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Technical Report Overview

Report: Evaluation of the Effects of Selenium on Early Life Stage Development of Mountain Whitefish from the Elk Valley, BC

Overview: This report describes the methods undertaken to understand the relative sensitivity of Mountain Whitefish to selenium, and the findings from this work.

This report was prepared for Teck by Nautilus Environmental.

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Future studies will be made available at teck.com/elkvalley



**Evaluation of the Effects of Selenium on Early
Lifestage Development of Mountain Whitefish from
the Elk Valley, BC**

Final Report

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SIGNATURE PAGE



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This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party.

EXECUTIVE SUMMARY

Adult mountain whitefish (*Prosopium williamsoni*) were collected from the Fording River and Michel Creek in three rounds of sampling performed in 2010, 2011, and 2013 (Rounds 1, 2 and 3). The adult fish were spawned on-site and the eggs fertilized and reared at the Nautilus Environmental laboratory. Endpoints from the test included survival, length, wet weight, and incidence of deformities.

Eggs from six adults were successfully reared in Round 1. A number of the embryos were affected by fungus and this lowered the survival rate of the developing fish. An iodophore treatment was implemented thereafter and, in this and subsequent rounds, this effectively prevented fungal growth. After accounting for the effects of fungus, survival rates were high and incidence of deformities were low, demonstrating that the egg selenium concentrations, which ranged from 15.5 to 20.0 µg/g dry weight (dw) did not cause adverse effects. The selenium concentrations in the eggs did not encompass sufficiently high egg selenium concentrations to detect adverse effects on length or weights of the developing fry.

In the second round of testing, nine egg samples were collected that produced developing embryos. Eggs from 27 other adults produced no development, and this was considered to be associated with sampling of under-ripe eggs. The nine samples that produced developed embryos encompassed a larger range of egg selenium concentrations than in Round 1, ranging from 18.3 to 33.2 µg/g dw. Survival rates were not related to selenium concentration in a dose-dependent manner and rates of deformity were low in all samples. Furthermore, there was no relationship between length or weight of the fry and selenium concentration. Thus, the results of Round 2 indicated that selenium concentrations ranging from 18.3 to 33.2 µg/g dw did not cause adverse effects on developing mountain whitefish.

Round 3 incorporated the largest number of egg samples; 28 samples were collected, of which 27 produced viable fry, although egg quality was noted to be less than ideal in six samples (including the one that produced no viable fry). Egg selenium concentrations in the samples collected in Round 3 ranged from 17.3 to 32.5 µg Se /g dw. Survival rates did not show a dose-dependent relationship with selenium concentration for development of eggs to the swim-up stage, or during a subsequent 28-day feeding period, indicating that there was no adverse effect of selenium on survival. Size of swim-up fry was negatively correlated with selenium concentration, but exhibited a stronger positive correlation with adult size. Thus, variation in fry size was likely related to adult size, and the apparent relationship to egg selenium

concentration likely reflected a weak trend of lower egg selenium concentrations in larger adults. Regardless, there was no relationship between selenium and fry size after 28 days of feeding, indicating that egg selenium concentration would not be expected to cause effects on growth of fry. Deformity rates in Round 3 were higher than previous rounds, with the percentage of swim-up fry having deformities ranging from 0.0 to 20.9% in the 27 samples that produced viable fry. Deformity rates were lower in assessments of the fry after a 28 day post swim-up feeding exposure, despite a high rate of survival during this time period, indicating that some minor deformities were reversible. Two samples produced approximately 20% deformities at swim-up and 11% deformities after 28 days of feeding, which were consistent with an effect associated with selenium. These deformity rates differed from the other samples, which all had rates of deformities of 3.8% or less after the 28 day feeding period. Selenium concentrations in these two samples were 25.1 and 32.5 $\mu\text{g Se /g dw}$.

Despite observing a small rate of deformities in these two samples, other egg samples in the same overall range of selenium concentrations (e.g., six samples in Round 2 ranging from 25.8 to 33.2 $\mu\text{g Se /g dw}$ and six samples in Round 3 ranging from 25.7 to 32.4 $\mu\text{g Se /g dw}$) did not produce evidence of deformities. Thus, the geometric mean of the concentration of selenium in the two fish that produced a low rate of deformities (i.e., 29.3 $\mu\text{g Se /g dw}$) appears to provide a conservative estimate of the lower bound of a potential threshold for effects on this species.

1.0 INTRODUCTION

Chronic toxicity of selenium has seen much scientific interest in the past 30 years due to the complexity of selenium uptake and accumulation in the aquatic food-web, and its unique form of toxic action. Microorganisms and primary producers accumulate selenium predominantly as aqueous inorganic selenium (selenate and selenite) and transform it into selenoamino acids, selenocysteine and selenomethionine (a form of organic selenium). These compounds are incorporated into proteins, which are transferred through the food-web to higher trophic levels.

Adverse effects from selenium are typically observed in developing offspring of egg-laying vertebrates, such as fish, birds, and amphibians. Toxicity occurs at this stage because protein-rich material in the egg provides a significant source of this element, and mobilization of these selenium-containing compounds occurs during development. The mechanism of toxicity has previously been hypothesized to involve mis-allocation of selenoamino acids as their standard amino acid counterparts (e.g., use of selenomethionine in place of methionine) resulting in teratogenic effects caused by mal-formed proteins. However, more recently, oxidative damage caused by selenium during mobilization of the seleno-proteins has been considered to be a likely mode-of-action (Janz et al. 2010; Palace et al. 2004).

Since the risk of adverse effects in fish is typically associated with tissue concentrations of organic selenium, a number of studies have been conducted to determine selenium effect thresholds for different salmonid species (e.g., Nautilus Environmental, 2011; McDonald et al., 2010; Rudolph et al., 2008; Holm et al., 2005; Kennedy et al., 2000). In addition, recent efforts to establish water quality guidelines for selenium have included a focus on establishing protective tissue concentrations in exposed adult fish (USEPA, 2014; BCMoE 2013; Deforest et al., 2012; Brix et al., 2005; Toll et al., 2005).

Mountain whitefish (*Prosopium williamsoni*) have been shown to accumulate selenium in the Elk Valley; for example, Windward et al. (2014) reported a range of ovary selenium concentrations in mountain whitefish captured at reference locations from 6.8 to 41.6 µg Se/g dry weight (dw). Golder (2010) showed that mountain whitefish tend to have similar muscle tissue selenium concentrations, but higher ovary selenium concentrations, compared to westslope cutthroat trout collected at the same locations.

Higher accumulation of selenium in ovaries of mountain whitefish than muscle is consistent with information presented by NAMC (2006), who summarized relationships between selenium

concentrations in muscle and ovary and demonstrated that mountain whitefish had the highest ratio of selenium in the ovary compared to muscle (at a rate of almost 10:1) of all the fish analyzed (i.e., bluegill sunfish, carp, razorback, largemouth bass, and cutthroat trout).

To the best of our knowledge, there is no information on the relative sensitivity of mountain whitefish to selenium. Consequently, this study was conducted with a goal of establishing an effect threshold for selenium in mountain whitefish using rates of survival and deformities, and measurements of growth observed in the progeny of selenium-exposed adult fish.

2.0 METHODS

2.1 Fish Collection

Adult mountain whitefish were collected by Lotic Environmental (Cranbrook, BC) using crews that ranged in size from two to four. Successful sampling was conducted predominantly at Fording River near Line Creek confluence (UTM: 11U 653003 5528968), Michel Creek near Sparwood (UTM: 11U 652886 5511686), and Michel Creek near Alexander Creek confluence (UTM: 11U 660064 5504970). Sampling was also conducted at four Elk River locations each year; however, no gravid fish were captured at these locations. The four locations were Elk River at Highway 93 Bridge (UTM: 11U 633498 5449043), Elko Reservoir (UTM: 11U 637798 5462570), Elk River near Sparwood (UTM: 11U 651351 5509567), and Elk River near Weary Creek (UTM: 11U 647708 5584172).

Once captured, fish were inspected to determine sex and ripeness. The fish were placed in a dark container with perforated sides and held in-stream to allow water to flow through. Once ripe females had been captured, male fish were also retained, but stored in a separate container.

Eggs and milt were stripped from the fish on the dates shown in Table 1, which also shows the number of male (milt) and female (egg) samples delivered to the laboratory on each sampling day. Whitefish collected in the fall of 2010, 2011, and 2013 are referred to here as Round 1, Round 2, and Round 3, respectively.

In 2010 and 2011, gametes were collected on the day of capture and in 2013 the mountain whitefish were collected and held over a twelve day period from October 25 until spawning on November 6. Additional sampling efforts each year produced no further ripe females, indicating that spawning was complete.

Table 1. Collection details for egg and milt samples from adult mountain whitefish.

Round Number	Date	Males	Females	Female ID
Round 1	November 10, 2010	5	6	Fording-1through Fording-5, Michel-6
Round 2	October 26, 2011	5	17	WF-1 through WF-17
	November 3, 2011	6	15	WF-23 through WF-37
	November 11, 2011	2	3	WF-38 through WF-40
	November 14, 2011	2	1	WF-41
Round 3	November 6, 2013	3	28	13-01 through 13-28

2.2 Stripping and Transportation of Gametes

Fish were anaesthetized using clove oil and gametes were obtained by applying gentle pressure to the abdomen of the fish. Milt was collected in Whirl-Pak bags and eggs were collected in hard-plastic Ziploc containers, taking care not to introduce any water. Milt and eggs from each fish were packaged in a cooler with ice-packs, and the cooler was transported to Vancouver as cargo on a commercial flight. In 2010, the samples were received and the exposures initiated on the day following collection as a result of a flight delay, whereas in 2011 and 2013, the samples were received and the eggs fertilized on the same day they were collected. Sample names for each batch of eggs (i.e., all of the eggs obtained from an individual adult female) were assigned at the laboratory in a sequential numeric manner to ensure that the laboratory staff were not aware of the capture location of the fish.

2.3 Fertilization Procedures and Culture Conditions

Each of the batches of eggs were inspected and observations relating to gamete quality were made before fertilization. Observations included instances of blood in the ovarian fluid, unusually large or limited amounts of ovarian fluid, and the presence of water-hardened or broken eggs. A subset of approximately ten eggs was also observed under a dissecting microscope and the appearance of oil droplets on the periphery of the eggs was recorded, since the distribution of oil droplets is indicative of egg development (Mansour et al. 2008, 2007).

Milt from each male was inspected under a microscope to determine sperm viability; a small amount of milt was mixed with water under 100-times magnification to determine the degree and duration of sperm motility. Milt was selected from males that produced sufficient volume of sperm with good motility and milt that contained blood or fecal material was avoided, where possible. In cases where multiple males produced good quality milt, the milt was pooled before fertilization. Ideally, milt from three or four males was pooled; however, milt from as few as one male was used if the quality of that sample was clearly superior to the remaining milt. In general, the largest constraint was volume of milt, since some of the males produced only a small quantity.

Eggs from each female fish (i.e., each batch) were fertilized in the Ziploc containers that they were sampled in with one or two drops of milt delivered using a glass Pasteur pipette, and the eggs and milt were gently mixed by manually stirring the eggs. The eggs were covered and allowed 20 to 25 minutes for fertilization to occur, at which time the containers were filled with dechlorinated tap water and the eggs allowed to water harden. Sixty eggs were then transferred into each of four replicates, for a total of 240 eggs per female.

Rearing containers were 4-L food-grade plastic tubs, which were held in a walk-in chamber with air conditioning and digital thermostat, able to maintain room temperature at $7\pm 1^\circ\text{C}$. The chamber was maintained in continuous dark, with the exception of low level lighting during water renewals and using a 16:8 light:dark photoperiod following hatch, which was consistent with Environment Canada (1998) procedures for early life stages of salmonids. The test containers were randomized on shelves, and black plastic was used to shield the containers from the light source prior to hatch. Test chambers were provided with continuous aeration just below the surface. Aeration was applied at approximately 100 bubbles per minute, and was sufficient to maintain dissolved oxygen levels close to saturation (11.8 to 12.4 mg/L for $7\pm 1^\circ\text{C}$), while providing gentle mixing of the water in the test containers.

Water used for culturing of fish was Metro Vancouver municipal tap water that had been treated with activated carbon to remove chlorine and other residual contaminants. Metals concentrations were measured in the culture water on multiple occasions during the study to confirm that the water was of high quality; metals analyses were conducted by ALS Environmental (Burnaby, BC). Chlorine and total ammonia were monitored weekly throughout the study period in the culture water. Water was held in a 200-L plastic container in the room and provided with continuous aeration for at least 24 hours prior to renewals to ensure that the

water temperature was the same as in the test chambers, and that the water was saturated with respect to dissolved oxygen concentration.

Water in the test containers was renewed three times per week prior to hatch by gently pouring or siphoning out approximately half of the water from the containers, and replacing with fresh water; care was taken to ensure that the embryos were not disturbed by turbulence during this process. Water replacement was increased to a daily replacement of 80% of the culture water following hatch, consistent with the requirements for rearing juvenile rainbow trout fry (Environment Canada, 2007).

Fungus was observed on some of the eggs in Round 1 and, consequently, a prophylactic treatment regime using an iodophore (1% Argentyne) was implemented twice per week starting on Day 27 of exposure in Round 1; and from the start of the tests in Rounds 2 and 3. Iodophore treatments ceased prior to hatch.

The fish were observed prior to water changes and mortalities were removed and recorded on data sheets. Eggs were determined to have died when the egg had turned partially or fully opaque. Hatched fish were determined to be dead if there was no evidence of movement from any part of the fish, including fins, and operculum.

Once hatching began, hatched fish were removed from the test containers on a daily basis, at which point, the hatched fish from each of the four replicates for each sample were pooled and placed in new containers. Hatched fish were added to these containers daily for a one week period, following which new containers were used for fish that hatched in the following week. This process was necessary since hatching of the embryos occurred over a relatively long time period (approximately four weeks) and fry were ready to actively feed shortly after hatch.

Hatched fry became active in the water column within a few days of hatch and the fry were provided food (recently hatched *Artemia nauplii*) *ad libitum* following transfer. The fry in each container were fed for an additional seven days following the end of the week, at which time the fish were considered to be swim-up fry and were anaesthetized using clove oil, with the exception of fish that were fed for the 28-day period described below. Thus, depending on whether the fry hatched at the beginning or the end of the week, sacrificed swim-up fry had been reared and fed for between seven and fourteen days following hatch. The fry were assessed for deformities, and individual lengths and combined weight of the replicate (following gentle blotting to remove excess moisture) were recorded.

Half of the surviving fry from three females in Round 2 and all 27 females in Round 3 were cultured for an additional 28 days under the same conditions described above (i.e., with daily feeding and 80% water replacement). Deformity assessments for the 28-d post swim-up stage were also conducted in the same manner as the assessments conducted at the swim-up stage. Fish that were maintained for the additional 28 day time period were separated from those that were removed at swim-up in a systematic random manner,¹ so that the rates of deformities present at swim-up and following the 28-day feeding period could be compared.

2.4 Deformity Assessment and Growth

Deformity assessments were conducted immediately following euthenization to avoid morphological changes that can occur in cases where preservatives are used. Deformities were assessed using a Graduated Severity Index (GSI), as described and used by Holm et al. (2003) and Rudolph et al. (2006; 2008). This approach involved assigning a score to deformities of 0, 1, 2, or 3 based on the severity of deformity in each of four categories: skeletal, craniofacial, finfold, and edema. The GSI scores were then assigned for each fry on the basis of the sum of scores for each of these four categories. Thus, GSI scores range from zero for no deformities to twelve for fry with gross deformities in each category.

The approach used was consistent with that described by Rudolph et al. (2006; 2008), as reproduced in Table 2, and was further informed as follows:

0	Fish with no signs of deformity;
1	Any minor deviation from natural phenotypic variability;
2	A significant deviation that would be expected to result in ecologically significant impairment, such as reduced feeding or swimming efficiency;
3	A gross deviation likely to result in mortality as a result of an inability to swim, feed, or evade predators.

¹ Refers to a procedure that has random characteristics, but is also systematic in nature. In this particular case, the procedure involved catching fish one at a time, and assigning them to the deformity assessment group, or the feeding group, sequentially.

Skeletal deformities included lordosis (i.e., concave curvature in the lumbar region of the spine); scoliosis (i.e., lateral curvature of the spine); and kephosis (i.e., convex curvature of the thoracic region of the spine). Craniofacial deformities included missing or deformed eyes; shortened or otherwise deformed jaw or opercle; and/or abnormalities in the shape of the head. Finfold deformities included missing or deformed fins, or abnormalities in the articulation of pectoral fins. Edema is not considered to be a true teratogenic effect, but rather is a sign of toxicological stress and has been reported as a common sign of selenium exposure (Janz et al. 2010; Hamilton 2004), although it is also commonly associated with exposure to other toxicants. Edema involves accumulation of fluid in the visceral cavity and is recognized as a clear fluid typically anterior or posterior to the yolk-sac. Exophthalmus (i.e., accumulation of fluid behind the eye resulting in bulging or protruding eye) was also scored as edema.

Deformity analyses were conducted on all fish by a single individual who was not privy to the identity of the fish with respect to capture location and selenium concentration. In addition, a second observer also conducted deformity analyses on a subset of fish as a component of Quality Assurance/Quality Control (QA/QC).

Total lengths were measured to the nearest 0.5 mm and total wet weight of each group of fish from a single female was measured to determine average wet weight of the fry.

Table 2. Deformity index from Rudolph et al. (2006; 2008).

Score	Skeletal	Craniofacial	Finfold	Edema
0	Normal backbone	Normal eyes, jaw, and head.	All fins present, normal size, and shape.	No fluid accumulation in head or pericardial cavity.
1	Slight scoliosis, lordosis or kephosis. Unlikely to significantly impair fish movement.	Slightly reduced or malformed eye or jaw. Unlikely to significantly reduce feeding ability or sight.	One or two fins slightly reduced in size or slightly malformed. Unlikely to significantly impair fish movement.	Slight fluid accumulation in eyes or pericardial cavity. Unlikely to significantly impair fish sight, movement or feeding.
2	Moderate scoliosis, lordosis or kephosis. Likely to impair fish movement.	Moderately reduced or malformed jaw or eyes. Likely to reduce feeding ability and sight.	More than 2 fins slightly reduced or malformed, or 1 or 2 moderately deformed fins. Likely to impair fish movement.	Moderate fluid accumulation in eyes or pericardial cavity. Likely to impair fish sight, movement or feeding.
3	Severe scoliosis, lordosis or kephosis. Fish movement likely to cease or be greatly impaired.	Missing or severely malformed eyes or jaws. Sight and feeding severely impaired.	One or more missing fins or more than 2 deformed fins. Severely reduced swimming capacity.	Severe fluid accumulation in eyes or pericardial cavity. Greatly reduced fish sight, movement or feeding.

2.5 Analytical Chemistry

Unfertilized eggs were subsampled using a clean plastic spoon into Whirl-Pak bags and were placed in a freezer prior to analysis. Samples were delivered to ALS (Burnaby, BC) and/or Applied Speciation (Bothell, WA) where selenium was measured using US EPA methodology with Reaction Cell Inductively Coupled Plasma Mass Spectrometry (CRC-ICP-MS or ICP-DRC-MS). Percent moisture was also determined for each batch of eggs and was used to convert the wet weight selenium measurement to a dry weight concentration. Muscle plugs (collected by Lotic Environmental) from each female were placed in a freezer and provided to Applied Speciation (Bothell, WA). Percent moisture was conducted on a composite sample of the muscle plugs due to limited mass of the muscle plugs.

2.6 Data Analysis

The test endpoints (i.e., survival, growth and incidence of deformities) observed in this study were evaluated to determine whether there was any evidence of an adverse response that could be related to selenium concentration in a dose-dependent manner (i.e., in which the frequency of adverse responses increases with increasing dose). Initial data analysis involved linear regression, to determine whether there was a statistically significant relationship with increasing dose corresponding to increased adverse responses, as well as data inspection. In the event that evidence of a dose-response was apparent, additional statistical analyses, such as non-linear regression could then be employed to establish point estimates.

2.7 Quality Assurance/Quality Control

A series of QA/QC practices and procedures were implemented throughout the study to ensure that the data were of good quality.

QA/QC practices included:

- identities of the fish were assigned by the field crew, and laboratory staff remained blind to the locations of capture and selenium concentrations throughout the rearing and deformity assessments;
- suitable sample size and replication consistent with recommendations of Environment Canada (1998) methods for early life stage tests using salmonids;

- water quality (pH, temperature and dissolved oxygen) was measured daily in one of the exposure containers to ensure that water quality remained suitable for salmonid culture and specifications of Environment Canada (1998);
- ammonia and chlorine were monitored weekly, and metals measured periodically in the water supply.

Accredited analytical laboratories were used in this study to perform the tests (i.e., the body burden analyses of selenium) that were conducted. ALS is accredited by the Canadian Association for Laboratory Accreditation (CALA); and Applied Speciation is accredited by Washington State Department of Ecology (WDOE). QA/QC practices incorporated into the analytical chemistry program included:

- measurement of Certified Reference Materials concurrently with each batch of samples. The Certified Reference Material used by ALS was (Dogfish Liver Certified Reference Material for Trace Metals by NRC; DOLT-4), and by Applied Speciation was DORM-3 (Fish Protein Certified Reference Material for Trace Metals) for total selenium
- testing of matrix duplicates, and testing of blanks. The laboratories tested blanks and duplicate samples as part of their routine QA/QC monitoring practices

QA/QC practices employed during the deformity assessments included:

- blind identification of samples;
- evaluation of all deformities by a single observer;
- duplicate measurements of deformities by a second observer for a subset of fish (approximately 10%).

3.0 RESULTS

3.1 Gamete quality

A detailed description of the gametes including egg appearance, presence of blood, lipid droplet appearance, ovarian fluid and other notes is provided in Appendix A.

