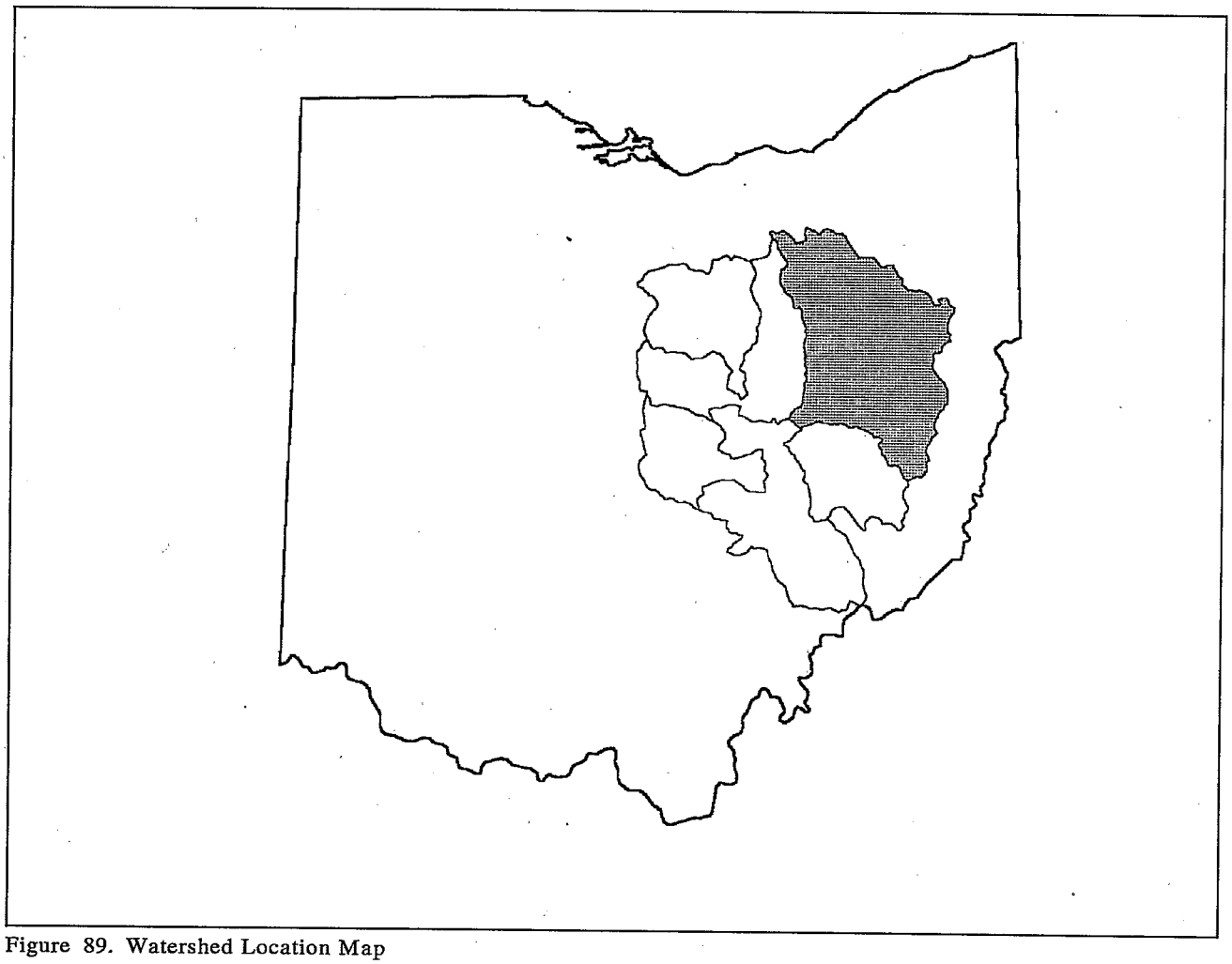

Figure 89. Watershed Location Map

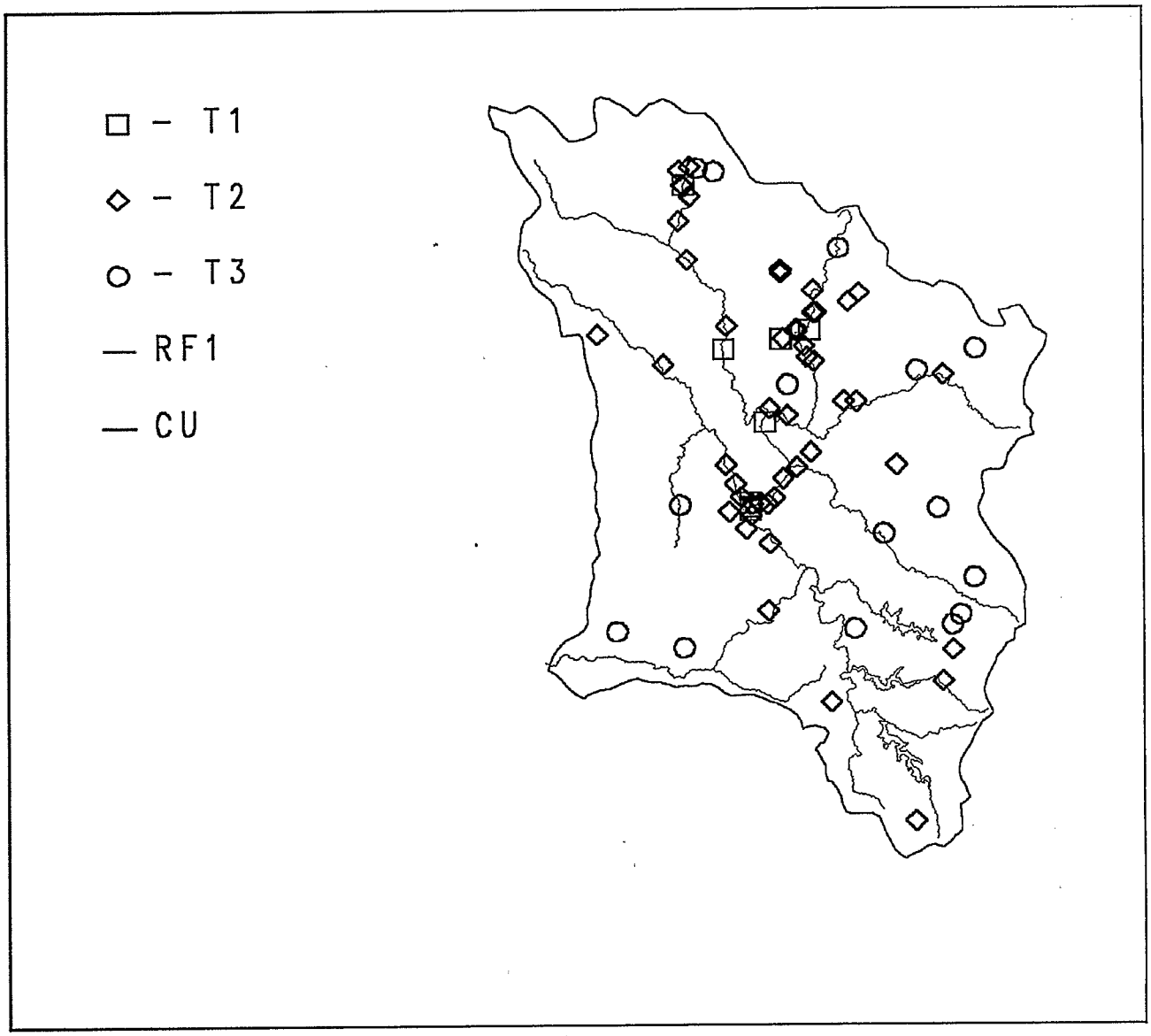

Figure 90. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11140100**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 21 Date Range: 1980-81

Source: **STORET** Agency: **21OHIO**
Monitoring Program: **Ohio EPA Water, Sediment, Tissue And Drinking Water Data**
Num. of Stations: 56 Date Range: 1985-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	78	43	.	43	.	43	.	.
Nickel	56	42	.	42	.	42	.	.
Zinc	77	37	.	37	.	37	.	.
Arsenic	65	33	2	31	2	31	.	.
Copper	75	33	.	33	.	33	.	.
Cadmium	74	24	.	24	.	24	.	.
Chromium	77	20	7	13	7	13	.	.
Dieldrin	7	5	.	5	.	5	.	5
DDT	7	4	1	3	1	3	.	1
Hexachlorobenzene	9	4	.	4	.	4	.	4
BHC	7	2	1	1	1	1	.	1
Aldrin	7	2	.	2	.	.	.	2
Endosulfan, alpha-	7	2	.	2	.	2	.	.
Fluoranthene	9	2	.	2	.	2	.	.
Pyrene	9	2	.	2	.	2	.	.
Polychlorinated biphenyls	8	1	1	.	1	.	.	1
Chrysene	9	1	.	1	.	1	.	.
Endosulfan, beta-	7	1	.	1	.	1	.	.
Phenanthrene	9	1	.	1	.	1	.	.
Silver	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	9	0.00	0.00	0	.	.
Acenaphthylene	9	0.00	0.00	0	.	.
Aldrin	7	1.57	0.00	2	6.36	4.61
Anthracene	9	0.00	0.00	0	.	.
Arsenic	74	12362.84	6910.00	74	96700.00	990.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	9	0.00	0.00	0	.	.
Benzo(a)pyrene	9	0.00	0.00	0	.	.
Benzo(b)fluoranthene	9	0.00	0.00	0	.	.
Benzo(ghi)perylene	9	0.00	0.00	0	.	.
Benzo(k)fluoranthene	9	188.89	0.00	2	1000.00	700.00
Bis(2-ethylhexyl)phthalate	9	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	9	0.00	0.00	0	.	.
BHC	28	0.78	0.00	4	8.02	1.65
Cadmium	101	969.76	224.00	71	18500.00	62.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	108	114925.9	10100.00	79	6420000	2960.00
Chrysene	9	55.56	0.00	1	500.00	500.00
Copper	103	31527.28	15000.00	89	296000.0	5000.00
Di-n-butyl phthalate	9	0.00	0.00	0	.	.
Di-n-octyl phthalate	9	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	9	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	25.22	0.00	1	227.00	227.00
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	7	11.25	6.77	5	42.40	3.62
Diethyl phthalate	9	0.00	0.00	0	.	.
Dimethyl phthalate	9	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	9	0.00	0.00	0	.	.
DDT	21	7.34	0.00	6	90.30	5.04
Endosulfan, alpha-	7	2.02	0.00	2	9.00	5.13
Endosulfan, beta-	7	3.57	0.00	2	18.00	7.00
Endrin	7	4.21	0.00	2	22.40	7.07
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	9	200.00	0.00	2	1000.00	800.00
Fluorene	9	0.00	0.00	0	.	.
Heptachlor	7	0.00	0.00	0	.	.
Heptachlor epoxide	7	0.00	0.00	0	.	.
Hexachlorobenzene	9	1355.56	0.00	4	5040.00	560.00
Hexachlorobutadiene	9	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	9	0.00	0.00	0	.	.
Isophorone	9	0.00	0.00	0	.	.
Lead	108	72224.63	29200.00	92	1870000	7010.00
Mercury	18	16.67	8.50	11	78.00	6.00
Naphthalene	9	0.00	0.00	0	.	.
Nickel	73	79589.18	43000.00	71	760000.0	7260.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	9	88.89	0.00	1	800.00	800.00
Phenol	8	0.00	0.00	0	.	.
Polychlorinated biphenyls	56	32.14	0.00	1	1800.00	1800.00
Pyrene	9	155.56	0.00	2	900.00	500.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Silver	6	1166.67	1000.00	6	2000.00	400.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Xylenes	1	0.00	0.00	0	.	.
Zinc	105	548385.7	102000.0	105	29600000	9000.00

Vermilion 05120109

Watershed Summary Information

Accounting Unit Name:	Wabash
State(s):	IL (IN)
Political Boundaries:	Vermilion, Ford, Champaign, Iroquois, Benton, Warren, Vermillion
Major Waterways:	Vermilion R Vermilion R, Salt Fk Vermilion R, M Fk Vermilion R, N Fk Upper Salt Fk Drainage Di
Number of Stations in Watershed:	Tier1 - 12 Tier2 - 16 Tier3 - .

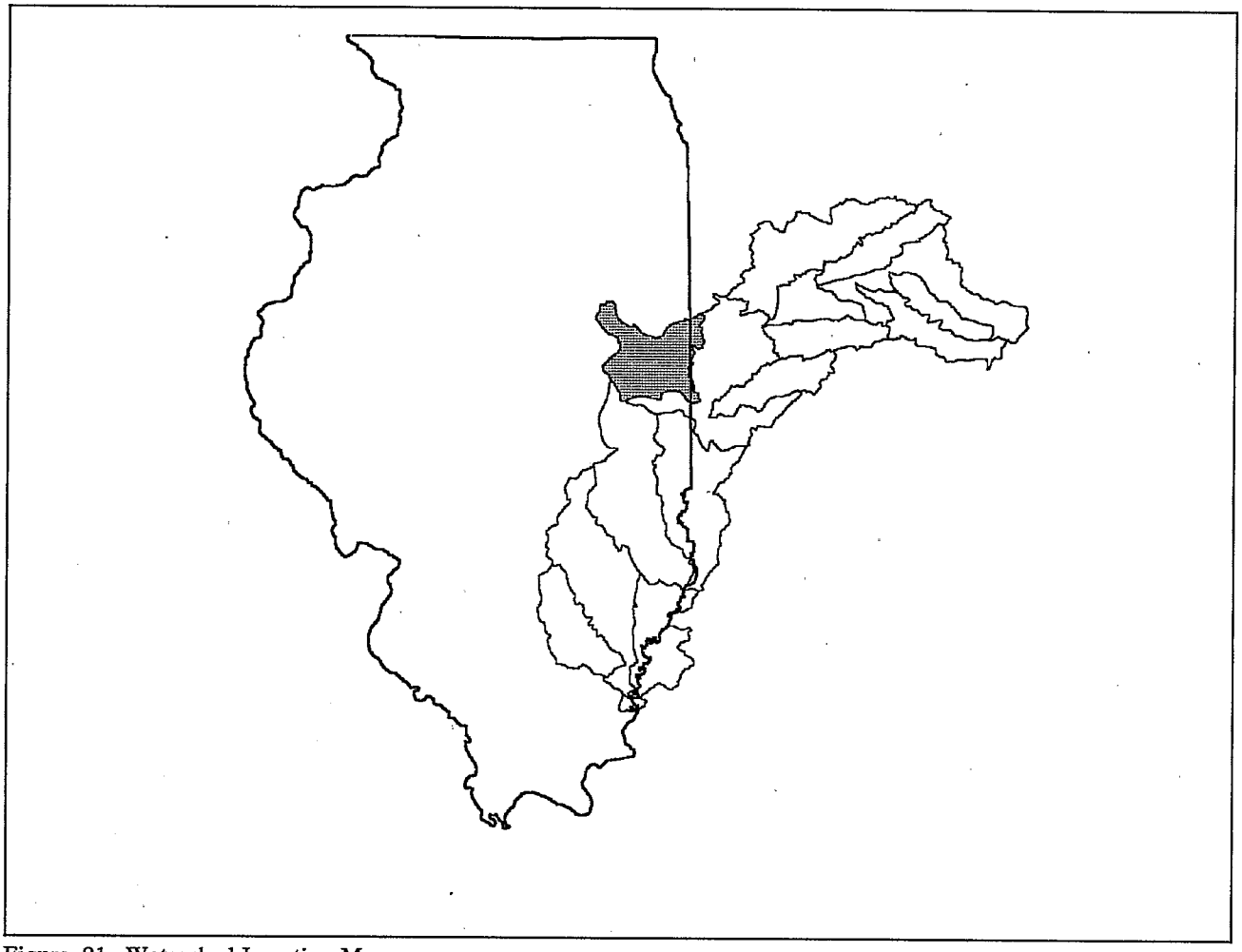

Figure 91. Watershed Location Map

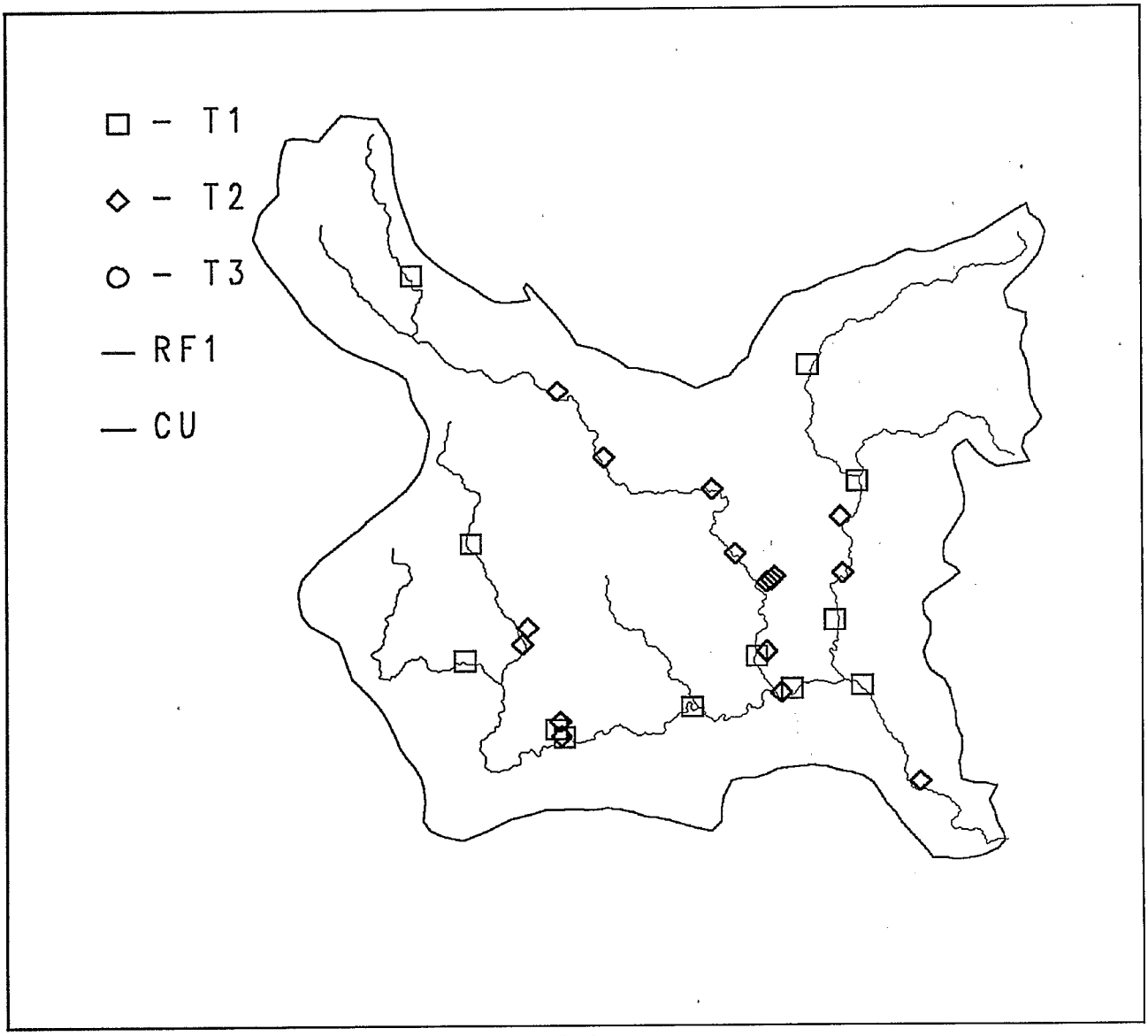

Figure 92. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 4 Date Range: 1980-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 5 Date Range: 1984-89

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 18 Date Range: 1986

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	27	24	.	24	.	20	.	24
Copper	23	19	.	19	.	19	.	.
Mercury	26	10	8	2	8	2	.	.
Chlordane	28	10	.	10	.	7	.	7
DDT	28	9	.	9	.	8	.	1
Polychlorinated biphenyls	27	5	4	1	.	1	4	1
Heptachlor epoxide	27	5	.	5	.	.	.	5
Lead	23	5	.	5	.	5	.	.
Zinc	23	4	.	4	.	4	.	.
Arsenic	23	3	.	3	.	3	.	.
Nickel	2	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	20	0.00	0.00	0	.	.
Arsenic	26	6011.54	6000.00	26	9000.00	4000.00
BHC	58	0.00	0.00	0	.	.
Cadmium	26	0.00	0.00	0	.	.
Chlordane	103	1.00	0.00	20	16.00	2.00
Chromium	26	27288.46	24000.00	26	50000.00	11900.00
Copper	26	24092.31	22000.00	26	43000.00	15000.00
Dieldrin	26	2.57	2.80	21	9.50	1.30
DDT	147	0.33	0.00	20	12.00	0.80
Endrin	20	0.00	0.00	0	.	.
Heptachlor	20	0.00	0.00	0	.	.
Heptachlor epoxide	26	0.21	0.00	3	2.60	1.00
Hexachlorobenzene	20	0.00	0.00	0	.	.
Lead	26	25576.92	22000.00	26	97000.00	4800.00
Mercury	26	500.31	50.00	24	3800.00	20.00
Methoxychlor	20	0.00	0.00	0	.	.
Nickel	2	17850.00	17850.00	2	22400.00	13300.00
Polychlorinated biphenyls	26	1.38	0.00	1	36.00	36.00
Silver	2	0.00	0.00	0	.	.
Zinc	26	101492.3	99000.00	26	170000.0	57900.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	36	0.00	0.00	0	.	.
BHC	74	0.14	0.00	1	10.00	10.00
Chlordane	48	208.48	124.50	45	1340.00	20.00
Dieldrin	56	118.84	45.00	53	840.00	10.00
DDT	43	161.79	70.00	41	986.00	10.00
Endrin	37	0.00	0.00	0	.	.
Heptachlor	37	0.00	0.00	0	.	.
Heptachlor epoxide	48	15.76	0.06	33	260.00	0.01
Hexachlorobenzene	37	0.00	0.00	0	.	.
Mercury	19	86.32	80.00	19	140.00	30.00
Methoxychlor	37	0.00	0.00	0	.	.
Mirex/Dechlorane	37	0.00	0.00	0	.	.
Polychlorinated biphenyls	39	214.38	0.00	17	3100.00	77.00
Toxaphene	37	0.00	0.00	0	.	.

Middle Wabash-Busseron 05120111

Watershed Summary Information

Accounting Unit Name:	Wabash
State(s):	IL IN
Political Boundaries:	Vigo, Sullivan, Crawford, Clark, Edgar, Clay, Parke, Knox, Vermilion, Lawrence
Major Waterways:	Wabash R Brouillets Cr Busseron Cr Mill Cr Sugar Cr
Number of Stations in Watershed:	Tier1 - 15 Tier2 - 17 Tier3 - 1

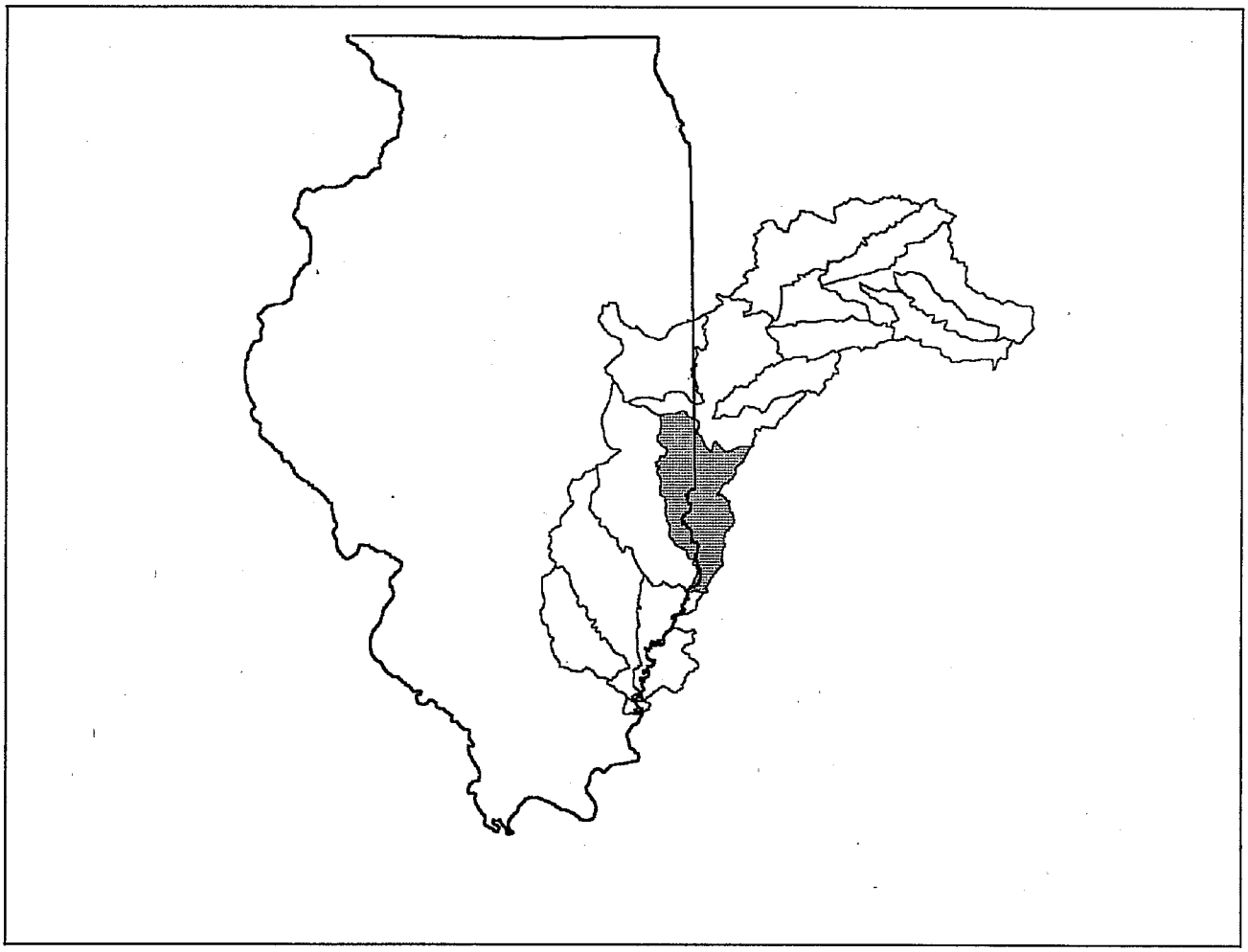

Figure 93. Watershed Location Map

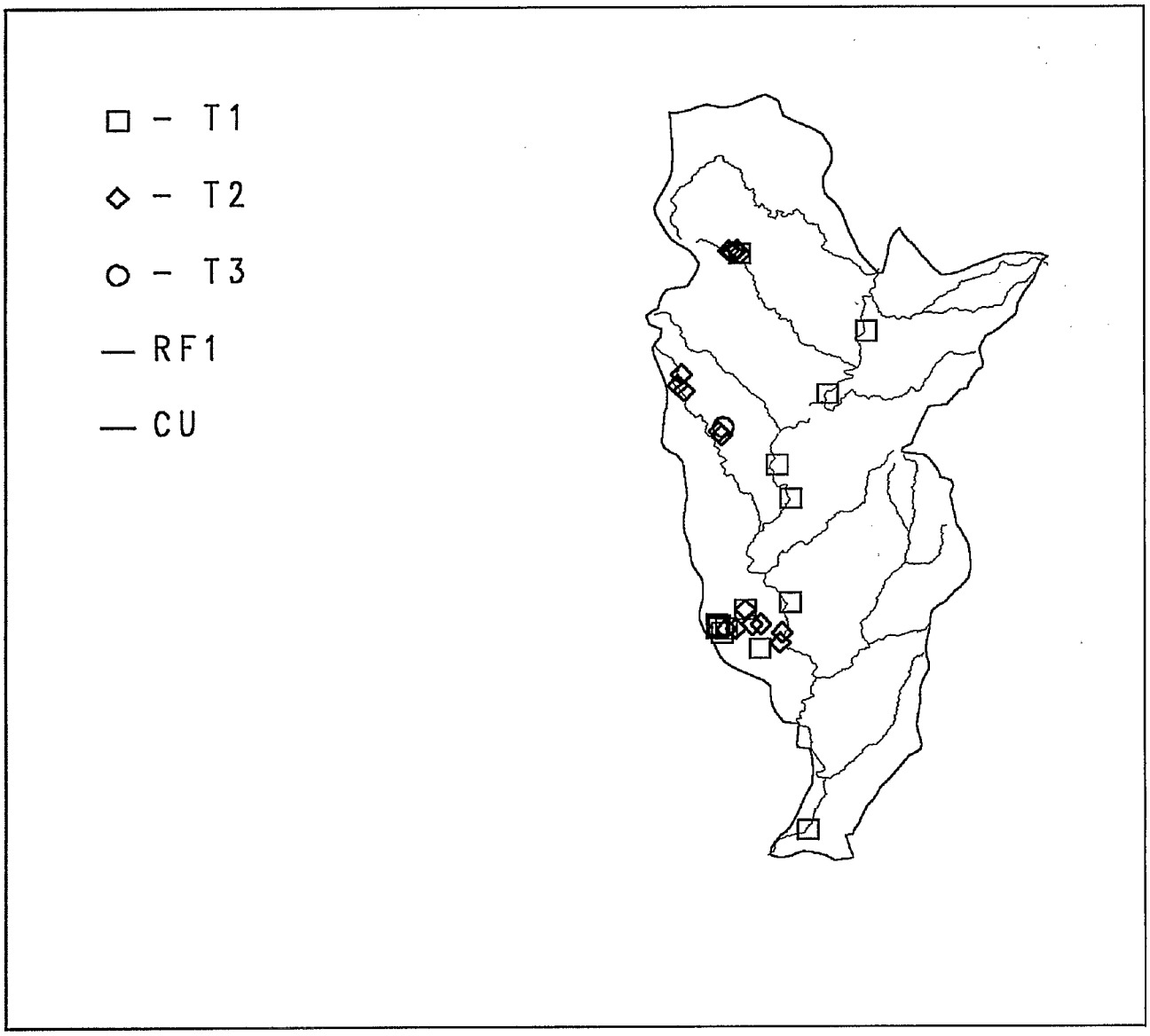

Figure 94. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **GR. LAKE** Agency: **11**
Monitoring Program: **Illinois EPA**
Num. of Stations: 13 Date Range: 1986

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 6 Date Range: 1980-90

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 9 Date Range: 1984-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 2 Date Range: 1986

Source: **STORET** Agency: **21IND**
Monitoring Program: **Indiana Board of Health General Water Quality & Bioassay Data**
Num. of Stations: 3 Date Range: 1980-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	33	29	.	29	.	9	.	28
Chlordane	33	23	.	23	.	15	.	20
Copper	27	19	.	19	.	19	.	.
Polychlorinated biphenyls	33	17	9	8	2	4	7	10
Mercury	32	16	7	9	7	9	.	.
Heptachlor epoxide	33	16	.	16	.	.	.	16
Arsenic	27	12	.	12	.	9	.	3
Lead	27	10	.	10	.	10	.	.
Zinc	26	9	.	9	.	9	.	.
Nickel	10	7	.	7	.	7	.	.
Cadmium	27	4	.	4	.	4	.	.
BHC	19	3	.	3	.	.	.	3
DDT	20	3	.	3	.	.	.	3
Aldrin	18	1	.	1	.	.	.	1
Chromium	27	1	.	1	.	1	.	.
Heptachlor	19	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	18	0.08	0.00	1	1.50	1.50
Arsenic	36	7302.78	6100.00	36	25000.00	3400.00
Bis(2-ethylhexyl)phthalate	8	27.50	35.00	5	50.00	20.00
BHC	36	0.00	0.00	0	.	.
Cadmium	36	166.67	0.00	6	1000.00	1000.00
Chlordane	81	7.68	0.00	28	90.00	2.40
Chromium	36	20794.44	16500.00	36	54000.00	11000.00
Copper	36	76244.44	24250.00	36	795000.0	12000.00
Di-n-butyl phthalate	7	14.29	0.00	2	50.00	50.00
Dieldrin	37	13.16	4.50	26	70.00	1.10
DDT	132	0.00	0.00	0	.	.
Endrin	18	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor	18	0.00	0.00	0	.	.
Heptachlor epoxide	37	5.56	0.00	14	50.00	1.60
Hexachlorobenzene	18	0.00	0.00	0	.	.
Lead	36	37358.33	22000.00	36	150000.0	4400.00
Mercury	37	374.97	100.00	36	2400.00	4.00
Methoxychlor	18	0.00	0.00	0	.	.
Nickel	13	19284.62	19000.00	13	27000.00	13000.00
Polychlorinated biphenyls	37	28.35	0.00	11	420.00	18.00
Silver	13	0.00	0.00	0	.	.
Zinc	36	117338.9	79850.00	36	440000.0	51000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Aldrin	48	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	7	0.00	0.00	0	.	.
Arsenic	31	15369.77	72.00	24	163000.0	13.00
Barium	7	0.00	0.00	0	.	.
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Benzoic acid	1	0.00	0.00	0	.	.
Benzyl alcohol	1	0.00	0.00	0	.	.
Beryllium	7	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	1	0.00	0.00	0	.	.
Bromodichloromethane	1	0.00	0.00	0	.	.
Bromomethane	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	260	46.72	0.00	128	1935.00	1.00
Cadmium	37	192.68	40.00	20	1180.00	20.00
Carbon disulfide	1	10.00	10.00	1	10.00	10.00
Chlordane	354	399.73	86.00	343	10330.00	3.00
Chlorobenzene	1	0.00	0.00	0	.	.
Chloroethane	1	0.00	0.00	0	.	.
Chloroethene	1	0.00	0.00	0	.	.
Chloromethane	1	0.00	0.00	0	.	.
Chloronaphthalene, 2-	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chlorophenol, 2-	1	0.00	0.00	0	.	.
Chromium	33	559.09	450.00	25	2200.00	240.00
Chrysene	1	0.00	0.00	0	.	.
Copper	33	656.06	600.00	27	1740.00	200.00
Cresol, o	1	0.00	0.00	0	.	.
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibenzofuran	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, 1,1-	1	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	137	1256.20	88.00	133	14630.00	5.00
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	1	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	1	0.00	0.00	0	.	.
DDT	314	205.91	22.00	242	10910.00	1.00
Endosulfan, alpha-	12	0.00	0.00	0	.	.
Endosulfan, beta-	12	0.00	0.00	0	.	.
Endrin	50	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	60	5.18	0.00	9	140.00	1.00
Heptachlor epoxide	115	94.98	10.00	86	1033.00	0.01
Hexachlorobenzene	93	5.81	0.00	38	67.00	1.00
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	38	57.11	0.00	9	440.00	120.00
Manganese	7	4137.14	6000.00	5	9300.00	260.00
Mercury	63	120.76	110.00	63	310.00	30.00
Methoxychlor	50	2.44	0.00	2	62.00	60.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methyl isobutyl ketone	1	0.00	0.00	0	.	.
Mirex/Dechlorane	38	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	7	0.00	0.00	0	.	.
Nitrobenzene	1	0.00	0.00	0	.	.
Nitrophenol, 4	1	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	1	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	114	5005.85	570.50	88	136900.0	53.00
Pyrene	1	0.00	0.00	0	.	.
Selenium	7	94.29	0.00	1	660.00	660.00
Silver	7	0.00	0.00	0	.	.
Styrene	1	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toxaphene	44	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	1	0.00	0.00	0	.	.
Vanadium	7	0.00	0.00	0	.	.
Vinyl acetate	1	0.00	0.00	0	.	.
Zinc	20	44550.00	34800.00	20	118000.0	11900.00

Holston 06010104

Watershed Summary Information

Accounting Unit Name: French Broad-Holston

State(s): TN

Political Boundaries: Hawkins, Jefferson, Grainger, Hamblen, Knox, Sullivan

Major Waterways:
Holston R
Richland Cr
Poor Valley Cr
Beech Cr
Cherokee L

Number of Stations in Watershed:
Tier1 - 12
Tier2 - 2
Tier3 - 1

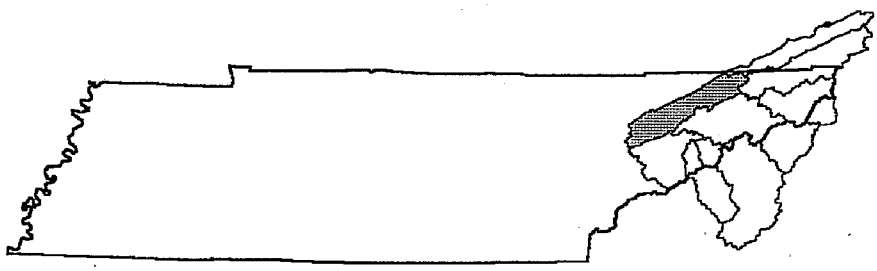

Figure 95. Watershed Location Map

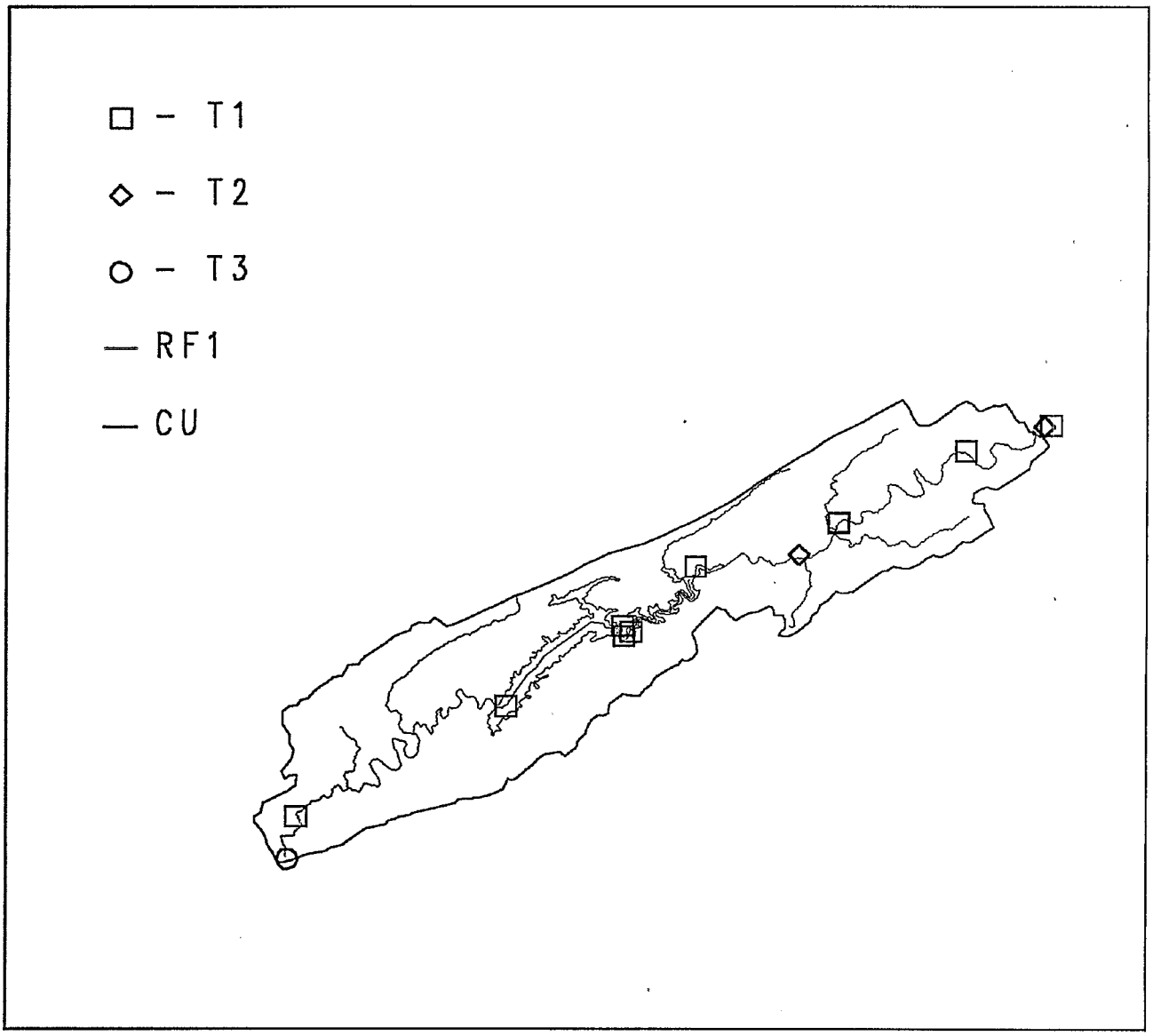

Figure 96. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **TN**
Monitoring Program: **Tennessee**
Num. of Stations: 2 Date Range: 1984-88

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984-88

Source: **STORET** Agency: **1114PEST**
Monitoring Program: **USEPA SE Environ Water Lab Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 8 Date Range: 1986-93

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1981-87

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	14	11	10	1	.	.	10	1
Mercury	14	6	3	3	3	3	.	.
Copper	10	6	.	6	.	6	.	.
Lead	10	5	.	5	.	5	.	.
Nickel	10	5	.	5	.	5	.	.
Zinc	10	5	.	5	.	5	.	.
Dieldrin	11	4	.	4	.	.	.	4
Cadmium	10	3	.	3	.	3	.	.
Chromium	10	3	.	3	.	3	.	.
Dioxins	4	2	2	.	.	.	2	.
Silver	7	2	1	1	1	1	.	.
Arsenic	9	2	.	2	.	.	.	2
Aldrin	8	1	.	1	.	.	.	1
Beryllium	6	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	11	0.00	0.00	0	.	.
Antimony	19	469.00	56.00	10	7000.00	56.00
Arsenic	19	428.95	120.00	12	2790.00	100.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	44	0.00	0.00	0	.	.
Cadmium	27	458.15	300.00	16	3000.00	200.00
Chlordane	12	0.00	0.00	0	.	.
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	27	32818.52	31000.00	27	93000.00	9700.00
Copper	27	75788.89	64000.00	27	272000.0	23000.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Diazinon/Spectracide	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	11	0.00	0.00	0	.	.
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
DDT	33	0.00	0.00	0	.	.
Endosulfan, alpha-	11	0.00	0.00	0	.	.
Endosulfan, beta-	11	0.00	0.00	0	.	.
Endrin	11	0.00	0.00	0	.	.
Ethion/Bladen	1	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	11	0.11	0.00	1	1.20	1.20
Heptachlor epoxide	11	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	27	39844.44	37000.00	25	162000.0	10000.00
Malathion	1	0.00	0.00	0	.	.
Mercury	25	905.72	450.00	25	5100.00	100.00
Methoxychlor	8	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	27	19811.11	18100.00	26	48000.00	8000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Phenanthrene	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	104	0.05	0.00	1	5.30	5.30
Pyrene	1	0.00	0.00	0	.	.
Silver	19	902.11	0.00	5	14000.00	300.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	11	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	27	248074.1	172000.0	27	1500000	64000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	21	0.48	0.00	1	10.00	10.00
Antimony	18	0.00	0.00	0	.	.
Arsenic	22	25.00	0.00	8	140.00	20.00
Beryllium	18	16.67	0.00	2	180.00	120.00
Biphenyl	2	0.00	0.00	0	.	.
BHC	86	0.08	0.00	2	3.24	3.24
Cadmium	22	82.36	0.00	9	480.00	2.00
Chlordane	51	13.09	0.00	22	64.40	4.35
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	18	64.44	30.00	10	330.00	20.00
Copper	18	466.67	0.00	7	1800.00	400.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	24	7.23	0.00	6	66.70	10.00
Dioxins	6	0.00	0.00	5	0.01	0.00
DDT	67	6.90	0.00	14	100.00	10.00
Endosulfan, alpha-	21	0.00	0.00	0	.	.
Endosulfan, beta-	21	3.33	0.00	1	70.00	70.00
Endrin	24	1.91	0.00	5	20.00	2.88
Heptachlor	23	0.00	0.00	0	.	.
Heptachlor epoxide	23	0.00	0.00	0	.	.
Hexachlorobenzene	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobutadiene	5	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	22	80.91	65.00	13	520.00	60.00
Mercury	26	231.62	245.00	26	410.00	76.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	13	0.00	0.00	0	.	.
Nickel	18	55.56	0.00	1	1000.00	1000.00
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	164	157.69	0.00	52	2528.30	100.00
Selenium	22	181.36	195.00	13	880.00	150.00
Silver	11	90.91	0.00	2	600.00	400.00
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Toxaphene	21	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	4	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Zinc	18	13088.89	8600.00	18	32000.00	5400.00

Watts Bar Lake 06010201

Watershed Summary Information

Accounting Unit Name:	Upper Tennessee
State(s):	TN
Political Boundaries:	Rhea, Roane, Loudon, Blount, Knox, Cumberland, Meigs, Bledsoe, Sevier, Mcminn, Monroe, Morgan, Swain
Major Waterways:	Tennessee R Little R Whites Cr Watts Bar L Fort Loudoun L
Number of Stations in Watershed:	Tier1 - 63 Tier2 - 7 Tier3 - 19

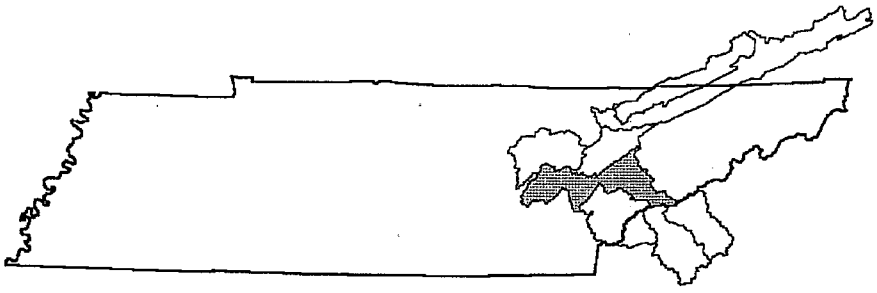

Figure 97. Watershed Location Map

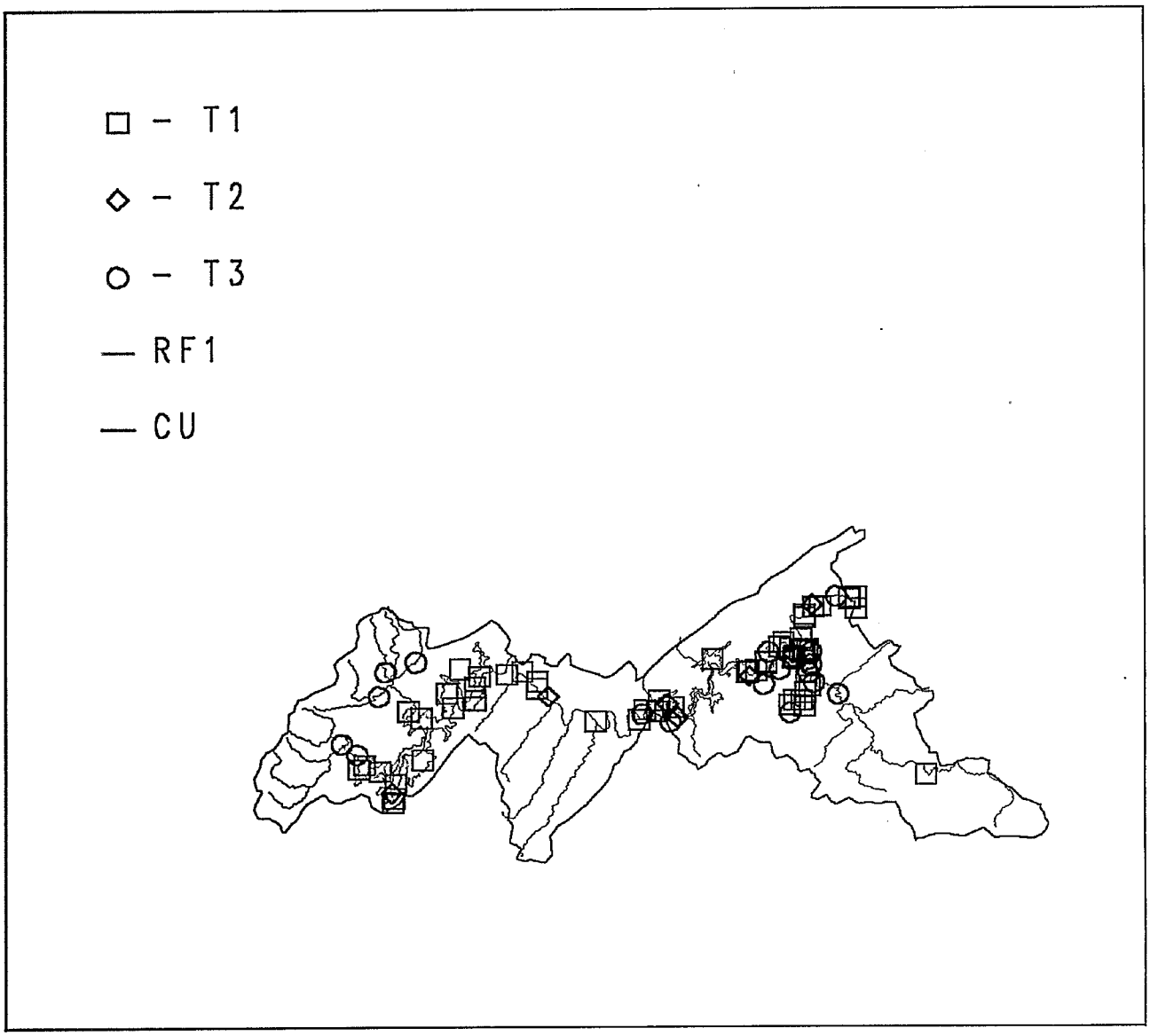

Figure 98. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **TN**
Monitoring Program: **Tennessee**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 6 Date Range: 1980-85

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 66 Date Range: 1982-93

Source: **STORET** Agency: **132TVAC**
Monitoring Program: **WQ Monitoring Tenn Valley Authority**
Num. of Stations: 6 Date Range: 1983-84

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 9 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	83	60	58	2	14	2	44	16
Chlordane	32	11	.	11	.	4	.	11
Mercury	30	10	5	5	5	5	.	.
Lead	28	9	.	9	.	7	.	2
Copper	28	7	.	7	.	7	.	.
Zinc	26	7	.	7	.	7	.	.
Chromium	31	6	.	6	.	6	.	.
Nickel	21	6	.	6	.	6	.	.
Dieldrin	24	5	.	5	.	.	.	5
Arsenic	21	4	.	4	.	3	.	1
Dioxins	2	1	1	.	.	.	1	.
Bis(2-ethylhexyl)phthalate	1	1	.	1	.	1	.	.
BHC	24	1	.	1	.	.	.	1
Cadmium	28	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	24	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	1	300.00	300.00	1	300.00	300.00
Arsenic	4	11500.00	13000.00	4	16000.00	4000.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	1300.00	1300.00	1	1300.00	1300.00
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	96	0.00	0.00	0	.	.
Cadmium	32	65.63	0.00	1	2100.00	2100.00
Chlordane	24	6.83	0.00	7	38.00	12.00
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	70	36285.71	38000.00	66	68000.00	10000.00
Chrysene	1	0.00	0.00	0	.	.
Copper	32	31031.25	34500.00	26	57000.00	22000.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	46.00	46.00	1	46.00	46.00
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	24	0.00	0.00	0	.	.
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
DDT	72	0.00	0.00	0	.	.
Endosulfan, alpha-	24	0.00	0.00	0	.	.
Endosulfan, beta-	24	0.00	0.00	0	.	.
Endrin	24	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	24	0.00	0.00	0	.	.
Heptachlor epoxide	24	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	32	40812.50	40000.00	29	87000.00	10000.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Mercury	86	1299.30	680.00	75	7800.00	100.00
Methoxychlor	19	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	26	28615.38	31000.00	24	56000.00	10000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenanthrene	1	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1224	97.18	0.00	117	6500.00	100.00
Pyrene	1	0.00	0.00	0	.	.
Silver	3	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	24	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	10.00	10.00	1	10.00	10.00
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	32	226218.8	220000.0	32	500000.0	9000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	121	0.00	0.00	0	.	.
Antimony	20	0.00	0.00	0	.	.
Arsenic	26	5.77	0.00	4	70.00	20.00
Beryllium	20	0.00	0.00	0	.	.
Biphenyl	2	0.00	0.00	0	.	.
BHC	388	0.80	0.00	6	180.00	10.00
Cadmium	32	63.22	0.00	15	500.00	3.00
Chlordane	561	9.58	0.00	116	590.00	7.00
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	31	49.03	50.00	16	150.00	50.00
Copper	31	1391.29	600.00	26	8000.00	200.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	123	1.84	0.00	9	60.00	8.39
Dioxins	3	0.00	0.00	3	0.00	0.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
DDT	513	7.35	0.00	58	300.00	10.00
Endosulfan, alpha-	72	5.97	0.00	20	50.00	10.00
Endosulfan, beta-	72	0.42	0.00	1	30.00	30.00
Endrin	122	1.97	0.00	7	90.00	10.00
Heptachlor	73	0.00	0.00	0	.	.
Heptachlor epoxide	74	0.05	0.00	2	1.83	1.83
Hexachlorobenzene	3	0.00	0.00	0	.	.
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	32	257.81	35.00	19	3000.00	20.00
Mercury	34	193.82	170.00	30	650.00	50.00
Methoxychlor	50	0.00	0.00	0	.	.
Mirex/Dechlorane	70	0.00	0.00	0	.	.
Nickel	20	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	5361	428.11	0.00	1704	22000.00	100.00
Selenium	21	98.57	80.00	11	680.00	80.00
Silver	12	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	72	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	20	15400.00	8550.00	20	29000.00	5400.00

Lower Clinch 06010207

Watershed Summary Information

Accounting Unit Name: Upper Tennessee

State(s): TN

Political Boundaries: Anderson, Knox, Roane, Loudon, Union, Grainger, Campbell

Major Waterways:
Clinch R
Bullrun Cr
Poplar Cr
Beaver Cr
Melton Hill L

Number of Stations in Watershed:
Tier1 - 61
Tier2 - 14
Tier3 - 4

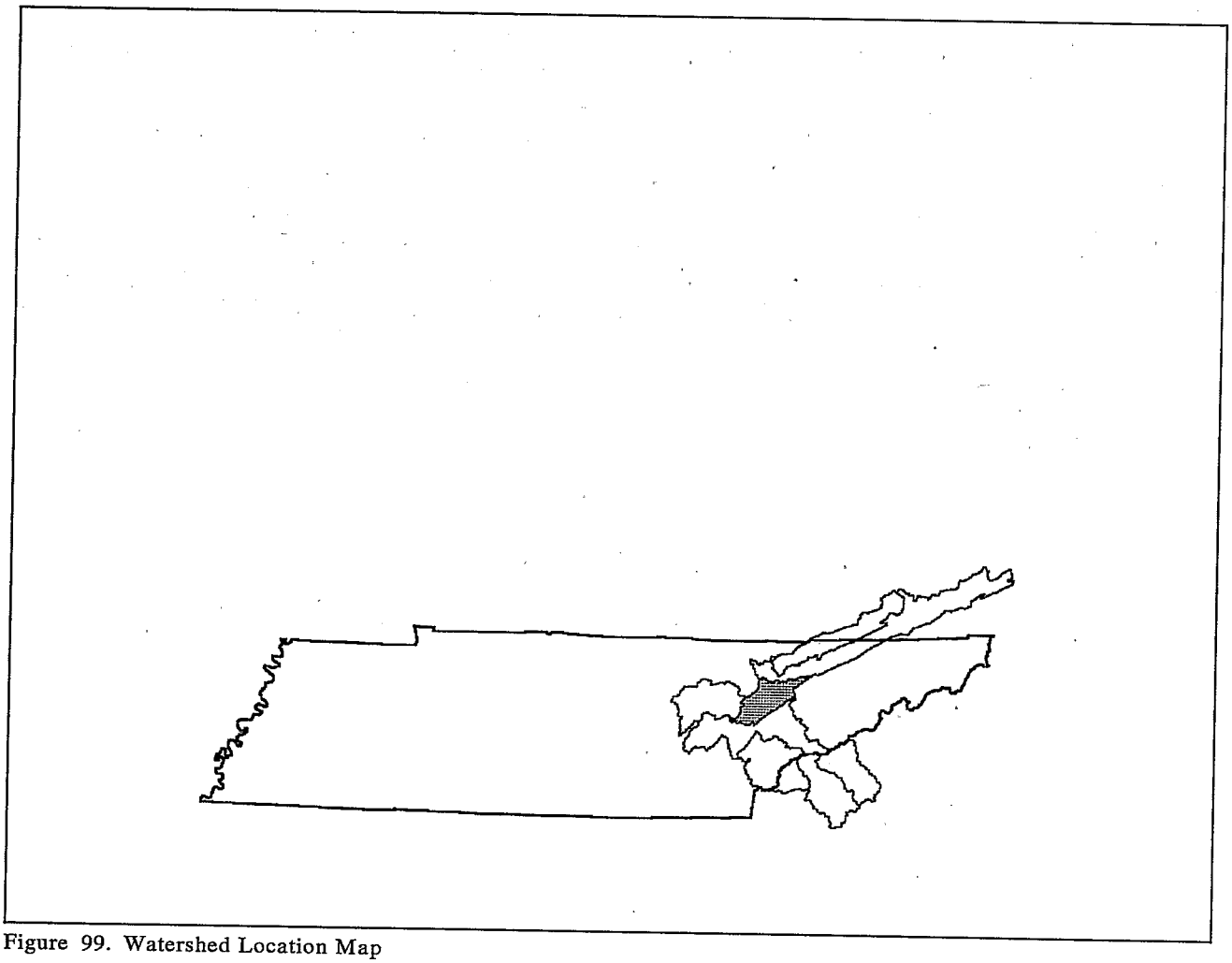

Figure 99. Watershed Location Map

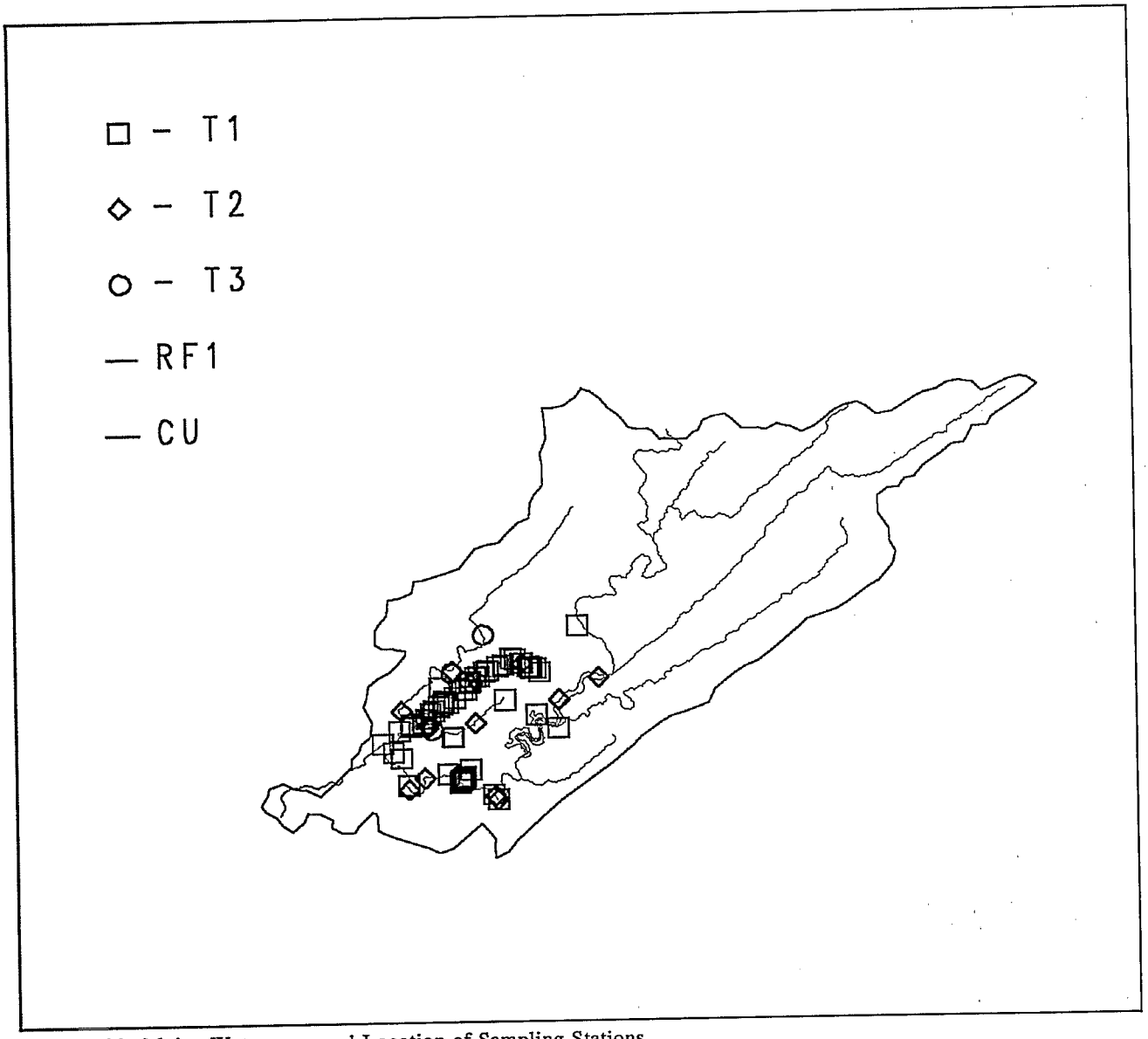

Figure 100. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 2 Date Range: 1980

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 7 Date Range: 1982-93

Source: **STORET** Agency: **132TVAC**
Monitoring Program: **WQ Monitoring Tenn Valley Authority**
Num. of Stations: 70 Date Range: 1983-84

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	75	57	46	11	46	5	.	6
Nickel	60	38	.	38	.	38	.	.
Lead	56	37	.	37	.	36	.	1
Cadmium	62	27	.	27	.	27	.	.
Silver	58	26	19	7	19	7	.	.
Arsenic	58	26	.	26	.	16	.	10
Polychlorinated biphenyls	55	24	24	.	11	.	13	11
Bis(2-ethylhexyl)phthalate	44	23	3	20	3	20	.	4
Fluoranthene	44	18	1	17	1	17	.	.
Pyrene	44	15	2	13	2	13	.	.
Copper	28	11	.	11	.	11	.	.
Chromium	62	10	2	8	2	8	.	.
Phenanthrene	39	9	3	6	3	6	.	.
Zinc	28	5	.	5	.	5	.	.
Anthracene	44	4	2	2	2	2	.	.
Chlordane	22	4	.	4	.	2	.	4
Benzo(a)anthracene	44	3	1	2	1	2	.	3
Beryllium	13	3	.	3	.	.	.	3
Chrysene	44	2	1	1	1	1	.	.
Heptachlor epoxide	22	2	.	2	.	.	.	2
Naphthalene	44	1	1	.	1	.	.	.
Aldrin	22	1	.	1	.	.	.	1
Benzo(a)pyrene	44	1	.	1	.	1	.	1
Butyl benzyl phthalate	44	1	.	1	.	1	.	.
BHC	22	1	.	1	.	.	.	1
Tetrachloroethene	16	1	.	1	.	1	.	.
Toxaphene	22	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	45	0.00	0.00	0	.	.
Acenaphthylene	45	0.00	0.00	0	.	.
Acrylonitrile	11	0.00	0.00	0	.	.
Aldrin	18	0.00	0.00	0	.	.
Anthracene	45	152.89	0.00	4	4100.00	580.00
Antimony	11	209.09	200.00	8	500.00	200.00
Arsenic	45	8548.89	6800.00	45	35000.00	3600.00
Benzene	11	0.00	0.00	0	.	.
Benzo(a)anthracene	45	87.11	0.00	3	1800.00	920.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)pyrene	45	20.00	0.00	1	900.00	900.00
Benzo(b)fluoranthene	45	0.00	0.00	0	.	.
Benzo(ghi)perylene	45	0.00	0.00	0	.	.
Benzo(k)fluoranthene	45	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	45	1121.78	780.00	25	9500.00	700.00
Bromophenyl phenyl ether, 4-	45	0.00	0.00	0	.	.
Butyl benzyl phthalate	45	28.89	0.00	1	1300.00	1300.00
BHC	72	0.00	0.00	0	.	.
Cadmium	55	2005.45	1100.00	34	10000.00	500.00
Chlordane	18	3.17	0.00	2	32.00	25.00
Chlorobenzene	11	0.00	0.00	0	.	.
Chromium	55	54618.18	35000.00	54	290000.0	10000.00
Chrysene	45	122.67	0.00	2	4600.00	920.00
Copper	21	45761.90	41000.00	21	150000.0	10000.00
Di-n-butyl phthalate	45	13.33	0.00	1	600.00	600.00
Di-n-octyl phthalate	45	46.67	0.00	1	2100.00	2100.00
Dibenzo(a,h)anthracene	45	0.00	0.00	0	.	.
Dibromochloromethane	11	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	45	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	45	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	45	0.00	0.00	0	.	.
Dichloroethane 1,1-	11	0.00	0.00	0	.	.
Dichloroethane 1,2-	11	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	11	0.00	0.00	0	.	.
Dichloromethane	11	59.09	40.00	9	180.00	25.00
Dichloropropane, 1,2-	11	0.00	0.00	0	.	.
Dieldrin	18	0.00	0.00	0	.	.
Diethyl phthalate	45	0.00	0.00	0	.	.
Dimethyl phthalate	45	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	11	0.00	0.00	0	.	.
DDT	54	0.00	0.00	0	.	.
Endosulfan, alpha-	18	0.00	0.00	0	.	.
Endosulfan, beta-	18	0.00	0.00	0	.	.
Endrin	18	0.00	0.00	0	.	.
Ethylbenzene	11	0.00	0.00	0	.	.
Fluoranthene	45	921.11	0.00	20	13000.00	590.00
Fluorene	45	0.00	0.00	0	.	.
Heptachlor	18	0.00	0.00	0	.	.
Heptachlor epoxide	18	0.00	0.00	0	.	.
Hexachlorobenzene	45	0.00	0.00	0	.	.
Hexachlorobutadiene	45	0.00	0.00	0	.	.
Hexachloroethane	45	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	45	0.00	0.00	0	.	.
Isophorone	45	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	55	54909.09	39000.00	55	170000.0	18000.00
Mercury	314	23360.00	13000.00	304	240000.0	110.00
Methoxychlor	7	1.43	0.00	1	10.00	10.00
Naphthalene	45	26.67	0.00	1	1200.00	1200.00
Nickel	53	37264.15	28000.00	50	200000.0	5000.00
Nitrosodiphenylamine, N-	45	0.00	0.00	0	.	.
Pentachlorophenol	11	0.00	0.00	0	.	.
Phenanthrene	45	390.44	0.00	10	4500.00	580.00
Phenol	11	0.00	0.00	0	.	.
Polychlorinated biphenyls	365	62.60	0.00	22	4000.00	200.00
Pyrene	45	675.56	0.00	17	10000.00	620.00
Silver	46	5454.35	2500.00	30	45000.00	1000.00
Tetrachloroethane, 1,1,2,2-	11	0.00	0.00	0	.	.
Tetrachloroethene	11	6.18	0.00	1	68.00	68.00
Tetrachloromethane	11	0.00	0.00	0	.	.
Toluene	11	1.09	0.00	1	12.00	12.00
Toxaphene	18	0.00	0.00	0	.	.
Tribromomethane/Bromoform	11	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	45	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	11	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	11	0.00	0.00	0	.	.
Trichloroethene	11	0.00	0.00	0	.	.
Trichlorofluoromethane	11	0.00	0.00	0	.	.
Trichloromethane/Chloroform	11	0.00	0.00	0	.	.
Zinc	21	121428.6	110000.0	21	370000.0	53000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	47	0.00	0.00	0	.	.
Acrolein	49	0.00	0.00	0	.	.
Acrylonitrile	49	0.00	0.00	0	.	.
Aldrin	63	0.32	0.00	1	20.00	20.00
Anthracene	47	0.00	0.00	0	.	.
Antimony	66	30.30	0.00	2	1000.00	1000.00
Arsenic	117	68.89	0.00	48	400.00	20.00
Benzene	49	0.00	0.00	0	.	.
Benzidine	47	0.00	0.00	0	.	.
Benzo(a)anthracene	47	0.00	0.00	0	.	.
Benzo(a)pyrene	47	0.00	0.00	0	.	.
Benzo(b)fluoranthene	47	0.00	0.00	0	.	.
Benzo(k)fluoranthene	47	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Beryllium	66	7.58	0.00	17	60.00	20.00
Bis(chloromethyl)ether	49	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	47	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	47	0.00	0.00	0	.	.
Bromodichloromethane	49	0.00	0.00	0	.	.
Bromomethane	49	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	47	0.00	0.00	0	.	.
Butyl benzyl phthalate	47	0.00	0.00	0	.	.
BHC	252	0.36	0.00	3	60.00	10.00
Cadmium	118	64.52	0.00	57	1600.00	2.00
Chlordane	157	11.08	0.00	47	120.00	10.00
Chlorobenzene	49	0.00	0.00	0	.	.
Chloroethane	49	0.00	0.00	0	.	.
Chloroethene	49	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	49	0.00	0.00	0	.	.
Chloromethane	49	0.00	0.00	0	.	.
Chloronaphthalene, 2-	47	0.00	0.00	0	.	.
Chlorophenol, 2-	47	0.00	0.00	0	.	.
Chromium	118	113.05	40.00	89	1500.00	20.00
Chrysene	47	0.00	0.00	0	.	.
Copper	66	786.36	420.00	54	10000.00	140.00
Di-n-butyl phthalate	47	27.66	0.00	1	1300.00	1300.00
Di-n-octyl phthalate	47	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	47	0.00	0.00	0	.	.
Dibromochloromethane	49	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	47	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	47	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	47	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	47	0.00	0.00	0	.	.
Dichlorodifluoromethane	49	0.00	0.00	0	.	.
Dichloroethane 1,1-	49	0.00	0.00	0	.	.
Dichloroethane 1,2-	49	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	49	0.00	0.00	0	.	.
Dichloroethene, 1,1-	49	0.00	0.00	0	.	.
Dichloromethane	49	18.98	0.00	2	480.00	450.00
Dichlorophenol, 2,4-	47	0.00	0.00	0	.	.
Dichloropropane, 1,2-	49	0.00	0.00	0	.	.
Dichloropropene, 1,3-	49	0.00	0.00	0	.	.
Dieldrin	63	0.00	0.00	0	.	.
Diethyl phthalate	47	0.00	0.00	0	.	.
Dimethyl phthalate	47	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	47	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	47	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	47	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dinitrotoluene, 2,6-	47	0.00	0.00	0	.	.
Diphenylhydrazine, 1,2-	47	0.00	0.00	0	.	.
DDT	189	23.81	0.00	60	220.00	20.00
Endosulfan, alpha-	63	2.22	0.00	4	50.00	20.00
Endosulfan, beta-	63	0.00	0.00	0	.	.
Endrin	63	0.00	0.00	0	.	.
Ethylbenzene	49	0.00	0.00	0	.	.
Fluoranthene	47	0.00	0.00	0	.	.
Fluorene	47	0.00	0.00	0	.	.
Heptachlor	63	0.00	0.00	0	.	.
Heptachlor epoxide	63	1.90	0.00	3	60.00	20.00
Hexachlorobenzene	47	0.00	0.00	0	.	.
Hexachlorobutadiene	47	0.00	0.00	0	.	.
Hexachloroethane	47	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	47	0.00	0.00	0	.	.
Isophorone	47	0.00	0.00	0	.	.
Lead	66	151.82	70.00	61	1600.00	20.00
Mercury	118	387.37	225.00	77	1700.00	100.00
Mirex/Dechlorane	16	0.00	0.00	0	.	.
Naphthalene	47	0.00	0.00	0	.	.
Nickel	118	84.75	0.00	6	3000.00	1000.00
Nitrobenzene	47	0.00	0.00	0	.	.
Nitrophenol, 4	47	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	47	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	47	0.00	0.00	0	.	.
Pentachlorophenol	47	0.00	0.00	0	.	.
Phenol	47	0.00	0.00	0	.	.
Polychlorinated biphenyls	1096	209.74	0.00	231	11700.00	30.00
Pyrene	47	0.00	0.00	0	.	.
Selenium	66	471.21	405.00	65	1800.00	60.00
Silver	117	30.77	0.00	9	600.00	200.00
Tetrachloroethane, 1,1,2,2-	49	0.00	0.00	0	.	.
Tetrachloroethene	49	0.00	0.00	0	.	.
Tetrachloromethane	49	0.00	0.00	0	.	.
Toluene	49	0.00	0.00	0	.	.
Toxaphene	63	7.94	0.00	1	500.00	500.00
Tribromomethane/Bromoform	49	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	47	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	49	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	49	0.00	0.00	0	.	.
Trichloroethene	49	0.00	0.00	0	.	.
Trichlorofluoromethane	49	7.47	0.00	7	66.00	50.00
Trichloromethane/Chloroform	49	0.84	0.00	2	21.00	20.00
Trichlorophenol, 2,4,6-	47	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Zinc	66	7704.55	7200.00	66	16000.00	4900.00

Middle Tennessee-Chickamauga 06020001

Watershed Summary Information

Accounting Unit Name:	Middle Tennessee-Hiwassee
State(s):	TN GA (AL)
Political Boundaries:	Hamilton, Rhea, Meigs, Catoosa, Bledsoe, Sequatchie, Walker, Dade, Marion, Whitfield, Roane, Jackson, Bradley, Mcminn
Major Waterways:	Tennessee R Hiwassee R Chickamauga Cr W Chickamauga Cr L Chickamauga
Number of Stations in Watershed:	Tier1 - 47 Tier2 - 29 Tier3 - 18

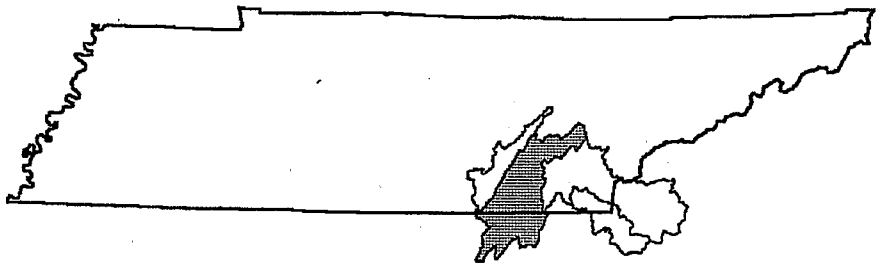

Figure 101. Watershed Location Map

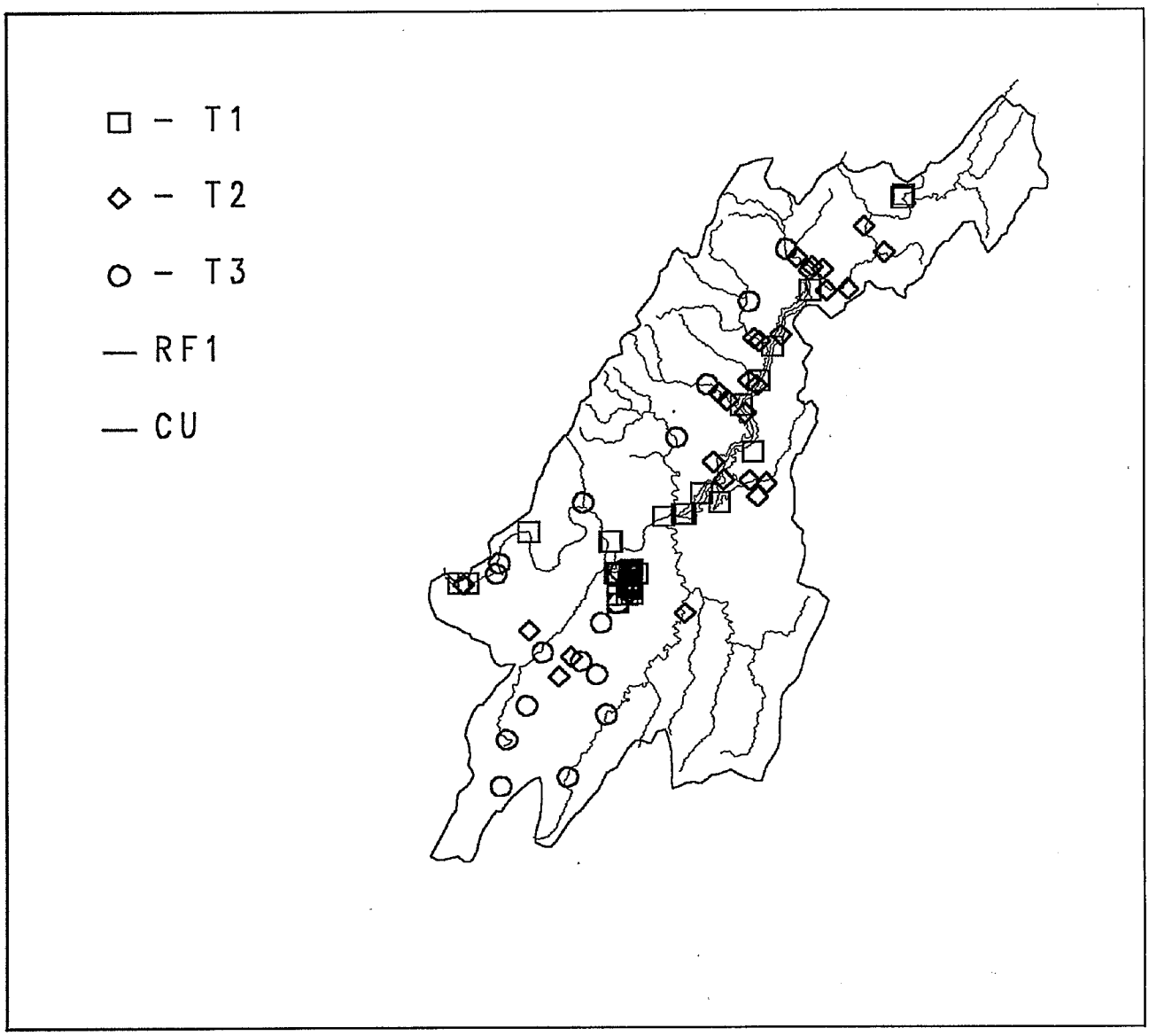

Figure 102. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **TN**
Monitoring Program: **Tennessee**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 18 Date Range: 1980-81

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 50 Date Range: 1980-93

Source: **STORET** Agency: **132TVAC**
Monitoring Program: **WQ Monitoring Tenn Valley Authority**
Num. of Stations: 3 Date Range: 1984

Source: **STORET** Agency: **21GAEPD**
Monitoring Program: **GA Dept of Nat Resources Resources Data**
Num. of Stations: 2 Date Range: 1982-91

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 19 Date Range: 1981-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	80	41	.	41	.	41	.	.
Nickel	58	39	.	39	.	39	.	.
Lead	65	30	.	30	.	30	.	.
Mercury	63	29	14	15	14	15	.	.
Acenaphthene	28	23	22	1	22	1	.	2
Fluoranthene	27	23	18	5	18	5	.	7
Anthracene	26	22	21	1	21	1	.	.
Fluorene	28	22	21	1	21	1	.	4
Pyrene	24	21	19	2	19	2	.	7
Zinc	62	20	.	20	.	20	.	.
Polychlorinated biphenyls	59	17	16	1	.	.	16	1
Chromium	83	17	1	16	1	16	.	.
Benzo(a)anthracene	19	14	13	1	13	1	.	14
Phenanthrene	18	14	12	2	12	2	.	.
Arsenic	34	13	.	13	.	8	.	5
Cadmium	66	10	.	10	.	10	.	.
Naphthalene	16	8	8	.	8	.	.	4
Bis(2-ethylhexyl)phthalate	12	7	3	4	3	4	.	3
Ethylbenzene	18	7	.	7	.	7	.	.
Benzo(a)pyrene	12	6	4	2	4	2	.	6
Chrysene	11	6	2	4	2	4	.	.
Chlordane	48	6	.	6	.	3	.	6
Acenaphthylene	12	5	4	1	4	1	.	.
DDT	44	5	1	4	1	2	.	2
Benzene	17	5	.	5	.	5	.	.
Benzo(b)fluoranthene	12	5	.	5	.	3	.	5
Dieldrin	46	5	.	5	.	.	.	5

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Beryllium	8	4	.	4	.	.	.	4
Silver	21	4	.	4	.	4	.	.
Benzo(ghi)perylene	12	3	.	3	.	3	.	.
Benzo(k)fluoranthene	12	3	.	3	.	3	.	3
BHC	46	3	.	3	.	1	.	3
Heptachlor epoxide	46	3	.	3	.	.	.	3
Dichlorobenzene, 1,2-	12	2	2	.	2	.	.	.
Dichlorobenzene, 1,4-	12	2	2	.	2	.	.	1
Dioxins	2	2	2	.	.	.	2	.
Trichlorobenzene, 1,2,4-	14	2	.	2	.	2	.	.
Dibenzo(a,h)anthracene	12	1	1	.	1	.	.	1
Aldrin	44	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	12	1	.	1	.	.	.	1
Phenol	13	1	.	1	.	1	.	.
Tetrachloroethene	12	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	31	93918.71	6100.00	25	1200000	420.00
Acenaphthylene	13	1034.62	0.00	5	10000.00	260.00
Acrylonitrile	13	0.00	0.00	0	.	.
Aldrin	50	0.00	0.00	0	.	.
Anthracene	28	177006.3	56850.00	24	722000.0	490.00
Antimony	14	0.00	0.00	0	.	.
Arsenic	31	5758.06	3000.00	24	19000.00	200.00
Benzene	18	57.82	0.00	7	490.00	8.00
Benzo(a)anthracene	20	327375.0	4050.00	14	1440000	1500.00
Benzo(a)pyrene	13	1824.62	270.00	7	8400.00	270.00
Benzo(b)fluoranthene	13	1938.46	0.00	6	10600.00	300.00
Benzo(ghi)perylene	13	1636.92	0.00	4	16000.00	380.00
Benzo(k)fluoranthene	13	2021.54	0.00	6	10600.00	300.00
Bis(2-ethylhexyl)phthalate	13	3957.69	250.00	7	41000.00	250.00
Bromophenyl phenyl ether, 4-	13	0.00	0.00	0	.	.
Butyl benzyl phthalate	13	16.92	0.00	1	220.00	220.00
BHC	193	186.53	0.00	2	29600.00	6400.00
Cadmium	75	415.20	0.00	12	5800.00	400.00
Chlordane	53	1.38	0.00	4	22.00	15.00
Chlorobenzene	13	45.23	0.00	3	560.00	13.00
Chromium	121	41250.41	33000.00	114	290000.0	3000.00
Chrysene	12	2258.33	400.00	6	16000.00	800.00
Copper	94	32375.53	26000.00	81	330000.0	1000.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-butyl phthalate	13	0.00	0.00	0	.	.
Di-n-octyl phthalate	13	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	13	200.00	0.00	1	2600.00	2600.00
Dibromochloromethane	13	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	13	160.77	0.00	2	1210.00	880.00
Dichlorobenzene, 1,3-	13	23.08	0.00	1	300.00	300.00
Dichlorobenzene, 1,4-	13	230.77	0.00	2	1700.00	1300.00
Dichloroethane 1,1-	13	0.00	0.00	0	.	.
Dichloroethane 1,2-	13	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	13	0.00	0.00	0	.	.
Dichloromethane	13	78.15	17.00	12	750.00	13.00
Dichloropropane, 1,2-	13	0.00	0.00	0	.	.
Dieldrin	50	0.00	0.00	0	.	.
Diethyl phthalate	13	0.00	0.00	0	.	.
Dimethyl phthalate	13	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	12	0.00	0.00	0	.	.
DDT	143	0.81	0.00	3	67.00	23.00
Endosulfan, alpha-	46	0.00	0.00	0	.	.
Endosulfan, beta-	46	0.00	0.00	0	.	.
Endrin	50	0.00	0.00	0	.	.
Ethylbenzene	19	46.55	0.00	8	311.00	1.00
Fluoranthene	29	603017.1	34000.00	25	6370000	200.00
Fluorene	31	195197.4	59000.00	24	1290000	220.00
Heptachlor	46	0.00	0.00	0	.	.
Heptachlor epoxide	46	0.00	0.00	0	.	.
Hexachlorobenzene	18	0.00	0.00	0	.	.
Hexachlorobutadiene	13	0.00	0.00	0	.	.
Hexachloroethane	13	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	13	47.69	0.00	1	620.00	620.00
Isophorone	13	0.00	0.00	0	.	.
Lead	74	44105.95	35000.00	60	250000.0	7040.00
Mercury	111	3379.64	400.00	84	240000.0	10.00
Methoxychlor	14	0.00	0.00	0	.	.
Mirex/Dechlorane	5	0.00	0.00	0	.	.
Naphthalene	17	446844.1	0.00	8	2160000	490.00
Nickel	68	29783.82	26500.00	68	150000.0	7000.00
Nitrosodiphenylamine, N-	13	0.00	0.00	0	.	.
Pentachlorophenol	16	0.00	0.00	0	.	.
Phenanthrene	18	1313811	130000.0	14	10100000	490.00
Phenol	15	133.33	0.00	1	2000.00	2000.00
Polychlorinated biphenyls	581	0.02	0.00	1	9.00	9.00
Pyrene	26	487548.2	20500.00	22	4270000	440.00
Silver	16	475.00	0.00	7	1700.00	400.00
Tetrachloroethane, 1,1,2,2-	13	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tetrachloroethene	13	5.08	0.00	1	66.00	66.00
Tetrachloromethane	13	1.38	0.00	1	18.00	18.00
Toluene	18	89.84	5.50	9	650.00	11.00
Toxaphene	50	0.00	0.00	0	.	.
Tribromomethane/Bromoform	13	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	13	221.54	0.00	2	2400.00	480.00
Trichloroethane, 1,1,1-	13	10.00	0.00	1	130.00	130.00
Trichloroethane, 1,1,2-	13	0.00	0.00	0	.	.
Trichloroethene	13	0.00	0.00	0	.	.
Trichlorofluoromethane	13	0.00	0.00	0	.	.
Trichloromethane/Chloroform	13	10.77	0.00	1	140.00	140.00
Zinc	76	166789.5	105000.0	74	1100000	6000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	149	1.54	0.00	9	80.00	10.00
Antimony	40	0.00	0.00	0	.	.
Arsenic	43	83.02	80.00	29	350.00	30.00
Beryllium	44	26.59	0.00	8	400.00	40.00
Biphenyl	2	2.61	2.61	2	2.61	2.61
BHC	540	0.91	0.00	8	280.00	2.00
Cadmium	47	31.77	0.00	20	360.00	3.00
Chlordane	547	15.70	0.00	228	120.00	4.00
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	45	47.78	0.00	22	590.00	20.00
Copper	45	481.56	0.00	17	3400.00	200.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	151	8.21	0.00	19	200.00	10.00
Dioxins	3	0.00	0.00	2	0.00	0.00
DDT	453	26.17	0.00	113	1700.00	3.00
Endosulfan, alpha-	147	0.00	0.00	0	.	.
Endosulfan, beta-	147	0.00	0.00	0	.	.
Endrin	150	4.53	0.00	26	70.00	10.00
Heptachlor	212	0.28	0.00	5	20.00	10.00
Heptachlor epoxide	213	0.61	0.00	6	30.00	10.00
Hexachlorobenzene	3	1.00	0.00	1	3.00	3.00
Hexachlorobutadiene	55	0.00	0.00	7	0.04	0.01
Isopropalin	1	0.00	0.00	0	.	.
Lead	47	102.55	50.00	27	800.00	20.00
Mercury	48	32.92	0.00	11	270.00	30.00
Methoxychlor	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Mirex/Dechlorane	140	0.05	0.00	2	3.68	3.68
Nickel	44	2.27	0.00	1	100.00	100.00
Pentachlorobenzene	2	0.63	0.63	2	0.63	0.63
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	2196	158.72	0.00	622	3309.20	70.00
Selenium	42	259.52	130.00	38	1400.00	30.00
Silver	31	9.68	0.00	2	200.00	100.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	146	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	1.43	1.43	2	1.43	1.43
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	40	9317.50	6300.00	40	29000.00	4200.00

Hiwassee 06020002

Watershed Summary Information

Accounting Unit Name:	Middle Tennessee-Hiwassee
State(s):	TN NC GA
Political Boundaries:	Cherokee, Bradley, Union, Clay, Mcminn, Polk, Towns, Monroe, Meigs, Hamilton, Rhea
Major Waterways:	Hiwassee R Nottely R Spring Cr Hiwassee L Chatugue L
Number of Stations in Watershed:	Tier1 - 13 Tier2 - 17 Tier3 - 3

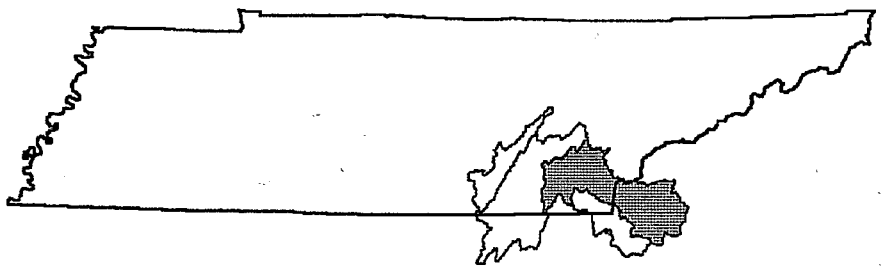

Figure 103. Watershed Location Map

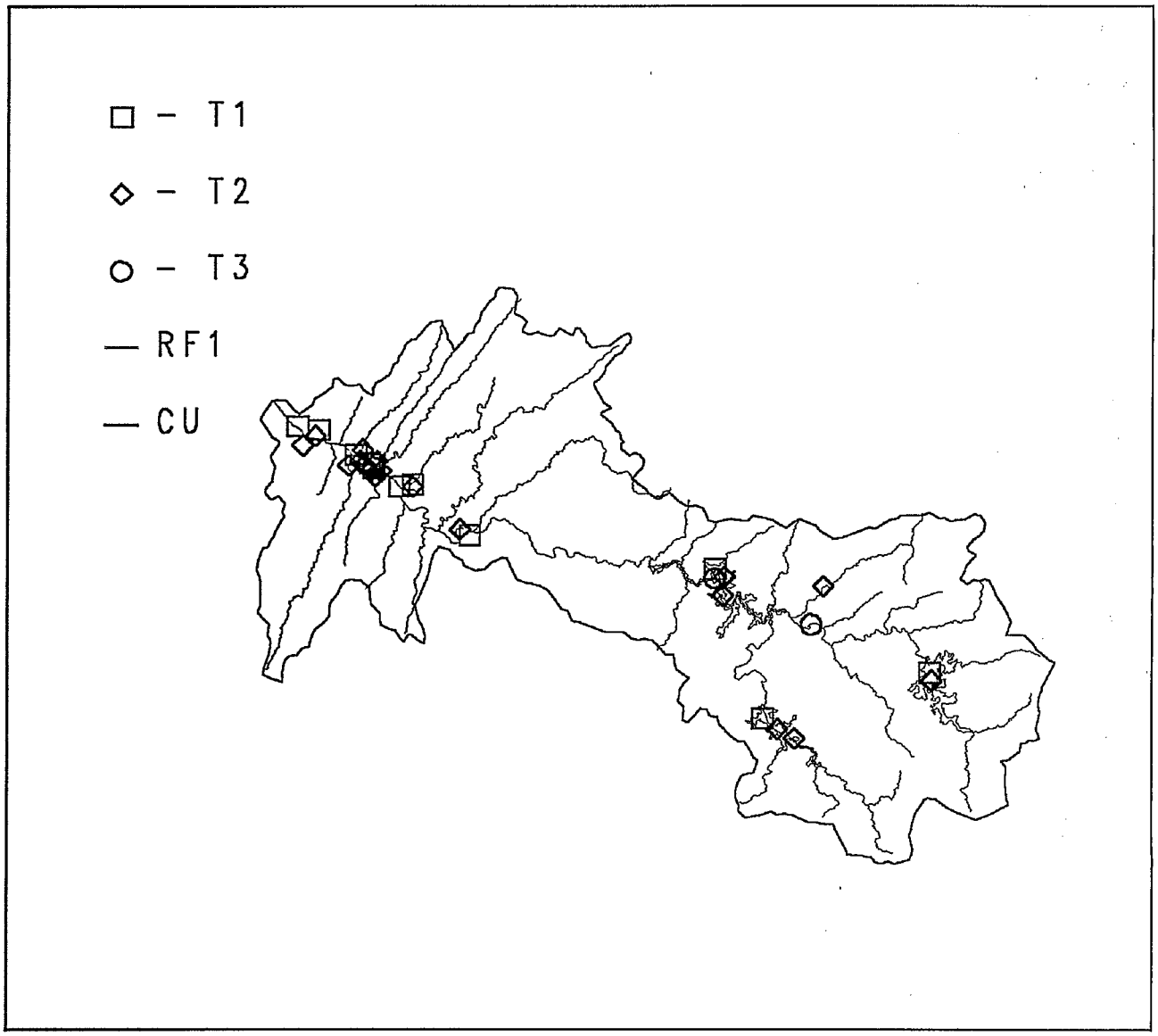

Figure 104. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **TN**
Monitoring Program: **Tennessee**
Num. of Stations: 1 Date Range: 1988

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1988

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 26 Date Range: 1987-93

Source: **STORET** Agency: **21NC01WQ**
Monitoring Program: **N.Carolina Dept of Natural Resources And Communty Developmnt Data**
Num. of Stations: 4 Date Range: 1980-85

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 1 Date Range: 1981-82

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	29	12	12	.	.	.	12	.
Copper	30	11	.	11	.	11	.	.
Nickel	27	11	.	11	.	11	.	.
Lead	29	10	.	10	.	9	.	1
Zinc	29	9	.	9	.	9	.	.
Mercury	33	7	1	6	1	4	.	2
Dieldrin	28	3	.	3	.	.	.	3
Dioxins	2	2	2	.	.	.	2	.
Cadmium	31	2	.	2	.	2	.	.
Chlordane	27	2	.	2	.	1	.	2
Arsenic	21	1	.	1	.	.	.	1
Beryllium	12	1	.	1	.	.	.	1
DDT	26	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	13	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	13	1153.85	0.00	5	5800.00	2000.00
BHC	48	0.00	0.00	0	.	.
Cadmium	24	198.75	0.00	3	3000.00	470.00
Chlordane	15	1.00	0.00	1	15.00	15.00
Chromium	24	21733.33	20500.00	24	46000.00	5000.00
Copper	24	22925.00	17500.00	24	69000.00	5100.00
Dieldrin	13	0.00	0.00	0	.	.
DDT	43	0.28	0.00	1	12.00	12.00
Endosulfan, alpha-	12	0.00	0.00	0	.	.
Endosulfan, beta-	12	0.00	0.00	0	.	.
Endrin	12	0.00	0.00	0	.	.
Heptachlor	12	0.00	0.00	0	.	.
Heptachlor epoxide	12	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	22	31186.36	18000.00	22	180000.0	5000.00
Mercury	24	113.33	25.00	14	820.00	20.00
Methoxychlor	3	0.00	0.00	0	.	.
Nickel	21	19366.67	19000.00	21	86000.00	4500.00
Polychlorinated biphenyls	109	0.00	0.00	0	.	.
Silver	1	0.00	0.00	0	.	.
Toxaphene	12	0.00	0.00	0	.	.
Zinc	23	173826.1	75000.00	23	750000.0	24000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	22	0.00	0.00	0	.	.
Antimony	30	0.00	0.00	0	.	.
Arsenic	35	27.71	0.00	16	160.00	20.00
Beryllium	30	5.33	0.00	2	100.00	60.00
Biphenyl	2	0.00	0.00	0	.	.
BHC	83	0.00	0.00	0	.	.
Cadmium	35	59.77	5.00	18	300.00	5.00
Chlordane	54	8.52	0.00	14	150.00	10.00
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	32	36.25	25.00	19	120.00	20.00
Copper	32	571.87	0.00	10	4000.00	400.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	24	6.42	0.00	3	60.00	47.00
Dioxins	6	0.00	0.00	6	0.01	0.00
DDT	72	7.50	0.00	13	110.00	10.00
Endosulfan, alpha-	20	0.00	0.00	0	.	.
Endosulfan, beta-	20	0.00	0.00	0	.	.
Endrin	23	0.43	0.00	1	10.00	10.00
Heptachlor	21	0.48	0.00	1	10.00	10.00
Heptachlor epoxide	21	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	35	154.86	70.00	30	2700.00	30.00
Mercury	49	224.49	170.00	35	1080.00	80.00
Methoxychlor	3	0.00	0.00	0	.	.
Mirex/Dechlorane	10	0.00	0.00	0	.	.
Nickel	30	106.67	0.00	3	2000.00	200.00
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Polychlorinated biphenyls	241	115.35	0.00	46	7800.00	100.00
Selenium	33	391.52	160.00	29	3800.00	20.00
Silver	24	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	20	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	30	10500.00	7100.00	30	27000.00	5600.00

