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FEB - 9 2004

**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

STATE OF ILLINOIS  
Pollution Control Board

IN THE MATTER OF: )  
)  
Petition of Noveon, Inc. )  
)  
)  
)  
for an Adjusted Standard from )  
35 Ill. Adm. Code 304.122 )

AS 02-5

**NOTICE OF FILING**

Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph Street  
Suite 11-500  
Chicago, IL 60601

Deborah Williams  
Assistant Counsel  
Division of Legal Counsel  
Illinois Environmental Protection  
Agency  
1021 N. Grand Avenue East  
Springfield, IL 62794-9276

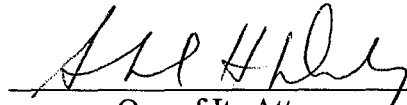
Bradley P. Halloran  
Hearing Officer  
Illinois Pollution Control Board  
James R. Thompson Center  
100 West Randolph Street  
Suite 11-500  
Chicago, IL 60601

**PLEASE TAKE NOTICE** that on **Monday, February 9 2004**, we filed the attached Exhibits to Expert Written Testimony of Michael R. Corn, P.E. with the Illinois Pollution Control Board, a copy of which is herewith served upon you.

Respectfully submitted,

NOVEON, INC.

By:

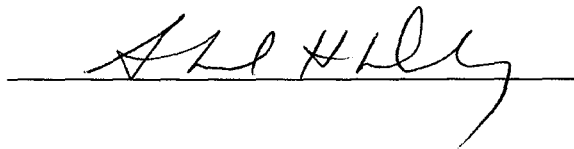
  
\_\_\_\_\_  
One of Its Attorneys

Richard J. Kissel  
Mark Latham  
Sheila H. Deely  
GARDNER CARTON & DOUGLAS LLP  
191 N. Wacker Drive – Suite 3700  
Chicago, IL 60606  
312-569-1000

**THIS FILING IS SUBMITTED ON RECYCLED PAPER**

**CERTIFICATE OF SERVICE**

The undersigned certifies that a copy of the foregoing **Notice of Filing and Exhibits to Expert Written Testimony of Michael R. Corn, P.E.** was filed by hand delivery with the Clerk of the Illinois Pollution Control Board and served upon the parties to whom said Notice is directed by first class mail, postage prepaid, by depositing in the U.S. Mail at 191 N. Wacker Drive, Chicago, Illinois on Monday, February 9, 2004 and facsimile.

A handwritten signature in cursive script, appearing to read "A. L. Hilley", is written over a horizontal line.

CH01/12337055.1

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**EXHIBITS TO EXPERT WRITTEN TESTIMONY OF MICHAEL R. CORN, P.E.**

## **SPECIFIC WATER QUALITY AND RELATED EXPERIENCE**

Mr. Corn, P.E. has twenty-eight years of experience as an environmental engineering consultant having worked on CWA, CAA, RCRA, CERCLA, and TSCA related projects. He is currently President of **AquaAeTer, Inc.** and the Technical Director for the company. He is recognized as a leader in the fields of water quality modeling and diffuser design, hazardous waste management and remediation, and air emissions estimates and permitting.

Mr. Corn has conducted water quality studies and assessments on over 200 streams, lakes, and estuaries in the United States and internationally. The studies include wasteload allocations and Total Maximum Daily Load (TMDL) studies and analyses, biological inventory, fish advisory analysis, QUAL2E dissolved oxygen and WASP dynamic DO modeling studies, hydrologic/hydraulic analyses, and dispersion and mixing zone analyses. He also assists clients in permit applications and negotiations; with the goal of receiving the best technically sound and cost effective permits possible for the client. Mr. Corn has been a leader in real-time permitting for complex receiving stream effluent discharge scenarios.

Mr. Corn is a recognized expert in water quality and water resource studies. He has conducted water quality and quantity studies including modeling. He has trained the Texas Water Resources staff in radiotracer reaeration of streams, trained the West Virginia Department of Natural Resources in wasteload allocation stream studies and QUAL2E modeling, and worked in cooperation with Bob Ambrose and Tom Barnwell of USEPA, Athens to provide the first calibration of the USEPA WASP model. He has previously worked with Jim Greenfield of the Georgia Environmental Protection Division (currently TMDL Coordinator for USEPA, Region 4) and the USGS in Doraville, Georgia to provide monthly wasteload allocations for the Conasauga River in Dalton, Georgia, and provided through a State of Tennessee grant to the Duck River Agency a monthly wasteload allocation for the Duck River near Columbia, Tennessee. Mr. Corn is currently working on a TMDL analysis for the Ouachita River in Arkansas and Louisiana. He has previously completed waste load allocations and TMDL analyses for the Turtle River in Brunswick, Georgia; the Altamaha and Ocmulgee Rivers from Warner Robbins to Everett, Georgia; the Flint River/Lake Blackshear from Oglethorpe to Flintside, Georgia; the Broad River/Lake Murray near Elberton, Georgia; the Grand Neosho River in Oklahoma; the Red River in Arkansas and Oklahoma; the Duck River near Columbia, Tennessee; the West Fork Stones River at Murfreesboro, Tennessee; and the Saluda River/Lake Murray near Newberry, South Carolina. Mr. Corn has considerable experience in effluent discharge dispersion and water quality analyses on diffusers and dispersion analyses in rivers, estuaries, and oceans. Mr. Corn has conducted radiotracer reaeration measurements on about 200 miles of streams, has used most water quality models, and has knowledge of most water quality investigative and field procedures. Mr. Corn was Project Manager for radiotracer reaeration studies conducted for NCASI in Arkansas and Louisiana in 1980. The data were used to develop the current versions of the QUAL2E model.