Gametes sampled in Round 1 were collected on November 10, 2010, and arrived at the laboratory the following morning in good condition, suggesting that the procedures used to collect and transport the eggs and milt were appropriate, despite an unplanned shipping delay resulting in approximately 24 hours elapsing between collection and fertilization of the eggs. The eggs were pale yellow in appearance and contained a normal quantity of ovarian fluid, and normally distributed lipid droplets on the surface of the eggs. Eggs from two of the six females (Fording-1 and Fording-5) had a small amount of blood and less ovarian fluid in comparison to the other eggs; however, all six were considered to be of acceptable quality. Sufficient milt with good motility was received; milt was combined from three males. A high rate of fertilization was observed, indicating that the procedures used for fertilization were successful.

In Round 2, the first group of eggs from 17 females (WF1 to WF17, collected on October 26, 2011), displayed characteristics that indicated that they were under-ripe; these eggs were notably different in appearance from the eggs in Round 1. The majority of the eggs were opaque, with some of the batches of eggs containing significant blood and clumps, which appeared to be eggs contained within pieces of ovarian tissue. Egg samples were generally small and contained relatively little ovarian fluid in all but three samples (WF1, WF7 and WF14). Examination under a dissecting scope demonstrated that some of the egg batches did not have well defined lipid droplets on the surface of the eggs, suggesting that they were not ripe (Mansour et al., 2007; 2008). Milt from four males was determined to have good motility and was pooled for fertilization. Eggs from these females exhibited no signs of development within two weeks of fertilization and were terminated, with the exception of a subset of eggs from WF14 which produced viable embryos.

The second group of eggs from 15 females (WF23 to WF37) collected on November 3, 2011, were similar to those received the prior week in terms of having small sample sizes, relatively little ovarian fluid, and containing small pieces of skein and blood within the samples. The eggs were less opaque and with more distinct lipid droplets than those received in the first group; however, the majority of these eggs were also considered to be under-ripe. Motility of milt

from three of five males was determined to be good and milt from these males was pooled and used for fertilization. Only four females from the second group produced developing embryos. One of these four, WF26, displayed an unusual appearance; approximately 10% of the eggs were swollen with a water-hardened appearance, while the remainder appeared good with a yellow coloration and with dispersed lipid droplets.

Eggs from three fish collected on November 11, 2011 (WF38 to WF40) and one collected on November 14, 2011 (WF41), had a good appearance with significantly more ovarian fluid, and appeared comparable to the high quality eggs collected in Round 1. All four of these egg batches produced developing embryos.

Gametes used in Round 3 were collected on November 6, 2013. The eggs had good appearance and normal ovarian fluid with only a few exceptions. Specifically, limited ovarian fluid was noted in egg samples 13-09, 13-12, 13-16 and 13-26; blood was observed in egg samples 13-21, 13-25, and 13-26; and a few water hardened eggs were observed in eggs from sample 13-21. Milt from three males was received and pooled for fertilization, since each had good motility. Sample 13-26 produced no viable embryos, whereas all of the other egg samples produced viable embryos.

3.2 Egg selenium concentrations

Selenium concentrations in the eggs from the six females that were collected in 2010 are shown in Table 3. The concentrations ranged from 15.5 to 20.0 µg/g dw.

Table 3. Mountain whitefish egg selenium concentrations in Round 1.

Fish ID (Sample Location)	Gamete collection date	Selenium (µg/g ww)	Moisture (%)	Selenium (µg/g dw)
Fording-1	10 Nov 2010	5.40	66.2	16.0
Fording-2	10 Nov 2010	4.99	67.8	15.5
Fording-3	10 Nov 2010	6.29	68.6	20.0
Fording-4	10 Nov 2010	5.29	68.2	16.6
Fording-5	10 Nov 2010	5.76	65.8	16.8
Michel-6	10 Nov 2010	6.74	65.9	19.8

Selenium concentrations in eggs from the 36 females that were collected in Round 2 are shown in Figure 1; concentrations ranged from 15.8 to 36.7 $\mu\text{g/g dw}$. Eggs from 27 females (shown in blue) were under-ripe and did not produce developing eggs. Concentrations in selenium in eggs that produced developed embryos in Round 2 are shown in orange in Figure 1; the concentrations of these eggs ranged from 18.3 to 33.2 $\mu\text{g Se /g dw}$ and covered a substantial proportion of the overall range encompassed by the 36 fish. The mean and standard deviation of under-ripe ($26.2 \pm 5.8 \mu\text{g Se /g dw}$) and viable ($26.6 \pm 5.6 \mu\text{g Se /g dw}$) eggs were almost identical, and the apparent ripeness of the eggs appears to be related to sample date, rather than selenium concentration. Egg concentrations for the nine females which produced viable embryos are shown in Table 4.

Figure 1. Egg selenium concentrations in under-ripe and viable eggs collected in Round 2.

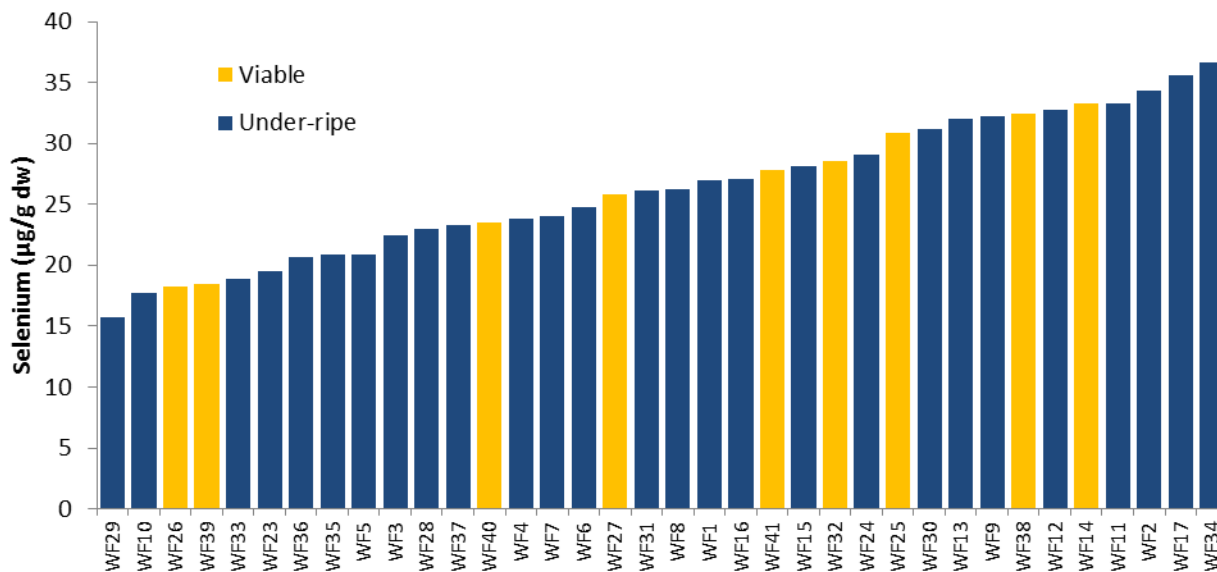


Table 4. Mountain whitefish egg selenium concentrations in Round 2.

Fish ID (Sample Location)	Gamete collection date	Selenium (µg/g ww)	Moisture (%)	Selenium (µg/g dw)
WF14 (MI3)	26 Oct 2011	11.2	66.3	33.2
WF25 (MI2)	3 Nov 2011	10.5	66.0	30.9
WF26 (MI2)	3 Nov 2011	5.4	70.7	18.3
WF27 (MI2)	3 Nov 2011	9.0	65.2	25.8
WF32 (Fo23)	3 Nov 2011	9.4	67.2	28.5
WF38 (MI3)	11 Nov 2011	10.2	68.6	32.5
WF39 (MI3)	11 Nov 2011	6.5	64.9	18.5
WF40 (MI3)	11 Nov 2011	7.6	67.8	23.5
WF41 (MI3)	14 Nov 2011	8.8	65.9	27.8

Selenium concentrations in eggs from the 28 females that were collected in Round 3 are shown in Table 5, and encompassed a similar range to that observed in Round 2. Eggs from only one female (13-26) did not produce any developing embryos; this fish had an egg selenium concentration of 27.9 µg/g dw. Selenium concentrations in the eggs from the 27 females that produced viable offspring ranged from 15.8 to 32.5 µg/g dw.

Table 5. Mountain whitefish egg selenium concentrations in Round 3.

Whitefish ID (Sample Location)	Gamete collection date	Selenium (µg/g ww)	Moisture (%)	Selenium (µg/g dw)
13-01 (MI2)	06 Nov 2013	7.66	67.8	23.8
13-02 (MI2)	06 Nov 2013	6.28	67.8	19.5
13-03 (FO23)	06 Nov 2013	7.84	68.6	25.0
13-04 (MI2)	06 Nov 2013	7.59	67.8	23.6
13-05 (MI2)	06 Nov 2013	5.37	66	15.8
13-06 (MI3)	06 Nov 2013	9.98	69.2	32.4
13-07 (MI3)	06 Nov 2013	8.17	68.2	25.7
13-08 (FO23)	06 Nov 2013	9.54	69.3	31.0
13-09 (FO23)	06 Nov 2013	10.6	67.4	32.5
13-10 (FO23)	06 Nov 2013	6.28	69.7	20.7
13-11 (FO23)	06 Nov 2013	5.79	69.1	18.7
13-12 (MI2)	06 Nov 2013	8.6	69.9	28.5
13-13 (FO23)	06 Nov 2013	6.56	69.8	21.7
13-14 (FO23)	06 Nov 2013	6.66	68.2	21.0
13-15 (FO23)	06 Nov 2013	7.81	68.9	25.1
13-16 (FO23)	06 Nov 2013	8.04	65.6	23.4
13-17 (FO23)	06 Nov 2013	7.11	67.7	22.1
13-18 (FO23)	06 Nov 2013	6.96	68.0	21.7
13-19 (FO23)	06 Nov 2013	7.79	66.8	23.5
13-20 (FO23)	06 Nov 2013	8.29	69.1	26.9
13-21 (FO23)	06 Nov 2013	7.34	70.2	24.7
13-22 (FO23)	06 Nov 2013	6.18	70.1	20.7
13-23 (MI2)	06 Nov 2013	9.46	67.2	28.8
13-24 (FO23)	06 Nov 2013	6.03	66.2	17.9
13-25 (MI2)	06 Nov 2013	8.1	66.9	24.5
13-27 (FO23)	06 Nov 2013	9.16	68.1	28.7
13-28 (FO23)	06 Nov 2013	6.04	65	17.3

3.3 Survival

3.3.1 Round 1

All six of the batches of eggs collected in Round 1 produced viable fry. The percentage of eggs that survived to the swim-up fry stage ranged from 55% to 81% for the six fish sampled in 2010. There was no relationship between selenium concentration and survival rate (linear regression, $p > 0.05$), or evidence of a dose-dependent relationship from data inspection. The majority of eggs that did not reach swim-up were either mortalities that were heavily infected by fungal hyphae after the second week of exposure, or live fungal-affected eggs that were removed on day 27 of exposure (Table 6). Fungal growth was successfully curtailed using prophylactic treatment of iodophor, thereafter; survival of the remaining fish ranged from 74 to 92%. This rate of survival is consistent with requirements for control performance for development of salmonids from egg to swim-up fry stages (i.e., $\geq 65\%$ fish following Environment Canada [1998] methodology). There was no evidence of adverse effects on survival associated with the relatively narrow range of selenium concentrations that were tested in 2010 (i.e., 15.5 to 20.0 $\mu\text{g/g dw}$).

Table 6. Survival of mountain whitefish embryos collected in Round 1.

Fish ID	Egg Se ($\mu\text{g/g dw}$)	Survival to swim-up (all eggs) (%)	Survival to swim-up (excluding fungal affected eggs) (%)
Fording-1	16.0	65.8	82.7
Fording-2	15.5	62.5	81.1
Fording-3	20.0	69.6	91.8
Fording-4	16.6	81.4	90.2
Fording-5	16.8	70.0	94.9
Michel-6	19.8	55.4	73.9

3.3.2 Round 2

Only one of the 17 batches of eggs collected on October 26 and four of the 15 samples of eggs collected on November 3, 2011 produced developing embryos. The remaining samples collected on these dates showed no evidence of development as a result of the eggs being under-ripe. Of the five samples of eggs from these two dates that produced developing fish, a low percentage of eggs reached eyed-stage in samples WF14 and WF26, suggesting that there was a poor rate of fertilization or early-stage development of the eggs (the eyed-egg stage was the first time that larval development could be assessed in the eggs). All three samples of eggs that were collected on November 11 produced a high rate of development to the eyed-stage, and a single batch of eggs collected on November 14 had a poor rate of development to the eyed-egg stage, despite appearing to be ripe. Thus, of the 36 samples of eggs collected in Round 2, 27 were sterile and nine samples produced developing eggs.

Percent survival to the eyed-egg stage and to the swim-up fry stage is shown in Table 7. Overall survival ranged from 19.6 to 94.2% in the nine batches of eggs that produced viable development; six out of nine batches met the requirement for control performance of $\geq 65\%$ in salmonid early life-stage tests (Environment Canada 1998). There was no relationship between survival rate and selenium concentration (linear regression, $p > 0.05$), and data inspection did not reveal any evidence of a dose-dependent relationship. When survival endpoints were calculated on the basis of the percentage of eyed-stage eggs (i.e., after removing the contribution of un-developed eggs to overall survival), survival to the swim-up fry stage exceeded 90% in seven of the nine batches of eggs, with survival rates of 56.7 and 72.5% in the other two batches of eggs. In other words, of the eggs that developed to the eyed-stage, a very high rate of survival ($>90\%$) was observed in seven out of nine batches of eggs.

The two samples of eggs that had less than 90% survival between the eyed-egg and swim-up fry stages contained 18.3 and 23.5 $\mu\text{g Se/g dw}$, which were the lowest and third lowest selenium concentrations measured in the nine batches of eggs. Consequently, there is no evidence that the reduced survival in eggs from these two fish had any relationship to selenium. Furthermore, the mortalities that were observed in the eggs from these two fish were almost entirely eggs that did not reach hatch, rather than being associated with yolk sac absorption, which is when adverse effects associated with selenium are typically observed in salmonids.

Percent survival for the three samples that were fed for an additional 28 days are also shown in Table 7. The survival rate was very high in these three samples, indicating that the selenium

concentration in these three samples of eggs (i.e., 18.5, 23.5 and 32.5 µg/g dw) did not cause adverse effects in fish during this extended period.

Table 7. Survival of mountain whitefish embryos collected in Round 2.

Fish ID	Egg Se (µg/g dw)	% survival to eyed-egg (of initial eggs)	% survival to swim-up (of initial eggs)	% survival to swim-up (of eyed eggs)	% survival during 28 day feeding period
WF14	33.2	52.9	41.0	88.7 *	Not tested
WF25	30.9	67.5	65.8	97.5	Not tested
WF26	18.3	37.5	19.6	52.2	Not tested
WF27	25.8	71.3	69.6	97.7	Not tested
WF32	28.5	75.8	75.8	100.0	Not tested
WF38	32.5	87.5	86.7	99.0	99.0
WF39	18.5	97.5	94.2	96.6	97.4
WF40	23.5	98.3	69.2	70.3	98.8
WF41	27.8	46.7	43.8	93.8	Not tested

* Excludes 30 dead fry from one test container (see Section 3.6)

3.3.3 Round 3

Survival of egg samples in Round 3 is shown in Table 8 and in Figure 2, where the results are presented for all samples, as well as after excluding egg samples that were identified as being of poor quality, and characteristic of under-ripe eggs. Of the 28 egg samples collected in Round 3, 22 of them met the requirement for acceptable control performance of ≥65% survival to the swim-up fry stage (Environment Canada, 1998). Eggs from three of the six females that produced less than 65% survival, including one sample with no survival, had been identified as having poor quality by inspection prior to fertilization.

Survival from the eyed-egg stage to the swim-up stage was generally good, with 17 of 27 fish producing >90% survival, 23 of 27 producing >80% survival. Only two samples (13-08 and 13-21) produced survival of less than 70% over this time period.

There was no relationship between survival rate of eggs to the eyed-egg stage, from the eyed stage to swim-up, or overall survival and selenium concentration for the 22 batches of eggs that were considered to be of good quality (linear regression, $p > 0.05$).

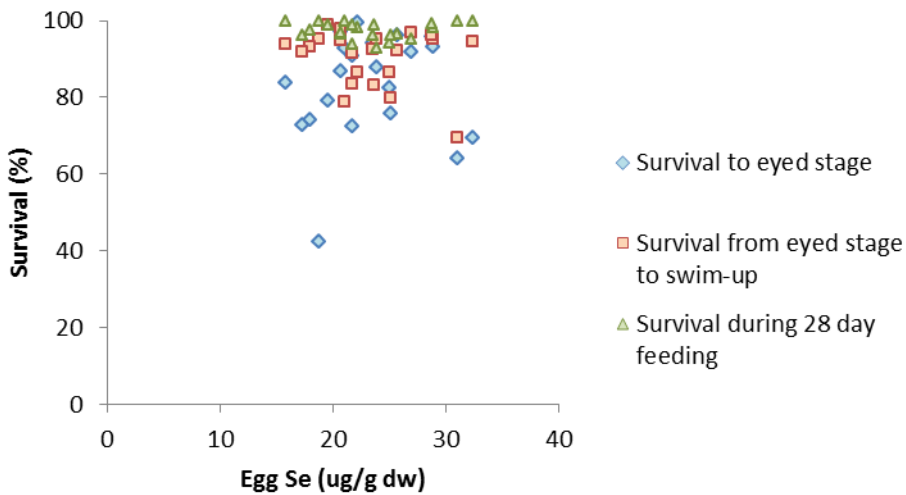
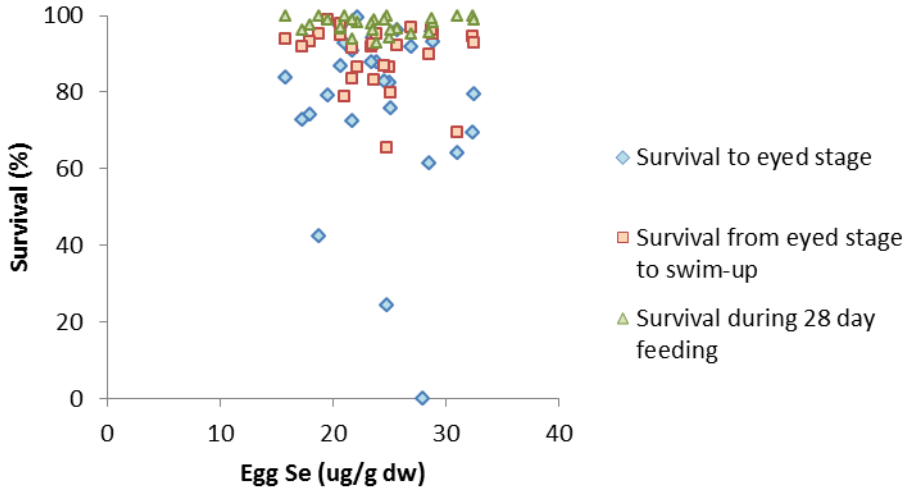
Survival during the 28-day feeding period was high with all eggs samples producing >90% survival. Thus, there was no evidence of adverse effects on survival during this time period.

Table 8. Survival of mountain whitefish embryos collected in Round 3.

Fish ID	Egg Se (µg/g dw)	% survival to eyed stage (of initial eggs)	% survival to swim-up (of initial eggs)	% survival to swim-up (of eyed eggs)	% survival during 28 day feeding
13-01	23.8	87.9	83.8	95.3	92.9
13-02	19.5	79.2	78.3	98.9	99.0
13-03	25	82.5	71.3	86.4	94.1
13-04	23.6	94.2	78.3	83.2	98.9
13-05	15.8	83.8	78.8	94.0	100.0
13-06	32.4	69.6	65.8	94.6	100.0
13-07	25.7	96.3	88.8	92.2	96.4
13-08	31	64.2	44.6	69.5	100.0
13-09 *	32.5	79.6	73.8	92.7	98.9
13-10	20.7	97.1	95.0	97.9	96.5
13-11	18.7	42.5	40.4	95.1	100.0
13-12 *	28.5	61.3	55.0	89.8	95.5
13-13	21.7	72.5	66.3	91.4	93.8
13-14	21	92.9	73.3	78.9	100.0
13-15	25.1	75.8	60.4	79.7	96.3
13-16 *	23.4	87.9	80.8	91.9	97.9
13-17	22.1	99.6	86.3	86.6	98.1
13-18	21.7	90.8	75.8	83.5	98.9
13-19	23.5	94.2	87.1	92.5	96.2
13-20	26.9	91.7	88.8	96.8	95.3
13-21 *	24.7	24.2	15.8	65.5	100.0
13-22	20.7	86.7	82.1	94.7	96.9
13-23	28.8	93.3	88.8	95.1	98.1
13-24	17.9	74.2	69.2	93.3	97.6
13-25 *	24.5	82.9	72.1	86.9	98.8
13-26 *	27.9	0.0	0.0	Not applicable	Not applicable
13-27	28.7	95.8	92.1	96.1	99.1
13-28	17.3	72.9	67.1	92.0	96.3

* Identified as poor quality eggs

Figure 2. Survival from egg to eyed stage, from eyed stage to swim-up, and from swim-up to 28 days feeding for samples collected in Round 3. Upper panel shows all data, and lower panel excludes egg samples that were considered to be poor quality.



3.4 Growth

3.4.1 Round 1

Length and weight of mountain whitefish swim-up fry from Round 1 are shown in Table 9; length of fry ranged from 13.9 to 15.7 mm and weight from 14.9 to 21.2 mg. There was no statistically significant relationship between selenium concentration and either length or weight (linear regression, $p > 0.05$).

Table 9. Length and weight of mountain whitefish fry at swim-up for samples collected in Round 1.