Guntersville Lake 06030001

Watershed Summary Information

Accounting Unit Name: Middle Tennessee-Elk

State(s): AL TN (GA)

Political Boundaries: Jackson, Marshall, De Kalb, Marion, Franklin, Grundy, Dade, Blount, Etowah

Major Waterways:
Tennessee R
Town Cr
Crow Cr
Short Cr
Guntersville L

Number of Stations in Watershed:
Tier1 - 25
Tier2 - 46
Tier3 - 21

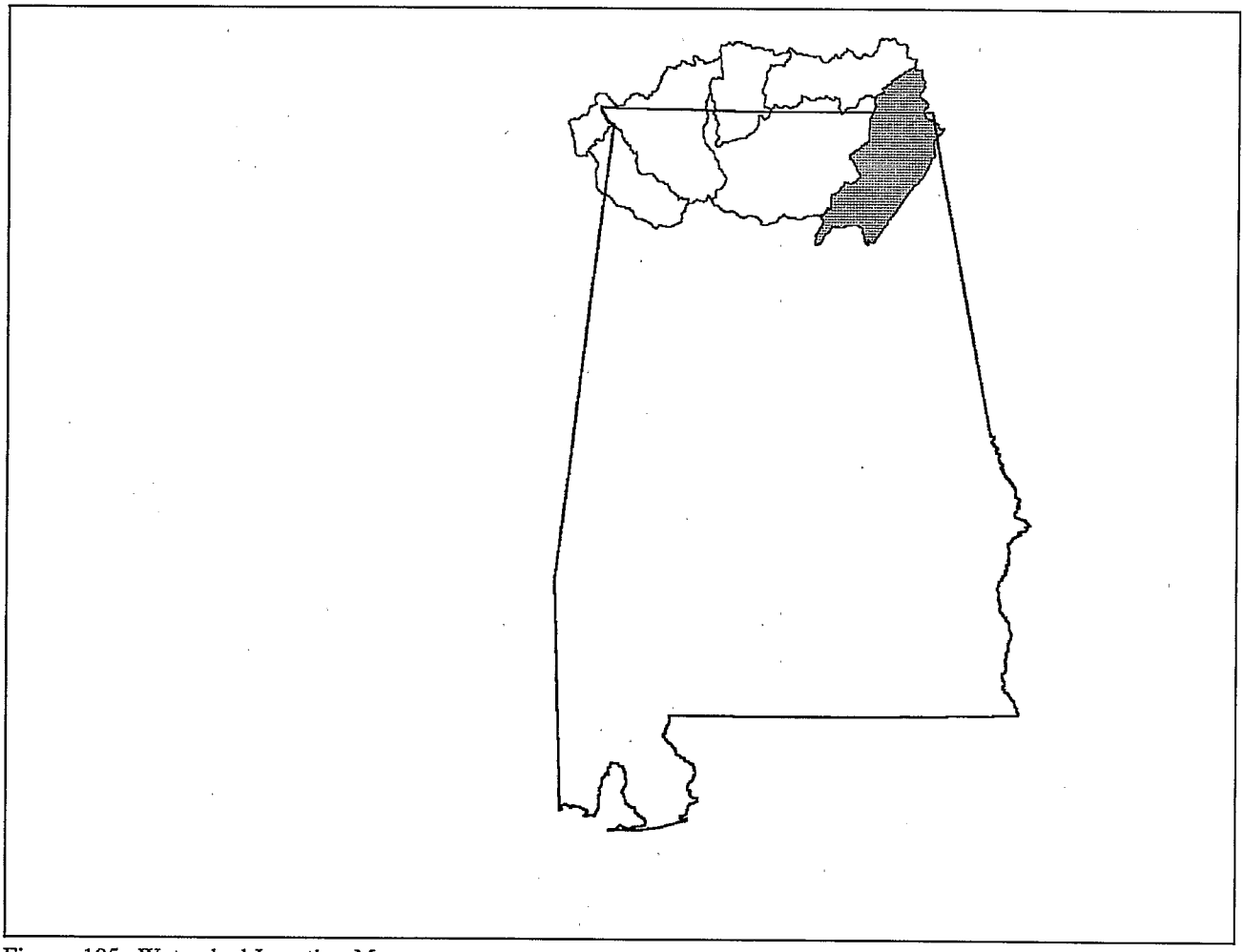

Figure 105. Watershed Location Map

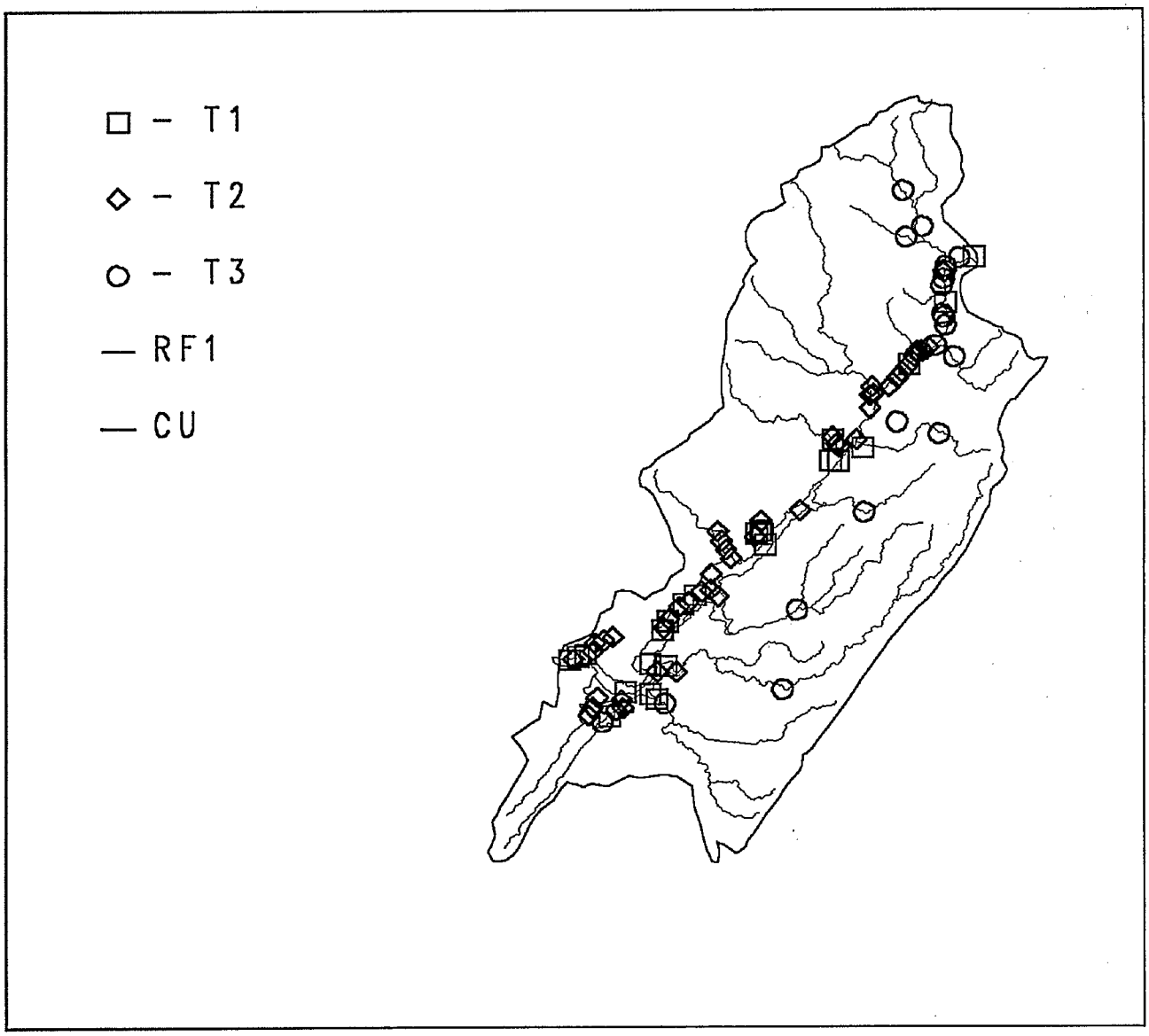

Figure 106. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 9 Date Range: 1980-82

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 82 Date Range: 1981-93

Source: **STORET** Agency: **132TVAC**
Monitoring Program: **WQ Monitoring Tenn Valley Authority**
Num. of Stations: 1 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	69	52	.	52	.	52	.	.
Arsenic	62	46	.	46	.	41	.	5
Cadmium	76	46	.	46	.	46	.	.
Lead	76	45	.	45	.	44	.	1
Mercury	72	43	7	36	7	35	.	1
Copper	76	36	.	36	.	36	.	.
Zinc	76	33	.	33	.	33	.	.
Polychlorinated biphenyls	66	15	15	.	.	.	15	.
DDT	51	14	3	11	3	4	.	13
Chromium	77	8	.	8	.	8	.	.
Silver	52	3	1	2	1	2	.	.
Chlordane	45	2	.	2	.	2	.	2

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	83	0.00	0.00	0	.	.
Antimony	93	365.81	210.00	60	1800.00	110.00
Arsenic	126	8463.97	8400.00	123	23600.00	600.00
BHC	326	0.00	0.00	0	.	.
Cadmium	142	3025.56	3400.00	106	6900.00	600.00
Chlordane	83	0.63	0.00	4	16.00	9.00
Chromium	148	29884.46	29000.00	140	85000.00	6000.00
Copper	142	22298.17	20700.00	129	98400.00	3000.00
Dieldrin	83	0.00	0.00	1	0.20	0.20
DDT	249	1.41	0.00	13	50.00	2.30
Endosulfan mixed isomers	2	0.00	0.00	0	.	.
Endosulfan, alpha-	81	0.00	0.00	0	.	.
Endosulfan, beta-	81	0.00	0.00	0	.	.
Endrin	83	0.00	0.00	0	.	.
Heptachlor	83	0.04	0.00	1	3.10	3.10
Heptachlor epoxide	83	0.01	0.00	1	0.70	0.70
Lead	142	35194.37	33100.00	128	120000.0	10000.00
Mercury	152	243.36	170.00	109	1100.00	20.00
Methoxychlor	9	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Nickel	134	25905.22	25300.00	125	80000.00	5000.00
Polychlorinated biphenyls	774	0.00	0.00	1	1.00	1.00
Silver	94	159.57	0.00	3	12000.00	1000.00
Toxaphene	83	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Zinc	142	158434.5	123450.0	142	1300000	4700.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	13	0.00	0.00	0	.	.
Antimony	19	0.00	0.00	0	.	.
Arsenic	20	86.50	50.00	13	380.00	30.00
Beryllium	19	0.00	0.00	0	.	.
BHC	50	0.00	0.00	0	.	.
Cadmium	54	33.43	13.00	37	420.00	3.00
Chlordane	25	8.40	0.00	9	50.00	10.00
Chromium	53	221.70	100.00	42	2600.00	20.00
Copper	53	2120.75	400.00	36	68000.00	200.00
Dieldrin	13	0.00	0.00	0	.	.
DDT	141	182.70	110.00	81	2500.00	40.00
Endosulfan, alpha-	13	0.00	0.00	0	.	.
Endosulfan, beta-	13	0.00	0.00	0	.	.
Endrin	13	9.23	10.00	7	30.00	10.00
Heptachlor	13	0.00	0.00	0	.	.
Heptachlor epoxide	13	0.77	0.00	1	10.00	10.00
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Lead	54	155.56	60.00	47	2600.00	20.00
Mercury	46	169.57	0.00	11	4000.00	200.00
Mirex/Dechlorane	6	0.00	0.00	0	.	.
Nickel	53	40.00	0.00	3	1000.00	120.00
Polychlorinated biphenyls	468	751.00	0.00	155	30000.00	100.00
Selenium	54	391.85	165.00	48	1600.00	60.00
Silver	14	0.00	0.00	0	.	.
Toxaphene	13	0.00	0.00	0	.	.
Zinc	53	14498.11	7300.00	53	110000.0	1900.00

Pickwick Lake 06030005

Watershed Summary Information

Accounting Unit Name: Middle Tennessee-Elk

State(s): AL TN (MS)

Political Boundaries: Colbert, Lauderdale, Lawrence, Lawrence, Wayne, Tishomingo, Hardin, Franklin

Major Waterways:
Tennessee R
Bear Cr
Shoal Cr
Wilson L
Pickwick L

Number of Stations in Watershed:
Tier1 - 49
Tier2 - 9
Tier3 - 11

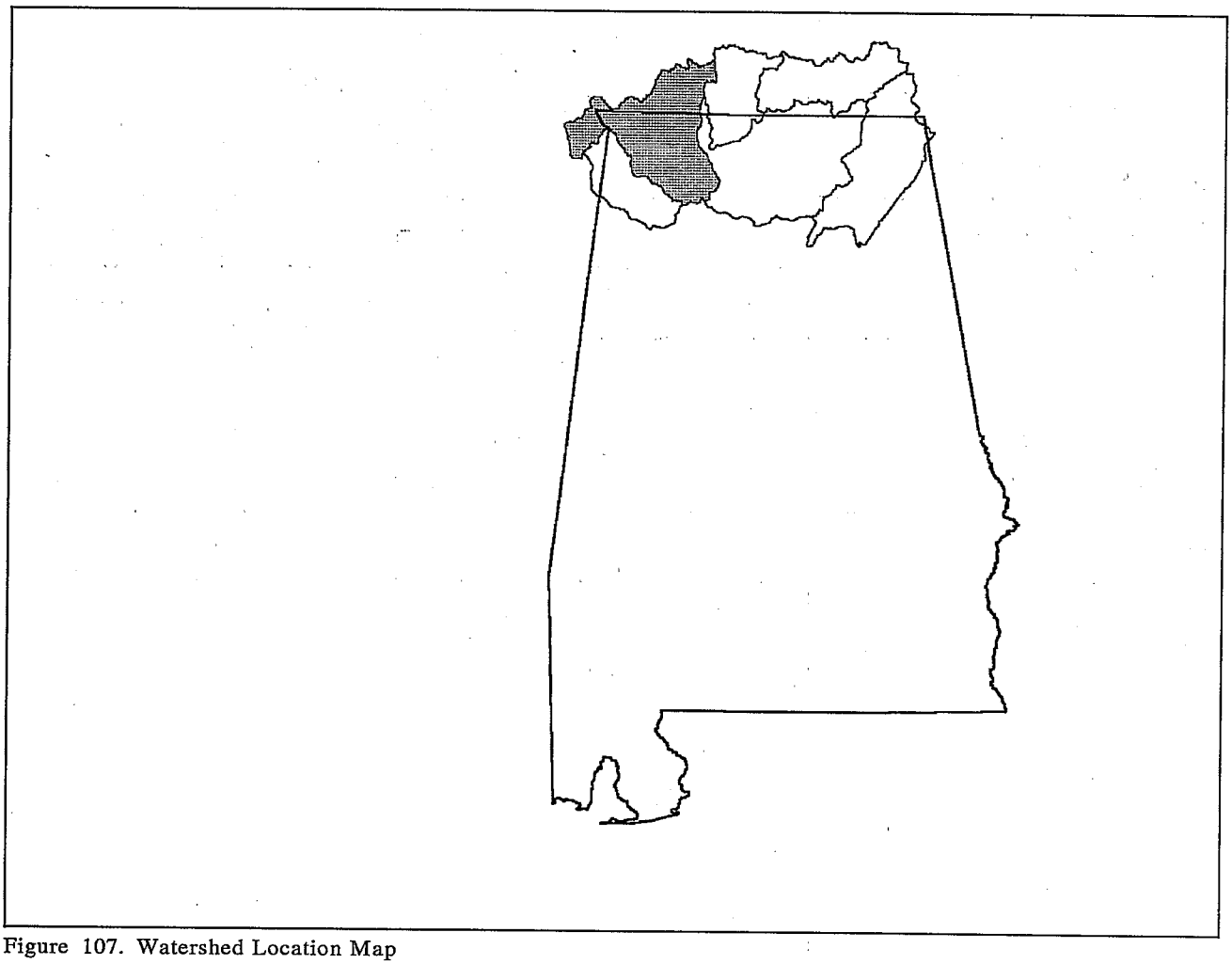

Figure 107. Watershed Location Map

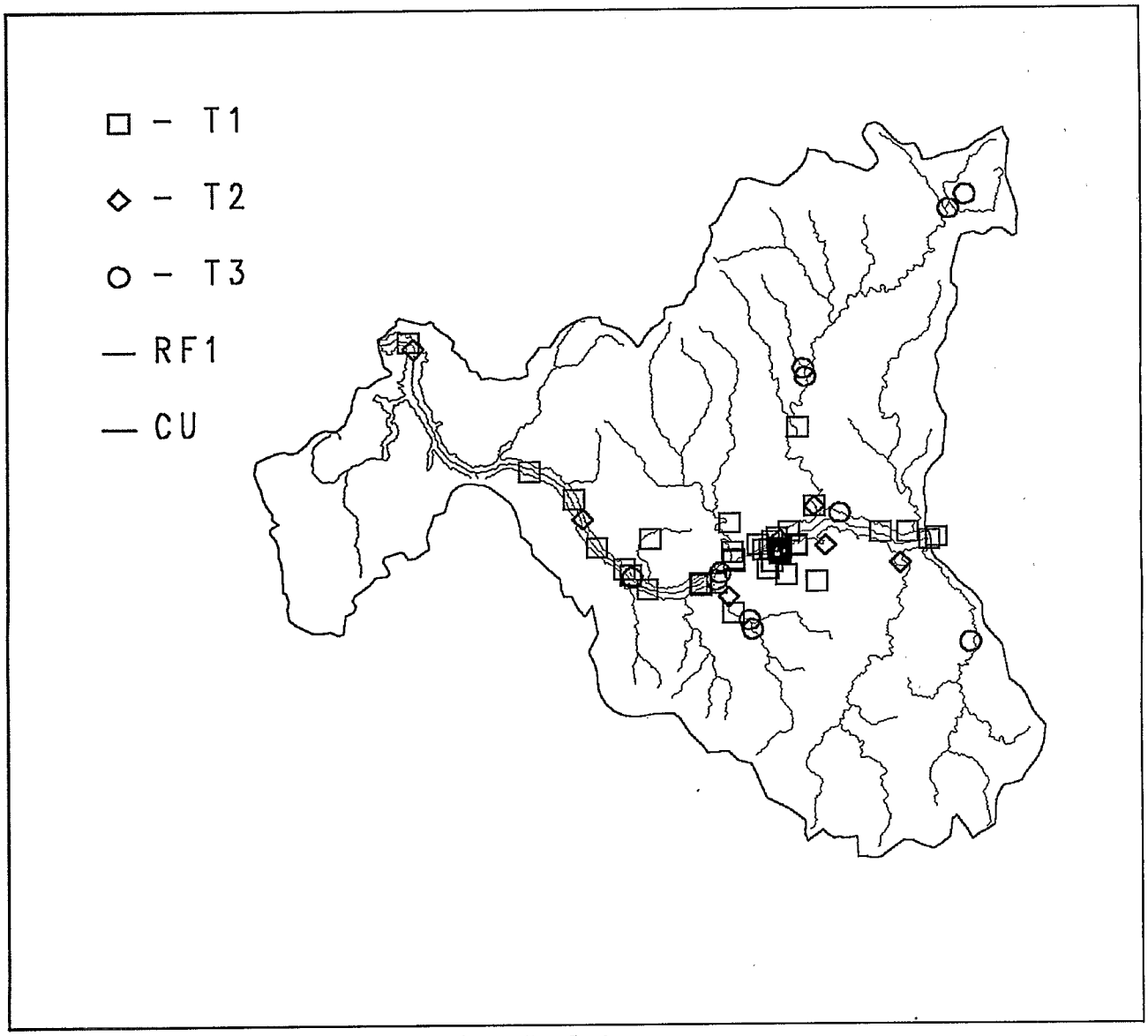

Figure 108. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 64 Date Range: 1982-93

Source: **STORET** Agency: **21AWIC**
Monitoring Program: **Alabama Dept Environmental Management**
Num. of Stations: 4 Date Range: 1986

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 1 Date Range: 1985

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	63	47	45	2	14	2	32	15
DDT	40	22	1	21	1	3	.	21
Mercury	42	19	8	11	8	9	.	2
Arsenic	34	18	.	18	.	13	.	6
Nickel	37	18	.	18	.	18	.	.
Lead	38	14	.	14	.	14	.	.
Zinc	37	14	.	14	.	14	.	.
Copper	33	13	.	13	.	13	.	.
Chromium	37	3	1	2	1	2	.	.
Heptachlor epoxide	30	3	.	3	.	.	.	3
Aldrin	31	2	.	2	.	.	.	2
Bis(2-ethylhexyl)phthalate	22	2	.	2	.	.	.	2
Cadmium	42	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	12	0.00	0.00	0	.	.
Acenaphthylene	12	0.00	0.00	0	.	.
Aldrin	21	0.00	0.00	0	.	.
Anthracene	12	0.00	0.00	0	.	.
Antimony	21	314.29	300.00	13	2000.00	100.00
Arsenic	24	8433.33	11000.00	23	14000.00	1600.00
Benzo(a)anthracene	12	0.00	0.00	0	.	.
Benzo(a)pyrene	12	0.00	0.00	0	.	.
Benzo(b)fluoranthene	12	0.00	0.00	0	.	.
Benzo(ghi)perylene	12	0.00	0.00	0	.	.
Benzo(k)fluoranthene	12	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	13	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	12	0.00	0.00	0	.	.
Butyl benzyl phthalate	12	0.00	0.00	0	.	.
BHC	84	0.00	0.00	0	.	.
Cadmium	37	54.05	0.00	1	2000.00	2000.00
Chlordane	21	0.00	0.00	0	.	.
Chromium	37	43621.62	33000.00	36	478000.0	10000.00
Chrysene	12	0.00	0.00	0	.	.
Copper	33	24121.21	25000.00	32	50000.00	6000.00
Di-n-butyl phthalate	12	0.00	0.00	0	.	.
Di-n-octyl phthalate	12	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	12	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichlorobenzene, 1,2-	12	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	12	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	12	0.00	0.00	0	.	.
Dieldrin	21	0.00	0.00	0	.	.
Diethyl phthalate	12	0.00	0.00	0	.	.
Dimethyl phthalate	12	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	12	0.00	0.00	0	.	.
DDT	63	2.73	0.00	5	130.00	10.00
Endosulfan, alpha-	21	0.00	0.00	0	.	.
Endosulfan, beta-	21	0.00	0.00	0	.	.
Endrin	21	0.00	0.00	0	.	.
Fluoranthene	12	0.00	0.00	0	.	.
Fluorene	12	0.00	0.00	0	.	.
Heptachlor	21	0.00	0.00	0	.	.
Heptachlor epoxide	21	0.00	0.00	0	.	.
Hexachlorobenzene	12	0.00	0.00	0	.	.
Hexachlorobutadiene	12	0.00	0.00	0	.	.
Hexachloroethane	12	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	12	0.00	0.00	0	.	.
Isophorone	12	0.00	0.00	0	.	.
Lead	37	35810.81	30000.00	32	152000.0	10000.00
Mercury	37	1707.57	270.00	30	37420.00	120.00
Methoxychlor	7	0.00	0.00	0	.	.
Naphthalene	12	0.00	0.00	0	.	.
Nickel	37	22513.51	23000.00	30	63000.00	10000.00
Nitrosodiphenylamine, N-	12	0.00	0.00	0	.	.
Pentachlorophenol	12	0.00	0.00	0	.	.
Phenanthrene	12	0.00	0.00	0	.	.
Phenol	12	0.00	0.00	0	.	.
Polychlorinated biphenyls	306	75.20	0.00	34	2700.00	100.00
Pyrene	12	0.00	0.00	0	.	.
Silver	15	0.00	0.00	0	.	.
Toxaphene	21	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	12	0.00	0.00	0	.	.
Zinc	37	145513.5	130000.0	37	957000.0	29000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	18	0.00	0.00	0	.	.
Aldrin	76	0.53	0.00	2	30.00	10.00
Anthracene	18	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Antimony	41	0.00	0.00	0	.	.
Arsenic	45	31.33	0.00	13	280.00	30.00
Benzidine	18	0.00	0.00	0	.	.
Benzo(a)anthracene	18	0.00	0.00	0	.	.
Benzo(a)pyrene	18	0.00	0.00	0	.	.
Benzo(b)fluoranthene	18	0.00	0.00	0	.	.
Benzo(k)fluoranthene	18	0.00	0.00	0	.	.
Beryllium	41	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	18	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	18	1277.78	0.00	2	13000.00	10000.00
Bromophenyl phenyl ether, 4-	18	0.00	0.00	0	.	.
Butyl benzyl phthalate	18	0.00	0.00	0	.	.
BHC	282	0.11	0.00	2	20.00	10.00
Cadmium	59	109.12	0.00	26	1300.00	10.00
Chlordane	159	5.47	0.00	36	60.00	10.00
Chloronaphthalene, 2-	18	0.00	0.00	0	.	.
Chlorophenol, 2-	18	0.00	0.00	0	.	.
Chromium	41	89.27	30.00	23	1000.00	20.00
Chrysene	18	0.00	0.00	0	.	.
Copper	41	1346.34	0.00	16	10000.00	200.00
Di-n-butyl phthalate	18	0.00	0.00	0	.	.
Di-n-octyl phthalate	18	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	18	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	18	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	18	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	18	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	18	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	18	0.00	0.00	0	.	.
Dieldrin	76	0.00	0.00	0	.	.
Diethyl phthalate	18	0.00	0.00	0	.	.
Dimethyl phthalate	18	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	18	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	18	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	18	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	18	0.00	0.00	0	.	.
Diphenylhydrazine, 1,2-	18	0.00	0.00	0	.	.
DDT	692	252.55	42.50	461	13000.00	5.00
Endosulfan, alpha-	67	0.00	0.00	0	.	.
Endosulfan, beta-	67	0.00	0.00	0	.	.
Endrin	75	0.80	0.00	6	10.00	10.00
Fluoranthene	18	0.00	0.00	0	.	.
Fluorene	18	0.00	0.00	0	.	.
Heptachlor	67	0.00	0.00	0	.	.
Heptachlor epoxide	67	3.43	0.00	5	120.00	10.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobenzene	27	0.00	0.00	0	.	.
Hexachlorobutadiene	22	0.00	0.00	0	.	.
Hexachloroethane	18	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	18	0.00	0.00	0	.	.
Isophorone	18	0.00	0.00	0	.	.
Lead	45	63.11	40.00	27	750.00	20.00
Mercury	59	178.14	0.00	23	3600.00	100.00
Methoxychlor	9	0.00	0.00	0	.	.
Mirex/Dechlorane	16	0.00	0.00	0	.	.
Naphthalene	18	0.00	0.00	0	.	.
Nickel	41	97.56	0.00	2	3000.00	1000.00
Nitrobenzene	18	0.00	0.00	0	.	.
Nitrophenol, 4	18	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	18	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	18	0.00	0.00	0	.	.
Pentachlorophenol	18	0.00	0.00	0	.	.
Phenol	18	0.00	0.00	0	.	.
Polychlorinated biphenyls	3387	879.61	0.00	901	350000.0	100.00
Pyrene	18	0.00	0.00	0	.	.
Selenium	45	288.00	120.00	25	1800.00	110.00
Silver	32	0.00	0.00	0	.	.
Toxaphene	67	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	18	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	18	0.00	0.00	0	.	.
Zinc	41	17173.17	9100.00	39	50000.00	2800.00

Lower Tennessee-Beech 06040001

Watershed Summary Information

Accounting Unit Name:	Lower Tennessee
State(s):	TN (MS)
Political Boundaries:	Hardin, Perry, Decatur, Henderson, Wayne, Benton, Humphreys, Mcnairy, Alcorn, Tishomingo, Chester
Major Waterways:	Tennessee R White Oak Cr Beech R Horse Cr Kentucky L
Number of Stations in Watershed:	Tier1 - 15 Tier2 - 6 Tier3 - 4

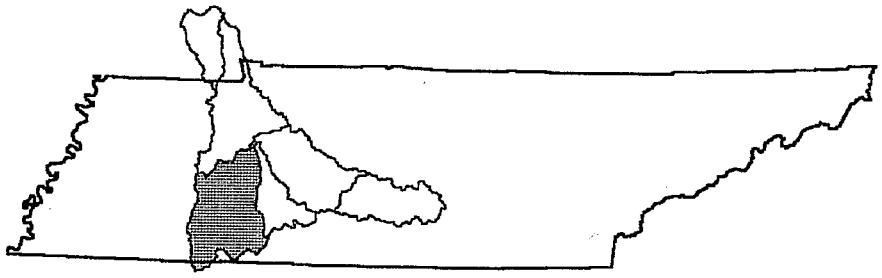

Figure 109. Watershed Location Map

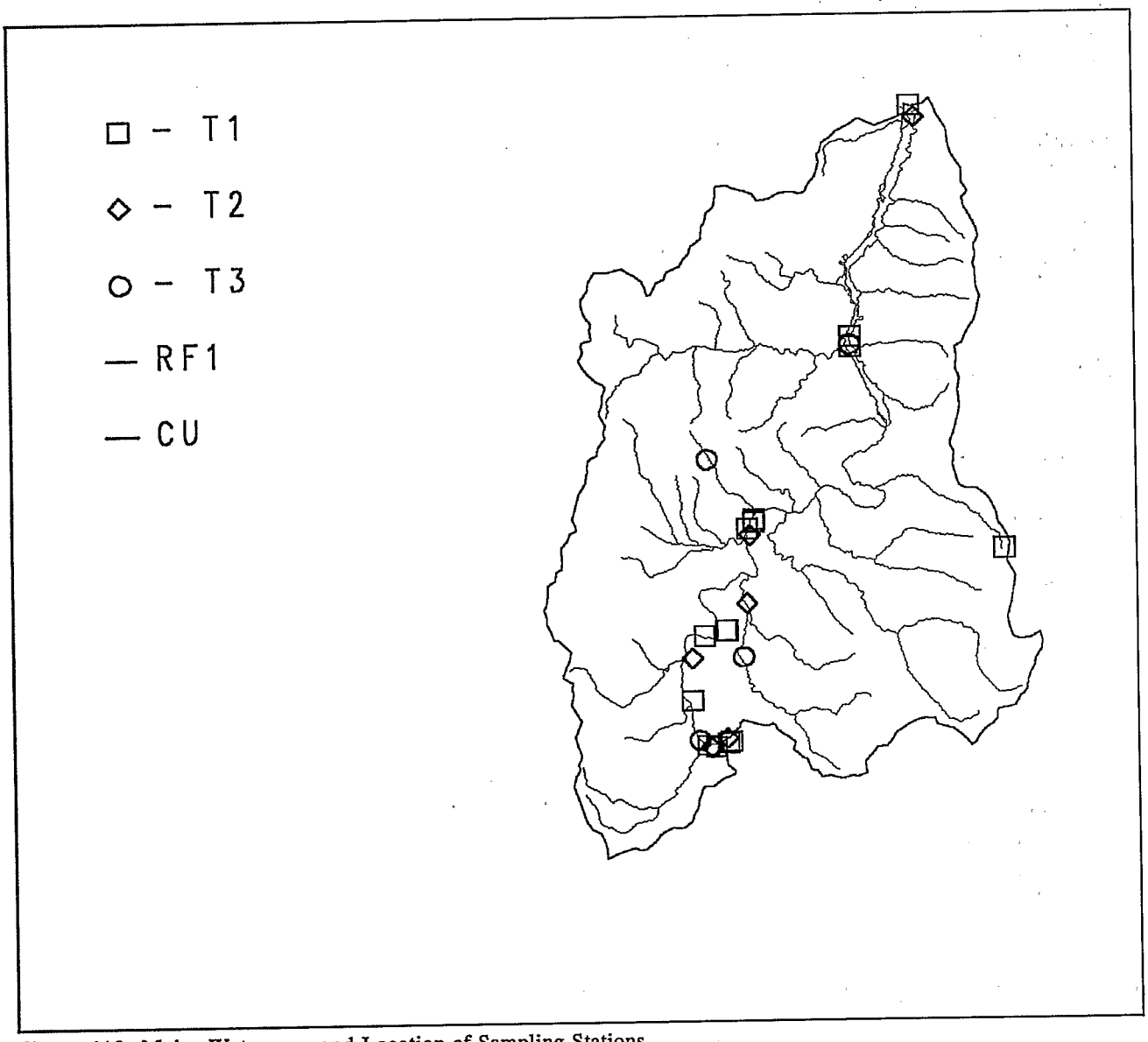

Figure 110. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: ODES Agency: TN
Monitoring Program: Tennessee
Num. of Stations: 1 Date Range: 1980-84

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 1 Date Range: 1988

Source: STORET Agency: 11FWS
Monitoring Program: US Fish & Wildlife Service Data - USEPA Hq Backdata Study
Num. of Stations: 1 Date Range: 1980-86

Source: **STORET** Agency: **1114PEST**
Monitoring Program: **USEPA SE Environ Water Lab Data**
Num. of Stations: 1 Date Range: 1981

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 15 Date Range: 1982-93

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 6 Date Range: 1982-87

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	20	14	14	.	1	.	13	1
DDT	21	13	.	13	.	2	.	11
Arsenic	18	9	.	9	.	1	.	8
Mercury	19	2	1	1	1	1	.	.
Cadmium	18	2	.	2	.	2	.	.
Dieldrin	18	2	.	2	.	.	.	2
Lead	19	2	.	2	.	2	.	.
Nickel	15	2	.	2	.	2	.	.
Dioxins	1	1	1	.	.	.	1	.
Aldrin	16	1	.	1	.	.	.	1
Copper	18	1	.	1	.	1	.	.
Toxaphene	15	1	.	1	.	.	.	1
Zinc	17	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	2	0.00	0.00	0	.	.
Acenaphthylene	2	0.00	0.00	0	.	.
Acrylonitrile	2	0.00	0.00	0	.	.
Aldrin	10	0.00	0.00	0	.	.
Anthracene	2	0.00	0.00	0	.	.
Antimony	2	250.00	250.00	2	300.00	200.00
Arsenic	4	5252.50	4255.00	4	11000.00	1500.00
Benzene	2	0.00	0.00	0	.	.
Benzo(a)anthracene	2	0.00	0.00	0	.	.
Benzo(a)pyrene	2	0.00	0.00	0	.	.
Benzo(b)fluoranthene	2	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(ghi)perylene	2	0.00	0.00	0	.	.
Benzo(k)fluoranthene	2	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	40	0.00	0.00	0	.	.
Cadmium	11	727.27	0.00	4	2000.00	2000.00
Chlordane	10	0.00	0.00	0	.	.
Chlorobenzene	2	0.00	0.00	0	.	.
Chromium	12	25333.33	28000.00	12	51000.00	7000.00
Chrysene	2	0.00	0.00	0	.	.
Copper	12	17283.33	16500.00	12	33000.00	4000.00
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	2	0.00	0.00	0	.	.
Dibromochloromethane	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dichloroethane 1,1-	2	0.00	0.00	0	.	.
Dichloroethane 1,2-	2	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	2	0.00	0.00	0	.	.
Dichloromethane	2	0.00	0.00	0	.	.
Dichloropropane, 1,2-	2	0.00	0.00	0	.	.
Dieldrin	10	0.00	0.00	0	.	.
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
DDT	39	0.58	0.00	9	5.88	0.56
Endosulfan, alpha-	10	0.00	0.00	0	.	.
Endosulfan, beta-	10	0.00	0.00	0	.	.
Endrin	10	0.00	0.00	0	.	.
Ethylbenzene	2	0.00	0.00	0	.	.
Fluoranthene	2	0.00	0.00	0	.	.
Fluorene	2	0.00	0.00	0	.	.
Heptachlor	12	0.04	0.00	2	0.30	0.20
Heptachlor epoxide	10	0.00	0.00	0	.	.
Hexachlorobenzene	5	0.36	0.10	3	1.60	0.10
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	2	0.00	0.00	0	.	.
Isophorone	2	0.00	0.00	0	.	.
Lead	12	25500.00	22000.00	12	57000.00	14000.00
Mercury	11	420.91	490.00	8	750.00	390.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methoxychlor	6	0.00	0.00	0	.	.
Naphthalene	2	0.00	0.00	0	.	.
Nickel	12	18000.00	17000.00	12	42000.00	6000.00
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	2	0.00	0.00	0	.	.
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	80	1112.50	0.00	1	89000.00	89000.00
Pyrene	2	0.00	0.00	0	.	.
Silver	3	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	2	0.00	0.00	0	.	.
Tetrachloroethene	2	0.00	0.00	0	.	.
Tetrachloromethane	2	0.00	0.00	0	.	.
Toluene	2	0.00	0.00	0	.	.
Toxaphene	10	0.00	0.00	0	.	.
Tribromomethane/Bromoform	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	2	0.00	0.00	0	.	.
Trichloroethene	2	0.00	0.00	0	.	.
Trichlorofluoromethane	2	0.00	0.00	0	.	.
Trichloromethane/Chloroform	2	0.00	0.00	0	.	.
Zinc	12	89666.67	91000.00	12	160000.0	35000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	23	0.87	0.00	2	10.00	10.00
Antimony	18	0.00	0.00	0	.	.
Arsenic	34	65.69	57.70	21	240.00	40.00
Beryllium	18	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
BHC	88	1.59	0.00	14	10.00	10.00
Cadmium	34	32.30	0.00	16	150.00	2.00
Chlordane	79	8.38	0.00	37	50.00	8.38
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	21	87.14	40.00	15	330.00	30.00
Copper	31	627.88	600.00	21	2200.00	200.00
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	31	4.19	0.00	9	30.00	10.00
Dioxins	2	0.00	0.00	2	0.01	0.00
DCPA/Dacthal	6	10.00	10.00	6	10.00	10.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
DDT	103	226.19	52.00	73	1595.00	5.00
Endosulfan, alpha-	16	3.75	0.00	3	20.00	20.00
Endosulfan, beta-	16	0.00	0.00	0	.	.
Endrin	29	3.79	0.00	10	20.00	10.00
Heptachlor	24	3.75	0.00	7	20.00	10.00
Heptachlor epoxide	19	1.05	0.00	2	10.00	10.00
Hexachlorobenzene	12	5.22	6.35	7	10.00	2.70
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	34	104.20	50.00	24	550.00	9.70
Mercury	35	91.56	100.00	21	210.00	49.86
Methoxychlor	6	0.00	0.00	0	.	.
Mirex/Dechlorane	16	4.05	0.00	7	10.00	4.83
Nickel	18	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	191	95.48	0.00	64	1117.00	100.00
Selenium	31	342.45	180.00	26	1300.00	110.00
Silver	12	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	22	85.91	0.00	6	690.00	100.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	3.40	3.40	1	3.40	3.40
Zinc	28	22790.00	16820.00	28	59620.00	4800.00

Kentucky Lake 06040005

Watershed Summary Information

Accounting Unit Name:	Lower Tennessee
State(s):	TN KY
Political Boundaries:	Benton, Humphreys, Henry, Stewart, Houston, Calloway, Carroll, Marshall, Livingston, Lyon, Trigg, Henderson, Dickson
Major Waterways:	Tennessee R Whiteoak Cr Big Sandy Cr Trace Cr Kentucky L
Number of Stations in Watershed:	Tier1 - 15 Tier2 - 14 Tier3 - 1

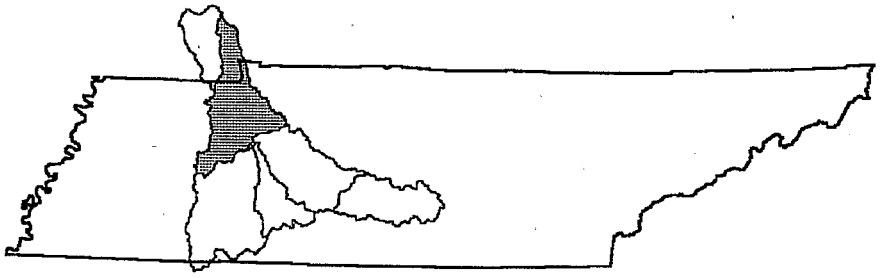

Figure 111. Watershed Location Map

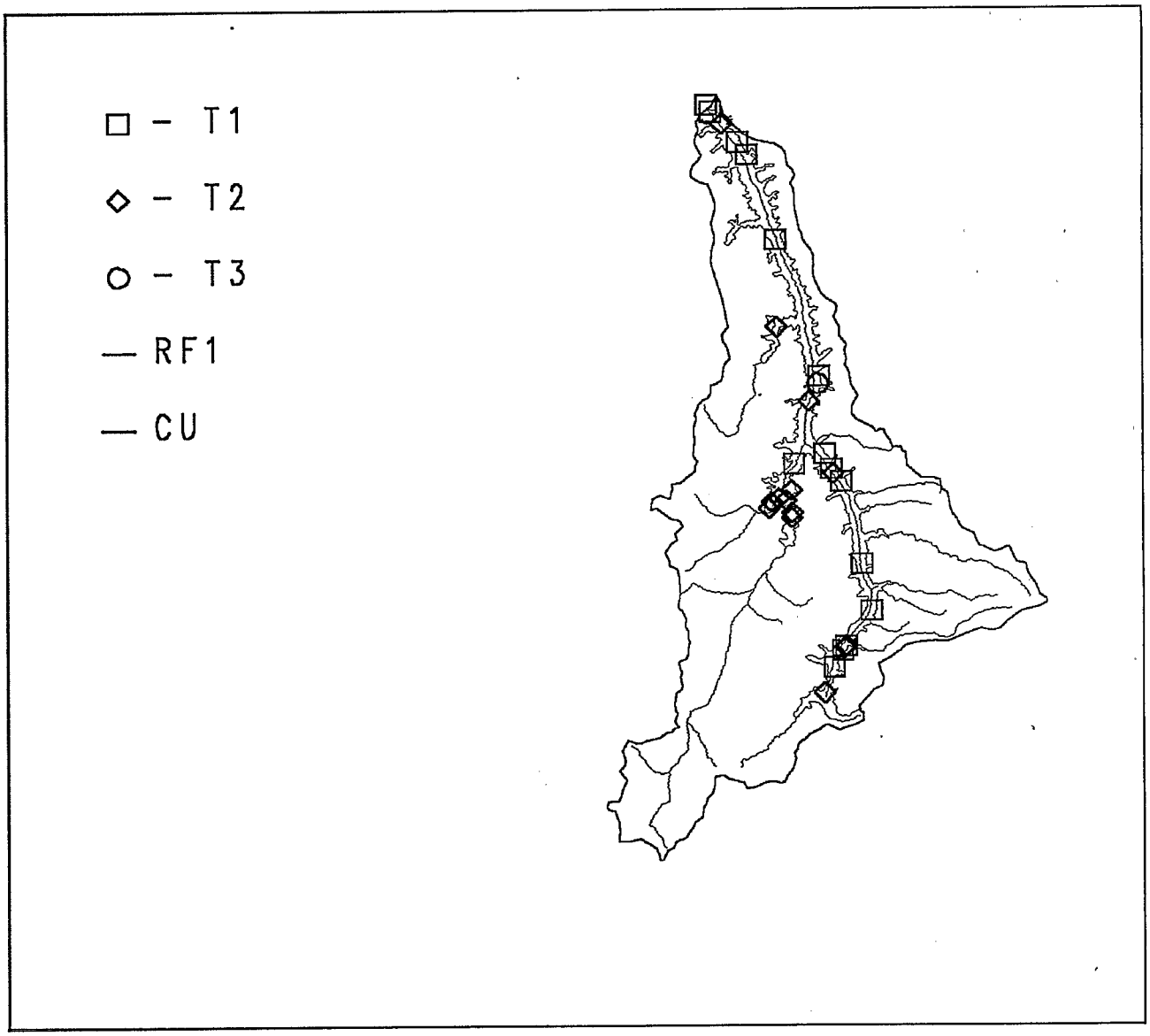

Figure 112. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **131TVAC**
Monitoring Program: **Tennessee Valley Authority Water, Sediment And Tissue Data**
Num. of Stations: 28 Date Range: 1982-93

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1980-82

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	28	15	.	15	.	15	.	.
Polychlorinated biphenyls	29	14	14	.	.	.	14	.
Arsenic	23	9	.	9	.	1	.	8
Cadmium	29	9	.	9	.	9	.	.
Mercury	30	9	.	9	.	9	.	.
Bis(2-ethylhexyl)phthalate	12	3	1	2	1	2	.	1
Copper	29	2	.	2	.	2	.	.
DDT	29	2	.	2	.	.	.	2
Lead	29	2	.	2	.	2	.	.
Chlordane	29	1	.	1	.	.	.	1
Zinc	28	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	9	0.00	0.00	0	.	.
Acenaphthylene	9	0.00	0.00	0	.	.
Acrylonitrile	9	0.00	0.00	0	.	.
Aldrin	22	0.00	0.00	0	.	.
Anthracene	9	0.00	0.00	0	.	.
Antimony	9	374.44	360.00	9	500.00	300.00
Arsenic	10	2023.00	1400.00	10	8000.00	270.00
Benzene	9	0.00	0.00	0	.	.
Benzo(a)anthracene	9	0.00	0.00	0	.	.
Benzo(a)pyrene	9	0.00	0.00	0	.	.
Benzo(b)fluoranthene	9	0.00	0.00	0	.	.
Benzo(ghi)perylene	9	0.00	0.00	0	.	.
Benzo(k)fluoranthene	9	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	9	1054.44	0.00	3	7770.00	680.00
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	9	0.00	0.00	0	.	.
BHC	88	0.00	0.00	0	.	.
Cadmium	23	1652.17	0.00	9	6000.00	2000.00
Chlordane	22	0.00	0.00	0	.	.
Chlorobenzene	9	0.00	0.00	0	.	.
Chromium	17	25647.06	24000.00	17	51000.00	14000.00
Chrysene	9	0.00	0.00	0	.	.
Copper	23	16260.87	17000.00	23	27000.00	7000.00
Di-n-butyl phthalate	9	0.00	0.00	0	.	.
Di-n-octyl phthalate	9	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibenzo(a,h)anthracene	9	0.00	0.00	0	.	.
Dibromochloromethane	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	0.00	0.00	0	.	.
Dichloroethane 1,1-	9	0.00	0.00	0	.	.
Dichloroethane 1,2-	9	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	9	0.00	0.00	0	.	.
Dichloromethane	9	0.00	0.00	0	.	.
Dichloropropane, 1,2-	9	0.00	0.00	0	.	.
Dieldrin	22	0.00	0.00	0	.	.
Diethyl phthalate	9	0.00	0.00	0	.	.
Dimethyl phthalate	9	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	9	0.00	0.00	0	.	.
DDT	66	0.00	0.00	0	.	.
Endosulfan, alpha-	22	0.00	0.00	0	.	.
Endosulfan, beta-	22	0.00	0.00	0	.	.
Endrin	22	0.00	0.00	0	.	.
Ethylbenzene	9	0.00	0.00	0	.	.
Fluoranthene	9	0.00	0.00	0	.	.
Fluorene	9	0.00	0.00	0	.	.
Heptachlor	22	0.00	0.00	0	.	.
Heptachlor epoxide	22	0.00	0.00	0	.	.
Hexachlorobenzene	9	0.00	0.00	0	.	.
Hexachlorobutadiene	9	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	9	0.00	0.00	0	.	.
Isophorone	9	0.00	0.00	0	.	.
Lead	23	19097.39	20000.00	23	62000.00	20.00
Mercury	23	164.35	150.00	17	450.00	110.00
Methoxychlor	7	0.00	0.00	0	.	.
Naphthalene	9	0.00	0.00	0	.	.
Nickel	23	21869.57	22000.00	23	39000.00	10000.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorophenol	9	0.00	0.00	0	.	.
Phenanthrene	9	0.00	0.00	0	.	.
Phenol	9	0.00	0.00	0	.	.
Polychlorinated biphenyls	156	0.00	0.00	0	.	.
Pyrene	9	0.00	0.00	0	.	.
Silver	10	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	9	0.00	0.00	0	.	.
Tetrachloroethene	9	0.00	0.00	0	.	.
Tetrachloromethane	9	0.00	0.00	0	.	.
Toluene	9	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Toxaphene	22	0.00	0.00	0	.	.
Tribromomethane/Bromoform	9	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	9	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	9	0.00	0.00	0	.	.
Trichloroethene	9	0.00	0.00	0	.	.
Trichlorofluoromethane	9	0.00	0.00	0	.	.
Trichloromethane/Chloroform	9	0.00	0.00	0	.	.
Zinc	23	101956.5	91000.00	23	370000.0	44000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Acrolein	3	0.00	0.00	0	.	.
Acrylonitrile	3	0.00	0.00	0	.	.
Aldrin	23	0.00	0.00	0	.	.
Anthracene	3	0.00	0.00	0	.	.
Antimony	27	0.00	0.00	0	.	.
Arsenic	37	56.49	20.00	19	310.00	20.00
Benzene	3	0.00	0.00	0	.	.
Benzidine	3	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	3	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Beryllium	27	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	3	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	3	0.00	0.00	0	.	.
Bromodichloromethane	3	0.00	0.00	0	.	.
Bromomethane	3	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	3	0.00	0.00	0	.	.
Butyl benzyl phthalate	3	0.00	0.00	0	.	.
BHC	87	0.11	0.00	1	10.00	10.00
Cadmium	36	38.61	1.50	18	200.00	3.00
Chlordane	42	10.00	0.00	11	210.00	10.00
Chlorobenzene	3	0.00	0.00	0	.	.
Chloroethane	3	0.00	0.00	0	.	.
Chloroethene	3	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	3	0.00	0.00	0	.	.
Chloromethane	3	0.00	0.00	0	.	.
Chloronaphthalene, 2-	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chlorophenol, 2-	3	0.00	0.00	0	.	.
Chromium	33	93.33	60.00	27	220.00	30.00
Chrysene	3	0.00	0.00	0	.	.
Copper	33	393.33	0.00	14	2200.00	200.00
Di-n-butyl phthalate	3	0.00	0.00	0	.	.
Di-n-octyl phthalate	3	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.
Dibromochloromethane	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	3	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	3	0.00	0.00	0	.	.
Dichloroethane 1,1-	3	0.00	0.00	0	.	.
Dichloroethane 1,2-	3	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	3	0.00	0.00	0	.	.
Dichloroethene, 1,1-	3	0.00	0.00	0	.	.
Dichloromethane	3	86.67	100.00	3	110.00	50.00
Dichlorophenol, 2,4-	3	0.00	0.00	0	.	.
Dichlorophenoxyacetic acid,	3	0.00	0.00	0	.	.
Dichloropropane, 1,2-	3	0.00	0.00	0	.	.
Dieldrin	23	0.00	0.00	0	.	.
Diethyl phthalate	3	0.00	0.00	0	.	.
Dimethyl phthalate	3	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	3	0.00	0.00	0	.	.
DDT	75	98.40	0.00	34	460.00	20.00
Endosulfan, alpha-	22	3.64	0.00	3	30.00	20.00
Endosulfan, beta-	22	0.00	0.00	0	.	.
Endrin	23	5.22	0.00	8	30.00	10.00
Ethylbenzene	3	10.00	10.00	3	10.00	10.00
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	3	0.00	0.00	0	.	.
Heptachlor	22	0.00	0.00	0	.	.
Heptachlor epoxide	22	0.00	0.00	0	.	.
Hexachlorobenzene	3	0.00	0.00	0	.	.
Hexachlorobutadiene	6	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Isophorone	3	0.00	0.00	0	.	.
Lead	36	148.06	65.00	32	600.00	20.00
Mercury	58	145.17	135.00	42	490.00	50.00
Methoxychlor	1	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Mirex/Dechlorane	10	0.00	0.00	0	.	.
Naphthalene	3	0.00	0.00	0	.	.
Nickel	27	0.00	0.00	0	.	.
Nitrobenzene	3	0.00	0.00	0	.	.
Nitrophenol, 4	3	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	3	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Pentachlorophenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	178	104.16	0.00	49	2300.00	100.00
Pyrene	3	0.00	0.00	0	.	.
Selenium	30	271.33	115.00	24	1000.00	50.00
Silver	20	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	3	0.00	0.00	0	.	.
Tetrachloroethene	3	0.00	0.00	0	.	.
Tetrachloromethane	3	0.00	0.00	0	.	.
Toluene	3	10.00	10.00	3	10.00	10.00
Toxaphene	22	0.00	0.00	0	.	.
Tribromomethane/Bromoform	3	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	3	10.00	10.00	2	20.00	10.00
Trichloroethane, 1,1,2-	3	0.00	0.00	0	.	.
Trichloroethene	3	10.00	10.00	3	10.00	10.00
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	3	20.00	20.00	3	20.00	20.00
Trichlorophenol, 2,4,6-	3	0.00	0.00	0	.	.
Zinc	27	10677.78	6900.00	27	26000.00	4800.00

Twin Cities 07010206

Watershed Summary Information

Accounting Unit Name:	Upper Mississippi-Crow-Rum
State(s):	MN WI
Political Boundaries:	Hennepin, Ramsey, Anoka, Dakota, Goodhue, Pierce, Washington, Carver
Major Waterways:	Mississippi R Coon R Elm Cr L Minnetonka
Number of Stations in Watershed:	Tier1 - 26 Tier2 - 2 Tier3 - 7

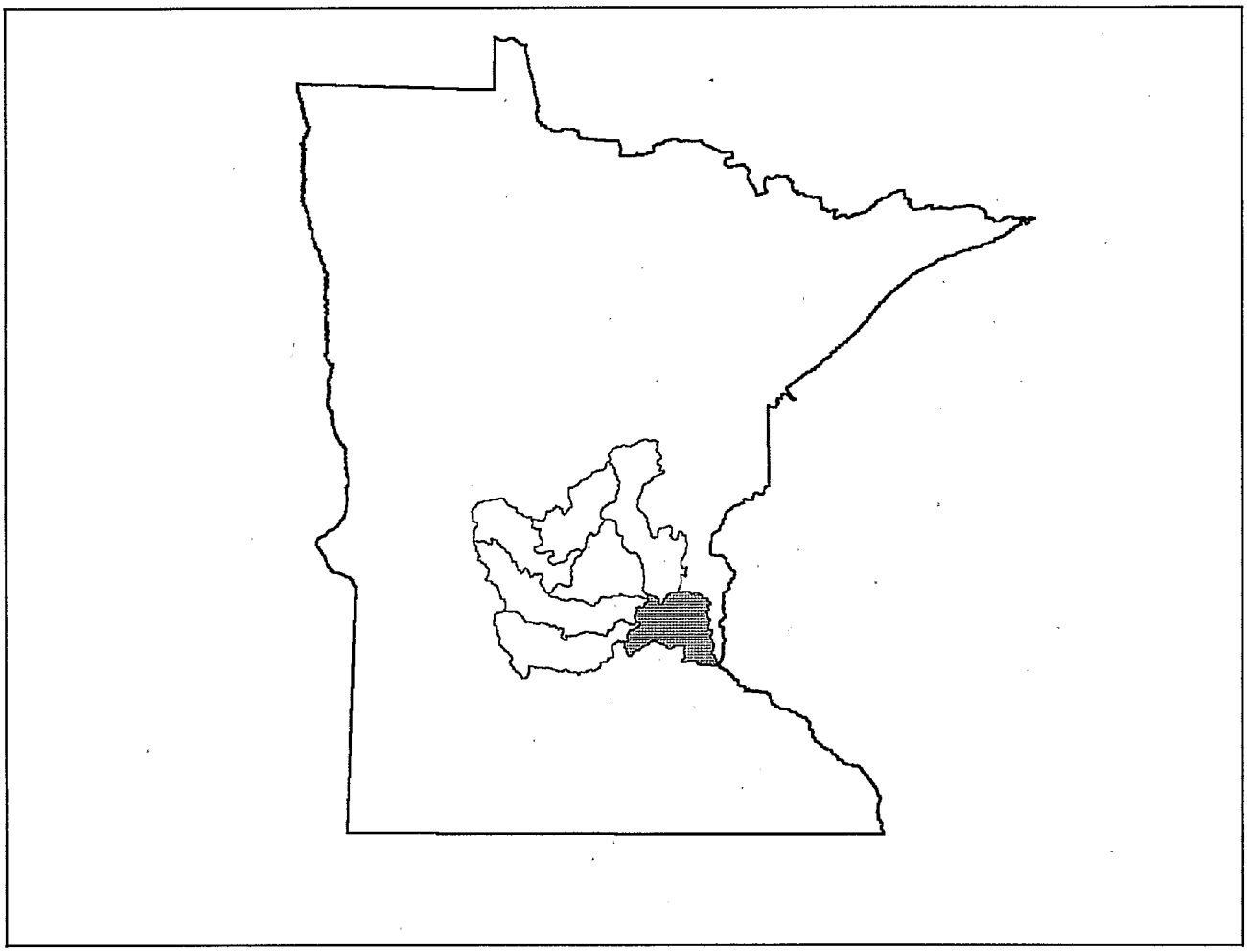

Figure 113. Watershed Location Map

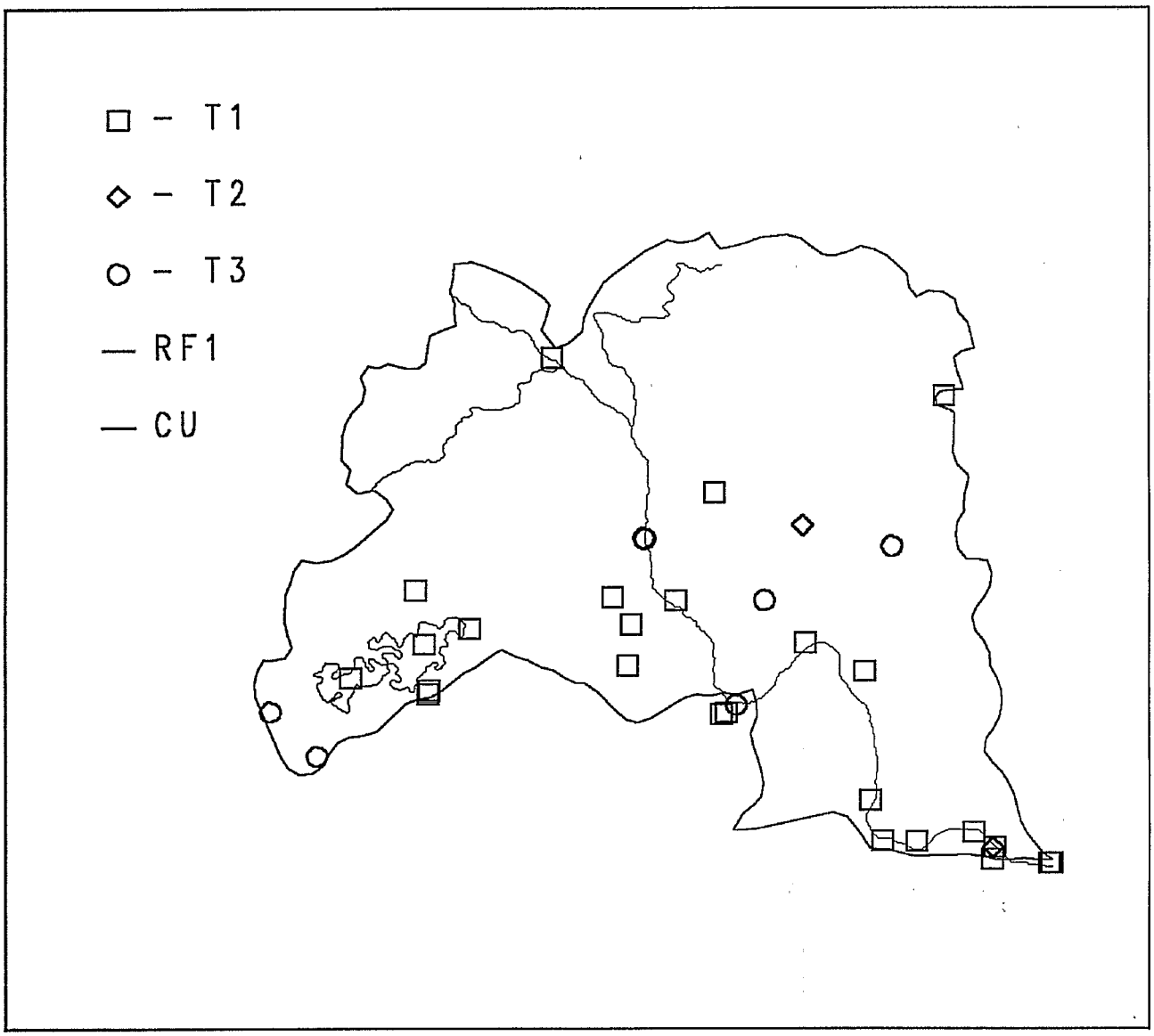

Figure 114. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11140100**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 3 Date Range: 1981-82

Source: **STORET** Agency: **21MINN**
Monitoring Program: **Minn Poll Control Agency Stream Data**
Num. of Stations: 10 Date Range: 1980-90

Source: **STORET** Agency: **21MINNL**
Monitoring Program: **Minn Poll Control Agency Data Lake Data**
Num. of Stations: 15 Date Range: 1983-91

Source: **STORET** Agency: **21MINNW**
Monitoring Program: **Wildlife Contaminent Data Minn Poll Control Agency**
Num. of Stations: 5 Date Range: 1990

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 1 Date Range: 1987-89

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 1 Date Range: 1982-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	31	26	26	.	.	.	26	.
Dieldrin	8	5	.	5	.	.	.	5
Copper	8	2	.	2	.	2	.	.
DDT	8	2	.	2	.	.	.	2
Cadmium	10	1	.	1	.	1	.	.
Chlordane	8	1	.	1	.	.	.	1
Hexachlorobenzene	8	1	.	1	.	.	.	1
Lead	10	1	.	1	.	1	.	.
Mercury	27	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Antimony	2	0.00	0.00	0	.	.
Arsenic	3	1233.33	1000.00	3	2200.00	500.00
Cadmium	6	603.33	160.00	4	2900.00	50.00
Chromium	6	9183.33	6700.00	6	27000.00	2000.00
Copper	12	22500.00	25000.00	12	72500.00	3500.00
Lead	13	16315.38	14000.00	12	35000.00	2000.00
Mercury	9	107.78	20.00	6	240.00	10.00
Nickel	5	4460.00	4500.00	4	7200.00	4000.00
Pentachlorophenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	4	0.00	0.00	0	.	.
Silver	5	0.00	0.00	0	.	.
Zinc	5	14300.00	15000.00	5	22000.00	4500.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	8	0.13	0.03	4	0.82	0.06
Arsenic	1	16.00	16.00	1	16.00	16.00
BHC	16	0.58	0.01	9	6.00	0.01
Cadmium	10	7.79	5.80	10	18.00	2.00
Chlordane	33	127.99	0.23	31	2200.00	0.04
Chromium	4	52.50	55.00	3	100.00	40.00
Copper	4	505.00	415.00	4	800.00	390.00
Dieldrin	13	128.23	4.80	13	1600.00	0.36
Dioxins	3	0.00	0.00	0	.	.
DDT	55	1710.82	1.90	35	65000.00	0.06
Endrin	8	0.00	0.00	1	0.01	0.01
Heptachlor epoxide	5	0.36	0.36	5	0.72	0.07
Hexachlorobenzene	8	188.08	0.85	7	1500.00	0.33
Lead	5	36.00	20.00	4	120.00	10.00
Mercury	79	132.01	120.00	76	430.00	20.00
Methoxychlor	3	0.00	0.00	0	.	.
Nickel	2	210.00	210.00	1	420.00	420.00
Polychlorinated biphenyls	526	1323.38	238.00	427	48000.00	3.70

Rush-Vermillion 07040001

Watershed Summary Information

Accounting Unit Name:	Upper Mississippi-Black-Root
State(s):	MN WI
Political Boundaries:	Goodhue, Pierce, Pepin, Dakota, St Croix, Buffalo, Wabasha
Major Waterways:	Mississippi R Rush R Timbelle R Hay Cr Vermillion R
Number of Stations in Watershed:	Tier1 - 13 Tier2 - 1 Tier3 - .

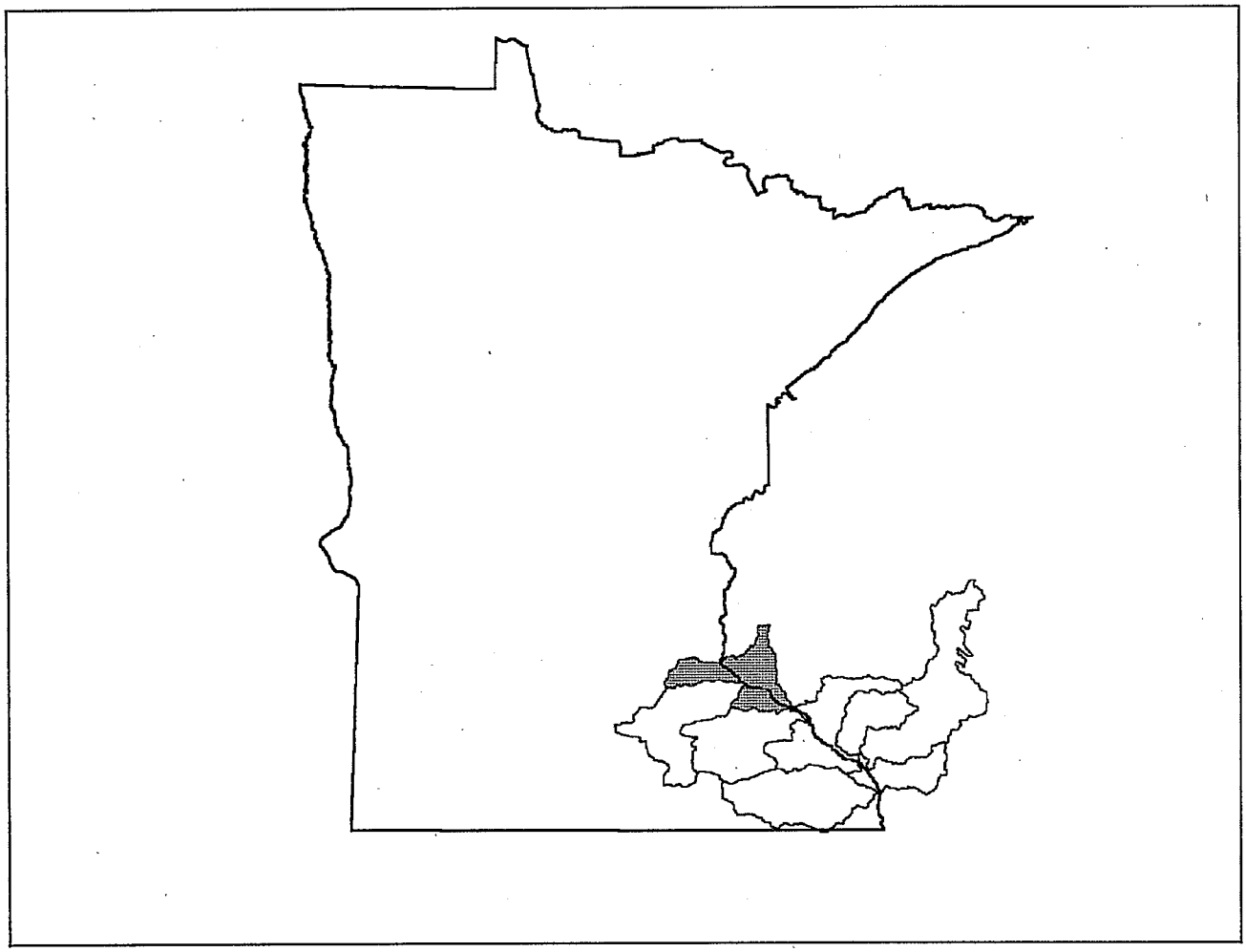

Figure 115. Watershed Location Map

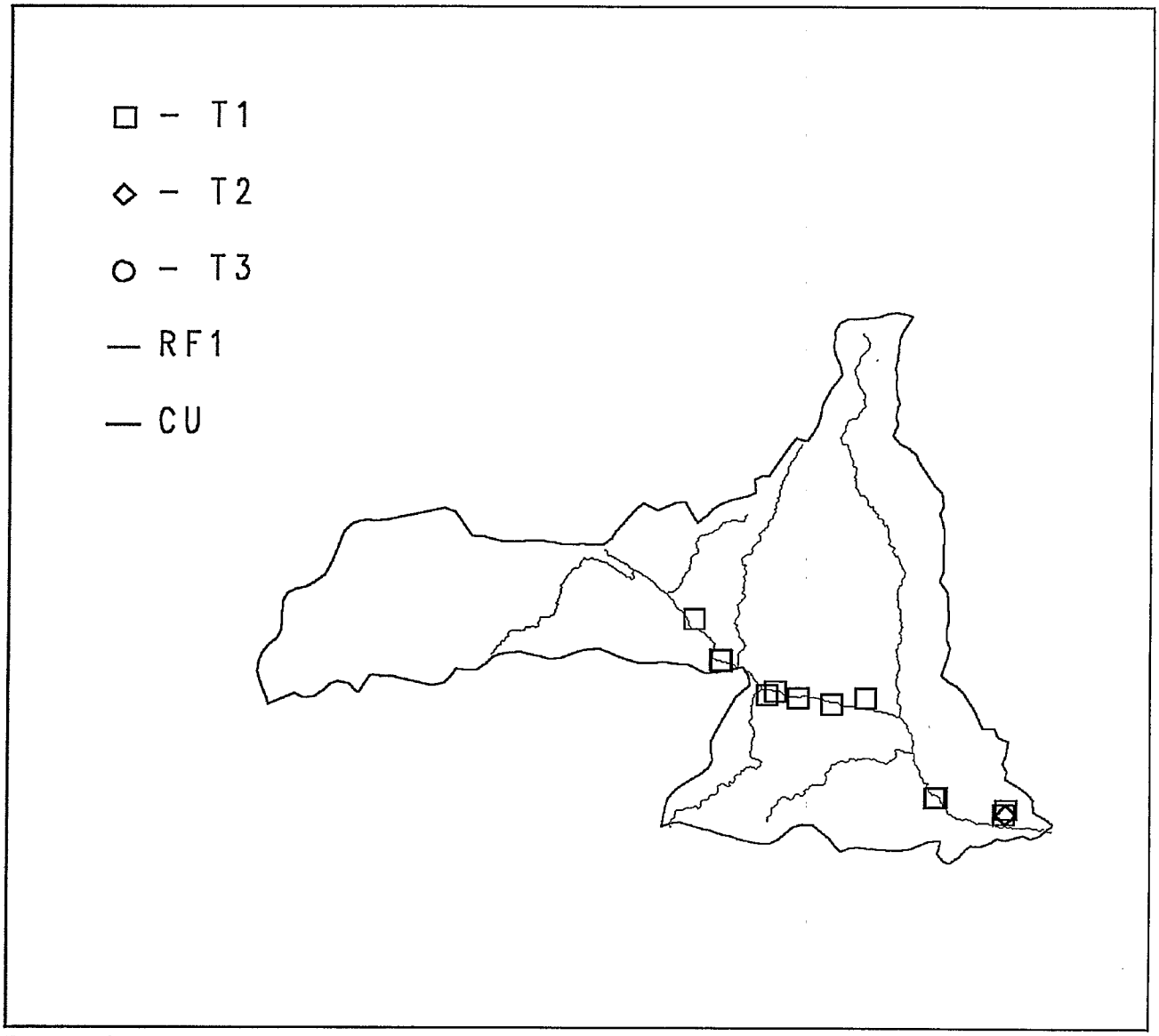

Figure 116. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1980-86

Source: **STORET** Agency: **21MINN**
Monitoring Program: **Minn Poll Control Agency Stream Data**
Num. of Stations: 6 Date Range: 1980-90

Source: **STORET** Agency: **21MINNW**
Monitoring Program: **Wildlife Contaminent Data Minn Poll Control Agency**
Num. of Stations: 1 Date Range: 1990

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 2 Date Range: 1980-92

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 3 Date Range: 1980-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	13	13	13	.	.	.	13	.
Dieldrin	8	3	.	3	.	.	.	3
Lead	5	3	.	3	.	2	.	1
Copper	5	2	.	2	.	2	.	.
Mercury	10	2	.	2	.	2	.	.
Dioxins	2	1	1	.	.	.	1	.
Aldrin	6	1	.	1	.	.	.	1
Arsenic	4	1	.	1	.	.	.	1
Cadmium	5	1	.	1	.	1	.	.
Chromium	4	1	.	1	.	1	.	.
DDT	7	1	.	1	.	.	.	1
Toxaphene	1	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cadmium	4	987.50	1055.00	4	1140.00	700.00
Chromium	6	45000.00	46500.00	6	62000.00	26000.00
Copper	15	29500.00	25000.00	15	60000.00	19100.00
Lead	15	29300.00	24000.00	15	53000.00	14000.00
Mercury	12	207.50	215.00	12	300.00	130.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	19	1.06	0.00	3	10.00	0.14
Arsenic	22	1476.31	0.00	7	18000.00	50.00
Biphenyl	1	0.00	0.00	0	.	.
BHC	47	2.81	0.00	15	10.00	0.04
Cadmium	26	15.08	6.50	14	52.16	6.00
Chlordane	99	2.43	0.00	28	10.00	0.09
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	15	33.33	0.00	1	500.00	500.00
Copper	22	1585.97	1600.00	22	2400.00	590.40
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	27	5.97	0.00	11	54.00	0.02
Dioxins	4	0.00	0.00	2	0.01	0.00
DCPA/Dacthal	6	10.00	10.00	6	10.00	10.00
DDT	118	33.58	0.00	43	630.00	0.23
Endrin	24	2.50	0.00	7	10.00	0.02
Heptachlor	7	8.57	10.00	6	10.00	10.00
Heptachlor epoxide	4	5.45	5.90	3	10.00	1.80
Hexachlorobenzene	24	2.68	0.00	11	10.00	0.01
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	21	107.88	0.00	6	1370.00	60.00
Mercury	44	97.90	90.00	41	290.00	20.00
Methoxychlor	14	0.00	0.00	0	.	.
Mirex/Dechlorane	7	8.57	10.00	6	10.00	10.00
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Pentachlorophenol	4	0.00	0.00	0	.	.
Polychlorinated biphenyls	246	2711.06	580.00	208	60000.00	0.13
Selenium	6	441.27	415.00	6	656.00	270.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	6	93.33	100.00	6	100.00	60.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	1	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	6	61120.00	71830.00	6	94460.00	14040.00

Buffalo-Whitewater 07040003

Watershed Summary Information

Accounting Unit Name: Upper Mississippi-Black-Root

State(s): MN WI

Political Boundaries: Buffalo, Winona, Trempealeau, Wabasha, Olmsted, Jackson, Eau Claire, Pepin

Major Waterways:
Mississippi R
Whitewater R
Buffalo Cr
Whitewater R, N Fk
Whitewater R, S Fk

Number of Stations in Watershed:
Tier1 - 17
Tier2 - 3
Tier3 - 6

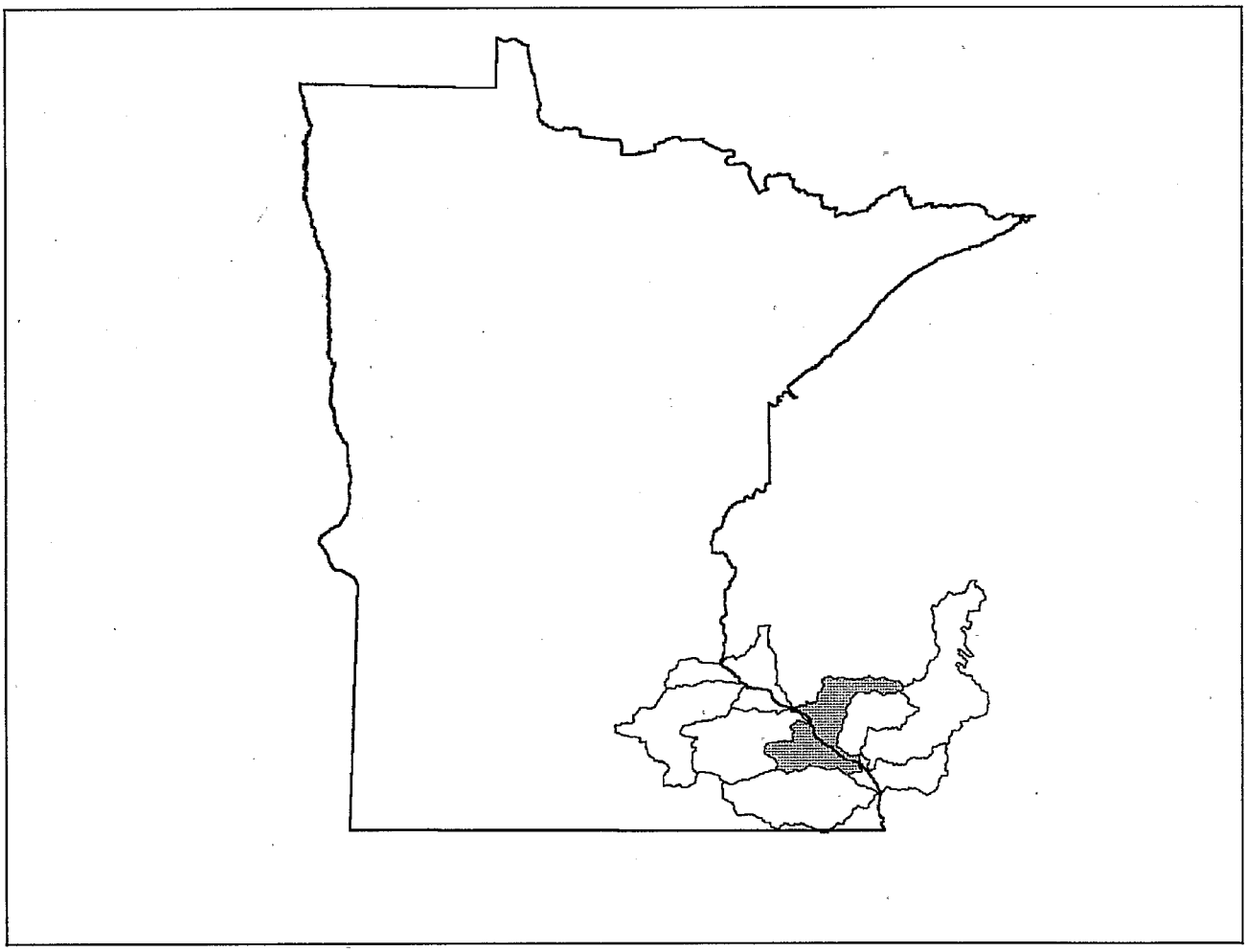

Figure 117. Watershed Location Map

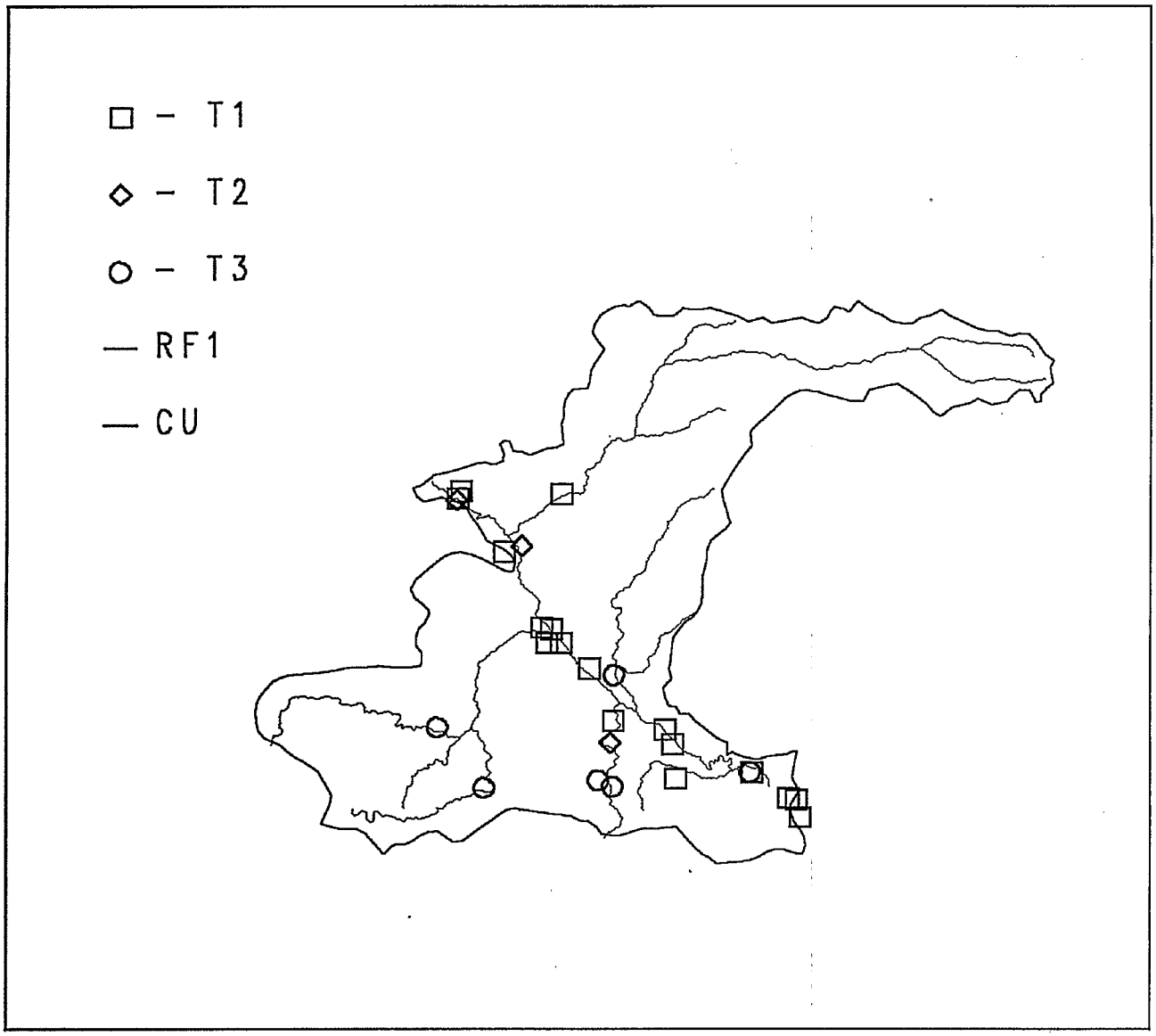

Figure 118. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1982

Source: **STORET** Agency: **21MINN**
Monitoring Program: **Minn Poll Control Agency Stream Data**
Num. of Stations: 8 Date Range: 1980-87

Source: **STORET** Agency: **21MINNW**
Monitoring Program: **Wildlife Contaminent Data Minn Poll Control Agency**
Num. of Stations: 6 Date Range: 1988-90

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 1 Date Range: 1987-92

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 10 Date Range: 1982-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	21	17	17	.	.	.	17	.
Dieldrin	11	6	.	6	.	.	.	6
Cadmium	10	2	.	2	.	2	.	.
Copper	4	1	.	1	.	1	.	.
DDT	8	1	.	1	.	.	.	1
Mercury	14	1	.	1	.	1	.	.
Nickel	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	1	0.00	0.00	0	.	.
Arsenic	4	1915.00	1500.00	4	4100.00	560.00
BHC	1	0.00	0.00	0	.	.
Cadmium	7	609.00	589.00	7	885.00	359.00
Chlordane	1	0.00	0.00	0	.	.
Chromium	6	22186.67	23015.00	6	34000.00	9200.00
Copper	14	20112.14	21000.00	14	52000.00	4800.00
Dieldrin	1	0.00	0.00	0	.	.
DDT	3	0.00	0.00	0	.	.
Endosulfan mixed isomers	1	0.00	0.00	0	.	.
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Lead	14	16652.86	17245.00	14	25000.00	8090.00
Mercury	12	96.17	105.00	10	230.00	22.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Nickel	4	15807.50	11595.00	4	32400.00	7640.00
Polychlorinated biphenyls	1	0.00	0.00	0	.	.
Toxaphene	1	0.00	0.00	0	.	.
Zinc	4	36427.50	32450.00	4	58310.00	22500.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	7	0.31	0.41	7	0.74	0.01
Arsenic	5	0.00	0.00	0	.	.
BHC	14	0.03	0.00	6	0.34	0.01
Cadmium	9	37.78	40.00	9	100.00	4.00
Chlordane	52	0.08	0.00	25	0.35	0.02
Chromium	6	28.33	15.00	5	90.00	10.00
Copper	1	870.00	870.00	1	870.00	870.00
Dieldrin	20	6.57	1.40	14	24.30	0.42
DDT	55	19.56	0.10	34	395.50	0.01
Endrin	7	0.04	0.03	4	0.09	0.03
Heptachlor epoxide	7	0.21	0.20	4	0.52	0.20
Hexachlorobenzene	7	0.36	0.37	7	0.47	0.30
Lead	6	40.00	30.00	5	110.00	10.00
Mercury	19	176.32	130.00	18	700.00	20.00
Nickel	1	250.00	250.00	1	250.00	250.00
Polychlorinated biphenyls	224	1348.31	437.50	162	23000.00	0.85
Selenium	5	522.00	490.00	5	680.00	420.00

Castle Rock 07070003

Watershed Summary Information

Accounting Unit Name: Wisconsin

State(s): WI

Political Boundaries: Juneau, Adams, Wood, Portage, Columbia, Sauk, Waushara, Monroe, Jackson, Marathon

Major Waterways:
Wisconsin R
Yellow R
Big Roche A Cri Cr
Petenwell Flowage
Castle Rock Flowage

Number of Stations in Watershed:
Tier1 - 20
Tier2 - .
Tier3 - 2

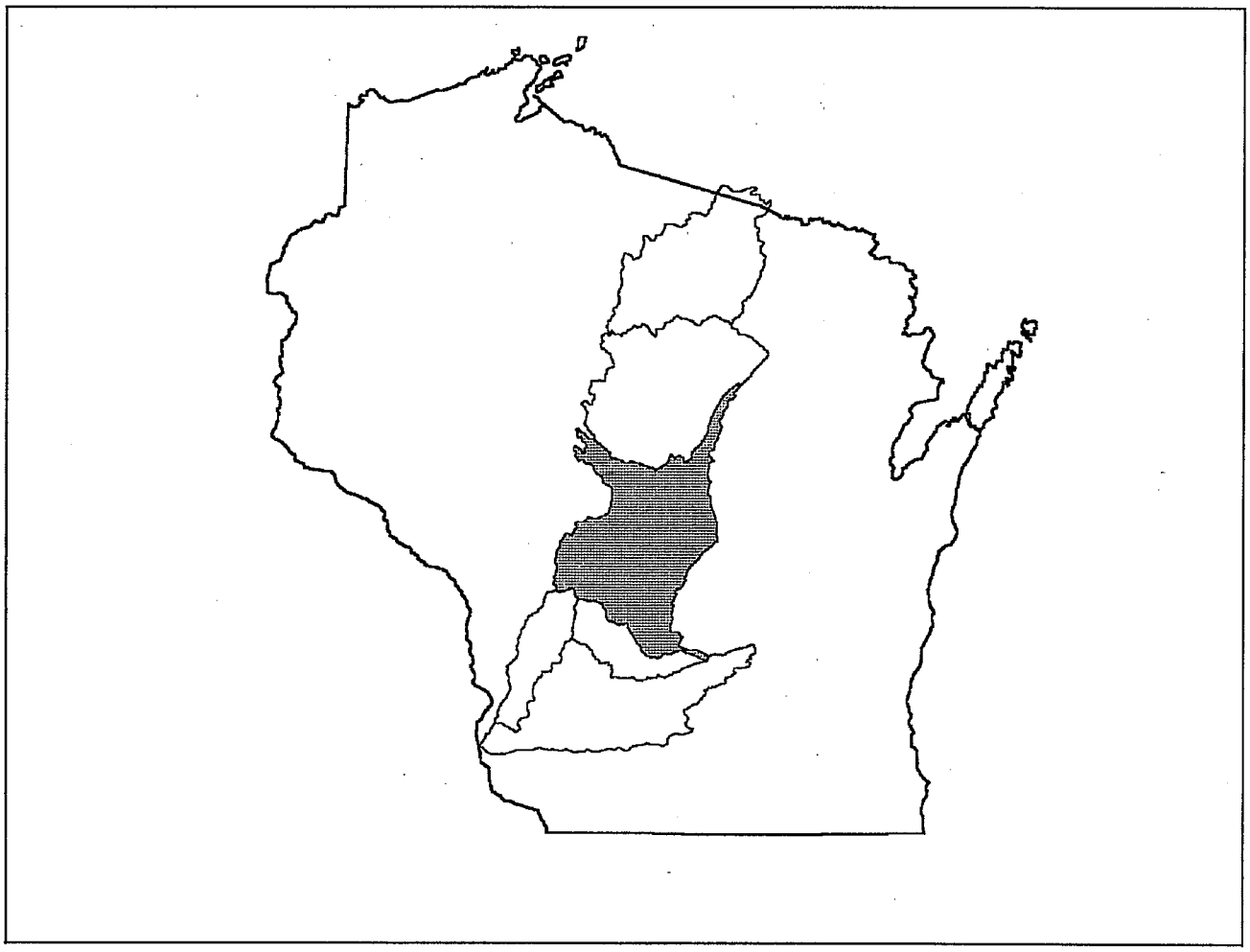

Figure 119. Watershed Location Map

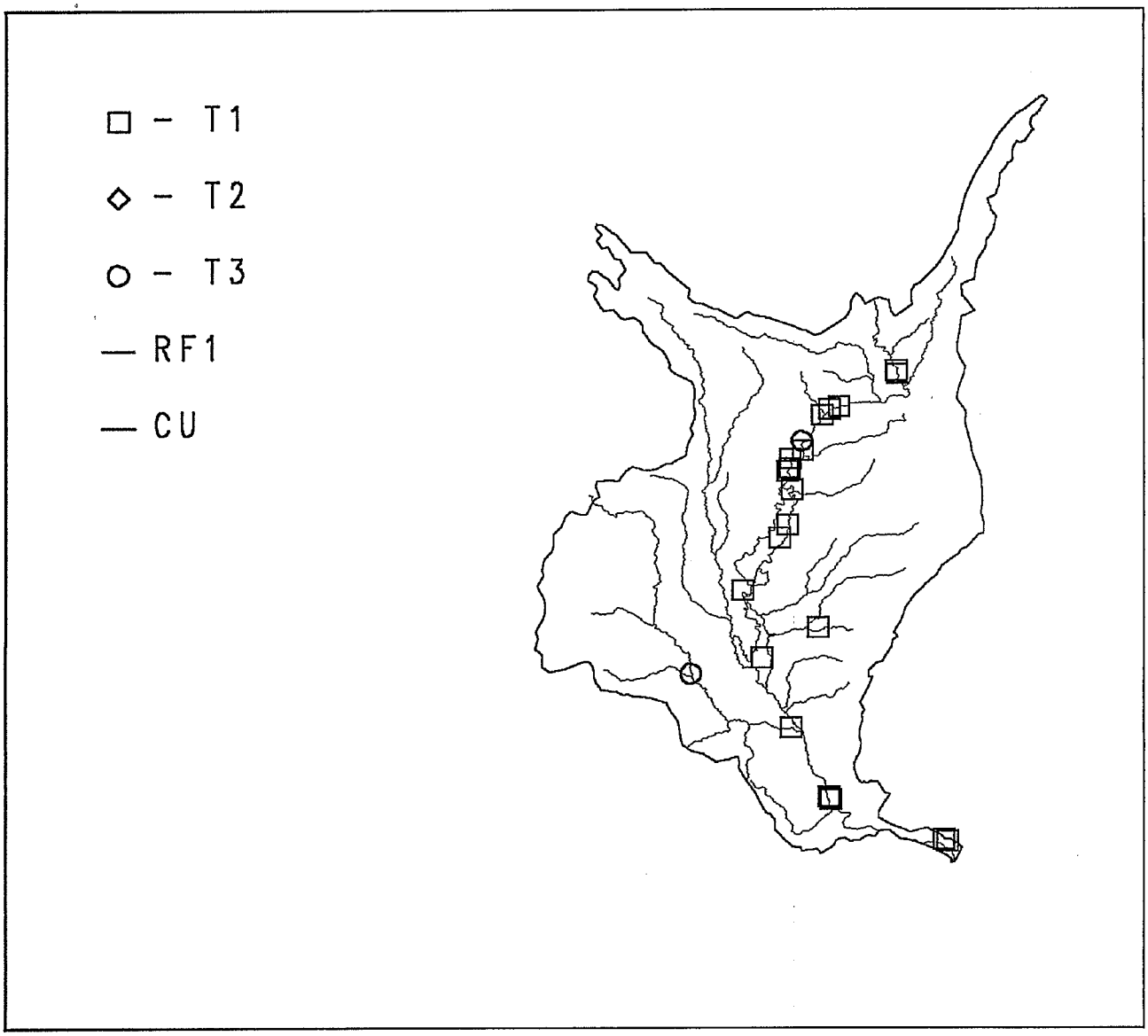

Figure 120. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1984-87

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 4 Date Range: 1980-82

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 16 Date Range: 1980-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	21	20	20	.	.	.	20	.
Dieldrin	13	4	.	4	.	.	.	4
Dioxins	2	2	2	.	.	.	2	.
BHC	12	2	.	2	.	.	.	2
Mercury	18	2	.	2	.	.	.	2
Arsenic	9	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	54	0.00	0.00	0	.	.
Arsenic	52	4.04	0.00	1	210.00	210.00
Biphenyl	2	0.00	0.00	0	.	.
BHC	112	0.68	0.00	5	20.00	10.00
Cadmium	50	0.00	0.00	0	.	.
Chlordane	222	0.08	0.00	3	6.88	4.23
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	51	98.04	0.00	9	800.00	300.00
Copper	52	1718.08	1700.00	52	3600.00	140.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	57	2.44	0.00	6	60.00	0.02
Dioxins	4	0.04	0.03	4	0.08	0.00
DDT	326	9.51	0.00	42	140.00	50.00
Endrin	56	0.00	0.00	0	.	.
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	2	0.93	0.93	1	1.86	1.86
Hexachlorobenzene	56	0.07	0.00	1	4.03	4.03
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	51	15.69	0.00	1	800.00	800.00
Mercury	97	309.69	220.00	97	3000.00	50.00
Methoxychlor	56	0.32	0.00	2	10.00	7.71
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Pentachlorophenol	46	2.61	0.00	3	50.00	20.00
Polychlorinated biphenyls	118	5357.93	1930.00	107	67000.00	200.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.

