

Appendix A
Summary Data Report - Pool 2 Fall 2013 Fish Data

Summary Data Report from Christopher Yates, Anchor QEA, to Don Pereira, Minnesota Department of Natural Resources, dated January 27, 2014, regarding 2013 Mississippi River Pool 2 Fish Collection Results.



3M_MN04813517

2400.0001



80 Glen Street, Suite 2
Glens Falls, New York 12801
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Fax 518.792.3719
www.anchorqea.com

MEMORANDUM

To: Don Pereira, Ph.D.,
Minnesota Department of Natural Resources

Date: January 27, 2014

From: Christopher Yates, Anchor QEA, LLC

Project: 110800-01.01

Re: 2013 Mississippi River Pool 2 Fish Collection Results

In accordance with the State of Minnesota Department of Natural Resources (MNDNR) special permit number 19417 (Attachment A), this memorandum summarizes the fish collection effort conducted in 2013 and provides the analytical results. A fisheries research permit application was submitted to MNDNR on July 25, 2013. An approved permit was received by Anchor QEA, LLC, on September 23, 2013. As required in the permit, an e-mail was sent to Mr. T.J. Debates, with the MNDNR Division of Fish and Wildlife, and Captain Gregory Salo, with the MNDNR Division of Enforcement, on September 23, 2013, indicating the initiation of sampling activities (Attachment B).

The Mississippi River was split into six sections between the Lock and Dam #1, and Lock and Dam #2. The river was divided longitudinally into the four sections used by the Minnesota Pollution Control Agency (MPCA) in their 2009 fish sampling effort (MPCA 2010). These sections were previously identified as Sections 1 through 4. For this sampling effort, Sections 2 and 4 were further laterally divided along the centerline of the river and designated with an A and B (Figure 1). Four fish species were targeted during the sampling effort, including bluegill (*Lepomis macrochirus*) or other representative sunfishes, white bass (*Morone chrysops*), freshwater drum (*Aplodinotus grunniens*), and common carp (*Cyprinus carpio*). A total of 15 specimens from each section were targeted for a grand total of 360 samples. Each species had a targeted size class (Table 1).

Table 1
Summary of Proposed Fish Targeted from Pool 2

Common Name	Species	Size Classes (total length)	Sample Size (entire pool)
Bluegill/sunfishes	<i>Lepomis macrochirus/Lepomis spp.</i>	4 to 10" (102 to 254 mm)	90
White bass	<i>Morone chrysops</i>	10 to 18" (254 to 457 mm)	90
Freshwater drum	<i>Aplodinotus grunniens</i>	10 to 20" (254 to 508 mm)	90
Common carp	<i>Cyprinus carpio</i>	10 to 24" (254 to 576 mm)	90

Note:
mm = millimeters

Fish collection occurred from September 23, 2013, through October 1, 2013. All the fish were captured using electrofishing methods. All non-target species were immediately returned to the water. The start and end coordinates for each fish run were recorded in the field database. After collection, the length and weight of each sample was entered in the field database. The samples were kept on ice and shipped via overnight courier to AXYS Analytical Laboratory in British Columbia, Canada, for perfluorochemical (PFC) analysis. Consistent with prior sampling efforts, fillets were removed from the fish by AXYS Analytical Laboratory based on U.S. Environmental Protection Agency (USEPA) Guidelines (USEPA 2000). The fillet type for all fish species was scaled with skin on, which is consistent with prior sampling efforts. The bones (e.g., rib cage) were removed from the fillets. The fillets from both sides of the fish were used for PFC analysis. The fillet samples were homogenized prior to being analyzed for PFCs.

The targeted species and sample counts were met in most sections. In Section 2B, bluegill could not be located, so green sunfish were used as a substitute. In Section 4A, white bass were difficult to locate and only 11 specimens were collected. In some sections, fish specimens outside of targeted size ranges were kept to achieve sufficient sample numbers. Figures 1 through 11 show the location and count of the fish collected by run in each section. Table 2 summarizes counts, lengths, and weights of the fish collected from Pool 2.

Table 2
Summary of Fish Collected from Pool 2

Common Name	Species	Length (millimeters)			Weight (grams)			Sample Size (Entire Pool)
		Min.	Avg.	Max.	Min.	Avg.	Max.	
Bluegill/sunfishes	<i>Lepomis macrochirus/ Lepomis spp.</i>	99	127	185	19	49	167	90
White bass	<i>Morone chrysops</i>	226	337	454	145	525	1115	87
Freshwater drum	<i>Aplodinotus grunniens</i>	275	391	584	243	860	2502	91
Common carp	<i>Cyprinus carpio</i>	353	508	692	644	1932	4122	94

The fish data have been provided in electronic files, which are included as Attachment C to this memorandum. The *TissueRunSummary_20140109.csv* file includes the fish run ID, the start date and time, and the start and end coordinates. The run ID is in the following format: *MISS-S2A-R3*. The section and run are identified within the ID. The example shown above is the third run from Section 2A.

The *TissuePFCResults_2014xxxx.csv* file contains the sample-specific information and the PFC results. The *sys_sample_code* includes the fish run ID and an incremental number, indicating the fish caught on that run. For example, *MISS-2A-R3-05* is the fifth fish sample from the third run in Section 2A. The species information, date and time collected, length, weight, and laboratory information are included for each sample. All the PFC results underwent verification and validation, and a summary validation report can be provided upon request. The following qualifiers were applied when necessary during the validation process:

- U – compound or analyte was analyzed for, but not detected at or above, the specified limit
- J – an estimated value
- UJ – compound or analyte was analyzed for, but not detected, and the specified limit reported is estimated
- R – data are rejected and unusable
- DNR – do not report

REFERENCES

- USEPA (U.S. Environmental Protection Agency), 2000. *Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories*. EPA 823-B-00-007. November 2000.
- MPCA (Minnesota Pollution Control Agency), 2010. *Mississippi River Pool 2 Intensive Study of Perfluorochemicals in fish and Water: 2009*. March 2010.

ATTACHMENT A

STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES
Fish Management Section, Division of Fish and Wildlife
500 Lafayette Road
St. Paul, MN 55155-4020
PH: (651) 259-5236
e-mail: fisheries.permits@state.mn.us

SPECIAL PERMIT NO. 19417
(General and Miscellaneous)
Date: 23 September 2013

TO WHOM IT MAY CONCERN:

Permission is hereby granted to:

Christopher Yates
Anchor QEA, LLC
80 Glen Street, Suite 2
Glen Falls, NY 12801

to collect fish by electrofishing or angling from Pool 2 of the Mississippi River between Lock and Dam #1 and #2. All collected fish will be released except those permitted for sampling and transport to the laboratory: 90 bluegill (*Lepomis* spp) or other representative sunfishes, 90 white bass (*Morone chrysops*), 90 freshwater drum (*Aplodinotus grunniens*), and 90 common carp (*Cyprinus carpio*) to be analyzed for PFCs. No threatened or endangered species may be collected.