Fish ID	Egg Se ($\mu\text{g/g dw}$)	Length (mm)	Wet weight (mg)
Fording-1	16.0	15.7 \pm 0.5	21.2
Fording-2	15.5	14.5 \pm 0.45	18.6
Fording-3	20.0	13.9 \pm 0.5	14.9
Fording-4	16.6	14.9 \pm 0.5	18.6
Fording-5	16.8	14.7 \pm 0.4	17.2
Michel-6	19.8	14.9 \pm 0.5	18.3

3.4.2 Round 2

Length and weight of the swim-up fry and fry fed for 28 days in Round 2 are shown in Table 10. Neither growth measure varied substantially between egg batches, ranging from 14.9 to 15.9 mm and 16.5 to 21.5 mg for length and weight, respectively. The fry grew by a factor of 1.3 to 1.7 in the 28 day feeding period. There were no statistically significant relationships between selenium concentration and either length or weight at either time period (linear regression, $p > 0.05$).

Table 10. Length and weight of mountain whitefish fry at swim-up and following 28 days of feeding for samples collected in Round 2.

Fish ID	Egg Se (µg/g dw)	Swim-up fry		28-day post swim up		Growth rate (X) *
		Length (mm)	Mean weight (mg)	Length (mm)	Mean weight (mg)	
WF14	33.2	14.9 ± 0.1	17.6	Not tested	Not tested	Not tested
WF25	30.9	15.5 ± 0.5	19.9	Not tested	Not tested	Not tested
WF26	18.3	15.0 ± 0.2	18.7	Not tested	Not tested	Not tested
WF27	25.8	15.3 ± 0.3	19.0	Not tested	Not tested	Not tested
WF32	28.5	15.8 ± 0.8	20.3	Not tested	Not tested	Not tested
WF38	32.5	14.9 ± 0.4	16.5	16.8 ± 0.4	24.2	1.5
WF39	18.5	15.9 ± 0.5	21.5	17.4 ± 0.4	27.0	1.3
WF40	23.5	15.0 ± 0.5	16.6	17.2 ± 0.7	28.3	1.7
WF41	27.8	15.2 ± 0.4	17.2	Not tested	Not tested	Not tested

* refers to the factor change in weight during the 28-day feeding period

3.4.3 Round 3

Mean lengths and weights of fry from Round 3 are shown in Table 11. Length of the swim-up fry ranged from 14.0 to 15.0 mm and weight ranged from 16.3 to 21.4 mg. Following the 28 day feeding period, lengths ranged from 19.2 to 21.9 mm and weights from 41.2 to 56.8 mg. The fry grew by 2.2 to 3.0 fold.

Regression analysis identified a weak negative correlation of weight and length of swim-up fry with egg selenium concentration ($p = 0.010$, $r^2 = 0.24$ for weight and $p = 0.009$, $r^2 = 0.24$ for length; Figure 3). However, stronger (positive) correlations were observed between weight or length of swim-up fry and adult weight or length ($r^2 = 0.47$ to 0.51). This indicates that variation in size of swim-up fry is more likely related to adult size, and the apparent correlation to egg selenium concentration reflects a weak trend of lower egg selenium concentrations in larger adults ($r^2 = 0.17$).

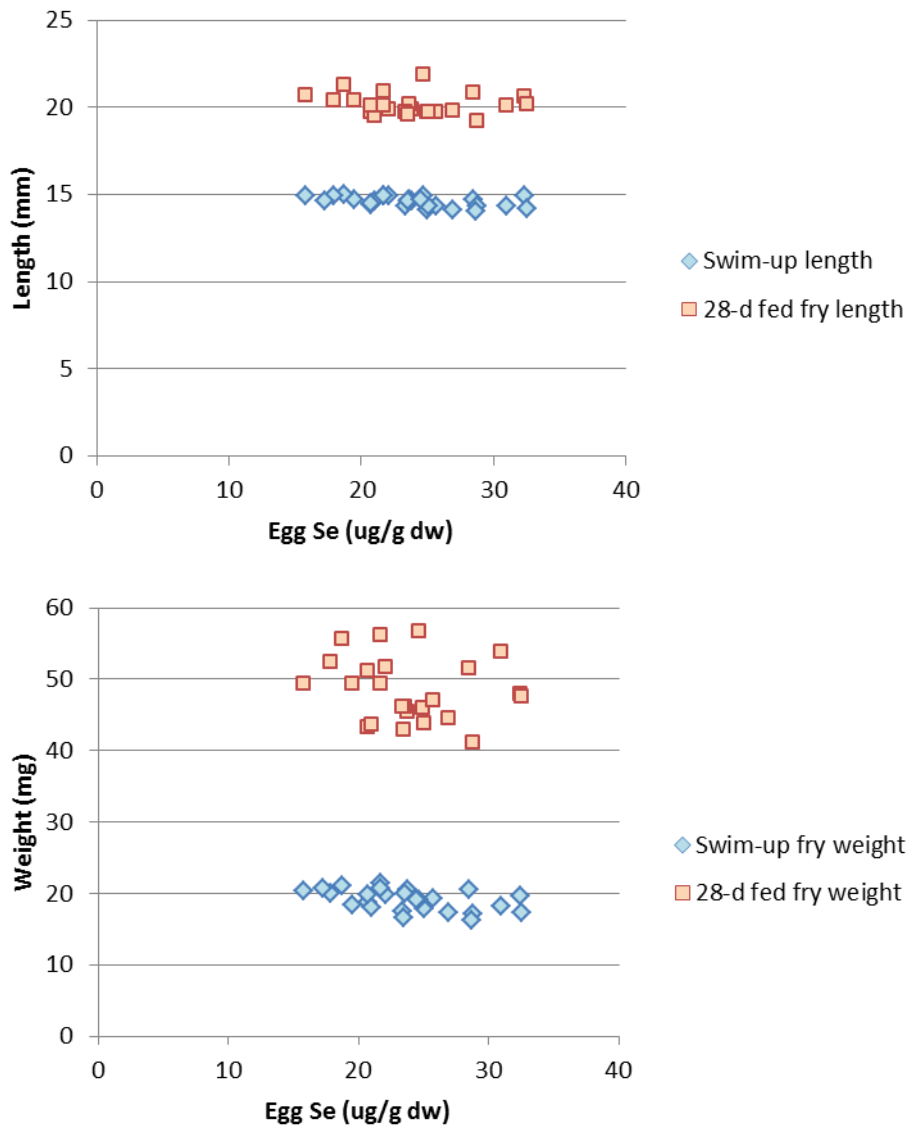
There were no statistically significant relationships between length or weight of fry and selenium concentration following the 28 day feeding period ($p > 0.05$).

Table 11. Length and weight of mountain whitefish fry at swim-up and following 28 days of feeding for samples collected in Round 3.

Fish ID	Egg Se (µg/g dw)	Swim-up fry		28-day post swim up		Growth rate (X) *
		Length (mm)	Average wet weight (mg)	Length (mm)	Average wet weight (mg)	
13-01	23.8	14.6 ± 0.7	20.5	19.9 ± 1.6	45.5	2.2
13-02	19.5	14.7 ± 0.5	18.4	20.4 ± 1.7	49.3	2.7
13-03	25.0	14.1 ± 0.9	18.4	19.7 ± 1.7	46.0	2.5
13-04	23.6	14.7 ± 0.6	20.0	20.2 ± 1.6	46.1	2.3
13-05	15.8	14.9 ± 0.5	20.4	20.7 ± 1.3	49.3	2.4
13-06	32.4	14.9 ± 0.5	19.6	20.6 ± 1.2	47.9	2.4
13-07	25.7	14.3 ± 0.7	19.3	19.7 ± 1.4	47.1	2.5
13-08	31.0	14.3 ± 0.9	18.3	20.1 ± 1.0	53.8	3.0
13-09	32.5	14.2 ± 0.9	17.4	20.2 ± 1.3	47.5	2.7
13-10	20.7	14.4 ± 0.5	18.8	19.7 ± 1.3	43.3	2.3
13-11	18.7	15.0 ± 0.5	21.1	21.3 ± 1.1	55.7	2.6
13-12	28.5	14.7 ± 0.5	20.5	20.8 ± 1.1	51.6	2.5
13-13	21.7	14.9 ± 0.6	21.4	20.9 ± 1.2	56.1	2.6
13-14	21.0	14.6 ± 0.6	18.0	19.5 ± 1.2	43.7	2.4
13-15	25.1	14.3 ± 0.8	17.9	19.7 ± 1.7	43.8	2.5
13-16	23.4	14.3 ± 0.5	17.5	19.7 ± 1.8	46.2	2.6
13-17	22.1	14.9 ± 0.5	19.8	19.9 ± 1.2	51.7	2.6
13-18	21.7	14.9 ± 0.7	20.7	20.1 ± 1.5	49.4	2.4
13-19	23.5	14.6 ± 0.5	16.7	19.6 ± 1.1	43.0	2.6
13-20	26.9	14.1 ± 0.4	17.4	19.8 ± 0.9	44.5	2.6
13-21	24.7	14.9 ± 0.7	19.2	21.9 ± 1.1	56.8	3.0
13-22	20.7	14.5 ± 0.5	19.9	20.1 ± 1.1	51.2	2.6
13-23	28.8	14.3 ± 0.5	17.1	19.2 ± 1.2	41.2	2.4
13-24	17.9	14.9 ± 0.5	20.1	20.4 ± 1.3	52.5	2.6
13-25	24.5	14.7 ± 0.5	19.2	20.9 ± 1.3	49.0	2.6
13-27	28.7	14.0 ± 0.5	16.3	19.3 ± 1.4	41.6	2.6
13-28	17.3	14.6 ± 0.5	20.7	20.7 ± 1.2	51.3	2.5

* refers to the factor change in weight during the 28-day feeding period

Figure 3. Length and weight of swim-up fry and fry fed for 28 days for samples collected in Round 3.



3.5 Deformities

3.5.1 Round 1

Between 133 and 193 fry were assessed for deformities from the six samples of eggs in Round 1 (969 fry overall). Deformities were observed in 0.6 to 2.4% of the fry from the six samples of eggs (Table 12). Of the total of 13 fry that were scored as having a deformity, seven had a total GSI score of one, indicating a minor deformity in one of the four categories, and six had a score of greater than one, indicating a moderate or severe deformity, or a combination of more than one minor deformity.

Table 12. Deformities in mountain whitefish swim-up fry in Round 1.

Fish ID	Egg Se ($\mu\text{g/g dw}$)	Sample size (n)	Number of fry with deformities		Percent of fry with deformities	
			Total GSI >0	Total GSI >1	Total GSI >0	Total GSI >1
Fording-1	16.0	158	1	1	0.6	0.6
Fording-2	15.5	150	2	0	1.4	0.0
Fording-3	20.0	167	4	1	2.5	0.6
Fording-4	16.6	193	1	1	0.5	0.5
Fording-5	16.8	168	2	1	1.2	0.6
Michel-6	19.8	133	3	2	2.3	1.5

GSI Graduated Severity Index

3.5.2 Round 2

A total of 1046 swim-up fry were assessed for deformities from the eggs collected in 2011. Of these, 1038 had no deformities, producing rates of deformity which ranged from 0.0 to 2.1% for the nine batches of eggs (Table 13). Of the eight fry that were scored as having a deformity, six had a GSI score of one, indicating a minor deformity in one of the four categories, and two had a score of greater than one, indicating a moderate or severe deformity, or a combination of more than one minor deformity. Only one of 289 fry that were reared for an additional 28 days had a deformity. Thus, a very low rate of deformities was observed with these fish at both swim-up and following 28 days of feeding.

Table 13 Deformities in mountain whitefish swim-up fry in Round 2.

Fish ID	Egg Se (µg/g dw)	Sample size (n)	Number of fry with deformities		Percent of fry with Deformities	
			Total GSI >0	Total GSI >1	Total GSI >0	Total GSI >1
WF14	33.2	86	1	0	1.2	0.0
WF25	30.9	158	0	0	0.0	0.0
WF26	18.3	47	1	0	2.1	0.0
WF27	25.8	167	1	0	0.6	0.0
WF32	28.5	182	1	0	0.5	0.0
WF38	32.5	105	2	1	1.9	1.0
WF39	18.5	112	0	0	0.0	0.0
WF40	23.5	84	0	0	0.0	0.0
WF41	27.8	105	2	1	1.9	1.0

a- Half of the embryos removed from WF38, WF39 and WF40 for 28-d post swim-up assessment
GSI Graduated Severity Index

3.5.3 Round 3

A total of 3107 fry were assessed at swim-up for deformities from the eggs collected in 2013, of which, 62 (2.0%) were identified as having a minor deformity (total GSI score of 1), and 131 (4.2%) were identified as having a total GSI score of 2 or higher, indicating the presence of a moderate or severe deformity or a combination of more than one minor deformities. In total, 193 of the 3107 fry (6.2%) were identified as having a deformity, indicating a higher overall rate of deformities than in Rounds 1 and 2.

Rates of deformities in the individual samples of eggs ranged from 0.0 to 20.9% (Table 13). Five samples produced a deformity rate exceeding 10%: these were samples 13-03, 13-09, 13-15, 13-22 and 13-27. Of these, it appears likely that some of the deformities reported for sample 13-03, 13-22, and 13-27 may not reflect real deformities, since the majority of the deformities for these samples were scored as a minor deformities, and following the 28 day feeding period, only 3.8, 1.1 and 0.9% deformities were observed, respectively, despite having high rates of survival over this time period. Furthermore, a large proportion of the deformities in these three samples were related to fin formation, and these were limited to just one of the three or four containers that were assessed for each sample. Thus it appears these fin deformities may have related to a container effect, perhaps as a result of aggression between fry in the containers. After removing these fin deformities, these three samples produced deformities in 9.3, 0.0 and 0.9% of swim-up fry, respectively, as shown in Table 13.

The remaining two samples that produced deformities exceeding 10% (samples 13-09 and 13-15) produced approximately 20% deformities at swim-up, and 11% deformities after 28 days of feeding, suggesting that the effects observed in these fish were real deformities. The deformities observed in these two fish were predominantly craniofacial and skeletal deformities. These samples contained 32.5 and 25.1 $\mu\text{g Se /g}$, respectively.

Other than these two fish, rates of deformities in the fish reared for 28 days ranged from 0.0 to 3.8%. Since survival was high during this time period, it appears that a proportion of the deformities observed at swim-up were reversible, or otherwise not significant deviations from normal development.

Table 14 Deformities in mountain whitefish swim-up fry and fry fed for 28 d in Round 3.

ID	Egg Se (µg/g dw)	Sample size Swim-up, 28-d fed	Number of fry with deformities				Percent of fry with deformities			
			Swim-up fry		28-d fed fry		Swim-up fry		28-d fed fry	
			GSI >0	GSI >1	GSI >0	GSI >1	GSI >0	GSI >1	GSI >0	GSI >1
13-01	23.8	102, 92	6	5	0	3	5.9	4.9	3.3	3.3
13-02	19.5	93, 94	3	1	0	0	3.2	1.1	0.0	0.0
13-03	25	86, 80	8 ^b	7	0	3	9.3	8.1	3.8	3.8
13-04	23.6	96, 91	8	5	0	3	8.3	5.2	3.3	3.3
13-05	15.8	99, 90	2	2	1	0	2.0	2.0	1.1	0.0
13-06	32.4	78, 80	2	2	1	0	2.6	2.6	1.3	0.0
13-07	25.7	102, 107	9	6	1	0	8.8	5.9	0.9	0.0
13-08	31	54, 53	1	1	0	1	1.9	1.9	1.9	1.9
13-09	32.5	86, 89	18	13	3	7	20.9	15.1	11.2	7.9
13-10	20.7	114, 110	1	1	0	0	0.9	0.9	0.0	0.0
13-11	18.7	48, 49	1	0	0	0	2.1	0.0	0.0	0.0
13-12	28.5	65, 64	1	1	0	0	1.5	1.5	0.0	0.0
13-13	21.7	79, 75	3	2	0	0	3.8	2.5	0.0	0.0
13-14	21	89, 87	2	2	0	0	2.2	2.2	0.0	0.0
13-15	25.1	63, 79	12	11	3	6	19.0	17.5	11.4	7.6
13-16	23.4	99, 93	5	4	1	2	5.1	4.0	3.2	2.2
13-17	22.1	104, 101	4	2	0	0	3.8	1.9	0.0	0.0
13-18	21.7	92, 89	8	6	0	0	8.7	6.5	0.0	0.0
13-19	23.5	104, 101	4	1	0	0	3.8	1.0	0.0	0.0
13-20	26.9	107, 101	0	0	0	0	0.0	0.0	0.0	0.0
13-21	24.7	20, 18	1	1	0	0	5.0	5.0	0.0	0.0
13-22	20.7	100, 94	0 ^c	0	0	1	0.0	0.0	1.1	1.1
13-23	28.8	108, 103	1	1	0	0	0.9	0.9	0.0	0.0
13-24	17.9	84, 80	2	1	0	0	2.4	1.2	0.0	0.0
13-25	24.5	87, 85	3	3	0	0	3.4	3.4	0.0	0.0
13-27	28.7	111, 109	0 ^d	1	0	1	0.9	0.9	0.9	0.9
13-28	17.3	81, 77	7	3	0	0	8.6	3.7	0.0	0.0

a- Half of the embryos removed from all batches for 28-d post swim-up assessment

b- Fin deformities identified in 6 fish excluded

c- Fin deformities identified in 10 fish excluded

d- Fin deformities identified in 17 fish excluded

GSI Graduated Severity Index

3.6 QA/QC

3.6.1 Larval Rearing

Temperature, dissolved oxygen and pH conditions during larval rearing were within acceptable ranges throughout the exposures. Fungus caused significant mortalities early in development during Round 1; however, prophylactic treatment using iodophore effectively controlled fungal growth thereafter, and no fungus was observed during 2011 and 2013.

Thirty hatched mountain whitefish were removed from test container of WF14 (Round 2) and placed into a new test container on January 10, 2012. On January 13, 2012 the thirty larval fish were all dead. The test container was aerating and the dissolved oxygen was close to saturation. The cause of these mortalities is unknown, but likely related to handling stress or contamination in the test container. Data for these fish were excluded from the analysis of swim-up fry performance.

3.6.2 Analytical Chemistry

Measurements of total selenium in eggs from Round 2 conducted by Applied Speciation produced results that were an average (\pm SD) of $100.8 \pm 9.6\%$ of the measurements reported by ALS. Thus, the two laboratories produced similar estimates of the concentrations in the eggs.

Recovery of Certified Reference Materials was 88.7, 93.9 and 103.0% for Applied Speciation measurements in Rounds 1, 2 and 3, respectively, and 95.6, 96.8 and 106.1% for three sets of measurements conducted by ALS in Round 2. One duplicate sample was sent to Applied Speciation in Round 1 and three duplicate egg samples were sent in Round 3 (Table 15). Additional details of the QA/QC associated with analytical chemistry measurements are provided in the individual laboratory reports in Appendix D.

Table 15. Duplicate egg selenium measurements.

Fish ID		Egg Se ($\mu\text{g/g ww}$)	Moisture content (%)	Egg Se ($\mu\text{g/g dw}$)	Percent (%)
Fording-4	Primary	5.29	68.2	16.6	
(Round 1)	Duplicate	5.29	66.9	16.0	96.4
13-11	Primary	5.79	69.1	18.7	
(Round 3)	Duplicate	5.69	67.7	17.6	94.1
13-13	Primary	6.56	69.2	21.7	
(Round 3)	Duplicate	6.01	68.3	19.0	87.6
13-24	Primary	6.03	66.2	17.9	
(Round 3)	Duplicate	6.12	66.9	18.5	103.4

3.6.3 Larval Deformity Assessment

The fry produced in Round 1 were not evaluated by a second analyst since they exhibited a very low frequency of deformity. Fry produced from three out of the nine eggs samples that produced swim-up fry in Round 2 of testing were assessed by a second analyst to provide a measure of repeatability of the data; see Table 17. A total of 149 fry from seven replicates were assessed by the two analysts, reflecting approximately 14% of the 1038 fry evaluated in Round 2.

Of the 149 fry assessed by a second analyst only one fry was assessed as deformed. The primary analyst also scored this fry in the same manner, with a craniofacial deformity of 1. The remaining 148 fry were all scored as normal swim-up fry by both analysts. Thus, both analysts reported a low frequency of deformities in the fry that were evaluated, and produced an identical dataset.

A subset of fry produced from eggs in Round 3 of testing were also assessed by a second analyst to provide a measure of repeatability of the data; both swim-up fry (Table 18) and 28-d post swim-up fry were assessed (Table 19). A total of 904 fry were assessed by the two analysts, reflecting approximately 15% of the 6128 fry evaluated in Round 3. The primary and secondary analyst recorded the same number of normal fry in each replicate demonstrating an equivalent rate of deformity identification between the two analysts. Some differences were observed in the severity of deformities observed by the two analysts but overall the scoring produced a similar percentage of major deformities in the 904 fry assessed.

Table 16. QA/QC data for larval deformity assessments (Round 2, swim-up fry).

Fish ID	Observer	Total fry	Normal Fry	Skeletal			Craniofacial			Finfold			Edema		
				1	2	3	1	2	3	1	2	3	1	2	3
WF25	1	30	30	0	0	0	0	0	0	0	0	0	0	0	0
	2	30	30	0	0	0	0	0	0	0	0	0	0	0	0
WF25	1	11	11	0	0	0	0	0	0	0	0	0	0	0	0
	2	11	11	0	0	0	0	0	0	0	0	0	0	0	0
WF25	1	9	9	0	0	0	0	0	0	0	0	0	0	0	0
	2	9	9	0	0	0	0	0	0	0	0	0	0	0	0
WF32	1	31	31	0	0	0	0	0	0	0	0	0	0	0	0
	2	31	31	0	0	0	0	0	0	0	0	0	0	0	0
WF32	1	30	29	0	0	0	1	0	0	0	0	0	0	0	0
	2	30	29	0	0	0	1	0	0	0	0	0	0	0	0
WF39	1	8	8	0	0	0	0	0	0	0	0	0	0	0	0
	2	8	8	0	0	0	0	0	0	0	0	0	0	0	0
WF39	1	30	30	0	0	0	0	0	0	0	0	0	0	0	0
	2	30	30	0	0	0	0	0	0	0	0	0	0	0	0

Table 17. QA/QC data for larval deformity assessments (Round 3-swim-up fry).

