2006 River Monitoring Mercury Report

Idaho Department of Environmental Quality
Prepared by Miranda Adams

March 2008

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Acknowledgments

Special thanks to Mary Anne Kosterman, who led the 2006 BURP crew and who helped a great deal in gathering information for this report. Thanks to Mike Edmondson, who was responsible for data collection and fish tissue processing, to Richard Lee who aided tremendously in processing the fish tissue samples, and to the 2006 BURP crew members of DEQ for conducting the field work for this project. Thanks to Michael McIntyre and Don Essig for guiding my efforts in generating this report and for the opportunity to do so.

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Introduction/Background

As a response to the Clean Water Act requirements set forth by the U.S. Environmental Protection Agency (EPA), the Idaho Department of Environmental Quality (*DEQ*) developed the Ambient Monitoring Plan (AMP) and the Beneficial Use Reconnaissance Program (BURP). These programs utilize physical habitat assessment in conjunction with biological and chemical monitoring to characterize river and stream integrity and water quality within the state. Through the collection of many aquatic organisms, including fish, macroinvertebrates, periphyton, phytoplankton, and macrophytes, DEQ aims to determine the condition of Idaho waters and establish which water bodies are impaired and require total maximum daily loads (TMDLs). BURP and AMP are intended to differentiate between impaired and non-impaired water bodies; they are not intended to identify pollutants or their sources. For a complete explanation of the goals and objectives of these programs, please refer to the Surface Water Ambient Monitoring Plan, accessible through DEQ's Web site (http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/ambient_plan_first_edition.pdf).

This study was conducted for the purpose of assessing ecological conditions in Idaho's large rivers. Vertebrate sampling is conducted to determine the abundance of fish and aquatic amphibian species in a reach. Data on species richness, species guilds, abundance, size, and anomalies are used to evaluate ecosystem condition and health. In addition to gathering data on the assemblage, fish specimens were retained for analysis of tissue contaminants including mercury (Hg), selenium (Se), and arsenic (AS), with mercury being the primary focus in this report. The purpose of this particular study was to:

- obtain a statistical picture of mercury levels in Idaho's large rivers
- determine the range of mercury concentrations present in the tissues of game fish
- assess a potential need for fish consumption advisories for certain water bodies within the state

Inorganic Mercury (Hg) is a naturally occurring mineral that is present in rocks and soils. It is released through soil erosion and the weathering of rocks, both by natural processes and human activities. While most of the mercury in surface waters (lakes, rivers, and streams) remains in its less harmful, inorganic form, some of it is converted to the highly toxic organic form, methylmercury (Me-Hg); nearly all mercury that accumulates in upper trophic level fish tissue is in the methylmercury form. Methylmercury readily biomagnifies, or accumulates, in biotic tissues. As a result of bioaccumulation, piscivorous fish (fish that feed on other fish) generally have elevated levels of methylmercury in their tissues.

In addition to the overall biological health of a particular water body, levels of mercury found through the river BURP monitoring efforts can clearly indicate whether the consumption of certain fish poses a risk to human health. Historically, the brain and the nervous system are recognized as the primary target organs of methylmercury poisoning.

Symptoms include, but are not limited to, auditory disturbances, tremors, ataxia, and constriction of visual fields. Due to severe neurological effects of methylmercury poisoning, it is especially dangerous to neonates, infants, and children undergoing significant nervous system development.

EPA has developed the *Water Quality Criterion for the Protection of Human Health: Methylmercury*, in which it states that fish and shellfish tissues being consumed by humans should contain no more than 0.3 milligrams Methylmercury per kilogram of fish tissue (mg/Kg) or 300 nanograms Methylmercury per gram of fish tissue (ng/g). DEQ has adopted this criterion into the Water Quality Standards (IDAPA 58.01.02).

Methods

According to the Ambient Monitoring Plan, there are two methods for selecting sampling sites: target selection and random design. Randomly selected sites are used to estimate an overall condition of the state's waters. In the summer of 2006, the river BURP crew was sent to randomly selected large-river sites to collect fish for biological assessment (see Table 1). Of those sites, approximately half resulted in the sufficient collection of fish. In general, BURP crews seek to collect 10 fish of the same species for composite sampling. Composite sampling gives a more precise indication of contaminant levels present in a given water body, as there is natural variation between individuals. If fewer than 10 fish are caught, they are usually released back into the river.

Electrofishing is a commonly used method for collecting specimens and was the method of choice for this specific project. The BURP Field Manual for Streams, also accessible through DEQ's Web site (http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/burp_field_manual_2007_entire.pdf), provides a comprehensive description of electrofishing methods and sample collection, as well as information needed for statewide consistency in monitoring and data collection activities on rivers. Specifically, the manual describes how sample sites are selected for monitoring and how to properly collect data for BURP rivers field sampling by providing information on the assumptions, methods, and equipment used. Principal sampling gear includes either boat electrofishers or bank/towed units. DEQ's primary electrofishing boat is a 16-foot-long inflatable raft modified for two persons and all fishing equipment (Figure 1). Raft configuration consists of a frame-mounted generator, an electrofishing control box, and electrodes extending out over the bow (Figure 2). The fish are collected by one netter operating from the bow, while the boat and generator are operated by the person in the rear of the boat. The netter uses an insulated dip net to retrieve stunned fish, which are then deposited into a live well for later processing. At the completion of electrofishing, each transect (transects are spaced at six equally distant sites within the reach, the reach is 40 times the wetted width of the river) and information on the fish (i.e., species, weight, length) are recorded on the collection form (see Appendix A).

Figure 1. Electrofishing boats.

Figure 2. Electrofishing setup.

It is difficult to target any one particular species when electrofishing in rivers. Therefore, a variety of species were caught and used for biological monitoring. Those species include suckers, mountain whitefish (MWF), northern pike minnows (NPM), and rainbow trout (O. Mykiss). Whole fish samples were stored in coolers with dry ice and were sent immediately to DEQ for further processing (Figures 3, 4, and 5). Back at the DEQ lab, the fish samples were thawed, filleted, and blended into composite samples (generally 10 fish of the same species go into one composite sample). Composite samples are much more representative since they take natural variation among individuals into account.

Figure 3. Weighed fillet samples.

Figure 4. Blending fillets.

Figure 5. Depositing composite samples into containers.

