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DOSE POTENTIAL FROM CONSUMPTION OF SELECT RADIONUCLIDES (Ra-226, Pb-210) AND METALS (Cd, Hg, Pb) IN CENTRAL FLORIDA PHOSPHATE MINERALIZED REGION FRESHWATER FISH PROTEIN

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Florida Institute of Phosphate Research

July 2002

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Florida Institute of Phosphate Research
1855 West Main Street
Bartow, Florida 33830
(863) 534-7160
Fax: (863) 534-7165
http://www.fipr.state.fl.us

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FINAL REPORT

Dart Morales
Principal Investigator

with

W. Emmett Bolch, Jr., Ph.D.,
Jorge de la Cruz, Ph.D., and Wesley Nall

GROVE SCIENTIFIC & ENGINEERING COMPANY
6140 Edgewater Drive, Suite F
Orlando, Florida 32810

Prepared for

FLORIDA INSTITUTE OF PHOSPHATE RESEARCH
1855 West Main Street
Bartow, Florida 33830 USA

Project Manager: Brian Birky, Ph.D.
FIPR Project Number: 00-05-060

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PERSPECTIVE

Brian K. Birky, Ph.D., Public Health Research Director

The Florida Institute of Phosphate Research (FIPR) established a framework to conduct research that will meet the needs of the people of Florida, which was published as *1998-2003 Strategic Research, Programmatic & Management Priorities*. Under the strategic research area of public health, the objective is to define the magnitude of public and occupational health aspects of radiation, hazardous or toxic materials, and air and water pollutants. One approach to meeting that objective is to conduct and sponsor studies of chemical and radiological contaminants in air, water and soil to determine if there are significant risks to public health for persons residing in phosphate regions.

Shortly after publication of the aforementioned document, my predecessor, Gordon Nifong, conducted a workshop to discuss potential research projects to address the research priorities. An attendee, Wesley Nall of the Polk County Health Department, suggested that further studies should be conducted on radionuclide and metals contents in fish from mining-impacted lakes with emphasis on consumable portions of popular varieties. The participants agreed that such research would be of significant interest. A proposal was subsequently submitted by Dart Morales of Grove Scientific & Engineering and Wesley Nall. W. Emmett Bolch, Ph.D., of the University of Florida provided additional expertise in radiological analysis. The Florida Fish and Wildlife Commission assisted in fish sampling as well as provision of local fish harvest data. This team offered a wealth of experience ideally suited to select the appropriate study lakes, harvest the fish of interest, analyze the edible fish flesh for the target metals and radionuclides, and interpret the sample results in terms of mining impact and ingestion consequences.

Mine pit lakes are popular angling locations in the phosphate region. Five species of fish were collected from mining-impacted and non-impacted lakes to compare levels of specific radionuclides (Ra-226 and Pb-210) and heavy metals (cadmium, lead and mercury) in the edible fish flesh. There was no statistical difference in radionuclides or metals between the fish flesh from impacted or non-impacted lakes except for mercury. Mercury was found to be higher in the natural non-impacted lakes, primarily driven by one lake. Readers interested specifically in mercury should note that the Florida Department of Environmental Protection (FDEP) uses a different method of analysis than the one used in this study. Specifically, the FDEP digests the fish flesh at a lower temperature to reduce volatilization of mercury. As a result, the mercury levels found in this study may be interpreted as a low estimate. The mercury contamination is not associated with the phosphate industry and is likely the result of atmospheric deposition from non-local and even global sources.

ABSTRACT

The purpose of this study was to determine if there was an elevated health risk due to ingestion of radionuclides (radium-226 and lead-210) or toxic metals (cadmium, lead, and mercury) in fish from lakes on previously mined lands in the central Florida phosphate region. The study lakes comprised four unreclaimed lakes, two reclaimed lakes, three natural lakes (control lakes), and one man-made reservoir. Largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), shellcracker (*Lepomis microlophus*), speckled perch (*Pomoxis nigromaculatus*), catfish (*Ictalurus sp.*), and tilapia (*Tilapia sp.*), were sampled.

Cadmium was observed sporadically and at low levels, and appears to be an insignificant contaminant for this area. Mean lead levels were generally an order of magnitude below the U. S. Fish and Wildlife 1984-1985 study observation of 0.110 μg/g. Only 20% of all samples exhibited measurable levels, and almost half of those were confined to two lakes with no difference between natural or impacted lakes. Mercury was found to be widely distributed above 0.005 μg/g. At 84% positive results, all lakes were affected by mercury to some degree. Natural lakes exhibited a higher trend for mercury than impacted lakes. Radionuclide data did not exhibit significant differences between natural or impacted lakes.

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- Sample preparation: Bruno Ferraro, Kevett Mickle, Jorge de la Cruz, Jodi Dittell and Jeanie Morales for their help in filleting, sealing and transporting almost one thousand fish.

- Report preparation: Mary Spirig, who typed many revisions. Bruno Ferraro for editorial assistance and the co-authors W. Emmett Bolch, Jorge de la Cruz and Wesley Nall.

Sincere appreciation is extended to Brian Birky, Ph.D., of the Florida Institute of Phosphate Research for his valuable assistance, guidance and patience to bring this work to publication.

Dart Morales
Principal Investigator

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EXECUTIVE SUMMARY

Central Florida's phosphate mineralized region contains many lakes both natural and artificially created as a result of phosphate mining activity. These lakes are a popular recreational and commercial fishery resource. Because local groundwaters often have elevated radium levels, and because mining activity exposes radium-containing strata, citizens in the area are highly concerned about the potential for radionuclides in local foods. Once mining is completed, many parcels of reclaimed land and artificial lakes are then utilized for agriculture and recreation. The Florida Institute of Phosphate Research (FIPR) has a long history of studying radionuclide contaminants in the local environment. The Institute has been extensively studying the risk of consumption of local agriculture and animal husbandry on previously mined and reclaimed land. FIPR has published a large data base of information on local land based foods: *Radioactivity in Foods Grown on Florida Phosphate Lands*, *Radioactivity in Foods Grown on Mined Phosphate Lands* and *Production of High-Value Cash Crops on Mixtures of Sand Tailings and Waste Phosphatic Clays* are some examples.

Following a series of local citizen inquires during the late 1990s, it was determined that, while much work had been performed on local lake water and sediments, studies targeting the specific issue of consumption of local freshwater finfish were very limited. In response to local concern, this study was funded with the purpose of targeting radionuclide (Ra-226, Pb-210) and toxic metals (cadmium, mercury and lead) risk from consumption of local freshwater finfish. Previous FIPR studies have noted mercury to be frequently associated with local lake sediments. *Water Quality in Central Florida's Phosphate Mineralized Region* is one example. Lead and cadmium were observed to a much lesser extent.

This study analyzed the edible portion of six fish species from ten lakes to help determine if bioaccumulation of radium-226, lead-210, mercury, cadmium and lead was occurring to the extent of posing an elevated risk to local consumers. A mix of ten natural and phosphate industry impacted lakes were sampled in order to determine if statistically significant risk was associated with the impacted lakes.

The study results indicate that bioaccumulations of these radionuclides, cadmium and lead in the edible portions of local freshwater fish do not pose a significant risk to local consumers. For most of the lakes, mercury was observed to present no significant risk to low or high level consumers.

One natural lake (Walk-in-Water) may pose a slight risk to above average consumers of *Micropterus* and *Lepomis.* Further study of these species from this lake is recommended. Specimens from natural lakes were observed to trend higher in mercury than artificial phosphatic lakes. No statistically significant trends for natural vs. artificial lakes were observed for lead or radionuclides. Cadmium was not observed at statistically significant levels or frequency. Top predators were observed to accumulate the highest mercury levels. Bottom and detrital feeders accumulated the most lead.

INTRODUCTION

BACKGROUND AND STATEMENT OF THE PROBLEM

During the late 1990s, public sector officials within Central Florida (Polk County Health Department--Radiological Health, Florida Fish and Wildlife Conservation Commission) and researchers (Florida Institute of Phosphate Research) observed an increasing public concern, both at public meetings and through individual inquiries, regarding the risk of health effects from heavy metals and radionuclides consumed from locally harvested freshwater fish. Local citizens are acutely aware of the role of radionuclides in local mining. Thus, while extensive research on local agricultural and range food products was performed in the 1980s and early 1990s, radionuclide consumption data for finfish from local sources was very limited.

During this period, ecological research in the Central Florida Phosphate mineralized region also intensified as regulators' requirements to reclaim previously mined lands lead to a need to quantify numerous ecological and chemical parameters. Concurrently, numerous other studies were focusing on the growing problem of toxic metals (particularly mercury) in both fresh and saltwater finfish from around the world. As interest grew in the subject of toxic metals contamination of consumable fish, local interest in local data also grew.

SPECIFIC GOALS OF THIS STUDY

- Collect trace metal and radionuclide concentration data from the edible portions of at least five species of legal sized locally consumed freshwater fish.
- Utilize the concentration data to calculate potential dose to consumers.
- Utilize potential dose data to evaluate potential public risk from edible fish flesh caught within the Central Florida mineralized region.
- Supplement the findings of other FIPR studies with respect to public health effects of consumption of metals and radionuclides from consumption of locally captured fish.
- Collect a large enough data set for statistical comparisons between species, natural lakes, mined reclaimed lakes, and mined unreclaimed lakes.

LITERATURE REVIEW

One of the earliest studies on the subject of radionuclides in finfish from the study area was *Radium-226 in Central Florida Aquatic Organisms* by Upchurch and others, from the University of South Florida Geology Department (Upchurch 1981). Upchurch noted then in his literature search that there was a paucity of literature regarding radionuclides in freshwater indigenous species. He also noted most exposure studies

focused on artificial isotopes from the nuclear industry rather than on naturally occurring isotopes. The Upchurch study focused on the effects of radium-226 uptake on the local ecology. The study was not designed to evaluate human risk from consumption.

In 1985, FIPR Publication No. 03-018-029, *Ecological Considerations of Reclaimed Lakes in Central Florida's Phosphate Region* (Boody and others) was an extensive ecological study of sixteen lakes, natural and impacted. This study greatly expanded the radium-226 work of Upchurch (1981). However, with the exception of *Micropterus salmoides*, most of the fish species observed were of less than 5 samples per lake. Both studies observed radium bioaccumulation but no biomagnification in fish. With the exception of *Micropterus* in Boody and others (1985) both studies suffered from low sample numbers (average < 5) per species. Neither study looked at toxic metal accumulation in fish flesh.

Although a few studies looked at accumulations in local birds and snails (O'Meara and others 1986, Stabin 1983) no further studies of the specific issue of radionuclides in Central Florida freshwater finfish appear until August of 2000, one month after the funding approval for this study. In August 2000, the Southwest Florida Water Management District published *Human Health Risk Assessment and Preliminary Ecological Evolution Regarding Potential Exposure to Radium-226 in Several Central Florida Lake Ecosystems*. This study evolved from two previous studies (SWFMD 1999) on Lakes Dosson, Halfmoon, and Round designed to study the effect of augmentation of Round Lake with groundwater. Again, this study suffered from low sample numbers for fish although it did specifically target risk assessment from consumption. The study found detectable radium-226 only in the lake chubsucker, which is not considered a popular food fish. Mussels and snails were also tested with the mussels observed to have a potential for elevated risk of exposure if consumed. The conclusion was tentative because rates of mussel consumption by humans are unknown.

The Environmental Behaviour of Radium, Vol. 1 (1990) by the International Atomic Energy Agency, Vienna, includes an article titled "Radium Uptake by Freshwater Fish" by J. Justyn and B. Havlik. This is a succinct treatment of radium uptake; however, none of the species tested are local. *Radiation Effects on Aquatic Organisms*, Nobuo Egami, ed., University Park Press, contains an article titled "Effect of Sediment-bound Radionuclides on Marine Organisms" (Koyanagi 1980) which details an interesting experiment whereby gelatin capsules containing quantified radionuclide levels were fed to *Kareius bicoloratus*, a flounder, to study uptake and excretion of various isotopes.

FIPR has published studies on radionuclides in foods from phosphate-mineralized lands. Notably, *Radioactivity in Foods Grown in Florida Phosphate Lands* (Guidry and others 1986) and *Radioactivity in Foods Grown on Mined Phosphate Lands* (Guidry and others 1990) have greatly expanded our knowledge of radionuclide consumption potentials for local citizens. However, neither of these studies reviews consumable fish. Thus this current study is a significant data base contribution for local foods.

Published information on toxic metals in fish flesh is extensive. Metals toxicity has been a problem for mankind for millennia. A well-known example being lead contamination from lead plumbing and ceramic glazes dating back to the Roman Empire. Mercury contamination was a problem in the days of Egyptian mummification. In modern times the term "Mad as a Hatter" derived from the recognition of mercury poisoning in workers manufacturing hats in the Industrial Age.

In modern times, industrial pollution, lead based motor fuels, power generation and industrial manufacturing have all contributed to a global concern with lead and mercury contamination, and to a much lesser extent cadmium contamination. The issue of mercury contamination has become one of global concern as mercury (as reactive gaseous mercury) can travel thousands of miles from its source via atmospheric transport. While a cursory literature yields a tremendous body of research, data for the Central Florida phosphate mineralized region is the major concern for the local population.

FIPR has funded several studies that have collected significant data on local lake sediment and water column metals. Boody and others (1985) and its follow up study, FIPR Publication No. 03-046-052, *Water Quality in Central Florida's Phosphate Mineralized Region* (1987), quantified cadmium, lead and mercury levels in sediments and waters of sixteen lakes, four of which are also the focus of this study. Mercury was found in the water column and sediments of all the study lakes; cadmium and lead were observed to a much lesser extent.

METHODOLOGY

SAMPLING AND SAMPLE HANDLING METHODOLOGY

The overwhelming majority of sampling employed electroshock methods. The Florida Fish and Wildlife Conservation Commission provided a vessel, electroshock equipment, and manpower to collect the samples. Gill nets, cast nets and hook and line were also utilized. Captured fish were immediately placed into iced coolers and kept iced until prepared for final shipment to the test laboratories. Not all species were available at the lakes. Speckled perch (*Pomoxis nigromaculatus*) was particularly difficult to obtain.

Due to the small size of the panfish, bluegill and speckled perch (*Lepomis sp*. and *Pomoxis nigromaculatus*), twice as many specimens were collected so that a whole fish could be used for each analyte group (metals, radionuclides). Bass, catfish, and tilapia (*Micropterus*, *Ictalurus* and *Tilapia*) were large enough to subsample for metals with the majority of sample going to radionuclide analysis. All the samples, except for gill netted specimens, primarily catfish (*Ictalurus*) from Lake Manatee and a few speckled perch (*Pomoxis*) and catfish (*Ictalurus*) from Floral Lake, were prepared the day of capture.

Each fish was filleted on a fresh sheet of plastic coated freezer wrapping paper. The handlers wore a new pair of powder-free disposable latex gloves for each specimen and the stainless steel fillet knife was cleaned between specimens. Larger fish were filleted and a small (10 grams) aliquot was removed for metals analysis. Samples for radioactivity were weighed on a triple beam scale and then evenly distributed in 500 ml Marinelli beakers that were then immediately sealed with plastic tape. The identification code, date of sample, and net weight were written directly on the beaker. Metals samples were placed in new resealable disposable plastic bags with the identification code and date of sampling written directly on the bags.

The panfish specimens too small to fillet (approximately 80%) were scaled, finned, beheaded and butterflied. Thus, most of the panfish did include some bone material. This was not considered an undesirable positive bias for these fish since many people enjoy deep-frying and eating these fish whole. The small bones fry crunchy and are fully edible.

The prepared samples were placed in iced coolers and transported to the radiological laboratory the following day. Metals samples were occasionally held frozen prior to transport of a batch set. Sample identification integrity was assured through the use of descriptive identifier codes and chain-of-custody documentation. Sample identification consisted of a two-letter lake code, followed by a two-letter species code and a two-digit discrete sample code. As an example, ARBG03 would be a bluegill from Lake Arietta, sample number three. The lake and fish codes are summarized in Tables 1 and 2.

Table 1. Lake Codes.

Lake	Code	Location		
		County	Latitude/ Longitude	Township/ Range
Arietta	AR	Polk	N28 06.17 W81 48.28	T 27S R 25E
Dover Park	DP	Hillsborough	N27 59.246 W82 14.053	T 29S R 21 E
Floral Lake	FL	Polk	N27 52.377 W81 51.002	T 27S R 24E
Hunter	HU	Polk	N29 01.97 W81 58.01	T 28S R 23E
IMC Ft. Green #845	IM	Hardee	N27 38.010 W81 59.002	T 33S R 23E
Manatee	MA	Manatee	N27 29.05 W82 20.28	T 34S R 20E
Medard Park Reservoir	MP	Hillsborough	N27 54.99 W82 09.66	T 29S R 21,22E
Saddle Creek	SC	Polk	N28 02.925 W81 52.945	T 28S R 24E
Tenoroc Lake 5	TN	Polk	N28 06.208 W81 51.234	T 27 S R 24E
Walk-in-Water	WW	Polk	N27 49.069 W81 24.497	T 31S R 29E

Table 2. Fish Codes.

Common Name(s)	Scientific Name(s)	Code
Bass	*Micropterus salmoides*	BS
Bluegill	*Lepomis macrochirus*	BG
Catfish (Channel catfish, white catfish)	*Ictalurus punctatus* *Ictalurus catus*	CF
Shellcracker (Redear Sunfish)	*Lepomis microlophus*	SC
Speckled Perch (Black Crappie)	*Pomoxis nigromaculatus*	SP
Tilapia	*Tilapia aurea*	TH

THE STUDY AREA

Ten lakes in a four county area were observed for this study (Figure 1). Since the primary purpose of the study was to determine potential risk by human consumption of popular fish, efforts were concentrated to locate lakes that:

(a) were generally accessible to the public,
(b) had been previously studied for metals and/or radionuclides, and
(c) were likely to contain the fisheries of interest.

Of the ten lakes selected, four (Lakes Arietta, Hunter, Manatee and Walk-in-Water) are considered "control" lakes. These are either natural or impoundments with no recent (< 25 years) history of mining in a mix of rural and urban settings. The remaining six lakes are a mix of mined reclaimed or unreclaimed lakes in rural and urban settings. These were considered to be "impacted lakes."

Figure 1. The Study Area.

LAKE DESCRIPTIONS

- Floral Lakes. Impacted, unreclaimed, urban. This phosphate lake is part of a private residential community. Residents fish for recreation. The homeowners' association may allow commercial netting of tilapia. The Florida Fish and Wildlife Conservation Commission has no data on recreational or commercial fish harvest for this lake.

- IMC Fort Green #845. Impacted, reclaimed, rural. This newly reclaimed lake will be opened to public fishing during 2001-2002. Current public use and harvest data is non-existent. The current identifier was used for this study; however, when the lake opens for public use it will be known as "Southlake" and will be part of the newly formed Hardee County Park. This study presented a unique opportunity to test consumable fish from a modern reclaimed lake prior to open public use.

- Lake Arietta. Natural, rural (although most of the shoreline is developed with single family homes). This lake has very good water quality and no public access. Residents fish for recreation. Commercial fishing probably does not occur. FWC has no data on fish harvest for this lake. This lake has been featured in previous FIPR studies for metals and/or radionuclides.

- Lake Hunter. Natural, urban. Public recreational and commercial fishing is high on this hyper-eutrophic lake. FWC does not have recreational harvest data or commercial cast net harvest data for this lake. Limited commercial fishing with regulated seines yields about 1500 pounds of tilapia and catfish per year. This lake has been featured in previous FIPR studies.

- Manatee Reservoir. Unmined, man-made impoundment within the Manatee River watershed. The reservoir is developed with park facilities and public recreational fishing is high. Commercial fishing is very limited for catfish. FFC has no use or harvest data for this lake. This lake has been featured in previous FIPR studies.

- Saddle Creek. Impacted, unreclaimed. Saddle creek is heavily used for recreational fishery. This highly convoluted lake features many deep pockets, islands and features a level controlled discharge to Saddle Creek. FFC use and harvest data is available for this lake.

- Medard Park. Impacted, partially reclaimed. Medard Park is an impoundment with a level controlled flow through structure. The lake has a large open central portion with various embayments. It has a well-developed park and boating facility. Besides having a popular recreational facility, the lake has a well-developed commercial cast net fishery for tilapia. This lake

has been featured in previous FIPR studies. FFC use and harvest data is available for this lake.

- Dover Park. Impacted, unreclaimed. This small crescent shaped lake has been developed into a county park with picnic areas and ball fields. The lake is a popular destination for school groups. While not heavily fished, it has been often used for shoreline fishing trips by youth groups because of the excellent panfish fishery, which has resulted from the installation of fish feeding stations. FFC use and harvest data is available for this lake.

- Walk-in-Water. Unmined, natural. Also known as Lake Weohyakapka, this roughly circular lake features a shoreline relatively free from development. The lake has several vacation resorts, a public access ramp, and borders a wildlife management area. The lake is particularly popular for its bass fishery. FFC use and harvest data is available for this lake.

- Tenoroc Lake #5. Impacted, unreclaimed, rural. This lake is part of the Tenoroc Park complex of lakes and hunting areas. The park is actively managed by the Florida Fish and Wildlife Conservation Commission as a limited access fishery. While there is a regulated commercial tilapia harvest, Lake #5 is excluded and is managed as a panfish fishery. FFC use and harvest data is available for this lake.

ANGLER USE DATA

The Florida Fish and Wildlife Conservation Commission collects angler use data on five of the ten study lakes. The following estimated angler use and fish harvest information for the study lakes was provided by the FWC. A quick examination of the data demonstrates that fisheries are of significant interest in the west Central Florida lakes. While this study adhered to minimum legal size requirements for all sampled fish, slot limits for bass were waived in order to collect larger (hence older) specimens. Tables 3-7 summarize the use data available at the time of the study.

Table 3. Estimated Angler Use and Fish Harvest from Saddle Creek Park (Data from 1991).

Species	Fishing Trips Per Year	Fish Harvested Per Year	Fish Per Trip
Black crappie	800	3,000	3.8
Bluegill	8,000	67,830	8.5
Catfish	2,422	6,783	2.8
Largemouth bass	10,000	2,584 [1]	0.3
Redear sunfish	8,000	67,830	8.5
Tilapia	No commercial harvest is allowed and recreational harvest		

[1] Bass between 14 and 20 inches could not be harvested during the data period. Current regulation prohibits harvest of bass between 15 and 24 inches.

Table 4. Estimated Angler Use and Fish Harvest from Medard Park (Data from 1999-2000).

Species	Fishing Trips Per Year	Fish Harvested Per Year	Fish Per Trip
Black crappie	11,781	11,862	1.0
Bluegill	3,250	5,525	1.7
Catfish	17,062	32,500	1.9
Largemouth bass	7,312	650 [1]	0.1
Redear sunfish	223	845	3.8
Tilapia	A commercial harvest is newly established. Harvest data not yet available.		

[1] Bass harvest is currently regulated under a slot limit where bass between 15 and 24 inches cannot be kept.

Table 5. Estimated Angler Use and Fish Harvest from Walk-in-Water (Weohyakapka) (Data from 1999-2000).

Species	Fishing Trips Per Year	Fish Harvested Per Year	Fish Per Trip
Black crappie	11,700	23,400	2.0
Bluegill	1,400	6,620	4.7
Catfish	Low population levels preclude commercial and recreational fisheries.		
Largemouth bass	43,550	19,651 [1]	0.5
Redear sunfish	1,400	6,620	4.7
Tilapia	Low population levels preclude commercial and recreational fisheries.		

[1] These data reflect harvest under the statewide bass regulation of a 14-inch minimum size limit. Current regulation prohibits harvest of bass between 15 and 24 inches.

Table 6. Estimated Angler Use and Fish Harvest from Dover Park (Data from 1993).

Species	Fishing Trips Per Year	Fish Harvested Per Year	Fish Per Trip
Black crappie	Low population levels limit recreational harvest.		
Bluegill	4,000	49,271	12.3
Catfish	6,080	12,563	2.1
Largemouth bass	1,500	0.0 [1]	0.0 [1]
Redear sunfish	4,000	49,271	12.3
Tilapia	Low recreational harvest and commercial fishing is not allowed.		

[1] Bass harvest is not allowed.

Table 7. Estimated Angler Use and Fish Harvest from Tenoroc Lake 5 (Data from 1999).

Species	Fishing Trips Per Year	Fish Harvested Per Year	Fish Per Trip
Black crappie	739	1,951	2.6
Bluegill	650	8,996	13.8
Catfish	57	159 [1]	2.8 [1]
Largemouth bass	1,525	250	0.2
Redear sunfish	Data not available.		
Tilapia	Regulated commercial fishery harvested 28,000 pounds from several lakes exclusive of Lake 5.		

[1] Bass harvest is limited under a maximum size limit of 15 inches (bass < 15 inches may be kept) with a bag limit of two fish.

METALS ANALYSIS METHODOLOGY

Sample analysis of fish for cadmium, lead and mercury was performed by Midwest Research Institute's (MRI) Florida Division at Palm Bay, Florida. MRI operates under a formal Quality Assurance system and is certified by the Florida Department of Environmental Protection (Comprehensive Quality Assurance Plan # 990096) and the Florida Department of Health (Environmental Certification #E73450, Safe Drinking Water Certification #73407) to perform these analyses.

SAMPLE PREPARATION

Fish tissue was digested using USEPA Method 200.11 (EPA 1991). This preparation uses a strong base, tetramethylammonium hydroxide (TMAH), to solubilize the tissues overnight at 60^{o} C. The following day nitric acid addition and digestion at 100^{o} C is performed to complete the process and provide an acidic digest for analysis. These digests are diluted to appropriate volume prior to analysis.

SAMPLE ANALYSIS

Elemental analysis for cadmium and lead was performed by Inductively Coupled Plasma Mass Spectrometry (ICP/MS) and followed EPA Method 200.8 (EPA 1994). The ICP/MS used was a Perkin-Elmer Elan 5000, which was tuned and operated in compliance with the manufacturer's recommendations.

Mercury analysis was performed by cold vapor atomic adsorption following EPA Method 245.6 (Modified). The method modification consisted of using EPA Method 200.11 as the technique for the digestion of the tissue samples. This modification was validated by demonstration of appropriate recovery of mercury from standard reference materials. Mercury analysis was conducted on a Perkin-Elmer FIMS-100 dedicated mercury analyzer in accordance with the manufacturer's recommendations.

In each case, instruments were calibrated against a commercial standard (Inorganic Ventures, Lakewood, NJ) serial dilution to produce a multipoint calibration. The calibration was evaluated for linearity and then verified against a secondary commercial standard (Environmental Resource Associates, Arvada, CO). Sample analysis proceeded in batches with quality control samples including segmenting batches at 10% frequency.

QUALITY CONTROL

Routine quality control analyses were applied to assure data quality. Quality control samples included blanks, sample spikes, sample duplicates, continuing calibration

checks and the analysis of a standard reference materials: DORM-2, Dogfish Muscle Tissue (National Research Council of Canada, Ottawa, Ontario). Data collected from the various quality control samples indicated that data quality is acceptable.

While the USEPA method detection limits (MDLs) were utilized for analytical validation purposes, the laboratory also provided the instrumental detection limits (IDL), adjusted for matrix, for the project. The IDL was defined as the upper 3-sigma interval of the signal from the tissue matrix blanks. This gives a good estimation of the lower threshold where the data signal turns to noise. To maintain expenses at a reasonable level, extensive additional QA/QC to validate the lower limits were not feasible. Therefore, while reported, values below the MDL were qualified as follows: "M = value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project."

The spread between IDL and MDL is a narrow for cadmium and lead (0.018 μg/g vs. 0.022 μg/g and 0.007 μg/g vs. 0.013 μg/g respectively). The spread for mercury, however, is almost an order of magnitude (0.005 μg/g vs. 0.046 μg/g). Thus by using these qualified data we were able to achieve a much more detailed look into the distribution of mercury in fish from Florida waters. Seventeen mercury samples were qualified as follows "J = value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria." These over-range samples were not diluted and reanalyzed within the method specific hold time. These samples were re-run as a spiked sample study and showed acceptable precision and recovery despite the extended period beyond the accepted sample hold time. Because of the importance of detecting potentially elevated mercury levels we elected to utilize these qualified samples in the study. Fifteen of the seventeen samples were from one lake (Walk-in-Water), nine were bass and six were speckled perch. The remaining two samples were bass from Lake Manatee. While the contract laboratory expresses the highest confidence in the accuracy of these over-range results, they must be reported as qualified data.

RADIOACTIVITY ANALYSIS METHODOLOGY

SAMPLE PREPARATION

Most of the samples were filleted and sealed in 500 ml Marinelli beakers by the field crew on the day of sampling (shock system). These sealed samples (vinyl electrical tape used to seal lids to beakers) were marked with the date collected, a lake code, a species code and the net weight of the fish filets. The samples were then transported to the radiation laboratory in the Environmental Engineering Sciences Building at the University of Florida; and, depending on space were kept in a refrigerator, freezer, or iced coolers for the two weeks equilibrium build-up time. Samples were moved from freezer to refrigerator, as space became available.

For a few samples where sufficient Marinelli beakers were not available, the field crew sealed the fillet material in plastic sandwich bags. These were also marked with a lake code and a species code as well as the net weight. The sealed bags were kept frozen until a Marinelli beaker was available. At this time the bagged fish was transferred to a Marinelli and allowed to thaw. Thus the laboratory was able to preserve as much built-up equilibrium from these frozen samples as possible.

SAMPLE ANALYSIS

The EG&G Ortec Gamma Analysis program was used to analyze the gamma spectra produced by each sample. The program reported results of peak analysis for seven distinct peaks of interest: three short lived radon daughter peaks (295, 353, and 609 keV) that are reflective of the radon-222 in equilibrium with radium-226, the characteristic peak for Pb-210 at 46 keV, and the characteristic peak for Cs-137 at 662 keV. Once the standard and background runs were available, a spreadsheet calculation for these radionuclides with all appropriate efficiencies, time of counting, net weight, etc. was developed and used for the entire set. W. Emmett Bolch, Ph.D., of the University of Florida, Gainesville, performed all calculations.

QUALITY CONTROL

Counting was accomplished on one detector: a high-resolution high purity germanium (HPGe) crystal with a thin window in the upper portion. Thus, the well in the Marinelli and any material on that ledge had maximum access to the thin window of the HPGe crystal. Sample sizes were small (usually from 100 to 300 grams) in comparison to the maximum (about 500 grams) that the Marinelli would accept. It was therefore the practice in the laboratory to shake the Marinelli beaker to place a reasonable portion of the sample on top of the Marinelli well to insure maximum exposure to the detecting crystal. The standard used for calibration was the same sized Marinelli beaker filled with a known amount of New Brunswick certified uranium ore mixed with sugar (no gamma

emitters in sugar). This is slightly denser than the fish, but would err on the conservative side (higher activity in the fish) for the smaller samples. An empty Marinelli beaker was used for the baseline to subtract from the gross peak areas for specific radionuclides to obtain the net peaks. If the net peak was negative, then a lower limit of detection was reported.

The samples were counted for long periods of time in order to obtain a reasonable Minimum Detectable Concentration. Often samples were counted for 12 hours, but in order to finish the nearly 500 samples in a reasonable time frame, some were counted only two and one-half hours. All counting times for each sample were reported.

STATISTICAL ANALYSIS

METHODOLOGY

Microsoft Excel® spreadsheets were utilized to summarize the data and perform limited statistical analysis. Variability was controlled by sampling method; all samples were collected within a short time span, all collected by similar method, all of similar size (legal bag sizes), sample size was small (10 or less per species) as was the number of lakes (10 total). The Analysis of Variance (ANOVA) was utilized to test the normal distribution and evaluate the homogeneity of sample variance. Students T-test was used to compare the difference between pairs of samples. Two levels of significance were tested. Significant difference at $p = 0.99$ was utilized to provide maximum protection against concluding there were differences where none exist (error type I, where $p < 0.01$) and significant difference at $p = 0.95$ was utilized to prevent missing more subtle differences (error type II, where $p < 0.05$).

Data transformations were limited to assigning a value of zero to metals results less than the instrument detection capability and assigning a value of one-half the MDC for radionuclide negative counts (non-detects). Radionuclide data for thorium-234, potassium-40, and cesium-137 was collected but not analyzed within the scope of the study. The database results for the radionuclides, with sample weights, counts, count durations and equilibrium data, are available to interested researchers on a Microsoft Excel® or Corel Quattro Pro® spreadsheet. Metals data is available as a Microsoft Word® document. Interested researchers should contact the Florida Institute of Phosphate Research, 1855 West Main Street, Bartow, FL 33830, for copies of the complete results. Printed copies of the data are provided in the appendices.