Fish ID	Observer	Total fry	Normal Fry	Skeletal			Craniofacial			Finfold			Edema		
				1	2	3	1	2	3	1	2	3	1	2	3
13-01	1	12	10	1	0	0	1	0	1	0	0	0	0	1	1
	2	12	10	1	0	0	2	0	0	0	0	0	1	0	1
13-02	1	6	6	0	0	0	0	0	0	0	0	0	0	0	0
	2	6	6	0	0	0	0	0	0	0	0	0	0	0	0
13-04	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0
	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0
13-05	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0
	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0
13-06	1	1	0	1	0	0	1	0	0	0	0	0	0	0	1
	2	1	0	0	0	0	1	0	0	0	0	0	0	0	1
13-09	1	3	2	0	0	1	1	0	0	0	0	0	0	1	0
	2	3	2	0	1	0	1	0	0	0	0	0	1	0	0
13-14	1	5	5	0	0	0	0	0	0	0	0	0	0	0	0
	2	5	5	0	0	0	0	0	0	0	0	0	0	0	0
13-15	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0
	2	2	1	1	0	0	1	0	0	0	0	0	1	0	0
13-16	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0
	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0
13-17	1	3	3	0	0	0	0	0	0	0	0	0	0	0	0
	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0
13-14	1	11	10	0	0	1	0	1	0	0	0	0	0	1	0
	2	11	10	0	1	0	1	0	0	0	0	0	0	0	1
13-19	1	20	20	0	0	0	0	0	0	0	0	0	0	0	0
	2	20	20	0	0	0	0	0	0	0	0	0	0	0	0
13-23	1	15	15	0	0	0	0	0	0	0	0	0	0	0	0
	2	15	15	0	0	0	0	0	0	0	0	0	0	0	0
13-24	1	6	6	0	0	0	0	0	0	0	0	0	0	0	0
	2	6	6	0	0	0	0	0	0	0	0	0	0	0	0
13-27	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
13-28	1	5	4	1	0	0	1	0	0	0	0	0	0	1	0
	2	5	4	0	0	0	0	0	1	0	0	0	0	0	1

Table 18. QA/QC data for larval deformity assessments (Round 3, 28d post swim-up).

Fish ID	Observer	Total fry	Normal Fry	Skeletal			Craniofacial			Finfold			Edema		
				1	2	3	1	2	3	1	2	3	1	2	3
13-12	1	34	34	0	0	0	0	0	0	0	0	0	0	0	0
	2	34	34	0	0	0	0	0	0	0	0	0	0	0	0
13-18	1	57	57	0	0	0	0	0	0	0	0	0	0	0	0
	2	57	57	0	0	0	0	0	0	0	0	0	0	0	0
13-20	1	53	53	0	0	0	0	0	0	0	0	0	0	0	0
	2	53	53	0	0	0	0	0	0	0	0	0	0	0	0
13-23	1	43	43	0	0	0	0	0	0	0	0	0	0	0	0
	2	43	43	0	0	0	0	0	0	0	0	0	0	0	0
13-24	1	33	33	0	0	0	0	0	0	0	0	0	0	0	0
	2	33	33	0	0	0	0	0	0	0	0	0	0	0	0
13-25	1	40	40	0	0	0	0	0	0	0	0	0	0	0	0
	2	40	40	0	0	0	0	0	0	0	0	0	0	0	0
13-27	1	53	52	0	0	0	0	0	0	0	0	0	1	0	0
	2	53	52	0	0	0	1	0	0	0	0	0	1	0	0
13-28	1	39	39	0	0	0	0	0	0	0	0	0	0	0	0
	2	39	39	0	0	0	0	0	0	0	0	0	0	0	0

4.0 DISCUSSION

Results for the six samples of eggs tested in Round 1 demonstrated no evidence of adverse effects in eggs with selenium concentrations of between 15.5 and 20.0 $\mu\text{g/g dw}$. Similarly, data for nine samples of eggs evaluated in Round 2 also produced no indication of adverse effects that could be related to selenium in samples containing selenium ranging from 18.3 to 33.2 $\mu\text{g/g dw}$. The three fish with the highest selenium concentrations, each exceeding 30 $\mu\text{g/g dw}$, produced survival to swim-up of between 90 and 100% (after removing the contribution of unfertilized eggs to survival) and developing fry had very low rates of deformities.

Results of the testing in the first two rounds provided useful information with regard to appropriate conditions for spawning and culturing mountain whitefish. Significant loss of embryos was observed in Round 1 due to fungal infection, which was ameliorated through the use of a prophylactic treatment. Eggs that produced poor fertilization in Round 2 were clearly under-ripe and associated with earlier collection efforts in the season. The results demonstrated that the spawning window for mountain whitefish appears to be short, with a limited amount of time during which eggs are sufficiently ripe for testing.

Round 3 benefitted from holding of fish collected late in October and early in November until they were ripe. Egg quality was improved and 27 of 28 egg samples producing viable fry. Egg selenium concentrations ranged from 15.8 to 32.5 $\mu\text{g/g dw}$. Similar to Rounds 1 and 2, there was no evidence of adverse effects on survival of fry to swim-up, including during a subsequent 28-day feeding period. A statistically significant negative relationship between selenium and size of swim-up fry was observed; however, this relationship was also apparent in the adult mountain whitefish, and it appears likely that the apparent effects on growth were related to adult size, rather than being an effect of selenium on the fry. In addition, the relationship between selenium and size of swim-up fry was no longer present following 28 days of feeding.

A higher rate of deformities was observed in Round 3 relative to the previous rounds, although a subset of the apparent deformities (primarily associated with the fins) appear to have been an artifact of rearing conditions, since this was associated with a small subset of test containers. Deformities after 28 days of feeding were at low levels (0.0 to 3.8%) in 25 of 27 samples; however, a low rate of deformities appears to have occurred in offspring from two fish. These eggs produced approximately 11% of predominantly craniofacial and skeletal deformities after 28 days of feeding, and contained 25.1 and 32.5 $\mu\text{g Se /g dw}$. Other egg samples in the same

overall range of selenium concentrations (e.g., six samples in Round 2 ranging from 25.8 to 33.2 $\mu\text{g Se /g dw}$ and six samples in Round 3 ranging from 25.7 to 32.4 $\mu\text{g Se /g dw}$) did not produce evidence of deformities. Consequently, the geometric mean of the concentrations associated with the two fish evaluated in Round 3 with deformities that appeared to be related to selenium (i.e., 29.3 $\mu\text{g Se /g dw}$) appears to be a conservative estimate of the lower bound of a potential threshold for effects on this species. This is considered to be a conservative estimate since there were a number of other fish with egg concentrations of selenium that fell within the same range of concentrations and that did not exhibit an elevated frequency of deformities, and the effects that were seen were incidence of deformities, rather than an effect on survival.

Mountain whitefish exhibited a lower degree of sensitivity to egg selenium concentration than Westslope cutthroat trout (Nautilus Environmental, 2011). Although estimated thresholds for incidence of effect on these species are not dramatically dissimilar, the effects on cutthroat trout were on survival, whereas effects reported here for mountain whitefish are on deformities, and the data presented here demonstrate that at least some proportion of these deformities are reversible during growth.

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APPENDIX A - Adult Fish Collection Data and Gamete Information

Adult collection data

2010

Site	Fish ID	Date captured	Date sampled	Sex	Length (mm)	Weight (g)	Gonad sample mass (g)
FOR1	FOR1-1	November 9	November 10	F	360	582	42
FOR1	FOR1-2	November 9	November 10	F	362	544	60
FOR1	FOR1-3	November 9	November 10	F	357	546	57
FOR1	FOR1-4	November 9	November 10	F	353	614	57
FOR1	FOR1-5	November 9	November 10	F	387	697	57
MIC2	MIC2-1	November 10	November 10	F	363	534	5
MIC2	MIC2-5	November 10	November 10	M	345	457	3
MIC2	MIC2-6	November 10	November 10	M	394	588	2
MIC2	MIC2-7	November 10	November 10	M	329	373	1
MIC2	MIC2-8	November 10	November 10	M	337	391	2
MIC2	MIC2-9	November 10	November 10	M	411	800	5

Adult fish collection data

2011

Date	Site	Species	length (mm)	weight (g)	Sex	Stage	Field notes/IDs	Nautilus ID	Sample wt (g)
26-Oct-11	Fo23	MW	379	703	F	maturing	F1	WF1	8.9
	Fo23	MW	325	387	F	maturing	F2	WF2	5
	Fo23	MW	321	406	F	maturing	F3	WF3	9.3
	Fo23	MW	376	622	F	maturing	F4	WF4	11.1
	Fo23	MW	331	416	F	maturing	F5	WF5	10.1
	Fo23	MW	390	670	M	mature	M1	-	-
	Fo23	MW	339	535	F	maturing	F6	WF6	12.5
	Fo23	MW	322	434	F	maturing	F7	WF7	9.3
	Fo23	MW	270	254	F	maturing	determined unripe in field		none
	M13	MW	441	1276	F	maturing	determined unripe in field		none
	M13	MW	368	629	F	maturing	F10	WF10	12.5
	M13	MW	320	475	F	maturing	F11	WF11	12.5
	M13	MW	307	325	F	maturing	F12	WF12	3.4
	M13	MW	318	407	F	maturing	F13	WF13	7.2
	M13	MW	331	487	F	maturing	F14	WF14	11
	M13	MW	300	355	F	maturing	F15	WF15	9.7
	M13	MW	291	264	F	maturing	determined unripe in field		none
	M13	MW	294	318	F	maturing	F17	WF17	5.5
	M13	MW	289	276	M	mature	M2	-	-
	M13	MW	297	297	F	maturing	determined unripe in field		none
	M13	MW	286	271	M	mature	M3	-	-
	M13	MW	290	292	M	mature	M4	-	-
	M13	MW	346	630	F	maturing	F19	WF9	10.1
	M13	MW	272	264	F	maturing	determined unripe in field		none
	M13	MW	281	254	M	mature	M5	-	-
	M13	MW	328	451	F	maturing	F21	WF16	7.4
M13	MW	358	311	F	maturing	F22	WF8	8.1	
3-Nov-11	M12	MW	328	449	F	mature	F23	WF23	-
	M12	MW	379	736	M	mature	M6	-	-
	M12	MW	324	405	F	mature	F24	WF24	-
	M12	MW	329	426	M	mature	M7	-	-
	M12	MW	315	322	M	mature	M8	-	-
	M12	MW	350	621	F	mature	F25	WF25	-
	M12	MW	294	314	F	mature	F26	WF26	-
	M12	MW	409	749	M	mature	M9	-	-
	M12	MW	308	321	M	mature	M10	-	-
	M12	MW	307	338	F	mature	F27	WF27	-
	M12	MW	366	658	F	mature	F28	WF28	-
	Fo23	MW	273	634	F	mature	F29	WF29	-
	Fo23	MW	311	357	F	mature	F30	WF30	-
	Fo23	MW	397	656	F	mature	F31	WF31	-
	Fo23	MW	344	483	F	mature	F32	WF32	-
	Fo23	MW	356	562	F	mature	F33	WF33	-
	Fo23	MW	440	766	F	mature	F34	WF34	-
	Fo23	MW	371	615	F	mature	F35	WF35	-
	Fo23	MW	335	442	F	mature	F36	WF36	-
	Fo23	MW	342	474	F	mature	F37	WF37	-
Fo23	MW	293	287	M	mature	M11	-	-	
11-Nov-11	M13	MW	419	902	F	mature	F38	WF38	-
	M13	MW	386	695	M	mature	M12	-	-
	M13	MW	425	761	F	Spent	--	-	-
	M13	MW	350	578	F	mature	F39	WF39	-
	M13	MW	349	469	F	Spent	--	-	-
	M13	MW	349	456	M	mature	M13	-	-
	M13	MW	319	318	F	Spent	--	-	-
	M13	MW	285	252	M	Spent	--	-	-
	M13	MW	326	355	F	Spent	--	-	-
	M13	MW	286	310	F	mature	F40	WF40	-
	M13	MW	368	500	F	Spent	--	-	-
	M13	MW	273	252	F	Spent	--	-	-
	M13	MW	293	287	M	Spent	--	-	-
14-Nov-11	M13	MW	361	422	F	Spent	--	-	-
	M13	MW	371	559	M	mature	M14	-	-
	M13	MW	290	246	F	mature	F41	WF41	-
	M13	MW	308	279	M	mature	M15	-	-
	M13	MW	456	1050	F	Spent	--	-	-
	M12	MW	322	NR	M	Spent	--	-	-
	M12	MW	298	NR	M	Spent	--	-	-
	M12	MW	269	NR	M	Spent	--	-	-
M12	MW	325	NR	F	Spent	--	-	-	

NR Not recorded

Adult fish collection data

2013

Site	Species	Sample	length (mm)	weight (g)	Sex	Nautilus	Gonad sample Mass (g)
FO23	MW	3	278	258	female	13-03	17
FO23	MW	8	299	299	female	13-08	8
FO23	MW	9	275	227	female	13-09	8
FO23	MW	10	296	329	female	13-10	14
FO23	MW	11	421	857	female	13-11	54
FO23	MW	13	388	799	female	13-13	77
MI2	MW	-	361	537	female		
MI2	MW	1	333	458	female	13-01	22
MI2	MW	2	349	520	female	13-02	22
MI2	MW	4	320	425	female	13-04	15
MI3	MW	6	355	481	female	13-06	11
MI3	MW	7	346	485	female	13-07	20
MI3	MW	-	410	765	female		
MI3	MW	-	256	184	male		
MI3	MW	-	284	246	male		
FO23	MW	14	325	427	female	13-14	12
FO23	MW	15	308	389	female	13-15	25
FO23	MW	16	277	229	female	13-16	9
FO23	MW	17	329	459	female	13-17	17
FO23	MW	18	394	699	female	13-18	32
MI2	MW	5	401	820	female	13-05	34
MI2	MW	12	402	797	female	13-12	6
MI3	MW	-	320	340	male		
FO23	MW	19	340	484	female	13-19	27
FO23	MW	20	291	329	female	13-20	23
FO23	MW	21	288	311	female	13-21	23
FO23	MW	22	288	265	female	13-22	9
FO23	MW	24	331	457	female	13-24	34
FO23	MW	27	290	257	female	13-27	13
FO23	MW	28	374	486	female	13-28	5
MI2	MW	23	299	309	female	13-23	14
MI2	MW	25	375	685	female	13-25	28
MI2	MW	26	349	540	female	13-26	9

Table 1. Egg Quality of those collected on November 10, 2010

Whitefish ID	Overall egg quality/appearance	Amount of blood	Amount of Ovarian Fluid	Notes
FOR-1	Good	Small	Poor	Sticky
FOR-2	Good	Small	Good	NA
FOR-3	Good	Absent	Good	NA
FOR-4	Good	Absent	Good	NA
FOR-5	Good	Absent	Poor	Sticky
FOR-6	Good	Absent	Good	Low quantity. Some eggs appear hardened and swelled.

Table 2. Egg Quality of those collected on October 26, 2011

Whitefish ID	Overall egg quality/appearance	Amount of blood	Lipid Droplet Quality	Amount of Ovarian Fluid	Notes
WF1	Poor	Small	50% clustered	Good	NA
WF2	Poor - Opaque	Moderate	50-75% clustered	Poor	NA
WF3	Poor - Opaque	Moderate	Not well defined	Poor	NA
WF4	Poor - Opaque	Moderate	Not well defined	Poor	NA
WF5	Poor - Opaque	Small	Not well defined	Poor	NA
WF6	Poor	Small	Not well defined	Very poor, clumpy	NA
WF7	Poor	Significant	50% clustered	Good	NA
WF8	Poor- Opaque	Absent	Not well defined	Poor	NA
WF9	Poor- Opaque	Small	Not well formed, some eggs have clusters	Poor	NA
WF10	Poor	Moderate	Good, partially clustered	Poor	NA
WF11	Poor	Significant	Good, partially clustered	Very poor, clumpy	NA
WF12	Poor- Opaque	Small	Not well defined	Poor	NA
WF13	Poor- Opaque	Absent	NA	Poor	Low quantity
WF14	Poor	Moderate	Good	Good	NA
WF15	Poor	Absent	Good	Very poor	NA
WF16	Poor	Absent	Good	Very poor	NA
WF17	Poor	Significant	Good	Poor	NA

Table 3. Egg Quality of those collected on November 3, 2011

Whitefish ID	Overall egg quality/appearance	Amount of blood	Lipid Droplet Quality	Amount of Ovarian Fluid	Notes
WF23	Good	Small	0% clustered	Poor	NA
WF24	Poor	Moderate	25% clustered	Poor	Skin
WF25	Good	Absent	0% clustered	Poor	NA
WF26	Very good	Absent	NA	Poor	10% Abnormal appearance, may be water hardened
WF27	Good	Absent	0% clustered	Poor	NA
WF28	Poor	Small	NA	Very poor	Debris, elongated eggs
WF29	Good	Absent	NA	Poor	Big and White
WF30	Good	Small	NA	Poor	15% Abnormal
WF31	Good	Small	NA	Poor	Large, very white
WF32	Good	Small	0% clustered	Poor	NA
WF33	Good	Small	NA	Poor	NA
WF34	Good	Absent	0% clustered	Poor	NA
WF35	Good	Absent	NA	Poor	Big and White
WF36	Good	Absent	NA	Poor	NA
WF37	Good	Small	50% clustered	Poor	NA

Table 4. Egg Quality of those collected on November 11, 2011

Whitefish ID	Overall egg quality/appearance	Amount of blood	Lipid Droplet Quality	Amount of Ovarian Fluid	Notes
WF38	Good	Absent	Clustered	Good	NA
WF39	Good	Absent	Clustered	Good	NA
WF40	Good	Absent	Clustered	Good	NA

Table 5. Egg Quality of those collected on November 14, 2011

Whitefish ID	Overall egg quality/appearance	Amount of blood	Lipid Droplet Quality	Amount of Ovarian Fluid	Notes
WF41	Good	Absent	Clustered	Good	NA

Table 6. Egg Quality of those collected on November 6, 2013

Whitefish ID	Overall egg quality/appearance	Amount of blood	Amount of Ovarian Fluid	Notes
13-01	Good	Absent	Good	NA
13-02	Good	Absent	Good	NA
13-03	Good	Absent	Good	NA
13-04	Good	Absent	Good	NA
13-05	Good	Absent	Good	NA
13-06	Good	Absent	Good	NA
13-07	Good	Absent	Good	NA
13-08	Good	Absent	Good	NA
13-09	Good	Absent	Poor	NA
13-10	Good	Absent	Good	NA
13-11	Good	Absent	Good	NA
13-12	Poor	Small	Poor	Debris after fertilization
13-13	Good	Absent	Good	NA
13-14	Good	Absent	Good	NA
13-15	Good	Absent	Good	<10% swollen clear-looking eggs
13-16	Good	Absent	Poor	NA
13-17	Good	Absent	Good	NA
13-18	Good	Absent	Good	NA
13-19	Good	Absent	Good	NA
13-20	Good	Absent	Good	NA
13-21	Poor	Small	Good	10% swollen clear-looking eggs. White spots on 50% eggs after fertilization.
13-22	Good	Absent	Good	<10% swollen clear-looking eggs. White spots on 20% eggs after fertilization.