DEQ contracted with Brooks Rand Laboratory (BRL) out of Seattle, Washington for trace metal analysis. Twenty-one fish tissue samples were sent to the lab for methylmercury (Me-Hg) and total mercury (THg) analysis following BRL standard operating procedures and EPA methods. A preparation blank and three processing blanks were also sent to the lab for quality assurance purposes (see Appendix B). The preparation blank was prepared from a water sample that sat in the lab with the fish tissue samples for the purpose of testing for possible air contamination in the lab. To prevent contamination of the tissue samples, the food processor was washed with water and then washed with 1.0 moles of hydrochloric acid between each composite preparation to remove residual fish tissue. The food processor was then rinsed again with water, and the water was retained and sent to the lab as processing blanks.

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Results/Discussion

The average taken from the preparation blank and the three processing blanks that were analyzed for total mercury (THg) was 1.38 ng/g. This value exceeded the primary acceptance criterion. All results were blank corrected; thus, any contamination evident in the method blanks did not significantly contribute to the sample results. Analysis of all other quality control samples in the batch met their respective acceptance criteria, and no corrective action was taken (see Appendix B).

Nearly all the mercury in the fish tissue samples is presumed to be in the Methylmercury form. However, sample ID 000679 and sample ID 000666 yielded methylmercury results of 1190 ng/g and 36.4 ng/g, which slightly exceeded the total mercury results of 1110 ng/g and 34.6 ng/g, respectively. In comparing the total mercury and methylmercury, results produced percent differences of 7% and 5%, which indicated that the differences between the results were statistically equivalent and were most likely due to analytical variability (see Appendix B), not to contamination.

Of the fish tissue samples tested (Table 1), three of the samples exceeded DEQ's criterion for mercury:

- Sample ID 000679, consisting of seven northern pike minnows, was collected from the Salmon River at Collection Site A008, near Salmon, Idaho. The lab results show that the composite concentration of mercury in this sample was 1,110.0 ng/g, more than three times the recommended limit.
- Sample ID 000687, consisting of 10 suckers, was collected from the Salmon River at Collection Site A016, near North Fork, Idaho. The lab results show that the composite concentration of mercury in this sample was 302.0 ng/g, exceeding DEQ's recommended limit by 2.0 ng/g.
- Sample ID 000681, also consisting of 10 suckers, was collected from the Snake River at Collection Site A081, near Idaho Falls, Idaho. At 317.0 ng/g, the lab results show that the recommended concentration limit for mercury was exceeded by 17.0 ng/g in this sample.

Table 1. Lab results analysis.

Sample ID	Collection Site ID	Water Body Name	Biota ID	No. of Fish	Average Length (mm)	THg[1] (ng/g)[2]
000679	A008	Salmon River	NPM	7	373.00	1110.000
000135	A008	Salmon River	Sucker	10	357.51	133.000
000684	A008	Salmon River	MWF	11	324.93	247.000
000121	A013	Big Lost River	O. Mykiss	8	350.00	80.300
000687	A016	Salmon River	Sucker	10	385.00	302.000
000694	A016	Salmon River	MWF	10	323.04	204.000
000666	A022	North Fork Coeur d'Alene	O. Mykiss	10	266.29	34.600
000692	A023	Snake River	Sucker	10	435.74	148.000
000668	A056	Middle Fork Clearwater	MWF	10	343.29	67.500
000678	A059	Salmon River	MWF	10	333.87	102.000
000680	A060	Salmon River	MWF	11	350.00	218.000
000706	A060	Salmon River	Sucker	10	382.00	146.000
000123	A069	Blackfoot River	Sucker	5	207.00	35.100
000705	A072	North Fork Payette	MWF	7	317.00	50.200
000695	A075	Salmon River	MWF	10	314.59	92.400
000693	A076	Salmon River	Sucker	6	457.00	216.000
000704	A076	Salmon River	MWF	9	324.57	97.700
000114	A079	Boise River	Sucker	10	436.43	221.000
000681	A081	Snake River	Sucker	10	474.07	317.000
000711	A082	Priest River	Sucker	10	434.30	234.000
000136	A082	Priest River	MWF	10	251.44	51.500
000116	PREP BLANK	PREP BLANK	PREP BLANK			0.040
000685	BLANK 1	BLANK 1	BLANK 1			0.040
038167[3]	BLANK 2	BLANK 2	BLANK 2			0.040
000708	BLANK 3	BLANK 3	BLANK 3			0.040

Color indicates that THg was above the mercury water quality standard criterion.

[1] Total mercury.

[2] Nanograms per gram.

[3] Sample arrived with a cracked lid. Lid was replaced upon receipt.

Typically, older/larger fish and high trophic level fish (predators) express elevated concentrations of toxins in their tissues, both as a result of being exposed to the toxin for a greater period of time and from feeding on smaller fish that also have mercury in their tissues. Figure 6 was generated from the fish data sheet (Appendix A) and the lab results (Appendix B) to demonstrate the correlation between the size of the fish and the concentration of mercury found in the fish tissue. The figure clearly reveals that Sample ID 000679 from site A008 lies outside the expected range of the data set. At an average length of 373.0 mm, the northern pike minnows in this composite sample were no larger than other fish tested, yet the sample had a conspicuously high concentration of mercury

compared to the other samples. Northern pike minnows are upper trophic level fish, feeding mostly on other fish (especially young salmon) and some aquatic invertebrates, so it is not surprising that the sample would contain high levels of methylmercury. This sample consisted of only seven fish, three less than DEQ's Implementation Guidance for the Idaho Mercury Water Quality Criteria (available at DEQ's Web site http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/idaho_mercury_wq_guidance.pdf) recommends for an accurate representation of mean Methylmercury concentrations in a waterbody. There were 10 suckers and 11 mountain whitefish collected from this site as well; both composite samples came back with much lower methylmercury concentrations. Both suckers and mountain whitefish are lower trophic fish, so we would expect to find lower levels of mercury in their tissues. Most suckers are adapted to a bottom-dwelling life; they feed on detritus, algae, and small invertebrates. Mountain whitefish primarily feed on aquatic and terrestrial insects and trout eggs. Unfortunately, in this study, no other northern pike minnows were collected from other locations for a mercury concentration comparison.

Both suckers and mountain whitefish were collected from site A016 on the Salmon River. The suckers exhibited higher levels of mercury than did the mountain whitefish, but they were also considerably larger in size, so this is expected.

Unfortunately, the only fish collected from site A081 were suckers. Intuitively we would expect that if lower trophic level fish contain high levels of mercury, upper trophic level fish in the same water body will contain even higher levels.

