DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
WILLIAM S. MOORHEAD FEDERAL BUILDING
1000 LIBERTY AVENUE
PITTSBURGH, PA 15222-4186

REPLY TO ATTENTION OF

March 26, 2010

Planning and Environmental Branch

Mr. Edward Hanlon, Designated Federal Officer
EPA Science Advisory Board (1400F)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

SUBJECT: Submittal to Science Advisory Board Environmental Engineering Committee for Evaluation and Comment on EPA's Proposed Research Approach for Studying the Potential Relationships Between Hydraulic Fracturing and Drinking Water Resources

Dear Mr. Hanlon:

Please accept the enclosed pieces of recent correspondence as evidence of Army Corps of Engineers, Pittsburgh District concerns with water quality and water quantity issues in the Upper Ohio River basin with respect to operations of our sixteen multi-purpose reservoir projects and their ability to satisfy authorized project purposes, as related to the above subject. Thank you.

Respectfully submitted,

/s/

Michael P. Crall
Colonel, Corps of Engineers
District Engineer

3 Enclosures

DEPARTMENT OF THE ARMY
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REPLY TO ATTENTION OF

September 18, 2009

Planning and Environmental Branch

Mr. William C. Early
Acting Regional Administrator
US EPA Region 3
1650 Arch Street (3PM52)
Philadelphia, Pennsylvania 19103-2029

Dear Mr. Early:

As you may know, the US Army Corps of Engineers plays a vital role in maintaining flows, navigability, and water quality of rivers in the upper Ohio River basin. For the first time in 34 years, however, we are observing a reversal in the trend of improving water quality on the Monongahela (Mon) River in Pennsylvania and West Virginia.

The Pittsburgh District operates and maintains 16 reservoir projects and 23 locks and dams in the upper Ohio River basin. These projects were authorized by Congress for the statutory purposes of flood control, low-flow augmentation, water quality, water supply, navigation, fish and wildlife protection, and recreation. To appropriately balance each of these purposes, each dam is operated according to carefully synchronized schedules for water release and retention.

The purpose of my letter is to provide your agency with a better understanding of the role that the Corps plays in the stewardship of our region's water resources, and to request your agency's participation in ongoing and future efforts to manage, and ultimately resolve the current and future water crises affecting our region.

In October 2008 the level of Total Dissolved Solids (TDS) in the lower Mon River above Pittsburgh rose dramatically to as much as 860 mg/L. Comparatively, historical levels of TDS in this reach of the Mon River range from 120 to 400 mg/L. Spikes in TDS are attributable to several factors, including a period of low precipitation, low stream and river flows, acid mine drainage, industrial discharges, and, most recently, increased gas drilling in the Marcellus Shale. In response to October 2008's dramatic increase, the Pennsylvania Department of Environmental Protection (DEP) requested that the Corps of Engineers increase the flow of water from our dams in the Mon River Basin. The Corps cooperated by altering the scheduled releases of water from Tygart and Stonewall Jackson Lakes in West Virginia with additional releases over a five-day period. This action had very little impact in reducing elevated TDS levels.

Recently, TDS levels again fluctuated above the water quality standard for taste, exceeding acceptable levels for drinking water established by the Environmental Protection Agency. While the Pittsburgh District assisted the DEP last fall, our actions are constrained by the congressionally authorized purposes of the dams in West Virginia. Had we continued to augment flow beyond five days (e.g., another one to three weeks) we would have drained the lakes and lost all flow augmentation capacity for water quality and navigation until the following year.

The Pittsburgh District is committed to improving water quality and continuing to manage its resources in order to meet its water quality, navigation, and recreation obligations, as well as the greater goals of human health, life, and safety. However, flow augmentation will be a severely limited or potentially unavailable option in the event that TDS levels exceed applicable criteria again later this year.

The Pennsylvania DEP took a significant step to address the difficult issues that TDS present, convening a "TDS Summit" on August 24, 2009 at the California University of Pennsylvania. The DEP's summit brought multiple Federal and state agencies to the table for TDS information and data sharing. Additionally, on October 8 and 9, 2009 an Ohio River Basin Summit is being convened in Covington, KY by the U.S. EPA, ORSANCO, the Ohio River Basin Water Resources Association, and the Army Corps of Engineers to discuss water resources needs in the greater Ohio River basin and to enhance future coordination of agency programs. I strongly encourage your agency to participate in the upcoming summit, as this will provide a forum to develop further actions needed to resolve elevated TDS levels in the Mon River basin.