RESULTS

A data matrix table was prepared for each analyte. After testing all possible pairs utilizing ANOVA and Students T-test, statigraphs were prepared ranking the lakes and species comparisons. The rankings presented utilize the qualified instrument detection limit data. Statigraphs were prepared at the method detection limit (MDL) and instrument detection limit (IDL) and the two were compared. The IDL was chosen for these analyses since it provided finer discrimination of low-level distinctions without changing the main conclusions. The following sections summarize the statigraph and summary statistics for each analyte.

Cadmium

Cadmium was found in only a few fish samples (8 out of 434) in two of the ten lakes. No significant differences were observed. Tables 8-15 summarize the observations.

Table 8. Cadmium Comparison Results.

Comparison	Statistical Significance
Bass from different lakes	No cadmium in bass from any lake.
Bluegill from different lakes	TN = all others No cadmium in bluegills from other lakes.
Catfish from different lakes	TN = AR No cadmium in catfish from other lakes.
Shellcracker from different lakes	No cadmium in shellcrackers from any lake.
Speckled perch from different lakes	TN = all others No cadmium in shellcrackers from any lake.
Tilapia from different lakes	AR = all others No cadmium in tilapia from other lakes.
Between fish species	No significant differences between positive species. No cadmium found in bass or shellcrackers.
Between lakes	AR = TN = all others No cadmium found in other lakes.
Lake type	Natural = impacted
Lake location	Rural = urban

No significant difference: = Significant at $p > 0.95$: $\underline{<}$ Significant at $p > 0.99$: $<$

Table 9. Metals Summary Statistics by Total Sample Size and by Lake: Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	436	BDL	0.102	0.001	0.008
Arietta	40	BDL	0.102	0.004	0.017
Dover Park	50	BDL	BDL	n/a	n/a
Floral Lake	41	BDL	BDL	n/a	n/a
Lake Hunter	42	BDL	BDL	n/a	n/a
IMC Ft. Green	51	BDL	BDL	n/a	n/a
Lake Manatee	32	BDL	BDL	n/a	n/a
Medard Reservoir	47	BDL	BDL	n/a	n/a
Saddle Creek	44	BDL	BDL	n/a	n/a
Tenoroc	49	BDL	0.101	0.004	0.016
Walk-in-Water	40	BDL	BDL	n/a	n/a
All Naturals	154	BDL	0.102	0.001	---
All Impacteds	282	BDL	0.101	<0.001	---

BDL = below project instrumental detection limit (0.018 μg/g)
n/a = not applicable

Table 10. Metals Summary Statistics by Species and by Species within Lake: Bass, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	BDL	BDL	n/a	n/a
Arietta	10	BDL	BDL	n/a	n/a
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	BDL	n/a	n/a
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	BDL	n/a	n/a
Medard Reservoir	10	BDL	BDL	n/a	n/a
Saddle Creek	10	BDL	BDL	n/a	n/a
Tenoroc	10	BDL	BDL	n/a	n/a
Walk-in-Water	10	BDL	BDL	n/a	n/a

Table 11. Metals Summary Statistics by Species and by Species within Lake: Bluegill, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	BDL	0.018M	<0.001	0.002
Arietta	10	BDL	BDL	n/a	n/a
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	BDL	n/a	n/a
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	BDL	n/a	n/a
Medard Reservoir	10	BDL	BDL	n/a	n/a
Saddle Creek	10	BDL	BDL	n/a	n/a
Tenoroc	10	BDL	0.018M	0.002	0.006
Walk-in-Water	10	BDL	BDL	n/a	n/a

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
BDL = below project instrumental detection limit (0.018 μg/g)
n/a = not applicable

Table 12. Metals Summary Statistics by Species and by Species within Lake: Catfish, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	75	BDL	0.102	0.004	0.017
Arietta	10	BDL	0.102	0.013	0.000
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	1	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	BDL	n/a	n/a
IMC Ft. Green	1	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	BDL	n/a	n/a
Medard Reservoir	10	BDL	BDL	n/a	n/a
Saddle Creek	4	BDL	BDL	n/a	n/a
Tenoroc	9	BDL	0.101	0.016	0.035
Walk-in-Water	10	BDL	BDL	n/a	n/a

Table 13. Metals Summary Statistics by Species and by Species within Lake: Shellcracker, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	20	BDL	BDL	n/a	n/a
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	n/s	n/a	n/a	n/a	n/a
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	n/s	n/a	n/a	n/a	n/a
Saddle Creek	n/s	n/a	n/a	n/a	n/a
Tenoroc	n/s	n/a	n/a	n/a	n/a
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable
BDL = below project instrumental detection limit (0.018 μg/g)

Table 14. Metals Summary Statistics by Species and by Species within Lake: Speckled Perch, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	59	BDL	0.029	0.001	0.005
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	n/s	n/a	n/a	n/a	n/a
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	2	BDL	BDL	n/a	n/a
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	7	BDL	BDL	n/a	n/a
Saddle Creek	10	BDL	BDL	n/a	n/a
Tenoroc	10	BDL	0.029	0.005	0.010
Walk-in-Water	10	BDL	BDL	n/a	n/a

Table 15. Metals Summary Statistics by Species and by Species within Lake: Tilapia, Cadmium.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	82	BDL	0.029	<0.001	0.003
Arietta	10	BDL	0.029	0.003	0.009
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	BDL	n/a	n/a
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	2	BDL	BDL	n/a	n/a
Medard Reservoir	10	BDL	BDL	n/a	n/a
Saddle Creek	10	BDL	BDL	n/a	n/a
Tenoroc	10	BDL	BDL	n/a	n/a
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable
BDL = below project instrumental detection limit (0.018 μg/g)

Lead

Lead was present in all tested fish species from all tested lakes. Bluegill, bass, shellcracker, and speckled perch did not exhibit significant differences between lakes. Catfish from TN and MR were higher than in other lakes. Tilapia from DP, HU and MR were higher than in other lakes. Catfish and tilapia exhibited significantly higher lead quantities (at $p > 0.95$) than the other species. Lakes FL and DP were significantly lower

(at $p > 0.99$) with MR significantly higher (at $p > 0.95$) than the other lakes. No significant differences were noted for natural vs. impacted or urban vs. rural.

Table 16. Lead Comparison Results.

Comparison	Statistical Significance
Bass from different lakes	AR = WW = DP = FL = IM = SC = TN = HU = MA = MR
Bluegill from different lakes	MA = FL = IM = MR = TN = AR = HU = WW = DP = SC
Catfish from different lakes	IM = SC = AR = MA = HU = DP = WW = FL < TN = MR
Shellcracker from different lakes	DP = IM No samples from other lakes.
Speckled perch from different lakes	HU = WW = SC = TN = FL = MR = IM No samples from other lakes.
Tilapia from different lakes	MA = FL = IM = SC = AR = TN < DP < MR = HU No samples from WW.
Between fish species	Bass = speckled perch = bluegill = shellcracker $\leq$ catfish = tilapia
Between lakes	FL = DP < SC = TN = MA = WW = AR = IM = HU $\leq$ MR
Lake type	Natural = impacted
Lake location	Rural = urban

No significant difference: = Significant at $p > 0.95$: $\leq$ Significant at $p > 0.99$: <

Table 17. Metals Summary Statistics by Total Sample Size and by Lake: Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	436	BDL	0.378	0.007	0.029
Arietta	40	BDL	0.077	0.004	0.013
Dover Park	50	BDL	0.030	0.003	0.007
Floral Lake	41	BDL	0.012	0.001	0.003
Lake Hunter	42	BDL	0.378	0.020	0.072
IMC Ft. Green	51	BDL	0.094	0.005	0.016
Lake Manatee	32	BDL	0.048	0.003	0.010
Medard Reservoir	47	BDL	0.245	0.024	0.045
Saddle Creek	44	BDL	0.012M	0.001	0.003
Tenoroc	49	BDL	0.028	0.002	0.005
Walk-in-Water	40	BDL	0.059	0.004	0.012
All Naturals	154	BDL	0.378	0.008	---
All Impacted	282	BDL	0.245	0.006	---

Table 18. Metals Summary Statistics by Species and by Species within Lake: Bass, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	BDL	0.048	<0.001	0.006
Arietta	10	BDL	BDL	n/a	n/a
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	0.009M	0.002	0.004
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	0.048	0.005	0.015
Medard Reservoir	10	BDL	0.034	0.007	0.012
Saddle Creek	10	BDL	0.007M	0.001	0.002
Tenoroc	10	BDL	0.008	0.001	0.002
Walk-in-Water	10	BDL	BDL	n/a	n/a

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
n/a = not applicable
BDL = below project instrumental detection limit (0.007 μg/g)

Table 19. Metals Summary Statistics by Species and by Species within Lake: Bluegill, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	BDL	0.077	0.002	0.010
Arietta	10	BDL	0.077	0.008	0.024
Dover Park	10	BDL	BDL	n/a	0.000
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	0.033	0.004	0.011
IMC Ft. Green	10	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	BDL	n/a	0.000
Medard Reservoir	10	BDL	0.007M	0.001	0.002
Saddle Creek	10	BDL	0.012M	0.001	0.004
Tenoroc	10	BDL	BDL	n/a	n/a
Walk-in-Water	10	BDL	0.042	0.008	0.013

Table 20. Metals Summary Statistics by Species and by Species within Lake: Catfish, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	75	BDL	0.140	0.010	0.021
Arietta	10	BDL	0.028	0.007	0.010
Dover Park	10	BDL	0.020	0.006	0.008
Floral Lake	1	0.012M	0.012M	0.012	n/a
Lake Hunter	10	BDL	0.015	0.004	0.006
IMC Ft. Green	1	BDL	BDL	n/a	n/a
Lake Manatee	10	BDL	0.031	0.004	0.010
Medard Reservoir	10	BDL	0.140	0.036	0.043
Saddle Creek	4	BDL	BDL	n/a	n/a
Tenoroc	9	BDL	0.028	0.006	0.010
Walk-in-Water	10	BDL	0.059	0.010	0.018

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
n/a = not applicable
BDL = below project instrumental detection limit (0.007 μg/g)

Table 21. Metals Summary Statistics by Species and by Species within Lake: Shellcracker, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	20	BDL	0.094	0.007	0.023
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	10	BDL	BDL	n/a	n/a
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	n/s	n/a	n/a	n/a	n/a
IMC Ft. Green	10	BDL	0.094	0.015	0.031
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	n/s	n/a	n/a	n/a	n/a
Saddle Creek	n/s	n/a	n/a	n/a	n/a
Tenoroc	n/s	n/a	n/a	n/a	n/a
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

Table 22. Metals Summary Statistics by Species and by Species within Lake: Speckled Perch, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	59	BDL	0.055	0.002	0.008
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	n/s	n/a	n/a	n/a	n/a
Floral Lake	10	BDL	0.012	0.001	0.004
Lake Hunter	2	BDL	BDL	n/a	n/a
IMC Ft. Green	10	BDL	0.055	0.011	0.017
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	7	BDL	0.013	0.002	0.005
Saddle Creek	10	BDL	BDL	n/a	n/a
Tenoroc	10	BDL	BDL	n/a	n/a
Walk-in-Water	10	BDL	BDL	n/a	n/a

n/s = not sampled
n/a = not applicable
M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
BDL = below project instrumental detection limit (0.007 μg/g)

Table 23. Metals Summary Statistics by Species and by Species within Lake: Tilapia, Lead.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	82	BDL	0.378	0.019	0.060
Arietta	10	BDL	0.011M	0.001	0.003
Dover Park	10	BDL	0.030	0.007	0.010
Floral Lake	10	BDL	BDL	n/a	n/a
Lake Hunter	10	BDL	0.378	0.076	0.138
IMC Ft. Green	10	BDL	0.011M	0.001	0.003
Lake Manatee	2	BDL	BDL	n/a	n/a
Medard Reservoir	10	BDL	0.245	0.066	0.071
Saddle Creek	10	BDL	0.011M	0.001	0.003
Tenoroc	10	BDL	0.011M	0.002	0.004
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
n/s = not sampled
n/a = not applicable
BDL = below project instrumental detection limit (0.007 μg/g)

Mercury

Mercury was present in all species in all lakes. Tilapia is lowest (at $p > 0.99$), speckled perch and bass are highest (at $p > 0.99$) in mercury between species. Lake Hunter was lowest (at $p > 0.99$) and Walk-in-Water was highest (at $p > 0.99$) between the lakes. Natural lakes are significantly higher (at $p > 0.99$) than impacted lakes. Rural lakes were significantly higher than urban lakes (at $p > 0.99$).

Table 24. Mercury Comparison Results.

Comparison	Statistical Significance
Bass from different lakes	HU = MR = AR < DP = IM = SC = TN = FL = MA < WW
Bluegill from different lakes	HU = TN < DP = AR = SC < FL = MR = IM = MA < WW
Catfish from different lakes	IM = SC < AR = MA < HU < DP < WW = FL < TN < MR
Shellcracker from different lakes	DP < IM No samples from other lakes.
Speckled perch from different lakes	HU = SC = WW = TN < FL = MR < IM No samples from other lakes.
Tilapia from different lakes	HU = TN = MR < AR = SC < DP = FL < IM = MA No samples from WW.
Between fish species	Tilapia < catfish = shellcracker = bluegill < speckled perch < bass
Between lakes	HU, AR = DP = TN = MR < IM = SC $\leq$ FL = MA <WW
Lake type	Impacted < natural
Lake location	Rural > Urban

No significant difference: = Significant at p > 0.95: $\leq$ Significant at p > 0.99: <

Table 25. Metals Summary Statistics by Total Sample Size and by Lake: Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	436	BDL	0.762	0.074	0.124
Arietta	40	BDL	0.162	0.039	0.040
Dover Park	50	BDL	0.231	0.040	0.060
Floral Lake	41	0.007M	0.397	0.079	0.098
Lake Hunter	42	BDL	0.139	0.017	0.028
IMC Ft. Green	51	0.006M	0.304	0.057	0.061
Lake Manatee	32	BDL	0.550J	0.102	0.126
Medard Reservoir	47	BDL	0.263	0.047	0.052
Saddle Creek	44	BDL	0.365	0.057	0.083
Tenoroc	49	BDL	0.417	0.045	0.091
Walk-in-Water	40	0.026M	0.762J	0.296	0.240
All Naturals	154	BDL	0.762	0.114	---
All Impacted	282	BDL	0.417	0.054	---

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
J = value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
BDL = below project instrumental detection limit (0.005 μg/g)

Table 26. Metals Summary Statistics by Species and by Species within Lake: Bass, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	0.014M	0.762J	0.192	0.165
Arietta	10	0.050	0.162	0.094	0.031
Dover Park	10	0.068	0.231	0.148	0.057
Floral Lake	10	0.004M	0.397	0.210	0.105
Lake Hunter	10	0.022M	0.139	0.056	0.033
IMC Ft. Green	10	0.014M	0.304	0.154	0.074
Lake Manatee	10	0.078	0.550J	0.230	0.154
Medard Reservoir	10	0.037M	0.263	0.080	0.068
Saddle Creek	10	0.097	0.365	0.180	0.092
Tenoroc	10	0.022M	0.417	0.189	0.119
Walk-in-Water	10	0.394	0.762J	0.575	0.112

Table 27. Metals Summary Statistics by Species and by Species within Lake: Bluegill, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	100	BDL	0.164	0.034	0.035
Arietta	10	0.013M	0.026M	0.018	0.004
Dover Park	10	0.010M	0.036M	0.010	0.009
Floral Lake	10	0.002M	0.055	0.029	0.010
Lake Hunter	10	BDL	0.013M	0.007	0.004
IMC Ft. Green	10	0.012M	0.081	0.039	0.021
Lake Manatee	10	0.014M	0.141	0.065	0.048
Medard Reservoir	10	0.020M	0.086	0.037	0.020
Saddle Creek	10	0.006M	0.036M	0.019	0.010
Tenoroc	10	BDL	0.028M	0.008	0.008
Walk-in-Water	10	0.042M	0.164	0.100	0.042

M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
J = value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
BDL = below project instrumental detection limit (0.005 μg/g)

Table 28. Metals Summary Statistics by Species and by Species within Lake: Catfish, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	75	BDL	0.225	0.028	0.040
Arietta	10	0.015	0.097	0.039	0.025
Dover Park	10	BDL	0.017M	0.009	0.006
Floral Lake	1	0.016M	0.016M	0.016	n/a
Lake Hunter	10	BDL	0.018M	0.003	0.006
IMC Ft. Green	1	0.017M	0.017M	0.017	n/a
Lake Manatee	10	BDL	0.122	0.027	0.036
Medard Reservoir	10	0.014M	0.086	0.036	0.021
Saddle Creek	4	0.005M	0.094	0.032	0.042
Tenoroc	9	BDL	0.006M	0.001	0.002
Walk-in-Water	10	0.026M	0.225	0.079	0.071

Table 29. Metals Summary Statistics by Species and by Species within Lake: Shellcracker, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	20	0.010M	0.116	0.033	0.026
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	10	0.010M	0.021	0.016	0.004
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	n/s	n/a	n/a	n/a	n/a
IMC Ft. Green	10	0.016M	0.116	0.050	0.028
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	n/s	n/a	n/a	n/a	n/a
Saddle Creek	n/s	n/a	n/a	n/a	n/a
Tenoroc	n/s	n/a	n/a	n/a	n/a
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable
M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
BDL = below project instrumental detection limit (0.005 μg/g)

Table 30. Metals Summary Statistics by Species and by Species within Lake: Speckled Perch, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	59	BDL	0.711	0.114	0.164
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	n/s	n/a	n/a	n/a	n/a
Floral Lake	10	0.028M	0.186	0.075	0.062
Lake Hunter	2	0.013M	0.041	0.027	0.020
IMC Ft. Green	10	0.015M	0.064	0.036	0.016
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	7	0.025M	0.172	0.097	0.060
Saddle Creek	10	BDL	0.077	0.037	0.029
Tenoroc	10	0.007M	0.082	0.023	0.024
Walk-in-Water	10	0.214	0.711J	0.429	0.173

Table 31. Metals Summary Statistics by Species and by Species within Lake: Tilapia, Mercury.

Lake	Number of Samples	Minimum μg/g Wet Weight	Maximum μg/g Wet Weight	Mean μg/g Wet Weight	Standard Deviation
All Lakes	82	BDL	0.022M	0.005	0.006
Arietta	10	BDL	0.008M	0.003	0.004
Dover Park	10	0.005M	0.016M	0.010	0.003
Floral Lake	10	0.007M	0.013M	0.010	0.002
Lake Hunter	10	BDL	BDL	n/a	n/a
IMC Ft. Green	10	0.006M	0.015M	0.011	0.003
Lake Manatee	2	0.014M	0.022M	0.018	0.005
Medard Reservoir	10	BDL	0.009M	0.001	0.003
Saddle Creek	10	BDL	0.020M	0.004	0.008
Tenoroc	10	BDL	0.006M	0.001	0.002
Walk-in-Water	n/m	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable
M = value reported at less than contract required detection criteria (MDL) but above the instrument detection capability documented during this project.
J = value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
BDL = below project instrumental detection limit (0.005 μg/g)

Radium-226

Radium-226 was found in all species in all lakes. Radionuclide data was analyzed with non-detects given as one-half the MDC. This is a conservative approach designed to prevent a negative bias from levels too low for a practical count in the time available. Thus for radium the caveat is given that 215 of the 434 samples (50%) were below detection. At $p < 0.99$, bluegills were highest from TN, WW and SC, catfish were highest from HV. At $p > 0.95$, tilapia from AR, HU and IM were lowest. Between lakes, MA was lower (at $p > 0.99$) than the others. Bass were the lowest species (at $p > 0.95$) while shellcracker and bluegills were the highest (at $p > 0.99$).

Table 32. Radium-226 Comparison Results.

Comparison	Statistical Significance
Bass from different lakes	IM = MA = FL = HU = TN = AR = DP = WW = SC = MR
Bluegill from different lakes	MA = HU = IM = DP = AR = MR = FL < TN < WW < SC
Catfish from different lakes	MA = DP = AR = SC = WW = TN = MR < HU No samples from FL and IM.
Shellcracker from different lakes	DP = IM No samples from other lakes.
Speckled perch from different lakes	FL = WW = MR = HU = IM = SC = TN No samples from other lakes.
Tilapia from different lakes	AR = HU = IM $\leq$ FL = MA = MR = SC = TN = DP No sample from WW.
Between fish species	Bass $\leq$ tilapia = speckled perch = catfish < shellcracker < bluegill
Between lakes	MA < AR = FL = IM = DP = MR = WW = HU = TN = SC
Lake type	Natural = impacted
Lake location	Rural = urban

No significant difference: = Significant at $p > 0.95$: $\leq$ Significant at $p > 0.99$: <

Table 33. Radionuclide Summary Statistics by Total Sample Size and by Lake: Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	434	0.0004	0.392	0.028	0.042
Arietta	40	0.001	0.100	0.020	0.025
Dover Park	48	0.0004	0.223	0.026	0.037
Floral Lake	40	0.002	0.182	0.020	0.033
Lake Hunter	43	0.001	0.392	0.035	0.067
IMC Ft. Green	51	0.001	0.066	0.022	0.022
Lake Manatee	32	0.001	0.028	0.010	0.006
Medard Reservoir	47	0.001	0.160	0.027	0.029
Saddle Creek	43	0.004	0.200	0.045	0.049
Tenoroc	50	0.002	0.180	0.038	0.043
Walk-in-Water	40	0.004	0.332	0.033	0.059
All Naturals	154	0.004	0.392	0.025	---
All Impacted	282	0.004	0.233	0.030	---

Table 34. Radionuclide Summary Statistics by Species and by Species within Lake: Bass, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	100	0.001	0.100	0.015	0.016
Arietta	10	0.002	0.100	0.019	0.029
Dover Park	10	0.006	0.053	0.018	0.015
Floral Lake	10	0.004	0.034	0.009	0.009
Lake Hunter	10	0.001	0.030	0.010	0.008
IMC Ft. Green	10	0.001	0.020	0.007	0.006
Lake Manatee	10	0.001	0.017	0.007	0.004
Medard Reservoir	10	0.006	0.060	0.025	0.019
Saddle Creek	10	0.010	0.060	0.023	0.015
Tenoroc	10	0.010	0.030	0.015	0.007
Walk-in-Water	10	0.004	0.052	0.019	0.018

Table 35. Radionuclide Summary Statistics by Species and by Species within Lake: Bluegill, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	100	0.001	0.332	0.046	0.056
Arietta	10	0.018	0.093	0.038	0.026
Dover Park	10	0.006	0.076	0.027	0.024
Floral Lake	10	0.002	0.182	0.044	0.059
Lake Hunter	10	0.005	0.048	0.019	0.015
IMC Ft. Green	10	0.001	0.065	0.021	0.026
Lake Manatee	10	0.001	0.021	0.011	0.006
Medard Reservoir	10	0.004	0.160	0.043	0.047
Saddle Creek	10	0.029	0.200	0.099	0.058
Tenoroc	10	0.029	0.180	0.076	0.057
Walk-in-Water	10	0.007	0.332	0.080	0.105

Table 36. Radionuclide Summary Statistics by Species and by Species within Lake: Catfish, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	74	0.0004	0.392	0.029	0.054
Arietta	10	0.001	0.086	0.015	0.026
Dover Park	10	0.0004	0.038	0.012	0.012
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	10	0.019	0.392	0.103	0.116
IMC Ft. Green	1	0.041	0.041	0.041	n/a
Lake Manatee	10	0.005	0.022	0.010	0.005
Medard Reservoir	10	0.001	0.099	0.027	0.033
Saddle Creek	3	0.004	0.027	0.016	0.012
Tenoroc	10	0.002	0.060	0.022	0.018
Walk-in-Water	10	0.006	0.052	0.017	0.016

n/s = not sampled
n/a = not applicable

Table 37. Radionuclide Summary Statistics by Species and by Species within Lake: Shellcracker, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	20	0.001	0.065	0.030	0.020
Arietta	n/m	n/a	n/a	n/a	n/a
Dover Park	10	0.007	0.050	0.023	0.015
Floral Lake	n/m	n/a	n/a	n/a	n/a
Lake Hunter	n/m	n/a	n/a	n/a	n/a
IMC Ft. Green	10	0.001	0.065	0.037	0.022
Lake Manatee	n/m	n/a	n/a	n/a	n/a
Medard Reservoir	n/m	n/a	n/a	n/a	n/a
Saddle Creek	n/m	n/a	n/a	n/a	n/a
Tenoroc	n/m	n/a	n/a	n/a	n/a
Walk-in-Water	n/m	n/a	n/a	n/a	n/a

Table 38. Radionuclide Summary Statistics by Species and by Species within Lake: Speckled Perch, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	60	0.005	0.193	0.029	0.033
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	n/s	n/a	n/a	n/a	n/a
Floral Lake	10	0.006	0.019	0.011	0.004
Lake Hunter	3	0.013	0.060	0.030	0.026
IMC Ft. Green	10	0.006	0.066	0.030	0.023
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	7	0.005	0.042	0.018	0.013
Saddle Creek	10	0.013	0.193	0.045	0.054
Tenoroc	10	0.013	0.150	0.047	0.043
Walk-in-Water	10	0.006	0.065	0.018	0.018

n/s = not sampled
n/a = not applicable

Table 39. Radionuclide Summary Statistics by Species and by Species within Lake: Tilapia, Radium-226.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	80	0.001	0.223	0.022	0.033
Arietta	10	0.001	0.023	0.009	0.007
Dover Park	8	0.003	0.223	0.057	0.079
Floral Lake	10	0.003	0.046	0.017	0.015
Lake Hunter	10	0.004	0.023	0.011	0.006
IMC Ft. Green	10	0.003	0.055	0.016	0.018
Lake Manatee	2	0.012	0.028	0.020	0.011
Medard Reservoir	10	0.010	0.062	0.022	0.018
Saddle Creek	10	0.006	0.056	0.023	0.016
Tenoroc	10	0.010	0.155	0.029	0.045
Walk-in-Water	n/m	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable

Lead-210

Lead-210 was found in all species in all lakes. Lead-210 data was analyzed with non-detects given as one-half the MDC. This is a conservative approach designed to prevent a negative bias from levels too low for a practical count in the time available. Thus for lead-210 the caveat is given that 232 of the 434 samples (53%) were below detection. Bluegill from TN, MR and SC were higher than from the other lakes (at $p > 0.99$). Catfish from HU and SC were higher than from the other lakes (a $p > 0.99$). Bass were significantly lower (at $p > 0.95$) than the other species. No significant differences (at $p > 0.99$) were observed between natural and impacted or urban and rural lakes.

Table 40. Lead-210 Comparison Results.

Comparison	Statistical Significance
Bass from different lakes	FL = MA = IM = DP = TN = WW = HU = MR = SC = AR
Bluegill from different lakes	IM = DP = HU = WW = MR $\leq$ FL = TN = MA = AR = SC
Catfish from different lakes	DP = WW = TN = MR = MA = AR $\leq$ HU = SC
Shellcracker from different lakes	DP = IM No samples from other lakes
Speckled perch from different lakes	FL = MR = HU = WW = TN= IM < SC No samples from other lakes.
Tilapia from different lakes	IM = MA = MR < TN = FL = HU = AR = SC = DP No samples from WW.
Between fish species	Shellcracker = bass $\leq$ tilapia = catfish = bluegill = speckled perch
Between lakes	IM = WW = FL = DP = MR = MA = TN = AR = HU = SC
Lake type	Natural = impacted
Lake location	Rural = urban

No significant difference: = Significant at p > 0.95: $\leq$ Significant at p > 0.99: <

Table 41. Radionuclide Summary Statistics by Total Sample Size and by Lake: Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	434	0.001	1.740	0.156	0.181
Arietta	40	0.010	0.950	0.189	0.184
Dover Park	48	0.002	1.235	0.120	0.175
Floral Lake	40	0.003	0.417	0.119	0.112
Lake Hunter	43	0.001	1.740	0.208	0.283
IMC Ft. Green	51	0.003	0.410	0.096	0.074
Lake Manatee	32	0.010	0.540	0.139	0.128
Medard Reservoir	47	0.010	0.360	0.133	0.082
Saddle Creek	43	0.010	1.207	0.307	0.304
Tenoroc	50	0.010	0.760	0.147	0.131
Walk-in-Water	40	0.039	0.270	0.114	0.061
All Naturals	154	0.001	1.740	0.163	---
All Impacted	282	0.002	1.235	0.154	---

Table 42. Radionuclide Summary Statistics by Species and by Species within Lake: Bass, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	100	0.003	0.500	0.105	0.082
Arietta	10	0.035	0.500	0.153	0.142
Dover Park	10	0.003	0.126	0.075	0.040
Floral Lake	10	0.019	0.095	0.062	0.023
Lake Hunter	10	0.050	0.260	0.121	0.075
IMC Ft. Green	10	0.035	0.120	0.073	0.031
Lake Manatee	10	0.035	0.110	0.070	0.026
Medard Reservoir	10	0.060	0.200	0.129	0.043
Saddle Creek	10	0.010	0.440	0.140	0.117
Tenoroc	10	0.010	0.370	0.109	0.110
Walk-in-Water	10	0.040	0.270	0.120	0.077

Table 43. Radionuclide Summary Statistics by Species and by Species within Lake: Bluegill, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	100	0.003	0.950	0.188	0.161
Arietta	10	0.010	0.950	0.303	0.262
Dover Park	10	0.035	0.233	0.111	0.059
Floral Lake	10	0.003	0.380	0.196	0.110
Lake Hunter	10	0.010	0.250	0.125	0.066
IMC Ft. Green	10	0.029	0.135	0.078	0.036
Lake Manatee	10	0.060	0.540	0.224	0.163
Medard Reservoir	10	0.066	0.360	0.188	0.104
Saddle Creek	10	0.020	0.720	0.313	0.213
Tenoroc	10	0.020	0.760	0.212	0.216
Walk-in-Water	10	0.039	0.225	0.128	0.062

Table 44. Radionuclide Summary Statistics by Species and by Species within Lake: Catfish, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	74	0.001	1.740	0.187	0.258
Arietta	10	0.020	0.460	0.154	0.153
Dover Park	10	0.002	0.263	0.097	0.082
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	10	0.001	1.740	0.478	0.485
IMC Ft. Green	1	0.075	0.075	0.075	n/a
Lake Manatee	10	0.010	0.430	0.134	0.120
Medard Reservoir	10	0.003	0.270	0.125	0.089
Saddle Creek	3	0.050	1.207	0.529	0.604
Tenoroc	10	0.040	0.230	0.123	0.078
Walk-in-Water	10	0.055	0.200	0.105	0.049

Table 45. Radionuclide Summary Statistics by Species and by Species within Lake: Shellcracker, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	20	0.003	0.160	0.086	0.039
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	10	0.020	0.160	0.087	0.039
Floral Lake	n/s	n/a	n/a	n/a	n/a
Lake Hunter	n/s	n/a	n/a	n/a	n/a
IMC Ft. Green	10	0.003	0.151	0.086	0.041
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	n/s	n/a	n/a	n/a	n/a
Saddle Creek	n/s	n/a	n/a	n/a	n/a
Tenoroc	n/s	n/a	n/a	n/a	n/a
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable

Table 46. Radionuclide Summary Statistics by Species and by Species within Lake: Speckled Perch, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	60	0.004	1.100	0.189	0.238
Arietta	n/s	n/a	n/a	n/a	n/a
Dover Park	n/s	n/a	n/a	n/a	n/a
Floral Lake	10	0.004	0.227	0.075	0.072
Lake Hunter	3	0.030	0.170	0.087	0.074
IMC Ft. Green	10	0.075	0.410	0.178	0.116
Lake Manatee	n/s	n/a	n/a	n/a	n/a
Medard Reservoir	7	0.010	0.190	0.085	0.062
Saddle Creek	10	0.070	1.100	0.537	0.396
Tenoroc	10	0.010	0.435	0.158	0.133
Walk-in-Water	10	0.043	0.240	0.102	0.059

Table 47. Radionuclide Summary Statistics by Species and by Species within Lake: Tilapia, Lead-210.