Copperas-Duck 07080101

Watershed Summary Information

Accounting Unit Name:	Upper Miss.-Skunk-Wapsipinicon
State(s):	IA IL
Political Boundaries:	Rock Island, Whiteside, Clinton, Scott, Muscatine, Mercer, Louisa, Carroll
Major Waterways:	Mississippi R Cooperas Cr Eliza Cr Johnson Cr Cattail Slough
Number of Stations in Watershed:	Tier1 - 17 Tier2 - 5 Tier3 - 5

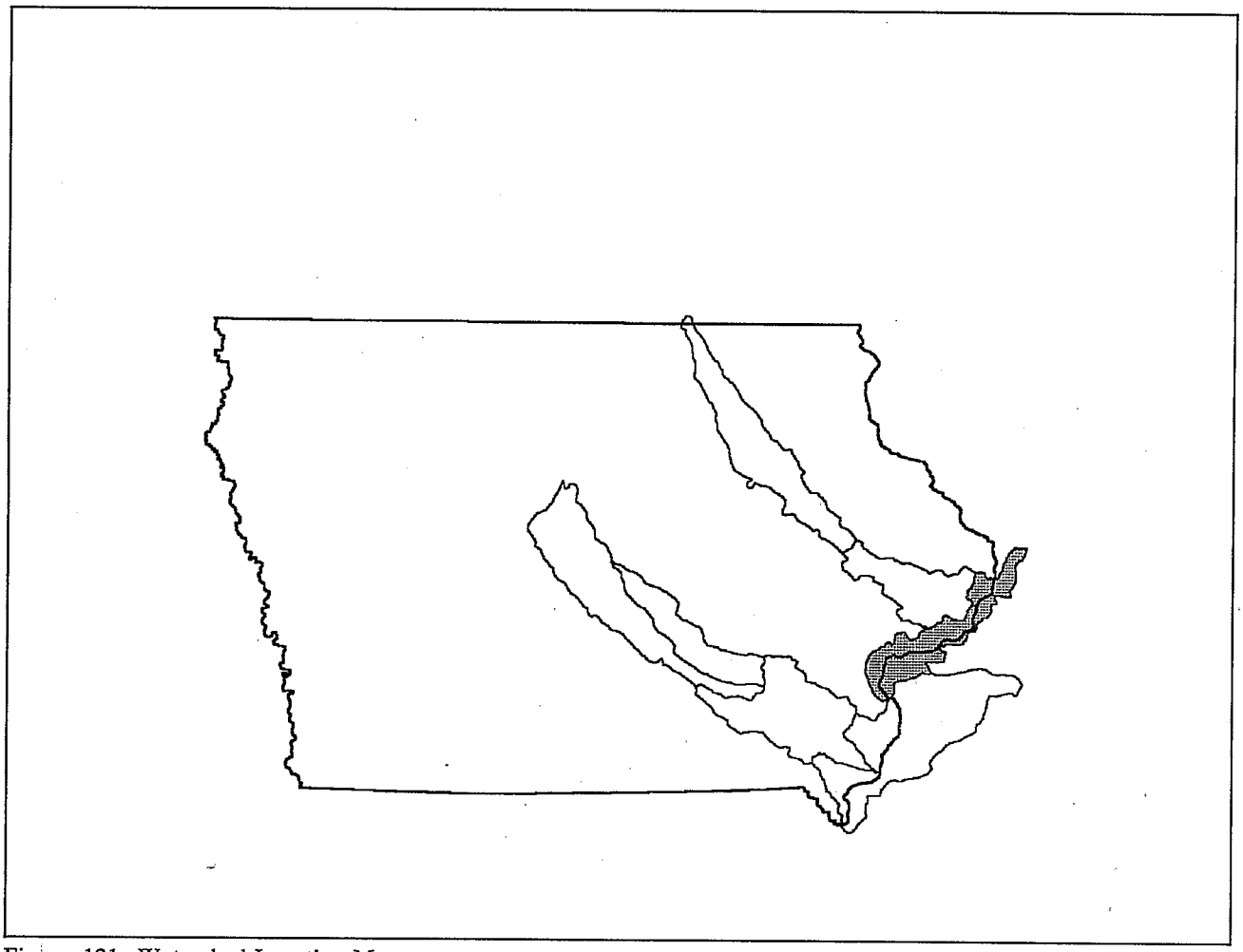

Figure 121. Watershed Location Map

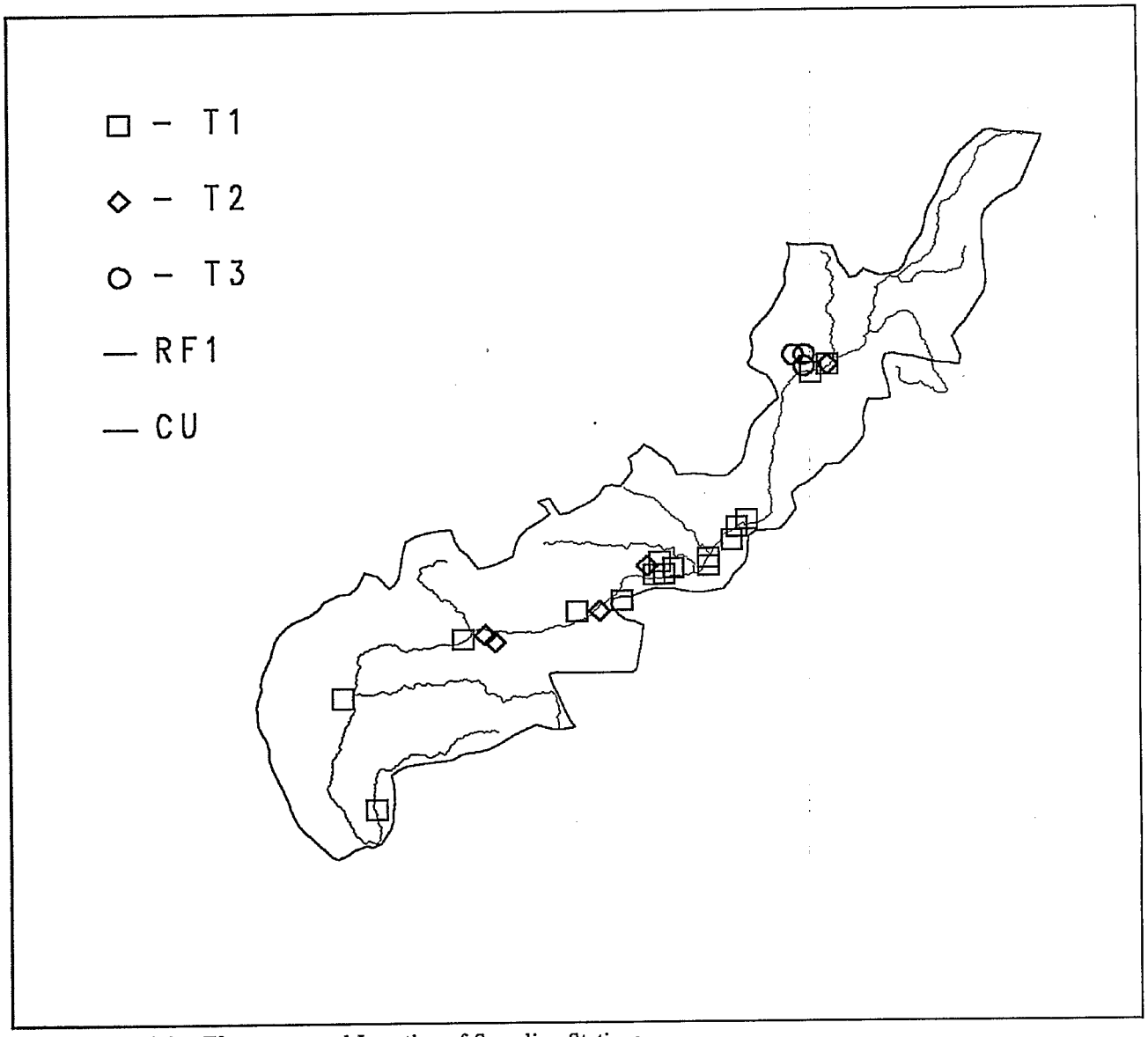

Figure 122. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1986

Source: **STORET** Agency: **1117MBR**
Monitoring Program: **USEPA Region 7 Data**
Num. of Stations: 13 Date Range: 1980-90

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 5 Date Range: 1982-91

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 2 Date Range: 1990-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 1 Date Range: 1980-90

Source: **STORET** Agency: **21IOWA**
Monitoring Program: **Iowa Dept of Natural Res Quality Data**
Num. of Stations: 5 Date Range: 1983-84

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	22	17	17	.	.	.	17	.
Dieldrin	16	12	.	12	.	2	.	12
Chlordane	22	10	.	10	.	.	.	10
Heptachlor epoxide	22	5	.	5	.	.	.	5
Cadmium	10	4	.	4	.	4	.	.
Arsenic	10	3	.	3	.	1	.	2
Nickel	10	3	.	3	.	3	.	.
Zinc	10	3	.	3	.	3	.	.
Mercury	11	2	1	1	1	1	.	.
Silver	8	2	1	1	1	1	.	.
Aldrin	14	2	.	2	.	.	.	2
Bis(2-ethylhexyl)phthalate	5	2	.	2	.	2	.	.
Copper	10	2	.	2	.	2	.	.
Dioxins	5	1	1	.	.	.	1	.
Benzo(a)pyrene	5	1	.	1	.	1	.	1
Benzo(b)fluoranthene	5	1	.	1	.	.	.	1
Chrysene	5	1	.	1	.	1	.	.
Fluoranthene	5	1	.	1	.	1	.	.
Lead	10	1	.	1	.	1	.	.
Phenanthrene	8	1	.	1	.	1	.	.
Pyrene	10	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	0.00	0.00	0	.	.
Acenaphthylene	7	0.00	0.00	0	.	.
Acrylonitrile	7	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	12	0.00	0.00	0	.	.
Anthracene	8	0.00	0.00	0	.	.
Antimony	3	366.67	0.00	1	1100.00	1100.00
Arsenic	15	3846.67	3000.00	12	9700.00	2400.00
Benzene	7	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	7	95.71	0.00	1	670.00	670.00
Benzo(b)fluoranthene	7	98.57	0.00	1	690.00	690.00
Benzo(ghi)perylene	7	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Benzoic acid	1	0.00	0.00	0	.	.
Benzyl alcohol	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	7	447.14	0.00	3	1300.00	870.00
Bromophenyl phenyl ether, 4-	7	0.00	0.00	0	.	.
Butyl benzyl phthalate	7	0.00	0.00	0	.	.
BHC	34	0.00	0.00	0	.	.
Cadmium	15	726.67	0.00	6	4200.00	400.00
Chlordane	40	0.00	0.00	0	.	.
Chlorobenzene	7	0.00	0.00	0	.	.
Chromium	20	19030.00	18000.00	20	37000.00	9500.00
Chrysene	7	50.00	0.00	1	350.00	350.00
Copper	15	118433.3	10000.00	15	1600000	7500.00
Cresol, o	1	0.00	0.00	0	.	.
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	7	0.00	0.00	0	.	.
Di-n-octyl phthalate	7	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	7	0.00	0.00	0	.	.
Dibenzofuran	1	0.00	0.00	0	.	.
Dibromochloromethane	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	5	0.00	0.00	0	.	.
Dichloroethane 1,1-	7	0.00	0.00	0	.	.
Dichloroethane 1,2-	6	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	2	0.00	0.00	0	.	.
Dichloromethane	7	0.00	0.00	0	.	.
Dichloropropane, 1,2-	7	0.00	0.00	0	.	.
Dieldrin	12	0.79	0.00	2	6.80	2.70
Diethyl phthalate	7	0.00	0.00	0	.	.
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.
Dioxins	2	0.00	0.00	0	.	.
DDT	72	0.00	0.00	0	.	.
Endosulfan, alpha-	3	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	12	0.00	0.00	0	.	.
Ethylbenzene	7	0.00	0.00	0	.	.
Fluoranthene	7	118.57	0.00	2	740.00	90.00
Fluorene	12	0.00	0.00	0	.	.
Heptachlor	12	0.00	0.00	0	.	.
Heptachlor epoxide	12	0.00	0.00	0	.	.
Hexachlorobenzene	16	0.00	0.00	0	.	.
Hexachlorobutadiene	7	0.00	0.00	0	.	.
Hexachloroethane	7	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	7	0.00	0.00	0	.	.
Isophorone	7	0.00	0.00	0	.	.
Lead	15	17540.00	13000.00	12	100000.0	9500.00
Mercury	15	93.00	23.00	9	768.00	20.00
Methoxychlor	9	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	0.00	0.00	0	.	.
Naphthalene	7	0.00	0.00	0	.	.
Nickel	9	19388.89	20000.00	9	28000.00	8300.00
Nitrosodiphenylamine, N-	7	0.00	0.00	0	.	.
Pentachlorophenol	7	0.00	0.00	0	.	.
Phenanthrene	12	38.33	0.00	1	460.00	460.00
Phenol	7	0.00	0.00	0	.	.
Polychlorinated biphenyls	30	0.00	0.00	0	.	.
Pyrene	12	57.50	0.00	2	600.00	90.00
Silver	9	4000.00	0.00	2	35000.00	1000.00
Tetrachloroethane, 1,1,2,2-	7	0.00	0.00	0	.	.
Tetrachloroethene	7	0.00	0.00	0	.	.
Tetrachloromethane	7	0.00	0.00	0	.	.
Toluene	7	0.00	0.00	0	.	.
Toxaphene	3	0.00	0.00	0	.	.
Tribromomethane/Bromoform	7	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	7	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	7	0.00	0.00	0	.	.
Trichloroethene	7	0.00	0.00	0	.	.
Trichlorofluoromethane	2	0.00	0.00	0	.	.
Trichloromethane/Chloroform	7	0.00	0.00	0	.	.
Zinc	15	131473.3	65000.00	15	930000.0	29100.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Acrolein	5	0.00	0.00	0	.	.
Acrylonitrile	5	0.00	0.00	0	.	.
Alachlor/Lasso	13	0.00	0.00	0	.	.
Aldrin	52	5.75	0.00	3	260.00	10.00
Anthracene	4	0.00	0.00	0	.	.
Antimony	10	0.00	0.00	0	.	.
Arsenic	16	27.50	0.00	4	160.00	70.00
Atrazine	16	0.00	0.00	0	.	.
Barium	10	1490.00	1785.00	8	2700.00	50.00
Benzene	13	0.00	0.00	0	.	.
Benzidine	3	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	3	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Beryllium	7	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	3	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	3	0.00	0.00	0	.	.
Bromodichloromethane	3	0.00	0.00	0	.	.
Bromomethane	3	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	3	0.00	0.00	0	.	.
Butyl benzyl phthalate	3	0.00	0.00	0	.	.
BHC	136	0.10	0.00	2	10.30	2.73
Cadmium	16	7.56	0.00	2	61.00	60.00
Chlordane	332	36.46	11.00	227	450.00	2.40
Chlorobenzene	10	0.00	0.00	0	.	.
Chloroethane	5	0.00	0.00	0	.	.
Chloroethene	8	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	5	0.00	0.00	0	.	.
Chloromethane	8	0.00	0.00	0	.	.
Chloronaphthalene, 2-	3	0.00	0.00	0	.	.
Chlorophenol, 2-	3	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	7	0.00	0.00	0	.	.
Chromium	12	316.00	290.00	9	1400.00	100.00
Chrysene	3	0.00	0.00	0	.	.
Copper	10	1444.00	1480.00	10	3360.00	290.00
Cyanazine	6	0.00	0.00	0	.	.
Di-n-butyl phthalate	3	0.00	0.00	0	.	.
Di-n-octyl phthalate	3	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibromochloromethane	5	0.60	0.00	1	3.00	3.00
Dichlorobenzene, 1,2-	8	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	8	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	3	0.00	0.00	0	.	.
Dichloroethane 1,1-	5	0.00	0.00	0	.	.
Dichloroethane 1,2-	13	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	8	0.00	0.00	0	.	.
Dichloroethene, 1,1-	13	0.00	0.00	0	.	.
Dichloromethane	5	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	3	0.00	0.00	0	.	.
Dichloropropane, 1,2-	5	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	58	34.67	11.50	35	540.00	2.00
Diethyl phthalate	3	0.00	0.00	0	.	.
Dimethyl phthalate	3	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	3	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	3	0.00	0.00	0	.	.
Dioxins	5	0.00	0.00	2	0.00	0.00
Diphenylhydrazine, 1,2-	3	0.00	0.00	0	.	.
DDT	132	15.68	0.00	49	123.00	3.00
Endosulfan, alpha-	17	0.35	0.00	1	6.00	6.00
Endosulfan, beta-	14	0.00	0.00	0	.	.
Endrin	53	0.43	0.00	2	12.00	11.00
Ethylbenzene	10	0.00	0.00	0	.	.
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	4	0.00	0.00	0	.	.
Fonofos	3	0.00	0.00	0	.	.
Heptachlor	92	0.00	0.00	0	.	.
Heptachlor epoxide	98	3.46	0.00	25	97.00	0.01
Hexachlorobenzene	43	0.04	0.00	1	1.90	1.90
Hexachlorobutadiene	4	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Isophorone	3	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	16	23.75	0.00	1	380.00	380.00
Malathion	4	0.00	0.00	0	.	.
Maleic anhydride	1	0.00	0.00	0	.	.
Manganese	7	5424.29	5300.00	7	6890.00	4320.00
Mercury	17	77.19	69.90	17	146.00	28.80
Methoxychlor	49	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Metribuzin	3	0.00	0.00	0	.	.
Mirex/Dechlorane	39	0.00	0.00	0	.	.
Molybdenum	10	39.30	0.00	3	136.00	126.00
Naphthalene	3	0.00	0.00	0	.	.
Nickel	10	58.60	0.00	2	328.00	258.00
Nitrobenzene	3	0.00	0.00	0	.	.
Nitrophenol, 4	3	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	3	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Parathion ethyl	4	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Pentachlorophenol	7	0.00	0.00	0	.	.
Phenol	5	160.00	0.00	2	400.00	400.00
Polychlorinated biphenyls	397	147.68	0.00	129	4900.00	22.00
Prometon/Pramitol	3	0.00	0.00	0	.	.
Pyrene	4	0.00	0.00	0	.	.
Selenium	7	540.00	570.00	7	620.00	390.00
Silver	7	0.00	0.00	0	.	.
Simazine	3	0.00	0.00	0	.	.
Styrene	3	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	13	0.00	0.00	0	.	.
Tetrachloroethene	11	0.00	0.00	0	.	.
Tetrachloromethane	13	0.00	0.00	0	.	.
Toluene	10	0.00	0.00	0	.	.
Toxaphene	47	0.00	0.00	0	.	.
Tribromomethane/Bromoform	10	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	4	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	10	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	12	0.00	0.00	0	.	.
Trichloroethene	13	0.00	0.00	0	.	.
Trichloromethane/Chloroform	13	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	7	0.00	0.00	0	.	.
Vanadium	10	68.90	60.50	5	155.00	121.00
Zinc	9	62511.11	74600.00	9	91900.00	4100.00

Kishwaukee 07090006

Watershed Summary Information

Accounting Unit Name:	Rock
State(s):	IL (WI)
Political Boundaries:	Boone, De Kalb, Winnebago, Mchenry, Ogle, Kane
Major Waterways:	Kishwaukee R Killbuck Cr Kishwaukee R, S Br Beaver Cr Piscasaw R
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 24 Tier3 - .

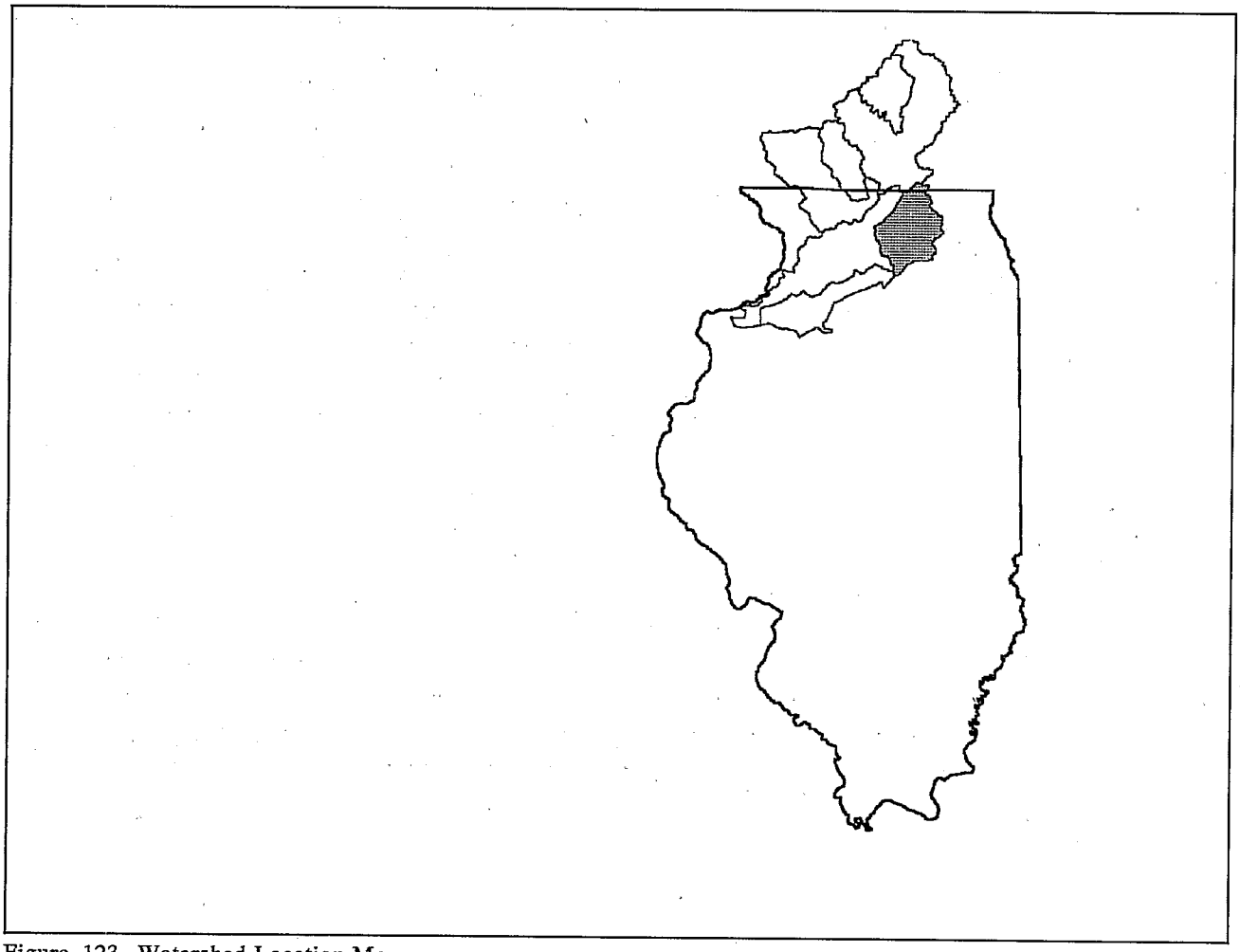

Figure 123. Watershed Location Map

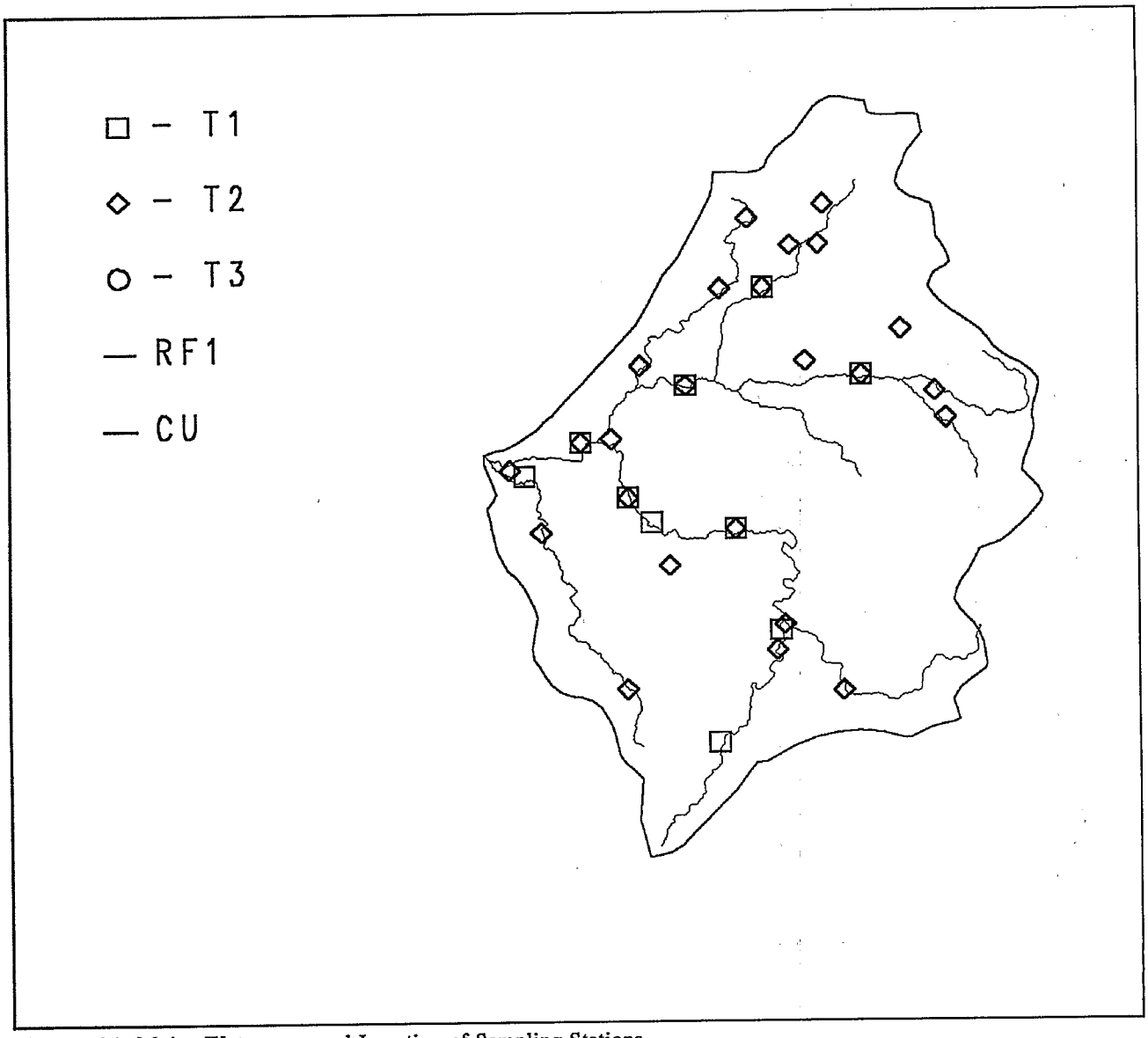

Figure 124. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 9 Date Range: 1983-89

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 25 Date Range: 1982-83

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	34	34	.	34	.	25	.	34
Polychlorinated biphenyls	34	14	10	4	1	2	9	5
Copper	23	11	.	11	.	11	.	.
Chlordane	34	8	.	8	.	6	.	3
DDT	34	7	.	7	.	4	.	4
Heptachlor epoxide	34	5	.	5	.	.	.	5
Chromium	23	3	.	3	.	3	.	.
Arsenic	23	2	.	2	.	2	.	.
Cadmium	23	2	.	2	.	2	.	.
Lead	23	2	.	2	.	2	.	.
Mercury	23	1	.	1	.	1	.	.
Zinc	23	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	25	0.00	0.00	0	.	.
Arsenic	23	4708.70	4000.00	23	8800.00	2300.00
BHC	75	0.00	0.00	0	.	.
Cadmium	23	173.91	0.00	2	3000.00	1000.00
Chlordane	125	0.53	0.00	21	6.60	2.00
Chromium	23	32000.00	28000.00	23	73000.00	16000.00
Copper	23	24521.74	17000.00	23	140000.0	12000.00
Dieldrin	25	4.74	4.30	25	13.00	1.50
DDT	175	0.32	0.00	15	15.00	1.00
Endrin	25	0.00	0.00	0	.	.
Heptachlor	25	0.00	0.00	0	.	.
Heptachlor epoxide	25	0.00	0.00	0	.	.
Hexachlorobenzene	25	0.00	0.00	0	.	.
Lead	23	21956.52	18000.00	23	76000.00	11000.00
Mercury	23	64.78	50.00	23	260.00	20.00
Methoxychlor	25	0.00	0.00	0	.	.
Polychlorinated biphenyls	25	27.20	0.00	5	600.00	11.00
Zinc	23	88434.78	89000.00	23	160000.0	60000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	24	0.00	0.00	0	.	.
BHC	42	0.24	0.00	1	10.00	10.00
Chlordane	32	21.00	15.50	18	100.00	10.00
Chlorpyrifos/Dursban	1	18.00	18.00	1	18.00	18.00
Dieldrin	28	102.00	54.00	26	420.00	11.00
DDT	28	176.79	120.00	27	680.00	27.00
Endrin	24	0.00	0.00	0	.	.
Heptachlor	24	0.00	0.00	0	.	.
Heptachlor epoxide	28	9.43	0.00	12	56.00	0.01
Hexachlorobenzene	18	0.00	0.00	0	.	.
Methoxychlor	24	0.00	0.00	0	.	.
Mirex/Dechlorane	14	0.00	0.00	0	.	.
Polychlorinated biphenyls	28	359.64	245.00	20	1700.00	116.00
Toxaphene	14	0.00	0.00	0	.	.

Chicago 07120003

Watershed Summary Information

Accounting Unit Name:	Upper Illinois
State(s):	IL IN
Political Boundaries:	Cook, Will, Lake
Major Waterways:	Calumet Sag Channel Little Calumet R Calumet R Chicago San Ship Ca Chicago R, N Br
Number of Stations in Watershed:	Tier1 - 64 Tier2 - 36 Tier3 - 3

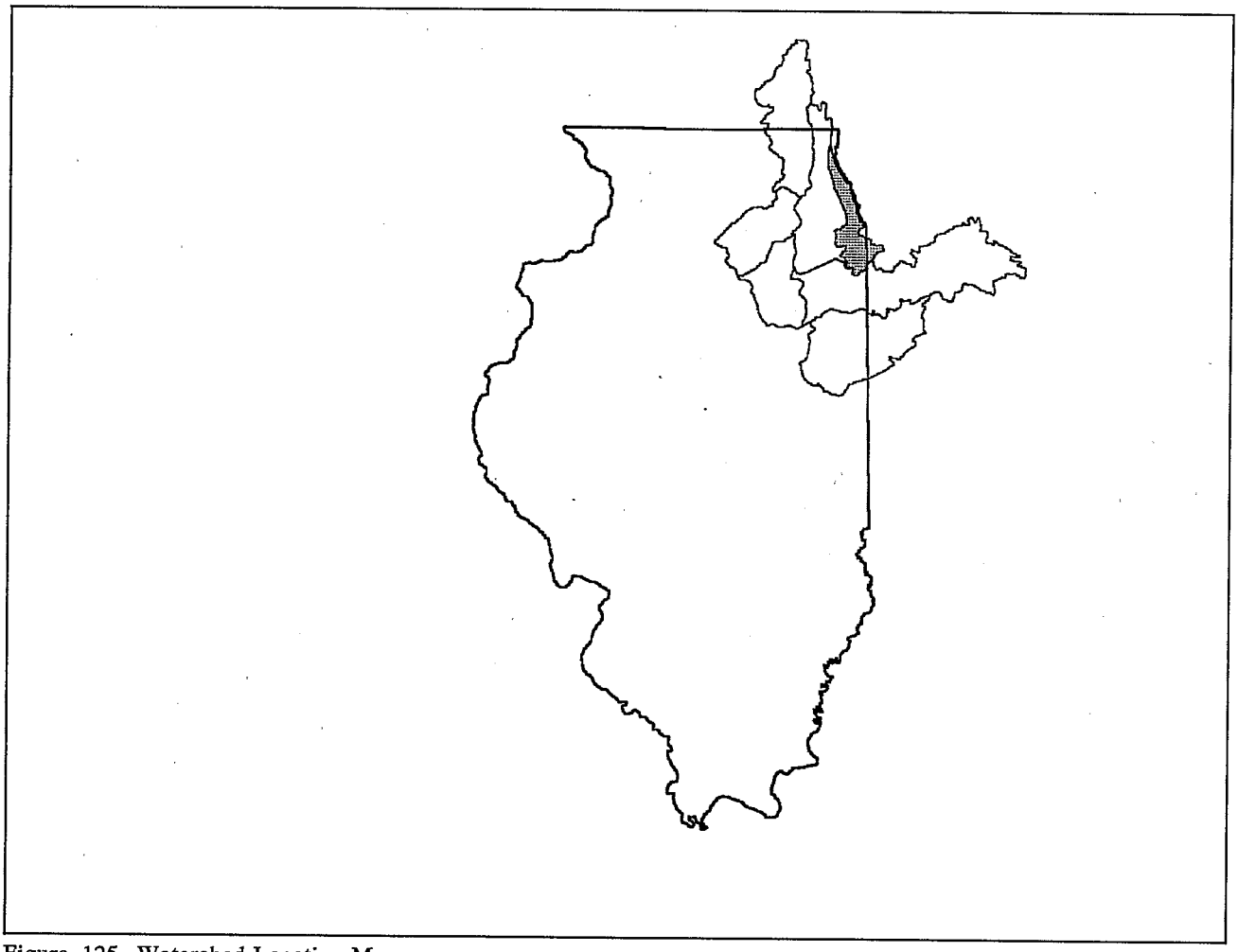

Figure 125. Watershed Location Map

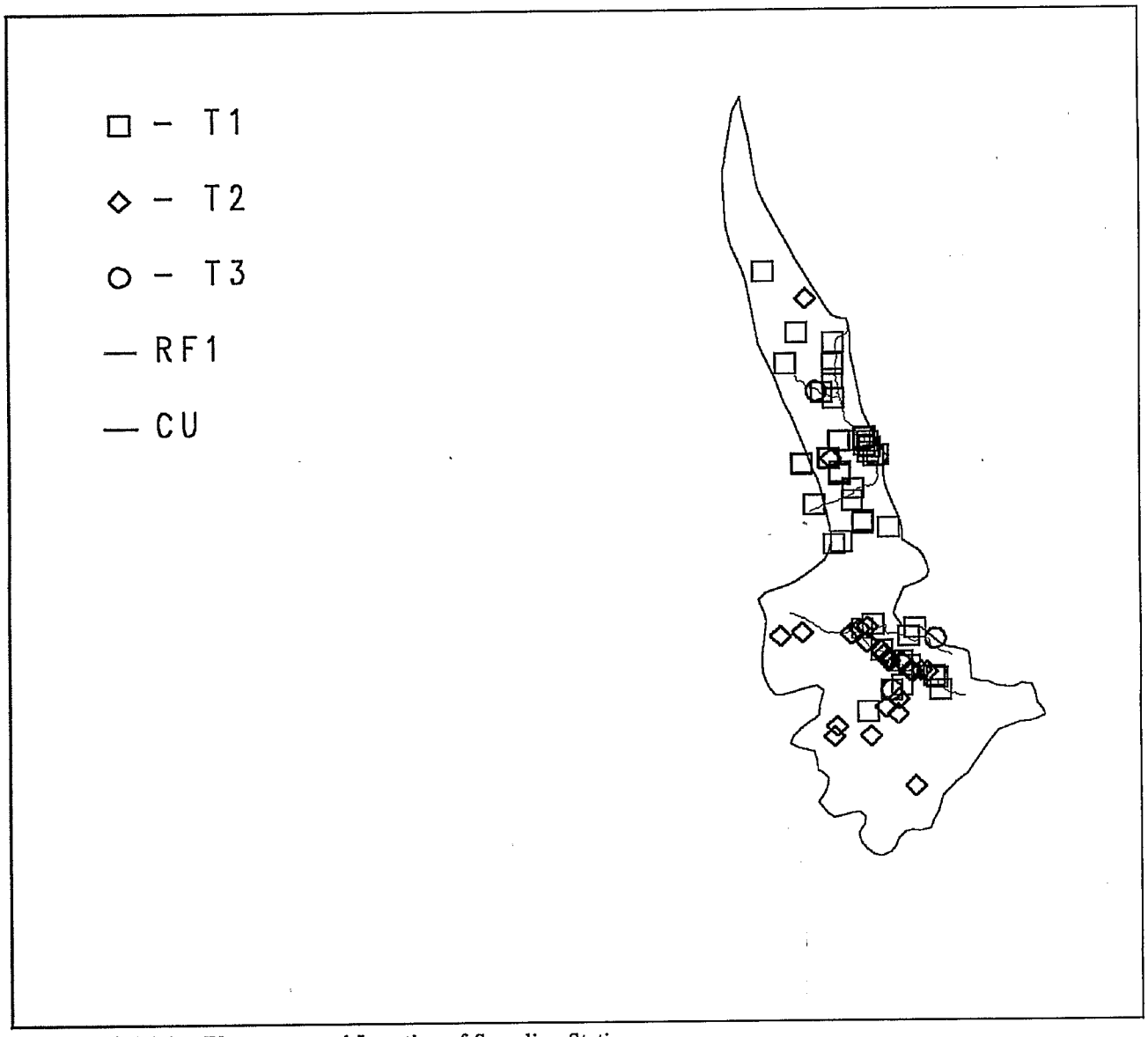

Figure 126. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: STORET Agency: 11COECHI
Monitoring Program: Corps of Engineers Data Chicago District
Num. of Stations: 42 Date Range: 1980-81

Source: STORET Agency: 112WRD
Monitoring Program: US Geological Survey Data
Num. of Stations: 1 Date Range: 1980

Source: STORET Agency: 21ILFISH
Monitoring Program: USEPA Region 5 Data
Num. of Stations: 23 Date Range: 1983-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 19 Date Range: 1988-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 18 Date Range: 1980-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	78	63	.	63	.	63	.	.
Cadmium	77	62	.	62	.	62	.	.
Polychlorinated biphenyls	100	50	34	16	13	14	21	29
Copper	52	49	.	49	.	49	.	.
Mercury	77	48	21	27	21	27	.	.
DDT	67	47	16	31	16	16	.	41
Chromium	77	41	12	29	12	29	.	.
Zinc	49	41	.	41	.	41	.	.
Dieldrin	67	38	.	38	.	20	.	37
Arsenic	53	33	11	22	11	22	.	.
Chlordane	67	33	.	33	.	17	.	29
Nickel	23	14	.	14	.	14	.	.
Heptachlor epoxide	67	13	.	13	.	.	.	13
BHC	67	7	4	3	4	3	.	5
Silver	16	1	1	.	1	.	.	.
Aldrin	66	1	.	1	.	.	.	1
Toxaphene	30	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	83	0.00	0.00	0	.	.
Antimony	22	35909.09	30000.00	11	100000.0	60000.00
Arsenic	119	24633.70	7000.00	117	370000.0	100.00
BHC	227	0.32	0.00	10	18.00	1.90
Cadmium	143	33467.83	3000.00	111	190000.0	400.00
Chlordane	247	5.16	0.00	79	100.00	1.30
Chromium	143	235100.7	107000.0	129	1000000	6000.00
Copper	118	273261.0	150000.0	114	1339000	3000.00
Dieldrin	83	3.78	0.00	29	58.00	1.20
Dioxins	3	0.00	0.00	0	.	.
DDT	491	32.75	0.00	197	790.00	1.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan, alpha-	22	0.00	0.00	0	.	.
Endosulfan, beta-	22	0.00	0.00	0	.	.
Endrin	83	0.00	0.00	0	.	.
Heptachlor	83	0.00	0.00	0	.	.
Heptachlor epoxide	83	0.47	0.00	13	12.00	1.00
Hexachlorobenzene	61	0.15	0.00	2	4.60	4.40
Lead	144	393796.5	175000.0	133	2000000	6000.00
Mercury	143	1415.80	330.00	124	10000.00	42.00
Methoxychlor	61	0.00	0.00	0	.	.
Nickel	38	13736.84	0.00	15	45000.00	21000.00
Polychlorinated biphenyls	362	3898.36	0.00	71	226000.0	10.00
Silver	17	7529.41	0.00	1	128000.0	128000.0
Toxaphene	22	0.00	0.00	0	.	.
Zinc	115	902356.5	390000.0	115	2900000	33000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	86	0.12	0.00	1	10.00	10.00
BHC	174	0.25	0.00	4	14.00	10.00
Chlordane	90	89.22	67.50	65	290.00	10.00
Chlorpyrifos/Dursban	2	25.50	25.50	2	28.00	23.00
Dieldrin	88	36.08	27.50	58	270.00	10.00
DDT	88	391.95	270.00	87	4300.00	18.00
Endrin	86	0.12	0.00	1	10.00	10.00
Heptachlor	86	0.12	0.00	1	10.00	10.00
Heptachlor epoxide	88	9.20	0.00	33	51.00	0.01
Hexachlorobenzene	86	0.12	0.00	1	10.00	10.00
Methoxychlor	86	0.58	0.00	1	50.00	50.00
Mirex/Dechlorane	86	0.12	0.00	1	10.00	10.00
Polychlorinated biphenyls	88	1306.69	1038.00	63	7700.00	130.00
Toxaphene	86	11.63	0.00	1	1000.00	1000.00

Des Plaines 07120004

Watershed Summary Information

Accounting Unit Name: Upper Illinois

State(s): IL WI

Political Boundaries: Will, Cook, Du Page, Lake, Kenosha, Grundy, Racine

Major Waterways:
Des Plains R
Du Page R
Chicago Ship Canal
Calumet Sag Channel
Du Page R, W Br

Number of Stations in Watershed:
Tier1 - 61
Tier2 - 43
Tier3 - 6

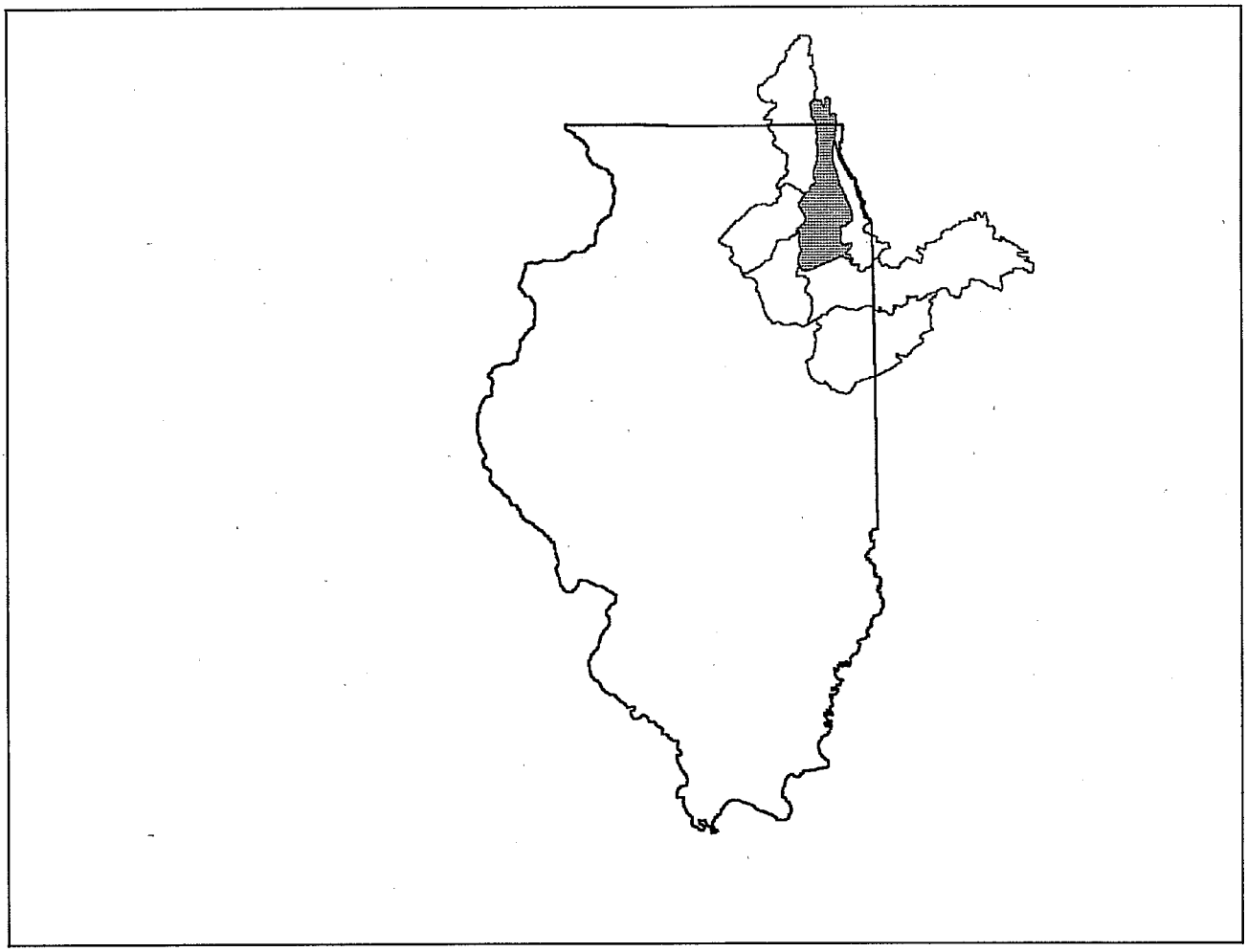

Figure 127. Watershed Location Map

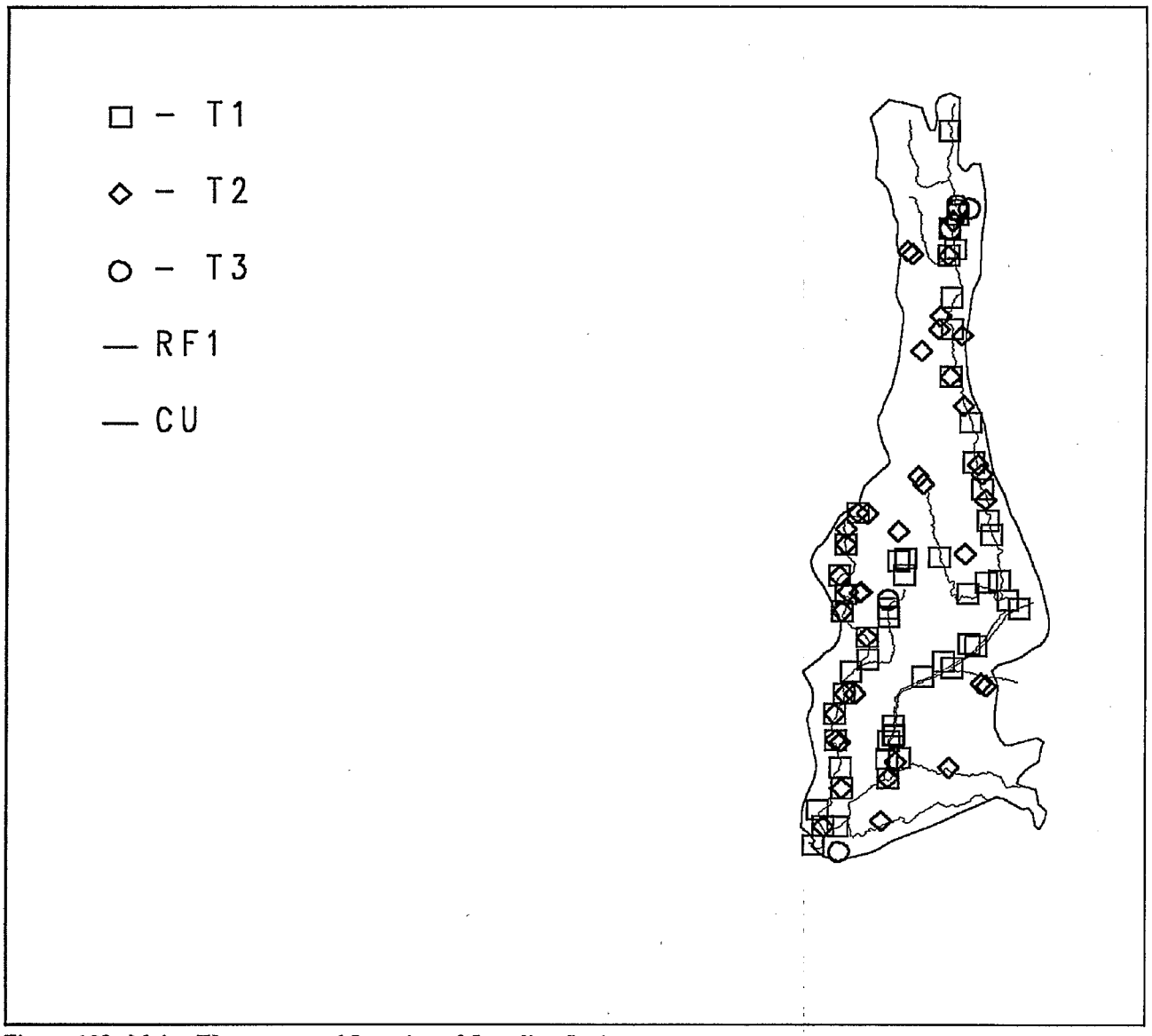

Figure 128. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 47 Date Range: 1980-91

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 19 Date Range: 1988-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 39 Date Range: 1980-89

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 4 Date Range: 1981-88

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	104	82	.	82	.	40	.	79
Polychlorinated biphenyls	107	78	54	24	10	15	44	34
DDT	104	61	11	50	11	28	.	43
Copper	58	57	.	57	.	57	.	.
Chlordane	104	51	.	51	.	30	.	44
Lead	58	48	.	48	.	48	.	.
Arsenic	58	36	.	36	.	36	.	.
Cadmium	58	36	.	36	.	36	.	.
Zinc	58	36	.	36	.	36	.	.
Mercury	60	30	12	18	12	18	.	.
Nickel	25	25	.	25	.	25	.	.
Heptachlor epoxide	103	12	.	12	.	.	.	12
Chromium	58	11	3	8	3	8	.	.
BHC	103	6	.	6	.	.	.	6
Aldrin	102	4	.	4	.	.	.	4
Silver	25	3	3	.	3	.	.	.
Dioxins	1	1	1	.	.	.	1	.
Heptachlor	103	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	70	0.00	0.00	0	.	.
Arsenic	76	10172.11	8000.00	76	49000.00	3200.00
BHC	184	0.00	0.00	0	.	.
Cadmium	76	10223.68	1000.00	49	290000.0	1000.00
Chlordane	303	3.83	0.00	117	56.00	2.00
Chromium	76	88448.68	38000.00	76	890000.0	10000.00
Copper	76	103657.9	54500.00	76	525000.0	17000.00
Dieldrin	71	4.59	3.30	49	28.00	1.00
DDT	497	12.68	0.00	137	540.00	1.00
Endrin	71	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor	71	0.00	0.00	0	.	.
Heptachlor epoxide	71	0.33	0.00	11	5.40	1.00
Hexachlorobenzene	71	0.04	0.00	1	2.60	2.60
Lead	76	126865.8	74000.00	76	750000.0	12000.00
Mercury	76	1003.42	210.00	68	17270.00	15.00
Methoxychlor	71	0.09	0.00	1	6.20	6.20
Nickel	25	37844.00	34000.00	25	135000.0	17000.00
Polychlorinated biphenyls	72	366.89	29.00	49	12000.00	10.00
Silver	25	1108.00	0.00	3	15800.00	4600.00
Zinc	76	440484.2	183000.0	76	5060000	62000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	95	0.59	0.00	4	26.00	10.00
Biphenyl	1	0.00	0.00	0	.	.
BHC	203	2.33	0.00	18	83.00	1.00
Chlordane	161	75.30	40.00	116	680.00	1.00
Chlorpyrifos/Dursban	20	50.10	31.50	20	179.00	11.00
Dicofol/Kelthane	1	3.10	3.10	1	3.10	3.10
Dieldrin	127	39.01	32.00	101	270.00	3.00
Dioxins	2	0.02	0.02	2	0.02	0.02
DDT	169	298.45	134.00	122	4800.00	10.00
Endrin	96	0.06	0.00	1	5.91	5.91
Heptachlor	96	0.53	0.00	1	51.00	51.00
Heptachlor epoxide	117	4.40	0.00	47	41.00	0.01
Hexachlorobenzene	105	0.50	0.00	4	25.00	0.01
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	4	81.00	62.00	4	160.00	40.00
Methoxychlor	96	0.00	0.00	0	.	.
Mirex/Dechlorane	96	0.61	0.00	2	50.00	8.63
Pentachlorobenzene	1	3.40	3.40	1	3.40	3.40
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	136	1390.36	670.50	112	10000.00	39.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	95	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Upper Fox 07120006

Watershed Summary Information

Accounting Unit Name:	Upper Illinois
State(s):	IL WI
Political Boundaries:	Mchenry, Racine, Lake, Waukesha, Walworth, Kenosha, Kane
Major Waterways:	Fox R White R Sugar Cr Wonder L Fox L
Number of Stations in Watershed:	Tier1 - 15 Tier2 - 40 Tier3 - 5

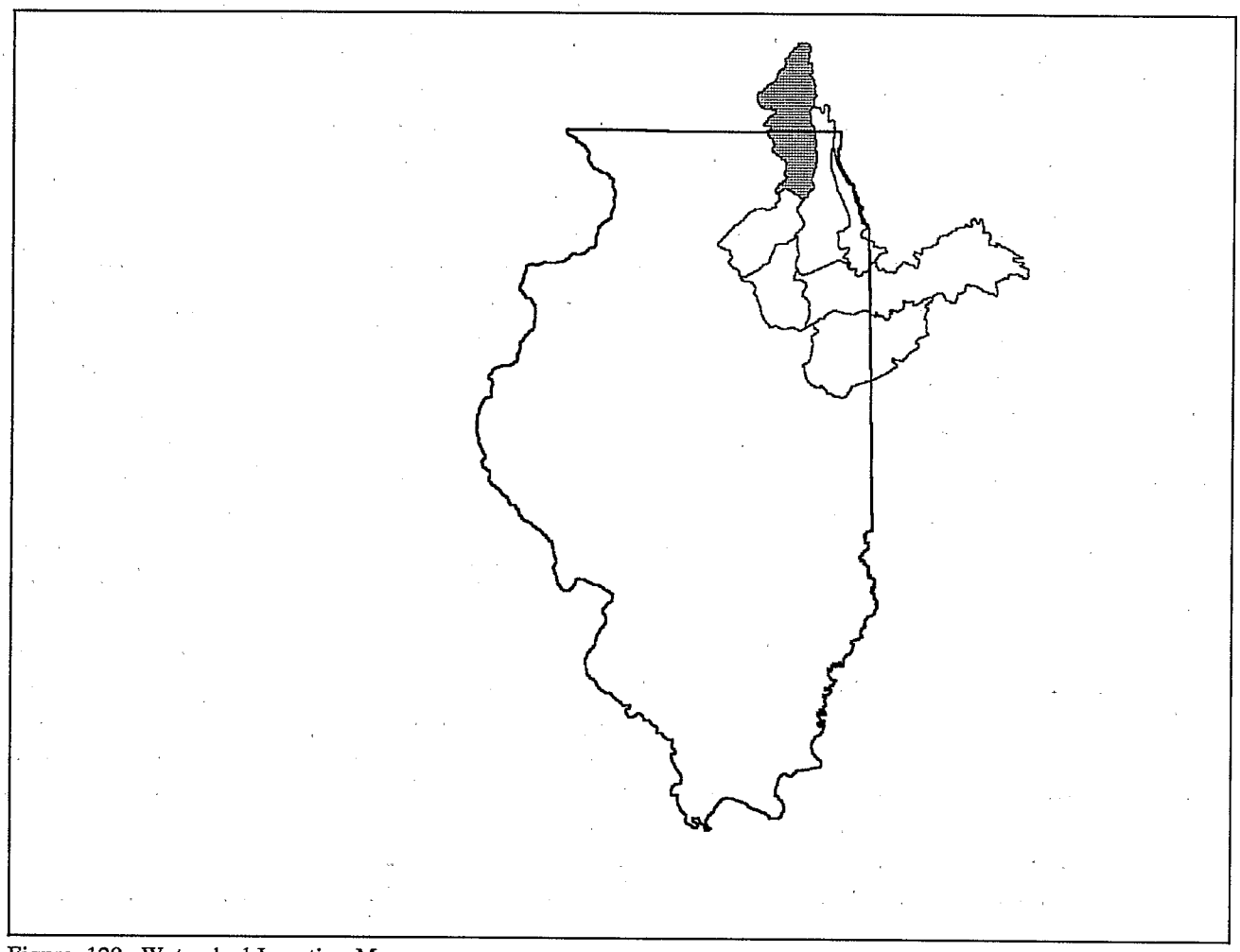

Figure 129. Watershed Location Map

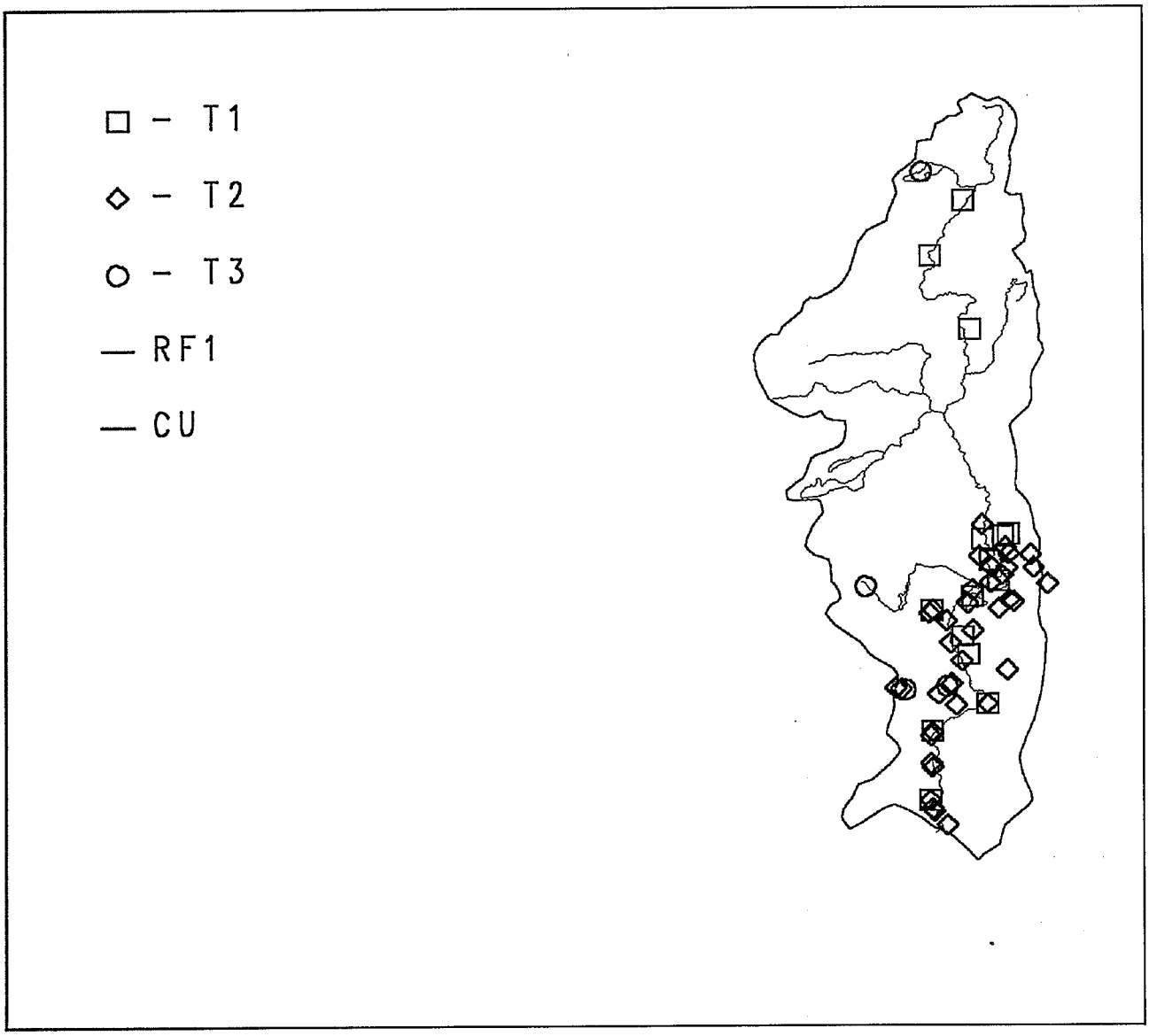

Figure 130. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 14 Date Range: 1980-91

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 25 Date Range: 1983-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 15 Date Range: 1980-82

Source: **STORET** Agency: **21ILSPEC**
Monitoring Program: **Special Sampling Done By COE For State of Illinois EPA Division of Water Pol Con**
Num. of Stations: 2 Date Range: 1984

Source: **STORET** Agency: **21WIS**
Monitoring Program: **Wisconsin DNR Div Env Protection Water And Sediment Data**
Num. of Stations: 1 Date Range: 1981-82

Source: **STORET** Agency: **21WITIS**
Monitoring Program: **Tissue Data Wisconsin Dept of Nat Res Div of Environ Protection**
Num. of Stations: 3 Date Range: 1981-85

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	45	32	.	32	.	32	.	.
Polychlorinated biphenyls	57	29	15	14	.	5	15	14
Lead	44	28	.	28	.	28	.	.
Cadmium	44	17	.	17	.	17	.	.
Dieldrin	56	16	.	16	.	8	.	16
Arsenic	45	14	.	14	.	14	.	.
DDT	55	13	.	13	.	11	.	5
Mercury	48	12	.	12	.	12	.	.
Zinc	42	11	.	11	.	11	.	.
Nickel	19	10	.	10	.	10	.	.
Chlordane	56	8	.	8	.	5	.	5
Aldrin	52	2	.	2	.	.	.	2
Heptachlor epoxide	53	2	.	2	.	.	.	2
BHC	49	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	40	0.00	0.00	0	.	.
Arsenic	50	6590.00	5000.00	50	25000.00	1000.00
BHC	95	0.00	0.00	0	.	.
Cadmium	50	896.00	0.00	21	4000.00	500.00
Chlordane	155	0.39	0.00	17	8.00	2.00
Chromium	50	15248.00	15350.00	50	34000.00	2500.00
Copper	50	31248.00	26950.00	50	87000.00	8000.00
Dieldrin	45	0.34	0.00	8	2.60	1.30
DDT	285	0.72	0.00	33	34.00	1.00
Endrin	40	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor	40	0.00	0.00	0	.	.
Heptachlor epoxide	45	0.10	0.00	2	2.70	1.90
Hexachlorobenzene	40	0.00	0.00	0	.	.
Lead	50	50224.00	41650.00	46	143000.0	10000.00
Mercury	50	106.96	70.00	36	580.00	5.00
Methoxychlor	40	0.00	0.00	0	.	.
Nickel	19	15068.42	17000.00	18	32900.00	3100.00
Polychlorinated biphenyls	45	10.29	0.00	15	140.00	13.00
Silver	19	0.00	0.00	0	.	.
Zinc	50	100288.0	94500.00	50	236400.0	20000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	78	1.01	0.00	3	60.00	0.06
Arsenic	11	0.00	0.00	0	.	.
BHC	146	0.65	0.00	5	41.00	8.00
Cadmium	10	0.00	0.00	0	.	.
Chlordane	142	20.49	2.50	72	489.00	2.00
Chlorpyrifos/Dursban	10	9.90	0.00	4	34.00	14.00
Chromium	10	0.00	0.00	0	.	.
Copper	11	1481.82	1500.00	11	1900.00	700.00
Dieldrin	102	2.89	0.00	20	28.00	1.00
DDT	153	78.92	60.00	108	1074.00	5.00
Endrin	78	0.13	0.00	1	10.00	10.00
Heptachlor	69	0.00	0.00	0	.	.
Heptachlor epoxide	84	0.49	0.00	9	26.00	0.01
Hexachlorobenzene	72	0.00	0.00	0	.	.
Lead	10	0.00	0.00	0	.	.
Mercury	14	180.71	150.00	14	500.00	30.00
Methoxychlor	78	0.00	0.00	0	.	.
Mirex/Dechlorane	59	0.00	0.00	0	.	.
Polychlorinated biphenyls	105	327.70	230.00	70	2300.00	47.00
Toxaphene	68	0.00	0.00	0	.	.

Lower Illinois-Senachwine Lake 07130001

Watershed Summary Information

Accounting Unit Name:	Lower Illinois
State(s):	IL
Political Boundaries:	Marshall, Woodford, La Salle, Putnam, Tazewell, Peoria, Bureau, Lee, De Kalb, Stark
Major Waterways:	Illinois R Big Bureau Cr Crow Cr Upper Peoria L Senachwine L
Number of Stations in Watershed:	Tier1 - 11 Tier2 - 10 Tier3 - .

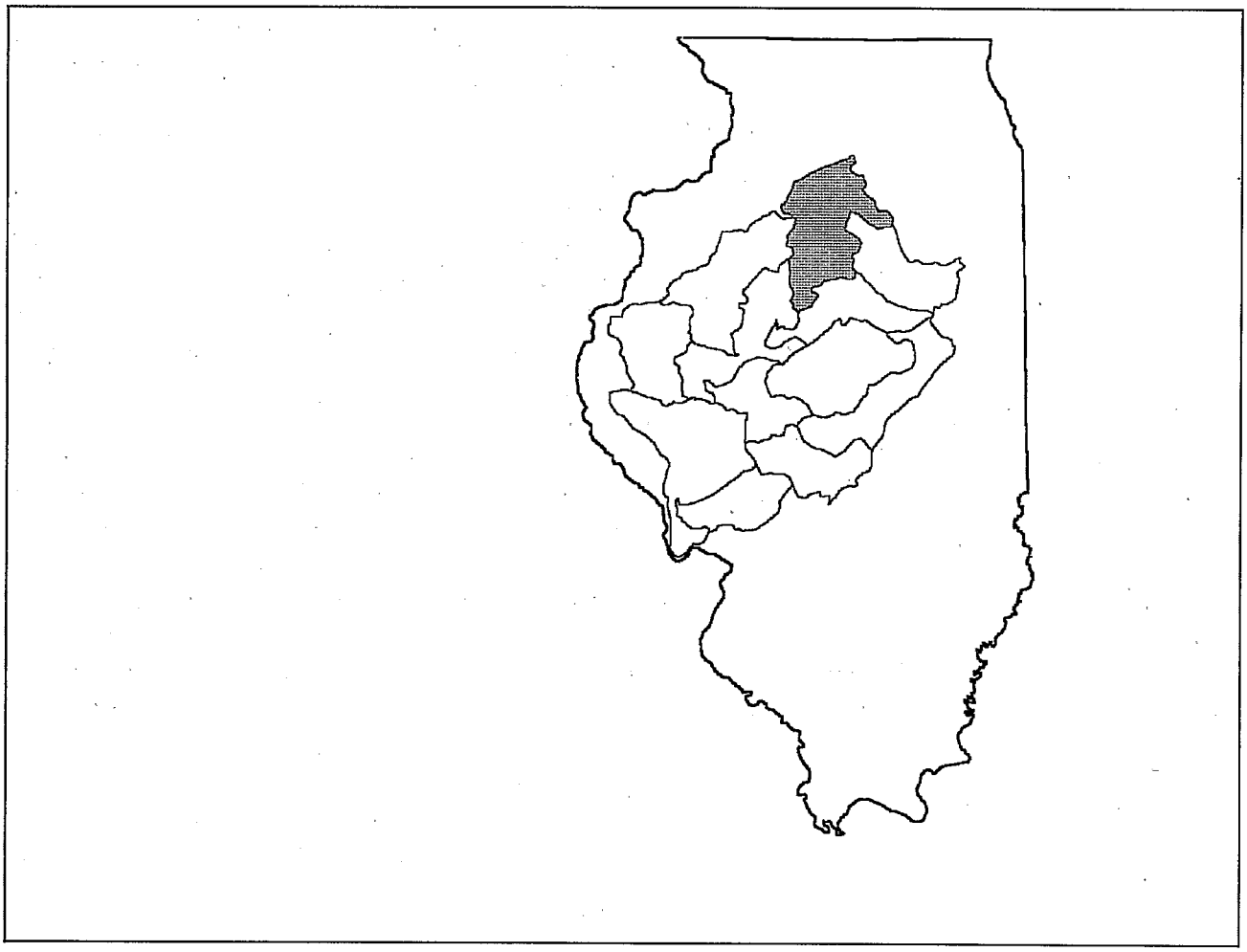

Figure 131. Watershed Location Map

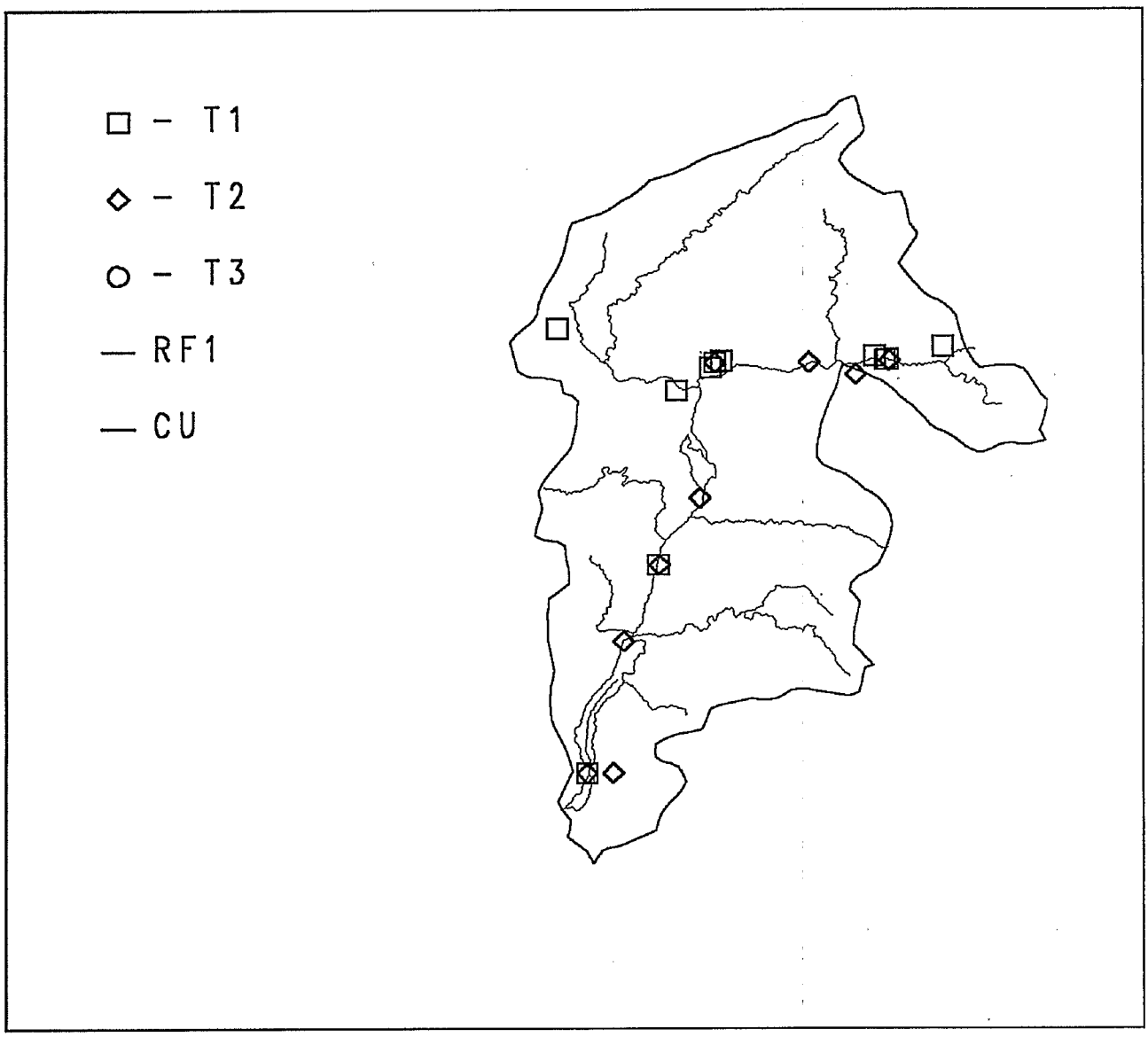

Figure 132. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11140100**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 9 Date Range: 1982-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 3 Date Range: 1983-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 8 Date Range: 1982-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	20	17	8	9	.	7	8	9
Dieldrin	20	13	.	13	.	4	.	13
Nickel	12	12	.	12	.	12	.	.
Copper	12	10	.	10	.	10	.	.
Zinc	12	10	.	10	.	10	.	.
Mercury	12	9	3	6	3	6	.	.
Lead	12	8	.	8	.	8	.	.
DDT	20	7	.	7	.	4	.	3
Arsenic	12	6	.	6	.	6	.	.
Chlordane	20	6	.	6	.	.	.	6
Cadmium	12	5	.	5	.	5	.	.
Heptachlor epoxide	20	5	.	5	.	.	.	5
Aldrin	19	4	.	4	.	.	.	4
Chromium	12	4	.	4	.	4	.	.
Silver	12	4	.	4	.	4	.	.
BHC	19	2	.	2	.	.	.	2
Heptachlor	19	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	12	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	21	8347.62	9100.00	21	18000.00	1000.00
BHC	25	0.00	0.00	0	.	.
Cadmium	21	10047.62	2000.00	12	53000.00	2000.00
Chlordane	44	0.00	0.00	0	.	.
Chromium	21	39642.86	41900.00	21	56300.00	14600.00
Copper	21	79109.52	63100.00	21	324000.0	13000.00
Dieldrin	18	2.34	1.25	9	8.90	2.50
DDT	90	0.36	0.00	5	13.00	1.40
Endrin	12	0.00	0.00	0	.	.
Heptachlor	12	0.00	0.00	0	.	.
Heptachlor epoxide	18	0.00	0.00	0	.	.
Hexachlorobenzene	12	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	21	56961.90	49000.00	21	160000.0	5000.00
Mercury	20	398.50	235.00	19	1784.00	46.00
Methoxychlor	12	0.00	0.00	0	.	.
Nickel	14	29235.71	27100.00	14	42400.00	16000.00
Polychlorinated biphenyls	18	21.30	20.50	14	55.00	14.00
Silver	14	598.57	0.00	6	2400.00	500.00
Zinc	21	4471524	200000.0	21	40870000	44000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	50	2.78	0.00	8	38.00	6.00
BHC	102	1.20	0.00	12	37.00	1.00
Chlordane	57	92.42	55.00	52	770.00	7.00
Chlorpyrifos/Dursban	2	15.00	15.00	2	19.00	11.00
Dieldrin	54	64.44	48.50	50	280.00	1.00
DDT	54	150.80	110.00	51	800.00	4.00
Endrin	51	0.00	0.00	0	.	.
Heptachlor	51	1.16	0.00	2	34.00	25.00
Heptachlor epoxide	54	6.61	0.00	25	91.00	0.02
Hexachlorobenzene	51	0.31	0.00	1	16.00	16.00
Mercury	1	170.00	170.00	1	170.00	170.00
Methoxychlor	51	1.12	0.00	1	57.00	57.00
Mirex/Dechlorane	51	0.00	0.00	0	.	.
Polychlorinated biphenyls	54	812.63	445.00	42	5600.00	50.00
Toxaphene	51	0.00	0.00	0	.	.

Cahokia-Joachim 07140101

Watershed Summary Information

Accounting Unit Name: Upper Mississippi-Meramec

State(s): IL MO

Political Boundaries: Madison, Monroe, St Louis, Ste Genevieve, St Clair, Jefferson, Macoupin, Randolph, St Francois, St Charles, St Louis City.

Major Waterways:
Mississippi R
Cahokia Canal
Establishment Cr
Joachim Cr
Platin Cr

Number of Stations in Watershed:
Tier1 - 18
Tier2 - 34
Tier3 - 4

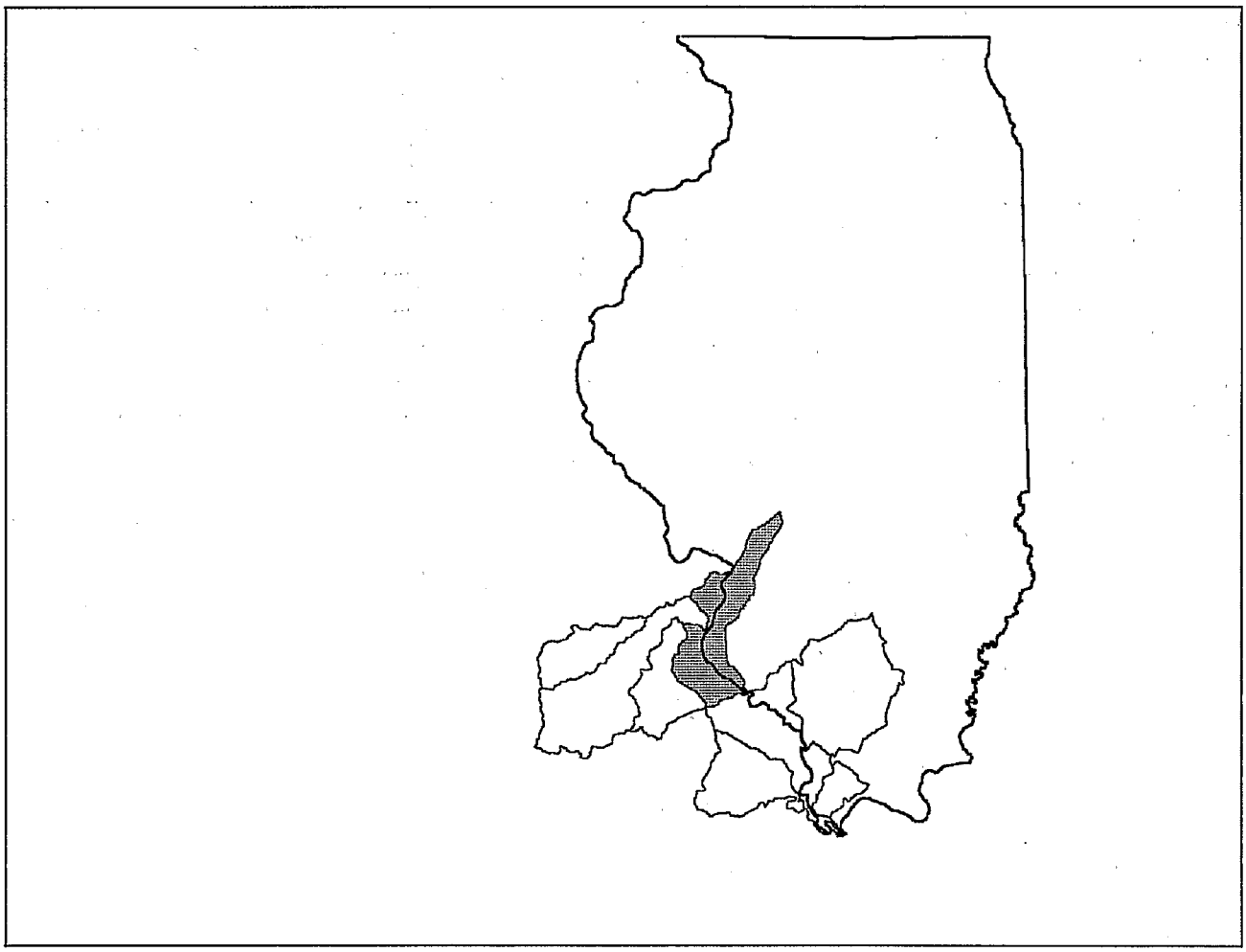

Figure 133. Watershed Location Map

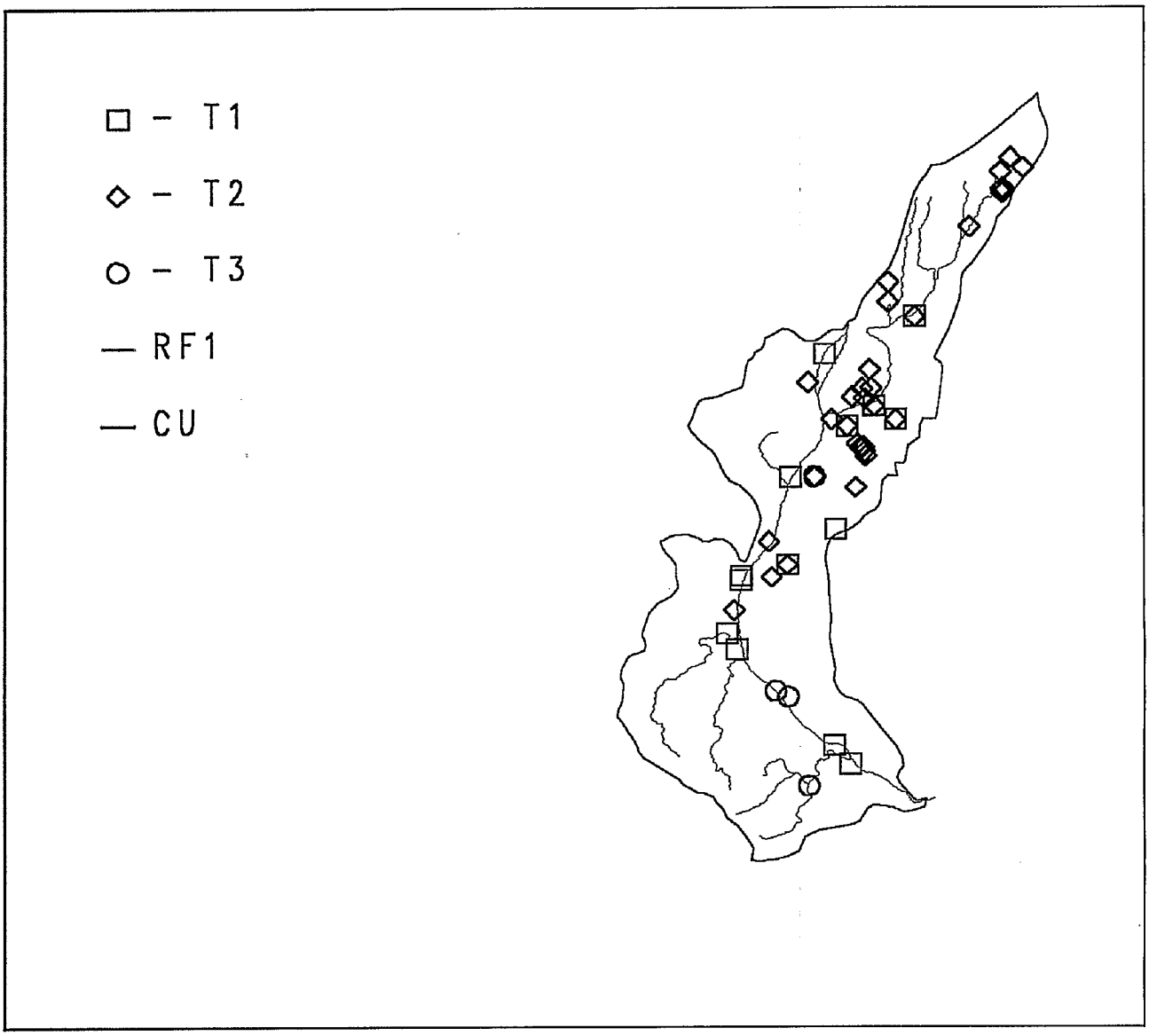

Figure 134. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1986-89

Source: **STORET** Agency: **1117MBR**
Monitoring Program: **USEPA Region 7 Data**
Num. of Stations: 11 Date Range: 1981-91

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 12 Date Range: 1980-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 13 Date Range: 1982-93

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 19 Date Range: 1984-88

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	50	37	.	37	.	21	.	37
Chlordane	52	35	.	35	.	20	.	31
Copper	38	25	.	25	.	25	.	.
Lead	39	23	.	23	.	23	.	.
Polychlorinated biphenyls	50	22	11	11	.	6	11	11
Zinc	37	21	.	21	.	21	.	.
Cadmium	38	17	.	17	.	17	.	.
Arsenic	39	16	.	16	.	16	.	.
Heptachlor epoxide	50	14	.	14	.	.	.	14
Mercury	42	12	4	8	4	8	.	.
DDT	50	10	2	8	2	6	.	4
Nickel	14	9	.	9	.	9	.	.
Dioxins	10	5	5	.	.	.	5	.
Chromium	37	4	1	3	1	3	.	.
Silver	13	2	.	2	.	2	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	46	0.02	0.00	1	1.00	1.00
Anthracene	1	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	72	7888.89	6500.00	71	44000.00	3700.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	108	0.00	0.00	0	.	.
Cadmium	72	5420.83	300.00	37	91000.00	300.00
Chlordane	214	3.54	0.00	81	110.00	1.20
Chlorobenzene	1	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Chromium	72	26608.33	18000.00	72	293000.0	8100.00
Chrysene	1	0.00	0.00	0	.	.
Copper	72	108225.0	35000.00	72	1100000	7900.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	66	4.08	1.35	37	79.00	1.00
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	341	1.21	0.00	29	150.00	1.20
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	47	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	46	0.00	0.00	0	.	.
Heptachlor epoxide	66	0.50	0.00	13	9.00	1.00
Hexachlorobenzene	46	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	72	79176.39	39500.00	72	420000.0	2700.00
Malathion	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Mercury	72	129.94	50.00	62	1217.00	10.00
Methoxychlor	46	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	15	29240.00	29000.00	15	54900.00	13000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	1	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	72	5.94	0.00	14	75.00	10.00
Pyrene	1	0.00	0.00	0	.	.
Silver	15	333.33	0.00	3	2000.00	1000.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	1	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	72	562487.5	134200.0	72	4100000	38000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	2	0.00	0.00	0	.	.
Acrolein	2	0.00	0.00	0	.	.
Acrylonitrile	2	0.00	0.00	0	.	.
Alachlor/Lasso	3	0.00	0.00	0	.	.
Aldrin	66	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	2	0.00	0.00	0	.	.
Arsenic	8	0.00	0.00	0	.	.
Atrazine	4	0.00	0.00	0	.	.
Barium	4	4622.50	4560.00	4	6600.00	2770.00
Benzene	4	3.00	0.00	1	12.00	12.00
Benzidine	2	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(b)fluoranthene	2	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Beryllium	3	0.00	0.00	0	.	.
Biphenyl	3	20.86	5.63	3	53.80	3.16
Bis(2-chloroethyl)ether	2	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Bromodichloromethane	2	0.00	0.00	0	.	.
Bromomethane	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	145	0.00	0.00	0	.	.
Cadmium	5	131.60	62.00	4	370.00	56.00
Chlordane	118	131.12	60.00	103	1700.00	2.80
Chlorobenzene	2	415.00	415.00	2	530.00	300.00
Chloroethane	2	0.00	0.00	0	.	.
Chloroethene	4	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	2	0.00	0.00	0	.	.
Chloromethane	2	0.00	0.00	0	.	.
Chloronaphthalene, 2-	2	0.00	0.00	0	.	.
Chlorophenol, 2-	2	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	5	5.49	7.22	3	12.80	7.22
Chromium	4	409.50	424.00	4	470.00	320.00
Chrysene	2	0.00	0.00	0	.	.
Copper	7	433.14	618.00	4	1100.00	618.00
Cyanazine	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	2	0.00	0.00	0	.	.
Dibromochloromethane	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	2	0.00	0.00	0	.	.
Dichlorodifluoromethane	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	2	0.00	0.00	0	.	.
Dichloroethane 1,2-	4	1.75	0.00	1	7.00	7.00
Dichloroethene, trans-1,2-	2	0.00	0.00	0	.	.
Dichloroethene, 1,1-	4	0.00	0.00	0	.	.
Dichloromethane	2	19.50	19.50	1	39.00	39.00
Dichlorophenol, 2,4-	2	0.00	0.00	0	.	.
Dichloropropane, 1,2-	2	0.00	0.00	0	.	.
Dicofol/Kelthane	3	0.00	0.00	0	.	.
Dieldrin	76	60.27	39.50	66	390.00	10.00
Diethyl phthalate	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	2	0.00	0.00	0	.	.
Dioxins	37	0.02	0.01	27	0.07	0.00
Diphenylhydrazine, 1,2-	2	0.00	0.00	0	.	.
DDT	91	66.30	26.00	63	1000.00	6.50
Endosulfan, alpha-	5	0.00	0.00	0	.	.
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	69	0.00	0.00	0	.	.
Ethylbenzene	2	58.50	58.50	2	59.00	58.00
Fluoranthene	2	0.00	0.00	0	.	.
Fluorene	2	0.00	0.00	0	.	.
Fonofos	2	0.00	0.00	0	.	.
Heptachlor	69	0.11	0.00	1	7.50	7.50
Heptachlor epoxide	75	8.40	0.03	40	56.00	0.01
Hexachlorobenzene	68	0.06	0.00	1	3.82	3.82
Hexachlorobutadiene	6	5.09	5.76	4	10.50	2.99
Hexachloroethane	2	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	2	0.00	0.00	0	.	.
Isophorone	2	0.00	0.00	0	.	.
Isopropalin	3	0.00	0.00	0	.	.
Lead	8	100.00	40.00	4	510.00	80.00
Malathion	2	0.00	0.00	0	.	.
Manganese	3	6556.67	6700.00	3	8810.00	4160.00
Mercury	17	69.69	70.10	16	130.00	26.70
Methoxychlor	67	0.00	0.00	0	.	.
Metribuzin	2	0.00	0.00	0	.	.
Mirex/Dechlorane	66	0.52	0.00	1	34.30	34.30
Molybdenum	3	48.33	0.00	1	145.00	145.00
Naphthalene	2	0.00	0.00	0	.	.
Nickel	4	109.50	0.00	1	438.00	438.00
Nitrobenzene	2	0.00	0.00	0	.	.
Nitrophenol, 4	1	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	2	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Parathion ethyl	2	0.00	0.00	0	.	.
Pentachlorobenzene	3	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	88	232.96	0.00	40	3000.00	35.00
Prometon/Pramitol	2	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Pyrene	2	0.00	0.00	0	.	.
Selenium	2	505.00	505.00	2	740.00	270.00
Silver	3	0.00	0.00	0	.	.
Simazine	2	0.00	0.00	0	.	.
Styrene	2	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	4	0.00	0.00	0	.	.
Tetrachloroethene	4	17.75	13.00	2	45.00	26.00
Tetrachloromethane	4	0.00	0.00	0	.	.
Toluene	2	105.00	105.00	2	160.00	50.00
Toxaphene	66	0.00	0.00	0	.	.
Tribromomethane/Bromoform	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	5	1.00	0.00	1	4.98	4.98
Trichloroethane, 1,1,1-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	4	0.00	0.00	0	.	.
Trichloroethene	4	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	4	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	2	0.00	0.00	0	.	.
Trifluralin/Treflan	4	36.03	42.80	3	58.50	33.10
Vanadium	3	250.67	140.00	3	482.00	130.00
Zinc	4	35025.00	33300.00	4	61000.00	12500.00

Big Muddy 07140106

Watershed Summary Information

Accounting Unit Name: Upper Mississippi-Meramec

State(s): IL

Political Boundaries: Jackson, Williamson, Franklin, Jefferson, Perry, Union, Washington, Hamilton, Johnson, Perry

Major Waterways:
Rend L
Beaucoup Cr
Crab Orchard Cr
Rend L
Crab Orchard L

Number of Stations in Watershed:
Tier1 - 23
Tier2 - 65
Tier3 - 6

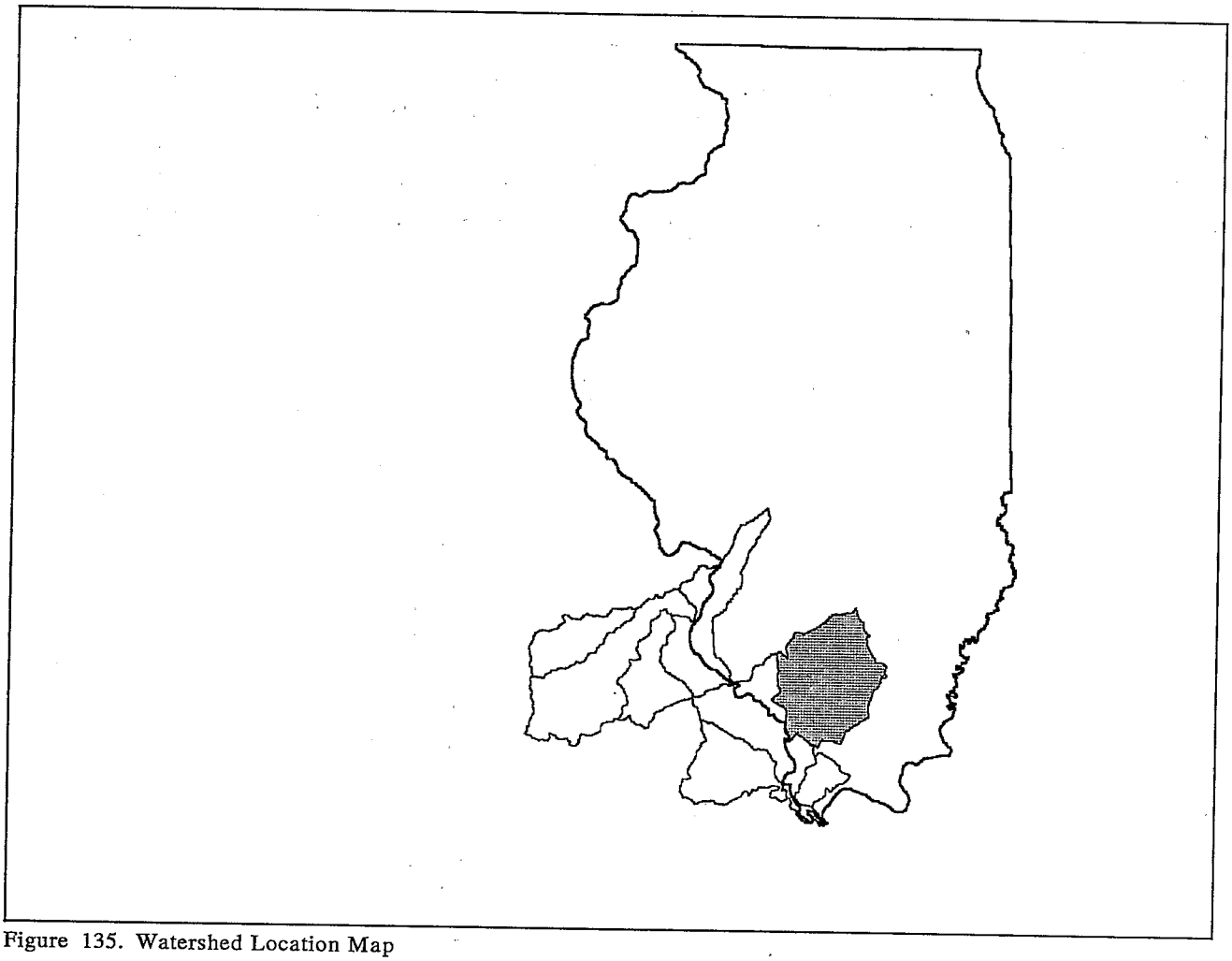

Figure 135. Watershed Location Map

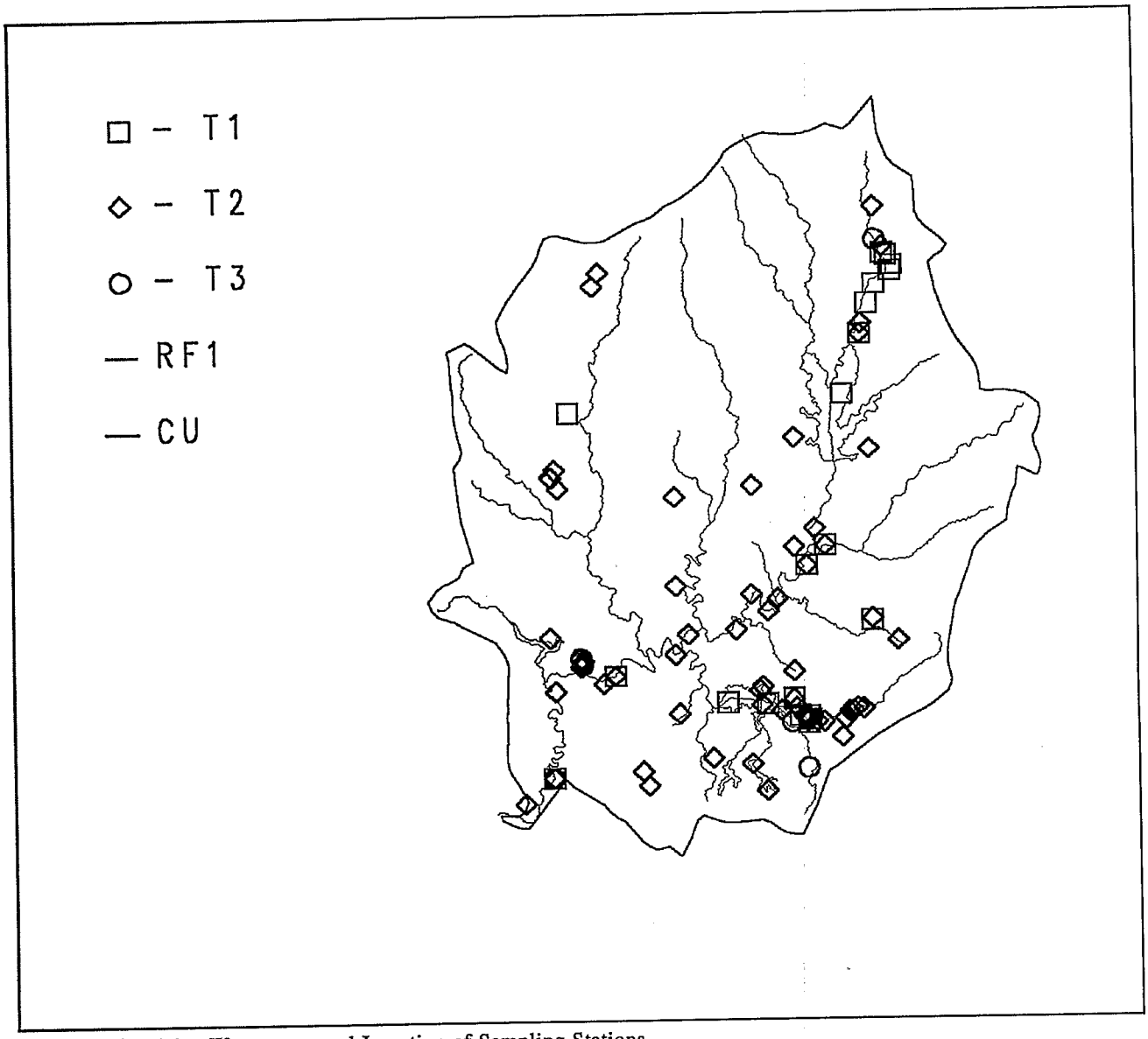

Figure 136. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1981-82

Source: **STORET** Agency: **21ILAMB**
Monitoring Program: **Illinois EPA Ambient Water Quality Monitoring Data**
Num. of Stations: 1 Date Range: 1981-82

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 16 Date Range: 1980-92

Source: **STORET** Agency: **21ILLAKE**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 41 Date Range: 1981-93

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 34 Date Range: 1980-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	75	42	.	42	.	42	.	.
Cadmium	72	39	.	39	.	39	.	.
Copper	72	39	.	39	.	39	.	.
Polychlorinated biphenyls	91	33	20	13	8	9	12	21
Dieldrin	88	32	.	32	.	17	.	30
Chlordane	86	26	.	26	.	14	.	23
Arsenic	72	24	2	22	2	22	.	.
Nickel	24	22	.	22	.	22	.	.
Mercury	85	16	2	14	2	14	.	.
Zinc	72	15	.	15	.	15	.	.
DDT	86	12	.	12	.	7	.	7
Heptachlor epoxide	87	9	.	9	.	.	.	9
Chromium	72	2	.	2	.	2	.	.
Aldrin	69	1	.	1	.	.	.	1
Silver	24	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	83	0.00	0.00	0	.	.
Arsenic	120	10169.17	5200.00	120	271900.0	2000.00
BHC	166	0.00	0.00	0	.	.
Cadmium	120	1850.00	0.00	49	48000.00	900.00
Chlordane	306	1.11	0.00	41	38.00	1.60
Chromium	120	18697.50	17000.00	120	75000.00	7000.00
Copper	120	24312.50	19000.00	120	116000.0	5800.00
Dieldrin	122	0.37	0.00	25	4.50	1.00
DDT	604	0.34	0.00	24	33.00	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan mixed isomers	4	0.00	0.00	0	.	.
Endrin	83	0.01	0.00	1	1.00	1.00
Heptachlor	82	0.00	0.00	0	.	.
Heptachlor epoxide	121	0.13	0.00	8	4.00	1.10
Hexachlorobenzene	79	0.00	0.00	0	.	.
Lead	120	35065.00	30000.00	117	140000.0	8000.00
Mercury	121	187.29	77.00	110	9610.00	13.00
Methoxychlor	83	0.00	0.00	0	.	.
Mirex/Dechlorane	4	0.00	0.00	0	.	.
Nickel	29	25965.52	24000.00	29	47000.00	12000.00
Polychlorinated biphenyls	132	221.52	0.00	35	11000.00	4.00
Silver	29	34.48	0.00	1	1000.00	1000.00
Toxaphene	4	0.00	0.00	0	.	.
Zinc	120	101225.0	87850.00	120	490000.0	26600.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	295	0.03	0.00	1	10.00	10.00
BHC	560	0.04	0.00	2	10.00	10.00
Chlordane	324	45.55	23.50	205	530.00	10.00
Dieldrin	340	17.47	0.00	160	870.00	10.00
DDT	330	77.49	28.50	252	1750.00	10.00
Endrin	295	0.00	0.00	0	.	.
Heptachlor	296	0.00	0.00	0	.	.
Heptachlor epoxide	324	2.13	0.00	68	57.00	0.01
Hexachlorobenzene	277	0.04	0.00	1	10.00	10.00
Lead	10	96.00	50.00	10	290.00	30.00
Mercury	74	110.95	100.00	73	440.00	10.00
Methoxychlor	281	0.07	0.00	2	10.00	10.00
Mirex/Dechlorane	277	0.00	0.00	0	.	.
Polychlorinated biphenyls	306	642.09	270.00	197	11000.00	100.00
Toxaphene	281	0.00	0.00	0	.	.