I welcome the opportunity to collaborate with your agency going forward to resolve this important issue. The Pittsburgh District stands ready to lend its expertise and assistance toward the goal of developing a long-term, comprehensive, and integrated approach to governance over the diverse environmental impacts affecting our water resources. Please feel free to contact me or my Planning and Environment Branch Chief, Mr. Curt Meeder, at (412) 395-7206 or Curtis.N.Meeder@usace.army.mil.

Sincerely,

/s/

Michael P. Crall
Colonel, Corps of Engineers
District Engineer

Mon River Basin Water Quality/Quantity Issues Correspondence – Agency Recipients

Mr. Clyde Thompson, Forest Supervisor
USFS Monongahela National Forest
200 Sycamore Street
Elkins, WV 26241
(304) 636-1800 ext. 227

Ms. Leanna Marten, Forest Supervisor
USFS Allegheny National Forest
4 Farm Colony Dr.
Warren, PA 16365
814-723-5150

Mr. Juan Palma, State Director
Bureau of Land Management - Eastern States
7450 Boston Boulevard
Springfield, VA 22153

Mr. Mark Storzer, Manager
Milwaukee Field Office
Bureau of Land Management - Eastern States
626 East Wisconsin Avenue, Suite 200
Milwaukee, WI 53202

Mr. William C. Early
Acting Regional Administrator
US EPA Region 3
1650 Arch Street (3PM52)
Philadelphia, PA 19103-2029

Mr. Robert Hainly
U.S. Geological Survey
Pennsylvania Water Science Center
215 Limekiln Road
New Cumberland, PA 17070
717-730-6900

Mr. Hugh Bevans
U.S. Geological Survey
West Virginia Water Science Center
11 Dunbar St.
Charleston, WV 25301
304-347-5130

Mr. Cindy Tibbett
U.S. Fish & Wildlife Service
Pennsylvania Field Office
315 South Allen Street, Suite 322
State College, PA 16801-4850

Mr. Tom Chapman
U.S. Fish &U Wildlife Service
West Virginia Field Office
694 Beverly Pike
Elkins, WV 26241

Mr. Alan Vicory, Executive Director
ORSANCO
5735 Kellogg Avenue
Cincinnati, OH 45230
513-231-7719

Dr. Doug Austen, Executive Director
Pennsylvania Fish and Boat Commission
P.O. Box 67000
Harrisburg, PA 17106-7000
717-705-7801

Mr. Dana Aunkst, Director
Pennsylvania Department of Environmental Protection
Bureau of Water Standards and Facility Regulation
P.O. Box 8467
Harrisburg, PA 17105-8467

Mr. Robert French, Director
Pennsylvania Emergency Management Agency
2065 Interstate Drive
Harrisburg, PA 17110-9364
717-651-2001

Mr. Carl Roe, Executive Director
Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
717-787-4250

Mr. John Quigley, Acting Secretary
Pennsylvania Dept. of Conservation and Natural Resources
P.O. Box 8767
Harrisburg, PA 17105-8767

Mr. Ron Gilius, Director
Pennsylvania Department of Environment Protection
Bureau of Oil and Gas Management
P.O. Box 8765
Harrisburg, PA 17105-8765
717-772-2199

Mr. Randy Huffman, Cabinet Secretary
West Virginia Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
304-926-0440

Mr. Frank Jezioro, Director
West Virginia Division of Natural Resources
Capitol Complex Bldg 3, Room 663
1900 Kanawha Blvd E
Charleston, WV 25305
304 558-2754

Mr. Jeff Herholdt, Director
West Virginia Division of Energy
Capitol Complex Bldg 6, Room 645
1900 Kanawha Blvd E
Charleston, WV 25305-0311

Mr. Jimmy Gianato, Director
West Virginia Division of Homeland Security & Emergency Management
Capitol Complex Bldg 1, Room EB-80
1900 Kanawha Blvd E
Charleston, WV 25305

Ms. Patsy Hardy, Secretary
West Virginia Department of Health and Human Resources
Capitol Complex Bldg 3, Room 206
1900 Kanawha Blvd E
Charleston, WV 25305
304-558-0684

Mr. Sean Logan, Director
Ohio Department of Natural Resources
2045 Morse Road, Building D-3
Columbus, OH 43229
(614) 265-6879

