IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS

UNITED STATES OF AMERICA,
STATE OF TEXAS,

Plaintiffs,

v.

MOBIL MINING AND MINERALS CO.

Defendant.

CIV. NO. _____

CONSENT DECREE ADDRESSING NATURAL RESOURCE DAMAGES

This Consent Decree is made and entered into by and between the United States, on behalf of the Secretary of the Interior (DOI), and the Under Secretary for Oceans and Atmosphere as the Administrator of the National Oceanic and Atmospheric Administration (NOAA) acting on behalf of the Secretary of Commerce (Federal Trustees), and the State of Texas on behalf of the Texas Natural Resources Conservation Commission (TNRCC), the Texas Parks and Wildlife Department (TPWD), and the Texas General Land Office (TGLO) (State Trustees) and Mobil Mining and Minerals Co. (Mobil).

THEREFORE, it is ORDERED, ADJUDGED AND DECREED as follows:

I. JURISDICTION AND VENUE

1. For purposes of entry and enforcement of this Decree only, the Parties to this Decree ("the Parties") agree that the Court has

personal jurisdiction over the Parties and has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and Sections 107 and 113(b) of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9607 and 9613(b) (CERCLA). Solely for the purposes of this Decree, the Parties waive all objections and defenses that they may have to the jurisdiction of the Court or to venue in this District and to service of process.

II. DEFINITIONS

2. Day - The term "day" as used in this Consent Decree shall refer to a calendar day.

III. DEFENDANT

3. Defendant Mobil Mining and Minerals Company is an operating division of Mobil Oil Corporation, which division and corporation engage in business under the laws of the State of Texas.

IV. STATEMENT OF FACTS

4. On April 6, 1992, in Pasadena, Texas, the southern retaining wall of Mobil's No. 3 gypsum stack experienced structural failure and released 45 million gallons of gypsum and acidic process water.

5. The material released was a mixture of a number of substances, but was primarily a gypsum slurry containing a 2.31

percent solution of phosphoric acid with a pH of less than two standard units. The material released was classified as hazardous because of its corrosivity and constituted a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. et seq. The material flowed into flood control ditches, open field, Cotton Patch Bayou, and eventually into the Houston Ship Channel through a barge basin. Large areas of terrestrial and aquatic habitat were physically covered by the released material along the entire course of the release. The bulk of the material was released during the first day of the incident with some release continuing for several days.

6. As a result of the release, numerous natural resources were affected. Surface water quality within approximately seven miles of the Houston Ship Channel was adversely affected for at least one week. Injuries were sustained to freshwater, marine, and estuarine wildlife, fishes, invertebrates, plants, and sediments. In addition, terrestrial wildlife, plants, and soils were impacted by the release. The services provided by these resources, such as the food, shelter, and nursery values of the affected habitats were also impaired.

7. Cotton Patch Bayou, which was severely impacted by the release, provided habitat for species of songbirds and wading birds, terrestrial reptiles, amphibians, mammals, and numerous invertebrates such as crayfish. In addition, the important water quality services of nutrient and contaminant filtration/removal, storm water/flood control, and erosion prevention which the Bayou

provided were impaired.

8. Important aquatic resources actually affected, especially in the Houston Ship Channel, included commercially and recreationally important finfish and shellfish species, mollusks, invertebrates, and plankton. A fish and macro-crustacean kill related to the release was documented in the Houston Ship Channel.

9. Mobil undertook response actions to contain, neutralize, and remove contaminated water and soil. The response action undertaken by Mobil did not provide compensation for the natural resources and natural resource services injured or lost as a result of the release of the phosphoric acid/gypsum.

10. The State and Federal Trustees are designated co-Trustees of the natural resources injured or lost as a result of the Mobil release.

V. NATURAL RESOURCE DAMAGES

11. Purpose - This Decree provides the terms upon which the United States, the State of Texas and Mobil agree to settle all claims of the Federal and State Trustees, under CERCLA and applicable state law, for natural resource damages against Mobil as a consequence of the injuries to, destruction of, or losses of natural resources or resource services which resulted from the April 6, 1992, release of hazardous substances at or from Mobil's Pasadena, Texas facility.

12. Wetlands Restoration Project - Mobil shall undertake the Wetlands Restoration Project ("Restoration Project") described in

Attachment A to this Decree. The Restoration Project provides for the restoration or replacement of equivalent natural resources or natural resource services, injured, destroyed, or lost as a result of Mobil's April 6, 1992, release by providing for the creation of approximately 17 acres of intertidal estuarine marsh and providing for the creation of freshwater wetlands and enhanced upland habitat on approximately 15 additional acres on property situated on the Houston Ship Channel at Mobil's Pasadena TX facility. The Restoration Project shall be implemented by Mobil in accordance with the particulars of Attachment A, which Attachment is specifically incorporated herein, and all other terms of this Decree.

13. Project Review Group - A. Not later than 30 days after the effective date of this Decree, a Project Review Group shall be established consisting of one representative each from NOAA, DOI, TNRCC, TGLO and TPWD. In addition, one representative from Mobil Mining and Minerals Company shall be appointed to serve as a non-voting ex-officio member of the Project Review Group. The Project Review Group shall act on behalf of the Federal and State Trustees on all matters related to the Restoration Project under the terms of this Decree including, but not limited to:

1. reviewing and approving all work plans and specifications, including performance criteria, for use in implementing and monitoring the Restoration Project,

2. overseeing implementation of such plans,

3. certifying construction of the Restoration Project is

completed, as provided in Paragraph 14.D,

4. monitoring the Restoration Project post-construction to evaluate its viability and to provide timely identification of problems or conditions to be addressed under this Decree,

5. certifying the satisfactory completion of the Restoration Project when performance criteria are achieved, as provided in Paragraph 15.

B. Decisions of the Project Review Group shall be by consensus of its voting members.

C. Not later than 30 days after the effective date of this Decree, Mobil shall designate a liaison to act as the Project Review Group's point-of-contact with Mobil and to coordinate Mobil's activities in implementing this Restoration Project in accordance with this Decree.

14. Restoration Project Planning and Implementation - A. Not later than four (4) months after the effective date of this Decree, Mobil shall submit a detailed Draft Work Plan for construction of the Restoration Project to the Project Review Group for approval. The Draft Work Plan shall (1) be consistent with Restoration Project particulars described in this Decree, including in Attachment A, (2) identify any Federal, State or local permits required to construct the Restoration Project, (3) identify a schedule for construction of the Restoration Project, including both a proposed date to begin construction and an anticipated date of completion, (4) propose, consistent with the criteria specified in Attachment A, performance criteria for use in determining

completion of the Restoration Project as provided in Paragraph 15, and (5) propose, consistent with the performance criteria and the parameters for monitoring specified in Attachment A, a detailed Restoration Project Monitoring Plan for use by the Trustees in monitoring and assessing project performance as provided in Paragraph 15.

B. The following procedures will apply to review and development of the Draft Work Plan:

1. Within 30 days of receipt of the Draft Work Plan, the Project Review Group will act to approve the Draft Work Plan or to disapprove such Plan with comments. In disapproving the Plan, the Project Review Group may not request a change to or modification of the Restoration Project, performance criteria or Restoration Project Monitoring Plan proposed therein which is inconsistent with the terms of this Decree, including Attachment A.

2. In the event of disapproval, Mobil will have 30 days following receipt of the Group's comments to revise and resubmit the Draft Work Plan for approval as provided in Paragraph 14.B.1. This process will be repeated until the Draft Work Plan is approved by the Project Review Group or until dispute resolution is invoked pursuant to Section XII of this Decree.

3. Upon approval by the Project Review Group, the Draft Work Plan becomes the Final Work Plan and shall be implemented by Mobil according to the construction schedule identified therein.

C. All permits, right-of-ways, and other documents necessary to implement the Restoration Project shall be obtained by Mobil at

its expense and Mobil shall comply with all applicable Federal, State and local laws in implementing the Restoration Project.

D. Mobil shall notify the Project Review Group upon completing construction of the Restoration Project. The Project Review Group shall inspect the Restoration Project within 30 days of receipt of such notice and, upon finding its construction is in accordance with the Final Work Plan, shall provide Mobil with a dated written statement certifying that construction is complete. The date of such statement shall constitute the "Construction Certification Date" for purposes of Paragraphs 13 and 15.

15. Restoration Project Monitoring - A. Upon certifying construction is complete, the Project Review Group shall initiate the Restoration Project Monitoring Plan approved in the Final Work Plan. Data and information provided by the Restoration Project Monitoring Plan during the two (2) year period following the Construction Certification Date will be used by the Project Review Group to evaluate the performance of the Project according to the Project performance criteria identified in the Final Work Plan.

B. The Project Review Group shall provide Mobil with a written statement certifying satisfactory completion of the Project ("Project Completion Certificate") when performance criteria have been achieved. If Mobil fails to meet performance criteria in the extended period described in Paragraph 15(C)(3) despite Mobil's best efforts as agreed by the Project Review Group, the Project Review Group shall certify completion.

C. In the event the performance criteria are not achieved

within the two year period,

1. The Project Review Group, in consultation with Mobil, will evaluate and request such actions at the Project site as may be necessary or appropriate to achieve the performance criteria.

2. Mobil shall implement such actions through work plans approved by the Project Review Group and the Project Review Group shall certify the implementation of such actions in accordance with the procedures outlined in Paragraph 14.

3. The Project Review Group may extend the two year period for evaluating Project performance according to the Project's performance criteria for an additional period of up to two (2) years.

16. Project Restoration and Maintenance - Mobil will provide up to a maximum of $100,000 in additional funds to the Trustees for use in restoring, rehabilitating, or reestablishing the Restoration Project site in the event it is damaged by hurricanes, high water flows or floods and for general care and maintenance of the Restoration Project site during the three (3) year period following the date the Restoration Project is certified complete. The use of these funds, including the amount to be provided by or credited to Mobil, shall be determined and directed by the Project Review Group and may include:

a. Replanting of vegetation,

b. Adjustments to elevations or enlargement of retention ponds and channels,

c. Adjustments to openings of inlets, placement of culverts,

and removal of silt or sediments to ensure adequate circulation and flushing of the Project site,

d. Vegetation control efforts, including removal of nuisance species,

e. Repair and control of erosional forces,

f. Removal of flotsam, trash and foreign debris from the site,

g. Repair and/or replacement of culverts, trash deflectors, rip-rap and shoring structures,

h. Repair and/or replacement of access roads and fences.

i. Such other actions as the Project Review Group may decide are necessary or appropriate to restore or maintain the Restoration Project site in accordance with this Paragraph.

17. Mobil shall provide the Project Review Group with an accounting of restoration and maintenance expenditures under Paragraph 16 on a semiannual basis.

18. Deed Restriction - Within six (6) months following the Construction Certification Date, Mobil shall act to place and record a conservation easement or other form of restriction on the deed for the Project site which is adequate to preserve the property as a conservation site or for conservation uses in perpetuity. Language for use in the conservation easement or deed restriction must be approved by the United States and the State of Texas. Mobil shall record such easement or restriction on the deed for the project site property in the public records of Harris County, Texas, and deliver proof of recordation to the United

States, the State of Texas and to the Project Review Group within 30 days of recording.

VI. PAST COSTS REIMBURSEMENT

19. The Trustees expended time, funds, and resources investigating the April 6, 1992, release and the injuries and losses to natural resources which resulted from the incident. As part of this settlement, within 30 days of the effective date of this Decree, Mobil shall reimburse past costs incurred by the State and Federal Trustees through March 4, 1995. Such costs are identified and shall be paid by certified check referencing the "Mobil Mining and Minerals Company, Pasadena, Texas, Natural Resource Damages Agreement for Phosphoric Acid/Gypsum Release, April 6, 1992" as follows:

a. TPWD: A check in the amount of $15,892.07 payable to the "Texas Parks and Wildlife Department" shall be sent to:

Texas Parks and Wildlife Department
Kay Hiscoe, Cashier & Revenue Control
4200 Smith School Road
Austin, Texas 78744

b. TNRCC: A check in the amount of $31,383.97 payable to the "Texas Natural Resource Conservation Commission" and with the additional notation "PCA 49360/Project No. 49360" shall be sent to:

Texas Natural Resource Conservation Commission
P.O. Box 13088, Capitol Station
Austin, Texas 78711-3088

c. TGLO: A check in the amount of $5,924.59 payable to the "Texas General Land Office" shall be sent to:

Texas General Land Office
Ms. Diane Hyatt, NRDA Director, Legal Services
1700 North Congress, Room 730
Austin, Texas 78701

d. DOI/FWS: A check in the amount of $3,761.00 payable to the "Secretary, Department of the Interior, with the additional notation "NRDAR Account No. 14X1618" shall be sent to:

Chief, Division of Finance
U.S. Fish and Wildlife Service
4401 North Fairfax Drive, Room 380
Arlington, VA 22203

e. NOAA: A check in the amount of $73,139.94 payable to "NOAA, Department of Commerce" shall be sent to:

NOAA Finance Services Division
Bills and Collection Unit, Caller Service 7025
20020 Century Boulevard
Germantown, MD 20874

with a copy of the check sent to:

NOAA Office of General Counsel
9721 Executive Center Dr. N., Suite 137
St. Petersburg, Florida 33702
ATTN: Stephanie Fluke

VII. FUTURE COSTS REIMBURSEMENT

20. The State and Federal Trustees have incurred and will continue to incur administrative costs and expenses after March 4, 1995, in connection with the development, implementation, and monitoring of the Project and with other activities contemplated by this Decree. The future costs are in addition to the funding described in Paragraph 16 of this Decree. Mobil agrees to reimburse such Project Review Group costs and expenses incurred after March 4, 1995, consistent with this Decree. The Project Review Group will provide Mobil with a biannual itemized statement

of such costs and expenses and Mobil shall pay such costs within 60 days of receipt of each statement in the manner provided in Paragraph 19, unless otherwise instructed by the Project Review Group. Mobil's liability for future costs shall terminate with the termination of this Decree.

VIII. ACCESS

21. Commencing upon the date of entry of this Decree, Mobil agrees to provide the United States and the State of Texas, including the State and Federal Trustees, their representatives, and contractors, access at all reasonable times to the Project site and to any other property to which access is required for this implementation of this Decree, to the extent access is controlled by Mobil, for the purposes of conducting any activity related to this Decree including, but not limited to:

a. overseeing or monitoring the implementation of the Project;

b. verifying any data or information submitted to the United States and the State of Texas;

c. conducting investigations related to implementation of the Project;

d. obtaining samples;

e. inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Mobil or their agents, consistent with Section VIII; and

f. assessing Mobil's compliance with this Decree.

22. Notwithstanding any provision of this Decree, the United States and the State of Texas retain all access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, or any other applicable Federal or State statute or regulation.

IX. ACCESS TO INFORMATION

23. Mobil shall provide to the State and Federal Trustees, upon request, copies of all documents and information within their possession or control relating to the Project site or the implementation of this Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the implementation of the Project. Mobil shall also make available to the Project Review Group, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the implementation, condition or performance of the Project.

X. APPLICABILITY OF CONSENT DECREE

24. The provisions of this Decree shall be binding on and inure to the benefit of the United States and the State of Texas and be binding on and inure to the benefit of Mobil, its officers, directors, employees, agents, predecessors, subsidiaries,

affiliates, parents, successors, and assigns. No change in the ownership or organizational form or status of Mobil shall affect its rights or obligations under this Decree.

XI. STIPULATED PENALTIES

25. The defendant shall pay stipulated penalties for failure to comply with the following requirements of the Restoration Project, unless excused under this Section on the basis of a Force Majeure event:

a.	Failure to timely submit Draft or Revised Work Plans under Paragraphs 14 & 15	$1000/day
b.	Failure to timely comply with schedules approved under Paragraphs 14 & 15 for implementing Final Work Plans	$1000/day
c.	Failure to timely provide funds as directed under Paragraph 16 for restoration and maintenance activities	$1000/day
d.	Failure to provide timely access to the Restoration Project site or information as required by Sections VIII & IX.	$1000/day
e.	Failure to record deed restriction as required by Paragraph 18	$1000/day

26. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Mobil or of any entity controlled by Mobil, including, but not limited to, its contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Mobil's best efforts to fulfill the obligation. The requirement that Mobil exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential

force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the obligations of this Decree.

27. If any event occurs or has occurred that may delay the performance of any obligation under this Decree, whether or not caused by a force majeure event, Mobil shall immediately notify orally the Project Review Group. Within seven (7) days thereafter, Mobil shall provide a written explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Mobil's rationale for attributing such delay to a force majeure event if it intends to assert such a claim and a statement as to whether, in the opinion of Mobil, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Mobil shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude Mobil from asserting any claim of force majeure for that event. Mobil shall be deemed to have notice of any circumstance of which their contractors or subcontractors had or should have had notice.

28. If the Project Review Group agrees that a force majeure event has occurred and that it caused a delay or anticipated delay, the only effect of the force majeure event shall be that the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by the Project Review Group for such time as is necessary to complete those obligations. An extension of the time for performance of the obligation affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If the Project Review Group does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the Project Review Group will notify Mobil in writing of that decision. If the Project Review Group agrees that the delay is attributable to a force majeure event, the Project Review Group will notify Mobil, in writing, of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

29. No later than 15 days after receipt of the Project Review Group's notice of decision relating to a force majeure claim, Mobil may elect to invoke the dispute resolution procedures set forth in Section XII (Dispute Resolution). In any such proceeding, Mobil shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and

mitigate the effects of the delay and that Mobil complied with the requirements of Paragraphs 27, above. If Mobil carries this burden, the delay at issue shall not be deemed to be a violation by Mobil of the affected obligation under this Consent Decree.

30. All penalties under this Section shall begin to accrue on the day after Mobil's performance or action is due and shall continue to accrue until the end of the day such inaction or nonperformance is fully cured by Mobil. Penalties may accrue simultaneously for separate violations of this Decree.

31. All penalties due under this section shall be due and payable within 30 days of Mobil's receipt of a demand for payment from the United States and the State of Texas, unless Mobil invokes dispute resolution under Section XII of this Decree.

32. In the event Mobil fails to pay stipulated penalties when due, the United States or the State of Texas may institute legal proceedings to collect such penalties, as well as interest accruing on any unpaid balance, as provided by law. Pursuant to Paragraph 36, however, stipulated penalties continue to accrue during dispute resolution but are not due and payable until resolution of the dispute.

XII. DISPUTE RESOLUTION

33. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedure of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth

in this Section shall not apply to actions by the United States or the State of Texas to enforce obligations of Mobil that have not been disputed in accordance with this Section.

34. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 30 days from the time the dispute arises, unless agreed to in writing by Mobil and the Project Review Group. A dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

35. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by the Project Review Group shall be considered binding unless, within 20 days after the conclusion of the informal negotiation period, Mobil invokes formal dispute resolution by filing with the Court and serving on the parties a notice of judicial appeal setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Mobil's notice of judicial appeal.

36. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone, or affect in any way any obligations of Mobil under this Consent Decree not directly in dispute, unless the Project Review Group agrees or the Court finds

otherwise. Further, if any project evaluation or work performance schedules have been stayed due to the invocation of formal dispute resolution, the affected schedules for performance shall be extended by the period of time that the schedule was interrupted due to Dispute Resolution. Stipulated penalties with respect to the disputed matters shall continue to accrue but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that Mobil does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XI.

XIII. INDEMNIFICATION

37. Mobil shall indemnify, save and hold harmless the United States and the State of Texas from any and all claims, causes of action or liabilities arising from the negligent acts or omissions or willful misconduct of Mobil in implementing this Decree.

XIV. EFFECT OF SETTLEMENT/ENTRY OF JUDGMENT

38. This Decree was negotiated and executed by the Parties hereto in good faith at arms length to avoid expensive and protracted litigation and is a fair and equitable settlement of claims which were contested. The execution of this Decree is not, and shall not constitute or be construed as, an admission of liability by any Party, nor is it an admission or denial of any of

the factual allegations set out in the Complaint or an admission of violation of any law, rule, regulation, or policy by any of the Parties to the Decree.

XV. COVENANT NOT TO SUE

39. Except as specifically provided in Section XVI of the Decree, the United States and the State of Texas each hereby covenant not to sue or to take any other civil or administrative action against Mobil for natural resource damages caused by the April 6, 1992, release described in Section III under CERCLA, 42 U.S.C. §§ 9601 et seq., or any other federal, state or common law. These covenants not to sue shall take effect upon the date of entry of the Decree, and shall remain in effect as long as Mobil fulfills its obligations under this Decree.

XVI. RESERVATION OF RIGHTS

40. Notwithstanding any other provision of this Decree, the United States and the State of Texas reserve the right to institute proceedings against Mobil in this action or in a new action seeking recovery of Natural Resource Damages, as defined herein; based on (1) conditions unknown to the United States or the State of Texas on the Date of Execution of the Decree that contribute to injury to, destruction of, or loss of natural resources ("Unknown Conditions"); or (2) information received by the United States or the State of Texas after the Date of Execution of the Decree which indicates there is injury to, destruction of, or loss of natural

resources, of a type unknown to Plaintiffs as of the Date of Execution of the Decree ("New Information").

41. Conditions or information which affect only the United States' or State of Texas' assessment of the magnitude of the injury, destruction or loss to natural resources, or the estimate of or actual natural resource damages shall not be considered to be Unknown Conditions or New Information within the meaning of Paragraph 40.

42. Notwithstanding any other provision of this Decree, the covenants not to sue in Section XV shall apply only to matters addressed in the Decree and specifically shall not apply to the following claims:

a. claims based on a failure by Mobil to satisfy the requirements of the Decree;

b. claims for criminal liability; and,

c. claims for natural resource damages from the past, present or future disposal, release or threat of release of hazardous substances that do not arise from disposal, release and threat of release of such hazardous substances by Mobil from the Pasadena facility on April 6, 1992.

XVII. COVENANTS BY SETTLING DEFENDANT

43. Mobil hereby covenants not to sue or to bring any administrative action of any kind against the United States or the State of Texas, or any agency or instrumentality of either, for any

claims arising from or relating to the April 6, 1992 spill described in Section IV, pursuant to any federal, state, or common law, including but not limited to, any direct or indirect claims pursuant to Section 112 of CERCLA, 42 U.S.C. § 9612, against the Hazardous Substance Superfund, pursuant to Section 113(f) of CERCLA, 42 U.S.C. § 9613(f), for contribution, or pursuant to the Federal Torts Claims Act, 28 U.S.C. § 1346(b) and §§ 2671, et seq.

XVIII. VOIDABILITY

44. If for any reason the District Court should decline to approve entry of this Decree in the form presented, this Decree and the settlement embodied herein shall be voidable by written notice to the other Parties at the sole discretion of any Party to this Decree, and the terms hereof may not be used as evidence in any litigation.

XIX. COMPLIANCE WITH OTHER LAWS

45. The Decree shall not be construed in any way to relieve Mobil or any other person or entity from the obligation to comply with any federal, state, or local law.

XX. RETENTION OF JURISDICTION

46. The Court shall retain jurisdiction of this matter for the purpose of entering such further order, direction, or relief as may be necessary or appropriate for the construction, implementation, or enforcement of this Decree.

XXI. AUTHORIZED REPRESENTATIVE

47. Each undersigned representative of a Party to the Decree certifies that he or she is fully authorized to enter into the terms and conditions of the Decree and to legally execute and bind that Party to this Decree.

XXII. MODIFICATION

48. The terms of this Decree may be modified only by a subsequent written agreement signed by all of the Parties signatory hereto, and approved by the Court as a modification to this Decree.

XXIII. TERMINATION

49. This Consent Decree shall terminate three years from the date the Project Review Group certifies completion of the Restoration Project under Paragraph 15 of this Decree or at the conclusion of the period provided for use of restoration and maintenance funds under Paragraph 16 where such period is extended due to the invocation of Dispute Resolution under Paragraph 36, whichever is later.

XXIV. PUBLIC COMMENT

50. The Parties agree that this Decree will be subject to a 30-day public comment period as provided in 28 C.F.R. § 50.7. Plaintiffs reserve the right to withdraw their consent to the Decree if comments received disclose facts or considerations which show that the Decree is inappropriate, improper, or inadequate.

Mobil consents to the entry of this Decree by the Court without further notice.

XXV. NOTICE

51. Any notice required hereunder shall be in writing and shall be delivered by hand, facsimile, or overnight mail as follows:

Notice to Plaintiffs:

Notice to Mobil:

52. Each party to this Decree may change the person(s) it has designated to receive notice for that Party, or the addresses for such notice, by serving said notice on each of the other Parties to the Decree.

50. By signature below, all Parties consent to this Consent Decree.

FOR THE PLAINTIFF UNITED STATES:

LOIS J. SCHIFFER
Acting Assistant Attorney General
Environment and Natural Resources
Division
U.S. Department of Justice
Washington, DC 20530

ANGELA O'CONNELL
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources
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Washington, DC 20044-7611
(202) 514-5315

FOR THE PLAINTIFF STATE OF TEXAS:

ALBERT M. BRONSON
Assistant Attorney General
State Bar No. 03057500
Natural Resource Division
P.O. Box 12548, Capitol Station
Austin, Texas 78711-2548
(512) 463-2012

FOR THE DEFENDANT MOBIL:

_____

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS

UNITED STATES OF AMERICA, STATE OF TEXAS, Plaintiffs, v. MOBIL MINING AND MINERALS CO. Defendant.	)	CIV. NO. _____

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3. Defendant Mobil Mining and Minerals Company is an operating division of Mobil Oil Corporation, which division and corporation engage in business under the laws of the State of Texas.

IV. STATEMENT OF FACTS

4. On April 6, 1992, in Pasadena, Texas, the southern retaining wall of Mobil's No. 3 gypsum stack experienced structural failure and released 45 million gallons of gypsum and acidic process water.

5. The material released was a mixture of a number of substances, but was primarily a gypsum slurry containing a 2.31

percent solution of phosphoric acid with a pH of less than two standard units. The material released was classified as hazardous because of its corrosivity and constituted a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. et seq. The material flowed into flood control ditches, open field, Cotton Patch Bayou, and eventually into the Houston Ship Channel through a barge basin. Large areas of terrestrial and aquatic habitat were physically covered by the released material along the entire course of the release. The bulk of the material was released during the first day of the incident with some release continuing for several days.

6. As a result of the release, numerous natural resources were affected. Surface water quality within approximately seven miles of the Houston Ship Channel was adversely affected for at least one week. Injuries were sustained to freshwater, marine, and estuarine wildlife, fishes, invertebrates, plants, and sediments. In addition, terrestrial wildlife, plants, and soils were impacted by the release. The services provided by these resources, such as the food, shelter, and nursery values of the affected habitats were also impaired.

7. Cotton Patch Bayou, which was severely impacted by the release, provided habitat for species of songbirds and wading birds, terrestrial reptiles, amphibians, mammals, and numerous invertebrates such as crayfish. In addition, the important water quality services of nutrient and contaminant filtration/removal, storm water/flood control, and erosion prevention which the Bayou

provided were impaired.

8. Important aquatic resources actually affected, especially in the Houston Ship Channel, included commercially and recreationally important finfish and shellfish species, mollusks, invertebrates, and plankton. A fish and macro-crustacean kill related to the release was documented in the Houston Ship Channel.

9. Mobil undertook response actions to contain, neutralize, and remove contaminated water and soil. The response action undertaken by Mobil did not provide compensation for the natural resources and natural resource services injured or lost as a result of the release of the phosphoric acid/gypsum.

10. The State and Federal Trustees are designated co-Trustees of the natural resources injured or lost as a result of the Mobil release.

V. NATURAL RESOURCE DAMAGES

11. Purpose - This Decree provides the terms upon which the United States, the State of Texas and Mobil agree to settle all claims of the Federal and State Trustees, under CERCLA and applicable state law, for natural resource damages against Mobil as a consequence of the injuries to, destruction of, or losses of natural resources or resource services which resulted from the April 6, 1992, release of hazardous substances at or from Mobil's Pasadena, Texas facility.

12. Wetlands Restoration Project - Mobil shall undertake the Wetlands Restoration Project ("Restoration Project") described in

Attachment A to this Decree. The Restoration Project provides for the restoration or replacement of equivalent natural resources or natural resource services, injured, destroyed, or lost as a result of Mobil's April 6, 1992, release by providing for the creation of approximately 17 acres of intertidal estuarine marsh and providing for the creation of freshwater wetlands and enhanced upland habitat on approximately 15 additional acres on property situated on the Houston Ship Channel at Mobil's Pasadena TX facility. The Restoration Project shall be implemented by Mobil in accordance with the particulars of Attachment A, which Attachment is specifically incorporated herein, and all other terms of this Decree.

13. Project Review Group - A. Not later than 30 days after the effective date of this Decree, a Project Review Group shall be established consisting of one representative each from NOAA, DOI, TNRCC, TGLO and TPWD. In addition, one representative from Mobil Mining and Minerals Company shall be appointed to serve as a non-voting ex-officio member of the Project Review Group. The Project Review Group shall act on behalf of the Federal and State Trustees on all matters related to the Restoration Project under the terms of this Decree including, but not limited to:

1. reviewing and approving all work plans and specifications, including performance criteria, for use in implementing and monitoring the Restoration Project,

2. overseeing implementation of such plans,

3. certifying construction of the Restoration Project is

completed, as provided in Paragraph 14.D,

4. monitoring the Restoration Project post-construction to evaluate its viability and to provide timely identification of problems or conditions to be addressed under this Decree,

5. certifying the satisfactory completion of the Restoration Project when performance criteria are achieved, as provided in Paragraph 15.

B. Decisions of the Project Review Group shall be by consensus of its voting members.

C. Not later than 30 days after the effective date of this Decree, Mobil shall designate a liaison to act as the Project Review Group's point-of-contact with Mobil and to coordinate Mobil's activities in implementing this Restoration Project in accordance with this Decree.

14. Restoration Project Planning and Implementation - A. Not later than four (4) months after the effective date of this Decree, Mobil shall submit a detailed Draft Work Plan for construction of the Restoration Project to the Project Review Group for approval. The Draft Work Plan shall (1) be consistent with Restoration Project particulars described in this Decree, including in Attachment A, (2) identify any Federal, State or local permits required to construct the Restoration Project, (3) identify a schedule for construction of the Restoration Project, including both a proposed date to begin construction and an anticipated date of completion, (4) propose, consistent with the criteria specified in Attachment A, performance criteria for use in determining

completion of the Restoration Project as provided in Paragraph 15, and (5) propose, consistent with the performance criteria and the parameters for monitoring specified in Attachment A, a detailed Restoration Project Monitoring Plan for use by the Trustees in monitoring and assessing project performance as provided in Paragraph 15.

B. The following procedures will apply to review and development of the Draft Work Plan:

1. Within 30 days of receipt of the Draft Work Plan, the Project Review Group will act to approve the Draft Work Plan or to disapprove such Plan with comments. In disapproving the Plan, the Project Review Group may not request a change to or modification of the Restoration Project, performance criteria or Restoration Project Monitoring Plan proposed therein which is inconsistent with the terms of this Decree, including Attachment A.

2. In the event of disapproval, Mobil will have 30 days following receipt of the Group's comments to revise and resubmit the Draft Work Plan for approval as provided in Paragraph 14.B.1. This process will be repeated until the Draft Work Plan is approved by the Project Review Group or until dispute resolution is invoked pursuant to Section XII of this Decree.

3. Upon approval by the Project Review Group, the Draft Work Plan becomes the Final Work Plan and shall be implemented by Mobil according to the construction schedule identified therein.

C. All permits, right-of-ways, and other documents necessary to implement the Restoration Project shall be obtained by Mobil at

its expense and Mobil shall comply with all applicable Federal, State and local laws in implementing the Restoration Project.

D. Mobil shall notify the Project Review Group upon completing construction of the Restoration Project. The Project Review Group shall inspect the Restoration Project within 30 days of receipt of such notice and, upon finding its construction is in accordance with the Final Work Plan, shall provide Mobil with a dated written statement certifying that construction is complete. The date of such statement shall constitute the "Construction Certification Date" for purposes of Paragraphs 13 and 15.

15. Restoration Project Monitoring - A. Upon certifying construction is complete, the Project Review Group shall initiate the Restoration Project Monitoring Plan approved in the Final Work Plan. Data and information provided by the Restoration Project Monitoring Plan during the two (2) year period following the Construction Certification Date will be used by the Project Review Group to evaluate the performance of the Project according to the Project performance criteria identified in the Final Work Plan.

B. The Project Review Group shall provide Mobil with a written statement certifying satisfactory completion of the Project ("Project Completion Certificate") when performance criteria have been achieved. If Mobil fails to meet performance criteria in the extended period described in Paragraph 15(C)(3) despite Mobil's best efforts as agreed by the Project Review Group, the Project Review Group shall certify completion.

C. In the event the performance criteria are not achieved

within the two year period,

1. The Project Review Group, in consultation with Mobil, will evaluate and request such actions at the Project site as may be necessary or appropriate to achieve the performance criteria.

2. Mobil shall implement such actions through work plans approved by the Project Review Group and the Project Review Group shall certify the implementation of such actions in accordance with the procedures outlined in Paragraph 14.

3. The Project Review Group may extend the two year period for evaluating Project performance according to the Project's performance criteria for an additional period of up to two (2) years.

16. Project Restoration and Maintenance - Mobil will provide up to a maximum of $100,000 in additional funds to the Trustees for use in restoring, rehabilitating, or reestablishing the Restoration Project site in the event it is damaged by hurricanes, high water flows or floods and for general care and maintenance of the Restoration Project site during the three (3) year period following the date the Restoration Project is certified complete. The use of these funds, including the amount to be provided by or credited to Mobil, shall be determined and directed by the Project Review Group and may include:

a. Replanting of vegetation,

b. Adjustments to elevations or enlargement of retention ponds and channels,

c. Adjustments to openings of inlets, placement of culverts,

and removal of silt or sediments to ensure adequate circulation and flushing of the Project site,

d. Vegetation control efforts, including removal of nuisance species,

e. Repair and control of erosional forces,

f. Removal of flotsam, trash and foreign debris from the site,

g. Repair and/or replacement of culverts, trash deflectors, rip-rap and shoring structures,

h. Repair and/or replacement of access roads and fences.

i. Such other actions as the Project Review Group may decide are necessary or appropriate to restore or maintain the Restoration Project site in accordance with this Paragraph.

17. Mobil shall provide the Project Review Group with an accounting of restoration and maintenance expenditures under Paragraph 16 on a semiannual basis.

18. Deed Restriction - Within six (6) months following the Construction Certification Date, Mobil shall act to place and record a conservation easement or other form of restriction on the deed for the Project site which is adequate to preserve the property as a conservation site or for conservation uses in perpetuity. Language for use in the conservation easement or deed restriction must be approved by the United States and the State of Texas. Mobil shall record such easement or restriction on the deed for the project site property in the public records of Harris County, Texas, and deliver proof of recordation to the United

States, the State of Texas and to the Project Review Group within 30 days of recording.

VI. PAST COSTS REIMBURSEMENT

19. The Trustees expended time, funds, and resources investigating the April 6, 1992, release and the injuries and losses to natural resources which resulted from the incident. As part of this settlement, within 30 days of the effective date of this Decree, Mobil shall reimburse past costs incurred by the State and Federal Trustees through March 4, 1995. Such costs are identified and shall be paid by certified check referencing the "Mobil Mining and Minerals Company, Pasadena, Texas, Natural Resource Damages Agreement for Phosphoric Acid/Gypsum Release, April 6, 1992" as follows:

a. TPWD: A check in the amount of $15,892.07 payable to the "Texas Parks and Wildlife Department" shall be sent to:

Texas Parks and Wildlife Department
Kay Hiscoe, Cashier & Revenue Control
4200 Smith School Road
Austin, Texas 78744

b. TNRCC: A check in the amount of $31,383.97 payable to the "Texas Natural Resource Conservation Commission" and with the additional notation "PCA 49360/Project No. 49360" shall be sent to:

Texas Natural Resource Conservation Commission
P.O. Box 13088, Capitol Station
Austin, Texas 78711-3088

c. TGLO: A check in the amount of $5,924.59 payable to the "Texas General Land Office" shall be sent to:

Texas General Land Office
Ms. Diane Hyatt, NRDA Director, Legal Services
1700 North Congress, Room 730
Austin, Texas 78701

d. DOI/FWS: A check in the amount of $3,761.00 payable to the "Secretary, Department of the Interior, with the additional notation "NRDAR Account No. 14X1618" shall be sent to:

Chief, Division of Finance
U.S. Fish and Wildlife Service
4401 North Fairfax Drive, Room 380
Arlington, VA 22203

e. NOAA: A check in the amount of $73,139.94 payable to "NOAA, Department of Commerce" shall be sent to:

NOAA Finance Services Division
Bills and Collection Unit, Caller Service 7025
20020 Century Boulevard
Germantown, MD 20874

with a copy of the check sent to:

NOAA Office of General Counsel
9721 Executive Center Dr. N., Suite 137
St. Petersburg, Florida 33702
ATTN: Stephanie Fluke

VII. FUTURE COSTS REIMBURSEMENT

20. The State and Federal Trustees have incurred and will continue to incur administrative costs and expenses after March 4, 1995, in connection with the development, implementation, and monitoring of the Project and with other activities contemplated by this Decree. The future costs are in addition to the funding described in Paragraph 16 of this Decree. Mobil agrees to reimburse such Project Review Group costs and expenses incurred after March 4, 1995, consistent with this Decree. The Project Review Group will provide Mobil with a biannual itemized statement

of such costs and expenses and Mobil shall pay such costs within 60 days of receipt of each statement in the manner provided in Paragraph 19, unless otherwise instructed by the Project Review Group. Mobil's liability for future costs shall terminate with the termination of this Decree.