Condition #1. Permits for Work in All State Waters (*Applies to all permits*)

- **Before** conducting work under this permit in state waters, permittees must decontaminate all equipment that has been used for other activities in infested waters in Minnesota or other locations.
- Permittees must do the following when leaving all waters:
 - **Clean** off all aquatic plants and animals (e.g., snails, zooplankton) from equipment; and
 - **Drain** water from watercraft and all equipment used to collect specimens.

Condition #2. General Invasive Species Related Conditions (*Applies to all permits*)

- If your permit allows for live transport, bring uninfested surface water or ground water to the collection site for specimen transportation.
- Obtain a *Prohibited Invasive Species Permit* if you collect any prohibited invasive species (see attachment for list and permit application information).

Condition #3. Permits for Work in Infested Waters (*Applies to permits in infested waters only*)

- Permittees using waders, hip boots, or other footwear in infested waters shall decontaminate the footwear before reuse in other waters.
- When collecting or conducting other research activities in designated infested waters, permittees should be aware that state regulations prohibit transport of water from designated infested waters and special precautions are required as conditions of this permit (download list of waters at http://files.dnr.state.mn.us/eco/invasives/infested_waters.pdf).

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- Obtain an *Infested Waters Appropriation Permit* if it is critical to transport aquatic species in infested water (see attachment for permit application information).
- Traps, nets, and gear used in designated infested waters shall be tagged with orange *Infested Waters Only* tags supplied by DNR and not used in other waters. Hook and line (angling), and backpack electrofishing equipment is excluded. Tags must be attached in a manner that prohibits their removal without cutting the tag, though see Condition #5 below if you have a situation that requires a second permit during the calendar year. Decontamination procedures must still be followed for tagged gear after completion of your field work. Watercraft do not need to be tagged, but must be fully decontaminated after work is completed in infested waters, and should not be left in infested waters overnight.
- The permittee must decontaminate equipment specific to the aquatic invasive species present in the waterbody. The following procedures are required before the tagged equipment may be used in uninfested waters or other types of infested waters:
 - **zebra mussel** – rinse with 140 degree F water at the point of contact for at least 10 seconds, or 120 degrees F for at least 2 minutes;
 - **faucet snail** – rinse with 140 degree F hot water for at least one minute;
 - **spiny water flea** – equipment must be thoroughly dry for at least 24 hours; and
 - **Eurasian watermilfoil, flowering rush** – all plant parts must be removed

This permit is only for sampling on State property, unless the permittee has explicit permission from the land owners; including the National Park Service, or County. A separate permit is needed from the Division of Parks and Recreation to collect within a State Park. A copy of this permit shall be carried while sampling.

The Area Fisheries Supervisor and the Regional Enforcement Manager must be notified by e-mail in advance of sampling. A hard copy of the notifications shall be attached to the year-end activity report. Your letter of application does not constitute advance notification of your intent to sample.

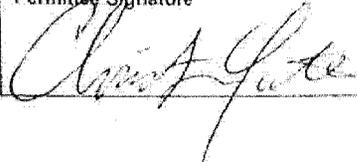
A report detailing collection activities (species, numbers, and collection sites) will be submitted to the Division of Fish and Wildlife by 31 January of each year. A copy of any report or publication resulting from this research will be provided to the Division of Fish and Wildlife upon its completion.

This permit is valid from date of issuance through 31 December 2013, but may be revoked at any time.

DONALD L. PEREIRA
FISHERIES RESEARCH AND POLICY MANAGER



I hereby certify that I have read and understand the provisions of this permit and understand that this permit is not valid unless it is signed by me.

Permitter Signature	Title	Date
	Managing Scientist	9/23/13

cc: Division of Fish and Wildlife

TJ Debates, East Metro Area Fisheries Supervisor, St. Paul
(e-mail timothy.debates@state.mn.us, phone 651-259-5770)
Joel Stiras, East Metro Fisheries Specialist, St. Paul
Brad Parsons, Regional Fisheries Manager, St. Paul

Division of Enforcement

Capt. Gregory Salo, Regional Enforcement Manager, St. Paul
(e-mail gregory.salo@state.mn.us, phone 651-259-5882)

ATTACHMENT B

From: Christopher Yates
To: "gregory.salo@state.mn.us"; "timothy.debates@state.mn.us"
Cc: "[Telander, Colleen L \(DNR\)](mailto:Telander, Colleen L (DNR))"
Subject: RE: MN DNR Fisheries Research Permit 19415 - ISSUED
Date: Monday, September 23, 2013 8:43:00 PM

Greg/TJ,

We have started fish collection via electroshocking methods today in accordance with Fisheries Research Permit 19415. We expect to the sampling to continue all of this week and into next week if necessary. If you have an questions, please feel free to contact me at any time at (518)-522-7037.

Thanks,
Chris

Christopher Yates

ANCHOR QEA, LLC

cyates@anchoragea.com

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Glens Falls, NY 12801

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From: Telander, Colleen L (DNR) [<mailto:colleen.telander@state.mn.us>]

Sent: Monday, September 23, 2013 4:19 PM

To: Christopher Yates

Subject: MN DNR Fisheries Research Permit 19415 - ISSUED

Chris –

The attached Fisheries Research Permit 19417 has been issued to collect fish by electrofishing or angling from Pool 2 of the Mississippi River between Lock and Dam #1 and #2. Also included are attachments detailing aquatic invasive species transfer risk, and the prior notification and reporting requirements associated with this permit. As stated in your permit, the Area Fisheries Supervisor and the Regional Enforcement Manager must be notified by e-mail in advance of sampling, with e-mail addresses located at the end of your permit.

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2400.0011

If you require your permit to be sent by U.S. mail in addition to this electronic distribution, please let us know. Thanks!