Chris Korleski, Director
Ohio Environmental Protection Agency
50 West Town Street
Box 1049
Columbus, Ohio 43216-1049
(614) 644-2790

Mr. James Tierney, Assistant Commissioner for Water & Watersheds
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-0001
(518) 402-8545

Mr. Jay Sakal, Director
Maryland Department of the Environment
Water Management Administration
1800 Washington Blvd.
Baltimore, MD 21230
(410) 537-3000

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REPLY TO ATTENTION OF

September 8, 2009

Planning and Environmental Branch

Susan K. Weaver
Chief, Division of Water Use Planning
Pennsylvania Department of Environmental Protection
PO Box 8555
Rachel Carson State Office Building
Harrisburg, Pennsylvania 17105-8555

Dear Ms. Weaver:

As you may know, the US Army Corps of Engineers' Pittsburgh District plays a vital role in maintaining the flow, navigability, and water quality of the Western Pennsylvania region's rivers. The Pittsburgh District operates and maintains 16 reservoir projects and 23 locks and dams in the upper Ohio River basin. These projects were authorized by Congress for the statutory purposes of flood control, low-flow augmentation, water quality, water supply, navigation, fish and wildlife protection, and recreation. To appropriately balance each of these purposes, each dam is operated according to carefully synchronized schedules for water release and retention.

The purpose of my letter is to advise the Commonwealth of Pennsylvania, Department of Environmental Protection (DEP) that water withdrawals in and around the East Branch Clarion River Lake may have unforeseen, but critical consequences on East Branch Dam's congressionally authorized purposes.

Early in 2008, the Pittsburgh District determined that the East Branch Dam may have structural deficiencies that could cause it to fail. In February 2008, we implemented several interim risk reduction measures to ensure that the dam continued to operate safely. Most significantly, we lowered the East Branch Clarion River Lake's operating pool. The new maximum summer pool was lowered approximately 20 feet (from elevation 1670 to 1650) and the maximum winter pool was lowered approximately 28 feet (from elevation 1651 to 1623). The lower operating pool will remain in effect for at least the next three years. Under normal conditions, the lower pool presents unique but manageable challenges to balancing and fulfilling project purposes, particularly controlling lake and downstream water quality and temperatures. However under very dry to drought conditions, the Corps' ability to manage lake and downstream water quality and temperatures would be significantly tested.

Beginning in May 2009, the Pittsburgh District observed water withdrawals associated with Marcellus Shale drilling (MSD) operations in Elk and McKean counties, and specifically in and around the upstream and downstream reaches of East Branch Clarion River Lake. These water withdrawals in and around East Branch Lake, including the cumulative effect of withdrawals from multiple locations within the dam's watershed, may undermine operations at East Branch

Dam and the watershed in which it sits. For example, water withdrawals may impair or negatively affect: (1) the lake's ability to provide good downstream water quality; (2) the amount of water available to downstream NPDES permit-holders, essential to their continued compliance with existing NPDES discharge limits; (3) the unique trout fishery situated in the East Branch Lake; (4) the trophy brown trout fishery along the Clarion River between Johnsonburg and Ridgway; (5) the recreational or economic conditions at and near the lake; and (6) the Federally-designated Wild and Scenic portions of the Clarion River.

We understand that DEP-approved water management plans, a prerequisite to obtaining an MSD permit, allow for the withdrawal of as much as 10% of a stream's Q7-10. If the Q7-10 used for these permits is based on flows downstream of Corps' reservoirs rather than the lake inflows, these permits would sanction the withdrawal of the dam's augmented flow, constituting a usurpation of water that is congressionally authorized for other purposes, including ensuring good water quality.

In light of the foregoing, the Pittsburgh District respectfully requests that the DEP: (1) approve water withdrawals with Q7-10 computations based only on pre-project flows (*i.e.*, without dam flows) to protect augmented flow; (2) permit only seasonal water withdrawals in the East Branch Clarion River downstream of the East Branch Dam and the Clarion River to below Johnsonburg; and (3) not permit withdrawals from the East Branch of the Clarion River upstream of the lake or from lake tributaries, to assure adequate lake water quality and quantity to meet operational objectives. Withdrawals from all high quality tributaries to the East Branch Lake, such as Straight Creek and Martins Run, can impact lake and downstream water quality as these tributaries provide important dilution buffer benefits for the lake's mine drainage-related acidity and metal loads.