Mr. Corn has conducted over 40 mixing zone studies involving computer simulations, dye tracing and diffuser design. He has given expert testimony before state regulatory agencies and

before hearing judges on establishing mixing zones, impacts from discharges and defining mixing in rivers, lakes, estuaries and oceans. Specific experience includes mixing zone studies and diffuser designs for the Turtle River in Brunswick, Georgia, the Chattahoochee River at Atlanta and Marietta, Georgia, the Broad River/Russell Lake at Elberton, Georgia; the Mississippi River at Cordova, Alton and Sauget, Illinois, the Illinois River at Joliet, Ottawa, and Henry, Illinois, the Rock River at Rockford and Joslin, Illinois, the Green River near Sheffield, Illinois; the Ohio River at Mount Vernon, Indiana, Lake Michigan at Whiting, Indiana; Fields Brook/Ashtabula River in Ashtabula and Lake Erie in Ashtabula, Ohio; Taunton River at Dighton, Massachusetts; Quinnipiac River in North Haven, Connecticut; Arthur Kill in Port Reading, New Jersey, Atlantic Ocean off Toms River, New Jersey, the Delaware River at Thorofare, New Jersey; the Allegheny River at Natrona, Pennsylvania; the Kanawha River at Institute, West Virginia; the Cape Fear River near Castle Hayne, North Carolina; the Saluda River/Lake Murray near Newberry, South Carolina; Hillsborough Bay at Tampa, Florida, West Bay of St. Andrew Bay, near Lynn Haven, Florida; the Mill Creek and the Cumberland River at Nashville, the Tennessee River at Counce, Tennessee, the White Oak Creek and the Clinch River at Oak Ridge National Laboratory ; the Tennessee River at Decatur, Alabama, the Alabama River near Burkville, Alabama, Huntsville Spring Branch, Indian Creek on Redstone Arsenal, Alabama; Black Creek Cooling Water Facility near Pascagoula, Mississippi, the Pearl River at Monticello, Mississippi; the Tennessee River at Calvert City, Kentucky, the Green River at Maxey Flats, Kentucky; the Red River near Valliant, Oklahoma; the Cedar River at Columbus, Junction, Iowa; Hylebos Waterway at Tacoma, Washington; Amuay Bay at Amuay, Venezuela; and the Mediterranean Sea off Jaffa, Israel. These studies have included dye, salt, radiotracer and other tracer studies, near-field and far-field mixing regimes, modeling, diffuser designs for acute, chronic, human health and wildlife criteria. Constituents studied have included color, salt, ammonia, metals including mercury, chromium, arsenic and lead, organics, temperature, radionuclides, PCBs, DDT, lindane and other pesticides/herbicides. The studies have also included biological inventories, habitat analyses, macrobenthos investigations, mussel identification and counts, and uptake and depuration studies of constituents from the water column, food sources and sediments within the mixing zones.

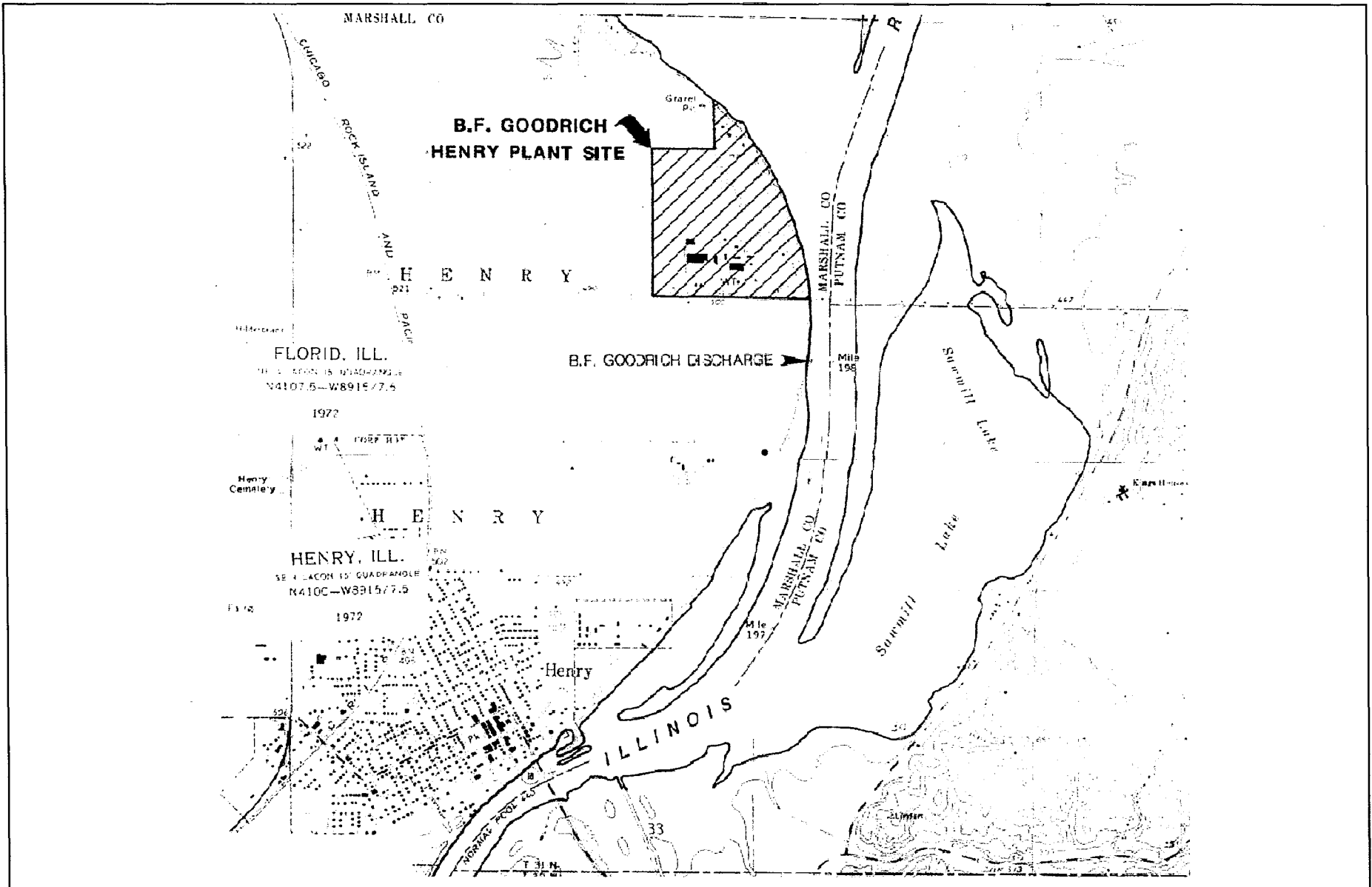
Mr. Corn has conducted water quality studies and analyses for the Georgia Environmental Protection Division, the Texas Water Resources Department, the Tennessee Department of Environment and Conservation, West Virginia Department of Natural Resources, the Cities of Columbia, Murfreesboro, and Nashville, Tennessee, the City of Columbus, Ohio, the Cities of Sauget, East Alton, and Rockford, Illinois, and the Cities of Atlanta and Dalton, Georgia; the Department of Energy; and Oak Ridge National Laboratory. These water quality studies were usually in cooperation with the USEPA.