Colleen Telander

MN DNR – Fisheries Research

500 Lafayette Road, Box 20

St. Paul, MN 55112-4020

Phone: 651-259-5236

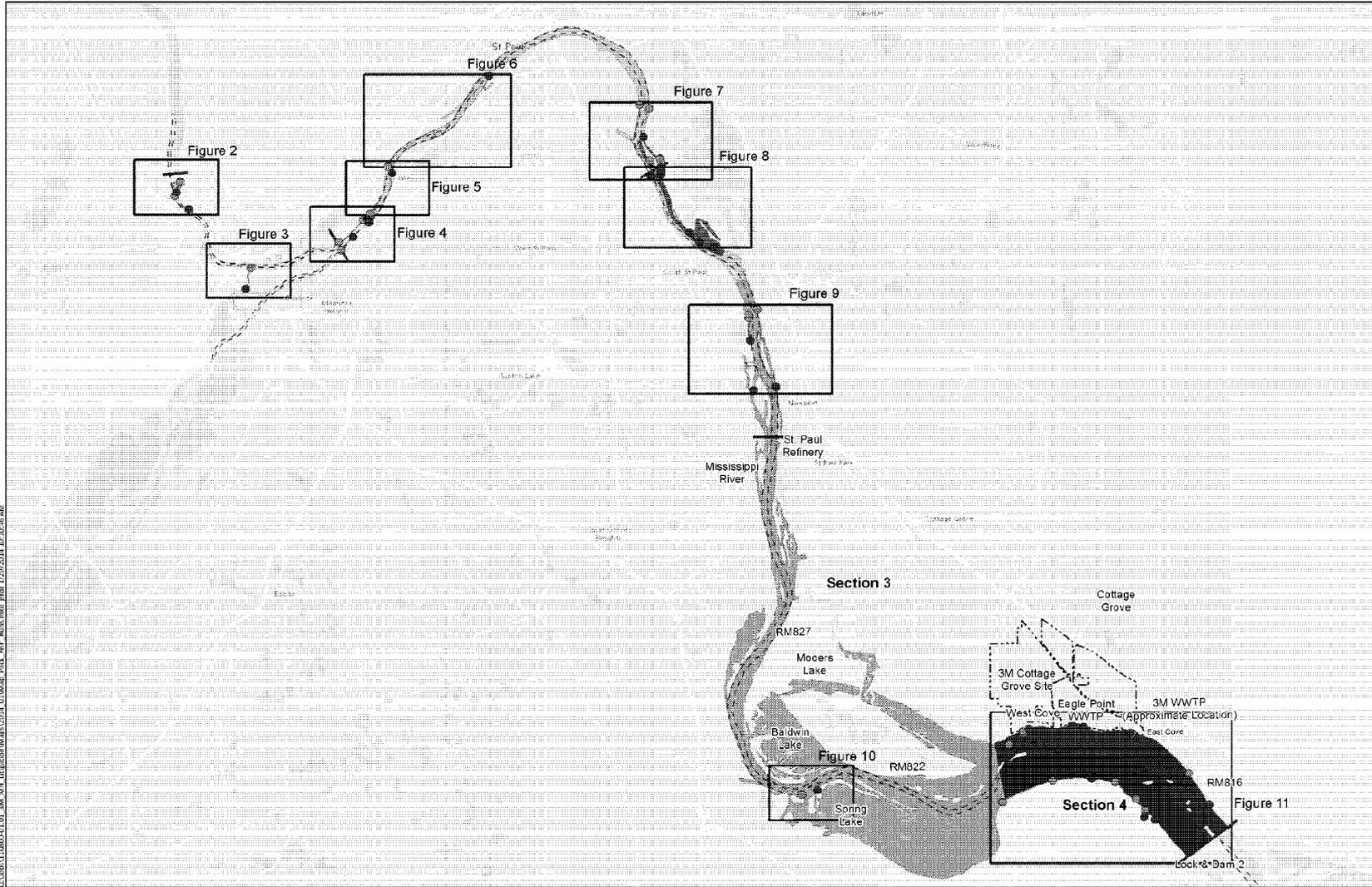
Fax: 651-297-4961

colleen.telander@state.mn.us

ATTACHMENT C
(FILES PROVIDED ELECTRONICALLY)

FIGURES

C:\Users\108003-01-01_3M_MN_Litigation\Map\2014_C1\Map_Pool_2\Fish_Run_Map_12/20/2014_10:20:45 AM



Legend

- Fish Run Start
- Fish Run End
- Assessment_Unit_ID
- - - Cottage Grove Boundary
- - - Navigation Channel
- Map Sheets

2013 AQ Fish Runs

- MISS-S1-R1
- MISS-S1-R2
- MISS-S1-R3
- MISS-S1-R4
- MISS-S1-R5
- MISS-S1-R6
- MISS-S2A-R1
- MISS-S2A-R2
- MISS-S2A-R3
- MISS-S2A-R4
- MISS-S2B-R1
- MISS-S2B-R2
- MISS-S2B-R3
- MISS-S2B-R4
- MISS-S2B-R5
- MISS-S2B-R6
- MISS-S3-R1
- MISS-S3-R2
- MISS-S3-R3
- MISS-S3-R4
- MISS-S4A-R1
- MISS-S4A-R2
- MISS-S4A-R3
- MISS-S4A-R4
- MISS-S4A-R5
- MISS-S4B-R1
- MISS-S4B-R2
- MISS-S4B-R3
- MISS-S4B-R4
- MISS-S4B-R5
- MISS-S4B-R6

River Sections

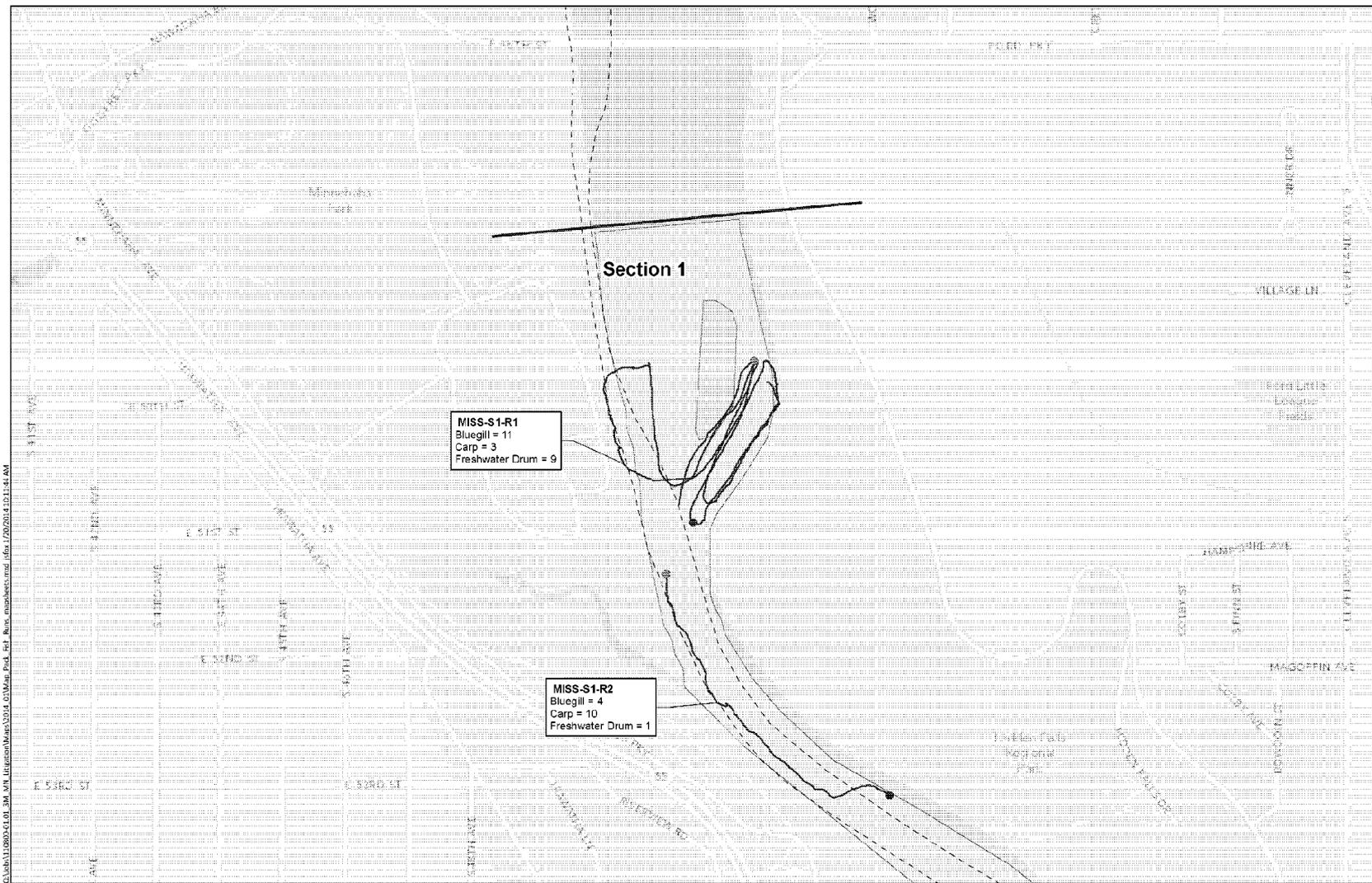
- Section 1
- Section 2A
- Section 2B
- Section 3
- Section 4A
- Section 4B



Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 1
Fish Collection Runs - Overview
2013 Mississippi River Pool 2 Collection Results



- Legend**
- Fish Run Start
 - Fish Run End
 - 2013 AQ Fish Runs**
 - MISS-S1-R1
 - MISS-S1-R2
 - MISS-S1-R3
 - MISS-S1-R4
 - MISS-S1-R5
 - MISS-S1-R6
 - MISS-S2A-R1
 - MISS-S2A-R2
 - MISS-S2A-R3
 - MISS-S2A-R4
 - MISS-S2B-R1
 - MISS-S2B-R2
 - MISS-S2B-R3
 - MISS-S2B-R4
 - MISS-S2B-R5
 - MISS-S2B-R6
 - MISS-S3-R1
 - MISS-S3-R2
 - MISS-S3-R3
 - MISS-S3-R4
 - MISS-S4A-R1
 - MISS-S4A-R2
 - MISS-S4A-R3
 - MISS-S4A-R4
 - MISS-S4A-R5
 - MISS-S4B-R1
 - MISS-S4B-R2
 - MISS-S4B-R3
 - MISS-S4B-R4
 - MISS-S4B-R5
 - MISS-S4B-R6
 - - - Cottage Grove Boundary
 - - - Navigation Channel
 - Assessment Unit ID
 - River Sections**
 - ▨ Section 1
 - ▨ Section 2A
 - ▨ Section 2B
 - ▨ Section 3
 - ▨ Section 4A
 - ▨ Section 4B

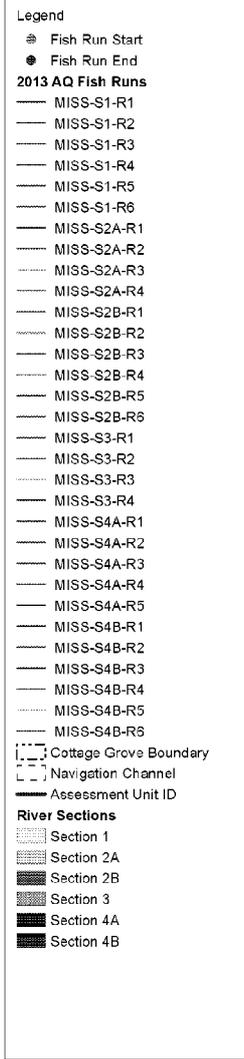
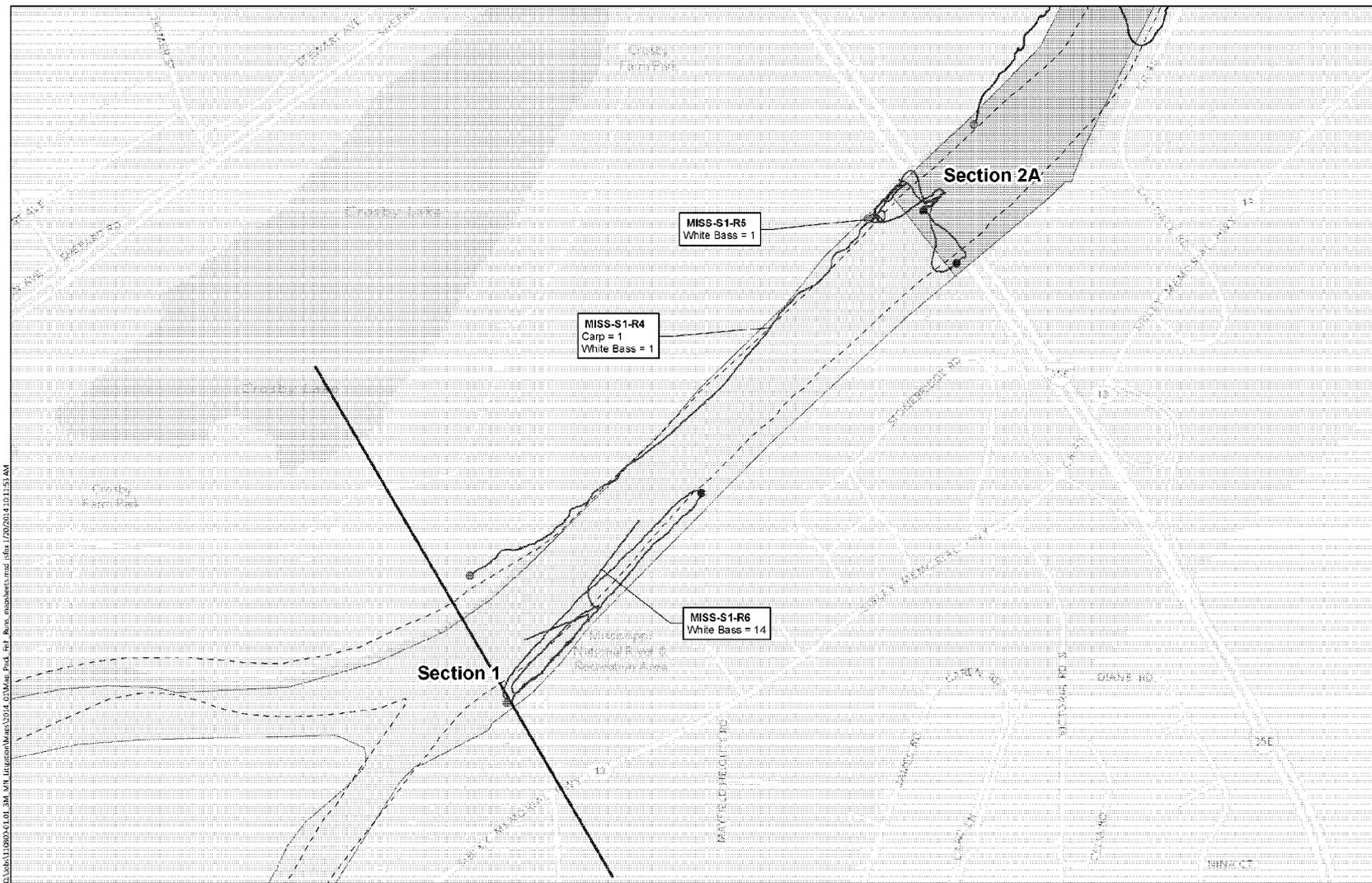
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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 2
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.