It is my hope that this letter has raised awareness as to the nature and scope of the Corps' missions and resources, and emphasized that a thorough consideration of Corps' resources in advance of permit decisions is imperative to maintaining and preserving water quality in Western Pennsylvania. We welcome increased communication and collaboration with the DEP going forward, and stand ready to lend our expertise and assistance toward the goal of developing cooperative, long-term solutions to manage our region's water resources. Based on prior contacts with the DEP Northwest and Southwest Regional offices, we encourage the sharing of this correspondence with the Regional Directors and their staffs who are working on water withdrawal permits. Please feel free to contact me or my Planning and Environment Branch Chief, Mr. Curt Meeder, at (412) 395-7206 or Curtis.N.Meeder@usace.army.mil.

Sincerely,

/s/

Michael P. Crall
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
PITTSBURGH DISTRICT, CORPS OF ENGINEERS
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February 9, 2010

Pennsylvania Environmental Quality Board
Rachel Carson State Office Building, 16th Floor
400 Market Street
Harrisburg, PA 17105-2301

The US Army Corps of Engineers ("USACE"), represented by the Pittsburgh District and in consultation with technical offices in the Baltimore and Philadelphia Districts, offers the following comments in response to the Environmental Quality Board's ("Board") proposal to amend 25 Pa. Code Chapter 95 (relating to the Pennsylvania's wastewater treatment requirements) ("Proposed Amendments").

The USACE is IN FAVOR of the Proposed Amendments, and commends the Board and the Pennsylvania Department of Environmental Protection (Department) for taking this important step toward ensuring the continued protection of Pennsylvania's water quality and the safety and potability of Pennsylvania's drinking water supplies. The USACE also respectfully submits that the Proposed Amendments must be more stringent to achieve their intended goals.

I. Introduction

The USACE plays a vital role in maintaining the flow, navigability, and water quality of the Pennsylvania's water resources. Specifically, the Pittsburgh District operates and maintains 16 reservoir projects and 23 locks and dams in the upper Ohio River basin. The Baltimore District operates and maintains additional reservoirs in the Susquehanna River Basin as does the Philadelphia District in the Delaware River Basin.

The projects described above are authorized by Congress for statutory purposes including, but not limited to, flood control, low-flow augmentation, water quality, water supply, navigation, fish and wildlife protection, and recreation. The USACE reconciles these purposes to achieve an appropriate and sustainable balance between them. This balance is achieved, in part, by carefully synchronized schedules for water release from our reservoirs and water retention of our dams.

Specifically, the USACE's water quality mission arises out of various congressional authorizations, Executive Orders, and Federal laws. These authorizations direct the USACE to operate and manage their reservoirs to improve water quality both in the reservoir impoundments and in the downstream reaches of river. More than 88% of storage in Pittsburgh District reservoirs is exclusively dedicated to water quality, approximately 8,000 linear miles of stream are controlled by these reservoirs, and over 1,030 miles of 21 major streams are directly influenced by District reservoir releases.

The USACE also maintains robust current and historical water quality data in partnership with the U.S. Geological Survey, through a network of monitoring stations on a number of rivers and streams in proximity to these reservoirs. In order to assure operations for optimum water quality benefits, The Pittsburgh District has maintained a "grab sample" water quality monitoring program in the upper Ohio River basin in PA since the late 1960's, and has also operated 10 continuously recording water quality monitors since the mid-1990s. Samples are routinely analyzed for a variety of parameters (specific conductivity, solids, nutrients, metals, hardness, alkalinity, acidity, EPA priority pollutants, etc) and real-time monitors measure water temperature, dissolved oxygen, specific conductivity, pH, and/or total dissolved gas.

After four decades of demonstrable improvement in water quality, the USACE's data shows that conditions are reversing on Pennsylvania's rivers. It is becoming apparent that the assimilative capacity of some rivers to receive total dissolved solids, if not already exceeded, is close to being exceeded, and simply cannot sustain the additional loading projected as a result of natural gas exploration activities. In the last two years, evidence of degradation, based on elevated specific conductivity readings recorded at water quality monitors located on the Monongahela River at Elizabeth, PA, the Casselman River at Markelton, PA, and the Conemaugh River at Conemaugh Dam, in addition to the recent Dunkard Creek aquatic kill, demonstrates that high TDS wastewaters threaten to undermine historical water quality improvements, posing a genuine and extreme threat to regional water quality.