Lake	Number of Samples	Minimum pCi/g Wet Weight	Maximum pCi/g Wet Weight	Mean pCi/g Wet Weight	Standard Deviation
All Lakes	80	0.007	1.235	0.144	0.160
Arietta	10	0.020	0.370	0.147	0.121
Dover Park	8	0.016	1.235	0.257	0.403
Floral Lake	10	0.007	0.417	0.142	0.152
Lake Hunter	10	0.040	0.500	0.144	0.138
IMC Ft. Green	10	0.030	0.214	0.067	0.056
Lake Manatee	2	0.013	0.160	0.087	0.104
Medard Reservoir	10	0.020	0.280	0.122	0.076
Saddle Creek	10	0.060	0.320	0.174	0.087
Tenoroc	10	0.050	0.230	0.135	0.065
Walk-in-Water	n/s	n/a	n/a	n/a	n/a

n/s = not sampled
n/a = not applicable

CONSUMPTION DOSE ASSESSMENT

CADMIUM

Cadmium levels at/or above the laboratory's instrument detection limit (IDL) of 0.018 μg/g wet weight were detected in only eight fish samples of the 436 collected and analyzed. These came from two of the ten lakes in the study. Of the samples collected from Lake Arietta, a natural lake, two catfish (n=10) and one tilapia (n=10) had cadmium levels which exceeded the MDL. The cadmium level for two catfish (n=9), two speckled perch (crappie) (n=10), and one bluegill (n=10), collected from the phosphate lake Tenoroc # 5 exceeded the IDL.

Cadmium is a cumulative toxicant, and the human exposure condition of most concern is long-term exposure to elevated levels in the diet. In the U.S., the average person eats food containing approximately 30 μg of cadmium on a daily average. However, not all of the cadmium is absorbed by the body. The average person absorbs about 1-3 μg per day from food (ATSDR 1997). Thus approximately 90% of ingested cadmium from food is excreted. The cadmium absorbed stays in the body for many years and tends to concentrate in the liver and kidneys.

Milk, dairy products, eggs, beef, and fish, usually contain less than 0.01 ppm (μg/g) while higher concentrations, 0.01 to 0.1 ppm are typically found in vegetables, fruits, and grains (Elinder 1992). In a study of cadmium in adult total diet samples from 1980-1982, meat, fish, and poultry had an average concentration of 0.0057 ppm with a range from a trace to 0.014 ppm (Gartrell and others 1986).

Significant concentrations of cadmium have been observed in fish living in stormwater ponds in Florida. The mean cadmium concentration for redear sunfish living in stormwater ponds was 1.64 μg/g wet weight compared to 0.198 μg/g for redear sunfish in control ponds. Largemouth bass in stormwater ponds had a mean cadmium concentration of 3.16 μg/g compared to 0.241 μg/g for bass from control ponds (Campbell 1994). The maximum cadmium concentration detected in this study was 0.102 μg/g wet weight. This is considerably less than the above control pond averages.

Table 48. Cadmium Levels in Fish from Study Lakes (μg/g Wet Weight).

Source	Maximum	Mean
All Lakes	0.102	0.004
Lake Arietta (natural lake)	0.102	0.013
Tenoroc Lake (impacted lake)	0.101	0.016

The Agency for Toxic Substances and Disease Registry (ATSDR) has derived a minimum risk level (MRL) for a chronic oral exposure to cadmium. It is based on a NOAEL (no observed adverse effect level) of 2.1 μg/kg/day using an uncertainty factor

of 10 for variability in the human population. The MRL is 0.2 μg/kg/day or 14 μg/day for 70 kg person (ATSDR 1997). Since the current average dietary cadmium intake for adults in the U.S. is about 0.4 μg/kg/day (Gartrell and others 1986), Americans currently do not have a good margin of safety with respect to cadmium intake.

Eating fish from the study lakes will not add substantially to this dietary cadmium intake or related health risk. In the two lakes where a total of eight fish were collected with measurable cadmium concentrations, four of the eight were catfish. The catfish also had the highest cadmium level detected in this study. Based on the FDA Pennington Diet fish consumption rate for the average adult of 20.6 g/day, an adult eating catfish from this lake only (maximum individual) would add 0.33 μg /day dietary cadmium intake. This is about 2% of the minimum risk level for a 70 kg (154 pound) person.

Table 49. Cadmium Intake from Adult Consumption of Catfish[1] at Maximum Mean Rate Based on FDA Pennington Diet Rate of 20.6 g/day.

	Control[2] Lake Arietta	Local Impacted[3] Tenoroc Lake	Maximum Impacted[4] Tenoroc Lake
Maximum Mean Rate (μg/g)	0.013	0.013	0.016
Cadmium Intake (μg/day)	0.27	0.28	0.33

[1]Study species with maximum cadmium level.
[2]Control individual consuming only fish from natural study lakes.
Dose (0.9 x dose from control) + (0.1 x dose from impacted).
[3]Local individual consuming 10% of fish intake from impacted study lakes.
[4]Maximum individual consuming only fish form impacted study lakes.

LEAD

Most of the lead that enters the body is through the oral pathway. However, not all of the lead swallowed actually enters the blood or other parts of the body. For adults, the amount absorbed by the body from the digestive tract is somewhat dependent on when the last meal was eaten. Experiments have shown that for adults, who had just eaten, the amount of lead absorbed into the bloodstream was only about 6% of the total amount taken in. In adults who had not eaten for a day, 60-80% of the lead absorbed into their bloodstream. Children react to ingested lead in a significantly enhanced manner. Fifty percent (50%) of the lead swallowed by children enters the blood and other body parts even if their stomachs are full (ATSDR 1997).

The human body does not change lead into any other form. It travels in the blood to the "soft tissues;" and, slowly, over a period of several weeks, becomes deposited in the bones and teeth. The lead that is not stored leaves the body through the urine or feces. About 99% of the lead taken into the body by an adult will leave in the waste in a couple of weeks, but only about 32% of the lead taken into the body of a child will leave in the waste. Under conditions of continued exposure, the rate of accumulation can

exceed the rate of excretion, and this can result in toxic levels of accumulation in the body (ATSDR 1997).

The U.S. Fish and Wildlife Service has reported on the concentration of metals in whole fish sampled from late 1984 to early 1985 from 109 stations nationwide. For lead, the maximum concentration reported was 4.88 μg/g wet weight. The 85th percentile concentration was 0.22 μg/g and the geometric mean was 0.11 μg/g (Schmitt 1990). For the ten lakes sampled for this study, the maximum lead level detected was 0.378 μg/g wet weight with a mean lead level for all fish of 0.007 μg/g.

Table 50. Lead Levels in Fish from Study Lakes (Compared to U.S. Fish & Wildlife Service Report, 1984-1985).

Source	μg/g Wet Weight	
	Maximum	Mean
All Lakes	0.378	0.007
Impacted Lakes	0.245	0.006
Natural Lakes	0.378	0.008
U.S. Fish & Wildlife (1984-1985)	4.880	0.110

Of the different fish species collected in this study, the tilapia had the highest lead concentration with a mean level for all lakes of 0.019 μg/g. The fish with the maximum lead level detected in this study (0.378 μg/g) was a tilapia collected from Lake Hunter where the mean for all tilapia collected was 0.076 μg/g. The catfish were also more likely to accumulate higher concentrations of lead than the other species collected for this study. Both of these species are primarily bottom feeders.

Table 51. Lead Levels by Fish Species in Study Lakes (μg/g).

Species	Mean	Maximum		
	All Lakes	Lake with Maximum	Maximum	Mean for Lake
Bass	0.001	Manatee Reservoir	0.048	0.005
Bluegill	0.002	Lake Arietta	0.077	0.008
Catfish	0.010	Medard Park	0.140	0.036
Shellcracker	0.007	IMC Fort Green #845	0.094	0.015
Speckled Perch (Crappie)	0.002	IMC Fort Green #845	0.055	0.011
Tilapia	0.019	Lake Hunter	0.378	0.076

The maximum lead concentration for each fish species occurred in different lakes except for IMC Ft. Green # 845, which repeated for crappie and shellcracker. These included three "natural" lakes and two phosphate lakes.

In a USEPA (U.S. Environmental Protection Agency) study of the typical concentrations of lead in various foods, the concentration found in meat, fish, and poultry ranged from 0.002 to 0.159 μg/g (EPA 1986). Data from the FDA's 1989-1990 Total Diet Survey indicate that dietary lead intake ranges from 5-11 μg/day for all age groups combined. FDA (U.S. Food and Drug Administration) estimated that in 1990, toddlers (two year-olds) received 16% of their total lead exposure from food (ATSDR 1997).

According to the FDA Pennington Diet Rates, the average adult consumes fish at the rate of 20.6 g/day. This rate is used to evaluate the lead intake from consumption of fish from the study lakes.

Table 52. Lead Intake and Blood Lead Levels from Consumption of Fish from Study Lakes Based on FDA Pennington Diet Rate of 20.6 g/day.

Adult Consumption at the Mean Rate			
	Control[1]	Local Impacted[2]	Maximum Impacted[3]
Mean Rate (μg/g)	0.008	0.008	0.006
Lead Intake (μg/day)	0.16	0.016	0.12
Blood Lead[4] (μg/dL)	0.005	0.005	0.004
Adult Consumption of Tilapia[5] at Maximum Mean Rate			
	Control Lake Hunter	Local Impacted Medard Reservoir	Maximum Impacted Medard Reservoir
Maximum Mean Rate (μg/g)	0.076	0.075	0.066
Lead Intake (μg/day)	1.57	1.55	1.34
Blood Lead (μg/dL)	0.05	0.05	0.04

[1]Control individual consuming only fish from natural study lakes.
[2]Local individual consuming 10% of fish intake from impacted study lakes.
Dose (0.9 x dose from control) + (0.1 x dose from impacted).
[3]Maximum individual consuming only fish from impacted study lakes.
[4]Slope factor = 0.030 μg/dL blood lead per μg/day lead intake.
[5]Study species with maximum lead level.

The principal adverse health effects of lead can be related to concentrations of lead in the blood. Correlation of data on blood lead concentrations and various health effects define those effects that begin to become apparent in human populations with blood lead concentrations in the range of 10-15 μg/dL. More pronounced effects are seen

as blood lead concentrations increase above this range. The Centers for Disease Control and Prevention (CDC) considers children to have an elevated level of lead if the amount in the blood is 10 μg/dL or more (ATSDR 1997).

Blood lead levels are related to dietary lead intake by slope factors. The contribution from diet in adults can be obtained from an experimental study (Cools and others 1976) and a duplicate diet study (Sherlock and others 1982). These slope factors range from 0.027-0.034 μg/dL blood lead per microgram lead intake per day. The data from the duplicate diet infant study by Ryu and others (1983) were reanalyzed to derive a slope factor of 0.24 μg/dL blood lead per μg/day lead intake (EPA 1990).

Consider the adult consuming tilapia, the study species with the maximum lead concentration from Lake Hunter, the study lake where the maximum mean concentration occurred. The blood lead contribution from this source is 0.05 μg/dL. The risk of adverse health effects is minimal for blood lead levels less than 10 μg/dL.

Compared to adults, children absorb more of the lead that they swallow into their bodies, retain more of the lead that they take in, and are more sensitive to its effects. The fish consumption rate for children is naturally less than that of an adult. The following table of consumption limits for each fish species at the maximum lead level detected in this study demonstrates a highly conservative consumption rate which will minimize risk and help to ensure that blood lead levels resulting from lead intake from all sources is less than 10 μg/dL.

Table 53. Infant/Children Consumption Limit for Species.[1]

Species	Consumption Limit g/day
Bass	140
Bluegill	87
Catfish	48
Shellcracker	71
Speckled Perch	122
Tilapia	18

[1]Based on maximum level for species; slope factor of 0.24 μg/dL blood lead per μg/day lead intake; 16% of total lead exposure from this food source; to maintain less than 10 μg/dL blood lead level.

Under these conservative constraints, only children eating tilapia at nearly the adult consumption rate might be at risk for exceeding the limits. This by itself would not be sufficient to increase the risk of adverse health effects. This table assumes a typical rate of lead ingestion from other sources. It is not applicable when elevated lead ingestion from other sources is known or suspected.

MERCURY

Dietary intake is the most important source of non-occupational exposure to mercury, with fish and other seafood products being the dominant source of mercury in the diet. Most of the mercury consumed in fish is the methylmercury form, which is highly absorbable by the human body. Microorganisms, including bacteria and fungi, convert inorganic mercury in the environment to methylmercury. This is the form of mercury that can best accumulate in the food chain. Methylmercury constitutes over 99% of the total mercury detected in fish muscle tissue (Grieb and others 1990; Bloom 1992). Therefore, all the mercury detected in the study fish is assumed to be methylmercury and mercury in fish tissue referenced in the following charts and discussion is methylmercury.

In a USEPA study of mercury concentrations in largemouth bass collected in various states throughout the United States during 1990-1995, the results of analysis for 2008 fish were reported for Florida. These results ranged from a minimum of 0.020 μg/g (ppm) to a maximum of 4.36 μg/g (ppm) with a mean of 0.642 μg/g (ppm) (EPA 1997). For the 100 bass samples from all lakes included in this study, the mercury concentration ranged from a minimum of 0.014 μg/g to a maximum of 0.762 μg/g with a mean of 0.192 μg/g. Mercury concentrations from bass collected from the natural lakes with a mean of 0.239 μg/g were higher than the concentrations in bass from the impacted lakes with a mean of 0.160 μg/g.

Table 54. Mercury Levels in Largemouth Bass from Study Lakes (Compared to 1997 EPA Study of 2,008 Samples Collected in Florida, 1990-1995).

Source	μg/g Wet Weight		
	Minimum	Maximum	Mean
All Lakes	0.014	0.762	0.192
Impacted Lakes	0.014	0.397	0.160
Natural Lakes	0.022	0.762	0.239
EPA Study (1997)	0.020	4.360	0.642

Of the different fish species collected for this study, the largemouth bass had the highest mercury concentration with a mean of 0.192 μg/g. The speckled perch (crappie) were next with a mean of 0.114 μg/g. The bass and crappie were more likely to accumulate higher concentrations of mercury than the other fish sampled. This is evident from comparing the mean concentrations in fish from all lakes sampled as well as from comparing the levels in fish from one particular lake.

Table 55. Mercury Levels by Fish Species in Study Lakes.

Species	μg/g Wet Weight			
	All Lakes			Lake Walk-in-Water
	Mean	Maximum	Minimum	Mean
Bass	0.192	0.762	0.014	0.575
Bluegill	0.034	0.164	<0.005	0.100
Catfish	0.028	0.225	<0.005	0.079
Shellcracker	0.033	0.116	0.010	n/m
Speckled Perch (Crappie)	0.114	0.711	<0.005	0.429
Tilapia	0.005	0.022	<0.005	n/m

n/m = not measured

The USFDA (U.S. Food and Drug Administration) has established an action level of 1 ppm for methylmercury in fish. The agency recommends that regular consumption of fish species with methylmercury levels around 1 ppm be limited to approximately 200g (7 ounces) per week. For fish with levels averaging 0.5 ppm, the recommended limit is 400g (14 ounces) per week. A weekly limit of 1 kilogram (2.2 pounds) is recommended for fish with a level of 0.2 ppm. Since few people eat more than this, consumption advisories are not made for lower levels. A special warning is made for pregnant women and women of child-bearing age to limit consumption of fish at 1 ppm to no more than one meal per month (FDA 1996). In critical periods of development before they are born, and in the early months after birth, children and fetuses are particularly sensitive to the harmful effects of methylmercury on the nervous system.

Table 56. United States Food and Drug Administration Recommended Consumption Limits.

Mercury Level in Fish	Consumption Limits
1.0 ppm *	200 g (7 ounces) per week
0.5 ppm *`	400 g (14 ounces) per week
0.2 ppm *	1,000 g (2.2 pounds) per week

* ppm = parts per million (equivalent to μg/g)

Special Warning: *Pregnant women and women of child-bearing age should limit consumption of fish at 1 ppm to one meal per month.*

The FDA action level of 1 ppm was designed to protect consumers purchasing fish and shellfish that are shipped in interstate commerce and that are purchased in commercial markets. It was not intended for the protection of fish consumers who routinely consume large quantities of fish from local bodies of water. Since some recreational and subsistence fishers consume larger quantities of fish than the general population and frequently fish the same bodies of water, these populations may be at a

greater risk of exposure to mercury. To protect the health of all consumers of noncommercial freshwater and estuarine fish, the EPA has developed a criterion for methylmercury in fish tissue. The EPA's recommendation is that 0.3 μg/g of methylmercury in fish tissue not be exceeded. This recommendation is provided as guidance to States and Tribes, however, the EPA encourages the development of a water quality criterion for methylmercury using local or regional data rather than the default values used in their calculation if that is more appropriate for the affected population (EPA 2001). The mean mercury concentration for the largemouth bass and speckled perch (crappie) collected from Lake Walk-in-Water exceeds this level. The mercury concentration in some individual largemouth bass collected from other study lakes exceeded this level, however, the mean level for the other study lakes did not.

The Florida Department of Health is the state agency with the responsibility for health advisories related to mercury concentrations in fish flesh. The State Health Officer may issue a health advisory for a lake if testing demonstrates a mean mercury level above 0.5 ppm in the fish flesh. The mean mercury concentration for bass collected from Lake Walk-in-Water during this study meets this threshold. Since we have only this data set, and several of the higher values were qualified, additional data sets should be collected to determine if a health advisory is warranted.

Table 57. Florida Department of Health Recommended Consumption Limits.

Mercury Level in Fish	Consumption Limits
Over 1.5 ppm *	No consumption
0.5 ppm * to 1.5 ppm *`	8 ounces per week
Less than 0.5 ppm *	No limit

* ppm = parts per million (equivalent to μg/g)

Special Warning: *Pregnant women and women of child-bearing age should limit consumption of fish to 8 ounces per month.*

The ATSDR (Agency for Toxic Substances and Disease Registry) has established a chronic oral minimum risk level (MRL) of 0.3 μg/kg/day for methylmercury. An MRL is defined as an estimate of daily human exposure to a substance that is likely to be without an appreciable risk of noncarcinogenic adverse effects (ATSDR 1999). This particular MRL is based on a study of the effects of prenatal and postnatal methylmercury exposure from fish consumption on neurodevelopment. This study, the Seychelles Child Development Study, revealed no evidence of adverse effects attributable to chronic ingestion of low levels of methylmercury in fish. In this study, developing fetuses were exposed *in utero* through maternal fish ingestion before and during pregnancy. Neonates continued to be exposed to maternal mercury during breastfeeding, and methylmercury exposure from the regular diet continued after the gradual post-weaning shift to a fish diet (Davidson and others 1998).

This MRL is a factor of 4.5 less than the NOAEL (no observed adverse effect level) to account for variation in human sensitivity. The NOAEL is 1.3 μg/kg/day (ATSDR 1999). For a 60 kg (132 pounds) woman, the MRL and NOAEL translate to 18 μg/day and 78 μg/day respectively. The estimated average daily intake of methylmercury from fish consumption by adults in the general population is 2.4 μg/day (WHO 1990, 1991).

The FDA Pennington Diet rates the adult consumption of fish at 20.6 grams per day (g/day), which is about 5.2 ounces, or one-third pound per week. This diet rate is used to evaluate the mercury intake from consumption of fish from the study lakes. Consumption of largemouth bass, the study species with the maximum mercury concentration, from Lake Walk-in-Water, the lake where the maximum mean concentration occurred, will result in a mercury intake of 11.85 μg/day. This is well below the minimum risk level of 18 μg/day (evaluated for the 60 kg woman).

Table 58. Mercury Intake from Consumption of Fish from Study Lakes (μg/day) Based on FDA Pennington Diet Rate of 20.6 g/day.

Adult Consumption at the Mean Rate		
Control[1]	Local Impacted[2]	Maximum Impacted[3]
2.35	2.23	1.11
Adult Consumption of Largemouth Bass[4] at Maximum Mean Rate		
Control	Local Impacted	Maximum Impacted
11.85	11.10	4.33

1Control individual consuming only fish from natural study lakes.
2Local individual consuming 10% of fish intake from impacted study lakes.
Dose (0.9 x dose from control) + (0.1 x dose from impacted).
3Maximum individual consuming only fish from impacted study lakes.
4Study species with maximum mercury level.

The consumption of fish from the impacted study lakes results in a lower mercury intake than from the natural study lakes.

RADIONUCLIDES

Unlike metals, individual radionuclide dose limits are rarely used in determining diet thresholds for individuals. This is not to say standards of radionuclide exposure do not exist; but rather that, with few exceptions, an individual radionuclide dose concentration per unit ingested is rare. Since all individuals are naturally exposed to background radiation, the dose from radionuclides in food must be considered as only a part of the total dose from background radiation.

The USEPA has been active in promulgating guidance and regulation of technologically enhanced naturally occurring radioactive materials. One of the few instances where a specific radionuclide limit concentration per unit ingested standard has

been developed is radium-226 plus radium-228 and gross alpha-particle activity (exclusive of radon and uranium) in water from community drinking water systems (40 CFR Part 141). These standards are expressed in terms of concentration, rather than dose to individuals, to allow compliance to be monitored by operators of water systems. The result is that, rather than a lengthy list of elements, isotopes, concentrations and unit dose, we have a "dose constraint" approach to monitoring radioactivity exposure.

Among the most commonly employed dose constraints are these developed by USEPA for the uranium fuel-cycle facilities (40 CFR Part 190) in 1977. The particular standard that applies to releases of naturally occurring radionuclides is a constraint on annual dose equivalent to individuals from all radionuclides, except radon and its decay products, of:

- 0.25 mSv (25 mrem) to the whole body.
- 0.75 mSv (75 mrem) to the thyroid.
- 0.25 mSv (25 mrem) to any other organ.

Separate activity limits on releases of some longer-lived, human-made radionuclides also are specified, but such limits are not specified for any naturally occurring radionuclides.

In the time since EPA's uranium fuel-cycle standards were promulgated, an authorized limit of 0.25 mSv (25 mrem) per year has been incorporated in other EPA standards for specific sources or practices, as well as in standards for low-level waste disposal established by the Nuclear Regulatory Commission (1982) and the Department of Energy (DOE 1988). Furthermore, on the basis of the currently accepted risk per unit dose of 5×10^{-5} per millisievert and an assumption that the lifetime risk posed by exposure to all controlled sources combined should not exceed about 10^{-3}, an authorized limit of 0.25 mSv (25 mrem) per year for specific human-made sources is now widely regarded as necessary for protection of public health (for example, NCRP 1993). Thus a dose constraint of 0.25 mSv (25 mrem) per year for specific sources or practices has attained an importance for radiation protection of the public considerably beyond its original use in the uranium fuel-cycle standards.

In the dose constraint concept, it is assumed that doses which are equivalent to or less than background doses are less than the variation in background doses and are appreciably less than standards will make an undetectable and acceptable contribution to total risk. The annual average total effective dose equivalent for natural and man-made (diagnostic x-rays, nuclear medicine, etc.) is frequently estimated at 360 mrem/year. Of this value approximately 60 mrem is estimated as man-made.

To apply the concept of dose constraint to this data set it is necessary to calculate a dose equivalent for a phosphate mining impacted lake versus a natural lake. In order to determine dose equivalent, an annual dose estimate must first be estimated. W. Emmett Bolch, Ph.D. prepared an Excel spreadsheet that can be modified to input varying consumption rates, lake sources, fish species and dose coefficients. With the data input, the program will calculate the annual dose in mrem. Various dose conversion factors have been developed to calculate dose. For this study, we utilized the most recently

available factors from ICRP Publication 72, *Age-Dependent Doses to Members of the Public from Intake of Radionuclides: Part S, Compilation of Ingestion and Inhalation Dose Coefficients.* The results of general example annual dose calculations at the FDA Pennington diet rate of 20.6 g/day are given in Table 59. Copies of the worksheets are included in Appendix A.

Table 59. Radionuclide Dose (mrem/yr at the FDA Diet Rate).

Adult Consuming at the Mean Rate			
	Control [1]	Local Impacted [2]	Maximum Impacted [3]
Ra-226	0.20	0.020	0.23
Pb-210	3.14	3.12	2.97
TOTAL	3.34	0.32 (0) [4]	3.20 (0) [4]
Child [5] Consuming at the Mean Rate			
	Control [1]	Local Impacted [2]	Maximum Impacted [3]
Ra-26	0.30	0.29	0.34
Pb-210	4.33	4.30	4.09
TOTAL	4.53	0.459 (0) [4]	4.33 (0) [4]
Adult Consuming Maximum Species (Bluegill) at the Maximum Mean Rate			
	Control (Lake Arietta)	Local Impacted (Saddle Creek)	Maximum Impacted (Saddle Creek)
Ra-226	0.30	0.35	0.77
Pb-210	5.84	5.86	6.04
TOTAL	6.14	6.21(0.07) [4]	6.81 (0.67)[4]
Child Consuming Maximum Species (Bluegill) at the Maximum Mean Rate			
	Control (Lake Arietta)	Local Impacted (Saddle Creek)	Maximum Impacted (Saddle Creek)
Ra-226	0.42	0.49	1.11
Pb-210	8.05	8.07	8.31
TOTAL	8.47	8.56(0.09) [4]	9.42 (0.95) [4]

[1]Control individual consuming only fish from natural study lakes.

[2]Local individual consuming same fish (10% of annual consumption) from impacted study lakes. Dose (0.9 x dose from control) + (0.1 x dose from impacted).

[3]Maximum individual consuming only fish from impacted study lakes.

[4]Numbers in parenthesis are the doses attributable to consuming from lakes and are equal to the difference between the dose beside it and the dose to the control individual.

[5]A ten-year old child was assumed to eat half of an adult portion. The ingestion dose coefficients are higher than for an adult.

From Table 59 it can be seen that, in this study, even under worst case comparison, the dose difference between natural lakes in the phosphate mineralized region and phosphate mining impacted lakes in the region is a fractional number. Dose attributable to fish from mined lakes versus natural lakes is, therefore, insignificant in this data set.

The control lakes in this study occur within the phosphate mineralized region, thus the possibility exists that these lakes are already elevated. In the Upchurch study (Upchurch and others 1981), as well as Boody (Boody and others 1985), consideration was given to non-mineralized region lakes. Neither researcher concluded that differences between regional and non-regional lakes were as significant as the differences between mined and un-mined lakes. Mining being positively correlated to radionuclide distribution. For this study, we were careful to include natural lakes that had been previously studied and are known to be a fair cross-section of rural and urban impacted within and without mining impacted water sheds.

CONCLUSIONS

None of the results from this study would lead us to conclude there exists a potential human health risk for exposure to cadmium, lead, mercury, radium-226 or lead-210 from consuming normal dietary levels of popular freshwater finfish from the study lakes, either natural or phosphate mining impacted.

Only one species (bass) from one study lake, Walk-in-Water, exhibited mean mercury levels near or above published regulatory guidance. A review of the laboratory quality assurance data indicated that most of the results exceeding the Florida Department of Health and Rehabilitative Services advisory level of 0.5 ppm were over-range samples, which were not confirmed, in a separate run with a higher standard curve. Thus, we cannot conclude with absolute surety that these samples exceed the FDHRS criteria. We recommend additional sampling and analysis of bass mercury levels from this lake in order to determine if the advisory level is indeed met or if it was artifactual. A brief discussion of the individual study analytes follows below.

CADMIUM

This metal was not found to be a significant contaminant within the study area. Of the metals studies, it had the lowest frequency and distribution. Only eight (8) samples contained any measurable cadmium, which were approximately 2% of all samples. Theses samples were well distributed among the test species (three of the five).

LEAD

Lead was found to be well distributed by species and by lake. At the lower estimated detection limit it was observed in 20% of all samples. Lead's broad distribution is speculated to be from atmospheric distribution of fossil fuel combustion by-products. With the discontinued use of tetraethyl lead as a fuel additive in the late 1970s, environmental lead levels have been slowly decreasing. Significant differences between natural vs. impacted lakes were not observed. No significant differences were observed for urban vs. rural lakes. Between lakes, Medard Park had a significantly higher frequency of detects at the lowest estimated detection limit (0.007 μg/g wet weight). Lake Hunter had the second highest detect frequency at 38% vs. 55% for Medard Park.

Lead was inversely proportional to trophic level (lower trophic levels tend to accumulate more lead). Lead in tilapia and catfish was significantly higher (at $p > 0.95$) than in the other species. Tilapia is a detrital feeder. While adult Ictalurus catfish are excellent predators, they are primarily bottom dwellers and a large part of their diet includes other bottom dwelling species such as mollusks, insects and other invertebrates. Bass, a top predator, was found to accumulate the least amount of lead. Bass and

speckled perch are primarily top water species. Lead is primarily a sedimentary contaminant due to its affinity for binding to fine particulates.

Consumption of lead by adults does not constitute a significant risk even at above average consumption rates. Under a highly unlikely conservative scenario (i.e.: assuming maximum observed value for a species occurs in all fish eaten) this study would suggest an infant/child maximum consumption rate slightly below the Pennington diet typical adult rate (20.6 g/day) for tilapia. Catfish may be safely consumed by infants and children at about 2.4 times the Pennington diet typical adult rate (see Table 53).

MERCURY

At the contract method detection limit of 0.046 μg/g wet weight, mercury was the most detected of the three study metals (35% of samples). At the demonstrated project instrument detection limit of 0.005 μg/g wet weight, mercury was essentially ubiquitous at 85% positive samples. The broad spread between higher and lower detection limits suggests a potential for under reporting of mercury levels when utilizing common commercial method detection limits. As of 1996, up to 36 states in the U. S. had issued fish consumption advisories for at least one water body (Qian 2001). The extent of mercury contamination in Florida gained urgency when the reported death of an endangered Florida panther in remote southern Florida was potentially attributed to mercury toxicosis (Jordan 1990).

Mercury tends to follow a positive correlation with trophic state (top predators trend higher in mercury). This trend was observed in this study with bass exhibiting the highest levels and tilapia the lowest. Another observed trend was higher mercury in fish from natural versus artificial lakes. This preferential distribution for natural lakes was also observed by Boody (1985). Based upon the urban location of the two highest natural lakes, Boody concluded that the mercury was likely due to localized anthropogenic effect. Since that time the role of nearby urban centers has failed to account for the increasingly geographically widespread observations of mercury contamination. Studies within the past decade or two have discovered mercury in the fish of remote lakes and watersheds where local or regional sources were scarce (e.g., the Florida Everglades). The role of global atmospheric deposition of mercury is thus a current topic of much interest. While mercury contamination is generally considered to be from anthropogenic sources, recent research indicates a potentially greater role for long distance atmospheric mercury transport (Guentzel 2001).

Deposition modeling of mercury is in its earliest stages and conflicting theories abound. Standards for consumption are also in a state of flux, with many different regulatory levels and guidelines. Thus the public is often confused as to what is a safe level of finfish consumption. In the interim, it appears that a prudent course is to eat a variety of fish from various sources. The most prudent scenarios suggest pregnant women and women of child bearing age limit consumption of any fish to eight (8) ounces

per month (approximately two meals). This study indicates there is no significant risk from consuming food fish from the study lakes when consuming at a typical dietary rate.

RADIONUCLIDES

When the previous studies of Upchurch, Boody, and the South Florida Water Management District are considered with this study, we have a minimum known universe of over 2,000 data points for radium-226 in Central Florida freshwater finfish. Approximately half of these data points are for the six valuable food species tested in this study. However, only the 434 data points from this study contain information on other radionuclides. With regard to edible fish, none of the studies indicate problematic levels of radium-226 from consumption by humans. Guidry (1990) noted that overall diet doses attributed to mined versus unmined land based foods were small or not detected. This study provided a similar conclusion for local freshwater finfish. This study's observations were within the ranges noted by Upchurch, Boody and SFWMD. Mean values for flesh were similar to, or slightly less than, Boody (Upchurch used whole fish). Bluegill, shellcracker and speckled perch were also similar to or less than Upchurch and Boody whole fish values (this study's bluegill, shellcracker and speckled perch samples included the spinal column for over half the samples of these small panfish). Bone is a known repository of radium-226 body burden.

With tilapia as an exception, we observed an inverse trophic level bias for radium-226 as did Upchurch and Boody. Our tilapia, bass and catfish were fillets only, whereas the panfish included the spinal column in over half the samples.

We did not observe significant correlation between natural and impacted or rural and urban lake types. Upchurch had observed a positive bias towards impacted lakes in bluegill samples. Boody noticed that radium-226 values tend to exhibit high variability within a lake and within species. This study also observed high variability within sample groups.

As mentioned previously, the other studies did not present observations for lead-210. Thus we do not have local data to compare our results with. We observed lead-210 was detected at approximately the same frequency as radium-226. Data sets for lead-210 indicated even greater variability (based upon standard deviation) than radium-226. A strong trophic level distribution bias for lead-210 was not observed.

Most interesting was a strong observation of a six to one (6:1) ratio of lead-210 to radium-226. The only previous study we had available which discussed a radium to lead ratio was Guidry (1990). In this study of radioactivity in local foods, a one to one (1:1) ratio for fish was assumed. Fish were not sampled for that study; fish values were from Holtzman (1980). The observation of a radium-226 to lead-210 ratio near 6:1 is interesting in that, while the ratio does not hold for an individual sample pair, as the table below demonstrates, the ratio is relatively stable across groups.