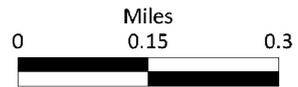
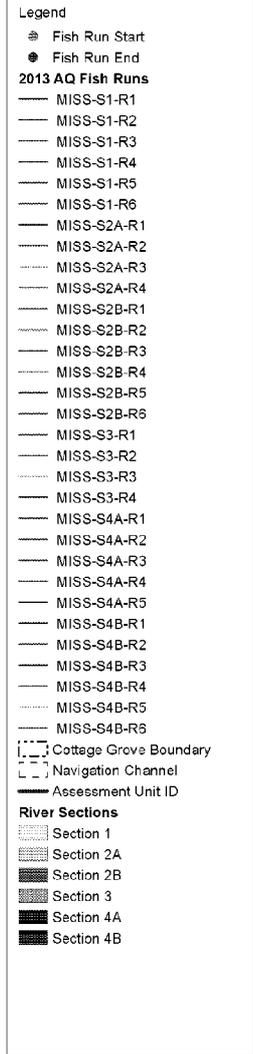


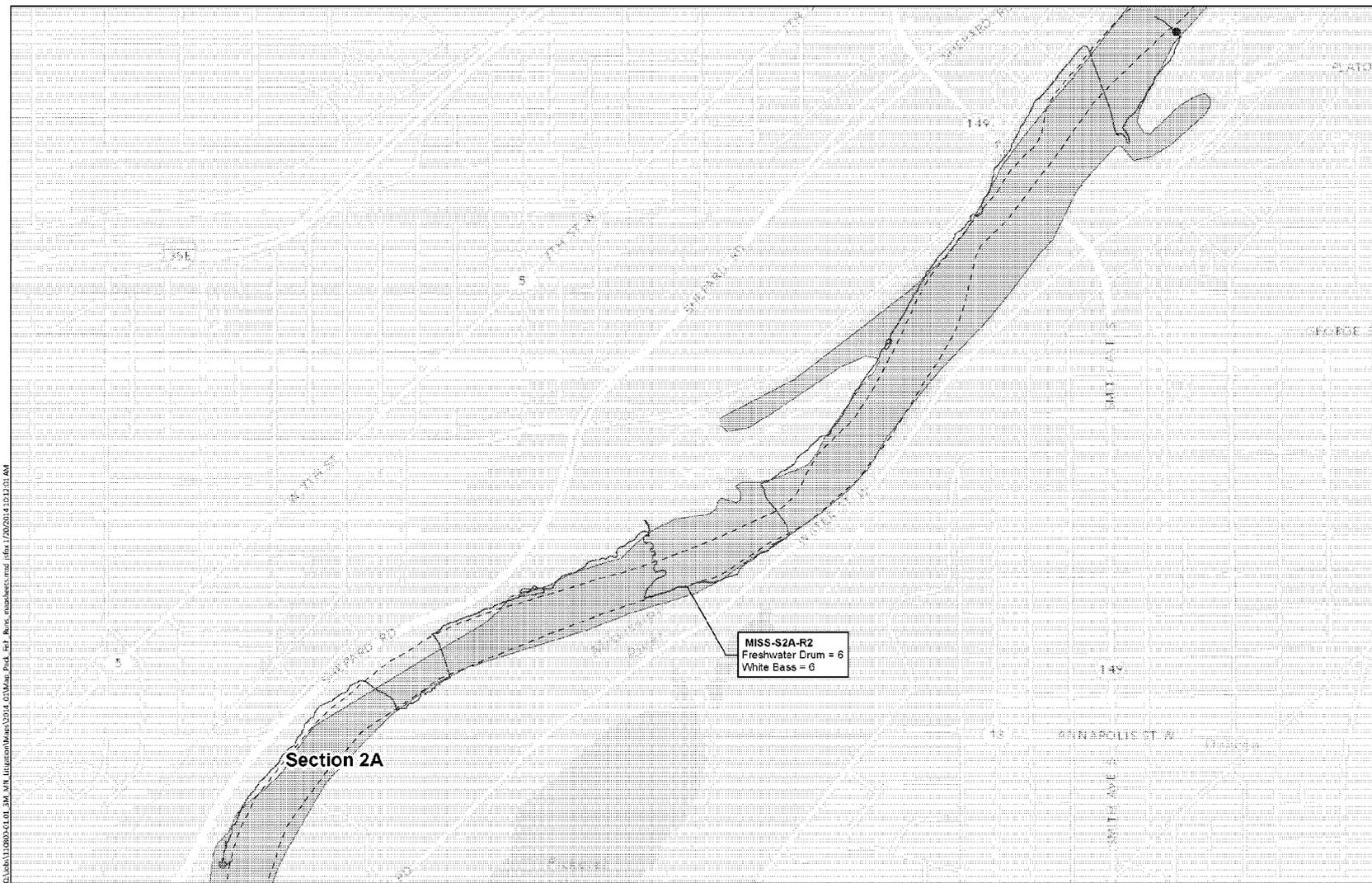
Figure 4
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 5
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