The overall results of this limited study show that most of the rivers that were tested contained fish with acceptable concentrations of mercury according to DEQ's WQS. Three of the 21 river sites in this study had fish tissue mercury levels above DEQ's criterion: the Salmon River near Salmon and also near North Fork (sites A008 and A016 respectively) and the Snake River near Idaho Falls (site A081), as shown in Figure 7. The results illustrate that at site A016 suckers have an average Methylmercury concentration of 302 ng/g which is less than 1% over DEQ's standard. Site A081 has one species of suckers that is about 5% over the standard. Further information pertaining to these waterbodies should be collected before listing the sites for impairment. The Idaho Fish Consumption Advisory Program (IFCAP) will be responsible for determining whether a fish consumption advisory is appropriate for these sites. Undoubtedly, site A008 is of importance, having had more than three times the recommended limit for Methylmercury. Additional specimens would need to be collected and composited to give a more accurate indication of impairment before site A008 should be listed.

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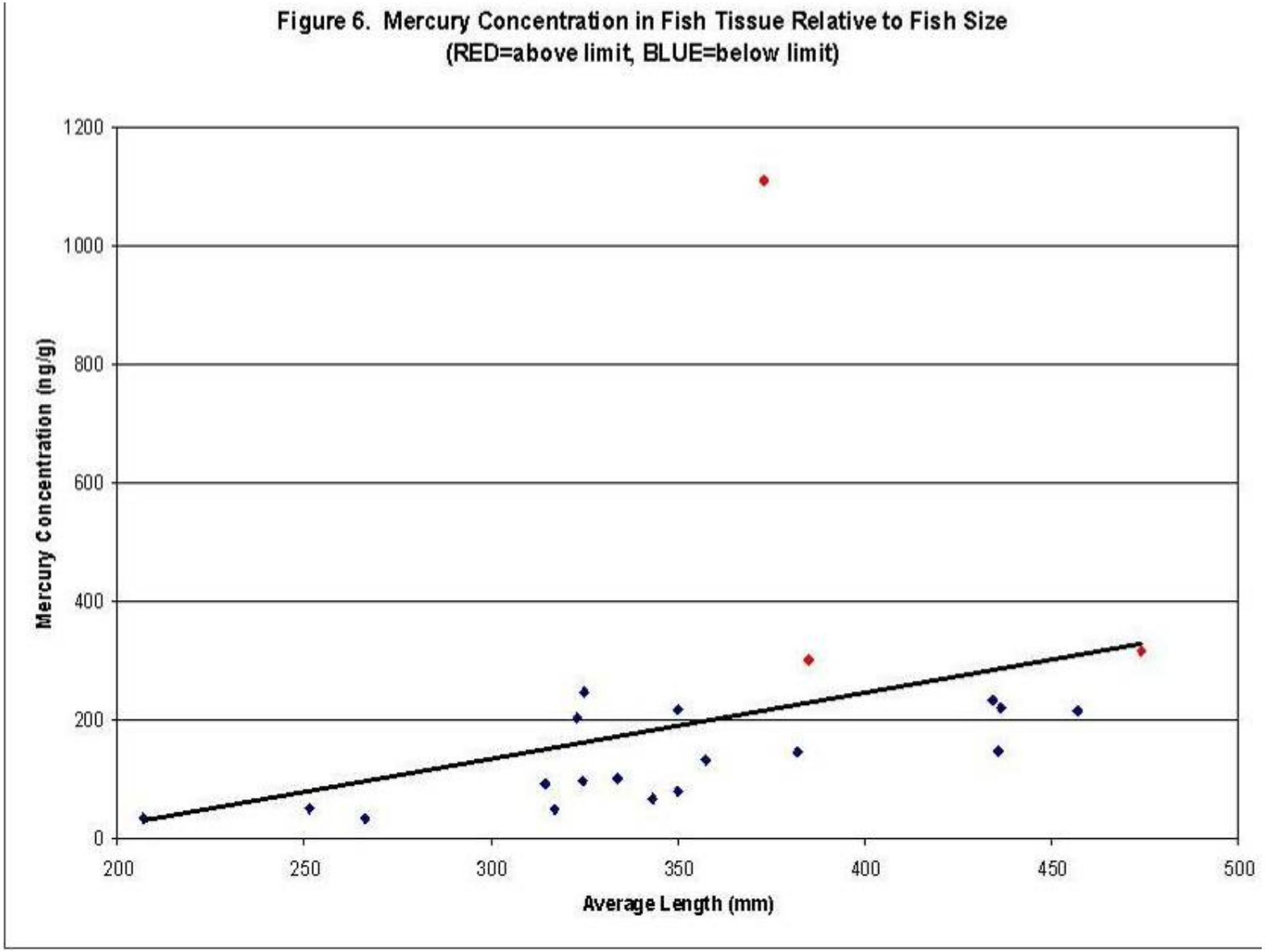

Figure 6. Mercury concentration in fish tissue relative to fish size.

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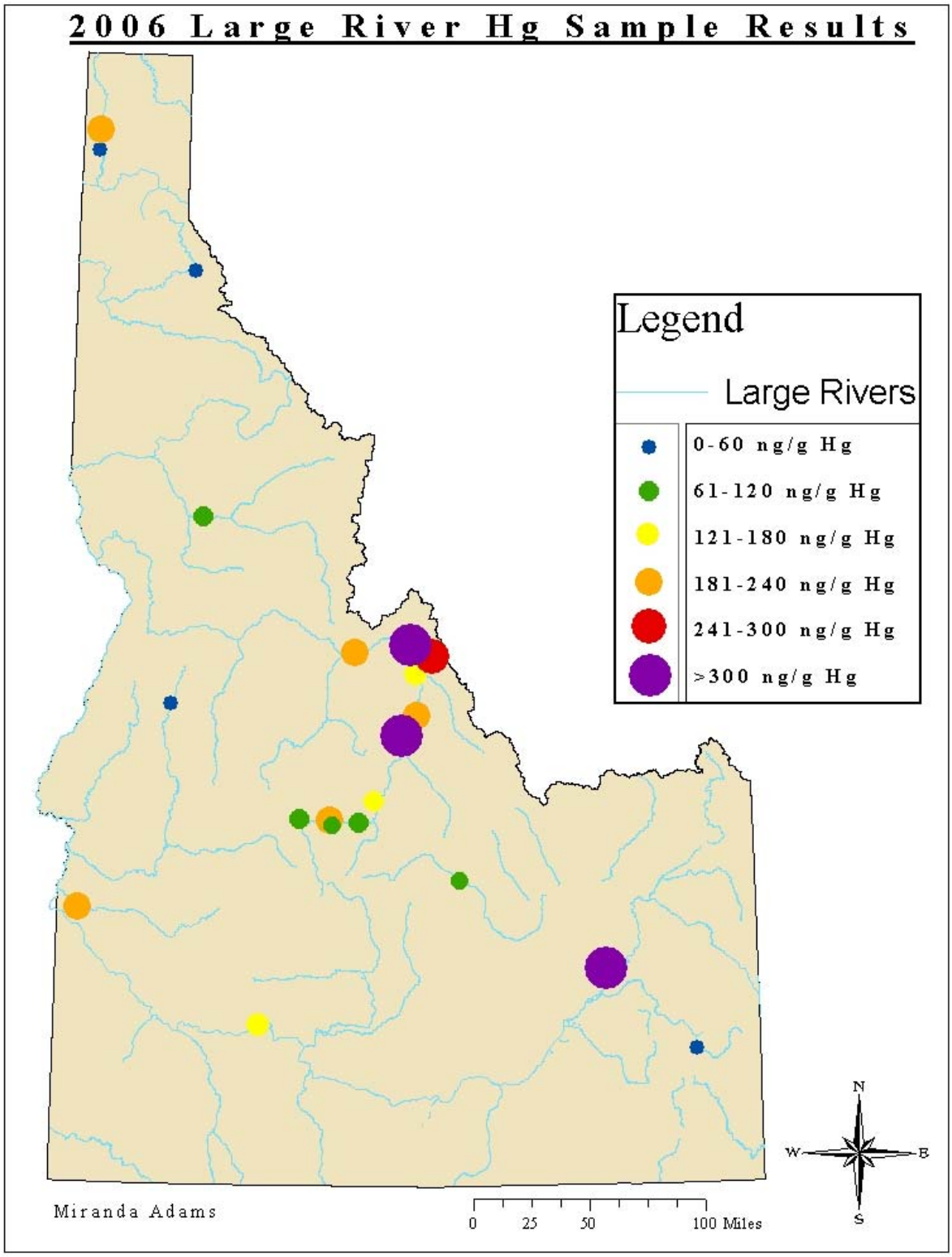