Table 60. Radium-226 to Lead-210 Ratios by Group.

Grouping*	Mean Ra-226	Mean Pb-210	Ratio
Natural lakes	0.025	0.163	6.5:1
Impacted lakes	0.030	0.154	5.1:1
Bass	0.015	0.105	7:1
Bluegill	0.046	0.188	4.1:1
Catfish	0.029	0.187	6.4:1
Tilapia	0.022	0.144	6.5:1
Speckled Perch	0.029	0.189	6.5:1
*Shellcracker omitted due to small sample size.		Mean ratio =6:1	

Additional research in other geographic locations and with different species would shed more light on what a more appropriate ratio should be. At least from this data set, it appears the commonly held 1:1 ratio previously utilized is underestimated.

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APPENDIX A

RADIONUCLIDE DOSE CALCULATIONS
EXAMPLE SHEETS

RISK MODEL WORK SHEET W. E. BOLCH, FEB, 2001

DIET CONSIDERATION FOR PERSON WHO FISHES FOR SOME MEALS

PICK A SERVING SIZE FOR ONE MEAL, LBS. -> **0.32**

SHEET WILL CONVERT TO GRAMS PER MEAL -> 145.28

PICK THE TIMES PER YR THIS MEAL OCCURS -> **52**

SHEET WILL CALCULATE THE INTAKE, grams/yr. -> 7554.56

OF FISH CAUGHT BY THE PERSON.

THE FDA DIET INDICATES AN ANNUAL INTAKE OF

ALL FISH AS 20.6 gms/day OR 7519 gms/yr

THUS WE CAN CALCULATE THE PERCENT OF

CAUGHT FISH CONSUMED BY THIS PERSON -> 100.5%

SPECIES CONSIDERATION AND RISK COMPARISON

PICK A SPECIES OF FISH -> **n/a**

PICK AN "IMPACTED" LAKE -> **mean impacted**

PICK A COMPARISON LAKE -> **mean control**

ENTER THE AVERAGE CONCENTRATIONS FOUND IN IMPACTED LAKE

mean impacted			**n/a**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra -226 ->	**0.03**		226.64		0.2348
Pb-210 ->	**0.154**		1163.40		2.9702
			TOTAL mrem/yr ->		3.20

ENTER THE AVERAGE CONCENTRATIONS FOUND IN COMPARISION LAKE

mean control			**n/a**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra-226 ->	**0.025**		188.86		0.1957
Pb-210 ->	**0.163**		1231.39		3.1437
			TOTAL mrem/yr ->		3.34

COMPARISON OF IMPACTED AND "CONTROL" LAKE DOSE RATES

IMPACTED	3.20	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	0.9%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	19.5%		of this study

CONTROL	3.34	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	0.9%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	20.4%		of this study

ICRP (1996) *Age-Dependent Doses to Members of the Public from Intake of Radionuclides: Part 5. Compilation of Ingestion and Inhalation Dose Coefficients*, Annals of the International Commission on Radiological Protection **26**(1), Pergamon Press, Oxford (ICRP Publication 72).

ADULT

Radionuc.	Sv per Bq	mrem/uCi	mrem/pCi
Ra-226	2.8 E-7	1.04E+03	1.04E-03
Pb-210	6.9 E-7	2.55E+03	2.55E-03

RISK MODEL WORK SHEET W. E. BOLCH, FEB, 2001

DIET CONSIDERATION FOR PERSON WHO FISHES FOR SOME MEALS

PICK A SERVING SIZE FOR ONE MEAL, LBS. -> **0.32**

SHEET WILL CONVERT TO GRAMS PER MEAL -> 145.28

PICK THE TIMES PER YR THIS MEAL OCCURS -> **52**

SHEET WILL CALCULATE THE INTAKE, grams/yr. -> 7554.56

OF FISH CAUGHT BY THE PERSON.

THE FDA DIET INDICATES AN ANNUAL INTAKE OF

ALL FISH AS 20.6 gms/day OR 7519 gms/yr

THUS WE CAN CALCULATE THE PERCENT OF

CAUGHT FISH CONSUMED BY THIS PERSON -> 100.5%

SPECIES CONSIDERATION AND RISK COMPARISON

PICK A SPECIES OF FISH -> **Bluegill**

PICK AN "IMPACTED" LAKE -> **Saddle Creek**

PICK A COMPARISON LAKE -> **Arietta**

ENTER THE AVERAGE CONCENTRATIONS FOUND IN IMPACTED LAKE

Saddle Creek			**Bluegill**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra -226 ->	**0.099**		747.90		0.7748
Pb-210 ->	**0.313**		2364.58		6.0368
			TOTAL mrem/yr ->		6.81

ENTER THE AVERAGE CONCENTRATIONS FOUND IN COMPARISION LAKE

Arietta			**Bluegill**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra-226 ->	**0.038**		287.07		0.2974
Pb-210 ->	**0.303**		2289.03		5.8439
			TOTAL mrem/yr ->		6.14

COMPARISON OF IMPACTED AND "CONTROL" LAKE DOSE RATES

IMPACTED	6.81	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	1.9%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	41.5%		of this study

CONTROL	6.14	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	1.7%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	37.4%		of this study

ICRP (1996) *Age-Dependent Doses to Members of the Public from Intake of Radionuclides: Part 5. Compilation of Ingestion and Inhalation Dose Coefficients*, Annals of the International Commission on Radiological Protection **26**(1), Pergamon Press, Oxford (ICRP Publication 72).

ADULT

Radionuc.	Sv per Bq	mrem/uCi	mrem/pCi
Ra-226	2.8 E-7	1.04E+03	1.04E-03
Pb-210	6.9 E-7	2.55E+03	2.55E-03

RISK MODEL WORK SHEET W. E. BOLCH, FEB, 2001

DIET CONSIDERATION FOR CHILD WHO FISHES FOR SOME MEALS

PICK A SERVING SIZE FOR ONE MEAL, LBS. -> **0.16**

SHEET WILL CONVERT TO GRAMS PER MEAL -> 72.64

PICK THE TIMES PER YR THIS MEAL OCCURS -> **52**

SHEET WILL CALCULATE THE INTAKE, grams/yr. -> 3777.28

OF FISH CAUGHT BY THE PERSON.

THE FDA DIET INDICATES AN ANNUAL INTAKE OF

ALL FISH AS 20.6 gms/day OR 7519 gms/yr

THUS WE CAN CALCULATE THE PERCENT OF

CAUGHT FISH CONSUMED BY THIS PERSON -> 50.2%

SPECIES CONSIDERATION AND RISK COMPARISON

PICK A SPECIES OF FISH -> **N/A**

PICK AN "IMPACTED" LAKE -> **mean impacted**

PICK A COMPARISON LAKE -> **mean control**

ENTER THE AVERAGE CONCENTRATIONS FOUND IN IMPACTED LAKE

mean impacted			**N/A**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra -226 ->	**0.03**		113.32		0.3354
Pb-210 ->	**0.154**		581.70		4.0894
			TOTAL mrem/yr ->		4.42

ENTER THE AVERAGE CONCENTRATIONS FOUND IN COMPARISION LAKE

mean control			**N/A**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra-226 ->	**0.025**		94.43		0.2795
Pb-210 ->	**0.163**		615.70		4.3283
			TOTAL mrem/yr ->		4.61

COMPARISON OF IMPACTED AND "CONTROL" LAKE DOSE RATES

IMPACTED	4.42	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	1.2%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	27.0%		of this study

CONTROL	4.61	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	1.3%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	28.1%		of this study

ICRP (1996) *Age-Dependent Doses to Members of the Public from Intake of Radionuclides: Part 5. Compilation of Ingestion and Inhalation Dose Coefficients* , Annals of the International Commission on Radiological Protection **26**(1), Pergamon Press, Oxford (ICRP Publication 72).

10-year-old CHILD

Radionuc.	Sv per Bq	mrem/uCi	mrem/pCi
Ra-226	8 E-7	2.96E+03	2.96E-03
Pb-210	1.9 E-6	7.03E+03	7.03E-03

RISK MODEL WORK SHEET W. E. BOLCH, FEB, 2001

DIET CONSIDERATION FOR CHILD WHO FISHES FOR SOME MEALS

PICK A SERVING SIZE FOR ONE MEAL, LBS. -> **0.16**

SHEET WILL CONVERT TO GRAMS PER MEAL -> 72.64

PICK THE TIMES PER YR THIS MEAL OCCURS -> **52**

SHEET WILL CALCULATE THE INTAKE, grams/yr. -> 3777.28

OF FISH CAUGHT BY THE PERSON.

THE FDA DIET INDICATES AN ANNUAL INTAKE OF

ALL FISH AS 20.6 gms/day OR 7519 gms/yr

THUS WE CAN CALCULATE THE PERCENT OF

CAUGHT FISH CONSUMED BY THIS PERSON -> 50.2%

SPECIES CONSIDERATION AND RISK COMPARISON

PICK A SPECIES OF FISH -> **Bluegill**

PICK AN "IMPACTED" LAKE -> **Saddle Creek**

PICK A COMPARISON LAKE -> **Arietta**

ENTER THE AVERAGE CONCENTRATIONS FOUND IN IMPACTED LAKE

Saddle Creek			**Bluegill**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra -226 ->	**0.099**		373.95		1.1069
Pb-210 ->	**0.313**		1182.29		8.3115
			TOTAL mrem/yr ->		9.42

ENTER THE AVERAGE CONCENTRATIONS FOUND IN COMPARISION LAKE

Arietta			**Bluegill**		
	Conc pCi/g		Intake pCi/yr		Dose mrem/yr
Ra-226 ->	**0.038**		143.54		0.4249
Pb-210 ->	**0.303**		1144.52		8.0459
			TOTAL mrem/yr ->		8.47

COMPARISON OF IMPACTED AND "CONTROL" LAKE DOSE RATES

IMPACTED	9.42	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	2.6%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	57.4%		of this study

CONTROL	8.47	mrem/yr	
USA average exp.->	360	mrem/yr	
Percent	2.4%		
FIPR, 1990 Control			
Individual Total Diet	**16.4**	**mrem/yr**	Note: not a calculated result
Percent	51.7%		of this study

ICRP (1996) *Age-Dependent Doses to Members of the Public from Intake of Radionuclides: Part 5. Compilation of Ingestion and Inhalation Dose Coefficients* , Annals of the International Commission on Radiological Protection **26**(1), Pergamon Press, Oxford (ICRP Publication 72).

10-year-old CHILD

Radionuc.	Sv per Bq	mrem/uCi	mrem/pCi
Ra-226	8 E-7	2.96E+03	2.96E-03
Pb-210	1.9 E-6	7.03E+03	7.03E-03

APPENDIX B

LABORATORY REPORT
METALS

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARTH-01	9829-001	<0.018	0.022
ARTH-02	9829-002	0.029	0.022
ARTH-03	9829-003	<0.018	0.022
ARTH-04	9829-004	<0.018	0.022
ARTH-05	9829-005	<0.018	0.022
ARTH-06	9829-006	<0.018	0.022
ARTH-07	9829-007	<0.018	0.022
ARTH-08	9829-008	<0.018	0.022
ARTH-09	9829-009	<0.018	0.022
ARTH-10	9829-010	<0.018	0.022
ARBS-01	9829-011	<0.018	0.022
ARBS-02	9829-012	<0.018	0.022
ARBS-03	9829-013	<0.018	0.022
ARBS-04	9829-014	<0.018	0.022
ARBS-05	9829-015	<0.018	0.022
ARBS-06	9829-016	<0.018	0.022

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARBS-07	9829-017	<0.018	0.022
ARBS-08	9829-018	<0.018	0.022
ARBS-09	9829-019	<0.018	0.022
ARBS-10	9829-020	<0.018	0.022
ARBG-01	9829-021	<0.018	0.022
ARBG-02	9829-022	<0.018	0.022
ARBG-03	9829-023	<0.018	0.022
ARBG-04	9829-024	<0.018	0.022
ARBG-05	9829-025	<0.018	0.022
ARBG-06	9829-026	<0.018	0.022
ARBG-07	9829-027	<0.018	0.022
ARBG-08	9829-028	<0.018	0.022
ARBG-09	9829-029	<0.018	0.022
ARBG-10	9829-030	<0.018	0.022
ARCF-01	9829-031	<0.018	0.022
ARCF-02	9829-032	<0.018	0.022

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARCF-03	9829-033	<0.018	0.022
ARCF-04	9829-034	<0.018	0.022
ARCF-05	9829-035	<0.018	0.022
ARCF-06	9829-036	<0.018	0.022
ARCF-07	9829-037	0.102	0.022
ARCF-08	9829-038	<0.018	0.022
ARCF-09	9829-039	0.024	0.022
ARCF-10	9829-040	<0.018	0.022
DPBS-01	9829-041	<0.018	0.022
DPBS-02	9829-042	<0.018	0.022
DPBS-03	9829-043	<0.018	0.022
DPBS-04	9829-044	<0.018	0.022
DPBS-05	9829-045	<0.018	0.022
DPBS-06	9829-046	<0.018	0.022
DPBS-07	9829-047	<0.018	0.022
DPBS-08	9829-048	<0.018	0.022

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPBS-09	9829-049	<0.018	0.022
DPBS-10	9829-050	<0.018	0.022
DPBG-01	9829-051	<0.018	0.022
DPBG-02	9829-052	<0.018	0.022
DPBG-03	9829-053	<0.018	0.022
DPBG-04	9829-054	<0.018	0.022
DPBG-05	9829-055	<0.018	0.022
DPBG-06	9829-056	<0.018	0.022
DPBG-07	9829-057	<0.018	0.022
DPBG-08	9829-058	<0.018	0.022
DPBG-09	9829-059	<0.018	0.022
DPBG-10	9829-060	<0.018	0.022
DPCF-01	9829-061	<0.018	0.022
DPCF-02	9829-062	<0.018	0.022
DPCF-03	9829-063	<0.018	0.022
DPCF-04	9829-064	<0.018	0.022

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPCF-05	9829-065	<0.018	0.022
DPCF-06	9829-066	<0.018	0.022
DPCF-07	9829-067	<0.018	0.022
DPCF-08	9829-068	<0.018	0.022
DPCF-09	9829-069	<0.018	0.022
DPCF-10	9829-070	<0.018	0.022
DPTH-01	9829-071	<0.018	0.022
DPTH-02	9829-072	<0.018	0.022
DPTH-03	9829-073	<0.018	0.022
DPTH-04	9829-074	<0.018	0.022
DPTH-05	9829-075	<0.018	0.022
DPTH-06	9829-076	<0.018	0.022
DPTH-07	9829-077	<0.018	0.022
DPTH-08	9829-078	<0.018	0.022
DPTH-09	9829-079	<0.018	0.022
DPTH-10	9829-080	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPSC-01	9829-081	<0.018	0.022
DPSC-02	9829-082	<0.018	0.022
DPSC-03	9829-083	<0.018	0.022
DPSC-04	9829-084	<0.018	0.022
DPSC-05	9829-085	<0.018	0.022
DPSC-06	9829-086	<0.018	0.022
DPSC-07	9829-087	<0.018	0.022
DPSC-08	9829-088	<0.018	0.022
DPSC-09	9829-089	<0.018	0.022
DPSC-10	9829-090	<0.018	0.022
FLBG-01	9829-091	<0.018	0.022
FLBG-02	9829-092	<0.018	0.022
FLBG-03	9829-093	<0.018	0.022
FLBG-04	9829-094	<0.018	0.022
FLBG-05	9829-095	<0.018	0.022
FLBG-06	9829-096	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBG-07	9829-097	<0.018	0.022
FLBG-08	9829-098	<0.018	0.022
FLBG-09	9829-099	<0.018	0.022
FLBG-10	9829-100	<0.018	0.022
FLTH-01	9829-101	<0.018	0.022
FLTH-02	9829-102	<0.018	0.022
FLTH-03	9829-103	<0.018	0.022
FLTH-04	9829-104	<0.018	0.022
FLTH-05	9829-105	<0.018	0.022
FLTH-06	9829-106	<0.018	0.022
FLTH-07	9829-107	<0.018	0.022
FLTH-08	9829-108	<0.018	0.022
FLTH-09	9829-109	<0.018	0.022
FLTH-10	9829-110	<0.018	0.022
FLBS-01	9829-111	<0.018	0.022
FLBS-02	9829-112	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBS-03	9829-113	<0.018	0.022
FLBS-04	9829-114	<0.018	0.022
FLBS-05	9829-115	<0.018	0.022
FLBS-06	9829-116	<0.018	0.022
FLBS-07	9829-117	<0.018	0.022
FLBS-08	9829-118	<0.018	0.022
FLBS-09	9829-119	<0.018	0.022
FLBS-10	9829-120	<0.018	0.022
HUCF-01	9829-121	<0.018	0.022
HUCF-02	9829-122	<0.018	0.022
HUCF-03	9829-123	<0.018	0.022
HUCF-04	9829-124	<0.018	0.022
HUCF-05	9829-125	<0.018	0.022
HUCF-06	9829-126	<0.018	0.022
HUCF-07	9829-127	<0.018	0.022
HUCF-08	9829-128	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUCF-09	9829-129	<0.018	0.022
HUCF-10	9829-130	<0.018	0.022
HUTH-01	9829-131	<0.018	0.022
HUTH-02	9829-132	<0.018	0.022
HUTH-03	9829-133	<0.018	0.022
HUTH-04	9829-134	<0.018	0.022
HUTH-05	9829-135	<0.018	0.022
HUTH-06	9829-136	<0.018	0.022
HUTH-07	9829-137	<0.018	0.022
HUTH-08	9829-138	<0.018	0.022
HUTH-09	9829-139	<0.018	0.022
HUTH-10	9829-140	<0.018	0.022
HUBS-01	9829-141	<0.018	0.022
HUBS-02	9829-142	<0.018	0.022
HUBS-03	9829-143	<0.018	0.022
HUBS-04	9829-144	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUBS-05	9829-145	<0.018	0.022
HUBS-06	9829-146	<0.018	0.022
HUBS-07	9829-147	<0.018	0.022
HUBS-08	9829-148	<0.018	0.022
HUBS-09	9829-149	<0.018	0.022
HUBS-10	9829-150	<0.018	0.022
HUBG-01	9829-151	<0.018	0.022
HUBG-02	9829-152	<0.018	0.022
HUBG-03	9829-153	<0.018	0.022
HUBG-04	9829-154	<0.018	0.022
HUBG-05	9829-155	<0.018	0.022
HUBG-06	9829-156	<0.018	0.022
HUBG-07	9829-157	<0.018	0.022
HUBG-08	9829-158	<0.018	0.022
HUBG-09	9829-159	<0.018	0.022
HUBG-10	9829-160	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUSP-01	9829-161	<0.018	0.022
HUSP-02	9829-162	<0.018	0.022
MABG-01	9829-163	<0.018	0.022
MABG-02	9829-164	<0.018	0.022
MABG-03	9829-165	<0.018	0.022
MABG-04	9829-166	<0.018	0.022
MABG-05	9829-167	<0.018	0.022
MABG-06	9829-168	<0.018	0.022
MABG-07	9829-169	<0.018	0.022
MABG-08	9829-170	<0.018	0.022
MABG-09	9829-171	<0.018	0.022
MABG-10	9829-172	<0.018	0.022
MABS-01	9829-173	<0.018	0.022
MABS-02	9829-174	<0.018	0.022
MABS-03	9829-175	<0.018	0.022
MABS-04	9829-176	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MABS-05	9829-177	<0.018	0.022
MABS-06	9829-178	<0.018	0.022
MABS-07	9829-179	<0.018	0.022
MABS-08	9829-180	<0.018	0.022
MABS-09	9829-181	<0.018	0.022
MABS-10	9829-182	<0.018	0.022
MACF-01	9829-183	<0.018	0.022
MACF-02	9829-184	<0.018	0.022
MACF-03	9829-185	<0.018	0.022
MACF-04	9829-186	<0.018	0.022
MACF-05	9829-187	<0.018	0.022
MACF-06	9829-188	<0.018	0.022
MACF-07	9829-189	<0.018	0.022
MACF-08	9829-190	<0.018	0.022
MACF-09	9829-191	<0.018	0.022
MACF-10	9829-192	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MATH-01	9829-193	<0.018	0.022
MATH-02	9829-194	<0.018	0.022
MRBS-01	9829-195	<0.018	0.022
MRBS-02	9829-196	<0.018	0.022
MRBS-03	9829-197	<0.018	0.022
MRBS-04	9829-198	<0.018	0.022
MRBS-05	9829-199	<0.018	0.022
MRBS-06	9829-200	<0.018	0.022
MRBS-07	9829-201	<0.018	0.022
MRBS-08	9829-202	<0.018	0.022
MRBS-09	9829-203	<0.018	0.022
MRBS-10	9829-204	<0.018	0.022
MRBG-01	9829-205	<0.018	0.022
MRBG-02	9829-206	<0.018	0.022
MRBG-03	9829-207	<0.018	0.022
MRBG-04	9829-208	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRBG-05	9829-209	<0.018	0.022
MRBG-06	9829-210	<0.018	0.022
MRBG-07	9829-211	<0.018	0.022
MRBG-08	9829-212	<0.018	0.022
MRBG-09	9829-213	<0.018	0.022
MRBG-10	9829-214	<0.018	0.022
MRTH-01	9829-215	<0.018	0.022
MRTH-02	9829-216	<0.018	0.022
MRTH-03	9829-217	<0.018	0.022
MRTH-04	9829-218	<0.018	0.022
MRTH-05	9829-219	<0.018	0.022
MRTH-06	9829-220	<0.018	0.022
MRTH-07	9829-221	<0.018	0.022
MRTH-08	9829-222	<0.018	0.022
MRTH-09	9829-223	<0.018	0.022
MRTH-10	9829-224	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRCF-01	9829-225	<0.018	0.022
MRCF-02	9829-226	<0.018	0.022
MRCF-03	9829-227	<0.018	0.022
MRCF-04	9829-228	<0.018	0.022
MRCF-05	9829-229	<0.018	0.022
MRCF-06	9829-230	<0.018	0.022
MRCF-07	9829-231	<0.018	0.022
MRCF-08	9829-232	<0.018	0.022
MRCF-09	9829-233	<0.018	0.022
MRCF-10	9829-234	<0.018	0.022
MRSP-01	9829-235	<0.018	0.022
MRSP-02	9829-236	<0.018	0.022
MRSP-03	9829-237	<0.018	0.022
MRSP-04	9829-238	<0.018	0.022
MRSP-05	9829-239	<0.018	0.022
MRSP-06	9829-240	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRSP-07	9829-241	<0.018	0.022
SCBS-01	9829-242	<0.018	0.022
SCBS-02	9829-243	<0.018	0.022
SCBS-03	9829-244	<0.018	0.022
SCBS-04	9829-245	<0.018	0.022
SCBS-05	9829-246	<0.018	0.022
SCBS-06	9829-247	<0.018	0.022
SCBS-07	9829-248	<0.018	0.022
SCBS-08	9829-249	<0.018	0.022
SCBS-09	9829-250	<0.018	0.022
SCBS-10	9829-251	<0.018	0.022
SCBG-01	9829-252	<0.018	0.022
SCBG-02	9829-253	<0.018	0.022
SCBG-03	9829-254	<0.018	0.022
SCBG-04	9829-255	<0.018	0.022
SCBG-05	9829-256	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCBG-06	9829-257	<0.018	0.022
SCBG-07	9829-258	<0.018	0.022
SCBG-08	9829-259	<0.018	0.022
SCBG-09	9829-260	<0.018	0.022
SCBG-10	9829-261	<0.018	0.022
SCTH-01	9829-262	<0.018	0.022
SCTH-02	9829-263	<0.018	0.022
SCTH-03	9829-264	<0.018	0.022
SCTH-04	9829-265	<0.018	0.022
SCTH-05	9829-266	<0.018	0.022
SCTH-06	9829-267	<0.018	0.022
SCTH-07	9829-268	<0.018	0.022
SCTH-08	9829-269	<0.018	0.022
SCTH-09	9829-270	<0.018	0.022
SCTH-10	9829-271	<0.018	0.022
SCSP-01	9829-272	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCSP-02	9829-273	<0.018	0.022
SCSP-03	9829-274	<0.018	0.022
SCSP-04	9829-275	<0.018	0.022
SCSP-05	9829-276	<0.018	0.022
SCSP-06	9829-277	<0.018	0.022
SCSP-07	9829-278	<0.018	0.022
SCSP-08	9829-279	<0.018	0.022
SCSP-09	9829-280	<0.018	0.022
SCSP-10	9829-281	<0.018	0.022
SCCF-01	9829-282	<0.018	0.022
SCCF-02	9829-283	<0.018	0.022
SCCF-03	9829-284	<0.018	0.022
SCCF-04	9829-285	<0.018	0.022
TNTH-01	9829-286	<0.018	0.022
TNTH-02	9829-287	<0.018	0.022
TNTH-03	9829-288	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNTH-04	9829-289	<0.018	0.022
TNTH-05	9829-290	<0.018	0.022
TNTH-06	9829-291	<0.018	0.022
TNTH-07	9829-292	<0.018	0.022
TNTH-08	9829-293	<0.018	0.022
TNTH-09	9829-294	<0.018	0.022
TNTH-10	9829-295	<0.018	0.022
TNBG-01	9829-296	<0.018	0.022
TNBG-02	9829-297	<0.018	0.022
TNBG-03	9829-298	0.018 M	0.022
TNBG-04	9829-299	<0.018	0.022
TNBG-05	9829-300	<0.018	0.022
TNBG-06	9829-301	<0.018	0.022
TNBG-07	9829-302	<0.018	0.022
TNBG-08	9829-303	<0.018	0.022
TNBG-09	9829-304	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBG-10	9829-305	<0.018	0.022
TNSP-01	9829-306	0.019 M	0.022
TNSP-02	9829-307	<0.018	0.022
TNSP-03	9829-308	0.029	0.022
TNSP-04	9829-309	<0.018	0.022
TNSP-05	9829-310	<0.018	0.022
TNSP-06	9829-311	<0.018	0.022
TNSP-07	9829-312	<0.018	0.022
TNSP-08	9829-313	<0.018	0.022
TNSP-09	9829-314	<0.018	0.022
TNSP-10	9829-315	<0.018	0.022
TNBS-01	9829-316	<0.018	0.022
TNBS-02	9829-317	<0.018	0.022
TNBS-03	9829-318	<0.018	0.022
TNBS-04	9829-319	<0.018	0.022
TNBS-05	9829-320	<0.018	0.022

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBS-06	9829-321	<0.018	0.022
TNBS-07	9829-322	<0.018	0.022
TNBS-08	9829-323	<0.018	0.022
TNBS-09	9829-324	<0.018	0.022
TNBS-10	9829-325	<0.018	0.022
TNCF-01	9829-326	<0.018	0.022
TNCF-02	9829-327	<0.018	0.022
TNCF-03	9829-328	0.101	0.022
TNCF-04	9829-329	<0.018	0.022
TNCF-05	9829-330	<0.018	0.022
TNCF-06	9829-331	<0.018	0.022
TNCF-07	9829-332	0.048	0.022
TNCF-08	9829-333	<0.018	0.022
TNCF-09	9829-334	<0.018	0.022
WWBS-01	9829-335	<0.018	0.022
WWBS-02	9829-336	<0.018	0.022

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Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBS-03	9829-337	<0.018	0.022
WWBS-04	9829-338	<0.018	0.022
WWBS-05	9829-339	<0.018	0.022
WWBS-06	9829-340	<0.018	0.022
WWBS-07	9829-341	<0.018	0.022
WWBS-08	9829-342	<0.018	0.022
WWBS-09	9829-343	<0.018	0.022
WWBS-10	9829-344	<0.018	0.022
WWBG-01	9829-345	<0.018	0.022
WWBG-02	9829-346	<0.018	0.022
WWBG-03	9829-347	<0.018	0.022
WWBG-04	9829-348	<0.018	0.022
WWBG-05	9829-349	<0.018	0.022
WWBG-06	9829-350	<0.018	0.022
WWBG-07	9829-351	<0.018	0.022
WWBG-08	9829-352	<0.018	0.022

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Midwest Research Institute
Florida Division

Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBG-09	9829-353	<0.018	0.022
WWBG-10	9829-354	<0.018	0.022
WWSP-01	9829-355	<0.018	0.022
WWSP-02	9829-356	<0.018	0.022
WWSP-03	9829-357	<0.018	0.022
WWSP-04	9829-358	<0.018	0.022
WWSP-05	9829-359	<0.018	0.022
WWSP-06	9829-360	<0.018	0.022
WWSP-07	9829-361	<0.018	0.022
WWSP-08	9829-362	<0.018	0.022
WWSP-09	9829-363	<0.018	0.022
WWSP-10	9829-364	<0.018	0.022
WWCF-01	9829-365	<0.018	0.022
WWCF-02	9829-366	<0.018	0.022
WWCF-03	9829-367	<0.018	0.022
WWCF-04	9829-368	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWCF-05	9829-369	<0.018	0.022
WWCF-06	9829-370	<0.018	0.022
WWCF-07	9829-371	<0.018	0.022
WWCF-08	9829-372	<0.018	0.022
WWCF-09	9829-373	<0.018	0.022
WWCF-10	9829-374	<0.018	0.022
FLCF-01	9829-375	<0.018	0.022
FLSP-01	9829-376	<0.018	0.022
FLSP-02	9829-377	<0.018	0.022
FLSP-03	9829-378	<0.018	0.022
FLSP-04	9829-379	<0.018	0.022
FLSP-05	9829-380	<0.018	0.022
FLSP-06	9829-381	<0.018	0.022
FLSP-07	9829-382	<0.018	0.022
FLSP-08	9829-383	<0.018	0.022
FLSP-09	9829-393	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLSP-10	9829-394	<0.018	0.022
IMCSC-01	9829-395	<0.018	0.022
IMCSC-02	9829-396	<0.018	0.022
IMCSC-03	9829-397	<0.018	0.022
IMCSC-04	9829-398	<0.018	0.022
IMCSC-05	9829-399	<0.018	0.022
IMCSC-06	9829-400	<0.018	0.022
IMCSC-07	9829-401	<0.018	0.022
IMCSC-08	9829-402	<0.018	0.022
IMCSC-09	9829-403	<0.018	0.022
IMCSC-10	9829-404	<0.018	0.022
IMCBG-01	9829-405	<0.018	0.022
IMCBG-02	9829-406	<0.018	0.022
IMCBG-03	9829-407	<0.018	0.022
IMCBG-04	9829-408	<0.018	0.022
IMCBG-05	9829-409	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCBG-06	9829-410	<0.018	0.022
IMCBG-07	9829-411	<0.018	0.022
IMCBG-08	9829-412	<0.018	0.022
IMCBG-09	9829-413	<0.018	0.022
IMCBG-10	9829-414	<0.018	0.022
IMCBS-01	9829-415	<0.018	0.022
IMCBS-02	9829-416	<0.018	0.022
IMCBS-03	9829-417	<0.018	0.022
IMCBS-04	9829-418	<0.018	0.022
IMCBS-05	9829-419	<0.018	0.022
IMCBS-06	9829-420	<0.018	0.022
IMCBS-07	9829-421	<0.018	0.022
IMCBS-08	9829-422	<0.018	0.022
IMCBS-09	9829-423	<0.018	0.022
IMCBS-10	9829-424	<0.018	0.022
IMCTH-01	9829-425	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCTH-02	9829-426	<0.018	0.022
IMCTH-03	9829-427	<0.018	0.022
IMCTH-04	9829-428	<0.018	0.022
IMCTH-05	9829-429	<0.018	0.022
IMCTH-06	9829-430	<0.018	0.022
IMCTH-07	9829-431	<0.018	0.022
IMCTH-08	9829-432	<0.018	0.022
IMCTH-09	9829-433	<0.018	0.022
IMCTH-10	9829-434	<0.018	0.022
IMCSP-01	9829-435	<0.018	0.022
IMCSP-02	9829-436	<0.018	0.022
IMCSP-03	9829-437	<0.018	0.022
IMCSP-04	9829-438	<0.018	0.022
IMCSP-05	9829-439	<0.018	0.022
IMCSP-06	9829-440	<0.018	0.022
IMCSP-07	9829-441	<0.018	0.022

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Laboratory Analysis
Cadmium

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCSP-08	9829-442	<0.018	0.022
IMCSP-09	9829-443	<0.018	0.022
IMCSP-10	9829-444	<0.018	0.022
IMCCF-01	9829-445	<0.018	0.022