Mr. Corn is a co-holder of an U.S. Patent for a hazardous waste treatment system (U.S. Patent No. 4,844,813 issued July 4, 1989). This patented design was the only land treatment unit to receive a Resource Conservation and Recovery (RCRA) Part B Permit in the State of New Jersey.

In 1993, Mr. Corn received the Engineering Excellence Award, along with an affiliate design firm, from the Consulting Engineers Council of Illinois for work on a multiport diffusion system for treated wastewater effluent for the Rock River Water Reclamation District of Rockford, Illinois. Mr. Corn was responsible for the field study to delineate the mixing zone and the modeling to determine dispersion and the preliminary diffuser design. The multiport diffusion system is an application of water resource engineering on inland waterways and provides a cost effective method for developing rapid initial mixing and dispersion of treated wastewater. Mr. Corn was the Technical Director for preparation of a Title V Permitting Manual for the wood treating industry sponsored by the American Wood Preservers Institute (AWPI).

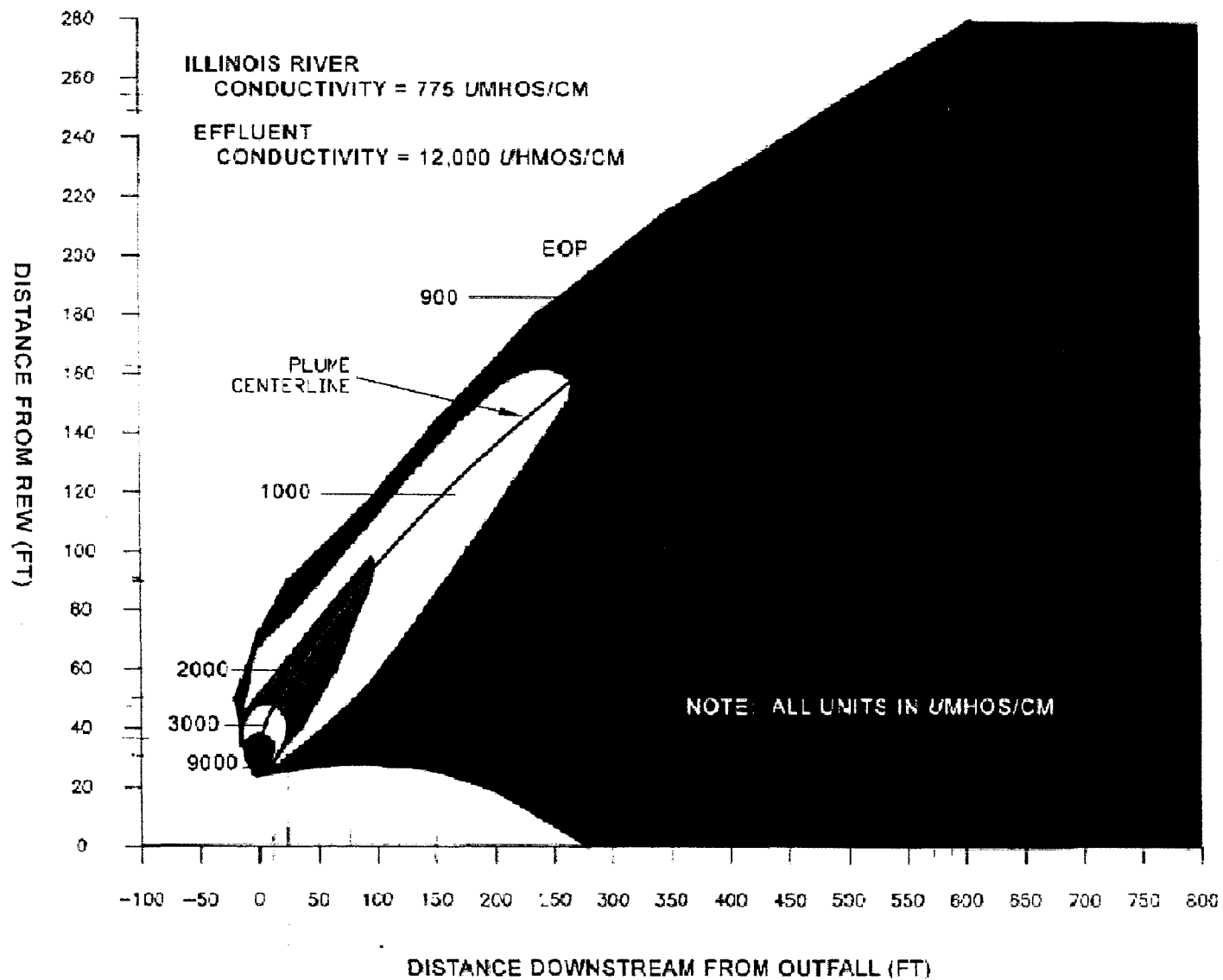
Mr. Corn has worked with industry, trade groups, municipalities, state governments, federal agencies, and defense agencies. He has worked on projects in over 40 states, 2 U.S. territories, and 20 foreign countries. Mr. Corn is a Registered Professional Engineer in Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, Nevada, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, and Wisconsin.