Upper Kaskaskia 07140201

Watershed Summary Information

Accounting Unit Name:	Kaskaskia
State(s):	IL
Political Boundaries:	Moultrie, Shelby, Fayette, Piatt, Douglas, Champaign, Coles, Christian
Major Waterways:	Kaskaskia R W Okaw R Kaskaskia R, Lake Fk Becks Cr L Shelbyville
Number of Stations in Watershed:	Tier1 - 31 Tier2 - 24 Tier3 - .

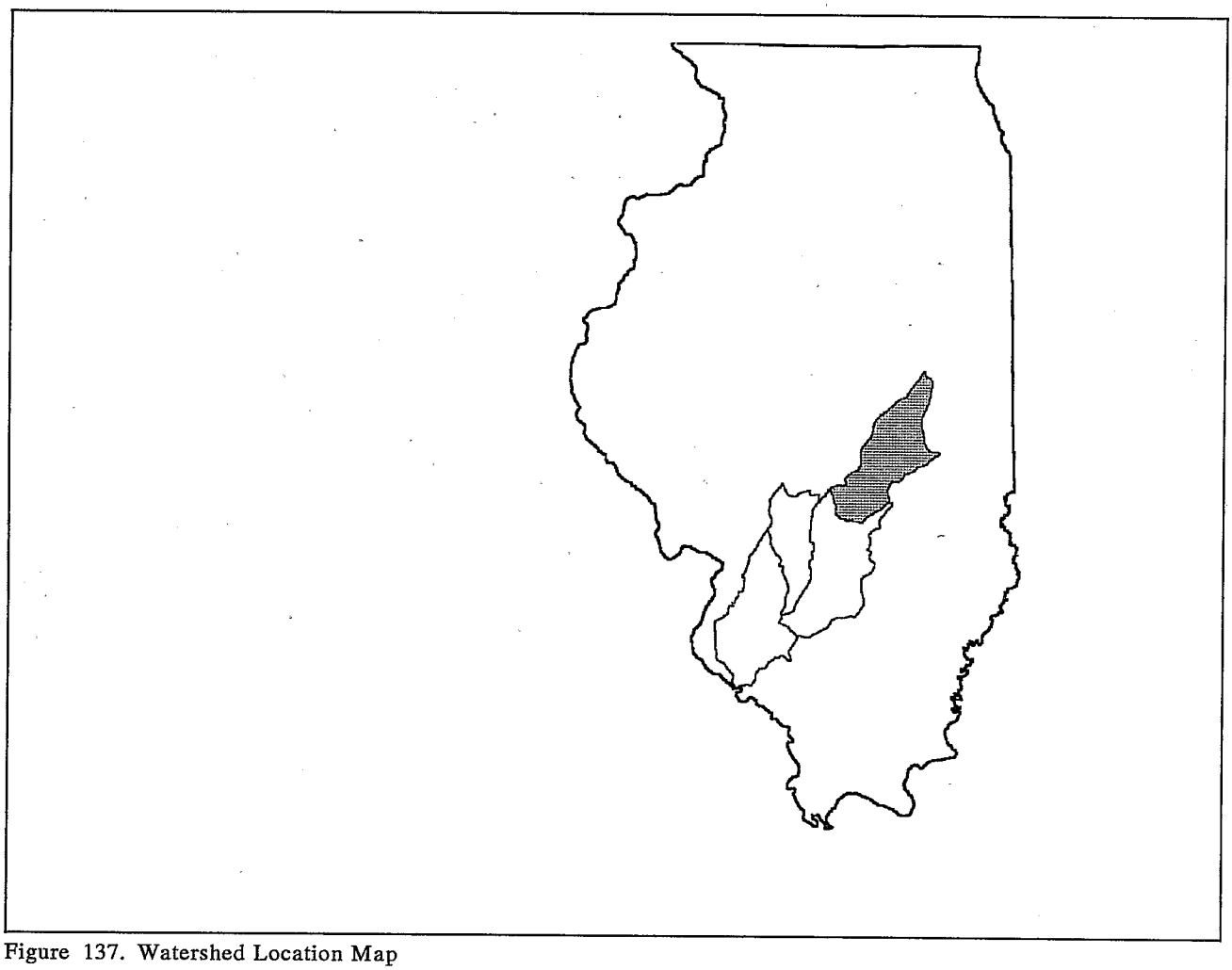

Figure 137. Watershed Location Map

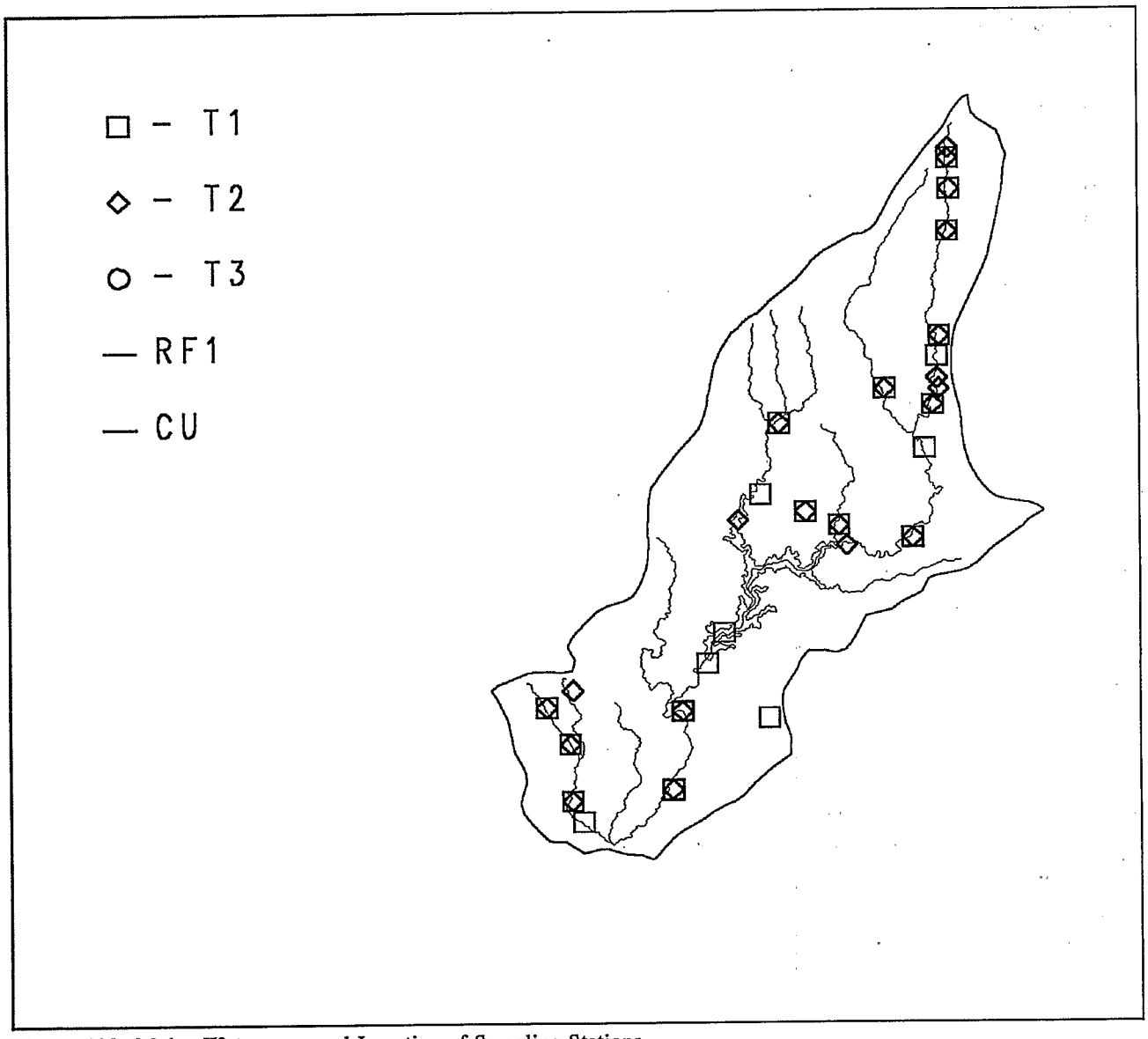

Figure 138. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **GR. LAKE** Agency: **11**
Monitoring Program: **Illinois EPA**
Num. of Stations: 14 Date Range: 1983

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 20 Date Range: 1980-92

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 21 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	52	52	14	38	14	18	.	52
Chlordane	49	45	.	45	.	26	.	42
Heptachlor epoxide	46	30	.	30	.	.	.	30
Polychlorinated biphenyls	44	29	23	6	6	2	17	12
Copper	35	5	.	5	.	5	.	.
Lead	35	4	.	4	.	4	.	.
Mercury	34	4	.	4	.	4	.	.
Aldrin	38	2	.	2	.	.	.	2
BHC	38	2	.	2	.	1	.	1
Arsenic	35	1	.	1	.	1	.	.
Heptachlor	38	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	29	0.00	0.00	0	.	.
Arsenic	47	4731.91	4900.00	47	9200.00	2800.00
BHC	86	0.01	0.00	1	1.00	1.00
Cadmium	47	0.00	0.00	0	.	.
Chlordane	154	826.00	0.00	71	46000.00	1.20
Chromium	47	15829.79	16000.00	47	29000.00	2000.00
Copper	47	14361.70	16000.00	47	22000.00	4000.00
Dieldrin	43	2742.84	9.30	43	27000.00	1.90
DDT	203	0.00	0.00	0	.	.
Endrin	29	0.00	0.00	0	.	.
Heptachlor	29	0.00	0.00	0	.	.
Heptachlor epoxide	37	815.35	1.80	24	17000.00	1.10
Hexachlorobenzene	29	0.00	0.00	0	.	.
Lead	47	61531.91	18000.00	46	1600000	8000.00
Mercury	36	95.00	40.00	36	550.00	20.00
Methoxychlor	29	0.17	0.00	1	5.00	5.00
Nickel	4	12750.00	14000.00	4	14000.00	9000.00
Polychlorinated biphenyls	35	2836.34	0.00	14	34000.00	10.00
Silver	4	0.00	0.00	0	.	.
Zinc	47	61744.68	61000.00	47	120000.0	30000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	88	0.55	0.00	3	21.00	10.00
BHC	177	0.29	0.00	3	36.00	4.80
Chlordane	120	212.34	139.00	115	1440.00	10.00
Dieldrin	121	154.51	98.00	112	1100.00	10.00
DDT	108	39.67	24.50	88	230.00	10.00
Endrin	89	0.00	0.00	0	.	.
Heptachlor	88	0.51	0.00	2	30.00	15.00
Heptachlor epoxide	109	25.27	13.00	85	280.00	0.01
Hexachlorobenzene	88	0.11	0.00	1	10.00	10.00
Mercury	33	82.42	70.00	33	220.00	20.00
Methoxychlor	89	0.00	0.00	0	.	.
Mirex/Dechlorane	88	0.00	0.00	0	.	.
Polychlorinated biphenyls	89	194.17	0.00	39	6600.00	103.00
Toxaphene	89	0.00	0.00	0	.	.

Middle Kaskaskia 07140202

Watershed Summary Information

Accounting Unit Name:	Kaskaskia
State(s):	IL
Political Boundaries:	Fayette, Clinton, Washington, Bond, Marion, Montgomery
Major Waterways:	Kaskaskia R Crooked Cr Hurricane Cr Kaskaskia Cr, E Fk Carlyle L
Number of Stations in Watershed:	Tier1 - 13 Tier2 - 22 Tier3 - 3

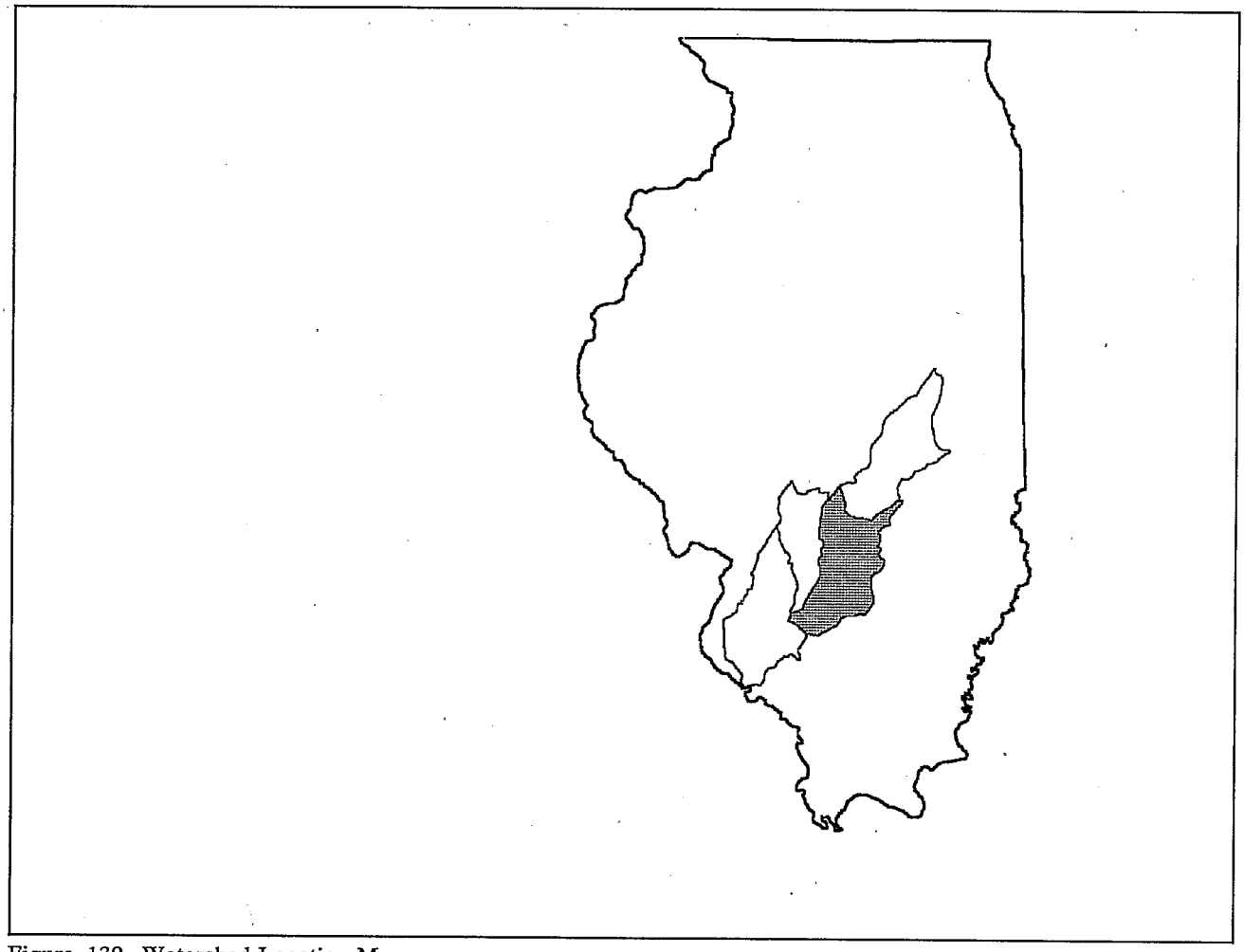

Figure 139. Watershed Location Map

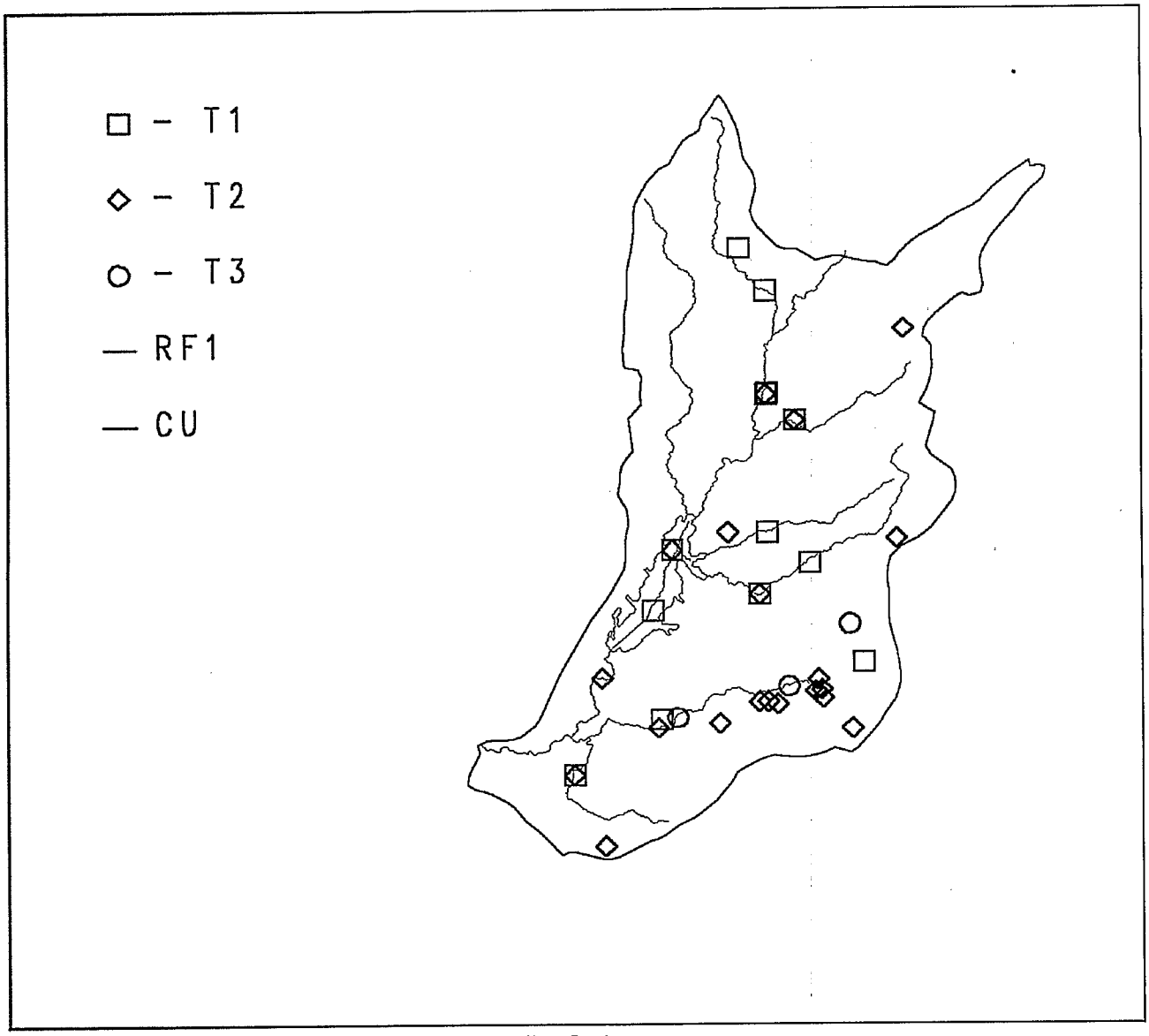

Figure 140. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: GR. LAKE Agency: 11
Monitoring Program: Illinois EPA
Num. of Stations: 9 Date Range: 1982-83

Source: STORET Agency: 21ILFISH
Monitoring Program: USEPA Region 5 Data
Num. of Stations: 8 Date Range: 1980-91

Source: STORET Agency: 21ILLAKE
Monitoring Program: USEPA Region 5 Data
Num. of Stations: 8 Date Range: 1985-93

Source: **STORET** Agency: **21ILSED**
Monitoring Program: **Illinois EPA Div of Water Pollution Control Data**
Num. of Stations: 13 Date Range: 1980-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	36	29	8	21	8	14	.	26
Copper	30	15	.	15	.	15	.	.
Polychlorinated biphenyls	29	11	5	6	1	5	4	7
Chlordane	28	10	.	10	.	5	.	8
Lead	30	10	.	10	.	10	.	.
Heptachlor epoxide	28	8	.	8	.	.	.	8
Arsenic	30	7	.	7	.	7	.	.
Nickel	11	7	.	7	.	7	.	.
Cadmium	30	6	.	6	.	6	.	.
Mercury	25	5	1	4	1	4	.	.
Zinc	30	5	.	5	.	5	.	.
DDT	28	3	.	3	.	2	.	1
Aldrin	28	2	.	2	.	.	.	2
BHC	28	1	.	1	.	.	.	1
Chromium	30	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	30	0.00	0.00	0	.	.
Arsenic	52	5707.69	5000.00	52	14300.00	2200.00
BHC	77	0.00	0.00	0	.	.
Cadmium	52	634.62	0.00	11	12000.00	1000.00
Chlordane	130	1.50	0.00	13	61.00	2.10
Chromium	52	18115.38	15000.00	52	58000.00	10000.00
Copper	52	112019.2	21500.00	52	888000.0	6000.00
Dieldrin	42	399.08	1.85	32	5000.00	1.00
DDT	214	0.09	0.00	7	5.10	1.50
Endrin	30	0.00	0.00	0	.	.
Heptachlor	29	0.00	0.00	0	.	.
Heptachlor epoxide	33	0.22	0.00	2	4.80	2.40
Hexachlorobenzene	30	0.00	0.00	0	.	.
Lead	52	28576.92	24000.00	51	150000.0	6000.00
Mercury	43	153.98	40.00	34	2100.00	11.00
Methoxychlor	30	0.17	0.00	1	5.00	5.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Nickel	21	19666.67	21000.00	21	27000.00	10000.00
Polychlorinated biphenyls	35	498.83	0.00	8	17000.00	17.00
Silver	21	0.00	0.00	0	.	.
Zinc	52	81346.15	76000.00	52	191000.0	40000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	69	0.70	0.00	4	14.00	10.00
BHC	139	0.13	0.00	1	18.00	18.00
Chlordane	102	136.69	110.00	94	720.00	10.00
Dieldrin	99	83.92	50.00	93	570.00	10.00
DDT	94	59.71	30.00	77	1310.00	10.00
Endrin	70	0.00	0.00	0	.	.
Heptachlor	70	0.00	0.00	0	.	.
Heptachlor epoxide	87	16.80	0.02	60	170.00	0.01
Hexachlorobenzene	69	0.00	0.00	0	.	.
Mercury	38	79.21	55.00	37	210.00	20.00
Methoxychlor	70	1.43	0.00	2	50.00	50.00
Mirex/Dechlorane	70	0.00	0.00	0	.	.
Polychlorinated biphenyls	70	130.81	0.00	16	4700.00	107.00
Toxaphene	70	0.00	0.00	0	.	.

Lower Mississippi-Memphis 08010100

Watershed Summary Information

Accounting Unit Name:	Lower Mississippi-Memphis
State(s):	TN KY MO AR MS
Political Boundaries:	Shelby, Lauderdale, Crittenden, Mississippi, Mississippi, Fulton, Tipton, Lake, New Madrid, Ballard, Obion, Carlisle, Dyer, Pemiscot, Hickman, De Soto
Major Waterways:	Mississippi R
Number of Stations in Watershed:	Tier1 - 14 Tier2 - 3 Tier3 - 3

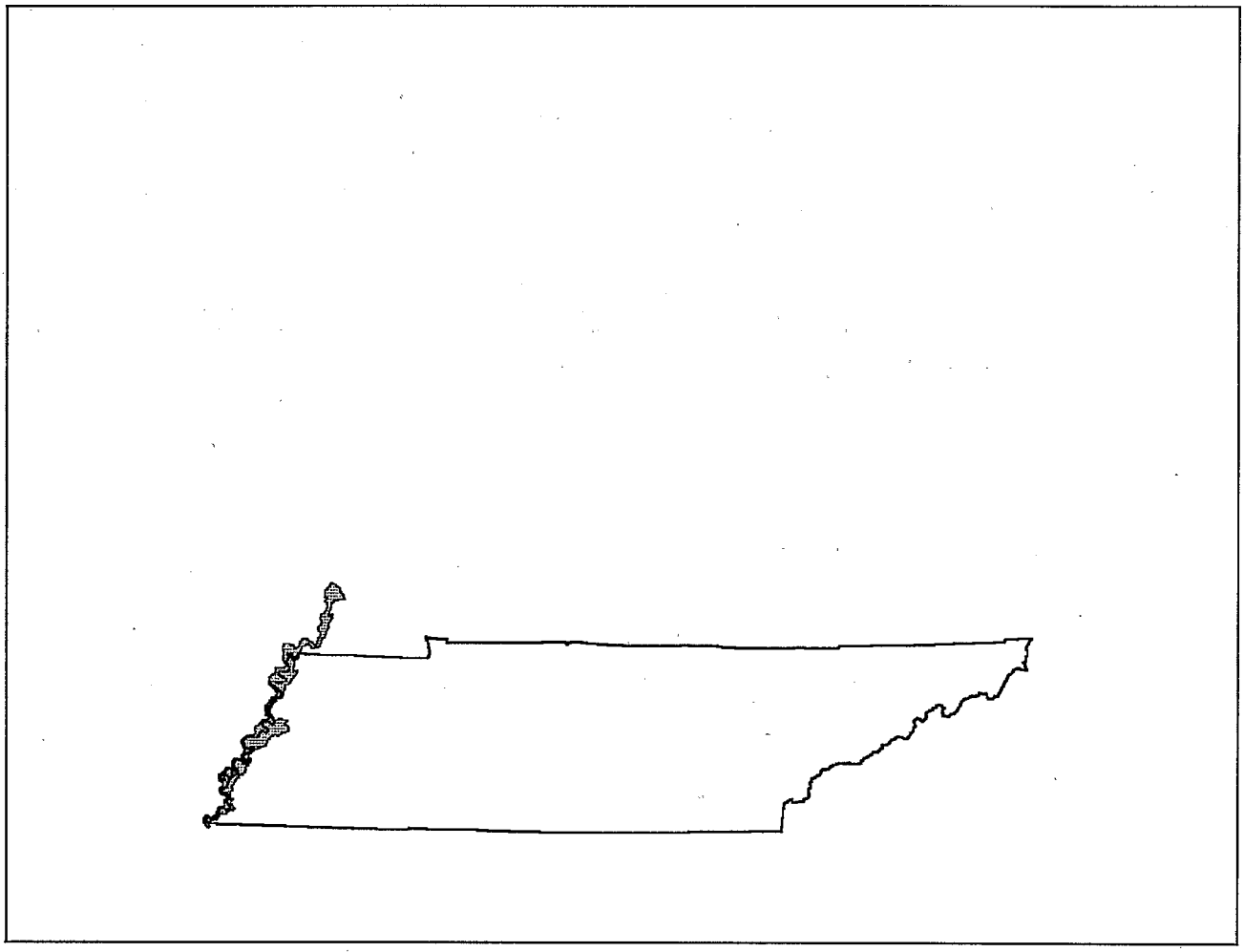

Figure 141. Watershed Location Map

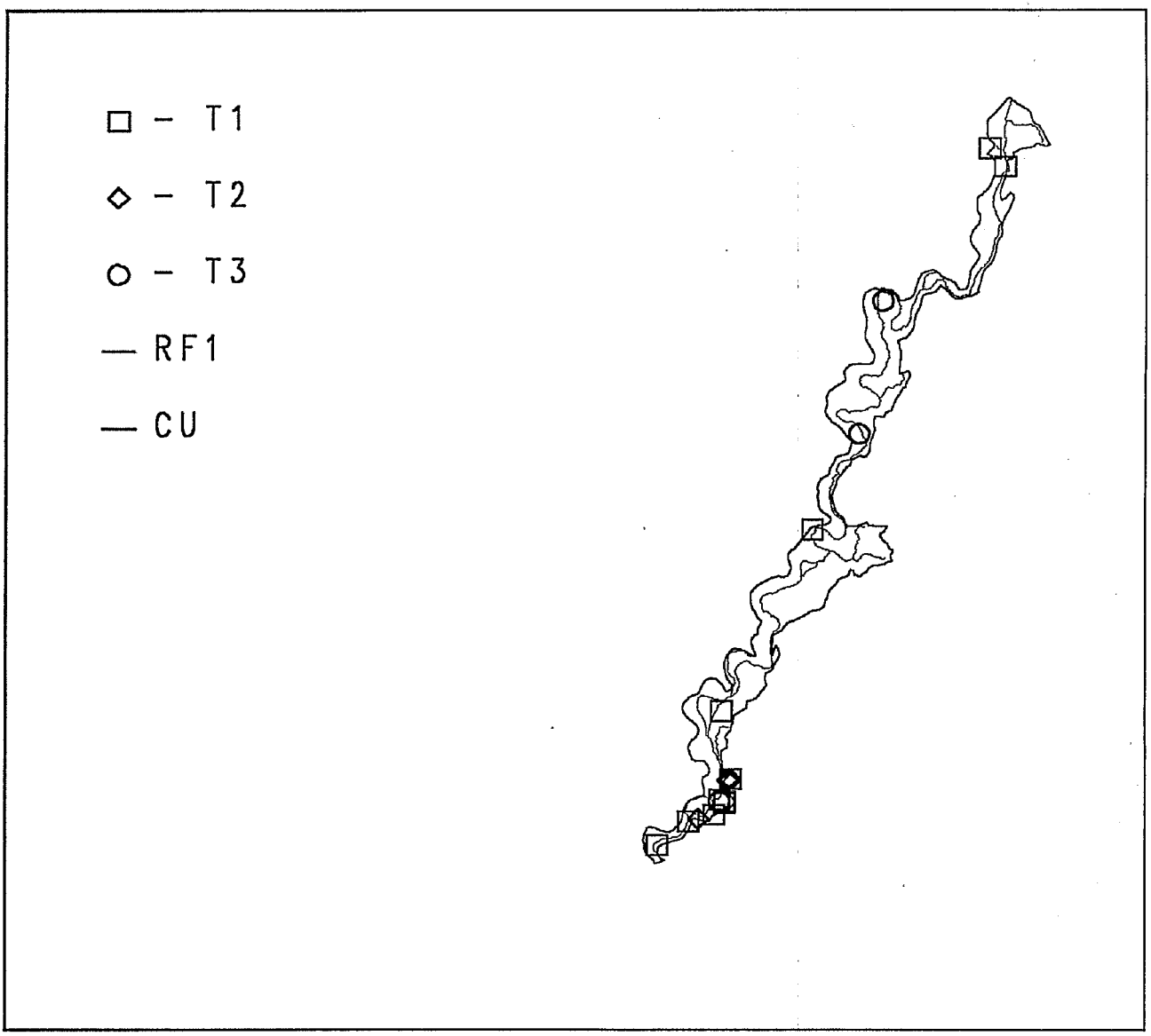

Figure 142. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **KY**
Monitoring Program: **Kentucky**
Num. of Stations: 1 Date Range: 1988

Source: **ODES** Agency: **TN**
Monitoring Program: **Tennessee**
Num. of Stations: 2 Date Range: 1981-89

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1988-89

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1981-84

Source: **STORET** Agency: **1114PEST**
Monitoring Program: **USEPA SE Environ Water Lab Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **1116APCC**
Monitoring Program: **Arkansas Dept of Con & Ecol. Pollution Control And Ecology Data**
Num. of Stations: 1 Date Range: 1980-82

Source: **STORET** Agency: **1117MBR**
Monitoring Program: **USEPA Region 7 Data**
Num. of Stations: 2 Date Range: 1984-88

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1981-82

Source: **STORET** Agency: **21ILFISH**
Monitoring Program: **USEPA Region 5 Data**
Num. of Stations: 1 Date Range: 1981-92

Source: **STORET** Agency: **21TNWQ**
Monitoring Program: **Tennessee Dept of Public Health Water, Sediment & Tissue Data**
Num. of Stations: 8 Date Range: 1980-82

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Dieldrin	17	15	.	15	.	.	.	15
Polychlorinated biphenyls	16	14	12	2	.	2	12	2
Chlordane	17	12	.	12	.	.	.	12
Aldrin	9	6	.	6	.	.	.	6
DDT	14	5	.	5	.	.	.	5
Dioxins	6	4	4	.	.	.	4	.
BHC	14	4	.	4	.	.	.	4
Heptachlor epoxide	7	4	.	4	.	.	.	4
Heptachlor	9	3	.	3	.	.	.	3
Arsenic	6	2	.	2	.	.	.	2
Cadmium	6	2	.	2	.	2	.	.
Chromium	4	1	1	.	1	.	.	.
Mercury	11	1	1	.	1	.	.	.
Copper	6	1	.	1	.	1	.	.
Lead	6	1	.	1	.	1	.	.
Nickel	1	1	.	1	.	1	.	.
Toxaphene	4	1	.	1	.	.	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Zinc	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	3	0.00	0.00	0	.	.
Anthracene	1	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	3	1320.00	1800.00	2	2160.00	1800.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	0.00	0.00	0	.	.
Benzo(a)pyrene	1	0.00	0.00	0	.	.
Benzo(b)fluoranthene	1	0.00	0.00	0	.	.
Benzo(ghi)perylene	1	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	1	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	6	0.00	0.00	0	.	.
Cadmium	3	1666.67	700.00	3	4000.00	300.00
Chlordane	4	0.00	0.00	0	.	.
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	3	96000.00	6200.00	3	278000.0	3800.00
Chrysene	1	0.00	0.00	0	.	.
Copper	3	17066.67	7900.00	3	37000.00	6300.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	3	0.00	0.00	0	.	.
Diethyl phthalate	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	1	0.00	0.00	0	.	.
DDT	11	0.20	0.00	3	1.06	0.32
Endosulfan mixed isomers	2	0.00	0.00	0	.	.
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	3	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	1	0.00	0.00	0	.	.
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	3	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	0.00	0.00	0	.	.
Isophorone	1	0.00	0.00	0	.	.
Lead	3	77066.67	13400.00	3	210000.0	7800.00
Mercury	2	540.00	540.00	2	980.00	100.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Naphthalene	1	0.00	0.00	0	.	.
Nickel	1	33000.00	33000.00	1	33000.00	33000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenanthrene	1	0.00	0.00	0	.	.
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	10	20.80	0.00	3	180.00	2.00
Pyrene	1	0.00	0.00	0	.	.
Silver	1	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	3	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	1	174000.0	174000.0	1	174000.0	174000.0

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	38	29.26	20.00	26	90.00	4.00
Arsenic	20	35.00	0.00	8	120.00	50.00
Biphenyl	6	0.00	0.00	0	.	.
BHC	93	97.13	4.00	48	4520.00	3.00
Cadmium	22	10.91	0.00	8	50.00	10.00
Chlordane	176	672.93	86.80	148	8400.00	4.00
Chlorpyrifos/Dursban	6	15.56	21.70	6	22.30	2.67
Chromium	14	44.29	40.00	14	80.00	30.00
Copper	22	509.09	540.00	22	850.00	220.00
Dicofol/Kelthane	4	1.41	1.41	2	2.83	2.83
Dieldrin	100	156.74	60.00	99	6900.00	7.00
Dioxins	18	0.01	0.00	15	0.02	0.00
DCPA/Dacthal	5	10.00	10.00	5	10.00	10.00
DDT	211	10663.21	70.00	175	626000.0	7.00
Endosulfan mixed isomers	3	72.00	72.00	3	90.00	54.00
Endrin	71	168.43	100.00	57	1200.00	3.22
Heptachlor	27	14.81	0.00	12	80.00	3.00
Heptachlor epoxide	26	8.03	0.03	18	40.00	0.01
Hexachlorobenzene	26	7.73	2.61	14	30.00	2.61
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Isopropalin	3	0.00	0.00	0	.	.
Lead	22	117.27	0.00	10	400.00	50.00
Mercury	34	117.35	90.00	34	330.00	50.00
Methoxychlor	24	0.38	0.00	2	4.55	4.55
Mirex/Dechlorane	23	2.65	0.00	9	10.00	2.01
Pentachlorobenzene	6	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	129	398.73	200.00	69	7129.00	100.00
Selenium	8	5102.50	375.00	8	38000.00	340.00
Tetrachlorobenzene, 1,2,4,5-	4	0.00	0.00	0	.	.
Toxaphene	16	156.25	0.00	4	1100.00	200.00
Trichlorobenzene, 1,2,4-	4	3.29	3.29	2	6.57	6.57
Trifluralin/Treflan	3	13.42	13.40	3	21.80	5.07
Zinc	8	35407.50	29820.00	8	66920.00	15070.00

Deer-Steele 08030209

Watershed Summary Information

Accounting Unit Name:	Yazoo
State(s):	MS (LA)
Political Boundaries:	Washington, Issaquena, Warren, Sharkey
Major Waterways:	Deer Cr Steele Bayou Black Bayou
Number of Stations in Watershed:	Tier1 - 11 Tier2 - 10 Tier3 - .

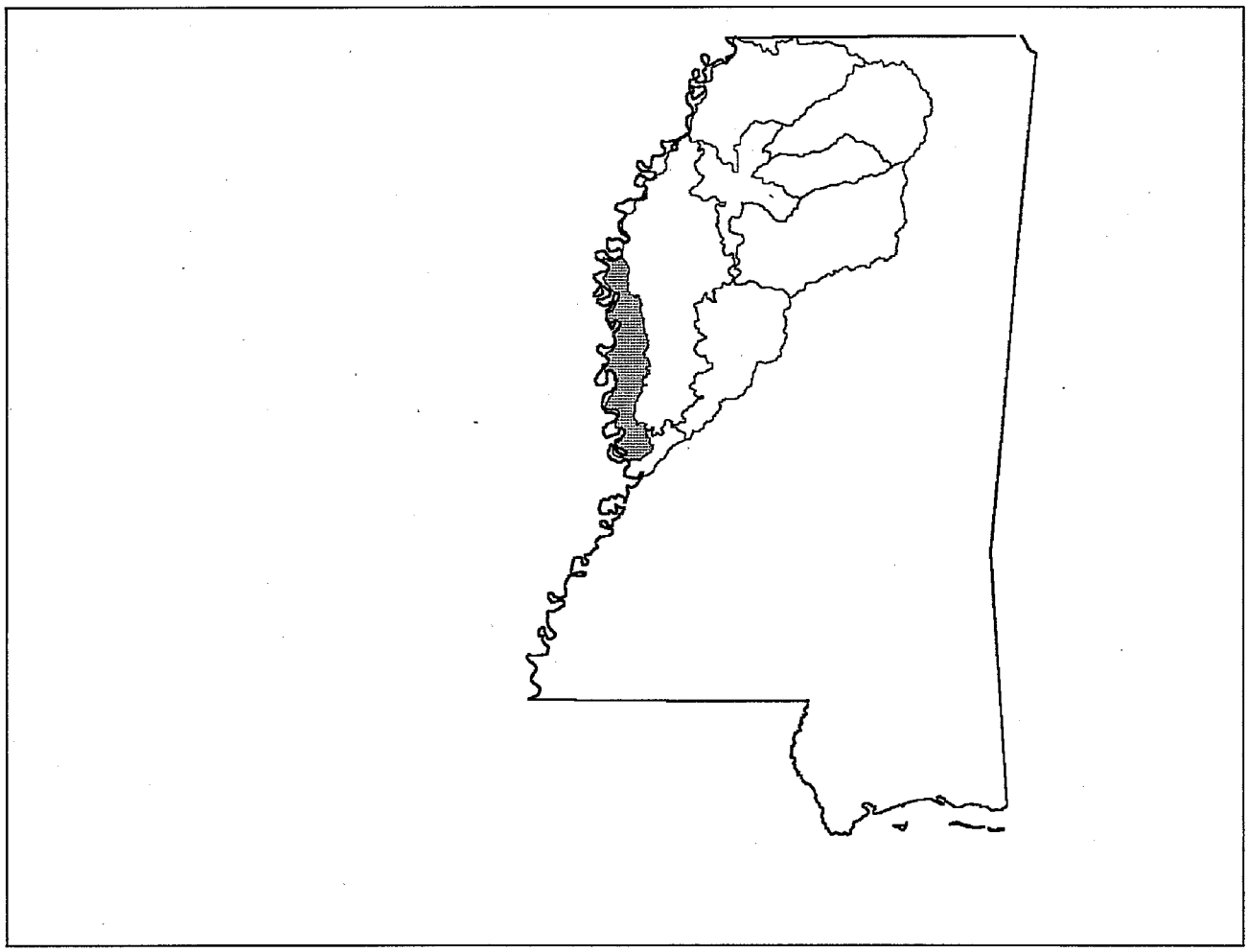

Figure 143. Watershed Location Map

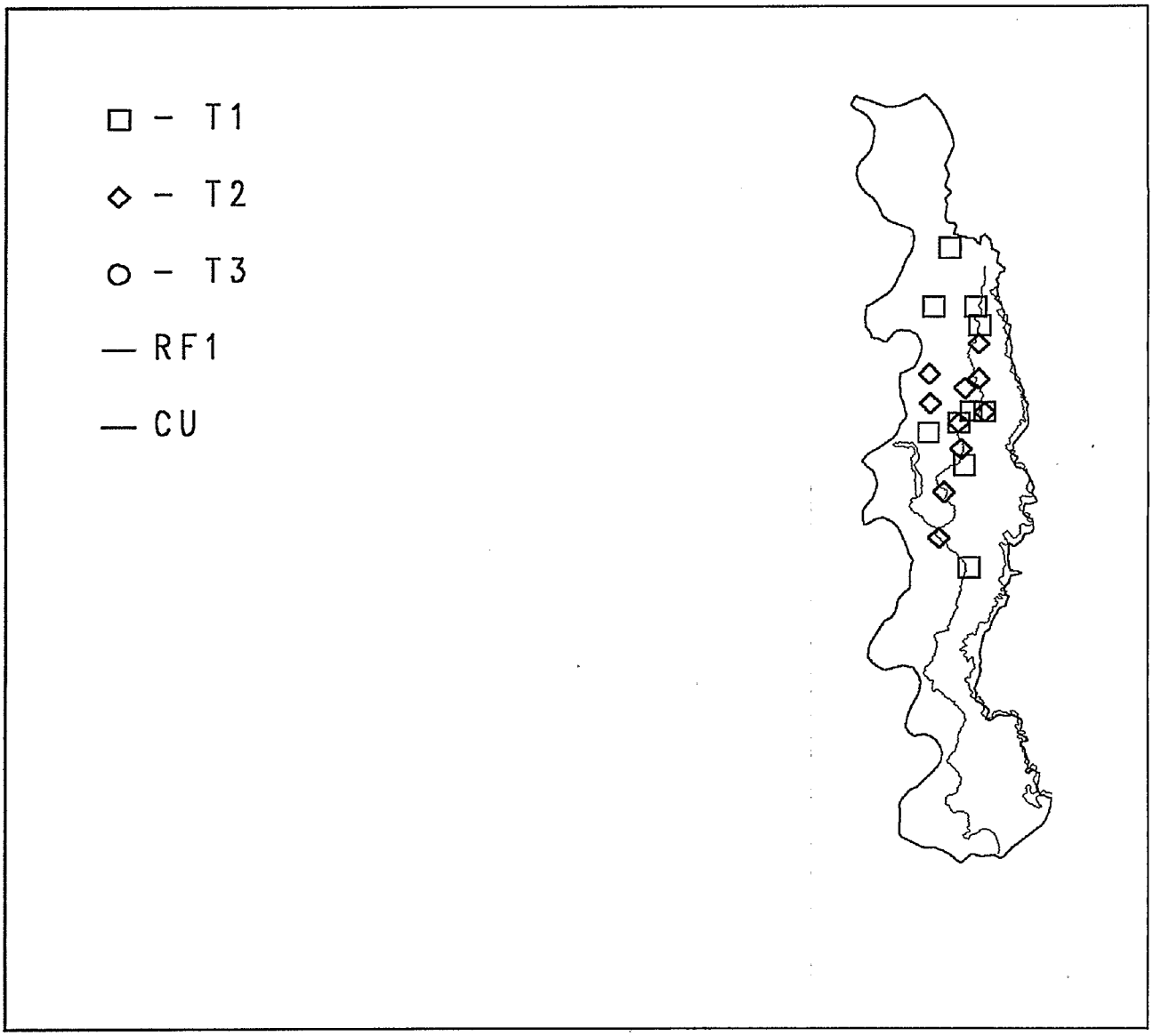

Figure 144. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11COEVXD**
Monitoring Program: **Corps of Engineers Vicksburg District**
Num. of Stations: 18 Date Range: 1990

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 3 Date Range: 1992

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	21	21	11	10	11	10	.	10
Nickel	7	7	.	7	.	7	.	.
Arsenic	7	5	.	5	.	5	.	.
Copper	7	5	.	5	.	5	.	.
Cadmium	7	2	.	2	.	2	.	.
Endosulfan mixed isomers	3	2	.	2	.	2	.	.
Lead	7	2	.	2	.	2	.	.
Zinc	7	2	.	2	.	2	.	.
BHC	21	1	.	1	.	1	.	.
Dieldrin	3	1	.	1	.	1	.	1
Heptachlor	21	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	12	0.03	0.00	1	0.30	0.30
Antimony	4	477.50	475.00	3	960.00	470.00
Arsenic	10	17400.00	13500.00	10	49000.00	4000.00
BHC	42	0.02	0.00	3	0.40	0.10
Cadmium	10	170.00	0.00	2	900.00	800.00
Chlordane	6	0.00	0.00	0	.	.
Chromium	10	19200.00	9500.00	10	44600.00	7000.00
Copper	10	22290.00	21500.00	10	40000.00	14700.00
Dieldrin	6	0.45	0.00	1	2.70	2.70
Dimethylphenol, 2,4-	21	0.00	0.00	0	.	.
DDT	72	19.32	11.00	61	78.00	0.80
Endosulfan mixed isomers	6	3.00	0.00	2	12.00	6.00
Endosulfan, alpha-	18	0.46	0.00	4	3.60	0.70
Endosulfan, beta-	18	0.03	0.00	2	0.40	0.20
Endrin	24	0.35	0.00	4	3.40	0.80
Heptachlor	24	0.63	0.00	7	3.90	1.30
Heptachlor epoxide	24	0.02	0.00	1	0.50	0.50
Lead	10	22860.00	20000.00	9	45300.00	18400.00
Mercury	10	33.00	45.00	6	60.00	40.00
Methoxychlor	6	0.00	0.00	0	.	.
Mirex/Dechlorane	6	0.00	0.00	0	.	.
Nickel	10	22500.00	21000.00	10	34900.00	10000.00
Polychlorinated biphenyls	6	0.00	0.00	0	.	.
Silver	4	0.00	0.00	0	.	.
Toxaphene	6	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Zinc	10	94140.00	72000.00	10	230000.0	51000.00

Lower Ouachita 08040207

Watershed Summary Information

Accounting Unit Name: Lower Ouachita

State(s): LA

Political Boundaries: Ouachita, Catahoula, Concordia, Morehouse, Union, Caldwell

Major Waterways: Ouachita R
Bayou De Siard
Bayou Louis

Number of Stations in Watershed: Tier1 - 12
Tier2 - .
Tier3 - .

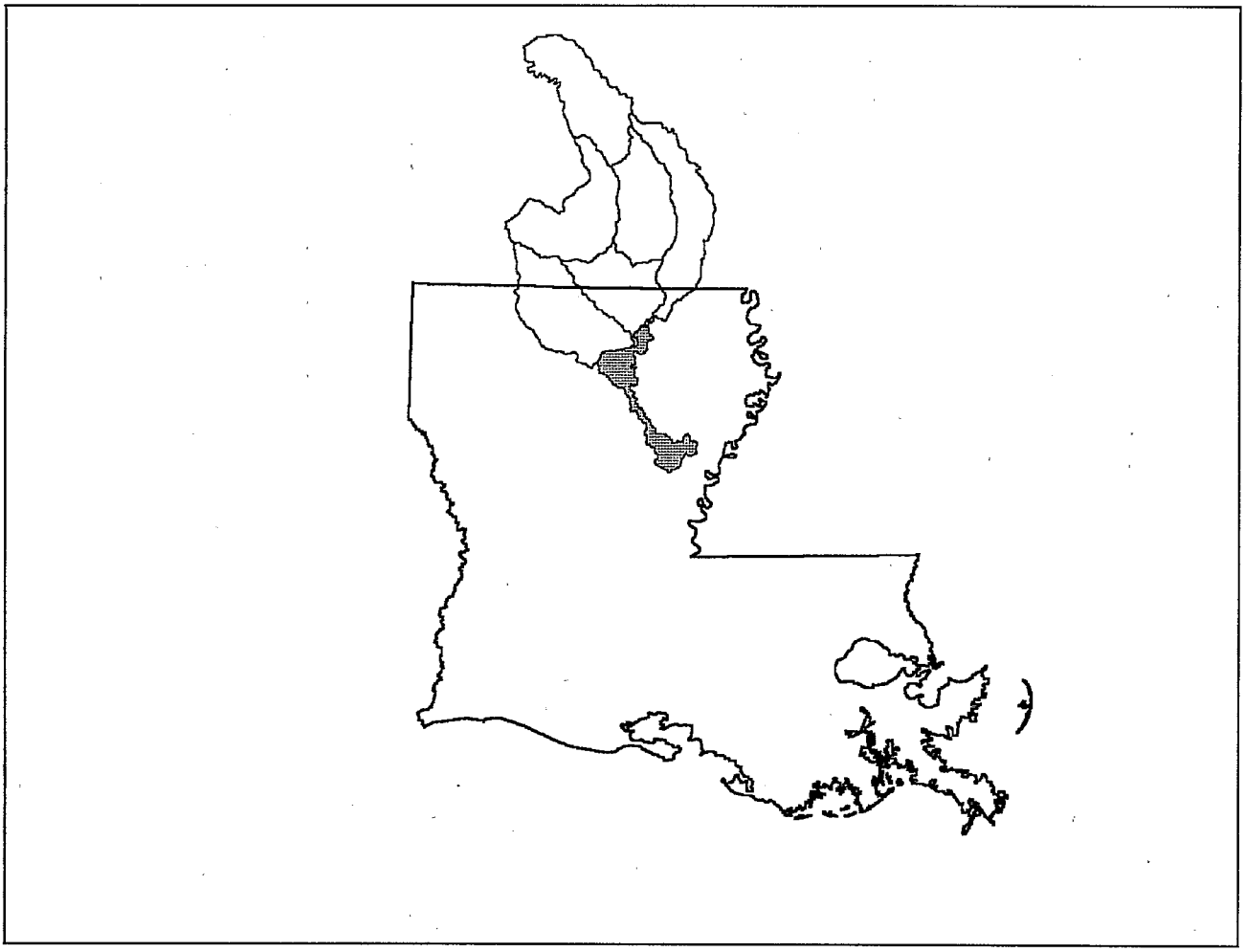

Figure 145. Watershed Location Map

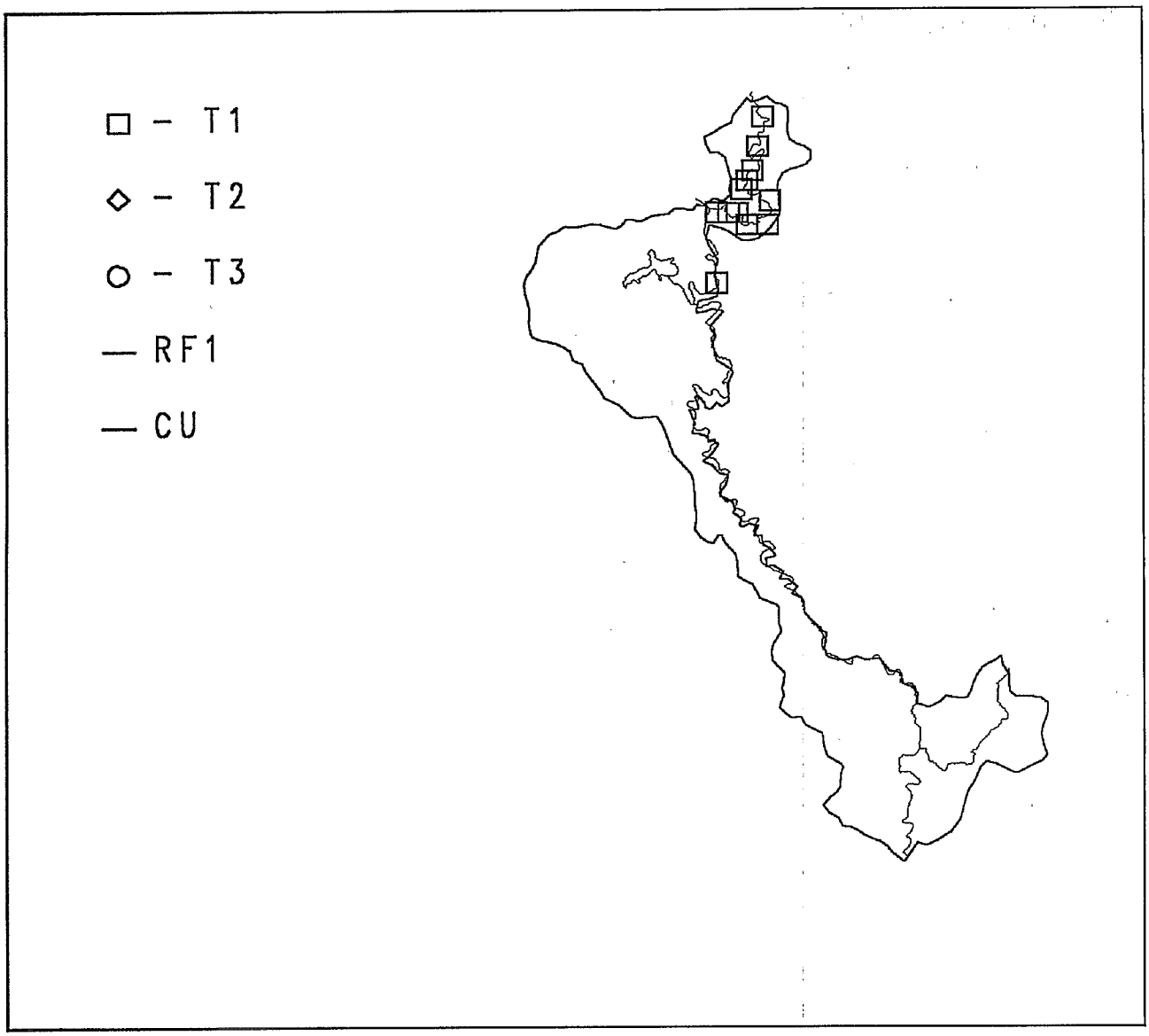

Figure 146. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11COEVXD**
Monitoring Program: **Corps of Engineers Vicksburg District**
Num. of Stations: 11 Date Range: 1983-87

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	11	11	11	.	11	.	.	11
Cadmium	11	11	.	11	.	11	.	.
Arsenic	11	10	.	10	.	10	.	.
Heptachlor epoxide	11	8	.	8	.	.	.	8
Dieldrin	6	5	5	.	5	.	.	5
Mercury	12	5	.	5	.	5	.	.
Copper	11	4	.	4	.	4	.	.
Heptachlor	5	4	.	4	.	.	.	4
Lead	9	4	.	4	.	4	.	.
Zinc	11	3	.	3	.	3	.	.
Mirex/Dechlorane	3	2	.	2	.	.	.	2
Dioxins	1	1	1	.	.	.	1	.
Polychlorinated biphenyls	1	1	1	.	.	.	1	.
Aldrin	2	1	.	1	.	.	.	1
Chromium	11	1	.	1	.	1	.	.
Endrin	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	0.97	0.97	2	1.67	0.26
Arsenic	76	6170.79	5490.00	76	16100.00	520.00
Cadmium	49	758.57	320.00	49	3690.00	20.00
Chromium	72	13137.50	12065.00	72	97900.00	50.00
Copper	75	34416.67	7930.00	75	772300.0	10.00
Dieldrin	8	885.80	540.00	8	2270.00	0.23
DDT	76	27191.58	141.85	76	262100.0	3.08
Endrin	2	26.13	26.13	2	51.97	0.29
Heptachlor	4	37582.50	34555.00	4	78910.00	2310.00
Heptachlor epoxide	20	739.65	3.36	20	6840.00	0.34
Lead	27	31378.15	15540.00	27	150600.0	60.00
Mercury	43	65.56	40.00	39	250.00	10.00
Mirex/Dechlorane	2	18.19	18.19	2	18.22	18.17
Zinc	76	49179.87	46880.00	76	174400.0	460.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	1	3.52	3.52	1	3.52	3.52
BHC	2	8.87	8.87	2	14.40	3.33
Chlordane	2	15.50	15.50	1	31.00	31.00
Chlorpyrifos/Dursban	1	17.50	17.50	1	17.50	17.50
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	0.00	0.00	0	.	.
Dioxins	4	0.01	0.01	4	0.01	0.00
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	4.29	4.29	1	4.29	4.29
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	1	230.00	230.00	1	230.00	230.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	42.40	42.40	1	42.40	42.40
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1	337.70	337.70	1	337.70	337.70
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	4.81	4.81	1	4.81	4.81
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Lower Calcasieu 08080206

Watershed Summary Information

Accounting Unit Name: Calcasieu-Mermentau

State(s): LA

Political Boundaries: Cameron, Calcasieu

Major Waterways:
Calcasieu R
Old East Bayou
Bayou Chopique
Black Bayou
Calcasieu L

Number of Stations in Watershed:
Tier1 - 26
Tier2 - 52
Tier3 - 22

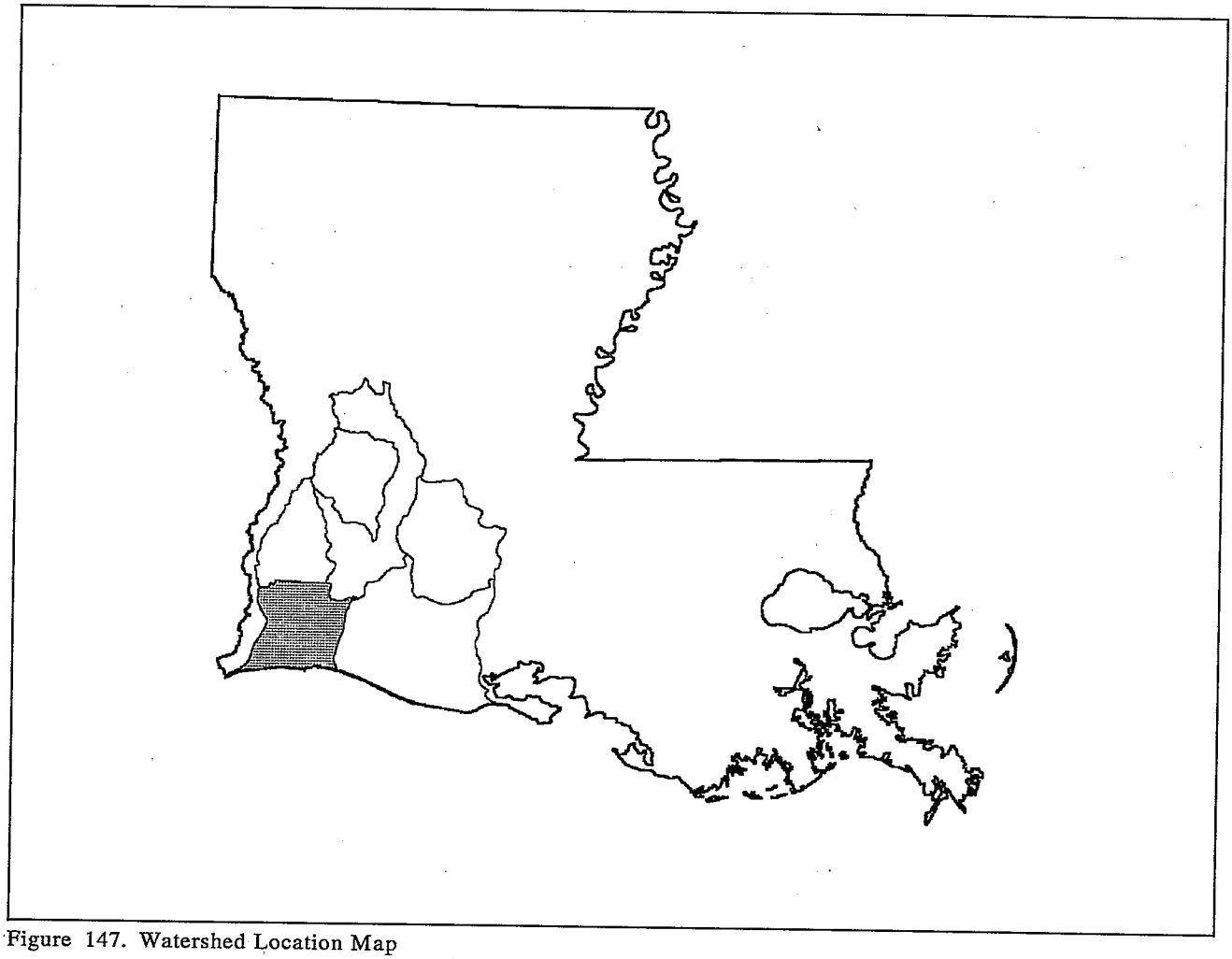

Figure 147. Watershed Location Map

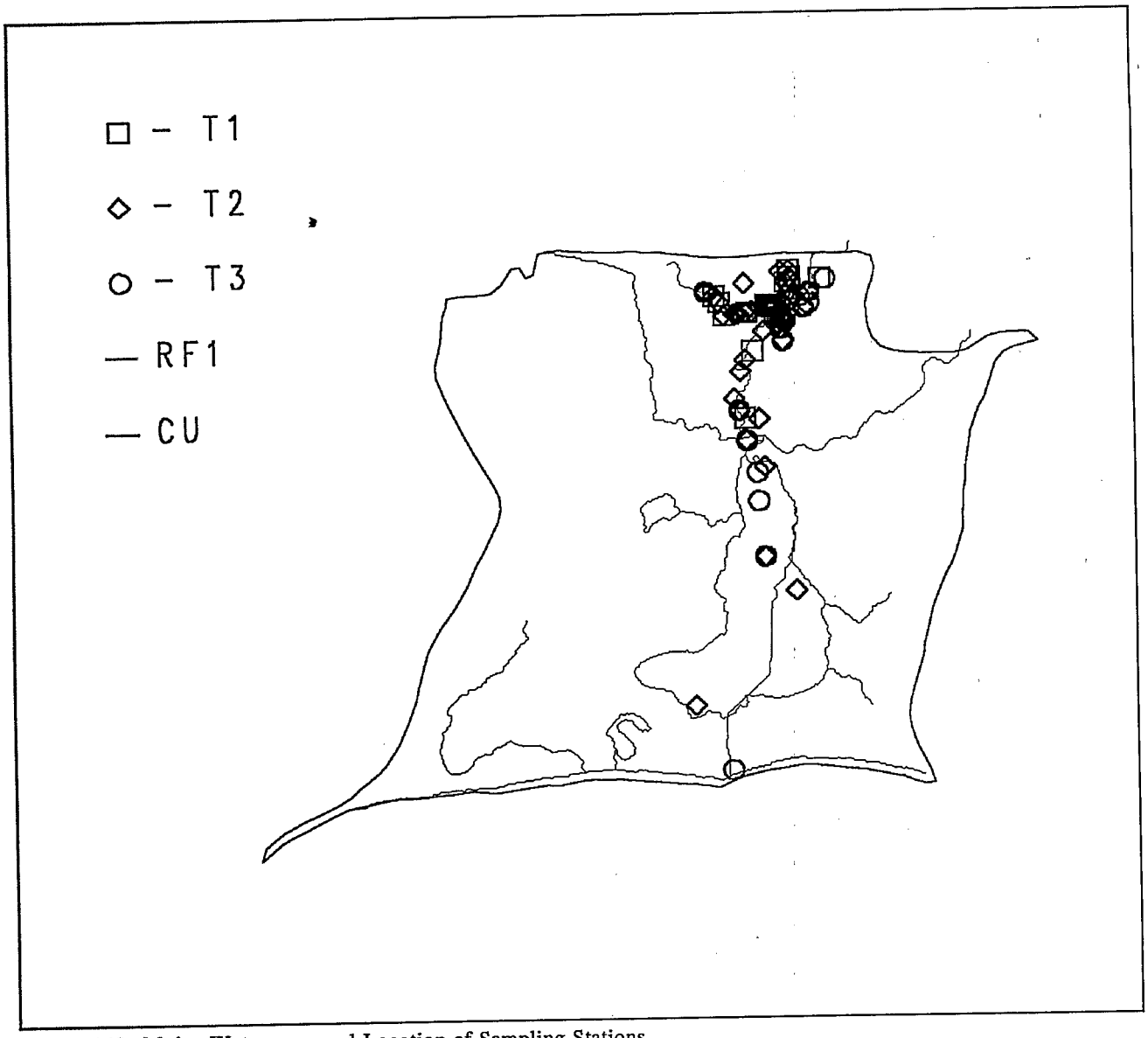

Figure 148. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 6 Date Range: 1986-88

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 2 Date Range: 1991-92

Source: **GOM** Agency:
Monitoring Program:
Num. of Stations: 1 Date Range: 1988

Source: **GOM** Agency: **EPA-HOUSTON**
Monitoring Program: **EPA-Houston**
Num. of Stations: 21 Date Range: 1988-89

Source: **GOM** Agency: **ERL-N**
Monitoring Program: **ERL-N**
Num. of Stations: 37 Date Range: 1988-89

Source: **GOM** Agency: **TVA**
Monitoring Program: **TVA**
Num. of Stations: 1 Date Range: 1988

Source: **GOM** Agency: **USGS**
Monitoring Program: **USGS**
Num. of Stations: 5 Date Range: 1988

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11POX06**
Monitoring Program: **USEPA Region 6 Data**
Num. of Stations: 1 Date Range: 1980-81

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 25 Date Range: 1985-90

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	44	30	12	18	12	18	.	.
Copper	37	20	.	20	.	20	.	.
Lead	56	20	.	20	.	20	.	.
Chromium	58	14	2	12	2	12	.	.
Bis(2-ethylhexyl)phthalate	22	11	7	4	7	4	.	6
Nickel	29	11	.	11	.	11	.	.
Naphthalene	33	10	.	10	.	10	.	.
Polychlorinated biphenyls	29	9	4	5	3	1	1	8
Hexachlorobenzene	31	9	.	9	.	9	.	9
Hexachlorobutadiene	25	9	.	9	.	9	.	8
Zinc	36	9	.	9	.	9	.	.
Phenanthrene	34	8	7	1	7	1	.	.
Pyrene	33	8	7	1	7	1	.	.
Dichlorobenzene, 1,2-	23	8	5	3	5	3	.	.
Benzo(a)pyrene	29	8	3	5	3	1	.	8
Trichlorobenzene, 1,2,4-	24	8	2	6	2	6	.	.
Dibenzo(a,h)anthracene	30	7	.	7	.	7	.	6

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Isophorone	28	7	.	7	.	.	.	7
Silver	15	6	.	6	.	6	.	.
Trichloroethane, 1,1,1-	23	6	.	6	.	6	.	.
Chrysene	33	5	4	1	4	1	.	2
Fluoranthene	33	5	4	1	4	1	.	.
Arsenic	31	5	.	5	.	5	.	.
Dichlorobenzene, 1,4-	23	4	4	.	4	.	.	2
Fluorene	29	4	4	.	4	.	.	.
Benzo(a)anthracene	31	4	3	1	3	1	.	3
Cadmium	33	4	.	4	.	4	.	.
Acenaphthene	28	3	2	1	2	1	.	.
Benzo(b)fluoranthene	28	3	.	3	.	1	.	3
Phenol	22	3	.	3	.	3	.	.
Anthracene	26	2	2	.	2	.	.	.
DDT	29	2	2	.	2	.	.	.
Acenaphthylene	27	2	1	1	1	1	.	.
Aldrin	22	2	.	2	.	.	.	2
Bromophenyl phenyl ether, 4-	22	2	.	2	.	2	.	.
Dichlorobenzene, 1,3-	23	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	29	2	.	2	.	1	.	2
Tetrachloroethane, 1,1,2,2-	19	2	.	2	.	1	.	2
Tetrachloroethene	19	2	.	2	.	2	.	.
Diethyl phthalate	22	1	1	.	1	.	.	.
Dioxins	2	1	1	.	.	.	1	.
Benzo(ghi)perylene	29	1	.	1	.	1	.	.
BHC	24	1	.	1	.	1	.	.
Chlordane	27	1	.	1	.	1	.	.
Di-n-butyl phthalate	22	1	.	1	.	1	.	.
Dieldrin	26	1	.	1	.	.	.	1
Dimethyl phthalate	22	1	.	1	.	1	.	.
Heptachlor epoxide	22	1	.	1	.	.	.	1
Hexachloroethane	22	1	.	1	.	1	.	.
HMW_PAHs	2	1	.	1	.	1	.	.
Methylnaphthalene, 2-	2	1	.	1	.	1	.	.
Pentachlorobenzene	1	1	.	1	.	1	.	.
SEM_est	2	1	.	1	.	1	.	.
Toxaphene	19	1	.	1	.	1	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	59	267.13	0.00	6	7700.00	2.90
Acenaphthylene	59	127.45	0.00	5	7500.00	2.00
Acrylonitrile	26	0.00	0.00	0	.	.
Aldrin	26	1.26	0.00	4	32.00	0.07
Anthracene	58	475.16	0.00	4	25500.00	5.20
Anthracene&Phenanthrene	1	0.00	0.00	0	.	.
Antimony	9	496.67	550.00	8	700.00	310.00
Arsenic	36	4160.14	2613.50	35	12000.00	1100.00
Benzene	26	0.00	0.00	0	.	.
Benzo(a)anthracene	66	116.39	0.00	14	4100.00	3.66
Benzo(a)pyrene	63	438.90	0.00	15	22000.00	3.59
Benzo(b)fluoranthene	60	435.43	0.00	8	21000.00	3.18
Benzo(ghi)perylene	61	352.83	0.00	11	20000.00	3.96
Benzo(k)fluoranthene	59	29.56	0.00	6	1700.00	3.18
Biphenyl	3	4.63	3.30	2	10.59	3.30
Bis(2-ethylhexyl)phthalate	54	4216.85	170.00	27	21000.00	340.00
Bromophenyl phenyl ether, 4-	53	803.58	0.00	6	12000.00	290.00
Butyl benzyl phthalate	54	10.56	0.00	1	570.00	570.00
BHC	37	0.04	0.00	5	0.68	0.03
Cadmium	43	236.49	0.00	16	4000.00	55.00
Chlordane	37	0.22	0.00	12	5.36	0.01
Chlorobenzene	26	0.00	0.00	0	.	.
Chromium	73	59544.11	38000.00	72	490000.0	8000.00
Chrysene	68	430.40	0.00	18	9470.00	4.77
Copper	42	48214.95	19500.00	41	377000.0	3000.00
Di-n-butyl phthalate	54	27.78	0.00	1	1500.00	1500.00
Di-n-octyl phthalate	54	0.00	0.00	0	.	.
Diazinon/Spectracide	21	0.00	0.00	1	0.10	0.10
Dibenzo(a,h)anthracene	62	2.28	0.00	7	40.33	9.00
Dibromochloromethane	26	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	55	650.91	0.00	14	6400.00	800.00
Dichlorobenzene, 1,3-	56	423.57	0.00	7	7220.00	470.00
Dichlorobenzene, 1,4-	56	232.86	0.00	7	3630.00	430.00
Dichloroethane 1,1-	26	0.00	0.00	0	.	.
Dichloroethane 1,2-	27	30.52	0.00	3	420.00	4.00
Dichloroethene, trans-1,2-	26	17.69	0.00	1	460.00	460.00
Dichloromethane	34	349.44	305.00	32	830.00	1.00
Dichloropropane, 1,2-	25	0.00	0.00	0	.	.
Dieldrin	32	0.08	0.00	10	0.64	0.02
Diethyl phthalate	54	351.85	0.00	1	19000.00	19000.00
Dimethyl phthalate	52	230.77	0.00	1	12000.00	12000.00
Dimethylphenol, 2,4-	54	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dioxins	1	0.00	0.00	0	.	.
DDT	122	3.42	0.00	33	370.00	0.03
Endosulfan mixed isomers	16	0.00	0.00	0	.	.
Endosulfan, alpha-	9	0.00	0.00	0	.	.
Endosulfan, beta-	8	0.00	0.00	0	.	.
Endrin	22	0.00	0.00	0	.	.
Ethion/Bladen	21	0.00	0.00	0	.	.
Ethylbenzene	26	0.00	0.00	0	.	.
Fluoranthene	68	1270.67	0.00	30	19000.00	4.24
Fluorene	61	383.43	0.00	8	11000.00	2.50
Heptachlor	27	0.01	0.00	4	0.23	0.03
Heptachlor epoxide	25	0.15	0.00	2	3.38	0.42
Hexachlorobenzene	63	21114.41	0.35	35	470000.0	0.06
Hexachlorobutadiene	57	23139.30	770.00	30	630000.0	770.00
Hexachloroethane	54	20.37	0.00	1	1100.00	1100.00
HMW_PAHs	2	542.17	542.17	2	907.44	176.89
Indeno(1,2,3-cd)pyrene	61	370.24	0.00	9	22000.00	2.65
Isophorone	61	5643.44	0.00	8	65100.00	22800.00
Lead	67	36692.84	30000.00	67	190000.0	4700.00
LMW_PAHs	2	154.05	154.05	2	186.91	121.19
Malathion	21	0.00	0.00	0	.	.
Mercury	58	819.67	280.00	55	6300.00	18.10
Methoxychlor	20	0.00	0.00	0	.	.
Methylnaphthalene, 2-	2	16.72	16.72	2	29.78	3.66
Mirex/Dechlorane	27	0.03	0.00	5	0.30	0.05
Naphthalene	66	148.10	0.00	20	1200.00	2.73
Nickel	33	16720.09	13000.00	32	50000.00	4170.00
Nitrosodiphenylamine, N-	54	0.00	0.00	0	.	.
Pentachlorobenzene	2	15950.00	15950.00	2	17000.00	14900.00
Pentachlorophenol	54	0.00	0.00	0	.	.
Phenanthrene	69	2307.69	0.00	27	68000.00	6.70
Phenol	54	362.96	0.00	5	6600.00	1300.00
Polychlorinated biphenyls	153	148.33	0.00	14	19300.00	0.86
Pyrene	68	1325.88	0.00	30	13500.00	7.07
Silver	19	845.84	110.00	18	3000.00	48.00
SEM_est	2	1.42	1.42	2	1.73	1.11
Tetrachloroethane, 1,1,2,2-	26	565.38	0.00	2	13000.00	1700.00
Tetrachloroethene	26	9.73	0.00	2	170.00	83.00
Tetrachloromethane	25	0.00	0.00	0	.	.
Toluene	26	0.00	0.00	0	.	.
Toxaphene	23	217.39	0.00	1	5000.00	5000.00
Tribromomethane/Bromoform	26	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	56	2848.75	0.00	26	26000.00	320.00
Trichloroethane, 1,1,1-	29	834.14	0.00	13	4900.00	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethane, 1,1,2-	26	0.00	0.00	0	.	.
Trichloroethene	26	3.77	0.00	1	98.00	98.00
Trichlorofluoromethane	25	0.00	0.00	0	.	.
Trichloromethane/Chloroform	26	0.00	0.00	0	.	.
Zinc	41	127645.2	85000.00	41	1234000	14000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Biphenyl	1	0.00	0.00	0	.	.
BHC	2	2.11	2.11	1	4.23	4.23
Chlordane	2	3.31	3.31	1	6.62	6.62
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	25.10	25.10	1	25.10	25.10
Dioxins	2	0.00	0.00	1	0.00	0.00
DDT	1	48.60	48.60	1	48.60	48.60
Endrin	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	2	155.02	155.02	2	310.00	0.04
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	1	1117.00	1117.00	1	1117.00	1117.00
Tetrachlorobenzene, 1,2,4,5-	1	3.17	3.17	1	3.17	3.17
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
29.9392	93.2752	92-08-11	Ampelisca Abdita	S	4.96	4.00	no
30.1210	93.3385	91-07-15	Ampelisca Abdita	S	61.99	14.00	Yes
Monitoring Program: ERL-N							
29.9717	93.3075	88-07-26	Ampelisca Abdita	S	4.47	0.00	no
30.0517	93.3150	88-07-26	Ampelisca Abdita	S	1.10	0.00	no
30.0817	93.3256	88-07-26	Ampelisca Abdita	S	8.30	0.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
30.1097	93.3333	88-07-26	Ampelisca Abdita	S	17.80	0.00	no
30.1469	93.3317	88-07-26	Ampelisca Abdita	S	22.20	0.00	Yes
30.1578	93.3269	88-07-26	Ampelisca Abdita	S	44.43	0.00	Yes
30.1753	93.2861	88-07-08	Ampelisca Abdita	S	5.57	4.47	no
30.1847	93.3072	88-07-26	Ampelisca Abdita	S	48.90	0.00	Yes
30.1867	93.2886	88-06-22	Ampelisca Abdita	S	4.47	3.30	no
30.1942	93.2842	88-07-08	Ampelisca Abdita	S	10.00	4.47	no
30.1972	93.2878	88-07-08	Ampelisca Abdita	S	4.43	4.47	no
30.1978	93.2881	88-06-22	Ampelisca Abdita	S	70.00	3.30	Yes
30.1997	93.3486	88-06-22	Ampelisca Abdita	S	31.13	3.30	Yes
		89-04-04	Ampelisca Abdita	S	35.57	1.10	Yes
30.2008	93.3331	88-06-22	Ampelisca Abdita	S	96.67	3.30	Yes
30.2011	93.2914	88-06-22	Ampelisca Abdita	S	100.00	3.30	Yes
30.2011	93.3372	88-06-22	Ampelisca Abdita	S	97.77	3.30	Yes
30.2025	93.3244	88-07-08	Ampelisca Abdita	S	23.33	4.47	no
30.2064	93.2969	88-07-08	Ampelisca Abdita	S	100.00	4.47	Yes
30.2067	93.2639	88-07-26	Ampelisca Abdita	S	5.57	0.00	no
30.2083	93.3008	88-07-08	Ampelisca Abdita	S	39.99	4.47	Yes
30.2092	93.2933	88-06-22	Ampelisca Abdita	S	100.00	3.30	Yes
30.2092	93.2964	88-06-22	Ampelisca Abdita	S	93.33	3.30	Yes
30.2097	93.3036	88-07-08	Ampelisca Abdita	S	40.03	4.47	Yes
30.2125	93.3539	89-04-04	Ampelisca Abdita	S	93.33	1.10	Yes
30.2133	93.2800	88-07-08	Ampelisca Abdita	S	10.00	4.47	no
30.2175	93.2681	88-07-26	Ampelisca Abdita	S	4.47	0.00	no
30.2181	93.2742	88-07-26	Ampelisca Abdita	S	91.10	0.00	Yes
30.2186	93.3589	89-04-04	Ampelisca Abdita	S	74.43	1.10	Yes
30.2217	93.2581	88-07-26	Ampelisca Abdita	S	7.77	0.00	no
30.2228	93.3681	89-04-04	Ampelisca Abdita	S	18.90	1.10	no
30.2244	93.2775	88-07-08	Ampelisca Abdita	S	100.00	4.47	Yes
30.2306	93.3272	88-06-22	Ampelisca Abdita	S	98.90	3.30	Yes
30.2311	93.2828	88-07-08	Ampelisca Abdita	S	100.00	4.47	Yes
30.2342	93.2408	88-07-08	Ampelisca Abdita	S	2.23	4.47	no
30.2361	93.2786	88-07-08	Ampelisca Abdita	S	100.00	4.47	Yes
30.2411	93.2881	88-07-08	Ampelisca Abdita	S	98.90	4.47	Yes
30.2422	93.2797	88-07-08	Ampelisca Abdita	S	100.00	4.47	Yes

Lower Mississippi-New Orleans 08090100

Watershed Summary Information

Accounting Unit Name: Lower Mississippi-New Orleans

State(s): LA

Political Boundaries: Plaquemines, St Charles, Lafourche, St Bernard, Jefferson

Major Waterways:
Mississippi R, Se Pass
Mississippi R, Pass Loutr
Mississippi R, Sw Pass
Mississippi R, Grand Pass
Mississippi R

Number of Stations in Watershed:
Tier1 - 16
Tier2 - 34
Tier3 - 1

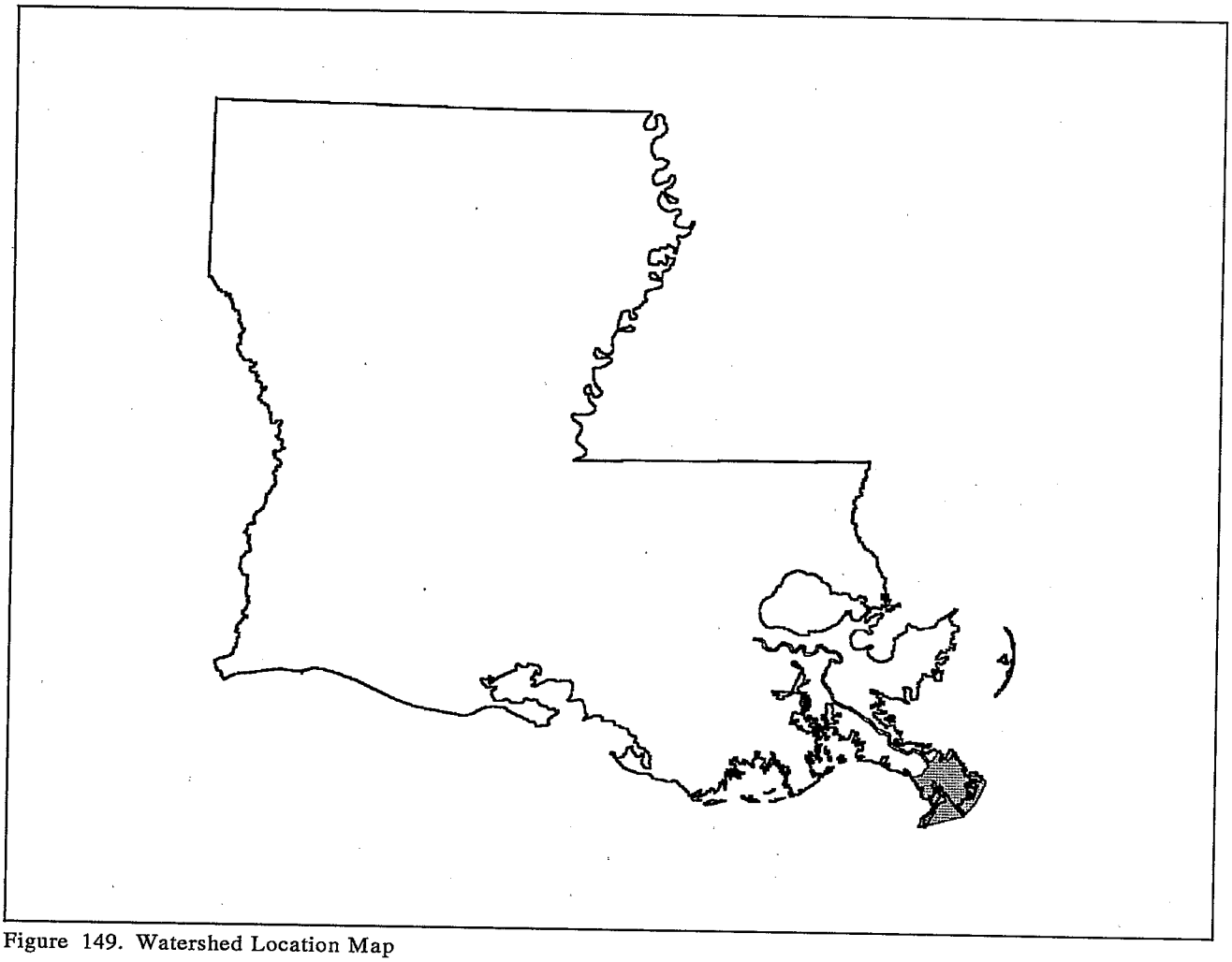

Figure 149. Watershed Location Map

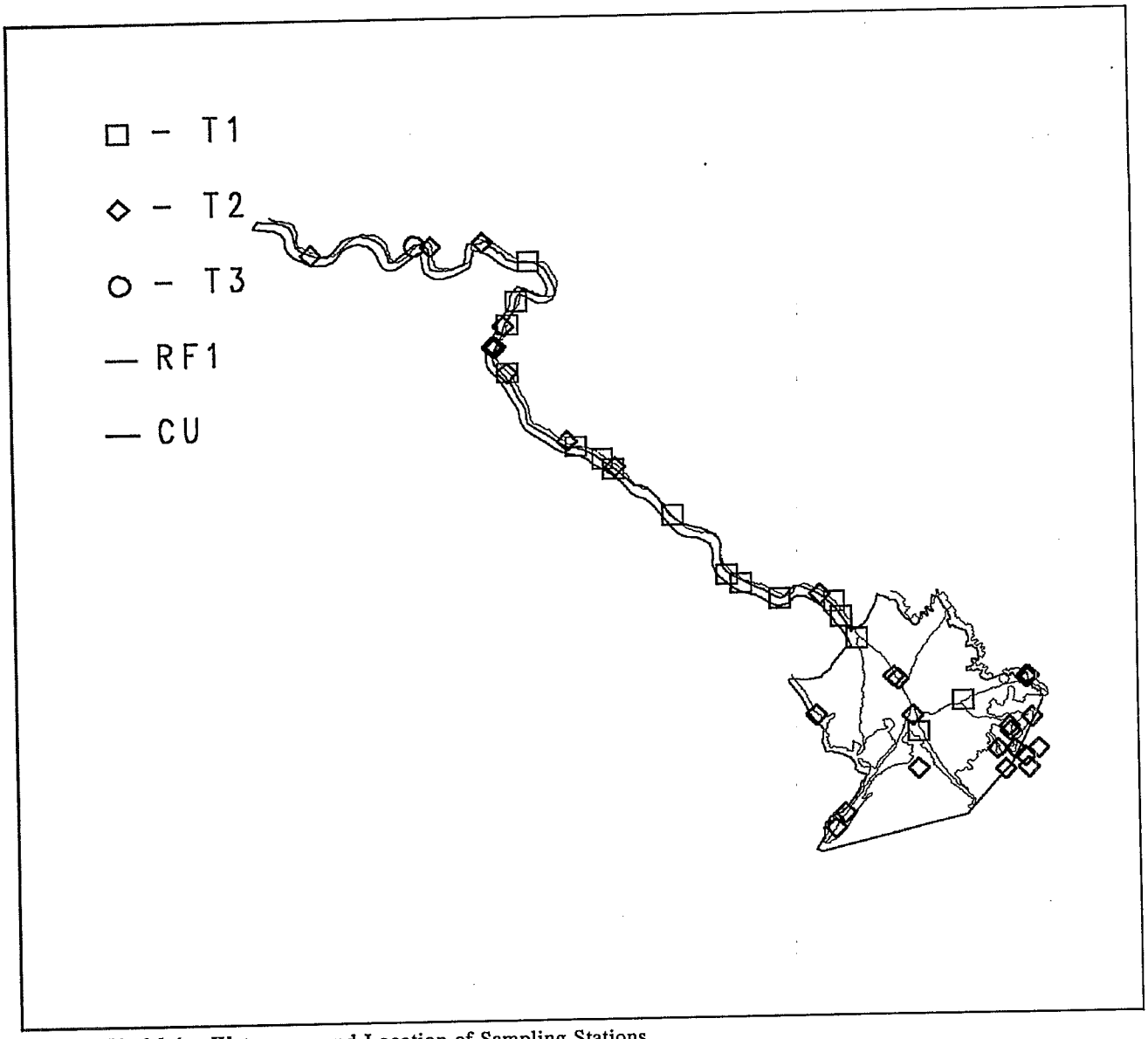

Figure 150. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 10 Date Range: 1984-88

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 31 Date Range: 1991-92

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: **STORET** Agency: **11POX06**
Monitoring Program: **USEPA Region 6 Data**
Num. of Stations: 2 Date Range: 1980-81

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 5 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	49	42	.	42	.	42	.	.
Polychlorinated biphenyls	47	39	9	30	.	7	9	30
DDT	50	38	.	38	.	38	.	1
Benzo(a)pyrene	48	33	.	33	.	3	.	33
Chromium	51	30	.	30	.	30	.	.
Arsenic	51	28	.	28	.	28	.	.
Dibenzo(a,h)anthracene	48	25	.	25	.	25	.	6
SEM_est	29	24	.	24	.	24	.	.
BHC	45	20	1	19	1	19	.	.
Methylnaphthalene, 2-	34	20	.	20	.	20	.	.
HMW_PAHs	34	19	.	19	.	19	.	.
LMW_PAHs	34	18	3	15	3	15	.	.
Copper	51	16	.	16	.	16	.	.
Fluorene	47	15	.	15	.	15	.	.
Naphthalene	48	15	.	15	.	15	.	.
Mercury	50	14	3	11	3	11	.	.
Cadmium	51	9	.	9	.	9	.	.
Acenaphthylene	43	8	.	8	.	8	.	.
Dieldrin	48	8	.	8	.	1	.	7
Benzo(a)anthracene	49	7	.	7	.	7	.	.
Zinc	51	7	.	7	.	7	.	.
Chlordane	47	6	.	6	.	6	.	3
Chrysene	49	6	.	6	.	6	.	.
Lead	51	6	.	6	.	6	.	.
Pyrene	49	4	.	4	.	4	.	.
Mirex/Dechlorane	36	2	.	2	.	.	.	2
Bis(2-ethylhexyl)phthalate	5	1	1	.	1	.	.	1
Aldrin	40	1	.	1	.	.	.	1
Anthracene	42	1	.	1	.	1	.	.
Benzo(b)fluoranthene	43	1	.	1	.	.	.	1
Butyl benzyl phthalate	5	1	.	1	.	1	.	.
Heptachlor epoxide	45	1	.	1	.	.	.	1
Hexachlorobenzene	48	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	48	3.97	0.00	20	43.15	1.48
Acenaphthylene	46	2.81	0.00	17	22.00	1.13
Acrylonitrile	3	0.00	0.00	0	.	.
Aldrin	65	0.03	0.00	3	0.95	0.10
Anthracene	45	15.49	7.63	35	251.09	2.16
Anthracene&Phenanthrene	3	0.00	0.00	0	.	.
Antimony	38	612.29	580.00	32	2100.00	280.00
Arsenic	104	4279.46	2450.00	60	15900.00	1000.00
Benzene	3	0.00	0.00	0	.	.
Benzo(a)anthracene	54	37.04	27.13	44	224.21	1.58
Benzo(a)pyrene	53	35.77	28.00	43	307.84	1.54
Benzo(b)fluoranthene	45	36.20	24.69	35	246.40	2.14
Benzo(ghi)perylene	46	35.21	23.51	37	252.28	0.63
Benzo(k)fluoranthene	44	26.41	21.58	34	137.32	2.46
Biphenyl	38	15.00	7.52	34	49.84	2.84
Bis(2-ethylhexyl)phthalate	7	2142.86	0.00	1	15000.00	15000.00
Bromophenyl phenyl ether, 4-	7	0.00	0.00	0	.	.
Butyl benzyl phthalate	7	185.71	0.00	1	1300.00	1300.00
BHC	191	0.20	0.00	49	3.40	0.04
Cadmium	109	689.62	550.00	96	4000.00	100.00
Chlordane	130	0.82	0.33	86	7.00	0.01
Chlorobenzene	3	0.00	0.00	0	.	.
Chromium	109	33246.52	23869.00	107	110000.0	1000.00
Chrysene	54	49.09	34.21	46	294.73	0.79
Copper	109	10747.33	10000.00	91	35174.00	1000.00
Di-n-butyl phthalate	7	0.00	0.00	0	.	.
Di-n-octyl phthalate	7	0.00	0.00	0	.	.
Diazinon/Spectracide	28	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	54	10.31	5.57	36	105.68	3.27
Dibromochloromethane	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	6	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	7	0.00	0.00	0	.	.
Dichloroethane 1,1-	3	0.00	0.00	0	.	.
Dichloroethane 1,2-	3	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	3	0.00	0.00	0	.	.
Dichloromethane	3	0.00	0.00	0	.	.
Dichloropropane, 1,2-	3	0.00	0.00	0	.	.
Dieldrin	72	0.56	0.40	50	4.60	0.16
Diethyl phthalate	7	0.00	0.00	0	.	.
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dioxins	5	0.00	0.00	0	.	.
DDT	373	1.07	0.19	206	23.24	0.01
Endosulfan mixed isomers	28	0.00	0.00	0	.	.
Endosulfan, alpha-	33	0.00	0.00	0	.	.
Endosulfan, beta-	33	0.00	0.00	0	.	.
Endrin	61	0.02	0.00	4	0.31	0.26
Ethion/Bladen	28	0.00	0.00	0	.	.
Ethylbenzene	3	0.00	0.00	0	.	.
Fluoranthene	55	53.50	49.23	48	352.36	0.73
Fluorene	51	16.36	6.27	34	79.02	2.78
Heptachlor	69	0.01	0.00	4	0.53	0.06
Heptachlor epoxide	70	0.03	0.00	7	0.83	0.01
Hexachlorobenzene	53	2.20	0.00	26	78.35	0.02
Hexachlorobutadiene	7	0.00	0.00	0	.	.
Hexachloroethane	7	0.00	0.00	0	.	.
HMW_PAHs	34	991.48	814.39	32	6918.66	8.01
Indeno(1,2,3-cd)pyrene	45	25.16	20.90	35	165.00	1.78
Isophorone	7	0.00	0.00	0	.	.
Lead	109	13420.23	14600.00	72	50000.00	6500.00
LMW_PAHs	34	1087.65	357.35	31	3953.77	8.79
Malathion	29	0.00	0.00	0	.	.
Mercury	103	223.52	60.00	78	1800.00	28.00
Methoxychlor	28	0.00	0.00	0	.	.
Methylnaphthalene, 2-	34	55.37	23.14	33	326.93	1.19
Mirex/Dechlorane	60	0.00	0.00	1	0.00	0.00
Naphthalene	54	31.85	16.83	45	296.13	1.08
Nickel	69	22002.90	22000.00	61	60000.00	6800.00
Nitrosodiphenylamine, N-	7	0.00	0.00	0	.	.
Pentachlorophenol	7	0.00	0.00	0	.	.
Phenanthrene	53	67.75	39.00	49	635.96	0.94
Phenol	7	0.00	0.00	0	.	.
Polychlorinated biphenyls	92	6.97	3.00	55	68.00	0.19
Pyrene	55	62.64	55.50	45	218.32	13.80
Silver	55	156.44	156.00	52	282.00	40.00
SEM_est	29	1.92	1.86	29	4.01	0.87
Tetrachloroethane, 1,1,2,2-	3	0.00	0.00	0	.	.
Tetrachloroethene	3	0.00	0.00	0	.	.
Tetrachloromethane	3	0.00	0.00	0	.	.
Toluene	3	0.00	0.00	0	.	.
Toxaphene	62	0.00	0.00	0	.	.
Tribromomethane/Bromoform	3	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	3	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	3	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethene	3	0.00	0.00	0	.	.
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	3	0.00	0.00	0	.	.
Zinc	109	54997.20	55000.00	108	165000.0	5000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	11	1.97	0.00	4	11.50	1.72
Arsenic	11	0.41	0.00	2	2.50	2.00
BHC	11	0.00	0.00	0	.	.
Cadmium	11	18.45	0.00	5	200.00	0.30
Chlordane	11	5.97	5.00	7	16.20	1.97
Chromium	11	9.60	0.50	8	100.00	0.30
Copper	11	1.56	0.00	3	8.70	3.70
Dieldrin	11	15.25	3.20	7	121.80	1.60
DDT	68	25.16	7.55	48	266.40	1.50
Endosulfan, alpha-	11	2.04	0.00	3	12.70	2.60
Endrin	11	8.23	2.95	6	57.40	2.95
Heptachlor epoxide	11	13.02	2.65	7	118.60	1.60
Hexachlorobenzene	11	2.79	0.00	5	11.60	0.90
Lead	11	0.15	0.10	7	0.55	0.10
Mercury	10	6.75	0.59	9	57.00	0.07
Mirex/Dechlorane	11	31.10	6.70	11	126.55	2.20
Nickel	11	1.12	1.40	8	2.50	1.00
Polychlorinated biphenyls	11	137.04	143.18	11	367.70	1.80
Selenium	11	0.70	0.00	4	2.70	1.00
Silver	11	0.30	0.19	7	1.23	0.17
Tin	11	13.64	1.57	10	120.00	0.23
Toxaphene	11	0.00	0.00	0	.	.
Zinc	11	2158.39	21.90	10	23500.00	14.20