Figure 7. 2006 large river mercury (Hg) sample results (ng/g = nanograms per gram).

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Appendix A. DEQ Fish Data Sheet

2772006598

Idaho Department of Environmental Quality Fish Data Sheet

Page 1 of 6

***SiteID:** 2 0 0 7 S ***Date:** __ - __ - 2 0 0 7

Stream: _____ **HUC/AU:** _____

Latitude: _____ **Longitude:** _____

Location: _____

Clarity: ○ Clear ○ Turbid ○ Stained

Collectors: __ . __

Taxonomist: __ . __

Conductivity: ____ . __ µS/cm

Water Temp: __ . __ ○ C ○ F

***Effort:** ____ sec **Voltage/Setting:** ____ V

Avg Width: ___ . __ m

E-fish Length: ___ . __ m

Frequency: ___ Hz **Model:** _____

Permit: _____

***Pass:** __ of __

Flag Codes:

1. Deformity
2. Erosion
3. Lesion
4. Tumor
5. Parasite
6. Fungus
7. Mortality
8. Young of Year
9. Other

*DEQ Code: ___ Species: _____ *DEQ Code: ___ Species: _____ *DEQ Code: ___ Species: _____

*Gp.	Length(mm)	Tag	Flag	*Gp.	Length(mm)	Tag	Flag	*Gp.	Length(mm)	Tag	Flag

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Appendix B. Summary of Results, Quality Assurance Summary, and Chain of Custody Forms from Brooks Rand Laboratory

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

December 7, 2006

Idaho Department of Environmental Quality
Attn.: Michael McIntyre
1410 N. Hilton Rd
Boise, ID 83706

RE: Brooks Rand Project: IDQ002; Tracking Number: 06BR1776
Client Project ID: River Monitoring

Dear Mr. McIntyre,

Twenty-one biota samples, a preparation blank and 3 processing blanks, were received by Brooks Rand Labs (BRL) on November 8, 2006. The samples arrived in a cooler with ice at a temperature of –8.0 °C. The requested analysis listed on the chain of custody (COC) form was total mercury (THg) for all samples and monomethyl mercury (MMHg) for three of the samples. Sample "068167" arrived with a cracked lid and a replacement lid was put on the sample upon receipt. The samples were received, stored, prepared and analyzed according to BRL standard operating procedures (SOPs) and EPA methods.

The preparation and processing blanks were treated as biota samples and were digested and analyzed with the associated fish tissue samples. All results have been blank corrected, as described in the applicable EPA methods and BRL SOPs. Please refer to the Quality Assurance Summaries for QA results.

The average of the four method blanks (MBs) analyzed in batch #06-1078 for THg was 1.38 ng/g, exceeding the primary acceptance criterion. However, all sample results in this batch were greater than 10 times larger than the highest MB (3.28 ng/g), satisfying the secondary acceptance criterion; any contamination evident in the MBs did not significantly contribute to the sample results. Analysis of all other QC samples in this batch met their respective acceptance criteria and no corrective action was required.

Samples "000679" (06BR1776-03) and "000666" (06BR1776-15) yielded MMHg results of 1190 ng/g and 36.4 ng/g, respectively. These values slightly exceed the THg results of 1110 ng/g and 34.6 ng/g. A comparison of the THg and MMHg results yielded relative percent differences (RPDs) of 7% and 5%, indicating that the differences between the results were statistically equivalent (RPD < 35%). These differences are most likely due to analytical variability; all THg in these samples is presumably in the MMHg form.

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Brooks Rand LLC
Project # IDQ002; Tracking #06BR1776

Sample results have been evaluated using detection limits that may have been adjusted to account for sample aliquot size; please refer to the Quality Assurance Summary for a list of the sample specific method detection limits (MDLs) and PQL. Results less than or equal to the MDL have been qualified "U" for non-detect and have been reported at the MDL. All QA criteria were met. No additional qualification of the data was required.

If you have any questions regarding this report, please feel free to contact us at any time.