VIII. ACCESS

21. Commencing upon the date of entry of this Decree, Mobil agrees to provide the United States and the State of Texas, including the State and Federal Trustees, their representatives, and contractors, access at all reasonable times to the Project site and to any other property to which access is required for this implementation of this Decree, to the extent access is controlled by Mobil, for the purposes of conducting any activity related to this Decree including, but not limited to:

a. overseeing or monitoring the implementation of the Project;

b. verifying any data or information submitted to the United States and the State of Texas;

c. conducting investigations related to implementation of the Project;

d. obtaining samples;

e. inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Mobil or their agents, consistent with Section VIII; and

f. assessing Mobil's compliance with this Decree.

22. Notwithstanding any provision of this Decree, the United States and the State of Texas retain all access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, or any other applicable Federal or State statute or regulation.

IX. ACCESS TO INFORMATION

23. Mobil shall provide to the State and Federal Trustees, upon request, copies of all documents and information within their possession or control relating to the Project site or the implementation of this Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the implementation of the Project. Mobil shall also make available to the Project Review Group, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the implementation, condition or performance of the Project.

X. APPLICABILITY OF CONSENT DECREE

24. The provisions of this Decree shall be binding on and inure to the benefit of the United States and the State of Texas and be binding on and inure to the benefit of Mobil, its officers, directors, employees, agents, predecessors, subsidiaries,

affiliates, parents, successors, and assigns. No change in the ownership or organizational form or status of Mobil shall affect its rights or obligations under this Decree.

XI. STIPULATED PENALTIES

25. The defendant shall pay stipulated penalties for failure to comply with the following requirements of the Restoration Project, unless excused under this Section on the basis of a Force Majeure event:

a.	Failure to timely submit Draft or Revised Work Plans under Paragraphs 14 & 15	$1000/day
b.	Failure to timely comply with schedules approved under Paragraphs 14 & 15 for implementing Final Work Plans	$1000/day
c.	Failure to timely provide funds as directed under Paragraph 16 for restoration and maintenance activities	$1000/day
d.	Failure to provide timely access to the Restoration Project site or information as required by Sections VIII & IX.	$1000/day
e.	Failure to record deed restriction as required by Paragraph 18	$1000/day

26. "Force Majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of Mobil or of any entity controlled by Mobil, including, but not limited to, its contractors and subcontractors, that delays or prevents the performance of any obligation under this Consent Decree despite Mobil's best efforts to fulfill the obligation. The requirement that Mobil exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential

force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the obligations of this Decree.

27. If any event occurs or has occurred that may delay the performance of any obligation under this Decree, whether or not caused by a force majeure event, Mobil shall immediately notify orally the Project Review Group. Within seven (7) days thereafter, Mobil shall provide a written explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Mobil's rationale for attributing such delay to a force majeure event if it intends to assert such a claim and a statement as to whether, in the opinion of Mobil, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Mobil shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure event. Failure to comply with the above requirements shall preclude Mobil from asserting any claim of force majeure for that event. Mobil shall be deemed to have notice of any circumstance of which their contractors or subcontractors had or should have had notice.

28. If the Project Review Group agrees that a force majeure event has occurred and that it caused a delay or anticipated delay, the only effect of the force majeure event shall be that the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by the Project Review Group for such time as is necessary to complete those obligations. An extension of the time for performance of the obligation affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If the Project Review Group does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the Project Review Group will notify Mobil in writing of that decision. If the Project Review Group agrees that the delay is attributable to a force majeure event, the Project Review Group will notify Mobil, in writing, of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

29. No later than 15 days after receipt of the Project Review Group's notice of decision relating to a force majeure claim, Mobil may elect to invoke the dispute resolution procedures set forth in Section XII (Dispute Resolution). In any such proceeding, Mobil shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and

mitigate the effects of the delay and that Mobil complied with the requirements of Paragraphs 27, above. If Mobil carries this burden, the delay at issue shall not be deemed to be a violation by Mobil of the affected obligation under this Consent Decree.

30. All penalties under this Section shall begin to accrue on the day after Mobil's performance or action is due and shall continue to accrue until the end of the day such inaction or nonperformance is fully cured by Mobil. Penalties may accrue simultaneously for separate violations of this Decree.

31. All penalties due under this section shall be due and payable within 30 days of Mobil's receipt of a demand for payment from the United States and the State of Texas, unless Mobil invokes dispute resolution under Section XII of this Decree.

32. In the event Mobil fails to pay stipulated penalties when due, the United States or the State of Texas may institute legal proceedings to collect such penalties, as well as interest accruing on any unpaid balance, as provided by law. Pursuant to Paragraph 36, however, stipulated penalties continue to accrue during dispute resolution but are not due and payable until resolution of the dispute.

XII. DISPUTE RESOLUTION

33. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedure of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth

in this Section shall not apply to actions by the United States or the State of Texas to enforce obligations of Mobil that have not been disputed in accordance with this Section.

34. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 30 days from the time the dispute arises, unless agreed to in writing by Mobil and the Project Review Group. A dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

35. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by the Project Review Group shall be considered binding unless, within 20 days after the conclusion of the informal negotiation period, Mobil invokes formal dispute resolution by filing with the Court and serving on the parties a notice of judicial appeal setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Mobil's notice of judicial appeal.

36. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone, or affect in any way any obligations of Mobil under this Consent Decree not directly in dispute, unless the Project Review Group agrees or the Court finds

otherwise. Further, if any project evaluation or work performance schedules have been stayed due to the invocation of formal dispute resolution, the affected schedules for performance shall be extended by the period of time that the schedule was interrupted due to Dispute Resolution. Stipulated penalties with respect to the disputed matters shall continue to accrue but payment shall be stayed pending resolution of the dispute. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that Mobil does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XI.

XIII. INDEMNIFICATION

37. Mobil shall indemnify, save and hold harmless the United States and the State of Texas from any and all claims, causes of action or liabilities arising from the negligent acts or omissions or willful misconduct of Mobil in implementing this Decree.

XIV. EFFECT OF SETTLEMENT/ENTRY OF JUDGMENT

38. This Decree was negotiated and executed by the Parties hereto in good faith at arms length to avoid expensive and protracted litigation and is a fair and equitable settlement of claims which were contested. The execution of this Decree is not, and shall not constitute or be construed as, an admission of liability by any Party, nor is it an admission or denial of any of

the factual allegations set out in the Complaint or an admission of violation of any law, rule, regulation, or policy by any of the Parties to the Decree.

XV. COVENANT NOT TO SUE

39. Except as specifically provided in Section XVI of the Decree, the United States and the State of Texas each hereby covenant not to sue or to take any other civil or administrative action against Mobil for natural resource damages caused by the April 6, 1992, release described in Section III under CERCLA, 42 U.S.C. §§ 9601 et seq., or any other federal, state or common law. These covenants not to sue shall take effect upon the date of entry of the Decree, and shall remain in effect as long as Mobil fulfills its obligations under this Decree.

XVI. RESERVATION OF RIGHTS

40. Notwithstanding any other provision of this Decree, the United States and the State of Texas reserve the right to institute proceedings against Mobil in this action or in a new action seeking recovery of Natural Resource Damages, as defined herein; based on (1) conditions unknown to the United States or the State of Texas on the Date of Execution of the Decree that contribute to injury to, destruction of, or loss of natural resources ("Unknown Conditions"); or (2) information received by the United States or the State of Texas after the Date of Execution of the Decree which indicates there is injury to, destruction of, or loss of natural

resources, of a type unknown to Plaintiffs as of the Date of Execution of the Decree ("New Information").

41. Conditions or information which affect only the United States' or State of Texas' assessment of the magnitude of the injury, destruction or loss to natural resources, or the estimate of or actual natural resource damages shall not be considered to be Unknown Conditions or New Information within the meaning of Paragraph 40.

42. Notwithstanding any other provision of this Decree, the covenants not to sue in Section XV shall apply only to matters addressed in the Decree and specifically shall not apply to the following claims:

a. claims based on a failure by Mobil to satisfy the requirements of the Decree;

b. claims for criminal liability; and,

c. claims for natural resource damages from the past, present or future disposal, release or threat of release of hazardous substances that do not arise from disposal, release and threat of release of such hazardous substances by Mobil from the Pasadena facility on April 6, 1992.

XVII. COVENANTS BY SETTLING DEFENDANT

43. Mobil hereby covenants not to sue or to bring any administrative action of any kind against the United States or the State of Texas, or any agency or instrumentality of either, for any

claims arising from or relating to the April 6, 1992 spill described in Section IV, pursuant to any federal, state, or common law, including but not limited to, any direct or indirect claims pursuant to Section 112 of CERCLA, 42 U.S.C. § 9612, against the Hazardous Substance Superfund, pursuant to Section 113(f) of CERCLA, 42 U.S.C. § 9613(f), for contribution, or pursuant to the Federal Torts Claims Act, 28 U.S.C. § 1346(b) and §§ 2671, et seq.

XVIII. VOIDABILITY

44. If for any reason the District Court should decline to approve entry of this Decree in the form presented, this Decree and the settlement embodied herein shall be voidable by written notice to the other Parties at the sole discretion of any Party to this Decree, and the terms hereof may not be used as evidence in any litigation.

XIX. COMPLIANCE WITH OTHER LAWS

45. The Decree shall not be construed in any way to relieve Mobil or any other person or entity from the obligation to comply with any federal, state, or local law.

XX. RETENTION OF JURISDICTION

46. The Court shall retain jurisdiction of this matter for the purpose of entering such further order, direction, or relief as may be necessary or appropriate for the construction, implementation, or enforcement of this Decree.

XXI. AUTHORIZED REPRESENTATIVE

47. Each undersigned representative of a Party to the Decree certifies that he or she is fully authorized to enter into the terms and conditions of the Decree and to legally execute and bind that Party to this Decree.

XXII. MODIFICATION

48. The terms of this Decree may be modified only by a subsequent written agreement signed by all of the Parties signatory hereto, and approved by the Court as a modification to this Decree.

XXIII. TERMINATION

49. This Consent Decree shall terminate three years from the date the Project Review Group certifies completion of the Restoration Project under Paragraph 15 of this Decree or at the conclusion of the period provided for use of restoration and maintenance funds under Paragraph 16 where such period is extended due to the invocation of Dispute Resolution under Paragraph 36, whichever is later.

XXIV. PUBLIC COMMENT

50. The Parties agree that this Decree will be subject to a 30-day public comment period as provided in 28 C.F.R. § 50.7. Plaintiffs reserve the right to withdraw their consent to the Decree if comments received disclose facts or considerations which show that the Decree is inappropriate, improper, or inadequate.

Mobil consents to the entry of this Decree by the Court without further notice.

XXV. NOTICE

51. Any notice required hereunder shall be in writing and shall be delivered by hand, facsimile, or overnight mail as follows:

Notice to Plaintiffs:

Notice to Mobil:

52. Each party to this Decree may change the person(s) it has designated to receive notice for that Party, or the addresses for such notice, by serving said notice on each of the other Parties to the Decree.

50. By signature below, all Parties consent to this Consent Decree.

FOR THE PLAINTIFF UNITED STATES:

LOIS J. SCHIFFER
Acting Assistant Attorney General
Environment and Natural Resources
Division
U.S. Department of Justice
Washington, DC 20530

ANGELA O'CONNELL
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources
Division
U.S. Department of Justice
P.O. Box 7611
Washington, DC 20044-7611
(202) 514-5315

FOR THE PLAINTIFF STATE OF TEXAS:

ALBERT M. BRONSON
Assistant Attorney General
State Bar No. 03057500
Natural Resource Division
P.O. Box 12548, Capitol Station
Austin, Texas 78711-2548
(512) 463-2012

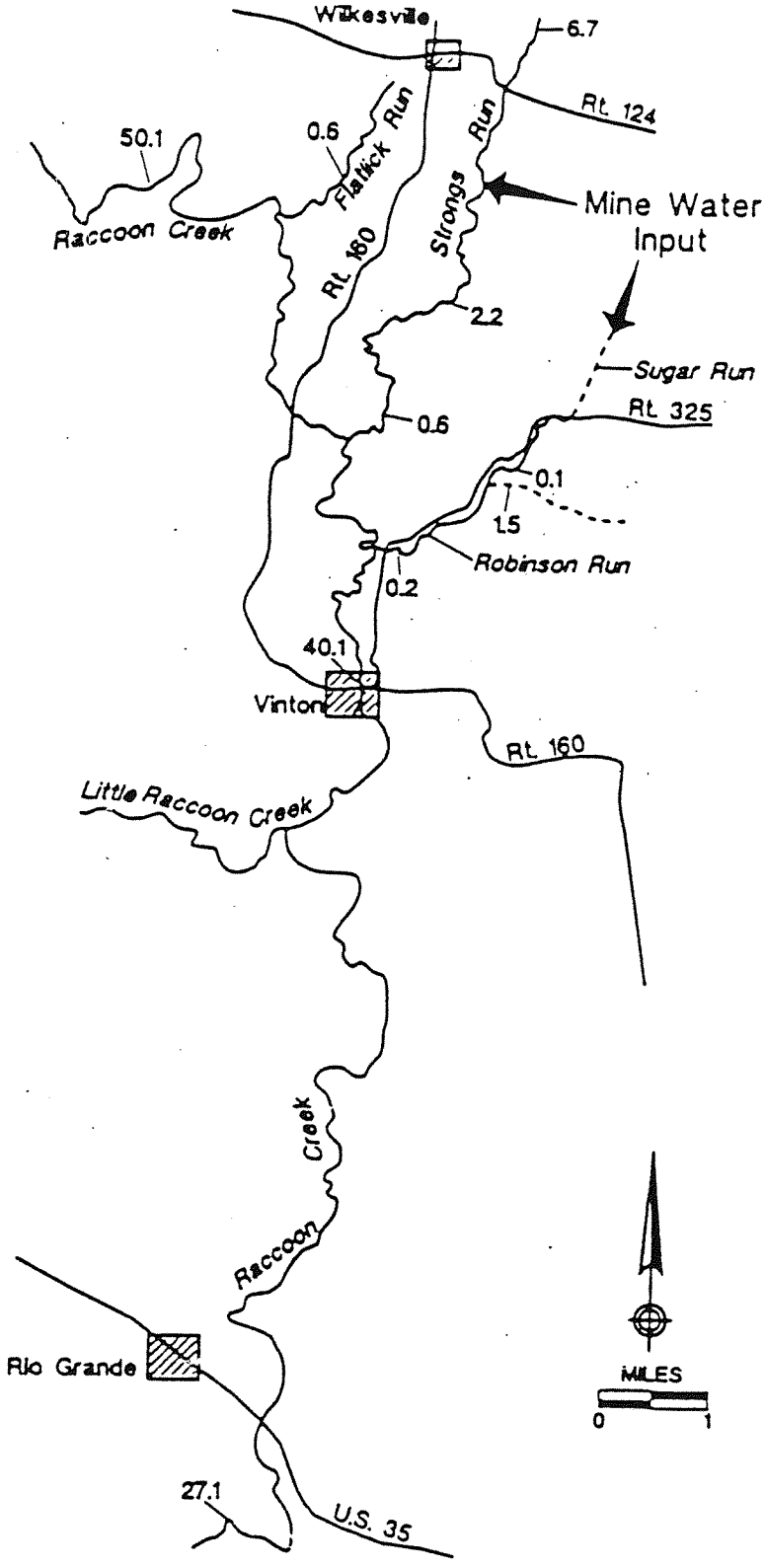
FOR THE DEFENDANT MOBIL:

_____

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
EASTERN DIVISION

UNITED STATES OF AMERICA, Plaintiff, v. SOUTHERN OHIO COAL COMPANY, Defendant.	Case No. Hon. Judge

CONSENT DECREE AND SETTLEMENT AGREEMENT



Sampling locations in Raccoon Creek and its tributaries.

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CONSENT DECREE AND SETTLEMENT AGREEMENT

Concurrently with the filing of this Consent Decree and Settlement Agreement ("Decree") the United States of America, on behalf of the Environmental Protection Agency ("EPA") and the Department of the Interior, Office of Surface Mining Reclamation and Enforcement ("OSMRE") and the United States Fish and Wildlife Service ("FWS"), filed an action against Southern Ohio Coal Company ("SOCCO") pursuant to the Clean Water Act 33 U.S.C. §§ 1251 et. seq., and the Surface Mining Control and Reclamation Act, 30 U.S.C. §§ 1201 et seq. This Decree resolves the claims raised in the United States' complaint filed simultaneously with this Decree (the "Complaint").

BACKGROUND

1. SOCCO owns and operates an underground coal mine complex in Southeastern Ohio, which includes Meigs Mine No. 31 ("Meigs No. 31"). Meigs No. 31 is the name given to the combined underground workings of what once were two separate mines, Meigs Mine No. 1 and Raccoon Mine No. 3. Meigs No. 31 naturally accumulates acidic water that contains in solution a number of metals and other chemicals. Such water is commonly referred to as "acid mine drainage" or "AMD."

2. A portion of the former Raccoon Mine No. 3 workings was abandoned in 1989 and in accordance with a plan submitted to the United States Mine Safety and Health Administration, a bulkhead was installed between the abandoned works and the active mine areas to store the naturally accumulated AMD from the

combined workings for eventual treatment and to assure proper ventilation in the active workings.

3. SOCCO holds two National Pollutant Discharge Elimination System ("NPDES") permits issued by the State of Ohio which, among other things, authorize SOCCO to discharge AMD and/or process wastewaters through designated outfalls into tributaries of Leading and Raccoon Creeks, both of which are tributaries of the Ohio River. SOCCO's NPDES Permits contain, among other things, limits on the concentration of a number of pollutants or contaminants allowed in any effluent discharged.

4. On or about July 11, 1993, as much as one billion gallons of AMD from the inactive portion of Meigs No. 31 inundated the active workings of the mine, halting all mining operations. Soon thereafter, SOCCO requested emergency authorization from the Ohio Environmental Protection Agency ("OEPA") to dewater Meigs No. 31 by pumping AMD from the mine and discharging it without meeting the effluent limits of its NPDES Permits.

5. On July 26, 1993, OEPA issued a "Director's Final Findings and Orders" ("DFFO"), which sets forth the terms and conditions under which OEPA would allow SOCCO to discharge untreated and/or partially treated AMD from Meigs Mine No. 31. The DFFO provided that SOCCO could discharge the effluent into Leading Creek, Raccoon Creek, and certain specified tributaries thereof.

6. On July 28, 1993, the United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement ("OSMRE") issued an administrative order directing SOCCO to cease its discharges of untreated or partially treated AMD (the "Cessation Order").

7. On July 29, 1993, SOCCO initiated an action styled Southern Ohio Coal Company v. Office of Surface Mining, Reclamation and Enforcement, et al., United States District Court for the Southern District of Ohio, Eastern Division, Civil Action No. C2-93-751. In its complaint SOCCO sought, among other things, to enjoin OSMRE's enforcement of the Cessation Order. On July 30, 1993, the United States District Court for the Southern District of Ohio, Eastern Division, issued a temporary restraining order prohibiting OSMRE from taking any action, including enforcement of the Cessation Order, that would interfere with SOCCO's dewatering of Meigs No. 31.

8. On or about August 3, 1993, the United States Environmental Protection Agency ("EPA") advised SOCCO that unless it immediately ceased discharging effluent that did not meet its NPDES Permit discharge limits, EPA would take administrative and/or judicial action to stop the discharges.

9. On August 4, 1993, SOCCO amended its complaint to include, among other things, claims to enjoin EPA from taking any action to interfere with SOCCO's dewatering of Meigs No. 31 pursuant to the DFFO.

10. On August 19, 1993, following a hearing, the court for the Southern District of Ohio, Eastern Division granted SOCCO preliminary injunctive relief by ordering that EPA and OSMRE not take any action to interfere with the dewatering of Meigs No. 31. The same day, EPA and OSMRE appealed the order to the Sixth Circuit Court of Appeals, and moved that Court for a stay of the preliminary injunction pending appeal.

11. On August 30, 1993, the Sixth Circuit granted in part EPA's motion for a stay of the District Court's injunction and denied OSMRE's stay request.

12. On September 3, 1993, EPA issued an administrative order essentially requiring SOCCO to cease discharges of untreated or partially treated effluent.

13. In response to a motion by SOCCO, on September 8, 1993, the District Court issued an order staying EPA's administrative order.

14. The District Court's stay order was vacated by the Sixth Circuit Court of Appeals on September 23, 1993.

15. Following the Court of Appeals' ruling, SOCCO timely complied with EPA's administrative order, treating all discharges to its NPDES Permit limits.

16. The untreated or partially treated AMD discharged prior to September 23, 1993, entered Raccoon Creek, Leading Creek, and tributaries thereto (the "Affected Streams"). These discharges resulted in, among other things, extensive mortality to aquatic life in Parker Run, Leading Creek, and Strong's Run.

This Decree addresses the environmental impacts of the discharges in three separate Sections, as briefly summarized in the following Paragraphs.

17. In accordance with the terms of the State of Ohio's DFFO, OEPA and SOCCO jointly developed a plan for: (a) monitoring the biological, physical and chemical conditions in the Affected Streams; and, (b) implementing corrective measures deemed necessary by OEPA to hasten or facilitate recovery of the Affected Streams. The OEPA/SOCCO plan is set forth in two related documents. Biological criteria for determining when the Affected Streams have returned to their pre-discharge condition were established and described in a document entitled "Ecological Recovery Endpoints of Streams Affected by the Meigs # 31 Mine Discharges during July - September 1993," March 2, 1994 and the Errata Sheet thereto dated July 10, 1995. ("Ecological Endpoints Document"), attached hereto as Appendices 1 and 1A respectively. The framework for certain sampling and monitoring activities, active restoration work, and other related matters is described in a document entitled "Southern Ohio Coal Company, Meigs Mine No. 31, Stream Restoration Plan" (the "SOCCO/OEPA Restoration Plan").

18. EPA provided comments to OEPA during the development of the Ecological Endpoints Document and the SOCCO/OEPA Restoration Plan. Although EPA did not concur on all aspects of the final versions of either of these documents as approved by OEPA, the Parties believe that the public's interest

is best served by cooperation of the regulatory agencies in pursuing restoration of the Affected Streams. To this end, as detailed below, actions to hasten or facilitate recovery of the Affected Streams will in the first instance be carried out under the direction of OEPA pursuant to the SOCCO/OEPA Restoration Plan and the Ecological Endpoints Document. In accordance with Section V of this Decree, if the Ecological Endpoints have not been met in any portion of the Affected Streams by certain specified times, EPA may direct SOCCO to take active measures to hasten or facilitate recovery. EPA and OEPA will coordinate their actions in accordance with a Memorandum of Understanding between the two agencies.

19. In accordance with Section VI, upon entry of this Decree SOCCO will commence an ecological assessment of conditions in the entire Leading Creek watershed and develop recommendations for enhancing the aquatic life uses of the entire Leading Creek Stream System. Also, in accordance with Section VI, SOCCO will deposit funds into the Department of the Interior's Natural Resource Damage Assessment and Restoration Fund to be used for the implementation of some or all of the recommendations made in the watershed assessment.

20. In accordance with Section VI, Paragraph 49, SOCCO will provide funds to be used for actions that will benefit aquatic fauna in the Ohio River that may use, be affected by, or affect the Leading Creek Stream System. This payment is the final element of a settlement of claims asserted in a related

action styled Southern Ohio Coal Co. v. Division of Environmental Protection, West Virginia Department of Commerce, Labor and Environmental Resources et al. Case No. 2:94-0432, United States District Court for the Southern District of West Virginia.

21. This Decree is a settlement of a contested matter. The Parties hereto dispute many factual and legal issues, including but not limited to the authority of OEPA to issue the DFFO. Participation in this settlement does not constitute or represent any admission of law or fact by any Party. In addition, there are no findings of fact or conclusions of law express or implied in this Decree and nothing in this Decree shall be construed to be, or to represent, an adjudication of any claim or an admission of liability.

NOW, THEREFORE, it is hereby ORDERED, ADJUDGED, and DECREED as follows:

I. JURISDICTION

22. This Court has jurisdiction over the subject matter and over the Parties to this action pursuant to 28 U.S.C. §§ 1331, 1345, 1355, and 33 U.S.C. §§ 1319(b) and 1321(e) and (n). Venue is proper in this Court pursuant to 28 U.S.C. § 1391(b). The Complaint in this action states claims upon which relief may be granted.

II. PARTIES BOUND

23. This Decree shall apply to and be binding upon and inure to the benefit of the United States and SOCCO, its officers, directors, successors and assigns. By signing this

Decree, the State of West Virginia does not obtain any rights, duties or obligations other than those specifically provided for in Paragraph 49.

III. DEFINITIONS

24. Unless otherwise provided herein, whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"Affected Streams" means those portions of the Leading Creek and Raccoon Creek Stream Systems into which untreated or partially treated water was discharged or otherwise introduced during the process of the dewatering of SOCCO's Meigs Mine No. 31 during some or all of the period from July 30, 1993, through September 23, 1993.

"Appendix" means one of the seven numbered attachments to this Decree labeled as an appendix.

"Consent Decree" means this Decree and all appendices attached hereto. In the event of a conflict between this Decree and any appendix, this Decree shall control.

"Day" means a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

"DFFO" means the Director's Final Findings and Orders issued by OEPA to SOCCO on July 26, 1993, and the amendments thereto dated September 22, 1993 and January 27, 1994.

"Ecological Endpoints" means the biological criteria consisting of specific index scores and certain species/taxa, that have been selected as measures of Recovery for each Segment of the Affected Streams. As used in this Decree, Ecological Endpoints refers only to the "final endpoints" (as opposed to the "interim endpoints") identified in the Ecological Endpoints Document and its Errata Sheet.

"The Ecological Endpoints Document" or "Endpoints Document" means the report prepared by the OEPA, Division of Surface Water Ecological Assessment Section, entitled "Ecological Recovery Endpoints for Streams Affected by the Meigs Mine Discharges during July - September 1993," OEPA Report No. EAS/1994-1-1, March 2, 1994, and the Errata Sheet thereto dated July 10. 1995. The Ecological Endpoints Document and the Errata Sheet are attached to this Decree as Appendix 1 and Appendix 1A respectively. Any changes to the Endpoints Document by OEPA subsequent to the entry of this Decree shall not be incorporated into the requirements of this Decree unless such changes are mutually adopted by SOCCO and EPA in accordance with Section XXII (Modification).

"EPA" means the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"FWS" means the United States Fish and Wildlife Service, an agency of the United States Department of the Interior, and any successor departments or agencies of the United States.

"OEPA" means the Ohio Environmental Protection Agency.

"OSMRE" means the Office of Surface Mining Reclamation and Enforcement, an agency of the United States Department of the Interior, and any successor departments or agencies of the United States.

"Paragraph" means a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

"Parties" means the United States and Southern Ohio Coal Company. Although the State of West Virginia, through the Division of Environmental Protection, West Virginia Department of Commerce, Labor and Environmental Resources, is a signatory to this Decree, its participation hereunder is limited to acceptance of the terms of Paragraph 49 as satisfaction of a requirement of a settlement agreement by and between SOCCO and the State of West Virginia that concluded the related action styled Southern Ohio Coal Co. v. Division of Environmental Protection, West Virginia Department of Commerce, Labor and Environmental Resources et al. Case No. 2:94-0432, United States District Court for the Southern District of West Virginia. That settlement agreement was accepted by the West Virginia District Court by an order dated May 8, 1995. The State of West Virginia is not a party to the underlying complaint in this action and is not included within the definition of Parties in this Decree.

"Responsible Agency" means the federal agency designated in this Decree as having the authority to approve, accept, or direct actions by SOCCO pursuant to any provision of this Decree. The United States Department of the Interior, Fish and Wildlife Service is the Responsible Agency for Section VI (Leading Creek Watershed Improvement Project). EPA is the Responsible Agency for all other requirements of the Decree.

"Restoration" and "Recovery" means the reestablishment of the pre-discharge aquatic functions and related physical and chemical characteristics. In this Decree, the pre-discharge aquatic functions and related physical and chemical characteristics are those which existed in the Affected Streams prior to the discharge of untreated or partially treated AMD pursuant to the DFFO. Restoration (Recovery) will be determined in accordance with Section V of this Decree.

"Restoration Measures" means activities taken pursuant to Section V of this Decree to facilitate and/or hasten Recovery of the Affected Streams.

The "SOCCO/OEPA Restoration Plan" means the document jointly developed by SOCCO and OEPA in accordance with the DFFO setting forth the actions to be taken by SOCCO to satisfy requirements of the DFFO regarding restoration in certain portions of Leading Creek, Raccoon Creek, and certain identified tributaries thereof. The document is entitled "Southern Ohio Coal Company, Meigs Mine No. 31, Stream Restoration Plan."

"Section" means a portion of this Consent Decree identified by a roman numeral.

"Stream Segment" or "Segment" means the named tributaries to, and designated stretches of, either Leading Creek or Raccoon Creek that are identified as distinct geographic zones for which specific Ecological Endpoints have been established in the Ecological Endpoints Document. The Stream Segments are identified below in Paragraph 30(b).

"Stream System" means the named and unnamed streams in the Raccoon Creek or the Leading Creek watersheds which flow into either Raccoon Creek or Leading Creek. Leading Creek is located in Athens County, Gallia County, and Meigs County, Ohio, and Raccoon Creek is located in Vinton County, and Gallia County, Ohio. For purposes of this Decree, Raccoon Creek and Leading Creek and their respective tributaries constitute two separate and distinct Stream Systems.

"Summer/Fall Index Period" means June 15 through October 15 of each year.

"United States" means the United States of America.

IV. CIVIL PENALTY AND COST REIMBURSEMENT

25. Within 15 days of the entry of this Decree, SOCCO shall pay to the United States $300,000 as a civil penalty. Payment of this amount shall be made through two separate disbursements, as follows: (a) $200,000 shall be paid by Fedwire Electronic Funds Transfer ("EFT") to the United States Department of Justice, referencing this action and the DOJ number

90-5-1-1-5033. Payment by EFT shall be made in accordance with instructions to be provided to SOCCO by the Financial Litigation Unit at the United States Attorney's Office for the Southern District of Ohio, Eastern Division. Any EFT received by the Department of Justice after 4:00 p.m. (Eastern Time) will be credited to the next business day. Notice of payment pursuant to this subparagraph shall be sent to the United States as provided in Section XVIII (Notices and Submissions); (b) $100,000 shall be paid by certified check made payable to "Office of Surface Mining Reclamation and Enforcement" and delivered to Department of the Interior, Office of the Field Solicitor, Ten Parkway Center, Room 385, Pittsburgh, PA, 15220. The check shall be accompanied by a letter referencing this action and indicating that the check is in payment of a civil penalty pursuant to this Decree. SOCCO shall send copies of the check and transmittal letter identified in this subparagraph to the United States as specified in Section XVIII (Notices and Submissions).

26. Within 15 days of the entry of this Decree, SOCCO shall pay to the United States $240,200 as reimbursement for costs incurred in monitoring and assessing the effects of the discharges addressed in the Complaint. This payment shall be made through two separate disbursements as follows: (a) $230,000 shall be paid by Fedwire Electronic Funds Transfer ("EFT") to the United States Department of Justice, referencing this action and the DOJ number 90-5-1-1-5033. Payment by EFT shall be made in accordance with instructions to be provided to SOCCO by the

Financial Litigation Unit at the United States Attorney's Office for the Southern District of Ohio, Eastern Division. Any EFT received by the Department of Justice after 4:00 p.m. (Eastern Time) will be credited to the next business day. (b) $10,200 shall be paid by certified check made payable to the Secretary of the Interior and shall be delivered to Chief, Division of Finance Division, United States Fish and Wildlife Service, 4401 North Fairfax Drive, Room 380, Arlington, VA 22203 [phone (703) 358-1742]. The check shall reflect that it is to be deposited in the "Natural Resource Damage Assessment and Restoration Fund, Account No. 14X5198 and reference the "SOCCO Mine Discharge." A transmittal letter shall accompany the check and indicate that it is reimbursement for natural resource damage assessment costs. SOCCO shall send copies of the check and transmittal letter to the United States as specified in Section XVIII (Notices and Submissions).

V. RESTORATION MEASURES FOR THE AFFECTED STREAMS

A. General Provisions

27. One of the primary objectives of this Decree is the Restoration (Recovery) of the Affected Streams, i.e. the reestablishment of the aquatic functions and related physical and chemical characteristics that existed prior to the dewatering of Meigs No. 31 in July through September of 1993. Due to the dynamic nature of stream systems, the Parties recognize that Restoration (Recovery) will be an approximation of pre-discharge conditions rather than an exact reproduction. As more

particularly described below, for the purposes of this Decree, Restoration (Recovery) shall be evaluated by reference to the specific biological criteria determined to be representative or descriptive of the pre-July 30, 1993 conditions in the Affected Streams. These biological criteria are the Ecological Endpoints that are set out in the Ecological Endpoints Document and its Errata Sheet attached hereto as Appendices 1 and 1A respectively. Specific Ecological Endpoints have been established for specified Stream Segments of each Affected Stream.

28. The Ecological Endpoints consist of: (1) the minimum mean score for the Index of Biotic Integrity ("IBI"), the minimum score(s) for the Invertebrate Community Index ("ICI"), and, for certain Stream Segments, the minimum mean score for the Modified Index of Well-being ("MIwb"); and, (2) a list of certain "Key" fish, macroinvertebrate, amphibian, and/or mussel species/taxa that must be demonstrated to have returned to a particular Stream Segment as set forth below. IBI, ICI, and MIwb scores shall be calculated in accordance with the provisions of the Endpoints Document and the OEPA protocols referenced therein.

29. EPA shall be the Responsible Agency for the oversight of actions required of SOCCO under this Decree relating to the Restoration of the Affected Streams. EPA shall notify SOCCO in writing of the name and address of the person who will act as the Responsible Agency Contact Person for purposes of submissions relating to Restoration Measures and notification pursuant to Section XV (Force Majeure). The Agency Contact

Person may be changed at any time upon written notification to SOCCO.