Mr. Corn has given expert opinions and/or testimony in Arkansas, Connecticut, Georgia, Illinois, Louisiana, and Ohio on toxicity, water quality impacts, mixing zones, diffuser designs and expected dispersion, CERCLA and TCSA remediations, and air emissions estimates. Mr. Corn serves on the TAPPI Environmental Division as Secretary of the Program Committee and was the past Chairman of the Water Quality Committee. He is also a member of the Water Environment Federation.



optimizing environmental resources  
water, air, earth

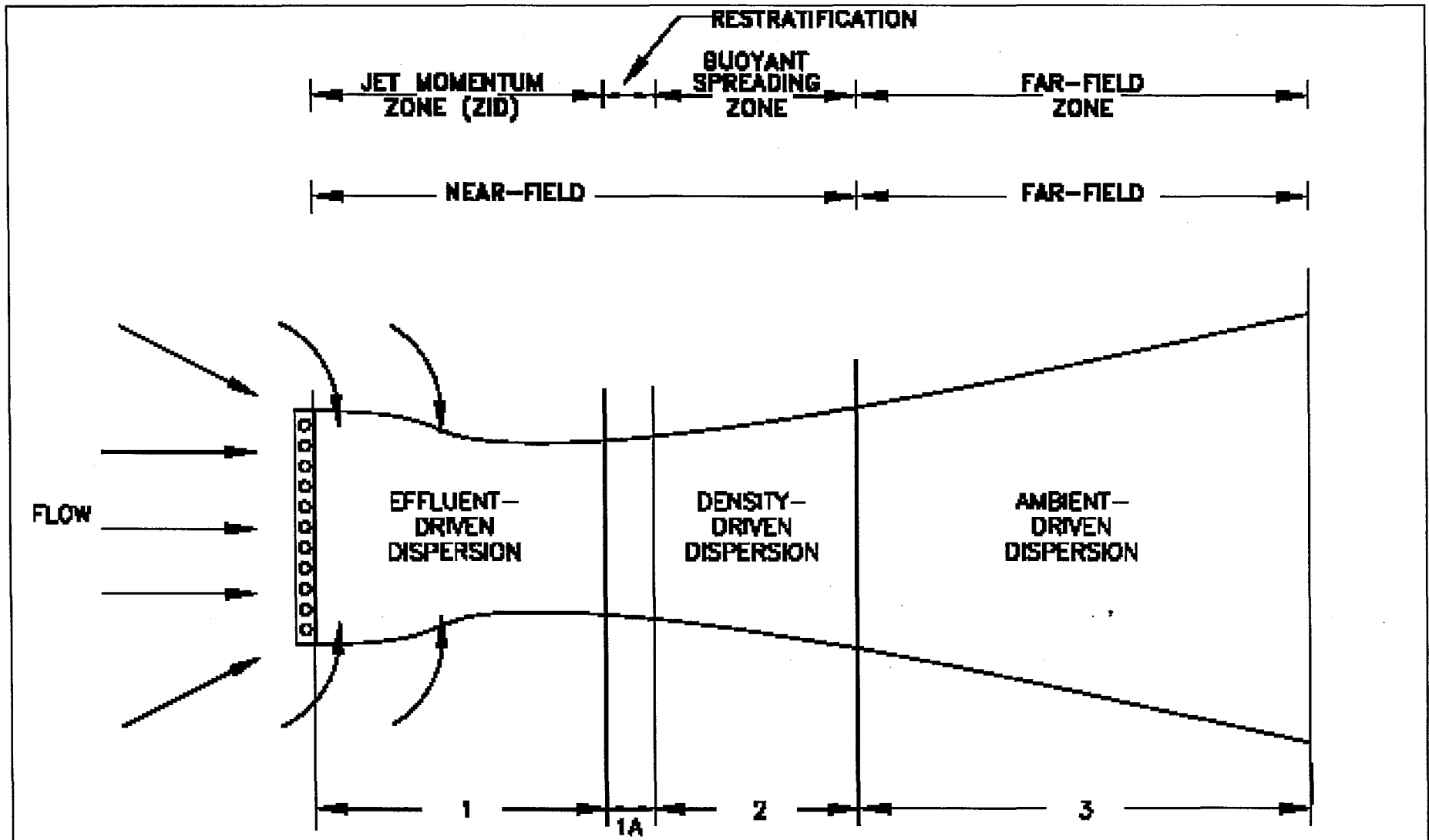
FIGURE 1  
AREA MAP



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FIGURE 2  
LATERAL AND LONGITUDINAL  
ISOPLETHS FOR BOTTOM SPECIFIC  
CONDUCTANCE





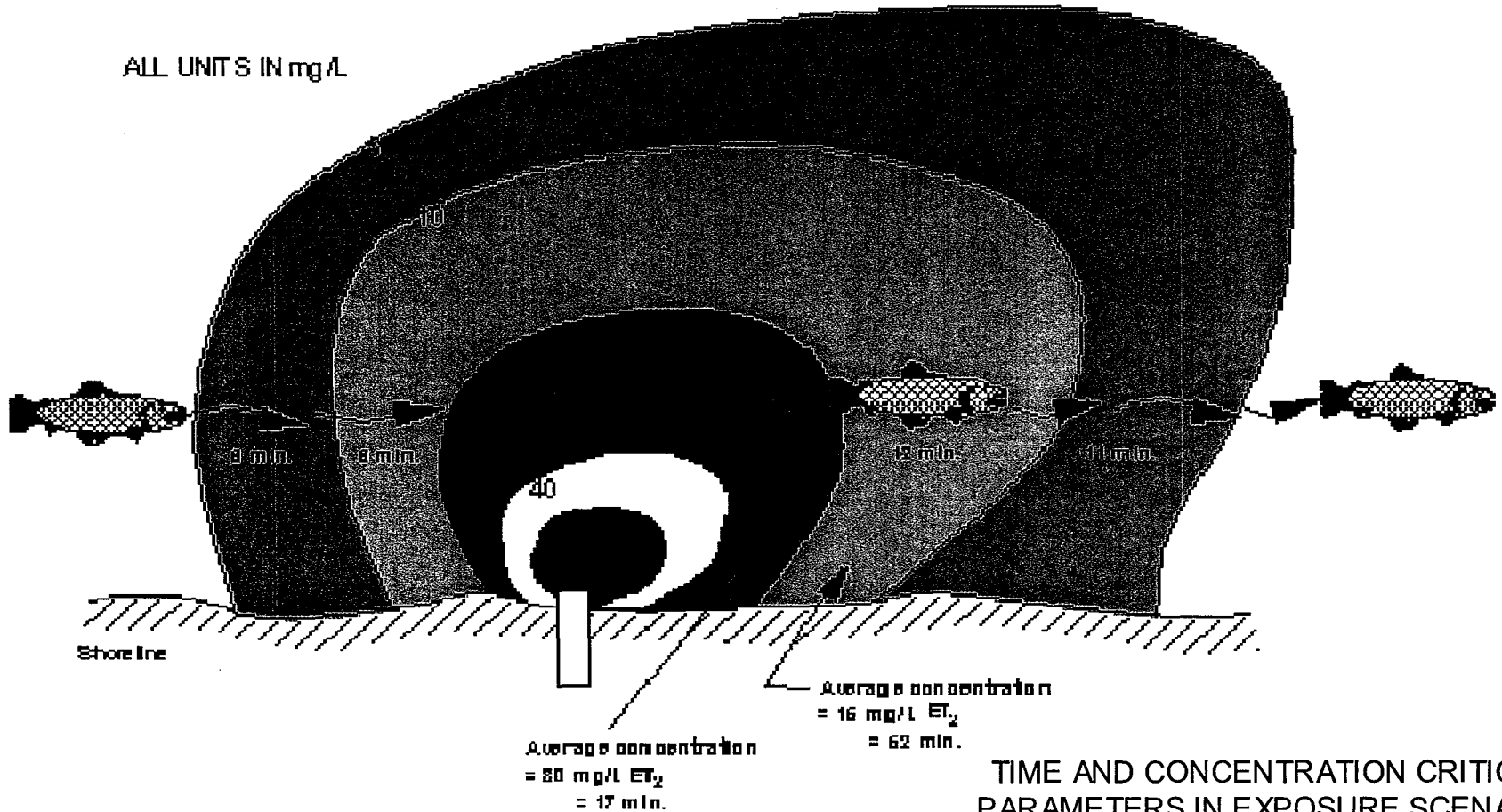
To Define the Dispersion from Effluent Momentum and Ambient Diffusion NOT TO SCALE