- Legend**
- Fish Run Start
 - Fish Run End
 - 2013 AQ Fish Runs**
 - MISS-S1-R1
 - MISS-S1-R2
 - MISS-S1-R3
 - MISS-S1-R4
 - MISS-S1-R5
 - MISS-S1-R6
 - MISS-S2A-R1
 - MISS-S2A-R2
 - MISS-S2A-R3
 - MISS-S2A-R4
 - MISS-S2B-R1
 - MISS-S2B-R2
 - MISS-S2B-R3
 - MISS-S2B-R4
 - MISS-S2B-R5
 - MISS-S2B-R6
 - MISS-S3-R1
 - MISS-S3-R2
 - MISS-S3-R3
 - MISS-S3-R4
 - MISS-S4A-R1
 - MISS-S4A-R2
 - MISS-S4A-R3
 - MISS-S4A-R4
 - MISS-S4A-R5
 - MISS-S4B-R1
 - MISS-S4B-R2
 - MISS-S4B-R3
 - MISS-S4B-R4
 - MISS-S4B-R5
 - MISS-S4B-R6
 - - - Cottage Grove Boundary
 - - - Navigation Channel
 - Assessment Unit ID
 - River Sections**
 - ▨ Section 1
 - ▨ Section 2A
 - ▨ Section 2B
 - ▨ Section 3
 - ▨ Section 4A
 - ▨ Section 4B

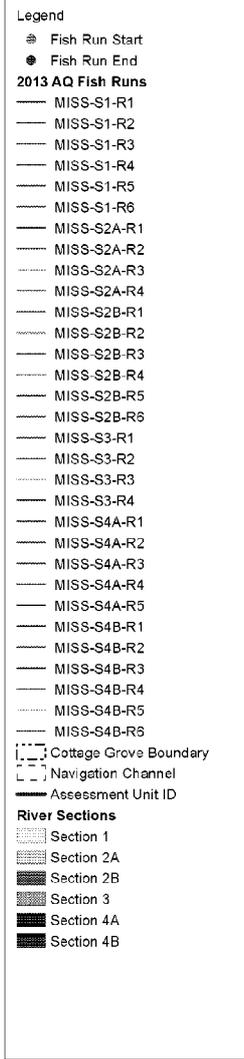
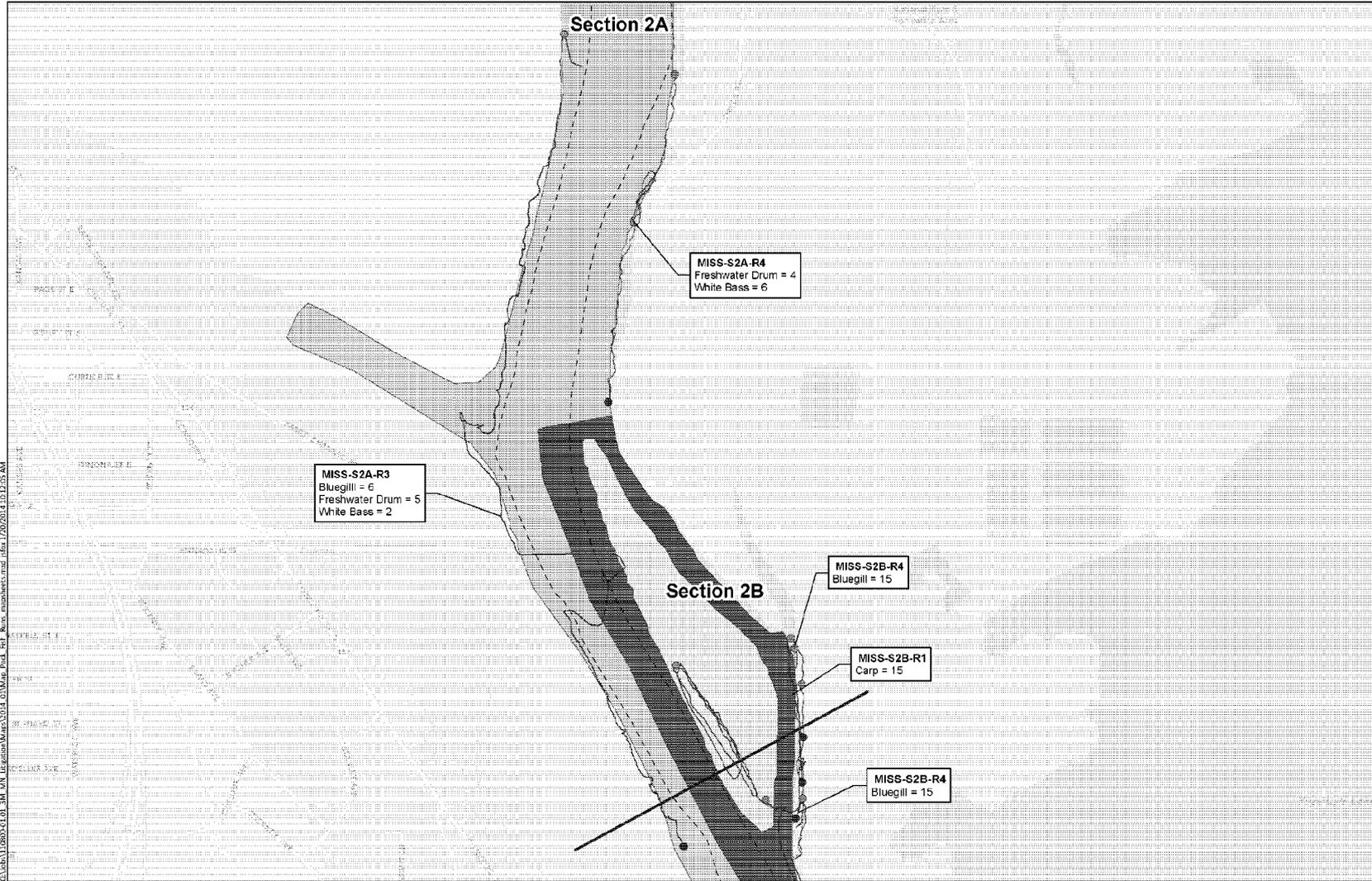
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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 6
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



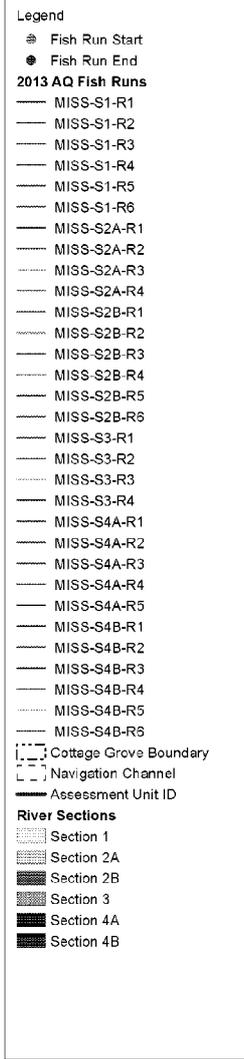
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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 7
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.