B. Determination of Recovery

30. Notwithstanding anything to the contrary in the Endpoints Document, the SOCCO/OEPA Restoration Plan, or any other document, for the purposes of this Decree, Restoration (Recovery) of the Affected Streams shall be demonstrated through attainment and maintenance of the Ecological Endpoints in accordance with the criteria set forth in subparagraphs (a) through (i) below.

a. The Leading Creek and Raccoon Creek Stream Systems comprise separate and distinct Stream Systems. Recovery of the Affected Streams in each Stream System will be evaluated independently.

b. Distinct Ecological Endpoints have been established for each Stream Segment and are specified in the Endpoints Document and its Errata Sheet. The Stream Segments for which distinct Ecological Endpoints have been established are:

i. Leading Creek Segment 1 - Ohio River Backwater. This Segment runs from River Mile ("RM") 0.0 to approximately RM 1.0 of Leading Creek. Endpoints Document at p. 15.

ii. Leading Creek Segment 2 - Low Gradient Lower Leading Creek. This Segment runs from approximately RM 1.1 through approximately RM 9.0. Endpoints Document at pp. 15-16.

iii. Leading Creek Segment 3 - Middle Leading Creek. This Segment runs from approximately RM 9.1 through approximately RM 15.6. Endpoints Document at pp. 16-17.

iv. Parker Run Segment ("Parker Run"). This Segment includes all of Parker Run covering approximately from river mile 2.97 of Parker Run to the confluence with Leading Creek. Endpoints Document at p. 17.

v. Raccoon Creek Segment ("Raccoon Creek"). This Segment includes the portion of Raccoon Creek from the confluence of Strongs Run at approximately RM 43.3 to the Ohio River. Endpoints Document at pp. 18.

vi. Strongs Run Segment ("Strongs Run"). This Segment includes all of Strongs Run from approximately RM 4.73 to the confluence with Raccoon Creek. Endpoints Document at pp. 18 - 19.

vii. Sugar Run Segment ("Sugar Run"). This Segment includes all of Sugar Run from approximately RM 2.40 to the confluence with Robinson Run. Endpoints Document at pp. 18 - 20.

viii. Robinson Run Segment ("Robinson Run"). This Segment includes all of Robinson Run from the confluence of Sugar Run at approximately RM 1.31 to the confluence with Raccoon Creek at approximately RM 41.67. Endpoints Document at pp. 18 - 20.

c. Specific zones ("Sampling Stations") have been established in each Stream Segment for the collection of biological and other sampling/monitoring data necessary to demonstrate attainment or maintenance of the Ecological Endpoints. These Sampling Stations are identified and described in Appendix 7. For each Sampling Station, the Ecological Endpoints will be deemed to have been attained or maintained for a particular year if the biological sampling/monitoring data collected at that Sampling Station demonstrate attainment of the minimum mean IBI, the minimum ICI, and the minimum mean MIwb scores established in the Endpoints Document for the Segment in which the Sampling Station is located. In Segments for which the Endpoints Document does not specify a minimum MIwb score, attainment of Endpoints at a Sampling Station shall be demonstrated through IBI and ICI scores only.

d. A Stream Segment will be deemed to have Recovered or to have been Restored when the biological sampling/monitoring data demonstrate that: (1) for three consecutive years, (a) the minimum prescribed IBI, ICI, and MIwb scores have been attained (or maintained) at each Sampling Station in the Segment, and (b)

each of the Key Species/Taxa of macroinvertebrates and fish required for that Segment, other than the River Redhorse, have been found at one or more Sampling Stations in that Segment in the abundance, and with the collection of recruits and sexually mature individuals, as required by the Endpoints Document and the Errata Sheet; (2) for Segments for which the River Redhorse is designated a Key Species, the requirements of Item 7, pp 4-5, of the Endpoints Document Errata Sheet have been met; and, (3) for Segments for which Mudpuppies are designated a Key Species, the requirements of Item 6, pp 3-4, of the Endpoints Document Errata Sheet have been met.

e. A Stream System will be deemed to have Recovered or to have been Restored, when the biological sampling/monitoring data demonstrate that: (1) all Stream Segments within the Stream System have recovered as provided in Paragraph 30(d) and, (2) all Ecological Endpoints for unionid mussels have been attained in the Stream System in accordance with the requirements of Appendix 2 (Unionid Mussel Recovery Endpoints).

f. In the event that one or more Endpoints are not attained or maintained in a particular Segment in a particular year solely as a result of an Exotic Event, such year shall be excluded from the determination of, and not be deemed to interrupt, the number of consecutive years of attainment of Endpoints in that Segment pursuant to Paragraphs 30(d) and 74. As used in this Decree, an Exotic Event is either: (1) an extraordinary introduction into the Stream System of a toxic

quantity of pollutants or contaminants from an identified source that is not located on property owned or controlled by SOCCO, or its parent or affiliate companies, and is otherwise beyond SOCCO's control; or (2) a severe drought. An extraordinary introduction of pollutants or contaminants could include such events as chemical or oil spills or sudden substantially increased flows of acid mine drainage from abandoned mine areas, but would not include typical agricultural and storm water runoff, discharges from SOCCO's mining and coal preparation operations, or acid mine drainage in volumes and/or concentrations seasonally typical in the watershed of the Affected Stream alleged to have experienced an Exotic Event. A severe drought, for purposes of this Decree, occurs when any Segment both ceases to flow and there are insufficient pools capable of sustaining the biological community required to meet an applicable Ecological Endpoint at one or more Sampling Stations in the Segment. Within two working days of the discovery of any extraordinary introduction of pollutants or contaminants into a Stream System that SOCCO believes may have an impact on attainment of any Endpoint(s), SOCCO shall provide telephonic and telefax notice to the United States of the nature and location of the event at the addresses listed in Section XVIII (Notices and Submissions).

g. If SOCCO chooses to assert the Exotic Event exception in Paragraph 30(f) for any Segment for any year, SOCCO shall so notify EPA in writing and shall request a determination from EPA

as to the applicability of the Exotic Event exception for specific Endpoints. Any request for a determination of the applicability of the Exotic Event exception must be submitted to EPA no later than 30 days after the submission of the biological sampling results that SOCCO contends were affected by the Exotic Event. Along with such notice and request, SOCCO shall provide the following information:

1. For a demonstration of an extraordinary introduction of pollutants or contaminants into the Stream System.

(i) identification of the source of the pollutants or contaminants preventing attainment of an Endpoint, to the extent that the source can be determined; (ii) photographs documenting any visible evidence of the Exotic Event; (iii) to the extent possible using best efforts, chemical data that fully characterize any such pollutants or contaminants; (iv) to the extent possible using best efforts, documentation of the in-stream conditions that existed during the Exotic Event, including pH, dissolved oxygen, conductivity, and sediment chemistry; (v) an evaluation of the habitat in the area believed to be affected by the Exotic Event using OEPA QHEI protocols, as appropriate; (vi) an explanation of the precise toxicologic or other adverse effect any contaminants or pollutants are believed to have, or have had, on organisms in the Segment; (vii) an explanation of the basis of the contention that the failure to attain Endpoints was caused by the Exotic Event (including citations to supporting scientific literature);

(viii) all toxicity data relied upon by SOCCO; and, (ix) any other information SOCCO believes supports its position.

2. For a demonstration that an Exotic Event involving a severe drought has occurred.

(i) meteorological data supporting the claim of drought; (ii) photographic documentation of the conditions throughout the Segment claimed to be affected by the drought; (iii) documentation of in-stream conditions during the drought, including number and physical dimensions of all pools in the Sampling Station(s) in the affected Segment(s), pH, dissolved oxygen, conductivity, temperature and, as appropriate, sediment chemistry; and (iv) an explanation of the basis for the contention that the drought is the cause of non-attainment of Endpoints.

h. EPA shall respond to SOCCO's request pursuant to Paragraph 30(h) within 180 days of receipt. Failure to meet the requirements of Paragraph 30(h) or to satisfy the notice requirement of Paragraph 30(f) shall preclude SOCCO from asserting the Exotic Event exception in any Request for Certification of Achievement of Endpoints pursuant to Section XIV (Certification of Recovery), or in any Dispute Resolution procedure under this Decree.

i. If an Exotic Event occurs after SOCCO has completed two valid sampling passes for fish and one valid collection of macroinvertebrates at a Sampling Station, and if the data collected demonstrate that for such Sampling Station the Ecological Endpoints have been attained or maintained as provided

in Paragraph 30(c), then that year may be considered an attaining year with respect to such Sampling Station. In addition, notwithstanding the requirements of Paragraph 71, if despite the exercise of best efforts, SOCCO is not able to conduct three valid fish collecting passes or two valid macroinvertebrate collections at a Sampling Station due to lack of appropriate flow conditions for such collections, then upon the written concurrence of EPA under Section XV (Force Majeure), SOCCO may demonstrate attainment of a required IBI or MIwb score using the data from only two valid sampling passes and demonstrate attainment of a required ICI through the use of only one valid macroinvertebrate collection.

C. Selection of Restoration Measures

31. Commencing the earlier of either, (a) a formal written determination by OEPA that SOCCO has satisfied its obligations under the OEPA/SOCCO Restoration Plan with respect to one or both Stream Systems, or (b) January 30, 1998 (the submission date for data collected during the 1997 Summer/Fall Index Period) if, after evaluating any biological data, EPA determines that any Ecological Endpoints have not been attained or are not currently being maintained in an Affected Stream or any Segment thereof, then EPA may so notify SOCCO in writing, specifying the Endpoints that have not been met .

32. Within 75 days of receipt of notice to SOCCO from EPA that an Endpoint has not been met, or such longer time as agreed to in writing by EPA, SOCCO shall submit to EPA for

approval a report identifying the factor(s) impeding Recovery and evaluating measures that could be taken to facilitate or hasten the achievement of the Endpoint(s) in the Stream Segment(s) ("Restoration Measures"). Restoration Measures may include active measures to address specific problems as well as special additional sampling or monitoring efforts to further characterize a problem or support the selection of an active measure. The report assessing Restoration Measures (the "Restoration Measures Report") shall evaluate any Restoration Measure timely suggested by EPA to SOCCO and shall also evaluate a "no action" alternative. Timely identification of a potential Restoration Measure includes, but is not limited to, identification contemporaneous with the issuance of the notice from EPA to SOCCO pursuant to Paragraph 31 or in EPA's comments disapproving a Restoration Measures Report pursuant to Section VII (Submissions Requiring Agency Approval).

33. EPA will review the Restoration Measures Report and may select one or more Restoration Measures for implementation by SOCCO. Within 60 days of notification by EPA that an active Restoration Measure(s) has been selected, or such longer time as approved in writing by EPA, SOCCO shall submit to EPA for approval a work plan for the implementation of the selected Restoration Measure(s) ("Restoration Measure Work Plan" or "R.M. Work Plan").

34. The R.M. Work Plan shall include the following: (a) the schedule for implementation of the Restoration

Measure(s); (b) the schedule and strategy for satisfying any applicable permitting requirements; (c) a construction quality control plan, if the Restoration Measure involves actual construction; and, if applicable, (d) performance standards for the Restoration Measure. The content and level of detail required in the R.M. Work Plan shall be commensurate with the complexity of the Restoration Measure selected by EPA.

35. If any selected Restoration Measure requires engineering or design work, then SOCCO shall include in the R.M. Work Plan the schedules for implementation of all design and pre-design tasks identified in the R.M. Work Plan which shall include, but not be limited to, plans and schedules for the completion of a preliminary design submittal and a pre-final/final design submittal, which shall include a Construction Quality Control/Quality Assurance Plan.

a. The preliminary design submittal shall include, at a minimum, the following: (1) design criteria; (2) results of any additional field sampling and pre-design work; (3) preliminary plans, drawings and sketches; (4) required specifications in outline form; and (5) a preliminary construction schedule.

b. The pre-final/final Restoration Measure design submittal shall include, at a minimum, the following: (1) final plans and specifications; and (2) a Construction Quality Control/Quality Assurance Plan. The Construction Quality Control/Quality Assurance Plan must detail the approach to

quality control and assurance during any construction activities, and specify a quality assurance official to conduct a quality assurance program during the construction phase of the project(s).

36. Upon its approval by EPA, the R.M. Work Plan(s) shall be incorporated into and become enforceable under this Decree.

37. Within 30 days of the approval of a R.M. Work Plan by EPA, or such longer time as agreed to in writing by EPA, SOCCO shall commence the activities required under the R.M. Work Plan. SOCCO shall submit to EPA and OEPA all documents required under an approved Work Plan. Unless otherwise directed by EPA, SOCCO shall not commence physical on-site Restoration Measure activities selected by EPA pursuant to this Decree prior to approval of the Restoration Measure Work Plan.

38. In implementing a Restoration Measure pursuant to this Section, SOCCO shall be obligated to achieve any performance standards identified in the approved Restoration Measure design or R.M. Work Plan.

39. Without waiving any rights under this Section, EPA may in its sole discretion, allow SOCCO to continue to take actions necessary for the Recovery of the Affected Streams under the direct oversight of OEPA even after the January 30, 1998, milestone established by Paragraph 31. Neither EPA's decision to forebear exercising its rights under this Section for any period of time, nor its selection of a "no action" alternative, shall

affect its right to subsequently require SOCCO to develop and implement a Restoration Measure in accordance with this Section. SOCCO acknowledges and agrees that nothing in this Decree or in the approval of any R.M. Work Plan or Restoration Measure design, constitutes a warranty or representation of any kind by EPA that compliance with the requirements of those documents will result in the achievement of the Ecological Endpoints. SOCCO's compliance with the requirements of this Decree or R.M. Work Plan approved hereunder shall not foreclose EPA from requiring additional Restoration Measures in accordance with this Section if Recovery has not been achieved.

VI. LEADING CREEK WATERSHED IMPROVEMENT PROJECT

A. Development of the Leading Creek Improvement Plan

40. In accordance with the Statement of Work for the development of the Leading Creek Improvement Plan, attached hereto as Appendix 3, SOCCO shall prepare and submit for approval a plan that will describe actions that could be taken in the Leading Creek watershed to enhance the physical, chemical, and biological characteristics throughout the Leading Creek Stream System.

41. The United States Fish and Wildlife Service ("FWS") shall be the Responsible Agency for the approval of the Leading Creek Improvement Plan and shall have the exclusive authority pursuant to Section VII (Submissions Requiring Agency Approval) to approve, disapprove or amend any plan, report or schedule submitted by SOCCO in connection with the development of

the Leading Creek Improvement Plan. FWS will consider all timely submitted comments from other federal and/or state agencies prior to approving any submission from SOCCO pursuant to this Section. FWS shall notify SOCCO in writing of the name and address of the person who will act as the Responsible Agency Contact Person for purposes of submissions pursuant to this Section and for notification pursuant to Section XV (Force Majeure). The Responsible Agency Contact Person may be changed at any time upon written notification to SOCCO.

42. Within 60 days of the entry of this Decree, SOCCO shall submit to FWS for approval, a draft work plan for the development of the Leading Creek Improvement Plan described in the preceding Paragraph ("LCIP Work Plan"). The LCIP Work Plan shall include a master schedule for preparation and submission of deliverables required by the Statement of Work for the LCI Plan (Appendix 3) or any plan or schedule developed thereunder, including but not limited to (a) drafts of the Leading Creek Improvement Plan or portions thereof, (b) drafts of any analytical plans or protocols, (c) revisions of draft plans and reports in accordance with comments from FWS, and (e) final plans and reports, including the final Leading Creek Improvement Plan. FWS will approve or disapprove the LCIP Work Plan in accordance with the Statement of Work for the Leading Creek Improvement Plan (Appendix 3) and Section VII (Submissions Requiring Agency Approval).

43. Upon approval by FWS, the LCIP Work Plan and any other plan, report, protocol, or schedule approved by FWS under this Decree shall be incorporated into and become enforceable under this Consent Decree.

44. SOCCO shall submit to FWS, 3 copies of all deliverables, including drafts, required under the approved L.C.I.P. Work Plan in accordance with the schedule for submissions contained in this Decree, the Statement of Work, the LCIP Work Plan, or any other schedule approved pursuant to this Section. Simultaneously with the submission to FWS, SOCCO shall submit a copy of all such documents to EPA and OEPA as provided in Section XVIII (Notices and Submissions).

45. The Parties encourage input into the project from local citizens and private groups. To foster community input, SOCCO shall deposit copies of the draft Leading Creek Improvement Plan with local public libraries in Athens, Meigs and Gallia Counties and the Ohio University library at Athens. Copies of the draft Leading Creek Improvement Plan shall be provided to the designated libraries by SOCCO within 10 days of their submission to FWS. In addition, within 5 days of providing the draft Improvement Plan to a library, SOCCO shall publish in at least one newspaper of general circulation in that County, a notice to the public where the draft is available for review. The notice regarding the draft shall indicate that written comments may be directed to FWS within 45 days of the date of the notice at the address provided under Section XVIII (Notices and Submissions).

Copies of the approved Leading Creek Improvement Plan shall also be deposited at each of the local libraries identified above.

B. Funding for Projects to Enhance the Leading Creek Watershed

46. SOCCO shall pay to the United States the sum of $1,900,000 as compensation for natural resources alleged to have been affected by the 1993 dewatering of Meigs Mine No. 31. Payment of the $1,900,000 shall be made in three separate installments. The first installment in the amount of $750,000 shall be made within 15 days of the entry of this Decree by the Court. The second installment of $750,000 shall be made within 180 days from the date of entry of this Decree. The third and final installment of $400,000 shall be made within one year of the entry of this Decree.

47. Payments pursuant to Paragraph 46 shall be made by tender of certified checks to the Department of the Interior, Fish and Wildlife Service. Checks shall be made payable to the Secretary of the Interior and shall be delivered to Chief, Division of Finance Division, United States Fish and Wildlife Service, 4401 North Fairfax Drive, Room 380, Arlington, VA 22203 [phone (703) 358-1742]. The check shall reflect that it is a payment to the "Natural Resource Damage Assessment and Restoration Fund, Account No. 14X5198 -- Leading Creek Improvement Project" and reference the "SOCCO Mine Discharge." The Department of the Interior will assign these funds a special project number to allow the funds to be maintained as a segregated account within the Department of the Interior Natural

Resource Damage Assessment and Restoration Fund, Account No. 14X5198 (the "Leading Creek Improvement Account"). The Department of the Interior shall, in accordance with law, manage and invest funds in the Leading Creek Improvement Account, and shall hold all funds in the Leading Creek Improvement Account subject to the provisions of this Decree.

48. All funds in the Leading Creek Improvement Account shall be used to: (a) support FWS activity in connection with the development of the LCI Plan; (b) implement or support the implementation of enhancement projects identified in the approved Leading Creek Improvement Plan; and (c) monitor the progress and effect of such projects. FWS may, to the extent otherwise allowed by law, obtain reimbursement from the Leading Creek Improvement Account for its direct and indirect costs incurred in connection with the performance of its obligations under this Decree, provided, however, that any reimbursement to FWS for such costs shall not exceed $30,000 in any calendar year. The foregoing shall not be construed as a limitation on the ability of FWS to charge a reasonable amount of overhead for actual costs incurred in connection with procurement of, or contracting for, goods or services required to implement this Decree.

49. In accordance with the terms and conditions below, SOCCO shall pay the sum of $100,000 to the State of West Virginia Division of Environmental Protection ("West Virginia DEP") to be used exclusively for projects in, or relating to, the

Ohio River intended to benefit the aquatic fauna in the Ohio River that may use, be affected by, or affect the Leading Creek Stream System. Such projects shall be selected by the West Virginia DEP and shall be subject to approval by the FWS, Reynoldsburg, Ohio Field Office. Within 15 days of the receipt of (a) a written demand for funds from West Virginia DEP for a sum certain and (b) a written approval from FWS for a proposed use of such funds, SOCCO shall transfer the requested funds to West Virginia DEP. The Parties and West Virginia agree that West Virginia DEP may make multiple requests for funds pursuant to this Paragraph, but that SOCCO's total payments to West Virginia DEP hereunder shall in no event exceed $100,000. West Virginia agrees to use all funds received pursuant to this paragraph for the project(s) approved by FWS. By signing this Decree, the State of West Virginia does not obtain any rights, duties or obligations other than those specifically provided for in this Paragraph. And the entry or non-entry of this Decree shall have no effect on the finality of the termination of the West Virginia Action pursuant to the Settlement Agreement therein.

C. Selection and Implementation of Enhancement Projects for the Leading Creek Watershed

50. FWS shall be the Responsible Agency for the selection, implementation, and oversight of enhancement projects to be funded in whole or in part with funds from the Leading Creek Improvement Account. Nothing in this Decree shall be deemed to limit any authority FWS may otherwise have under applicable law to use monies from the Leading Creek Improvement

Account to fund grants, cooperative agreements, and/or inter-agency agreements necessary to allow other federal or state agencies to implement or support enhancement projects selected or approved by FWS pursuant to this Decree.

51. Because certain state agencies have technical expertise with respect to the matters covered by this Decree, and because along with the United States the State of Ohio is a trustee for some or all of the natural resources to be addressed by the Leading Creek Improvement Plan, the United States has determined that implementation of any enhancement projects identified in the Leading Creek Improvement Plan would best be accomplished through a continued state/federal cooperative effort. FWS will endeavor to develop with the appropriate federal and state agencies a memorandum of understanding that will guide the decision-making process for selection and implementation of enhancement projects pursuant to this Section. Development of a formal memorandum of understanding is not, however, a prerequisite to either approval of the Leading Creek Improvement Plan pursuant to Section VII (Submissions Requiring Agency Approval) or to selection and implementation by FWS of projects pursuant to Paragraph 50.

52. The Parties acknowledge that the funds in the Leading Creek Improvement Account will likely not be sufficient to fully implement every potential enhancement project identified in the Leading Creek Improvement Plan. Therefore, it shall be the responsibility of FWS to determine the most effective way to

use the funds in the Leading Creek Improvement Account to implement enhancement projects identified in the Leading Creek Improvement Plan. FWS shall, to the extent practicable, seek to maximize the value of such funds by encouraging other state and/or federal agencies to provide matching funds or to provide services in connection with the implementation of selected projects. In selecting or approving projects, FWS will place a premium on the maximization of ecological benefits to be derived from the Leading Creek Improvement Account by taking into consideration SOCCO's obligations regarding Restoration of the Affected Streams set forth in Section V of this Decree and SOCCO's obligations under the SOCCO/OEPA Restoration Plan. Thus, as a general principle, FWS will not expend funds from the Leading Creek Improvement Account for enhancement projects that would primarily benefit SOCCO in the satisfaction of such other obligations. In addition, except as may be appropriate for determining the effectiveness of any implemented enhancement project, unless EPA agrees with FWS in writing, no funds in the Leading Creek Improvement Account shall be used to conduct further studies unless directly connected with some aspect of the implementation of an enhancement project identified in the LCI Plan (e.g., design related studies).

VII. SUBMISSIONS REQUIRING AGENCY APPROVAL

53. After review of any plan, report or other item which is required to be submitted by SOCCO for approval pursuant to this Decree, the Responsible Agency shall: (a) approve the

submission; (b) disapprove the submission, directing that SOCCO modify the submission in accordance with the Responsible Agency's comments or directions; or (c) if the Parties agree, approve a portion of the submittal and disapprove the remainder.

54. In the event of approval by the Responsible Agency pursuant to Paragraph 53(a) or (c), SOCCO shall proceed to take any action required by the plan, report, or other item, as approved by the Responsible Agency, subject only to its right to invoke the Dispute Resolution procedures set forth in Section VIII (Dispute Resolution).

55. Upon receipt of a notice of disapproval pursuant to Paragraph 53(b), SOCCO shall, within 30 days or such other time as specified by the Responsible Agency in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Unless otherwise agreed to by SOCCO, except for minor modifications, FWS shall not provide less than 30 days for the revision of the LCIP Work Plan, the Quality Assurance Project Plan, or the LCI Plan.

56. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by the Responsible Agency, the Responsible Agency may again require SOCCO to correct the deficiencies, in accordance with the preceding Paragraphs. The Responsible Agency also retains the right to amend the plan, report or other item. SOCCO shall implement any such plan, report, or item as amended by the Responsible Agency, subject

only to its right to invoke the procedures set forth in Section VIII (Dispute Resolution).

57. If upon the second resubmission, a plan, report, or item is disapproved or modified by the Responsible Agency due to a material defect, SOCCO shall be deemed to have failed to submit such plan, report, or item timely and adequately unless SOCCO invokes the dispute resolution procedures set forth in Section VIII (Dispute Resolution) and the Responsible Agency's action is overturned pursuant to that Section.

58. All plans, reports, and other items required to be submitted to the Responsible Agency under this Decree shall be, upon approval or amendment by the Responsible Agency, enforceable obligations under this Decree. In the event that the Responsible Agency approves or amends a portion of a plan, report, or other item required to be submitted to the Responsible Agency under this Decree, the approved or amended portion shall be enforceable under this Decree.

VIII. DISPUTE RESOLUTION

59. The dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce SOCCO's obligations that have not been disputed in accordance with this Section.

60. Any dispute which arises under or with respect to this Decree shall in the first instance be the subject of

informal negotiations between the Parties. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is extended by written agreement of the Parties. The dispute shall be considered to have arisen when one Party sends the other Party a written Notice of Dispute.

61. a. In the event that the Parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by the Responsible Agency shall be considered binding unless, within 20 days after the conclusion of the informal negotiation period, SOCCO invokes the formal dispute resolution procedures of this Section by serving on the Responsible Agency a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by SOCCO. SOCCO shall simultaneously serve a copy of its Statement of Position on the Chief, Environmental Enforcement Section, United States Department of Justice at the address indicated in Section XVIII (Notices and Submissions).

b. After receipt of SOCCO's Statement of Position, the Responsible Agency will serve on SOCCO its Statement of Position, including but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by the Responsible Agency. Within 21 days of service of the Responsible Agency's Statement of Position, SOCCO may

serve on the Responsible Agency a response to the Responsible Agency's Statement of Position.

c. If there is disagreement between the Responsible Agency and SOCCO as to whether dispute resolution should proceed under Paragraph 62 or Paragraph 64, the Parties shall follow the procedures set forth in the paragraph determined by the Responsible Agency to be applicable. However, if SOCCO ultimately appeals to the Court to resolve the dispute, the Court shall determine which paragraph is applicable in accordance with the standards identified in Paragraphs 62 and 64.

62. Formal dispute resolution for disputes pertaining to any aspect of the selection by EPA of a Response Measure pursuant to Section V (Restoration Measures for Affected Streams), determinations regarding the occurrence of an Exotic Event pursuant to Paragraph 30(f), attainment of any Ecological Endpoint, the adequacy of any submittal requiring agency approval under Section VII, disposition of a request for certification of Recovery pursuant to Section XIV (Certification of Recovery), approval by FWS of the LCIP Work Plan or Plans and reports submitted pursuant thereto, approval by FWS of the final Leading Creek Improvement Plan, and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph.

a. An administrative record of the dispute shall be maintained by the Responsible Agency and shall contain all

Statements of Position and responses thereto, including supporting documentation, submitted pursuant to Paragraph 61. Where appropriate, the Responsible Agency may allow submission of supplemental Statements of Position by the Parties.

b. When EPA is the Responsible Agency, the Director of the Water Division, EPA Region V, or such other person as may be designated by the Regional Administrator, EPA Region V, will issue a final administrative decision resolving the dispute based on the administrative record described in Subparagraph a above. When FWS is the Responsible Agency the Regional Director, Region III of the United States Fish and Wildlife Service, or such other person as he or she may designate will issue the final administrative decision resolving the dispute based on the administrative record described in Subparagraph a above. These decision(s) shall be binding upon SOCCO and shall not be subject to judicial review, unless, within 20 days of the service upon SOCCO of the decision, SOCCO serves upon the United States and files with this Court a motion challenging the decision. Such motion shall be served upon the United States as provided in Section XVIII (Notices and Submissions). The United States shall have 60 days from the date of service to serve and file a response to SOCCO's motion. SOCCO's motion shall inform the Court of this provision regarding the length of time allowed to the United States for a response.

63. In any proceeding to review a determination made pursuant to Paragraph 62(b), SOCCO shall have the burden of

demonstrating that the decision of the designated decision-maker of the Responsible Agency is arbitrary and capricious or otherwise not in accordance with law. Judicial review of the Responsible Agency's decision shall be on the administrative record compiled pursuant to Paragraph 62(a) with either Party having the right to request oral argument.

64. Formal dispute resolution for disputes that are neither explicitly identified in Paragraph 62 nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of SOCCO's Statement of Position submitted pursuant to Paragraph 61, the designated decision-maker of the Responsible Agency, will issue a final decision resolving the dispute. This decision shall be binding upon SOCCO and shall not be subject to judicial review unless, within 20 days of the service upon SOCCO of the decision, SOCCO serves upon the United States and files with this Court a motion challenging the decision. Such motion shall be served upon the United States as provided in Section XVIII (Notices and Submissions). The United States shall have 60 days from the date of service to serve and file a response to SOCCO's motion, and SOCCO's motion shall inform the Court of this provision regarding the length of time allowed for a response.

b. Judicial review of any dispute governed by this Paragraph shall be governed by applicable provisions of law.

65. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of SOCCO's under this Consent Decree not directly in dispute, unless the Responsible Agency or the Court agrees otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraphs 87 and 88.

66. For the purposes of this Section, Service is complete when the documents are deposited for delivery with an overnight delivery service or with the United States Postal Service if sent certified mail, return receipt requested, or, if any other method is used, service is complete upon actual receipt.

IX. ACCESS TO INFORMATION AND PROPERTY

67. SOCCO shall provide to EPA, FWS and OEPA, upon request, copies of all non-privileged documents and information within its possession or control or that of its contractors or agents (to the extent that SOCCO has the authority to require its contractor or agent to produce such documents or information) relating to activities taken pursuant to the SOCCO/OEPA Stream Restoration Plan and this Decree including, but not limited to, sampling, analysis, chain of custody records, manifests, receipts, reports, correspondence, or other documents.

68. Commencing on the date of lodging of this Consent Decree, SOCCO agrees to provide EPA, FWS, and their

representatives, including its contractors, access at all reasonable times to any property in or adjacent to the Stream Systems that is owned or controlled by SOCCO for the purposes of:

a. Monitoring the implementation of any Restoration Measure;

b. Verifying any data or information submitted to the United States or OEPA, including any data collected pursuant to the LCIP Work Plan;

c. Conducting investigations relating to the Stream Systems;

d. Obtaining samples; and

e. Assessing the need for, or planning the implementation of, Restoration Measures.

69. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, including enforcement authorities related thereto, under any applicable statute or regulations.

X. BIOLOGICAL AND CHEMICAL MONITORING AND REPORTING

70. This Section describes the chemical and biological sampling/monitoring to be performed by SOCCO pursuant to Section V (Restoration Measures). Although SOCCO may be obligated to perform some or all of these sampling/monitoring activities to satisfy its obligations to OEPA, the requirements of this Section are separate and independent obligations of SOCCO to the United States. In the event of a discrepancy between this Decree and the Endpoints Document, the terms of the Decree shall

control. Chemical and biological sampling/monitoring to be performed by SOCCO to satisfy the requirements of Section VI (Leading Creek Watershed Improvement Project) shall be performed in accordance with the procedures approved by FWS pursuant to that Section.

71. This Paragraph applies to all biological sampling/monitoring data submitted by SOCCO to EPA for the purposes of demonstrating attainment of Ecological Endpoints under this Decree.

a. SOCCO shall conduct biological sampling and monitoring in the Affected Streams, and shall analyze and report all data collected therefrom, in accordance with the Endpoints Document and all OEPA Protocols identified therein.

b. All biological sampling/monitoring shall be conducted at the Sampling Stations identified in Appendix 7 (Sampling Stations).

c. Except as otherwise provided in the Endpoints Document Errata Sheet with respect to the Silver Lamprey, the Least Brook Lamprey, and the River Redhorse, all fish and macroinvertebrate sampling/monitoring shall be conducted during the Summer/Fall Index Period, unless otherwise agreed to by EPA in writing.

d. Except as provided in Paragraphs 30(i) and 74, each year during the Summer/Fall Index Period SOCCO shall conduct at least two valid collections of macroinvertebrates and three valid fish sampling passes at each Sampling Station. The minimum number of sample collections or sampling passes required by this Paragraph

(as may be modified by Paragraph 30(i) or Paragraph 74) establishes the minimum number of valid samples necessary to demonstrate attainment or maintenance of a required IBI, ICI, and MIwb score at any Sampling Station. To be considered valid, each collection must follow the procedures described in, and occur under in-stream conditions contemplated by, the relevant OEPA protocol.

e. Mussel and amphibian sampling/monitoring will be conducted as appropriate to demonstrate attainment of mussel and amphibian Ecological Endpoints. .

f. Sampling Stations for demonstrating attainment of the Ecological Endpoints for amphibians (Muddpuppies) in Segment 3 of Leading Creek had not been finally identified at the time this Decree was drafted. As provided in item 6 of the Errata Sheet to the Endpoints Document SOCCO has proposed seven (7) locations that appear to have suitable muddpuppy habitat. These Sampling Stations are identified in Appendix 7 to this Decree as the Leading Creek Sampling Stations at RM (river mile) 15.6, 15.5, 14.8, 13.8, 12.9, 12.3 and, 10.3. Based upon sampling data to be obtained subsequent to the signing of this Decree, OEPA will select four of these Sampling Stations for the demonstration of the attainment and maintenance of the Ecological Endpoints for amphibians in Segment 3 of Leading Creek. OEPA will notify both SOCCO and EPA of the Sampling Stations selected. Upon their selection by OEPA, these four Sampling Stations shall be the Sampling Stations at which SOCCO must demonstrate satisfaction of

the Ecological Endpoint for amphibians (collection of adult and juvenile muddpuppies for three consecutive years at each Sampling Station).

g. Biological sampling and/or monitoring conducted by SOCCO for the purpose of submission to OEPA pursuant to the SOCCO/OEPA Restoration Plan and/or Endpoints Document may be submitted by SOCCO to EPA to satisfy requirements of this Decree so long as such data also meets the requirements of this Decree and provided that any deviation from the terms of the Endpoints Document, as attached to this Decree, or the sampling protocols identified therein, has been agreed to in writing by EPA.

72. Unless otherwise agreed to in writing by EPA, all biological data collected during the Summer/Fall Index Period (June 15 through October 15) and all analysis of that data shall be submitted to EPA no later than the earlier of either the date it is submitted to OEPA, or January 30th of the year immediately following the collection of the data. In reporting biological data to EPA, SOCCO shall provide copies of all forms required to be completed pursuant to the Endpoints Document or OEPA protocols identified therein, including but not limited to, the qualitative habitat evaluation forms, all field notes of samplers, and all worksheets and final reports addressing calculation of IBI, ICI, and MIwb scores. Until such time as OEPA directs otherwise, all voucher specimens required by the Endpoints Document are to be provided only to OEPA in accordance with the Endpoints Document. If for any reason OEPA informs SOCCO that it is no longer willing

to receive or provide for the retention of voucher specimens, then SOCCO shall continue to collect and preserve voucher specimens in the manner prescribed by the Endpoints Document and shall submit such specimens directly to EPA.

73. In addition to the biological monitoring conducted pursuant to Paragraph 72, SOCCO shall:

(a) Sample periphyton growth in the Affected Streams in accordance with Appendix 4. The periphyton monitoring shall be conducted between April 1 and May 31 and between July 1 and August 31 of 1995. Additional periphyton monitoring, if any, will be required under this Decree only in connection with specific Restoration Measures or Restoration Measures Reports under Section V (Restoration Measures for the Affected Streams); and,

(b) Collect and report qualitative data regarding macroinvertebrate communities in the Affected Streams in accordance with Appendix 5. These data shall be collected in conjunction with each macroinvertebrate collection required pursuant to Paragraph 71.

74. Notwithstanding anything to the contrary in the Endpoints Document, SOCCO may reduce the level of effort for biological sampling/monitoring in any Stream Segment, upon the written concurrence of EPA, only as follows:

(a) In the year following two consecutive years of demonstrated attainment of all Ecological Endpoints for fish in a particular Stream Segment, SOCCO may reduce the fish collections

at each Station in that Segment to two valid sampling passes for fish. In the year following two consecutive years of demonstrated attainment of all Ecological Endpoints for macroinvertebrates in a particular Stream Segment, SOCCO may reduce the macroinvertebrate collections at each Station in that Segment to one valid macroinvertebrate collection. Notwithstanding any reduced sampling for fish and/or macroinvertebrates, SOCCO shall, unless otherwise directed by EPA, continue to collect and report the additional qualitative macroinvertebrate data required by Paragraph 73(b) unless EPA agrees, in writing, that such sampling may be further reduced or eliminated.

(b) Upon the Certification of Recovery for a particular Segment, SOCCO may further reduce biological sampling/monitoring in such Segment by sampling only at designated "Key Station(s)" and "Control Stations" in that Segment. Key Stations shall be established by: (1) OEPA designation of Key Stations and written confirmation by OEPA to EPA of such designation, or (2) if OEPA has not designated Key Stations by the time SOCCO is entitled, pursuant to this Paragraph, to reduce sampling to Key Stations, SOCCO shall propose and obtain written concurrence from EPA that one or more Sampling Stations in a Stream Segment is (are) the representative Station(s) for that Segment. Control Stations are identified in Appendix 7 (Sampling Stations). Sampling/monitoring of Key Stations and Control Stations will continue until the Stream

System has Recovered in accordance with Paragraph 30(e). SOCCO may, upon the concurrence of EPA pursuant to Section XIV (Certification of Recovery), discontinue biological sampling/monitoring in a Stream System when that System has Recovered.