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARTH-01	9829-001	<0.007	0.013
ARTH-02	9829-002	0.011 M	0.013
ARTH-03	9829-003	<0.007	0.013
ARTH-04	9829-004	<0.007	0.013
ARTH-05	9829-005	<0.007	0.013
ARTH-06	9829-006	<0.007	0.013
ARTH-07	9829-007	<0.007	0.013
ARTH-08	9829-008	<0.007	0.013
ARTH-09	9829-009	<0.007	0.013
ARTH-10	9829-010	<0.007	0.013
ARBS-01	9829-011	<0.007	0.013
ARBS-02	9829-012	<0.007	0.013
ARBS-03	9829-013	<0.007	0.013
ARBS-04	9829-014	<0.007	0.013
ARBS-05	9829-015	<0.007	0.013
ARBS-06	9829-016	<0.007	0.013

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Midwest Research Institute
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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARBS-07	9829-017	<0.007	0.013
ARBS-08	9829-018	<0.007	0.013
ARBS-09	9829-019	<0.007	0.013
ARBS-10	9829-020	<0.007	0.013
ARBG-01	9829-021	0.007 M	0.013
ARBG-02	9829-022	<0.007	0.013
ARBG-03	9829-023	<0.007	0.013
ARBG-04	9829-024	<0.007	0.013
ARBG-05	9829-025	<0.007	0.013
ARBG-06	9829-026	<0.007	0.013
ARBG-07	9829-027	<0.007	0.013
ARBG-08	9829-028	0.077	0.013
ARBG-09	9829-029	<0.007	0.013
ARBG-10	9829-030	<0.007	0.013
ARCF-01	9829-031	0.013	0.013
ARCF-02	9829-032	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARCF-03	9829-033	<0.007	0.013
ARCF-04	9829-034	<0.007	0.013
ARCF-05	9829-035	<0.007	0.013
ARCF-06	9829-036	<0.007	0.013
ARCF-07	9829-037	0.011 M	0.013
ARCF-08	9829-038	<0.007	0.013
ARCF-09	9829-039	0.015	0.013
ARCF-10	9829-040	0.028	0.013
DPBS-01	9829-041	<0.007	0.013
DPBS-02	9829-042	<0.007	0.013
DPBS-03	9829-043	<0.007	0.013
DPBS-04	9829-044	<0.007	0.013
DPBS-05	9829-045	<0.007	0.013
DPBS-06	9829-046	<0.007	0.013
DPBS-07	9829-047	<0.007	0.013
DPBS-08	9829-048	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPBS-09	9829-049	<0.007	0.013
DPBS-10	9829-050	<0.007	0.013
DPBG-01	9829-051	0.014	0.013
DPBG-02	9829-052	<0.007	0.013
DPBG-03	9829-053	<0.007	0.013
DPBG-04	9829-054	<0.007	0.013
DPBG-05	9829-055	<0.007	0.013
DPBG-06	9829-056	<0.007	0.013
DPBG-07	9829-057	<0.007	0.013
DPBG-08	9829-058	<0.007	0.013
DPBG-09	9829-059	<0.007	0.013
DPBG-10	9829-060	<0.007	0.013
DPCF-01	9829-061	<0.007	0.013
DPCF-02	9829-062	<0.007	0.013
DPCF-03	9829-063	<0.007	0.013
DPCF-04	9829-064	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPCF-05	9829-065	<0.007	0.013
DPCF-06	9829-066	<0.007	0.013
DPCF-07	9829-067	0.012 M	0.013
DPCF-08	9829-068	0.020	0.013
DPCF-09	9829-069	0.019	0.013
DPCF-10	9829-070	0.009 M	0.013
DPTH-01	9829-071	0.009 M	0.013
DPTH-02	9829-072	<0.007	0.013
DPTH-03	9829-073	<0.007	0.013
DPTH-04	9829-074	<0.007	0.013
DPTH-05	9829-075	0.009 M	0.013
DPTH-06	9829-076	0.011 M	0.013
DPTH-07	9829-077	<0.007	0.013
DPTH-08	9829-078	0.030	0.013
DPTH-09	9829-079	<0.007	0.013
DPTH-10	9829-080	0.016	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPSC-01	9829-081	<0.007	0.013
DPSC-02	9829-082	<0.007	0.013
DPSC-03	9829-083	<0.007	0.013
DPSC-04	9829-084	<0.007	0.013
DPSC-05	9829-085	<0.007	0.013
DPSC-06	9829-086	<0.007	0.013
DPSC-07	9829-087	<0.007	0.013
DPSC-08	9829-088	<0.007	0.013
DPSC-09	9829-089	<0.007	0.013
DPSC-10	9829-090	<0.007	0.013
FLBG-01	9829-091	<0.007	0.013
FLBG-02	9829-092	<0.007	0.013
FLBG-03	9829-093	<0.007	0.013
FLBG-04	9829-094	<0.007	0.013
FLBG-05	9829-095	<0.007	0.013
FLBG-06	9829-096	<0.007	0.013

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBG-07	9829-097	<0.007	0.013
FLBG-08	9829-098	<0.007	0.013
FLBG-09	9829-099	<0.007	0.013
FLBG-10	9829-100	<0.007	0.013
FLTH-01	9829-101	<0.007	0.013
FLTH-02	9829-102	<0.007	0.013
FLTH-03	9829-103	<0.007	0.013
FLTH-04	9829-104	<0.007	0.013
FLTH-05	9829-105	<0.007	0.013
FLTH-06	9829-106	<0.007	0.013
FLTH-07	9829-107	<0.007	0.013
FLTH-08	9829-108	<0.007	0.013
FLTH-09	9829-109	<0.007	0.013
FLTH-10	9829-110	<0.007	0.013
FLBS-01	9829-111	<0.007	0.013
FLBS-02	9829-112	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBS-03	9829-113	<0.007	0.013
FLBS-04	9829-114	<0.007	0.013
FLBS-05	9829-115	<0.007	0.013
FLBS-06	9829-116	<0.007	0.013
FLBS-07	9829-117	<0.007	0.013
FLBS-08	9829-118	<0.007	0.013
FLBS-09	9829-119	<0.007	0.013
FLBS-10	9829-120	<0.007	0.013
HUCF-01	9829-121	<0.007	0.013
HUCF-02	9829-122	0.007 M	0.013
HUCF-03	9829-123	0.008 M	0.013
HUCF-04	9829-124	0.015	0.013
HUCF-05	9829-125	<0.007	0.013
HUCF-06	9829-126	<0.007	0.013
HUCF-07	9829-127	<0.007	0.013
HUCF-08	9829-128	<0.007	0.013

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUCF-09	9829-129	0.013	0.013
HUCF-10	9829-130	<0.007	0.013
HUTH-01	9829-131	0.008 M	0.013
HUTH-02	9829-132	<0.007	0.013
HUTH-03	9829-133	0.008 M	0.013
HUTH-04	9829-134	0.012 M	0.013
HUTH-05	9829-135	0.016	0.013
HUTH-06	9829-136	<0.007	0.013
HUTH-07	9829-137	0.378	0.013
HUTH-08	9829-138	0.288	0.013
HUTH-09	9829-139	0.008 M	0.013
HUTH-10	9829-140	0.042	0.013
HUBS-01	9829-141	<0.007	0.013
HUBS-02	9829-142	<0.007	0.013
HUBS-03	9829-143	0.008 M	0.013
HUBS-04	9829-144	0.009 M	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUBS-05	9829-145	<0.007	0.013
HUBS-06	9829-146	<0.007	0.013
HUBS-07	9829-147	<0.007	0.013
HUBS-08	9829-148	<0.007	0.013
HUBS-09	9829-149	<0.007	0.013
HUBS-10	9829-150	<0.007	0.013
HUBG-01	9829-151	<0.007	0.013
HUBG-02	9829-152	<0.007	0.013
HUBG-03	9829-153	<0.007	0.013
HUBG-04	9829-154	<0.007	0.013
HUBG-05	9829-155	<0.007	0.013
HUBG-06	9829-156	<0.007	0.013
HUBG-07	9829-157	0.007 M	0.013
HUBG-08	9829-158	<0.007	0.013
HUBG-09	9829-159	<0.007	0.013
HUBG-10	9829-160	0.033	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUSP-01	9829-161	<0.007	0.013
HUSP-02	9829-162	<0.007	0.013
MABG-01	9829-163	<0.007	0.013
MABG-02	9829-164	<0.007	0.013
MABG-03	9829-165	<0.007	0.013
MABG-04	9829-166	<0.007	0.013
MABG-05	9829-167	<0.007	0.013
MABG-06	9829-168	<0.007	0.013
MABG-07	9829-169	<0.007	0.013
MABG-08	9829-170	<0.007	0.013
MABG-09	9829-171	<0.007	0.013
MABG-10	9829-172	<0.007	0.013
MABS-01	9829-173	<0.007	0.013
MABS-02	9829-174	<0.007	0.013
MABS-03	9829-175	0.048	0.013
MABS-04	9829-176	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MABS-05	9829-177	<0.007	0.013
MABS-06	9829-178	<0.007	0.013
MABS-07	9829-179	<0.007	0.013
MABS-08	9829-180	<0.007	0.013
MABS-09	9829-181	<0.007	0.013
MABS-10	9829-182	<0.007	0.013
MACF-01	9829-183	<0.007	0.013
MACF-02	9829-184	<0.007	0.013
MACF-03	9829-185	0.011 M	0.013
MACF-04	9829-186	<0.007	0.013
MACF-05	9829-187	<0.007	0.013
MACF-06	9829-188	<0.007	0.013
MACF-07	9829-189	0.031	0.013
MACF-08	9829-190	<0.007	0.013
MACF-09	9829-191	<0.007	0.013
MACF-10	9829-192	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MATH-01	9829-193	<0.007	0.013
MATH-02	9829-194	<0.007	0.013
MRBS-01	9829-195	<0.007	0.013
MRBS-02	9829-196	0.034	0.013
MRBS-03	9829-197	0.022	0.013
MRBS-04	9829-198	<0.007	0.013
MRBS-05	9829-199	<0.007	0.013
MRBS-06	9829-200	<0.007	0.013
MRBS-07	9829-201	<0.007	0.013
MRBS-08	9829-202	0.011 M	0.013
MRBS-09	9829-203	<0.007	0.013
MRBS-10	9829-204	<0.007	0.013
MRBG-01	9829-205	<0.007	0.013
MRBG-02	9829-206	<0.007	0.013
MRBG-03	9829-207	<0.007	0.013
MRBG-04	9829-208	<0.007	0.013

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Laboratory Analysis
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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRBG-05	9829-209	<0.007	0.013
MRBG-06	9829-210	<0.007	0.013
MRBG-07	9829-211	<0.007	0.013
MRBG-08	9829-212	<0.007	0.013
MRBG-09	9829-213	<0.007	0.013
MRBG-10	9829-214	0.007 M	0.013
MRTH-01	9829-215	0.245	0.013
MRTH-02	9829-216	0.063	0.013
MRTH-03	9829-217	0.037	0.013
MRTH-04	9829-218	0.050	0.013
MRTH-05	9829-219	0.022	0.013
MRTH-06	9829-220	0.044	0.013
MRTH-07	9829-221	<0.007	0.013
MRTH-08	9829-222	0.023	0.013
MRTH-09	9829-223	0.127	0.013
MRTH-10	9829-224	0.049	0.013

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Laboratory Analysis
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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRCF-01	9829-225	0.007 M	0.013
MRCF-02	9829-226	<0.007	0.013
MRCF-03	9829-227	0.009 M	0.013
MRCF-04	9829-228	0.066	0.013
MRCF-05	9829-229	0.007 M	0.013
MRCF-06	9829-230	0.054	0.013
MRCF-07	9829-231	0.017	0.013
MRCF-08	9829-232	0.015	0.013
MRCF-09	9829-233	0.047	0.013
MRCF-10	9829-234	0.140	0.013
MRSP-01	9829-235	<0.007	0.013
MRSP-02	9829-236	<0.007	0.013
MRSP-03	9829-237	<0.007	0.013
MRSP-04	9829-238	0.013	0.013
MRSP-05	9829-239	<0.007	0.013
MRSP-06	9829-240	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRSP-07	9829-241	<0.007	0.013
SCBS-01	9829-242	<0.007	0.013
SCBS-02	9829-243	<0.007	0.013
SCBS-03	9829-244	<0.007	0.013
SCBS-04	9829-245	<0.007	0.013
SCBS-05	9829-246	0.007 M	0.013
SCBS-06	9829-247	<0.007	0.013
SCBS-07	9829-248	<0.007	0.013
SCBS-08	9829-249	<0.007	0.013
SCBS-09	9829-250	<0.007	0.013
SCBS-10	9829-251	<0.007	0.013
SCBG-01	9829-252	<0.007	0.013
SCBG-02	9829-253	<0.007	0.013
SCBG-03	9829-254	<0.007	0.013
SCBG-04	9829-255	<0.007	0.013
SCBG-05	9829-256	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCBG-06	9829-257	<0.007	0.013
SCBG-07	9829-258	0.012 M	0.013
SCBG-08	9829-259	<0.007	0.013
SCBG-09	9829-260	<0.007	0.013
SCBG-10	9829-261	<0.007	0.013
SCTH-01	9829-262	<0.007	0.013
SCTH-02	9829-263	<0.007	0.013
SCTH-03	9829-264	<0.007	0.013
SCTH-04	9829-265	<0.007	0.013
SCTH-05	9829-266	0.011 M	0.013
SCTH-06	9829-267	<0.007	0.013
SCTH-07	9829-268	<0.007	0.013
SCTH-08	9829-269	<0.007	0.013
SCTH-09	9829-270	<0.007	0.013
SCTH-10	9829-271	<0.007	0.013
SCSP-01	9829-272	<0.007	0.013

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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCSP-02	9829-273	<0.007	0.013
SCSP-03	9829-274	<0.007	0.013
SCSP-04	9829-275	<0.007	0.013
SCSP-05	9829-276	<0.007	0.013
SCSP-06	9829-277	<0.007	0.013
SCSP-07	9829-278	<0.007	0.013
SCSP-08	9829-279	<0.007	0.013
SCSP-09	9829-280	<0.007	0.013
SCSP-10	9829-281	<0.007	0.013
SCCF-01	9829-282	<0.007	0.013
SCCF-02	9829-283	<0.007	0.013
SCCF-03	9829-284	<0.007	0.013
SCCF-04	9829-285	<0.007	0.013
TNTH-01	9829-286	<0.007	0.013
TNTH-02	9829-287	<0.007	0.013
TNTH-03	9829-288	<0.007	0.013

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Laboratory Analysis
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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNTH-04	9829-289	<0.007	0.013
TNTH-05	9829-290	<0.007	0.013
TNTH-06	9829-291	0.007 M	0.013
TNTH-07	9829-292	<0.007	0.013
TNTH-08	9829-293	<0.007	0.013
TNTH-09	9829-294	0.011 M	0.013
TNTH-10	9829-295	<0.007	0.013
TNBG-01	9829-296	<0.007	0.013
TNBG-02	9829-297	<0.007	0.013
TNBG-03	9829-298	<0.007	0.013
TNBG-04	9829-299	<0.007	0.013
TNBG-05	9829-300	<0.007	0.013
TNBG-06	9829-301	<0.007	0.013
TNBG-07	9829-302	<0.007	0.013
TNBG-08	9829-303	<0.007	0.013
TNBG-09	9829-304	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBG-10	9829-305	<0.007	0.013
TNSP-01	9829-306	<0.007	0.013
TNSP-02	9829-307	<0.007	0.013
TNSP-03	9829-308	<0.007	0.013
TNSP-04	9829-309	<0.007	0.013
TNSP-05	9829-310	<0.007	0.013
TNSP-06	9829-311	<0.007	0.013
TNSP-07	9829-312	<0.007	0.013
TNSP-08	9829-313	<0.007	0.013
TNSP-09	9829-314	<0.007	0.013
TNSP-10	9829-315	<0.007	0.013
TNBS-01	9829-316	0.008 M	0.013
TNBS-02	9829-317	<0.007	0.013
TNBS-03	9829-318	<0.007	0.013
TNBS-04	9829-319	<0.007	0.013
TNBS-05	9829-320	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBS-06	9829-321	<0.007	0.013
TNBS-07	9829-322	<0.007	0.013
TNBS-08	9829-323	<0.007	0.013
TNBS-09	9829-324	<0.007	0.013
TNBS-10	9829-325	<0.007	0.013
TNCF-01	9829-326	<0.007	0.013
TNCF-02	9829-327	0.007 M	0.013
TNCF-03	9829-328	<0.007	0.013
TNCF-04	9829-329	0.028	0.013
TNCF-05	9829-330	<0.007	0.013
TNCF-06	9829-331	<0.007	0.013
TNCF-07	9829-332	<0.007	0.013
TNCF-08	9829-333	<0.007	0.013
TNCF-09	9829-334	0.015	0.013
WWBS-01	9829-335	<0.007	0.013
WWBS-02	9829-336	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBS-03	9829-337	<0.007	0.013
WWBS-04	9829-338	<0.007	0.013
WWBS-05	9829-339	<0.007	0.013
WWBS-06	9829-340	<0.007	0.013
WWBS-07	9829-341	<0.007	0.013
WWBS-08	9829-342	<0.007	0.013
WWBS-09	9829-343	<0.007	0.013
WWBS-10	9829-344	<0.007	0.013
WWBG-01	9829-345	0.042	0.013
WWBG-02	9829-346	0.008 M	0.013
WWBG-03	9829-347	<0.007	0.013
WWBG-04	9829-348	0.018	0.013
WWBG-05	9829-349	0.010 M	0.013
WWBG-06	9829-350	<0.007	0.013
WWBG-07	9829-351	<0.007	0.013
WWBG-08	9829-352	<0.007	0.013

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBG-09	9829-353	<0.007	0.013
WWBG-10	9829-354	<0.007	0.013
WWSP-01	9829-355	<0.007	0.013
WWSP-02	9829-356	<0.007	0.013
WWSP-03	9829-357	<0.007	0.013
WWSP-04	9829-358	<0.007	0.013
WWSP-05	9829-359	<0.007	0.013
WWSP-06	9829-360	<0.007	0.013
WWSP-07	9829-361	<0.007	0.013
WWSP-08	9829-362	<0.007	0.013
WWSP-09	9829-363	<0.007	0.013
WWSP-10	9829-364	<0.007	0.013
WWCF-01	9829-365	<0.007	0.013
WWCF-02	9829-366	0.010 M	0.013
WWCF-03	9829-367	0.016	0.013
WWCF-04	9829-368	<0.007	0.013

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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWCF-05	9829-369	<0.007	0.013
WWCF-06	9829-370	<0.007	0.013
WWCF-07	9829-371	0.059	0.013
WWCF-08	9829-372	0.011 M	0.013
WWCF-09	9829-373	<0.007	0.013
WWCF-10	9829-374	<0.007	0.013
FLCF-01	9829-375	0.012 M	0.013
FLSP-01	9829-376	<0.007	0.013
FLSP-02	9829-377	<0.007	0.013
FLSP-03	9829-378	<0.007	0.013
FLSP-04	9829-379	<0.007	0.013
FLSP-05	9829-380	<0.007	0.013
FLSP-06	9829-381	0.012 M	0.013
FLSP-07	9829-382	<0.007	0.013
FLSP-08	9829-383	<0.007	0.013
FLSP-09	9829-393	<0.007	0.013

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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLSP-10	9829-394	<0.007	0.013
IMCSC-01	9829-395	<0.007	0.013
IMCSC-02	9829-396	<0.007	0.013
IMCSC-03	9829-397	<0.007	0.013
IMCSC-04	9829-398	<0.007	0.013
IMCSC-05	9829-399	<0.007	0.013
IMCSC-06	9829-400	<0.007	0.013
IMCSC-07	9829-401	<0.007	0.013
IMCSC-08	9829-402	0.094	0.013
IMCSC-09	9829-403	0.043	0.013
IMCSC-10	9829-404	0.008 M	0.013
IMCBG-01	9829-405	<0.007	0.013
IMCBG-02	9829-406	<0.007	0.013
IMCBG-03	9829-407	<0.007	0.013
IMCBG-04	9829-408	<0.007	0.013
IMCBG-05	9829-409	<0.007	0.013

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Laboratory Analysis
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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCBG-06	9829-410	<0.007	0.013
IMCBG-07	9829-411	<0.007	0.013
IMCBG-08	9829-412	<0.007	0.013
IMCBG-09	9829-413	<0.007	0.013
IMCBG-10	9829-414	<0.007	0.013
IMCBS-01	9829-415	<0.007	0.013
IMCBS-02	9829-416	<0.007	0.013
IMCBS-03	9829-417	<0.007	0.013
IMCBS-04	9829-418	<0.007	0.013
IMCBS-05	9829-419	<0.007	0.013
IMCBS-06	9829-420	<0.007	0.013
IMCBS-07	9829-421	<0.007	0.013
IMCBS-08	9829-422	<0.007	0.013
IMCBS-09	9829-423	<0.007	0.013
IMCBS-10	9829-424	<0.007	0.013
IMCTH-01	9829-425	<0.007	0.013

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Laboratory Analysis
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Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCTH-02	9829-426	<0.007	0.013
IMCTH-03	9829-427	<0.007	0.013
IMCTH-04	9829-428	<0.007	0.013
IMCTH-05	9829-429	<0.007	0.013
IMCTH-06	9829-430	<0.007	0.013
IMCTH-07	9829-431	<0.007	0.013
IMCTH-08	9829-432	<0.007	0.013
IMCTH-09	9829-433	0.011 M	0.013
IMCTH-10	9829-434	<0.007	0.013
IMCSP-01	9829-435	0.007 M	0.013
IMCSP-02	9829-436	<0.007	0.013
IMCSP-03	9829-437	0.010 M	0.013
IMCSP-04	9829-438	0.019	0.013
IMCSP-05	9829-439	0.007 M	0.013
IMCSP-06	9829-440	<0.007	0.013
IMCSP-07	9829-441	0.055	0.013

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Lead

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11	**Analytical Method:**	200.8
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCSP-08	9829-442	0.007 M	0.013
IMCSP-09	9829-443	<0.007	0.013
IMCSP-10	9829-444	<0.007	0.013
IMCCF-01	9829-445	<0.007	0.013

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARTH-01	9829-001	<0.005	0.046
ARTH-02	9829-002	0.008 M	0.046
ARTH-03	9829-003	<0.005	0.046
ARTH-04	9829-004	0.005 M	0.046
ARTH-05	9829-005	0.008 M	0.046
ARTH-06	9829-006	<0.005	0.046
ARTH-07	9829-007	<0.005	0.046
ARTH-08	9829-008	<0.005	0.046
ARTH-09	9829-009	0.007 M	0.046
ARTH-10	9829-010	0.005 M	0.046
ARBS-01	9829-011	0.074	0.046
ARBS-02	9829-012	0.091	0.046
ARBS-03	9829-013	0.082	0.046
ARBS-04	9829-014	0.125	0.046
ARBS-05	9829-015	0.077	0.046
ARBS-06	9829-016	0.112	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARBS-07	9829-017	0.162	0.046
ARBS-08	9829-018	0.082	0.046
ARBS-09	9829-019	0.089	0.046
ARBS-10	9829-020	0.050	0.046
ARBG-01	9829-021	0.026 M	0.046
ARBG-02	9829-022	0.021 M	0.046
ARBG-03	9829-023	0.023 M	0.046
ARBG-04	9829-024	0.017 M	0.046
ARBG-05	9829-025	0.013 M	0.046
ARBG-06	9829-026	0.017 M	0.046
ARBG-07	9829-027	0.019 M	0.046
ARBG-08	9829-028	0.016 M	0.046
ARBG-09	9829-029	0.015 M	0.046
ARBG-10	9829-030	0.017 M	0.046
ARCF-01	9829-031	0.015 M	0.046
ARCF-02	9829-032	0.063	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
ARCF-03	9829-033	0.037 M	0.046
ARCF-04	9829-034	0.097	0.046
ARCF-05	9829-035	0.043 M	0.046
ARCF-06	9829-036	0.030 M	0.046
ARCF-07	9829-037	0.031 M	0.046
ARCF-08	9829-038	0.021 M	0.046
ARCF-09	9829-039	0.021 M	0.046
ARCF-10	9829-040	0.031 M	0.046
DPBS-01	9829-041	0.148	0.046
DPBS-02	9829-042	0.210	0.046
DPBS-03	9829-043	0.211	0.046
DPBS-04	9829-044	0.230	0.046
DPBS-05	9829-045	0.104	0.046
DPBS-06	9829-046	0.175	0.046
DPBS-07	9829-047	0.101	0.046
DPBS-08	9829-048	0.140	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPBS-09	9829-049	0.090	0.046
DPBS-10	9829-050	0.068	0.046
DPBG-01	9829-051	0.012 M	0.046
DPBG-02	9829-052	0.013 M	0.046
DPBG-03	9829-053	0.020 M	0.046
DPBG-04	9829-054	0.014 M	0.046
DPBG-05	9829-055	0.015 M	0.046
DPBG-06	9829-056	0.031 M	0.046
DPBG-07	9829-057	0.036 M	0.046
DPBG-08	9829-058	0.010 M	0.046
DPBG-09	9829-059	0.011 M	0.046
DPBG-10	9829-060	0.016 M	0.046
DPCF-01	9829-061	0.011 M	0.046
DPCF-02	9829-062	0.005 M	0.046
DPCF-03	9829-063	0.011 M	0.046
DPCF-04	9829-064	0.012 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPCF-05	9829-065	0.017 M	0.046
DPCF-06	9829-066	0.008 M	0.046
DPCF-07	9829-067	<0.005	0.046
DPCF-08	9829-068	0.006 M	0.046
DPCF-09	9829-069	<0.005	0.046
DPCF-10	9829-070	0.017 M	0.046
DPTH-01	9829-071	0.007 M	0.046
DPTH-02	9829-072	0.005 M	0.046
DPTH-03	9829-073	0.009 M	0.046
DPTH-04	9829-074	0.016 M	0.046
DPTH-05	9829-075	0.010 M	0.046
DPTH-06	9829-076	0.010 M	0.046
DPTH-07	9829-077	0.009 M	0.046
DPTH-08	9829-078	0.011 M	0.046
DPTH-09	9829-079	0.011 M	0.046
DPTH-10	9829-080	0.008 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
DPSC-01	9829-081	0.012 M	0.046
DPSC-02	9829-082	0.019 M	0.046
DPSC-03	9829-083	0.019 M	0.046
DPSC-04	9829-084	0.016 M	0.046
DPSC-05	9829-085	0.020 M	0.046
DPSC-06	9829-086	0.020 M	0.046
DPSC-07	9829-087	0.019 M	0.046
DPSC-08	9829-088	0.012 M	0.046
DPSC-09	9829-089	0.010 M	0.046
DPSC-10	9829-090	0.011 M	0.046
FLBG-01	9829-091	0.020 M	0.046
FLBG-02	9829-092	0.031 M	0.046
FLBG-03	9829-093	0.031 M	0.046
FLBG-04	9829-094	0.031 M	0.046
FLBG-05	9829-095	0.030 M	0.046
FLBG-06	9829-096	0.021 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBG-07	9829-097	0.055	0.046
FLBG-08	9829-098	0.023 M	0.046
FLBG-09	9829-099	0.022 M	0.046
FLBG-10	9829-100	0.022 M	0.046
FLTH-01	9829-101	0.009 M	0.046
FLTH-02	9829-102	0.010 M	0.046
FLTH-03	9829-103	0.007 M	0.046
FLTH-04	9829-104	0.009 M	0.046
FLTH-05	9829-105	0.010 M	0.046
FLTH-06	9829-106	0.010 M	0.046
FLTH-07	9829-107	0.013 M	0.046
FLTH-08	9829-108	0.009 M	0.046
FLTH-09	9829-109	0.010 M	0.046
FLTH-10	9829-110	0.011 M	0.046
FLBS-01	9829-111	0.203	0.046
FLBS-02	9829-112	0.289	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLBS-03	9829-113	0.162	0.046
FLBS-04	9829-114	0.102	0.046
FLBS-05	9829-115	0.342	0.046
FLBS-06	9829-116	0.397	0.046
FLBS-07	9829-117	0.222	0.046
FLBS-08	9829-118	0.161	0.046
FLBS-09	9829-119	0.064	0.046
FLBS-10	9829-120	0.154	0.046
HUCF-01	9829-121	<0.005	0.046
HUCF-02	9829-122	0.007 M	0.046
HUCF-03	9829-123	<0.005	0.046
HUCF-04	9829-124	0.018 M	0.046
HUCF-05	9829-125	<0.005	0.046
HUCF-06	9829-126	<0.005	0.046
HUCF-07	9829-127	<0.005	0.046
HUCF-08	9829-128	<0.005	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUCF-09	9829-129	<0.005	0.046
HUCF-10	9829-130	<0.005	0.046
HUTH-01	9829-131	<0.005	0.046
HUTH-02	9829-132	<0.005	0.046
HUTH-03	9829-133	<0.005	0.046
HUTH-04	9829-134	<0.005	0.046
HUTH-05	9829-135	<0.005	0.046
HUTH-06	9829-136	<0.005	0.046
HUTH-07	9829-137	<0.005	0.046
HUTH-08	9829-138	<0.005	0.046
HUTH-09	9829-139	<0.005	0.046
HUTH-10	9829-140	<0.005	0.046
HUBS-01	9829-141	0.022 M	0.046
HUBS-02	9829-142	0.038 M	0.046
HUBS-03	9829-143	0.029 M	0.046
HUBS-04	9829-144	0.041 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUBS-05	9829-145	0.070	0.046
HUBS-06	9829-146	0.061	0.046
HUBS-07	9829-147	0.139	0.046
HUBS-08	9829-148	0.057	0.046
HUBS-09	9829-149	0.050	0.046
HUBS-10	9829-150	0.051	0.046
HUBG-01	9829-151	0.009 M	0.046
HUBG-02	9829-152	0.005 M	0.046
HUBG-03	9829-153	0.010 M	0.046
HUBG-04	9829-154	0.007 M	0.046
HUBG-05	9829-155	0.010 M	0.046
HUBG-06	9829-156	0.013 M	0.046
HUBG-07	9829-157	<0.005	0.046
HUBG-08	9829-158	0.007 M	0.046
HUBG-09	9829-159	<0.005	0.046
HUBG-10	9829-160	0.007 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
HUSP-01	9829-161	0.013 M	0.046
HUSP-02	9829-162	0.041 M	0.046
MABG-01	9829-163	0.054	0.046
MABG-02	9829-164	0.023 M	0.046
MABG-03	9829-165	0.141	0.046
MABG-04	9829-166	0.032 M	0.046
MABG-05	9829-167	0.027 M	0.046
MABG-06	9829-168	0.033 M	0.046
MABG-07	9829-169	0.130	0.046
MABG-08	9829-170	0.112	0.046
MABG-09	9829-171	0.084	0.046
MABG-10	9829-172	0.014 M	0.046
MABS-01	9829-173	0.134	0.046
MABS-02	9829-174	0.142	0.046
MABS-03	9829-175	0.125	0.046
MABS-04	9829-176	0.148	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MABS-05	9829-177	0.410 J	0.046
MABS-06	9829-178	0.550 J	0.046
MABS-07	9829-179	0.205	0.046
MABS-08	9829-180	0.078	0.046
MABS-09	9829-181	0.154	0.046
MABS-10	9829-182	0.351	0.046
MACF-01	9829-183	0.013 M	0.046
MACF-02	9829-184	0.015 M	0.046
MACF-03	9829-185	0.122	0.046
MACF-04	9829-186	<0.005	0.046
MACF-05	9829-187	0.007 M	0.046
MACF-06	9829-188	<0.005	0.046
MACF-07	9829-189	0.033 M	0.046
MACF-08	9829-190	0.035 M	0.046
MACF-09	9829-191	0.017 M	0.046
MACF-10	9829-192	0.028 M	0.046