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FIGURE 3  
HYDRAULIC MIXING ZONE  
CONCEPTS

ALL UNITS IN mg/L



NATIONAL ACADEMY OF SCIENCES, WATER  
QUALITY COMMITTEE, 1972

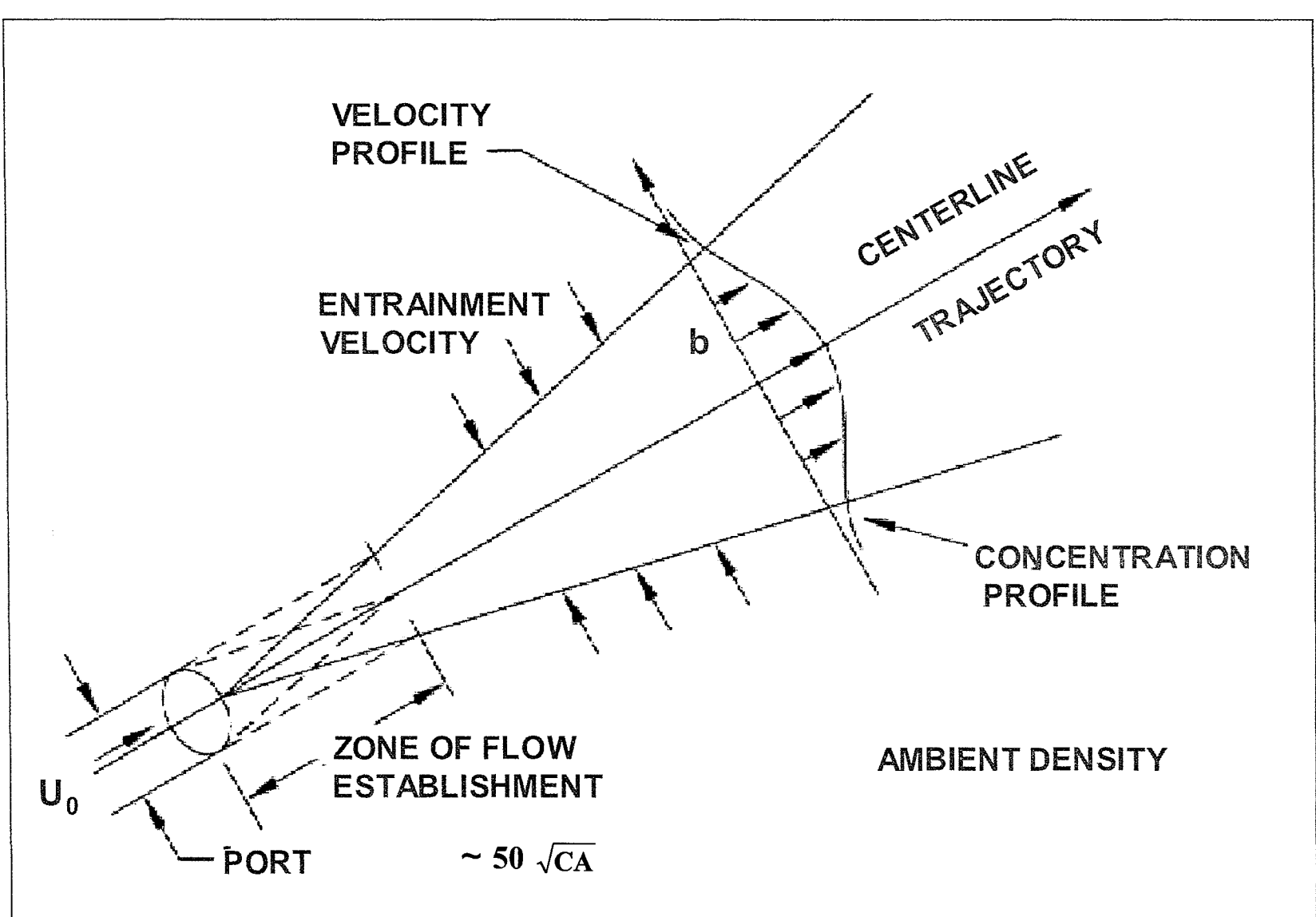
HYPOTHETICAL EXPOSURE SCENARIO FOR FISH PASSING THROUGH AZID

TIME AND CONCENTRATION CRITICAL  
PARAMETERS IN EXPOSURE SCENARIO



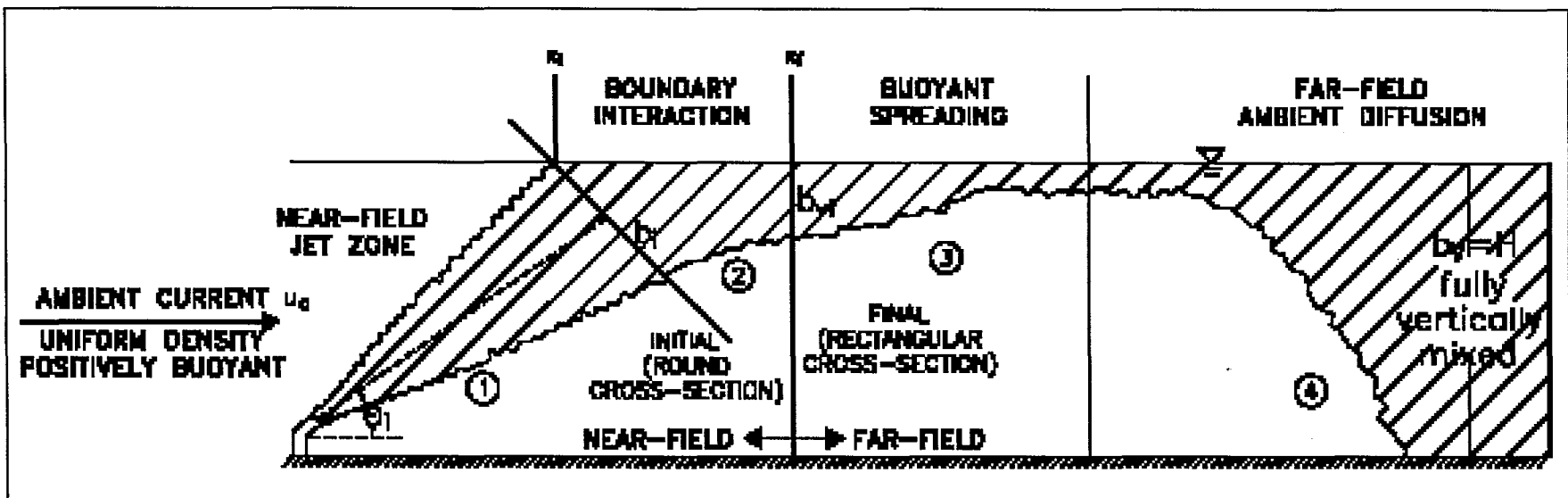
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FIGURE 4  
HYPOTHETICAL EXPOSURE FOR  
FISH PASSING THROUGH ZID



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FIGURE 5  
ZONE OF FLOW ESTABLISHMENT