(c) To obtain EPA concurrence for the reduction of sampling, SOCCO must submit to EPA a written request identifying precisely what sampling SOCCO wishes to reduce and the basis for such request. EPA shall respond to SOCCO's request within 120 days. Failure of EPA to deny SOCCO's request for a reduction of sampling within the designated time period shall be deemed an approval of such request for the next following Summer/Fall Index Period and for any subsequent sampling period unless EPA, in writing, objects to the reduction and requires resumption of the more frequent sampling during the next following Summer/Fall Index Period.

75. SOCCO shall conduct periodic sampling of sediments in the Affected Streams in accordance with the provisions of Appendix 6. Sediment sampling will continue in each Stream System until such time as EPA certifies Recovery of such Stream System pursuant to Section XIV (Certification of Recovery). Any additional sampling of sediments or of water quality shall be undertaken in accordance with a Restoration Measures Plan approved pursuant to Section V (Restoration Measures for Affected Streams). Unless otherwise agreed to in writing by EPA, all water and sediment samples must be analyzed, subjected to QA/QC

procedures in accordance with Section XI, and the results reported to EPA within 90 days of each sampling event.

76. Not less often than quarterly (January 15, April 15, July 15, and October 15), SOCCO shall submit to EPA copies of all discharge monitoring reports required to be submitted to OEPA pursuant to any NPDES Permit held by SOCCO for discharge into the Leading Creek or Raccoon Creek Stream Systems.

XI. QUALITY ASSURANCE, SAMPLING, and DATA ANALYSIS

77. For any work performed pursuant to this Decree, SOCCO shall use quality assurance, quality control, and chain of custody procedures for all samples which shall substantially meet the quality assurance requirements established in the following guidance: "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5), Draft Final July 1993; "Guidance for the Data Quality Objectives Process" (EPA QA/G-4) Final September 1994; and, "Data Quality Objectives Decision Error Feasibility Trails" (EPA QA/G-4D) Final September 1994. SOCCO shall ensure that EPA personnel and their authorized representatives are allowed access at reasonable times to all laboratories owned and utilized by SOCCO in implementing this Decree. SOCCO shall ensure that the laboratories it utilizes for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. SOCCO shall ensure that all laboratories it uses for analysis of samples taken pursuant to this Decree use an EPA or equivalent QA/QC program.

78. Upon request, SOCCO shall allow split or duplicate samples to be taken by EPA and/or OEPA or their authorized representatives. SOCCO shall notify EPA and OEPA not less than 14 days in advance of any sample collection activity required by this Decree, including, but not limited to, water, sediment and biological sampling, unless shorter notice is agreed to by EPA. The results of any unscheduled sampling or supplemental sampling conducted by SOCCO but not explicitly required by this Decree shall be provided to EPA along with the bi-annual progress reports required in Section XII. Upon request, EPA shall allow SOCCO to take split or duplicates of any samples it takes as part of its implementation of this Decree.

79. Except as otherwise provided in this Decree or in the Statement of Work for the Leading Creek Improvement Plan, SOCCO shall submit to EPA results of all sampling and/or tests or other data obtained or generated by or on behalf of SOCCO with respect to the implementation of this Decree within 14 days of SOCCO's receipt or preparation of data sheets or other compilation of test results, unless EPA agrees otherwise. SOCCO shall send courtesy copies of all such data to OEPA.

XII. REPORTING REQUIREMENTS

80. In addition to any other requirement of this Decree, SOCCO shall submit to EPA written progress reports every 6 months that: (a) describe the actions which have been taken toward achieving Restoration of the Affected Streams during the previous 6 months, including an identification of all sampling

collection activities as referenced in Paragraph 79; (b) identify all work plans, plans and other deliverables required by the OEPA/SOCCO Restoration Plan completed and submitted during the previous six months; (c) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next 6 months; and (d) include any modifications to the work plans or other schedules that SOCCO has proposed to OEPA under the SOCCO/OEPA Restoration Plan or this Decree. SOCCO shall submit these progress reports to OEPA and EPA by the tenth day of April and October of each year following the entry of this Decree until EPA has issued a Certification of Recovery for both Stream Systems pursuant to Section XIV (Certification of Recovery).

81. All reports and other documents submitted by SOCCO to FWS and EPA that purport to document SOCCO's compliance with the terms of this Decree shall be signed by an authorized representative of SOCCO. The person signing such report or document shall make the following certification:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

XIII. STIPULATED PENALTIES

82. SOCCO shall be liable to the United States for stipulated penalties in the amounts set forth in subparagraphs (a) and (b) of this Paragraph for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XV (Force Majeure). "Compliance" shall include completion of the activities required under this Consent Decree or any work plan approved under this Consent Decree in accordance with the terms of this Decree or the approved plan.

a. The following stipulated penalties shall be payable per violation per day to the United States for any: (i) failure to commence or complete any Restoration Measure in accordance with any schedule in any EPA approved or amended work plan; (ii) failure to timely make any payment required under Paragraphs 26, 27, 46 or 49; or (iii) failure to conduct sampling/monitoring as required by this Decree.

Penalty Per Violation Per Day	Period of Noncompliance
a. $500	a. Day 1 through 10
b. $1,000	b. Day 11 through 20
c. $5,000	c. Day 21 and each day thereafter

b. The following stipulated penalties shall be payable per violation per day to the United States for: (i) failure to submit timely or adequate reports or plans pursuant to Paragraphs 32-35, 40-42, and 80, and pursuant to the schedule(s) adopted or approved pursuant to the LCIP Work Plan and/or the provisions of Section VI (Leading Creek Watershed Improvement Plan); and (ii)

failure to timely submit data and analyses pursuant to Paragraphs 72, 73, 75, 76, and 79:

Penalty Per Violation Per Day	Period of Noncompliance
a. $250	a. Day 1 through 10
b. $500	b. Day 11 through 20
c. $2,000	c. Day 21 and each day thereafter

83. All stipulated penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

84. Following the Responsible Agency's determination that SOCCO has failed to comply with a requirement of this Consent Decree, the Responsible Agency may give SOCCO written notification of the same and describe the noncompliance. The Responsible Agency may send SOCCO a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether the Responsible Agency has notified SOCCO of a violation.

85. All penalties owed to the United States under this Section shall be due and payable within 30 days of receipt from the Responsible Agency of a demand for payment of the penalties, unless SOCCO invokes the Dispute Resolution procedures under Section VIII (Dispute Resolution). All payments under this

Section shall be made in the same manner as the payment required by Paragraph 25(a).

86. The payment of penalties shall not alter in any way SOCCO's obligation to complete the performance required under this Consent Decree.

87. Penalties shall continue to accrue as provided in Paragraphs 82 and 83 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of the Responsible Agency that is not appealed to this Court, accrued penalties determined to be owing shall be paid within 30 days of the agreement or the receipt of the Responsible Agency decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, SOCCO shall pay all accrued penalties determined by the Court to be owed to the United States.

88. Notwithstanding the forgoing, if stipulated penalties accrue relating to SOCCO's failure to (a) timely or adequately submit a Restoration Measure Work Plan pursuant to Paragraphs 33-35 or, (b) timely commence implementation of a Restoration Measure pursuant to a Restoration Measure Work Plan amended by EPA pursuant to Paragraph 56 then, for such penalties that accrue between the time that SOCCO invokes formal Dispute Resolution and 10 days after the dispute resolution procedure has concluded by agreement, failure to challenge the decision of the

Water Division Director, or by entry of a final non-appealable order by the Court, any assessment of stipulated penalties shall be made by order of the Court based upon the Court's assessments of the reasonableness of SOCCO's challenge to EPA's decision, and such other equitable factors as the Court deems appropriate.

89. If SOCCO fails to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties.

90. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of SOCCO's violation of this Decree or of the statutes and regulations upon which it is based.

XIV. CERTIFICATION OF RECOVERY

91. If at any time after submittal to EPA of all of the sampling data required under this Decree for any particular Summer/Fall Index Period, SOCCO concludes that either the Leading Creek or Raccoon Creek Stream System or any Segment thereof has Recovered, SOCCO may submit to EPA a written request for certification by EPA that such Stream System(s) or Segment(s) has Recovered. A copy of the request shall be contemporaneously sent to the Chief, Environmental Enforcement Section, at the address provided in Section XVIII (Notices). In the request, a corporate representative of SOCCO shall (a) state that all Restoration Measures as implemented in the relevant Stream System pursuant to this Decree have been completed in full satisfaction

of the requirements of this Decree and any work plan approved hereunder, (b) state that Recovery has occurred, and (c) provide a summary and explanation of the data and documentation that SOCCO believes demonstrate that Recovery has occurred in the Stream System or Segment. The request shall contain the following statement, signed by a responsible corporate official of SOCCO:

> I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after review of the request for certification EPA determines, based upon any available data, that (a) a Restoration Measure or any portion thereof has not been completed in accordance with this Decree or approved work plan, or (b) Recovery of the Stream System or Segment has not been achieved, EPA will so notify SOCCO in writing and EPA may, in accordance with the procedures provided under Paragraphs 31 through 39, require SOCCO to take further actions. Failure of EPA to approve or deny within 180 days a properly submitted request for certification of Recovery shall be deemed a denial of the request and subject to Section VIII (Dispute Resolution).

92. If EPA agrees that Recovery has occurred in a Stream System or Segment, EPA will so certify in writing to

SOCCO. At SOCCO's request EPA may certify that a Segment has Recovered except for the Key Species/Taxa of unionid mussels specified as Ecological Endpoints. Certification of Recovery of a Stream Segment with a reservation regarding mussels shall not affect EPA's authority to require additional actions by SOCCO related to recovery of Key Species/Taxa of mussels in such Segment pursuant to Section V (Restoration Measures for Affected Streams). Certification of Recovery of a Stream Segment without a reservation for Key Species/Taxa of mussels shall terminate SOCCO's obligations under Sections V of this Decree as to actions related to Ecological Endpoints for that Stream Segment. Certification of Recovery of a Stream System shall terminate SOCCO's obligations under Sections V and X of this Decree as to that Stream System.

93. EPA shall not be bound by any determinations regarding Recovery made by OEPA. Any such determinations may, however, be included in the administrative record for purposes of Dispute Resolution under Section VIII if documentation of OEPA's decision is timely added to the administrative record compiled pursuant to Paragraph 62(a).

XV. FORCE MAJEURE

94. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of SOCCO or of any entity controlled by SOCCO, including, but not limited to, their contractors and subcontractors, that delays or prevents the performance of any obligation under this

Consent Decree despite SOCCO's best efforts to fulfill the obligation. The requirement that SOCCO exercise "best efforts to fulfill the obligation" includes best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the extent possible. "Force Majeure" does not include financial inability to complete required work or a failure to attain the Ecological Endpoints.

95. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, SOCCO shall notify orally the Contact Person for the Responsible Agency or, in the event that person is unavailable, the Contact Person's supervisor, within 5 days of when SOCCO first knew or should have known that the event would cause a delay. The Contact Person for a Responsible Agency shall be the person to whom SOCCO has been directed in writing to submit deliverables, data or other submissions under this Decree. Within 10 days thereafter, SOCCO shall provide in writing to the Responsible Agency an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; and, SOCCO's rationale for attributing such delay to a force majeure event if it intends to assert such a claim. SOCCO shall include with any notice all

available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude SOCCO from asserting any claim of force majeure for that event. SOCCO shall be deemed to have notice of any circumstance of which its contractors or subcontractors had actual notice.

96. If the Responsible Agency agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by the Responsible Agency, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If the Responsible Agency does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, the Responsible Agency will, within 60 days, notify SOCCO in writing of its decision. If the Responsible Agency agrees that the delay is attributable to a force majeure event, the Responsible Agency will notify SOCCO in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

97. If SOCCO elects to invoke the dispute resolution procedures set forth in Section VIII (Dispute Resolution), it shall do so no later than 20 days after receipt of the Responsible Agency's notice pursuant to Paragraph 96. In any

such proceeding, SOCCO shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that SOCCO complied with the requirements of Paragraphs 94 and 95. If SOCCO carries this burden, the delay at issue shall be deemed not to be a violation by SOCCO of the affected obligation of this Consent Decree identified to the Responsible Agency and the Court.

XVI. COVENANTS NOT TO SUE

98. Except as specifically provided in Paragraphs 100 and 101, effective upon entry of the Decree, the receipt of SOCCO's first payment into the Leading Creek Improvement Account pursuant to Paragraph 46, the receipt of the reimbursement payments pursuant to Paragraph 26, and the payment in full of the civil penalty pursuant to Paragraph 25, the United States covenants not to sue or to take administrative action against SOCCO for claims and allegations asserted in the Complaint in this action, including but not limited to claims for natural resource damages and the costs of assessing any damage to natural resources arising out of the discharge of untreated or partially treated effluent during the dewatering of Meigs Mine No. 31 during July 30, 1993 through September 23, 1993. This covenant not to sue extends to SOCCO, American Electric Power Company,

Inc., American Electric Power Service Corporation, Ohio Power Company, and the officers, directors and employees of each of those companies to the extent such person was acting in such capacity in connection with the dewatering of Meigs Mine No. 31 during July 30, 1993 through September 23, 1993. This covenant not to sue does not extend to any other person.

99. Effective upon the entry of this Decree, SOCCO covenants not to sue the United States on any claim arising out of the operative facts underlying the action filed in the United States District Court for the Southern District of Ohio, Eastern Division, styled Southern Ohio Coal Company v. Office of Surface Mining, Reclamation, and Enforcement, et al., Civil Action No. C2-93-751. Notwithstanding the foregoing, SOCCO does not waive any defense it may have to any future action reserved to the United States under Paragraphs 100 and 101.

XVII. RESERVATIONS OF RIGHTS

100. The covenants not to sue in Paragraph 98 shall apply only to civil claims arising out of the discharge of untreated or partially treated AMD during the July 30, 1993 through September 23, 1993 dewatering of the Meigs No. 31, and shall not apply to claims based on a failure of SOCCO to satisfy the requirements of this Decree or any violation of law occurring prior to July 30, 1993 or subsequent to September 23, 1993.

101. The United States reserves, and this Decree is without prejudice to, any civil cause of action or claim for relief not arising directly out of the July 30, 1993 through

September 23, 1993 dewatering of the Meigs Mine. In addition, notwithstanding the covenant not to sue in Paragraph 98, the United States reserves all rights to take any action, including administrative or judicial actions against SOCCO, to address any imminent and substantial endangerment to human health or the environment.

102. Except as expressly stated in this Decree, each Party reserves against any person not a Party to this Decree all rights, claims, or defenses available to it arising out of or relating to the Meigs Mine No. 31 dewatering in July 30, 1993 through September 23, 1993.

103. Nothing in this Decree creates, nor shall it be construed as creating, any claim in favor of any person not a Party to this Decree. Nothing in this Decree shall be construed as limiting, barring, or otherwise prejudicing claims SOCCO may have for insurance, contribution, and/or indemnification arising from this settlement against any person not a Party to this Decree.

XVIII. NOTICES AND SUBMISSIONS

104. Except as otherwise provided herein, if written notice or submission is required to be given by one Party to another Party or entity for any reason, it shall be directed to the individuals and addresses specified below, unless the individuals specified or their successors give notice, in writing, to the other Parties that notice or submission should be directed to a different individual or address. All notices shall

reference the action United States v. Southern Ohio Coal Company, its action number and the United States Department of Justice file number, 90-5-1-1-5033.

Notice and submissions to the United States:
(Notices and submissions to the United States shall be sent to all persons listed under this subheading. Notices and submissions to EPA shall be sent to the person denoted with an *. Notices and submissions to FWS shall be sent to the person denoted with a **.)

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044

* Director, Division of Water
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

** Field Office Supervisor
U.S. Fish and Wildlife Service
6950 Americana Pkwy
Suite H
Reynoldsburg, OH 43068-4132

Notice to SOCCO

William C. Bosworth
Manager Environmental Engineering
American Electric Power Service Corporation
1 Memorial Drive
Lancaster, Ohio 43130

Copies to OEPA

Edward Rankin
Ohio Environmental Protection Agency
Division of Surface Water
1685 Westbelt Drive
Columbus, OH 43228-3809

XIX. REPRESENTATIVES

105. Each undersigned representative of SOCCO certifies that he or she is fully authorized to enter into the

terms and conditions of this Decree and to execute and legally bind SOCCO to this Decree.

XX. ASSURANCE OF ABILITY TO PERFORM

106. Within 15 days of the entry of this Decree, SOCCO shall provide assurance of ability to complete the requirements of this Decree by providing to EPA a letter of guarantee from Ohio Power Company guaranteeing to the United States full performance of all payment and work obligations of SOCCO under this Decree.

XXI. MISCELLANEOUS

107. The Parties agree that this Decree may be executed in counterpart.

108. All activities undertaken by SOCCO pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations.

109. Where any activity required by this Decree requires a federal or state permit or approval, SOCCO shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. SOCCO may seek relief under the provisions of Section XV (Force Majeure) of this Consent Decree for any delay resulting from a failure to obtain, or a delay in obtaining, any required permit. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

110. Except with the prior written consent of EPA, SOCCO agrees that, consistent with safe mining practices, it will maintain the currently-existing drainage at the bulkhead area from the inactive portion of Meigs No. 31 (formerly Raccoon No. 3) and will not reseal the opening between this inactive area and Meigs No. 31 for the purpose of storing any water. The presently existing passageway for ventilation and/or access control shall not be deemed a violation of this provision.

XXII. MODIFICATION

111. Minor modifications not materially altering this Decree may be effected by the written agreement of the Parties. Modifications to the Endpoints Document and changes to any R.M. Work Plan schedules which are agreed to in writing by SOCCO and EPA shall be considered minor modifications to this Decree and shall not require the Court's approval. No other modifications of this Decree may be made unless the Parties agree in writing to the modification and the Court approves of the requested modification.

XXIII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

112. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with 28 C.F.R. § 50.7. The United States reserves the right to withdraw consent to this Decree if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is

inappropriate, improper, or inadequate. SOCCO consents to the entry of this Consent Decree without further notice.

113. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the discretion of either Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXIV. TERMINATION

114. Upon the complete satisfaction of all of the requirements of this Decree, and after at least 60 days written notice to the United States, SOCCO may move this Court for a termination of this Decree. If the Court determines that SOCCO has satisfied all of its obligations hereunder, the Court may terminate this Decree.

XXV. CONTINUING JURISDICTION

115. The Court retains jurisdiction to enforce the terms of this Decree.

Dated and entered this _____ day of _____, 1995.

_____

UNITED STATES DISTRICT JUDGE

United States v. SOCCO Consent Decree

WE HEREBY CONSENT to the entry of this Decree and Settlement Agreement:

FOR THE UNITED STATES OF AMERICA:

12/4/97
Date

LOIS J. SCHIFFER
Assistant Attorney General
Environment & Natural Resources Division
U.S. Department of Justice
10th St. and Pennsylvania Ave N.W.
Washington, D.C. 20530

Date

PHILLIP A. BROOKS
ANITA J. CICERO
Attorneys
Environmental Enforcement Section
Environment & Natural Resources Division
U.S. Department of Justice
P.O. Box 7611 Ben Franklin Station
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(202) 514-3637

EDMUND A. SARGUS, JR.
United States Attorney
Southern District of Ohio

Date

JAMES E. RATTAN (Bar # 0018632)
Assistant United States Attorney
Southern District of Ohio
2 Nationwide Plaza
280 N. High Street, 4th Floor
Columbus, OH 43215

FOR THE UNITED STATES, CONTINUED

8/22/95
Date

VALDAS V. ADAMKUS
Regional Administrator
Region 5
U.S. Environmental Protection Agency
77 West Jackson Boulevard (R-19J)
Chicago, IL 60604-3590

9/25/95
Date

STEVEN A. HERMAN
Assistant Administrator for
Enforcement & Compliance Assurance
U.S. Environmental Protection Agency
Washington, DC 20460

8/14/95
Date

DAVID MUCHA
U.S. Environmental Protection Agency
Office of Regional Counsel
Region 5
77 West Jackson Boulevard (C-30A)
Chicago, IL 60604-3590

10/2/95
Date

ROBERT URAM
Director
Office of Surface Mining
Reclaimation and Enforcement
United States Department
of of the Interior
1951 Constitution Ave. N.W.
Washington, D.C. 20240

FOR SOUTHERN OHIO COAL COMPANY:

8-7-95
Date

CHARLES A. EBETINO, JR.
President and
Chief Operating Officer
Southern Ohio Coal Company
1 Memorial Drive
Lancaster, Ohio 43130

8/7/95
Date

LANCE G. SOGAN
Vice President
Administration and Human Resources
American Electric Power Service
Corporation-Fuel Supply Department
1 Memorial Drive
Lancaster, Ohio 43130
AS AGENT FOR SOUTHERN OHIO COAL CO.

8-7-95
Date

D. MICHAEL MILLER
American Electric Power Service
Corporation-Fuel Supply Department
1 Memorial Drive
Lancaster, Ohio 43130
AS COUNSEL FOR SOUTHERN OHIO COAL CO.

FOR THE STATE OF WEST VIRGINIA

28 Aug 97
Date

LAIDLEY ELI MCCOY
Director
West Virginia Division of
Environmental Protection
10 McJunkin Rd.
Nitro, West Virginia 25143
IN ACCEPTANCE OF THE TERMS OF PARAGRAPH
49 OF THE DECREE ONLY

Ecological Recovery Endpoints for Streams Affected by the Meigs #31 Mine Discharges during July - September 1993

OEPA Report Number EAS/1994-1-1

March 2, 1994

Ohio EPA, Division of Surface Water
Ecological Assessment Section
1685 Westbelt Drive
Columbus, Ohio 43228

NOTICE TO USERS

Ohio EPA adopted biological criteria into the Ohio Water Quality Standards (WQS; Ohio Administrative Code 3745-1) regulations in February 1990 (Effective May 1990). These criteria consist of numeric values for the Index of Biotic Integrity (IBI) and Modified Index of Well-Being (MIwb), both of which are based on fish, and for the Invertebrate Community Index (ICI), which is based on macroinvertebrates. Criteria for each index are specified for each of Ohio's five ecoregions, and are further organized by organism group, index, site type, and aquatic life use designation. These criteria, along with the chemical and whole effluent toxicity evaluation methods, figure prominently in the assessment of Ohio s surface water resources.

Several documents support the adoption of the biological criteria by outlining the rationale for using biological information, the specific methods by which the biocriteria were derived and calculated, the field methods by which sampling must be conducted, and the process for evaluating results. These documents are:

Ohio Environmental Protection Agency. 1987a. Biological criteria for the protection of aquatic life: Volume I. The role of biological data in water quality assessment. Division of Water Quality Monitoring & Assessment, Surface Water Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1987b. Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Monitoring & Assessment, Surface Water Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1989a. Addendum to Biological criteria for the protection of aquatic life: Volume II. Users manual for biological field assessment of Ohio surface waters. Division of Water Quality Planning & Assessment, Ecological Assessment Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1989b. Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities. Division of Water Quality Planning & Assessment, Ecological Assessment Section, Columbus, Ohio.

Ohio Environmental Protection Agency. 1990a. The use of biological criteria in the Ohio EPA surface water monitoring and assessment program. Division of Water Quality Planning & Assessment, Ecological Assessment Section, Columbus, Ohio.

Rankin, E.T. 1989. The qualitative habitat evaluation index (QHEI): rationale,methods, and application. Division of Water Quality Planning & Assessment, Ecological Assessment Section, Columbus, Ohio.

These documents and this document can be obtained by writing to:

Ohio EPA - DSW
Ecological Assessment Section
1685 Westbelt Drive
Columbus, Ohio 43228
(614) 777-6264

Acknowledgements
The following Ohio EPA staff are acknowledged for their significant contribution to this report.

Biological Assessment:
Macroinvertebrate Community - Jeff DeShon
Fish Community - Ed Rankin
Data Management - Dennis Mishne and Ed Rankin
Reviewers - Chris Yoder, Mike Greenlee (ODNR-DOW), Jim Grow, John Estenik, Chris Skalski, Dr. Tom Watters (ODNR-DOW, Ohio State Research Center)
Editor - Ed Rankin

This evaluation and report would not have been possible without the assistance of the Leading Creek study team and numerous full and part time staff in the field including Tom Simon of USEPA and Eric Avery of ORSANCO. Also, numerous landowners and entities adjacent to the study area are acknowledged for their cooperation in granting Ohio EPA personnel access through their properties.

Ecological Recovery Endpoints for Streams Affected by the Meigs #31 Mine Discharges during July - September 1993

Introduction

This document lays out the specific ecological endpoints that the Ohio EPA will use to ascertain recovery of the biological, physical, and chemical characteristics of the streams affected by the discharge of untreated and partially treated mine waters from the Meigs # 31 Mine during July - September 1993. These endpoints were derived from pre-discharge and historical data and also incorporate the concepts underlying the biological criteria in Ohio s Water Quality Standards. Biological data from the impacted streams will be used to determine whether or not recovery has occurred. The overall assessment process is summarized in the flow chart in Figure 1.

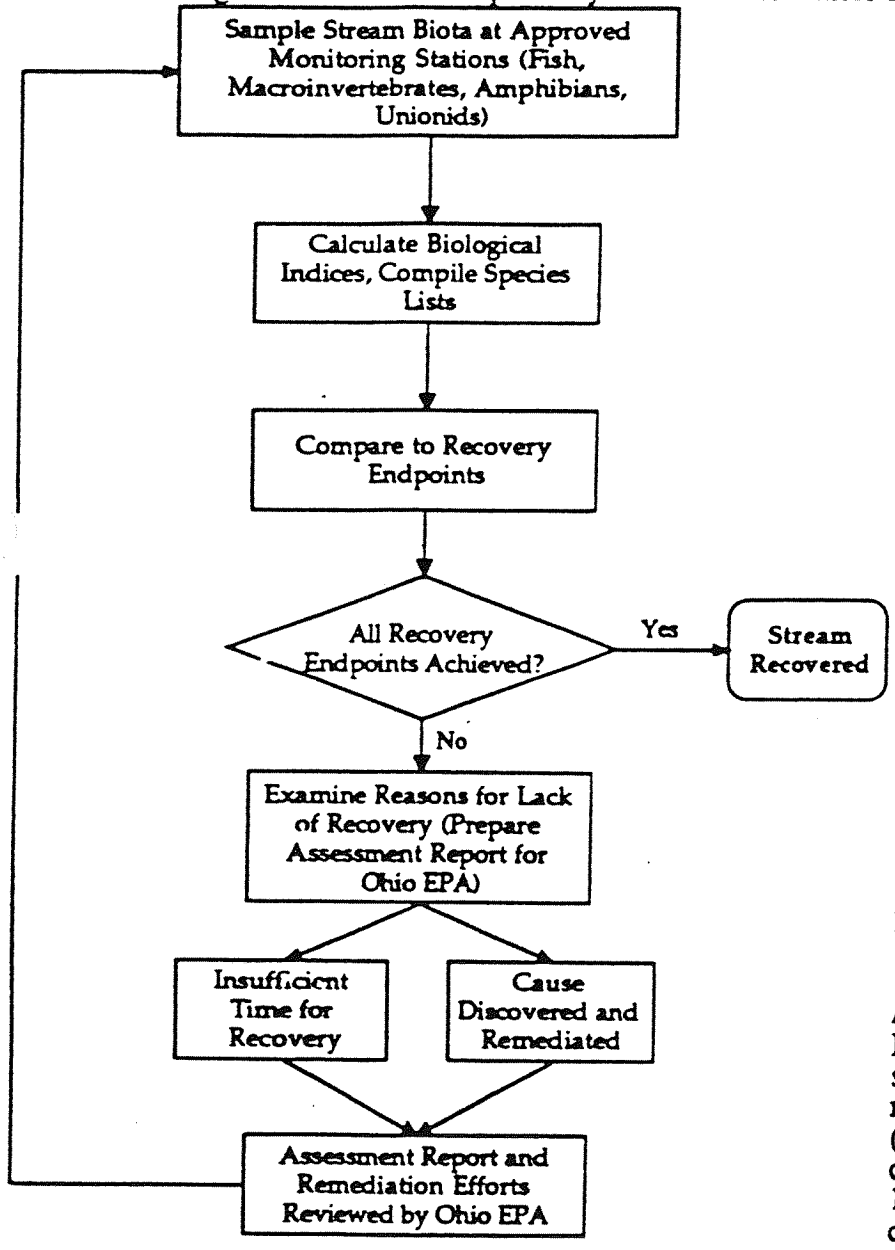

Figure 1. Process for assessing progress towards recovery endpoints in streams affected by the Meigs #31 Mine discharge during 1993.

General Considerations

Ecological Endpoints

Attainment of the ecological endpoints detailed here will be determined on the basis of data collected using approved Ohio EPA protocols for biological (fish and macroinvertebrates; Ohio EPA 1987, 1989a, 1989b; Rankin 1989), chemical, and physical data (Ohio EPA 1992) or, for amphibians and unionids mussels, generally accepted sampling methods supported by the scientific literature.

Fish Communities

For fish assemblage data, a satisfactory demonstration of full recovery will be dependent on samples (minimum of three sampling passes) collected between June 15 and October 15 under normal summer flow conditions. However, data collected outside of this index period may provide information which is useful to

support a showing that recovery is occurring. This summer-fall index period is when resident fish species comprise the majority of the specimens that are usually collected and when there is evidence that successful reproduction and growth has occurred. The ecological endpoints specified here *do not* require that each fish species be found in the *exact* proportions which occurred in the historical data. Instead, we are relying on the attainment of *similar* biological index scores (IBI, MIwb, ICI) found under pre-discharge conditions which reflect the composite of: 1) a similar species richness[1], 2) a restoration of *similar* structural and functional proportions within the assemblage, and 3) the return of a similar abundance of all *key fish species* that indicate the return of environmental attributes found during pre-discharge conditions.[2] These key species must be present as both *recruits and as sexually mature individuals* for species where such distinctions are usually evident (*e.g.*, centrarchids, suckers, some cyprinids). Ecological endpoints are specified by the individual stream and stream segments affected by the discharges.

Macroinvertebrate Communities
Requirements for recovery of the macroinvertebrate community will be similar to those for the fish community and will include a principal reliance on biological index scores (ICI) found under pre-discharge conditions which reflect the composite of: 1) the return of key macroinvertebrate species, 2) the restoration of *similar* structural and functional proportions within the assemblage, and 3) a *similar* taxa richness based on Ohio EPA approved methods as specified in Ohio EPA s biological methods manuals (Ohio EPA 1987, 1989a, 1989b).

Unionid Mussel Communities
Requirements for the recovery of the unionid mussel community will be based on the collection of recruits *and* sexually mature individuals of the species previously known to exist in each stream or stream segment (Appendix Table 3). Because of the length of time needed to recolonize, monitoring for unionid mussel recovery is likely to extend for at least 3-10 years or more before attainment of the recovery endpoints can be verified.

Amphibian Communities
ODNR fish kill investigations and electrofishing collections by Ohio EPA staff documented the presence of mudpuppies (*Necturus maculosus*) from multiple sites in Leading Creek (Appendix Table 5). This species will be used as the indicator species for amphibians. Many amphibians have declined in distribution in Ohio (Pfingsten and Downs 1989) and worldwide (Lohmeier 1990) and the population of mudpuppies in Leading Creek is significant for this area (Western Allegheny Plateau ecoregion) of Ohio. The presence of mudpuppies at *each* of the four locations in segment 3 of Leading Creek, where individuals (mostly dead) were collected during the summer discharge of untreated mine water, and at *one other* site in segment 1 or 2, will be the endpoint for this group. Collections can be made using traps and/or other methods as discussed in Pfingsten and Downs (1989) or other relevant sources (*e.g.*, Heyer *et al.* 1993).

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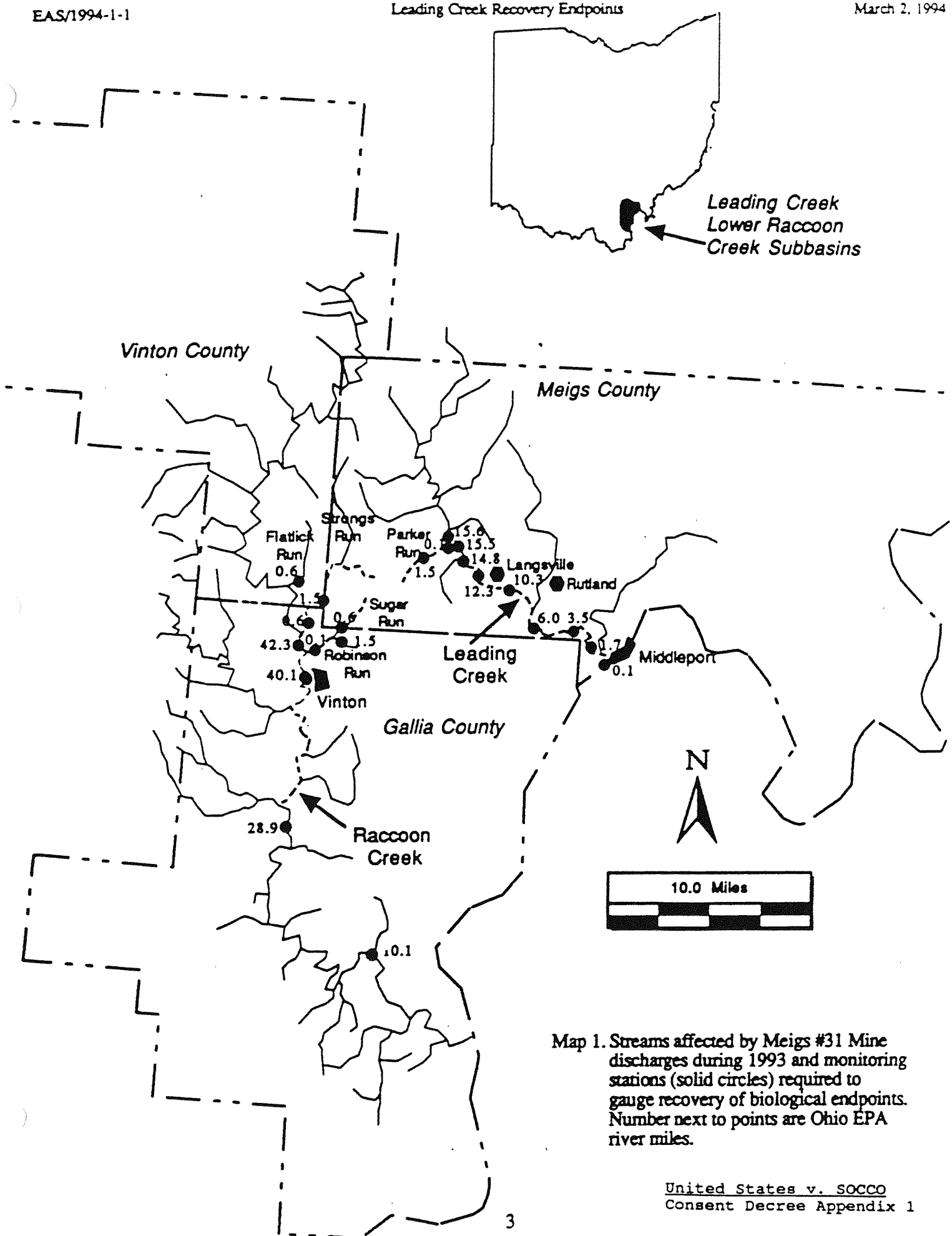
[1]When comparing post-discharge IBIs to endpoints based on historical and pre-discharge IBIs, a similar species richness should be present. [3]Minimum species richness values for each stream or segment have been defined based on the low range of species richness in a stream or segment. Although IBIs calulated with fewer species are [3]valid (e.g., for determination of interim endpoints), such IBIs will likely be missing key species and thus, the segment or stream will not acheive the final endpoint for that segment.

[2]The following species must have at least one specimen collected for each applicable stream preserved as a voucher to be deposited at the Ohio State University Museum of Biological Diversity: river redhorse, shorthead redhorse, black redhorse, longnose gar, sand shiner, silver lamprey (ammocoete), and least brook lamprey (ammocoete).



Map 1. Streams affected by Meigs #31 Mine discharges during 1993 and monitoring stations (solid circles) required to gauge recovery of biological endpoints. Number next to points are Ohio EPA river miles.

United States v. SOCCO
Consent Decree Appendix 1

Other Biological Communities
Although major impacts to non-aquatic species were not expected, the loss of the aquatic fauna in the area streams as a food source for terrestrial species (e.g., fish-eating mammals and birds) *or* the transfer of contaminants to these terrestrial species via ingestion of water, aquatic organisms, or precipitate is a possibility. Any reports about declines in these groups will be investigated, and if needed, recovery endpoints will be generated for these terrestrial species as well.