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
28.9510	89.3952	91-07-27	Ampelisca Abdita	S	19.01	11.00	no
28.9762	89.3768	92-07-08	Ampelisca Abdita	S	6.98	3.00	no
29.0457	89.0787	91-07-27	Ampelisca Abdita	S	16.96	11.00	no
29.0503	89.2397	92-07-08	Ampelisca Abdita	S	6.88	3.00	no
29.1135	89.2395	92-07-08	Ampelisca Abdita	S	22.98	3.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
29.1415	89.2493	91-07-28	Ampelisca Abdita	S	27.02	11.00	no
29.1648	89.1555	92-07-08	Ampelisca Abdita	S	10.95	3.00	no
29.2018	89.0372	92-07-08	Ampelisca Abdita	S	9.01	6.00	no
29.2030	89.2750	92-07-09	Ampelisca Abdita	S	15.03	3.00	no
29.2043	89.0330	91-07-28	Ampelisca Abdita	S	22.98	3.00	no
29.2045	89.0363	92-08-15	Ampelisca Abdita	S	11.01	4.00	no
29.2075	89.2828	91-07-30	Ampelisca Abdita	S	5.00	0.00	no
29.3112	89.3790	92-07-09	Ampelisca Abdita	S	29.03	6.00	Yes
29.3362	89.3913	92-07-09	Ampelisca Abdita	S	12.51	8.00	no
29.3433	89.4930	91-07-31	Ampelisca Abdita	S	33.97	13.00	Yes
29.3490	89.4178	91-07-30	Ampelisca Abdita	S	58.99	7.00	Yes
29.3705	89.5645	92-07-10	Ampelisca Abdita	S	27.04	5.00	Yes
29.3853	89.5903	92-07-10	Ampelisca Abdita	S	27.04	5.00	Yes
29.4870	89.6902	92-07-10	Ampelisca Abdita	S	12.03	5.00	no
29.5845	89.8203	91-07-29	Ampelisca Abdita	S	41.04	7.00	Yes
29.6067	89.8692	92-07-10	Ampelisca Abdita	S	16.97	3.00	no
29.6160	89.8862	92-07-11	Ampelisca Abdita	S	31.99	2.00	Yes
29.7342	89.9973	92-07-10	Ampelisca Abdita	S	41.02	3.00	Yes
29.7348	89.9962	92-08-15	Ampelisca Abdita	S	7.00	2.00	no
29.7760	90.0210	92-08-15	Ampelisca Abdita	S	31.98	5.00	Yes
29.7795	90.0245	91-07-31	Ampelisca Abdita	S	32.97	2.00	Yes
29.7800	90.0180	92-07-11	Ampelisca Abdita	S	18.02	5.00	no
29.8147	90.0025	92-08-15	Ampelisca Abdita	S	11.00	0.00	no
29.8172	89.9947	91-07-31	Ampelisca Abdita	S	21.96	13.00	no
29.9238	89.9545	92-08-16	Ampelisca Abdita	S	18.97	6.00	no
29.9568	90.0405	91-07-25	Ampelisca Abdita	S	69.04	14.00	Yes

Lower Kansas 10270104

Watershed Summary Information

Accounting Unit Name:	Kansas
State(s):	KS MO
Political Boundaries:	Leavenworth, Douglas, Johnson, Jefferson, Atchison, Shawnee, Osage, Wyandotte, Jackson
Major Waterways:	Kansas R Wakarusa R Stranger Cr Crooked Cr Rock Cr
Number of Stations in Watershed:	Tier1 - 12 Tier2 - 15 Tier3 - 2

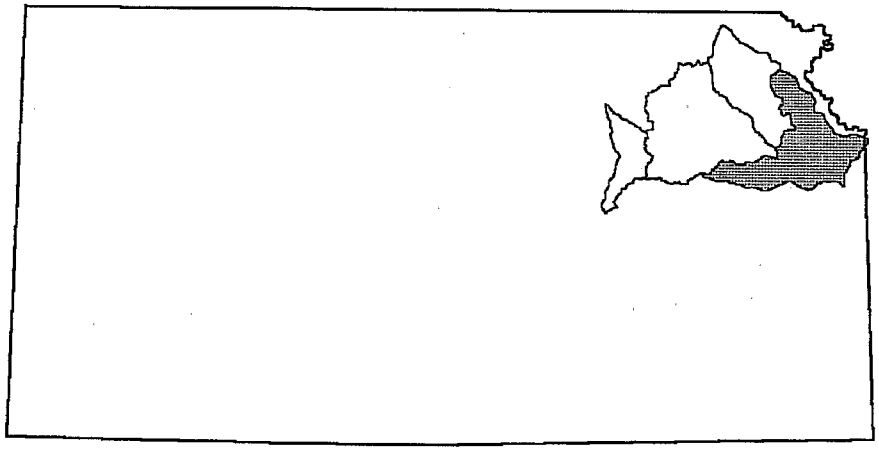

Figure 151. Watershed Location Map

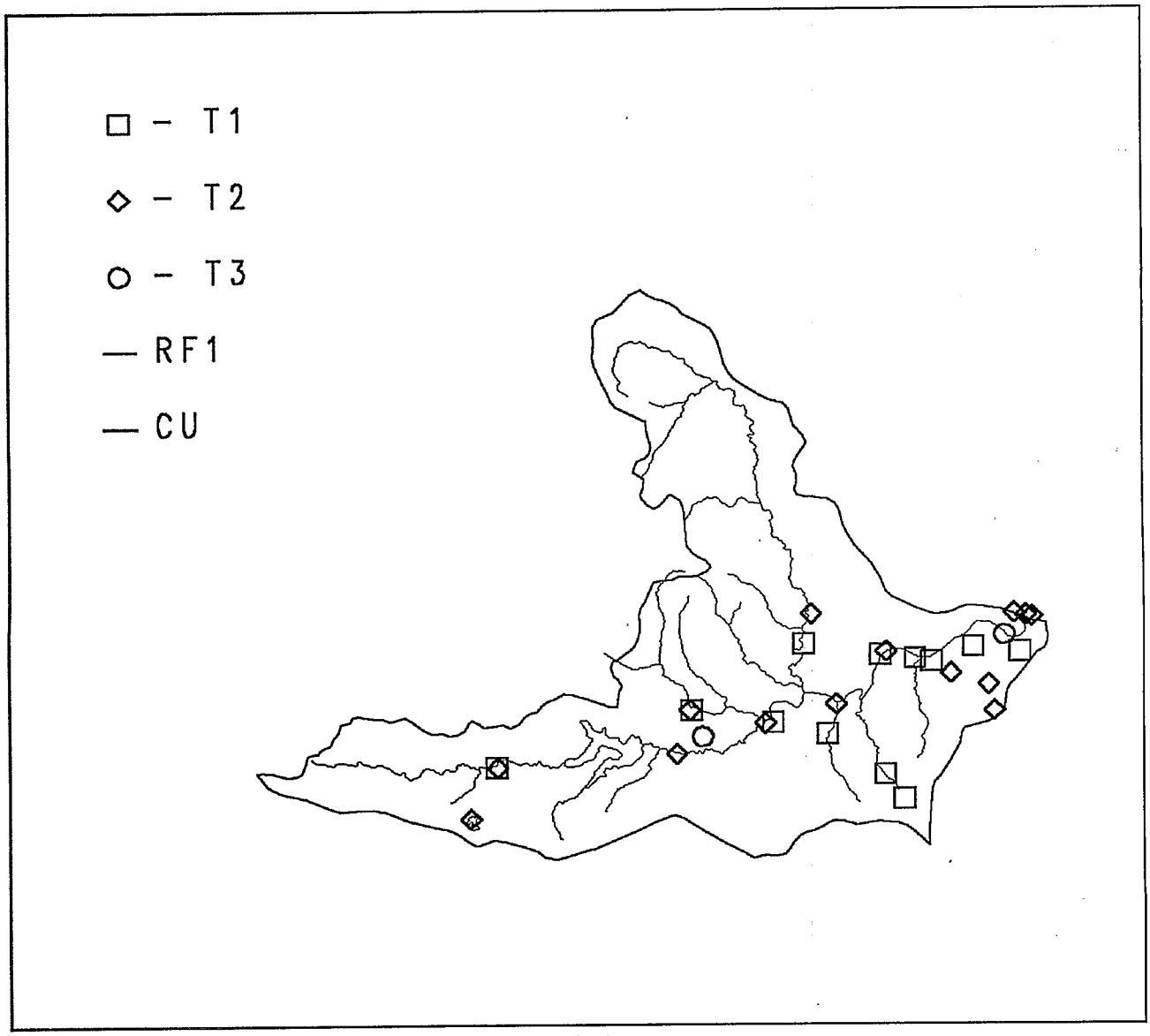

Figure 152. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1981-84

Source: **STORET** Agency: **1117MBR**
Monitoring Program: **USEPA Region 7 Data**
Num. of Stations: 19 Date Range: 1980-92

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 8 Date Range: 1982-89

Source: **STORET** Agency: **21KAN001**
Monitoring Program: **Kansas Dept Health & Env Data**
Num. of Stations: 1 Date Range: 1992

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chlordane	28	16	.	16	.	2	.	15
Arsenic	23	13	.	13	.	7	.	6
Polychlorinated biphenyls	28	11	11	.	.	.	11	.
Dieldrin	25	11	.	11	.	.	.	11
Nickel	19	9	.	9	.	9	.	.
Chromium	20	7	.	7	.	7	.	.
BHC	25	4	.	4	.	2	.	3
Heptachlor epoxide	27	4	.	4	.	.	.	4
Bis(2-ethylhexyl)phthalate	17	3	.	3	.	3	.	.
Copper	20	3	.	3	.	3	.	.
DDT	24	2	.	2	.	2	.	.
Heptachlor	28	2	.	2	.	.	.	2
Lead	23	2	.	2	.	2	.	.
Dioxins	9	1	1	.	.	.	1	.
Silver	19	1	1	.	1	.	.	.
Anthracene	15	1	.	1	.	1	.	.
Benzo(a)anthracene	15	1	.	1	.	1	.	1
Benzo(b)fluoranthene	17	1	.	1	.	.	.	1
Chrysene	17	1	.	1	.	1	.	.
Mercury	23	1	.	1	.	1	.	.
Pyrene	17	1	.	1	.	1	.	.
Toxaphene	25	1	.	1	.	.	.	1
Zinc	20	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	15	0.00	0.00	0	.	.
Acenaphthylene	15	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	18	0.00	0.00	0	.	.
Anthracene	14	33.57	0.00	1	470.00	470.00
Antimony	11	918.18	1000.00	8	2600.00	900.00
Arsenic	11	5818.18	7500.00	8	9600.00	6400.00
Benzene	1	33.00	33.00	1	33.00	33.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)anthracene	14	196.43	0.00	3	1400.00	370.00
Benzo(a)pyrene	15	0.00	0.00	0	.	.
Benzo(b)fluoranthene	15	131.33	0.00	2	1000.00	970.00
Benzo(ghi)perylene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	14	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	15	395.33	0.00	6	1800.00	230.00
Bromophenyl phenyl ether, 4-	15	0.00	0.00	0	.	.
Butyl benzyl phthalate	15	65.33	0.00	3	420.00	280.00
BHC	38	1.32	0.00	2	49.00	1.10
Cadmium	11	51.91	0.00	2	342.00	229.00
Chlordane	15	6.37	0.00	3	87.00	0.10
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	11	54337.73	61000.00	11	93000.00	7725.00
Chrysene	15	178.00	0.00	3	1400.00	500.00
Copper	11	19639.91	17000.00	11	48000.00	8361.00
Di-n-butyl phthalate	15	0.00	0.00	0	.	.
Di-n-octyl phthalate	15	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	15	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	15	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	15	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	18	0.00	0.00	0	.	.
Diethyl phthalate	15	0.00	0.00	0	.	.
Dimethyl phthalate	15	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	15	0.00	0.00	0	.	.
Dioxins	3	0.00	0.00	0	.	.
DCPA/Dacthal	2	0.00	0.00	0	.	.
DDT	36	0.47	0.00	3	9.00	3.00
Endosulfan mixed isomers	1	0.00	0.00	0	.	.
Endosulfan, alpha-	15	0.00	0.00	0	.	.
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	18	0.31	0.00	1	5.60	5.60
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	15	161.33	0.00	4	770.00	390.00
Fluorene	15	0.00	0.00	0	.	.
Heptachlor	18	0.36	0.00	1	6.50	6.50
Heptachlor epoxide	18	0.10	0.00	1	1.80	1.80
Hexachlorobenzene	15	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobutadiene	15	0.00	0.00	0	.	.
Hexachloroethane	15	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	15	0.00	0.00	0	.	.
Isophorone	15	0.00	0.00	0	.	.
Lead	11	24035.45	22000.00	10	61000.00	10480.00
Mercury	11	37.27	20.00	8	240.00	20.00
Methoxychlor	3	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Naphthalene	15	0.00	0.00	0	.	.
Nickel	11	22085.36	24000.00	11	33000.00	9069.00
Nitrosodiphenylamine, N-	15	0.00	0.00	0	.	.
Pentachlorophenol	15	0.00	0.00	0	.	.
Phenanthrene	15	258.67	0.00	4	1500.00	680.00
Phenol	15	0.00	0.00	0	.	.
Polychlorinated biphenyls	120	0.00	0.00	0	.	.
Pyrene	15	214.67	0.00	4	1200.00	490.00
Silver	11	727.27	0.00	1	8000.00	8000.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	18	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	15	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	11	77250.91	74000.00	11	200000.0	33120.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	11	0.00	0.00	0	.	.
Acrolein	11	0.00	0.00	0	.	.
Acrylonitrile	11	0.00	0.00	0	.	.
Alachlor/Lasso	51	0.00	0.00	0	.	.
Aldrin	63	0.00	0.00	0	.	.
Anthracene	8	0.00	0.00	0	.	.
Antimony	22	0.00	0.00	0	.	.
Arsenic	58	308.74	0.00	16	9000.00	50.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Atrazine	38	0.00	0.00	0	.	.
Barium	37	4372.16	4190.00	37	8700.00	1630.00
Benzene	33	0.21	0.00	1	7.00	7.00
Benzidine	10	0.00	0.00	0	.	.
Benzo(a)anthracene	8	0.00	0.00	0	.	.
Benzo(a)pyrene	11	0.00	0.00	0	.	.
Benzo(b)fluoranthene	11	0.00	0.00	0	.	.
Benzo(k)fluoranthene	8	0.00	0.00	0	.	.
Beryllium	22	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	11	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	11	27.27	0.00	1	300.00	300.00
Bromodichloromethane	11	0.00	0.00	0	.	.
Bromomethane	11	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	11	0.00	0.00	0	.	.
Butyl benzyl phthalate	11	0.00	0.00	0	.	.
BHC	234	1.42	0.00	24	64.00	1.40
Cadmium	58	66.93	59.00	40	352.00	20.00
Chlordane	382	105.58	27.50	313	2000.00	2.00
Chlorobenzene	25	0.00	0.00	0	.	.
Chloroethane	11	0.00	0.00	0	.	.
Chloroethene	19	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	11	0.00	0.00	0	.	.
Chloromethane	25	0.00	0.00	0	.	.
Chloronaphthalene, 2-	11	0.00	0.00	0	.	.
Chlorophenol, 2-	11	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	10	0.00	0.00	0	.	.
Chromium	37	357.92	320.00	37	798.00	187.00
Chrysene	11	0.00	0.00	0	.	.
Copper	36	906.69	898.00	36	1710.00	330.00
Cyanazine	16	0.00	0.00	0	.	.
Di-n-butyl phthalate	11	0.00	0.00	0	.	.
Di-n-octyl phthalate	11	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	11	0.00	0.00	0	.	.
Dibromochloromethane	11	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	25	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	19	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	23	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	11	0.00	0.00	0	.	.
Dichlorodifluoromethane	3	0.00	0.00	0	.	.
Dichloroethane 1,1-	11	0.00	0.00	0	.	.
Dichloroethane 1,2-	32	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	25	0.00	0.00	0	.	.
Dichloroethene, 1,1-	33	0.00	0.00	0	.	.
Dichloromethane	11	13.36	0.00	3	69.00	12.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichlorophenol, 2,4-	11	0.00	0.00	0	.	.
Dichloropropane, 1,2-	11	0.00	0.00	0	.	.
Dieldrin	68	50.93	29.50	47	460.00	3.00
Diethyl phthalate	11	0.00	0.00	0	.	.
Dimethyl phthalate	11	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	11	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	11	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	11	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	11	0.00	0.00	0	.	.
Dioxins	14	0.00	0.00	2	0.00	0.00
Diphenylhydrazine, 1,2-	11	0.00	0.00	0	.	.
DCPA/Dacthal	5	10.00	10.00	5	10.00	10.00
DDT	294	13.57	0.00	74	290.00	5.00
Endosulfan, alpha-	63	0.29	0.00	1	18.00	18.00
Endosulfan, beta-	36	0.00	0.00	0	.	.
Endrin	68	0.92	0.00	7	10.00	6.20
Ethylbenzene	25	0.00	0.00	0	.	.
Fluoranthene	11	0.00	0.00	0	.	.
Fluorene	11	0.00	0.00	0	.	.
Fonofos	10	0.00	0.00	0	.	.
Heptachlor	80	3.07	0.00	13	52.00	4.80
Heptachlor epoxide	76	6.86	0.00	36	90.00	2.00
Hexachlorobenzene	37	1.88	0.00	15	10.00	1.10
Hexachlorobutadiene	11	0.00	0.00	0	.	.
Hexachloroethane	11	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	11	0.00	0.00	0	.	.
Isophorone	11	0.00	0.00	0	.	.
Lead	58	41.78	0.00	15	315.00	80.00
Malathion	10	0.00	0.00	0	.	.
Manganese	22	4694.09	4140.00	22	9610.00	1800.00
Mercury	58	79.71	63.60	54	275.00	10.00
Methoxychlor	33	0.00	0.00	0	.	.
Metribuzin	10	0.00	0.00	0	.	.
Mirex/Dechlorane	14	3.57	0.00	5	10.00	10.00
Molybdenum	28	22.64	0.00	5	149.00	85.00
Naphthalene	11	0.00	0.00	0	.	.
Nickel	31	77.84	0.00	6	1010.00	109.00
Nitrobenzene	11	0.00	0.00	0	.	.
Nitrophenol, 4	11	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	11	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	11	0.00	0.00	0	.	.
Parathion ethyl	10	0.00	0.00	0	.	.
Pentachlorophenol	25	0.00	0.00	0	.	.
Phenol	11	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Polychlorinated biphenyls	330	39.55	0.00	81	730.00	14.00
Prometon/Pramitol	10	0.00	0.00	0	.	.
Pyrene	11	0.00	0.00	0	.	.
Selenium	22	2641.36	465.00	21	49000.00	240.00
Silver	22	0.00	0.00	0	.	.
Simazine	10	0.00	0.00	0	.	.
Styrene	8	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	33	0.00	0.00	0	.	.
Tetrachloroethene	33	2.09	0.00	2	59.00	10.00
Tetrachloromethane	33	0.00	0.00	0	.	.
Toluene	25	0.80	0.00	1	20.00	20.00
Toxaphene	54	35.19	0.00	5	700.00	100.00
Tribromomethane/Bromoform	25	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	11	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	25	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	27	0.00	0.00	0	.	.
Trichloroethene	33	0.00	0.00	0	.	.
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	33	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	11	0.00	0.00	0	.	.
Trifluralin/Treflan	32	4.87	0.00	8	52.00	6.10
Vanadium	28	163.82	180.00	24	280.00	105.00
Zinc	36	51338.89	53850.00	36	75500.00	11500.00

Spring 11070207

Watershed Summary Information

Accounting Unit Name: Neosho

State(s): KS MO OK

Political Boundaries: Jasper, Cherokee, Barton, Lawrence, Ottawa, Newton, Barry, Dade, Crawford

Major Waterways: Spring R, N Fk
Shoal Cr
Spring R
Center Cr
Cow Cr

Number of Stations in Watershed: Tier1 - 10
Tier2 - 25
Tier3 - 6

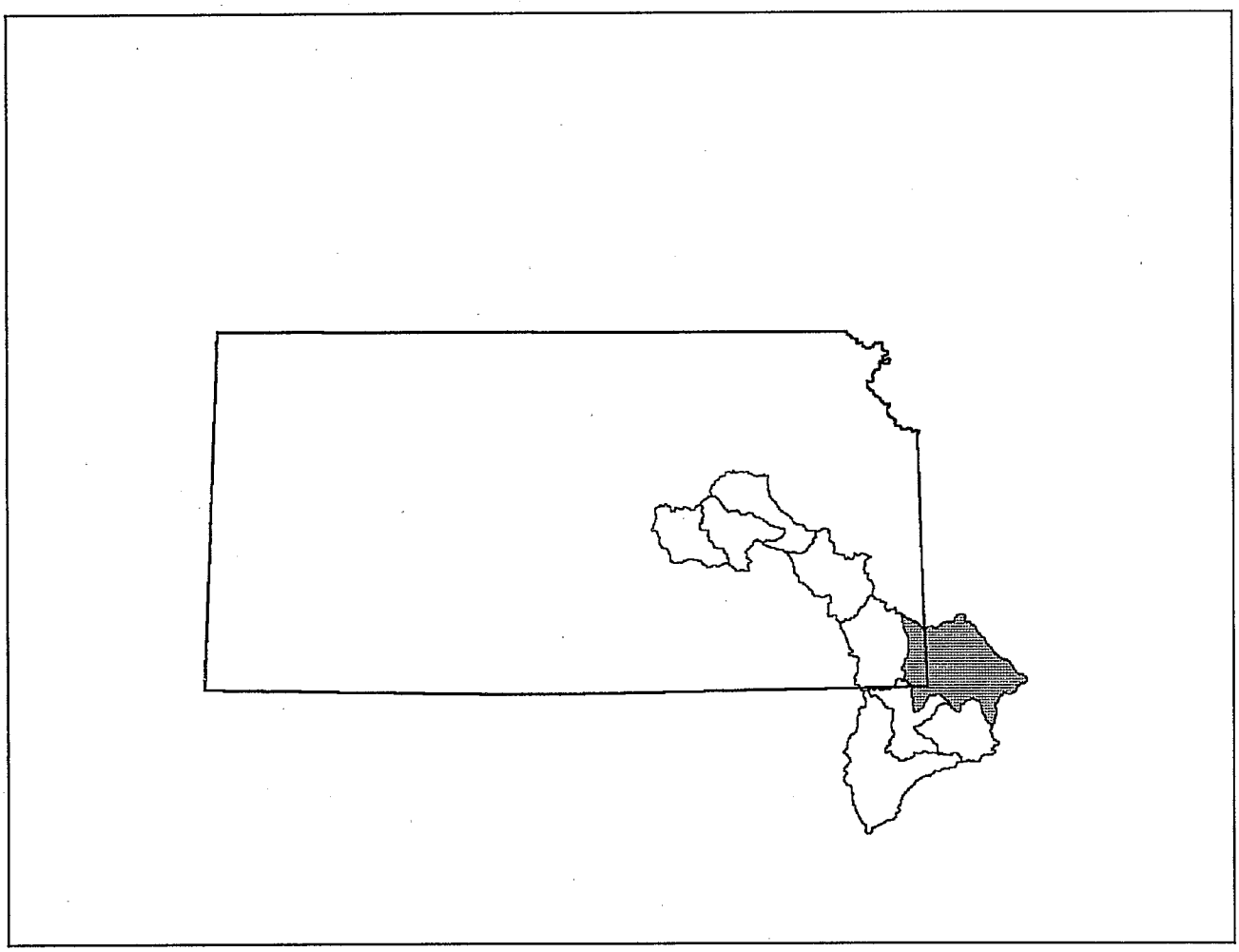

Figure 153. Watershed Location Map

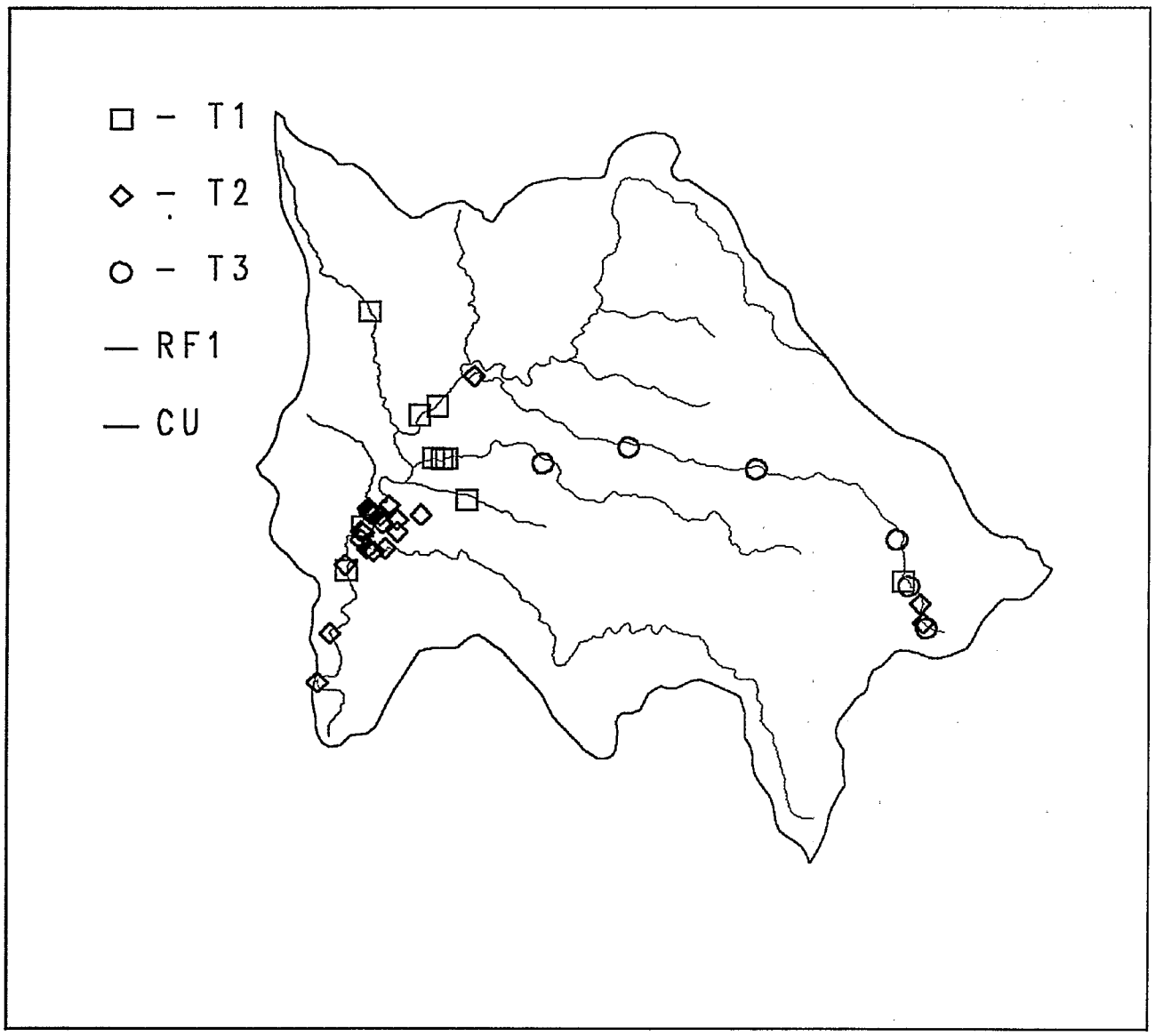

Figure 154. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **1117MBR**
Monitoring Program: **USEPA Region 7 Data**
Num. of Stations: 39 Date Range: 1980-92

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1982

Source: **STORET** Agency: **21OKOSHD**
Monitoring Program: **Oklahoma State Health Dept Water, Sediment And Tissue Data**
Num. of Stations: 1 Date Range: 1981-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Lead	38	25	.	25	.	21	.	4
Cadmium	38	22	.	22	.	22	.	.
Zinc	37	22	.	22	.	22	.	.
Polychlorinated biphenyls	16	9	8	1	.	1	8	1
Arsenic	25	8	.	8	.	4	.	4
Copper	25	8	.	8	.	8	.	.
Chlordane	16	7	.	7	.	.	.	7
Nickel	24	6	.	6	.	6	.	.
Dieldrin	16	5	.	5	.	.	.	5
Chromium	26	4	.	4	.	4	.	.
Dioxins	15	3	2	1	.	.	2	1
Silver	24	2	.	2	.	2	.	.
Phenanthrene	6	1	1	.	1	.	.	.
Anthracene	4	1	.	1	.	1	.	.
Benzo(a)anthracene	4	1	.	1	.	1	.	1
Benzo(a)pyrene	11	1	.	1	.	1	.	1
Chrysene	11	1	.	1	.	1	.	.
Fluoranthene	11	1	.	1	.	1	.	.
Heptachlor epoxide	15	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	11	1	.	1	.	.	.	1
Mercury	18	1	.	1	.	1	.	.
Pyrene	11	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	6	0.00	0.00	0	.	.
Acenaphthylene	6	0.00	0.00	0	.	.
Acetone	1	0.00	0.00	0	.	.
Aldrin	7	0.00	0.00	0	.	.
Anthracene	1	760.00	760.00	1	760.00	760.00
Antimony	67	0.00	0.00	0	.	.
Arsenic	69	1249.28	0.00	7	17300.00	4500.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	1	1300.00	1300.00	1	1300.00	1300.00
Benzo(a)pyrene	6	166.67	0.00	1	1000.00	1000.00
Benzo(b)fluoranthene	6	0.00	0.00	0	.	.
Benzo(ghi)perylene	6	0.00	0.00	0	.	.
Benzo(k)fluoranthene	1	1000.00	1000.00	1	1000.00	1000.00
Benzoic acid	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzyl alcohol	1	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	6	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	6	0.00	0.00	0	.	.
Butyl benzyl phthalate	6	0.00	0.00	0	.	.
BHC	24	0.00	0.00	0	.	.
Cadmium	141	50937.52	23400.00	136	571000.0	2000.00
Chlordane	15	0.00	0.00	0	.	.
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	70	25330.43	19700.00	70	132000.0	5000.00
Chrysene	6	216.67	0.00	1	1300.00	1300.00
Copper	69	84983.77	54800.00	69	425000.0	2900.00
Cresol, o	1	0.00	0.00	0	.	.
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	6	0.00	0.00	0	.	.
Di-n-octyl phthalate	6	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	6	0.00	0.00	0	.	.
Dibenzofuran	1	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	7	0.00	0.00	0	.	.
Diethyl phthalate	6	0.00	0.00	0	.	.
Dimethyl phthalate	6	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	6	0.00	0.00	0	.	.
Dioxins	6	4.00	0.00	2	12.00	12.00
DDT	29	0.00	0.00	0	.	.
Endosulfan, alpha-	5	0.00	0.00	0	.	.
Endosulfan, beta-	5	0.00	0.00	0	.	.
Endrin	7	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	6	200.00	0.00	1	1200.00	1200.00
Fluorene	6	0.00	0.00	0	.	.
Heptachlor	6	0.00	0.00	0	.	.
Heptachlor epoxide	5	0.00	0.00	0	.	.
Hexachlorobenzene	8	0.00	0.00	0	.	.
Hexachlorobutadiene	6	0.00	0.00	0	.	.
Hexachloroethane	6	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	6	83.33	0.00	1	500.00	500.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Isophorone	6	0.00	0.00	0	.	.
Lead	140	647515.0	229550.0	136	16080000	4600.00
Mercury	8	49.37	20.00	6	295.00	10.00
Methoxychlor	2	0.00	0.00	0	.	.
Methyl ethyl ketone	1	0.00	0.00	0	.	.
Methylnaphthalene, 2-	1	0.00	0.00	0	.	.
Naphthalene	6	0.00	0.00	0	.	.
Nickel	67	16834.33	13500.00	67	55900.00	1670.00
Nitrosodiphenylamine, N-	6	0.00	0.00	0	.	.
Pentachlorophenol	6	0.00	0.00	0	.	.
Phenanthrene	6	566.67	0.00	1	3400.00	3400.00
Phenol	6	0.00	0.00	0	.	.
Polychlorinated biphenyls	37	2.54	0.00	1	94.00	94.00
Pyrene	6	416.67	0.00	1	2500.00	2500.00
Silver	67	210.46	0.00	20	1850.00	220.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	6	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	6	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Xylenes	1	0.00	0.00	0	.	.
Zinc	138	6301709	3346500	138	66500000	47000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	10	0.00	0.00	0	.	.
Acrolein	10	0.00	0.00	0	.	.
Acrylonitrile	10	0.00	0.00	0	.	.
Alachlor/Lasso	22	0.00	0.00	0	.	.
Aldrin	32	0.00	0.00	0	.	.
Anthracene	7	0.00	0.00	0	.	.
Antimony	20	0.00	0.00	0	.	.
Arsenic	31	36.45	0.00	12	220.00	50.00
Atrazine	20	0.00	0.00	0	.	.
Barium	26	3170.19	3225.00	26	5800.00	163.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzene	21	2.81	0.00	2	51.00	8.00
Benzidine	10	0.00	0.00	0	.	.
Benzo(a)anthracene	7	0.00	0.00	0	.	.
Benzo(a)pyrene	10	0.00	0.00	0	.	.
Benzo(b)fluoranthene	10	0.00	0.00	0	.	.
Benzo(k)fluoranthene	7	0.00	0.00	0	.	.
Beryllium	22	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	10	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	10	0.00	0.00	0	.	.
Bromodichloromethane	10	0.00	0.00	0	.	.
Bromomethane	10	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	10	0.00	0.00	0	.	.
Butyl benzyl phthalate	10	0.00	0.00	0	.	.
BHC	117	0.10	0.00	2	8.50	3.50
Cadmium	31	140.26	102.00	23	714.00	60.00
Chlordane	159	44.69	8.00	120	780.00	2.00
Chlorobenzene	19	0.00	0.00	0	.	.
Chloroethane	10	0.00	0.00	0	.	.
Chloroethene	12	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	10	0.00	0.00	0	.	.
Chloromethane	19	0.00	0.00	0	.	.
Chloronaphthalene, 2-	10	0.00	0.00	0	.	.
Chlorophenol, 2-	10	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	8	0.00	0.00	0	.	.
Chromium	26	430.19	417.00	26	877.00	160.00
Chrysene	10	0.00	0.00	0	.	.
Copper	24	912.71	964.00	24	1780.00	318.00
Cyanazine	3	0.00	0.00	0	.	.
Di-n-butyl phthalate	10	0.00	0.00	0	.	.
Di-n-octyl phthalate	10	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	10	0.00	0.00	0	.	.
Dibromochloromethane	10	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	19	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	16	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	19	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	10	0.00	0.00	0	.	.
Dichlorodifluoromethane	3	0.00	0.00	0	.	.
Dichloroethane 1,1-	10	0.00	0.00	0	.	.
Dichloroethane 1,2-	21	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	19	0.00	0.00	0	.	.
Dichloroethene, 1,1-	21	0.00	0.00	0	.	.
Dichloromethane	10	91.00	0.00	3	737.00	13.00
Dichlorophenol, 2,4-	10	0.00	0.00	0	.	.
Dichloropropane, 1,2-	10	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dieldrin	31	13.48	0.00	13	76.00	6.00
Diethyl phthalate	10	0.00	0.00	0	.	.
Dimethyl phthalate	10	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	10	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	10	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	10	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	10	0.00	0.00	0	.	.
Dioxins	15	0.00	0.00	3	0.01	0.00
Diphenylhydrazine, 1,2-	10	0.00	0.00	0	.	.
DDT	151	6.05	0.00	27	130.00	6.00
Endosulfan, alpha-	32	0.00	0.00	0	.	.
Endosulfan, beta-	21	0.00	0.00	0	.	.
Endrin	32	0.00	0.00	0	.	.
Ethylbenzene	19	0.21	0.00	1	4.00	4.00
Fluoranthene	10	0.00	0.00	0	.	.
Fluorene	10	0.00	0.00	0	.	.
Fonofos	8	0.00	0.00	0	.	.
Heptachlor	34	0.69	0.00	3	11.00	3.30
Heptachlor epoxide	34	1.24	0.00	9	17.00	1.50
Hexachlorobenzene	15	0.00	0.00	0	.	.
Hexachlorobutadiene	10	0.00	0.00	0	.	.
Hexachloroethane	10	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	10	0.00	0.00	0	.	.
Isophorone	10	0.00	0.00	0	.	.
Lead	31	616.35	0.00	15	3770.00	80.00
Malathion	8	0.00	0.00	0	.	.
Manganese	22	7845.09	6950.00	22	16000.00	712.00
Mercury	31	40.88	27.00	25	328.00	10.00
Methoxychlor	19	0.00	0.00	0	.	.
Metribuzin	8	0.00	0.00	0	.	.
Mirex/Dechlorane	8	0.00	0.00	0	.	.
Molybdenum	16	36.44	0.00	5	148.00	72.00
Naphthalene	10	0.00	0.00	0	.	.
Nickel	24	93.87	0.00	7	494.00	155.00
Nitrobenzene	10	0.00	0.00	0	.	.
Nitrophenol, 4	9	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	10	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	10	0.00	0.00	0	.	.
Parathion ethyl	8	0.00	0.00	0	.	.
Pentachlorophenol	19	0.00	0.00	0	.	.
Phenol	10	0.00	0.00	0	.	.
Polychlorinated biphenyls	155	39.37	0.00	37	510.00	20.00
Prometon/Pramitol	8	0.00	0.00	0	.	.
Pyrene	10	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Selenium	21	380.00	410.00	20	790.00	120.00
Silver	22	0.00	0.00	0	.	.
Simazine	8	0.00	0.00	0	.	.
Styrene	2	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	21	0.00	0.00	0	.	.
Tetrachloroethene	21	0.00	0.00	0	.	.
Tetrachloromethane	21	0.00	0.00	0	.	.
Toluene	19	0.79	0.00	1	15.00	15.00
Toxaphene	23	0.00	0.00	0	.	.
Tribromomethane/Bromoform	19	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	10	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	19	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	18	0.00	0.00	0	.	.
Trichloroethene	21	0.00	0.00	0	.	.
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	21	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	10	0.00	0.00	0	.	.
Trifluralin/Treflan	11	1.18	0.00	1	13.00	13.00
Vanadium	16	141.31	139.50	13	340.00	109.00
Zinc	24	59700.00	62500.00	24	150000.0	4900.00

Lower Neosho 11070209

Watershed Summary Information

Accounting Unit Name: Neosho

State(s): OK (AR)

Political Boundaries: Mayes, Delaware, Cherokee, Craig, Wagoner, Benton, Rogers, Muskogee

Major Waterways:
Neosho R
Spavinaw Cr
Spring Cr
Fort Gibson L
L Hudson

Number of Stations in Watershed:
Tier1 - 13
Tier2 - 3
Tier3 - 4

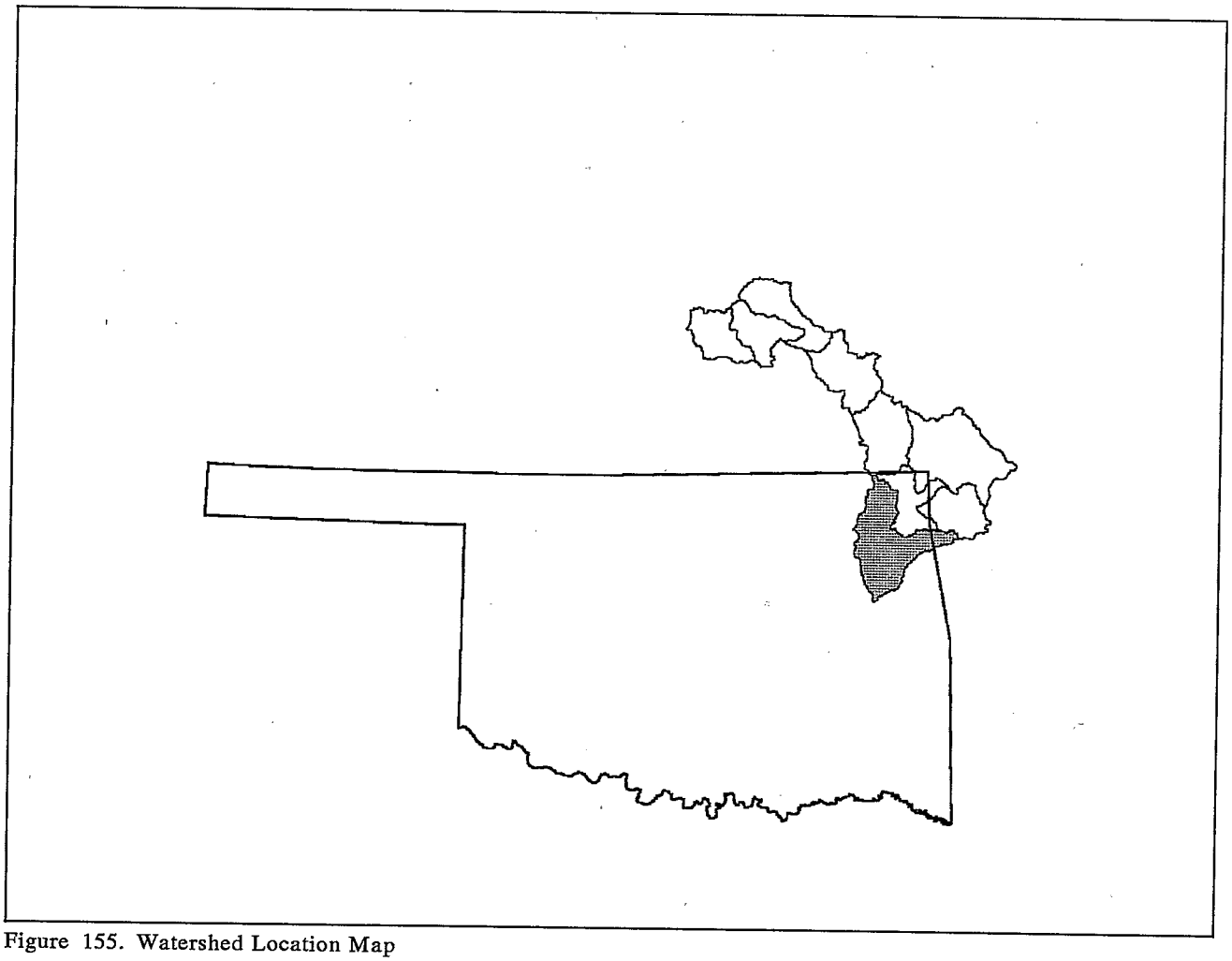

Figure 155. Watershed Location Map

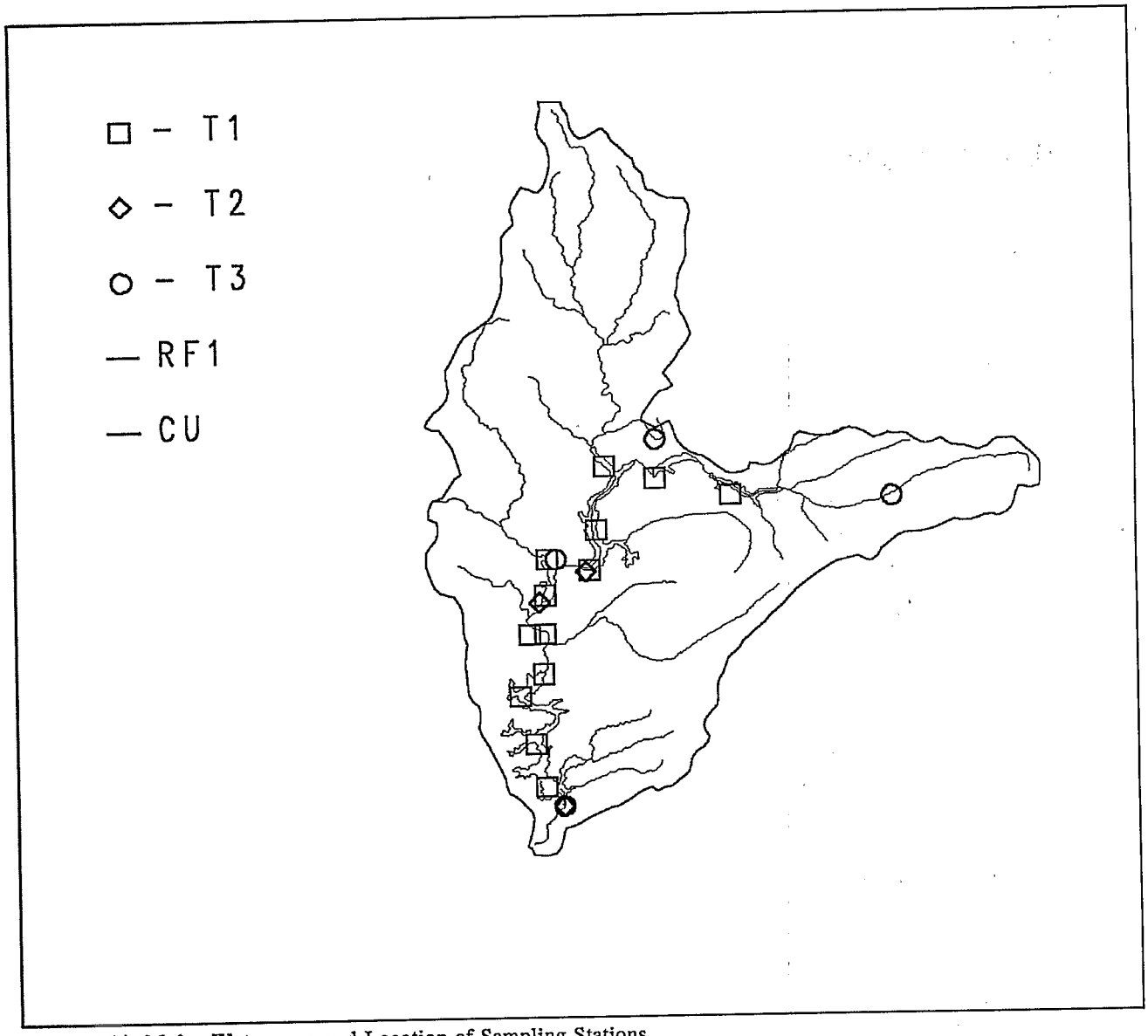

Figure 156. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1986

Source: **STORET** Agency: **11POX06**
Monitoring Program: **USEPA Region 6 Data**
Num. of Stations: 3 Date Range: 1980-81

Source: **STORET** Agency: **1116APCC**
Monitoring Program: **Arkansas Dept of Con & Ecol. Pollution Control And Ecology Data**
Num. of Stations: 1 Date Range: 1981-83

Source: **STORET** Agency: **21OKOSHD**
Monitoring Program: **Oklahoma State Health Dept Water, Sediment And Tissue Data**
Num. of Stations: 15 Date Range: 1980-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	18	13	13	.	1	.	12	1
Chlordane	17	11	.	11	.	.	.	11
Dieldrin	12	7	.	7	.	.	.	7
DDT	19	2	.	2	.	.	.	2
Lead	8	2	.	2	.	2	.	.
Cadmium	8	1	.	1	.	1	.	.
Heptachlor	19	1	.	1	.	.	.	1
Heptachlor epoxide	7	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	3	0.00	0.00	0	.	.
Acenaphthylene	3	0.00	0.00	0	.	.
Acrylonitrile	3	0.00	0.00	0	.	.
Aldrin	6	0.00	0.00	0	.	.
Anthracene&Phenanthrene	2	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	9	1127.78	0.00	3	4250.00	2900.00
Benzene	3	0.00	0.00	0	.	.
Benzo(a)anthracene	3	0.00	0.00	0	.	.
Benzo(a)pyrene	3	0.00	0.00	0	.	.
Benzo(b)fluoranthene	3	0.00	0.00	0	.	.
Benzo(ghi)perylene	3	0.00	0.00	0	.	.
Benzo(k)fluoranthene	3	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	16	0.00	0.00	0	.	.
Cadmium	10	1053.00	0.00	3	10000.00	130.00
Chlordane	26	0.00	0.00	0	.	.
Chlorobenzene	3	0.00	0.00	0	.	.
Chromium	10	11364.00	10500.00	8	29300.00	8640.00
Chrysene	3	0.00	0.00	0	.	.
Copper	10	4721.00	5500.00	8	9300.00	3100.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	3	0.00	0.00	0	.	.
Dibromochloromethane	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	3	0.00	0.00	0	.	.
Dichloroethane 1,1-	3	0.00	0.00	0	.	.
Dichloroethane 1,2-	3	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	3	0.00	0.00	0	.	.
Dichloromethane	3	0.00	0.00	0	.	.
Dichloropropane, 1,2-	3	0.00	0.00	0	.	.
Dieldrin	6	0.00	0.00	0	.	.
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	47	0.00	0.00	0	.	.
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.
Endrin	6	0.00	0.00	0	.	.
Ethylbenzene	3	0.00	0.00	0	.	.
Fluoranthene	3	0.00	0.00	0	.	.
Fluorene	3	0.00	0.00	0	.	.
Heptachlor	9	0.56	0.00	1	5.00	5.00
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	8	0.00	0.00	0	.	.
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Hexachloroethane	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	3	0.00	0.00	0	.	.
Isophorone	3	0.00	0.00	0	.	.
Lead	10	16844.00	11500.00	10	48000.00	6640.00
Mercury	10	11.00	0.00	2	90.00	20.00
Methoxychlor	5	0.00	0.00	0	.	.
Naphthalene	3	0.00	0.00	0	.	.
Nickel	3	900.00	0.00	1	2700.00	2700.00
Nitrosodiphenylamine, N-	3	0.00	0.00	0	.	.
Pentachlorophenol	3	0.00	0.00	0	.	.
Phenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	25	916.00	0.00	1	22900.00	22900.00
Pyrene	3	0.00	0.00	0	.	.
Silver	3	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	3	0.00	0.00	0	.	.
Tetrachloroethene	3	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Tetrachloromethane	3	0.00	0.00	0	.	.
Toluene	3	0.00	0.00	0	.	.
Toxaphene	8	0.00	0.00	0	.	.
Tribromomethane/Bromoform	3	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	3	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	3	0.00	0.00	0	.	.
Trichloroethene	3	0.00	0.00	0	.	.
Trichlorofluoromethane	3	0.00	0.00	0	.	.
Trichloromethane/Chloroform	3	0.00	0.00	0	.	.
Zinc	3	19133.33	17000.00	3	31000.00	9400.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	94	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
BHC	7	5.14	4.00	5	16.00	4.00
Chlordane	128	39.68	22.00	70	306.00	11.20
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	8	14.99	10.00	8	30.00	9.89
Dioxins	2	0.00	0.00	1	0.00	0.00
DDT	105	51.34	0.00	47	704.00	10.00
Endrin	1	0.00	0.00	0	.	.
Heptachlor	96	0.08	0.00	1	8.00	8.00
Heptachlor epoxide	4	7.97	8.50	4	12.00	2.87
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Mercury	53	35.66	0.00	12	330.00	100.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	201	1739.28	608.00	152	20900.00	62.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	94	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.

Buffalo-San Jacinto 12040104

Watershed Summary Information

Accounting Unit Name: San Jacinto

State(s): TX

Political Boundaries: Harris, Fort Bend, Chambers, Walker

Major Waterways:
San Jacinto R
Buffalo Bayou
Greens Bayou
Brays Bayou
White Oak Bayou

Number of Stations in Watershed:
Tier1 - 10
Tier2 - 23
Tier3 - 3

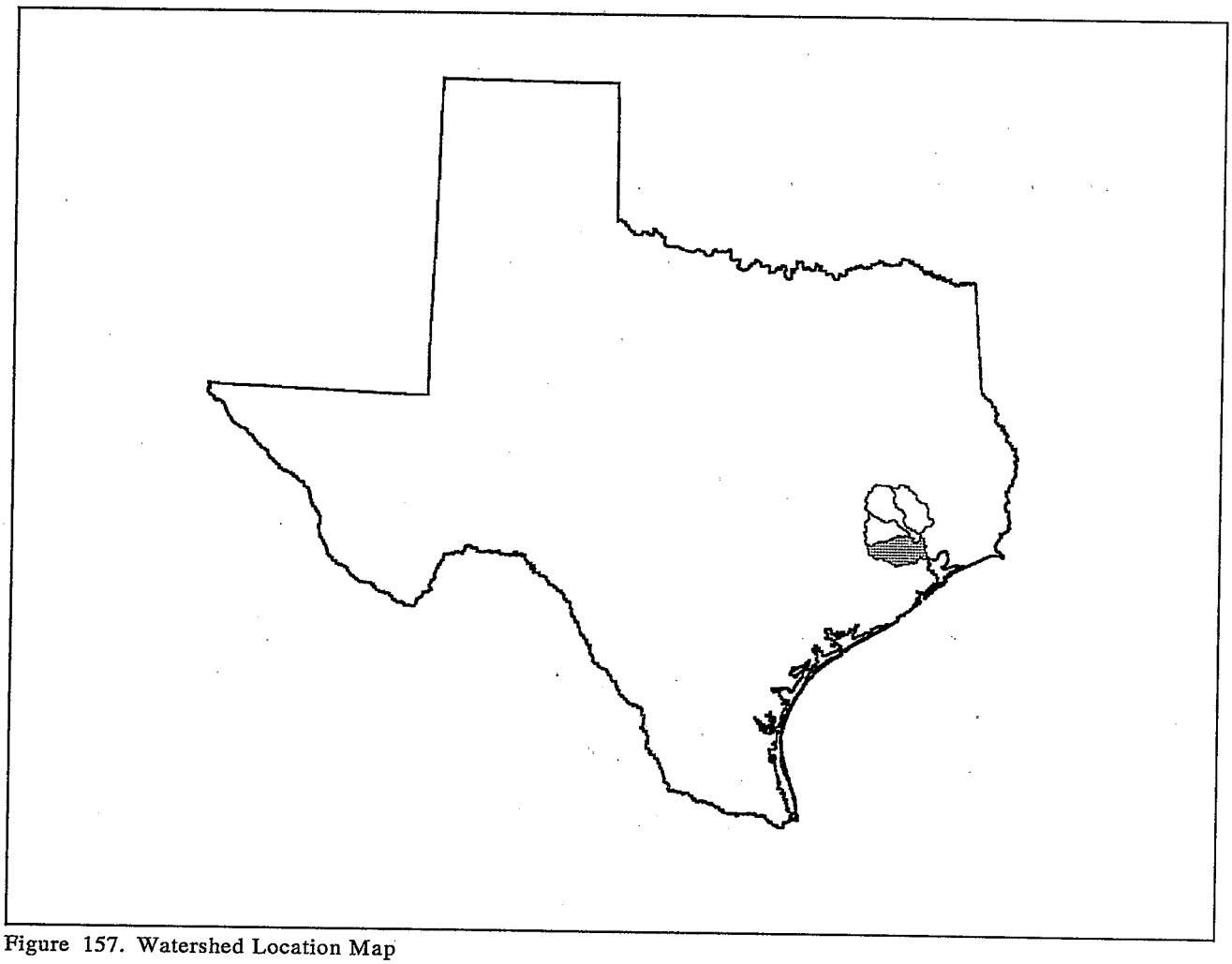

Figure 157. Watershed Location Map

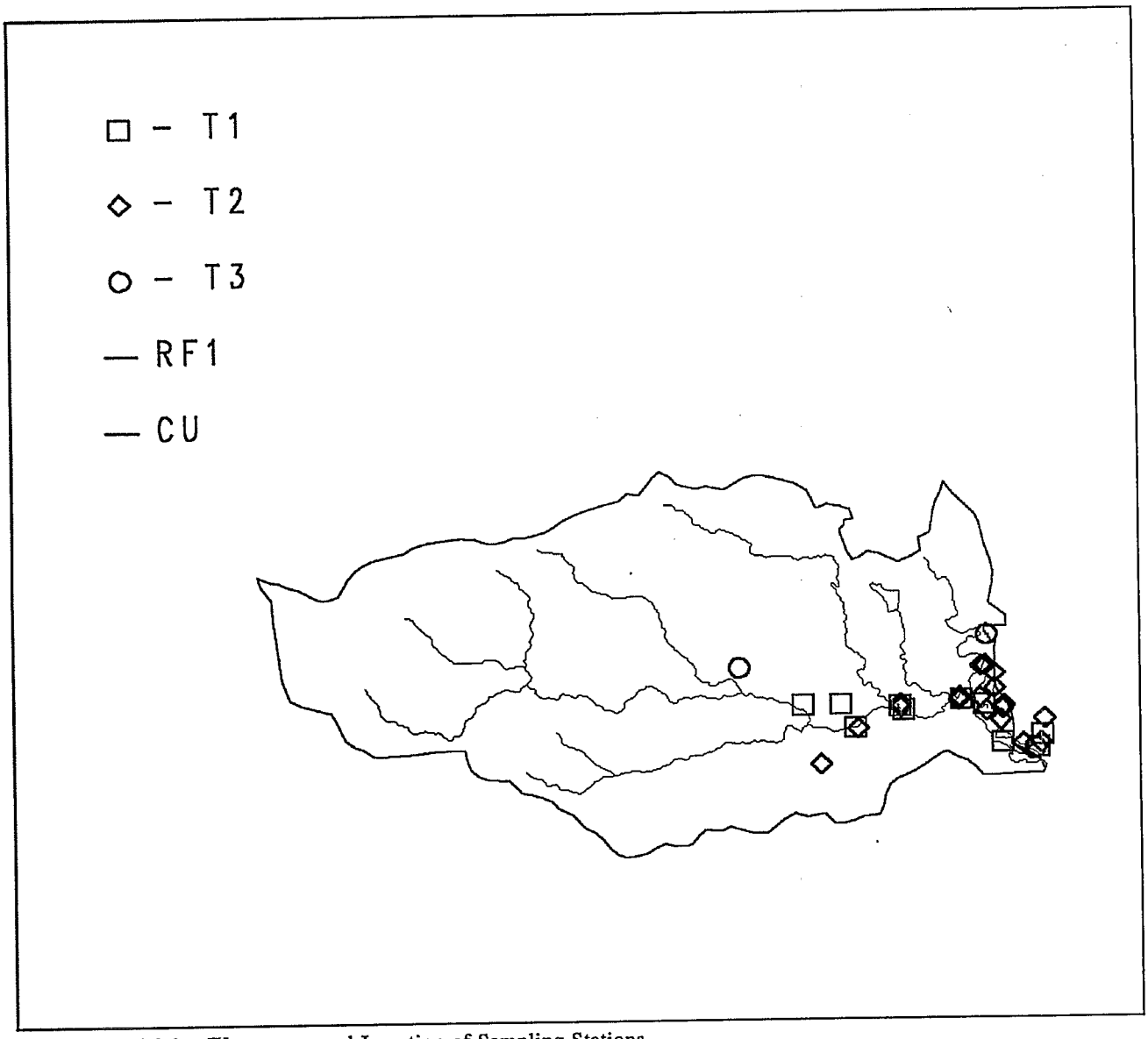

Figure 158. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 9 Date Range: 1987-90

Source: **EMAP-LA** Agency: **EMAPLA**
Monitoring Program: **EMAP-LA Province**
Num. of Stations: 3 Date Range: 1991-92

Source: **GOM** Agency: **USEPA REGION 6**
Monitoring Program: **USEPA Region 6**
Num. of Stations: 10 Date Range: 1988-90

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **21TXWQB**
Monitoring Program: **Texas Dept. of Water Resources Surface Water Data**
Num. of Stations: 13 Date Range: 1980-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	25	24	9	15	7	14	2	22
Chromium	30	21	.	21	.	21	.	.
Nickel	29	21	.	21	.	21	.	.
Copper	30	19	.	19	.	19	.	.
Zinc	29	18	.	18	.	18	.	.
Lead	30	17	.	17	.	17	.	.
DDT	18	15	2	13	2	13	.	4
Mercury	30	14	.	14	.	14	.	.
Dibenzo(a,h)anthracene	12	12	1	11	1	11	.	6
Benzo(a)pyrene	12	12	.	12	.	4	.	12
BHC	16	11	1	10	1	10	.	.
Acenaphthylene	12	11	.	11	.	11	.	.
Chlordane	17	9	.	9	.	8	.	6
Arsenic	30	8	.	8	.	8	.	.
Cadmium	30	8	.	8	.	8	.	.
Dieldrin	17	7	.	7	.	6	.	6
Silver	29	6	1	5	1	5	.	.
Bis(2-ethylhexyl)phthalate	5	5	3	2	3	2	.	3
Chrysene	12	5	.	5	.	5	.	.
Pyrene	12	5	.	5	.	5	.	.
Benzo(a)anthracene	12	4	.	4	.	4	.	1
Hexachlorobenzene	18	4	.	4	.	4	.	.
Heptachlor epoxide	16	3	.	3	.	.	.	3
Aldrin	12	2	.	2	.	.	.	2
Fluoranthene	12	2	.	2	.	2	.	.
Fluorene	12	2	.	2	.	2	.	.
HMW_PAHs	3	2	.	2	.	2	.	.
LMW_PAHs	3	2	.	2	.	2	.	.
Acenaphthene	12	1	.	1	.	1	.	.
Anthracene	11	1	.	1	.	1	.	.
Di-n-butyl phthalate	5	1	.	1	.	1	.	.
Indeno(1,2,3-cd)pyrene	12	1	.	1	.	.	.	1
Methylnaphthalene, 2-	3	1	.	1	.	1	.	.
Mirex/Dechlorane	6	1	.	1	.	.	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Naphthalene	12	1	.	1	.	1	.	.
Phenanthrene	12	1	.	1	.	1	.	.
SEM_est	3	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	15	7.33	4.93	13	22.00	2.00
Acenaphthylene	19	15.10	10.74	19	45.00	1.00
Aldrin	37	0.11	0.00	3	2.00	0.31
Anthracene	16	16.62	13.18	16	64.00	3.00
Antimony	29	911.21	0.00	12	15800.00	496.00
Arsenic	79	3925.78	4000.00	63	9600.00	1100.00
Benzo(a)anthracene	19	90.87	44.00	19	480.00	20.00
Benzo(a)pyrene	17	71.78	53.87	17	220.00	12.00
Benzo(b)fluoranthene	10	82.25	57.17	10	166.20	35.17
Benzo(ghi)perylene	17	104.47	72.31	17	310.00	19.00
Benzo(k)fluoranthene	9	39.54	25.75	9	91.56	13.77
Biphenyl	15	38.13	14.53	15	360.00	2.50
Bis(2-ethylhexyl)phthalate	23	3208.52	2370.00	14	16200.00	430.00
BHC	61	0.35	0.00	14	12.30	0.21
Cadmium	77	1079.34	180.00	44	11000.00	84.00
Chlordane	76	71.85	1.65	48	587.00	0.40
Chromium	79	49166.44	43000.00	78	185000.0	2200.00
Chrysene	18	89.86	84.07	18	280.00	13.00
Copper	79	24616.85	20069.00	77	115000.0	1200.00
Di-n-butyl phthalate	23	114.26	0.00	5	2010.00	59.00
Diazinon/Spectracide	32	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	19	54.03	14.17	19	567.00	3.00
Dieldrin	46	4.47	0.51	27	32.00	0.38
DCPA/Dacthal	1	51.00	51.00	1	51.00	51.00
DDT	223	2.56	0.00	88	107.00	0.07
Endosulfan, alpha-	3	0.00	0.00	0	.	.
Endosulfan, beta-	3	0.00	0.00	0	.	.
Endrin	35	0.00	0.00	0	.	.
Fluoranthene	18	176.35	96.75	18	960.00	12.00
Fluorene	18	12.10	11.80	18	39.00	1.00
Heptachlor	34	0.00	0.00	0	.	.
Heptachlor epoxide	46	2.95	0.00	15	37.00	0.01
Hexachlorobenzene	43	18.66	2.50	33	150.00	0.09
HMW_PAHs	3	1637.50	2052.43	3	2301.03	559.04
Indeno(1,2,3-cd)pyrene	17	65.81	35.10	17	180.00	11.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Lead	77	46018.05	31000.00	70	226000.0	2300.00
LMW_PAHs	3	566.31	740.54	3	816.26	142.13
Malathion	28	0.00	0.00	0	.	.
Mercury	69	198.95	216.20	51	590.00	20.00
Methoxychlor	32	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	18.66	19.88	3	23.21	12.90
Mirex/Dechlorane	6	0.05	0.03	3	0.15	0.06
Naphthalene	16	19.51	13.19	16	53.00	5.00
Nickel	62	17428.73	18000.00	58	45000.00	2000.00
Pentachlorophenol	13	2.37	0.00	1	30.87	30.87
Phenanthrene	17	55.21	36.35	17	230.00	12.00
Polychlorinated biphenyls	59	287.05	26.96	41	6430.00	3.80
Pyrene	21	234.58	132.50	21	1200.00	28.00
Silver	60	430.87	0.00	29	7000.00	115.00
SEM_est	3	3.10	2.75	3	4.11	2.45
Toxaphene	34	0.00	0.00	0	.	.
Zinc	79	159725.1	125700.0	79	836000.0	6800.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	6	0.00	0.00	0	.	.
Arsenic	6	0.00	0.00	0	.	.
BHC	6	0.50	0.00	1	3.00	3.00
Cadmium	6	0.05	0.00	1	0.30	0.30
Chlordane	6	217.88	0.00	2	1300.00	7.30
Chromium	6	0.12	0.00	2	0.40	0.30
Copper	6	125.83	1.05	3	750.00	2.10
Dieldrin	6	14.57	3.20	3	70.00	6.40
DCPA/Dacthal	2	22.50	22.50	2	30.00	15.00
DDT	32	14.63	0.00	15	87.00	2.50
Endosulfan, alpha-	4	0.00	0.00	0	.	.
Endrin	6	3.33	0.00	1	20.00	20.00
Heptachlor	2	0.00	0.00	0	.	.
Heptachlor epoxide	6	2.52	0.00	2	8.35	6.75
Hexachlorobenzene	6	3.18	1.50	3	9.80	3.00
Lead	6	0.10	0.00	2	0.40	0.20
Mercury	5	14.06	0.04	3	70.00	0.04
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	4	47.43	5.85	4	174.10	3.90
Nickel	4	0.50	0.45	2	1.10	0.90
Polychlorinated biphenyls	6	63.88	26.20	5	270.00	2.10

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Selenium	6	253.33	0.00	2	850.00	670.00
Silver	4	0.32	0.19	2	0.89	0.37
Tin	4	0.40	0.35	2	0.89	0.70
Toxaphene	6	0.00	0.00	0	.	.
Zinc	4	3.90	0.00	1	15.60	15.60

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EMAP-LA Province							
29.7058	95.0408	91-07-09	Ampelisca Abdita	S	0.01	1.00	no
29.7472	95.0385	92-07-22	Ampelisca Abdita	S	6.05	1.00	no
29.7568	95.0932	92-07-22	Ampelisca Abdita	S	10.04	2.00	no

Coeur D'Alene Lake 17010303

Watershed Summary Information

Accounting Unit Name: Spokane

State(s): ID (WA)

Political Boundaries: Kootenai, Benewah, Shoshone

Major Waterways:
St Joe R
Coeur D'alene R
Wolf Lodge Cr
Coeur D'alene L
Thompson L

Number of Stations in Watershed:
Tier1 - 10
Tier2 - 13
Tier3 - .

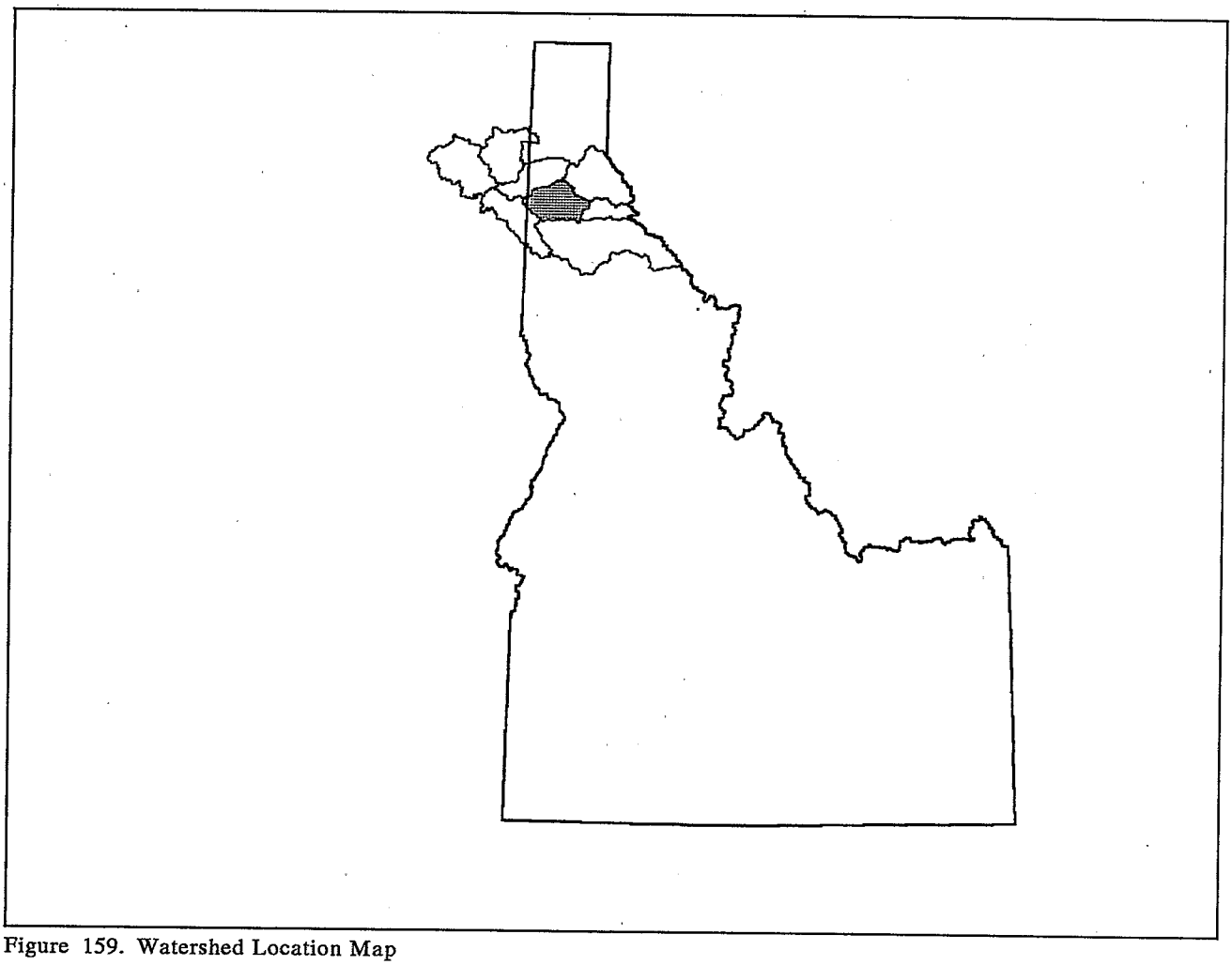

Figure 159. Watershed Location Map

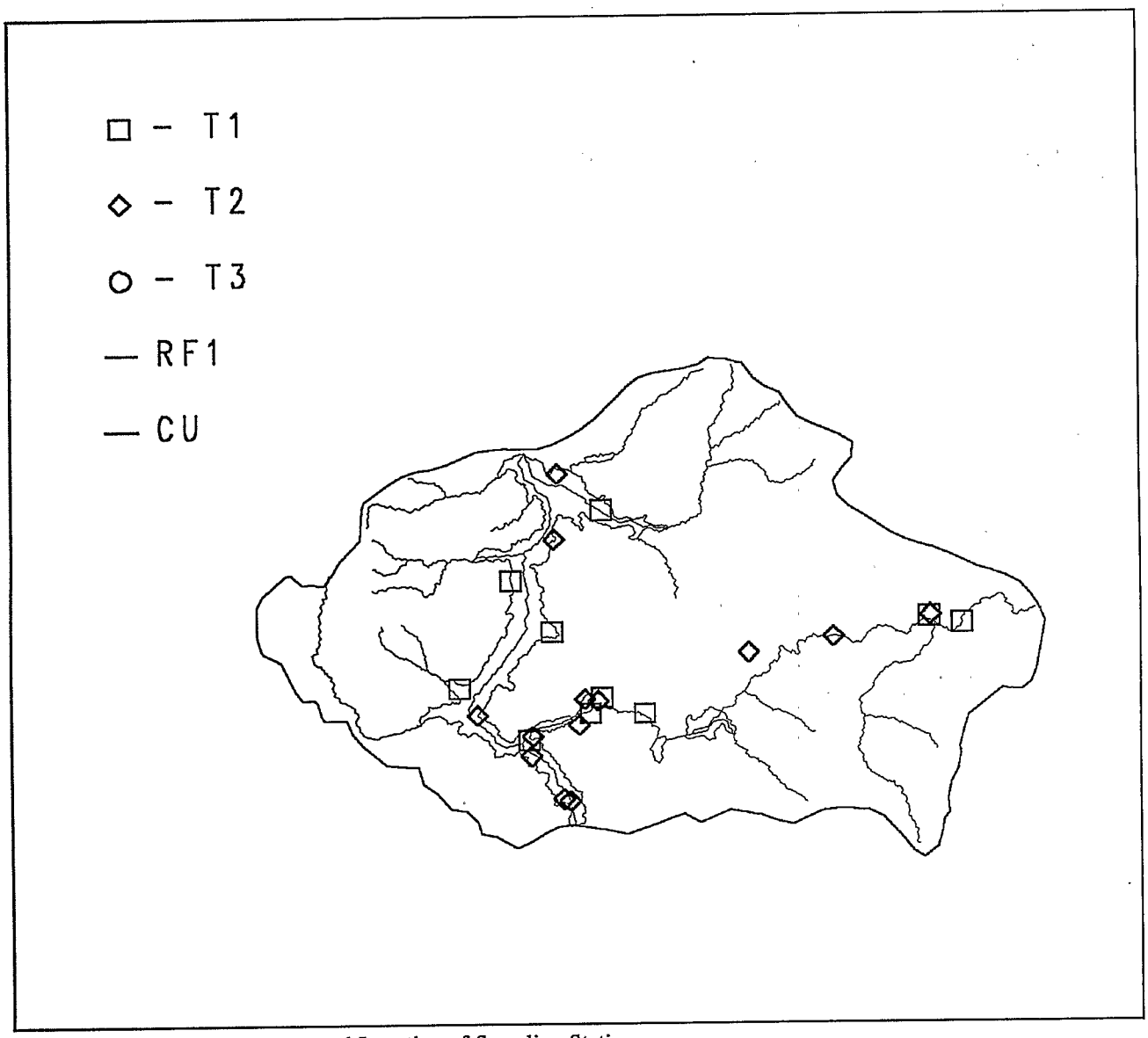

Figure 160. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **10EPACOP**
Monitoring Program: **USEPA Region 10 Cooperative Water Data**
Num. of Stations: 9 Date Range: 1985-87

Source: **STORET** Agency: **10EPAINT**
Monitoring Program: **USEPA Region 10 Intensive Survey Data**
Num. of Stations: 10 Date Range: 1986

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 2 Date Range: 1987

Source: **STORET** Agency: **1119C050**
Monitoring Program: **USEPA Region 10 Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1986

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	21	20	8	12	8	5	.	7
Lead	21	19	.	19	.	14	.	5
Cadmium	21	14	.	14	.	14	.	.
Zinc	21	14	.	14	.	14	.	.
Copper	21	13	.	13	.	13	.	.
Antimony	21	4	.	4	.	.	.	4
Polychlorinated biphenyls	5	2	2	.	.	.	2	.
Silver	8	2	2	.	2	.	.	.
Mercury	12	2	1	1	1	1	.	.
Manganese	7	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acetone	1	0.00	0.00	0	.	.
Aldrin	1	0.00	0.00	0	.	.
Antimony	18	783.33	400.00	12	2500.00	200.00
Arsenic	18	63061.11	71750.00	18	100000.0	1400.00
Benzene	1	0.00	0.00	0	.	.
BHC	4	0.00	0.00	0	.	.
Cadmium	18	10938.89	7900.00	18	30000.00	300.00
Chlordane	1	0.00	0.00	0	.	.
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	7	8171.43	8100.00	7	13000.00	2700.00
Copper	18	102394.4	105000.0	18	197000.0	6300.00
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	1	0.00	0.00	0	.	.
DDT	3	0.00	0.00	0	.	.
Endosulfan, alpha-	1	0.00	0.00	0	.	.
Endosulfan, beta-	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endrin	1	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Heptachlor	1	0.00	0.00	0	.	.
Heptachlor epoxide	1	0.00	0.00	0	.	.
Lead	18	3127944	3053000	18	6570000	32000.00
Mercury	7	1974.57	3000.00	6	3700.00	70.00
Methyl ethyl ketone	1	0.00	0.00	0	.	.
Nickel	6	9633.33	9950.00	6	13000.00	6400.00
Polychlorinated biphenyls	7	0.00	0.00	0	.	.
Silver	7	7557.14	5800.00	6	19000.00	400.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	1	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Xylenes	1	0.00	0.00	0	.	.
Zinc	18	3497611	3910000	18	7300000	218000.0

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	0.00	0.00	0	.	.
Antimony	41	3519.51	3000.00	31	12000.00	2000.00
Arsenic	41	172.20	100.00	34	710.00	50.00
Barium	39	1953.59	1800.00	39	4400.00	520.00
Beryllium	39	2.33	0.00	8	20.00	6.00
Biphenyl	2	0.00	0.00	0	.	.
Boron	39	1215.38	0.00	18	8400.00	600.00
BHC	12	0.00	0.00	0	.	.
Cadmium	41	346.27	240.00	40	1200.00	30.00
Chlordane	6	0.44	0.00	1	2.61	2.61
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	39	69.23	0.00	2	2000.00	700.00
Copper	41	1042.44	840.00	40	6000.00	280.00
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	4	1.00	0.00	1	4.00	4.00
Dioxins	4	0.00	0.00	2	0.00	0.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
DDT	7	2.77	2.00	4	7.37	2.00
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	4	0.00	0.00	0	.	.
Heptachlor	4	0.00	0.00	0	.	.
Heptachlor epoxide	4	0.00	0.00	0	.	.
Hexachlorobenzene	2	0.00	0.00	0	.	.
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	41	4135.12	2100.00	41	16000.00	80.00
Manganese	41	16109.51	11100.00	41	83200.00	760.00
Mercury	43	102.35	86.00	43	270.00	20.00
Methoxychlor	2	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.00	0.00	0	.	.
Molybdenum	39	0.00	0.00	0	.	.
Nickel	39	10.26	0.00	1	400.00	400.00
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	16	54.84	0.00	2	563.80	313.60
Selenium	41	180.98	190.00	40	500.00	20.00
Silver	39	0.00	0.00	0	.	.
Strontium	39	8758.21	7590.00	39	24900.00	200.00
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Tin	41	26.10	0.00	2	700.00	370.00
Toxaphene	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Vanadium	39	43.59	0.00	9	300.00	100.00
Zinc	41	39492.68	31200.00	41	159000.0	5500.00

Lower Yakima 17030003

Watershed Summary Information

Accounting Unit Name:	Yakima
State(s):	WA
Political Boundaries:	Yakima, Benton, Klickitat
Major Waterways:	Yakima R Satus Cr Toppenish Cr Ahtanum Cr Simcoe Cr
Number of Stations in Watershed:	Tier1 - 23 Tier2 - 19 Tier3 - 5

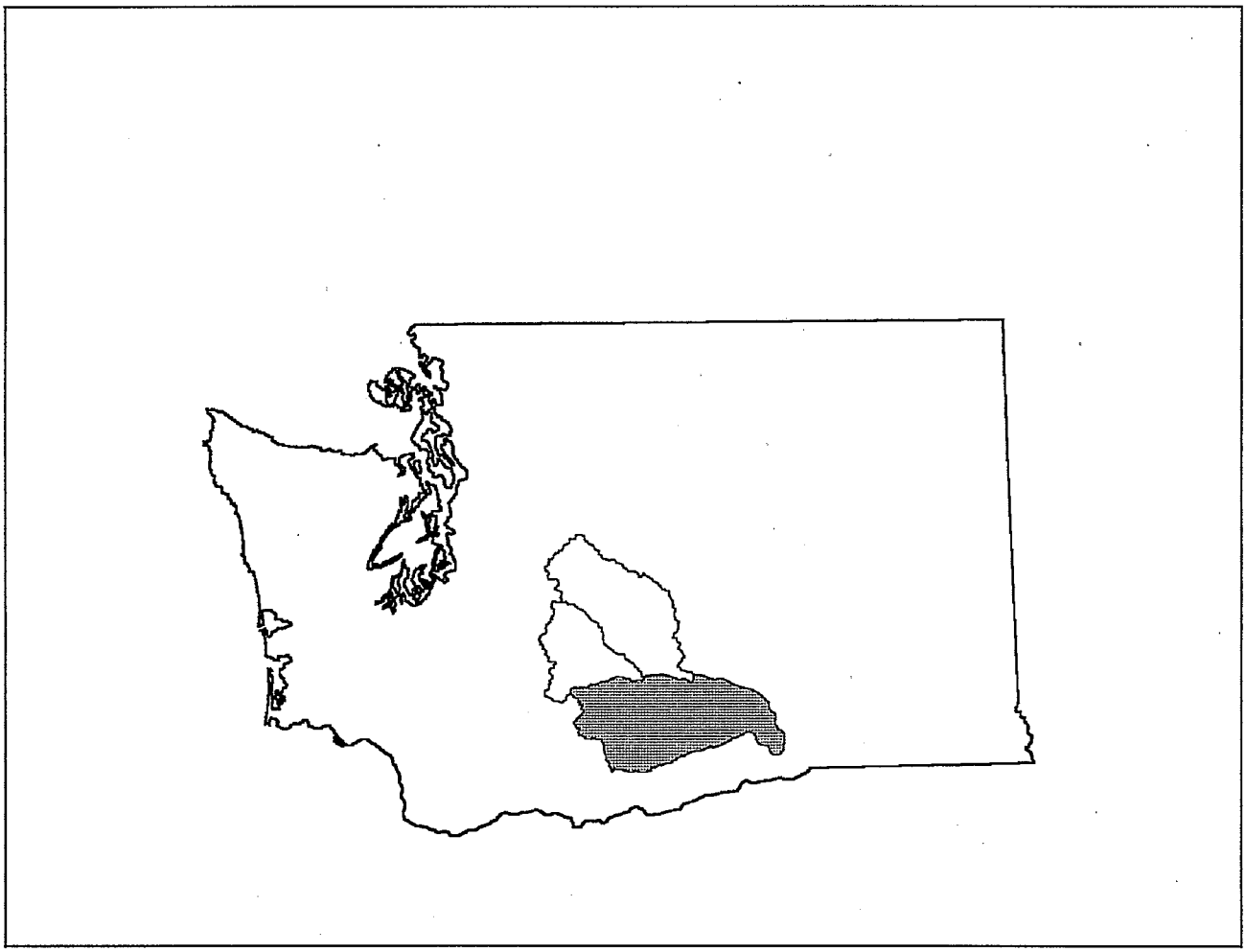

Figure 161. Watershed Location Map

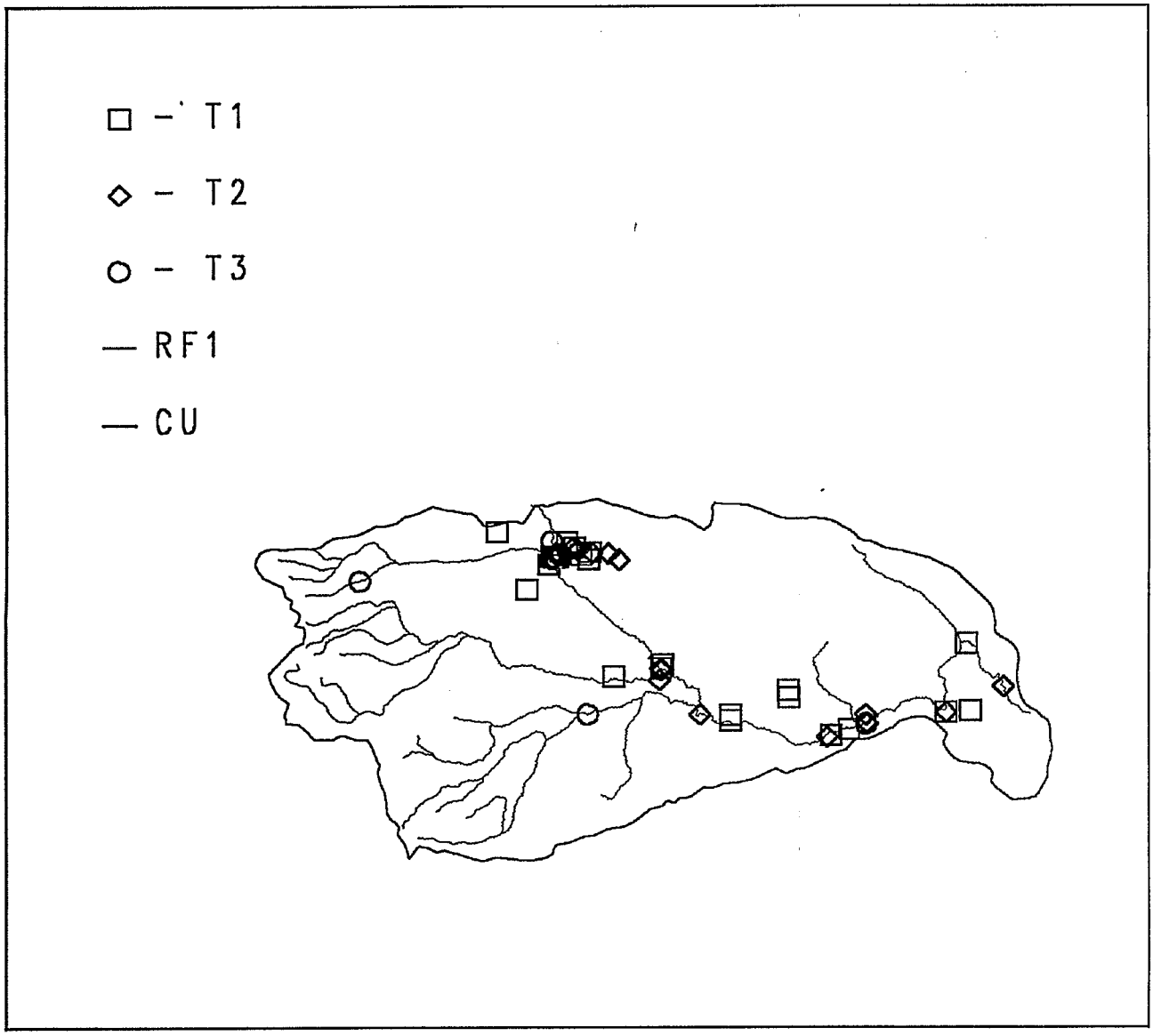

Figure 162. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **10EPACOP**
Monitoring Program: **USEPA Region 10 Cooperative Water Data**
Num. of Stations: 21 Date Range: 1985-87

Source: **STORET** Agency: **10EPATOX**
Monitoring Program: **USEPA Region 10 Water, Sediment & Tissue Data**
Num. of Stations: 1 Date Range: 1980

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **11FWS**
Monitoring Program: **US Fish & Wildlife Service Data - USEPA Hq Backdata Study**
Num. of Stations: 1 Date Range: 1980-86

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 19 Date Range: 1987-90

Source: **STORET** Agency: **21540000**
Monitoring Program: **Washington Dept Ecology Southwest Regional Office Estuary & Freshwatrs Data**
Num. of Stations: 4 Date Range: 1980-85

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	45	41	19	22	19	20	1	33
Dieldrin	36	17	.	17	.	9	.	15
Bis(2-ethylhexyl)phthalate	17	8	.	8	.	8	.	.
Chlordane	46	6	.	6	.	5	.	2
Endosulfan mixed isomers	25	6	.	6	.	6	.	.
Polychlorinated biphenyls	46	5	5	.	.	.	5	.
BHC	46	5	.	5	.	3	.	3
Arsenic	4	4	.	4	.	1	.	3
Diazinon/Spectracide	3	3	.	3	.	3	.	.
Aldrin	36	2	.	2	.	.	.	2
Dioxins	2	1	1	.	.	.	1	.
Acenaphthylene	17	1	.	1	.	1	.	.
Cadmium	4	1	.	1	.	1	.	.
Copper	4	1	.	1	.	1	.	.
Cresol, o	2	1	.	1	.	1	.	.
Diethyl phthalate	17	1	.	1	.	1	.	.
Heptachlor epoxide	45	1	.	1	.	.	.	1
Lead	4	1	.	1	.	.	.	1
Nickel	1	1	.	1	.	1	.	.
Nitrosodiphenylamine, N-	17	1	.	1	.	1	.	.
Toxaphene	44	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	29	0.00	0.00	0	.	.
Acenaphthylene	29	2.79	0.00	1	80.90	80.90
Acrylonitrile	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	51	20.90	0.00	4	1065.00	0.20
Anthracene	29	0.00	0.00	0	.	.
Antimony	1	0.00	0.00	0	.	.
Arsenic	3	4200.00	2800.00	3	8800.00	1000.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	29	0.00	0.00	0	.	.
Benzo(a)pyrene	29	0.00	0.00	0	.	.
Benzo(b)fluoranthene	27	0.00	0.00	0	.	.
Benzo(ghi)perylene	29	0.00	0.00	0	.	.
Benzo(k)fluoranthene	29	0.00	0.00	0	.	.
Benzoic acid	2	0.00	0.00	0	.	.
Benzyl alcohol	2	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	29	157.76	0.00	13	790.00	42.00
Bromophenyl phenyl ether, 4-	29	0.00	0.00	0	.	.
Butyl benzyl phthalate	29	0.00	0.00	0	.	.
BHC	155	0.16	0.00	6	15.00	0.10
Cadmium	3	690.00	600.00	3	1400.00	70.00
Chlordane	63	0.62	0.00	9	15.00	1.00
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	3	9200.00	600.00	2	27000.00	600.00
Chrysene	29	0.45	0.00	1	13.00	13.00
Copper	3	20566.67	16700.00	3	35800.00	9200.00
Cresol, o	2	405.00	405.00	1	810.00	810.00
Cresol, p-	2	0.00	0.00	0	.	.
Di-n-butyl phthalate	29	13.34	0.00	3	165.00	109.00
Di-n-octyl phthalate	29	6.90	0.00	1	200.00	200.00
Diazinon/Spectracide	5	107.20	1.50	5	530.00	0.20
Dibenzo(a,h)anthracene	29	0.00	0.00	0	.	.
Dibenzofuran	2	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	29	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	29	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	29	0.00	0.00	0	.	.
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	0.00	0.00	0	.	.
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	47	1.91	0.50	27	15.00	0.10
Diethyl phthalate	29	10.34	0.00	1	300.00	300.00
Dimethyl phthalate	29	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	29	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	242	23.91	5.65	183	680.00	0.10

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan mixed isomers	38	7.57	0.00	15	68.00	1.90
Endosulfan, alpha-	11	0.00	0.00	0	.	.
Endosulfan, beta-	8	0.00	0.00	0	.	.
Endrin	61	0.40	0.00	9	17.00	0.10
Ethion/Bladen	5	0.02	0.00	1	0.10	0.10
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	29	0.52	0.00	1	15.00	15.00
Fluorene	29	0.00	0.00	0	.	.
Heptachlor	61	0.00	0.00	0	.	.
Heptachlor epoxide	61	0.07	0.00	6	2.50	0.10
Hexachlorobenzene	30	0.00	0.00	0	.	.
Hexachlorobutadiene	29	0.00	0.00	0	.	.
Hexachloroethane	29	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	29	0.00	0.00	0	.	.
Isophorone	29	0.52	0.00	1	15.00	15.00
Lead	3	2600.00	2900.00	3	4200.00	700.00
Malathion	5	0.00	0.00	0	.	.
Mercury	14	22.71	18.00	13	100.00	4.00
Methoxychlor	62	0.11	0.00	4	3.20	0.60
Methylnaphthalene, 2-	2	0.00	0.00	0	.	.
Mirex/Dechlorane	31	0.00	0.00	0	.	.
Naphthalene	29	0.52	0.00	1	15.00	15.00
Nickel	1	36000.00	36000.00	1	36000.00	36000.00
Nitrosodiphenylamine, N-	29	7.59	0.00	1	220.00	220.00
Pentachlorophenol	29	0.00	0.00	0	.	.
Phenanthrene	29	2.66	0.00	3	35.10	17.00
Phenol	29	3.45	0.00	1	100.00	100.00
Polychlorinated biphenyls	208	0.00	0.00	0	.	.
Pyrene	29	2.54	0.00	2	57.60	16.00
Silver	1	30.00	30.00	1	30.00	30.00
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	61	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	29	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	3	59600.00	54300.00	3	82500.00	42000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	41	0.49	0.00	2	10.00	10.00
Arsenic	26	614.36	30.00	16	14000.00	20.00
Biphenyl	1	0.00	0.00	0	.	.
BHC	100	3.35	0.00	30	47.00	0.60
Cadmium	27	18.90	10.00	22	100.00	2.55
Chlordane	95	7.89	0.00	35	230.00	5.10
Chlorpyrifos/Dursban	1	3.44	3.44	1	3.44	3.44
Chromium	21	120.95	50.00	11	800.00	50.00
Copper	27	2364.07	1800.00	27	7400.00	430.00
Dicofol/Kelthane	1	3.44	3.44	1	3.44	3.44
Dieldrin	50	20.00	0.00	18	240.00	10.00
Dioxins	2	0.00	0.00	2	0.00	0.00
DCPA/Dacthal	6	10.00	10.00	6	10.00	10.00
DDT	252	887.95	104.50	159	26000.00	1.30
Endosulfan mixed isomers	14	5.00	0.00	2	50.00	20.00
Endrin	35	3.75	0.00	10	50.00	0.50
Heptachlor	21	2.86	0.00	6	10.00	10.00
Heptachlor epoxide	17	1.39	0.00	3	10.00	3.62
Hexachlorobenzene	14	4.61	2.27	7	10.00	4.55
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	27	298.00	170.00	19	2000.00	27.10
Mercury	38	112.42	88.50	37	780.00	11.00
Methoxychlor	44	0.00	0.00	0	.	.
Mirex/Dechlorane	7	8.57	10.00	6	10.00	10.00
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Pentachlorophenol	12	7.40	2.40	7	32.00	2.00
Polychlorinated biphenyls	111	148.00	0.00	51	2000.00	30.00
Selenium	6	436.93	420.80	6	550.00	350.00
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	20	45.00	0.00	6	400.00	100.00
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	7.16	7.16	1	7.16	7.16
Zinc	27	21221.48	18600.00	27	35500.00	12600.00

Lower Willamette 17090012

Watershed Summary Information

Accounting Unit Name:	Willamette
State(s):	OR
Political Boundaries:	Multnomah, Columbia, Clackamas, Clark
Major Waterways:	Willamette R Multnomah Channel Scappoose Bay Scappoose Cr Johnson Cr
Number of Stations in Watershed:	Tier1 - 21 Tier2 - 51 Tier3 - 4