II. Proposed Amendments' Background and Purpose

The USACE concurs with the Department's statements and conclusions set forth in the Proposed Amendments' Background and Purpose narrative statement. Opponents to the Proposed Amendments have advanced the position that insufficient data/science exists demonstrating a reversal in historical water quality trends to support promulgation and passage of the Proposed Amendments. In that regard, by way of supporting evidence, the USACE offers Exhibits A-B, attached hereto and incorporated herein by reference.

III. Proposed Amendments

A. 25 Pa. Code §95.10(a) (proposed):

For the purpose of implementing this section, a new discharge of High-TDS wastewater is a discharge that did not exist on April 1, 2009, and includes a TDS concentration that exceeds 2,000 mg/L or a TDS loading that exceeds 100,000 pounds per day. The term "new discharge" includes an additional discharge, an expanded discharge or an increased discharge from a facility in existence prior to April 1, 2009.

COMMENT:

The USACE recommends that the definition of "new discharge" be revised to exclude the 2,000 mg/l or the TDS loading of 100,000 pounds per day threshold requirements. These requirements

fail to address the cumulative effect of combined, smaller-source TDS dischargers on streams. If the Department must select a threshold TDS concentration, the USACE recommends 750 mg/l.

Additionally, the term "new discharge" should be expanded to include "facilities in existence prior to April 1, 2009 upon permit amendment, modification, or renewal by any such facility." Further, the Department should expressly prohibit a holder of multiple NPDES permits from apportioning its discharge loading among multiple facilities to evade regulation.

Finally, this section should be revised to further limit or prohibit high TDS wastewater discharges proportional to the sensitivity of the receiving water. Factors to consider should include, but are not limited to: (1) the receiving waters' flow criteria; (2) the seasonal variations affecting the receiving water; (3) the status of the receiving water as a headwater tributary; and (4) established stream designation and uses. For example, no discharge should be permitted to High Quality or Exceptional Value streams. Moreover, no discharge should be permitted during periods of low-flow, as determined by the Department.

B. 25 Pa. Code §95.10(b) (proposed):

Unless specifically exempted under paragraph (6), new discharges of wastewater with High-TDS must comply with the following...(2) The discharge may not contain more than 500 mg/L of TDS as a monthly average[;] (3) The discharge may not contain more than 250 mg/L of total chlorides as a monthly average[; and] (4) The discharge may not contain more than 250 mg/L of total sulfates as a monthly average.

COMMENT:

The USACE recommends that monthly averages be eliminated because they fail to adequately protect aquatic life. Rather, the Department should instead adopt daily, or instantaneous criteria. The 500 mg/l and 250 mg/l measurements should be retained.

C. 25 Pa. Code §95.10(c)(2) (proposed):

Treated discharges of wastewater generated from fracturing, production, field exploration, drilling, or well completion may be authorized by the Department under Chapter 92 (relating to National Pollutant Discharge Elimination System Permitting, Monitoring and Compliance). The discharges shall be authorized only from centralized waste treatment (CWT) facilities and approved Publicly Owned Treatment Works (POTWs).

COMMENT:

Insert the word "only" before the phrase "treated discharges of wastewater. Insert the word "approved" before the phrase "centralized waste treatment (CWT) facilities." Additionally,

disposal into surface waters of wastewater generated from fracturing, production, field exploration, drilling, or well completion should be expressly prohibited.

D. 25 Pa. Code §95.10(c)(3) and (c)(4) (proposed):

The discharge may not contain more than 10 mg/L of total barium as a monthly average[; and] [t]he discharge may not contain more than 10 mg/L of total strontium as a monthly average.

COMMENT:

As previously stated above, the USACE recommends that monthly averages be eliminated and that daily, or instantaneous criterion is used. Additionally, the Proposed Amendments should also include relevant and appropriate limits for bromide, arsenic, radium, benzene, sodium, strontium, boron, and magnesium.