Physical/Chemical Considerations
Although the recovery of the biological communities discussed above will be the primary focus of the Meigs #31 Mine restoration, achieving these ecological endpoints will be precluded by inadequate water quality and degraded habitats, as was amply demonstrated during and after the discharges. The restoration of key chemical and physical attributes is a prerequisite for ecological recovery and these will also need to be monitored. Ohio EPA will focus on the response of lithophilic and psammophilic species to detect effects of degraded and contaminated sediments. Attributes considered important include:

1. Sediment chemistry: Concentrations of heavy metals in fine sediments should be similar to ecoregional reference levels for Western Allegheny Plateau ecoregion streams. Concentrations can be compared to ecoregional reference values (available from Ohio EPA) as well as results from upstream sites and pre-discharge results.
2. Sediment/Precipitate Deposition in Pools and Margins: Pool, margin, and backwater areas of streams should be free from significant deposits of precipitates and excess sediment ≡ disturbance of the substrate should not result in the suspension of reddish precipitates (i.e., those indicative of the past untreated mine discharges). These habitats are also likely to be the most susceptible to ecological damage thus affecting the re-colonization of these depositional areas. Recent laboratory work on these precipitates by the ODNR Divsion of Reclamation suggests that dewatering of stream margins could result in low pH values (4.6) from the hydrolysis of iron at the sediment-stream interface (Kirk Beach, personal communication).
3. Sediment/Precipitate Deposition in Riffle/Run Habitats: Reddish precipitates also accumulated in the interstitial spaces between riffle/run substrates. The disturbance of the coarse substrates resulted in ɔclouds of precipitate being released into the water column. Riffle/run areas should also be free of ɔcementing or ɔarmor plating of thc substrate. Coarse substrates should be easily dislodged with only a minimal effort and not cemented together.

Time Frames For Recovery and Actions

This document lays out the ecological recovery endpoints for these streams. Time frames for achievement of these interim and final endpoints for each biological group are summarized in Table 1. Time frames for requiring potential restoration or enhancement options, based on a lack of recovery, are also listed in Table 1. A listing of potential restoration or enhancement options that Ohio EPA may require if recovery does not occur, or does not occur quickly enough, is listed in Table 2. Some of these options may be modified and other options may be added to this list as recovery data are collected and the actions necessary to complete the restoration process become clear. Any restoration activities required by Ohio EPA will not be ɔpunitive actions, but will be designed to restore or enhance the long term ecological integrity of these streams. When final endpoints are reached, monitoring requirements for an organism group will cease after a second year of monitoring confirms that endpoints have been maintained; however, if final endpoints are not realized, special studies may be required to identify the impediments to recovery.

Table 1. Time frames for examining interim and final recovery of ecological endpoints and for requiring restoration actions if these endpoints are not reached. Specified monitoring durations and frequencies will be reduced if interim and final endpoints are acheived on schedule. Long-term monitoring is designed to ensure that all groups acheive endpoints simultaneously at some point, as was the condition prior to discharge.

Date	Macro-invertebrates	Fish	Amphib-ians[1]	Unionids (Mussels)	Water Chemistry	Restoration Options
March-April 1994					• Quarterly Monitoring	1. Removal of WPA Dam
June 15-October 15, 1994	• Two Sets of Samples (Artificial Substrates w/quals) from study sites on impaired streams	• Three electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options During Field Season.
October 16-December 31, 1994	• *Begin Interim Endpoint Assessment:* • Taxa Richness (based on Frequency Distribution, Fig 3) within 10% of historical/pre-discharge data • All ICI values out of "poor" range • 80% of key taxa collected	*Begin Interim Endpoint Assessment:* • All sites out of the "poor" range for the IBI	•Assess Monitoring Data	•Assess Monitoring Data	• Quarterly Monitoring •Assess Monitoring Data	*If Interim Endpoints Are Not Met, Ohio EPA Will Require Restoration Options That May Include, But Not Be Limited To:* 1. Increased monitoring of biota and water/sediment chemistry; possible special studies. 2. Site-specific removal of floc and deposits. 3. Site-specific habitat improvment structures designed to cleanse and restore areas affected by deposition.

June 15-October 15, 1995	• Two Sets of Samples (Artificial Substrates w/quals) from study sites on impaired streams	• Three electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options and Efficacy of Previous Restoration (1994) Efforts During Field Work
October 16 to December 31, 1995	• *Begin Final Endpoint Assessment:* • 95% of Endpoints for each stream reached (ICI) • Taxa Richness (based on Frequency Distribution, Fig 3) within 10% of historical/pre-discharge data • All key taxa collected	• *Begin Final Endpoint Assessment:* •95% of Endpoints for each stream reached (IBI) • Species Richness (based on Frequency Distribution, Fig 3) within 10% of historical/pre-discharge data • All key fish species collected	•Assess Monitoring Data	•Assess Monitoring Data	• Quarterly Monitoring •Assess Monitoring Data	*If Final Endpoints Are Not Met, Ohio EPA Will Require Restoration Options That May Include, But Not Be Limited To:* 1. Further monitoring of biota and water/sediment chemistry to determine limits to biotic recovery; possible special studies. 2. Site-specific removal of floc and deposits. 3. More widespread restoration and enhancement options including those discussed above plus options designed to speed overall recovery process via habitat/riparian enhancement with the purpose of improving substrate quality, including (but not limited to): a.) riparian zone easements to improve other aspects of habitat quality, b.) bank restoration.
June 15-October 15, 1996	• One Set of Samples (Artificial Substrates w/quals) from study sites on impaired streams	• Two electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored • Sites Examined for Sex. Mature Adults	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options and Efficacy of Previous Restoration Efforts (1995) During Field Work
October 16 to December 31, 1996	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	•Assess Monitoring Data	•Assess Monitoring Data	• Quarterly Monitoring	Further restoration efforts dependent on recovery and efficacy of existing (1996) restoration (See Above).

June 15-October 15, 1997	• One Set of Samples (Artificial Substrates w/ quals) from study sites on impaired streams	• Two electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored • Sites Examined for Sex. Mature Adults	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options and Efficacy of Previous Restoration Efforts (1996) During Field Work
Oct 16 to December 31, 1997	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• *Begin Final Endpoint Assessment:* • Mudpuppies found at locations specified in text.	• *Begin Interim Endpoint Assessment:* • Unionid Recruits of All Species (Some Present as Adults)	• Quarterly Monitoring	Further restoration efforts dependent on recovery and efficacy of existing (1996) restoration (See Above), plus: 1. If mudpuppies not found, examine whether all amphibians suppressed and consider stocking options[2] in cooperation with ODNR.
June 15-October 15, 1998	• One Set of Samples (Artificial Substrates w/ quals) from study sites on impaired streams	• Two electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored • Sites Examined for Sex. Mauture Adults	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options and Efficacy of Previous Restoration Efforts (1996) During Field Work
October 16 to December 31, 1998	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• *Continue Interim Endpoint Assessment:* • Unionid Recruits (All Species) Present, Sexually Mature of Some Species Present	• Quarterly Monitoring	Further restoration efforts dependent on recovery and efficacy of existing (1997) restoration (See Above), plus: 1. If mudpuppies not found, examine whether all amphibians suppressed and consider stocking options[2] in cooperation with ODNR. 2. If unionid recruits not found, examine cause of suppression and consider stocking options[2] in cooperation with ODNR.

June 15-October 15, 1999 and 2000	• One Set of Samples (Artificial Substrates w/quals) from study sites on impaired streams	• Two electrofishing sampling passes from study sites on impaired streams	• Amphibian populations examined (traps, etc.)	• Recruitment Monitored • Sites Examined for Sex. Mature Adults	• Quarterly Monitoring	1. Ohio EPA Monitoring Staff Assess Possible Restoration Options and Efficacy of Previous Restoration Efforts (1998,99) During Field Work
October 16 to December 31, 2000	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• **Total Recovery** • *Assess For Maintenance of Final Endpoints*	• *Final Endpoint Assessment:*•• Unionid Recruits (All Species) Present, Sexually Mature of All Species Present	• Quarterly Monitoring	Further restoration efforts dependent on recovery and efficacy of existing (1999) restoration (See Above), plus: 1. If mudpuppies not found, examine whether all amphibians suppressed and consider stocking options[2] in cooperation with ODNR. 2. If unionids recruits not found, examine cause of suppression and consider stocking options[2] in cooperation with ODNR.

[1] mudpuppies (*Necturus maculosus*) use as an indicator species.
[2] if no other impediments to population survival are evident.

Table 2. Some potential restoration actions that Ohio EPA may require to ensure full recovery of the biological communities in streams affected by the Meigs #31 Mine discharges.

Short-Term
Removal of the WPA Dam.
Removal of precipitate and floc deposits from streams.
Mid-Term
Removal of precipitate and floc deposits from streams.
Special studies to investigate the impediments to recovery and identify recovery/enhancement actions most likely to eliminate these impediments.
Installation of habitat improvement structures to rehabilitate substrates.
Site specific bank restoration activities designed to decrease sediment delivery to streams, and thus, increase capacity of streams to remove channel deposits of sediments (that could contain precipitates and floc).
Long-Term
Special studies to investigate the impediments to recovery, identify the success of the implementation of any short- and moderate-term restoration activities, and identify further recovery actions most likely to eliminate impediments to recovery.
More extensive implementation of successful short- and moderate-term restoration/enhancement activities.
Establishment of riparian easements and riparian enhancement projects along streams to speed recovery of biological communities though enhancement of habitat features currently limiting to these populations.
Consider, as a last resort, and in close consultation with ODNR - Division of Wildlife, stocking options for fauna that has not recovered, and that does not appear to be limited by any cause other than a lack of recolonizing individuals.

Specific Considerations

Leading Creek Watershed

The Leading Creek watershed suffered the most extensive damage from the Meigs #31 Mine discharges. Essentially, the entire fish, aquatic insect, unionid mussel, and amphibian assemblages were eliminated from Parker Run downstream from the Meigs #31 discharge and from Leading Creek 0.5 miles upstream from Parker Run (where the high volume of the discharge created a backflow of approximately 0.5 miles in length) to the Ohio River. Figure 2 summarizes the historical, pre-discharge, and most recent (29 Nov - 1 Dec) post-discharge IBI data from Leading Creek (a State Resource Water - SRW) to illustrate the minimal recovery in 1993 and the amount of recovery yet to occur to achieve the endpoints specified in this document.

Essential to enhancing the full recovery of Leading Creek is the removal of the old WPA dam located at approximately RM 11.0. The dam, presently in disrepair, is a barrier to the upstream migration of fish and unionid mussel larvae (via their large river fish hosts). For example, the removal of the dam would enhance the survival of sensitive fish species such as the Ohio threatened silver lamprey. This species has a multi-year larval life stage (up to seven years) in which it resides in soft sediments as a filter feeder. All of the extant larval year classes were likely destroyed by the Meigs #31 Mine discharges. A portion of the adults that emerged during 1993 prior to the discharges are currently in the Ohio River or elsewhere, and will return to spawn in the spring of 1994. It is not assured that the substrates of the impacted segments of Leading Creek will be suitable for egg development and larval survival by that time. The removal of the dam at RM 11.0 would open access to reaches of Leading Creek upstream from the discharge impacted areas for spawning of this and other species. Because the majority of the best habitat in Leading Creek is located upstream from this dam, the recovery of populations of sport fish, such as sauger and spotted bass, would also be enhanced. It has been our experience that the recovery of streams occurs more quickly when repopulation occurs from the downstream reaches; thus, the removal of the dam would speed the recovery process.

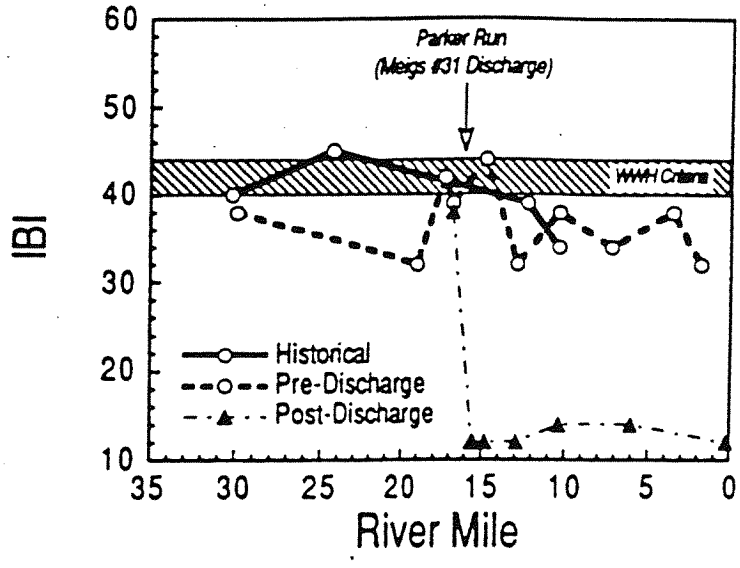


Figure 2. Plot of IBI versus river mile for historical, pre-discharge, and most recent (29 Nov - 1 Dec) post-discharge data from Leading Creek upstream and downstream of Parker Run (location of the Meigs #31 Mine discharge.

Ecological Endpoints

There have been 49 fish species, 162 macroinvertebrate taxa (excluding unionids), and 10 species of unionid mussels recorded from Leading Creek and tributaries during the past twelve years (Appendix Tables 1A, 2, and 3). For impaired segments of Leading Creek and Parker Run, "Cumulative Frequency Plots" of Invertebrate Taxa or Fish Species, that had been collected in those segments prior to discharge, were plotted versus the number of samples and fitted with a logarithmic curve (Figure 3). Species counts in streams, and other types of habitats, have been shown to be related to sampling effort in a logarithmic fashion. To ensure that a similar species richness exists post-discharge, *based on similar effort*, the species/sample relationship must asymptote within 10% of the value found in pre-discharge data for each stream (Figure 3). All unionid species, recorded in both the historical and pre-discharge samples, must be recorded in post-discharge sampling (as specified on page 2) for recovery to be considered complete in the affected areas of Leading Creek.

Monitoring will be required at nine locations in Leading Creek (Table 3). The specific ecological endpoints for determining recovery in Leading Creek will differ depending on location and segment. The format for specifying the endpoints for each segment is illustrated in Figure 4. We have divided Leading Creek into 3 segments or habitat types on the basis of habitat quality (QHEI), substrate score (QHEI), stream gradient (ft/mi), and riffle score (QHEI) for the purposes of gauging recovery. These habitat attributes are illustrated in Figure 5.

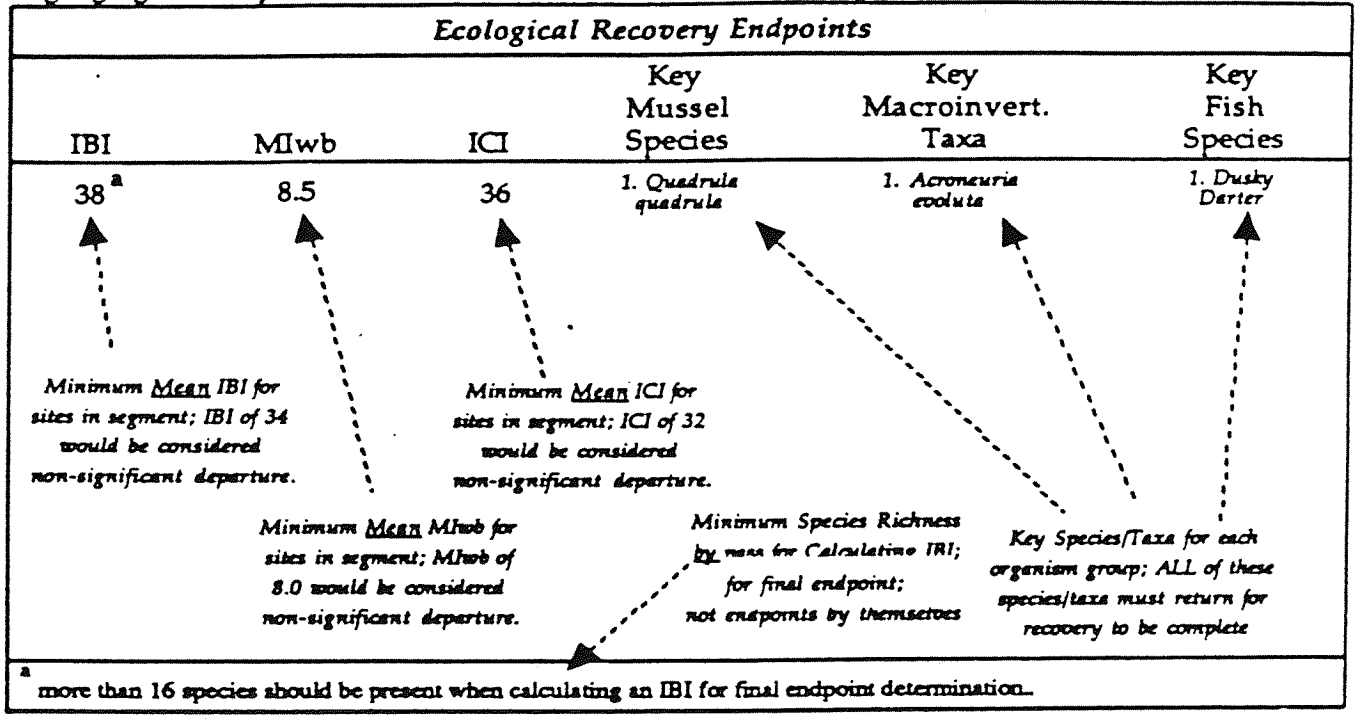
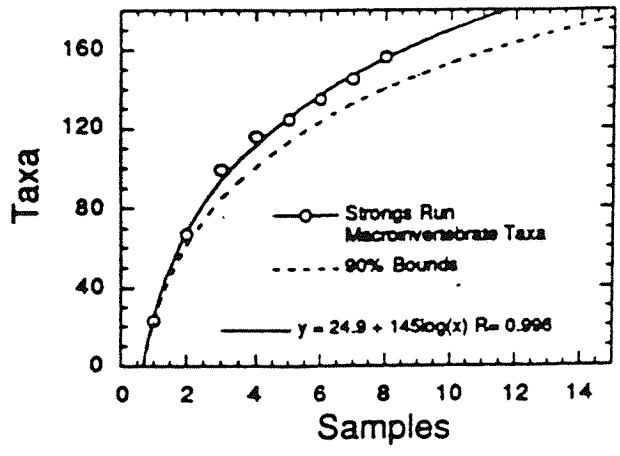
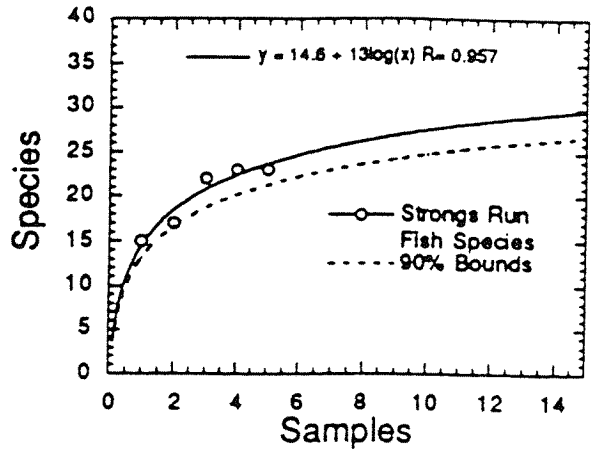
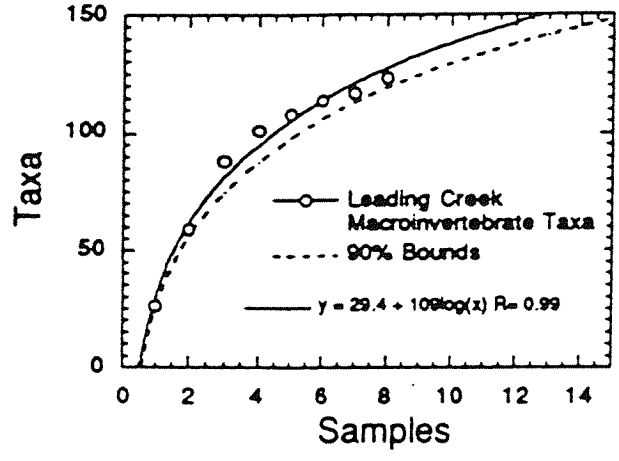
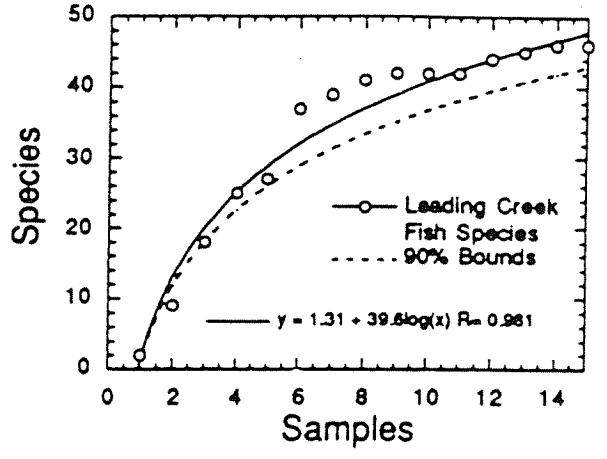


Figure 4. Illustration of the format for presenting ecological endpoints for streams or stream segments in the Leading Creek/Raccoon Creek study area.









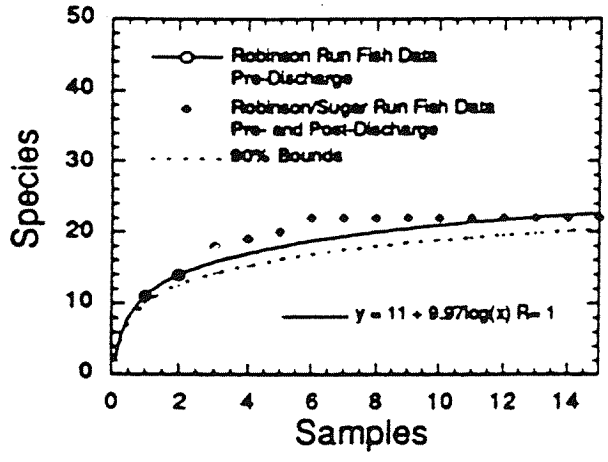


Figure 3. Cumulative frequency distribution plots of taxa (macroinvertebrates) or fish species versus number of samples for Strongs Run, Robinson/Sugar Run, and Leading Creek/Parker Run. Dashed lines indicate 90% of species represented by the regression line.

Table 3 Required monitoring locations for determining the attainment of recovery endpoints in Leading Creek and Parker Run.

RM	Fish	Macro-inverts.	Unionid Mussels	Amphibs.	Site Description
Leading Creek					
0.1	X	X			Dst. U.S. ACE boat ramp [Segment I recovery monitoring]
1.8	X	X		X	0.25 mi upstream of Route 7 [Segment II recovery monitoring]
3.5	X	X		X	Private bridge off Leading Cr. Rd. [Segment II recovery monitoring]
6.0/7.2	X	X		X	Twp. Rt. 351 bridge *or* Co. Rt. 12 bridge [Segment II recovery monitoring]
10.3	X	X	X	X	Twp. Rt. 41 bridge [Segment III recovery monitoring; historical site]
12.3/12.9	X	X	X	X	St. Rt. 124 *or* ford adj. Co. Rt. 10 [Segment III recovery monitoring]
14.8	X	X	X	X	Malloons Run Rd. [Segment III recovery monitoring]
15.5	X	X	X	X	Immediately dst. Parker Run [Segment III recovery monitoring]
15.6	X	X	X	X	Immediately ust. Parker Run [Segment III recovery monitoring; recovery of ust. affected area]
Parker Run					
0.1	X	X			At mouth [Parker Run recovery monitoring]
1.6	X	X			Twp. Rt. 18 bridge [Parker Run recovery monitoring]

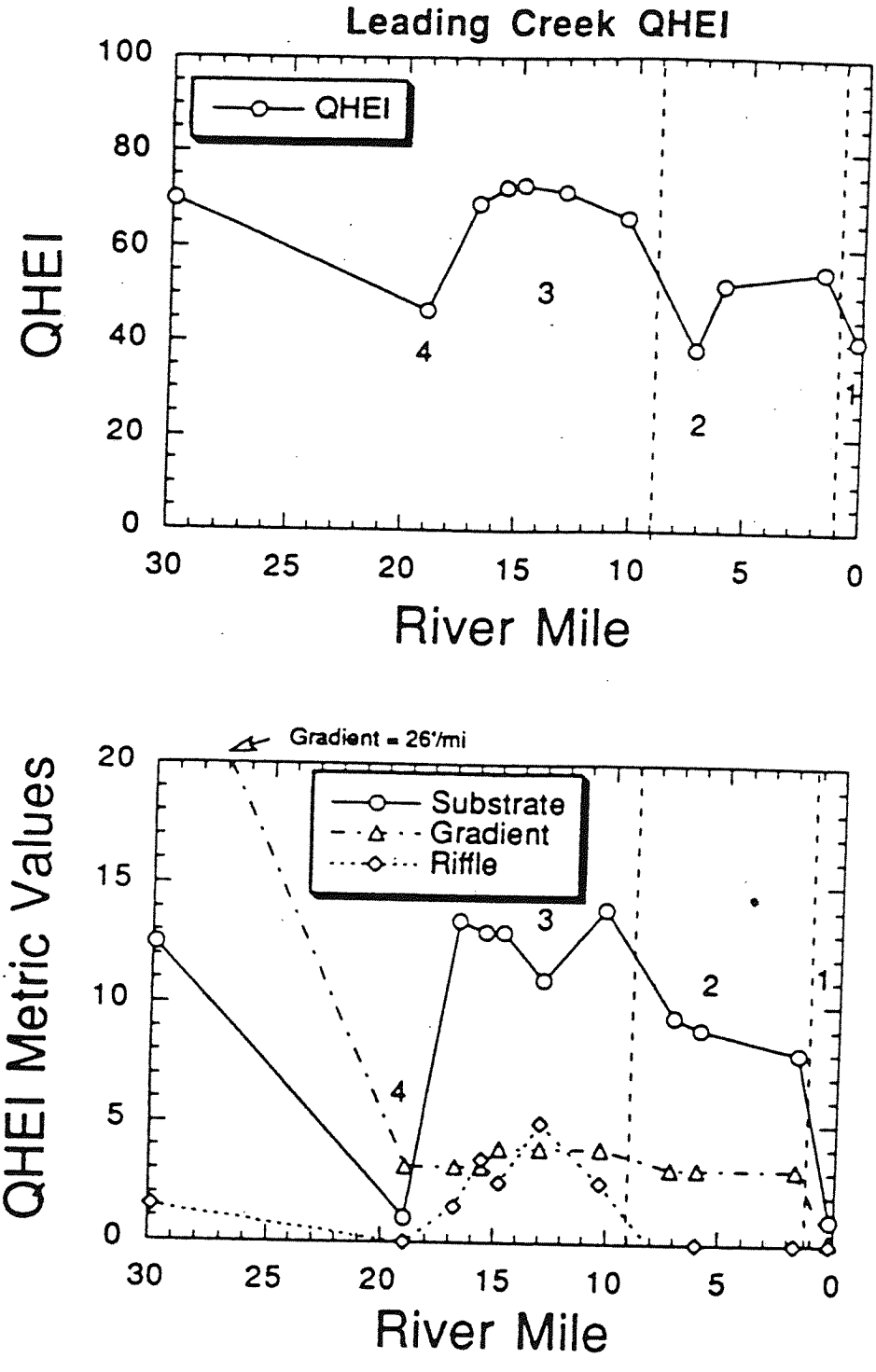


Figure 5. Habitat characterstics and values in the four segments of Leading Creek.

Leading Creek

Segment 1 - Ohio River Backwater (RM 0.0-1.0): Approximately the lower mile of Leading Creek is influenced by the water levels of the Ohio River. The biological communities found here are strongly influenced by the biological communities of the Ohio River and the backwater habitat characteristics of this segment. Thus, the recovery endpoints reflect these characteristics as well. Quantitative background data collected by EA Engineering prior to discharge was hampered by equipment problems. Seining data collected by Ted Cavender (OSU Museum of Biodiversity) and Dan Rice (ODNR-NAP) at the Leading Creek boat ramp provided information on key fish species which must reoccur for recovery to be considered complete in addition to the other ecological endpoints.

Ecological Recovery Endpoints for Segment 1:

IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
30†a	6.6†	22†	None	None	*Channel Shiner* *Longear Sunfish* *Dusky Darter* *Smallmouth Buffalo* *Adult Spotted Bass* *Adult Channel Catfish*

†Ohio EPA Modified Warmwater Habitat - Impoundment biocriteria (Ohio Water Quality Standards); these apply to streams designated as Modified Warmwater Habitat; here they are being used as recovery criteria in lieu of quantitative historical data.

a more than 13 species should be present when calculating an IBI for final endpoint determination.

Segment 2 - Low Gradient Lower Leading Creek (RMs 1.1-9.0): Upstream from the impounded segment, Leading Creek has a very low gradient and has a historically high sand bedload from previous mining activities and upland erosion in the watershed. As a result, certain habitat attributes are either absent or present in reduced abundance (see Figure 5) and this segment will have somewhat lower biological performance expectations, particularly for the fish assemblages, when compared to the higher gradient upstream reaches. Thus, the recovery endpoints reflect the reduced expectations and are based largely on pre-discharge results. Macroinvertebrate community performance, based on Hester-Dendy multiple plate samplers, should be able to attain the WWH ICI value of 36. This macroinvertebrate sampling method generally reflects water quality more strongly than macrohabitat conditions; thus, the high sand bedload and other negative habitat attributes should not preclude attainment of the WWH ICI biocriterion.

Ecological Recovery Endpoints for Segment 2:					
IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
34‡,▪	8.0◊	36§	None	*Acroneuria evoluta* *Orconectes sanbornii* *Polycentropodidae* *Hydropsychidae*	*Sand Shiner* *Channel Shiner* *Silverjaw Minnow* *Longear Sunfish* *Blackside Darter* *Dusky Darter* *Logperch* *Golden Redhorse*

‡Based on pre-discharge data in Appendix Table 4
◊ estimated value
§ICI biocriterion for WWH in WAP ecoregion;
▪ more than 13 species should be present when calculating an IBI for final endpoint determination.

The key macroinvertebrate taxa include *Acroneuria evoluta*, a perlid stonefly with a multi-year larval stage, the crayfish *Orconectes sanbornii* , and caddisflies from the families Polycentropodidae (*Polycentropus* and *Nyctiophylax*) and Hydropsychidae (*Cheumatopsyche* and *Hydropsyche*). All were collected by Ohio EPA prior to the discharge and will need to be found in order for recovery to be considered complete (in addition to attainment of the biological criteria).

Segment 3 -Middle Leading Creek (RM 9.1-15.6): Much of the middle section of Leading Creek (below Parker Run to RM 9.0) has sufficient gradient to ameliorate the effects of the high sand bedload and has relatively high quality habitat. These are the most ecologically diverse segments of Leading Creek and the location of the highest number of sensitive fish species and the highest populations of unionid mussels. Historical data from this segment of Leading Creek indicates that populations of sensitive species were resident here, including Ohio threatened and special concern species such as silver lamprey, river redhorse, and sand darter. The biological index scores at sites both upstream and downstream from Paker Run (segments 2 and 3) indicated marginal attainment (*i.e.*, index scores in non-significant departure from the biocriteria), partial attainment, and even non-attainment of the WWH criteria (Appendix Table 4). The most recent coordinated subbasin survey (Ohio EPA 1991) indicated full WWH attainment upstream and partial attainment downstream from Parker Run. This indicates that some impairment of the WWH use designation existed prior to the discharge of untreated and partially treated mine waters from Meigs #31, although the impairment after the discharge was much more severe.

Ecological Recovery Endpoints ¥for Segment 3:					
IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
38‡,ª	8.0◊	36§	*Wabash pigtoe* *fatmucket* *pink heelsplitter* *plain pocketbook* *cylindrical papershell* *giant floater* *white heelsplitter* *fragile papershell* *mapleleaf* *squawfoot*	*Acroneuria evoluta* *Orconectes sanbornii* *Polycentropodidae* *Hydropsychidae*	*Silver Lamprey* ᵇ *River Redhorse* *Shorthead Redhorse* *Black Redhorse* *N. Hog Sucker* *Sand Shiner* *Redfin Shiner* *Longnose Gar* *Spotted Bass* *Longear Sunfish* *Fantail Darter* *Blackside Darter* *Logperch*

¥ Mudpuppies must be found all sites in this segment where found by ODNR during the fish kill (Appendix Table 5) and at one location in segment 1 or 2 of Leading Creek.
‡Based on pre-discharge data in Appendix Table 4
◊ estimated value
§ICI biocriterion for WWH in WAP ecoregion;
ª more than 16 species should be present when calculating an IBI for final endpoint determination.
ᵇ adults can be collected during the spring, ammocoetes during spring or summer.

Parker Run

Parker Run was the initial receiving stream for the untreated Meigs Mine discharges. Because of its small size and the high discharge flow, problems with buildup from iron-laden precipitates was less serious of a problem than in Leading Creek where deposition was greater. However, like Leading Creek, the aquatic fauna was completely eliminated because of the acutely toxic discharges. Pre-discharge sampling in 1993 revealed full attainment of the IBI biocriterion. Thus, the recovery endpoints for Parker Run reflect attainment of the WWH biocriteria for the Western Allegheny Plateau ecoregion.

Ecological Recovery Endpoints for Parker Run:					
IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
44‡,ª	N.A.	36§	None	*Acroneuria evoluta*	*Blacknose Dace* *So. Redbelly Dace* *Silverjaw Minnow* *Fantail Darter*

‡ Based on pre-discharge data in Appendix Table 4
§ ICI biocriterion for WWH in WAP ecoregion;
ª more than 12 species should be present when calculating an IBI for final endpoint determination.

Raccoon Creek Watershed

The Raccoon Creek watershed received a lesser amount of untreated mine discharge waters than Leading Creek. Historic and pre-discharge species/taxa collected in Raccoon Creek and the affected tributaries are listed in Appendix Tables 1-B, 2, and 3. Although a fish kill was reported from Raccoon Creek between Strongs Run and Robinson Run, the stream was not impacted as severely as Leading Creek. Several of the smaller tributaries, however, were impacted quite severely. Impairment of the WWH aquatic life use was evident prior to the Meigs #31 Mine discharges. However, impairment was not severe in Raccoon Creek as evidenced by IBI scores in the mid 30's and ICI scores indicative of near exceptional performance (Appendix Table 4).

Raccoon Creek

The results obtained by the 1990 survey (Ohio EPA 1991) indicate that aquatic community recovery from the previous severely impaired status has been considerable. Thus, the threat imposed by the untreated mine discharges was substantial. The recovery endpoints for Raccoon Creek reflect the accomplishments of the accumulated efforts of surface and underground mine reclamation in the watershed. Required monitoring stations for ascertaining recovery are listed in Table 4.

Ecological Recovery Endpoints for Raccoon Creek:

IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
32‡,a	6.5‡	Greater of 36§ or ICI at RM 50.1	*pink heelsplitter* *fragile papershell*	*Cheumatopsyche* sp. *Stenacron* sp. *Stenonema* sp. *Isonychia* sp. *Caenis* sp	*Golden Redhorse* *N. Hog Sucker* *Spotted Sucker* *Adult Spotted Bass* *Longear Sunfish* *Warmouth* *Dusky Darter* *Blackside Darter* *Grass Pickerel*

‡Based on pre-discharge data in Appendix Table 4
§ICI biocriterion for WWH in WAP ecoregion;
[a] more than 13 species should be present when calculating an IBI for final endpoint determination.

Strongs Run

Strongs Run, a State Resource Water, was severely impaired by the Meigs #31 Mine untreated discharge water with pH values as low as 2.1 S.U. resulting in a complete kill of aquatic life. Historical data, pre-discharge collections, and, to a lesser extent, collections in the nearby Flatlick Creek provided reliable sources of endpoint information. Curves of fish species and macroinvertebrate taxa vs. sampling effort were dervied for Strongs Run and are illustrated in Figure 3. To ensure that a similar species richness exists post-discharge, based on similar effort, the species or taxa/sample relationship must asymptote within 10% of the value found in pre-discharge data for each stream (Figure 3).