J - Value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MATH-01	9829-193	0.022 M	0.046
MATH-02	9829-194	0.014 M	0.046
MRBS-01	9829-195	0.081	0.046
MRBS-02	9829-196	0.037 M	0.046
MRBS-03	9829-197	0.078	0.046
MRBS-04	9829-198	0.044 M	0.046
MRBS-05	9829-199	0.040 M	0.046
MRBS-06	9829-200	0.058	0.046
MRBS-07	9829-201	0.037 M	0.046
MRBS-08	9829-202	0.056	0.046
MRBS-09	9829-203	0.110	0.046
MRBS-10	9829-204	0.263	0.046
MRBG-01	9829-205	0.023 M	0.046
MRBG-02	9829-206	0.020 M	0.046
MRBG-03	9829-207	0.050	0.046
MRBG-04	9829-208	0.038 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRBG-05	9829-209	0.042 M	0.046
MRBG-06	9829-210	0.026 M	0.046
MRBG-07	9829-211	0.043 M	0.046
MRBG-08	9829-212	0.022 M	0.046
MRBG-09	9829-213	0.025 M	0.046
MRBG-10	9829-214	0.086	0.046
MRTH-01	9829-215	0.009 M	0.046
MRTH-02	9829-216	<0.005	0.046
MRTH-03	9829-217	<0.005	0.046
MRTH-04	9829-218	<0.005	0.046
MRTH-05	9829-219	<0.005	0.046
MRTH-06	9829-220	<0.005	0.046
MRTH-07	9829-221	<0.005	0.046
MRTH-08	9829-222	<0.005	0.046
MRTH-09	9829-223	<0.005	0.046
MRTH-10	9829-224	<0.005	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRCF-01	9829-225	0.029 M	0.046
MRCF-02	9829-226	0.030 M	0.046
MRCF-03	9829-227	0.047	0.046
MRCF-04	9829-228	0.017 M	0.046
MRCF-05	9829-229	0.026 M	0.046
MRCF-06	9829-230	0.027 M	0.046
MRCF-07	9829-231	0.014 M	0.046
MRCF-08	9829-232	0.042 M	0.046
MRCF-09	9829-233	0.038 M	0.046
MRCF-10	9829-234	0.087	0.046
MRSP-01	9829-235	0.172	0.046
MRSP-02	9829-236	0.135	0.046
MRSP-03	9829-237	0.062	0.046
MRSP-04	9829-238	0.155	0.046
MRSP-05	9829-239	0.025 M	0.046
MRSP-06	9829-240	0.099	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
MRSP-07	9829-241	0.029 M	0.046
SCBS-01	9829-242	0.173	0.046
SCBS-02	9829-243	0.129	0.046
SCBS-03	9829-244	0.322	0.046
SCBS-04	9829-245	0.145	0.046
SCBS-05	9829-246	0.122	0.046
SCBS-06	9829-247	0.213	0.046
SCBS-07	9829-248	0.097	0.046
SCBS-08	9829-249	0.132	0.046
SCBS-09	9829-250	0.108	0.046
SCBS-10	9829-251	0.365	0.046
SCBG-01	9829-252	0.036 M	0.046
SCBG-02	9829-253	0.021 M	0.046
SCBG-03	9829-254	0.027 M	0.046
SCBG-04	9829-255	0.010 M	0.046
SCBG-05	9829-256	0.006 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCBG-06	9829-257	0.033 M	0.046
SCBG-07	9829-258	0.017 M	0.046
SCBG-08	9829-259	0.015 M	0.046
SCBG-09	9829-260	0.009 M	0.046
SCBG-10	9829-261	0.020 M	0.046
SCTH-01	9829-262	0.020 M	0.046
SCTH-02	9829-263	0.018 M	0.046
SCTH-03	9829-264	<0.005	0.046
SCTH-04	9829-265	<0.005	0.046
SCTH-05	9829-266	<0.005	0.046
SCTH-06	9829-267	<0.005	0.046
SCTH-07	9829-268	<0.005	0.046
SCTH-08	9829-269	<0.005	0.046
SCTH-09	9829-270	<0.005	0.046
SCTH-10	9829-271	<0.005	0.046
SCSP-01	9829-272	0.067	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
SCSP-02	9829-273	0.077	0.046
SCSP-03	9829-274	0.065	0.046
SCSP-04	9829-275	0.058	0.046
SCSP-05	9829-276	0.046	0.046
SCSP-06	9829-277	0.017 M	0.046
SCSP-07	9829-278	0.009 M	0.046
SCSP-08	9829-279	0.030 M	0.046
SCSP-09	9829-280	<0.005	0.046
SCSP-10	9829-281	<0.005	0.046
SCCF-01	9829-282	0.008 M	0.046
SCCF-02	9829-283	0.094	0.046
SCCF-03	9829-284	0.018 M	0.046
SCCF-04	9829-285	0.005 M	0.046
TNTH-01	9829-286	0.006 M	0.046
TNTH-02	9829-287	<0.005	0.046
TNTH-03	9829-288	<0.005	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNTH-04	9829-289	<0.005	0.046
TNTH-05	9829-290	<0.005	0.046
TNTH-06	9829-291	<0.005	0.046
TNTH-07	9829-292	<0.005	0.046
TNTH-08	9829-293	<0.005	0.046
TNTH-09	9829-294	<0.005	0.046
TNTH-10	9829-295	<0.005	0.046
TNBG-01	9829-296	0.008 M	0.046
TNBG-02	9829-297	<0.005	0.046
TNBG-03	9829-298	0.009 M	0.046
TNBG-04	9829-299	<0.005	0.046
TNBG-05	9829-300	0.028 M	0.046
TNBG-06	9829-301	0.012 M	0.046
TNBG-07	9829-302	<0.005	0.046
TNBG-08	9829-303	0.008 M	0.046
TNBG-09	9829-304	0.006 M	0.046

M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBG-10	9829-305	0.011 M	0.046
TNSP-01	9829-306	0.017 M	0.046
TNSP-02	9829-307	0.009 M	0.046
TNSP-03	9829-308	0.010 M	0.046
TNSP-04	9829-309	0.007 M	0.046
TNSP-05	9829-310	0.010 M	0.046
TNSP-06	9829-311	0.010 M	0.046
TNSP-07	9829-312	0.009 M	0.046
TNSP-08	9829-313	0.022 M	0.046
TNSP-09	9829-314	0.081	0.046
TNSP-10	9829-315	0.049	0.046
TNBS-01	9829-316	0.136	0.046
TNBS-02	9829-317	0.278	0.046
TNBS-03	9829-318	0.022 M	0.046
TNBS-04	9829-319	0.185	0.046
TNBS-05	9829-320	0.100	0.046

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Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
TNBS-06	9829-321	0.246	0.046
TNBS-07	9829-322	0.113	0.046
TNBS-08	9829-323	0.093	0.046
TNBS-09	9829-324	0.294	0.046
TNBS-10	9829-325	0.417	0.046
TNCF-01	9829-326	0.005 M	0.046
TNCF-02	9829-327	<0.005	0.046
TNCF-03	9829-328	0.006 M	0.046
TNCF-04	9829-329	<0.005	0.046
TNCF-05	9829-330	<0.005	0.046
TNCF-06	9829-331	<0.005	0.046
TNCF-07	9829-332	<0.005	0.046
TNCF-08	9829-333	<0.005	0.046
TNCF-09	9829-334	<0.005	0.046
WWBS-01	9829-335	0.393	0.046
WWBS-02	9829-336	0.662 J	0.046

J - Value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBS-03	9829-337	0.711 J	0.046
WWBS-04	9829-338	0.457 J	0.046
WWBS-05	9829-339	0.580 J	0.046
WWBS-06	9829-340	0.761 J	0.046
WWBS-07	9829-341	0.539 J	0.046
WWBS-08	9829-342	0.520 J	0.046
WWBS-09	9829-343	0.578 J	0.046
WWBS-10	9829-344	0.540 J	0.046
WWBG-01	9829-345	0.114	0.046
WWBG-02	9829-346	0.164	0.046
WWBG-03	9829-347	0.162	0.046
WWBG-04	9829-348	0.110	0.046
WWBG-05	9829-349	0.042 M	0.046
WWBG-06	9829-350	0.101	0.046
WWBG-07	9829-351	0.083	0.046
WWBG-08	9829-352	0.047	0.046

J - Value above instrumental calibration but within documented linear range; associated QC samples pass acceptance criteria.
M - Value reported at less than the contract required detection criteria (MDL) but above the instrument detection capability documented during this project.

Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWBG-09	9829-353	0.071	0.046
WWBG-10	9829-354	0.103	0.046
WWSP-01	9829-355	0.575 J	0.046
WWSP-02	9829-356	0.247	0.046
WWSP-03	9829-357	0.711 J	0.046
WWSP-04	9829-358	0.300	0.046
WWSP-05	9829-359	0.488 J	0.046
WWSP-06	9829-360	0.219	0.046
WWSP-07	9829-361	0.544 J	0.046
WWSP-08	9829-362	0.523 J	0.046
WWSP-09	9829-363	0.214	0.046
WWSP-10	9829-364	0.462 J	0.046
WWCF-01	9829-365	0.072	0.046
WWCF-02	9829-366	0.038 M	0.046
WWCF-03	9829-367	0.051	0.046
WWCF-04	9829-368	0.040 M	0.046

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Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
WWCF-05	9829-369	0.042 M	0.046
WWCF-06	9829-370	0.026 M	0.046
WWCF-07	9829-371	0.043 M	0.046
WWCF-08	9829-372	0.059	0.046
WWCF-09	9829-373	0.225	0.046
WWCF-10	9829-374	0.198	0.046
FLCF-01	9829-375	0.016 M	0.046
FLSP-01	9829-376	0.178	0.046
FLSP-02	9829-377	0.090	0.046
FLSP-03	9829-378	0.185	0.046
FLSP-04	9829-379	0.095	0.046
FLSP-05	9829-380	0.044 M	0.046
FLSP-06	9829-381	0.032 M	0.046
FLSP-07	9829-382	0.031 M	0.046
FLSP-08	9829-383	0.033 M	0.046
FLSP-09	9829-393	0.028 M	0.046

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Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
FLSP-10	9829-394	0.032 M	0.046
IMCSC-01	9829-395	0.116	0.046
IMCSC-02	9829-396	0.037 M	0.046
IMCSC-03	9829-397	0.053	0.046
IMCSC-04	9829-398	0.016 M	0.046
IMCSC-05	9829-399	0.064	0.046
IMCSC-06	9829-400	0.062	0.046
IMCSC-07	9829-401	0.036 M	0.046
IMCSC-08	9829-402	0.048	0.046
IMCSC-09	9829-403	0.035 M	0.046
IMCSC-10	9829-404	0.026 M	0.046
IMCBG-01	9829-405	0.056	0.046
IMCBG-02	9829-406	0.026 M	0.046
IMCBG-03	9829-407	0.034 M	0.046
IMCBG-04	9829-408	0.081	0.046
IMCBG-05	9829-409	0.034 M	0.046

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Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCBG-06	9829-410	0.035 M	0.046
IMCBG-07	9829-411	0.012 M	0.046
IMCBG-08	9829-412	0.041 M	0.046
IMCBG-09	9829-413	0.012 M	0.046
IMCBG-10	9829-414	0.057	0.046
IMCBS-01	9829-415	0.014 M	0.046
IMCBS-02	9829-416	0.128	0.046
IMCBS-03	9829-417	0.212	0.046
IMCBS-04	9829-418	0.141	0.046
IMCBS-05	9829-419	0.189	0.046
IMCBS-06	9829-420	0.304	0.046
IMCBS-07	9829-421	0.140	0.046
IMCBS-08	9829-422	0.152	0.046
IMCBS-09	9829-423	0.143	0.046
IMCBS-10	9829-424	0.112	0.046
IMCTH-01	9829-425	0.008 M	0.046

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Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCTH-02	9829-426	0.009 M	0.046
IMCTH-03	9829-427	0.011 M	0.046
IMCTH-04	9829-428	0.013 M	0.046
IMCTH-05	9829-429	0.013 M	0.046
IMCTH-06	9829-430	0.015 M	0.046
IMCTH-07	9829-431	0.013 M	0.046
IMCTH-08	9829-432	0.006 M	0.046
IMCTH-09	9829-433	0.010 M	0.046
IMCTH-10	9829-434	0.012 M	0.046
IMCSP-01	9829-435	0.042 M	0.046
IMCSP-02	9829-436	0.025 M	0.046
IMCSP-03	9829-437	0.055	0.046
IMCSP-04	9829-438	0.041 M	0.046
IMCSP-05	9829-439	0.042 M	0.046
IMCSP-06	9829-440	0.029 M	0.046
IMCSP-07	9829-441	0.028 M	0.046

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Midwest Research Institute
Florida Division

Laboratory Analysis
Mercury

Client:	Grove Scientific & Engineering Company	**CompQAP Number:**	990096
		Work Order/Report Number:	9829
Matrix:	Fish Tissue		
Digestion Method:	200.11 Modified	**Analytical Method:**	245.6
Analyst:	N. Julien		
Data Released By:	T. Price		

Field ID	Lab ID	Analysis Result (µg/g wet wt.)	MDL (µg/g wet wt.)
IMCSP-08	9829-442	0.064	0.046
IMCSP-09	9829-443	0.019 M	0.046
IMCSP-10	9829-444	0.015 M	0.046
IMCCF-01	9829-445	0.017 M	0.046

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APPENDIX C

LABORATORY REPORT
RADIONUCLIDES

FISH RESULTS — All in pCi/g wet — **Non Detectables in Bold** — **Averages in Bold also**

SET ONE

Seal Date	Sample#	Weight	cnt. time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/11/2000 0:00	SCBS01	106.00	14400	0.06	0.03	**-0.21**	0.32	**-0.43**	0.18	3.06	0.35	0.16	0.03
7/11/2000 0:00	SCBS02	116.85	14400	0.02	0.03	0.14	0.29	**-0.40**	0.16	2.87	0.32	0.02	0.02
7/11/2000 0:00	SCBS03	126.38	14400	0.03	0.025	**-0.01**	0.26	**-0.24**	0.15	3.10	0.3	0.18	0.02
7/11/2000 0:00	SCBS04	161.97	14400	0.03	0.02	0.01	0.21	**-0.20**	0.12	1.06	0.23	0.07	0.02
7/11/2000 0:00	SCBS05	105.13	13661	**-0.04**	0.03	**-0.01**	0.33	**-0.07**	0.18	2.49	0.36	0.09	0.03
7/11/2000 0:00	SCBS06	157.9	14400	0.03	0.02	**-0.03**	0.21	**-0.14**	0.12	3.12	0.24	0.02	0.02
7/11/2000 0:00	SCBS07	123.7	78769	0.01	0.01	0.05	0.12	**-0.01**	0.06	3.00	0.13	0.06	0.01
7/11/2000 0:00	SCBS08	133.7	14400	**-0.04**	0.02	0.13	0.25	**-0.05**	0.14	2.95	0.28	0.19	0.02
7/11/2000 0:00	SCBS09	110.4	14400	**-0.07**	0.03	0.44	0.30	0.02	0.17	3.05	0.34	0.04	0.02
7/11/2000 0:00	SCBS10	104.7	84662	0.01	0.01	**-0.27**	0.13	**-0.2**	0.07	2.76	0.15	0.07	0.01
10	**average-> Bass/SC**			**0.027**		**0.15**		**0.02**		**2.75**		**0.090**	
	avg count time, hrs->		7.7	**3 NDs**		**5 NDs**		**9 NDs**					
7/11/2000 0:00	SCBG01	71.28	19930	0.05	0.04	0.38	0.4	**-0.50**	0.22	2.29	0.46	0.004	0.03
7/11/2000 0:00	SCBG02	71.1	43692	0.05	0.03	**-0.05**	0.27	**-0.43**	0.15	1.66	0.30	0.05	0.02
7/11/2000 0:00	SCBG03	79.8	13704	0.20	0.04	0.09	0.43	**-0.17**	0.24	2.35	0.48	**-0.01**	0.04
7/11/2000 0:00	SCBG04	74.85	44003	0.05	0.02	0.22	0.26	**-0.16**	0.14	7.17	0.29	0.18	0.02
7/11/2000 0:00	SCBG05	46.2	14020	0.14	0.07	0.51	0.73	**-0.60**	0.41	2.98	0.82	0.05	0.06
7/11/2000 0:00	SCBG06	65.55	14349	0.16	0.05	0.72	0.51	**-0.37**	0.29	2.33	0.57	0.10	0.04
6	**average->Blue Gill/SC**			**0.108**		**0.384**		**NDs**		**3.13**		**0.0768**	
16	avg count time, hrs->		6.9			**1 ND**		**6 NDs**				**1 ND**	
7/11/2000 0:00	TNBS01	100.45	43350	**-0.04**	0.02	**-0.06**	0.11	**-0.05**	0.11	2.87	0.21	**-0.02**	0.02
7/11/2000 0:00	TNBS02	115.3	16503	**-0.02**	0.03	0.37	0.27	**-0.07**	0.15	3.55	0.30	0.01	0.02
7/11/2000 0:00	TNBS03	96.85	9507	**-0.02**	0.04	0.23	0.42	0.05	0.24	2.92	0.47	0.015	0.04
7/11/2000 0:00	TNBS04	109.87	75289	0.01	0.01	**-0.07**	0.13	**-0.19**	0.07	2.92	0.15	**-0.01**	0.01
7/11/2000 0:00	TNBS05	122.3	14746	**-0.03**	0.03	0.13	0.27	**-0.08**	0.15	3.09	0.3	**-0.01**	0.02
7/11/2000 0:00	TNBS06	151.38	11317	**-0.001**	0.02	0.02	0.25	**-0.01**	0.14	2.96	0.28	0.02	0.02
7/11/2000 0:00	TNBS07	151.2	70901	0.01	0.01	0.02	0.10	**-0.17**	0.06	2.95	0.08	0.01	
7	**average->Bass/TN**			**0.01**		**0.154**		0.05		**3.04**		**0.01375**	
23	avg count time, hrs->		9.6	**5 NDs**		**2 NDs**		**6 NDs**				**3 NDs**	
7/11/2000 0:00	TNTH01	126.3	10854	**-0.01**	0.03	0.15	0.30	**-0.19**	0.17	3.60	0.34	0.01	0.03
7/11/2000 0:00	TNTH02	141.85	36508	0.02	0.01	**-0.01**	0.15	**-0.10**	0.08	3.27	0.17	0.01	0.01
7/11/2000 0:00	TNTH03	109.65	24903	**-0.01**	0.02	0.06	0.23	**-0.22**	0.13	2.59	0.26	0.03	0.02
7/11/2000 0:00	TNTH04	121.63	12091	**-0.01**	0.03	0.23	0.30	**-0.16**	0.17	2.83	0.33	0.01	0.02
7/11/2000 0:00	TNTH05	99.85	13057	**-0.06**	0.03	**-0.05**	0.35	**-0.21**	0.20	3.24	0.39	**-0.03**	0.03
7/11/2000 0:00	TNTH06	107.5	10604	0.01	0.03	**-0.10**	0.36	**-0.05**	0.20	3.29	0.40	**-0.01**	0.03
7/11/2000 0:00	TNTH07	99.38	15000	**-0.06**	0.31	**-0.12**	0.33	**-0.15**	0.18	3.56	0.37	0.03	0.03
7/11/2000 0:00	TNTH08	120.27	40953	0.01	0.02	0.07	0.16	**-0.19**	0.09	3.55	0.18	0.005	0.01
7/11/2000 0:00	TNTH09	95.38	13505	0.01	0.03	0.05	0.36	**-0.23**	0.2	2.79	0.40	**-0.03**	0.03
7/11/2000 0:00	TNTH10	81.6	9005	**-0.04**	0.05	0.19	0.52	**-0.04**	0.29	3.59	0.58	0.08	0.04
10	**average->Tilapia/TN**			**0.013**		**0.125**				**3.23**		**0.025**	
33	avg count time, hrs->		5.2	**6 NDs**		**4 NDs**		**10 NDs**				**3 NDs**	

Seal Date	Sample#	Weight	cnt. time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/11/2000 0:00	TNBG01	93.37	9803	0.18	0.04	**-0.09**	0.43	**-0.20**	0.24	1.73	0.48	0.01	0.04
7/11/2000 0:00	TNBG02	88.26	9615	0.07	0.04	0.76	0.46	**-0.22**	0.26	2.03	0.52	0.03	0.04
7/11/2000 0:00	TNBG03	92.35	10990	0.15	0.04	0.31	0.43	**-0.26**	0.24	2.94	0.48	0.01	0.04
7/11/2000 0:00	TNBG04	95.02	9103	0.02	0.04	0.05	0.44	0.03	0.25	1.99	0.49	0.09	0.04
7/11/2000 0:00	TNBG05	123.35	11403	0.01	0.03	**-0.02**	0.30	**-0.16**	0.17	2.40	0.34	0.002	0.03
7/11/2000 0:00	TNBG06	139.5	21711	0.06	0.02	**-0.17**	0.2	**-0.07**	0.11	2.33	0.22	0.01	0.02
7/11/2000 0:00	TNBG07	78.48	54027	0.11	0.02	0.01	0.22	**-0.16**	0.12	2.01	0.25	0.002	0.02
7/11/2000 0:00	TNBG08	82.1	44725	0.09	0.02	**-0.01**	0.23	**-0.13**	0.13	2.36	0.26	0.01	0.02
7/11/2000 0:00	TNBG09	92.35	16093	0.04	0.22	**-0.03**	0.22	**-0.08**	0.13	1.30	0.24	0.08	0.02
7/11/2000 0:00	TNBG10	75.28	11468	**-0.03**	0.05	0.3	0.52	**-0.28**	0.29	2.59	0.58	**-0.02**	0.04
10	**average->Blue Gill/TN**			**0.081**		**0.286**		0.03		2.17		0.013	
43	avg count time, hrs->		5.5	**1 ND**		**5 NDs**		**9 NDs**				**1 ND**	
7/11/2000 0:00	TNSP01	117.28	45619	0.04	0.015	**-0.03**	0.16	**-0.02**	0.09	2.41	0.18	0.05	0.01
7/11/2000 0:00	TNSP02	96.65	10204	**-0.001**	0.04	0.16	0.41	**-0.32**	0.23	2.19	0.46	0.02	0.03
7/11/2000 0:00	TNSP03	115.5	11357	0.03	0.03	0.33	0.33	**-0.17**	0.18	2.17	0.36	0.01	0.03
7/11/2000 0:00	TNSP04	93.58	72258	0.06	0.015	**-0.07**	0.16	**-0.10**	0.09	2.53	0.17	0.01	0.01
7/11/2000 0:00	TNSP05	113.05	16093	**-0.05**	0.03	**-0.60**	0.28	**-0.54**	0.16	0.67	0.31	**-0.01**	0.02
7/11/2000 0:00	TNSP06	85.77	7631	0.15	0.05	0.02	0.54	**-0.16**	0.30	1.96	0.60	0.09	0.04
7/11/2000 0:00	TNSP07	50	8443	0.02	0.083	**-0.02**	0.87	**-0.32**	0.49	2.62	0.97	0.59	0.07
7/11/2000 0:00	TNSP08	105	20886	**-0.003**	0.025	0.01	0.26	**-0.27**	0.15	2.73	0.30	**-0.02**	0.02
7/11/2000 0:00	TNSP09	134	8071	0.09	0.032	**-0.20**	0.33	**-0.26**	0.19	2.59	0.37	0.179	0.03
7/11/2000 0:00	TNSP10	102	16301	0.03	0.029	**-0.06**	0.31	**-0.47**	0.17	2.47	0.34	**-0.001**	0.03
10	**average->Spec Perch/TN**			**0.06**		**0.13**				**2.23**		0.1355714	
53	avg count time, hrs->		6.0	**3 NDs**		**6 NDs**		**10 NDs**				**3 NDs**	
7/11/2000 0:00	TNCF01	91.97	86400	**-0.06**	0.014	**-0.04**	0.15	**-0.14**	0.08	3.25	0.17	0.02	0.01
7/11/2000 0:00	TNCF02	87.48	16148	**-0.02**	0.03	**-0.03**	0.36	**-0.05**	0.20	2.95	0.40	0.16	0.03
7/11/2000 0:00	TNCF03	105.5	9434	**-0.05**	0.037	0.04	0.39	**-0.06**	0.22	2.88	0.44	0.06	0.03
7/11/2000 0:00	TNCF04	140.67	9162	**-0.04**	0.028	**-0.01**	0.30	**-0.30**	0.17	2.99	0.33	0.004	0.02
7/11/2000 0:00	TNCF05	125.05	43200	**-0.04**	0.015	0.06	0.15	**-0.06**	0.09	2.92	0.17	**-0.01**	0.01
7/11/2000 0:00	TNCF06	122.2	7220	0.002	0.04	**-0.21**	0.39	**-0.14**	0.22	3.12	0.43	**-0.003**	0.03
7/11/2000 0:00	TNCF07	169.08	12618	0.04	0.02	0.04	0.21	**-0.14**	0.12	3.34	0.24	**-0.01**	0.02
7/11/2000 0:00	TNCF08	134.33	37648	0.04	0.015	**-0.06**	0.09	**-0.10**	0.09	3.01	0.17	**-0.01**	0.01
7/11/2000 0:00	TNCF09	114.5	18052	0.06	0.025	0.23	0.26	**-0.09**	0.15	3.27	0.29	0.08	0.02
7/11/2000 0:00	TNCF10	102.3	8608	0.02	0.04	**-0.34**	0.42	**-0.38**	0.24	2.66	0.47	0.35	0.03
10	**average->Cat Fish/TN**			**0.0324**		**0.0925**				**3.039**		**0.1123333**	
63	avg count time, hrs->		6.9	**5 NDs**		**6 NDs**		**10 NDs**				**4 NDs**	

Seal Date	Sample#	Weight	cnt. time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/13/2000 0:00	MRSP01	190.85	41740	**-0.005**	0.010	0.06	0.10	**-0.04**	0.06	2.56	0.11	0.102	0.01
7/13/2000 0:00	MRSP02	220.08	10067	0.024	0.017	0.05	0.18	0.05	0.10	2.82	0.20	0.139	0.01
7/13/2000 0:00	MRSP03	73.05	18604	**-0.02**	0.038	0.14	0.40	**-0.39**	0.23	2.55	0.45	0.058	0.03
7/13/2000 0:00	MRSP04	237.4	9872	0.022	0.016	0.01	0.17	**-0.11**	0.10	2.78	0.19	0.148	0.01
7/13/2000 0:00	MRSP05	95.6	43200	**-0.02**	0.019	**-0.21**	0.20	**-0.06**	0.11	2.76	0.23	0.165	0.02
5	**average->Spec Perch/MR**			**0.023**		**0.07**		**0.05**		**2.69**		**0.122**	
68	avg count time, hrs->		6.9	**3 NDs**		**1 ND**		**4 NDs**					
7/13/2000 0:00	MRBG01	86.3	43200	0.004	0.021	**-0.05**	0.22	**-0.21**	0.13	2.19	0.25	0.046	0.02
7/13/2000 0:00	MRBG02	44	53693	0.012	0.037	0.18	0.39	**-0.34**	0.22	3.10	0.44	0.056	0.03
7/13/2000 0:00	MRBG03	51.17	12150	**-0.15**	0.067	**-0.23**	0.71	**-0.25**	0.4	2.52	0.79	0.151	0.06
7/13/2000 0:00	MRBG04	106	9215	**-0.022**	0.037	**-0.04**	0.39	0.07	0.22	2.42	0.44	0.053	0.03
7/13/2000 0:00	MRBG05	54.65	43200	0.16	0.033	**-0.16**	0.35	**-0.13**	0.2	1.78	0.39	**-0.017**	0.03
7/13/2000 0:00	MRBG06	54.7	58800	0.052	0.028	**-0.10**	0.28	**-0.08**	0.08	2.68	0.32	0.059	0.02
7/13/2000 0:00	MRBG07	39.82	9005	0.02	0.101	0.36	1.06	**-0.24**	0.59	2.11	1.19	0.003	0.09
7/13/2000 0:00	MRBG08	58.1	19938	**-0.14**	0.046	0.07	0.49	0.17	0.27	2.48	0.55	0.189	0.04
7/13/2000 0:00	MRBG09	55.62	10163	0.026	0.07	0.066	0.71	**-0.72**	0.39	3.10	0.80	0.004	0.05
7/13/2000 0:00	MRBG10	41.65	43200	0.08	0.044	**-0.15**	0.46	**-0.23**	0.26	2.83	0.52	**-0.007**	0.04
10	**average->Blue Gill/MR**			**0.0505714**		**0.169**		**0.12**		**2.52**		**0.070125**	
78	avg count time, hrs->		8.4	**3 NDs**		**6 NDs**		**8 NDs**				**2 NDs**	
7/13/2000 0:00	MRBS01	159.92	43200	**-0.02**	0.011	**-0.017**	0.12	**-0.07**	0.07	3.05	0.13	**-0.01**	0.01
7/13/2000 0:00	MRBS02	131.85	9200	0.05	0.027	**-0.08**	0.33	**-0.09**	0.17	3.09	0.36	0.152	0.02
7/13/2000 0:00	MRBS03	115.3	21597	**-0.026**	0.022	**-0.09**	0.24	**-0.01**	0.13	3.10	0.26	0.201	0.02
7/13/2000 0:00	MRBS04	156.23	24798	0.02	0.015	**-0.08**	0.16	**-0.17**	0.09	3.13	0.18	0.134	0.01
7/13/2000 0:00	MRBS05	130.05	11903	0.04	0.027	**-0.35**	0.28	**-0.23**	0.16	3.23	0.32	0.03	0.02
7/13/2000 0:00	MRBS06	174.2	14834	**-0.01**	0.018	**-0.17**	0.19	**-0.07**	0.11	3.13	0.21	0.082	0.02
7/13/2000 0:00	MRBS07	135.3	12152	**-0.05**	0.026	**-0.13**	0.27	**-0.13**	0.15	3.08	0.30	0.195	0.02
7/13/2000 0:00	MRBS08	179.9	7782	0.01	0.024	**-0.11**	0.25	**-0.05**	0.14	2.77	0.28	0.08	0.02
7/13/2000 0:00	MRBS09	130.18	8273	0.06	0.032	**-0.01**	0.34	**-0.08**	0.19	3.13	0.38	0.106	0.03
7/13/2000 0:00	MRBS10	171.7	9040	0.03	0.023	0.20	0.25	**-0.10**	0.14	2.42	0.27	0.111	0.02
10	**average->Bass/MR**			**0.035**		**0.20**				**3.01**		**0.1212222**	
88	avg count time, hrs->		4.5	**4 NDs**		**9 NDs**		**10 NDs**				**1 ND**	
7/13/2000 0:00	MRTH01	140.47	18645	**-0.07**	0.02	**-0.24**	0.21	**-0.03**	0.12	2.74	0.23	0.044	0.02
7/13/2000 0:00	MRTH02	95.25	14040	**-0.06**	0.031	**-0.12**	0.33	**-0.15**	0.18	3.55	0.36	0.025	0.03
7/13/2000 0:00	MRTH03	85.05	36222	**-0.02**	0.024	0.07	0.25	**-0.20**	0.14	3.24	0.28	0.081	0.02
7/13/2000 0:00	MRTH04	83.2	43200	**-0.03**	0.022	0.02	0.23	0.05	0.13	3.34	0.26	0.048	0.02
7/13/2000 0:00	MRTH05	89.6	39624	0.01	0.020	**-0.19**	0.22	**-0.22**	0.13	3.46	0.25	0.014	0.02
7/13/2000 0:00	MRTH06	116.8	13689	0.062	0.028	0.28	0.29	0.02	0.16	3.52	0.33	0.151	0.02
7/13/2000 0:00	MRTH07	136.75	17965	0.01	0.021	**-0.06**	0.22	**-0.14**	0.12	2.97	0.24	0.016	0.02
7/13/2000 0:00	MRTH08	87	22571	0.029	0.029	0.04	0.31	**-0.06**	0.17	2.82	0.34	0.098	0.03
7/13/2000 0:00	MRTH09	127.98	32240	0.042	0.021	**-0.08**	0.24	**-0.08**	0.14	3.05	0.28	0.019	0.02
7/13/2000 0:00	MRTH10	100.81	10556	**-0.02**	0.037	**-0.27**	0.39	0.07	0.22	2.92	0.45	0.014	0.03
10	**average->Tilapia/MR**			**0.0306**		**0.1025**		**0.0466667**		**3.16**		**0.051**	
98	avg count time, hrs->		6.9	**5 NDs**		**6 NDs**		**7 NDs**					