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FIGURE 6  
SCHEMATIC FOR DISPERSION  
FROM A DIFFUSER

Water Depth = 28.6 ft  
Velocity = 1.51 fps

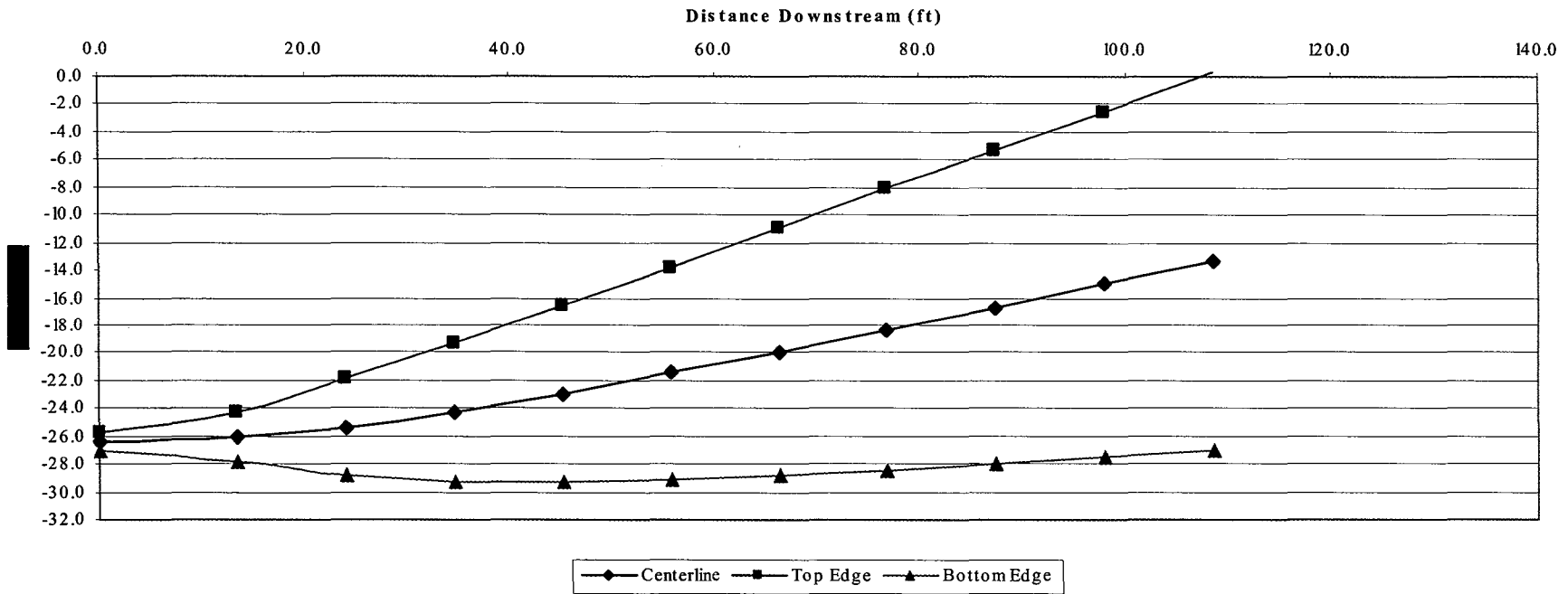
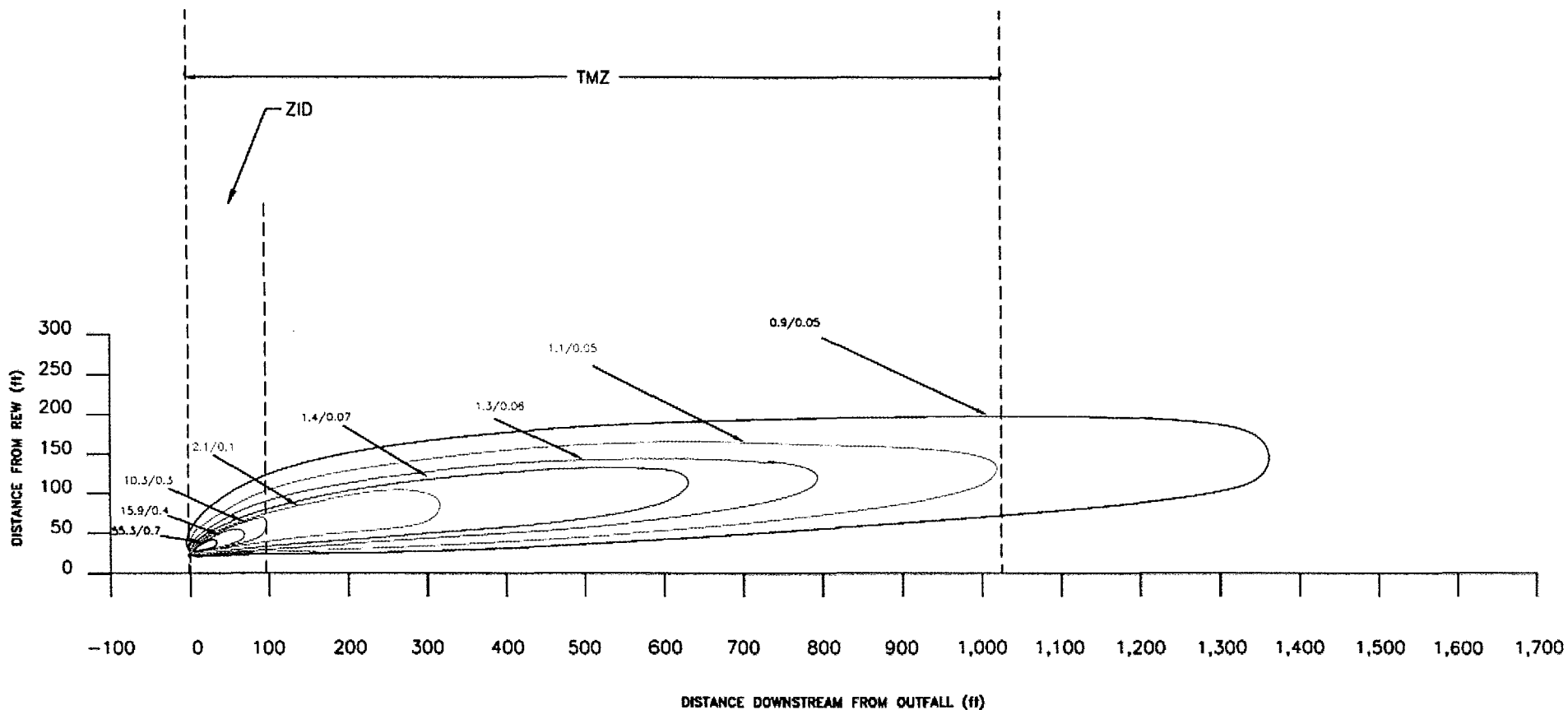
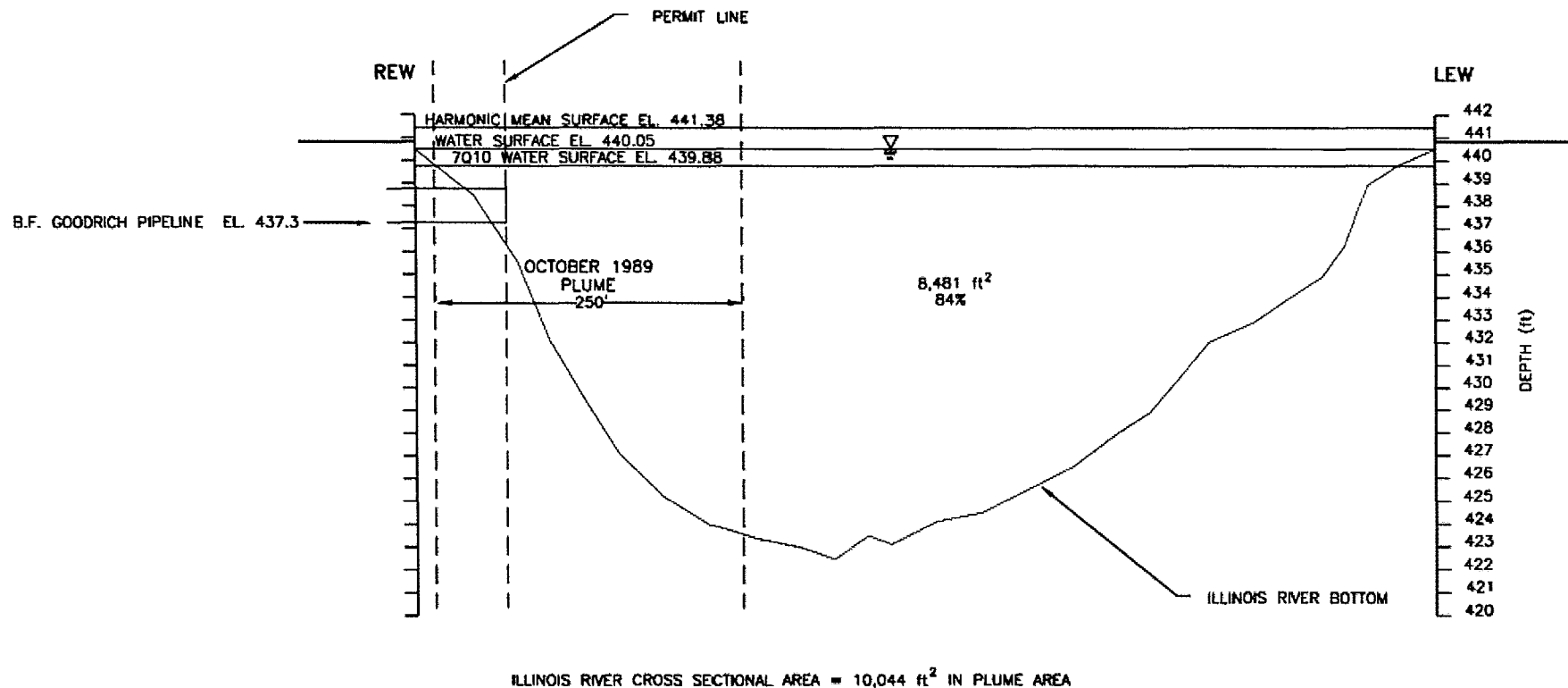