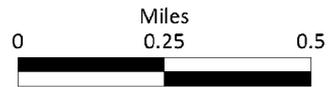
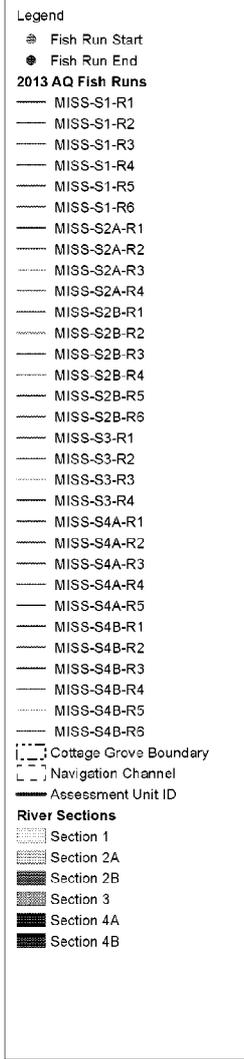
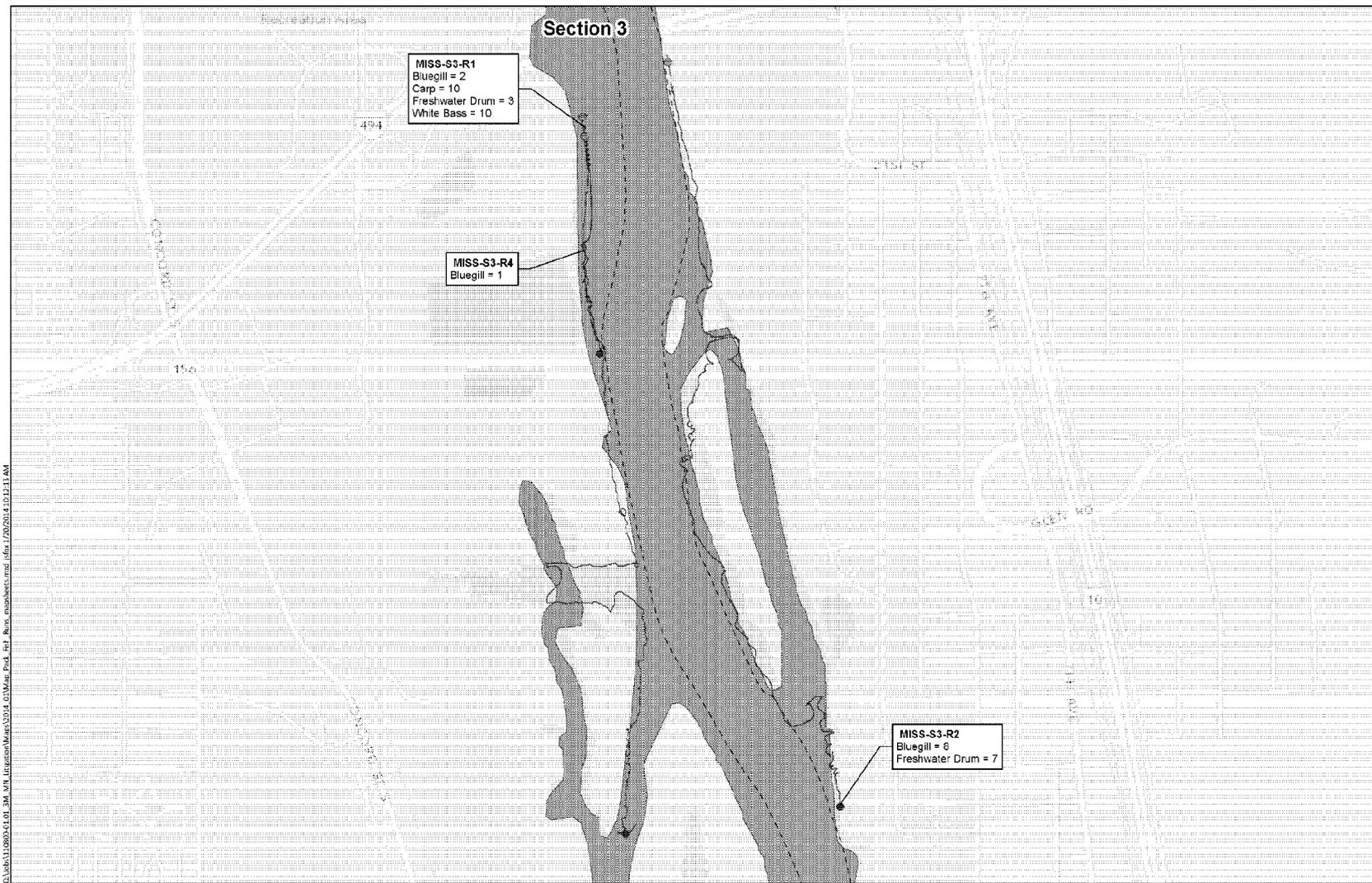


Figure 8
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.