IV. Additional Recommendations

The USACE submits the following additional recommendations to the Department and Board for its consideration:

A. To the extent that it is not already so provided, where discharge through a POTW or CWT is proposed, pretreatment must include removal of constituents comprising TDS, as well as radionuclides and radioactive materials;

B. Adopt and implement Federal aquatic life and human health criteria for chloride; alternatively, adopt and implement Pennsylvania's proposed water quality criteria for chloride for aquatic life use protection at 230 mg/l - chronic and 860 mg/l - acute; and

C. Identify, resolve and eliminate the inequities created by the absence of a River Basin Commission in Western Pennsylvania. In that regard, the USACE recommends that the Department adopt and implement the Delaware River Basin Commission's (DRBC) criteria for special protection waters. 18 C.F.R. 410; DRBC Regulations. Additionally, the Department should create and execute a monitoring program similar to the program that DRBC undertook to characterize existing water quality in Pennsylvania's Lower Delaware River, to demonstrate water quality standards in the Ohio River Basin are at least equal to existing criteria in other portions of the Commonwealth.

Respectfully submitted,

Michael P. Crall
Colonel, Corps of Engineers
District Engineer

Exhibit A

Monongahela River
"Worse Case" Summer Season Specific Conductivity For Period of Record (1974 - 2006),
and Maximum Specific Conductivity Recorded at @ Elizabeth PA During 2008 & 2009