Table 6. Continued

Whitefish ID	Overall egg quality/appearance	Amount of blood	Amount of Ovarian Fluid	Notes
13-23	Good	Absent	Good	NA
13-24	Good	Absent	Good	NA
13-25	Poor	Moderate	Poor	Some clumping
13-26	Poor	Moderate	Poor	Some clumping
13-27	Good	Absent	Good	NA
13-28	Good	Absent	Good	NA

APPENDIX B - Larval Rearing Data

2010-2011

Whitefish Embryo-Alevin-Fry Test Summary Sheet

2010-2011

Client: Golder Start Date/Time: ^{EST} 11-Nov-10

Work Order No.: N/A Test Species: P. williamsoni

Sample Information:

Fish ID: Various
 Sample Date: 10-Nov-10
 Date Received: 11-Nov-10

Dilution Water:

Type: Range Dechlorinated Water
 Hardness (mg/L CaCO₃): 8-8 9-12
 Alkalinity (mg/L CaCO₃): 8-8 8-14

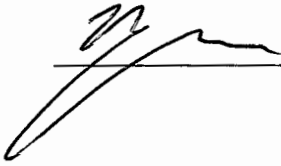
Test Organism Information:

Batch No.: 111110
 Source: Field collected from Fording River (FOR 1-5) and Michel Creek (FOR-6)
 Loading Density: n/a

Test Results:

Fish ID	% survival	% survival after day 27*
FOR-1	65.8	82.7
FOR-2	62.5	81.1
FOR-3	69.6	91.8
FOR-4	81.4	90.2
FOR-5	70.0	94.9
FOR-6	55.4	73.9

*: All fugged eggs were removed on Day 27 and all mortalities prior to this day were omitted due to fungal presence

Reviewed by: 

Date reviewed: 27 Mar 2013

Embryo Alevin Fry Survival Summary

2010-2011

Client: Golder

Start Date/Time: 11-Nov-10

Test Species: *P. williamsoni*

Eyed Embryos (# and %):

Sample ID	# of Initial Eggs	# of Eyed Eggs
FOR-1	240	n/a
FOR-2	240	n/a
FOR-3	240	n/a
FOR-4	240	n/a
FOR-5	240	n/a
FOR-6	240	n/a

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)
FOR-1	159	66.3
FOR-2	151	62.9
FOR-3	167	69.6
FOR-4	195	81.3
FOR-5	167	69.6
FOR-6	134	55.8

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of hatched)
FOR-1	158	65.8	99.4
FOR-2	150	62.5	99.3
FOR-3	167	69.6	100.0
FOR-4	193	80.4	99.0
FOR-5	168	70.0	100.6
FOR-6	133	55.4	99.3

Reviewed by: 

Date reviewed: 27 Mar 2013

Whitefish Embryo-Alevin-Fry Study Summary Table - 2010

Date Initiated: Novmber 11, 2010

Sample ID	Rep	No. initial eggs	Day 27 non-fungal infected eyed embryos	Total no. hatched alevins	Total surviving to swim-up	Fish with deformities	Survival (% of initial)	Survival (% of survivors at day 27) *	Deformities (%)
FOR-1	1	60	48	159	158	1	65.8%	82.7%	0.6%
	2	60	50						
	3	60	41						
	4	60	52						
FOR-2	1	60	49	151	150	2	62.5%	81.1%	1.3%
	2	60	43						
	3	60	51						
	4	60	42						
FOR-3	1	60	51	167	167	4	69.6%	91.8%	2.4%
	2	60	50						
	3	60	24						
	4	60	57						
FOR-4	1	60	54	195	193	1	80.4%	90.2%	0.5%
	2	60	54						
	3	60	50						
	4	60	56						
FOR-5	1	60	45	168	168	2	70.0%	94.9%	1.2%
	2	60	42						
	3	60	44						
	4	60	46						
FOR-6	1	60	51	134	133	3	55.4%	73.9%	2.3%
	2	60	24						
	3	60	50						
	4	60	55						

* Survival post day 27 evaluated to remove influence of fungal infection on results

SUMMARY OUTPUT - Round 1- Length vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.478497
R Square	0.22896
Adjusted R	0.036199
Standard E	1.917524
Observatio	6

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	4.367402	4.367402	1.187795	0.337033
Residual	4	14.7076	3.676899		
Total	5	19.075			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	40.73217	21.37687	1.905432	0.129426	-18.6195	100.0839	-18.6195	100.0839
X Variable	-1.57692	1.446897	-1.08986	0.337033	-5.59415	2.440315	-5.59415	2.440315

SUMMARY OUTPUT- Round 1- Weight vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.648698
R Square	0.420809
Adjusted R	0.276011
Standard E	1.661932
Observatio	6

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	8.026923	8.026923	2.906179	0.163442
Residual	4	11.04808	2.762019		
Total	5	19.075			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	28.51121	6.523835	4.370315	0.011965	10.39814	46.62428	10.39814	46.62428
X Variable	-0.61078	0.358281	-1.70475	0.163442	-1.60553	0.383967	-1.60553	0.383967

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-1 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: MARCH 18/2011
 Test Species: P. williamseni

Treatment	Days														
	0		1		2		3		4		5		6		7
Pyrene-a	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	8.0	7.0	/	7.5	/	7.0	/	6.5	6.5	6.5	/	6.5	6.0	6.0	
DO (mg/L)	11.8	11.6	/	12.1	/	11.6	/	12.1	11.9	11.5	/	11.6	12.1	12.3	
pH	6.5	6.8	/	7.2	/	7.1	/	7.1	7.1	6.8	/	6.7	7.6	6.7	
Cond. (µS/cm)	33	34		35		37		33		34		31	33		
Initials	KL	KL		~		~		BEL		KL		FSL	KL		

Treatment	Days													
	7		8		9		10		11		12		13	
Pyrene-a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.5	/	6.0	6.0	6.6
DO (mg/L)	/	12.3	12.1	11.4	/	11.6	/	11.7	11.6	11.4	/	11.6	11.9	11.8
pH	/	7.1	7.3	6.7	/	6.9	/	6.9	7.3	6.9	/	6.5	7.0	7.2
Cond. (µS/cm)	/	32	32	32		34		32		32		33	34	
Initials		KL	~	~		~		KSL	KSL	KSL		KSL	KL	KL

Treatment	Days													
	14		15		16		17		18		19		20	
Pyrene-a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	6.5	/	6.5	6.5	6.0
DO (mg/L)	/	12.1	12.3	12.1	/	11.9	/	12.1	12.3	12.1	/	12.2	12.3	12.2
pH	/	6.9	7.1	7.1	/	7.1	/	7.2	7.2	7.0	/	7.1	7.2	6.9
Cond. (µS/cm)	/	32	34	35		34		34		34		33	32	
Initials		KL	~	~		~		KL	KL	KL		KL	KL	KL

Treatment	Days													
	21		22		23		24		25		26		27	
Pyrene-a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.0	/	6.0	/	6.0	6.0	6.5	/	7.0	6.0	6.5
DO (mg/L)	/	12.1	12.2	11.8	/	12.2	/	11.7	12.0	12.3	/	12.3	12.3	12.1
pH	/	6.9	6.8	6.8	/	6.8	/	6.8	6.7	6.9	/	7.0	6.9	6.9
Cond. (µS/cm)	/	31	35			31		31		30		31	31	
Initials		KL	~	~		~		KSL	KL	KL		KL	KL	KL

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	9			
Alkalinity*	8			

Analysts: ECS, ECC, KSL
ALD, BEL
 Reviewed by: KL
 Date reviewed: Mar 27 2011

* mg/L as CaCO3

Sample Description: _____
 Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FUR-1 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18, 2011
 Test Species: P. Williamsoni

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	5.5	7.0	/	7.0	/	6.5	6.0	7.0	/	7.0	6.0	7.0	/	
DO (mg/L)	12.2	5.1/1.3	/	11.8	/	11.7	11.9	11.0	/	11.6	11.5	12.0	/	
pH	7.1	7.0	/	7.0	/	6.9	7.0	6.7	/	6.9	6.9	6.9	/	
Cond. (µS/cm)	31		31		32		31		30		31		/	
Initials	KJL		/		/		KJL		KJL		KJL		/	

Concentration	Days													
	35	36		37		38		39		40		41		42
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	7.0	7.0	6.5	/	6.5	/	6.5	7.0	/	7.0	6.0	6.5	/
DO (mg/L)	12.3	12.0	11.5	11.7	/	11.8	/	12.3	11.6	/	12.0	12.2	11.9	/
pH	6.8	7.1	6.9	7.0	/	6.9	/	6.4	7.1	/	7.0	6.7	6.8	/
Cond. (µS/cm)	30	30		31		31		31		31		30		/
Initials	KJL	KJL		/		/		KJL		KJL		KJL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	6.0	7.0	/	7.0	/	7.0	6.5	6.5	/	7.0	6.0	6.5	/
DO (mg/L)	11.4	11.7	11.8	/	11.5	/	11.5	12.3	11.6	/	11.9	12.4	11.4	/
pH	6.6	6.7	6.6	/	6.9	/	7.0	7.5	7.4	/	7.2	6.9	7.3	/
Cond. (µS/cm)	30	29		30		30		28		29		27		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.5	6.5	7.0	/	7.0	/	7.0	6.0	7.0	6.5	/	6.0	6.0	/
DO (mg/L)	11.7	12.1	12.1	/	11.3	/	11.6	11.9	11.8	12.2	/	12.4	12.1	/
pH	7.3	7.0	7.2	/	7.3	/	7.4	7.1	7.4	7.0	/	7.0	7.1	/
Cond. (µS/cm)	27	29		29		29		29		27		27		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	11		
Alkalinity*	14		

* mg/L as CaCO3

Analysts: EGS, AWD, KJL
KJL
 Reviewed by: KJL
 Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-16°C
 Work Order #: N/A

Start Date & Time: ^{8:00} 11-Nov-10
 Stop Date & Time: ^{3:30} March 18 / 2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	12.5	6.0	7.0	/	/	/	/	6.0	6.5	/	/	6.0	7.5	/	
DO (mg/L)	12.5	12.1	12.1	/	/	/	/	12.5	12.0	/	/	11.7	11.8	/	
pH	6.7	6.4	6.3	/	/	/	/	6.7	6.3	/	/	6.8	6.5	/	
Cond. (µS/cm)	26.6	27	/	/	/	/	/	27	/	/	/	26	/	/	
Initials	KLB	AK	/	/	/	/	/	KSL	/	/	/	AK	/	/	

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	/	7.0	7.0	/	/	/	/	/	/	6.0	7.0	/	/	/	
DO (mg/L)	/	12.1	11.6	/	/	/	/	/	/	12.0	12.2	/	/	/	
pH	6.7	7.1	7.5	/	/	/	/	/	/	8.0	7.3	/	7.3	/	
Cond. (µS/cm)	/	27	/	/	/	/	/	/	/	35	/	/	/	/	
Initials	/	AK	/	/	/	/	/	/	/	AK	/	/	KSL	/	

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	7.0	6.0	7.0	/	/	/	/	6.0	7.0	/	/	5.5	6.5	/	
DO (mg/L)	11.4	12.3	12.1	/	/	/	/	12.4	12.4	/	/	11.4	11.7	/	
pH	7.2	7.4	7.6	/	/	/	/	6.9	6.7	/	7.0	6.8	7.0	/	
Cond. (µS/cm)	/	32	/	/	/	/	/	30	/	/	/	30	/	/	
Initials	KSL	AK	/	/	/	/	/	AK	/	/	/	KSL	/	/	

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	/	6.0	6.5	/	/	/	/	6.0	7.0	/	/	7.0	7.0	/	
DO (mg/L)	/	11.6	11.8	/	/	/	/	11.9	12.2	/	/	12.0	11.9	/	
pH	/	7.3	7.1	/	/	/	/	7.3	7.5	/	/	7.1	6.8	/	
Cond. (µS/cm)	/	29	/	/	/	/	/	30	/	/	/	30	/	/	
Initials	/	KSL	/	/	/	/	/	AK	/	/	/	AK	/	/	

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	12			
Alkalinity*	6			

Analysts: KLB, EGS, KSL

Reviewed by: AK

Date reviewed: 27 Mar 2011

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-1 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18, 2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97		99	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	6.5	6.0	6.0	6.5	6.5	6.0	7.0	6.0	6.5	6.0	6.0	6.0	6.0
DO (mg/L)	12.5	12.5	12.3	12.3	12.1	12.3	12.5	12.0	12.0	12.5	12.0	11.9	12.6	11.5
pH	7.0	7.1	7.2	6.9	7.2	6.8	7.2	7.0	6.9	6.8	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		29		29		29	
Initials	EGS/BPL		KSL		KSL		KSL		KSL		KSL		KSL	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.5	7.0	6.5	7.0	6.5	7.0	6.0	7.0	6.5	7.0	6.0	7.0	6.5	7.0
DO (mg/L)	12.0	12.6	12.1	12.1	12.2	12.1	11.7	11.3	11.7	11.7	11.3	11.6	12.4	12.3
pH	7.3	7.1	7.3	7.1	7.2	7.0	7.0	6.8	7.2	7.3	7.4	7.0	6.9	6.9
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	KSL		KSL		KSL		KSL		KSL		KSL		KSL	

Concentration	Days													
	118		120		123									
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	7.0	6.5	7.0	7.0	7.0								
DO (mg/L)	12.4	12.1	12.6	12.6	11.8	11.8								
pH	7.1	6.8	7.0	7.0	7.1	7.1								
Cond. (µS/cm)	29		30		29									
Initials	BPL		KSL		KSL									

Concentration	Days													
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	10		
Alkalinity*	8		

Analysts: EGS, BPL, KSL

Reviewed by: [Signature]

Date reviewed: 27 Mar 2011

* mg/L as CaCO3

Sample Description: _____

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-2 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Treatment	Days														
	0		1		2		3		4		5		6		7
<u>Pyrene a</u>	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	8.0	6.5	/	7.5	/	7.0	/	7.6	6.5	6.5	/	6.5	6.0	6.0	
DO (mg/L)	11.8	11.8	/	12.0	/	11.8	/	12.0	11.9	11.9	/	12.0	12.1	12.5	
pH	6.9	7.0	/	7.1	/	7.2	/	7.1	7.1	6.9	/	6.6	7.6	6.7	
Cond. (µS/cm)	35	36	/	35	/	36	/	33	35	35	/	31	33	33	
Initials	RL	RL	/	m	/	-	/	BPL	RL	RL	/	KSL	RL	RL	

Treatment	Days													
	7	8		9		10		11		12		13		14
<u>Pyrene a</u>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.5	6.0	6.5	/	6.0	6.0	6.6
DO (mg/L)	/	12.3	12.1	11.6	/	11.7	/	11.5	11.6	11.8	/	11.5	11.9	11.8
pH	/	7.1	7.3	6.8	/	6.9	/	6.8	7.3	6.9	/	6.6	7.0	7.2
Cond. (µS/cm)	/	32	33	33	/	33	/	32	32	32	/	33	34	34
Initials	/	RL	RL	m	/	-	/	KSL	KSL	KSL	/	KSL	RL	RL

Treatment	Days													
	14	15		16		17		18		19		20		21
<u>Pyrene a</u>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	6.5	/	6.5	6.0	6.0
DO (mg/L)	/	12.1	12.3	12.1	/	12.0	/	12.1	12.3	12.1	/	12.1	12.3	12.2
pH	/	6.9	7.1	7.1	/	7.1	/	7.2	7.2	7.0	/	7.1	7.2	6.9
Cond. (µS/cm)	/	32	34	35	/	35	/	34	34	34	/	33	32	32
Initials	/	RL	RL	m	/	-	/	RL	RL	RL	/	RL	RL	RL

Treatment	Days													
	21	22		23		24		25		26		27		28
<u>Pyrene a</u>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.0	/	6.0	/	6.0	6.0	6.5	/	6.5	6.0	6.5
DO (mg/L)	/	12.1	12.2	11.8	/	11.6	/	12.2	11.7	12.0	/	12.3	12.3	12.1
pH	/	6.9	6.8	6.7	/	6.8	/	6.8	6.8	6.7	/	6.9	7.0	6.9
Cond. (µS/cm)	/	31	34	34	/	34	/	31	31	31	/	30	31	31
Initials	/	RL	RL	m	/	-	/	KSL	RL	RL	/	RL	RL	RL

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	9		
Alkalinity*	8		

Analysts: RL, AUD, BPL, KSL, FCC
 Reviewed by: RL
 Date reviewed: 27 Mar 2011

* mg/L as CaCO3

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-2 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	5.5	6.5	/	7.0	/	6.5	6.0	7.0	/	7.0	6.0	7.0	/	
DO (mg/L)	12.2	11.7	/	11.8	/	11.8	11.9	11.4	/	12.1	11.5	11.9	/	
pH	7.1	7.0	/	7.0	/	6.9	7.0	6.8	/	6.9	6.9	6.9	/	
Cond. (µS/cm)	31		32		32		31		30		31		/	
Initials	Q		A				Q		Q		Q		/	

Concentration	Days													
	35	36		37		38		39		40		41		42
	init.	new	old	old	new	old	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	7.0	7.0	6.5	/	6.5	/	6.5	7.0	/	7.0	6.0	6.5	/
DO (mg/L)	12.8	12.0	11.7	11.6	/	11.8	/	12.3	11.7	/	12.0	12.2	12.2	/
pH	6.8	7.1	6.9	7.0	/	6.9	/	6.4	6.9	/	7.0	6.7	6.8	/
Cond. (µS/cm)	30	30		31		31		31		31		30		/
Initials	KJL	Q						Q		KPG		KJL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	6.0	7.0	/	7.0	/	7.0	6.5	6.5	/	7.0	6.0	6.0	/
DO (mg/L)	11.8	11.7	11.7	/	11.6	/	11.5	12.3	11.4	/	12.1	12.4	12.0	/
pH	6.7	6.7	6.7	/	7.0	/	7.0	7.5	7.4	/	7.2	6.9	7.2	/
Cond. (µS/cm)	30	29		30		30		28		29		27		/
Initials	KJL	KJL		Q		Q		Q		KJL		KJL		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.0	6.5	7.0	/	6.5	/	6.5	6.0	6.5	6.5	/	6.0	6.5	/
DO (mg/L)	11.9	12.1	12.0	/	11.5	/	11.5	11.9	11.7	12.2	/	12.4	12.2	/
pH	7.3	7.0	7.1	/	7.3	/	7.4	7.1	7.4	7.0	/	7.0	7.1	/
Cond. (µS/cm)	28	29		29		29		29		27		27		/
Initials	KJL	Q		Q		Q		Q		KJL		KJL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	11		
Alkalinity*	14		

* mg/L as CaCO3

Analysts: EGS, AWD, KJL
KPG
 Reviewed by: [Signature]
 Date reviewed: 27 Mar 2011

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-2 6°C
 Work Order #: N/A

Start Date & Time: ^{09L} 11-Nov-10
 Stop Date & Time: ^{09L} March 18/2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	12.5	6.0	11.9	7.0	/	/	/	/	6.0	6.0	/	7.0	6.0	7.0	/
DO (mg/L)	12.5	12.1	11.9		/	/	/	/	12.5	12.1	/		11.7	11.8	/
pH	6.7	6.4	6.3		/	/	/	/	6.7	6.3	/		6.6	6.8	6.6
Cond. (µS/cm)	267	27			/	/	/	/	27		/			26	
Initials	KLB	KL			/	/	/	/	KJL		/		KL		/

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	7.0	6.5		/	/	/	/	/	/	6.0	7.0	/	/	/
DO (mg/L)	/	12.1	12.1		/	/	/	/	/	/	12.0	12.1	/	/	/
pH	/	7.1	7.3		/	/	/	/	/	/	8.0	7.2	/	7.3	/
Cond. (µS/cm)	/	27			/	/	/	/	/	/	35		/		
Initials	/	KL			/	/	/	/	/	/	KL		/	KJL	/

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	7.0	6.0	7.0		7.0		/	/	6.0	7.0	/	/	5.5	6.5	
DO (mg/L)	11.8	12.3	11.9		/	/	/	/	12.4	12.4	/	/	11.4	11.9	
pH	7.3	7.4	7.6		6.7		/	/	6.9	6.7	/	6.7	6.8	6.7	
Cond. (µS/cm)		32			/	/	/	/	30		/	/	30		
Initials	KJL	KL			/	/	/	/	KL		/	/	KJL		

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)		6.0	6.5		/	/	/	/	6.0	6.5	/	/	7.0	7.0	/
DO (mg/L)		11.6	11.8		/	/	/	/	11.9	12.3	/	/	12.0	11.9	/
pH		7.3	7.3		/	/	/	/	7.3	7.4	/	/	7.1	6.9	/
Cond. (µS/cm)		29			/	/	/	/	30		/	/	30		
Initials		KJL			/	/	/	/	KL		/	/	KL		

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	12			
Alkalinity*	6			

* mg/L as CaCO₃

Analysts: KLB, EGG, KJL

Reviewed by: KL

Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test

Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-2 6°C
 Work Order #: N/A

Start Date & Time: ¹³⁹⁵ 11-Nov-10
 Stop Date & Time: ¹³⁹⁵ March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97		99	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	7.0	6.0	7.0	6.5	6.5	6.0	7.0	6.0	7.0	6.0	7.0	6.0	6.0
DO (mg/L)	12.5	12.5	12.3	12.3	12.1	12.5	12.5	12.1	12.0	12.5	12.0	11.9	12.6	12.3
pH	7.0	7.0	7.2	6.8	7.2	6.8	7.2	7.0	6.9	6.8	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		29		29		29	
Initials	EGS/BPL		KJL		KJL		KJL		KJL		KJL		KJL	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.5	7.0	6.5	6.0	6.5	6.0	6.0	6.5	6.5	6.5	6.0	6.5	6.5	7.0
DO (mg/L)	12.0	12.0	12.1	12.2	12.2	12.4	11.7	11.2	11.7	11.7	11.3	11.6	12.4	12.5
pH	7.3	7.0	7.3	7.1	7.2	7.0	7.0	6.8	7.2	7.3	7.4	7.0	6.9	6.8
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	KJL		KJL		KJL		KJL		KJL		KJL		KJL	

Concentration	Days													
	118		120		123									
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	6.7	6.5	7.0	7.0	7.0								
DO (mg/L)	12.4	12.5	12.6	12.6	11.8	12.0								
pH	7.1	6.8	7.0	7.0	7.1	7.1								
Cond. (µS/cm)	29		30		29									
Initials	BPL		KJL		KJL									

Concentration	Days													
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

Control			
Hardness*	10		
Alkalinity*	8		

* mg/L as CaCO₃

Analysts: EGS, BPL, KJL,

Reviewed by: KJL

Date reviewed: 17 Mar 2013

Sample Description: _____

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FUR-3 6°C
 Work Order #: N/A

Start Date & Time: Nov 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Treatment Pyrene	Days														
	0		1		2		3		4		5		6		7
	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	8.5	6.5	/	7.5	/	7.0	/	7.0	6.5	7.0	/	6.5	6.0	6.0	
DO (mg/L)	11.8	11.9	/	12.0	/	12.0	/	12.0	11.9	11.9	/	11.9	12.1	12.3	
pH	7.0	7.0	/	7.2	/	7.2	/	7.1	7.1	6.9	/	6.6	7.6	6.7	
Cond. (µS/cm)	34	35	/	35	/	36	/	33		34	/	31		35	
Initials	AL	AL	/	~	/	~	/	BEL		AL	/	KSL		AL	

Treatment Pyrene	Days													
	7		8		9		10		11		12		13	
	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.5	6.5	6.5	6.0	6.6
DO (mg/L)	/	12.3	12.1	11.4	/	11.7	/	11.4	11.6	11.9	11.9	12.0	11.9	11.8
pH	/	7.1	7.3	6.8	/	6.9	/	6.8	7.3	6.9	6.9	6.7	7.0	7.2
Cond. (µS/cm)	/		32	33		34		32		32		33		34
Initials	/	AL						KSL		KSL		KSL		AL