Sincerely,

Amy Durdle
Project Coordinator
amy@brooksrand.com

Elizabeth Madonick
Project Manager
elizabeth@brooksrand.com

- ii -

Reported by

Brooks Rand LLC

Contact: Elizabeth Madonick

3958 6th Avenue NW
Seattle, WA 98107
Tel: 206-632-6206 Fax: 206-632-6017

Summary of Results for

Idaho Department of Environmental Quali

Contact: Michael McIntyre

1410 N Hilton
Boise ID 83706
Tel: 208-373-0570

Lab Project # IDQ002
Lab Tracking # 06BR1776

Contract C485
Client Project ID see COC

Sample/Sampling/Receiving Info

Idaho Department of Environmental Quality		*BRL*	
Sample Identification	**Sampling Date**	**Sample Number**	**Receiving Date**
000693	11/6/06	06BR1776 - 01	11/8/2006
000706	11/6/06	06BR1776 - 02	11/8/2006
000679	11/6/06	06BR1776 - 03	11/8/2006
000711	11/6/06	06BR1776 - 04	11/8/2006
000692	11/6/06	06BR1776 - 05	11/8/2006
000121	11/6/06	06BR1776 - 06	11/8/2006
000695	11/6/06	06BR1776 - 07	11/8/2006
000135	11/6/06	06BR1776 - 08	11/8/2006
000687	11/6/06	06BR1776 - 09	11/8/2006
000694	11/6/06	06BR1776 - 10	11/8/2006
000705	11/6/06	06BR1776 - 11	11/8/2006
000680	11/6/06	06BR1776 - 12	11/8/2006
000704	11/6/06	06BR1776 - 13	11/8/2006
000123	11/6/06	06BR1776 - 14	11/8/2006
000666	11/6/06	06BR1776 - 15	11/8/2006
000136	11/6/06	06BR1776 - 16	11/8/2006
000114	11/6/06	06BR1776 - 17	11/8/2006
000681	11/6/06	06BR1776 - 18	11/8/2006
000678	11/6/06	06BR1776 - 19	11/8/2006
000684	11/6/06	06BR1776 - 20	11/8/2006
000668	11/6/06	06BR1776 - 21	11/8/2006
000116	11/6/06	06BR1776 - 22	11/8/2006
000685	11/6/06	06BR1776 - 23	11/8/2006
038167	11/6/06	06BR1776 - 24	11/8/2006
000708	11/6/06	06BR1776 - 25	11/8/2006

Wednesday, December 06, 2006

Elizabeth Madonick
Project Manager

Reported by

Brooks Rand LLC

Contact: Elizabeth Madonick

3958 6th Avenue NW
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Tel: 206-632-6206 Fax: 206-632-6017

Summary of Results for

Idaho Department of Environmental Quali

Contact: Michael McIntyre

1410 N Hilton
Boise ID 83706
Tel: 208-373-0570

Lab Project # IDQ002
Lab Tracking # 06BR1776

Contract C485
Client Project ID see COC

Hg

Sample Identification	BRL Number	Total or Dissolved	Preparation date	Analysis date	Batch #	Result	Units	Qualifier (Q)
000693	06BR1776 - 01	T	11/30/2006	12/4/2006	06-1080	216.000	ng/g	
000706	06BR1776 - 02	T	11/30/2006	12/4/2006	06-1080	146.000	ng/g	
000679	06BR1776 - 03	T	11/28/2006	11/29/2006	06-1078	1,110.000	ng/g	
000711	06BR1776 - 04	T	11/30/2006	12/4/2006	06-1080	234.000	ng/g	
000692	06BR1776 - 05	T	11/30/2006	12/4/2006	06-1080	148.000	ng/g	
000121	06BR1776 - 06	T	11/28/2006	11/29/2006	06-1078	80.300	ng/g	
000695	06BR1776 - 07	T	11/30/2006	12/4/2006	06-1080	92.400	ng/g	
000135	06BR1776 - 08	T	11/30/2006	12/4/2006	06-1080	133.000	ng/g	
000687	06BR1776 - 09	T	11/30/2006	12/4/2006	06-1080	302.000	ng/g	
000694	06BR1776 - 10	T	11/30/2006	12/4/2006	06-1080	204.000	ng/g	
000705	06BR1776 - 11	T	11/30/2006	12/4/2006	06-1080	50.200	ng/g	
000680	06BR1776 - 12	T	11/30/2006	12/4/2006	06-1080	218.000	ng/g	
000704	06BR1776 - 13	T	11/30/2006	12/4/2006	06-1080	97.700	ng/g	
000123	06BR1776 - 14	T	11/30/2006	12/4/2006	06-1080	35.100	ng/g	
000666	06BR1776 - 15	T	11/28/2006	11/29/2006	06-1078	34.600	ng/g	
000136	06BR1776 - 16	T	11/30/2006	12/4/2006	06-1080	51.500	ng/g	
000114	06BR1776 - 17	T	11/30/2006	12/4/2006	06-1080	221.000	ng/g	
000681	06BR1776 - 18	T	11/30/2006	12/4/2006	06-1080	317.000	ng/g	
000678	06BR1776 - 19	T	11/30/2006	12/4/2006	06-1080	102.000	ng/g	
000684	06BR1776 - 20	T	11/30/2006	12/4/2006	06-1080	247.000	ng/g	
000668	06BR1776 - 21	T	11/30/2006	12/4/2006	06-1080	67.500	ng/g	
000116	06BR1776 - 22	T	11/30/2006	12/4/2006	06-1080	0.040	ng/L	U
000685	06BR1776 - 23	T	11/30/2006	12/4/2006	06-1080	0.040	ng/L	U
038167	06BR1776 - 24	T	11/30/2006	12/4/2006	06-1080	0.040	ng/L	U
000708	06BR1776 - 25	T	11/30/2006	12/4/2006	06-1080	0.040	ng/L	U

Thursday, December 07, 2006

Elizabeth Madonick
Project Manager

Reported by

Brooks Rand LLC

Contact: Elizabeth Madonick

3958 6th Avenue NW
Seattle, WA 98107
Tel: 206-632-6206 Fax: 206-632-6017

Summary of Results for

Idaho Department of Environmental Quali

Contact: Michael McIntyre

1410 N Hilton
Boise ID 83706
Tel: 208-373-0570

Lab Project # IDQ002
Lab Tracking # 06BR1776

Contract C485
Client Project ID see COC

Hg(Monomethyl)

Sample Identification	BRL Number	Total or Dissolved	Preparation date	Analysis date	Batch #	Result	Units	Qualifier (Q)
000679	06BR1776 - 03	T	11/28/2006	12/5/2006	06-1079	1,190.000	ng/g	
000121	06BR1776 - 06	T	11/28/2006	12/5/2006	06-1079	77.900	ng/g	
000666	06BR1776 - 15	T	11/28/2006	12/5/2006	06-1079	36.400	ng/g	

Wednesday, December 06, 2006

Elizabeth Madonick
Project Manager

QUALITY ASSURANCE SUMMARY

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

3958 6th Avenue NW
Seattle, WA 98107
Voice: 206-632-6206
Fax: 206-632-6017

Batch #: **06-1078** ***Method #:*** **BR-0002**

Analyte: **Hg** ***Matrix:*** **Biota**

BIAS *Criterion: Recovery = 85-115%* **Independent Calibration Verification (ICV)**			
QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
ICV*	16.01	15.97	100%

* Preparation of the CRM NIST 1641d.