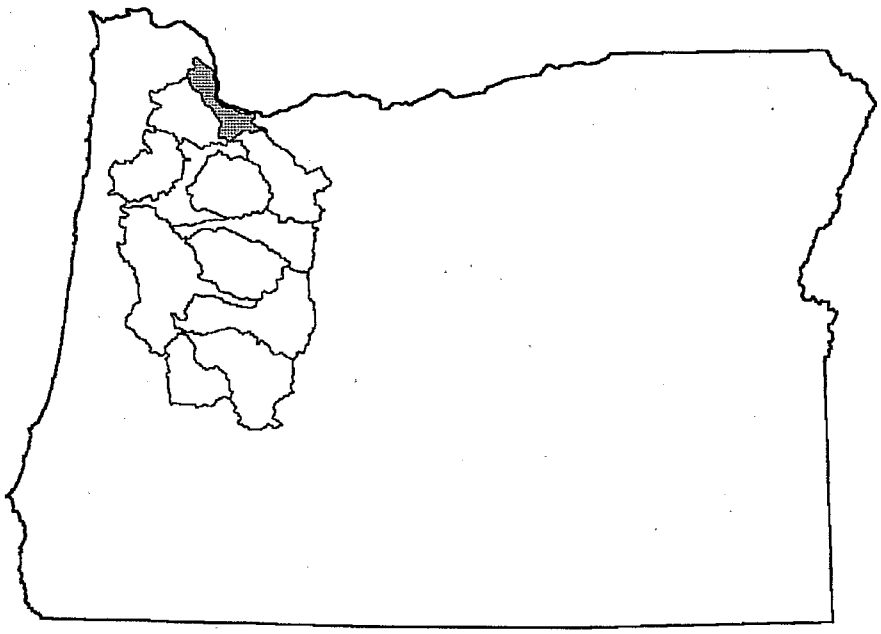

Figure 163. Watershed Location Map

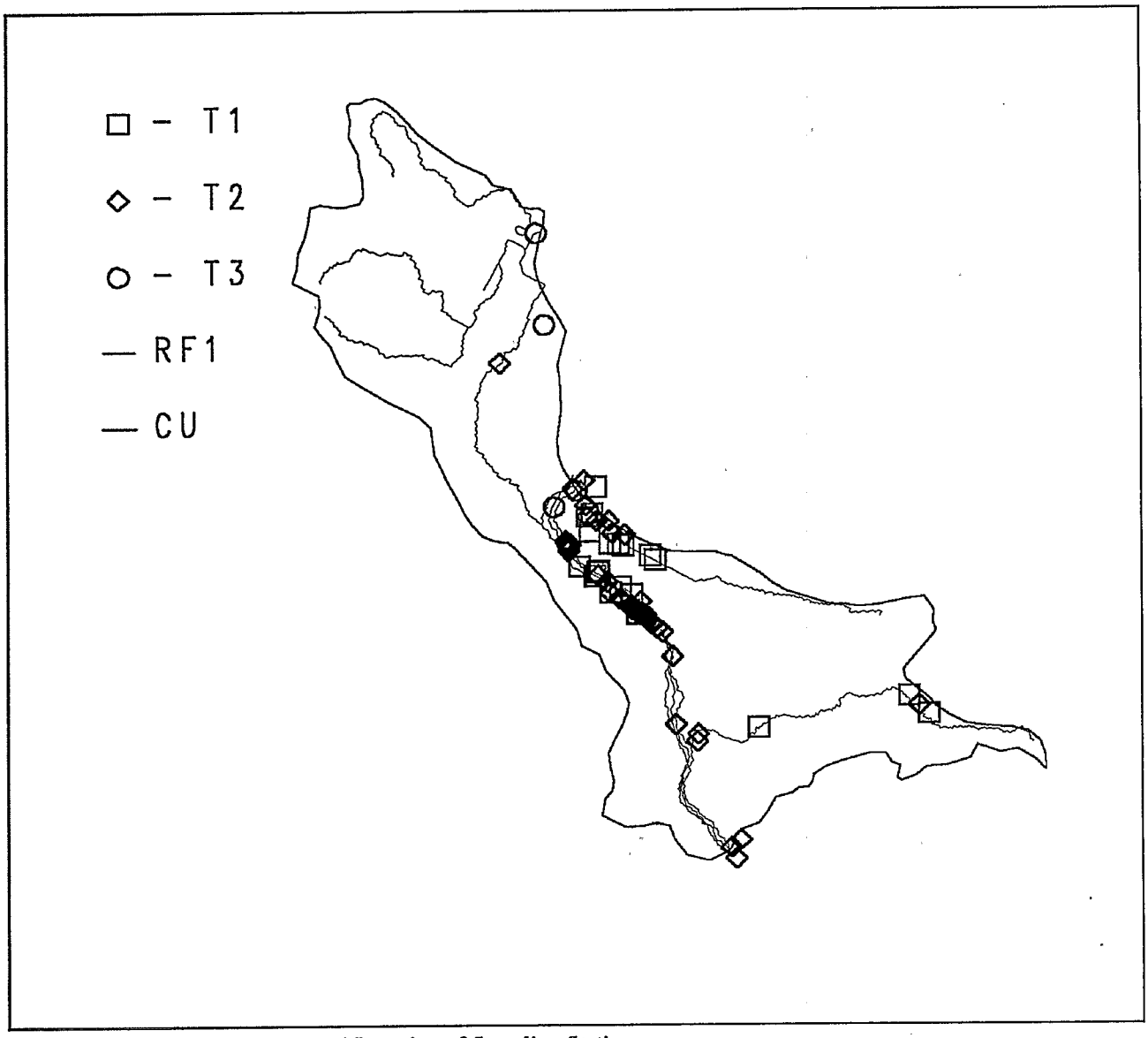

Figure 164. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **10EPACOP**
Monitoring Program: **USEPA Region 10 Cooperative Water Data**
Num. of Stations: 22 Date Range: 1982-87

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 25 Date Range: 1982-92

Source: **STORET** Agency: **21400000**
Monitoring Program: **Oregon Dept of Environ Quality Rivers Data**
Num. of Stations: 26 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	52	48	.	48	.	48	.	.
Polychlorinated biphenyls	59	37	13	24	9	21	6	31
Nickel	48	33	.	33	.	33	.	.
Zinc	50	28	.	28	.	28	.	.
DDT	55	27	10	17	10	17	3	10
Arsenic	51	26	.	26	.	24	.	4
Lead	53	22	.	22	.	22	.	.
Cadmium	52	21	.	21	.	21	.	.
Mercury	53	13	1	12	1	12	.	1
Bis(2-ethylhexyl)phthalate	25	13	.	13	.	13	.	.
Pyrene	30	10	4	6	4	6	.	1
Anthracene	32	10	3	7	3	7	.	.
Benzo(a)anthracene	27	9	3	6	3	6	.	6
Fluoranthene	28	9	3	6	3	6	.	1
Benzo(a)pyrene	28	9	2	7	2	4	.	9
Phenanthrene	22	8	3	5	3	5	.	.
Chlordane	56	8	.	8	.	8	.	4
Chrysene	26	7	3	4	3	4	.	1
Silver	37	7	.	7	.	7	.	.
Fluorene	31	6	2	4	2	4	.	.
Naphthalene	32	6	2	4	2	4	.	.
Benzo(b)fluoranthene	29	6	.	6	.	2	.	6
Chromium	51	6	.	6	.	6	.	.
Dibenzo(a,h)anthracene	28	5	3	2	3	2	.	5
Indeno(1,2,3-cd)pyrene	30	4	.	4	.	3	.	4
Dioxins	4	3	3	.	.	.	3	.
Acenaphthene	33	3	2	1	2	1	.	.
Acenaphthylene	26	3	1	2	1	2	.	.
Benzo(ghi)perylene	24	3	.	3	.	3	.	.
BHC	56	3	.	3	.	3	.	2
Benzo(k)fluoranthene	29	2	.	2	.	1	.	2
Di-n-butyl phthalate	24	2	.	2	.	2	.	.
Dieldrin	54	2	.	2	.	.	.	2
Dibenzofuran	15	1	1	.	1	.	.	.
Methylnaphthalene, 2-	9	1	1	.	1	.	.	.
Di-n-octyl phthalate	27	1	.	1	.	1	.	.
Nitrosodiphenylamine, N-	24	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Pentachlorophenol	27	1	.	1	.	1	.	.
Xylenes	6	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	51	483.43	0.00	7	14900.00	5.00
Acenaphthylene	50	94.16	0.00	6	4300.00	3.00
Acetone	14	0.00	0.00	0	.	.
Acrylonitrile	6	0.00	0.00	0	.	.
Aldrin	75	0.00	0.00	0	.	.
Anthracene	44	5003.16	0.00	21	200000.0	20.00
Antimony	51	2562.75	0.00	20	25000.00	100.00
Arsenic	78	7851.41	5000.00	72	54000.00	200.00
Benzene	18	0.00	0.00	0	.	.
Benzo(a)anthracene	37	5912.24	45.00	23	200000.0	4.00
Benzo(a)pyrene	36	8830.53	0.00	15	300000.0	50.00
Benzo(b)fluoranthene	32	9983.12	0.00	14	300000.0	80.00
Benzo(ghi)perylene	41	5472.95	0.00	13	200000.0	19.00
Benzo(k)fluoranthene	37	3054.43	30.00	20	100000.0	20.00
Benzoic acid	28	0.00	0.00	0	.	.
Benzyl alcohol	28	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	36	432.44	0.00	17	2200.00	98.00
Bromophenyl phenyl ether, 4-	41	0.00	0.00	0	.	.
Butyl benzyl phthalate	41	1.41	0.00	3	44.00	6.00
BHC	266	0.12	0.00	4	13.00	6.00
Cadmium	78	690.67	501.00	52	3590.00	100.00
Chlordane	74	0.68	0.00	10	10.00	1.00
Chlorobenzene	20	0.00	0.00	0	.	.
Chromium	78	26462.82	20100.00	78	110000.0	6000.00
Chrysene	34	9405.59	40.50	21	300000.0	4.00
Copper	78	57961.54	35000.00	78	320000.0	13000.00
Cresol, o	28	0.00	0.00	0	.	.
Cresol, p-	27	0.00	0.00	0	.	.
Di-n-butyl phthalate	36	230.72	0.00	12	1965.00	40.00
Di-n-octyl phthalate	44	265.61	0.00	5	6400.00	22.00
Dibenzo(a,h)anthracene	44	11608.23	0.00	5	500000.0	160.00
Dibenzofuran	25	490.08	0.00	5	11400.00	42.00
Dibromochloromethane	20	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	41	0.63	0.00	2	13.00	13.00
Dichlorobenzene, 1,3-	41	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	41	0.12	0.00	1	5.00	5.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dichloroethane 1,1-	20	0.00	0.00	0	.	.
Dichloroethane 1,2-	20	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	20	0.00	0.00	0	.	.
Dichloromethane	20	0.00	0.00	0	.	.
Dichloropropane, 1,2-	20	0.00	0.00	0	.	.
Dieldrin	74	0.02	0.00	9	0.40	0.10
Diethyl phthalate	44	0.23	0.00	3	4.00	3.00
Dimethyl phthalate	44	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	49	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	217	36.55	0.00	92	2700.00	0.20
Endosulfan mixed isomers	10	0.00	0.00	0	.	.
Endosulfan, alpha-	64	0.00	0.00	0	.	.
Endosulfan, beta-	60	0.00	0.00	0	.	.
Endrin	74	0.00	0.00	0	.	.
Ethylbenzene	17	0.00	0.00	0	.	.
Fluoranthene	37	26199.72	110.00	25	900000.0	7.70
Fluorene	47	469.02	0.00	10	16100.00	7.00
Heptachlor	74	0.04	0.00	9	0.40	0.20
Heptachlor epoxide	74	0.00	0.00	0	.	.
Hexachlorobenzene	41	0.00	0.00	0	.	.
Hexachlorobutadiene	41	0.00	0.00	0	.	.
Hexachloroethane	41	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	44	7169.02	0.00	11	300000.0	67.00
Isophorone	41	0.15	0.00	2	3.00	3.00
Lead	79	61703.80	30000.00	79	396800.0	700.00
Mercury	75	114.83	80.00	71	1740.00	30.00
Methoxychlor	36	0.00	0.00	0	.	.
Methyl ethyl ketone	14	0.00	0.00	0	.	.
Methylnaphthalene, 2-	19	713.26	0.00	3	7200.00	52.00
Mirex/Dechlorane	10	0.00	0.00	0	.	.
Naphthalene	47	2085.85	0.00	11	50000.00	6.00
Nickel	68	26385.29	25300.00	68	73400.00	10000.00
Nitrosodiphenylamine, N-	41	12.93	0.00	1	530.00	530.00
Pentachlorophenol	43	790.70	0.00	1	34000.00	34000.00
Phenanthrene	36	24430.92	95.00	25	800000.0	22.00
Phenol	44	0.75	0.00	2	20.00	13.00
Polychlorinated biphenyls	441	35.76	0.00	51	4200.00	14.00
Pyrene	41	13547.17	51.00	25	500000.0	10.00
Silver	58	336.78	155.00	47	1720.00	10.00
Tetrachloroethane, 1,1,2,2-	20	0.00	0.00	0	.	.
Tetrachloroethene	20	0.00	0.00	0	.	.
Tetrachloromethane	20	0.00	0.00	0	.	.
Toluene	17	0.94	0.00	1	16.00	16.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Toxaphene	74	0.00	0.00	0	.	.
Tribromomethane/Bromoform	20	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	41	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	20	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	20	0.00	0.00	0	.	.
Trichloroethene	20	0.00	0.00	0	.	.
Trichlorofluoromethane	19	0.00	0.00	0	.	.
Trichloromethane/Chloroform	20	0.00	0.00	0	.	.
Xylenes	10	4.00	0.00	1	40.00	40.00
Zinc	76	217306.6	154000.0	76	790000.0	45000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	19	0.00	0.00	0	.	.
Acrolein	5	0.00	0.00	0	.	.
Acrylonitrile	5	0.00	0.00	0	.	.
Aldrin	43	0.42	0.00	7	5.00	1.00
Anthracene	19	0.00	0.00	0	.	.
Antimony	8	48.75	40.00	4	150.00	80.00
Arsenic	21	79.05	50.00	11	280.00	50.00
Benzene	5	0.00	0.00	0	.	.
Benzidine	10	0.00	0.00	0	.	.
Benzo(a)anthracene	19	0.00	0.00	0	.	.
Benzo(a)pyrene	19	0.00	0.00	0	.	.
Benzo(b)fluoranthene	17	0.00	0.00	0	.	.
Benzo(k)fluoranthene	19	0.00	0.00	0	.	.
Beryllium	8	2.12	1.00	4	5.00	2.00
Biphenyl	2	5.37	5.37	2	7.33	3.41
Bis(2-chloroethyl)ether	10	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	10	326.60	97.00	8	1500.00	31.00
Bromodichloromethane	5	0.00	0.00	0	.	.
Bromomethane	5	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	10	0.00	0.00	0	.	.
Butyl benzyl phthalate	10	420.00	0.00	1	4200.00	4200.00
BHC	156	0.37	0.00	8	18.60	1.00
Cadmium	29	29.07	0.00	8	357.00	4.00
Chlordane	58	2.35	0.00	4	80.00	6.70
Chlorobenzene	5	0.00	0.00	0	.	.
Chloroethane	5	0.00	0.00	0	.	.
Chloroethene	5	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	5	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Chloromethane	5	0.00	0.00	0	.	.
Chloronaphthalene, 2-	10	0.00	0.00	0	.	.
Chlorophenol, 2-	10	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	2	0.00	0.00	0	.	.
Chromium	21	235.24	200.00	13	1230.00	100.00
Chrysene	19	0.00	0.00	0	.	.
Copper	22	5327.27	1130.00	22	26500.00	260.00
Di-n-butyl phthalate	10	0.00	0.00	0	.	.
Di-n-octyl phthalate	10	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	19	0.00	0.00	0	.	.
Dibromochloromethane	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	10	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	10	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	10	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	10	0.00	0.00	0	.	.
Dichlorodifluoromethane	5	0.00	0.00	0	.	.
Dichloroethane 1,1-	5	0.00	0.00	0	.	.
Dichloroethane 1,2-	5	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	5	0.00	0.00	0	.	.
Dichloroethene, 1,1-	5	0.00	0.00	0	.	.
Dichloromethane	5	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	10	0.00	0.00	0	.	.
Dichloropropane, 1,2-	5	0.00	0.00	0	.	.
Dicofol/Kelthane	2	0.00	0.00	0	.	.
Dieldrin	37	1.66	0.00	5	24.00	5.00
Diethyl phthalate	10	0.00	0.00	0	.	.
Dimethyl phthalate	10	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	10	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	10	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	10	0.00	0.00	0	.	.
Dinitrotoluene, 2,6-	10	1.00	0.00	1	10.00	10.00
Dioxins	8	0.01	0.01	8	0.03	0.00
Diphenylhydrazine, 1,2-	10	0.00	0.00	0	.	.
DCPA/Dacthal	9	0.00	0.00	0	.	.
DDT	166	78.81	11.50	96	840.00	2.00
Endosulfan, alpha-	32	0.00	0.00	0	.	.
Endosulfan, beta-	32	0.00	0.00	0	.	.
Endrin	45	0.18	0.00	2	5.00	3.00
Ethylbenzene	5	0.00	0.00	0	.	.
Fluoranthene	19	0.00	0.00	0	.	.
Fluorene	19	0.00	0.00	0	.	.
Heptachlor	42	0.00	0.00	0	.	.
Heptachlor epoxide	34	0.00	0.00	0	.	.
Hexachlorobenzene	31	1.10	0.00	7	10.00	2.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Hexachlorobutadiene	12	0.00	0.00	0	.	.
Hexachloroethane	10	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	19	0.00	0.00	0	.	.
Isophorone	10	0.00	0.00	0	.	.
Isopropalin	2	0.00	0.00	0	.	.
Lead	28	132.14	0.00	9	680.00	150.00
Mercury	23	313.39	190.00	21	1160.00	10.00
Methoxychlor	14	0.93	0.00	1	13.00	13.00
Mirex/Dechlorane	11	0.00	0.00	0	.	.
Molybdenum	1	0.00	0.00	0	.	.
Naphthalene	19	0.00	0.00	0	.	.
Nickel	9	511.11	280.00	7	2680.00	150.00
Nitrobenzene	10	0.00	0.00	0	.	.
Nitrophenol, 4	10	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	8	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	8	0.00	0.00	0	.	.
Pentachlorobenzene	2	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	2	0.00	0.00	0	.	.
Pentachlorophenol	18	8.33	0.00	8	36.00	6.00
Phenol	10	0.00	0.00	0	.	.
Polychlorinated biphenyls	243	2051.72	0.00	36	480000.0	16.00
Pyrene	19	0.00	0.00	0	.	.
Selenium	9	106.67	50.00	9	230.00	30.00
Silver	8	4.00	0.00	1	32.00	32.00
Tetrachlorobenzene, 1,2,4,5-	2	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	5	0.00	0.00	0	.	.
Tetrachloroethene	5	22.00	0.00	1	110.00	110.00
Tetrachloromethane	5	0.00	0.00	0	.	.
Toluene	5	0.00	0.00	0	.	.
Toxaphene	32	0.00	0.00	0	.	.
Tribromomethane/Bromoform	5	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	12	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	5	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	5	0.00	0.00	0	.	.
Trichloroethene	5	0.00	0.00	0	.	.
Trichlorofluoromethane	5	0.00	0.00	0	.	.
Trichloromethane/Chloroform	5	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	10	0.00	0.00	0	.	.
Trifluralin/Treflan	2	0.00	0.00	0	.	.
Vanadium	1	340.00	340.00	1	340.00	340.00
Zinc	9	15055.56	17100.00	9	24300.00	7400.00

Strait Of Georgia 17110002

Watershed Summary Information

Accounting Unit Name:	Puget Sound
State(s):	WA
Political Boundaries:	Whatcom, Skagit, San Juan
Major Waterways:	Sammish R Friday Cr Dakota Cr Silver Cr L Whatcom
Number of Stations in Watershed:	Tier1 - 32 Tier2 - 168 Tier3 - 63

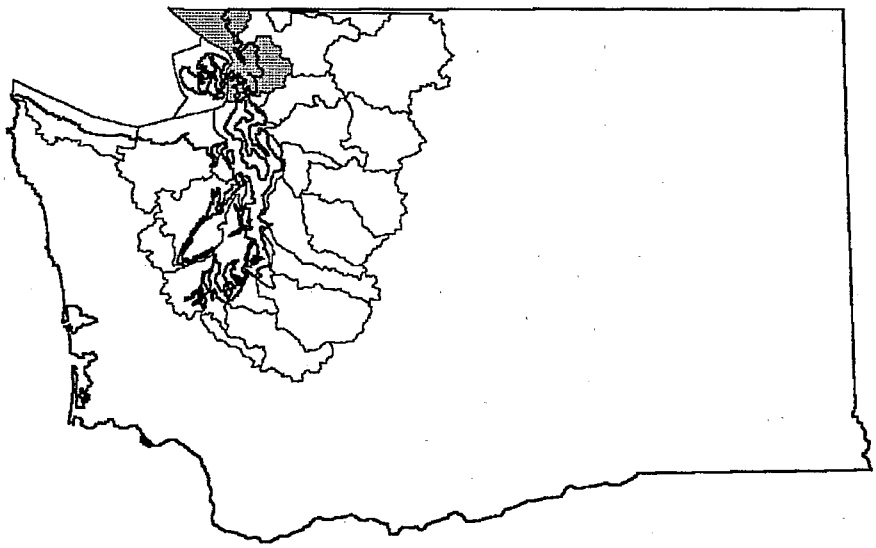

Figure 165. Watershed Location Map

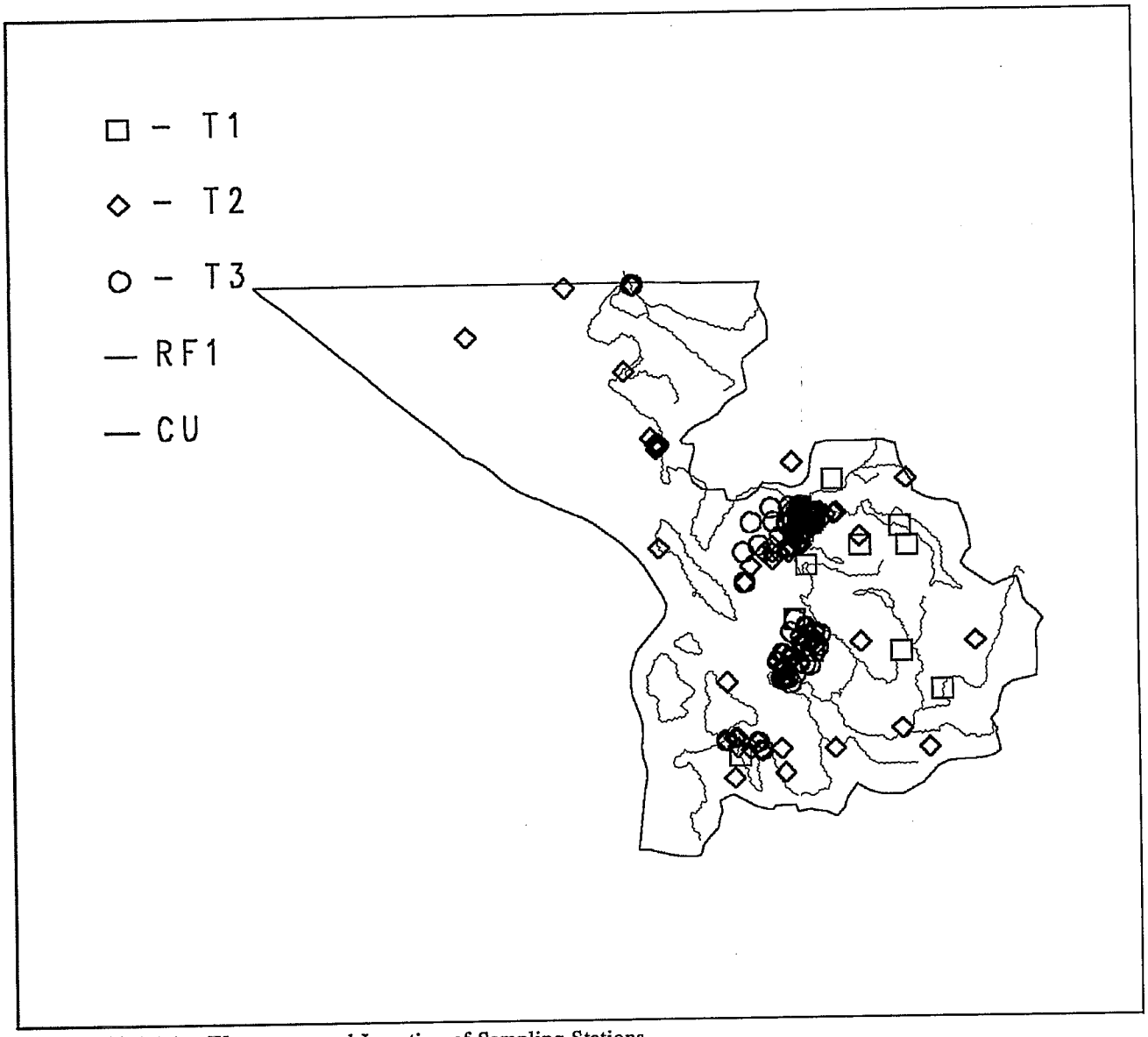

Figure 166. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: COSED Agency: NS&T
Monitoring Program: NOAA/National Status and Trends
Num. of Stations: 6 Date Range: 1986-87

Source: ODES Agency: PS
Monitoring Program: Puget Sound
Num. of Stations: 4 Date Range: 1989

Source: SEACOE Agency: AK_FERRY
Monitoring Program: Alaska Ferry Terminal construct. survey.
Num. of Stations: 2 Date Range: 1989

Source: **SEACOE** Agency: **ANCHO029**
Monitoring Program: **Anchor Cove Condominium Marina Project.**
Num. of Stations: 2 Date Range: 1990

Source: **SEACOE** Agency: **BLAINE89**
Monitoring Program: **Port of Bellingham/Blaine Marina expansn**
Num. of Stations: 6 Date Range: 1989

Source: **SEACOE** Agency: **BLGM_91A**
Monitoring Program: **Maint./other dredging of Bellingham Bay.**
Num. of Stations: 31 Date Range: 1990-91

Source: **SEACOE** Agency: **BLGM_91B**
Monitoring Program: **Follow up to BLGM_91A: resample for Zn.**
Num. of Stations: 38 Date Range: 1991

Source: **SEACOE** Agency: **BPOIL_FC**
Monitoring Program: **BP Oil/Ferndale Full Characterization.**
Num. of Stations: 16 Date Range: 1990

Source: **SEACOE** Agency: **BPOIL_PC**
Monitoring Program: **BP Oil Ferndale Partial Characterization**
Num. of Stations: 6 Date Range: 1990

Source: **SEACOE** Agency: **COLUMBIA**
Monitoring Program: **Columbia Cement proposed maint. dredging**
Num. of Stations: 1 Date Range: 1986

Source: **SEACOE** Agency: **DNRREC91**
Monitoring Program: **Aq. Lands Sediment Qual. Reconnaissance.**
Num. of Stations: 9 Date Range: 1991

Source: **SEACOE** Agency: **EIGHTBAY**
Monitoring Program: **1985 Puget Sound Eight-Bay survey.**
Num. of Stations: 32 Date Range: 1983-84

Source: **SEACOE** Agency: **GAPAC_C2**
Monitoring Program: **NPDES Georgia Pacific - Bellingham.**
Num. of Stations: 4 Date Range: 1988

Source: **SEACOE** Agency: **METROEBP**
Monitoring Program: **WestPoint emergency bypass outfall.**
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **NAVYHPFC**
Monitoring Program: **Everett Homeport (full characterization)**
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **POSTPTC2**
Monitoring Program: **NPDES B'ham Post Point treatment plant.**
Num. of Stations: 3 Date Range: 1987

Source: **SEACOE** Agency: **PSDDA2**
Monitoring Program: **PSDDA Phase 2 baseline survey**

Num. of Stations: 8 Date Range: 1989

Source: SEACOE Agency: PSREF90
Monitoring Program: Puget Sound Reference Areas Survey
Num. of Stations: 7 Date Range: 1990

Source: SEACOE Agency: SED18903
Monitoring Program: March-April 1989 Sediment Survey
Num. of Stations: 5 Date Range: 1989

Source: SEACOE Agency: SED19003
Monitoring Program: Puget Sound Ambient Monitoring - 1990
Num. of Stations: 3 Date Range: 1990

Source: SEACOE Agency: SHELL055
Monitoring Program: Shell Oil, Anacortes, DY93
Num. of Stations: 3 Date Range: 1992

Source: SEACOE Agency: SWINOM88
Monitoring Program: Swinomish Channel Maintenance Dredging.
Num. of Stations: 1 Date Range: 1988

Source: SEACOE Agency: 2MARINAS
Monitoring Program: Port Townsend & Cap Sante Marinas Study
Num. of Stations: 19 Date Range: 1988

Source: STORET Agency: 10EPACOP
Monitoring Program: USEPA Region 10 Cooperative Water Data
Num. of Stations: 6 Date Range: 1986-87

Source: STORET Agency: 10EPAINT
Monitoring Program: USEPA Region 10 Intensive Survey Data
Num. of Stations: 48 Date Range: 1983-84

Source: STORET Agency: 11BIOACC
Monitoring Program: USEPA National Bioaccumulation Study
Num. of Stations: 1 Date Range: 1987

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	153	127	.	127	.	127	.	.
Nickel	130	124	.	124	.	124	.	.
Arsenic	138	75	1	74	1	73	.	1
Mercury	151	67	16	51	16	51	.	.
Naphthalene	148	61	1	60	1	60	.	.
Pyrene	141	58	5	53	5	53	.	.
Chrysene	153	51	4	47	4	47	.	1
Benzo(a)anthracene	151	51	2	49	2	49	.	14

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Benzo(a)pyrene	159	50	.	50	.	33	.	48
Zinc	186	50	.	50	.	50	.	.
Dibenzo(a,h)anthracene	155	49	12	37	12	37	.	37
Fluorene	149	49	1	48	1	48	.	.
Methylnaphthalene, 2-	102	34	.	34	.	34	.	.
DDT	117	31	4	27	4	27	.	4
Chromium	59	31	.	31	.	31	.	.
Bis(2-ethylhexyl)phthalate	127	30	4	26	4	26	.	3
Acenaphthylene	152	30	.	30	.	30	.	.
Lead	189	26	.	26	.	26	.	.
HMW_PAHs	104	25	4	21	4	21	.	.
LMW_PAHs	112	25	4	21	4	21	.	.
Cadmium	124	23	.	23	.	23	.	.
Phenanthrene	148	16	1	15	1	15	.	.
Polychlorinated biphenyls	80	16	1	15	1	12	.	16
Fluoranthene	148	15	1	14	1	14	.	.
Aldrin	98	15	.	15	.	.	.	15
Acenaphthene	154	6	.	6	.	6	.	.
Anthracene	29	4	.	4	.	4	.	.
Chlordane	104	4	.	4	.	4	.	1
Indeno(1,2,3-cd)pyrene	142	3	.	3	.	2	.	3
BHC	60	2	.	2	.	2	.	.
Dieldrin	103	2	.	2	.	1	.	2
Silver	182	2	.	2	.	2	.	.
Cresol, p-	16	1	.	1	.	1	.	.
Dimethyl phthalate	112	1	.	1	.	1	.	.
Dimethylphenol, 2,4-	134	1	.	1	.	1	.	.
Xylenes	43	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	166	23.69	0.00	38	450.00	7.20
Acenaphthylene	165	13.63	0.00	31	517.00	11.00
Acetone	8	0.00	0.00	0	.	.
Acrylonitrile	12	0.00	0.00	0	.	.
Aldrin	108	1.12	0.00	21	23.00	1.10
Anthracene	36	38.79	0.00	14	470.00	7.30
Antimony	141	1958.16	200.00	78	110000.0	40.00
Arsenic	156	9176.92	7700.00	150	220000.0	3.10
Benzene	19	0.02	0.00	3	0.12	0.08
Benzo(a)anthracene	162	133.55	21.00	88	2100.00	8.30

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(a)pyrene	169	57.21	0.00	69	1511.00	13.00
Benzo(b)fluoranthene	8	23.25	20.00	4	53.00	40.00
Benzo(ghi)perylene	156	31.88	0.00	35	638.00	10.00
Benzo(k)fluoranthene	10	18.20	0.00	4	52.00	39.00
Benzoic acid	85	21.45	0.00	11	410.00	6.00
Benzyl alcohol	96	0.00	0.00	0	.	.
Biphenyl	6	27.50	27.00	6	43.00	12.00
Bis(2-ethylhexyl)phthalate	137	217.23	0.00	66	3500.00	5.00
Bromophenyl phenyl ether, 4-	33	0.00	0.00	0	.	.
Butyl benzyl phthalate	134	2.24	0.00	2	280.00	20.00
BHC	153	0.01	0.00	2	0.60	0.60
Cadmium	142	456.67	330.00	135	3500.00	20.00
Chlordane	112	0.21	0.00	11	4.50	0.30
Chlorobenzene	19	0.00	0.00	0	.	.
Chromium	74	65820.64	61500.00	74	230000.0	16.90
Chrysene	168	289.19	38.50	99	9838.00	14.00
Copper	174	48135.50	42000.00	174	400000.0	6.70
Cresol, m-	109	31.04	24.00	94	280.00	2.00
Cresol, o	130	15.15	7.10	98	250.00	3.20
Cresol, p-	16	75.00	0.00	1	1200.00	1200.00
Di-n-butyl phthalate	136	3.45	0.00	6	154.00	5.00
Di-n-octyl phthalate	139	53.37	0.00	12	4200.00	69.00
Diazinon/Spectracide	5	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	289	58.35	0.00	75	5001.00	3.00
Dibenzofuran	90	8.68	0.00	11	200.00	13.00
Dibromochloromethane	19	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	126	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	126	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	126	0.00	0.00	0	.	.
Dichloroethane 1,1-	20	0.00	0.00	0	.	.
Dichloroethane 1,2-	19	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	12	0.00	0.00	0	.	.
Dichloromethane	18	16.77	0.00	2	300.00	1.90
Dichloropropane, 1,2-	19	0.00	0.00	0	.	.
Dieldrin	111	0.34	0.00	18	6.40	0.21
Diethyl phthalate	134	0.26	0.00	1	35.00	35.00
Dimethyl phthalate	122	3.24	0.00	3	350.00	19.00
Dimethylphenol, 2,4-	150	0.23	0.00	1	35.00	35.00
DDT	359	2.63	0.00	99	123.00	0.21
Endosulfan, alpha-	19	0.00	0.00	0	.	.
Endosulfan, beta-	31	0.00	0.00	0	.	.
Endrin	31	0.00	0.00	0	.	.
Ethion/Bladen	5	0.00	0.00	0	.	.
Ethylbenzene	69	0.00	0.00	3	0.08	0.07

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Fluoranthene	162	454.20	92.00	121	9484.00	22.00
Fluorene	162	35.31	0.00	58	480.00	7.50
Heptachlor	104	0.97	0.00	12	32.00	0.20
Heptachlor epoxide	32	0.01	0.00	1	0.40	0.40
Hexachlorobenzene	134	0.02	0.00	8	0.85	0.10
Hexachlorobutadiene	123	0.00	0.00	0	.	.
Hexachloroethane	117	0.00	0.00	0	.	.
HMW_PAHs	114	1533.03	0.00	35	31000.00	68.00
Indeno(1,2,3-cd)pyrene	154	36.48	0.00	38	878.00	4.00
Isophorone	60	0.15	0.00	1	9.00	9.00
Lead	223	18432.65	15000.00	219	190000.0	2000.00
LMW_PAHs	122	348.07	0.00	32	6600.00	54.90
Malathion	5	0.00	0.00	0	.	.
Mercury	165	481.27	117.00	146	34900.00	0.14
Methyl ethyl ketone	8	0.00	0.00	0	.	.
Methylnaphthalene, 2-	106	24.85	0.00	38	206.00	12.00
Mirex/Dechlorane	1	0.06	0.06	1	0.06	0.06
Naphthalene	162	92.36	5.00	81	1362.00	10.00
Nickel	156	64968.78	50200.00	156	180000.0	23.80
Nitrosodiphenylamine, N-	123	0.00	0.00	0	.	.
Pentachlorophenol	143	0.05	0.00	1	7.00	7.00
Phenanthrene	163	203.12	90.00	116	2141.00	12.00
Phenol	139	5.55	0.00	14	220.00	5.00
Polychlorinated biphenyls	263	4.26	0.00	16	510.00	3.00
Pyrene	155	473.81	110.00	115	12370.00	26.00
Silver	222	153.74	130.00	175	1470.00	0.12
Tetrachloroethane, 1,1,2,2-	19	0.00	0.00	0	.	.
Tetrachloroethene	69	0.00	0.00	3	0.05	0.04
Tetrachloromethane	19	0.00	0.00	0	.	.
Toluene	19	0.62	0.00	4	11.00	0.20
Toxaphene	17	0.00	0.00	0	.	.
Tribromomethane/Bromoform	19	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	126	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	12	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	19	0.00	0.00	0	.	.
Trichloroethene	69	0.00	0.00	0	.	.
Trichlorofluoromethane	12	0.00	0.00	0	.	.
Trichloromethane/Chloroform	31	0.02	0.00	3	0.31	0.19
Xylenes	53	0.45	0.00	5	12.00	0.25
Zinc	204	104790.4	106500.0	204	520000.0	28.20

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	2	0.00	0.00	0	.	.
Arsenic	2	1450.00	1450.00	2	1700.00	1200.00
Benzo(a)anthracene	2	0.00	0.00	0	.	.
Benzo(a)pyrene	2	0.00	0.00	0	.	.
Benzo(b)fluoranthene	2	0.00	0.00	0	.	.
Benzo(k)fluoranthene	2	0.00	0.00	0	.	.
Biphenyl	1	0.00	0.00	0	.	.
BHC	4	0.00	0.00	0	.	.
Cadmium	2	160.00	160.00	2	180.00	140.00
Chlordane	4	0.00	0.00	0	.	.
Chlorpyrifos/Dursban	1	0.00	0.00	0	.	.
Copper	2	1150.00	1150.00	2	1300.00	1000.00
Dibenzo(a,h)anthracene	2	0.00	0.00	0	.	.
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	3	0.00	0.00	0	.	.
Dioxins	2	0.00	0.00	1	0.00	0.00
DDT	7	0.17	0.00	2	1.00	0.19
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	3	0.00	0.00	0	.	.
Fluoranthene	2	0.00	0.00	0	.	.
Fluorene	2	0.00	0.00	0	.	.
Heptachlor	3	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	3	0.00	0.00	0	.	.
Hexachlorobutadiene	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	2	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	2	0.00	0.00	0	.	.
Mercury	3	22.00	5.00	3	60.00	1.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Naphthalene	2	0.00	0.00	0	.	.
Pentachlorobenzene	1	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	15	0.00	0.00	0	.	.
Pyrene	2	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Toxaphene	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	2	13600.00	13600.00	2	13900.00	13300.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: Puget Sound Reference Areas Survey							
48.5817	122.5356	90-06-22	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	7.00	9.00	no
48.5819	122.5344	90-06-21	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	10.00	9.00	no
48.5819	122.5347	90-06-22	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	4.00	9.00	no
48.5822	122.5350	90-06-21	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	19.00	9.00	no
48.5822	122.5361	90-06-22	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	6.50	9.00	no
48.5828	122.5392	90-06-21	Neanthes Arenaceodentata	S	4.00	20.00	no
			Rhepoxynius Abronius	S	7.00	9.00	no
48.5831	122.5286	90-06-21	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	12.00	9.00	no
Monitoring Program: PSDDA Phase 2 baseline survey							
48.7000	122.5833	89-05-06	Rhepoxynius Abronius	S	10.00	4.00	no
48.7138	122.5262	89-05-06	Rhepoxynius Abronius	S	16.00	4.00	no
48.7138	122.5505	89-05-06	Rhepoxynius Abronius	S	19.00	4.00	no
48.7304	122.5179	89-05-06	Rhepoxynius Abronius	S	9.00	4.00	no

Duwamish 17110013

Watershed Summary Information

Accounting Unit Name:	Puget Sound
State(s):	WA
Political Boundaries:	King, Kittitas
Major Waterways:	Elliot Bay Green R Big Soos Cr Newaukum Cr Green R, N Fk
Number of Stations in Watershed:	Tier1 - 48 Tier2 - 69 Tier3 - 10

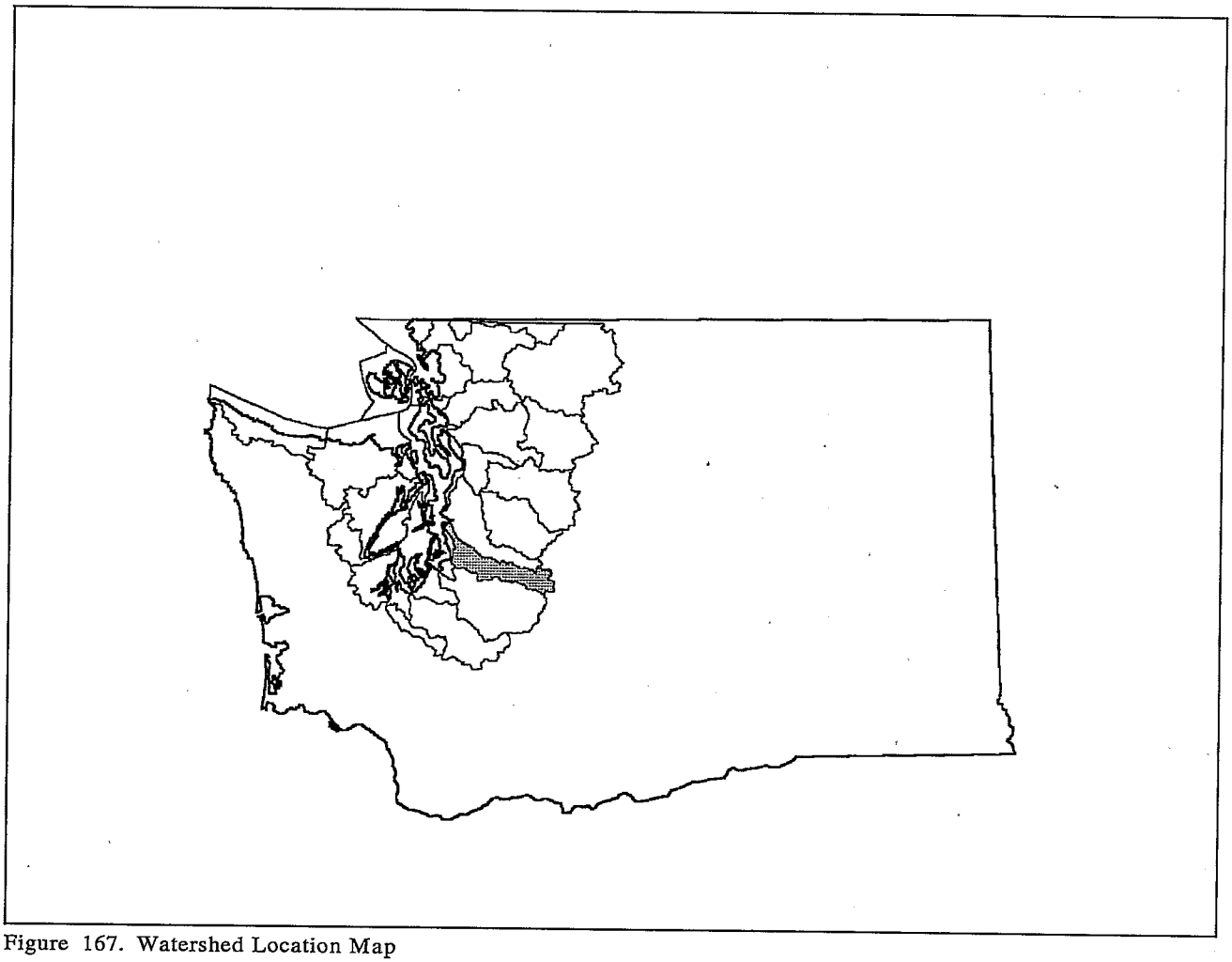

Figure 167. Watershed Location Map

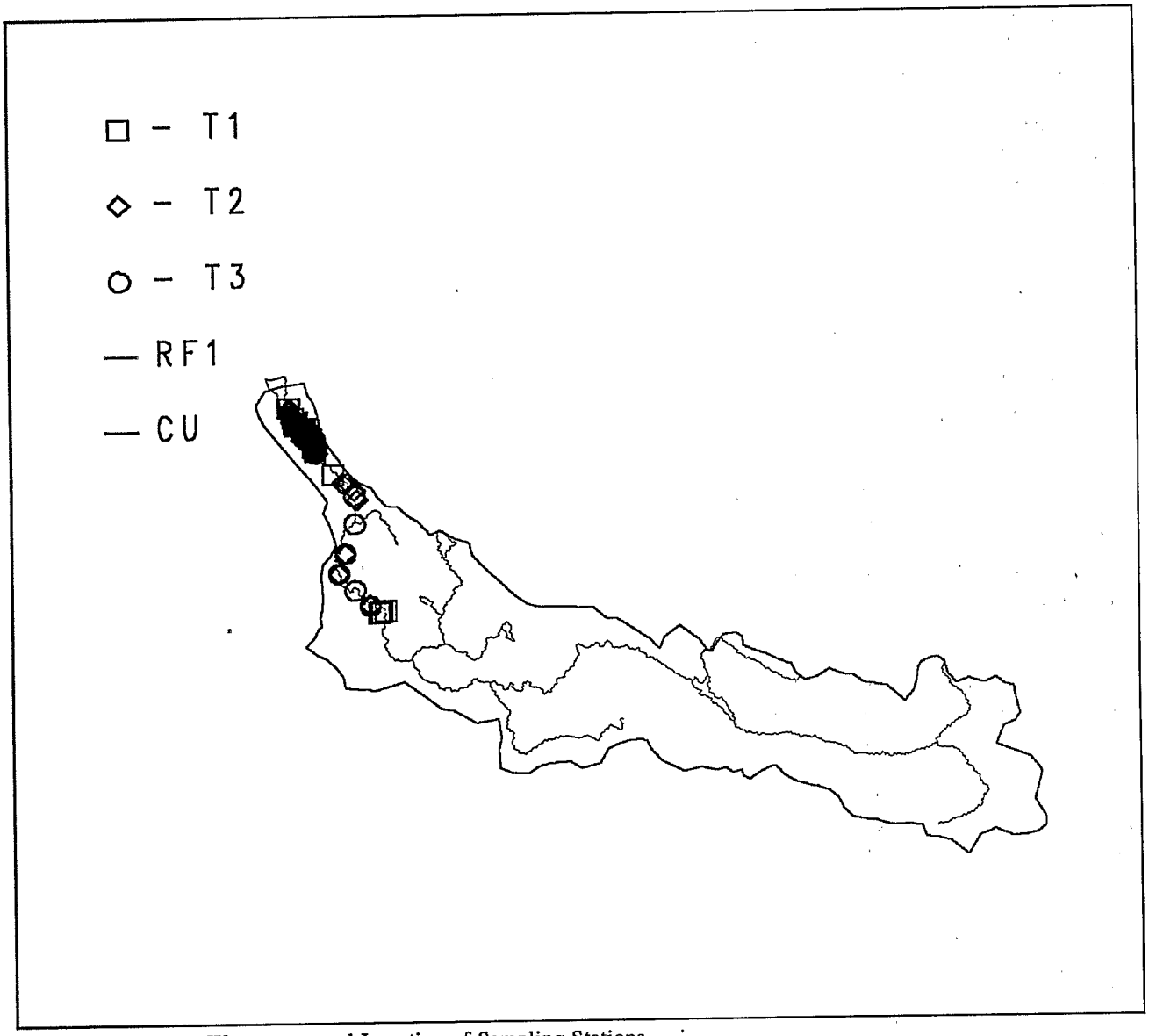

Figure 168. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: SEACOE Agency: **DUWA0014**
Monitoring Program: **USACE DUWAMISH O&M DY90 ROUND 3**
Num. of Stations: 2 Date Range: 1990

Source: SEACOE Agency: **DUWA1032**
Monitoring Program: **USACE Duwamish O&M, DY92 Phase 1**
Num. of Stations: 8 Date Range: 1990

Source: SEACOE Agency: **DUWO&M90**
Monitoring Program: **Operations & Maint. Dredge Duwamish Riv.**
Num. of Stations: 17 Date Range: 1989

Source: **SEACOE** Agency: **DUYACHT1**
Monitoring Program: **Duwamish Yacht Club marina maint. dredge**
Num. of Stations: 5 Date Range: 1988

Source: **SEACOE** Agency: **EBCHEM**
Monitoring Program: **1985 Elliott Bay sediment survey**
Num. of Stations: 19 Date Range: 1985

Source: **SEACOE** Agency: **EPA8283**
Monitoring Program: **1982-83 EPA survey of Duwamish River**
Num. of Stations: 31 Date Range: 1982-83

Source: **SEACOE** Agency: **HURLEN89**
Monitoring Program: **Hurlen Construction Co. Maint. Dredging.**
Num. of Stations: 1 Date Range: 1990

Source: **SEACOE** Agency: **LONESTAR**
Monitoring Program: **Lonestar NW, maint. dredge Duwamish Riv.**
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **MALINS**
Monitoring Program: **1980 NOAA OMPA-19 survey of Elliott Bay.**
Num. of Stations: 1 Date Range: 1980

Source: **SEACOE** Agency: **MORTON89**
Monitoring Program: **Morton wharf construct. & draft increase**
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: **SEACOE** Agency: **NOAA86**
Monitoring Program: **1986 Benthic Surveillance (NST)**
Num. of Stations: 3 Date Range: 1986

Source: **STORET** Agency: **10EPAINT**
Monitoring Program: **USEPA Region 10 Intensive Survey Data**
Num. of Stations: 32 Date Range: 1982-83

Source: **STORET** Agency: **10EPATOX**
Monitoring Program: **USEPA Region 10 Water, Sediment & Tissue Data**
Num. of Stations: 2 Date Range: 1980

Source: **STORET** Agency: **21540000**
Monitoring Program: **Washington Dept Ecology Southwest Regional Office Estuary & Freshwatrs Data**
Num. of Stations: 1 Date Range: 1983-84

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	119	96	.	96	.	96	.	.
Arsenic	111	88	3	85	3	84	.	1
Nickel	118	87	.	87	.	87	.	.
Lead	118	64	.	64	.	64	.	.
Pyrene	84	52	9	43	9	43	.	.
Cadmium	113	52	.	52	.	52	.	.
Benzo(a)pyrene	90	48	4	44	4	39	.	48
Benzo(a)anthracene	76	46	4	42	4	42	.	34
Fluoranthene	88	45	4	41	4	41	.	.
Chrysene	77	45	2	43	2	43	.	.
Polychlorinated biphenyls	102	44	34	10	33	10	1	43
Zinc	97	40	.	40	.	40	.	.
Phenanthrene	77	34	8	26	8	26	.	.
Dibenzo(a,h)anthracene	92	31	7	24	7	24	.	24
Bis(2-ethylhexyl)phthalate	85	27	6	21	6	21	.	6
Mercury	99	27	.	27	.	27	.	.
Fluorene	89	21	2	19	2	19	.	.
DDT	112	17	3	14	3	14	.	5
HMW_PAHs	64	17	1	16	1	16	.	.
Silver	93	17	.	17	.	17	.	.
Benzo(b)fluoranthene	39	12	.	12	.	.	.	12
Methylnaphthalene, 2-	55	12	.	12	.	12	.	.
LMW_PAHs	66	11	.	11	.	11	.	.
Chromium	74	9	.	9	.	9	.	.
Naphthalene	89	8	1	7	1	7	.	.
Acenaphthene	91	7	2	5	2	5	.	.
Acenaphthylene	91	5	2	3	2	3	.	.
Anthracene	21	5	2	3	2	3	.	.
Indeno(1,2,3-cd)pyrene	85	5	.	5	.	.	.	5
BHC	88	3	.	3	.	2	.	2
Benzo(k)fluoranthene	40	2	.	2	.	.	.	2
Dimethyl phthalate	85	2	.	2	.	2	.	.
Pentachlorophenol	117	2	.	2	.	2	.	.
Benzoic acid	71	1	.	1	.	1	.	.
Cresol, m-	71	1	.	1	.	1	.	.
Dibenzofuran	52	1	.	1	.	1	.	.
Endosulfan, alpha-	33	1	.	1	.	1	.	.
Nitrosodiphenylamine, N-	55	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	99	30.12	0.00	23	1000.00	5.20
Acenaphthylene	99	30.08	0.00	10	1300.00	1.00
Acrylonitrile	42	0.00	0.00	0	.	.
Aldrin	127	0.00	0.00	0	.	.
Anthracene	21	315.24	0.00	5	2800.00	630.00
Antimony	127	5110.16	0.00	53	101000.0	100.00
Arsenic	129	19363.80	12000.00	129	449000.0	3000.00
Benzene	49	0.00	0.00	0	.	.
Benzo(a)anthracene	76	610.72	200.00	54	7900.00	9.50
Benzo(a)pyrene	98	388.61	51.00	56	3100.00	11.00
Benzo(b)fluoranthene	39	430.77	0.00	12	3000.00	680.00
Benzo(ghi)perylene	93	27.83	0.00	20	360.00	19.00
Benzo(k)fluoranthene	40	410.00	0.00	12	3000.00	680.00
Benzoic acid	71	23.68	0.00	14	1100.00	13.00
Benzyl alcohol	72	0.35	0.00	2	15.00	10.00
Bis(2-ethylhexyl)phthalate	93	743.13	0.00	34	16000.00	37.00
Bromophenyl phenyl ether, 4-	21	0.00	0.00	0	.	.
Butyl benzyl phthalate	94	9.89	0.00	14	96.00	49.00
BHC	398	0.03	0.00	2	7.00	3.30
Cadmium	131	832.91	600.00	117	8300.00	61.00
Chlordane	126	0.00	0.00	1	0.50	0.50
Chlorobenzene	49	0.00	0.00	0	.	.
Chromium	91	25498.90	21000.00	84	174000.0	8000.00
Chrysene	77	728.05	280.00	56	9000.00	5.30
Copper	136	62097.06	44150.00	132	386000.0	1000.00
Cresol, m-	71	45.17	26.00	71	1100.00	3.50
Cresol, o	54	14.15	5.90	53	280.00	3.00
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	91	4.54	0.00	14	81.00	7.00
Di-n-octyl phthalate	106	26.52	0.00	20	1300.00	23.10
Dibenzo(a,h)anthracene	152	69.83	0.00	47	2800.00	11.00
Dibenzofuran	52	46.54	0.00	16	2000.00	4.00
Dibromochloromethane	48	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	112	0.09	0.00	1	10.00	10.00
Dichlorobenzene, 1,3-	112	0.09	0.00	1	10.00	10.00
Dichlorobenzene, 1,4-	111	0.09	0.00	1	10.00	10.00
Dichloroethane 1,1-	48	0.00	0.00	0	.	.
Dichloroethane 1,2-	26	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	42	0.00	0.00	0	.	.
Dichloromethane	42	137.38	0.00	7	4200.00	140.00
Dichloropropane, 1,2-	48	0.00	0.00	0	.	.
Dieldrin	127	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Diethyl phthalate	92	1.09	0.00	12	70.00	2.00
Dimethyl phthalate	93	12.79	0.00	16	510.00	5.70
Dimethylphenol, 2,4-	134	0.00	0.00	0	.	.
Dioxins	20	0.00	0.00	0	.	.
DDT	415	1.66	0.00	42	160.00	0.50
Endosulfan, alpha-	42	0.26	0.00	1	11.00	11.00
Endosulfan, beta-	42	0.00	0.00	0	.	.
Endrin	99	0.00	0.00	0	.	.
Ethylbenzene	83	0.00	0.00	0	.	.
Fluoranthene	96	1676.54	570.00	79	38000.00	10.00
Fluorene	97	137.51	0.00	26	5900.00	3.00
Heptachlor	125	0.00	0.00	0	.	.
Heptachlor epoxide	83	0.00	0.00	0	.	.
Hexachlorobenzene	116	0.29	0.00	10	20.00	0.10
Hexachlorobutadiene	112	0.00	0.00	0	.	.
Hexachloroethane	55	0.00	0.00	0	.	.
HMW_PAHs	72	748.41	0.00	27	9900.00	20.90
Indeno(1,2,3-cd)pyrene	93	32.22	0.00	19	520.00	20.00
Isophorone	40	0.00	0.00	0	.	.
Lead	136	61045.44	35650.00	135	307000.0	3000.00
LMW_PAHs	74	157.42	0.00	15	3000.00	21.00
Mercury	117	96.36	90.00	85	400.00	20.00
Methoxychlor	1	0.00	0.00	0	.	.
Methylnaphthalene, 2-	55	15.80	0.00	17	240.00	14.00
Naphthalene	97	19.39	0.00	18	990.00	17.00
Nickel	135	23397.04	21000.00	131	155000.0	4000.00
Nitrosodiphenylamine, N-	55	1.09	0.00	3	30.00	10.00
Pentachlorophenol	134	7.54	0.00	4	419.00	77.90
Phenanthrene	77	1367.00	280.00	55	32000.00	8.70
Phenol	121	13.77	0.00	20	320.00	10.00
Polychlorinated biphenyls	644	101.29	0.00	66	5600.00	92.00
Pyrene	92	1444.54	510.00	70	30000.00	5.30
Silver	111	355.92	160.00	67	2100.00	70.00
Tetrachloroethane, 1,1,2,2-	48	0.00	0.00	0	.	.
Tetrachloroethene	82	0.00	0.00	0	.	.
Tetrachloromethane	48	0.00	0.00	0	.	.
Toluene	86	0.63	0.00	2	50.00	4.60
Toxaphene	42	0.00	0.00	0	.	.
Tribromomethane/Bromoform	48	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	111	0.06	0.00	1	6.40	6.40
Trichloroethane, 1,1,1-	42	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	48	0.00	0.00	0	.	.
Trichloroethene	81	0.00	0.00	0	.	.
Trichlorofluoromethane	42	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloromethane/Chloroform	48	0.00	0.00	0	.	.
Xylenes	36	0.00	0.00	0	.	.
Zinc	114	158639.5	111000.0	114	1240000	22000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	7	0.00	0.00	0	.	.
Arsenic	7	17.14	0.00	2	90.00	30.00
BHC	6	155.17	115.50	5	460.00	20.00
Cadmium	7	125.71	30.00	6	430.00	10.00
Chlordane	10	0.00	0.00	0	.	.
Chromium	7	117.14	0.00	3	520.00	100.00
Copper	7	5628.57	1600.00	7	24600.00	1000.00
Dieldrin	7	0.00	0.00	0	.	.
DDT	35	341.69	160.00	24	2000.00	13.00
Endrin	1	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Lead	7	128.57	0.00	2	800.00	100.00
Mercury	5	178.80	130.00	5	530.00	40.00
Methoxychlor	7	0.00	0.00	0	.	.
Pentachlorophenol	4	84.00	78.00	4	170.00	10.00
Polychlorinated biphenyls	7	795.71	600.00	6	1600.00	420.00
Zinc	7	19028.57	16500.00	7	27300.00	11400.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: 1985 Elliott Bay sediment survey							
47.5153	122.3032	85-09-30	Rhepoxynius Abronius	S	13.00	2.25	no
47.5190	122.3070	85-10-10	Rhepoxynius Abronius	S	40.00	10.00	Yes
47.5198	122.3010	85-09-30	Rhepoxynius Abronius	S	38.00	2.25	Yes
47.5252	122.3077	85-09-30	Rhepoxynius Abronius	S	14.50	2.25	no
47.5259	122.3073	85-09-30	Rhepoxynius Abronius	S	18.00	2.25	no
47.5300	122.3136	85-09-30	Rhepoxynius Abronius	S	29.00	2.25	Yes
47.5320	122.3187	85-10-09	Rhepoxynius Abronius	S	8.00	5.00	no
47.5344	122.3203	85-09-30	Rhepoxynius Abronius	S	8.00	2.25	no
47.5367	122.3250	85-09-30	Rhepoxynius Abronius	S	17.00	2.25	no
47.5368	122.3175	85-09-30	Rhepoxynius Abronius	S	25.00	2.25	Yes
47.5397	122.3304	85-09-30	Rhepoxynius Abronius	S	7.00	2.25	no
47.5416	122.3309	85-09-30	Rhepoxynius Abronius	S	23.00	2.25	Yes

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.5429	122.3299	85-09-30	Rhepoxynius Abronius	S	17.00	2.25	no
47.5433	122.3343	85-09-30	Rhepoxynius Abronius	S	57.00	2.25	Yes
47.5440	122.3361	85-09-30	Rhepoxynius Abronius	S	32.00	2.25	Yes
47.5473	122.3341	85-09-30	Rhepoxynius Abronius	S	89.00	2.25	Yes
47.5485	122.3388	85-09-30	Rhepoxynius Abronius	S	45.00	2.25	Yes
47.5528	122.3401	85-09-30	Rhepoxynius Abronius	S	8.00	2.25	no
47.5569	122.3392	85-09-25	Rhepoxynius Abronius	S	22.00	2.25	no

Puyallup 17110014

Watershed Summary Information

Accounting Unit Name:	Puget Sound
State(s):	WA
Political Boundaries:	Pierce, King
Major Waterways:	White R Carbon R S Prairie Cr Puyallup R Voight Cr
Number of Stations in Watershed:	Tier1 - 12 Tier2 - 6 Tier3 - 1

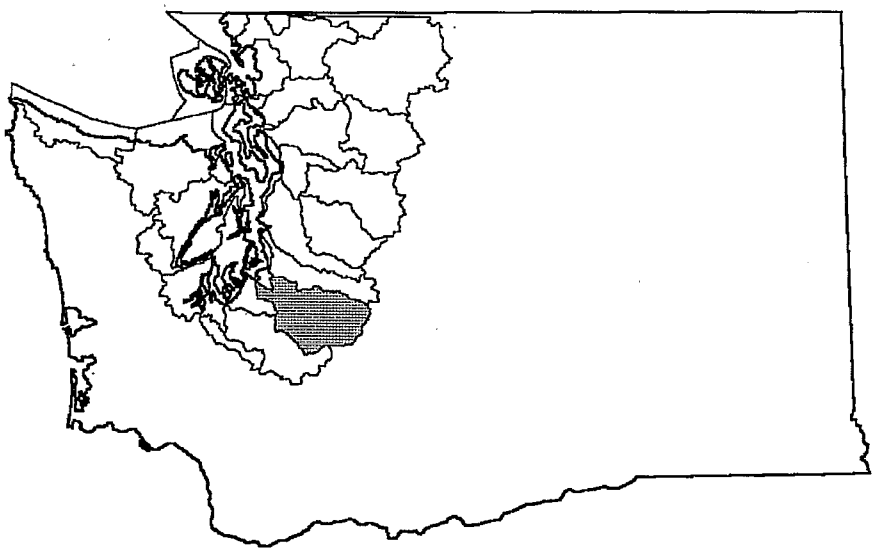

Figure 169. Watershed Location Map

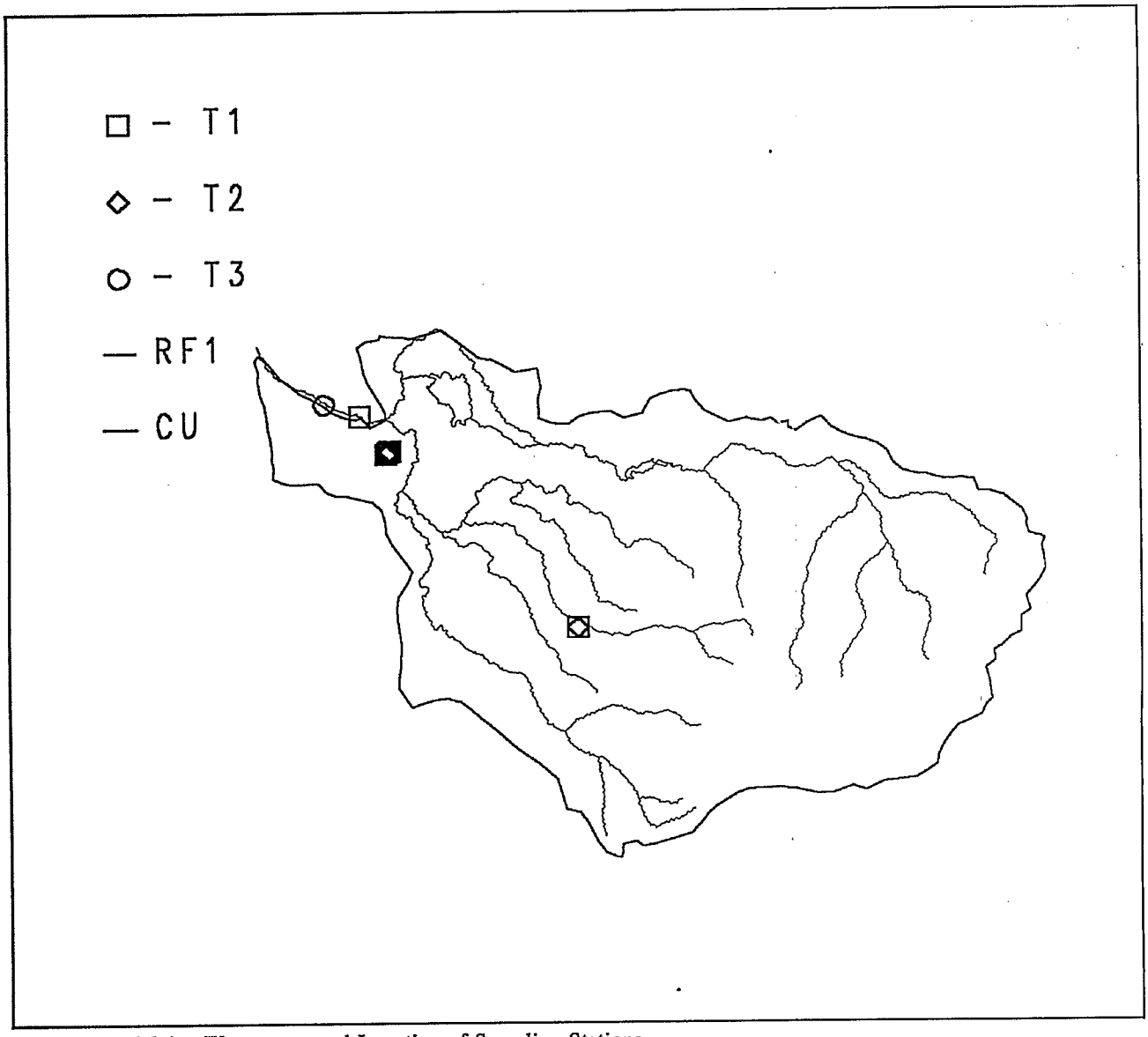

Figure 170. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: SEACOE Agency: CASCAD85
Monitoring Program: **Early McFarland Cascade sediment study.**
Num. of Stations: 11 Date Range: 1985

Source: SEACOE Agency: NOAA84
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: SEACOE Agency: NOAA86
Monitoring Program: **1986 Benthic Surveillance (NST)**
Num. of Stations: 3 Date Range: 1986

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1984

Source: **STORET** Agency: **21540000**
Monitoring Program: **Washington Dept Ecology Southwest Regional Office Estuary & Freshwatrs Data**
Num. of Stations: 1 Date Range: 1980-81

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Naphthalene	13	12	6	6	6	6	.	.
Dibenzo(a,h)anthracene	14	11	8	3	8	3	.	9
Pyrene	14	11	6	5	6	5	.	.
Copper	11	11	.	11	.	11	.	.
Chrysene	13	10	3	7	3	7	.	1
Benzo(a)pyrene	14	10	2	8	2	5	.	10
Benzo(a)anthracene	13	8	5	3	5	3	.	7
Fluorene	13	8	5	3	5	3	.	.
Methylnaphthalene, 2-	13	7	2	5	2	5	.	.
Polychlorinated biphenyls	7	7	1	6	.	4	1	6
Bis(2-ethylhexyl)phthalate	8	6	1	5	1	5	.	1
Arsenic	11	6	.	6	.	6	.	.
Dibenzofuran	10	4	1	3	1	3	.	1
LMW_PAHs	13	4	1	3	1	3	.	.
Fluoranthene	14	3	3	.	3	.	.	.
Silver	3	3	3	.	3	.	.	.
Chromium	3	3	.	3	.	3	.	.
Ethylbenzene	8	3	.	3	.	3	.	.
Nickel	3	3	.	3	.	3	.	.
Acenaphthene	14	2	2	.	2	.	.	.
Phenanthrene	14	2	2	.	2	.	.	.
Cadmium	3	2	.	2	.	2	.	.
Lead	3	2	.	2	.	2	.	.
Xylenes	8	1	1	.	1	.	.	.
Acenaphthylene	8	1	.	1	.	1	.	.
Dieldrin	4	1	.	1	.	.	.	1
DDT	7	1	.	1	.	1	.	.
HMW_PAHs	14	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	14	28138.07	405.00	11	370000.0	9.00
Acenaphthylene	8	41.25	0.00	1	330.00	330.00
Aldrin	3	0.00	0.00	0	.	.
Antimony	3	1336.67	1330.00	3	1440.00	1240.00
Arsenic	11	6699.09	7300.00	11	11000.00	2540.00
Benzo(a)anthracene	13	9081.00	670.00	11	95000.00	48.00
Benzo(a)pyrene	14	3261.07	124.50	10	40000.00	52.00
Benzo(ghi)perylene	10	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	8	2455.00	700.00	7	15000.00	120.00
BHC	3	0.00	0.00	0	.	.
Cadmium	3	770.00	810.00	3	840.00	660.00
Chlordane	3	0.00	0.00	0	.	.
Chromium	3	69500.00	69800.00	3	71000.00	67700.00
Chrysene	13	11167.77	740.00	11	120000.0	81.00
Copper	11	63772.73	56600.00	11	131500.0	32000.00
Cresol, m-	8	190.00	110.00	8	400.00	100.00
Cresol, o	8	187.50	100.00	8	400.00	100.00
Dibenzo(a,h)anthracene	21	7705.67	20.00	13	150000.0	10.00
Dibenzofuran	10	13836.00	280.00	7	130000.0	220.00
Dieldrin	3	0.67	0.00	1	2.00	2.00
Dimethylphenol, 2,4-	8	0.00	0.00	0	.	.
DDT	11	0.45	0.00	3	2.00	1.00
Ethylbenzene	8	72.75	0.00	3	510.00	18.00
Fluoranthene	14	44940.71	2200.00	14	530000.0	130.00
Fluorene	13	16025.62	69.00	10	200000.0	17.00
Heptachlor	3	0.00	0.00	0	.	.
Heptachlor epoxide	3	0.00	0.00	0	.	.
Hexachlorobenzene	3	1.67	2.00	2	3.00	2.00
HMW_PAHs	15	180.00	0.00	6	740.00	230.00
Indeno(1,2,3-cd)pyrene	9	0.00	0.00	0	.	.
Lead	3	34633.33	32100.00	3	42200.00	29600.00
LMW_PAHs	14	3597.14	115.00	7	48000.00	230.00
Mercury	3	0.00	0.00	0	.	.
Methylnaphthalene, 2-	13	1370.54	85.00	8	15000.00	6.00
Naphthalene	13	18430.54	530.00	12	210000.0	85.00
Nickel	3	24966.67	24600.00	3	26000.00	24300.00
Pentachlorophenol	8	0.00	0.00	0	.	.
Phenanthrene	14	59343.57	865.00	13	800000.0	100.00
Phenol	8	0.00	0.00	0	.	.
Polychlorinated biphenyls	7	37.73	49.00	7	69.00	4.50
Pyrene	14	33135.00	1240.00	14	400000.0	110.00
Silver	3	5900.00	5090.00	3	7560.00	5050.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Xylenes	8	50.00	0.00	1	400.00	400.00
Zinc	3	101000.0	97000.00	3	110000.0	96000.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	2	0.00	0.00	0	.	.
BHC	4	1.30	0.30	2	4.60	0.60
Chlordane	8	5.08	5.25	5	12.00	4.00
Dieldrin	2	0.70	0.70	1	1.40	1.40
Dioxins	2	0.00	0.00	1	0.00	0.00
DDT	14	18.58	9.05	8	66.00	2.10
Endrin	2	0.00	0.00	0	.	.
Hexachlorobenzene	1	36.00	36.00	1	36.00	36.00
Mercury	1	190.00	190.00	1	190.00	190.00
Methoxychlor	2	0.00	0.00	0	.	.
Pentachlorophenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	2	225.00	225.00	2	290.00	160.00

Puget Sound 17110019

Watershed Summary Information

Accounting Unit Name:	Puget Sound
State(s):	WA
Political Boundaries:	Mason, Pierce, Kitsap, Island, Thurston, Jefferson, Snohomish, King, Skagit
Major Waterways:	Sherwood Cr Chimacum Cr Mintner Cr Deer Cr Burley Cr
Number of Stations in Watershed:	Tier1 - 418 Tier2 - 851 Tier3 - 114

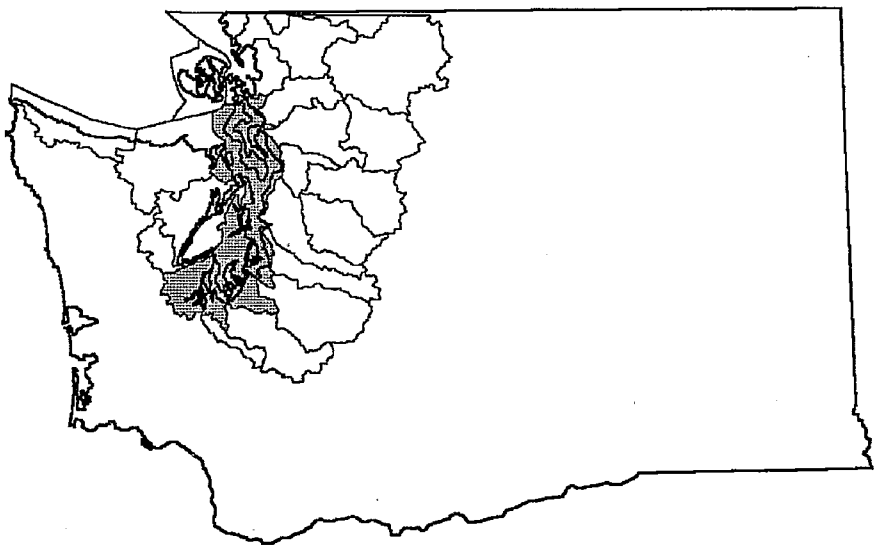

Figure 171. Watershed Location Map

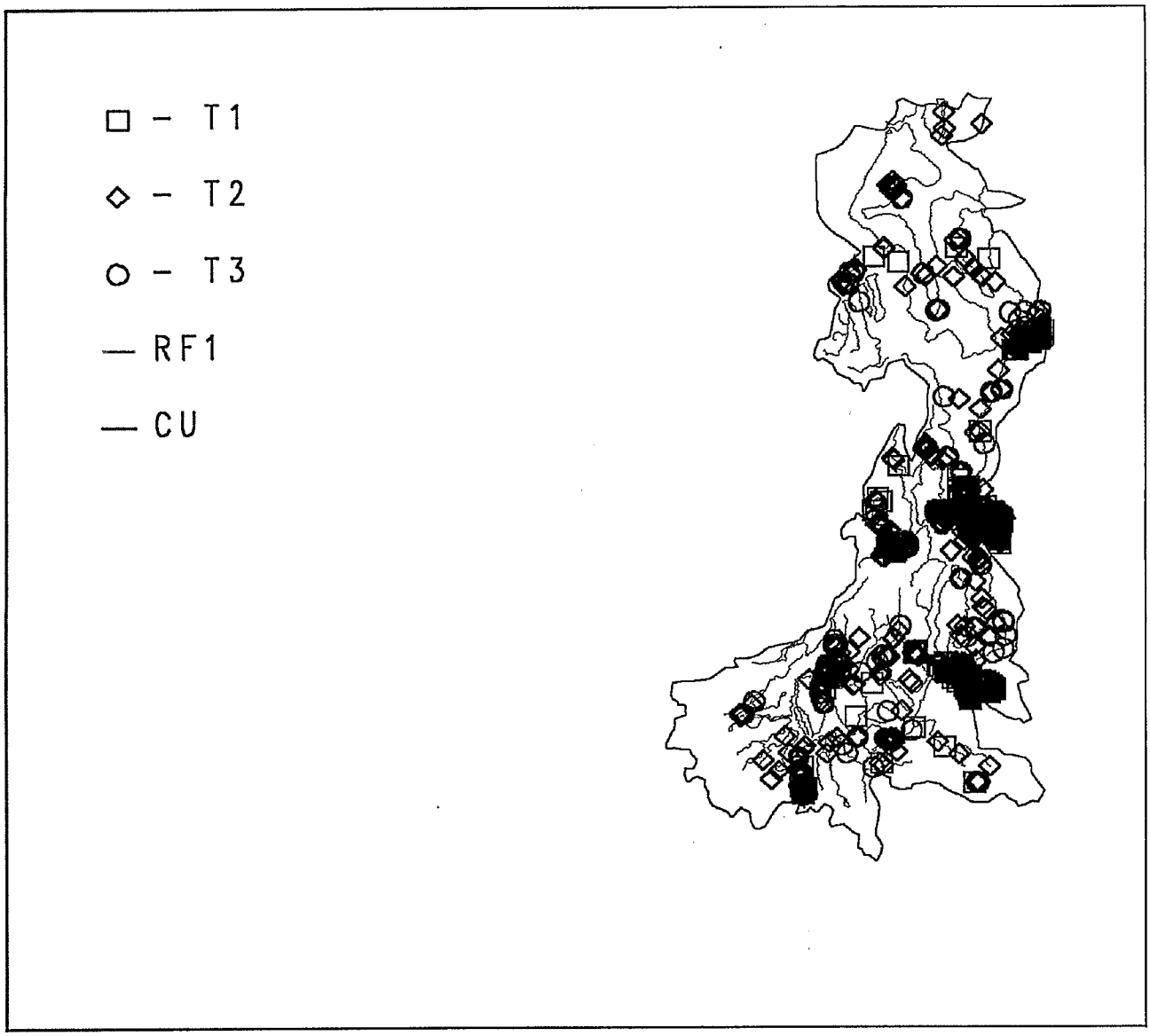

Figure 172. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 33 Date Range: 1984-90

Source: **ODES** Agency: **PS**
Monitoring Program: **Puget Sound**
Num. of Stations: 50 Date Range: 1988-89

Source: **SEACOE** Agency: **ALKI**
Monitoring Program: **1982 ALKI Survey**
Num. of Stations: 11 Date Range: 1984

Source: **SEACOE** Agency: **BLAIR037**
Monitoring Program: **Tacoma, Port of, Blair Waterway, DY92**
Num. of Stations: 15 Date Range: 1991

Source: **SEACOE** Agency: **BLAKEISL**
Monitoring Program: **WA state park maintenance dredging.**
Num. of Stations: 1 Date Range: 1988

Source: **SEACOE** Agency: **CASCADRI**
Monitoring Program: **Cascade Pole Remedial Investigation.**
Num. of Stations: 55 Date Range: 1990-91

Source: **SEACOE** Agency: **CBBLAIR**
Monitoring Program: **Commencment Bay RI Blair Waterway Dredge**
Num. of Stations: 12 Date Range: 1984

Source: **SEACOE** Agency: **CBMSQS**
Monitoring Program: **Commencement Bay RI Main Sed. Qual. Sur.**
Num. of Stations: 115 Date Range: 1984

Source: **SEACOE** Agency: **CGPIER35**
Monitoring Program: **US Coast Guard dredging and construction**
Num. of Stations: 3 Date Range: 1989

Source: **SEACOE** Agency: **CHEVMD90**
Monitoring Program: **Chevron USA Edmonds Dock Maint. Dredging**
Num. of Stations: 3 Date Range: 1990

Source: **SEACOE** Agency: **COE_KEYS**
Monitoring Program: **Keystone Harbor Study/Maint. Dredging.**
Num. of Stations: 7 Date Range: 1990

Source: **SEACOE** Agency: **DNRREC91**
Monitoring Program: **Aq. Lands Sediment Qual. Reconnaissance.**
Num. of Stations: 13 Date Range: 1991

Source: **SEACOE** Agency: **DNRREC92**
Monitoring Program: **Aq. Lands Sediment Qual. Reconnaissance.**
Num. of Stations: 20 Date Range: 1992

Source: **SEACOE** Agency: **DUWAM84**
Monitoring Program: **1984 Duwamish Head Survey**
Num. of Stations: 28 Date Range: 1984

Source: **SEACOE** Agency: **DUWAM85**
Monitoring Program: **Duwamish Head Baseline Survey, '85-'86**
Num. of Stations: 36 Date Range: 1985-86

Source: **SEACOE** Agency: **DUWO&M90**
Monitoring Program: **Operations & Maint. Dredge Duwamish Riv.**
Num. of Stations: 1 Date Range: 1989

Source: **SEACOE** Agency: **EBCHEM**
Monitoring Program: **1985 Elliott Bay sediment survey**

Num. of Stations: 88 Date Range: 1985

Source: SEACOE Agency: **EHCHEM**
Monitoring Program: **Eagle Harbor sediment chemistry survey**
Num. of Stations: 34 Date Range: 1985

Source: SEACOE Agency: **EIGHTBAY**
Monitoring Program: **1985 Puget Sound Eight-Bay survey.**
Num. of Stations: 48 Date Range: 1983-84

Source: SEACOE Agency: **EPA8283**
Monitoring Program: **1982-83 EPA survey of Duwamish River**
Num. of Stations: 34 Date Range: 1982-83

Source: SEACOE Agency: **EVCHEM**
Monitoring Program: **1985 Everett Hbr. chem. & biota data.**
Num. of Stations: 46 Date Range: 1986

Source: SEACOE Agency: **EVRT12TH**
Monitoring Program: **Everett 12th St. barge channel dredging.**
Num. of Stations: 8 Date Range: 1992

Source: SEACOE Agency: **GAMPONIA**
Monitoring Program: **Gamponia survey of Elliott Bay**
Num. of Stations: 14 Date Range: 1985

Source: SEACOE Agency: **HOME1008**
Monitoring Program: **US NAVY EVERETT HOMEPORT ELEMENT I PC DY90**
Num. of Stations: 2 Date Range: 1988

Source: SEACOE Agency: **HULB87PC**
Monitoring Program: **Hulbert Mill's proposed 12th St. Marina.**
Num. of Stations: 2 Date Range: 1987

Source: SEACOE Agency: **IND_MOXL**
Monitoring Program: **Indian/Moxlie Cr. (Olympis) Basin Samp.**
Num. of Stations: 2 Date Range: 1992

Source: SEACOE Agency: **LOTT_91**
Monitoring Program: **1991 LOTT Budd Inlet Sample Study**
Num. of Stations: 4 Date Range: 1991

Source: SEACOE Agency: **LOTT_92**
Monitoring Program: **1992 LOTT Budd Inlet Sample Study**
Num. of Stations: 4 Date Range: 1992

Source: SEACOE Agency: **LOTTO041**
Monitoring Program: **LOTT Olympia Treat. Plant Outfall, DY89**
Num. of Stations: 1 Date Range: 1989

Source: SEACOE Agency: **LOTTO043**
Monitoring Program: **LOTT Olympia Treat. Plant Outfall, DY91**
Num. of Stations: 1 Date Range: 1991

Source: SEACOE Agency: **MALINS**

Monitoring Program: **1980 NOAA OMPA-19 survey of Elliott Bay.**
Num. of Stations: 15 Date Range: 1980

Source: **SEACOE** Agency: **METROEBP**
Monitoring Program: **WestPoint emergency bypass outfall.**
Num. of Stations: 7 Date Range: 1989

Source: **SEACOE** Agency: **NAVYHPFC**
Monitoring Program: **Everett Homeport (full characterization)**
Num. of Stations: 32 Date Range: 1989

Source: **SEACOE** Agency: **NAVYHPII**
Monitoring Program: **U.S. Navy Homeport Element II Full Char.**
Num. of Stations: 9 Date Range: 1990

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 3 Date Range: 1984

Source: **SEACOE** Agency: **NOAA86**
Monitoring Program: **1986 Benthic Surveillance (NST)**
Num. of Stations: 2 Date Range: 1986

Source: **SEACOE** Agency: **OLYHARFC**
Monitoring Program: **Olympia Harbor planning, full character.**
Num. of Stations: 11 Date Range: 1988

Source: **SEACOE** Agency: **OLYMP_B2**
Monitoring Program: **Olympia Har. Berth 2 sediment study.**
Num. of Stations: 2 Date Range: 1985

Source: **SEACOE** Agency: **OLYMP_B3**
Monitoring Program: **Olympia Har. Berth 3 reconstr. dredging.**
Num. of Stations: 3 Date Range: 1986

Source: **SEACOE** Agency: **POEST060**
Monitoring Program: **Everett, Port of, South Terminal PC, DY93**
Num. of Stations: 13 Date Range: 1992

Source: **SEACOE** Agency: **POSAP053**
Monitoring Program: **Seattle, Port of, American President's Line-T5, DY92**
Num. of Stations: 2 Date Range: 1992

Source: **SEACOE** Agency: **POST5036**
Monitoring Program: **Seattle, Port of, Terminal 5, DY92**
Num. of Stations: 3 Date Range: 1991

Source: **SEACOE** Agency: **PSDDA1**
Monitoring Program: **PSDDA Phase I baseline survey**
Num. of Stations: 61 Date Range: 1988

Source: **SEACOE** Agency: **PSDDA2**
Monitoring Program: **PSDDA Phase 2 baseline survey**
Num. of Stations: 7 Date Range: 1989

Source: SEACOE Agency: **PSREF90**
Monitoring Program: **Puget Sound Reference Areas Survey**
Num. of Stations: 14 Date Range: 1990

Source: SEACOE Agency: **SED18804**
Monitoring Program: **Puget Sound Reconnaissance Survey - Spri**
Num. of Stations: 18 Date Range: 1988

Source: SEACOE Agency: **SED18903**
Monitoring Program: **March-April 1989 Sediment Survey**
Num. of Stations: 34 Date Range: 1989

Source: SEACOE Agency: **SED19003**
Monitoring Program: **Puget Sound Ambient Monitoring - 1990**
Num. of Stations: 41 Date Range: 1990

Source: SEACOE Agency: **SILVERDA**
Monitoring Program: **Port of Silverdale Dock/Pier/Ramp Dredge**
Num. of Stations: 3 Date Range: 1991

Source: SEACOE Agency: **SSRECON**
Monitoring Program: **South Puget Sound Reconaissance Survey**
Num. of Stations: 17 Date Range: 1990

Source: SEACOE Agency: **SWINOM88**
Monitoring Program: **Swinomish Channel Maintenance Dredging.**
Num. of Stations: 3 Date Range: 1988

Source: SEACOE Agency: **TPPS**
Monitoring Program: **TPPS Preliminary survey**
Num. of Stations: 31 Date Range: 1981-82

Source: SEACOE Agency: **TPPS3AB**
Monitoring Program: **TPPS Phase III A & B**
Num. of Stations: 37 Date Range: 1981-82

Source: SEACOE Agency: **TRIMA022**
Monitoring Program: **TRISTAR MARINE**
Num. of Stations: 2 Date Range: 1990

Source: SEACOE Agency: **USNPD034**
Monitoring Program: **U.S. Navy Bremerton Pier D, DY92**
Num. of Stations: 21 Date Range: 1991

Source: SEACOE Agency: **USOILVLF**
Monitoring Program: **US Oil Refinery Blair WW Maint. Dredging**
Num. of Stations: 6 Date Range: 1989-90

Source: SEACOE Agency: **WBMARINA**
Monitoring Program: **Olympia/West Bay marina sampling.**
Num. of Stations: 12 Date Range: 1991

Source: SEACOE Agency: **1TREEISL**
Monitoring Program: **One Tree Island (Fiddlehead) Marina Proj**

Num. of Stations: 14 Date Range: 1985

Source: **SEACOE** Agency: **2MARINAS**
Monitoring Program: **Port Townsend & Cap Sante Marinas Study**
Num. of Stations: 4 Date Range: 1988

Source: **STORET** Agency: **10EPACOP**
Monitoring Program: **USEPA Region 10 Cooperative Water Data**
Num. of Stations: 12 Date Range: 1986-87

Source: **STORET** Agency: **10EPAINT**
Monitoring Program: **USEPA Region 10 Intensive Survey Data**
Num. of Stations: 242 Date Range: 1982-88

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 3 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 4 Date Range: 1991

Source: **STORET** Agency: **21540000**
Monitoring Program: **Washington Dept Ecology Southwest Regional Office Estuary & Freshwatrs Data**
Num. of Stations: 4 Date Range: 1980-82

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	1174	922	.	922	.	922	.	.
Nickel	1125	904	.	904	.	904	.	.
Arsenic	1111	737	37	700	37	686	.	14
Lead	1240	644	.	644	.	641	.	3
Benzo(a)pyrene	929	591	93	498	93	356	.	590
Pyrene	964	570	134	436	134	436	.	1
Mercury	1039	547	98	449	98	449	.	.
Chrysene	908	535	72	463	72	463	.	10
Dibenzo(a,h)anthracene	995	533	206	327	206	322	.	480
Benzo(a)anthracene	885	507	91	416	91	409	.	316
Cadmium	1147	498	.	498	.	498	.	.
Polychlorinated biphenyls	964	463	146	317	140	199	6	457
Naphthalene	943	400	90	310	90	310	.	.
Fluorene	944	387	66	321	66	321	.	.
Acenaphthylene	908	378	27	351	27	351	.	.
Zinc	1041	292	.	292	.	292	.	.
HMW_PAHs	688	283	71	212	71	212	.	.
LMW_PAHs	699	271	80	191	80	191	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chromium	850	265	2	263	2	263	.	.
Methylnaphthalene, 2-	618	237	28	209	28	209	.	.
Fluoranthene	968	230	50	180	50	180	.	1
Phenanthrene	893	206	100	106	100	106	.	.
Silver	1094	185	13	172	13	172	.	.
Bis(2-ethylhexyl)phthalate	737	154	13	141	13	141	.	9
Indeno(1,2,3-cd)pyrene	912	148	.	148	.	67	.	140
DDT	987	117	29	88	29	88	.	43
Acenaphthene	899	100	33	67	33	67	.	.
Benzo(b)fluoranthene	238	98	.	98	.	23	.	98
Benzo(ghi)perylene	909	74	.	74	.	74	.	.
Phenol	921	60	.	60	.	60	.	.
Anthracene	133	49	9	40	9	40	.	.
Benzo(k)fluoranthene	241	45	.	45	.	21	.	44
Hexachlorobutadiene	936	39	.	39	.	39	.	1
Anthracene&Phenanthrene	47	36	1	35	1	35	.	.
Cresol, m-	641	36	.	36	.	36	.	.
Dimethylphenol, 2,4-	919	34	.	34	.	34	.	.
Hexachlorobenzene	968	33	.	33	.	33	.	3
Dibenzofuran	591	30	10	20	10	20	.	2
BHC	730	27	8	19	8	19	.	2
Di-n-butyl phthalate	755	24	2	22	2	22	.	.
Nitrosodiphenylamine, N-	704	24	.	24	.	24	.	.
Cresol, o	689	19	.	19	.	19	.	.
Dimethyl phthalate	846	17	.	17	.	17	.	.
Antimony	832	16	.	16	.	16	.	.
Dichlorobenzene, 1,4-	917	15	2	13	2	13	.	1
Di-n-octyl phthalate	815	15	.	15	.	15	.	2
Diethyl phthalate	775	14	3	11	3	11	.	.
Benzyl alcohol	634	13	.	13	.	13	.	.
Xylenes	254	12	3	9	3	9	.	.
Aldrin	806	11	.	11	.	.	.	11
Benzo(a)anthracene/Chrysene	46	11	.	11	.	11	.	4
Dieldrin	816	11	.	11	.	1	.	10
Ethylbenzene	423	10	.	10	.	10	.	.
Tetrachloroethene	403	10	.	10	.	10	.	.
Trichlorobenzene, 1,2,4-	915	10	.	10	.	10	.	.
Dichlorobenzene, 1,2-	922	9	1	8	1	8	.	.
Benzoic acid	573	8	.	8	.	8	.	.
Toxaphene	167	7	.	7	.	7	.	7
Butyl benzyl phthalate	789	6	.	6	.	6	.	.
Heptachlor epoxide	419	6	.	6	.	.	.	6
Pentachlorophenol	993	6	.	6	.	6	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Chlordane	817	3	.	3	.	3	.	1
Heptachlor	733	2	.	2	.	.	.	2
Cresol, p-	78	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1065	540.18	0.00	465	100000.0	0.30
Acenaphthylene	1074	101.89	0.00	450	14000.00	0.60
Acetone	17	0.00	0.00	0	.	.
Acrylonitrile	110	0.00	0.00	0	.	.
Aldrin	862	0.16	0.00	29	75.00	0.30
Anthracene	154	422.01	22.50	98	21000.00	7.00
Anthracene&Phenanthrene	47	199.02	142.00	44	1117.00	6.00
Antimony	999	10181.68	280.00	619	1370000	6.00
Arsenic	1262	44365.24	9290.00	1214	12200000	0.74
Benzene	175	0.00	0.00	7	0.17	0.07
Benzo(a)anthracene	1051	1118.42	106.00	811	300000.0	1.00
Benzo(a)anthracene/Chrysene	46	57.02	14.90	27	816.00	5.00
Benzo(a)pyrene	1102	664.58	81.50	807	39000.00	0.40
Benzo(b)fluoranthene	248	1957.51	105.00	186	150000.0	7.00
Benzo(ghi)perylene	1064	259.38	6.65	558	16000.00	0.80
Benzo(k)fluoranthene	251	1984.95	94.00	185	150000.0	1.00
Benzoic acid	633	60.51	0.00	94	8000.00	2.00
Benzyl alcohol	702	7.06	0.00	86	810.00	10.00
Biphenyl	30	12.54	10.84	30	42.00	1.90
Bis(2-ethylhexyl)phthalate	829	252.87	0.00	354	34850.00	5.00
Bromophenyl phenyl ether, 4-	151	0.00	0.00	0	.	.
Butyl benzyl phthalate	882	28.30	0.00	112	1800.00	0.30
BHC	2240	0.02	0.00	30	5.00	0.20
Cadmium	1326	1460.37	470.00	1171	250000.0	0.47
Chlordane	871	0.29	0.00	19	230.00	0.50
Chlorobenzene	171	0.00	0.00	0	.	.
Chromium	1018	45683.62	37000.00	1013	350000.0	10.80
Chrysene	1083	1555.80	160.00	875	350000.0	0.60
Copper	1359	107241.7	47000.00	1348	14300000	2.70
Cresol, m-	708	276.51	20.00	567	96000.00	1.00
Cresol, o	761	59.85	6.20	540	3300.00	0.60
Cresol, p-	84	24.77	0.00	6	2000.00	4.00
Di-n-butyl phthalate	851	154.56	0.00	266	9800.00	0.20
Di-n-octyl phthalate	912	436.43	0.00	130	69000.00	0.20
Dibenzo(a,h)anthracene	1955	491.42	0.00	945	240000.0	0.50

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dibenzofuran	715	565.32	0.00	282	100000.0	5.00
Dibromochloromethane	176	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1026	1.69	0.00	46	350.00	2.00
Dichlorobenzene, 1,3-	1006	2.64	0.00	62	210.00	2.00
Dichlorobenzene, 1,4-	1024	35.92	0.00	110	31000.00	1.00
Dichloroethane 1,1-	161	0.01	0.00	2	0.52	0.52
Dichloroethane 1,2-	166	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	119	0.28	0.00	7	12.70	2.70
Dichloromethane	147	4.74	0.00	2	692.00	5.00
Dichloropropane, 1,2-	172	0.61	0.00	1	105.00	105.00
Dieldrin	864	0.14	0.00	17	44.00	0.18
Diethyl phthalate	870	14.21	0.00	118	2400.00	0.80
Dimethyl phthalate	947	29.45	0.00	77	11000.00	0.20
Dimethylphenol, 2,4-	1031	7.92	0.00	59	920.00	2.00
Dioxins	47	0.00	0.00	0	.	.
DDT	3510	2.22	0.00	508	830.00	0.10
Endosulfan, alpha-	347	0.00	0.00	0	.	.
Endosulfan, beta-	369	0.00	0.00	0	.	.
Endrin	494	0.04	0.00	2	10.00	10.00
Ethylbenzene	473	0.55	0.00	24	50.00	0.03
Fluoranthene	1151	3103.85	210.00	1002	1300000	1.00
Fluorene	1111	488.64	0.60	557	120000.0	0.40
Heptachlor	773	0.02	0.00	7	10.00	0.30
Heptachlor epoxide	448	0.12	0.00	17	13.00	0.35
Hexachlorobenzene	1068	4.60	0.00	82	730.00	0.02
Hexachlorobutadiene	1032	6.84	0.00	78	940.00	0.20
Hexachloroethane	753	3.90	0.00	2	2800.00	140.00
HMW_PAHs	849	5005.09	150.00	471	810000.0	6.00
Indeno(1,2,3-cd)pyrene	1068	246.82	8.00	559	18000.00	0.70
Isophorone	560	55.84	0.00	12	29630.00	37.00
Lead	1430	146076.4	31000.00	1380	71100000	3.20
LMW_PAHs	873	4502.70	34.00	491	880000.0	1.30
Mercury	1200	357.41	149.50	1053	52000.00	0.02
Methoxychlor	9	0.00	0.00	0	.	.
Methyl ethyl ketone	20	0.00	0.00	0	.	.
Methylnaphthalene, 2-	739	302.12	0.00	340	85000.00	0.40
Mirex/Dechlorane	4	0.68	0.25	4	2.00	0.20
Naphthalene	1112	701.35	15.00	613	180000.0	0.70
Nickel	1324	31997.17	30000.00	1290	366000.0	7.90
Nitrosodiphenylamine, N-	793	55.35	0.00	37	25640.00	5.00
Pentachlorophenol	1166	5.65	0.00	66	860.00	2.00
Phenanthrene	1071	1728.71	160.00	884	330000.0	1.00
Phenol	1018	691.04	0.00	309	608300.0	1.70
Polychlorinated biphenyls	3512	73.92	0.00	791	17000.00	0.20