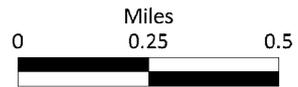
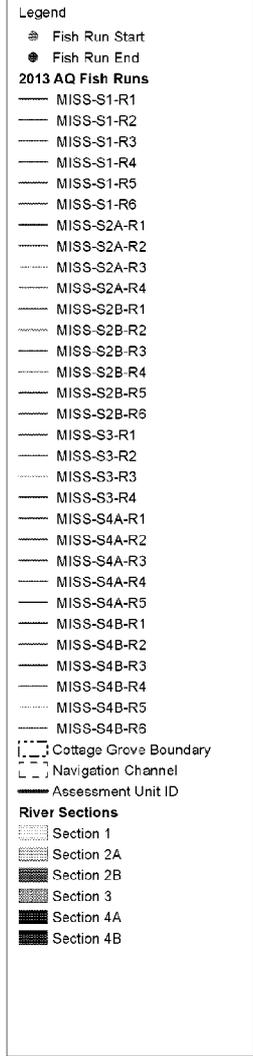
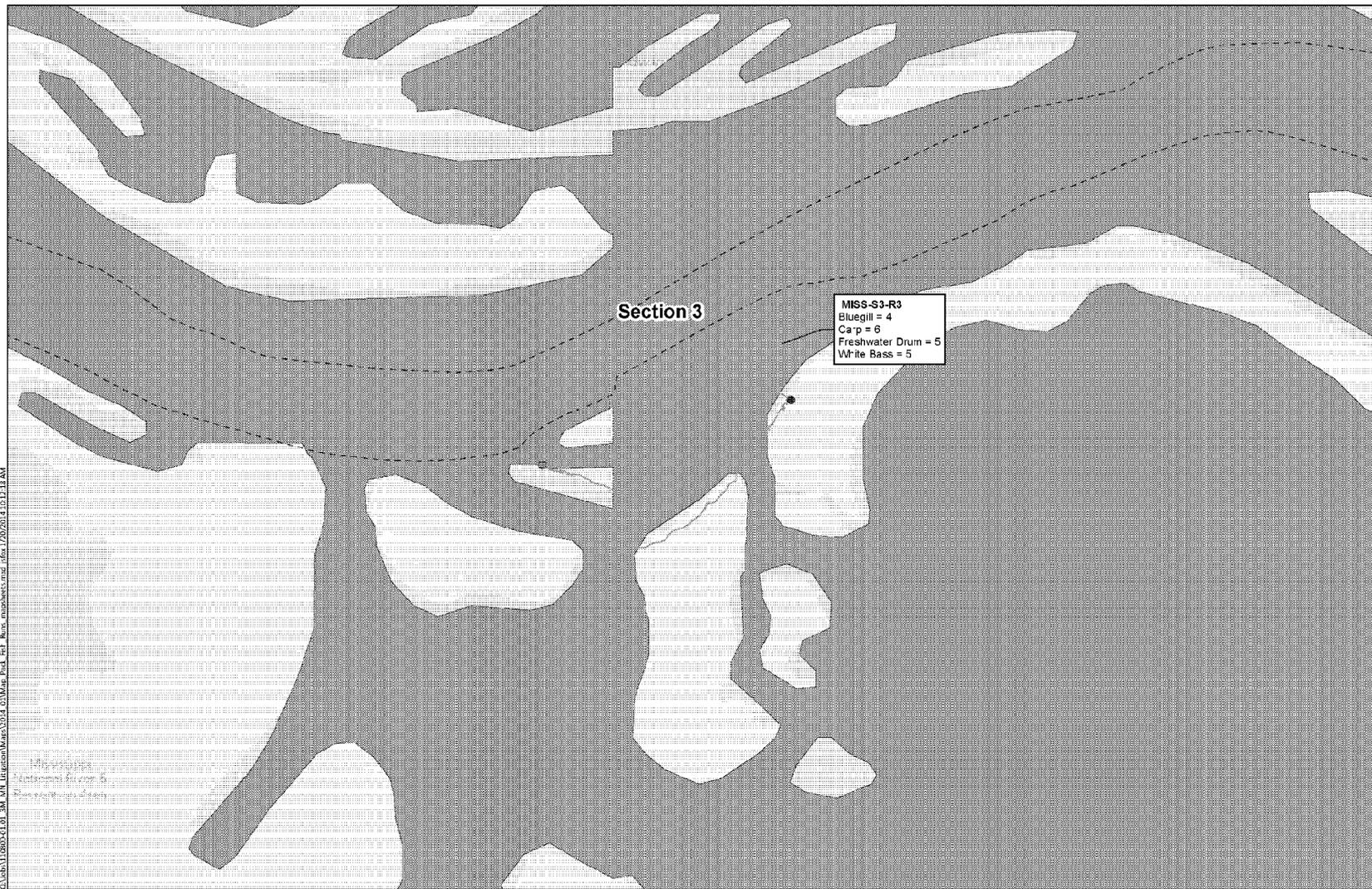


Figure 9
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



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Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.

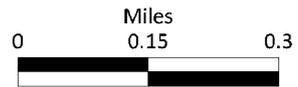
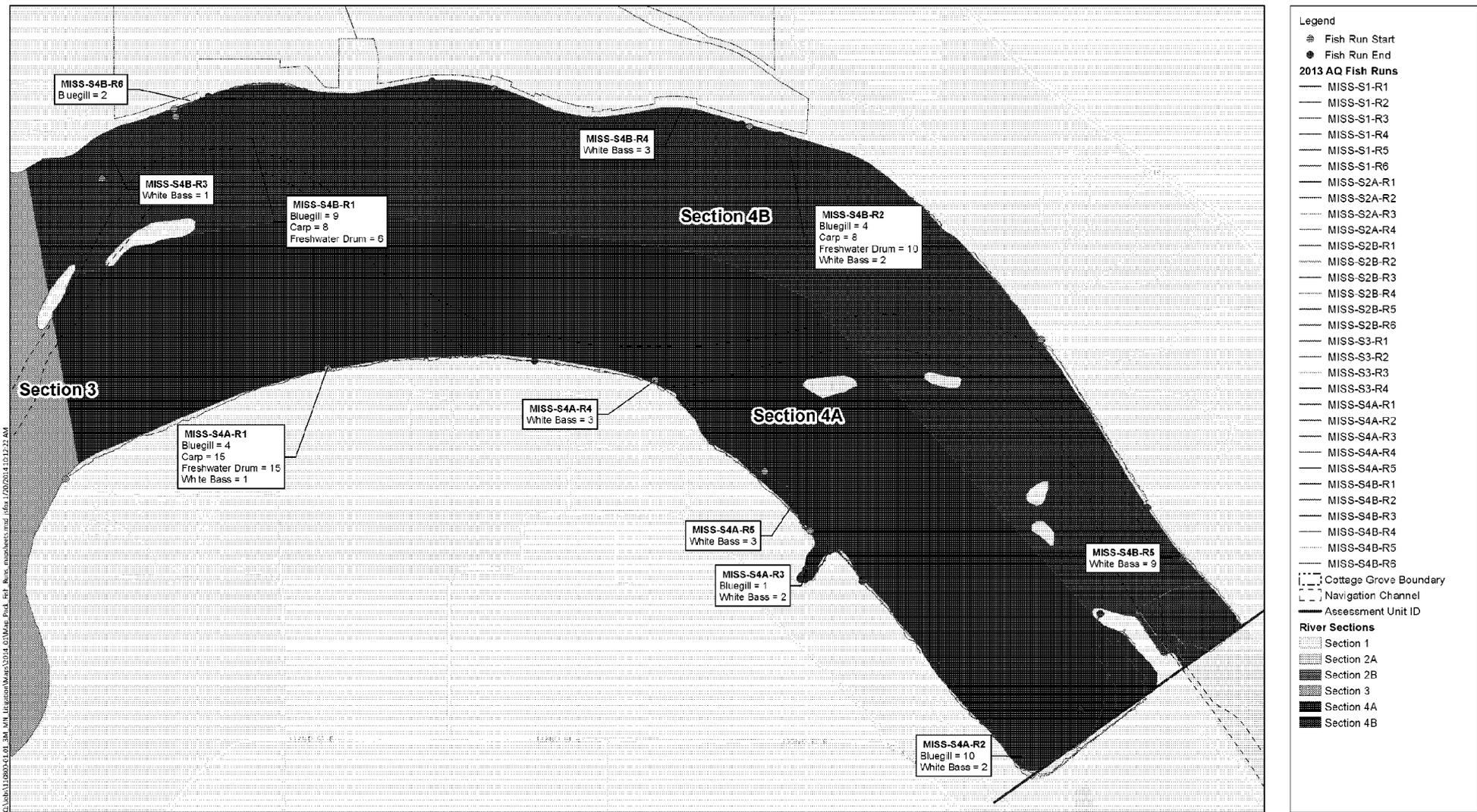


Figure 10
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results



Note:
The section boundaries shown are an approximation of the Mississippi shoreline. The actual shoreline varies and fish runs may appear to be on land.



Figure 11
Fish Collection Runs
2013 Mississippi River Pool 2 Collection Results