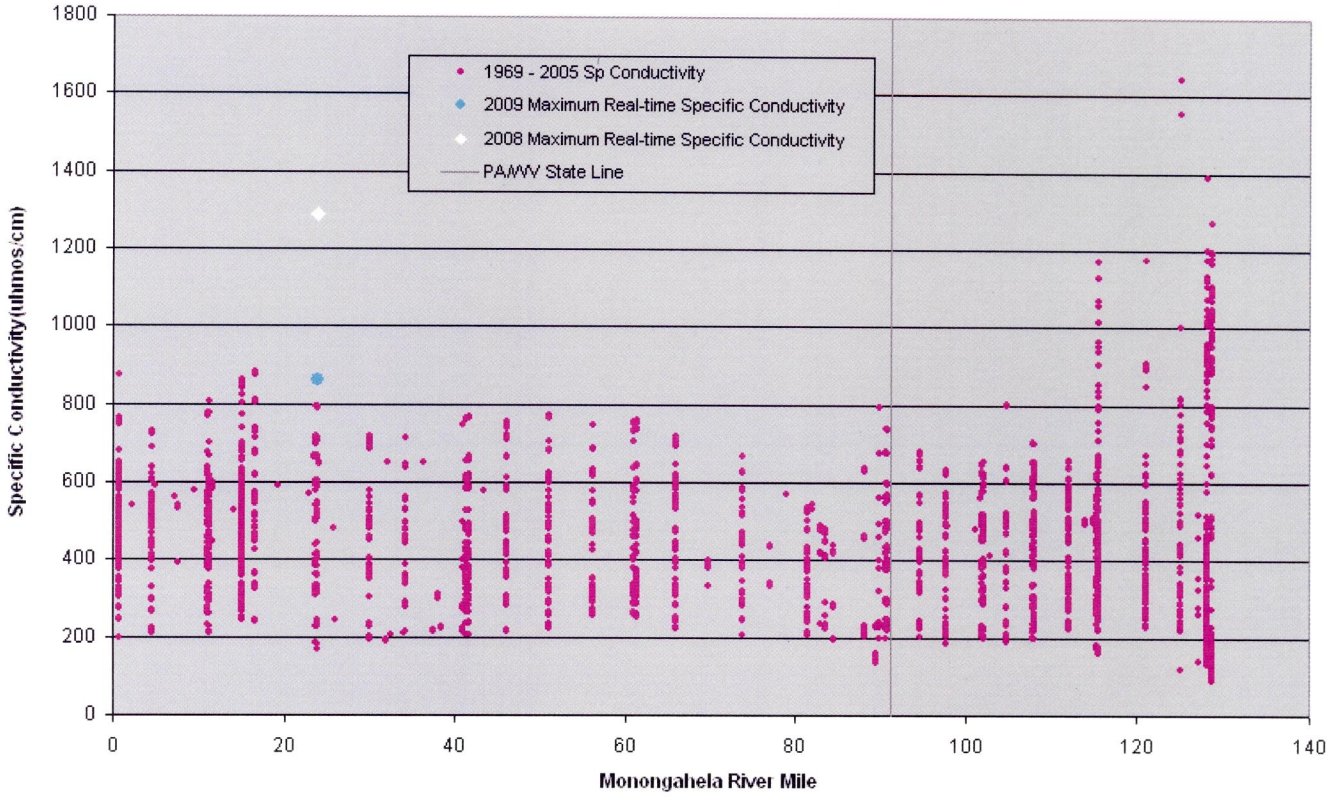
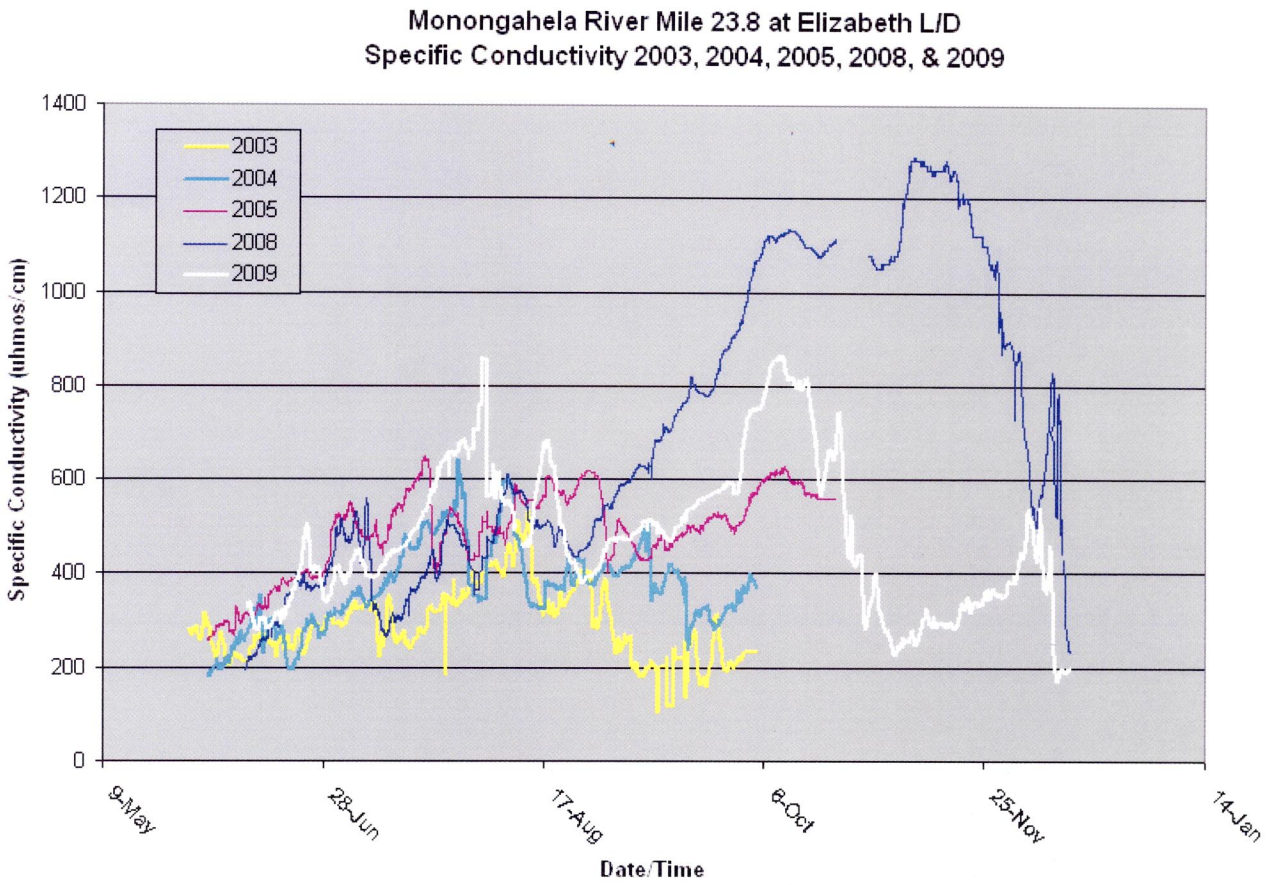


Exhibit B


Monongahela River Mile 23.8 at Elizabeth L/D
Specific Conductivity 2003, 2004, 2005, 2008, & 2009
Specific Conductivity (uhmos/cm)
1400
1200
1000
800
600
400
200
0
2003
2004
2005
2008
2009
9-May
28-Jun
17-Aug
6-Oct
25-Nov
14-Jan
Date/Time