BIAS *Criterion: Recovery = 75-125%* **Certified Reference Material (CRM)**			
CRM ID	*Certified Value ng/g*	*Measured Value ng/g*	*Recovery %*
DORM-2*	4640	4537	98%

*Dogfish muscle

BIAS *Criterion: Recovery = 77-123%* **Continuing Calibration Verification (CCV)**			
QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
CCV1	5.00	5.02	100%
CCV2	5.00	4.94	99%
CCV3	5.00	4.99	100%

BIAS *Criteria: Recovery = 70-130%, RPD < 30%* **Matrix Spikes/Matrix Spike Duplicates (MS/MSD)**								
		Matrix Spike			*Matrix Spike Duplicate*			
Sample ID	*Sample Value ng/g (wet)*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MS Recovery %*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MSD Recovery %*	*Duplicate RPD*
06BR1776-03	1110	996.0	2141	103%	996.0	2103	100%	2%

PRECISION *Criterion: RPD < 30% if < 5x PQL* **Method Duplicate Analysis (MD)**				
Sample ID	*Sample Value ng/g (wet)*	*Duplicate Value ng/g (wet)*	*Average Value ng/g (wet)*	*Duplicate RPD*
06BR1776-03	1110	1087	1099	2%

Method Blanks (MB) *Criteria: Avg. <2x MDL, Std Dev < 2/3 MDL or sample results > 10x highest MB*					
MB1 ng/g	*MB2 ng/g*	*MB3 ng/g*	*MB4 ng/g*	*Average ng/g*	*StDev ng/g*
0.29	0.57	1.39	3.28	1.38	1.35 **

**High MBs. All sample results are greater than 10x as larger as the highest MB, satisfying the secondary acceptance criteiron.

Sample Specific Reporting Limits		
Sample ID	*MDL ng/g*	*PQL ng/g*
06BR1776-03	16	40
06BR1776-06	2	4
06BR1776-15	0.8	1.9

Method Detection Limits	
MDL ng/g	*PQL ng/g*
0.04	0.10

Joseph Fraser 11/30/06
Quality Assurance Officer

Elizabeth Melnick 12/7/06
Project Manager

11/30/2006 *Page 1 of 1*

QUALITY ASSURANCE SUMMARY

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

3958 6th Avenue NW
Seattle, WA 98107
Voice: 206-632-6206
Fax: 206-632-6017

Batch #: **06-1080** ***Method #:*** **BR-0002**

Analyte: **Hg** ***Matrix:*** **Biota**

BIAS *Criterion: Recovery = 85-115%*
Independent Calibration Verification (ICV)

QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
ICV*	16.01	15.48	97%

* Preparation of the CRM NIST 1641d.

BIAS *Criterion: Recovery = 75-125%*
Certified Reference Material (CRM)

CRM ID	*Certified Value ng/g*	*Measured Value ng/g*	*Recovery %*
DORM-2*	4640	4010	86%
DORM-2*	4640	4422	95%

*Dogfish muscle

BIAS *Criterion: Recovery = 77-123%*
Continuing Calibration Verification (CCV)

QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
CCV1	5.00	5.03	101%
CCV2	5.00	5.19	104%
CCV3	5.00	5.01	100%

BIAS *Criteria: Recovery = 70-130%, RPD < 30%*
Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

		Matrix Spike			*Matrix Spike Duplicate*			
Sample ID	*Sample Value ng/g (wet)*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MS Recovery %*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MSD Recovery %*	*Duplicate RPD*
06BR1776-02	145.7	553.0	712.9	103%	554.0	647.0	90%	10%
06BR1776-18	317.5	569.3	853.0	94%	560.2	875.3	100%	3%

PRECISION *Criterion: RPD < 30% if < 5x PQL*
Method Duplicate Analysis (MD)

Sample ID	*Sample Value ng/g (wet)*	*Duplicate Value ng/g (wet)*	*Average Value ng/g (wet)*	*Duplicate RPD*
06BR1776-02	145.7	147.3	146.5	1%
06BR1776-18	317.5	333.3	325.4	5%

Method Blanks (MB) *Criteria: Avg. <2x MDL, Std Dev < 2/3 MDL or sample results > 10x highest MB*

MB1 ng/g	*MB2 ng/g*	*MB3 ng/g*	*MB4 ng/g*	*Average ng/g*	*StDev ng/g*
0.02	0.06	0.02	0.03	0.03	0.02

Method Detection Limits

MDL ng/g	*PQL ng/g*
0.04	0.10

Sample Specific Reporting Limits

Sample ID	*MDL ng/g*	*PQL ng/g*
06BR1776-01	7.9	19.7
06BR1776-02	7.7	19.3
06BR1776-04	7.5	18.7
06BR1776-05	8.0	20.0
06BR1776-07	7.8	19.6
06BR1776-08	8.4	20.9
06BR1776-09	7.7	19.3
06BR1776-10	8.3	20.8
06BR1776-11	7.3	18.3

Sample Specific Reporting Limits

Sample ID	*MDL ng/g*	*PQL ng/g*
06BR1776-12	7.6	19.0
06BR1776-13	7.1	17.7
06BR1776-14	0.4	1.0
06BR1776-16	7.0	17.6
06BR1776-17	8.4	21.1
06BR1776-18	7.5	18.7
06BR1776-19	7.6	18.9
06BR1776-20	7.8	19.4
06BR1776-21	8.0	19.9

Tony Fryd 12/6/06
Quality Assurance Officer

Elizabeth Mcdonald 12/7/06
Project Manager

12/6/2006 *Page 1 of 1*

QUALITY ASSURANCE SUMMARY

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

3958 6th Avenue NW
Seattle, WA 98107
Voice: 206-632-6206
Fax: 206-632-6017

Batch #: **06-1079**

Method #: **BR-0011**

Analyte: **MMHg**

Matrix: **Biota**

BIAS *Criteria: Recovery = 80-120%*
Independent Calibration Verification (ICV)

QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
ICV*	2.84	2.48	87%

* The ICV standard is prepared from an aliquot of the CRM DORM-2.