Treatment Pyrene	Days													
	14		15		16		17		18		19		20	
	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	6.5	6.5	6.5	6.0	6.0
DO (mg/L)	/	12.1	12.3	11.9	/	11.9	/	12.1	12.3	12.1	12.1	12.1	12.3	12.2
pH	/	6.9	7.1	7.1	/	7.1	/	7.2	7.2	7.0	7.0	7.1	7.2	6.9
Cond. (µS/cm)	/		32	34		35		34		34		33		32
Initials	/	AL						AL		AL		AL		AL

Treatment Pyrene	Days													
	21		22		23		24		25		26		27	
	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)		6.5	6.0	6.0	/	6.0	/	6.0	6.0	/	6.5	7.0	6.0	6.5
DO (mg/L)		12.1	12.2	11.7	/	11.8	/	12.0	11.7	/	12.0	12.3	12.3	12.1
pH		6.9	6.8	6.9	/	6.8	/	6.8	6.8	/	6.7	6.9	7.0	6.9
Cond. (µS/cm)			32	34		35		31		31		30		31
Initials		AL						KSL		AL		AL		AL

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	9		
Alkalinity*	8		

Analysts: EGS, ALW, BEL
KSL, ECC
 Reviewed by: AL
 Date reviewed: 27 Mar 2013

* mg/L as CaCO3

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-3 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	55	65	/	7.0	/	6.5	6.0	6.5	/	7.0	6.0	7.0	/	
DO (mg/L)	12.2	11.7	/	11.8	/	11.9	11.9	11.7	/	12.1	11.5	11.9	/	
pH	7.1	6.9	/	6.9	/	6.8	7.0	6.8	/	6.9	6.9	7.0	/	
Cond. (µS/cm)	31		31		32		31		31		31		/	
Initials	KJL		KJL		KJL		KJL		KJL		KJL		/	

Concentration	Days													
	35	36		old 37		old 38		39		40		41		42
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.5	7.0	7.0	6.5	/	6.5	/	6.5	7.0	/	7.0	6.0	7.0	/
DO (mg/L)	12.2	12.0	11.9	11.7	/	11.9	/	12.3	11.8	/	12.2	12.2	12.3	/
pH	7.0	7.1	7.0	6.9	/	6.9	/	6.4	6.8	/	6.9	6.7	6.8	/
Cond. (µS/cm)	30	30		31		31		31		31		30		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	6.0	7.0	/	7.0	/	7.0	6.5	6.5	/	6.8	6.0	6.0	/
DO (mg/L)	11.4	11.8	11.6	/	11.9	/	11.7	12.3	11.5	/	12.3	12.4	12.2	/
pH	6.7	6.7	6.7	/	7.2	/	7.0	7.5	7.3	/	7.1	6.9	7.2	/
Cond. (µS/cm)	30	29		30		30		28		29		27		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.5	6.5	7.0	/	7.0	/	6.5	6.0	6.5	6.0	/	6.0	6.5	/
DO (mg/L)	12.2	12.1	12.0	/	11.5	/	11.5	11.9	11.7	12.3	/	12.4	12.2	/
pH	7.3	7.0	7.2	/	7.3	/	7.4	7.1	7.4	7.0	/	7.0	7.1	/
Cond. (µS/cm)	28	29		29		29		29		27		28		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	11		
Alkalinity*	14		

* mg/L as CaCO3

Analysts: EGS, AWD, KJL
KPG,
ML
 Reviewed by: ML
 Date reviewed: 27 Mar 2011

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test

Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-3 6°C
 Work Order #: N/A

Start Date & Time: ⁰⁸⁰11-Nov-10
 Stop Date & Time: ⁰⁸⁰March 18/2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	13.0 ^{11.9}	6.0	6.0	/	/	/	/	6.0	6.0	/	7.0	6.0	7.0	/	/
DO (mg/L)	13.0 ^{11.9}	12.1	12.0	/	/	/	/	12.5	12.0	/	/	11.7	12.0	/	/
pH	6.7 ^{6.8}	6.4	6.3	/	/	/	/	6.7	6.7	/	6.6	6.8	6.6	/	/
Cond. (µS/cm)	26.4	27	/	/	/	/	/	27	/	/	u	36	/	/	/
Initials	KLB	AL	/	/	/	/	/	KJL	/	/	u	AL	/	/	/

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	7.0	7.0	/	/	/	/	/	/	6.0	6.5	/	/	/	/
DO (mg/L)	/	12.1	12.3	/	/	/	/	/	/	12.0	12.0	/	/	/	/
pH	/	7.1	7.3	/	/	/	/	/	/	8.0	7.2	/	/	/	/
Cond. (µS/cm)	/	27	/	/	/	/	/	/	/	35	/	/	/	/	/
Initials	/	AL	/	/	/	/	/	/	/	AL	/	/	/	/	/

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	7.0	6.0	6.5	/	/	/	/	6.0	6.5	/	/	5.5	6.5	/	/
DO (mg/L)	11.8	12.3	12.4	/	/	/	/	12.4	12.4	/	/	11.4	12.0	/	/
pH	7.5	7.4	7.6	/	/	/	/	6.9	6.6	/	7.0	6.8	7.0	/	/
Cond. (µS/cm)	/	32	/	/	/	/	/	30	/	/	30	/	/	/	/
Initials	KJL	AL	/	/	/	/	/	AL	/	/	AL	/	/	/	/

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	6.0	6.5	/	/	/	/	6.0	7.0	/	/	7.0	6.0	/	/
DO (mg/L)	/	11.6	11.7	/	/	/	/	11.9	12.2	/	/	12.0	12.3	/	/
pH	/	7.3	7.3	/	/	/	/	7.3	7.3	/	/	7.1	6.9	/	/
Cond. (µS/cm)	/	29	/	/	/	/	/	30	/	/	30	/	/	/	/
Initials	/	KJL	/	/	/	/	/	AL	/	/	AL	/	/	/	/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	12			
Alkalinity*	6			

Analysts: KLB, EGS, KJL

Reviewed by: AL

Date reviewed: 27 Mar 2011

* mg/L as CaCO₃

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-3 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18, 2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97			
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	7.0	6.0	6.5	6.5	7.0	6.0	7.0	6.0	6.5	6.0	7.0	6.0	7.0
DO (mg/L)	12.5	12.5	12.3	12.3	12.1	12.5	12.5	12.1	12.0	12.5	12.0	11.9	12.6	12.4
pH	7.0	7.1	7.2	6.8	7.2	6.9	7.2	7.0	6.9	6.9	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		29		29		29	
Initials	EGS/BPL		QL		QL		QL		QL		KJL		KJL	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.5	7.0	6.5	6.5	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.0	6.5	6.5
DO (mg/L)	12.0	12.0	12.1	12.1	12.2	12.4	11.7	11.8	11.7	11.7	11.3	11.9	12.4	12.5
pH	7.3	6.9	7.3	7.1	7.2	7.1	7.0	6.8	7.2	7.3	7.4	7.0	6.9	6.9
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	QL		KJL		KJL		QL		QL		QL		QL	

Concentration	Days													
	118		120		123									
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	7.0	6.5	7.0	7.0	6.5								
DO (mg/L)	12.4	12.1	12.6	12.6	11.8	12.0								
pH	7.1	6.8	7.0	7.0	7.1	7.1								
Cond. (µS/cm)	29		30	30	29									
Initials	BPL		QL		QL									

Concentration	Days													
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	10		
Alkalinity*	8		

* mg/L as CaCO3

Analysts: EGS, BPL, ^{BPL} KJL

Reviewed by: QL

Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-4 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Treatment	Days															
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
Pyrene a	Init	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	8.5	7.0	/	7.5	/	7.0	/	7.0	6.5	7.0	/	6.5	6.0	6.0		
DO (mg/L)	11.8	11.9	/	12.0	/	11.8	/	12.0	11.9	11.8	/	11.8	12.1	12.3		
pH	7.0	7.0	/	7.1	/	7.2	/	7.1	7.1	7.0	/	6.8	7.6	6.7		
Cond. (µS/cm)	34	36	/	35	/	36	/	33		35	/	31		33		
Initials	AK	AK	/		/		/	BPL		AK	/	KSL		AK		

Treatment	Days															
	7	8	9	10	11	12	13	14	7	8	9	10	11	12	13	14
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.0	/	6.0	6.0	6.6		
DO (mg/L)	/	12.3	12.1	11.6	/	11.7	/	11.5	11.6	11.8	/	11.8	11.9	11.8		
pH	/	7.1	7.3	6.8	/	6.9	/	6.9	7.3	7.0	/	6.7	7.0	7.2		
Cond. (µS/cm)	/	32	33		34		32		32		32		33	34		
Initials	/	AK						KSL		KSL		KSL		AK		

Treatment	Days															
	14	15	16	17	18	19	20	21	14	15	16	17	18	19	20	21
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	6.5	/	6.5	6.5	6.0	6.0	
DO (mg/L)	/	12.1	12.3	12.0	/	12.0	/	12.1	12.3	12.1	/	12.1	12.1	12.3	12.2	
pH	/	6.9	7.1	7.0	/	7.1	/	7.2	7.2	7.0	/	7.1	7.2	6.9		
Cond. (µS/cm)	/	32	34		35		34		34		34		33	32		
Initials	/	AK						AK		AK		AK		AK		

Treatment	Days															
	21	22	23	24	25	26	27	28	21	22	23	24	25	26	27	28
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.0	/	6.0	/	6.0	6.0	6.5	6.5	6.0	6.5			
DO (mg/L)	/	12.1	12.2	11.9	/	11.7	/	12.3	11.7	12.0	12.3	12.3	12.1			
pH	/	6.9	6.8	6.9	/	6.8	/	6.8	6.8	6.7	7.2	7.6	6.9			
Cond. (µS/cm)	/	31	34		35		31		31		31	30	31			
Initials	/	AK					KSL		AK		AK		AK			

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	9		
Alkalinity*	8		

* mg/L as CaCO3

Analysts: EGS, AWD, BR
KSL, ECC
 Reviewed by: AK
 Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-4 6°C
 Work Order #: N/A

Start Date & Time: ^{3P} NOV 11/10
 Stop Date & Time: ^{3P} March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	5.5	6.0	/	7.0	/	6.5	6.0	7.0	/	6.5	6.0	6.5	/	
DO (mg/L)	12.2	11.9	/	11.8	/	11.7	11.9	11.7	/	11.7	11.5	12.0	/	
pH	7.1	6.9	/	7.0	/	6.9	7.0	6.8	/	6.9	6.9	6.9	/	
Cond. (µS/cm)	31		32		32		31		30		31		/	
Initials	KJL		KJL		KJL		KJL		KJL		KJL		/	

Concentration	Days													
	35	36		37		38		39		40		41		42
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	7.0	7.0	6.5	/	6.5	/	6.5	7.0	/	7.0	6.0	7.0	/
DO (mg/L)	12.3	12.0	12.1	11.6	/	11.7	/	12.3	12.1	/	12.1	12.2	12.3	/
pH	6.9	7.1	6.9	6.8	/	6.9	/	6.4	6.8	/	6.9	6.7	6.9	/
Cond. (µS/cm)	30	30		31		31		31		31		30		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.5	6.0	7.0	/	7.0	/	7.0	6.5	6.0	/	6.5	6.0	6.0	/
DO (mg/L)	12.3	11.7	12.1	/	11.9	/	11.8	12.3	11.5	/	12.3	12.4	12.2	/
pH	6.8	6.7	6.6	/	7.2	/	7.0	7.5	7.3	/	7.1	6.9	7.1	/
Cond. (µS/cm)	30	29		30		30		28		29		27		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.5	6.5	6.5	/	6.5	/	6.5	6.0	6.5	6.0	/	6.0	6.5	/
DO (mg/L)	12.0	12.1	12.1	/	11.7	/	11.6	11.9	11.8	12.3	/	12.4	12.2	/
pH	7.2	7.0	7.1	/	7.2	/	7.4	7.1	7.3	7.1	/	7.0	7.1	/
Cond. (µS/cm)	28	29		29		29		29		27		27		/
Initials	KJL	KJL		KJL		KJL		KJL		KJL		KJL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	11		
Alkalinity*	14		

Analysts: EGS, AWD, KJL
KJL, KJL
 Reviewed by: KJL
 Date reviewed: 27 Mar 2013

* mg/L as CaCO₃

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-46C
 Work Order #: N/A

Start Date & Time: ^{13:00} 11-Nov-10
 Stop Date & Time: ^{12:00} March 18/2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	7.0	6.0	6.5		/		/		6.0	6.0		7.0	6.0	7.0	/
DO (mg/L)	12.7	12.1	12.0		/		/		12.5	12.0		/	11.7	12.1	/
pH	7.4	6.4	6.3		/		/		6.7	6.7		6.6	6.8	6.6	/
Cond. (µS/cm)	26.6		27		/		/		27			/	36		/
Initials	KLB		QL		/		/		KJL			/	QL		/

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	7.0	7.0		/		/		/		6.0	6.5		/	/
DO (mg/L)	/	12.1	12.2		/		/		/		12.0	12.0		/	/
pH	/	7.1	7.2		/		/		/		8.0	7.2		/	/
Cond. (µS/cm)	/		27		/		/		/		35			/	/
Initials	/		QL		/		/		/		QL			/	/

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	7.0	6.0	7.0		/		/		6.0	6.5		/	5.5	6.5	
DO (mg/L)	11.9	12.3	12.4		/		/		12.4	12.5		/	11.4	12.1	
pH	7.5	7.4	7.6		/		/		6.9	6.7		6.9	6.8	6.9	
Cond. (µS/cm)			32		/		/		36			/	30		
Initials	KJL		QL		/		/		QL			/	KJL		

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)		6.0	7.0		/		/		6.0	6.5		/	7.0	7.0	/
DO (mg/L)		11.6	11.7		/		/		11.9	12.4		/	12.0	12.3	/
pH		7.3	7.3		/		/		7.3	7.3		/	7.1	6.9	/
Cond. (µS/cm)			29		/		/		30			/	30		/
Initials			KJL		/		/		QL			/	QL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	12		
Alkalinity*	6		

Analysts: KLB, EGS, KJL

Reviewed by: M

Date reviewed: 27 Mar 2013

* mg/L as CaCO₃

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-4 6°C
 Work Order #: N/A

Start Date & Time: ³⁰11-Nov-10
 Stop Date & Time: ³⁰March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97			
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	6.5	6.0	6.5	6.5	7.0	6.0	7.0	6.0	6.5	6.0	7.0	6.0	7.0
DO (mg/L)	12.5	12.5	12.3	12.2	12.1	12.4	12.5	12.0	12.0	12.5	12.0	11.9	12.6	11.6
pH	7.0	7.0	7.2	6.9	7.2	6.9	7.2	7.1	6.9	6.8	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		29		29		29	
Initials	EGS/ARL		RL		ARL		ARL		RL		KSL		KSL	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	8.5	7.0	6.5	6.0	6.5	6.0	6.0	7.0	6.5	6.5	6.0	5.5	6.5	6.0
DO (mg/L)	12.0	12.0	12.1	12.1	12.2	12.2	11.7	11.8	11.7	11.7	11.3	12.0	12.4	12.5
pH	7.3	6.9	7.3	7.1	7.2	7.0	7.0	6.8	7.2	7.2	7.4	7.0	6.9	6.9
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	RL		KSL		KSL		RL		RL		RL		RL	

Concentration	Days													
	118		119											
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	5.8												
DO (mg/L)	12.4	12.5												
pH	7.1	6.8												
Cond. (µS/cm)	29													
Initials	ARL													

Concentration	Days													
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
	Temperature (°C)													
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	10			
Alkalinity*	8			

Analysts: EGS, ARL, KSL
 Reviewed by: RL
 Date reviewed: 27 Mar 2013

* mg/L as CaCO3

Sample Description: ① test terminated

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-5 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Treatment	Days													
	0		1		2		3		4		5		6	
Pyrene a	Init	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	8.0	7.0	/	7.5	/	7.0	/	7.0	6.5	7.5	/	6.5	6.0	6.0
DO (mg/L)	11.8	11.9	/	11.9	/	1.8	/	12.0	11.9	11.9	/	12.0	12.1	12.3
pH	7.0	6.9	/	7.0	/	7.2	/	7.1	7.1	7.0	/	6.8	7.6	6.7
Cond. (µS/cm)	34	36	/	36	/	38	/	33	34	34	/	31	33	33
Initials	AK	AK	/	AK	/	AK	/	BRL	AK	AK	/	KSL	AK	AK

Treatment	Days													
	7		8		9		10		11		12		13	
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.5	6.0	6.0	/	6.0	6.0	6.6
DO (mg/L)	/	12.3	12.1	11.4	/	11.7	/	11.8	11.6	12.1	/	11.8	11.9	11.8
pH	/	7.1	7.3	6.7	/	6.9	/	6.9	7.3	7.0	/	6.7	7.0	7.2
Cond. (µS/cm)	/	32	32	32	/	34	/	32	32	32	/	33	33	34
Initials	/	AK	AK	AK	/	AK	/	KSL	KSL	KSL	/	KSL	AK	AK

Treatment	Days													
	14		15		16		17		18		19		20	
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	6.5	/	6.5	6.5	6.0
DO (mg/L)	/	12.1	12.3	12.0	/	11.9	/	12.1	12.3	12.1	/	12.1	12.3	12.2
pH	/	6.9	7.1	7.1	/	7.1	/	7.2	7.2	7.0	/	7.1	7.2	6.9
Cond. (µS/cm)	/	32	34	34	/	35	/	34	34	34	/	33	33	32
Initials	/	AK	AK	AK	/	AK	/	AK	AK	AK	/	AK	AK	AK

Treatment	Days													
	21		22		23		24		25		26		27	
Pyrene a	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.0	/	6.0	/	6.0	6.0	6.5	/	6.5	6.0	6.5
DO (mg/L)	/	12.1	12.2	11.7	/	11.8	/	12.3	11.7	12.0	/	12.3	12.0	12.1
pH	/	6.9	6.8	6.9	/	6.8	/	6.7	6.8	6.7	/	7.0	7.0	6.9
Cond. (µS/cm)	/	31	34	34	/	35	/	31	31	31	/	30	31	31
Initials	/	AK	AK	AK	/	AK	/	KSL	AK	AK	/	AK	AK	AK

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	9		
Alkalinity*	8		

Analysts: EGS, BRL, KSL, AWD

Reviewed by: AK
 Date reviewed: 27 Mar 2011

* mg/L as CaCO₃

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-56C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsi

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	5.5	6.5	/	7.0	/	6.5	6.0	6.5	/	7.0	6.0	7.0	/	
DO (mg/L)	12.2	11.8	/	11.5	/	11.9	11.9	11.6	/	11.7	11.5	12.0	/	
pH	7.1	7.0	/	6.9	/	6.9	7.0	6.8	/	6.9	6.9	6.9	/	
Cond. (µS/cm)	31		31		22		31		30		31		/	
Initials	G		G		G		G		G		G		/	

Concentration	Days													
	35	36		37		38		39		40		41		42
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	7.0	6.5	6.5	/	6.5	/	6.5	6.5	/	6.5	6.0	6.0	/
DO (mg/L)	12.2	12.0	12.0	11.8	/	11.8	/	12.3	12.2	/	12.2	12.2	12.3	/
pH	6.9	7.1	7.0	6.9	/	6.9	/	6.4	6.8	/	7.0	6.7	6.9	/
Cond. (µS/cm)	30	30		31		31		31		31		30		/
Initials	KSL	G		G		G		G		KPG		KSL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	6.0	6.5	/	6.5	/	6.5	6.5	6.0	/	6.5	6.0	6.5	/
DO (mg/L)	11.8	11.7	11.7	/	12.1	/	12.0	12.3	11.8	/	12.3	12.4	12.2	/
pH	6.9	6.7	6.7	/	7.2	/	7.0	7.5	7.3	/	7.1	6.9	7.0	/
Cond. (µS/cm)	30	29		30		30		28		29		27		/
Initials	KSL	KSL		G		G		G		KSL		KSL		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.0	/	6.0	6.0	6.0	/
DO (mg/L)	12.2	12.1	12.1	/	11.8	/	11.7	11.9	11.7	/	12.3	12.4	12.1	/
pH	7.2	7.0	7.1	/	7.2	/	7.3	7.1	7.3	/	7.1	7.0	7.1	/
Cond. (µS/cm)	28	29		29		29		29		27		27		/
Initials	KSL	G		G		G		G		KSL		KSL		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	11			
Alkalinity*	14			

* mg/L as CaCO₃

Analysts: EGS, AWD, KSL
KPG
 Reviewed by: G
 Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test

Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-5 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	26.5	26.0	7.0	7.0	/	/	/	/	6.0	6.0	/	7.0	6.0	7.0	/
DO (mg/L)	12.4	11.9	12.1	11.8	/	/	/	/	12.5	12.0	/	/	11.7	12.0	/
pH	7.4	6.4	6.3	/	/	/	/	/	6.7	6.7	/	6.7	6.8	6.7	/
Cond. (µS/cm)	26.5	27	/	/	/	/	/	/	27	/	/	/	36	/	/
Initials	KLB	AK	/	/	/	/	/	/	KJL	/	/	/	AK	/	/

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	7.0	7.0	/	/	/	/	/	/	/	6.0	7.0	/	/	/
DO (mg/L)	/	12.1	12.3	/	/	/	/	/	/	/	12.0	12.1	/	/	/
pH	/	7.1	7.2	/	/	/	/	/	/	/	8.0	7.2	/	/	/
Cond. (µS/cm)	/	27	/	/	/	/	/	/	/	/	35	/	/	/	/
Initials	/	AK	/	/	/	/	/	/	/	/	AK	/	/	/	/

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	2.0	6.0	6.5	/	/	/	/	/	6.0	6.5	/	/	5.5	6.5	/
DO (mg/L)	12.0	12.3	12.4	/	/	/	/	/	12.4	12.5	/	/	11.4	12.3	/
pH	7.5	7.4	7.6	/	/	/	/	/	6.9	6.7	/	7.0	6.8	7.0	/
Cond. (µS/cm)	/	32	/	/	/	/	/	/	30	/	/	/	30	/	/
Initials	KJL	AK	/	/	/	/	/	/	AK	/	/	/	KJL	/	/