Ecological Recovery Endpoints for Strongs Run:					
IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
34‡,a	N. A.	36§	None	*Centroptilum* sp. *Stenacron* sp. *Stenonema femoratum* *Caenis* sp *Cheumatopsyche* sp.	*Least Brook Lamprey* *Longear Sunfish* *So. Redbelly Dace* *Dusky Darter*
‡Based on pre-discharge data in Appendix Table 4 §ICI biocriterion for WWH in WAP ecoregion; a more than 11 species should be present when calculating an IBI for final endpoint determination.					

Table 4.Required monitoring stations for determining the attainment of recovery endpoints in Raccoon Creek, Strongs Run, Sugar Run, and Robinson Run.

RM	Fish	Macro-inverts.	Unionid Mussels	Site Description
Raccoon Creek				
42.3	X	X		McGhee Rd. (dst. Strongs Run ust. Robinson Run) [Monitor Strongs Run discharge, 1993 fish kill]
40.1-39.9	X	X	X	Dst. Vinton Dam [Monitor Strongs Run and Robinson Run discharge]
29.9 or 28.9	X	X	X	near Bob Fvans Farms [Monitor far-field effects of discharge]
Strongs Run				
0.6	X	X		Adney Rd. [Strongs Run recovery monitoring location]
1.5 or 2.2	X	X		Co. Rt. 2W or Co. Rt. 1W [Strongs Run recovery monitoring site]
Sugar Run				
0.1 or 0.6	X	X		Keesee Rd. or Driveway of Mr. Smith [Sugar Run recovery monitoring site]
Robinson Run				
1.5	X	X		Ust. Sugar Run [Robinson Run recovery monitoring site]
0.2	X	X		St. Rt. 325 [Robinson Run recovery monitoring site]

Sugar Run

Although Sugar Run received untreated mine discharge water with high levels of suspended and dissolved solids, the aquatic life kill was partial. Fish were present during all post-discharge collections. Pre-discharge data was lacking, thus, recovery endpoints are based largely on the ecoregional biocriteria.

Ecological Recovery Endpoints for Sugar Run:

IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
44 §,a	N.A.	36§	None	*Centroptilum* sp. *Paraleptophlebia* sp. *Stenonema femoratum* *Hexagenia* sp. *Caenis* sp	*Least Brook Lamprey* *Redfin Shiner* *So. Redbelly Dace*

§ICI biocriterion for WWH in WAP ecoregion.
[a] more than 7 species should be present when calculating an IBI for final endpoint determination.

Robinson Run

Sugar Run is a tributary to Robinson Run entering at RM 1.4. Data was collected at sites upstream and downstream from the Sugar Run confluence by EA Engineering. Curves of fish species vs. sampling effort were dervied for Robinson and Sugar Run (combined) and are illustrated in Figure 3. To ensure that a similar species richness exists post-discharge, based on similar effort, the species/sample relationship must asymptote within 10% of the value found in pre-discharge data for each stream (Figure 3).

Ecological Recovery Endpoints for Robinson Run:

IBI	MIwb	ICI	Key Mussel Species	Key Macroinvertebrate Taxa	Key Fish Species
32‡,a	N.A.	36§	None	*Stenacron* sp. *Isonychia* sp. *Cheumatopysche* sp.	*Least Brook Lamprey* *Redfin Shiner* *So. Redbelly Dace*

‡Based on pre-discharge data in Appendix Table 4.
§ICI biocriterion for WWH in WAP ecoregion.
[a] more than 10 species should be present when calculating an IBI for final endpoint determination.

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Appendix Table 1-A. Fish species captured in Leading Creek and its tributaries between 1982 and 1993. Data sources include Ohio EPA, Ohio DNR - DOW, Ohio DNR - NAP, ODOT.

Species	Segment 1	Segment 2	Segment 3	
	Ohio River Backwater RM 0.1-1.0	Lower Leading Cr. Low Gradient RM 1.1-9.0	Mid. Leading Cr. High Gradient RM > 9.0	Mid. Leading Cr. Low Gradient RM > 9.0
Silver Lamprey			X	
Least Brook Lamprey			X	
Longnose Gar			X	
Gizzard Shad	X	X	X	X
Grass Pickerel			X	
Smallmouth Buffalo	X			
Quillback Carpsucker			X	X
Silver Redhorse			X	
Black Redhorse			X	
Golden Redhorse		X	X	X
Shorthead Redhorse			X	
River Redhorse			X	
Northern Hog Sucker		X	X	
White Sucker	X	X	X	X
Spotted Sucker		X	X	X
Common Carp	X		X	X
Blacknose Dace		X	X	
Creek Chub		X	X	X
Suckermouth Minnow			X	
Southern Redbelly Dace			X	X
Emerald Shiner	X	X	X	
Rosyface Shiner			X	
Redfin Shiner			X	X
Striped Shiner		X	X	X
Spotfin Shiner	X	X	X	
Sand Shiner		X	X	
Channel Shiner	X	X	X	
Silverjaw Minnow		X	X	X
Bluntnose Minnow	X	X	X	X
Central Stoneroller		X	X	X
Channel Catfish	X	X		
Yellow Bullhead			X	X
Trout-perch			X	X
White Bass	X	X	X	
White Crappie			X	X

Appendix Table 1. (continued)

Species	Segment 1	Segment 2	Segment 3	
	Ohio River Backwater RM 0.1-1.0	Low. Lead. Cr. Low Gradient RM 1.1-9.0	Mid Lead. Cr. High Gradient RM > 9.0	Mid Lead. Cr. Low Gradient RM > 9.0
Smallmouth Bass		X	X	
Spotted Bass	X	X	X	X
Largemouth Bass	X		X	
Green Sunfish	X	X	X	X
Bluegill Sunfish	X	X	X	X
Longear Sunfish	X	X	X	X
Sauger			X	
Dusky Darter	X	X	X	
Blackside Darter		X	X	X
Logperch		X	X	X
Johnny Darter	X	X	X	X
Fantail Darter			X	X
Sand Darter†			X†	
Freshwater Drum	X		X	X
Totals: 49	18	26	47	25

† collected by Tom Watters at the mouth of Parker Run on July 23, 1993.

Appendix Table 1-B. Fish species captured in Raccoon Creek and its tributaries between 1984 and 1993. Data sources include Ohio EPA, Ohio DNR - DOW, Ohio DNR - NAP, and EA Engineering and Science.

Species	Raccoon Creek	Strongs Run	Robinson/Sugar Run	Flatlick Creek
Least Brook Lamprey	X	X	X	X
Longnose Gar	X			
Gizzard Shad	X			
Grass Pickerel	X	X	X	X
Smallmouth Buffalo	X			
Silver Redhorse	X			
Black Redhorse	X			
Golden Redhorse	X	X	X	
Shorthead Redhorse	X			
Northern Hog Sucker	X			
White Sucker	X	X	X	X
Spotted Sucker	X	X		X
Common Carp	X			
Golden Shiner	X			X
Silver Chub	X			
Blacknose Dace		X	X	X
Creek Chub	X	X	X	X
Southern Redbelly Dace		X	X	X
Emerald Shiner	X			
Silver Shiner	X			
Redfin Shiner	X	X	X	
Striped Shiner	X	X	X	X
River Shiner	X			
Spotfin Shiner	X			
Sand Shiner	X			
Silverjaw Minnow	X	X	X	X
Bluntnose Minnow	X	X	X	X
Central Stoneroller	X	X	X	
Channel Catfish	X			
Yellow Bullhead	X	X	X	X
Brown Bullhead	X			
Black Bullhead	X			
Flathead Catfish	X			
Eastern Banded Killifish	X			
White Bass	X			
White Crappie	X			

Appendix Table 1-B. (continued)

Species	Raccoon Creek	Strongs Run	Robinson/Sugar Run	Flatlick Creek
Rockbass	X			
Spotted Bass	X	X	X	
Largemouth Bass	X		X	X
Warmouth	X	X		
Green Sunfish	X	X		X
Bluegill Sunfish	X	X	X	X
Longear Sunfish	X	X	X	X
Sauger	X			X
Dusky Darter	X	X		X
Blackside Darter	X	X	X	X
Logperch	X			
Johnny Darter	X	X	X	X
Greenside Darter			X	
Fantail Darter	X	X	X	X
Freshwater Drum	X			
Totals: 51	48	23	22	22

Appendix Table 2. Macroinvertebrate taxa collected from Leading Creek, Raccoon Creek, and tributary sites by the Ohio EPA Prior to the Meigs # 31 Mine discharge, 1987-1993.

Taxa Code	Taxa Name	Leading Cr/Parker Run	Raccoon Creek	Strongs Run	Robinson/ Sugar Run
01320	*Hydra sp*	X	X	X	
01801	Turbellaria	X	X		
03360	*Plumatella sp*	X	X	X	
03451	*Urnatella gracilis*			X	
03600	*Oligochaeta*	X	X	X	X
04686	*Placobdella papillifera*				X
04687	*Placobdella parasitica*			X	
05800	*Caccidotea sp*	X	X	X	
06700	*Crangonyx sp*	X	X	X	
06810	*Gammarus fasciatus*		X		
07820	*Cambarus (Cambarus) bartonii cavatus*	X	X	X	X
07880	*Cambarus (Lacunicambarus) diogenes*	X		X	X
08250	*Orconectes (Procericambarus) rusticus*			X	
08260	*Orconectes (Crokerinus) sanbornii sanbornii*	X	X	X	X
08601	Hydracarina	X	X	X	X
10550	*Ameletus sp* *			X	
10600	*Siphlonurus sp**	X			
11100	*Baetis sp*	X		X	
11130	*Baetis intercalaris*		X		
11150	*Baetis propinquus*		X		
11200	*Callibaetis sp*			X	X
11300	*Centroptilum sp*	X	X	X	X
11400	*Cloeon sp*	X	X	X	X
11700	*Pseudocloeon sp*	X		X	
12200	*Isonychia sp*	X	X		

13000	*Leucrocuta sp*	X			
13120	*Nixe perfida*	X		X	
13400	*Stenacron sp*	X	X	X	
13510	*Stenonema exiguum*		X		
13521	*Stenonema femoratum*	X		X	X
13590	*Stenonema vicarium*	X	X		
15000	*Paraleptophlebia sp*	X	X	X	X
16700	*Tricorythodes sp*		X		
17100	*Brachycercus sp*		X		
17200	*Caenis sp*	X	X	X	X
17600	*Baetisca sp*	X	X		
18700	*Hexagenia sp*	X		X	X
21200	*Calopteryx sp*	X	X	X	X
21300	*Hetaerina sp*	X		X	
22001	Coenagrionidae	X	X		X
22300	*Argia sp*	X	X		X
23600	*Aeshna sp*	X			X
23804	*Basiaeschna janata*	X	X	X	X
23905	*Boyeria grafiana*		X		
23909	*Boyeria vinosa*	X	X	X	X
23950	*Epiaeschna heros*				X
24710	*Dromogomphus spinosus*	X	X		
24900	*Gomphus sp*	X	X	X	X
25010	*Hagenius brevistylus*	X	X		
25410	*Progomphus obscurus*		X	X	
26100	*Cordulegaster sp*	X		X	X
26600	*Didymops transversa*		X	X	
26700	*Macromia sp*		X	X	
27500	*Somatochlora sp*	X	X	X	X
27610	*Epitheca (Tetragoneuria) cynosura*	X			X
28955	*Plathemis lydia*			X	
28908	*Perithemis tenera*			X	

32205	*Amphinemura delosa**	X			
34130	*Acroneuria evoluta*	X			
34500	*Perlesta sp**	X		X	
35570	*Isoperla transmarina**	X		X	
42700	*Belostoma sp*	X	X		
43300	*Ranatra sp*	X	X		
43570	*Neoplea sp*		X		
45100	*Palmacorixa sp*	X	X	X	X
45300	*Sigara sp*	X		X	X
45400	*Trichocorixa sp*	X	X		
45900	*Notonecta sp*			X	X
47600	*Sialis sp*	X	X	X	X
48200	*Chauliodes sp*	X	X		
48410	*Corydalus cornutus*		X		
48620	*Nigronia serricornis*	X	X	X	
50315	*Chimarra obscura*	X	X		
51206	*Cyrnellus fraternus*		X		
51300	*Neureclipsis sp*		X		
51400	*Nyctiophylax sp*	X	X	X	
51500	*Phylocentropus sp*			X	
51600	*Polycentropus sp*	X	X	X	
52200	*Cheumatopsyche sp*	X	X	X	X
52315	*Diplectrona modesta*			X	
52500	*Hydropsyche (H.) sp*			X	
52530	*Hydropsyche (H.) depravata* group	X	X		
52570	*Hydropsyche (H.) simulans*	X	X		
53800	*Hydroptila sp*	X	X		
54100	*Neotrichia sp*		X		
54300	*Oxyethira sp*				X
55300	*Ptilostomis sp*			X	
57900	*Pycnopsyche sp*	X	X	X	
59500	*Oecetis sp*	X	X	X	

59700	*Triaenodes sp*	X			
59950	*Parapoynx sp*		X		
60300	*Dineutus sp*	X	X	X	
60400	*Gyrinus sp*	X	X	X	X
60900	*Peltodytes sp*		X	X	X
61400	*Agabus sp*			X	
63300	*Hydroporus sp*	X	X	X	X
63700	*Ilybius sp*			X	X
63900	*Laccophilus sp*	X			X
65800	*Berosus sp*		X		
66200	*Cymbiodyta sp*			X	X
66500	*Enochrus sp*			X	
66901	*Helocombus bifidus*			X	
67000	*Helophorus sp*	X		X	X
67300	*Hydrochus sp*			X	
67500	*Laccobius sp*	X		X	X
67700	*Paracymus sp*	X		X	
67750	*Sperchopsis tesselatus*	X			
67800	*Tropisternus sp*	X		X	X
68130	*Helichus sp*	X	X	X	X
68201	Scirtidae	X			
68601	*Ancyronyx variegata*	X	X	X	
68708	*Dubiraphia vittata* group	X	X	X	X
68901	*Macronychus glabratus*	X	X		
69400	*Stenelmis sp*	X	X		
70900	*Gonomyia sp*			X	
71100	*Hexatoma sp*	X			
71300	*Limonia sp*	X			
71700	*Pilaria sp*	X		X	
71900	*Tipula sp*	X		X	X
71910	*Tipula abdominalis*	X	X		X
72160	*Psychoda sp*	X		X	

72340	*Dixella sp*				X
72700	*Anopheles sp*	X	X	X	X
72900	*Culex sp*			X	X
74100	*Simulium sp*	X	X	X	
74501	Ceratopogonidae	X	X	X	X
74650	*Atrichopogon sp*			X	
77115	*Ablabesmyia janta*	X	X	X	
77120	*Ablabesmyia mallochi*	X	X	X	X
77130	*Ablabesmyia rhamphe* group	X	X	X	
77355	*Clinotanypus pingus*				X
77500	*Conchapelopia sp*	X	X	X	
77750	*Thienemannimyia sp*	X	X	X	
77800	*Helopelopia sp*	X		X	
78101	*Labrundinia becki*		X	X	
78140	*Labrundinia pilosella*	X	X	X	
78200	*Larsia sp*		X		
78350	*Meropelopia sp*	X		X	
78401	*Natarsia* species *A (sensu* Roback, 1978)	X	X	X	X
78450	*Nilotanypus fimbriatus*	X	X		
78500	*Paramerina fragilis*			X	X
78650	*Procladius sp*	X	X	X	X
79010	*Tanypus carinatus*		X		
79400	*Zavrelimyia sp*	X		X	
79832	*Monodiamesa depectinata*			X	
80204	*Brillia flavifrons* group	X			
80370	*Corynoneura "taris" (sensu* Simpson and Bode 1980)	X	X	X	
80410	*Cricotopus (C.) sp***	X	X	X	X
80420	*Cricotopus (C.) bicinctus*	X	X	X	
80430	*Cricotopus (C.) tremulus* group	X	X	X	
80440	*Cricotopus (C.) trifascia* group	X			

81240	*Nanocladius (N.) distinctus*		X		
81250	*Nanocladius (N.) minimus*	X			
81231	*Nanocladius (N.) crassicornus*	X			
81270	*Nanocladius (N.) spiniplenus*	X	X		
81460	*Othocladius (O.) sp*			X	
81530	*Orthocladius (Symposiocladius) lignicola*	X			
81631	*Parakiefferiella sp*	X	X	X	
81650	*Parametriocnemus sp*	X		X	X
81825	*Rheocricotopus (Psilocricotopus) robacki*	X	X	X	
82121	*Thienemanniella* "nr *fusca*" (*sensu* Simpson and Bode 1980)	X	X		
82141	*Thienemanniella xena*	X	X	X	
82300	*Xylotopus par*		X		X
82730	*Chironomus (C.) decorus* group	X	X	X	X
82770	*Chironomus (C.) riparius* group	X		X	X
82780	*Chironomus (C.) staegeri* group			X	
82800	*Cladopelma sp*		X		
82820	*Cryptochironomus sp*	X	X	X	X
82880	*Cryptotendipes sp*			X	X
82890	*Demeijerea sp*	X			
83002	*Dicrotendipes modestus*	X	X	X	X
83003	*Dicrotendipes fumidus*				X
83040	*Dicrotendipes neomodestus*	X	X	X	X
83050	*Dicrotendipes lucifer*	X	X	X	
83051	*Dicrotendipes simpsoni*	X		X	X
83158	*Endochironomus nigricans*	X	X	X	X
83300	*Glyptotendipes (Phytotendipes) sp*	X	X	X	X
83380	*Goeldichironomus holoprasinus*			X	
83410	*Harnischia curtilamellata*	X	X		
83600	*Kiefferulus dux*	X			X

83820	*Microtendipes "caelum" (sensu* Simpson & Bode, 1980)	X			
83840	*Microtendipes pedellus* group	X	X	X	X
83900	*Nilothauma sp*	X		X	
84060	*Parachironomus pectinatellae*		X		
84155	*Paralauterborniella nigrohalteralis*	X	X		
84210	*Paratendipes albimanus*	X		X	X
84300	*Phaenopsectra prob. dyari* (sensu Simpson and Bode, 1980)	X	X	X	X
84302	*Phaenopsectra flavipes*	X	X	X	
84410	*Polypedilum (Pentapedilum) tritum*	X			
84440	*Polypedilum (P.) aviceps*			X	
84450	*Polypedilum (P.) convictum*	X	X	X	
84460	*Polypedilum (P.) fallax* group	X	X	X	X
84470	*Polypedilum (P.) illinoense*	X	X	X	X
84475	*Polypedilum (P.) ophioides*		X		
84520	*Polypedilum (Tripodura) halterale* group	X	X	X	
84540	*Polypedilum (Tripodura) scalaenum* group	X	X	X	
84700	*Stenochironomus sp*	X	X		
84750	*Stictochironomus sp*	X	X	X	X
84790	*Tribelos fuscicorne*	X	X	X	
84800	*Tribelos jucundum*	X	X	X	X
84960	*Pseudochironomus sp*	X	X		
85201	*Cladotanytarsus* species group A	X	X		
85230	*Cladotanytarsus mancus* group	X	X	X	
85264	*Cladotanytarsus vanderwulpi* group	X			
85500	*Paratanytarsus sp*	X		X	X
85615	*Rheotanytarsus distinctissimus* group	X	X	X	
85625	*Rheotanytarsus exiguus* group	X	X	X	X
85700	*Stempellina sp*		X	X	
85800	*Tanytarsus sp****	X	X	X	X

85802	*Tanytarsus curticornis* group****	X	X	X	
85814	*Tanytarsus glabrescens* group	X	X	X	
85840	*Tanytarsus guerlus* group	X	X	X	X
86050	*Chlorotabanus crepuscularis*				X
86100	*Chrysops sp*	X	X	X	X
87400	*Stratiomys sp*	X			
87501	Empididae	X	X	X	X
87601	Dolichopodidae		X	X	
89501	Ephydridae	X		X	
94400	*Fossaria sp*	X			
95100	*Physella sp*	X	X	X	X
95501	Planorbidae		X		
96002	*Heliosoma anceps anceps*		X	X	X
96900	*Ferrissia sp*	X	X	X	
97601	*Corbicula fluminea*	X	X		
98200	*Pisidium sp*	X		X	X
98600	*Sphaerium sp*	X		X	

*Spring Species.
** Will key to "other Cricotopus" in Simpson and Bode 1990.
*** Will key to "other Tanytarsus" in Simpson and Bode 1990.
**** in Wiederholm, T. (1986).

Totals:	(excluding Spring Species)	157	137	142	83

Appendix Table 3. List of unionid mussels (living, freshdead, or weathered) collected in Leading Creek since 1964.

Species	Stream/Date/Collector/Site Leading Cr. 18 June 64†	Leading Cr. 02 Oct 84‡	Leading Cr. 12 Aug 87§	Leading Cr. 12 Aug 87§	Leading Cr. 12 Aug 87§	Leading Cr. 12 Aug 87§	Leading Cr. 12 Aug 87§	Leading Cr. 23 Jul 93§	Leading Cr. 23 Jul 93§	Leading Cr. 23 Jul 93
	12.3	12.3	12.3	10.3	7.1	5.1	1.7	15.5	14.8	12.3
Wabash pigtoe	X			X						
fatmucket	X	X	X	X				X	X	
pink heelsplitter	X		X	X					X	
plain pocketbook		X	X					X	X	
cylindrical papershell			X	X						
giant floater			X	X				X	X	X
white heelsplitter			X	X						
fragile papershell			X	X				X	X	X
mapleleaf				X						
squawfoot			X	X					X	
Total Species (10)	3	2	8	9	0	0	0	4	6	2

†J. Jenkinson et al.
‡R. Sanders
§G. T. Watters

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Appendix Table 3 continued. List of unionid mussels (living, freshdead, or weathered) collected in Leading Creek since 1964.

Species	Stream/Date/Collector/Site Leading Cr. 23 Jul 93§ 10.3	Parker Run 23 Jul 93§ 1.5	Leading Cr. 28 Jul 93* 10.3	Leading Cr. 28 Jul 93* 14.8	Leading Cr. 13 Sep 93* 12.9	Raccoon Cr 28 Jul 93* 40.1	Raccoon Cr 13 Sep 93* 39.9
Wabash pigtoe	X		X				
fatmucket	X		X	X	X		
pink heelsplitter	X		X			X	
plain pocketbook	X		X	X	X		
cylindrical papershell							
giant floater	X		X				
white heelsplitter				X	X		
fragile papershell	X			X	X		X
mapleleaf	X				X		
squawfoot	X						
Total Species (10)	8	0	5	4	5	1	1

§G. T. Watters
*Ohio EPA

Appendix Table 4. Aquatic life use attainment status for the Warmwater Habitat (WWH) use designation in Leading Creek, Raccoon Creek, and tributaries based on historical data and data collected by EA Engineering and the Ohio Division of Wildlife during July 1993.

RM Fish/Inv.	Date	Mean Fish Species	Macro. Taxa	IBI	Modified Iwb[a]	ICI[b]	QHEI[c]	WWH Attainment Status[d]	Comment
Leading Creek									
30.2/–	1986	15	–	¤40ns	–	–	–	(Full)	ODOT Survey - Carpenter Rd
29.9/–	1993	11	–	†38*	N/A	–	†70.0	(Non)	Carpenter Rd
–/26.0	1991	–	30	–	–	†30*	–	(Non)	Co.Rd. 10
–/26.0	1990	–	44	–	–	†40	–	(Full)	" "
–/26.0	1989	–	32	–	–	†28*	–	(Non)	" "
–/26.0	1988	–	36	–	–	†26*	–	(Non)	" "
24.3/24.3	1987	16	30	‡44	–	†26*	–	Partial	Twp. Rd. 13
19.0/–	1993	21	–	†32*	8.0ns	–	†46.5	(Partial)	Twp. Rd. 27
17.3/–	1993	24	–	‡42ns	8.6	–	–	(Full)	Co. Rd. 4 (near Dexter)
16.8/16.7	1993	20	34	†39*	7.5*	†MG	†69.0	Partial	Co. Rd. 10 (Dexter)
14.8/14.8	1993	17	36	‡44	–	†F	†73.0	Partial	Co. Rd. 8 (Malloons Run Rd)
12.9/–	1993	13	–	‡32*	–	–	†71.5	(Non)	Tractor Crossing off Co. Rd. 10; "Big Rock"
12.3/–	1982	19	–	¤39*	–	–	–	(Non)	SR 124

Appendix Table 4. Continued.

RM Fish/Inv.	Date	Mean Fish Species	Macro. Taxa	IBI	Modified Iwb[a]	ICI[b]	QHEI[c]	WWH Attainment Status[d]	Comment
10.3/10.3	1993	19	41	‡42*	–	†F	†66.0	Non	Twp. Rd. 41
10.3/10.3	1990	21	37	†36*	8.5	†36	†72.0	(Partial)	" "
–/10.3	1989		31	–	–	†34ns	–	(Full)	" "
–/10.3	1988		38	–	–	†28*	–	(Non)	" "
–/10.3	1987	29	35	‡39*	–	†32ns	–	Partial	" "
7.2/7.1	1993	14	26	‡34*	–	†F	†38.5	Non	Co. Rd. 12 (Titus Road)
3.5/–	1993	16	–	‡38*	–	–	–	(Non)	Private Rd off Leading Cr Rd.; .75 mi W SR 7
1.8/–	1993	15	–	‡32*	–	–	†55.0	(Non)	Upstream SR 7
Little Leading Creek									
0.4/–	1993	14	–	†32*	–	–	†48.0	(Non)	Twp. Rd. 176
0.1/–	1993	12	–	‡32*	–	–	–	(Non)	Mouth
Parker Run									
2.7/–	1993	13	–	‡48	–	–	–	(Full)	Meigs #31 Mine Property upst. discharge
1.5/1.6	1993	14	24	‡46	–	†F	†70.0	Partial	Co. Rd. 18 (Parkers Run Rd)
L. Parker Run									
0.4/–	1993	5	–	†40ns	–	–	†51.0	(Full)	Co. Rd. 18 (Parkers Run Rd)
Malloons Run									
0.2/–	1993	12	–	†42ns	–	–	†55.0	(Full)	Co. Rd. 8 (Malloons Run Rd)
0.1/–	1993	10	–	‡42ns	–	–	–	(Full)	" "

Appendix Table 4. Continued.

RM Fish/Inv.	Date	Mean Fish Species	Macro. Taxa	IBI	Modified Iwb[a]	ICI[b]	QHEI[c]	WWH Attainment Status[d]	Comment
Dexter Run									
–/1.6									
0.8/–	1987	9	–	‡42[ns]	–	–	–	(Full)	Co. Rd. 4
Thomas Fork									
2.8/–	1993	0	–	†12	–	–	†45.5	(Non)	Twp. Rd. 361
Trib to Ogden Run									
–/1.0	1990	–	28	–	–	†30*	–	(Non)	
–/1.0	1989	–	27	–	–	†38	–	(Full)	
–/1.0	1988	–	37	–	–	†30*	–	(Non)	
Raccoon Creek									
50.2/50.1	1993	12.5	28	‡‡34*	6.4	†G	–	Partial	Humpback Bridge
40.2/40.1	1990	15.5	37	†35*	7.6*	†46	†48.5	Partial	Vinton Dam - (Boat)
40.1/40.1	1993	21	38	†36*	7.8*	†G	†73.0	Partial	" " (Wading)
40.1/-	1993	14	–	‡32*	6.7*	–	–	(Non)	" " (Wading)
39.9/–	1993	22	–	†35*	9.0	–	†71.0	(Partial)	dst Vinton Dam (Boat)
–/29.1	1993	–	42	–	–	†G	–	(Full)	SR 588, Adamsville
–/29.1	1980	–	15	–	–	†6*	–	(Non)	" "
27.1	1993	15	–	‡38[ns]	6.5*	–	–	(Partial)	Garners Ford Rd
10.2/-	1993	12	–	‡30*	6.4*	–	–	(Non)	dst Northrup, OH
10.0/–	1990	18.5	28	†35*	8.8	†46	†81.0	(Partial)	" "

Appendix Table 4. Continued.

RM Fish/Inv.	Date	Mean Fish Species	Macro. Taxa	IBI	Modified Iwb[a]	ICI[b]	QHEI[c]	WWH Attainment Status[d]	Comment
Strongs Run									
6.7/–	1993	10	–	↕30*	–	–	–	(Non)	Co. Rd. 52
–/5.9	1990	–	31	–	–	↑28*	–	(Non)	SR 124
–/5.9	1988	–	29	–	–	↑24*	–	(Non)	SR 124
5.9/–	1987	7	–	↕36ns	–	–	–	(Full)	SR 124
2.3/–	1993	18	–	↕38*	–	–	–	(Non)	Co. Rd. 1W
–/1.5	1993	–	32	–	–	↑MG	–	(Full)	Co. Rd. 2W
–/1.5	1991	–	26	–	–	↑34ns	–	(Full)	Co. Rd. 2W
–/1.5	1990	–	34	–	–	↑46	–	(Full)	Co. Rd. 2W
–/1.5	1989	–	40	–	–	↑40	–	(Full)	Co. Rd. 2W
–/1.5	1988	–	33	–	–	↑34ns	–	(Full)	Co. Rd. 2W
0.6/–	1993	12	–	◊32*	–	–	↑61.5	(Non)	Adney Road
–/0.6	1988	–	33	–	–	↑26*	–	(Non)	Adney Road
0.6/–	1987	15	–	↕30*	–	–	–	(Non)	Adney Road
Robinson Run									
–/1.6	1993	–	33	–	–	↑MG	–	(Full)	Ust Sugar Run
0.2/–	1993	13	–	↕34*	–	–	↑66.5	(Non)	SR 325
Sugar Run									
0.6/–	1993	–	–	–	–	–	↑62.5	–	Willi Smith driveway/SR 325
0.1/0.1	1993	–	29	–	–	↑MG	↑42.0	(Full)	Keesee Road

Appendix Table 4. Continued.

RM Fish/Inv.	Date	Mean Fish Species	Macro. Taxa	IBI	Modified Iwb[a]	ICI[b]	QHEI[c]	WWH Attainment Status[d]	Comment
Flatlick Run									
0.7/–	1993	16	–	†40[ns]	–	–	–	(Full)	ust. Co. Rd. 8
0.6/0.6	1993	15.5	29	†29*	–	†MG	†67.0	Partial	dst. Co. Rd. 8
–/0.6	1991	–	30			†32[ns]		(Full)	" "
–/0.6	1990	–	35			†38		(Full)	" "
–/0.6	1988	–	35			†28*		(Non)	" "
0.6/–	1987	18	–	‡40[ns]	–	–	–	(Full)	" "

† - Ohio EPA Data
‡ - EA Engineering Data
‡ - ODNR - NAP Data
◊ - ODNR - DOW Data
□ - ODOT Data
* - significant departure from ecoregion biocriteria (> 4 IBI or ICI units; > 0.5 Iwb units); poor and very poor results are underlined.
ns - Nonsignificant departure from biocriterion (≤ 4 IBI or ICI units; ≤ 0.5 Iwb units).
a - Modified Iwb does not apply in Headwaters habitats.
b - Narrative evaluation based on qualitative samples from the natural substrates; G = Good, MG = marginally good, F = fair, P = poor.
c - all Qualitative Habitat Evaluation Index (QHEI) values are based on the most recent version (Rankin 1989).
d - Attinment status based on one organism group is parentheically expressed

Ecoregion Biocriteria: Western Allegheny Plateau (WAP)

INDEX - Site Type	WWH	EWH	MWH[e]
IBI - Headwaters	44	50	24
IBI - Wading	44	50	24
IBI - Boat	40	48	24
Mod. Iwb - Headwaters	N/A	N/A	N/A
Mod. Iwb - Wading	8.4	9.4	6.2
Mod. Iwb - Boat	8.6	9.6	5.8
ICI	36	48	24

e - Modified Warmwater Habitat for channelized areas.

Appendix Table 5. ODNR Fish kill stations and associated number of mudpuppies recovered at these locations. Collection conditions were marginal (high flow, low transparency), thus these number are likely underestimates of individuals killed.

Location	No. of Mudpuppies
Dst Parker Run confluence	0
Malloons Road Bridge	2
Insinger Road Bridge	3
SR 124 (Langsville)	1
Parkinson Run Road (Twp. 41)	1
Lasher Road	0
Titus Road	0
Wells Road	0
Leading Creek Road (iron bridge)	1
SR 7 Bridge	4
Middleport Boat Ramp	0

Errata Sheet for

"Ecological Recovery Endpoints for Streams Affected by the Meigs # 31 Mine Discharges during July-September 1993"

This errata sheet (1) clarifies the monitoring schedule required in these segments, and (2) adds some new "key" macroinvertebrate taxa, thought to be sensitive to metal toxicity in sediments, to some of the segments in the study area, (3) - (5) clarifies sampling effort and biological index calculation for endpoint attainment, (6) clarifies amphibian endpoints, and (7) clarifies and modifies the procedure for counting key fish and macroinvertebrate taxa.

1. *Clarification of Monitoring Requirements*: This text replaces and clarifies the text relating to monitoring at the bottom of page four:

"Monitoring will be required until final endpoints are reached for all organism groups. After an individual organism group's final endpoints are reached for two consecutive years, the sampling effort will be reduced in frequency to a single macroinvertebrate artificial substrate sample per station or two fish samples per station. After both fish and macroinvertebrates attain endpoints for three consecutive years, the sampling effort is further reduced to monitoring of key stations in each segment to confirm that endpoints are being maintained until all applicable organism group endpoints are attained."

2. *Key Macroinvertebrate Taxa*:

For Leading Creek Segment 3 (RM 9.1-15.6):

REMOVE: *Polycentropodidae*

ADD: *Nytiophylax* sp.
Microtendipes "caelum"

For Raccoon Creek:

ADD: *Cyrnellus fraternus*
Hydropsyche (H.) *simulans*
Polypedium (*Tripodura*) *halterale* gr.
Dicrotendipes modestus

For Strongs Run:

ADD: *Tanytarsus glabrescens* gr.

For Sugar Run:

ADD: *Oxyethira* sp.

Dicrotendipes modestus

For Robinson Run

ADD: *Tanytarsus guerlus* gr.

Hexagenia sp.

3. *Sampling Effort* - Ohio EPA sampling guidance documents for collecting biosurvey data discuss problems with inadequate fish sampling efforts (i.e., underestimating the actual fish community biological integrity due to a poor estimate of fish species richness, abundance, and variability of proportional metrics). While over-sampling is much less of a likelihood than undersampling (i.e., estimates of relative abundance and proportional metrics are not likely to be affected), the biocriteria were calibrated on samples collected with a "reasonable" level of effort and certain of the "structural" metrics (e.g., species richness) could be inflated if sampling effort is extraordinarily intensive. The 90th percentile time fished for wadeable sites in Ohio streams is 55 minutes (median = 32.8 minutes; N = 3,648 samples). To ensure that IBI scores are not inflated by an extraordinary sampling effort, samples where the time fished is greater than the 90th percentile (55.0 minutes) may not be considered valid upon examination by Ohio EPA biologists.

4. *Clarification of IBI Calculations Based on "Minimum" Species Richness for a Segment* - IBI values calculated where the number of species in a sample pass are less than the "minimum" defined for a segment shall be used in calculating an average IBI for interim endpoint achievement (being sure to make all low-end scoring adjustments). However, achievement of a final endpoint cannot be certified unless the minimum species richness is met or exceeded for each sampling pass in a given year. IBI values calculated with less than the minimum number of species are not to be ignored in characterizing the conditions in these streams.

Achievement of a final IBI endpoint needs to consider the influence of young-of-the-year

fish (YOY) on index calculation. The achievement of MIwb endpoints will be considered sufficient evidence that multiple-year classes for most fish species are present in streams > 20 sq mi drainage. If conductivity precludes MIwb calculation in Leading Creek (*i.e.*, the IBI becomes the sole endpoint for fish) or the Ohio EPA determines that YOY fish may be having an undo influence on IBI calculations (*i.e.*, adult fish are in low abundance), Ohio EPA may require that the IBI be calculated for certain sites in two ways:

1.) with YOY individuals included in the statistics and,

2.) with YOY individuals excluded from the data.

YOY fish to be excluded are fish greater than 15-20 mm (fish 15-20 mm should not be collected at all) that are obviously hatched in the present year. By September or when such fish cannot be readily distinguished from year I fish, they are considered juveniles or adults and not YOY fish. To be considered usable for achievement of final endpoints an IBI score cannot be affected by the presence of YOY fish more than:

1) the IBI is affected at control stations (e.g., Leading Creek at RM 16.8), plus:

2) four points (to account for natural variation).

Thus, for example, if in segment 3 of Leading Creek the control site variation in the IBI with and without YOY is 4 points (e.g., $IBI_{YOY} - IBI_{NOYOY} = 4$, + 4 points to account for natural variation) then an IBI at an affected site where $IBI_{YOY} - IBI_{NOYOY} > 8$ points would not achieve the IBI endpoint for that sampling station.