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Pyrene	1136	2459.15	260.00	994	740000.0	0.90
Silver	1303	454.41	235.00	1053	6000.00	0.04
Tetrachloroethane, 1,1,2,2-	176	0.00	0.00	0	.	.
Tetrachloroethene	446	2.87	0.00	27	210.00	0.01
Tetrachloromethane	175	0.00	0.00	0	.	.
Toluene	199	0.01	0.00	8	0.24	0.10
Toxaphene	168	8.33	0.00	7	200.00	200.00
Tribromomethane/Bromoform	175	0.00	0.00	1	0.04	0.04
Trichlorobenzene, 1,2,4-	1016	1.43	0.00	25	260.00	4.00
Trichloroethane, 1,1,1-	122	0.01	0.00	3	0.82	0.06
Trichloroethane, 1,1,2-	176	0.00	0.00	0	.	.
Trichloroethene	458	0.01	0.00	1	3.30	3.30
Trichlorofluoromethane	119	0.00	0.00	0	.	.
Trichloromethane/Chloroform	234	0.01	0.00	9	0.89	0.05
Xylenes	298	4.70	0.00	24	460.00	0.17
Zinc	1216	151680.6	88000.00	1215	5910000	14.70

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	20	0.00	0.00	0	.	.
Aldrin	15	0.00	0.00	0	.	.
Anthracene	5	1.80	0.40	3	8.00	0.40
Antimony	1	300.00	300.00	1	300.00	300.00
Arsenic	28	1813.21	1800.00	28	4900.00	120.00
Benzo(a)anthracene	19	0.47	0.00	2	5.00	4.00
Benzo(a)pyrene	21	0.76	0.00	2	13.00	3.00
Benzo(b)fluoranthene	15	1.00	0.00	5	6.00	2.00
Benzo(k)fluoranthene	14	0.29	0.00	3	2.00	1.00
Biphenyl	3	0.00	0.00	0	.	.
BHC	62	0.08	0.00	2	3.60	1.30
Cadmium	28	341.07	250.00	28	1800.00	30.00
Chlordane	55	0.00	0.00	1	0.10	0.10
Chlorpyrifos/Dursban	3	0.00	0.00	0	.	.
Chromium	8	187.62	120.00	8	420.00	80.00
Chrysene	5	1.60	1.00	3	6.00	1.00
Copper	28	2437.50	1900.00	28	5400.00	130.00
Dibenzo(a,h)anthracene	20	0.00	0.00	0	.	.
Dicofol/Kelthane	3	0.00	0.00	0	.	.
Dieldrin	31	0.01	0.00	1	0.20	0.20
Dioxins	5	0.00	0.00	2	0.00	0.00
DDT	103	0.53	0.00	29	8.50	0.10

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan, alpha-	20	0.00	0.00	0	.	.
Endosulfan, beta-	20	0.00	0.00	0	.	.
Endrin	30	0.00	0.00	0	.	.
Fluoranthene	15	15.80	10.00	14	40.00	5.00
Fluorene	20	0.00	0.00	0	.	.
Heptachlor	24	0.00	0.00	0	.	.
Heptachlor epoxide	23	0.00	0.00	0	.	.
Hexachlorobenzene	31	0.02	0.00	1	0.60	0.60
Hexachlorobutadiene	23	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	20	0.05	0.00	1	1.00	1.00
Isopropalin	3	0.00	0.00	0	.	.
Lead	28	456.43	180.00	20	3800.00	40.00
Mercury	27	15.61	10.00	25	80.00	1.00
Methoxychlor	7	0.00	0.00	0	.	.
Mirex/Dechlorane	3	0.00	0.00	0	.	.
Naphthalene	21	619.05	0.00	1	13000.00	13000.00
Nickel	1	80.00	80.00	1	80.00	80.00
Pentachlorobenzene	3	0.00	0.00	0	.	.
Pentachloronitrobenzene/Quin	3	0.00	0.00	0	.	.
Pentachlorophenol	4	3.03	3.50	3	5.10	2.00
Polychlorinated biphenyls	189	6.42	0.00	44	132.00	0.07
Pyrene	20	5.00	0.00	4	40.00	20.00
Silver	1	0.00	0.00	0	.	.
Tetrachlorobenzene, 1,2,4,5-	3	0.00	0.00	0	.	.
Toxaphene	20	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	3	0.00	0.00	0	.	.
Trifluralin/Treflan	3	0.00	0.00	0	.	.
Zinc	25	18072.00	15200.00	25	43000.00	4000.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: Puget Sound Reference Areas Survey							
47.3203	122.6939	90-06-19	Neanthes Arenaceodentata	S	0.00	0.00	no
			Rhepoxynius Abronius	S	7.00	1.00	no
47.3311	122.6789	90-06-19	Neanthes Arenaceodentata	S	4.00	0.00	no
			Rhepoxynius Abronius	S	6.00	1.00	no
47.3317	122.6769	90-06-19	Neanthes Arenaceodentata	S	4.00	0.00	no
			Rhepoxynius Abronius	S	9.00	1.00	no
47.3319	122.6706	90-06-19	Neanthes Arenaceodentata	S	0.00	0.00	no
			Rhepoxynius Abronius	S	12.00	1.00	no
47.3319	122.6736	90-06-19	Neanthes Arenaceodentata	S	0.00	0.00	no
			Rhepoxynius Abronius	S	12.00	1.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.3319	122.6761	90-06-19	Neanthes Arenaceodentata	S	4.00	0.00	no
			Rhepoxynius Abronius	S	13.00	1.00	no
47.3347	122.6642	90-06-19	Neanthes Arenaceodentata	S	4.00	0.00	no
			Rhepoxynius Abronius	S	12.00	1.00	no
48.0314	122.5203	90-06-26	Neanthes Arenaceodentata	S	4.00	20.00	no
			Rhepoxynius Abronius	S	7.00	2.00	no
48.0331	122.5147	90-06-26	Neanthes Arenaceodentata	S	4.00	20.00	no
			Rhepoxynius Abronius	S	3.00	2.00	no
48.0331	122.5161	90-06-26	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	10.00	2.00	no
48.1019	122.5511	90-06-25	Neanthes Arenaceodentata	S	52.00	20.00	Yes
			Rhepoxynius Abronius	S	11.00	2.00	no
48.1056	122.5586	90-06-25	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	2.00	2.00	no
48.1067	122.5636	90-06-25	Neanthes Arenaceodentata	S	40.00	20.00	no
			Rhepoxynius Abronius	S	11.00	2.00	no
48.1214	122.5208	90-06-26	Neanthes Arenaceodentata	S	0.00	20.00	no
			Rhepoxynius Abronius	S	1.00	2.00	no
Monitoring Program: PSDDA Phase I baseline survey							
47.2198	122.6242	88-05-17	Rhepoxynius Abronius	S	16.00	6.00	no
47.2871	122.4556	88-05-17	Rhepoxynius Abronius	S	32.00	6.00	Yes
47.3000	122.4667	88-05-16	Rhepoxynius Abronius	S	7.00	6.00	no
47.3016	122.4586	88-05-18	Rhepoxynius Abronius	S	17.00	6.00	no
47.3036	122.4639	88-05-16	Rhepoxynius Abronius	S	49.00	6.00	Yes
47.3129	122.4556	88-05-17	Rhepoxynius Abronius	S	48.00	6.00	Yes
47.3167	122.4444	88-05-17	Rhepoxynius Abronius	S	33.00	6.00	Yes
47.5891	122.3615	88-05-19	Rhepoxynius Abronius	S	12.00	6.00	no
47.5950	122.3558	88-05-20	Rhepoxynius Abronius	S	17.00	6.00	no
47.5995	122.3563	88-05-20	Rhepoxynius Abronius	S	22.00	6.00	no
47.6002	122.3417	88-05-19	Rhepoxynius Abronius	S	15.00	6.00	no
47.6028	122.3541	88-05-20	Rhepoxynius Abronius	S	16.00	6.00	no
47.9722	122.2716	88-05-24	Rhepoxynius Abronius	S	29.00	6.00	Yes
47.9750	122.3333	88-05-23	Rhepoxynius Abronius	S	51.00	6.00	Yes
47.9811	122.2778	88-05-23	Rhepoxynius Abronius	S	36.00	6.00	Yes
48.0888	122.3530	88-05-23	Rhepoxynius Abronius	S	37.00	6.00	Yes
Monitoring Program: PSDDA Phase 2 baseline survey							
47.1572	122.6567	89-05-06	Rhepoxynius Abronius	S	17.00	4.00	no
47.1635	122.6418	89-05-06	Rhepoxynius Abronius	S	13.00	4.00	no
47.2198	122.6242	89-05-06	Rhepoxynius Abronius	S	4.00	4.00	no
Monitoring Program: 1985 Elliott Bay sediment survey							
47.5580	122.3420	85-10-09	Rhepoxynius Abronius	S	37.00	5.00	Yes
47.5589	122.3444	85-09-25	Rhepoxynius Abronius	S	27.00	2.25	Yes
47.5632	122.3444	85-09-30	Rhepoxynius Abronius	S	32.00	2.25	Yes
47.5634	122.3441	85-10-09	Rhepoxynius Abronius	S	18.00	5.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.5635	122.3464	85-09-30	Rhepoxynius Abronius	S	9.00	2.25	no
47.5654	122.3476	85-09-30	Rhepoxynius Abronius	S	23.00	2.25	Yes
47.5669	122.3460	85-10-01	Rhepoxynius Abronius	S	16.00	1.00	no
47.5675	122.3486	85-10-01	Rhepoxynius Abronius	S	33.00	1.00	Yes
47.5694	122.3468	85-10-08	Rhepoxynius Abronius	S	31.00	5.00	Yes
47.5705	122.3508	85-10-01	Rhepoxynius Abronius	S	32.00	1.00	Yes
47.5720	122.3433	85-10-09	Rhepoxynius Abronius	S	3.00	5.00	no
47.5720	122.3541	85-10-09	Rhepoxynius Abronius	S	82.00	5.00	Yes
47.5722	122.3528	85-10-01	Rhepoxynius Abronius	S	15.00	1.00	no
47.5730	122.3545	85-10-01	Rhepoxynius Abronius	S	9.00	1.00	no
47.5738	122.3565	85-10-01	Rhepoxynius Abronius	S	9.00	1.00	no
47.5740	122.3422	85-10-04	Rhepoxynius Abronius	S	39.00	5.00	Yes
47.5741	122.3592	85-10-01	Rhepoxynius Abronius	S	19.00	1.00	no
47.5742	122.3552	85-10-01	Rhepoxynius Abronius	S	11.00	1.00	no
47.5751	122.3580	85-10-01	Rhepoxynius Abronius	S	41.00	1.00	Yes
47.5760	122.3431	85-10-04	Rhepoxynius Abronius	S	29.00	5.00	Yes
47.5777	122.3445	85-10-14	Rhepoxynius Abronius	S	58.00	1.00	Yes
47.5779	122.3572	85-10-02	Rhepoxynius Abronius	S	41.00	1.00	Yes
47.5786	122.3397	85-10-04	Rhepoxynius Abronius	S	39.00	5.00	Yes
47.5788	122.3431	85-10-01	Rhepoxynius Abronius	S	100.00	1.00	Yes
47.5792	122.3583	85-10-02	Rhepoxynius Abronius	S	12.00	1.00	no
47.5794	122.3601	85-10-02	Rhepoxynius Abronius	S	15.00	1.00	no
47.5797	122.3572	85-10-02	Rhepoxynius Abronius	S	33.00	1.00	Yes
47.5803	122.3447	85-10-14	Rhepoxynius Abronius	S	63.00	1.00	Yes
47.5807	122.3433	85-10-14	Rhepoxynius Abronius	S	65.00	1.00	Yes
47.5818	122.3570	85-10-02	Rhepoxynius Abronius	S	18.00	1.00	no
47.5819	122.3418	85-10-14	Rhepoxynius Abronius	S	59.00	1.00	Yes
47.5820	122.3582	85-10-02	Rhepoxynius Abronius	S	17.00	1.00	no
47.5822	122.3608	85-10-08	Rhepoxynius Abronius	S	13.00	5.00	no
47.5830	122.3603	85-10-03	Rhepoxynius Abronius	S	16.00	1.00	no
47.5834	122.3572	85-10-03	Rhepoxynius Abronius	S	14.00	1.00	no
47.5839	122.3693	85-10-16	Rhepoxynius Abronius	S	100.00	10.00	Yes
47.5840	122.3680	85-10-09	Rhepoxynius Abronius	S	9.00	5.00	no
47.5841	122.3419	85-10-14	Rhepoxynius Abronius	S	62.00	1.00	Yes
47.5844	122.4025	85-09-26	Rhepoxynius Abronius	S	3.00	2.25	no
47.5849	122.3448	85-10-15	Rhepoxynius Abronius	S	16.00	10.00	no
47.5850	122.3567	85-10-03	Rhepoxynius Abronius	S	18.00	1.00	no
47.5851	122.3432	85-10-14	Rhepoxynius Abronius	S	58.00	1.00	Yes
47.5855	122.3671	85-10-16	Rhepoxynius Abronius	S	83.00	10.00	Yes
47.5856	122.3644	85-10-15	Rhepoxynius Abronius	S	80.00	10.00	Yes
47.5856	122.3614	85-10-15	Rhepoxynius Abronius	S	87.00	10.00	Yes
47.5858	122.3574	85-10-02	Rhepoxynius Abronius	S	60.00	1.00	Yes
47.5863	122.3740	85-10-16	Rhepoxynius Abronius	S	58.00	10.00	Yes
47.5871	122.3431	85-10-15	Rhepoxynius Abronius	S	24.00	10.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.5872	122.3585	85-10-03	Rhepoxynius Abronius	S	22.00	1.00	Yes
47.5875	122.3764	85-10-08	Rhepoxynius Abronius	S	24.00	5.00	no
47.5875	122.3563	85-10-16	Rhepoxynius Abronius	S	94.00	10.00	Yes
47.5877	122.3518	85-10-15	Rhepoxynius Abronius	S	45.00	10.00	Yes
47.5883	122.3766	85-09-26	Rhepoxynius Abronius	S	47.00	2.25	Yes
47.5891	122.3493	85-10-15	Rhepoxynius Abronius	S	20.00	10.00	no
47.5900	122.3419	85-10-15	Rhepoxynius Abronius	S	22.00	10.00	no
47.5904	122.3477	85-10-15	Rhepoxynius Abronius	S	55.00	10.00	Yes
47.5905	122.3386	85-10-15	Rhepoxynius Abronius	S	16.00	10.00	no
47.5908	122.3798	85-09-26	Rhepoxynius Abronius	S	6.00	2.25	no
47.5910	122.3432	85-10-15	Rhepoxynius Abronius	S	31.00	10.00	Yes
47.5935	122.3410	85-10-16	Rhepoxynius Abronius	S	9.00	10.00	no
47.5937	122.3932	85-09-26	Rhepoxynius Abronius	S	3.00	2.25	no
47.5995	122.3365	85-10-04	Rhepoxynius Abronius	S	57.00	5.00	Yes
47.6012	122.3365	85-10-04	Rhepoxynius Abronius	S	13.00	5.00	no
47.6038	122.3389	85-10-03	Rhepoxynius Abronius	S	18.00	1.00	no
47.6059	122.3399	85-10-03	Rhepoxynius Abronius	S	45.00	1.00	Yes
47.6068	122.3410	85-10-03	Rhepoxynius Abronius	S	30.00	1.00	Yes
47.6093	122.3445	85-09-27	Rhepoxynius Abronius	S	44.00	2.25	Yes
47.6103	122.3462	85-09-27	Rhepoxynius Abronius	S	29.00	2.25	Yes
47.6122	122.3501	85-09-27	Rhepoxynius Abronius	S	14.00	2.25	no
47.6133	122.3519	85-09-27	Rhepoxynius Abronius	S	10.00	2.25	no
47.6157	122.3564	85-09-27	Rhepoxynius Abronius	S	19.00	2.25	no
47.6186	122.3593	85-10-08	Rhepoxynius Abronius	S	58.00	5.00	Yes
47.6222	122.3656	85-09-27	Rhepoxynius Abronius	S	16.00	2.25	no
47.6238	122.3684	85-10-04	Rhepoxynius Abronius	S	13.00	5.00	no
47.6258	122.3730	85-10-04	Rhepoxynius Abronius	S	10.00	5.00	no
47.6265	122.3793	85-10-04	Rhepoxynius Abronius	S	36.00	5.00	Yes
47.6268	122.3751	85-10-08	Rhepoxynius Abronius	S	33.00	5.00	Yes
47.6303	122.3983	85-09-26	Rhepoxynius Abronius	S	7.00	2.25	no
47.6321	122.4049	85-09-26	Rhepoxynius Abronius	S	3.00	2.25	no
47.6324	122.3778	85-09-27	Rhepoxynius Abronius	S	15.00	2.25	no
47.6327	122.3825	85-09-26	Rhepoxynius Abronius	S	82.00	2.25	Yes
47.6343	122.4089	85-09-26	Rhepoxynius Abronius	S	7.00	2.25	no
47.6394	122.4195	85-09-26	Rhepoxynius Abronius	S	6.00	2.25	no
48.1033	122.3944	85-10-12	Rhepoxynius Abronius	S	17.00	10.00	no
48.1175	122.4141	85-10-12	Rhepoxynius Abronius	S	10.00	10.00	no
48.1367	122.4372	85-10-12	Rhepoxynius Abronius	S	24.00	10.00	no
48.1730	122.4670	85-10-12	Rhepoxynius Abronius	S	13.00	10.00	no
Monitoring Program: 1985 Everett Hbr. chem. & biota data.							
47.9508	122.3016	86-10-03	Rhepoxynius Abronius	S	5.00	7.00	no
47.9513	122.2927	86-10-15	Rhepoxynius Abronius	S	1.00	4.00	no
47.9518	122.2934	86-10-08	Rhepoxynius Abronius	S	43.00	9.00	Yes
47.9547	122.2884	86-10-02	Rhepoxynius Abronius	S	100.00	7.00	Yes

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
47.9575	122.2730	86-10-15	Rhepoxynius Abronius	S	5.00	4.00	no
47.9603	122.2731	86-10-02	Rhepoxynius Abronius	S	13.00	5.00	no
47.9646	122.2392	86-10-15	Rhepoxynius Abronius	S	6.00	4.00	no
47.9656	122.2410	86-10-02	Rhepoxynius Abronius	S	6.00	5.00	no
47.9707	122.2307	86-10-15	Rhepoxynius Abronius	S	2.00	4.00	no
47.9709	122.2372	86-10-09	Rhepoxynius Abronius	S	58.00	9.00	Yes
47.9728	122.2316	86-10-02	Rhepoxynius Abronius	S	5.00	5.00	no
47.9756	122.2268	86-10-01	Rhepoxynius Abronius	S	37.00	5.00	Yes
47.9783	122.2224	86-10-01	Rhepoxynius Abronius	S	13.00	7.00	no
47.9794	122.2206	86-10-01	Rhepoxynius Abronius	S	55.00	5.00	Yes
47.9830	122.2172	86-09-30	Rhepoxynius Abronius	S	73.50	5.00	Yes
47.9841	122.2185	86-09-30	Rhepoxynius Abronius	S	99.00	7.00	Yes
47.9887	122.2269	86-10-03	Rhepoxynius Abronius	S	15.00	5.00	no
47.9888	122.2164	86-10-07	Rhepoxynius Abronius	S	100.00	7.00	Yes
47.9917	122.2512	86-10-07	Rhepoxynius Abronius	S	29.00	7.00	Yes
47.9979	122.2156	86-10-03	Rhepoxynius Abronius	S	33.00	5.00	Yes
48.0287	122.2303	86-10-09	Rhepoxynius Abronius	S	15.00	9.00	no
48.0999	122.3905	86-10-10	Rhepoxynius Abronius	S	20.00	9.00	no
48.1160	122.4129	86-10-13	Rhepoxynius Abronius	S	24.00	9.00	no
48.1358	122.4370	86-10-13	Rhepoxynius Abronius	S	29.00	9.00	no

Tulare-Buena Vista Lakes 18030012

Watershed Summary Information

Accounting Unit Name: Tulare-Buena Vista Lakes

State(s): CA

Political Boundaries: Tulare, Kern, Fresno, Kings

Major Waterways:
Kings R
Kern R
Kaweah R
Tule R
Poso R

Number of Stations in Watershed:
Tier1 - 10
Tier2 - 5
Tier3 - 5

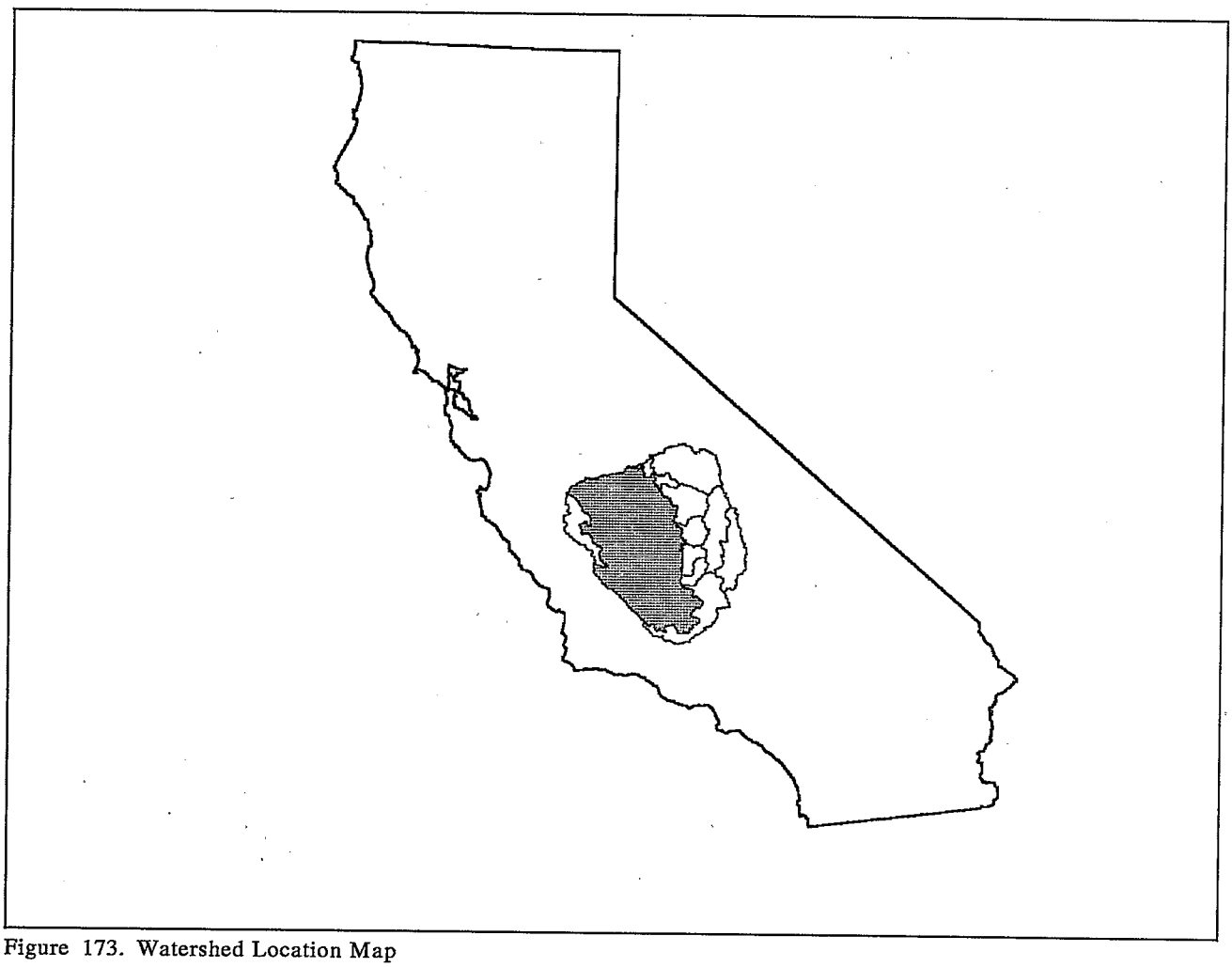

Figure 173. Watershed Location Map

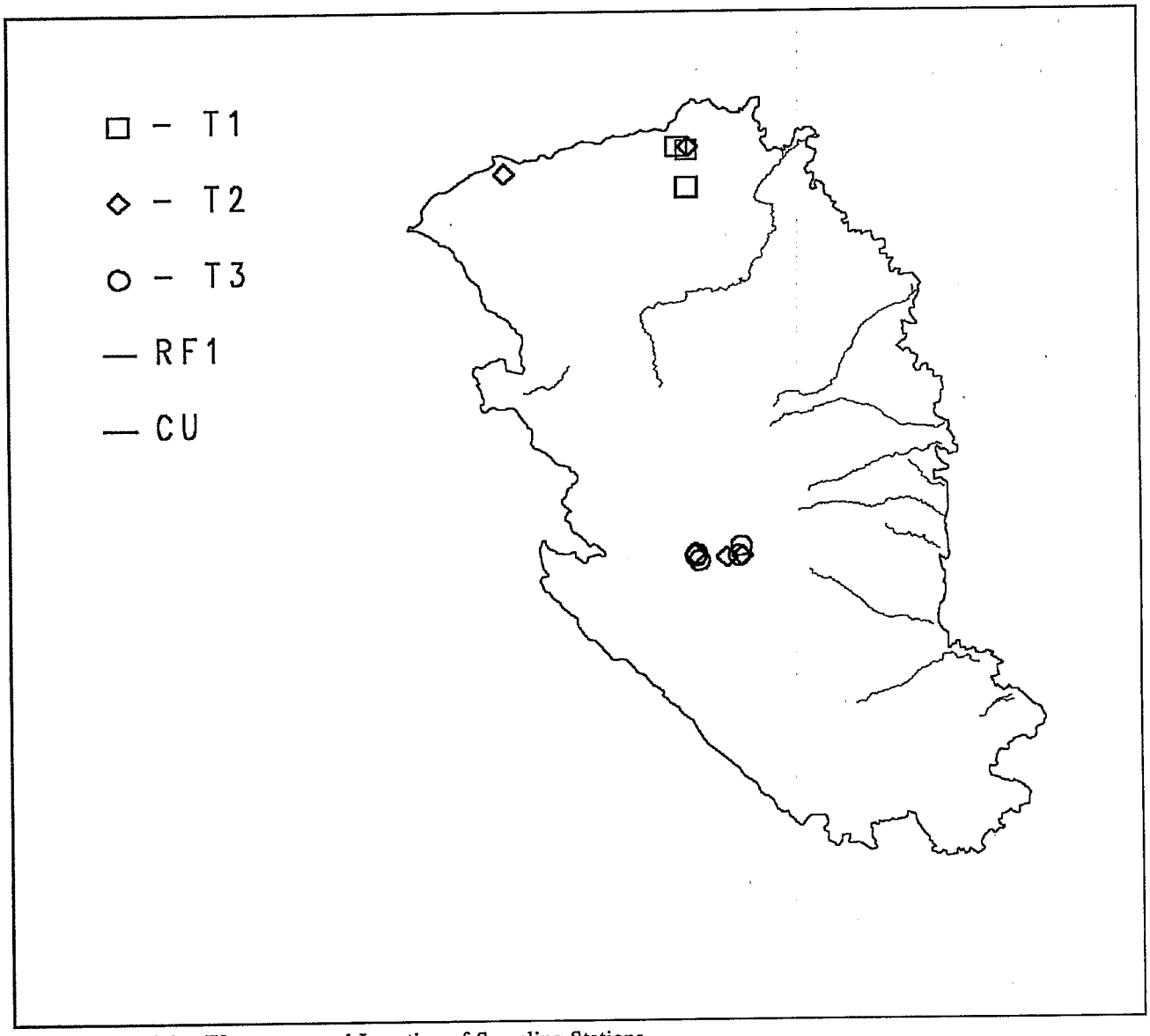

Figure 174. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 20 Date Range: 1982-86

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	20	14	9	5	9	5	.	7
Dieldrin	20	11	.	11	.	11	.	10
BHC	19	7	4	3	4	3	.	.
Polychlorinated biphenyls	14	5	1	4	1	3	.	5
Diazinon/Spectracide	19	5	.	5	.	5	.	.
Lead	5	5	.	5	.	5	.	.
Chlordane	15	4	.	4	.	4	.	4
Heptachlor epoxide	20	4	.	4	.	.	.	4
Malathion	19	4	.	4	.	4	.	.
Zinc	5	4	.	4	.	4	.	.
Cadmium	5	3	.	3	.	3	.	.
Copper	5	3	.	3	.	3	.	.
Nickel	5	3	.	3	.	3	.	.
Endosulfan mixed isomers	17	2	.	2	.	2	.	.
Benzo(a)anthracene	1	1	1	.	1	.	.	1
Benzo(a)pyrene	1	1	1	.	1	.	.	1
Bis(2-ethylhexyl)phthalate	1	1	1	.	1	.	.	1
Chrysene	1	1	1	.	1	.	.	.
Fluoranthene	1	1	1	.	1	.	.	.
Phenanthrene	1	1	1	.	1	.	.	.
Pyrene	1	1	1	.	1	.	.	.
Anthracene	1	1	.	1	.	1	.	.
Arsenic	5	1	.	1	.	1	.	.
Benzo(b)fluoranthene	1	1	.	1	.	1	.	1
Benzo(ghi)perylene	1	1	.	1	.	1	.	.
Benzo(k)fluoranthene	1	1	.	1	.	1	.	1
Indeno(1,2,3-cd)pyrene	1	1	.	1	.	1	.	1
Mercury	5	1	.	1	.	1	.	.
Naphthalene	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	0.00	0.00	0	.	.
Acenaphthylene	1	0.00	0.00	0	.	.
Aldrin	41	0.00	0.00	0	.	.
Anthracene	1	460.00	460.00	1	460.00	460.00
Arsenic	22	3272.73	2500.00	22	15000.00	1000.00
Benzo(a)anthracene	1	3900.00	3900.00	1	3900.00	3900.00
Benzo(a)pyrene	1	6500.00	6500.00	1	6500.00	6500.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Benzo(b)fluoranthene	1	9200.00	9200.00	1	9200.00	9200.00
Benzo(ghi)perylene	1	11000.00	11000.00	1	11000.00	11000.00
Benzo(k)fluoranthene	1	6400.00	6400.00	1	6400.00	6400.00
Bis(2-ethylhexyl)phthalate	1	6200.00	6200.00	1	6200.00	6200.00
Bromophenyl phenyl ether, 4-	1	0.00	0.00	0	.	.
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	40	2.08	1.10	24	26.00	0.30
Cadmium	14	714.29	0.00	5	5000.00	1000.00
Chlordane	33	205.97	69.00	19	3400.00	1.00
Chromium	14	13714.29	10000.00	14	40000.00	3000.00
Chrysene	1	9700.00	9700.00	1	9700.00	9700.00
Copper	22	30500.00	22500.00	20	180000.0	5000.00
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Diazinon/Spectracide	40	5.53	0.10	21	80.00	0.10
Dibenzo(a,h)anthracene	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	1	0.00	0.00	0	.	.
Dieldrin	40	3.81	1.10	29	89.00	0.10
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.
DDT	122	10.66	0.85	72	77.00	0.10
Endosulfan mixed isomers	37	0.45	0.00	2	10.00	6.70
Endrin	40	0.00	0.00	0	.	.
Ethion/Bladen	40	0.00	0.00	0	.	.
Fluoranthene	1	9400.00	9400.00	1	9400.00	9400.00
Fluorene	1	0.00	0.00	0	.	.
Heptachlor	40	0.99	0.55	24	3.10	0.10
Heptachlor epoxide	41	1.70	0.00	10	35.00	0.20
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Hexachloroethane	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	1	9500.00	9500.00	1	9500.00	9500.00
Isophorone	1	0.00	0.00	0	.	.
Lead	22	459090.9	425000.0	22	1000000	100000.0
Malathion	40	1.81	0.00	11	17.00	2.00
Mercury	22	51.36	30.00	22	240.00	10.00
Methoxychlor	41	0.00	0.00	0	.	.
Mirex/Dechlorane	41	0.00	0.00	0	.	.
Naphthalene	1	150.00	150.00	1	150.00	150.00
Nickel	22	13590.91	10000.00	15	50000.00	8000.00
Nitrosodiphenylamine, N-	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Pentachlorophenol	1	0.00	0.00	0	.	.
Phenanthrene	1	2700.00	2700.00	1	2700.00	2700.00
Phenol	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	32	73.28	13.00	19	860.00	3.00
Pyrene	1	15000.00	15000.00	1	15000.00	15000.00
Toxaphene	41	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.00	0.00	0	.	.
Zinc	22	268636.4	90000.00	22	1600000	40000.00

Coyote 18050003

Watershed Summary Information

Accounting Unit Name: San Francisco Bay

State(s): CA

Political Boundaries: Santa Clara, San Mateo, Alameda, Sonoma

Major Waterways:
Coyote Cr
Stevens Cr
San Feupe Cr
Stevens Cr Res
Anderson L

Number of Stations in Watershed:
Tier1 - 18
Tier2 - 6
Tier3 - .

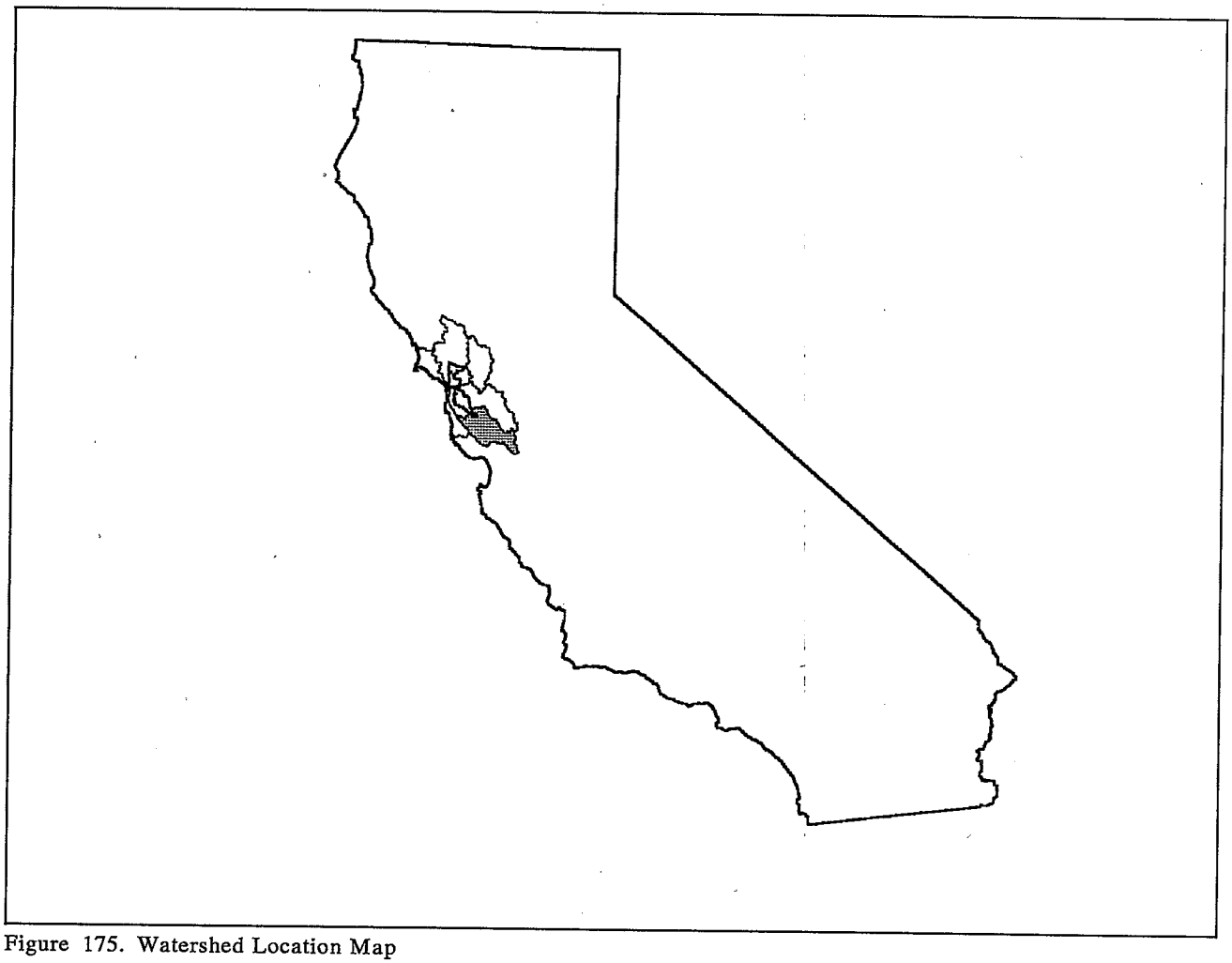

Figure 175. Watershed Location Map

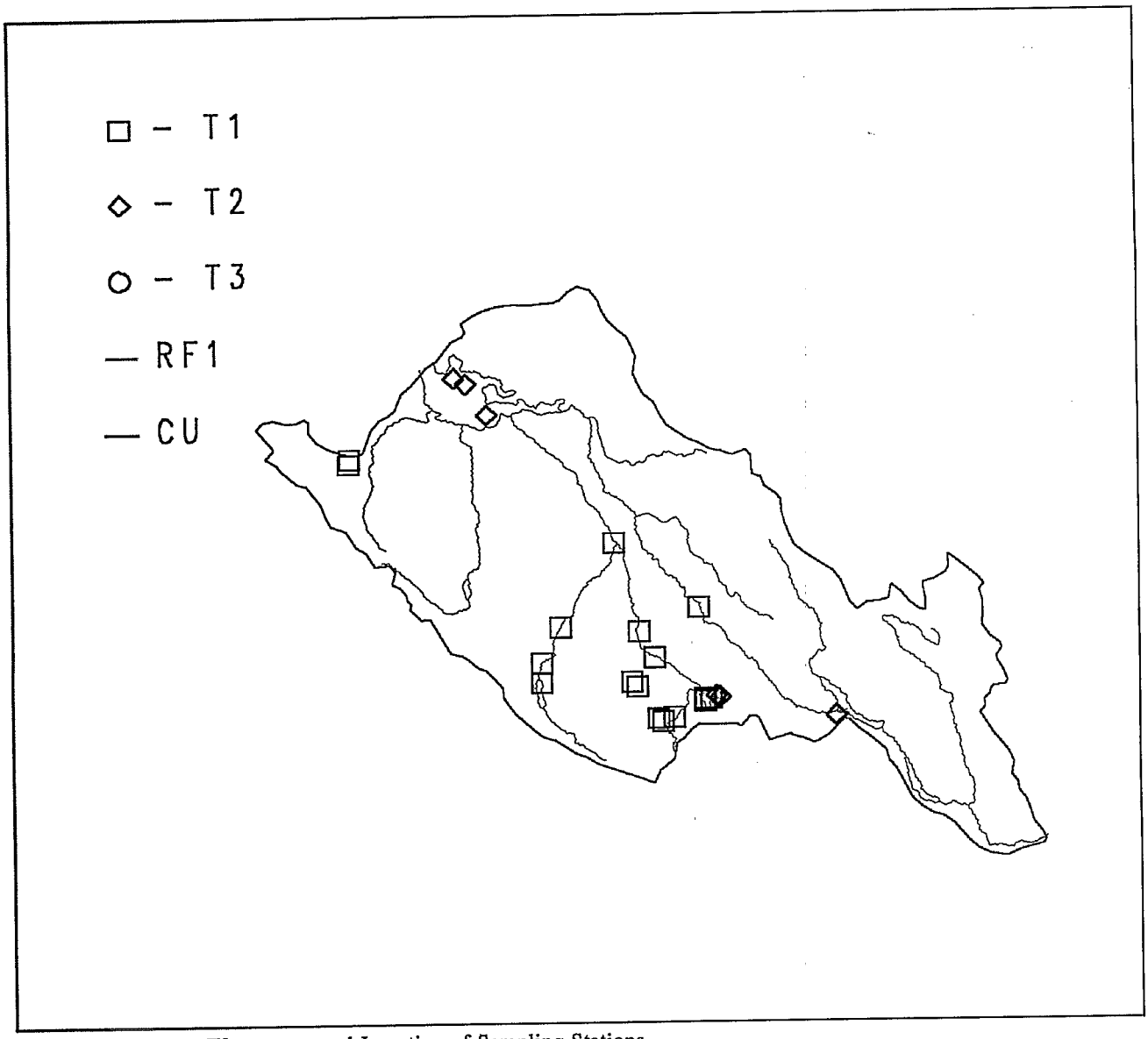

Figure 176. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: SEACOE Agency: NOAA84
Monitoring Program: Benthic Surveillance 1984
Num. of Stations: 2 Date Range: 1984

Source: STORET Agency: 112WRD
Monitoring Program: US Geological Survey Data
Num. of Stations: 22 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Mercury	24	22	14	8	14	8	.	.
Copper	20	20	.	20	.	20	.	.
Arsenic	20	16	.	16	.	16	.	.
Chromium	20	12	8	4	8	4	.	.
Nickel	12	12	.	12	.	12	.	.
Lead	20	8	.	8	.	8	.	.
Cadmium	20	7	.	7	.	7	.	.
Zinc	20	6	.	6	.	6	.	.
Benzo(a)anthracene	1	1	.	1	.	1	.	1
Benzo(a)pyrene	1	1	.	1	.	1	.	1
Chrysene	1	1	.	1	.	1	.	.
Dibenzo(a,h)anthracene	1	1	.	1	.	1	.	1
Fluorene	1	1	.	1	.	1	.	.
HMW_PAHs	1	1	.	1	.	1	.	.
LMW_PAHs	1	1	.	1	.	1	.	.
Naphthalene	1	1	.	1	.	1	.	.
Polychlorinated biphenyls	1	1	.	1	.	1	.	1
Pyrene	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	1	15.00	15.00	1	15.00	15.00
Aldrin	1	0.00	0.00	0	.	.
Antimony	8	670.00	500.00	4	2000.00	1000.00
Arsenic	94	7304.89	6000.00	79	50000.00	1000.00
Benzo(a)anthracene	1	280.00	280.00	1	280.00	280.00
Benzo(a)pyrene	1	490.00	490.00	1	490.00	490.00
BHC	1	0.00	0.00	0	.	.
Cadmium	83	508.92	0.00	25	11000.00	100.00
Chlordane	1	0.00	0.00	0	.	.
Chromium	95	114684.2	40000.00	95	1600000	9000.00
Chrysene	1	370.00	370.00	1	370.00	370.00
Copper	95	38357.89	26000.00	95	260000.0	4000.00
Dibenzo(a,h)anthracene	2	109.00	109.00	2	160.00	58.00
Dieldrin	1	0.00	0.00	0	.	.
DDT	3	0.33	0.50	2	0.50	0.50
Fluoranthene	1	670.00	670.00	1	670.00	670.00
Fluorene	1	33.00	33.00	1	33.00	33.00
Heptachlor	1	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Heptachlor epoxide	1	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
HMW_PAHs	1	2700.00	2700.00	1	2700.00	2700.00
Lead	95	46920.00	21000.00	85	1000000	5000.00
LMW_PAHs	1	700.00	700.00	1	700.00	700.00
Mercury	130	2772.85	440.00	128	95000.00	20.00
Methylnaphthalene, 2-	1	0.00	0.00	0	.	.
Naphthalene	1	68.00	68.00	1	68.00	68.00
Nickel	21	227728.6	110000.0	21	940000.0	89000.00
Phenanthrene	1	420.00	420.00	1	420.00	420.00
Polychlorinated biphenyls	1	50.00	50.00	1	50.00	50.00
Pyrene	1	870.00	870.00	1	870.00	870.00
Silver	21	2.48	0.00	1	52.00	52.00
Zinc	95	110052.6	70000.00	94	2200000	8000.00

San Francisco Bay 18050004

Watershed Summary Information

Accounting Unit Name:	San Francisco Bay
State(s):	CA
Political Boundaries:	Alameda, Santa Clara, Contra Costa, San Francisco, San Mateo
Major Waterways:	Alameda Cr Alamo Cr Arroyo Mocho San Antonio Res Lake Del Valle
Number of Stations in Watershed:	Tier1 - 19 Tier2 - 37 Tier3 - 8

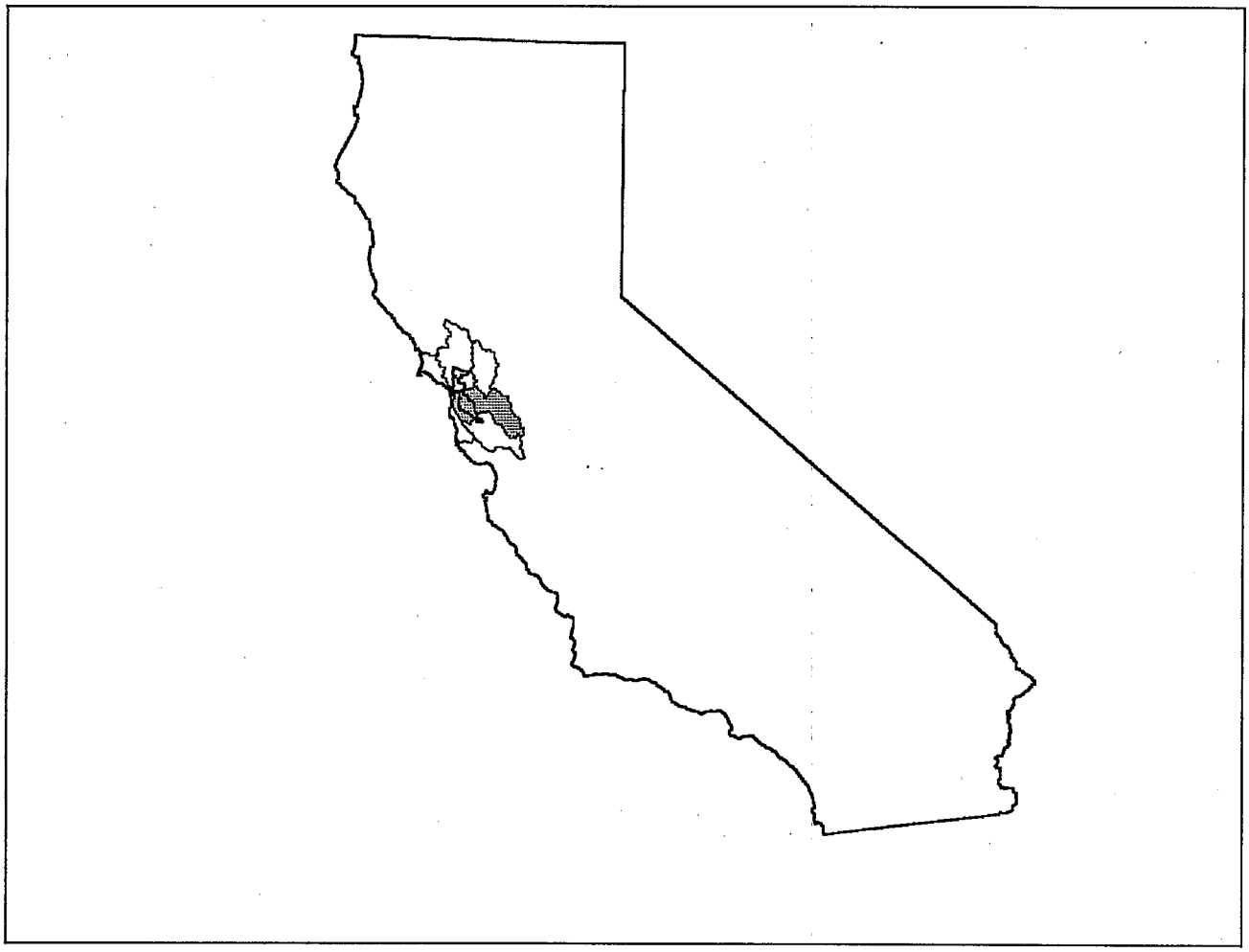

Figure 177. Watershed Location Map

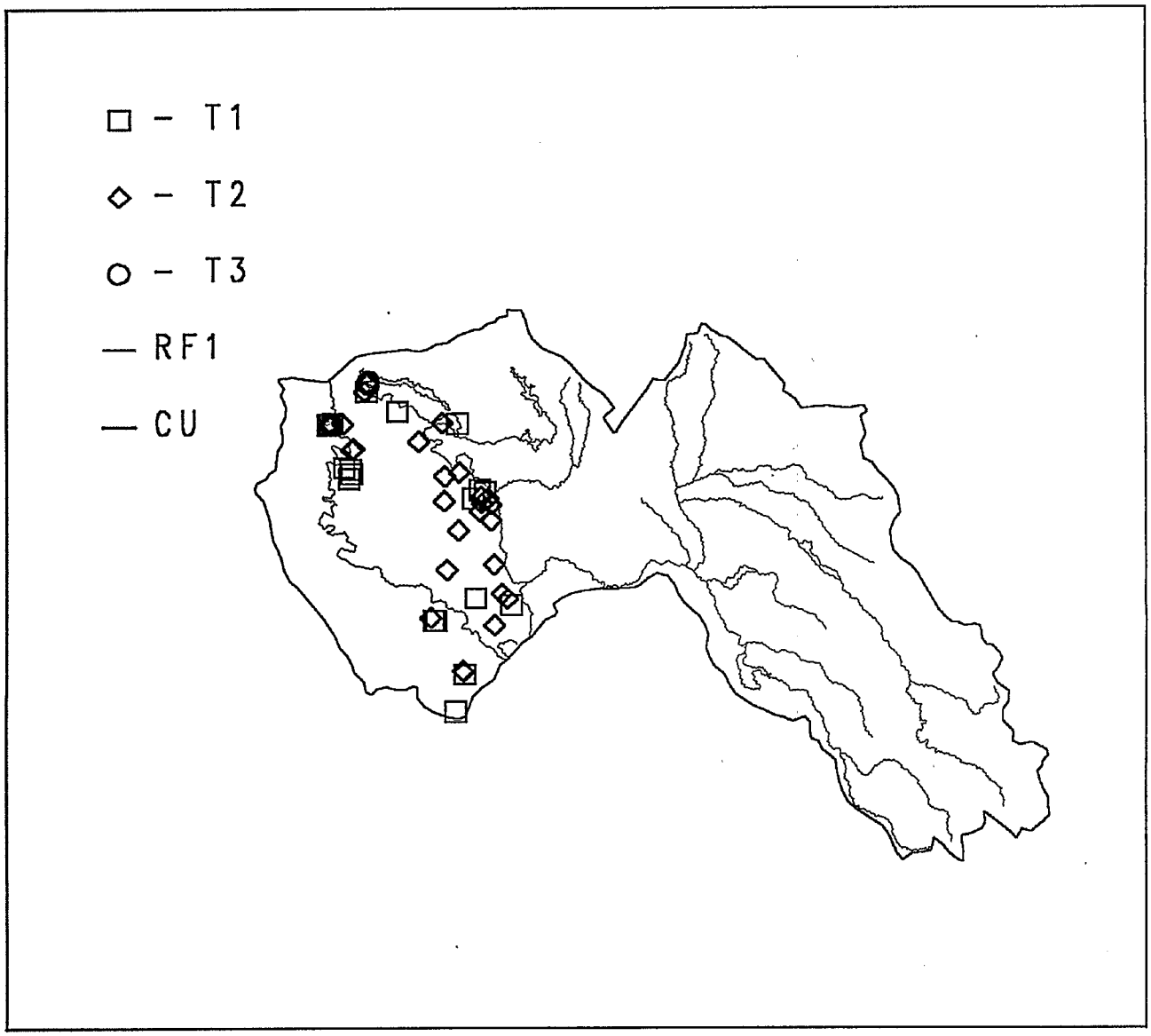

Figure 178. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 15 Date Range: 1984-88

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 7 Date Range: 1984

Source: **SEACOE** Agency: **SFHPORT**
Monitoring Program: **San Fran Homeport verification studies**
Num. of Stations: 2 Date Range: 1987

Source: **SEACOE** Agency: **SFTRIAD**
Monitoring Program: **A Field Trial of Sediment Quality Triad in San Francisco Bay**
Num. of Stations: 19 Date Range: 1985

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 21 Date Range: 1989-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Nickel	50	50	.	50	.	50	.	.
Copper	50	47	.	47	.	47	.	.
Mercury	50	43	10	33	10	33	.	.
Arsenic	50	40	1	39	1	39	.	.
Lead	50	30	.	30	.	30	.	.
Chromium	48	27	6	21	6	21	.	.
Zinc	50	26	.	26	.	26	.	.
Benzo(a)pyrene	28	25	1	24	1	23	.	25
Pyrene	28	24	3	21	3	21	.	.
Benzo(a)anthracene	28	24	.	24	.	24	.	15
Chrysene	28	24	.	24	.	24	.	.
Naphthalene	26	21	.	21	.	21	.	.
Dibenzo(a,h)anthracene	22	20	3	17	3	17	.	20
Polychlorinated biphenyls	23	19	1	18	1	12	.	19
DDT	28	19	.	19	.	19	.	.
Silver	50	11	3	8	3	8	.	.
Fluorene	23	9	.	9	.	9	.	.
Phenanthrene	28	8	1	7	1	7	.	.
Dieldrin	20	8	.	8	.	2	.	8
Methylnaphthalene, 2-	14	8	.	8	.	8	.	.
HMW_PAHs	14	7	2	5	2	5	.	.
Acenaphthene	21	7	.	7	.	7	.	.
Fluoranthene	28	7	.	7	.	7	.	.
LMW_PAHs	14	6	1	5	1	5	.	.
Anthracene	13	5	.	5	.	5	.	.
Cadmium	50	5	.	5	.	5	.	.
Indeno(1,2,3-cd)pyrene	7	5	.	5	.	1	.	5
BHC	18	4	.	4	.	4	.	.
Acenaphthylene	4	2	.	2	.	2	.	.
Aldrin	12	1	.	1	.	.	.	1
Benzo(ghi)perylene	7	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	32	26.19	16.50	26	120.00	2.00
Acenaphthylene	14	28.14	9.50	12	120.00	5.00
Aldrin	12	0.31	0.00	3	1.80	0.70
Anthracene	30	98.57	46.50	30	450.00	13.00
Antimony	41	802.68	850.00	36	2200.00	290.00
Arsenic	144	8192.23	6125.00	80	72000.00	2780.00
Benzene	2	0.00	0.00	0	.	.
Benzo(a)anthracene	47	288.91	200.00	46	1400.00	20.00
Benzo(a)pyrene	47	465.70	320.00	46	2200.00	34.00
Benzo(b)fluoranthene	2	28.50	28.50	2	32.00	25.00
Benzo(ghi)perylene	17	522.35	350.00	17	1900.00	35.00
Benzo(k)fluoranthene	2	27.50	27.50	2	30.00	25.00
Benzoic acid	2	0.00	0.00	0	.	.
Benzyl alcohol	2	0.00	0.00	0	.	.
Biphenyl	19	15.00	10.00	19	43.00	6.00
Bis(2-ethylhexyl)phthalate	2	0.00	0.00	0	.	.
Butyl benzyl phthalate	2	0.00	0.00	0	.	.
BHC	27	0.32	0.00	11	2.40	0.20
Cadmium	142	129.35	0.00	44	2500.00	20.00
Chlordane	24	0.53	0.33	15	2.00	0.20
Chlorobenzene	2	0.00	0.00	0	.	.
Chromium	142	90021.13	18000.00	142	1090000	8000.00
Chrysene	47	378.94	220.00	46	2208.00	24.00
Copper	143	40603.21	36000.00	143	147000.0	549.00
Cresol, m-	2	0.00	0.00	0	.	.
Cresol, o	2	0.00	0.00	0	.	.
Di-n-butyl phthalate	2	0.00	0.00	0	.	.
Di-n-octyl phthalate	2	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	49	106.33	36.00	41	1341.00	10.00
Dibenzofuran	2	0.00	0.00	0	.	.
Dibromochloromethane	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	3	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	2	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	2	0.00	0.00	0	.	.
Dichloroethane 1,1-	2	0.00	0.00	0	.	.
Dichloroethane 1,2-	2	0.00	0.00	0	.	.
Dichloromethane	2	0.00	0.00	0	.	.
Dieldrin	32	1.32	1.00	23	4.50	0.40
Diethyl phthalate	2	0.00	0.00	0	.	.
Dimethyl phthalate	2	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	2	0.00	0.00	0	.	.
DDT	149	2.30	1.90	137	18.00	0.22

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	2	0.00	0.00	0	.	.
Ethylbenzene	2	0.00	0.00	0	.	.
Fluoranthene	47	728.91	430.00	47	3712.00	15.00
Fluorene	35	34.26	16.00	30	232.00	5.00
Heptachlor	16	0.54	0.00	7	2.20	0.30
Heptachlor epoxide	9	0.00	0.00	0	.	.
Hexachlorobenzene	28	0.54	0.50	22	2.00	0.10
Hexachlorobutadiene	2	0.00	0.00	0	.	.
Hexachloroethane	2	0.00	0.00	0	.	.
HMW_PAHs	14	2529.00	775.00	10	12064.00	294.00
Indeno(1,2,3-cd)pyrene	17	455.71	310.00	17	1600.00	23.00
Isophorone	2	0.00	0.00	0	.	.
Lead	144	30638.68	25000.00	144	223000.0	300.00
LMW_PAHs	14	604.71	173.00	9	3160.00	20.00
Mercury	141	411.67	280.00	137	8700.00	20.00
Methylnaphthalene, 2-	14	33.93	25.00	9	126.00	12.00
Mirex/Dechlorane	5	1.54	2.00	5	3.00	0.30
Naphthalene	42	59.55	47.50	38	200.00	20.00
Nickel	144	79975.69	83600.00	144	133000.0	25000.00
Nitrosodiphenylamine, N-	2	0.00	0.00	0	.	.
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	47	305.96	180.00	47	1600.00	20.00
Phenol	2	0.00	0.00	0	.	.
Polychlorinated biphenyls	41	38.09	26.95	37	255.26	2.00
Pyrene	47	882.09	590.00	47	4900.00	17.00
Silver	141	338.50	0.00	44	8600.00	140.00
Tetrachloroethane, 1,1,2,2-	2	0.00	0.00	0	.	.
Tetrachloroethene	2	0.00	0.00	0	.	.
Tetrachloromethane	2	0.00	0.00	0	.	.
Toluene	2	0.00	0.00	0	.	.
Tribromomethane/Bromoform	2	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	2	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	2	0.00	0.00	0	.	.
Trichloroethene	2	0.00	0.00	0	.	.
Trichloromethane/Chloroform	2	0.00	0.00	0	.	.
Xylenes	2	0.00	0.00	0	.	.
Zinc	144	112930.6	97000.00	144	359000.0	31000.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: A Field Trial of Sediment Quality Triad in San Francisco Bay							
37.7471	122.3875	85-07-17	Rhepoxynius Abronius	S	100.00	6.00	Yes
37.7472	122.3867	85-07-17	Rhepoxynius Abronius	S	24.00	6.00	no
37.7472	122.3881	85-07-17	Rhepoxynius Abronius	S	48.00	6.00	Yes
37.7472	122.3888	85-07-17	Rhepoxynius Abronius	S	95.00	6.00	Yes
37.7474	122.3832	85-07-18	Rhepoxynius Abronius	S	50.00	6.00	Yes
37.7474	122.3892	85-07-17	Rhepoxynius Abronius	S	95.00	6.00	Yes
37.7475	122.3853	85-07-18	Rhepoxynius Abronius	S	21.00	6.00	no
37.7475	122.3860	85-07-18	Rhepoxynius Abronius	S	31.00	6.00	Yes
37.7478	122.3836	85-07-18	Rhepoxynius Abronius	S	29.00	6.00	Yes
37.7479	122.3828	85-07-18	Rhepoxynius Abronius	S	37.00	6.00	Yes
37.7914	122.3344	85-07-18	Rhepoxynius Abronius	S	11.00	6.00	no
37.7914	122.3360	85-07-18	Rhepoxynius Abronius	S	13.00	6.00	no
37.7922	122.3360	85-07-18	Rhepoxynius Abronius	S	12.00	6.00	no
			Rhepoxynius Abronius	S	22.00	6.00	no
37.7931	122.3344	85-07-18	Rhepoxynius Abronius	S	20.00	6.00	no
37.7931	122.3360	85-07-17	Rhepoxynius Abronius	S	13.00	6.00	no
37.7939	122.3344	85-07-17	Rhepoxynius Abronius	S	8.00	6.00	no
			Rhepoxynius Abronius	S	20.00	6.00	no
37.7946	122.3344	85-07-17	Rhepoxynius Abronius	S	10.00	6.00	no

Santa Monica Bay 18070104

Watershed Summary Information

Accounting Unit Name:	Ventura-San Gabriel Coastal
State(s):	CA
Political Boundaries:	Los Angeles, Ventura
Major Waterways:	Petrero Valley Cr Big Sycamore Canyon Mandeville Canyon Zuma Canyon
Number of Stations in Watershed:	Tier1 - 79 Tier2 - 31 Tier3 - 22

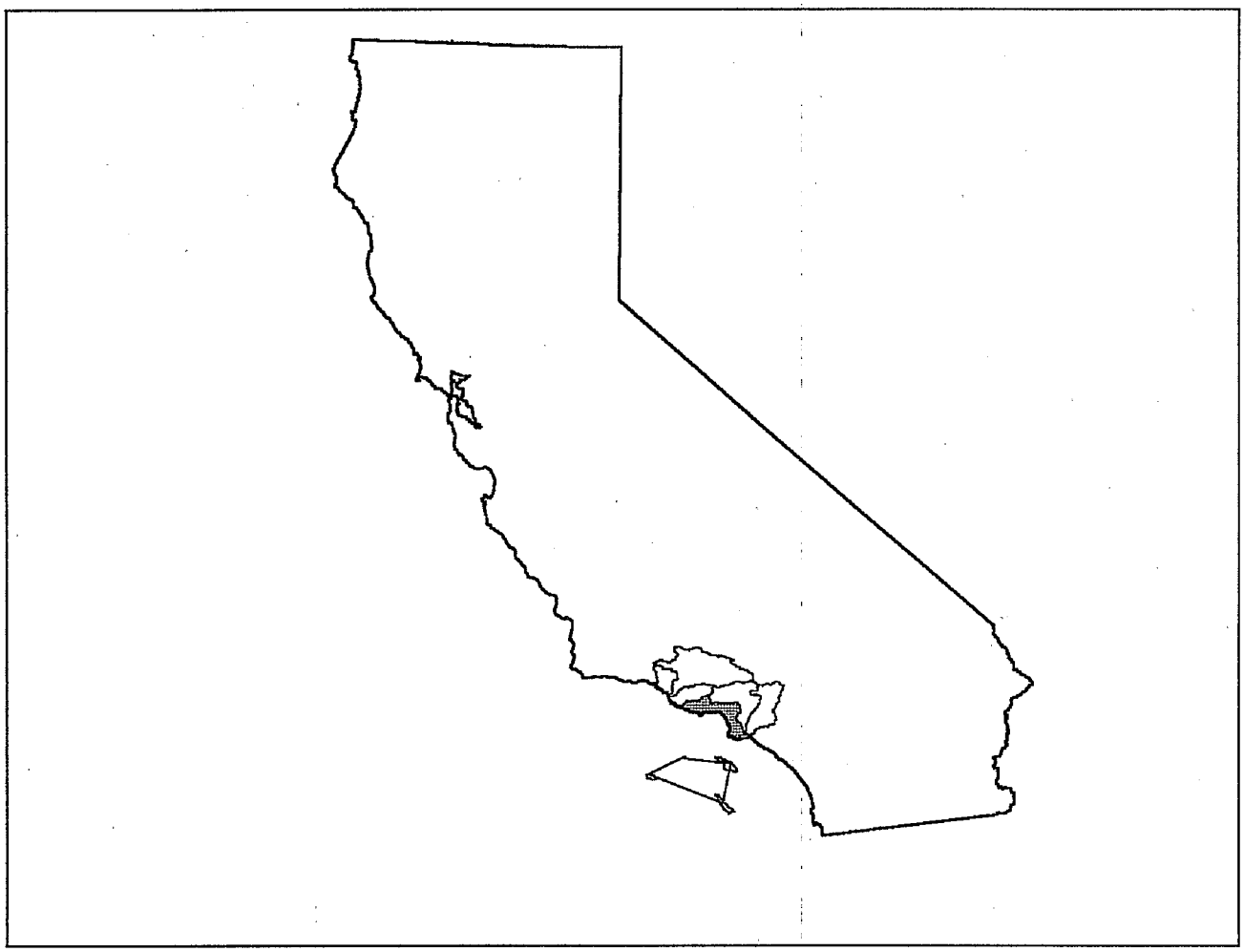

Figure 179. Watershed Location Map

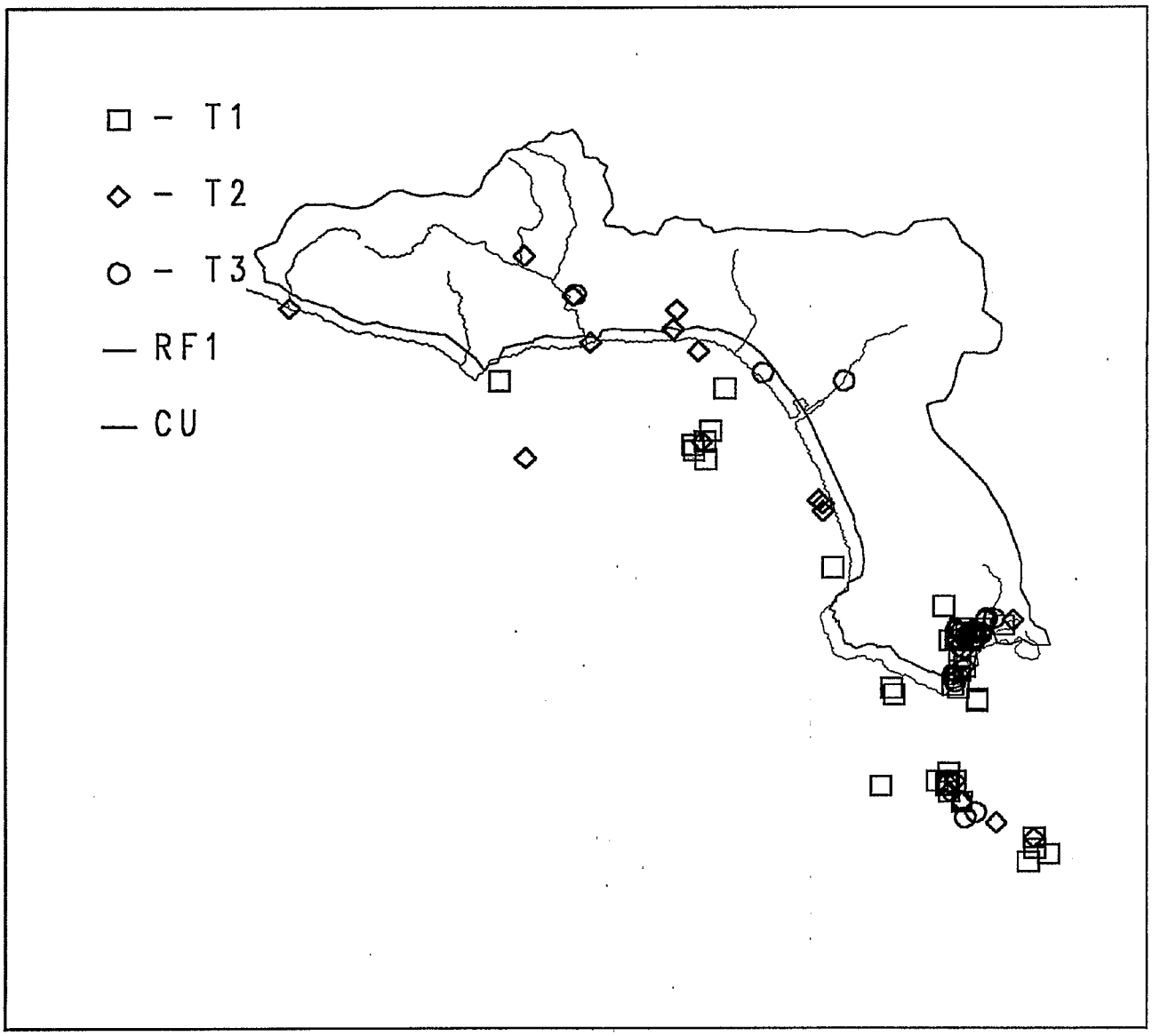

Figure 180. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 25 Date Range: 1984-90

Source: **DMATS** Agency: **R9**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 62 Date Range: 1980-89

Source: **DMATS** Agency: **09**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 4 Date Range: 1989-91

Source: **ODES** Agency: **L2**
Monitoring Program: **LA2 Ocean Dumping**
Num. of Stations: 28 Date Range: 1983-84

Source: **SEACOE** Agency: **SCCWRP87**
Monitoring Program: **Toxicity of sediments from Southern CA**
Num. of Stations: 3 Date Range: 1987

Source: **STORET** Agency: **11BIOACC**
Monitoring Program: **USEPA National Bioaccumulation Study**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 7 Date Range: 1981-88

Source: **STORET** Agency: **21CALAFD**
Monitoring Program: **Los Angeles County Flood Control District Surface And Ground Waters Data**
Num. of Stations: 2 Date Range: 1988-89

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	93	84	66	18	65	19	2	77
Cadmium	123	79	.	79	.	79	.	.
Copper	123	77	.	77	.	77	.	.
Lead	123	59	.	59	.	56	.	4
Polychlorinated biphenyls	117	56	22	34	19	27	5	51
Mercury	121	48	15	33	15	33	.	.
Chromium	74	40	2	38	2	38	.	.
Nickel	50	31	.	31	.	31	.	.
Zinc	81	28	.	28	.	28	.	.
Arsenic	78	27	.	27	.	25	.	2
Silver	47	21	5	16	5	16	.	.
Benzo(a)pyrene	18	15	.	15	.	12	.	15
Chlordane	29	15	.	15	.	14	.	6
Pyrene	29	11	3	8	3	8	.	.
Chrysene	25	10	2	8	2	8	.	2
Dibenzo(a,h)anthracene	12	9	.	9	.	9	.	6
Dieldrin	19	9	.	9	.	1	.	9
Benzo(a)anthracene	22	8	.	8	.	7	.	6
BHC	49	7	.	7	.	7	.	.
Naphthalene	21	7	.	7	.	7	.	.
Anthracene	17	5	2	3	2	3	.	.
Acenaphthylene	11	4	1	3	1	3	.	.
Fluoranthene	31	3	2	1	2	1	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Phenanthrene	29	3	2	1	2	1	.	.
Bis(2-ethylhexyl)phthalate	3	3	.	3	.	3	.	.
Fluorene	16	3	.	3	.	3	.	.
Methylnaphthalene, 2-	3	2	1	1	1	1	.	.
Benzo(b)fluoranthene	5	2	.	2	.	.	.	2
LMW_PAHs	3	2	.	2	.	2	.	.
Dioxins	1	1	1	.	.	.	1	.
Aldrin	40	1	.	1	.	.	.	1
Indeno(1,2,3-cd)pyrene	10	1	.	1	.	.	.	1

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	11	2.31	0.00	5	12.50	0.31
Acenaphthylene	15	7747.75	1.84	11	116000.0	0.65
Aldrin	159	0.02	0.00	6	1.20	0.10
Anthracene	26	5906.24	9.50	23	86000.00	1.50
Antimony	24	474.58	455.00	24	1100.00	170.00
Arsenic	194	3970.73	2386.00	194	19000.00	30.00
Benzo(a)anthracene	34	56.26	12.50	32	410.00	2.00
Benzo(a)pyrene	31	141.43	71.00	30	600.00	4.00
Benzo(b)fluoranthene	9	200.97	13.08	9	870.00	8.12
Benzo(ghi)perylene	18	46.59	8.41	15	360.00	4.38
Benzo(k)fluoranthene	11	21.57	5.23	8	120.00	3.84
Biphenyl	15	48.06	8.00	15	250.00	0.85
Bis(2-ethylhexyl)phthalate	3	308.00	350.00	3	354.00	220.00
Butyl benzyl phthalate	1	0.00	0.00	0	.	.
BHC	429	0.02	0.00	20	1.70	0.03
Cadmium	331	1737.99	1170.00	326	28600.00	50.00
Chlordane	54	2.07	1.00	41	18.00	0.35
Chromium	189	86503.86	37200.00	189	5770000	12720.00
Chrysene	39	10531.81	37.00	38	244500.0	3.00
Copper	330	114721.3	37950.00	329	5500000	4600.00
Cresol, m-	3	10.81	0.25	3	32.00	0.17
Cresol, o	3	0.61	0.25	3	1.40	0.17
Di-n-butyl phthalate	1	0.00	0.00	0	.	.
Di-n-octyl phthalate	1	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	20	61.73	53.50	17	240.00	0.80
Dieldrin	41	1.56	0.10	26	26.00	0.10
Diethyl phthalate	1	0.00	0.00	0	.	.
Dimethyl phthalate	1	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	3	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
DDT	711	229.37	11.27	619	77000.00	0.10
Endosulfan mixed isomers	26	0.00	0.00	0	.	.
Endosulfan, alpha-	2	0.00	0.00	0	.	.
Endosulfan, beta-	2	0.00	0.00	0	.	.
Endrin	28	0.00	0.00	0	.	.
Fluoranthene	48	14644.10	39.75	45	378500.0	5.00
Fluorene	22	10.45	3.65	18	67.00	0.69
Heptachlor	34	0.08	0.00	8	0.90	0.08
Heptachlor epoxide	156	0.03	0.00	3	3.00	0.10
Hexachlorobenzene	12	0.52	0.48	12	1.10	0.10
Hexachlorobutadiene	3	0.83	0.00	1	2.50	2.50
HMW_PAHs	3	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	19	13.64	3.78	12	104.50	0.60
Lead	330	61125.52	27400.00	326	740000.0	3000.00
LMW_PAHs	3	620.00	450.00	3	1100.00	310.00
Mercury	323	839.75	154.50	318	60000.00	3.40
Methoxychlor	23	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	384.00	37.00	3	1100.00	15.00
Mirex/Dechlorane	31	0.11	0.00	6	1.90	0.05
Naphthalene	32	34.13	11.50	28	450.00	1.50
Nickel	72	28513.06	24050.00	70	166200.0	4950.00
Pentachlorophenol	6	1.83	0.00	1	11.00	11.00
Phenanthrene	44	8401.88	26.50	41	235000.0	5.00
Phenol	3	0.00	0.00	0	.	.
Polychlorinated biphenyls	588	1306.45	15.00	371	732500.0	0.20
Pyrene	45	8072.35	60.00	44	211000.0	3.50
Silver	61	1211.66	680.00	58	9120.00	70.00
Toxaphene	28	0.00	0.00	0	.	.
Zinc	200	107796.1	78460.00	200	1016000	2950.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	4	0.00	0.00	0	.	.
Arsenic	4	249.12	151.50	4	662.00	31.50
Biphenyl	1	0.70	0.70	1	0.70	0.70
BHC	14	0.40	0.00	1	5.59	5.59
Cadmium	4	536.25	535.83	4	880.00	193.33
Chlordane	2	37.50	37.50	2	43.40	31.60
Chlorpyrifos/Dursban	1	5.12	5.12	1	5.12	5.12
Chromium	4	410.00	403.33	4	590.00	243.33
Copper	4	1910.00	1603.33	4	3890.00	543.33

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dicofol/Kelthane	1	0.00	0.00	0	.	.
Dieldrin	1	0.00	0.00	0	.	.
Dioxins	2	0.00	0.00	2	0.00	0.00
DDT	12	152.00	24.67	11	785.00	1.67
Endrin	1	0.00	0.00	0	.	.
Heptachlor	5	0.00	0.00	0	.	.
Heptachlor epoxide	5	0.00	0.00	0	.	.
Hexachlorobenzene	1	0.00	0.00	0	.	.
Hexachlorobutadiene	1	0.00	0.00	0	.	.
Isopropalin	1	0.00	0.00	0	.	.
Lead	4	2241.25	1786.67	4	3955.00	1436.67
Mercury	5	200.74	153.27	4	526.20	123.00
Methoxychlor	1	0.00	0.00	0	.	.
Mirex/Dechlorane	1	0.00	0.00	0	.	.
Pentachlorobenzene	1	1.08	1.08	1	1.08	1.08
Pentachloronitrobenzene/Quin	1	0.00	0.00	0	.	.
Polychlorinated biphenyls	17	34.25	18.33	9	199.60	18.33
Tetrachlorobenzene, 1,2,4,5-	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	1	0.35	0.35	1	0.35	0.35
Trifluralin/Treflan	1	0.00	0.00	0	.	.
Zinc	4	18629.17	17216.67	4	27050.00	13033.33

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
33.7167	118.2806	80-06-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	21.00	9.00	no
33.7200	118.2819	80-06-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	16.00	9.00	no
33.7231	118.2828	80-06-01	Macoma Nasuta	S	4.00	0.00	no
			Neanthes Arenacedonta	S	24.00	9.00	no
33.7267	118.2758	81-06-01	Macoma Nasuta	S	2.00	0.00	no
			Neanthes Arenacedonta	S	13.00	18.00	no
33.7306	118.2700	86-01-15	Macoma Nasuta	S	1.00	2.00	no
			Neanthes Arenacedonta	S	54.00	11.00	Yes
33.7378	118.2756	81-06-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	18.00	9.00	no
33.7389	118.2756	81-06-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	10.00	9.00	no
33.7403	118.2756	81-06-01	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	11.00	9.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
33.7486	118.2772	81-09-10	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	19.00	12.00	no
33.7542	118.2644	81-10-01	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	16.00	14.00	no
33.7547	118.2639	81-10-01	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	13.00	14.00	no
33.7547	118.2644	85-12-15	Macoma Nasuta	S	0.00	1.00	no
			Neanthes Arenacedonta	S	21.00	8.00	no
33.7547	118.2861	82-01-15	Macoma Nasuta	S	2.00	0.00	no
			Neanthes Arenacedonta	S	13.00	13.00	no
33.7550	118.2772	81-06-01	Macoma Nasuta	S	2.00	0.00	no
			Neanthes Arenacedonta	S	16.00	18.00	no
33.7556	118.2722	82-01-15	Macoma Nasuta	S	0.00	0.00	no
33.7569	118.2625	85-12-15	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	28.00	8.00	no
33.7583	118.2694	89-11-21	Macoma Nasuta	S	0.00	0.50	no
			Macoma Nasuta	S	1.25	0.00	no
			Nephtys Caecoides	S	2.63	1.54	no
			Nephtys Caecoides	S	11.00	5.00	no
33.7589	118.2603	85-12-15	Neanthes Arenacedonta	S	19.00	8.00	no
33.7611	118.2589	82-04-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	17.00	9.00	no
33.7611	118.2611	81-06-01	Macoma Nasuta	S	1.00	1.00	no
33.7611	118.2675	81-06-01	Macoma Nasuta	S	1.00	2.00	no
			Neanthes Arenacedonta	S	12.00	11.00	no
33.7619	118.2586	82-04-01	Macoma Nasuta	S	3.00	0.00	no
			Neanthes Arenacedonta	S	25.00	9.00	no
33.7619	118.2600	82-04-01	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	18.00	9.00	no
33.7622	118.2528	81-06-01	Macoma Nasuta	S	0.00	1.00	no
33.7625	118.2583	88-01-19	Acartia Spp.	E	18.33	11.67	no
			Holmesimysis Sculpta	E	15.00	5.00	no
			Holmesimysis Sculpta	S	27.00	10.00	no
			Macoma Nasuta	S	100.00	0.00	Yes
			Neanthes Arenacedonta	S	22.00	6.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7625	118.2761	81-06-01	Macoma Nasuta	S	3.00	0.00	no
			Neanthes Arenacedonta	S	27.00	18.00	no
33.7628	118.2500	81-06-01	Macoma Nasuta	S	1.00	2.00	no
			Neanthes Arenacedonta	S	10.00	11.00	no
33.7633	118.2772	81-06-01	Macoma Nasuta	S	0.00	2.00	no
			Neanthes Arenacedonta	S	24.00	11.00	no
33.7639	118.2600	82-04-01	Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	10.00	9.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
33.7661	118.2750	81-06-01	Macoma Nasuta	S	1.00	1.00	no
33.7667	118.2786	81-06-01	Macoma Nasuta	S	0.00	2.00	no
			Neanthes Arenacedonta	S	35.00	11.00	Yes
33.7694	118.2278	82-03-15	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	0.00	10.00	no
33.7744	118.2172	80-01-31	Acartia Spp.	E	6.67	13.33	no
			Holmesimysis Sculpta	E	16.67	20.00	no
			Macoma Nasuta	S	63.00	7.00	Yes
			Neanthes Arenacedonta	S	0.00	4.00	no
			Sandab Speckled	E	0.00	0.00	no

Los Angeles 18070105

Watershed Summary Information

Accounting Unit Name: Ventura-San Gabriel Coastal

State(s): CA

Political Boundaries: Los Angeles

Major Waterways: Los Angeles R
Big Tujunga Canyon
Eaton Wash
Aliso Canyon Wash
Pacoima Cr

Number of Stations in Watershed: Tier1 - 14
Tier2 - 19
Tier3 - 4

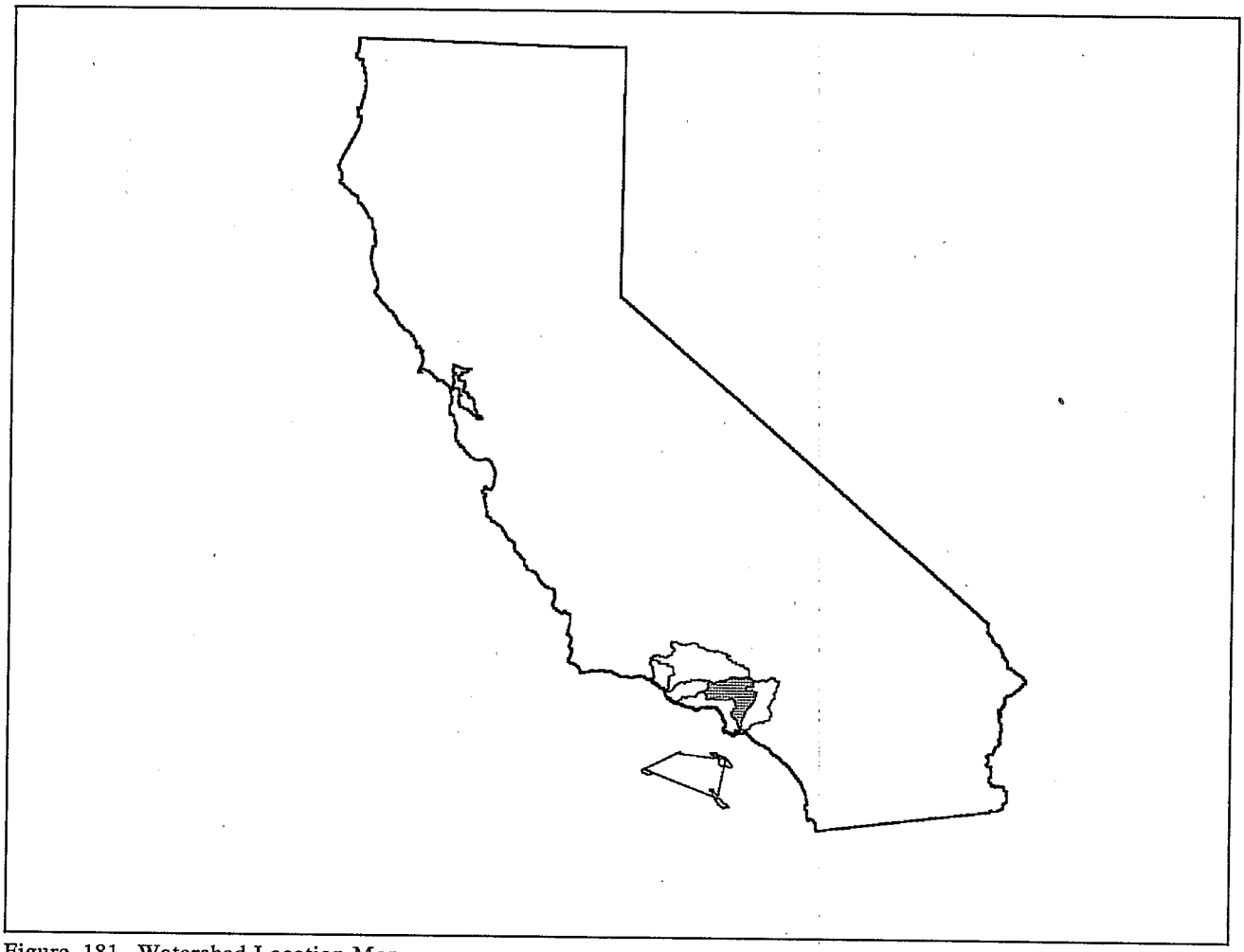

Figure 181. Watershed Location Map

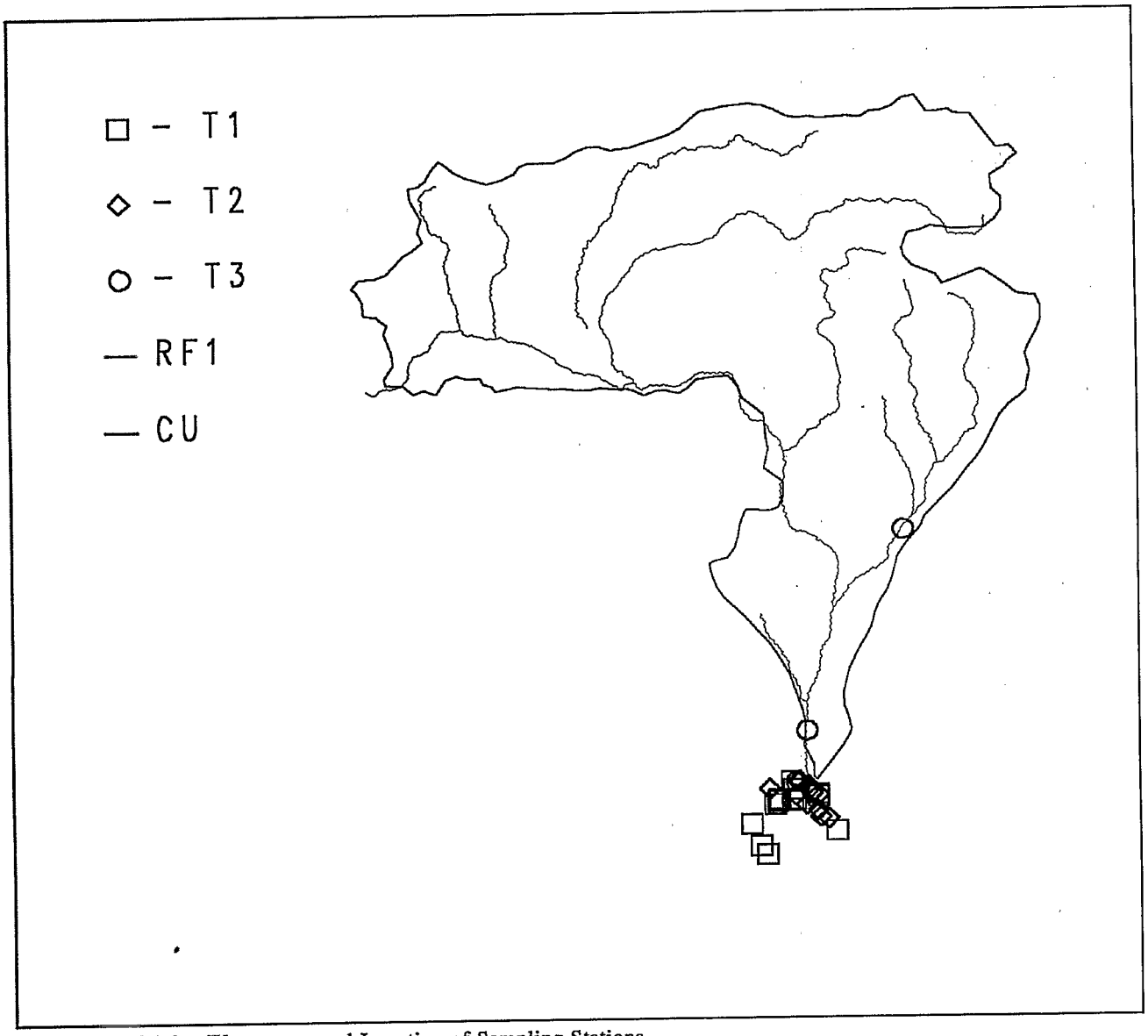

Figure 182. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 3 Date Range: 1984-90

Source: **DMATS** Agency: **R9**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 25 Date Range: 1980-90

Source: **DMATS** Agency: **09**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 6 Date Range: 1991-92

Source: **SEACOE** Agency: **SCCWRP87**
Monitoring Program: **Toxicity of sediments from Southern CA**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **21CALAFD**
Monitoring Program: **Los Angeles County Flood Control District Surface And Ground Waters Data**
Num. of Stations: 2 Date Range: 1988-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	34	30	.	30	.	30	.	.
Nickel	27	23	.	23	.	23	.	.
Mercury	34	20	4	16	4	16	.	2
Cadmium	35	19	.	19	.	19	.	3
DDT	26	17	8	9	8	9	.	10
Lead	30	17	.	17	.	17	.	.
Arsenic	29	13	.	13	.	13	.	.
Silver	26	13	.	13	.	13	.	.
Zinc	28	13	.	13	.	13	.	.
Pyrene	17	8	3	5	3	5	.	.
Chrysene	17	8	2	6	2	6	.	1
Chromium	32	8	.	8	.	8	.	.
Benzo(a)anthracene	16	7	2	5	2	5	.	2
Benzo(a)pyrene	16	7	1	6	1	6	.	7
Polychlorinated biphenyls	31	6	2	4	2	4	.	6
Acenaphthylene	15	6	1	5	1	5	.	.
Anthracene	15	5	1	4	1	4	.	.
Fluoranthene	17	4	2	2	2	2	.	.
Fluorene	12	4	1	3	1	3	.	.
Dibenzo(a,h)anthracene	12	4	.	4	.	4	.	3
BHC	15	3	.	3	.	3	.	1
Naphthalene	11	3	.	3	.	3	.	.
Phenanthrene	17	2	1	1	1	1	.	.
Acenaphthene	11	1	1	.	1	.	.	.
Aldrin	10	1	.	1	.	.	.	1
Bis(2-ethylhexyl)phthalate	6	1	.	1	.	1	.	.
Heptachlor	14	1	.	1	.	.	.	1
LMW_PAHs	1	1	.	1	.	1	.	.
Methylnaphthalene, 2-	1	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	25	137.96	0.00	8	3208.00	2.13
Acenaphthylene	30	41.67	1.50	15	677.00	3.00
Aldrin	22	0.24	0.00	3	2.14	1.14
Anthracene	30	563.94	2.50	15	7806.00	5.00
Antimony	9	786.67	820.00	9	1300.00	320.00
Arsenic	49	6296.80	7530.00	49	16700.00	2.00
Benzo(a)anthracene	33	449.45	29.98	19	9115.00	12.00
Benzo(a)pyrene	33	361.07	44.00	19	6173.00	34.16
Benzo(b)fluoranthene	4	204.38	122.44	4	520.00	52.65
Benzo(ghi)perylene	27	32.40	0.00	8	270.00	27.12
Benzo(k)fluoranthene	18	26.46	0.00	4	309.00	24.74
Biphenyl	4	7.00	4.16	4	18.67	1.00
Bis(2-ethylhexyl)phthalate	14	107.00	0.00	6	540.00	73.40
Butyl benzyl phthalate	14	0.00	0.00	0	.	.
BHC	83	0.41	0.00	4	29.00	1.00
Cadmium	159	825.20	560.00	147	6530.00	0.09
Chlordane	25	0.29	0.00	6	2.00	0.50
Chromium	52	43272.07	39425.00	49	118196.7	1.00
Chrysene	35	2835.66	49.00	20	76000.00	27.00
Copper	56	74076.57	46900.00	56	577190.0	7.80
Cresol, m-	1	0.24	0.24	1	0.24	0.24
Cresol, o	1	0.24	0.24	1	0.24	0.24
Di-n-butyl phthalate	14	11.88	0.00	4	59.00	24.50
Di-n-octyl phthalate	14	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	28	21.60	0.00	9	122.22	11.00
Dieldrin	20	0.10	0.00	1	2.00	2.00
Diethyl phthalate	14	0.00	0.00	0	.	.
Dimethyl phthalate	14	1.63	0.00	1	22.80	22.80
Dimethylphenol, 2,4-	19	0.00	0.00	0	.	.
DDT	123	227.99	0.00	60	24000.00	1.00
Endosulfan, alpha-	19	0.00	0.00	0	.	.
Endosulfan, beta-	19	0.00	0.00	0	.	.
Endrin	19	0.86	0.00	1	16.30	16.30
Fluoranthene	35	7368.47	58.70	21	233000.0	28.00
Fluorene	27	202.19	0.00	12	4500.00	2.00
Heptachlor	26	0.90	0.00	5	15.00	1.50
Heptachlor epoxide	22	0.03	0.00	3	0.39	0.11
Hexachlorobenzene	4	0.99	1.06	4	1.26	0.60
Hexachlorobutadiene	1	2.40	2.40	1	2.40	2.40
HMW_PAHs	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	33	16.74	0.00	8	120.00	1.90
Lead	53	44624.92	33500.00	50	170400.0	1.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
LMW_PAHs	1	840.00	840.00	1	840.00	840.00
Mercury	55	3481.85	190.00	49	81300.00	18.00
Methylnaphthalene, 2-	1	170.00	170.00	1	170.00	170.00
Mirex/Dechlorane	2	1.83	1.83	2	1.83	1.82
Naphthalene	26	10.92	0.00	8	102.71	3.00
Nickel	47	25405.42	24100.00	45	62800.00	1.50
Pentachlorophenol	20	0.00	0.00	0	.	.
Phenanthrene	34	536.20	0.00	16	11208.00	15.00
Phenol	19	0.00	0.00	0	.	.
Polychlorinated biphenyls	160	11.25	0.00	14	470.00	11.00
Pyrene	35	2220.10	109.50	23	47000.00	21.00
Silver	45	504.24	430.00	32	2850.00	46.00
Toxaphene	19	0.00	0.00	0	.	.
Zinc	48	133061.2	105000.0	46	876000.0	2.40

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Cadmium	3	19572.22	20460.00	3	22030.00	16226.67
Chromium	3	4040.00	3813.33	3	5213.33	3093.33
Copper	3	17617.78	18156.67	3	18820.00	15876.67
Mercury	3	3318.89	1313.33	3	7970.00	673.33

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
33.7356	118.1833	91-11-21	Ampelisca Abdita	S	15.00	4.00	no
			Macoma Nasuta	S	1.33	0.00	no
			Nephtys Caecoides	S	8.50	10.00	no
			Nephtys Caecoides	S	16.00	2.00	no
33.7431	118.1944	85-06-11	Macoma Nasuta	S	6.00	3.00	no
33.7486	118.2069	81-12-01	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	25.00	9.00	no
33.7486	118.2417	81-08-01	Neanthes Arenacedonta	S	1.00	2.00	no
			Protothaca Staminea	S	2.00	2.00	no
33.7514	118.2389	81-08-01	Neanthes Arenacedonta	S	2.50	2.00	no
			Protothaca Staminea	S	1.00	2.00	no
33.7525	118.2381	81-08-01	Metamysidopsis Elongata	S	14.00	12.00	no
			Neanthes Arenacedonta	S	2.00	2.00	no
			Protothaca Staminea	S	2.00	2.00	no