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	new
Temperature (°C)	/	6.0	7.0	/	/	/	/	/	6.0	7.0	/	/	7.0	6.5	/
DO (mg/L)	/	11.6	11.2	/	/	/	/	/	11.9	12.5	/	/	12.0	12.3	/
pH	/	7.3	7.7	/	/	/	/	/	7.3	7.3	/	/	7.1	6.9	/
Cond. (µS/cm)	/	29	/	/	/	/	/	/	30	/	/	/	30	/	/
Initials	/	KJL	/	/	/	/	/	/	AK	/	/	/	AK	/	/

DO meter: DO-1 pH meter: PH-1 Conductivity meter: C-1

	Control			
Hardness*	12			
Alkalinity*	6			

Analysts: KLB, EGS, KJL

Reviewed by: AK

Date reviewed: 27 Mar 2013

* mg/L as CaCO₃

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FDR-5 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97			
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	6.0	6.0	6.5	6.5	7.0	6.0	6.0	6.0	7.0	6.0	7.0	6.0	6.5
DO (mg/L)	12.5	12.5	12.3	12.3	12.1	12.5	12.5	12.0	12.0	12.5	12.0	11.9	12.6	12.5
pH	7.0	7.0	7.2	7.0	7.2	6.9	7.2	7.1	6.9	6.8	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		29		29		29	
Initials	EGS/epc		qu		qu		qu		qu		KJL		VBE	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.5	6.5	6.5	6.5	6.5	6.0	6.0	7.0	6.5	5.0	6.0	5.5	6.5	5.5
DO (mg/L)	12.0	12.0	12.1	12.1	12.2	12.5	11.7	11.1	11.7	12.2	11.3	12.0	12.4	12.5
pH	7.3	6.8	7.3	7.1	7.2	7.0	7.0	6.8	7.2	7.2	7.4	7.0	6.9	6.8
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	qu		KJL		KJL		qu		qu		qu		qu	

Concentration	Days													
	118		119		120		121		122		123		124	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	5.5												
DO (mg/L)	12.4	12.5												
pH	7.1	6.9												
Cond. (µS/cm)	29													
Initials	BRL													

Concentration	Days													
	125		126		127		128		129		130		131	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	10			
Alkalinity*	8			

* mg/L as CaCO₃

Analysts: EGS, BRL, KJL

Reviewed by: [Signature]
 Date reviewed: 27 Mar 2013

Sample Description: Ⓢ test terminated

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-6 6°C
 Work Order #: N/A

Start Date & Time: ^{3:00} NOV 11/10
 Stop Date & Time: ^{3:30} March 15/2011
 Test Species: P. williamsoni

Treatment	Days														
	0		1		2		3		4		5		6		7
Pyrene-<i>a</i>	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	9.8	6.0	/	7.5	/	7.0	/	6.7	6.5	6.5	/	6.5	6.0	6.0	
DO (mg/L)	11.7	11.6	/	12.0	/	11.8	/	12.2	11.9	11.8	/	12.1	12.1	12.3	
pH	7.0	7.0	/	7.1	/	7.2	/	7.1	7.1	7.1	/	6.8	7.6	6.7	
Cond. (µS/cm)	34	36	/	35	/	38	/	33	33	34	/	31	31	33	
Initials	EL	EL	/		/		/	BPL		EL	/	KSL		EL	

Treatment	Days													
	7	8		9		10		11		12		13		14
Pyrene-<i>a</i>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.0	/	6.0	6.0	6.6
DO (mg/L)	/	12.3	12.1	11.6	/	11.7	/	11.9	11.6	12.0	/	11.9	11.9	11.8
pH	/	7.1	7.3	6.8	/	6.9	/	6.9	7.3	7.0	/	6.7	7.0	7.2
Cond. (µS/cm)	/		32	33	/	34	/	32	32	32	/	33	34	
Initials	/	EL			/		/	KSL		KSL	/	KSL		EL

Treatment	Days													
	14	15		16		17		18		19		20		21
Pyrene-<i>a</i>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.5	/	6.5	/	6.5	6.0	/	6.5	6.5	6.0	6.0
DO (mg/L)	/	12.1	12.3	12.0	/	12.1	/	12.1	12.3	/	12.1	12.1	12.3	12.2
pH	/	6.9	7.1	7.1	/	7.1	/	7.2	7.2	/	7.0	7.1	7.2	6.9
Cond. (µS/cm)	/		32	34	/	35	/	34	34	/	34	33	32	
Initials	/	EL			/		/	EL		EL	/	EL		EL

Treatment	Days													
	21	22		23		24		25		26		27		28
Pyrene-<i>a</i>	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init	Final	Init
Temperature (°C)	/	6.5	6.0	6.0	/	6.0	/	6.0	6.0	/	6.5	7.0	6.0	6.5
DO (mg/L)	/	12.1	12.2	11.6	/	11.7	/	12.3	11.7	/	12.0	12.3	12.3	12.1
pH	/	6.9	6.8	6.7	/	6.8	/	6.8	6.8	/	6.7	6.7	7.0	6.9
Cond. (µS/cm)	/		31	34	/	35	/	31	31	/	31	30	31	
Initials	/	EL			/		/	KSL		EL	/	EL		EL

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*	9		
Alkalinity*	8		

Analysts: EGS, AWD, BPL, KSL, ECC
 Reviewed by: _____
 Date reviewed: 27 Mar 2013

* mg/L as CaCO₃

Sample Description: _____
 Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: GOLDER
 Sample ID: FOR-6 6°C
 Work Order #: N/A

Start Date & Time: NOV 11/10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days													
	29		30		31		32		33		34		35	
	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	5.5	7.0	/	7.0	/	6.5	6.0	7.0	/	6.5	6.0	6.5	/	
DO (mg/L)	12.2	11.8	/	11.9	/	11.9	11.9	11.6	/	11.6	11.5	12.1	/	
pH	7.1	7.1	/	7.0	/	7.0	7.0	6.8	/	7.0	6.9	6.9	/	
Cond. (µS/cm)	31		31		32		31		31		31		/	
Initials	QU		~		~		QU		QU		QU		/	

Concentration	Days													
	35	36		37		38		39		40		41		42
	init.	new	old	old new	old	old new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	7.0	7.0	6.5	/	6.5	/	6.5	6.5	/	7.0	6.0	7.0	/
DO (mg/L)	12.0	12.0	12.0	11.7	/	11.8	/	12.3	12.3	/	12.2	12.2	12.3	/
pH	7.0	7.1	7.0	6.9	/	6.9	/	6.4	6.8	/	6.9	6.7	6.9	/
Cond. (µS/cm)	30	30		31	/	31	/	31	31	/	31	30		/
Initials	KSV	QU		/	/	/	/	QU	QU	/	KPG	KSL		/

Concentration	Days													
	42	43		44		45		46		47		48		49
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	7.0	6.0	6.5	/	6.5	/	6.5	6.5	6.5	/	6.5	6.0	6.0	/
DO (mg/L)	11.8	11.7	11.9	/	12.2	/	12.0	12.3	11.9	/	12.3	12.4	12.2	/
pH	6.8	6.7	6.7	/	7.2	/	7.0	7.5	7.2	/	7.1	6.9	7.0	/
Cond. (µS/cm)	30	29		30	/	30	/	28	28	/	29	27		/
Initials	KSV	KSV		QU	/	QU	/	QU	QU	/	KSV	KSV		/

Concentration	Days													
	49	50		51		52		53		54		55		56
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new
Temperature (°C)	6.0	6.5	6.5	/	6.0	/	6.0	6.0	6.0	6.5	6.5	6.0	6.5	/
DO (mg/L)	12.1	12.1	12.1	/	11.9	/	11.8	11.9	11.7	/	12.3	12.4	12.0	/
pH	7.2	7.0	7.1	/	7.2	/	7.3	7.1	7.2	/	7.1	7.0	7.1	/
Cond. (µS/cm)	28	29		29	/	29	/	29	29	/	27	28		/
Initials	KSV	QU		QU	/	QU	/	QU	QU	/	KSV	KSV		/

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	11			
Alkalinity*	14			

* mg/L as CaCO3

Analysts: EGS, AWD, KSV

KPG

Reviewed by: QU

Date reviewed: 27 Mar 2011

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-6 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18/2011
 Test Species: P. williamsoni

Concentration	Days														
	56		57		58		59		60		61		62		63
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	7.0	6.0	7.0		/		/		6.0	6.5		7.5	6.0	7.5	/
DO (mg/L)	12.7 ^{11.5}	12.1	11.8		/		/		12.5	12.0		11.7	11.7	11.8	/
pH	7.6	6.4	6.3		/		/		6.7	6.7		6.7	6.8	6.5	/
Cond. (µS/cm)	265		27		/		/		27			36	36		/
Initials	KLB		KL		/		/		KSL			KL	KL		/

Concentration	Days														
	63		64		65		66		67		68		69		70
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	/	7.0	7.0		/		/		/		6.0	7.0		/	/
DO (mg/L)	/	12.1	12.3		/		/		/		12.0	11.9		/	/
pH	/	7.1	7.2		/		/		/		8.0	7.2		/	/
Cond. (µS/cm)	/		27		/		/		/		35			/	/
Initials	/		KL		/		/		/		KL			/	/

Concentration	Days														
	70		71		72		73		74		75		76		77
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)	7.0	6.0	6.5		/		/		6.0	6.5		/	5.5	6.5	
DO (mg/L)	12.0	12.3	12.4		/		/		12.4	12.5		/	11.4	12.3	
pH	7.5	7.4	7.6		/		/		6.9	6.7		/	7.0	7.0	
Cond. (µS/cm)			32		/		/		30			/	30		
Initials	KSL		KL		/		/		KL			/	KSL		

Concentration	Days														
	77		78		79		80		81		82		83		84
	old	new	old	new	old	new	old	new	old	new	old	new	old	new	
Temperature (°C)		6.0	6.5		/		/		6.0	7.0		/	7.0	7.0	/
DO (mg/L)		11.6	11.5		/		/		11.9	12.7		/	12.0	12.3	/
pH		7.3	7.4		/		/		7.3	7.3		/	7.1	6.9	/
Cond. (µS/cm)			29		/		/		30			/	30		
Initials			KSL		/		/		KL			/	KL		

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	12			
Alkalinity*	6			

* mg/L as CaCO3

Analysts: KLB, EGS, KSL

Reviewed by: KL

Date reviewed: 27 Mar 2013

Sample Description: _____

Comments: _____

7-d Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: FOR-6 6°C
 Work Order #: N/A

Start Date & Time: 11-Nov-10
 Stop Date & Time: March 18 / 2011
 Test Species: P. williamsoni

Concentration	Days													
	85		88		90		92		95		97			
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.0	7.0	6.0	6.5	6.5	6.0	6.0	6.5	6.0	7.0	6.0	7.0	6.0	7.0
DO (mg/L)	12.5	12.5	12.3	12.4	12.1	12.6	12.5	11.9	12.0	12.5	12.0	11.9	12.6	12.3
pH	7.0	7.0	7.2	6.9	7.2	6.9	7.2	7.0	6.9	6.8	7.0	6.9	7.0	7.0
Cond. (µS/cm)	29		29		30		30		30		29		29	
Initials	EGS/BRL		KSL		KSL		KSL		KSL		KSL		KSL	

Concentration	Days													
	102		104		106		109		111		113		116	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	6.5	7.0	6.5	6.0	6.5	6.0	6.0	7.0	6.5	5.5	6.0	5.5	6.5	5.5
DO (mg/L)	12.0	12.1	12.1	12.1	12.2	12.3	11.7	11.4	11.7	12.4	11.3	12.2	12.4	12.5
pH	7.3	6.8	7.3	7.1	7.2	7.0	7.0	6.8	7.2	7.2	7.4	6.9	6.9	6.7
Cond. (µS/cm)	30		30		29		30		29		31		30	
Initials	KSL		KSL		KSL		KSL		KSL		KSL		KSL	

Concentration	Days													
	118		119		120		121		122		123		124	
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	5.5	5.1												
DO (mg/L)	12.4	12.7												
pH	7.1	6.9												
Cond. (µS/cm)	29													
Initials	KSL													

Concentration	Days													
	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)														
DO (mg/L)														
pH														
Cond. (µS/cm)														
Initials														

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control			
Hardness*	10			
Alkalinity*	8			

Analysts: EGS, BRL, KSL

Reviewed by: K

Date reviewed: 27 Mar 2011

* mg/L as CaCO₃

Sample Description: ① test terminated

Comments: _____

2011-2012

Whitefish Embryo-Alevin-Fry Test Summary Sheet

Client: Golder

Start Date/Time: Oct 26/11 - Nov 14/11

Work Order No.: N/A

Test Species: *P. williamsoni*

Sample Information:

Fish ID: Various

Sample Date: Oct 26/11 - Nov 14/11

Date Received: Oct 26/11 - Nov 14/11

Dilution Water:

Type: Dechlorinated Municipal Tap Water

Hardness (mg/L CaCO₃): 10-13

Alkalinity (mg/L CaCO₃): 7-10


Test Organism Information:

Source: Field collected from Fording River and Michel Creek

Loading Density: 60 organisms per test container

Test Results:

Fish ID (Location)	% survival	% swim-up (of eyed)
WF14 (MI3)	41.0	88.7
WF25 (MI2)	65.8	97.5
WF26 (MI2)	19.6	52.2
WF27 (MI2)	69.6	97.7
WF32 (E-23)	75.8	100.0
WF38 (MI3)	86.7	99.0
WF39 (MI3)	94.2	96.6
WF40 (MI3)	69.2	70.3
WF41 (MI3)	43.8	93.8

Reviewed by:  _____

Date reviewed: 13 Mar 2013

Whitefish Embryo-Alevin-Fry Study Summary Table - 2011

Date Initiated:

November 2011

Sample ID	Rep	No. initial eggs	Eyed Eggs	% eyed	Total surviving to swim-up	Fish with deformities	Survival (% of initial)	Survival (% of eyed) *	Deformities (%)
WF-14	1	60	33	52.9%	86	1	41.0%	88.7%	1.2%
	2	60	34						
	3	60	32						
	4	60	28						
WF-25	1	60	39	67.5%	158	0	65.8%	97.5%	0.0%
	2	60	42						
	3	60	41						
	4	60	40						
WF-26	1	60	20	37.5%	47	1	19.6%	52.2%	2.1%
	2	60	17						
	3	60	33						
	4	60	20						
WF-27	1	60	45	71.3%	167	1	69.6%	97.7%	0.6%
	2	60	42						
	3	60	43						
	4	60	41						
WF-32	1	60	41	75.8%	182	1	75.8%	100.0%	0.5%
	2	60	49						
	3	60	49						
	4	60	43						
WF-38	1	60	56	87.5%	208	2	86.7%	99.0%	1.9%
	2	60	51						
	3	60	46						
	4	60	57						
WF-39	1	60	59	97.5%	226	0	94.2%	96.6%	0.0%
	2	60	59						
	3	60	58						
	4	60	58						
WF-40	1	60	59	98.3%	166	0	69.2%	70.3%	0.0%
	2	60	59						
	3	60	58						
	4	60	60						
WF-41	1	60	28	46.7%	105	2	43.8%	93.8%	1.9%
	2	60	31						
	3	60	20						
	4	60	33						

* Survival post eyed stage evaluated to remove influence of unfertilized eggs on results

Embryo Alevin Fry Survival Summary

Client: Golder

Start Date/Time: Oct 26/11 - Nov 14/11

Test Species: *P. williamsoni*

Eyed Embryos (# and %):

Sample ID	# of Initial Eggs	# of Eyed Eggs	%Eyed (of Initial)
WF14	240	127	52.9
WF25	240	162	67.5
WF26	240	90	37.5
WF27	240	171	71.3
WF32	240	182	75.8
WF38	240	210	87.5
WF39	240	234	97.5
WF40	240	236	98.3
WF41	240	112	46.7

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)	%Hatched (of eyed)
WF14	121	50.4	95.3
WF25	162	67.5	100.0
WF26	51	21.3	56.7
WF27	169	70.4	98.8
WF32	182	75.8	100.0
WF38	210	87.5	100.0
WF39	227	94.6	97.0
WF40	171	71.3	72.5
WF41	111	46.3	99.1

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of eyed)	%Swim-up (of hatched)
WF14 ^b	86	41.0	88.7	94.5
WF25	158	65.8	97.5	97.5
WF26	47	19.6	52.2	92.2
WF27	167	69.6	97.7	98.8
WF32	182	75.8	100.0	100.0
WF38 ^a	208	86.7	99.0	99.0
WF39 ^a	226	94.2	96.6	99.6
WF40 ^a	166	69.2	70.3	97.1
WF41	105	43.8	93.8	94.6

a- Values include both standard assessment (at swim-up) and four week post swim-up assessment

b- Percent Swim-up values are calculated excluding 30 fry found dead within one test container

Reviewed by: 

Date reviewed: 13 Mar 2013

Embryo-Alevin-Fry Toxicity Test Daily Mortality (Summary)

Client: Goldier
 Sample ID: WF-# (Whitefish)
 Work Order #: n/a

Start Date & Time: Oct 26/11, Nov 3/11, Nov 9/11 + Nov 14/11
 Stop Date: Various
 Test Species: P. williamsoni

Sample ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos ^①	Total Exposed
		0-14	21-40 ^③	40-56	57-69	69-96 ^{SRB*}			
WF-14	1	0	27	0	0	1	1 ^②	27	60
	2	0	26	0	0	1	1	26	60
	3	0	28	0	0	2	2	28	60
	4	0	32	0	0	2	2	32	60
WF-25	1	0	21	0	0	0	0	21	60
	2	0	18	0	0	1	1	18	60
	3	0	19	0	0	0	0	19	60
	4	0	20	0	0	0	0	20	60
WF-26	1	2	38	0	11	3	16	38	60
	2	2 5	38	0	11	0	14 16	38	60
	3	3	24	0	12	0	16	23	60
	4	2	38	0	5	0	7	38	60
WF-27	1	0	15	0	0	0	1	14	60
	2	0	18	0	0	0	1	17	60
	3	0	17	0	0	2	2	17	60
	4	0	19	0	0	0	0	19	60
WF-32	1	0	19	0	0	0	0	19	60
	2	0	11	0	0	0	0	11	60
	3	0	11	0	0	0	0	11	60
	4	1	16	0	0	0	2	15	60
WF-38	1	0	4	0	0	0	0	4	60
	2	0	9	0	0	0	0	9	60
	3	0	14	0	0	0	0	14	60
	4	0	3	0	0	0	0	3	60
WF-39	1	0	1	0	0	3	3	1	60
	2	0	1	1	0	0	1	1	60
	3	0	2	0	0	0	0	2	60
	4	0	2	0	1	2	3	2	60
WF-40	1	0	1	9	5	0	14	1	60
	2	0	1	6	11	0	17	1	60
	3	0	2	9	9	0	18	2	60
	4	0	0	8	8	0	16	0	60
WF-41	1	0	32	0	0	0	12	20	60
	2	0	29	0	0	0	5	24	60
	3	1	39	0	0	0	16	24	60
	4	0	27	1	0	0	SRB 11	17	60
Tech Initials		JAB	JAB	JAB	JAB	JAB	JAB	JAB	JAB

Comments:
 ① No development, no eyes, removed in 21-40 period (days); likely unfertilized
 ② Test container with 30 alevins had complete mortality prior to alevin assessment.
 ③ Included undeveloped (unfertilized) eggs
 Reviewed by: [Signature] Date reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test

28-day Post Swim-up Assessment

Client: Golder

Start Date & Time: ^{SAB} Nov 9/11

Sample ID: WF38 → WF40 Swim-ups


Stop Date: Dec 7/11

Work Order #: n/a

Test Species: P. williamsoni

ID	Initial eyed embryos (separated from regular exposure) ^①	Number alevins assessed
WF38	103	97
WF39	114	111
WF40	82	81

Comments: ① 20-30 embryos in four replicates. Hatched alevins removed and placed in new test containers (pooled for alevin assessment).