5. *ICI scores treated individually for attainment of endpoints* - Unlike IBI and MIwb values, which are averaged to determine endpoint attainment, each individual, valid ICI score at a sampling station must independently meet the appropriate endpoint. However, one valid ICI score will suffice to demonstrate achievement of the final endpoint if circumstances preclude the collection of two samples and the calculation of two valid ICI scores. This supersedes the notation of a "minimum mean ICI" as depicted in Figure 4 on page 11 of the document.

6. *Clarification of Amphibian Endpoints* –This paragraph modified and clarifies the required endpoints for amphibians in the Endpoints Document. Collection of mudpuppies at four sampling stations in segment 3 and one site in segment 1 or 2 is the stated endpoint. In response to a suggestion from SOCCO, we have modified the designated sampling stations for demonstrating the attainment of the amphibian endpoint in Leading Creek as follows:

SOCCO has identified seven locations in Segment 3 that appear to have suitable mudpuppy habitat. Once biological sampling demonstrates the presence of adults and juveniles in at least four of the seven aforementioned sampling stations, then OEPA will select four of these locations as the Sampling Stations for demonstration of attainment of the amphibian final endpoint. The new Sampling Stations shall merely replace the locations identified in the Endpoints Document. OEPA will provide both SOCCO and U.S. EPA with notice of its selection in writing. Sampling Stations will not be redesignated after such notice.

Although the Endpoints Document did not specify that adults and juveniles must be collected in Leading Creek, this has been the intent with each of the other organism groups (fish, macroinvertebrates, and mussels). Thus, we are clarifying that, not withstanding anything suggested in Table 1 of the Endpoints Document, for this endpoint both juveniles and adults must be collected at each Sampling Station approved by OEPA pursuant to the preceding paragraph for three consecutive years to satisfy the final endpoint.

7. *Relatively Rare Species and Counting of Key Taxa* - Upon recovery of the effected streams most of the key fish and macroinvertebrate taxa would be expected to be routinely captured in each segment during each year of monitoring by SOCCO. Some species, however, may be relatively less frequently captured. For three key fish species, shorthead redhorse, black redhorse, and silver lamprey, Ohio EPA collections may be used, in addition to SOCCO collections, to determine whether these species have been collected in a given segment for a given year. In addition, for the shorthead redhorse, the presence of adults will suffice for determination of endpoint attainment. For the silver lamprey and least brook lamprey the presence of ammocoetes is sufficient to confirm the presence of these species. For purposes of demonstrating return of key macroinvertebrate taxa, all collections by SOCCO and Ohio EPA at sampling sites within a segment in a given year can be used. This includes any sample deemed invalid for the computation of an ICI score during the summer/fall index period.

Although the river redhorse is a regular member of the Ohio River ichthyofauna, there is uncertainty about whether it is a permanent member of the Leading Creek ichthyofauna. The river redhorse is most likely to be present as adults during spring or early summer to

spawn and/or feed on the mollusk community of Leading Creek. The existing endpoints may be used to satisfy the requirements for this species (adults captured each year in segment three of Leading Creek for three consecutive years). As an alternative, however, SOCCO may conduct a three year study on the status of this species in Leading Creek and a similar sized reference stream (that is also a direct tributary to the Ohio River). This data can be used to show that populations of river redhorse in Leading Creek are not substantially different from minimally impacted reference streams, and then, by inference, from pre-discharge conditions in Leading Creek. Possible reference streams in the same area of the state with similar drainage areas, populations of mollusks, and that are direct tributaries to the Ohio River include the Shade River, Pine Creek, and the Little Scioto River. The study shall consist of a search (visual and trap netting, fyke netting or electrofishing) for spawning adults in Leading Creek and the reference stream (similar effort in each stream) in late April and early May (the species has been observed spawning in Ohio in early May at 16 ° C; Alban and Thoma, personal communication) and a similar search for feeding adults during late May and early June. The earlier period will coincide with the time period that SOCCO will be searching for the silver lamprey in Leading Creek. The three year period will extend sampling until *Corbicula* and other mollusk populations recover sufficiently to act as a food source. A short proposal will be prepared by SOCCO and approved by Ohio EPA.

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APPENDIX 2

UNIONID MUSSEL RECOVERY ENDPOINTS

The Parties acknowledge that at the time of the signing of this Decree, certain "mussel restoration projects" were already planned for Leading Creek. These projects are being planned by the Ohio Department of Natural Resources, Division of Wildlife ("ODNR") and/or by SOCCO in conjunction with the SOCCO/OEPA Restoration Plan. These restoration projects are expected to involve human reintroduction (stocking) of adult mussels, laboratory-propagated juveniles, or glochidia that have been artificially encysted upon appropriate "host" fish. Although EPA has not participated in the planning or development of these restoration projects and here expresses no opinion regarding such projects, the Parties have agreed that these projects may go forward under the auspices of ODNR and/or OEPA. The Parties further agree that, notwithstanding the active participation of ODNR and/or OEPA in any mussel restoration project, SOCCO is ultimately responsible under this Decree for the satisfaction of the Ecological Endpoints for all Key Species of unionid mussels.

The Endpoints Document identifies Key unionid mussel species for Segment No. 3 of Leading Creek and for Raccoon Creek. The recovery of unionid mussels in these Stream Segments will be deemed to have occurred when sampling/monitoring data demonstrate that: (a) each species has maintained a naturally viable population of adults for three consecutive years after the last human introduction of the specific individual mussel species through placement in the stream of individual mussels (stocking); and, (b) recruitment has occurred by each of the species for three consecutive years. Recruitment for each species shall be demonstrated through: (a) the collection of either juvenile of the species or collection of a fish encysted by glochidia of such species; and, (b) a demonstration that the collected juvenile or glochidia encysted fish resulted from natural (unassisted) propagation of mussels in the Stream System or from natural migration from contiguous aquatic habitat, i.e., the juveniles or glochidia infested fish were not introduced as part of any SOCCO or ODNR mussel restoration project.

To account for natural variation, disease, and other factors, if after five years from the first artificial introduction of a mussel species into a Stream Segment, SOCCO determines that recruitment is not occurring each year for a particular species, then SOCCO may demonstrate Recovery of such species by demonstrating that for each of the Key Species of unionid mussels: (a) that there are a sufficient number of sexually mature individuals of each sex to allow a reasonable scientific judgment that the population is capable of self-perpetuation; and (b) the reproductive rates in the Affected Stream Segment are equivalent to the reproductive rates exhibited

by the same species of mussel in an approved reference stream. Reference streams for this demonstration must be approved, in writing, by EPA. To qualify as a reference stream, a stream must be located in the same general ecoregion, have chemical, physical, and habitat characteristics similar to those existing in the Stream Segment for which SOCCO proposes to make the alternate demonstration of Recovery, and otherwise have the attributes that allow a reasonable scientific judgment that the stream is representative of a healthy Allegheny Plateau ecosystem.

Sampling/monitoring for Unionid Mussels in Leading Creek and Raccoon Creek will be conducted at the Sampling Stations identified in Appendix 7 (Sampling Stations).

APPENDIX 3

United States v. SOCCO Consent Decree

LEADING CREEK IMPROVEMENT PLAN STATEMENT OF WORK

I. INTRODUCTION

The streams and rivers that make up the Ohio River drainage system each contribute to the quality of the main river itself. The tributaries to the Ohio are integral parts of its ecology, and hence its viability as a resource. The Leading Creek Stream System drains a watershed of over 96,700 acres. Although it has been adversely affected by numerous human activities, the Leading Creek Stream System appears to have the potential to provide, among other things, important ecological, economic, and recreational services to the communities in the watershed and, to some extent, even to the users of the Ohio River.

In the Summer of 1993, certain tributaries of the Ohio River received a significant discharge of untreated or partially treated water during the emergency recovery operations at an underground coal mine owned and operated by Southern Ohio Coal Company ("SOCCO"). Pursuant to Section V (Restoration Measures) of the Consent Decree, SOCCO has agreed to take those actions necessary to restore the affected streams to certain pre-determined Ecological Endpoints which, for purposes of this Decree represent a description of the conditions that existed prior to the discharge. In addition, in settlement of the United State's claims for alleged natural resource damages, including lost use values, SOCCO has agreed under this Consent Decree to pay certain amounts and to undertake the task of preparing the Leading Creek Improvement Plan ("LCI Plan") described in this Statement of Work ("SOW").

The primary goal of the LCI Plan is to describe actions that could reasonably be taken to effect measurable ecological rehabilitation or enhancement of the Leading Creek Stream System to attain the highest Ohio Environmental Protection Agency ("OEPA") aquatic life use designation possible, i.e., Ohio EPA Warmwater or Exceptional Warmwater Habitat Criteria. Ohio Water Quality Standards, Ohio Administrative Code (OAC) 3745-1-07, Table 7-17.

The fundamental approach of the LCI Plan is ecological, that is, enhancement of watershed and in-stream conditions to the extent necessary for the establishment of the most diverse and structurally integrated natural assemblage of aquatic organisms that the streams are capable of supporting. As described more fully below, the LCI Plan will (a) characterize the current biological, chemical, and physical conditions throughout the streams of the watershed, (b) identify and characterize throughout the watershed sources of impairment of the in-stream

biological communities, in-stream habitat, riparian vegetation, and shore-line habitat and (c) identify and evaluate potential actions that could be undertaken to cause as many reaches of the Leading Creek Stream System as possible to meet the criteria of OEPA Warmwater Habitat and, where possible, Exceptional Warmwater Habitat. While the overall focus of the LCI Plan is ecological, it will combine expertise from the fields of biology, chemistry, toxicology, geology, hydrology and engineering.

Some of the actions described in the final LCI Plan will be carried out using the funds provided pursuant to Paragraph 46 of the attached Decree. It is expected, however, that the LCI Plan will identify more potential projects than could be carried out with the limited funds provided under the Decree. Some of the projects identified may have to await funding, others may fall within the identified responsibility of specific state or federal agencies, and still other projects might require individual or group efforts from the people living in or using the watershed to be successful. The LCI Plan is intended to provide to various federal and state agencies, as well as the communities in the Leading Creek watershed, a guidance document for the coordination of actions over time, to allow the Leading Creek Stream System to realize its maximum potential as a sustainable natural resource.

As provided in Paragraphs 50-52 of the Decree, the United States Fish and Wildlife Service ("FWS") and the United States Environmental Protection Agency ("EPA") will work with certain other state and federal agencies to evaluate and select potential projects identified in the LCI Plan for the improvement of the Leading Creek Stream System and associated watershed. Pursuant to Paragraphs 44 and 45 of the Decree, the LCI Plan will be provided to interested federal and state agencies as well as interested citizens for their use as a resource. It is anticipated that the LCI Plan will be of assistance to these various groups in future coordination of their efforts with respect to watershed or stream protection and/or improvement.

Concurrently with the development of the LCI Plan SOCCO, EPA, OEPA and others will be engaged in work relating to portions of the Leading Creek Stream System affected by the Summer 1993 dewatering of Meigs Mine No. 31. This work will be carried out in accordance with the SOCCO/OEPA Restoration Plan and Section V of the Decree. In the development of the LCI Plan, SOCCO shall utilize data generated in connection with these other actions as well as data generated pursuant to the requirements of this SOW to develop an independent evaluation of the actions necessary to achieve throughout the Leading Creek Stream System the higher standards of Warmwater Habitat and/or Exceptional Warmwater Habitat.

II. DEFINITIONS

Whenever terms listed below are used in this Appendix the following definitions shall apply. Where usage of a term in this Appendix differs from its use in the Decree, it is so noted.

"Affected Streams" means those portions of the Leading Creek and Raccoon Creek Stream Systems into which untreated or partially treated water was discharged or otherwise introduced during the process of the dewatering of SOCCO's Meigs Mine No. 31 during some or all of the period from July 30, 1993, through September 23, 1993. **Note:** In this Appendix, the term is used only with reference to Leading Creek.

"ARC/INFO" means the copyrighted geographic information system computer software program distributed under that name by Environmental Systems Research Institute, Inc.

"Consent Decree" means the Consent Decree between the United States and Southern Ohio Coal Company to which this Appendix is attached and incorporated. Except as to definitions, in the event of a conflict between this Decree and this Appendix, the Decree shall control.

"Day" means a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

"DFFO" means the Director's Final Findings and Orders issued by OEPA to SOCCO on July 26, 1993, and the amendments thereto dated September 22, 1993 and January 27, 1994.

"Ecological Endpoints" means the biological criteria consisting of specific index scores and certain species/taxa, that have been selected as levels of biotic integrity to be achieved in the Affected Streams pursuant to the requirements of Section V (Restoration Measures) of the Decree. For purposes of this SOW and the Decree, the Ecological Endpoints represent the stream conditions prior to the Summer 1993 discharges during the dewatering of Meigs Mine No. 31. 1993. The Ecological Endpoints are identified in the Ecological Endpoints Document and the Errata Sheet attached thereto.

"The Ecological Endpoints Document" or "Endpoints Document" means the report prepared by the OEPA, Division of Surface Water Ecological Assessment Section, entitled "Ecological Recovery Endpoints for Streams Affected by the Meigs Mine Discharges during July - September 1993," OEPA Report No. EAS/1994-1-1,

March 2, 1994, and the Errata Sheet thereto dated July 10, 1995. The Ecological Endpoints Document and the Errata Sheet are attached to the Decree as Appendix 1.

"Enhancement Measures" means activities that could be taken or strategies that could be pursued to rehabilitate or improve the physical, chemical and/or biological condition of some or all of the Leading Creek Stream System. Enhancement Measures include, but are not limited to, sediment removal/retardation actions, chemical treatments, riparian improvements, habitat modification, stream flow modifications, and institutional controls.

"EPA" means the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"FWS" means the United States Fish and Wildlife Service, an agency of the United States Department of the Interior and any successor departments or agencies of the United States.

"Paragraph" means a portion of this SOW or of the Consent Decree identified by an arabic numeral or an upper case letter.

The "SOCCO/OEPA Restoration Plan" means the document jointly developed by SOCCO and OEPA in accordance with the DFFO which sets forth the actions to be taken by SOCCO to satisfy requirements of the DFFO regarding restoration in certain portions of Leading Creek, Raccoon Creek, and certain identified tributaries thereof. The document is entitled "Southern Ohio Coal Company, Meigs Mine No. 31, Stream Restoration Plan."

"Section" means a portion of this Consent Decree or Appendix identified by a roman numeral.

"Stream Segment" or "Segment" is a term used in the Decree to identify the named tributaries to, and designated stretches of, either Leading Creek or Raccoon Creek that are identified as distinct geographic zones that have been established for purposes of Section V of the Decree. **Note:** Because Stream Segments are identified only for Affected Streams, there are tributaries to, and portions of, Leading Creek that will be addressed by the LCI Plan that have not been identified as separate Stream Segments in the Decree. When the term is used in this Appendix it refers only to those Stream Segments in the Leading Creek Stream System. The Stream Segments in the Leading Creek Stream System are defined in Paragraph 30(b) of the Decree.

"Stream System" means the named and unnamed streams in the Raccoon Creek or the Leading Creek watersheds which flow into either Raccoon Creek or Leading Creek. **Note:** In this Appendix

the term refers only to the Leading Creek Stream System located in Gallia County, Meigs County, and Athens County, Ohio.

"Summer/Fall Index Period" means June 15 through October 15 of each year.

III. ELEMENTS OF WORK FOR THE LCI PLAN

The LCI Plan shall be composed of the following Elements of Work to be performed by SOCCO:

A. Describe recent historical and current baseline conditions in the Leading Creek watershed for in-stream biological communities, in-stream habitat, riparian vegetation, shore-line habitat, in-stream water quality, aquatic and riparian ecology, hydrologic conditions and cycles, and other conditions in the watershed affecting stream quality and potential for achieving the highest OEPA aquatic life use designations. This shall include, but is not limited to the following tasks.:

- Examination and analysis of relevant historical data to describe the history of the Leading Creek Stream System to provide context for an understanding of current conditions and a basis for a discussion of the future potential of the resource. This involve, among other things, collecting and analyzing published and, where feasible unpublished records, of state and local resource agencies, industries, and non-governmental organizations and by the application of professional judgment. Information from EPA, FWS, the Ohio Department of Natural Resources, and OEPA may be obtained by informal written request to each Agency.

- Description of the current land use and vegetative cover in the watershed. The level of detail required will be a function of the relevance of such detail to the evaluation of the impact of such use or cover on the chemical, physical, and/or biological attributes of the Stream System. Thus, while the areal extent and composition of forested land might be described generally, it may be important to identify particular agricultural practices (e.g. soil tilling or cattle farming) or land use practices in specific areas due to the degree of potential influence on in-stream conditions (e.g. septic fields).

- Description and evaluation of the hydrology of the Stream System and watershed;

- Description and assessment of current baseline water quality, aquatic and riparian habitat, and biological conditions throughout the Stream System and associated riparian zone. This task will include, among other things: incorporation of all information generated from the water and sediment chemical analysis, biological sampling, toxicological testing and other work performed by SOCCO in connection with the DFFO, the OEPA/SOCCO Restoration Plan, and Sections V and X of this Consent Decree; reference to recent biological surveys, studies or investigations by state and federal agencies; and review of relevant literature. After existing information has been reviewed, data gaps shall be identified by SOCCO and appropriate studies, investigations, and/or monitoring projects shall be designed and undertaken to fill those data gaps. Measures to fill data gaps might include, among other things, supplemental water, sediment, toxicological, and biological sampling/monitoring, and quantitative and qualitative assessment of in-stream and riparian habitat throughout the watershed. Current baseline conditions shall be described using methods and protocols approved by FWS through the approval of the LCIP Work Plan, required sampling plans, or any amendments to the foregoing. The description of biological baseline conditions must include, among other things: (1) the use of OEPA biocriteria (IBI, ICI, and MIwb scores) for each ecologically distinct reach or portion of the Stream System; (2) aquatic and riparian habitat assessments that utilize a protocol of general acceptance in the scientific community; and, (3) identification of species/taxa that provide relevant qualitative information. Baseline data on in-stream and watershed vegetation will also be developed and analyzed.

Note: The requirement that the LCI Plan utilize OEPA biocriteria and biological sample collection protocols is not intended to limit the methods that SOCCO may use in describing baseline conditions in the Leading Creek Stream System (or in describing the conditions expected if particular biological/ecological goals are attained pursuant to Element of Work B, below). Rather, the use of OEPA biocriteria and protocols is intended to establish a minimum level of analysis and to generate data that are comparable to data generated in connection with other OEPA/EPA investigations and regulatory activities. Thus, SOCCO and its contractor(s) are expected to draw upon their considerable expertise and professional judgment to effectuate the goals of the LCI Plan. In the development of the LCI Plan, SOCCO is encouraged to propose methods to supplement or evaluate OEPA biocriteria and protocols.

B. Develop for each distinct reach or portion of the Leading Creek Stream System and associated riparian zone, biological/ecological descriptions of the conditions that would be expected in those areas if they were to meet OEPA Warmwater and, where reasonable, Exceptional Warmwater Criteria. This description will include, but is not limited to, a calculation of the expected values of the OEPA biocriteria (IBI, ICI, and MIwb scores), an explanation of expected habitat conditions, and identification of species/taxa that would be expected upon achievement of the OEPA use designation of Warmwater or Exceptional Warmwater Habitat. The purpose of developing these criteria is to establish target conditions for the development and evaluation of proposed Enhancement Measures and to provide objective criteria that will be used in the future to assist in the evaluation of the efficacy of Enhancement Measures that are implemented. Where establishment of Exceptional Warmwater Habitat can not be reasonably expected in a portion of the Stream System because of inherent physical limitations (e.g. stream size, gradient, continuity, etc.) or because correction of an impediment would be prohibitively expensive, then SOCCO will address only Warmwater Habitat criteria in developing its description of the target in-stream conditions. Where Warmwater Habitat criteria are more likely to be met, but Exceptional Warmwater Habitat is possible, SOCCO shall address both sets of criteria, providing its analysis of the relative merits of the alternate targets.

Note: The Exceptional Warmwater Habitat criteria, and in some instances the Warmwater Habitat criteria, describe biological conditions superior to those described by the Ecological Endpoints required to be met under Section V of the Decree.

C. Identify, characterize, and quantify inputs and loadings from all significant sources of acid mine drainage, sediment loadings, and other point and non-point source pollutants to Leading Creek and its tributaries. "Significant sources" shall be those sources of acidity, sulphates, chlorides, total dissolved solids, metals, nutrients, hydrocarbons, and other parameters (whether or not their discharge is regulated by any state or federal agency) that may affect establishment of Warmwater or Exceptional Warmwater Habitat. Analyze the effects of such sediment and pollutant sources on the aquatic and riparian ecology (biota and habitat) of the Leading Creek Stream System. This effort will include the historical data developed during the 1993 Dewatering Event, and data developed in connection with the OEPA/SOCCO Restoration Plan and Sections V and X of this Decree.

D. All appropriate physical, chemical, habitat, and biological data developed or collected during the preparation of

the LCI Plan shall be compiled in an electronic format suitable for input into the geographic information system ARC/INFO and shall be recorded along with appropriate locational information (coordinates) in accordance with EPA's Locational Data Policy (IRM Policy Manual 2100, Chapter 13, "Locational Data Policy," April 8, 1991; and, Method Accuracy Description (Version 6.1) Information Coding Standards for the U.S. Environmental Protection Agency's Locational Policy, November 7, 1994) for the purpose of: (1) organizing and manipulating data; (2) analyzing current conditions throughout the Stream System; (3) evaluating/explaining the probable effects of proposed Enhancement Measures; and (4) providing a tool for the future evaluation of the effects of implemented Enhancement Measures. The selection of the format for the data to be imported into GIS system will be addressed through the approval process for the Data Management Plan required by Section IV of this Statement of Work.

SOCCO shall also evaluate appropriate existing hydrologic and fluvial geomorphology modeling systems and select the appropriate model(s) for use in the development and implementation of the LCI Plan. The model(s) selected must have sufficient power or predictive value to be useful in describing current conditions in the Stream System or portions thereof and, as appropriate, be useful in estimating probable outcomes of the implementation of any proposed Enhancement Measure. The Parties recognize that for certain stretches or reaches, a simpler model may be used if it adequately describes/predicts the relevant in-stream conditions. Potential models may include, but are not limited to, HSPF, Instream Flow Incremental Methodology, Riffle Stability Index, WASP, SWRRBWQ, and other fluvial geomorphology models and sediment/contaminant transport and fate models. All models selected for use shall have been peer reviewed and approved by EPA, FWS, United States Geological Survey or the United States Department of Agriculture.

The goal of the development of the database and model selection is to allow SOCCO in the first instance, and FWS thereafter, to efficiently manipulate and compare data, meaningfully compare anticipated costs and benefits of potential Enhancement Measures and to evaluate the potential effects of different sequences of actions. The goal of model selection is to identify the model(s) that can meaningfully assist in the evaluation of contaminant and sediment loading and stream response under various expected flow regimes for each stretch or reach of a stream that may reasonably be considered as a single unit.

Note: The Stream Segments of Leading Creek (Parker Run, and Leading Creek Segments 1, 2, and 3) shall be presumptively considered discrete portions or reaches for purposes of the LCI

Plan unless otherwise determined by FWS during the LCI Plan approval process. Nothing in the foregoing is intended to limit SOCCO's ability to propose more appropriate divisions of the Stream System for the purposes of the LCI Plan.

E. Develop and evaluate site-specific, discharge-specific, and/or condition-specific measures that could be taken to enhance the physical, chemical and/or biological conditions in the Leading Creek Stream System. Enhancement Measures will be evaluated in relation to their contribution towards a goal of having as much of the Leading Creek Stream System as possible meet the OEPA use designation of Warmwater Habitat and, where the potential exists, Exceptional Warmwater Habitat. The final LCI Plan will rank Enhancement Measures in relationship to their projected contribution towards achieving the stated goal and will also recommend the sequence of actions that would likely maximize the cost/benefit ratio of the proposed Enhancement Measures. As part of the evaluation of alternative measures, SOCCO will evaluate the factors relevant to each potential measure, including basic design issues, and address the estimated costs and expected benefits of each particular measure. Factors to be considered will include, but not be limited to:

- site geology;
- site hydrology and fluvial geomorphology;
- water quality;
- sediment quality/composition;
- site ecology, including riparian ecology;
- source(s) of contamination and/or cause(s) of aquatic habitat impairment;
- potential treatment and/or control technologies and strategies;
- potential institutional controls including zoning changes, acquisition of easements, etc.);
- ability to identify owner(s) of property identified as source of stream impairment or which would be affected by implementation of a proposed Enhancement Measure (property owners to be identified by name and address where possible);
- specific aquatic and riparian habitat and/or ecological benefit(s) to be expected from implementation of potential corrective or remedial measures;
- estimated range of capital costs of Enhancement Measures;
- estimated operation and maintenance or recurring costs (if applicable) of Enhancement Measures;
- cost estimating methodology (e.g. Means Cost Guide, comparable projects in study area);
- level of design work necessary for reasonable cost estimation;
- an assessment of all applicable legal permitting

requirements for proposed Enhancement Measures.

Note: Review of, or comment on, the appropriateness of any federally permitted point source is explicitly beyond the scope of the LCI Plan. Other than characterization of the effluent and any necessary discussion of the impact of the discharge, recommendations of Enhancement Measures should not include recommendations regarding changes in existing permits.

F. Develop an approach to monitoring the results of implementation of Enhancement Measures. This approach must be reasonably tailored to show direct cause and effect relationships between Enhancement Measures and ecological responses, including biological responses and incremental impacts on targeted habitat. See, e.g. Cairns (1992), pp. 172-175, 494. The monitoring system must utilize quantitative and qualitative measures of biological, habitat response, and as appropriate, physical/chemical in-stream conditions. The quantitative biological measures should incorporate, but need not be limited to, OEPA biocriteria. The monitoring approach may integrate the use of appropriate reference streams and/or reaches to assist the evaluation process. The goal of the monitoring program is to provide a scientifically valid and cost effective methodology to evaluate the effectiveness of Enhancement Measures.

G. Prepare LCI Plan and provide to FWS the approved final Plan in document form (10 copies) and in accordance with the requirements of the approved deliverables described in Section IV (Plans and Reports). In addition, as more fully described below, SOCCO shall provide to FWS one copy of all databases (in machine readable form) and software developed or assembled for the production of the LCI Plan. The contents and format of the LCI Plan will be developed through consultations with FWS during the development of the LCI Plan. At a minimum, however, it is expected that the LCI Plan will be of "publishable" quality and will contain the relevant hard copy maps, areal photographs, and other information appropriate to a project of this magnitude. For purposes of timely evaluation of the LCI Plan by FWS, SOCCO will provide to FWS at the time of the submission of the draft LCI Plan, copies of any literature, data summaries, or other information relied upon and/or cited in the LCI Plan.

IV. DESCRIPTION OF PLANS AND REPORTS

This Section sets forth a description of the types of information that should be included in the plans and reports listed below. This Section is intended to provide a framework for developing such plans and reports, and is not intended to be a prescriptive explanation of their content. The Parties recognize that other information and requirements may be

required by FWS to develop the LCI Plan in accordance with Section III of this Statement of Work. Unless otherwise specified, the description is not meant to distinguish between draft and final versions of the documents.

The following is a list of the plans and reports required for preparation of the LCI Plan: (**Note**: This Section does not address any other documents required to be submitted by SOCCO under other provisions of the Decree.)

A. LCI Work Plan

B. Quality Assurance Project Plan

C. Data Management Plan

D. Biological Sampling Plan

E. Chemical Sampling Plan

F. Toxicological Testing/Sampling and Analysis Plan

G. Hydrologic Assessment and Sediment/Contaminant Loading Assessment Plan

H. Model Selection Report

I. Overall Project Quarterly Report

A. <u>LCI Work Plan</u>

The Work Plan shall be the primary plan to control and guide the Elements of Work for the LCI Plan. The Work Plan shall include, but is not limited to, the following information:

- an overall description of the work to be performed with attached copies of other documents containing more specific details;
- identification of information needed to complete the LCI Plan (data gaps);
- the technical approach for undertaking and completing the LCI Plan;
- a description of the procedures, specific activities and objectives of each major activity;
- a description of the deliverables and milestones. Deliverables include, but are not limited to, any plan

or report identified in Section IV above that is not submitted concurrently with the Draft LCIP Work Plan;

- a document retention policy;
- the schedule for the work to be performed including agency review and approval times;
- a staffing plan, including organizational structure, positions, and resumes;
- an explanation of SOCCO's protocol for coordinating, and communicating with FWS (including a schedule for regular telephone and in-person conferences between FWS, SOCCO and their invitees to discuss the work in progress).

The optimal timing for the preparation and submission of the various plans and reports required by Section IV as well as the proposed submission dates for the draft and final LCI Plan will be addressed in the LCIP Work Plan. It is critical that project objectives are carefully designed and the work appropriately planned so that the work will proceed in an orderly fashion and that data generated will be useful, timely, and sufficient to meet the objectives of this Statement of Work. To the extent that certain determinations cannot reasonably be made prior to the submission of the LCIP Work Plan, then the Plan will explain when such decisions will be appropriate and suggest procedures for obtaining FWS comment and approval well in advance of the time that actions must be taken in accordance with such deferred decisions. Deferred decisions may be addressed through modifications to the LCIP Work Plan, the promulgation or amendment of some more specific plan, or, in the case of minor modifications, through correspondence issued by FWS. To be effective, however, modifications to any existing plan must be approved in writing by FWS. In addition, work that is not pre-approved through approval of a plan, report or modification may result in a delay in approval, or disapproval, of the final LCI Plan.

B. Quality Assurance Project Plan

The Quality Assurance Project Plan ("QAPP") shall establish quality assurance and quality control procedures associated with each Element of Work to be performed by SOCCO. The QAPP provides a framework for how environmental data will be collected to achieve specific project objectives and describes the procedures that will be implemented to obtain data of known and adequate quality. The QAPP must be prepared and approved prior to sample collection and analysis. It is critical that project objectives are carefully designed and the investigation appropriately

planned so that the data generated will be useful. The QAPP shall conform to EPA guidance, including "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5), Draft Final July 1993; "Guidance for the Data Quality Objectives Process" (EPA QA/G-4) Final September 1994; and, "Data Quality Objectives Decision Error Feasibility Trails" (EPA QA/G-4D) Final September 1994. Compliance with EPA QA/R-5 may be met for chemical analysis by strict compliance with the U.S. EPA Region 5 RCRA or CERCLA model QAPP. Compliance with EPA QA/R-5 may be met for biological sampling by strict compliance with the Generic Quality Assurance Project Plan Guidance for Programs Using Community Level Biological Assessment in Streams and Rivers (OWOW QA-1)(Draft October 27, 1994) and the current OEPA biological sampling protocols. The QAPP shall include, but is not limited to, the following basic information:

- Overall description of the QAPP, including its purpose and a general description of the Elements of Work covered by the QAPP.
- Data quality objectives.
- Sampling and sample custody procedures.
- Analytical methods and procedures.
- Data reduction and validation procedures.
- Control procedures, including internal quality control checks.
- Audits and routine procedures to assess data quality.
- Record retention procedures for all sampling/analysis performed in connection with the preparation of the LCI Plan.
- Corrective action procedures.

To the extent that all sampling/analytical methodologies have not been selected as of the time of the submission of the QAPP, the QAPP may be amended or modified subsequently to cover such additional methodologies. Except as provided in the following sentence, SOCCO may only satisfy the requirements of this Statement of Work and the approved LCIP Work Plan by using data collected in accordance with a pre-approved QAPP, QAPP amendment, or sampling plan addressing all elements of data quality control and quality assurance required to be addressed in a QAPP under this Section. Notwithstanding the limitation of the preceding sentence, the following data generated prior to the approval by FWS of a QAPP, a QAPP amendment, or a sampling plan

may be used, as appropriate, to satisfy the requirements of this Statement of Work: (1) data generated by SOCCO in connection with the requirements of Sections V and X of the Decree; (2) data generated in connection with work required by the SOCCO/OEPA Restoration Plan and/or the DFFO; (3) data generated by a governmental agency; or (4) data collected in accordance with a methodology expressly approved in writing by FWS prior to the collection/analysis of such data.

Note: Information to be supplied in the QAPP can be referenced to the Biological Sampling Plan or Chemical Sampling Plan, as appropriate. However, the information in such sampling plan must: 1) address all requirements stated in this Section, 2) provide detailed information, and 3) provide the specific reference to the sampling plan where the requested information is or will be located. If these criteria cannot be met in the sampling plan, then this information must be detailed in this section of the QAPP.

C. Data Management Plan

The Data Management Plan shall address the issues of data acquisition, format, storage, and retrievability. One of the goals of the LCI Plan is to produce a data collection that will be of use to interested governmental agencies in the review of the LCI Plan as well as for the future evaluation of the change in conditions in the Leading Creek Stream System (whether as an effect of implemented Enhancement Measures or other collateral events in the watershed). This will require, among other things, reduction of data to an electronic format. The Parties recognize that at the time of execution of the Decree, base maps of the Leading Creek Watershed in an appropriate scale were not available in an electronic form. Because, however, it is anticipated that such base maps will be available in the future, the Data Management Plan shall establish the procedures for compilation of data in a form and format suitable for importation into the geographic information system "ARC/INFO" to display or present in geographic format, all appropriate chemical, physical, habitat, and biological data developed or collected during the preparation of the LCI Plan. The Data Management Plan will address the technical aspects of the proposed data base and demonstrate its compatibility with ARC/INFO. The Data Management Plan shall include, but not be limited, to the following:

- A methodology for standardization of data formats for storage of data.

- A strategy for ensuring that all data collected or assembled for preparation of the LCI Report have the appropriate associated locational information (coordinates) appropriate for importation into a GIS

system in a manner consistent with EPA's Locational Data Policy (IRM Policy Manual 2100, Chapter 13, "Locational Data Policy," April 8, 1991; and, Method Accuracy Description (Version 6.1), Information Coding Standards for the U.S. Environmental Protection Agency's Locational Policy, November 7, 1994).

- A strategy for ensuring compatibility of data format with the several potential base map formats, i.e., Universal Transverse Mercator and State Plane coordinate systems. This requirement may be satisfied by either recordation of data in both formats, or the provision along with the final LCI Plan of a suitable software package that can translate one coordinate system into the other.

- A description of hard copy maps, including proposed scales, to be presented in the final LCI Plan. These maps will address, for the entire watershed: topography, fluvial geomorphology, vegetation cover types, streams, aquatic and riparian habitat, land use, sampling stations, loading impact areas, water/sediment quality, loading sources, and such other data useful for achieving the purpose of the LCI Plan. If hard copy maps are to be produced by the use of electronic data (e.g. RASTER reductions of existing hard copy maps), the Data Management Plan shall address the incorporation of such data into the larger data base.

- Procedures for data archival, retrieval, and transfer that are compatible with the data management capabilities of FWS. Where possible, data should be reduced to machine readable form.

- A Data Catalog listing and describing all data sets used in the preparation of the LCI Plan as well as a description of how to locate and/or access the data.

Note: The Parties agree that SOCCO is not required under this Decree to transform base maps into digital format and that even if base maps in digital form become available during the process of preparing the LCI Plan, SOCCO is not required to incorporate such digitized map information into the final LCI Plan or the data base(s) described in the approved Data Management Plan.

D. Biological Sampling Plan

The Biological Sampling Plan shall establish the sampling procedures associated with the biological and habitat assessment necessary for preparation of the LCI Plan. The Biological

sampling plan shall, at a minimum, follow OEPA sampling and analysis protocols and conform to Ohio EPA guidance. Specifically such OEPA guidance includes, but is not limited to, Ohio Environmental Protection Agency, 1987, Biological Criteria for the Protection of Aquatic Life, Volumes I, II, and III, their current updates and Addenda. Unless otherwise agreed to by EPA, all sampling for the purpose of calculating OEPA biocriteria (IBI, ICI, and MIwb scores) shall be performed during the Summer/Fall index period. The Plan shall identify and explain the habitat assessment methodology to be used and, at a minimum, address stream substrates, cover, habitat diversity, channel integrity, flow rates, and riparian buffers, and shall address as appropriate, leaf decomposition rates, algal/plant diversity in relation to macroinvertebrate herbivory, and evidence of fish growth rates. This plan should provide for any special or unscheduled sampling necessary to fully characterize stream conditions (e.g. impacts of sediment/contaminant loadings). The biological Sampling Plan may include relevant portions of the QAPP by specific reference. The Biological Sampling Plan shall include, but is not limited to, the following basic information:

- Overall description of the Biological Sampling Plan.
- Sampling/monitoring methodologies.
- Sampling rationale and objectives.
- Sampling locations and frequency.
- Sample designation.
- Sampling equipment and sampling preservation, preparation and cleaning procedures.
- Chain of custody procedures (these must conform to EPA-NEIC procedures).