FIGURE 7  
MULTIPOINT JET ZONE DIFFUSER  
ANALYSIS



EFFLUENT 103 mg/L  
 ILLINOIS RIVER BACKGROUND 0.6 mg/L

FIGURE 8  
 TOTAL AMMONIA DISPERSION FOR THE NOVEON SUBMERGED SINGLE-PORT DIFFUSER - SUMMER



ILLINOIS RIVER CROSS SECTIONAL AREA = 10,044 ft<sup>2</sup> IN PLUME AREA

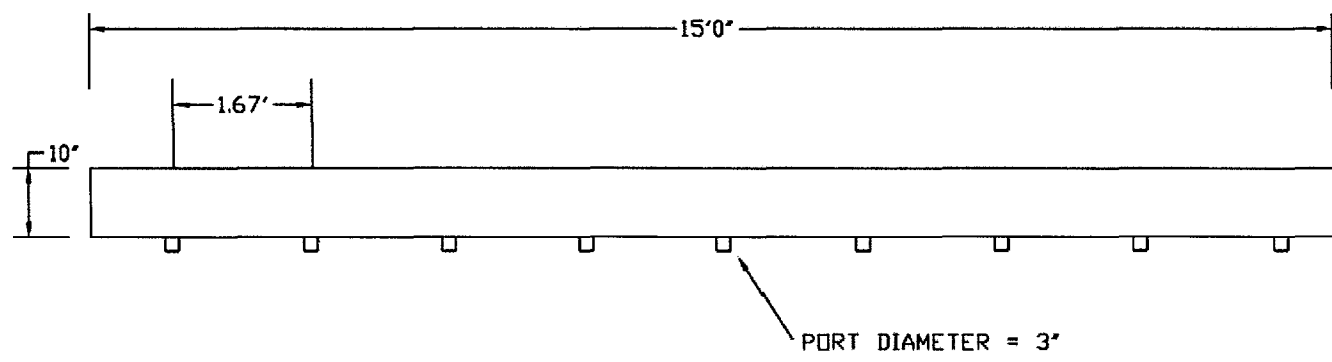
NOTE: WATER SURFACE ELEVATION BASED ON  
CORPS OF ENGINEERS SOUNDINGS OF SEPTEMBER 1970  
BASED ON 1989 CONDUCTIVITY MEASUREMENTS, PLUME WILL  
REQUIRE APPROXIMATELY 16% OF CROSS SECTIONAL AREA  
TO MEET DISPERSION REQUIRED DURING THE WINTER FOR  
AN EFFLUENT CONCENTRATION OF 103 mg/L.

FIGURE 9  
PROFILE OF ILLINOIS RIVER  
NEAR HENRY, ILLINOIS

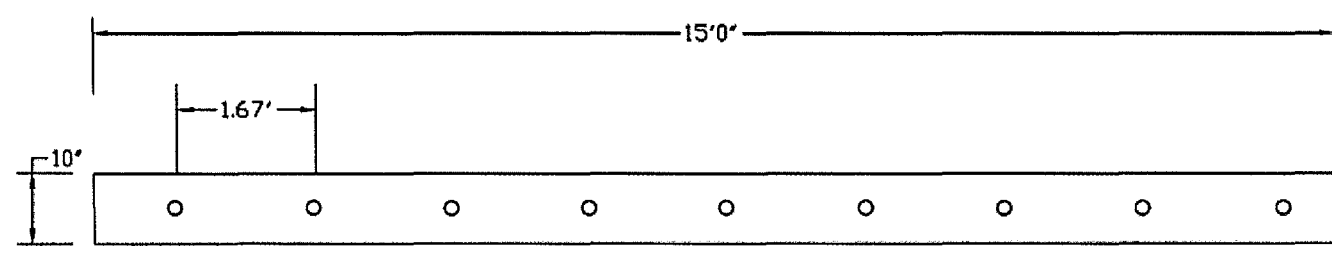
HORIZONTAL SCALE  
1" = 200'

Number of Ports	9
Port Spacing	1.67 ft
Diffuser Dia.	10 in
Diffuser Length	15 ft
Port Diameter	3 in
Port Angle	60°
Design Flowrate	1.3 mgd

PLAN VIEW



ELEVATION



SIDE VIEW

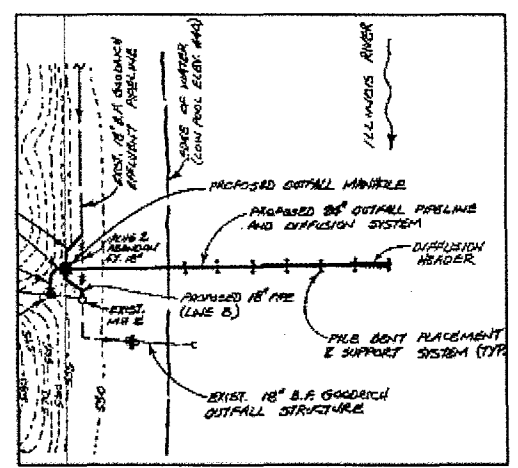
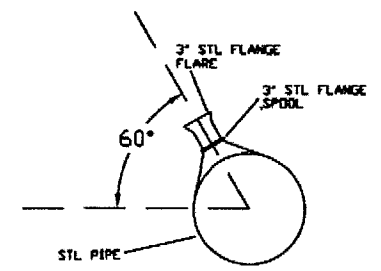


FIGURE 10  
DIFFUSER SCHEMATIC