Seal Date	Sample#	Weight	cnt. time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/13/2000 0:00	MRCF01	112.9	14031	**-0.017**	0.028	0.08	0.3	**-0.19**	0.17	3.43	0.33	0.138	0.02
7/13/2000 0:00	MRCF02	189.28	68912	0.018	0.008	0.09	0.08	**-0.12**	0.05	2.93	0.09	0.05	0.01
7/13/2000 0:00	MRCF03	171.03	9004	**-0.014**	0.023	**-0.01**	0.025	**-0.18**	0.14	3.58	0.28	0.049	0.02
7/13/2000 0:00	MRCF04	89.7	9063	**-0.025**	0.045	0.14	0.47	**-0.29**	0.26	3.05	0.52	0.166	0.04
7/13/2000 0:00	MRCF05	156.5	74478	0.003	0.009	0.08	0.09	**-0.10**	0.05	3.07	0.10	0.068	0.01
7/13/2000 0:00	MRCF06	121.53	9692	**-0.016**	0.032	0.27	0.34	**-0.08**	0.19	3.02	0.37	**-0.017**	0.03
7/13/2000 0:00	MRCF07	77.65	9146	0.099	0.051	**-0.06**	0.54	**-0.22**	0.30	3.66	0.60	0.027	0.04
7/13/2000 0:00	MRCF08	186.05	18552	0.001	0.015	0.18	0.16	**-0.10**	0.09	3.09	0.18	0.002	0.01
7/13/2000 0:00	MRCF09	137.25	32240	**-0.088**	0.15	**-0.07**	0.16	**-0.07**	0.09	2.50	0.18	0.049	0.01
7/13/2000 0:00	MRCF10	186.8	43200	**-0.011**	0.01	**-0.01**	0.10	**-0.11**	0.06	2.17	0.12	0.005	0.01
10	**average->Cat Fish/MR**			**0.03025**		**0.14**				**3.05**		**0.0615556**	
108	avg count time, hrs->		8.0	**6 NDs**		**4 NDs**		**10 NDs**				**1 ND**	
7/18/2000 0:00	MACF01	86.3	10567	**-0.055**	0.043	**-0.22**	0.45	**-0.09**	0.25	2.68	0.50	0.179	0.04
7/18/2000 0:00	MACF02	93.85	11501	0.007	0.038	0.43	0.40	0.13	0.22	3.12	0.45	0.140	0.03
7/18/2000 0:00	MACF03	250.4	17355	**-0.015**	0.012	0.08	0.12	**-0.10**	0.07	3.17	0.14	0.094	0.01
7/18/2000 0:00	MACF04	117.4	43200	**-0.016**	0.016	**-0.01**	0.16	0.01	0.09	3.27	0.18	0.115	0.01
7/18/2000 0:00	MACF05	111.6	43200	**-0.002**	0.016	**-0.04**	0.17	0.08	0.10	2.94	0.19	0.141	0.01
7/18/2000 0:00	MACF06	96.75	43200	**-0.058**	0.019	0.01	0.20	**-0.04**	0.11	2.81	0.22	0.004	0.02
6	**average->Cat Fish/MA**			**0.007**		**0.173**		**0.0733333**		**3.00**		**0.11**	
114	avg count time, hrs->		7.8	**5 NDs**		**3 NDs**		**3 NDs**					
7/18/2000 0:00	MABG01	119.2	9255	0.011	0.033	**-0.096**	0.35	0.049	0.21	2.55	0.39	0.08	0.03
7/18/2000 0:00	MABG02	126.72	9100	**-0.010**	0.031	0.47	0.33	**-0.08**	0.19	2.13	0.37	0.157	0.03
7/18/2000 0:00	MABG03	113.5	43200	**-0.052**	0.016	0.06	0.17	0.02	0.10	2.29	0.19	0.147	0.01
7/18/2000 0:00	MABG04	145.1	11250	**-0.038**	0.025	**-0.27**	0.26	**-0.08**	0.15	2.60	0.29	0.076	0.02
7/18/2000 0:00	MABG05	151.37	9486	**-0.053**	0.026	0.17	0.27	**-0.06**	0.15	2.47	0.30	0.013	0.02
7/18/2000 0:00	MABG06	155.1	19413	0.017	0.018	**-0.08**	0.19	**-0.08**	0.10	2.35	0.21	0.115	0.02
7/18/2000 0:00	MABG07	125.45	11639	0.001	0.028	0.29	0.30	**-0.22**	0.17	2.13	0.33	0.11	0.02
7/18/2000 0:00	MABG08	109.05	42004	**-0.002**	0.017	**-0.11**	0.18	**-0.05**	0.10	2.22	0.20	0.054	0.01
7/18/2000 0:00	MABG09	128.92	5997	**-0.008**	0.041	**-0.21**	0.43	0.20	0.24	2.13	0.48	0.218	0.04
7/18/2000 0:00	MABG10	114.55	9219.5	0.004	0.035	0.54	0.36	**-0.25**	0.2	2.37	0.41	0.128	0.03
10	**average->Blue Gill/MA**			**0.00825**		**0.306**		**0.0896667**		**2.324**		**0.1098**	
124	avg count time, hrs->		4.7	**6 NDs**		**5 NDs**		**7 NDs**					
7/18/2000 0:00	MABS01	429.2	9023	**-0.007**	0.009	0.07	0.10	0.04	0.06	2.63	0.11	0.031	0.01
7/18/2000 0:00	MABS02	462	14741	**-0.004**	0.007	**-0.06**	0.07	**-0.03**	0.04	2.49	0.08	0.041	0.01
7/18/2000 0:00	MABSO3	324.65	17048	**-0.018**	0.009	**-0.07**	0.09	**-0.01**	0.05	2.95	0.11	0.049	0.01
7/18/2000 0:00	MABSO4	131.9	9130	**-0.015**	0.033	0.044	0.35	**-0.09**	0.21	2.16	0.38	0.057	0.01
7/18/2000 0:00	MABSO5	113.85	43200	**-0.01**	0.016	**-0.15**	0.17	0.11	0.09	2.87	0.19	0.078	0.01
7/18/2000 0:00	MABSO6	201.7	14967	**-0.005**	0.015	**-0.15**	0.16	**-0.08**	0.09	2.59	0.18	0.030	0.01
7/18/2000 0:00	MABSO7	306.5	43200	0.001	0.006	0.08	0.06	**-0.001**	0.04	3.07	0.07	0.034	0.01
7/18/2000 0:00	MABSO8	242.95	10050	0.009	0.016	0.05	0.16	-0.16	0.09	3.09	0.18	0.086	0.01
7/18/2000 0:00	MABSO9	206.7	8705.6	**-0.012**	0.02	**-0.03**	0.21	**-0.08**	0.12	2.91	0.23	0.12	0.02
7/18/2000 0:00	MABS10	335.1	26008	**-0.011**	0.007	0.11	0.07	**-0.03**	0.04	2.77	0.08	0.015	0.01
10	**average->Bass/MA**			**0.005**		**0.071**		**0.075**		**2.75**		**0.05**	
134	avg count time, hrs->		5.4	**8 NDs**		**5 NDs**		**8 NDs**					

Seal	Sample#	Weight	cnt. time	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/18/2000 0:00	MATH01	149.6	10596	0.028	0.025	**-0.034**	0.026	**-0.28**	0.15	3.29	0.29	0.059	0.02
7/18/2000 0:00	MATH02	151.25	11371	**-0.03**	0.024	0.16	0.25	**-0.16**	0.14	4.00	0.28	0.056	0.02
2	**average->Tilapia/MA**			**0.028**		**0.16**				**3.65**		**0.06**	
136	avg count time, hrs->		3.1	**1 ND**		**1 ND**		**2 NDs**					
7/17/2000 0:00	HUTH01	100.9	26101	**-0.025**	0.023	**-0.17**	0.25	0.240	0.14	5.57	0.27	0.133	0.02
7/17/2000 0:00	HUTH02	150.25	43200	**-0.029**	0.012	0.04	0.13	0.004	0.07	2.66	0.14	0.107	0.01
7/17/2000 0:00	HUTH03	269.35	43200	**-0.001**	0.007	0.04	0.07	0.023	0.04	2.61	0.08	0.022	0.01
7/17/2000 0:00	HUTH04	139.35	43200	**-0.006**	0.013	**-0.05**	0.14	**-0.053**	0.08	2.71	0.15	0.078	0.01
7/17/2000 0:00	HUTH05	187.58	11027	**-0.049**	0.019	0.15	0.20	**-0.058**	0.11	2.72	0.23	0.056	0.02
7/17/2000 0:00	HUTH06	178.4	11680	**-0.01**	0.02	0.08	0.21	0.21	0.12	2.49	0.24	0.206	0.02
7/17/2000 0:00	HUTH07	112	43200	**-0.016**	0.016	**-0.005**	0.17	**-0.078**	0.1	2.55	0.19	0.074	0.01
7/17/2000 0:00	HUTH08	104.45	6382	0.016	0.046	**-0.57**	0.48	0.01	0.27	2.80	0.54	0.006	0.04
7/17/2000 0:00	HUTH09	87.4	9401	**-0.016**	0.045	0.50	0.47	**-0.172**	0.26	2.80	0.53	0.068	0.04
7/17/2000 0:00	HUTH10	196.5	9476	0.021	0.02	**-0.04**	0.21	**-0.39**	0.12	1.40	0.23	0.025	0.02
10	**average->Tilapia/HV**			**0.0185**		0.162		**0.0974**		**2.831**		**0.0775**	
146	avg count time, hrs->		6.9	**8 NDs**		**5 NDs**		**5 NDs**					
7/17/2000 0:00	HUSP01	123.6	9286	**-0.054**	0.032	**-0.18**	0.34	0.143	0.19	1.80	0.38	0.041	0.03
7/17/2000 0:00	HUSP02	131.55	13374	**-0.067**	0.025	0.03	0.26	0.049	0.15	2.65	0.29	0.099	0.02
7/17/2000 0:00	HUSP03	99.4	24396	0.06	0.025	0.06	0.26	0.02	0.14	2.42	0.29	0.022	0.02
3	**average->Spec Perch/HV**			**0.06**		**0.045**		**0.0706667**		**2.29**		**0.054**	
149	avg count time, hrs->		4.4	**2 NDs**		**1 ND**							
7/17/2000 0:00	HUCF01	79.4	9648	0.076	0.049	**-0.19**	0.51	0.14	0.29	2.80	0.57	**-0.007**	0.04
7/17/2000 0:00	HUCF02	68.25	13731	0.033	0.048	0.18	0.50	**-0.107**	0.28	2.51	0.56	0.085	0.04
7/17/2000 0:00	HUCF03	57.9	9419	0.392	0.068	0.001	0.71	**-0.046**	0.40	3.58	0.80	0.068	0.06
7/17/2000 0:00	HUCF04	66.9	10270	0.208	0.056	**-0.39**	0.59	0.156	0.33	2.65	0.66	0.30	0.05
7/17/2000 0:00	HUCF05	32.92	19610	**-0.249**	0.083	**-0.07**	0.87	**-0.439**	0.49	0.52	0.97	0.082	0.07
7/17/2000 0:00	HUCF06	53.2	17919	**-0.007**	0.053	0.43	0.56	**-0.111**	0.31	2.75	0.63	0.080	0.05
7/17/2000 0:00	HUCF07	50	43200	**-0.108**	0.037	**-0.32**	0.39	**-0.108**	0.22	3.02	0.43	0.003	0.03
7/17/2000 0:00	HUCF08	40.65	9260	**-0.113**	0.097	0.62	1.03	0.639	0.57	3.65	1.15	0.099	0.08
7/17/2000 0:00	HUCF09	32.5	9615	0.119	0.119	**-0.80**	1.26	**-1.035**	0.70	2.23	1.41	0.102	0.10
7/17/2000 0:00	HUCF10	36.4	6323	**-0.177**	0.131	1.74	1.39	0.681	0.78	1.32	1.55	0.14	0.11
10	**average->Cat Fish/HV**			**0.1656**		**0.5942**		**0.404**		**2.503**		**0.1065556**	
159	avg count time, hrs->		4.6	**5 NDs**		**5 NDs**		**6 NDs**				**1 ND**	
7/17/2000 0:00	HUBS01	118.7	21040	**-0.014**	0.022	0.10	0.23	**-0.05**	0.13	2.64	0.26	0.129	0.02
7/17/2000 0:00	HUBS02	159.9	43200	**-0.001**	0.011	**-0.08**	0.12	**-0.04**	0.07	3.16	0.13	0.038	0.01
7/17/2000 0:00	HUBS03	119.9	8555	0.008	0.034	**-0.30**	0.36	0.003	0.20	2.99	0.40	0.07	0.03
7/17/2000 0:00	HUBS04	106.8	31847	**-0.036**	0.02	0.26	0.21	**-0.071**	0.12	2.86	0.24	0.134	0.02
7/17/2000 0:00	HUBS05	172	19278	**-0.034**	0.016	0.05	0.17	0.002	0.09	3.21	0.19	0.104	0.01
7/17/2000 0:00	HUBS06	146.08	43200	0.001	0.013	**-0.07**	0.13	**-0.091**	0.07	2.88	0.15	0.071	0.01
7/17/2000 0:00	HUBS07	165.6	43200	**-0.03**	0.011	**-0.16**	0.12	0.009	0.07	2.80	0.13	0.04	0.01
7/17/2000 0:00	HUBS08	161.2	22366	**-0.017**	0.016	**-0.07**	0.17	**-0.067**	0.09	2.71	0.19	0.109	0.01
7/17/2000 0:00	HUBS09	150.65	11216	0.03	0.024	**-0.16**	0.25	**-0.14**	0.14	2.82	0.28	0.183	0.02
7/17/2000 0:00	HUBS10	155.7	9663	**-0.023**	0.025	0.22	0.26	0.033	0.15	3.71	0.29	0.086	0.02
10	**average->Bass/HV**			**0.013**		**0.1575**		**0.01175**		**2.978**		**0.0964**	
169	avg count time, hrs->		7.0	**7 NDs**		**6 NDs**		**6 NDs**					

Seal Date	Sample#	Weight	cnt. time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/17/2000 0:00	HUBG01	127.7	40983	**-0.029**	0.015	**-0.09**	0.16	**-0.002**	0.09	2.15	0.17	0.038	0.01
7/17/2000 0:00	HUBG02	149.3	11857	0.048	0.023	**-0.24**	0.25	**-0.012**	0.14	2.25	0.28	0.32	0.02
7/17/2000 0:00	HUBG03	105.5	10984	0.044	0.034	0.25	0.36	**-0.411**	0.20	2.27	0.41	0.068	0.03
7/17/2000 0:00	HUBG04	141.58	15093	**-0.028**	0.022	**-0.09**	0.23	0.045	0.13	2.07	0.26	0.057	0.02
7/17/2000 0:00	HUBG05	135.2	12838	0.022	0.025	**-0.10**	0.26	**-0.095**	0.15	1.92	0.29	0.069	0.02
7/17/2000 0:00	HUBG06	113.85	20312	**-0.002**	0.023	**-0.21**	0.25	**-0.144**	0.14	2.30	0.28	0.074	0.02
7/17/2000 0:00	HUBG07	112.9	43200	0.005	0.016	0.15	0.17	**-0.015**	0.10	2.32	0.19	**-0.013**	0.01
7/17/2000 0:00	HUBG08	103.07	20302	**-0.057**	0.026	0.19	0.27	**-0.364**	0.15	1.78	0.30	0.029	0.02
7/17/2000 0:00	HUBG09	106.45	9729	**-0.01**	0.036	0.07	0.38	**-0.189**	0.21	2.82	0.43	**-0.001**	0.03
7/17/2000 0:00	HUBG10	106.5	34013	**-0.041**	0.019	0.01	0.20	**-0.061**	0.11	2.41	0.23	0.072	0.02
10	**average->Blue Gill/HV**			**0.02975**		**0.134**		**0.045**		**2.229**		**0.090875**	
179	avg count time, hrs->		6.1	**6 NDs**		**5 NDs**		**9 NDs**				**2 NDs**	
7/19/2000 0:00	SCBG07	65.3	9559	0.128	0.06	0.34	0.63	**-0.020**	0.35	1.71	0.70	0.036	0.05
7/19/2000 0:00	SCBG08	70.9	25662	0.121	0.033	0.02	0.35	**-0.214**	0.20	2.47	0.39	**-0.004**	0.05
7/19/2000 0:00	SCBG09	46.32	19938	**-0.048**	0.058	0.26	0.61	**-0.047**	0.34	1.44	0.68	**-0.024**	0.05
7/19/2000 0:00	SCBG10	63	23344	0.058	0.04	0.453	0.42	**-0.863**	0.23	1.93	0.47	0.063	0.03
4	**average->Blue Gill/SC**			**0.1023333**		**0.26825**				**1.8875**		**0.0495**	
183	avg count time, hrs->		5.5	**1 ND**				**4 NDs**				**2 NDs**	
7/19/2000 0:00	SCTH01	66.75	22660	**-0.022**	0.037	**-0.04**	0.33	**-0.085**	0.19	3.05	0.39	0.052	0.04
7/19/2000 0:00	SCTH02	90.3	11119	0.034	0.040	0.187	0.42	0.128	0.24	2.76	0.47	0.064	0.03
7/19/2000 0:00	SCTH03	58.3	35168	**-0.032**	0.035	0.23	0.37	0.181	0.21	3.10	0.41	0.008	0.03
7/19/2000 0:00	SCTH04	165.6	43200	**-0.018**	0.011	**-0.03**	0.12	**-0.075**	0.07	3.01	0.13	0.070	0.01
7/19/2000 0:00	SCTH05	97.95	12224	**-0.10**	0.035	0.10	0.37	**-0.160**	0.21	3.10	0.41	0.005	0.03
7/19/2000 0:00	SCTH06	120.85	12870	0.045	0.028	0.30	0.30	0.053	0.17	2.99	0.34	0.760	0.02
7/19/2000 0:00	SCTH07	111.85	16311	**-0.073**	0.027	**-0.01**	0.28	0.077	0.16	3.11	0.31	0.085	0.02
7/19/2000 0:00	SCTH08	122.68	35852	**-0.026**	0.016	**-0.16**	0.17	**-0.107**	0.10	3.26	0.19	0.085	0.01
7/19/2000 0:00	SCTH09	64.3	9582	0.056	0.06	**-0.52**	0.64	**-0.244**	0.36	3.37	0.71	0.052	0.05
7/19/2000 0:00	SCTH10	81.25	16628	**-0.077**	0.036	0.15	0.38	**-0.076**	0.21	3.06	0.43	0.015	0.03
10	**average->Tilapia/SC**			**0.045**		**0.193**		**0.110**		**3.08**		**0.1196**	
193	avg count time, hrs->		6.0	**7 NDs**		**5 NDs**		**6 NDs**					
7/19/2000 0:00	SCSP01	71.95	43200	**-0.088**	0.025	0.25	0.27	**-0.158**	0.15	3.27	0.3	0.054	0.02
7/19/2000 0:00	SCSP02	101	10986	0.065	0.036	0.20	0.38	0.267	0.21	2.81	0.42	0.20	0.03
7/19/2000 0:00	SCSP03	70.2	37750	**-0.175**	0.028	**-0.02**	0.29	**-0.007**	0.16	2.96	0.33	0.066	0.02
7/19/2000 0:00	SCSP04	77.54	9045	0.193	0.052	0.47	0.54	**-0.419**	0.30	4.19	0.61	0.186	0.04
7/19/2000 0:00	SCSP05	67.6	9420	**-0.015**	0.055	0.95	0.64	**-0.462**	0.34	2.74	0.72	0.066	0.02
7/19/2000 0:00	SCSP06	62.58	11824	**-0.021**	0.056	1.00	0.59	0.098	0.33	2.85	0.66	0.065	0.05
7/19/2000 0:00	SCSP07	61.6	10577	**-0.014**	0.060	1.10	0.63	**-0.471**	0.35	2.42	0.71	0.073	0.05
7/19/2000 0:00	SCSP08	64.75	43200	**-0.066**	0.028	0.07	0.3	0.223	0.17	2.78	0.33	0.064	0.02
7/19/2000 0:00	SCSP09	52.3	12798	**-0.145**	0.064	0.85	0.68	0.401	0.38	2.83	0.76	0.061	0.06
7/19/2000 0:00	SCSP10	54.3	9839	**-0.134**	0.071	0.33	0.74	**-0.209**	0.42	0.96	0.83	0.067	0.06
10	**average->Spec Perch/SC**			**0.129**		**0.58**		**0.24725**		**2.78**		**0.0902**	
203	avg count time, hrs->		5.5	**8 NDs**		**1 ND**		**6 NDs**					

FISH RESULTS SET 2

All in pCi/g wet **Non Detectables in Bold**
Averages in Bold also

Seal Date	Sample #	Weight	cnt. time	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/19/2000 0:00	SCCF01	107.52	10090	**-0.013**	0.036	0.33	0.37	**-0.051**	0.21	2.55	0.41	0.083	0.03
7/19/2000 0:00	SCCF02	219.5	43200	**-0.011**	0.008	0.05	0.09	**-0.063**	0.05	3.13	0.10	0.029	0.01
2	**average->Catfish/SC**					**0.19**				**2.84**		**0.056**	
205	avg count time, hrs -->		7.4	**2 NDs**				**2 NDs**					
7/26/2000 0:00	ARBS01	284.05	43200	**-0.014**	0.006	**-0.10**	0.07	0.009	0.04	2.64	0.08	0.018	0.01
7/26/2000 0:00	ARBS02	108.5	20903	**-0.008**	0.024	**-0.095**	0.26	**-0.181**	0.14	2.73	0.29	0.05	0.02
7/26/2000 0:00	ARBS03	160.1	9782	**-0.048**	0.024	0.30	0.25	**-0.143**	0.14	3.15	0.28	0.061	0.02
7/26/2000 0:00	ARBS04	192.15	10194	**-0.043**	0.20	**-0.38**	0.21	0.130	0.12	3.21	0.046	0.046	0.02
7/26/2000 0:00	ARBS05	178.73	14877	**-0.018**	0.017	**-0.06**	0.18	0.692	0.10	3.39	0.21	0.098	0.02
7/26/2000 0:00	ARBS06	200.7	36152	0.0023	0.01	**-0.087**	0.11	0.095	0.06	3.35	0.12	0.07	0.01
7/26/2000 0:00	ARBS07	137.15	23509	**-0.067**	0.018	**-0.06**	0.19	0.02	0.11	2.73	0.21	0.116	0.02
7/26/2000 0:00	ARBS08	153.27	10867	**-0.020**	0.024	**-0.04**	0.25	**-0.166**	0.14	2.91	0.28	0.072	0.02
7/26/2000 0:00	ARBS09	116.75	11524	**-0.069**	0.030	0.50	0.32	1.093	0.18	3.06	0.36	0.068	0.03
7/26/2000 0:00	ARBS10	144.55	9816	**-0.035**	0.027	0.09	0.28	0.074	0.16	2.85	0.31	0.169	0.02
10	**average ->Bass/AR**			**0.0023**		**0.297**		**0.302**		**3.00**		**0.08**	
215	avg count time, hrs -->		5.3	**9 NDs**		**7 NDs**		**3 NDs**					
7/26/2000 0:00	ARTH01	201.83	10483	**-0.041**	0.018	0.14	0.19	0.073	0.11	3.13	0.22	0.147	0.02
7/26/2000 0:00	ARTH02	247.05	13869	0.023	0.013	**-0.20**	0.14	0.353	0.08	3.27	0.15	0.118	0.01
7/26/2000 0:00	ARTH03	234.55	43200	**-0.022**	0.008	0.05	0.08	0.015	0.05	2.98	0.09	0.037	0.01
7/26/2000 0:00	ARTH04	166.5	9518	**-0.020**	0.023	0.24	0.25	**-0.051**	0.14	3.04	0.28	0.199	0.02
7/26/2000 0:00	ARTH05	284.05	5533	0.002	0.018	0.37	0.19	0.575	0.11	3.17	0.21	0.19	0.02
7/26/2000 0:00	ARTH06	195	42466	**-0.013**	0.009	0.08	0.10	**-0.047**	0.06	2.95	0.11	0.059	0.01
7/26/2000 0:00	ARTH07	169.2	19762	**-0.011**	0.016	0.02	0.17	**-0.132**	0.09	2.98	0.19	0.099	0.01
7/26/2000 0:00	ARTH08	220	15139	**-0.004**	0.014	0.02	0.15	0.065	0.08	3.13	0.17	0.112	0.01
7/26/2000 0:00	ARTH09	252	43200	0.001	0.007	0.19	0.08	**-0.061**	0.04	2.96	0.09	0.05	0.01
7/26/2000 0:00	ARTH10	243.1	16802	0.015	0.012	0.29	0.13	0.043	0.07	2.89	0.14	0.104	0.01
10	**average -> Tilapia/AR**			**0.010**		**0.16**		**0.19**		**3.05**		**0.112**	
225	avg count time, hrs -->		6.1	**6 NDs**		**1 ND**		**4 NDs**					
7/26/2000 0:00	ARCF01	377.1	9716	0.003	0.01	0.04	0.11	0.196	0.06	2.83	0.12	0.078	0.01
7/26/2000 0:00	ARCF02	209.58	31659	0.001	0.01	**-0.07**	0.11	**-0.050**	0.06	2.81	0.12	0.056	0.01
7/26/2000 0:00	ARCF03	176.15	43200	0.013	0.01	0.02	0.11	**-0.023**	0.06	3.06	0.12	0.048	0.01
7/26/2000 0:00	ARCF04	200.88	32300	0.002	0.02	**-0.04**	0.14	**-0.044**	0.07	2.68	0.12	0.067	0.01
7/26/2000 0:00	ARCF05	156.1	19890	**-0.019**	0.017	0.25	0.18	0.77	0.10	3.38	0.20	0.083	0.02
7/26/2000 0:00	ARCF06	85.4	9134	0.086	0.047	0.11	0.49	1.22	0.27	2.62	0.55	0.227	0.04
7/26/2000 0:00	ARCF07	99.7	16349	0.001	0.03	0.37	0.31	1.00	0.18	2.88	0.35	0.068	0.03
7/26/2000 0:00	ARCF08	131.68	35659	**-0.053**	0.015	**-0.03**	0.16	0.796	0.09	2.87	0.07	0.01	0.02
7/26/2000 0:00	ARCF09	109.82	43200	0.015	0.017	**-0.06**	0.18	0.855	0.10	2.92	0.20	0.061	0.01
7/26/2000 0:00	ARCF10	61.9	9775	0.011	0.062	0.46	0.66	0.768	0.37	2.73	0.73	0.128	0.05
10	**average->Catfish/AR**			**0.017**		**0.208**		**0.801**		**2.88**		**0.083**	
235	avg count time, hrs -->		7.0	**2 NDs**		**4 NDs**		**3 NDs**					

Seal Date	Sample #	Weight	cnt. time	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/26/2000 0:00	ARBG01	106.45	10589	0.022	0.035	**-0.28**	0.37	0.072	0.20	1.95	0.41	0.125	0.03
7/26/2000 0:00	ARBG02	206.35	9983	0.043	0.018	**-0.043**	0.019	**-0.180**	0.11	1.60	0.22	0.076	0.02
7/26/2000 0:00	ARBG03	80.37	32412	0.093	0.026	0.39	0.28	1.013	0.16	2.52	0.31	0.105	0.02
7/26/2000 0:00	ARBG04	75.3	19541	**-0.025**	0.036	**-0.35**	0.38	0.276	0.21	2.40	0.43	0.118	0.03
7/26/2000 0:00	ARBG05	84.5	15504	0.068	0.036	**-0.509**	0.38	0.065	0.21	1.99	0.43	0.113	0.03
7/26/2000 0:00	ARBG06	57.65	43200	0.019	0.032	**-0.16**	0.33	0.945	0.19	2.17	0.37	0.079	0.03
7/26/2000 0:00	ARBG07	77.55	9736	0.018	0.050	0.95	0.52	0.158	0.29	2.67	0.59	0.207	0.04
7/26/2000 0:00	ARBG08	59.2	43200	0.028	0.031	**-0.14**	0.33	1.139	0.18	2.03	0.36	0.091	0.03
7/26/2000 0:00	ARBG09	67.1	21906	**-0.092**	0.038	0.465	0.40	0.016	0.23	2.04	0.45	0.132	0.03
7/26/2000 0:00	ARBG10	63.93	9695	0.053	0.06	**-0.809**	0.64	0.009	0.36	1.24	0.71	0.163	0.05
10	**average->BlueGill/AR**			**0.043**		**0.602**		**0.410**		**2.06**		**0.121**	
245	avg count time, hrs -->		6.0	**2 NDs**		**7 NDs**		**1 ND**					
7/27/2000 0:00	FLBG01	51.7	43200	**-0.012**	0.035	0.380	0.37	**-0.067**	0.21	2.06	0.42	0.009	0.03
7/27/2000 0:00	FLBG02	85.53	43200	0.008	0.021	0.280	0.23	**-0.145**	0.13	2.19	0.25	0.007	0.02
7/27/2000 0:00	FLBG03	99.35	20483	0.023	0.027	0.003	0.28	**-0.026**	0.16	1.80	0.32	0.004	0.02
7/27/2000 0:00	FLBG04	86.5	41064	**-0.062**	0.022	**-0.372**	0.23	**-0.046**	0.13	2.23	0.26	0.014	0.02
7/27/2000 0:00	FLBG05	93.95	43200	0.002	0.019	**-0.061**	0.21	0.523	0.11	1.86	0.23	0.011	0.02
7/27/2000 0:00	FLBG06	78.7	16983	0.046	0.037	**-0.237**	0.39	**-0.326**	0.22	2.02	0.44	0.004	0.03
7/27/2000 0:00	FLBG07	63.75	53762	0.012	0.026	**-0.230**	0.27	**-0.116**	0.15	2.03	0.30	**-0.018**	0.02
7/27/2000 0:00	FLBG08	76.11	16334	**-0.100**	0.039	**-0.044**	0.41	**-0.369**	0.23	1.68	0.46	0.054	0.03
7/27/2000 0:00	FLBG09	67.35	13624	0.182	0.048	**-0.217**	0.51	**-0.404**	0.29	3.13	0.57	0.270	0.04
7/27/2000 0:00	FLBG10	70.7	9724	0.119	0.055	**-0.259**	0.58	0.192	0.32	2.46	0.64	0.073	0.05
10	**average->BlueGill/FL**			**0.056**		**0.221**		**0.358**		**2.15**		**0.05**	
255	avg count time, hrs -->		8.4	**3 NDs**		**7 NDs**		**8 NDs**				**1 ND**	
7/27/2000 0:00	FLTH01	121.7	43200	**-0.039**	0.015	**-0.136**	0.16	0.301	0.09	2.71	0.18	0.006	0.01
7/27/2000 0:00	FLTH02	237.9	9964	0.012	0.016	0.012	0.017	**-0.058**	0.09	3.08	0.19	0.019	0.01
7/27/2000 0:00	FLTH03	211.35	43200	**-0.027**	0.009	**-0.004**	0.09	**-0.072**	0.05	3.13	0.10	0.035	0.01
7/27/2000 0:00	FLTH04	343.2	10880	0.015	0.011	0.417	0.11	**-0.141**	0.06	3.10	0.13	0.027	0.01
7/27/2000 0:00	FLTH05	178	8027	**-0.001**	0.024	0.117	0.25	**-0.063**	0.14	3.22	0.28	0.38	0.02
7/27/2000 0:00	FLTH06	235.8	34627	0.046	0.009	0.007	0.09	**-0.335**	0.05	2.82	0.10	**-0.004**	0.01
7/27/2000 0:00	FLTH07	276.55	43200	**-0.015**	0.007	0.115	0.07	**-0.022**	0.04	3.16	0.08	0.03	0.01
7/27/2000 0:00	FLTH08	218.55	18539	0.03	0.013	0.397	0.14	0.114	0.08	3.46	0.15	0.083	0.01
7/27/2000 0:00	FLTH09	365.6	43200	**-0.0002**	0.005	**-0.125**	0.05	**-0.044**	0.03	2.94	0.06	0.001	0.005
7/27/2000 0:00	FLTH10	191.75	43200	0.036	0.010	0.204	0.1	**-0.027**	0.06	2.94	0.11	0.008	0.01
10	**average->Tilapia/FL**			**0.028**		**0.181**		**0.208**		**3.06**		**0.07**	
265	avg count time, hrs -->		8.3	**5 NDs**		**3 NDs**		**8 NDs**				**1 ND**	