E. Chemical Sampling Plan

The Chemical Sampling Plan shall establish the sampling procedures associated with Elements of Work requiring sampling and analysis of water, sediment or other medium. The Plan will explain the purpose of the chemical sampling and analysis in relation to the objectives of the Statement of Work and will discuss how the proposed sampling will achieve such goals. The discussion of objectives and approach must address the issues of representativeness and reliability of sampling strategies as well as the other factors required to be addressed in the QAPP. The Chemical Sampling and Analysis Plan may incorporate portions of the QAPP by specific reference. This Plan should provide for any special or unscheduled sampling necessary to fully characterize

stream conditions (e.g. extent of impact from sediment/contaminant inputs). The Chemical Sampling Plan shall conform to EPA guidance and protocols identified in the Decree at Section XI (Quality Assurance, Sampling, and Data Analysis). It shall include, but is not limited to, the following basic information:

- Overall description of the Chemical Sampling Plan, including its purpose.
- Sampling rationale and objectives.
- Sampling locations and frequency.
- Sample designation.
- Sampling equipment and sampling preservation, preparation and cleaning procedures.
- Chain of custody procedures (these must conform to EPA-NEIC procedures).

F. Toxicological Testing/Sampling and Analysis Plan

The Toxicological Testing/Sampling and Analysis Plan shall establish the procedures associated with Elements of Work requiring toxicological testing. The Toxicological Testing/Sampling and Analysis Plan shall conform to applicable EPA guidance and protocols and such other protocols as are identified and approved through the submittal/approval process for this Plan. It shall include, but is not limited to, the following basic information:

- Overall description of the Toxicological Testing/Sampling and Analysis Plan, including its purpose.
- Sampling rationale and objectives.
- Proposed analytical techniques.
- Sampling locations and frequency.
- Sample designation.
- Sampling equipment and sampling, preservation, preparation and cleaning procedures.
- Chain of custody procedures (these must conform to EPA-NEIC procedures).

G. Hydrologic Assessment and Sediment/Contaminant Loading Assessment Plan

The Hydrologic Assessment and Sediment Contaminant Loading Assessment Plan shall establish the methodology for quantifying flow regimes in the Stream System (high, medium and low) and the analytical procedures associated with the determination of hydrologic conditions, fluvial geomorphology, sediment/contaminant loadings, and transport and fate of sediments and/or contaminants. The Plan shall include, but is not limited to, the following basic information:

- Overall description of the Hydrologic Assessment and Sediment/Contaminant Loading Assessment Plan.
- Objectives and rationale for models and approach selected.
- Monitoring locations and frequency.

H. Model Selection Report

The Model Selection Report will identify the modeling approaches and/or programs proposed to be used for the preparation of the LCI Plan. The purpose of this report is to reach a consensus on critical model and data manipulation techniques prior to the preparation of the draft LCI Plan. The report shall detail the features and capabilities of the proposed models to be used to describe sediment/contaminant transport and fate and other dynamic processes relevant to the assessment of conditions in the Leading Creek Stream System. The report will include a description of the data and software necessary to operate the proposed models.

I. Overall Project Quarterly Report

The Overall Project Quarterly Report shall be a consolidated status report on all Work. The Report shall be divided into separate sections providing the status of the individual Elements and components of work under this SOW. It shall include, but is not limited to, the following basic information:

- Introduction, including the purpose, general description of the work, and master schedule.
- Activities/tasks undertaken during the reporting period, and expected to be undertaken during the next reporting period.
- Deliverables/milestones completed during the reporting period, and expected to be completed during the next

reporting period.

- Identification of issues and actions that have been or are being taken to resolve the issues.

- Schedules and schedule changes.

V. DELIVERABLES

This Section lists the deliverables associated with the LCI Plan. Unless otherwise noted, deliverables are to be final products, subject to review and approval pursuant to Section VII of the Decree (Submissions Requiring Agency Approval).

- *Project Quarterly Reports

- Draft Work Plan

- Final Work Plan

- Draft Project Quality Assurance Plan

- Project Quality Assurance Plan

- Biological Sampling Plan

- Chemical Sampling Plan

- Toxicological Sampling Plan

- Hydrologic Assessment and Sediment/Contaminant Loading Assessment Plan

- Model Selection Report

- Draft LCI Plan

- Final LCI Plan

- A copy of all databases created for production of the Final LCI Plan and any software necessary to access the databases if SOCCO has failed to comply with the data compatibility requirement of the Data Management Plan. This requirement does not require SOCCO to provide a copy of any GIS software so long as the database provided can be imported into, and allow operation of, the ARC/INFO software package.

* Project Quarterly Reports do not require formal approval by FWS, but may be rejected as inadequate within 30 days receipt. Project Quarterly Reports rejected as inadequate

shall be revised and resubmitted within 35 days from the issuance of the notice of rejection.

VI. SCHEDULES

This Section provides schedules for deliverables discussed in Sections III and IV of this SOW as well as other documents and significant milestone events. Except as otherwise provided below, all schedules will be proposed by SOCCO in the LCIP Work Plan. The proposed schedule(s) will indicate the date a deliverable is due or a milestone is to be achieved, and a proposed date for comments and/or approval/disapproval by FWS. For administrative convenience, dates that are dependent upon issuance by FWS of comments, approval, or disapproval of a deliverable will be expressed in terms of days or weeks from the necessary action by FWS.

Deliverables sent to FWS by overnight mail shall be deemed received by FWS on the date indicated the carriers form indicating the actual date of delivery, or shall be presumed to have been received on the day indicated for delivery on the sender's shipping receipt. Deliverables sent by certified mail, return receipt requested shall be deemed to have been received on the date shown for delivery. All other forms of delivery are complete upon actual delivery. For the purposes of calculating dependent dates, a deliverable or milestone is approved, disapproved, or comments are communicated on the date shown on the letter or other written document from FWS regarding such deliverable. If approval from FWS is sent by regular mail, five working days shall be added to SOCCO's next deadline that is calculated based upon the FWS action. FWS shall not be bound under the Decree to provide its comments, approval or disapproval by any date set in an approved schedule. However, any delay in the issuance of comments, approval or disapproval by FWS shall extend day for day the time for SOCCO's performance of any action that is explicitly tied to or dependent upon FWS action.

If FWS has not commented upon, approved or disapproved the draft LCIP Work Plan, the final LCIP Work Plan or the final QAPP within 90 days of receipt of such document by FWS, then SOCCO may, at its election, deem the final LCIP Work Plan and/or QAPP disapproved, and may commence dispute resolution procedures pursuant to Section VIII of the Decree (Dispute Resolution). If FWS has not commented upon, approved or disapproved the final Leading Creek Improvement Plan within 120 days of receipt of such document by FWS, then SOCCO may, at its election, deem the final Leading Creek Improvement Plan disapproved and may commence dispute resolution procedures pursuant to Section VIII of the Decree. For all other deliverables required pursuant to this Statement of Work, if FWS has not commented upon, approved, or disapproved of such deliverable within 30 days of the date

provided for comment, approval or disapproval under an approved schedule, then such deliverable shall be deemed to have been approved, unless the reason for delay in FWS action is attributable to illness or reduction in staff at the FWS office in Reynoldsburg, Ohio. Issuance by FWS of comments requiring a response by SOCCO (or its contractors) will restart the applicable FWS comment/approval time period (30, 90 or 120 days), commencing with the receipt of SOCCO's response to comments.

Schedules established in the approved LCIP Work Plan or pursuant to any other plan or deliverable may be modified in accordance with Section XXII of the Decree (Modification). In addition to the requirements of the Decree, requests for modifications shall include a discussion of the reason for the request, and any impact the proposed change in schedule may have on the schedule of subsequent deliverables and other documents, and on milestone events. SOCCO may choose to submit any deliverable prior to the date it is due.

The schedule for submission of the Draft and Final LCIP Work Plan is established by Paragraph 42 of the Decree. All other schedules shall be established through the approval of the LCIP Work Plan, its amendments, or other deliverables. FWS shall review the LCIP Work Plan and other deliverables required pursuant to this Statement of Work pursuant to Section VII of the Decree (Submissions Requiring Agency Approval).

VII. GENERAL PROVISIONS

All work performed pursuant to this Appendix is subject to the terms of the Decree. The contractor(s) providing services to SOCCO in connection with preparation of the LCI Plan are expected to be aware of the provisions of the Decree relating to this work, including but not limited to, the provisions of Sections VI (Supplemental Leading Creek Watershed Improvement Project), VII (Submissions Requiring Agency Approval), VIII (Dispute Resolution), IX (Access to Information and Property), XI (Quality Assurance, Sampling, and Data Analysis), XIII (Stipulated Penalties) and XV (Force Majeure).

Copies of all deliverables, correspondence, or other submittals and written communications from SOCCO or its contractor(s) relating to the LCI Plan shall be sent to the following:

Dr. Thomas P. Simon
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604

Kent Kroonemyer and William Kurey
U.S. Fish and Wildlife Service
6950 Americana Pkwy.
Suite H
Reynoldsburg, OH 43068

Ed Rankin
Ohio Environmental Protection Agency
Division of Surface Water
1685 Westbelt Drive
Columbus, OH 43228-3809

Phillip A. Brooks
Environmental Enforcement Section
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044

Note: The above names and addresses may be changed upon written notice.

APPENDIX No. 4

United States v. SOCCO Consent Decree

PERIPHYTON SAMPLING

Periphyton growth will be monitored at each sampling station identified below and will consist of two separate sampling events. Pursuant to an oral agreement between the Parties the first periphyton sampling event took place on May 30, 1995. The second sampling event shall be conducted prior to August 31, 1995. Sampling at each location must be sufficient to determine periphyton productivity through quantitative measurements of biomass, chlorophyll a, and pheophytin a. All raw data shall be reported and the results integrated to assess effects upon periphyton productivity. This will include calculation of the Autotrophic Index. Procedures for these analyses shall be consistent with those given in *Standard Methods for the Examination of Water and Wastewater*, 18th edition, 1992 (as prepared and published jointly by the American Public Health Association, American Water Works Association and the Water Environment Federation).

The collection of periphyton shall be from natural substrates (e.g., rock surfaces) using the procedure described by S. Porter, T. Cuffney, M. Gurtz and M. Meador, *Methods for Collection of Algal Samples as Part of the National Water Quality Assessment Program,* Open File Report No. 93-409, U.S.G.S., 1993. Periphyton samples shall be analyzed taxonomically with identification to the genus level.

SOCCO shall provide the results of all periphyton sampling and analysis to EPA no later than 90 days after the sampling is conducted unless EPA agrees, in writing, to a later submission.

Sampling Stations

Leading Creek:

RM 16.9

RM 15.5

RM 14.8

RM 12.9

RM 10.3

Note: Sampling Stations for Periphyton sampling are identified and described in Appendix 7 (Sampling Stations).

APPENDIX 5

United States v. SOCCO Consent Decree

SUPPLEMENTAL QUALITATIVE MACROINVERTEBRATE DATA REQUIREMENTS

In accordance with Section X (Biological and Chemical Monitoring and Reporting) of the Decree and the Ecological Endpoints Document, macroinvertebrate sampling in the Affected Streams will be conducted in accordance with the following: Ohio Environmental Protection Agency, 1987b, Biological Criteria for the Protection of Aquatic Life: Volume II. Users Manual for Biological Field Assessment of Ohio Surface Waters, Division of Water Quality Planning and Assessment, Ecological Assessment Section, Columbus, Ohio; January 1, 1988 Update to the preceding; Ohio Environmental Protection Agency, 1989, Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities, Division of Water Quality Planning and Assessment, Ecological Assessment Section, Columbus, Ohio; and, Ohio Environmental Protection Agency, 1989, The Qualitative Habitat Evaluation Index [QHEI]: Rationale, Methods, and Application, Division of Water Quality Planning & Assessment, Ecological Assessment Section, Columbus, Ohio.

In addition to those data that are collected and reported in connection with the macroinvertebrate sampling required by Paragraph 73(b) of the Decree, SOCCO shall conduct supplemental macroinvertebrate sampling at the Sampling Stations identified below. The goal of such sampling is to determine for each of the representative habitat(s) at each Sampling Station, (a) the number of taxa present (species richness), (b) the relative abundance of taxa, and (c) analysis of functional (trophic) groups. At a minimum, sampling at each station shall include, where possible, riffle, run, pool, and stream edge habitats. Collections shall be by kick/dip netting for a minimum of five minutes in each representative habitat, with sampling of each habitat continuing until visual examination of the samples indicates that no additional taxa are being collected. All organisms collected by this method shall be preserved for identification and enumeration in the laboratory.

Sampling Stations

Parker Run:

RM 1.5

RM 0.1

Leading Creek:

RM 16.9

RM 12.9

RM 10.3

RM 3.5

Strongs Run,

RM 2.2

Robinson Run

RM 0.2

Sugar Run,

RM 0.1 or RM 0.6 (sample location to be selected on basis of flow with preference for Station experiencing flow of .03 ft/sec. or greater)

APPENDIX 6

United States v. SOCCO Consent Decree

SEDIMENT SAMPLING AND ANALYSIS

The objective of the sediment sampling protocol outlined in this Appendix is to quantify metals levels in sediments at each identified Sampling Station. Sediments will be collected at each of the identified Sampling Stations annually unless the Parties agree to additional sampling or such is required by an approved Restoration Measures Plan. Sediment Samples shall be taken the Summer/Fall Index Period of each year.

I. Sampling Stations

A. Parker Run

- 60 meters upstream from NPDES outfall 001, (approximately RM 1,7)
- 60 meters downstream from NPDES outfall 001, (approximately RM 1.7)
- RM 1.5
- Confluence of Parker Run and Leading Creek, in Parker Run 20 to 25 meters from Leading Creek (approximately RM 0.1)

B. Leading Creek

- RM 16.9
- RM 14.8
- RM 12.9
- RM 10.3

Sampling Stations designated by "RM" (river mile) are identified and described in Appendix 7 (Sampling Stations).

II. Sediment Collection

At each of the Sampling Stations identified above, sediment samples will be taken as follows:

A. Sediment samples for analyses of metals will be collected in accordance with procedures approved in SW 846 (3rd Ed.).

B. At each Sampling Station five (5) separate samples will

be collected generally along a transect across the stream. Where possible, the transect will include a pool or deep run. Depending upon access and the locations of pools or runs, each sample need not be taken directly in line across a Sampling Station so long as each sample is collected within the designated Sampling Station. If a sampling along a transect cannot reasonably include a pool or deep run, then in addition to the sampling along the transect, SOCCO shall take two samples from the nearest pool or deep run in the Sampling Station. In sampling along the transect, one sample will be taken in-stream near each bank, one sample shall be taken from approximately the center of the stream and one sample will be taken from the near flood plain (within 10 meters of the water's edges) on both sides of the stream. Where they exist within a Sampling Station, locations of decreased water velocity/high sediment deposition (i.e., pools, outer loop of stream bends) will be selected for the transect sampling. If a sample is collected near a riffle, the sample should be taken from the downstream side of large rocks where sediment may accumulate. A ponar dredge may be used in the collection of sediments when water depth makes direct collection difficult or dangerous. Each individual sample will be a composite of subsamples from a 1 m^2 area, totaling approximately 700 mL in volume. Samples will be restricted to the upper 1-10 cm of sediment or soil.

D. Care will be taken to preserve sediment samples intact, and to minimize washing with stream water. Material to be excluded from the samples includes gravel, rocks, leaves, and twigs. Duplicate samples shall be taken from at least one of the sample locations during each sampling period.

E. The sample container shall have the appropriate information attached to it (site number, date, time, preservative, parameters). Chain-of-custody forms are to be filled out for each batch of samples and must accompany the samples to the laboratory.

F. Samples will be secured in locked compartments and held on ice during transport to the laboratory, where they must be refrigerated (4 degrees centigrade) until prepared for analysis. Sediments must be analyzed for metals within 90 days following collection.

G. Field notes will be kept identifying the specific origin of each sediment sample and any other information deem relevant by the collector.

III. Preparation and Chemical Analyses of Sediments

A. Representative portions of the sediment samples will be prepared for chemical analysis using the procedure specified in Section 12 (Sample Preparation) of ASTM D3974-81).

B. Twigs, rocks and other debris are to be removed from all samples.

C. The samples are then digested using an adaption of the SW-846 3rd edition microwave digestion procedure (Method 3051).

IV. Analytical Methods

The test procedures used for the sediment samples are as follows:

Parameter	Method (SW-846, 3rd Edition
Antimony, Arsenic, Beryllium, Cadmium, Copper, Lead, Nickel, Arsenic, Zinc, Manganese	6010
Barium	7081
Chromium	7191
Selenium	7740
Aluminum	7020
Iron	7380
Calcium	7140
Magnesium	7450
Mercury	7471A
Total Organic Carbon	CHN Analyzer (no method provided in SW-846)

Note: Other methods approved in SW 846 (3rd Ed.) may be used if necessary so long as they produce comparable data to those methods specified above.

V. Quality Assurance All laboratory analyses shall be done in accordance with the applicable quality assurance measures prescribed in Chapter 1 (QA/QC) of SW 846 (3rd Ed.). These procedures will include, at a minimum, analysis of duplicates, spikes, digested standards and NIST reference sediment samples on at least a 10% basis. In addition, other quality assurance measures will be taken in accordance with the Guidance identified

in Section XI (Quality Assurance, Sampling, and Data Analysis). Permanent field and laboratory records will be kept of all facets of the sample collection and analysis procedures. A formal chain of custody will be maintained for all field samples collected.

REFERENCES

American Society for Testing and Materials (ASTM). 1989b. Standard Practices for Preparation for Extraction of Trace Elements from Sediments. D3974-81. In: 1989 Annual Book of ASTM Standards. Water and Environmental Technology. Section 11, Volume 11.02, Water (II). Philadelphia, PA.

U.S. EPA. 1986. Test Methods for Evaluating Solid Waste. Volume 1A: Laboratory Manual Physical/Chemical Methods Third Edition. United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC. ("SW 846 (3rd Ed.)")

APPENDIX 7

United States v. SOCCO Consent Decree

SAMPLING STATIONS

Biological and chemical sampling/monitoring to satisfy the requirements of this Decree shall be conducted at pre-approved locations (Sampling Stations). Unless modified pursuant to Section XXII (Modification), the locations listed in the Table below are the Sampling Stations to be used for biological and/or sediment sampling/monitoring required for (1) demonstrating attainment or maintenance of Ecological Endpoints, and (2) satisfaction of the sampling/monitoring requirements of Appendices 2, 4, 5, and 6. Additional sampling for other purposes may utilize additional locations if approved by EPA. The list of Sampling Stations in this Appendix is similar to, but not coextensive with, the list of Sampling Stations identified in the Ecological Endpoints Document, Tables 3 and 5. Therefore, notwithstanding anything to the contrary in the Endpoints Document, for the purposes of this Decree attainment of Ecological Endpoints and Recovery of the Affected Streams will be evaluated on the basis of the sampling/monitoring results from the Sampling Stations identified in this Appendix. As in the Endpoints Document, the Ecological Endpoints for each Sampling Station are determined by reference to the Endpoints for the Stream Segment in which a Sampling Station is located.

For each Sampling Station the Table below provides the following information: (1) the location specified in miles from the mouth of the identified stream ("River Miles" or "RM"); (2) a brief verbal description of the location; (3) the type sampling/monitoring efforts required by to be performed at the Sampling Station pursuant to Sections V and X of the Decree, and (4) which indices (IBI, ICI, and/or MIwb), if any, serve as Endpoints for that Station. The Table also identifies two Sampling Stations as "control stations." These control stations are in areas that are upstream of the portions of the stream that received untreated or partially treated effluent during the July 30 through September 23, 1995 dewatering of Meigs Mine No. 31.

Sampling/monitoring at the control stations is required by the this Decree, but there are no Ecological Endpoints to be attained for control sites. Sampling/monitoring results from the control sites may be used to perform the alternate calculation of IBI scores when conductivity levels in a Stream Segment preclude electrofishing and calculation of a MIwb score. See, Item 4, pages 2 - 3 of the Errata Sheet to the Endpoints Document. Sampling/monitoring at a control site will cease when all sampling downstream of the control site has been terminated in accordance with the provisions of Section XIV (Certification of Recovery), Paragraph 92 of the Decree. The control sites designated in the chart below are not the equivalent of, and do not satisfy the requirements for, "reference streams" as that

term is used in the Endpoints Document or Appendix 2 (Unionid Mussel Recovery Endpoints).

RM	DESCRIPTION OF LOCATION	SAMPLE TYPE*	INDICES SERVING AS ENDPOINTS**
2.9	Parker Run next to Mine 31 office	F,M,QHEI	N/A
1.8	A. 60 meters upstream of outfall 001 B. 60 meters downstream of outfall 001	S	N/A
1.5	Parker Run Road Bridge (TR 18)	F,M,S,QHEI, Supp.	IBI,ICI
0.1	Parker Run at Mouth	F,M,QHEI,S, Supp.	IBI,ICI
16.9	Leading Creek at Bridge on County Road 10 (control station)	F,M,S,QHEI, A,UM, Supp.	N/A
15.6	Leading Creek Just Upstream of Parker Run Confluence	F,M,QHEI,A, UM	IBI,ICI, MIwb***
15.5	Leading Creek Just Downstream of Parker Run Confluence	F,M,QHEI,A, UM,P	IBI,ICI,MIwb
14.8	Malloons Run Bridge (County Road 8)	F,M,S,QHEI, A,UM,P	IBI,ICI,MIwb
13.8	Leading Creek at Insinger Road Bridge	A	N/A
12.9	Leading Creek at Big Rock	F,M,S,QHEI,A UM,P,Supp.	IBI,ICI,MIwb
12.3	at S.R. 124 Bridge	A,UM	N/A
10.3	Leading Creek at TR 41 East of Langsville at Bridge	F,M,S,QHEI, A,UM,P,Supp.	IBI,ICI,MIwb
7.2	Leading Creek at Rutland Road	F,M,QHEI,A	IBI,ICI,MIwb

RM	LOCATION	SAMPLE TYPE*	INDICES SERVING AS ENDPOINTS**
3.5	Leading Creek at Bridge South of McElhinney Hill Road (County Road 3)	F,M,QHEI,A, Supp.	IBI,ICI,MIwb
1.8	Leading Creek above S.R. 7 Bridge - Middleport	F,M,QHEI,A	IBI,ICI,MIwb
0.1 or 0.6	Leading Creek at Middleport Boat Ramp	F,M,,QHEI	IBI,ICI,MIwb
2.2	Strongs Run on McMillen Road	F,M,QHEI	IBI,ICI
0.6	Strongs Run at Adney Road	F,M,QHEI	IBI,ICI
0.1 or 0.6	Sugar Run	F,M,QHEI, Supp.	IBI,ICI
1.5	Robinson Run Upstream of Sugar Run Confluence	F,M,QHEI	IBI,ICI
0.2	Robinson Run at S.R. 325 Bridge	F,M,QHEI, Supp.	IBI,ICI
50.1	Raccoon Creek at Covered Bridge (control station)	F,M,QHEI	N/A
40.3	Raccoon Creek at Vinton Dam	F,M,QHEI,UM	IBI,ICI,MIwb
28.9	Raccoon Creek at Bob Evans Farm	M,UM	ICI
26.5	Raccoon Creek at Gardners Ford Bridge	F,QHEI	IBI,MIwb

* Definition of Abbreviations

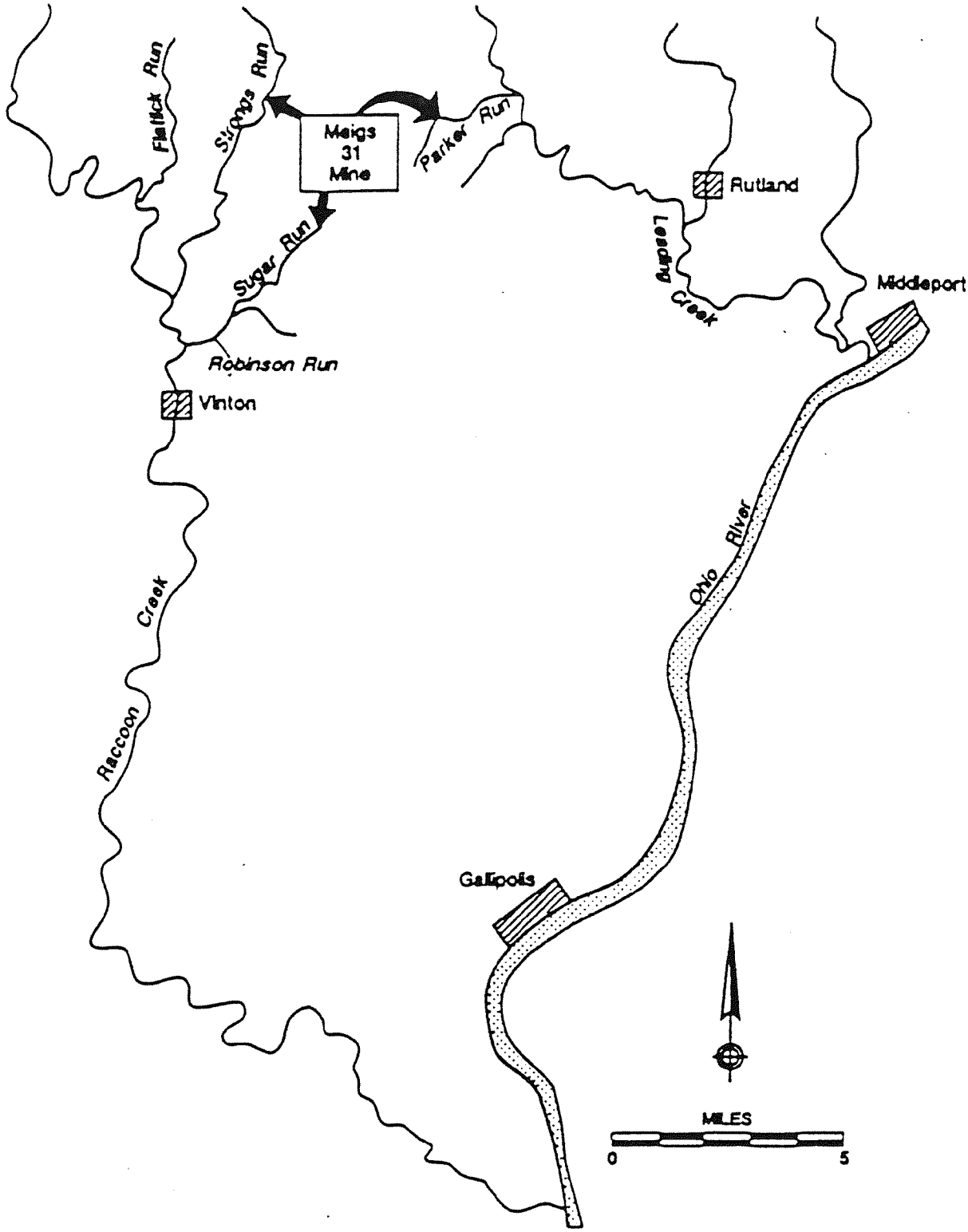
A	-	Amphibians
F	-	Fish
IBI	-	Index of Biotic Integrity
ICI	-	Invertebrate Community Index
M	-	Macroinvertebrates
MIwb	-	Modified Index of Well-Being
N/A	-	Not Applicable
P	-	Periphyton
S	-	Sediment Chemistry
S.R.	-	State Route
Supp.	-	Supplemental Macroinvertebrate Sampling
T.R.	-	Township Road

QHEI - Qualitative Habitat Evaluation Index
UM - Unionid Mussels

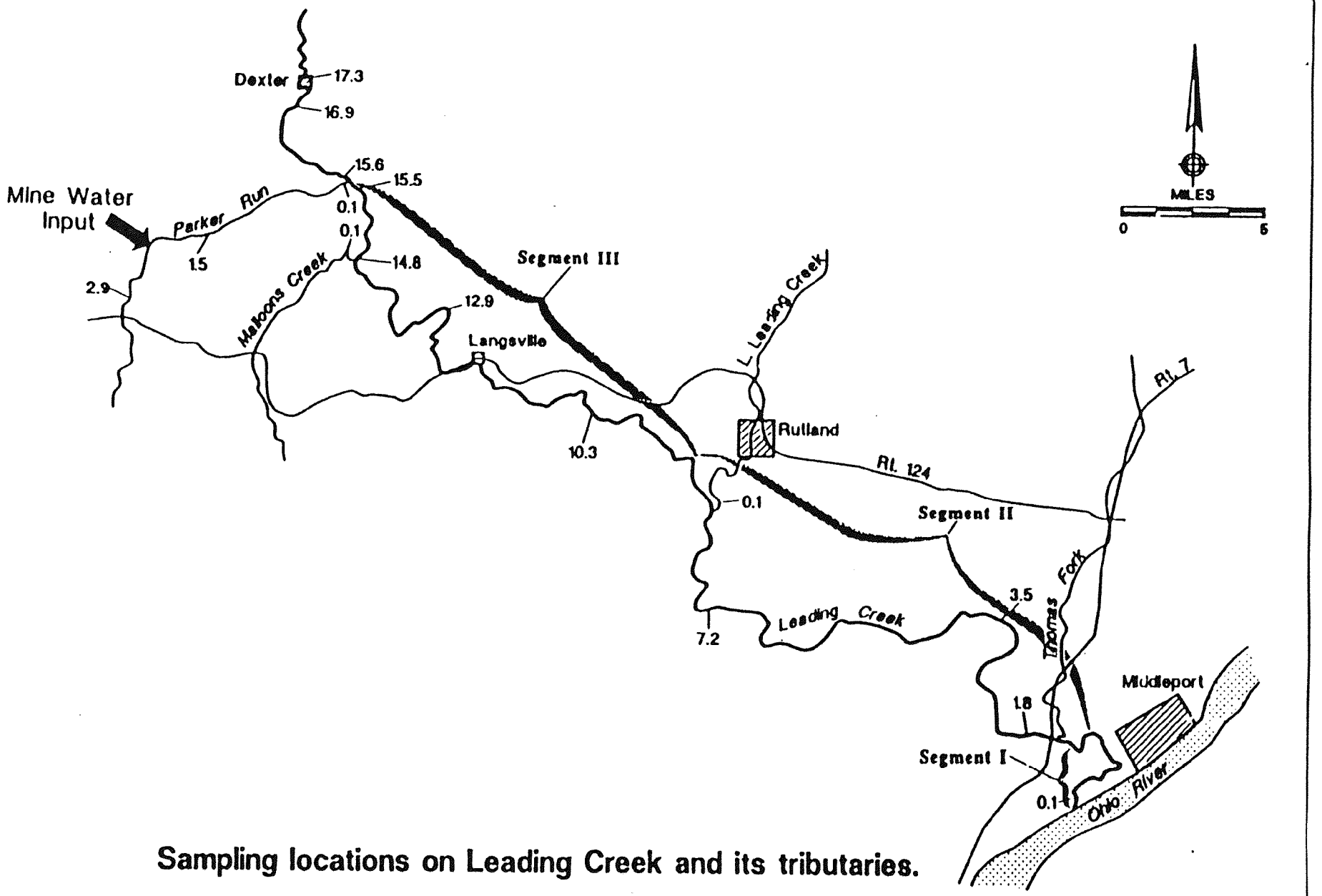
Note: Requirements for biological and chemical sampling/monitoring are discussed in Sections V (Restoration Measures for the Affected Streams), Section X (Biological and Chemical Monitoring and Reporting), Section XI (Quality Assurance, Sampling, and Data Analysis), and Appendices 1, 1A, 2, 4, 5, and 6.

** As in the case of amphibians, some Sampling Stations will have Ecological Endpoints in addition to index scores identified in the Table, and Stream Segments have additional Ecological Endpoints that must be satisfied. These other Endpoints are not reflected in this Table. The index scores and other Endpoints required for each Sampling Station and/or Stream Segment are specified in the Ecological Endpoints Document (Appendix 1), the Errata Sheet to the Endpoints Document (Appendix 1A), and Recovery Endpoints for Unionid Mussels (Appendix 2).

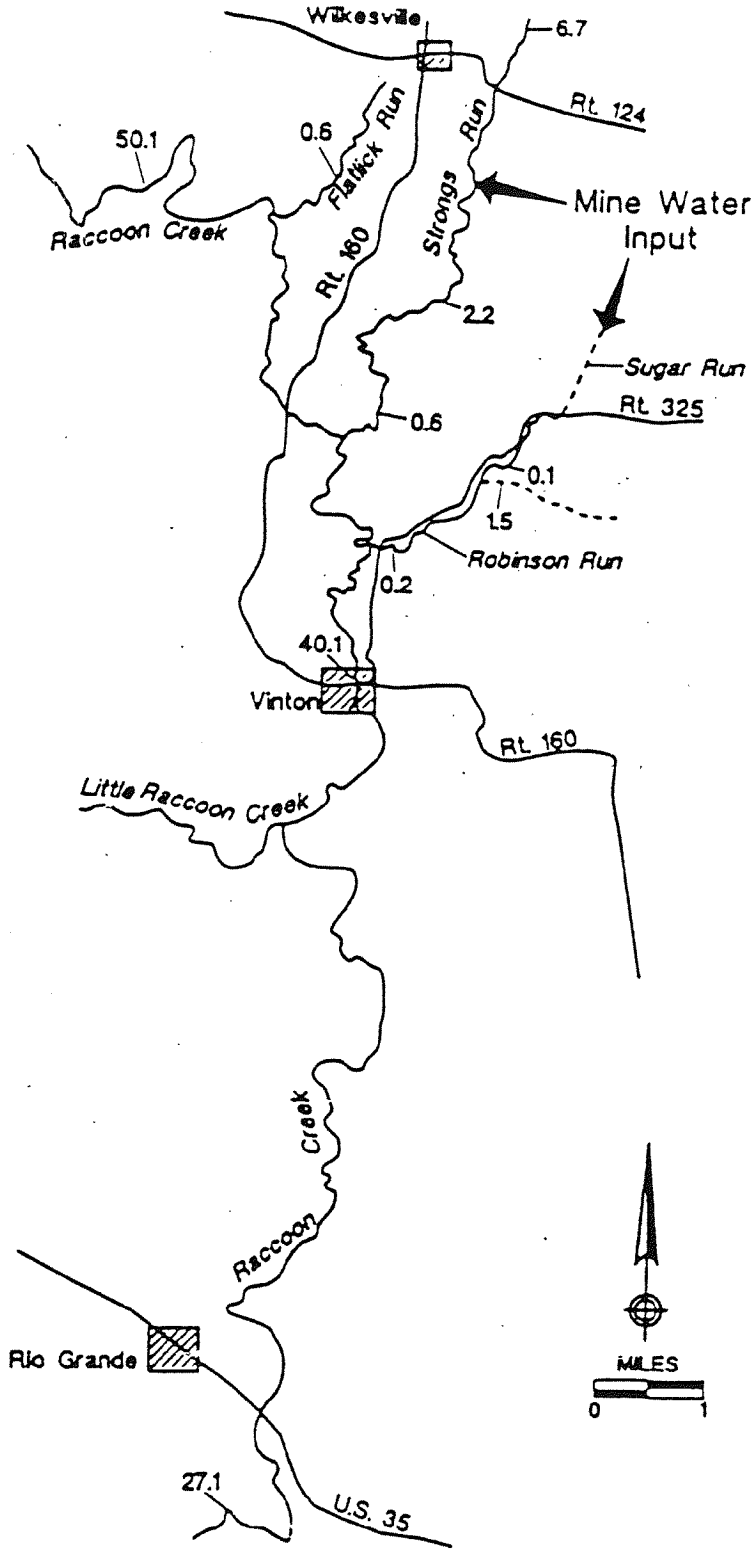
*** As provided in Item 4 of the Errata Sheet to the Endpoints Document (Appendix 1A), under certain circumstances the MIwb score Endpoints for Sampling Stations in Leading Creek will be satisfied by an alternate calculation.



Location of Meigs 31 Mine and Leading Creek and Raccoon Creek.



Sampling locations on Leading Creek and its tributaries.



Sampling locations in Raccoon Creek and its tributaries.