BIAS *Criteria: Recovery = 65-135%*
Certified Reference Material (CRM)

CRM ID	*Certified Value ng/g*	*Measured Value ng/g*	*Recovery %*
DORM-2**	4470	4901	110%

** Dogfish muscle

BIAS *Criteria: Recovery = 67-133%*
Continuing Calibration Verification (CCV)

QCS ID	*Certified Value ng/L*	*Measured Value ng/L*	*Recovery %*
CCV1	0.250	0.230	92%
CCV2	0.250	0.227	91%

BIAS *Criteria: Recovery = 65-135%, RPD < 35%*
Matrix Spikes/Matrix Spike Duplicates (MS/MSD)

		Matrix Spike			*Matrix Spike Duplicate*			
Sample ID	*Sample Value ng/g (wet)*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MS Recovery %*	*Spiked Value ng/g (wet)*	*Measured Value ng/g (wet)*	*MSD Recovery %*	*Duplicate RPD*
06BR1776-06	77.9	514.9	628.9	107%	508.1	578.9	99%	8%

PRECISION *Criteria: RPD<35% or results +/- 2xPQL if < 5xPQL*
Method Duplicate Analysis (MD)

Sample ID	*Sample Value ng/g (wet)*	*Duplicate Value ng/g (wet)*	*Average Value ng/g (wet)*	*RPD*
06BR1776-06	77.9	77.2	77.6	1%

Method Blanks (MB) *Criteria: Avg. <2x MDL, Std Dev < 2/3 MDL*

MB1 ng/g	*MB2 ng/g*	*MB3 ng/g*	*MB4 ng/g*	*Average ng/g*	*StDev ng/g*
0.0	0.0	0.2	0.1	0.1	0.1

Sample Specific Detection Limits

Sample ID	*MDL ng/g*	*PQL ng/g*
06BR1776-03	9.5	28.5
06BR1776-06	1.1	3.2

Method Detection Limits

MDL ng/g	*PQL ng/g*
1.0	3.0

Tamy Fiegel 12/6/06
Quality Assurance Officer

Elizabeth Medwick 12/7/06
Project Manager

12/6/2006

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BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

3958 6th Avenue NW
Seattle, WA 98107
www.brooksrand.com

Phone: 206-632-6206
Fax: 206-632-6017
Email: bri@brooksrand.com

Sample Receiving Log

Tracking # **06BR1776**

Customer: Idaho Department of Environmental Quality
Contact: Michael McIntyre
Project Ref. #: IDQ002
BRL Project Manager: Elizabeth Madonick

QA Level: Standard
Sample Condition: Intact
Shipping container intact?: Yes
Shipping container type: Cooler
Shipping container temp: -8 C
Shipping container coolant: Dry ice
Sample Turnaround Time:
Contract Turnaround Time: 28 days

Due Date: 12/6/2006
Receiving Date: 11/8/2006
Receiving Time: 10:00 AM
Logged-in by: Katie Jahanmir
Log-in Date: 11/8/2006
Log-in Time: 11:40 AM
Airbill present?: Yes
Airbill #: 1ZR7V6900122387616
Courier: UPS
Custody seal present?: Yes
Custody seal intact?: Yes
COC Present?: Yes
COC/Sample tag agree?: Yes
COC Number: N/A
Subcontract or PO Number: River Monitoring

Comments: Sample 038167 arrived with cracked lid. Lid was replaced upon receipt.

Lab ID:

01
Sample Tag #: 000693
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5
Comments: A076 Sucker
Analysis / Method: Hg EPA 1631, Appendix

02
Sample Tag #: 000706
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5
Comments: A060 Sucker
Analysis / Method: Hg EPA 1631, Appendix

03
Sample Tag #: 000679
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5
Comments: A008 NPM
Analysis / Method: Hg EPA 1631, Appendix

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Lab ID:

Analysis / Method: Hg(Monomethyl) EPA 1630 Mod.

04

Sample Tag #: 000711
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A082 Sucker

Analysis / Method: Hg EPA 1631, Appendix

05

Sample Tag #: 000692
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A023 Sucker

Analysis / Method: Hg EPA 1631, Appendix

06

Sample Tag #: 000121
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A013 O.Mukiss

Analysis / Method: Hg EPA 1631, Appendix
Analysis / Method: Hg(Monomethyl) EPA 1630 Mod.

07

Sample Tag #: 000695
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A075 MWF

Analysis / Method: Hg EPA 1631, Appendix

08

Sample Tag #: 000135
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A008 Sucker

Analysis / Method: Hg EPA 1631, Appendix

09

Sample Tag #: 000687
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A016 Sucker

Analysis / Method: Hg EPA 1631, Appendix

Page 2 of 5

Lab ID:

10

Sample Tag #: 000694
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A016 MWF

Analysis / Method: Hg EPA 1631, Appendix

11

Sample Tag #: 000705
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A072 MWF

Analysis / Method: Hg EPA 1631, Appendix

12

Sample Tag #: 000680
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A060 MWF

Analysis / Method: Hg EPA 1631, Appendix

13

Sample Tag #: 000704
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A076 MWF

Analysis / Method: Hg EPA 1631, Appendix

14

Sample Tag #: 000123
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A069 Sucker

Analysis / Method: Hg EPA 1631, Appendix

15

Sample Tag #: 000666
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A022 O.Mukiss

Analysis / Method: Hg EPA 1631, Appendix
Analysis / Method: Hg(Monomethyl) EPA 1630 Mod.

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Lab ID:

16

Sample Tag #: 000136
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A082 MWF

Analysis / Method: Hg EPA 1631, Appendix

17

Sample Tag #: 000114
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A079 Sucker

Analysis / Method: Hg EPA 1631, Appendix

18

Sample Tag #: 000681
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A081 Sucker

Analysis / Method: Hg EPA 1631, Appendix

19

Sample Tag #: 000678
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A059 MWF

Analysis / Method: Hg EPA 1631, Appendix

20

Sample Tag #: 000684
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A008 MWF

Analysis / Method: Hg EPA 1631, Appendix

21

Sample Tag #: 000668
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Fish
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: A056 MWF

Analysis / Method: Hg EPA 1631, Appendix

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Lab ID:

22

Sample Tag #: 000116
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Homog. Blank
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: Saupus Prep Blank

Analysis / Method: Hg EPA 1631, Appendix Do Not Spike

23

Sample Tag #: 000685
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Homog. Blank
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: Process Blank 1

Analysis / Method: Hg EPA 1631, Appendix Do Not Spike

24

Sample Tag #: 038167
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: Glass jar,
Size: 125-mL
Matrix/Sub-Matrix: Biota, Homog. Blank
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: Process Blank 2 Lab Split (Arrived with cracked lid)

Analysis / Method: Hg EPA 1631, Appendix Do Not Spike

25

Sample Tag #: 000708
Collection Date/Time: 11/6/06, 12:00:00 PM
ContainerType and Lot #: HDPE jar,
Size: 8 oz.
Matrix/Sub-Matrix: Biota, Homog. Blank
Preservation: none
Acid Lot#:
pH:
Filtered?: No
Sample Storage Location: Freezer #5

Comments: Process Blank 3 Final

Analysis / Method: Hg EPA 1631, Appendix Do Not Spike

11/9/06 updated
Sample Custodian signature Date

11/10/06
Reviewed By signature Date

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BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