Seal Date	Sample #	Weight	cnt. time	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
7/27/2000 0:00	FLBS01	302.65	13030	**-0.009**	0.011	0.019	0.12	**-0.11**	0.06	2.86	0.13	0.008	0.01
7/27/2000 0:00	FLBS02	345.95	9777	**-0.011**	0.011	**-0.159**	0.12	0.066	0.07	2.59	0.13	0.054	0.01
7/27/2000 0:00	FLBS03	218.6	43200	**-0.005**	0.008	**-0.17**	0.09	**-0.032**	0.05	2.98	0.10	0.031	0.01
7/27/2000 0:00	FLBS04	220.7	43200	**-0.062**	0.008	**-0.655**	0.09	**-0.457**	0.05	3.16	0.10	0.007	0.01
7/27/2000 0:00	FLBS05	259.5	18609	**-0.001**	0.011	**-0.029**	0.11	0.02	0.06	2.95	0.13	0.059	0.01
7/27/2000 0:00	FLBS06	235.25	9928	0.034	0.016	**-0.145**	0.17	**-0.042**	0.1	2.66	0.19	0.027	0.01
7/27/2000 0:00	FLBS07	257.15	10526	**-0.015**	0.014	**-0.348**	0.15	**-0.157**	0.09	2.97	0.17	0.038	0.01
7/27/2000 0:00	FLBS08	248.15	10820	**-0.0003**	0.015	**-0.075**	0.16	0.048	0.09	2.94	0.17	0.004	0.01
7/27/2000 0:00	FLBS09	242.5	20355	0.009	0.011	**-0.387**	0.12	**-0.126**	0.06	2.74	0.13	0.031	0.01
7/27/2000 0:00	FLBS10	209.8	9993	**-0.042**	0.018	**-0.07**	0.19	**-0.279**	0.11	2.77	0.21	0.026	0.02
10	**average->Bass/FL**			**0.0215**		**0.019**		**0.045**		**2.86**		**0.03**	
275	avg count time, hrs -->		5.8	**8 NDs**		**9 NDs**		**7 NDs**					
8/1/2000 0:00	WWCF01	99.25	43200	**-0.0158**	0.018	**-0.438**	0.19	0.046	0.11	3.02	0.22	0.078	0.02
8/1/2000 0:00	WWCF02	164.8	12319	**-0.058**	0.021	**-0.364**	0.22	**-0.025**	0.12	2.90	0.24	0.048	0.02
8/1/2000 0:00	WWCF03	234	43200	0.007	0.008	0.056	0.08	0.012	0.05	3.22	0.09	0.032	0.01
8/1/2000 0:00	WWCF04	263.65	11409	**-0.035**	0.014	**-0.23**	0.14	0.010	0.08	3.16	0.16	0.035	0.01
8/1/2000 0:00	WWCF05	160.1	43200	**-0.006**	0.011	**-0.241**	0.11	0.004	0.06	3.05	0.12	0.048	0.02
8/1/2000 0:00	WWCF06	178.7	9854	0.037	0.021	**-0.114**	0.23	**-0.061**	0.13	3.33	0.25	0.099	0.02
8/1/2000 0:00	WWCF07	148.9	6032	0.052	0.033	**-0.153**	0.35	**-0.135**	0.19	3.01	0.39	0.207	0.03
8/1/2000 0:00	WWCF08	180.8	13438	**-0.004**	0.018	**-0.297**	0.19	0.100	0.11	3.07	0.21	0.094	0.02
11/25/2000 0:00	WWCF09	132.3	7435	0.019	0.038	**-0.443**	0.4	**-0.047**	0.22	2.22	0.44	0.076	0.03
11/25/2000 0:00	WWCF10	84.8	43200	**-0.056**	0.022	0.074	0.23	**-0.149**	0.13	2.07	0.25	0.097	0.02
10	**average->Catfish/WW**			**0.029**		**0.065**		**0.034**		**2.91**		**0.08**	
285	avg count time, hrs -->		6.5	**6 NDs**		**8NDs**		**5 NDs**					
8/1/2000 0:00	WWBG01	131.87	25627	0.007	0.02	**-0.558**	0.21	**-0.164**	0.12	2.46	0.24	0.092	0.02
8/1/2000 0:00	WWBG02	128.75	6032	0.060	0.038	0.112	0.40	**-0.272**	0.22	3.48	0.45	0.198	0.03
8/1/2000 0:00	WWBG03	90.85	9863	0.195	0.042	**-0.036**	0.44	**-0.147**	0.24	3.27	0.49	0.130	0.04
8/1/2000 0:00	WWBG04	92.3	9150	0.332	0.043	**-0.171**	0.45	**-0.021**	0.25	3.06	0.51	0.067	0.04
8/1/2000 0:00	WWBG05	157.95	43200	0.027	0.012	0.067	0.12	**-0.106**	0.07	2.17	0.14	0.037	0.01
8/1/2000 0:00	WWBG06	117	10652	**-0.011**	0.032	**-0.038**	0.33	**-0.402**	0.19	2.41	0.37	0.131	0.03
8/1/2000 0:00	WWBG07	118.15	6032	0.081	0.044	0.101	0.47	0.03	0.26	3.82	0.53	0.224	0.04
8/1/2000 0:00	WWBG08	91.15	20079	**-0.016**	0.029	**-1.042**	0.31	**-0.029**	0.17	2.36	0.35	0.119	0.03
8/1/2000 0:00	WWBG09	109.8	36929	**-0.019**	0.018	**-0.196**	0.19	**-0.056**	0.11	2.29	0.21	0.067	0.02
8/1/2000 0:00	WWBG10	76.7	12416	0.059	0.045	0.039	0.47	0.06	0.26	1.72	0.52	0.068	0.04
10	**average->BlueGill/WW**			**0.109**		**0.080**		**0.045**		**2.70**		**0.113**	
295	avg count time, hrs -->		5.0	**3 NDs**		**6 NDs**		**8 NDs**					

Seal Date	Sample #	Weight	cnt. time	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
8/1/2000 0:00	WWBS01	284.85	9509	0.048	0.014	**-0.039**	0.14	**-0.036**	0.08	2.86	0.16	0.048	0.01
8/1/2000 0:00	WWBS02	252.42	10490	**-0.008**	0.015	0.10	0.16	0.043	0.09	2.88	0.17	0.093	0.01
8/1/2000 0:00	WWBS03	196.9	9683	0.030	0.02	0.148	0.21	**-0.209**	0.12	3.31	0.23	0.053	0.02
8/1/2000 0:00	WWBS04	219.35	31246	0.052	0.01	0.178	0.10	**-0.134**	0.06	3.05	0.12	0.061	0.01
8/1/2000 0:00	WWBS05	178.4	13237	**-0.021**	0.019	**-0.007**	0.20	**-0.153**	0.11	3.10	0.22	0.121	0.02
8/1/2000 0:00	WWBS06	210.2	33810	**-0.042**	0.01	0.046	0.10	**-0.033**	0.06	2.72	0.12	0.054	0.01
8/1/2000 0:00	WWBS07	231.65	43200	**-0.022**	0.008	**-0.092**	0.08	**-0.032**	0.05	3.07	0.09	0.047	0.01
8/1/2000 0:00	WWBS08	177.6	43200	**-0.021**	0.01	0.270	0.11	0.064	0.06	2.97	0.12	0.056	0.01
8/1/2000 0:00	WWBS09	166.45	9749	**-0.011**	0.023	0.202	0.24	**-0.077**	0.14	3.03	0.27	0.076	0.02
8/1/2000 0:00	WWBS10	194.22	40624	0.019	0.01	**-0.053**	0.10	**-0.109**	0.06	2.98	0.11	0.024	0.01
10	**average->Bass/WW**			**0.037**		**0.157**		**0.054**		**3.00**		**0.063**	
305	avg count time, hrs -->		6.8	**6 NDs**		**4 NDs**		**8 NDs**					
11/19/2000 0:00	WWSP01	198.55	43200	**-0.011**	0.011	**-0.035**	0.12	**-0.091**	0.06	1.98	0.11	0.056	0.01
11/10/2000 0:00	WWSP02	155.2	28252	**-0.014**	0.015	**-0.025**	0.15	**-0.146**	0.09	1.69	0.17	0.068	0.01
10/19/2000 0:00	WWSP03	147.1	43200	0.065	0.012	**-0.053**	0.13	**-0.041**	0.07	2.39	0.15	0.057	0.01
11/11/2000 0:00	WWSP04	146	22479	**-0.0178**	0.017	0.157	0.18	**-0.289**	0.10	2.44	0.20	0.026	0.02
10/19/2000 0:00	WWSP05	155.9	43200	0.013	0.012	**-0.314**	0.12	**-0.007**	0.07	1.97	0.14	0.058	0.01
10/19/2000 0:00	WWSP06	163.1	19384	**-0.007**	0.017	0.095	0.18	**-0.203**	0.10	1.89	0.20	0.064	0.01
11/11/2000 0:00	WWSP07	153.15	43200	**-0.016**	0.012	0.043	0.13	**-0.205**	0.07	2.20	0.14	0.021	0.01
10/19/2000 0:00	WWSP08	151.9	11536	**-0.009**	0.023	**-0.123**	0.25	**-0.275**	0.14	2.63	0.27	0.049	0.02
11/11/2000 0:00	WWSP09	116.85	28812	0.0297	0.019	**-0.217**	0.20	**-0.212**	0.11	1.85	0.23	0.035	0.02
11/10/2000 0:00	WWSP10	105.3	6363	**-0.059**	0.045	**-0.241**	0.48	**-0.219**	0.27	2.35	0.53	0.069	0.04
10	**average->SpPrch/WW**			**0.0359**		**0.098**				**2.14**		**0.05**	
315	avg count time, hrs -->		8.0	**7 NDs**		**7 NDs**		**10 NDs**					
8/2/2000 0:00	DPCF01	63.15	35331	**-0.044**	0.032	0.263	0.34	**-0.173**	0.19	2.74	0.38	0.036	0.03
8/2/2000 0:00	DPCF02	305.9	19173	**-0.01**	0.009	**-0.087**	0.09	**-0.057**	0.05	2.84	0.11	0.046	0.01
8/2/2000 0:00	DPCF03	154.15	10890	0.001	0.024	**-0.013**	0.25	**-0.042**	0.14	3.41	0.28	0.061	0.02
8/2/2000 0:00	DPCF04	153.95	43200	**-0.031**	0.012	0.029	0.13	**-0.025**	0.07	3.11	0.14	0.048	0.01
8/2/2000 0:00	DPCF05	154.55	31303	**-0.044**	0.014	0.002	0.15	**-0.084**	0.08	3.05	0.16	**-0.018**	0.01
8/2/2000 0:00	DPCF06	123.63	13249	0.024	0.027	**-0.247**	0.28	0.236	0.16	2.54	0.31	0.001	0.02
6	**average->Catfish/DP**			**0.0125**		**0.098**		**0.236**		**2.95**		**0.0384**	
321	avg count time, hrs -->		7.1	**4 NDs**		**3 NDs**		**5 NDs**				**1 ND**	
10/20/2000 0:00	DPBG01	109.6	36640	0.0156	0.018	0.035	0.19	**-0.139**	0.11	1.70	0.21	0.047	0.02
11/26/2000 0:00	DPBG02	96.5	70904	0.0157	0.015	0.151	0.16	**-0.276**	0.09	1.86	0.17	0.007	0.01
11/26/2000 0:00	DPBG03	101.8	65100	0.012	0.015	**-0.151**	0.15	**-0.029**	0.09	1.76	0.17	0.017	0.01
10/25/2000 0:00	DPBG04	74.6	8804	**-0.0145**	0.054	0.132	0.57	**-0.114**	0.32	1.65	0.64	0.066	0.05
10/25/2000 0:00	DPBG05	134.8	9581	**-0.056**	0.029	0.233	0.30	**-0.344**	0.17	1.95	0.34	0.210	0.03
10/25/2000 0:00	DPBG06	80.4	67212	0.027	0.018	**-0.139**	0.19	**-0.428**	0.11	1.41	0.21	0.013	0.03
11/26/2000 0:00	DPBG07	83.4	43200	0.0643	0.022	**-0.088**	0.13	**-0.334**	0.13	1.41	0.26	0.011	0.02
10/25/2000 0:00	DPBG08	105.4	86400	0.076	0.012	**-0.018**	0.13	**-0.195**	0.07	2.18	0.14	0.003	0.01
10/25/2000 0:00	DPBG09	96.6	49192	0.0062	0.018	**-0.204**	0.19	**-0.361**	0.10	1.61	0.21	0.021	0.02
10/25/2000 0:00	DPBG10	169.15	32040	**-0.046**	0.014	0.162	0.15	**-0.306**	0.08	1.84	0.16	0.015	0.01
10	**average->BlueGill/DP**			**0.031**		**0.143**				**1.74**		**0.041**	
331	avg count time, hrs -->		13.0	**3 NDs**		**5 NDs**		**10 NDs**					

FISH DATA, SET 3 **Non-Detectables in Bold** **Averages in Bold also**

Seal Date	Sample#	Weight	cnt.time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
11/23/2000 0:00	DPSC01	108.05	43200	0.0117	0.017	**-0.184**	0.18	**-0.1272**	0.10	1.70	0.2	0.015	0.01
10/25/2000 0:00	DPSC02	106.4	61555	**-0.0176**	0.014	0.020	0.015	**-0.1556**	0.08	1.22	0.17	**-0.014**	0.01
11/23/2000 0:00	DPSC03	139.4	39481	0.0117	0.014	**-0.072**	0.14	0.0225	0.08	1.70	0.16	0.024	0.01
11/24/2000 0:00	DPSC04	104.55	9266	**-0.039**	0.038	0.134	0.4	**-0.410**	0.22	1.18	0.45	**-0.009**	0.03
11/17/2000 0:00	DPSC05	99.1	86400	0.0258	0.013	**-0.163**	0.14	**-0.0215**	0.08	1.57	0.15	**-0.017**	0.01
11/23/2000 0:00	DPSC06	99	61800	0.0231	0.016	**-0.079**	0.15	**-0.151**	0.09	1.97	0.18	0.015	0.01
11/23/2000 0:00	DPSC07	152.4	43200	0.0502	0.012	**-0.100**	0.13	**-0.0072**	0.07	1.40	0.14	0.032	0.01
11/23/2000 0:00	DPSC08	91.1	43200	**-0.0368**	0.02	0.104	0.21	**-0.0578**	0.12	1.76	0.24	0.023	0.02
10/25/2000 0:00	DPSC09	98	64308	0.0222	0.016	**-0.096**	0.16	**-0.121**	0.09	2.17	0.18	0.020	0.01
11/25/2000 0:00	DPSC10	110.09	12826	0.0478	0.031	**-0.145**	0.32	**-0.211**	0.18	1.44	0.36	0.006	0.03
10	**Avg ShellCrk/DP ->**			**0.0275**		**0.086**		**0.0225**		**1.61**		**0.019**	
341	average count time->		12.9	**3 NDs**		**7 NDs**		**9 NDs**				**3 NDs**	
8/2/2000 0:00	DPTH01	124.8	14919	0.005	0.025	0.056	0.26	0.107	0.15	2.15	0.29	0.023	0.02
8/2/2000 0:00	DPTH02	145.35	9623	0.035	0.027	**-0.114**	0.28	**-0.014**	0.16	3.22	0.31	0.099	0.02
11/4/2000 0:00	DPTH03	234.1	62591	**-0.008**	0.006	**-0.016**	0.07	**-0.163**	0.04	1.62	0.08	0.046	0.01
11/11/2000 0:00	DPTH04	44.35	43200	0.133	0.041	**-0.319**	0.44	**-0.322**	0.24	2.18	0.49	0.003	0.04
11/1/2000 0:00	DPTH05	57.7	13072	0.0148	0.058	0.016	0.61	**-0.275**	0.34	1.71	0.68	**-0.002**	0.05
11/2/2000 0:00	DPTH06	57.1	12419	**-0.0196**	0.060	1.235	0.63	0.486	0.35	2.10	0.70	0.072	0.05
11/1/2000 0:00	DPTH07	51.1	81704	**-0.0001**	0.026	**-0.158**	0.27	**-0.218**	0.15	2.46	0.30	**-0.028**	0.02
11/23/2000 0:00	DPTH08	46.8	39254	0.223	0.041	**-0.767**	0.43	**-0.145**	0.24	2.06	0.48	0.040	0.04
8	**Avg Tilapia/DP ->**			**0.0822**		**0.4357**		**0.297**		**2.19**		**0.047**	
348	average count time->		9.6	**3 NDs**		**4 NDs**		**6 NDs**				**2 NDs**	
8/2/2000 0:00	DPBS01	163.1	43200	0.019	0.011	0.036	0.12	**-0.075**	0.07	3.10	0.13	0.03	0.01
8/2/2000 0:00	DPBS02	166	30660	**-0.001**	0.013	**-0.03**	0.14	**-0.125**	0.08	3.21	0.15	0.044	0.01
8/2/2000 0:00	DPBS03	218.1	43100	0.007	0.008	0.106	0.01	0.112	0.04	3.06	0.1	0.102	0.01
8/2/2000 0:00	DPBS04	174.7	24148	0.017	0.014	**-0.123**	0.15	**-0.126**	0.08	3.04	0.16	0.07	0.01
8/2/2000 0:00	DPBS05	177.4	43200	0.018	0.01	**-0.003**	0.11	**-0.144**	0.06	3.01	0.12	0.027	0.01
8/2/2000 0:00	DPBS06	165	43200	0.036	0.011	0.049	0.12	**-0.079**	0.07	2.99	0.13	0.029	0.01
8/2/2000 0:00	DPBS07	200.15	43200	0.006	0.009	0.126	0.1	0.126	0.05	3.07	0.11	0.142	0.01
8/2/2000 0:00	DPBS08	150.1	12498	**-0.004**	0.023	**-0.169**	0.24	**-0.004**	0.13	3.29	0.27	0.037	0.02
8/2/2000 0:00	DPBS09	135.9	49000	**-0.028**	0.013	0.105	0.13	**-0.166**	0.07	3.17	0.15	0.027	0.01
8/2/2000 0:00	DPBS10	134.39	9597	0.053	0.029	0.003	0.3	**-0.153**	0.17	3.53	0.34	0.064	0.03
10	**Avg Bass/DP ->**			**0.022**		**0.071**		**0.119**		**3.15**		**0.06**	
358	average count time->		9.5	**3 NDs**		**4 NDs**		**8 NDs**					
8/15/2000 0:00	MACF07	203.5	11595	**-0.021**	0.017	**-0.283**	0.18	0.101	0.10	2.39	0.20	0.068	0.02
8/15/2000 0:00	MACF08	203.1	43200	**-0.023**	0.009	**-0.014**	0.1	**-0.051**	0.05	2.95	0.11	0.033	0.01
8/15/2000 0:00	MACF09	116.55	10771	**-0.044**	0.031	**-0.253**	0.33	**-0.154**	0.19	1.75	0.37	0.130	0.03
8/15/2000 0:00	MACF10	156.2	11392	**-0.042**	0.023	**-0.368**	0.24	**-0.097**	0.13	2.54	0.27	0.075	0.02
4	**Avg CatFish/MA ->**							**0.101**					
362	average count time->		5.6	**3 NDs**		**3 NDs**		**2 NDs**		**2.41**		**0.08**	

Seal Date	Sample#	Weight	cnt.time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
8/15/2000 0:00	SCCF03	144.3	43200	0.027	0.013	1.207	0.13	**-0.11**	0.07	2.05	0.15	0.036	0.01
1	**Avg CatFish/SC ->**			**0.027**		**1.207**				**2.05**		**0.036**	
363	average count time->		12					**1 ND**					
8/10/2000 0:00	TNBS08	204.1	21776	0.006	0.013	**-0.101**	0.13	0.044	0.07	2.95	0.15	0.052	0.01
8/10/2000 0:00	TNBS09	192	20684	0.0296	0.014	**-0.008**	0.15	0.028	0.08	2.75	0.16	0.038	0.01
8/10/2000 0:00	TNBS10	161.2	9406	0.023	0.024	0.062	0.26	0.036	0.14	2.42	0.14	0.095	0.02
3	**Avg Bass/TN ->**			**0.020**		**0.062**		**0.036**		**2.71**		**0.062**	
366	average count time->		4.8			**2 NDs**							
8/10/2000 0:00	MRSP06	104	10279	0.042	0.036	**-0.163**	0.38	0.097	0.21	2.10	0.42	0.084	0.03
8/10/2000 0:00	MRSPO7	204.1	43200	**-0.006**	0.009	**-0.265**	0.09	**-0.018**	0.05	2.79	0.11	0.028	0.01
2	**Avg SpecPrch/MR->**			**0.042**				**0.097**		**2.43**		**0.06**	
368	average count time->		5.0	**1 ND**		**2 NDs**		**1 ND**					
8/18/2000 0:00	DPCF07	222.1	12144	0.0004	0.016	**-0.162**	0.16	0.024	0.09	3.02	0.18	0.006	0.01
8/18/2000 0:00	DPCF08	146.9	16825	**-0.0011**	0.02	0.002	0.21	0.0202	0.12	3.10	0.24	0.002	0.02
8/18/2000 0:00	DPCF09	97.95	20471	**-0.072**	0.027	**-0.053**	0.29	**-0.094**	0.16	3.58	0.32	**-0.026**	0.02
8/18/2000 0:00	DPCF10	143.4	10095	0.038	0.026	**-0.113**	0.28	**-0.105**	0.16	2.91	0.31	0.027	0.02
4	**Avg CatFish/DP ->**			**0.0192**		**0.002**		**#VALUE!**		**3.15**		**0.012**	
372	average count time->		4.1	**2 NDs**		**3 NDs**		**2 NDs**				**1 ND**	
8/25/2000 0:00	FLSP01	148.85	43200	**-0.002**	0.012	0.046	0.13	**-0.025**	0.07	2.59	0.14	0.064	0.01
8/25/2000 0:00	FLSP02	142.3	14545	**-0.002**	0.022	0.092	0.23	0.097	0.13	2.78	0.26	0.094	0.02
8/25/2000 0:00	FLSP03	191.45	86400	0.013	0.007	0.014	0.07	**-0.016**	0.04	2.27	0.08	0.082	0.01
8/25/2000 0:00	FLSP04	98.4	43200	0.0167	0.015	0.034	0.16	-0.085	0.09	2.68	0.18	0.052	0.02
8/25/2000 0:00	FLSP05	103	14114	0.0186	0.031	**-0.157**	0.33	**-0.087**	0.18	2.69	0.37	0.057	0.03
8/25/2000 0:00	FLSP06	114.6	12337	0.010	0.030	0.004	0.32	0.154	0.18	1.86	0.35	0.131	0.03
8/25/2000 0:00	FLSP07	121.2	43200	**-0.006**	0.015	0.013	0.16	**-0.081**	0.09	2.58	0.18	0.053	0.01
8/25/2000 0:00	FLSP08	144.8	24490	**-0.023**	0.016	**-0.224**	0.165	**-0.057**	0.095	2.36	0.19	0.057	0.03
8/25/2000 0:00	FLSP09	129.9	40500	**-0.0001**	0.015	**-0.068**	0.15	0.013	0.09	2.33	0.17	0.060	0.01
8/25/2000 0:00	FLSP10	170.9	15144	0.0114	0.018	0.227	0.19	**-0.074**	0.11	2.07	0.21	0.072	0.02
10	**Avg SpecPrch/FL->**			**0.0143**		**0.039**		0.088		**2.42**		**0.07**	
382	average count time->		5.8	**5 NDs**		**3 NDs**		**4 NDs**					
8/28/2000 0:00	IMCSC01	106.2	54409	0.026	0.015	0.151	0.16	**-0.087**	0.09	2.24	0.18	**-0.026**	0.01
8/28/2000 0:00	IMCSC02	113.45	75048	0.038	0.012	0.096	0.13	0.004	0.07	2.60	0.14	0.001	0.01
8/28/2000 0:00	IMCSC03	146.15	47622	0.053	0.012	**-0.221**	0.13	**-0.062**	0.07	2.12	0.14	**-0.003**	0.01
8/28/2000 0:00	IMCSC04	120	43200	0.001	0.015	**-0.050**	0.16	0.054	0.09	2.36	0.18	**-0.008**	0.01
8/28/2000 0:00	IMCSC05	102.55	40428	**-0.014**	0.018	**-0.111**	0.19	0.027	0.11	2.26	0.22	**-0.008**	0.02
8/28/2000 0:00	IMCSC06	97.9	43200	0.049	0.019	0.003	0.20	0.026	0.11	2.06	0.22	**-0.013**	0.02
8/28/2000 0:00	IMCSC07	98.45	21523	0.049	0.026	**-0.416**	0.28	**-0.022**	0.16	2.69	0.31	**-0.002**	0.02
8/28/2000 0:00	IMCSC08	109.4	67420	0.065	0.013	**-0.087**	0.14	**-0.124**	0.08	2.28	0.16	0.019	0.01
11/25/2000 0:00	IMCSC09	117.3	67381	0.061	0.012	**-0.079**	0.13	**-0.390**	0.07	1.43	0.15	**-0.001**	0.01
11/25/2000 0:00	IMCSC10	110.1	43200	0.023	0.017	**-0.093**	0.18	**-0.098**	0.1	1.46	0.2	0.005	0.01
10	**Avg ShellCrk/IMC ->**			**0.041**		**0.083**		**0.028**		**2.15**		**0.008**	
392	average count time->		1.8	**1 ND**		**7 NDs**		**6 NDs**				**7 NDs**	

Seal Date	Sample#	Weight	cnt.time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
8/28/2000 0:00	IMCTH01	277.4	15767	**-0.014**	0.011	0.044	0.12	**-0.1098**	0.06	2.68	0.13	0.078	0.01
8/28/2000 0:00	IMCTH02	277.5	51101	**-0.0032**	0.006	**-0.058**	0.06	0.0033	0.04	2.69	0.07	0.045	0.01
8/28/2000 0:00	IMCTH03	296.45	11033	0.034	0.012	0.214	0.13	**-0.0404**	0.07	2.76	0.14	0.037	0.01
8/28/2000 0:00	IMCTH04	276	21262	**-0.007**	0.009	**-0.092**	0.100	**-0.036**	0.06	2.96	0.11	0.06	0.01
8/28/2000 0:00	IMCTH05	310.5	19130	0.011	0.009	**-0.066**	0.09	0.052	0.05	2.79	0.10	0.008	0.01
8/28/2000 0:00	IMCTH06	247.2	86400	**-0.004**	0.005	**-0.226**	0.06	0.039	0.03	2.58	0.06	0.053	0.005
8/28/2000 0:00	IMCTH07	230.75	9240	0.0326	0.017	**-0.197**	0.18	0.011	0.10	2.25	0.20	0.02	0.01
8/28/2000 0:00	IMCTH08	371.6	20829	**-0.004**	0.007	**-0.034**	0.07	**-0.047**	0.04	2.56	0.08	0.04	0.01
8/28/2000 0:00	IMCTH09	252.05	39854	**-0.0015**	0.008	**-0.001**	0.08	0.018	0.04	2.68	0.09	0.018	0.01
8/28/2000 0:00	IMCTH10	231.55	10200	0.055	0.016	0.095	0.17	0.217	0.10	3.19	0.19	0.013	0.01
10	**Avg Tilapia/IMC ->**			**0.033**		**0.118**		**0.057**		**2.71**		**0.04**	
402	average count time->		7.9	**6 NDs**		**7 NDs**		**4 NDs**					
11/24/2000 0:00	IMCBG01	91.45	74658	**-0.0123**	0.015	**-0.124**	0.16	**-0.113**	0.09	1.55	0.18	0.031	0.01
8/28/2000 0:00	IMCBG02	89.45	55474	0.0416	0.018	0.033	0.19	**-0.3356**	0.11	1.60	0.21	**-0.001**	0.02
8/28/2000 0:00	IMCBG03	138.55	43200	0.0019	0.013	0.135	0.14	**-0.1086**	0.08	1.47	0.16	0.010	0.01
8/28/2000 0:00	IMCBG04	107.95	76661	**-0.0092**	0.013	**-0.111**	0.13	**-0.1518**	0.08	1.65	0.15	0.003	0.01
8/28/2000 0:00	IMCBG05	127.65	21098	0.0648	0.021	0.029	0.22	**-0.0539**	0.12	1.81	0.24	0.008	0.02
8/28/2000 0:00	IMCBG06	126.55	43200	0.0184	0.014	0.062	0.15	**-0.2014**	0.09	1.31	0.17	0.001	0.02
8/28/2000 0:00	IMCBG07	114.45	27621	0.0006	0.02	0.069	0.21	**-0.1639**	0.12	1.30	0.24	0.022	0.02
8/28/2000 0:00	IMCBG08	117.05	16444	0.0038	0.026	**-0.016**	0.27	**-0.1423**	0.15	1.39	0.30	**-0.001**	0.02
8/28/2000 0:00	IMCBG09	117.25	43200	0.0021	0.016	**-0.177**	0.16	**-0.1328**	0.09	1.81	0.18	0.001	0.01
8/28/2000 0:00	IMCBG10	115.05	36315	0.0647	0.017	**-0.012**	0.18	**-0.1566**	0.10	1.73	0.2	**-0.025**	0.02
10	**Avg BlueGil/IMC ->**			**0.0247**		**0.0656**				**1.56**		**0.011**	
412	average count time->		12.2	**2 NDs**		**5 NDs**		**10 NDs**				**3 NDs**	
8/28/2000 0:00	IMCBS01	227.05	45418	**-0.009**	0.008	**-0.042**	0.08	0.0004	0.05	2.99	0.09	0.027	0.01
8/28/2000 0:00	IMCBS02	176.9	19253	0.0007	0.016	**-0.045**	0.16	**-0.022**	0.09	2.98	0.18	0.035	0.01
8/28/2000 0:00	IMCBS03	170.3	43200	0.008	0.011	0.102	0.11	0.014	0.06	2.80	0.13	0.032	0.01
8/28/2000 0:00	IMCBS04	225.2	10603	**-0.013**	0.016	**-0.258**	0.17	0.071	0.10	3.11	0.19	0.053	0.01
8/28/2000 0:00	IMCBS05	252.15	43200	**-0.008**	0.007	**-0.041**	0.07	0.004	0.04	2.89	0.11	0.032	0.01
8/28/2000 0:00	IMCBS06	191.55	79985	**-0.0028**	0.007	0.107	0.07	**-0.105**	0.04	3.01	0.08	0.088	0.01
8/28/2000 0:00	IMCBS07	271.55	47220	**-0.0073**	0.006	0.041	0.07	**-0.035**	0.04	3.08	0.08	0.048	0.01
8/28/2000 0:00	IMCBS08	166.3	10109	**-0.0311**	0.023	**-0.220**	0.24	0.083	0.13	3.66	0.27	0.007	0.02
8/28/2000 0:00	IMCBS09	212.7	43200	**-0.009**	0.009	0.063	0.09	**-0.033**	0.05	3.12	0.10	0.078	0.01
8/28/2000 0:00	IMCBS10	168.7	46955	0.0201	0.01	**-0.118**	0.11	0.06	0.06	2.98	0.12	0.06	0.01
10	**Avg Bass/IMC ->**			**0.0096**		**0.078**		**0.039**					
422	average count time->		10.8	**7 NDs**		**6 NDs**		**3 NDs**		**3.07**		**0.048**	

Seal Date	Sample#	Weight	cnt.time seconds	Ra-226	Ra-MDC	Pb-210	Pb-MDC	Th-234	Th-MDC	K-40	K-MDC	Cs-137	Cs-MDC
9/27/2000 0:00	IMCSP01	90.05	24119	0.034	0.027	0.087	0.29	0.165	0.16	3.01	0.32	0.095	0.02
9/27/2000 0:00	IMCSP02	113.05	27023	**-0.028**	0.02	**-0.430**	0.22	0.135	0.12	2.17	0.24	0.071	0.02
9/27/2000 0:00	IMCSP03	117.05	43200	0.006	0.016	**-0.063**	0.16	0.007	0.09	3.24	0.18	0.052	0.01
9/27/2000 0:00	IMCSP04	92.35	43200	0.029	0.02	0.137	0.21	**-0.197**	0.12	2.41	0.23	0.068	0.02
9/27/2000 0:00	IMCSP05	88.25	86400	**-0.011**	0.015	**-0.058**	0.15	**-0.088**	0.09	3.03	0.17	0.144	0.01
9/27/2000 0:00	IMCSP06	72.2	14090	0.064	0.044	**-0.165**	0.47	**-0.149**	0.16	2.56	0.52	0.086	0.04
9/27/2000 0:00	IMCSP07	72.9	43200	0.007	0.025	**-0.187**	0.26	**-0.044**	0.15	2.94	0.30	0.001	0.02
9/27/2000 0:00	IMCSP08	50.3	13287	**-0.023**	0.066	**-0.259**	0.69	0.041	0.39	3.74	0.77	0.121	0.06
9/27/2000 0:00	IMCSP09	44.25	12144	**-0.111**	0.078	**-0.284**	0.82	0.887	0.46	3.86	0.92	0.028	0.07
9/27/2000 0:00	IMCSP10	43.3	71387	0.066	0.033	**-0.691**	0.35	0.028	0.19	2.31	0.39	**-0.033**	0.03
10	**Avg SpecPrch/IMC ->**			**0.034**		**0.112**		**0.211**		**2.927**		**0.074**	
432	average count time->		10.5	**4 NDs**		**8 NDs**		**4 NDs**				**1 ND**	
9/27/2000 0:00	IMCCF01	136.35	40577	0.0409	0.014	**-0.168**	0.15	**-0.012**	0.08	2.97	0.16	0.015	0.01
1	**Avg CatFish/IMC ->**			0.0409						**2.97**		**0.015**	
433	**TOTAL Samples**					**1 ND**		**1 ND**					

NOTE FLCF10 was on Chain of Custody dated 8/29/00 but after both refirgerators and both freezers were emptyed this sample was not located.