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
33.7539	118.2361	86-09-23	Holmesimysis Sculpta	S	34.00	7.00	Yes
			Macoma Nasuta	S	1.00	0.00	no
			Neanthes Arenacedonta	S	4.50	2.50	no
33.7561	118.1939	87-09-04	Holmesimysis Sculpta	E	3.33	0.00	no
			Macoma Nasuta	S	3.00	0.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7578	118.1939	87-09-04	Holmesimysis Sculpta	E	10.00	0.00	no
			Macoma Nasuta	S	6.00	0.00	no
			Sandab Speckled	E	10.00	0.00	no
33.7592	118.2008	87-09-04	Holmesimysis Sculpta	E	6.67	0.00	no
			Macoma Nasuta	S	3.00	0.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7603	118.2008	87-09-04	Holmesimysis Sculpta	E	0.00	0.00	no
			Macoma Nasuta	S	4.00	0.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7625	118.2044	87-09-04	Holmesimysis Sculpta	E	0.00	0.00	no
			Macoma Nasuta	S	4.00	0.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7625	118.2208	82-03-15	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	6.00	10.00	no
33.7633	118.2472	81-06-01	Neanthes Arenacedonta	S	15.00	11.00	no
33.7664	118.2050	87-09-04	Holmesimysis Sculpta	E	6.67	0.00	no
			Macoma Nasuta	S	0.00	0.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7694	118.2181	80-01-31	Acartia Spp.	E	33.33	13.33	no
			Holmesimysis Sculpta	E	30.00	20.00	no
			Holmesimysis Sculpta	E	33.33	13.33	no
			Macoma Nasuta	S	3.00	4.00	no
			Macoma Nasuta	S	3.00	7.00	no
			Neanthes Arenacedonta	S	12.00	4.00	no
			Neanthes Arenacedonta	S	12.00	8.00	no
			Sandab Speckled	E	0.00	0.00	no
33.7694	118.2236	82-03-15	Macoma Nasuta	S	0.00	0.00	no
			Neanthes Arenacedonta	S	3.00	10.00	no

San Pedro Channel Islands 18070107

Watershed Summary Information

Accounting Unit Name: Ventura-San Gabriel Coastal

State(s): CA

Political Boundaries: Los Angeles

Major Waterways:

Number of Stations in Watershed:
Tier1 - 14
Tier2 - 10
Tier3 - 1

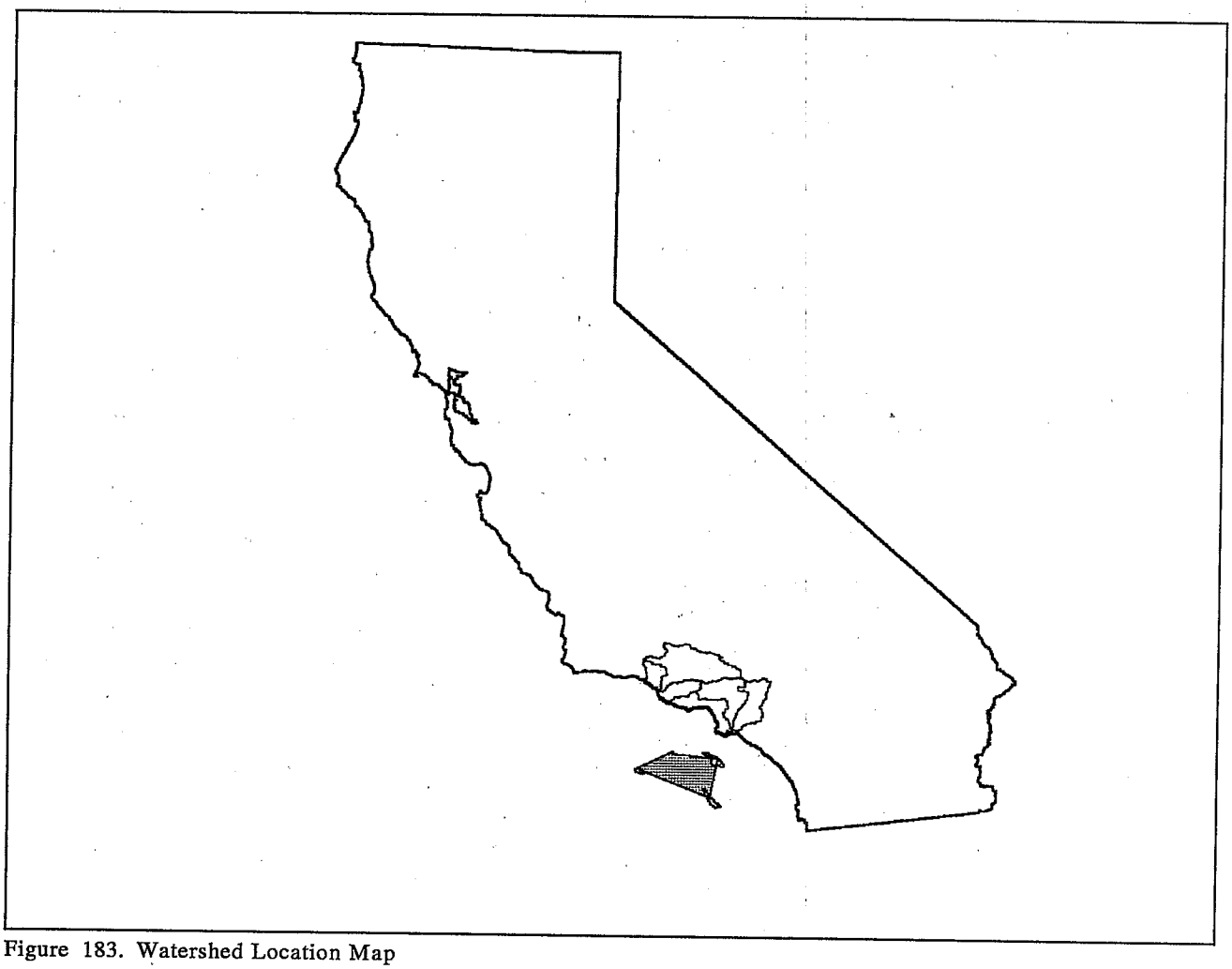

Figure 183. Watershed Location Map

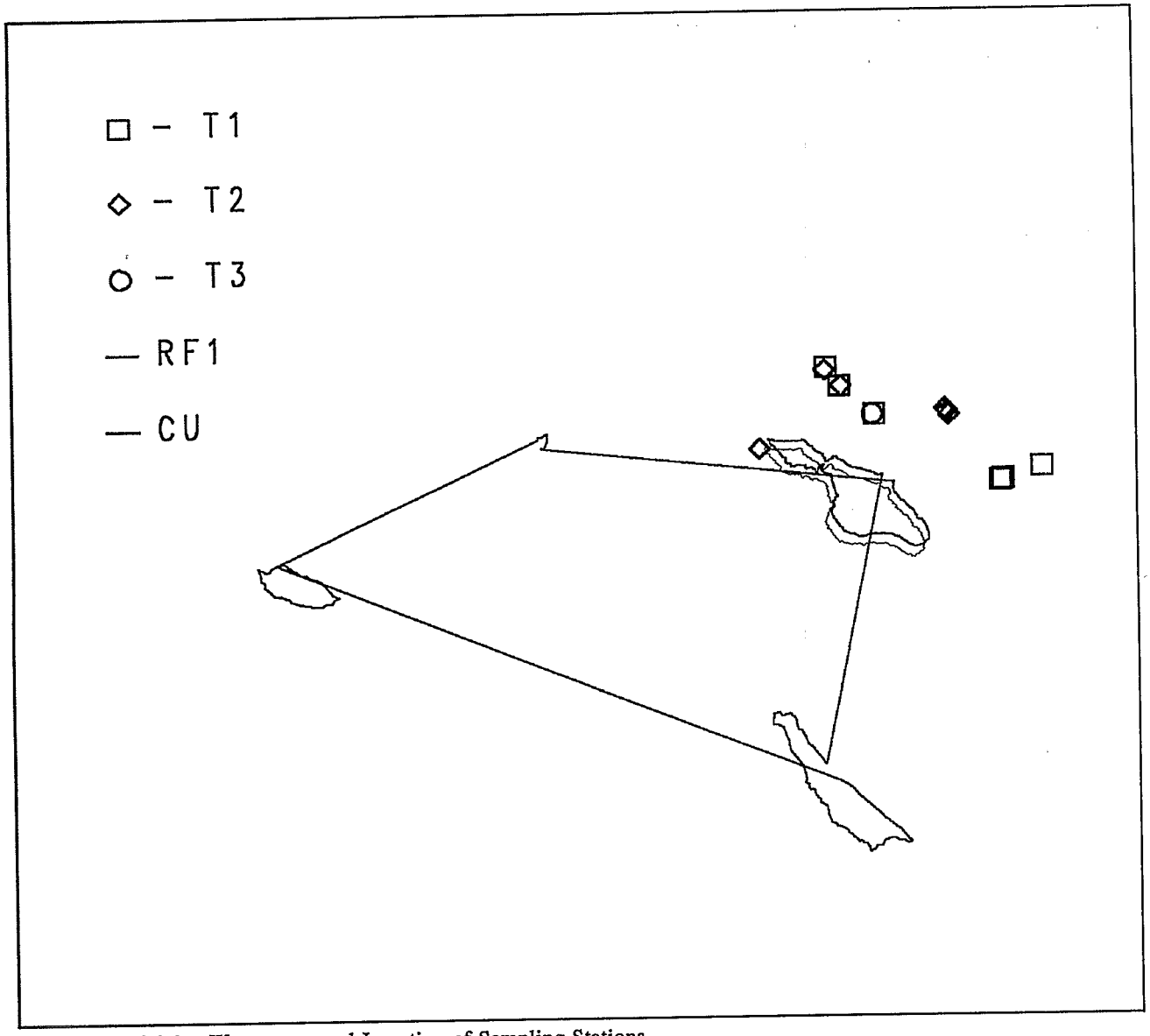

Figure 184. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **ODES** Agency: **GL**
Monitoring Program: **Goleta 301(h)**
Num. of Stations: 5 Date Range: 1986-90

Source: **ODES** Agency: **TH**
Monitoring Program: **Thums Ocean Dumping**
Num. of Stations: 13 Date Range: 1985-87

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 7 Date Range: 1984

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Arsenic	25	18	.	18	.	13	.	5
Chromium	25	17	.	17	.	16	.	1
Nickel	25	16	.	16	.	16	.	.
Silver	25	14	2	12	2	12	.	.
Copper	25	14	.	14	.	14	.	.
DDT	25	13	10	3	10	3	.	10
Mercury	25	10	7	3	7	3	.	.
Lead	25	9	.	9	.	9	.	.
Polychlorinated biphenyls	25	8	2	6	2	3	.	8
Cadmium	25	8	.	8	.	8	.	.
Benzo(a)pyrene	24	4	.	4	.	.	.	4
Dibenzo(a,h)anthracene	24	3	.	3	.	3	.	1
Zinc	24	3	.	3	.	3	.	.
Chlordane	25	2	.	2	.	2	.	2
Bis(2-chloroethyl)ether	5	1	.	1	.	.	.	1
Bis(2-ethylhexyl)phthalate	16	1	.	1	.	.	.	1
Di-n-butyl phthalate	17	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	24	1.41	0.00	3	21.00	0.90
Acenaphthylene	17	0.00	0.00	0	.	.
Acetone	17	0.00	0.00	0	.	.
Acrylonitrile	11	0.00	0.00	0	.	.
Aldrin	24	0.00	0.00	0	.	.
Anthracene	16	0.00	0.00	0	.	.
Antimony	24	625.00	590.00	17	2750.00	280.00
Arsenic	24	7977.29	9490.00	24	21700.00	1145.00
Benzene	17	0.00	0.00	0	.	.
Benzo(a)anthracene	23	5.13	0.00	4	45.00	12.00
Benzo(a)pyrene	23	9.00	0.00	4	71.00	38.00
Benzo(b)fluoranthene	6	0.00	0.00	0	.	.
Benzo(ghi)perylene	16	0.00	0.00	0	.	.
Benzo(k)fluoranthene	16	0.00	0.00	0	.	.
Benzoic acid	17	0.00	0.00	0	.	.
Benzyl alcohol	17	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	16	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	6	0.00	0.00	0	.	.
Butyl benzyl phthalate	16	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	75	0.00	0.00	0	.	.
Cadmium	24	768.12	532.50	23	2735.00	57.00
Chlordane	24	3.84	0.00	6	75.90	0.40
Chlorobenzene	17	0.00	0.00	0	.	.
Chromium	24	63445.83	65350.00	24	139000.0	6650.00
Chrysene	23	10.48	0.00	4	83.00	27.00
Copper	24	28373.96	33700.00	24	55900.00	4600.00
Cresol, o	17	0.00	0.00	0	.	.
Cresol, p-	17	0.00	0.00	0	.	.
Di-n-butyl phthalate	16	271.87	0.00	3	1850.00	1250.00
Di-n-octyl phthalate	16	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	30	1.50	0.00	4	16.00	4.00
Dibenzofuran	17	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	17	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	17	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	17	0.00	0.00	0	.	.
Dichloroethane 1,1-	17	0.00	0.00	0	.	.
Dichloroethane 1,2-	17	0.00	0.00	0	.	.
Dichloromethane	17	0.00	0.00	0	.	.
Dichloropropane, 1,2-	17	0.00	0.00	0	.	.
Dieldrin	24	0.00	0.00	0	.	.
Diethyl phthalate	17	0.00	0.00	0	.	.
Dimethyl phthalate	17	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	17	0.00	0.00	0	.	.
DDT	65	119.78	0.00	30	881.00	3.00
Endosulfan, alpha-	17	0.00	0.00	0	.	.
Endosulfan, beta-	17	0.00	0.00	0	.	.
Endrin	17	0.00	0.00	0	.	.
Ethylbenzene	17	0.00	0.00	0	.	.
Fluoranthene	23	12.96	0.00	5	89.00	28.00
Fluorene	24	0.63	0.00	2	13.00	2.00
Heptachlor	7	0.00	0.00	0	.	.
Heptachlor epoxide	24	0.00	0.00	0	.	.
Hexachlorobenzene	23	0.00	0.00	0	.	.
Hexachlorobutadiene	17	0.00	0.00	0	.	.
Hexachloroethane	17	0.00	0.00	0	.	.
HMW_PAHs	7	72.86	0.00	2	360.00	150.00
Indeno(1,2,3-cd)pyrene	16	0.00	0.00	0	.	.
Isophorone	17	0.00	0.00	0	.	.
Lead	24	17096.04	12550.00	24	35900.00	800.00
LMW_PAHs	7	7.86	0.00	1	55.00	55.00
Mercury	24	545.29	41.25	15	3020.00	22.50
Methoxychlor	6	0.00	0.00	0	.	.
Methyl ethyl ketone	17	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Methylnaphthalene, 2-	24	0.29	0.00	1	7.00	7.00
Naphthalene	24	0.79	0.00	2	11.00	8.00
Nickel	24	27100.00	27500.00	24	43600.00	5150.00
Nitrosodiphenylamine, N-	16	0.00	0.00	0	.	.
Pentachlorophenol	16	0.00	0.00	0	.	.
Phenanthrene	23	6.26	0.00	4	50.00	11.00
Phenol	17	0.00	0.00	0	.	.
Polychlorinated biphenyls	126	10.29	0.00	8	720.00	11.00
Pyrene	23	14.91	0.00	5	130.00	21.00
Silver	24	1673.75	1280.00	18	11500.00	370.00
Tetrachloroethane, 1,1,2,2-	17	0.00	0.00	0	.	.
Tetrachloroethene	17	0.00	0.00	0	.	.
Tetrachloromethane	17	0.00	0.00	0	.	.
Toluene	17	0.00	0.00	0	.	.
Toxaphene	17	0.00	0.00	0	.	.
Tribromomethane/Bromoform	17	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	17	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	17	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	17	0.00	0.00	0	.	.
Trichloroethene	17	0.00	0.00	0	.	.
Trichlorofluoromethane	11	0.00	0.00	0	.	.
Trichloromethane/Chloroform	17	0.00	0.00	0	.	.
Xylenes	17	0.00	0.00	0	.	.
Zinc	24	84379.17	96750.00	24	194000.0	14500.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	5	0.00	0.00	0	.	.
Acrolein	5	0.00	0.00	0	.	.
Acrylonitrile	5	0.00	0.00	0	.	.
Aldrin	5	0.00	0.00	0	.	.
Anthracene	5	0.00	0.00	0	.	.
Antimony	5	0.00	0.00	0	.	.
Arsenic	5	1360.00	1300.00	5	1700.00	1100.00
Benzene	5	4.40	0.00	1	22.00	22.00
Benzidine	5	0.00	0.00	0	.	.
Benzo(a)anthracene	5	0.00	0.00	0	.	.
Benzo(a)pyrene	5	0.00	0.00	0	.	.
Benzo(b)fluoranthene	5	0.00	0.00	0	.	.
Benzo(k)fluoranthene	5	0.00	0.00	0	.	.
Beryllium	5	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Bis(2-chloroethyl)ether	5	40.00	0.00	1	200.00	200.00
Bis(2-chloroisopropyl)ether	5	40.00	0.00	1	200.00	200.00
Bis(2-ethylhexyl)phthalate	4	2130.00	260.00	2	8000.00	520.00
Bromodichloromethane	5	0.00	0.00	0	.	.
Bromomethane	5	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	5	0.00	0.00	0	.	.
Butyl benzyl phthalate	5	0.00	0.00	0	.	.
BHC	20	0.00	0.00	0	.	.
Cadmium	5	570.00	540.00	5	950.00	270.00
Chlordane	5	0.00	0.00	0	.	.
Chlorobenzene	5	0.00	0.00	0	.	.
Chloroethane	5	0.00	0.00	0	.	.
Chloroethene	5	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	5	0.00	0.00	0	.	.
Chloromethane	5	20.20	0.00	1	101.00	101.00
Chloronaphthalene, 2-	5	0.00	0.00	0	.	.
Chlorophenol, 2-	5	40.00	0.00	1	200.00	200.00
Chromium	5	14872.00	920.00	4	71000.00	840.00
Chrysene	5	0.00	0.00	0	.	.
Copper	5	716.00	700.00	5	1000.00	560.00
Cyanide	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	5	72.00	0.00	1	360.00	360.00
Di-n-octyl phthalate	5	1480.00	0.00	1	7400.00	7400.00
Diazinon/Spectracide	4	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	5	0.00	0.00	0	.	.
Dibromochloromethane	5	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	5	40.00	0.00	1	200.00	200.00
Dichlorobenzene, 1,3-	5	40.00	0.00	1	200.00	200.00
Dichlorobenzene, 1,4-	5	40.00	0.00	1	200.00	200.00
Dichlorobenzidine, 3,3'-	5	0.00	0.00	0	.	.
Dichloroethane 1,1-	4	0.00	0.00	0	.	.
Dichloroethane 1,2-	4	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	5	0.00	0.00	0	.	.
Dichloroethene, 1,1-	4	0.00	0.00	0	.	.
Dichloromethane	2	0.00	0.00	0	.	.
Dichlorophenol, 2,4-	5	0.00	0.00	0	.	.
Dichloropropane, 1,2-	5	0.00	0.00	0	.	.
Dichloropropene, 1,3-	4	0.00	0.00	0	.	.
Dieldrin	5	0.00	0.00	0	.	.
Diethyl phthalate	5	0.00	0.00	0	.	.
Dimethyl phthalate	5	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	5	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	5	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	5	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dinitrotoluene, 2,6-	5	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
Diphenylhydrazine, 1,2-	5	0.00	0.00	0	.	.
Disulfoton	4	0.00	0.00	0	.	.
DDT	21	1.52	0.00	2	26.00	6.00
Endosulfan, alpha-	5	0.00	0.00	0	.	.
Endosulfan, beta-	5	0.00	0.00	0	.	.
Endrin	5	0.00	0.00	0	.	.
Ethion/Bladen	4	0.00	0.00	0	.	.
Ethylbenzene	4	0.00	0.00	0	.	.
Fluoranthene	5	0.00	0.00	0	.	.
Fluorene	5	0.00	0.00	0	.	.
Heptachlor	5	0.00	0.00	0	.	.
Heptachlor epoxide	5	0.00	0.00	0	.	.
Hexachlorobenzene	5	0.00	0.00	0	.	.
Hexachlorobutadiene	5	0.00	0.00	0	.	.
Hexachloroethane	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	5	0.00	0.00	0	.	.
Isophorone	5	0.00	0.00	0	.	.
Lead	5	164.00	150.00	4	310.00	100.00
Malathion	5	0.00	0.00	0	.	.
Mercury	5	90.00	20.00	4	400.00	10.00
Methoxychlor	4	0.00	0.00	0	.	.
Mirex/Dechlorane	3	0.00	0.00	0	.	.
Naphthalene	5	0.00	0.00	0	.	.
Nickel	5	1512.00	560.00	3	6300.00	560.00
Nitrobenzene	5	0.00	0.00	0	.	.
Nitrophenol, 4	5	0.00	0.00	0	.	.
Nitrosodi-n-propylamine, N-	5	0.00	0.00	0	.	.
Nitrosodiphenylamine, N-	5	0.00	0.00	0	.	.
Parathion ethyl	5	68.00	0.00	1	340.00	340.00
Pentachlorophenol	5	0.00	0.00	0	.	.
Phenol	5	0.00	0.00	0	.	.
Polychlorinated biphenyls	35	0.00	0.00	0	.	.
Pyrene	5	0.00	0.00	0	.	.
Selenium	5	106.00	0.00	2	300.00	230.00
Silver	5	106.00	0.00	2	400.00	130.00
Tetrachloroethane, 1,1,2,2-	5	0.00	0.00	0	.	.
Tetrachloroethene	4	0.50	0.00	1	2.00	2.00
Tetrachloromethane	5	0.00	0.00	0	.	.
Toluene	5	3.00	0.00	2	9.00	6.00
Toxaphene	5	0.00	0.00	0	.	.
Tribromomethane/Bromoform	5	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	5	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethane, 1,1,1-	5	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	5	0.00	0.00	0	.	.
Trichloroethene	5	0.00	0.00	0	.	.
Trichlorofluoromethane	5	0.00	0.00	0	.	.
Trichloromethane/Chloroform	5	0.60	0.00	1	3.00	3.00
Trichlorophenol, 2,4,6-	5	0.00	0.00	0	.	.
Zinc	4	24000.00	21000.00	4	34000.00	20000.00

Seal Beach 18070201

Watershed Summary Information

Accounting Unit Name: Santa Ana

State(s): CA

Political Boundaries: Los Angeles, Orange

Major Waterways:

Number of Stations in Watershed:
Tier1 - 63
Tier2 - 339
Tier3 - 40

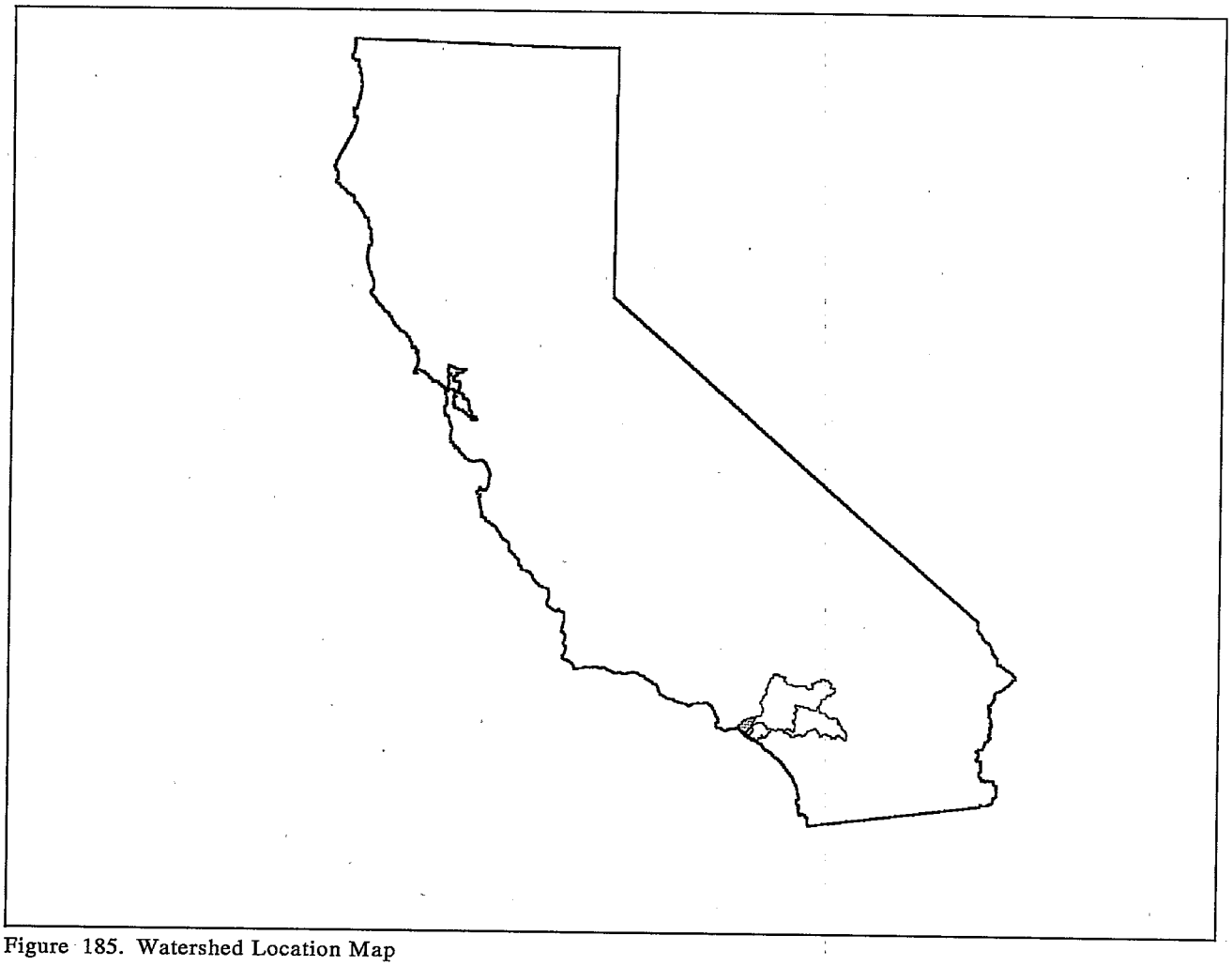

Figure 185. Watershed Location Map

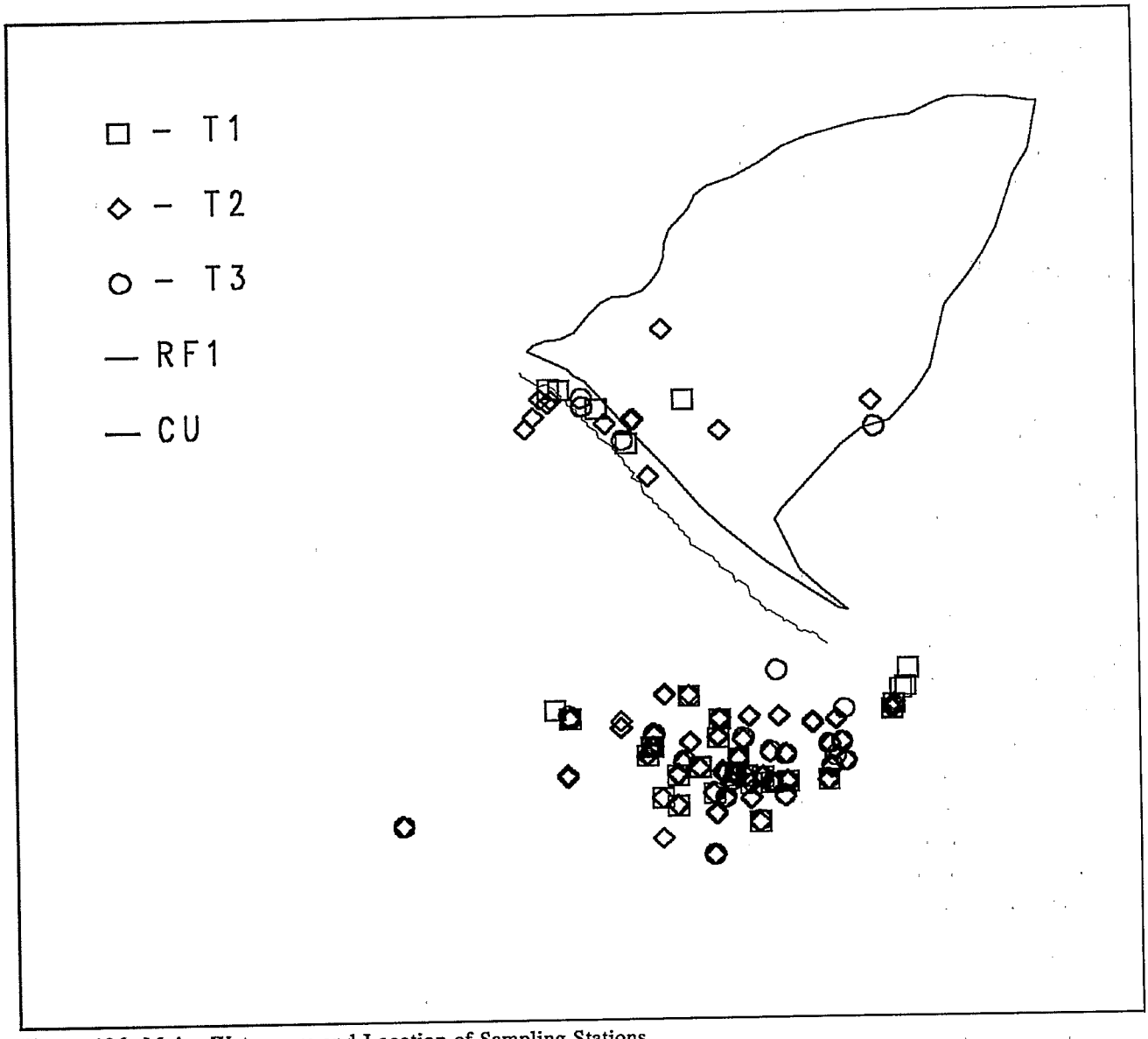

Figure 186. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **DMATS** Agency: **R9**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 13 Date Range: 1982-87

Source: **DMATS** Agency: **09**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 2 Date Range: 1991

Source: **ODES** Agency: **OC**
Monitoring Program: **Orange County 301(h)**
Num. of Stations: 414 Date Range: 1985-91

Source: **SEACOE** Agency: **SCCWRP87**
Monitoring Program: **Toxicity of sediments from Southern CA**
Num. of Stations: 1 Date Range: 1987

Source: **STORET** Agency: **21CAOCFC**
Monitoring Program: **Orange County (Ca) Environ Mgnt Generl Water Quality & Sediment Data**
Num. of Stations: 12 Date Range: 1980-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	422	278	23	255	23	255	.	92
Bis(2-ethylhexyl)phthalate	304	206	32	174	32	174	.	75
Copper	442	163	.	163	.	163	.	.
Polychlorinated biphenyls	424	150	8	142	4	64	4	146
Cadmium	430	126	.	126	.	126	.	.
BHC	415	95	.	95	.	95	.	12
Arsenic	417	67	.	67	.	63	.	4
Silver	413	60	.	60	.	60	.	.
Mercury	432	43	5	38	5	38	.	.
Nickel	430	31	.	31	.	31	.	.
Phenol	373	23	.	23	.	23	.	.
Aldrin	410	22	.	22	.	.	.	22
Lead	442	21	.	21	.	21	.	.
Dieldrin	389	20	.	20	.	4	.	19
Zinc	438	14	.	14	.	14	.	.
Benzo(a)pyrene	389	13	1	12	1	3	.	13
Benzoic acid	88	11	.	11	.	11	.	.
Methylnaphthalene, 2-	135	11	.	11	.	11	.	.
Fluoranthene	389	10	.	10	.	10	.	.
Phenanthrene	383	8	1	7	1	7	.	.
Naphthalene	394	6	.	6	.	6	.	.
Pyrene	387	6	.	6	.	6	.	.
Endosulfan, beta-	400	5	.	5	.	5	.	.
Benzo(a)anthracene	398	4	2	2	2	2	.	3
Chlordane	367	4	.	4	.	4	.	3
Chromium	437	4	.	4	.	4	.	.
Benzo(b)fluoranthene	396	3	.	3	.	.	.	3
Chrysene	398	3	.	3	.	3	.	.
Diethyl phthalate	391	3	.	3	.	3	.	.
Dibenzo(a,h)anthracene	398	2	1	1	1	1	.	2
Acenaphthene	391	2	.	2	.	2	.	.
Anthracene	397	2	.	2	.	2	.	.
Indeno(1,2,3-cd)pyrene	397	2	.	2	.	2	.	2
Benzo(ghi)perylene	385	1	.	1	.	1	.	.

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Benzo(k)fluoranthene	389	1	.	1	.	.	.	1
Cresol, p-	90	1	.	1	.	1	.	.
Dimethylphenol, 2,4-	392	1	.	1	.	1	.	.
Fluorene	398	1	.	1	.	1	.	.
Heptachlor epoxide	406	1	.	1	.	.	.	1
Nitrosodi-n-propylamine, N-	14	1	.	1	.	.	.	1
Pentachlorophenol	386	1	.	1	.	1	.	.
Trichloroethane, 1,1,1-	398	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	837	0.27	0.00	2	190.00	33.00
Acenaphthylene	869	0.00	0.00	0	.	.
Acetone	317	0.42	0.00	2	66.00	66.00
Acrylonitrile	181	0.00	0.00	0	.	.
Aldrin	974	0.08	0.00	41	18.00	0.00
Anthracene	866	1.36	0.00	10	700.00	8.00
Antimony	929	15.16	0.00	37	481.00	225.00
Arsenic	987	4763.81	3480.00	986	32000.00	250.00
Benzene	531	0.02	0.00	1	11.50	11.50
Benzo(a)anthracene	866	6.71	0.00	26	2700.00	5.20
Benzo(a)pyrene	818	5.32	0.00	20	2200.00	8.50
Benzo(b)fluoranthene	864	4.84	0.00	21	2200.00	7.00
Benzo(ghi)perylene	869	3.34	0.00	6	2200.00	5.80
Benzo(k)fluoranthene	823	5.46	0.00	16	2400.00	5.70
Benzoic acid	243	246.98	0.00	103	4200.00	8.90
Benzyl alcohol	325	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	594	1089.49	504.50	483	60800.00	11.00
Bromophenyl phenyl ether, 4-	710	0.00	0.00	0	.	.
Butyl benzyl phthalate	818	4.97	0.00	67	374.75	7.70
BHC	3808	0.08	0.00	192	15.00	0.01
Cadmium	1024	649.44	459.50	987	6770.00	49.00
Chlordane	827	0.89	0.00	71	270.00	0.25
Chlorobenzene	574	0.00	0.00	0	.	.
Chromium	1051	20681.10	19900.00	1051	110000.0	310.00
Chrysene	866	6.10	0.00	28	2500.00	6.40
Copper	1066	27653.83	16350.00	1065	2000000	380.00
Cresol, m-	1	0.15	0.15	1	0.15	0.15
Cresol, o	324	0.74	0.00	2	240.00	0.15
Cresol, p-	248	27.31	0.00	22	5100.00	12.00
Di-n-butyl phthalate	722	17.16	0.00	114	962.00	8.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-octyl phthalate	848	15.82	0.00	160	970.00	7.60
Dibenzo(a,h)anthracene	870	0.99	0.00	2	680.00	180.00
Dibenzofuran	837	0.25	0.00	2	190.00	22.40
Dibromochloromethane	575	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	859	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	837	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	837	0.06	0.00	1	50.20	50.20
Dichloroethane 1,1-	571	0.00	0.00	0	.	.
Dichloroethane 1,2-	574	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	173	0.00	0.00	0	.	.
Dichloromethane	438	28.74	0.00	125	1460.00	1.10
Dichloropropane, 1,2-	567	0.00	0.00	0	.	.
Dieldrin	842	0.09	0.00	76	6.70	0.21
Diethyl phthalate	859	4.22	0.00	77	620.00	5.10
Dimethyl phthalate	857	0.13	0.00	4	39.00	12.00
Dimethylphenol, 2,4-	861	0.08	0.00	1	69.00	69.00
Dioxins	176	0.00	0.00	0	.	.
DDT	2609	2.38	0.00	1005	110.00	0.01
Endosulfan mixed isomers	217	0.02	0.00	2	3.40	1.90
Endosulfan, alpha-	670	0.00	0.00	7	0.44	0.00
Endosulfan, beta-	900	0.45	0.00	63	93.00	0.17
Endrin	925	0.21	0.00	52	35.00	0.40
Ethylbenzene	573	0.01	0.00	1	7.54	7.54
Fluoranthene	840	11.79	0.00	93	3000.00	8.70
Fluorene	869	0.43	0.00	1	370.00	370.00
Heptachlor	97	0.00	0.00	0	.	.
Heptachlor epoxide	958	0.02	0.00	14	4.10	0.17
Hexachlorobenzene	860	0.00	0.00	0	.	.
Hexachlorobutadiene	830	0.00	0.00	0	.	.
Hexachloroethane	859	0.00	0.00	0	.	.
HMW_PAHs	1	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	868	3.72	0.00	5	2400.00	10.00
Isophorone	832	0.00	0.00	0	.	.
Lead	1046	16437.77	9390.00	1044	320000.0	690.00
LMW_PAHs	1	20.00	20.00	1	20.00	20.00
Malathion	76	0.00	0.00	0	.	.
Mercury	1021	216.14	52.00	973	29000.00	1.00
Methoxychlor	85	0.00	0.00	0	.	.
Methyl ethyl ketone	315	0.03	0.00	1	11.00	11.00
Methylnaphthalene, 2-	323	3.64	0.00	38	96.00	7.30
Naphthalene	850	1.07	0.00	34	96.60	4.40
Nickel	947	9076.95	8280.00	945	36000.00	3840.00
Nitrosodiphenylamine, N-	859	0.00	0.00	0	.	.
Pentachlorophenol	836	1.54	0.00	8	790.00	15.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Phenanthrene	864	8.21	0.00	58	3600.00	8.00
Phenol	780	83.29	0.00	284	5160.00	3.50
Polychlorinated biphenyls	6493	1.69	0.00	337	860.00	2.60
Pyrene	829	10.22	0.00	88	2200.00	7.52
Silver	916	469.14	443.00	907	1750.00	40.70
Tetrachloroethane, 1,1,2,2-	257	0.00	0.00	0	.	.
Tetrachloroethene	573	0.00	0.00	0	.	.
Tetrachloromethane	568	0.10	0.00	4	21.70	5.69
Toluene	530	0.32	0.00	5	78.10	4.39
Toxaphene	972	0.00	0.00	0	.	.
Tribromomethane/Bromoform	574	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	859	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	563	0.17	0.00	2	77.90	19.20
Trichloroethane, 1,1,2-	575	0.00	0.00	0	.	.
Trichloroethene	561	0.22	0.00	11	46.40	3.20
Trichlorofluoromethane	2	0.00	0.00	0	.	.
Trichloromethane/Chloroform	518	0.00	0.00	0	.	.
Xylenes	317	0.00	0.00	0	.	.
Zinc	1055	59058.48	47000.00	1055	915000.0	320.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	7	4.81	0.00	1	33.67	33.67
Acetone	1	0.00	0.00	0	.	.
Acrolein	1	0.00	0.00	0	.	.
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	7	0.39	0.00	2	1.90	0.83
Aniline	1	0.00	0.00	0	.	.
Anthracene	7	0.00	0.00	0	.	.
Antimony	7	0.00	0.00	0	.	.
Arsenic	6	919.00	888.50	5	1640.00	517.00
Benzene	7	0.00	0.00	0	.	.
Benzidine	2	0.00	0.00	0	.	.
Benzo(a)anthracene	7	0.00	0.00	0	.	.
Benzo(a)pyrene	7	0.00	0.00	0	.	.
Benzo(b)fluoranthene	7	0.00	0.00	0	.	.
Benzo(k)fluoranthene	7	0.00	0.00	0	.	.
Benzoic acid	1	1340.00	1340.00	1	1340.00	1340.00
Benzyl alcohol	1	0.00	0.00	0	.	.
Beryllium	7	0.00	0.00	0	.	.
Bis(2-chloroethyl)ether	7	0.00	0.00	0	.	.

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Bis(2-chloroisopropyl)ether	7	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	4	1031.67	928.33	3	2270.00	796.67
Bromodichloromethane	7	0.00	0.00	0	.	.
Bromomethane	7	0.00	0.00	0	.	.
Bromophenyl phenyl ether, 4-	7	0.00	0.00	0	.	.
Butyl benzyl phthalate	7	0.00	0.00	0	.	.
BHC	25	0.74	0.00	3	16.00	0.63
Cadmium	6	0.80	0.00	1	4.82	4.82
Carbon disulfide	1	0.00	0.00	0	.	.
Chlordane	4	0.00	0.00	0	.	.
Chlorobenzene	7	0.00	0.00	0	.	.
Chloroethane	1	0.00	0.00	0	.	.
Chloroethene	7	0.00	0.00	0	.	.
Chloroethylvinyl ether, 2-	1	0.00	0.00	0	.	.
Chloromethane	7	0.00	0.00	0	.	.
Chloronaphthalene, 2-	7	0.00	0.00	0	.	.
Chromium	7	5.60	0.00	3	18.10	10.00
Chrysene	7	0.00	0.00	0	.	.
Copper	7	171.64	157.50	7	235.00	100.00
Cresol, o	1	0.00	0.00	0	.	.
Cresol, p-	1	0.00	0.00	0	.	.
Di-n-butyl phthalate	7	43.29	0.00	2	250.00	53.00
Di-n-octyl phthalate	7	0.00	0.00	0	.	.
Dibenzo(a,h)anthracene	7	0.00	0.00	0	.	.
Dibenzofuran	7	0.00	0.00	0	.	.
Dibromochloromethane	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	7	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	7	6.33	0.00	1	44.33	44.33
Dichlorobenzene, 1,4-	7	0.00	0.00	0	.	.
Dichlorobenzidine, 3,3'-	7	0.00	0.00	0	.	.
Dichloroethane 1,1-	7	0.00	0.00	0	.	.
Dichloroethane 1,2-	7	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	7	0.00	0.00	0	.	.
Dichloroethene, 1,1-	7	0.00	0.00	0	.	.
Dichloromethane	7	275.13	33.00	6	1722.50	18.00
Dichlorophenol, 2,4-	14	6.43	0.00	1	90.00	90.00
Dichloropropane, 1,2-	7	0.00	0.00	0	.	.
Dichloropropene, 1,3-	7	0.00	0.00	0	.	.
Dieldrin	6	0.00	0.00	0	.	.
Diethyl phthalate	7	0.00	0.00	0	.	.
Dimethyl phthalate	7	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	7	0.00	0.00	0	.	.
Dinitrophenol, 2,4-	2	0.00	0.00	0	.	.
Dinitrotoluene, 2,4-	7	10.86	0.00	1	76.00	76.00

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Dinitrotoluene, 2,6-	7	0.00	0.00	0	.	.
Dioxins	1	0.00	0.00	0	.	.
DDT	14	30.38	0.00	6	240.00	0.94
Endosulfan mixed isomers	1	0.00	0.00	0	.	.
Endosulfan, alpha-	6	0.00	0.00	0	.	.
Endosulfan, beta-	5	0.44	0.00	1	2.20	2.20
Endrin	5	0.70	0.00	1	3.48	3.48
Ethylbenzene	7	0.00	0.00	0	.	.
Fluoranthene	7	0.00	0.00	0	.	.
Fluorene	7	0.00	0.00	0	.	.
Heptachlor	7	0.37	0.00	2	2.10	0.46
Heptachlor epoxide	7	0.00	0.00	0	.	.
Hexachlorobenzene	7	0.00	0.00	0	.	.
Hexachlorobutadiene	7	0.00	0.00	0	.	.
Hexachloroethane	7	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	7	0.00	0.00	0	.	.
Isophorone	7	0.00	0.00	0	.	.
Lead	7	4.53	0.00	1	31.70	31.70
Mercury	7	346.80	197.00	7	849.00	33.10
Methyl ethyl ketone	1	0.00	0.00	0	.	.
Methyl isobutyl ketone	1	0.00	0.00	0	.	.
Naphthalene	7	0.00	0.00	0	.	.
Nickel	7	6.86	0.00	1	48.00	48.00
Nitrobenzene	7	0.00	0.00	0	.	.
Nitrophenol, 4	2	25.00	25.00	1	50.00	50.00
Nitrosodi-n-propylamine, N-	7	10.43	0.00	1	73.00	73.00
Nitrosodiphenylamine, N-	7	0.00	0.00	0	.	.
Pentachlorophenol	7	13.00	0.00	1	91.00	91.00
Phenol	7	33.33	0.00	2	140.00	93.33
Polychlorinated biphenyls	44	14.58	0.00	6	186.67	28.47
Pyrene	7	3.71	0.00	1	26.00	26.00
Selenium	6	199.83	199.50	4	424.00	137.00
Silver	7	1.14	0.00	1	8.00	8.00
Styrene	1	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	6	0.00	0.00	0	.	.
Tetrachloroethene	7	0.00	0.00	0	.	.
Tetrachloromethane	7	0.00	0.00	0	.	.
Toluene	7	0.56	0.00	1	3.90	3.90
Toxaphene	7	0.00	0.00	0	.	.
Tribromomethane/Bromoform	7	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	7	7.71	0.00	1	54.00	54.00
Trichloroethane, 1,1,1-	7	34.21	0.00	1	239.44	239.44
Trichloroethane, 1,1,2-	7	0.00	0.00	0	.	.
Trichloroethene	7	4.40	0.00	1	30.81	30.81

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloromethane/Chloroform	7	0.00	0.00	0	.	.
Trichlorophenol, 2,4,5-	7	0.00	0.00	0	.	.
Trichlorophenol, 2,4,6-	7	0.00	0.00	0	.	.
Vinyl acetate	1	0.00	0.00	0	.	.
Xylenes	1	0.00	0.00	0	.	.
Zinc	7	3055.71	2890.00	7	3510.00	2700.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
33.6103	117.9283	82-06-27	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	6.00	2.00	no
33.7139	118.0611	86-05-01	Macoma Nasuta	S	0.00	0.00	no
33.7189	118.1083	87-06-01	Macoma Nasuta	S	3.00	3.00	no
			Neanthes Arenacedonta	S	14.00	12.00	no
33.7208	118.0694	86-05-01	Macoma Nasuta	S	2.00	0.00	no
33.7222	118.0569	86-05-01	Macoma Nasuta	S	1.00	0.00	no
33.7236	118.1042	87-06-01	Macoma Nasuta	S	5.00	3.00	no
			Neanthes Arenacedonta	S	32.00	12.00	no
33.7278	118.0806	86-05-01	Macoma Nasuta	S	2.00	0.00	no
33.7292	118.0972	87-06-01	Macoma Nasuta	S	2.00	3.00	no
			Neanthes Arenacedonta	S	14.00	12.00	no
33.7306	118.0953	87-06-01	Macoma Nasuta	S	1.00	3.00	no
			Neanthes Arenacedonta	S	28.00	12.00	no
33.7311	118.1008	87-06-01	Macoma Nasuta	S	7.00	3.00	no
			Neanthes Arenacedonta	S	26.00	12.00	no
33.7347	118.0917	87-06-01	Macoma Nasuta	S	3.00	3.00	no
			Neanthes Arenacedonta	S	30.00	12.00	no
33.7353	118.0967	87-06-01	Macoma Nasuta	S	5.00	3.00	no
			Neanthes Arenacedonta	S	27.00	12.00	no

Newport Bay 18070204

Watershed Summary Information

Accounting Unit Name:	Santa Ana
State(s):	CA
Political Boundaries:	Orange, San Bernardino
Major Waterways:	San Diego Cr Peters Canyon Wash
Number of Stations in Watershed:	Tier1 - 24 Tier2 - 68 Tier3 - 16

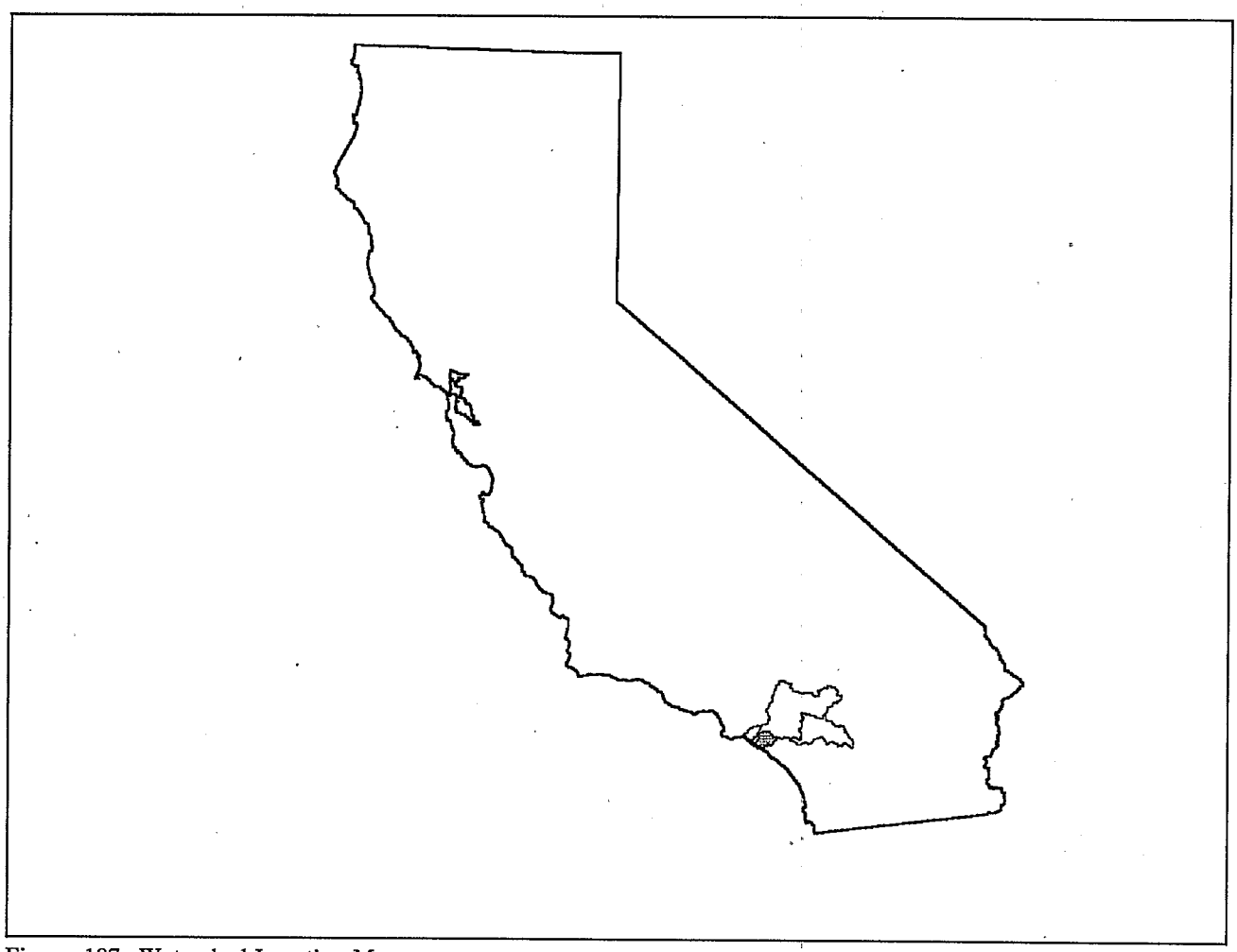

Figure 187. Watershed Location Map

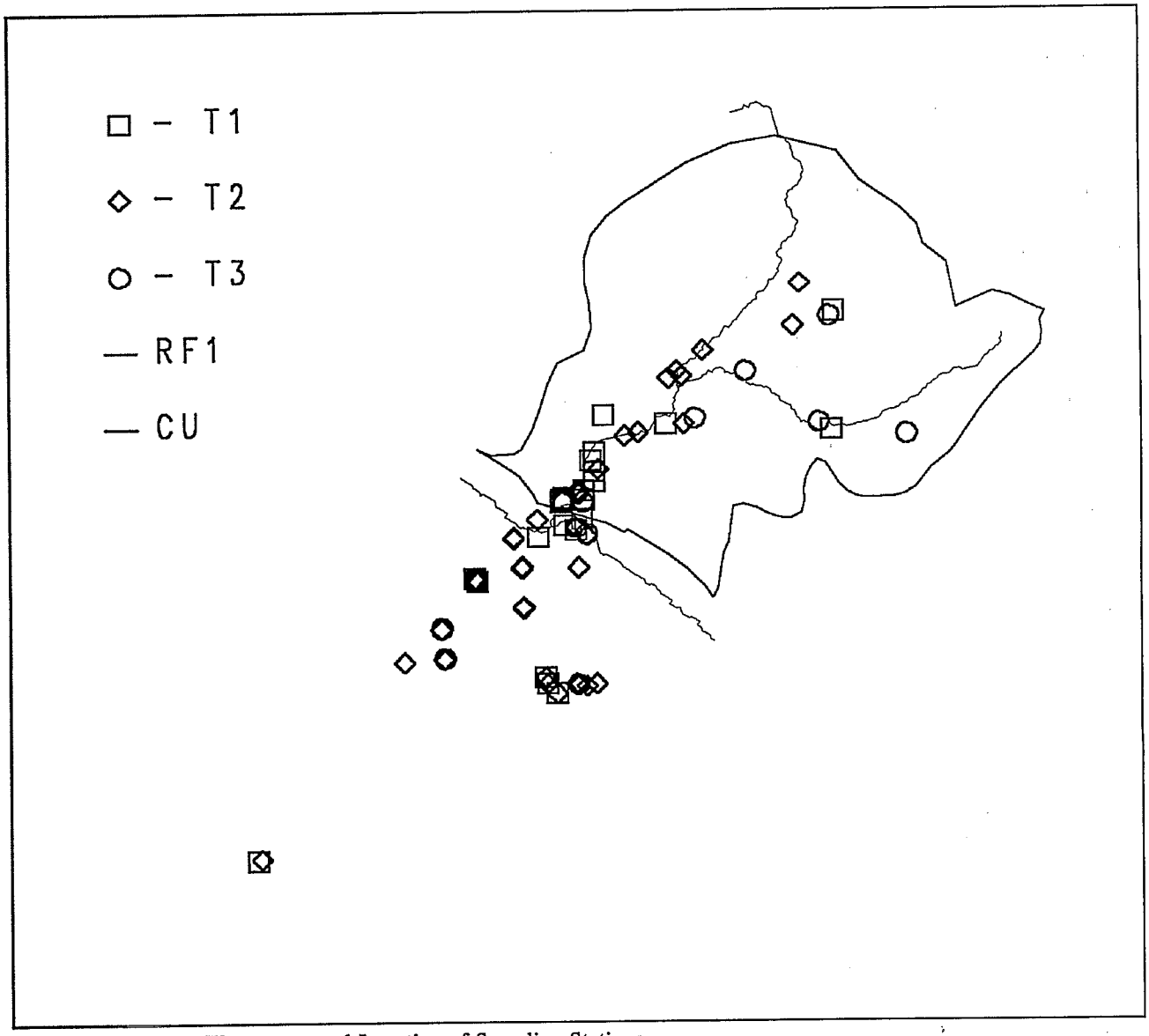

Figure 188. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 3 Date Range: 1986-87

Source: **DMATS** Agency: **R9**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 27 Date Range: 1982-90

Source: **DMATS** Agency: **09**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 6 Date Range: 1989-90

Source: **ODES** Agency: **OC**
Monitoring Program: **Orange County 301(h)**
Num. of Stations: 45 Date Range: 1985-90

Source: **SEACOE** Agency: **NOAA84**
Monitoring Program: **Benthic Surveillance 1984**
Num. of Stations: 2 Date Range: 1984

Source: **STORET** Agency: **21CAOCFC**
Monitoring Program: **Orange County (Ca) Environ Mgnt Generl Water Quality & Sediment Data**
Num. of Stations: 25 Date Range: 1980-92

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
DDT	91	55	11	44	11	44	.	21
Copper	102	47	.	47	.	47	.	.
Cadmium	105	35	.	35	.	35	.	.
Bis(2-ethylhexyl)phthalate	38	25	2	23	2	23	.	6
Mercury	96	23	10	13	10	13	.	.
Nickel	81	23	.	23	.	23	.	.
Polychlorinated biphenyls	99	20	1	19	1	9	.	20
Arsenic	86	19	.	19	.	19	.	.
Lead	104	15	.	15	.	15	.	.
BHC	83	14	.	14	.	14	.	1
Chromium	98	11	.	11	.	11	.	.
Zinc	101	10	.	10	.	10	.	.
Silver	85	9	.	9	.	9	.	.
Benzo(a)pyrene	69	4	.	4	.	.	.	4
Fluoranthene	76	4	.	4	.	4	.	.
Chlordane	78	3	.	3	.	3	.	3
Dieldrin	77	3	.	3	.	1	.	2
Phenol	48	3	.	3	.	3	.	.
Endosulfan, beta-	75	2	.	2	.	2	.	.
Benzoic acid	6	1	.	1	.	1	.	.
Dibenzo(a,h)anthracene	69	1	.	1	.	1	.	.
Dichloromethane	31	1	.	1	.	.	.	1
Diethyl phthalate	48	1	.	1	.	1	.	.
Methylnaphthalene, 2-	16	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	119	0.00	0.00	0	.	.
Acenaphthylene	123	0.00	0.00	0	.	.
Acetone	28	1.57	0.00	2	34.00	10.00
Acrylonitrile	19	0.00	0.00	0	.	.
Aldrin	248	0.01	0.00	2	1.01	0.50
Anthracene	122	0.22	0.00	1	26.60	26.60
Antimony	81	14.20	0.00	2	590.00	560.00
Arsenic	175	4210.95	3370.00	171	22000.00	5.00
Benzene	50	0.00	0.00	0	.	.
Benzo(a)anthracene	126	0.58	0.00	5	30.00	7.20
Benzo(a)pyrene	120	0.72	0.00	5	29.00	9.30
Benzo(b)fluoranthene	114	0.22	0.00	1	25.00	25.00
Benzo(ghi)perylene	121	0.00	0.00	0	.	.
Benzo(k)fluoranthene	111	0.20	0.00	1	22.00	22.00
Benzoic acid	17	141.18	0.00	8	1200.00	11.00
Benzyl alcohol	28	0.00	0.00	0	.	.
Bis(2-ethylhexyl)phthalate	60	589.13	204.00	50	3560.00	22.00
Bromophenyl phenyl ether, 4-	64	0.00	0.00	0	.	.
Butyl benzyl phthalate	75	1.28	0.00	3	42.00	22.00
BHC	927	0.05	0.00	18	13.30	0.00
Cadmium	255	1055.75	389.00	194	67000.00	103.00
Chlordane	242	0.60	0.00	15	59.00	0.23
Chlorobenzene	55	0.00	0.00	0	.	.
Chromium	255	16978.12	13000.00	252	129000.0	1.60
Chrysene	128	1.05	0.00	6	50.00	11.00
Copper	264	16037.53	11000.00	260	153000.0	7.90
Cresol, o	28	0.00	0.00	0	.	.
Cresol, p-	18	0.00	0.00	0	.	.
Di-n-butyl phthalate	62	3.00	0.00	6	52.00	17.00
Di-n-octyl phthalate	78	12.29	0.00	13	414.00	8.70
Dibenzo(a,h)anthracene	125	0.06	0.00	1	7.00	7.00
Dibenzofuran	71	0.00	0.00	0	.	.
Dibromochloromethane	56	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	73	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	67	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	68	0.00	0.00	0	.	.
Dichloroethane 1,1-	56	0.00	0.00	0	.	.
Dichloroethane 1,2-	56	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	18	0.00	0.00	0	.	.
Dichloromethane	43	158.29	0.00	12	5920.00	5.70
Dichloropropane, 1,2-	55	0.00	0.00	0	.	.
Dieldrin	239	0.02	0.00	9	1.20	0.16

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Diethyl phthalate	78	10.22	0.00	9	430.00	7.70
Dimethyl phthalate	78	0.00	0.00	0	.	.
Dimethylphenol, 2,4-	79	0.00	0.00	0	.	.
Dioxins	19	0.00	0.00	0	.	.
DDT	743	40.10	0.00	217	13000.00	0.00
Endosulfan mixed isomers	15	0.00	0.00	0	.	.
Endosulfan, alpha-	188	0.00	0.00	3	0.01	0.01
Endosulfan, beta-	203	0.24	0.00	4	31.00	0.01
Endrin	243	0.02	0.00	3	1.88	1.81
Ethylbenzene	55	0.00	0.00	0	.	.
Fluoranthene	129	10.97	0.00	17	362.50	13.00
Fluorene	123	0.00	0.00	0	.	.
Heptachlor	173	0.00	0.00	0	.	.
Heptachlor epoxide	247	0.00	0.00	1	0.30	0.30
Hexachlorobenzene	75	0.00	0.00	0	.	.
Hexachlorobutadiene	72	0.00	0.00	0	.	.
Hexachloroethane	73	0.00	0.00	0	.	.
HMW_PAHs	2	90.00	90.00	1	180.00	180.00
Indeno(1,2,3-cd)pyrene	121	0.00	0.00	0	.	.
Isophorone	71	0.00	0.00	0	.	.
Lead	266	21617.86	9400.00	221	257000.0	1400.00
LMW_PAHs	2	0.00	0.00	0	.	.
Malathion	137	0.00	0.00	0	.	.
Mercury	214	159.39	29.10	142	5230.00	10.00
Methoxychlor	156	0.00	0.00	0	.	.
Methyl ethyl ketone	28	0.00	0.00	0	.	.
Methylnaphthalene, 2-	30	8.07	0.00	3	220.00	8.00
Mirex/Dechlorane	1	0.15	0.15	1	0.15	0.15
Naphthalene	119	0.00	0.00	0	.	.
Nickel	150	9800.22	7510.00	145	49000.00	2.50
Nitrosodiphenylamine, N-	73	0.00	0.00	0	.	.
Pentachlorophenol	77	2.26	0.00	2	130.00	44.00
Phenanthrene	126	1.03	0.00	7	36.00	7.00
Phenol	75	70.03	0.00	30	1110.00	7.60
Polychlorinated biphenyls	1584	0.56	0.00	30	200.00	0.40
Pyrene	123	3.57	0.00	13	95.00	13.40
Silver	141	184.54	127.00	82	1700.00	55.00
Tetrachloroethane, 1,1,2,2-	28	0.00	0.00	0	.	.
Tetrachloroethene	56	0.00	0.00	0	.	.
Tetrachloromethane	55	0.00	0.00	0	.	.
Toluene	47	0.00	0.00	0	.	.
Toxaphene	237	0.00	0.00	0	.	.
Tribromomethane/Bromoform	56	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	73	0.00	0.00	0	.	.

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Trichloroethane, 1,1,1-	52	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	56	0.00	0.00	0	.	.
Trichloroethene	53	0.00	0.00	0	.	.
Trichloromethane/Chloroform	48	0.00	0.00	0	.	.
Xylenes	28	0.00	0.00	0	.	.
Zinc	263	57339.30	41000.00	263	333000.0	5.10

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
33.6000	117.9186	82-06-27	Macoma Nasuta	S	5.00	1.00	no
			Neanthes Arenacedonta	S	5.00	2.00	no
33.6017	117.8903	82-06-27	Neanthes Arenacedonta	S	5.00	2.00	no
33.6086	117.9189	82-06-27	Macoma Nasuta	S	1.00	1.00	no
			Neanthes Arenacedonta	S	6.00	2.00	no
33.6089	117.8931	82-06-27	Macoma Nasuta	S	2.00	1.00	no
			Neanthes Arenacedonta	S	15.00	2.00	no
33.6175	117.8925	82-06-27	Neanthes Arenacedonta	S	5.00	2.00	no
33.6194	117.9036	82-06-27	Macoma Nasuta	S	2.00	1.00	no
			Neanthes Arenacedonta	S	5.00	2.00	no
33.6214	117.8950	82-06-22	Neanthes Arenacedonta	S	17.00	2.00	no
33.6222	117.8958	82-06-22	Neanthes Arenacedonta	S	3.00	2.00	no
33.6228	117.8950	82-06-22	Neanthes Arenacedonta	S	16.00	2.00	no
33.6417	117.8861	85-03-12	Macoma Nasuta	S	0.00	1.00	no
			Neanthes Arenacedonta	S	4.00	8.00	no

Aliso-San Onofre 18070301

Watershed Summary Information

Accounting Unit Name:	Laguna-San Diego Coastal
State(s):	CA
Political Boundaries:	Orange, San Diego, Riverside
Major Waterways:	San Juan Cr San Mateo Canyon Arroyo Trabusco Aliso Cr San Onofre Canyon
Number of Stations in Watershed:	Tier1 - 10 Tier2 - 22 Tier3 - .

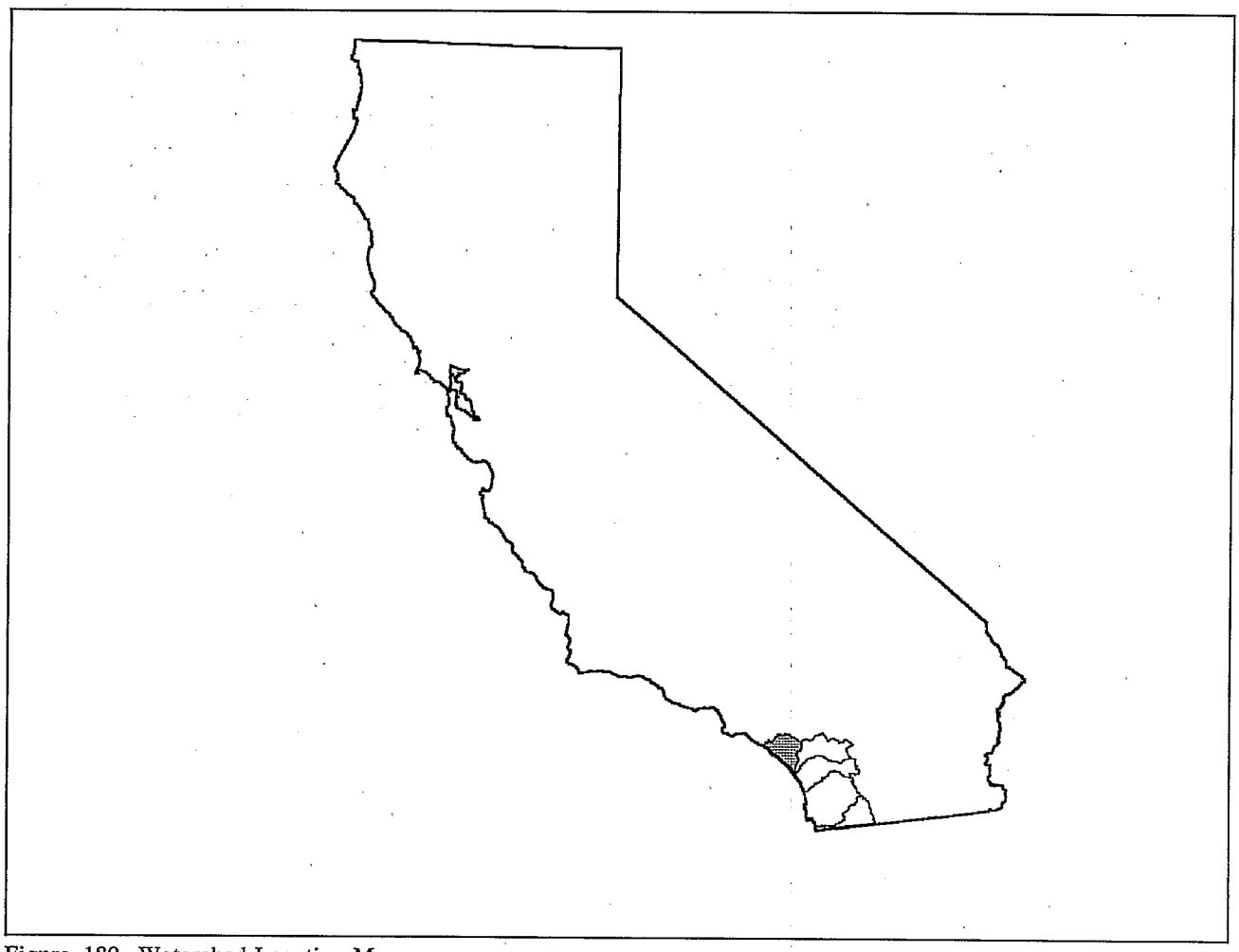

Figure 189. Watershed Location Map

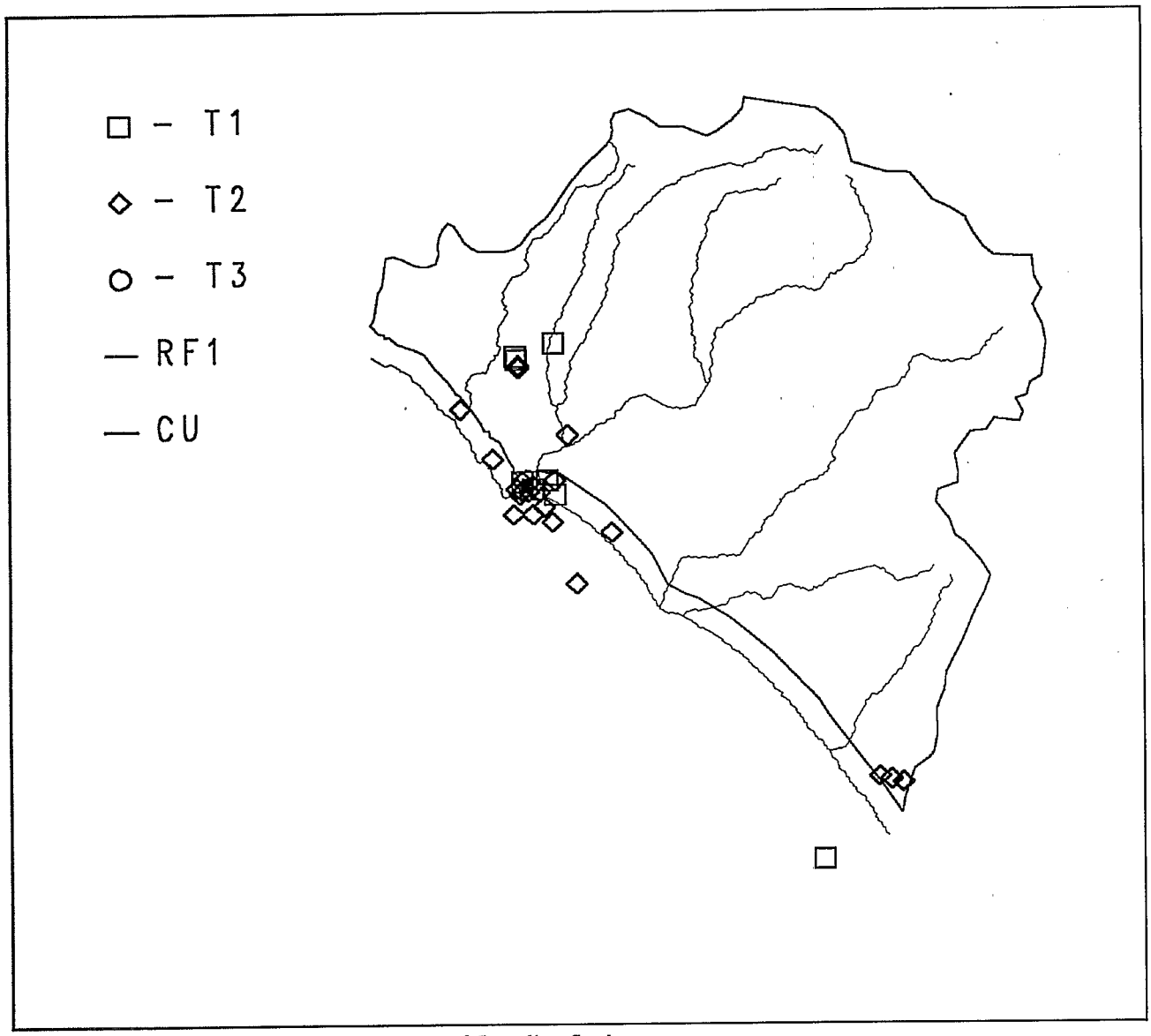

Figure 190. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: COSED Agency: NS&T
Monitoring Program: NOAA/National Status and Trends
Num. of Stations: 8 Date Range: 1984-88

Source: DMATS Agency: R9
Monitoring Program: EPA Region 9 Dredged Material Program
Num. of Stations: 4 Date Range: 1983-88

Source: SEACOE Agency: NOAA84
Monitoring Program: Benthic Surveillance 1984
Num. of Stations: 3 Date Range: 1984

Source: **SEACOE** Agency: **SCCWRP87**
Monitoring Program: **Toxicity of sediments from Southern CA**
Num. of Stations: 2 Date Range: 1987

Source: **STORET** Agency: **21CAOCFC**
Monitoring Program: **Orange County (Ca) Environ Mgnt Generl Water Quality & Sediment Data**
Num. of Stations: 15 Date Range: 1980-91

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Copper	31	22	.	22	.	22	.	.
Arsenic	30	16	.	16	.	16	.	.
Cadmium	31	16	.	16	.	16	.	.
Mercury	30	12	5	7	5	7	.	.
DDT	29	10	4	6	4	6	.	5
Polychlorinated biphenyls	27	9	.	9	.	.	.	9
Chromium	31	8	2	6	2	6	.	.
Lead	30	8	.	8	.	8	.	.
Nickel	24	8	.	8	.	8	.	.
Zinc	31	7	.	7	.	7	.	.
BHC	26	4	1	3	1	3	.	.
Chlordane	24	3	.	3	.	2	.	3
Benzo(a)anthracene	18	2	.	2	.	2	.	2
Chrysene	19	2	.	2	.	2	.	.
Endosulfan, alpha-	17	1	.	1	.	1	.	.
Silver	24	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	22	0.00	0.00	0	.	.
Acenaphthylene	19	0.00	0.00	0	.	.
Aldrin	91	0.01	0.00	2	1.10	0.20
Anthracene	18	0.50	0.00	1	9.00	9.00
Antimony	19	723.16	800.00	19	1300.00	290.00
Arsenic	126	5154.21	3900.00	123	24000.00	80.00
Benzo(a)anthracene	25	11.72	0.00	7	140.00	0.50
Benzo(a)pyrene	23	0.19	0.00	2	3.30	1.00
Benzo(b)fluoranthene	10	1.66	0.00	2	10.00	6.60
Benzo(ghi)perylene	20	0.21	0.00	2	3.30	0.90
Benzo(k)fluoranthene	19	14.47	0.00	2	140.00	135.00
Biphenyl	1	16.00	16.00	1	16.00	16.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
BHC	336	0.03	0.00	5	9.00	0.30
Cadmium	130	3033.21	461.50	106	54000.00	25.00
Chlordane	95	0.90	0.00	8	59.00	0.26
Chromium	135	30547.41	18000.00	134	303000.0	700.00
Chrysene	26	11.47	0.00	8	140.00	0.60
Copper	138	43160.87	20000.00	132	817000.0	700.00
Cresol, m-	2	0.17	0.17	2	0.17	0.17
Cresol, o	2	0.17	0.17	2	0.17	0.17
Dibenzo(a,h)anthracene	27	0.00	0.00	0	.	.
Dieldrin	93	0.03	0.00	4	1.10	0.27
DDT	331	1.30	0.00	67	54.00	0.10
Endosulfan, alpha-	60	0.42	0.00	1	25.00	25.00
Endosulfan, beta-	59	0.00	0.00	0	.	.
Endrin	86	0.00	0.00	0	.	.
Fluoranthene	28	2.86	0.00	9	23.00	0.70
Fluorene	22	0.00	0.00	0	.	.
Heptachlor	89	0.00	0.00	0	.	.
Heptachlor epoxide	90	0.00	0.00	1	0.11	0.11
Hexachlorobenzene	7	0.32	0.06	4	1.00	0.06
Hexachlorobutadiene	2	0.00	0.00	0	.	.
HMW_PAHs	5	0.00	0.00	0	.	.
Indeno(1,2,3-cd)pyrene	17	0.00	0.00	0	.	.
Lead	128	17983.44	12300.00	108	221000.0	1500.00
LMW_PAHs	5	1.04	0.00	2	3.50	1.70
Malathion	67	0.00	0.00	0	.	.
Mercury	122	220.04	0.00	51	6500.00	6.00
Methoxychlor	70	0.00	0.00	0	.	.
Methylnaphthalene, 2-	5	0.00	0.00	0	.	.
Mirex/Dechlorane	2	0.55	0.55	2	0.90	0.20
Naphthalene	27	0.30	0.00	5	3.00	1.00
Nickel	44	12007.95	11000.00	44	29500.00	900.00
Pentachlorophenol	2	0.00	0.00	0	.	.
Phenanthrene	26	2.06	0.00	7	21.00	0.90
Polychlorinated biphenyls	485	0.24	0.00	21	14.10	0.10
Pyrene	29	2.19	0.00	9	14.00	0.90
Silver	43	238.77	230.00	35	1320.00	10.00
Toxaphene	82	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Zinc	137	148789.1	59000.00	137	2220000	3200.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
33.4578	117.6750	88-02-02	Macoma Nasuta	S	0.00	0.00	no
			Nephtys Caecoides	S	7.00	8.00	no
33.4667	117.7000	88-02-02	Macoma Nasuta	S	3.00	0.00	no
			Nephtys Caecoides	S	13.00	8.00	no
33.4675	117.6747	88-02-02	Macoma Nasuta	S	1.00	0.00	no
			Nephtys Caecoides	S	6.00	8.00	no

San Diego 18070304

Watershed Summary Information

Accounting Unit Name: Laguna-San Diego Coastal

State(s): CA

Political Boundaries: San Diego

Major Waterways:
San Dieguito R
Santa Ysabel Cr
Sweetwater R
Sweetwater Res
San Vincente Res

Number of Stations in Watershed:
Tier1 - 53
Tier2 - 51
Tier3 - 3

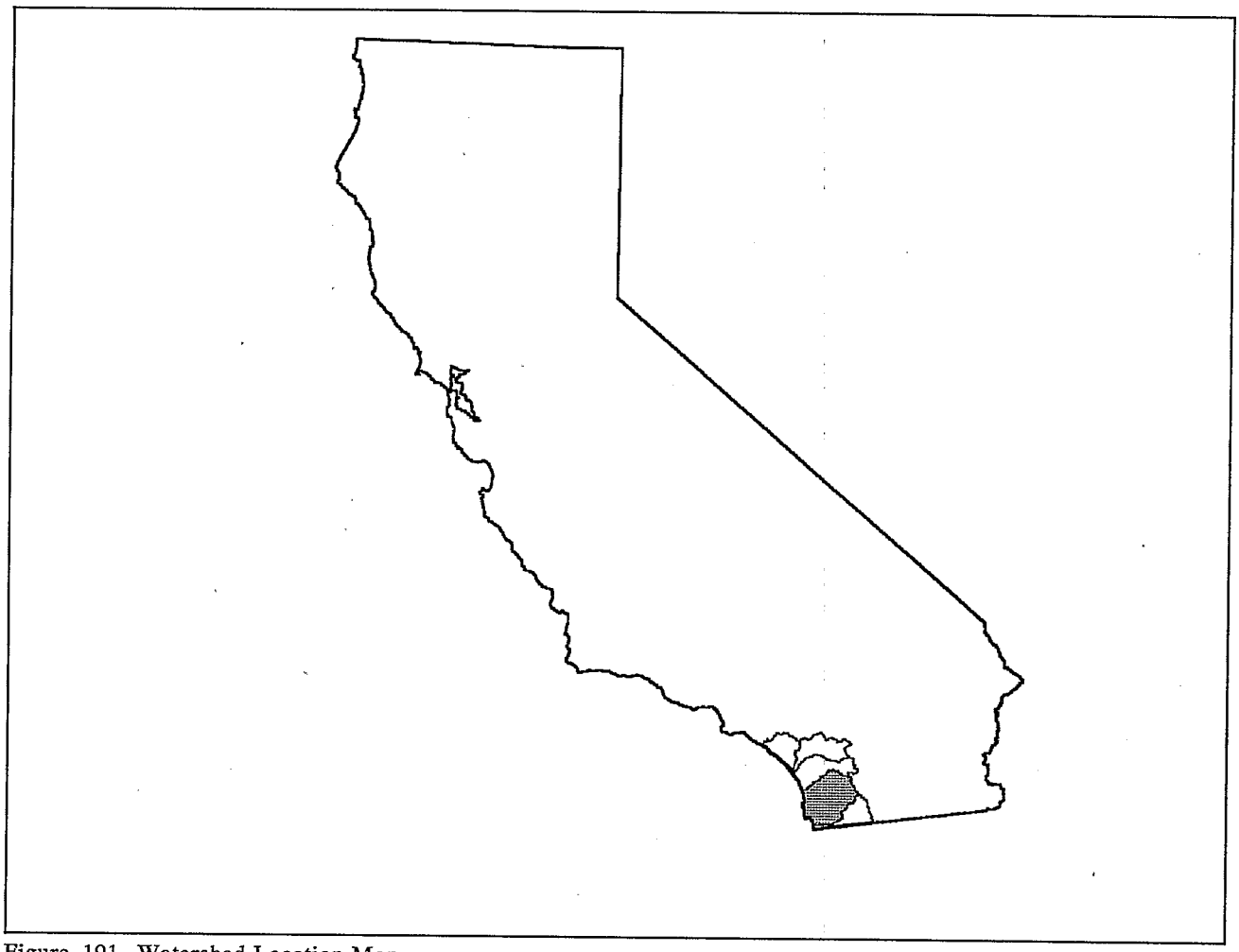

Figure 191. Watershed Location Map

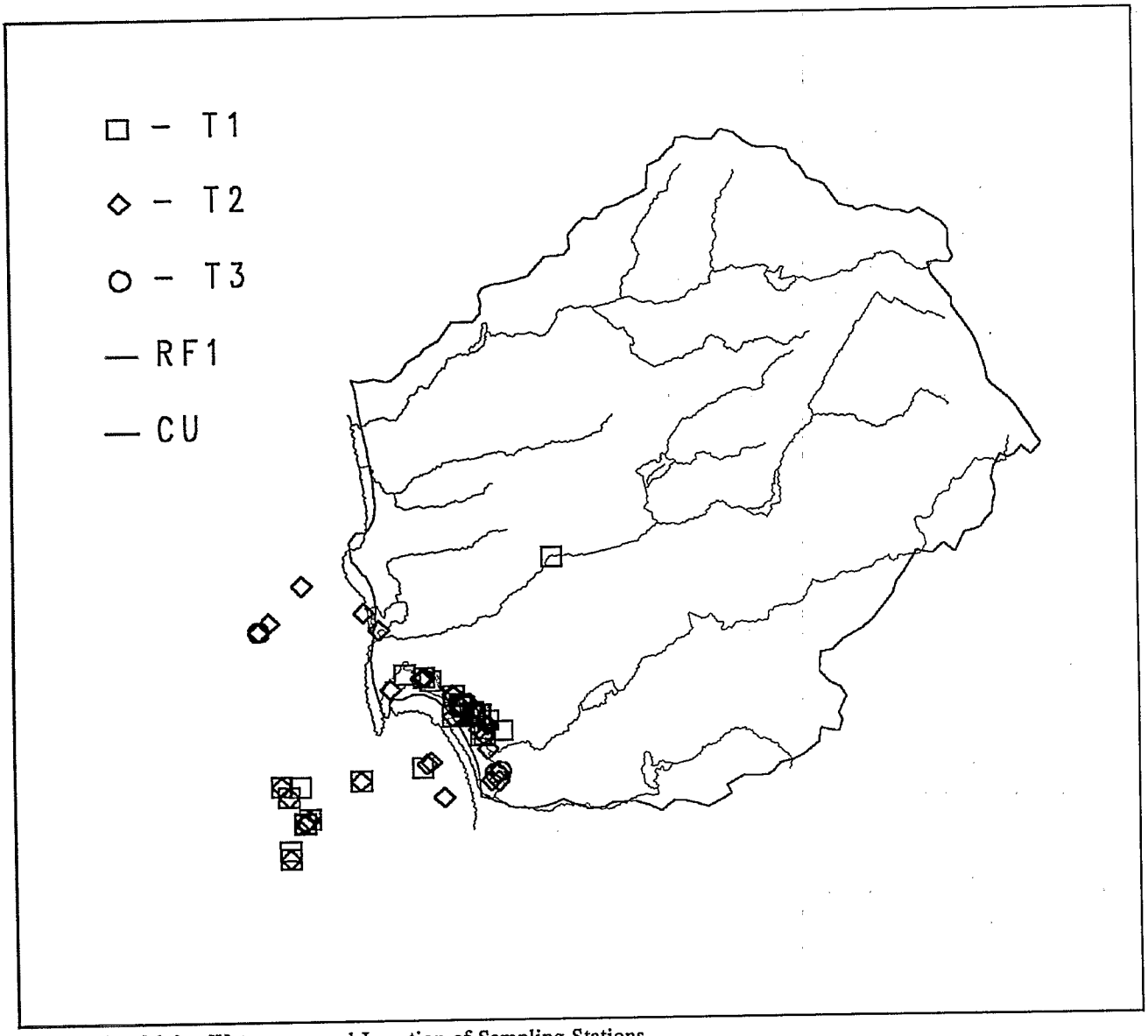

Figure 192. Major Waterways and Location of Sampling Stations

Data Source(s) Used in Evaluation

Source: **COSED** Agency: **NS&T**
Monitoring Program: **NOAA/National Status and Trends**
Num. of Stations: 34 Date Range: 1984-91

Source: **DMATS** Agency: **09**
Monitoring Program: **EPA Region 9 Dredged Material Program**
Num. of Stations: 41 Date Range: 1983-92

Source: **ODES** Agency: **L5**
Monitoring Program: **LA5 Ocean Dumping**
Num. of Stations: 27 Date Range: 1983-84

Source: **SEACOE** Agency: **SCCWRP87**
Monitoring Program: **Toxicity of sediments from Southern CA**
Num. of Stations: 3 Date Range: 1987

Source: **STORET** Agency: **11TOX09**
Monitoring Program: **USEPA Region 9 Priority Pollutant Data**
Num. of Stations: 1 Date Range: 1981

Source: **STORET** Agency: **112WRD**
Monitoring Program: **US Geological Survey Data**
Num. of Stations: 1 Date Range: 1988

Chemicals Responsible for Sampling Station Classification as Tier 1 or Tier 2

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
Polychlorinated biphenyls	93	78	33	45	30	30	4	74
Copper	106	70	.	70	.	70	.	.
DDT	84	56	11	45	11	44	.	18
Lead	106	48	.	48	.	46	.	3
Mercury	101	44	18	26	18	26	.	.
Cadmium	102	42	.	42	.	42	.	.
Arsenic	99	40	.	40	.	36	.	4
Zinc	106	39	.	39	.	39	.	.
Benzo(a)pyrene	53	37	1	36	1	28	.	37
Pyrene	55	34	1	33	1	33	.	.
Benzo(a)anthracene	51	28	1	27	1	26	.	23
Chrysene	50	28	.	28	.	28	.	.
Silver	71	27	4	23	4	23	.	.
Anthracene	45	23	1	22	1	22	.	.
Chromium	102	23	.	23	.	23	.	.
Dibenzo(a,h)anthracene	37	18	4	14	4	14	.	17
Fluoranthene	50	17	.	17	.	17	.	.
Acenaphthylene	29	16	.	16	.	16	.	.
Indeno(1,2,3-cd)pyrene	38	14	.	14	.	1	.	14
Fluorene	39	12	2	10	2	10	.	.
Nickel	61	12	.	12	.	12	.	.
Phenanthrene	48	11	.	11	.	11	.	.
Acenaphthene	32	8	.	8	.	8	.	.
Dieldrin	40	8	.	8	.	2	.	7
Naphthalene	45	8	.	8	.	8	.	.
Aldrin	56	6	.	6	.	.	.	6
Benzo(b)fluoranthene	12	6	.	6	.	.	.	6
Chlordane	34	6	.	6	.	6	.	2
BHC	67	5	2	3	2	3	.	2
Bis(2-ethylhexyl)phthalate	17	4	1	3	1	3	.	1

Classifying Parameter	Number of Stations							
	All Parameters				Aquatic Life		Human Health	
	Total	T.1&2	Tier1	Tier2	Tier1	Tier2	Tier1	Tier2
HMW_PAHs	3	3	.	3	.	3	.	.
LMW_PAHs	3	3	.	3	.	3	.	.
Benzo(ghi)perylene	37	2	.	2	.	2	.	.
Dimethyl phthalate	17	2	.	2	.	2	.	.
Di-n-butyl phthalate	17	1	1	.	1	.	.	.
Dichlorobenzene, 1,4-	7	1	1	.	1	.	.	.
Dimethylphenol, 2,4-	17	1	.	1	.	1	.	.
Phenol	17	1	.	1	.	1	.	.

Sediment Chemistry Data: Chemical Summary

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Acenaphthene	72	21.65	0.00	20	413.00	1.00
Acenaphthylene	82	24.93	0.00	35	250.00	1.00
Acrylonitrile	1	0.00	0.00	0	.	.
Aldrin	193	0.04	0.00	11	1.60	0.08
Anthracene	112	117.04	25.50	76	4200.00	0.04
Antimony	53	1058.30	630.00	53	21100.00	180.00
Arsenic	223	4327.97	1917.00	218	30700.00	12.00
Benzene	1	0.00	0.00	0	.	.
Benzo(a)anthracene	120	153.76	76.50	88	1700.00	0.06
Benzo(a)pyrene	121	220.26	52.80	81	3300.00	0.13
Benzo(b)fluoranthene	16	413.30	37.50	15	1900.00	0.14
Benzo(ghi)perylene	99	129.63	0.00	49	2000.00	0.17
Benzo(k)fluoranthene	18	305.54	35.50	16	1200.00	0.09
Benzoic acid	5	0.00	0.00	0	.	.
Benzyl alcohol	5	0.00	0.00	0	.	.
Biphenyl	11	6.73	2.00	11	36.00	0.08
Bis(2-ethylhexyl)phthalate	23	1322.46	0.00	8	18000.00	58.82
Bromophenyl phenyl ether, 4-	9	0.00	0.00	0	.	.
Butyl benzyl phthalate	23	17.67	0.00	2	354.00	52.30
BHC	626	0.02	0.00	10	5.40	0.10
Cadmium	246	778.89	626.50	235	5090.00	7.00
Chlordane	90	4.23	0.00	39	200.00	0.03
Chlorobenzene	1	0.00	0.00	0	.	.
Chromium	246	33740.41	25050.00	246	192000.0	1000.00
Chrysene	120	251.90	103.50	89	2700.00	0.12
Copper	280	72503.85	25450.00	280	1900000	1800.00
Cresol, m-	3	0.23	0.21	3	0.26	0.21
Cresol, o	42	0.02	0.00	3	0.26	0.21
Cresol, p-	39	0.00	0.00	0	.	.
Di-n-butyl phthalate	23	1542.98	0.00	6	34690.00	16.00

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Di-n-octyl phthalate	23	6.14	0.00	2	123.00	18.30
Dibenzo(a,h)anthracene	97	36.30	0.00	42	490.00	2.00
Dibenzofuran	5	0.00	0.00	0	.	.
Dibromochloromethane	1	0.00	0.00	0	.	.
Dichlorobenzene, 1,2-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,3-	9	0.00	0.00	0	.	.
Dichlorobenzene, 1,4-	9	46.67	0.00	1	420.00	420.00
Dichloroethane 1,1-	1	0.00	0.00	0	.	.
Dichloroethane 1,2-	1	0.00	0.00	0	.	.
Dichloroethene, trans-1,2-	1	0.00	0.00	0	.	.
Dichloromethane	1	30.60	30.60	1	30.60	30.60
Dichloropropane, 1,2-	1	0.00	0.00	0	.	.
Dieldrin	78	0.26	0.00	17	5.60	0.07
Diethyl phthalate	23	2.00	0.00	1	46.03	46.03
Dimethyl phthalate	23	23.48	0.00	3	240.00	101.00
Dimethylphenol, 2,4-	53	26.98	0.00	2	1100.00	330.00
DDT	754	4.57	1.00	444	150.00	0.04
Endosulfan mixed isomers	1	0.00	0.00	0	.	.
Endosulfan, alpha-	61	0.00	0.00	0	.	.
Endosulfan, beta-	61	0.00	0.00	0	.	.
Endrin	61	0.00	0.00	0	.	.
Ethylbenzene	1	0.00	0.00	0	.	.
Fluoranthene	118	225.75	100.50	89	2411.00	0.17
Fluorene	91	36.40	0.00	37	910.00	2.00
Heptachlor	67	0.04	0.00	6	1.00	0.03
Heptachlor epoxide	193	0.01	0.00	4	0.80	0.10
Hexachlorobenzene	26	0.17	0.06	17	1.00	0.01
Hexachlorobutadiene	12	0.00	0.00	0	.	.
Hexachloroethane	9	0.00	0.00	0	.	.
HMW_PAHs	3	5343.33	5150.00	3	7500.00	3380.00
Indeno(1,2,3-cd)pyrene	101	123.87	0.18	52	2000.00	0.16
Isophorone	9	0.00	0.00	0	.	.
Lead	280	34998.82	18740.00	264	353000.0	1380.00
LMW_PAHs	3	593.33	560.00	3	760.00	460.00
Mercury	254	1254.91	68.05	221	130000.0	0.20
Methoxychlor	6	0.00	0.00	0	.	.
Methylnaphthalene, 2-	3	0.00	0.00	0	.	.
Mirex/Dechlorane	5	0.92	0.70	5	2.00	0.40
Naphthalene	110	14.37	0.00	52	258.00	0.34
Nickel	100	12794.50	10750.00	100	35600.00	2000.00
Nitrosodiphenylamine, N-	9	0.00	0.00	0	.	.
Pentachlorobenzene	5	0.00	0.00	0	.	.
Pentachlorophenol	56	0.00	0.00	0	.	.
Phenanthrene	119	107.72	40.10	81	1384.00	0.07

Sediment Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Phenol	53	364.91	0.00	3	15000.00	840.00
Polychlorinated biphenyls	1156	598.11	0.00	409	190000.0	0.10
Pyrene	121	321.80	164.00	96	2700.00	0.16
Silver	137	2633.82	376.00	117	263000.0	10.00
Tetrachlorobenzene, 1,2,4,5-	5	0.00	0.00	0	.	.
Tetrachloroethane, 1,1,2,2-	1	0.00	0.00	0	.	.
Tetrachloroethene	1	0.00	0.00	0	.	.
Tetrachloromethane	1	0.00	0.00	0	.	.
Toluene	1	0.00	0.00	0	.	.
Toxaphene	61	0.00	0.00	0	.	.
Tribromomethane/Bromoform	1	0.00	0.00	0	.	.
Trichlorobenzene, 1,2,4-	9	0.00	0.00	0	.	.
Trichloroethane, 1,1,1-	1	0.00	0.00	0	.	.
Trichloroethane, 1,1,2-	1	0.00	0.00	0	.	.
Trichloroethene	1	0.00	0.00	0	.	.
Trichlorofluoromethane	1	0.00	0.00	0	.	.
Trichloromethane/Chloroform	1	0.00	0.00	0	.	.
Zinc	273	142655.4	66000.00	266	1322000	448.00

Tissue Residue Data: Chemical Summary

Tissue Parameter	Total Observations			Detected Observations		
	Num.	Mean (ppb)	Median (ppb)	Num.	Max (ppb)	Min (ppb)
Aldrin	4	0.00	0.00	0	.	.
Arsenic	4	281.42	209.42	4	581.33	125.50
BHC	12	0.00	0.00	0	.	.
Cadmium	4	449.37	468.75	4	710.00	150.00
Chromium	4	406.25	396.25	4	597.50	235.00
Copper	4	933.75	992.50	4	1065.00	685.00
DDT	12	44.37	31.38	11	122.25	3.00
Heptachlor	4	0.00	0.00	0	.	.
Heptachlor epoxide	4	0.00	0.00	0	.	.
Lead	4	2582.50	2412.50	4	4297.50	1207.50
Mercury	4	107.26	111.10	4	155.70	51.13
Polychlorinated biphenyls	16	74.45	20.67	11	356.75	5.38
Zinc	4	19133.75	17930.00	4	25400.00	15275.00

Biotoxicity Data

Lat.	Long.	Date	Species Name	Phase	% Mortality		Sign.
					Test	Control	
Monitoring Program: EPA Region 9 Dredged Material Program							
32.6811	117.1306	89-10-18	Acanthomysis Costata	E	30.00	6.67	Yes
			Macoma Nasuta	S	2.00	2.00	no
			Macoma Nasuta	S	5.00	3.00	no
			Nephtys Caecoides	S	8.00	6.00	no
			Nephtys Caecoides	S	9.50	5.00	no
			Rhepoxynius Abronius	S	69.00	11.00	Yes
			Sandab Speckled	E	23.33	3.33	no
32.6825	117.1306	89-10-18	Acanthomysis Costata	E	23.33	6.67	no
			Macoma Nasuta	S	0.00	3.00	no
			Macoma Nasuta	S	1.00	2.00	no
			Nephtys Caecoides	S	3.00	6.00	no
			Nephtys Caecoides	S	10.50	5.00	no
			Rhepoxynius Abronius	S	44.00	11.00	Yes
			Sandab Speckled	E	6.67	3.33	no
32.7022	117.1556	92-01-29	Acanthomysis Costata	S	17.00	7.00	no
			Nephtys Caecoides	S	7.00	7.00	no

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