Chain Of Custody Record

Page 1 of 3
White: LAB COPY
Yellow: CUSTOMER COPY

Client: IDAHO DEQ	COC receipt confirmation? (Y) N)	Ship to: **Brooks Rand LLC**
Contact: MIKE EDLUNDSON	If yes, by Fax / Email (circle one)	3958 6th Avenue NW
Address: 1410 N. HILTON BOISE, IDAHO 83706	Fax #:	Seattle, WA 98107
	Email: MICHAEL.EDLUNDSON@DEQ.IDAHO.GOV	Phone: 206-632-6206
	Sampler's name: MIKE EDLUNDSON	Fax: 206-632-6017
Phone #: 208.373.0257	Client project ID: RIVER MONITORING	Email:samples@brooksrand.com
PO #:	BRL project ID: ID0002	www.brooksrand.com

	Sample ID	Collection		Miscellaneous				Field Preservation			Analyses required									Comments
		Date	Time	Sampler (initials)	Matrix type	# of containers	Sample field filtered (Y/N)	Unpreserved / ice only	HCl/HNO3/BrCl (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	Metals ICP-MS (specify)	As / Se species (specify)	% Solids:	Filtration	Other (specify)	Other (specify)	Other (specify)	
1	000693	11/6	12:00	ME	TISS						X									A076 SUCKER
2	000706	11/6	12:00	ME	TISS						X									A060 SUCKER
3	000679	11/6	12:00	ME	TISS						X	X								A008 NPM
4	000711	11/6	12:00	ME	TISS						X									A082 SUCKER
5	000692	11/6	12:00	ME	TISS						X									A023 SUCKER
6	000121	11/6	12:00	ME	TISS						X	X								A013 O. MYKISS
7	000695	11/6	12:00	ME	TISS						X									A075 MWF
8	000135	11/6	12:00	ME	TISS						X									A008 SUCKER
9	000687	11/6	12:00	ME	TISS						X									A016 SUCKER
10	000694	11/6	12:00	ME	TISS						X									A016 MWF

Relinquished by: ME EDLUNDSON	Date: 11/7/06	Time: 1706	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at BRL by: [signature]	Date: 11/8/06	Time: 10:00
Shipping carrier:	# of coolers:		BRL Tracking #:		

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

Chain Of Custody Record

Page 2 of 3
White: LAB COPY
Yellow: CUSTOMER COPY

Client: IDAHO	COC receipt confirmation? (Y) N)	Ship to: **Brooks Rand LLC**
Contact: MIKE EDMONDSON	If yes, by Fax / Email (circle one)	3958 6th Avenue NW
Address: 1410 N. WILTON BOISE, ID 83706	Fax #:	Seattle, WA 98107
	Email: MICHAEL.EDMONDSON@DEQ.IDAHO.GOV	Phone: 206-632-6206
	Sampler's name: MIKE EDMONDSON	Fax: 206-632-6017
Phone #: 208.373.7913	Client project ID: RIVER MONITORING	Email:samples@brooksrand.com
PO #:	BRL project ID: IN0002	www.brooksrand.com

	Sample ID	Collection		Miscellaneous				Field Preservation			Analyses required									Comments
		Date	Time	Sampler (initials)	Matrix type	# of containers	Sample field filtered (Y/N)	Unpreserved / ice only	HCl/HNO_3/BrCl (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	Metals ICP-MS (specify)	As / Se species (specify)	% Solids	Filtration	Other (specify)	Other (specify)	Other (specify)	
1	000705	11/6	12:00	ME	TISS	1		X			X									A072 MWF
2	000680	11/6	12:00	ME	TISS	1		X			X									A060 MWF
3	000704	11/6	12:00	ME	TISS	1		X			X									A076 MWF
4	000123	11/6	12:00	ME	TISS	1		X			X									A069 SUCKER
5	000666	11/6	12:00	ME	TISS	1		X			X	X								A077 OLIGOSS
6	000136	11/6	12:00	ME	TISS	1		X			X									A082 MWF
7	000114	11/6	12:00	ME	TISS	1		X			X									A079 SUCKER
8	000681	11/6	12:00	ME	TISS	1		X			X									A080 SUCKER
9	000678	11/6	12:00	ME	TISS	1		X			X									A059 MWF
10	000684	11/6	12:00	ME	TISS	1		X			X									A008 MWF

Relinquished by: M Edmondson	Date: 11/7/06	Time: 1700	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at BRL by: [signature]	Date: 11/8/06	Time: 10:00
Shipping carrier:	# of coolers:		BRL Tracking #:		

BROOKSRAND
TRACE METALS ANALYSIS & PRODUCTS

Chain Of Custody Record

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White: LAB COPY
Yellow: CUSTOMER COPY

Client: IDAHO DEQ	COC receipt confirmation? (Y) N)	Ship to: **Brooks Rand LLC**
Contact: MIKE EDMONDSON	If yes, by Fax / Email (circle one)	3958 6th Avenue NW
Address: 1410 N. HILTON BOISE, ID 83706	Fax #:	Seattle, WA 98107
	Email: MICHAEL.EDMONDSON@DEQ.IDAHO.GOV	Phone: 206-632-6206
	Sampler's name: MIKE EDMONDSON	Fax: 206-632-6017
Phone #:	Client project ID: RIVER MONITORING	Email:samples@brooksrand.com
PO #:	BRL project ID: ID 0002	www.brooksrand.com

	Sample ID	Collection		Miscellaneous				Field Preservation			Analyses required									Comments
		Date	Time	Sampler (initials)	Matrix type	# of containers	Sample field filtered (Y/N)	Unpreserved / ice only	HCl/HNO_3/BrCl (circle one)	Other (specify)	Total Hg, EPA 1631	Methyl Hg, EPA 1630	Metals ICP-MS (specify)	As / Se species (specify)	% Solids	Filtration	Other (specify)	Other (specify)	Other (specify)	
1	000668	11/6	12:00	ME	TISS			X			X									4056 MWF
2	000116	11/6	12:00	ME	W	1	N	X			X									SAMPLE PRIOR BLANK
3	000685	11/6	12:00	ME	W	1	N	X			X									PROCESS BLANK 1
4	038167	11/6	12:00	ME	W	1	N	X			X									PROCESS BLANK 2 LAB SPLIT
5	000708	11/6	12:00	ME	W	1	N	X			X									PROCESS BLANK 3 FINAL
6																				
7																				
8																				
9																				
10																				

Relinquished by: MEdmondson	Date: 11/7/06	Time: 1700	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at BRL by:	Date: 11/8/06	Time: 10:00
Shipping carrier:	# of coolers:		BRL Tracking #:		