Reviewed by: 

Date reviewed: 27 Mar 2013

SUMMARY OUTPUT- Round 2- Length vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.281888
R Square	0.079461
Adjusted R	-0.05204
Standard E	5.695159
Observatio	9

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	19.59839	19.59839	0.604239	0.462422
Residual	7	227.0438	32.43483		
Total	8	246.6422			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	89.47356	80.96364	1.105108	0.305643	-101.975	280.9221	-101.975	280.9221
X Variable	-4.11827	5.297981	-0.77733	0.462422	-16.646	8.409466	-16.646	8.409466

SUMMARY OUTPUT- Round 2- Weight vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.389485
R Square	0.151698
Adjusted R	0.030512
Standard E	5.467136
Observatio	9

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	37.4152	37.4152	1.251781	0.300131
Residual	7	209.227	29.88957		
Total	8	246.6422			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	49.51379	20.60062	2.40351	0.047222	0.801062	98.22652	0.801062	98.22652
X Variable	-1.23505	1.103878	-1.11883	0.300131	-3.84531	1.375204	-3.84531	1.375204

Embryo-Alevin-Fry Freshwater Toxicity Test

Initial and Final Water Quality Measurements

Client: Goldier
 Sample ID: WF23-WF37+(WF14+WF38-41)
 Work Order #: n/a

Start Date & Time: Nov 3rd 2011 @ 2030h
 Stop Date & Time: Various
 Test Species: Protophormium williamsoni

	Days															
	0					4 (Avg)				8 (Avg)			13 (Avg)			
	Init	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	7.0	6.5	6.0	6.0	7.0	6.5	6.5	7.0	7.0	7.5 ^①	7.0	7.5 ^①	8.0 ^①			
DO (mg/L)	11.8	12.2	12.2	12.3	12.1	12.0	12.2	12.1	12.1	12.1	11.9	11.9	12.0			
pH	7.0	7.1	7.0	7.0	6.8	6.8	6.9	6.8	6.9	6.8	6.9	7.0	7.0			
Cond. (µS/cm)	33	35	34	36	33	33	35	33	34	35	35	35	33			
Initials	JAB					JAB				ARG			JAB			

	Days											
	25 (Avg)				34				41			
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	6.5	7.0	7.0	6.5	6.0	6.0	6.0	6.5	6.0	6.5	6.0	7.0
DO (mg/L)	12.1	12.2	12.1	12.3	12.3	12.3	12.2	12.0	12.5	12.4	12.6	12.2
pH	7.1	7.1	7.0	6.9	6.9	7.0	7.0	6.9	6.9	7.0	7.0	7.0
Cond. (µS/cm)	34	36	34	33	33	33	32	32	33	32	32	32
Initials	JAB				JAB				JAB			

	Days											
	48				55				61			
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	6.0	6.5	6.0	6.5	6.5	6.5	6.5	7.0	6.0	6.0	6.0	6.5
DO (mg/L)	12.2	12.2	12.2	12.2	12.1	12.0	11.9	11.9	12.3	12.4	12.4	12.1
pH	7.1	7.1	7.1	7.0	7.2	7.1	7.1	7.1	7.0	7.1	7.0	7.0
Cond. (µS/cm)	33	33	33	33	32	33	32	32	33	34	34	30
Initials	JAB				JAB				JAB			

	Days											
	69				74				81			
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	6.0	6.0	6.0	6.5	6.0	6.5	6.5	7.0	7.0	7.0	7.0	7.0
DO (mg/L)	12.0	12.4	12.4	12.4	12.2	12.1	12.2	12.0	11.9	11.8	11.8	11.7
pH	6.9	6.9	6.9	6.9	6.8	6.8	6.9	6.8	7.0	7.0	7.0	6.9
Cond. (µS/cm)	32	31	31	30	30	31	30	29	31	30	31	29
Initials	JAB				JAB				JAB			

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

Control			
Hardness*			
Alkalinity*			

Analysts: _____
 Reviewed by: U
 Date reviewed: 6 Feb 2013

* mg/L as CaCO3

Sample Description: _____

Comments: power outage

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: WF23-WF37, WF14, WF38-41
 Work Order #: n/a

Start Date & Time: Nov 3/11 @ 2030h
 Stop Date & Time: Various
 Test Species: P. williamsoni

	Days											
	88											
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	7.0	7.5	7.5	8.0								
DO (mg/L)	11.5	11.5	11.4	11.3								
pH	7.0	6.9	6.9	6.9								
Cond. (µS/cm)	32	31	34	29								
Initials	JAB											

	Days											
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)												
DO (mg/L)												
pH												
Cond. (µS/cm)												
Initials												

	Days											
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)												
DO (mg/L)												
pH												
Cond. (µS/cm)												
Initials												

	Days											
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)												
DO (mg/L)												
pH												
Cond. (µS/cm)												
Initials												

DO meter: _____ pH meter: _____ Conductivity meter: _____

	Control			
Hardness*				
Alkalinity*				

Analysts: _____

Reviewed by: W
 Date reviewed: 6 Feb 2013

Sample Description: _____

Comments: _____

Chronic Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Galder
 Sample ID: WF38-WF40 6° degree
 Work Order #: _____

Start Date & Time: Nov 9/11
 Stop Date & Time: Nov 10
 Test Species: P. williamsoni

	Days														
	0	2 (Nov)		5		7 (Nov)									
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)	7.0	7.0	6.5												
DO (mg/L)	12.0	12.1	11.9												
pH	7.0	6.9	6.8												
Cond. (µS/cm)	34	34	34												
Initials	JAB														

	Days														
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)															
DO (mg/L)															
pH															
Cond. (µS/cm)															
Initials															

	Days														
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)															
DO (mg/L)															
pH															
Cond. (µS/cm)															
Initials															

	Days														
	init.	new	old	new	old	new	old	new	old	new	old	new	old	new	old
Temperature (°C)															
DO (mg/L)															
pH															
Cond. (µS/cm)															
Initials															

DO meter: _____ pH meter: _____ Conductivity meter: _____

	Control			
Hardness*				
Alkalinity*				

* mg/L as CaCO3

Analysts: _____

Reviewed by: ML

Date reviewed: 6 Feb 2013

Sample Description: _____

Comments: _____

Embryo-Alevin-Fry Freshwater Toxicity Test Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: Whitefish WF1-17
 Work Order #: n/a

Start Date & Time: Oct 26/11 @ 1900h
 Stop Date & Time: Various
 Test Species: Proserpium williamsoni

	Days													
	0		2 (Avg)				5 (Avg)				7			
	Init	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final	
Temperature (°C)	7.0	7.0	6.5	6.5	7.0	6.5	6.5	6.0	7.0	6.5	6.5	6.5	7.0	
DO (mg/L)		11.6	11.7	11.2	11.6	11.4	11.5	11.4	11.5	11.6	11.5	11.5	11.6	
pH		6.8	6.9	6.9	6.9	6.8	6.7	6.9	7.0	7.0	7.0	6.9	7.0	
Cond. (µS/cm)		33	33	33	33	33	34	34	33	33	33	34	33	
Initials	JAB	JAB				JAB				ARG				

	Days												
	no water change (no water) 9				12 (Avg)				14				16 (Avg)
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final	
Temperature (°C)				7.0 JAB	6.5	6.5	6.5	7.0	7.0	6.5	6.5	7.0	
DO (mg/L)					12.2	12.2	12.3	12.1	12.2	12.0	11.9	12.0	
pH					6.9	6.9	7.0	6.8	7.2	7.1	7.1	7.0	
Cond. (µS/cm)				33 JAB	34	37	37	33	34	35	34	34	
Initials	JAB				JAB				JAB				

	Days											
	19				new datasheets							
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
Temperature (°C)	6.5			6.570								
DO (mg/L)	11.9			12.1 ARG								
pH	6.8			6.9								
Cond. (µS/cm)	34			34								
Initials	ARG											

	Days											
	Init	Init	Init	Final	Init	Init	Init	Final	Init	Init	Init	Final
	Temperature (°C)											
DO (mg/L)												
pH												
Cond. (µS/cm)												
Initials												

DO meter: DO-1 pH meter: pH-1 Conductivity meter: C-1

	Control		
Hardness*			
Alkalinity*			

* mg/L as CaCO3

Analysts: _____

Reviewed by: ME
 Date reviewed: 6 Feb 2013

Sample Description: _____

Version 1.0 Issued June 26, 2006

Nautilus Environmental

Comments: _____

2013-2014

Whitefish Embryo-Alevin-Fry Test Summary Sheet

Client: Golder Start Date/Time: 06-Nov-13

Work Order No.: N/A Test Species: *P. williamsoni*

Sample Information:

Fish ID: 13-01 to 13-08
 Sample Date: 06-Nov-13
 Date Received: 06-Nov-13

Dilution Water:

Type: Dechlorinated Water
 Hardness (mg/L CaCO₃): 9-11 (range)
 Alkalinity (mg/L CaCO₃): 7-9 (range)

Test Organism Information:

Batch No.: 13-01 to 13-28
 Source: Elk Valley
 Loading Density: n/a

Test Results:

Fish ID	%swim-up ¹ (of initial)	% swim-up ¹ (of eyed)	% survival (28d post swim-up) ²
13-01	83.8	95.3	92.9
13-02	78.3	98.9	99
13-03	71.3	86.4	94.1
13-04	78.3	83.2	98.9
13-05	78.8	94.0	100
13-06	65.8	94.6	100
13-07	88.8	92.2	96.4
13-08	44.6	69.5	100

1- Number of hatched swim-up fry, just prior to splitting into swim-up and post swim-up (feeding) assessment groups
 2-Survival of fry during 28 day post swim-up feeding exposure

Reviewed by:  _____

Date reviewed: 31/12/14

Whitefish Embryo-Alevin-Fry Test Summary Sheet

Client: Golder Start Date/Time: 06-Nov-13

Work Order No.: N/A Test Species: P. williamsoni

Sample Information:

Fish ID: 13-08 to 13-16
 Sample Date: 06-Nov-13
 Date Received: 06-Nov-13

Dilution Water:

Type: Dechlorinated Water
 Hardness (mg/L CaCO₃): 9-11 (range)
 Alkalinity (mg/L CaCO₃): 7-9 (range)

Test Organism Information:

Batch No.: 13-01 to 13-28
 Source: Elk Valley
 Loading Density: n/a

Test Results:

Fish ID	%swim-up ¹ (of initial)	% swim-up ¹ (of eyed)	% survival (28d post swim-up) ²
13-09	73.8	92.7	98.9
13-10	95.0	97.9	96.5
13-11	40.4	95.1	100.0
13-12	55.0	89.8	95.5
13-13	66.3	91.4	93.8
13-14	73.3	78.9	100.0
13-15	60.4	79.7	96.3
13-16	80.8	91.9	97.9

1- Number of hatched swim-up fry, just prior to splitting into swim-up and post swim-up (feeding) assessment groups
 2-Survival of fry during 28 day post swim-up feeding exposure

Reviewed by: 

Date reviewed: 31/12/14

Whitefish Embryo-Alevin-Fry Test Summary Sheet

Client: Goldier Start Date/Time: 06-Nov-13

Work Order No.: N/A Test Species: *P. williamsoni*

Sample Information:

Fish ID: 13-17 to 13-24
 Sample Date: 06-Nov-13
 Date Received: 06-Nov-13

Dilution Water:

Type: Dechlorinated Water
 Hardness (mg/L CaCO₃): 9-11 (range)
 Alkalinity (mg/L CaCO₃): 7-9 (range)

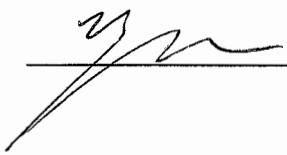
Test Organism Information:

Batch No.: 13-01 to 13-28
 Source: Elk Valley
 Loading Density: n/a

Test Results:

Fish ID	%swim-up ¹ (of initial)	% swim-up ¹ (of eyed)	% survival (28d post swim-up) ²
13-17	86.3	86.6	98.1
13-18	75.8	83.5	98.9
13-19	87.1	92.5	96.2
13-20	88.8	96.8	95.3
13-21	15.8	65.5	100.0
13-22	82.1	94.7	96.9
13-23	88.8	95.1	98.1
13-24	69.2	93.3	97.6

1- Number of hatched swim-up fry, just prior to splitting into swim-up and post swim-up (feeding) assessment groups
 2-Survival of fry during 28 day post swim-up feeding exposure

Reviewed by: 

Date reviewed: 3/12/14

Whitefish Embryo-Alevin-Fry Test Summary Sheet

Client: Golder Start Date/Time: 06-Nov-13

Work Order No.: N/A Test Species: *P. williamsoni*

Sample Information:

Fish ID: 13-25 to 13-28
 Sample Date: 06-Nov-13
 Date Received: 06-Nov-13

Dilution Water:

Type: Dechlorinated Water
 Hardness (mg/L CaCO₃): 9-11 (range)
 Alkalinity (mg/L CaCO₃): 7-9 (range)

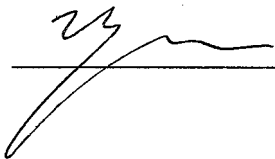
Test Organism Information:

Batch No.: 13-01 to 13-28
 Source: Elk Valley
 Loading Density: n/a

Test Results:

Fish ID	%swim-up ¹ (of initial)	% swim-up ¹ (of eyed)	% survival (28d post swim-up) ²
13-25	72.1	86.9	98.8
13-26	0.0	-	-
13-27	92.1	96.1	99.1
13-28	67.1	92.0	96.3

1- Number of hatched swim-up fry, just prior to splitting into swim-up and post swim-up (feeding) assessment groups
 2-Survival of fry during 28 day post swim-up feeding exposure

Reviewed by: 

Date reviewed: 31/12/14

Embryo Alevin Fry Survival Summary

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h
 Test Species: P. williamsoni

Eyed Embryos (# and %):

Sample ID	# of Initial Eggs	# of Eyed Eggs	%Eyed (of Initial)
13-01	240	211	87.9
13-02	240	190	79.2
13-03	240	198	82.5
13-04	240	226	94.2
13-05	240	201	83.8
13-06	240	167	69.6
13-07	240	231	96.3
13-08	240	154	64.2

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)	%Hatched (of eyed)
13-01	205	85.4	97.2
13-02	188	78.3	98.9
13-03	179	74.6	90.4
13-04	188	78.3	83.2
13-05	189	78.8	94.0
13-06	160	66.7	95.8
13-07	217	90.4	93.9
13-08	107	44.6	69.5

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of eyed)	%Swim-up (of hatched)
13-01	201	83.8	95.3	98.0
13-02	188	78.3	98.9	100.0
13-03	171	71.3	86.4	95.5
13-04	188	78.3	83.2	100.0
13-05	189	78.8	94.0	100.0
13-06	158	65.8	94.6	98.8
13-07	213	88.8	92.2	98.2
13-08	107	44.6	69.5	100.0

Reviewed by: 

Date reviewed: 3/12/14

Embryo Alevin Fry Survival Summary

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h

Test Species: P. williamsoni

Eyed Embryos (# and %):

Sample ID	# of Initial Eggs	# of Eyed Eggs	%Eyed (of Initial)
13-09	240	191	79.6
13-10	240	233	97.1
13-11	240	102	42.5
13-12	240	147	61.3
13-13	240	174	72.5
13-14	240	223	92.9
13-15	240	182	75.8
13-16	240	211	87.9

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)	%Hatched (of eyed)
13-09	179	74.6	93.7
13-10	228	95.0	97.9
13-11	97	40.4	95.1
13-12	140	58.3	95.2
13-13	159	66.3	91.4
13-14	177	73.8	79.4
13-15	146	60.8	80.2
13-16	200	83.3	94.8

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of eyed)	%Swim-up (of hatched)
13-09	177	73.8	92.7	98.9
13-10	228	95.0	97.9	100.0
13-11	97	40.4	95.1	100.0
13-12	132	55.0	89.8	94.3
13-13	159	66.3	91.4	100.0
13-14	176	73.3	78.9	99.4
13-15	145	60.4	79.7	99.3
13-16	194	80.8	91.9	97.0

Reviewed by: 

Date reviewed: 3/12/14

Embryo Alevin Fry Survival Summary

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h

Test Species: P. williamsoni

Eyed Embryos (# and %):


Sample ID	# of Initial Eggs	# of Eyed Eggs	%Eyed (of Initial)
13-17	240	239	99.6
13-18	240	218	90.8
13-19	240	226	94.2
13-20	240	220	91.7
13-21	240	58	24.2
13-22	240	208	86.7
13-23	240	224	93.3
13-24	240	178	74.2

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)	%Hatched (of eyed)
13-17	208	86.7	87.0
13-18	186	77.5	85.3
13-19	212	88.3	93.8
13-20	215	89.6	97.7
13-21	38	15.8	65.5
13-22	200	83.3	96.2
13-23	213	88.8	95.1
13-24	166	69.2	93.3

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of eyed)	%Swim-up (of hatched)
13-17	207	86.3	86.6	99.5
13-18	182	75.8	83.5	97.8
13-19	209	87.1	92.5	98.6
13-20	213	88.8	96.8	99.1
13-21	38	15.8	65.5	100.0
13-22	197	82.1	94.7	98.5
13-23	213	88.8	95.1	100.0
13-24	166	69.2	93.3	100.0

Reviewed by: 

Date reviewed: 11/12/14

Embryo Alevin Fry Survival Summary

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h

Test Species: P. williamsoni

Eyed Embryos (# and %):

Sample ID	# of Initial Eggs	# of Eyed Eggs	%Eyed (of Initial)
13-25	240	199	82.9
13-26	240	0	0.0
13-27	240	230	95.8
13-28	240	175	72.9

Hatched Alevins (# and %):

Sample ID	# of Hatched	%Hatched (of Initial)	%Hatched (of eyed)
13-25	175	72.9	87.9
13-26	-	-	-
13-27	226	94.2	98.3
13-28	175	72.9	100.0

Swim-up Alevins (# and %):

Sample ID	# of Swim-up	%Swim-up (of Initial)	%Swim-up (of eyed)	%Swim-up (of hatched)
13-25	173	72.1	86.9	98.9
13-26	-	-	-	-
13-27	221	92.1	96.1	97.8
13-28	161	67.1	92.0	92.0

Reviewed by: *W*

Date reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Counts

Client: Golder- MWF
Sample ID: 13-x

Start Date & Time: Nov 6/13 @2100h
Stop Date: January 2014 (various)
Test Species: P.williamsoni

Female ID	Rep	Total Exposed	Surviving Fry	Total Surviving (exposed-morts)	Total Hatched Alevins	Total Assessed (Swim-up)	Mortalities (28 d)	Total Assessed (Post Swim-up)	Total Assessed	Total ^②
13-01	1	60	49	204	205	102	7	92	194	201
	2	60	53							
	3	60	51							
	4	60	51							
13-02	1	60	43	188	188 ^①	93	1	94	187	188
	2	60	50							
	3	60	46							
	4	60	49							
13-03	1	60	42	180	179	86	5	80	166	171
	2	60	46							
	3	60	51							
	4	60	41							
13-04	1	60	52	186	188	96	1	91	187	188
	2	60	37							
	3	60	49							
	4	60	48							
13-05	1	60	49	190	189 ^①	99	0	90	189	189
	2	60	52							
	3	60	55							
	4	60	34							
13-06	1	60	32	158	160	78	0	80	158	158
	2	60	39							
	3	60	39							
	4	60	48							
13-07	1	60	56	222	217	102	4	107	209	213
	2	60	58							
	3	60	50							
	4	60	58							
13-08	1	60	25	109	107	54	0	53	107	107
	2	60	30							
	3	60	26							
	4	60	28							
Tech Initials										

Comments: ^{counted} ① Total Hatched originally less than Total. Changed to Total. ② Assessed + Mortalities

Reviewed by: *W* Date reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Counts

Client: Golder- MWF
Sample ID: 13-x

Start Date & Time: Nov 6/13 @2100h
Stop Date: January 2014 (various)
Test Species: P.williamsoni

Female ID	Rep	Total Exposed	Surviving Fry	Total Surviving (exposed-morts)	Total Hatched Alevins	Total Assessed (Swim-up)	Mortalities (28 d)	Total Assessed (Post Swim-up)	Total Assessed	Total ^②
13-09	1	60	44	180	179	87	1	89	176	177
	2	60	50							
	3	60	42							
	4	60	44							
13-10	1	60	58	228	228 ^①	114	4	110	224	228
	2	60	55							
	3	60	58							
	4	60	57							
13-11	1	60	25	95	97	48	0	49	97	97
	2	60	27							
	3	60	17							
	4	60	26							
13-12	1	60	38	146	140	65	3	64	129	132
	2	60	40							
	3	60	37							
	4	60	31							
13-13	1	60	35	156	159 ^①	79	5	75	154	159
	2	60	42							
	3	60	35							
	4	60	44							
13-14	1	60	40	179	177	89	0	87	176	176
	2	60	47							
	3	60	46							
	4	60	46							
13-15	1	60	41	154	146 ^①	63	3	79	142	145
	2	60	37							
	3	60	31							
	4	60	45							
13-16	1	60	52	199	200 ^a	99	2	93	192	194
	2	60	49							
	3	60	52							
	4	60	46							
Tech Initials										

Comments: a- secondary counts used. Error occurred in original counts

② Assessed + mortalities

① Total Hatch counts less than Total. Corrected

Reviewed by: *M*

Date reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Counts

Client: Golder- MWF
Sample ID: 13-x

Start Date & Time: Nov 6/13 @2100h
Stop Date: January 2014 (various)
Test Species: P. williamsoni

Female ID	Rep	Total Exposed	Surviving Fry	Total Surviving (exposed-morts)	Total Hatched Alevins	Total Assessed (Swim-up)	Mortalities (28 d)	Total Assessed (Post Swim-up)	Total Assessed	Total [ⓐ]
13-17	1	60	60	205	208	104	2	101	205	207
	2	60	39							
	3	60	56							
	4	60	50							
13-18	1	60	52	186	186	92	1	89	181	182
	2	60	41							
	3	60	56							
	4	60	37							
13-19	1	60	50	213	212	104	4	101	205	209
	2	60	54							
	3	60	53							
	4	60	56							
13-20	1	60	53	214	215	107	5	101	208	213
	2	60	51							
	3	60	56							
	4	60	54							
13-21	1	60	8	45	38	20	0	18	38	38
	2	60	8							
	3	60	13							
	4	60	16							
13-22	1	60	53	199	200	100	3	94	194	197
	2	60	52							
	3	60	47							
	4	60	47							
13-23	1	60	52	215	213	108	2	103	211	213
	2	60	50							
	3	60	58							
	4	60	55							
13-24	1	60	56	170	166 [ⓐ]	84	2	80	164	166
	2	60	56							
	3	60	34							
	4	60	24							
Tech Initials										

Comments: [ⓐ] Total counted hatched alevins less than total. Corrected [ⓑ] Assessed + Mortalities

Reviewed by: *R* Date reviewed: 31/12/14

SUMMARY OUTPUT - Round 3 - Length vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.494702
R Square	0.24473
Adjusted R	0.214519
Standard E	3.942938
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	125.9405	125.9405	8.100756	0.00871
Residual	25	388.6691	15.54676		
Total	26	514.6096			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	131.2208	37.71587	3.479194	0.00186	53.54353	208.8981	53.54353	208.8981
X Variable	-7.36782	2.588666	-2.84618	0.00871	-12.6993	-2.03636	-12.6993	-2.03636

SUMMARY OUTPUT - Round 3- Weight vs Selenium (Swim-up Fry)

<i>Regression Statistics</i>	
Multiple R	0.487897
R Square	0.238043
Adjusted R	0.207565
Standard E	3.960355
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	122.4994	122.4994	7.810262	0.009832
Residual	25	392.1103	15.68441		
Total	26	514.6096			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	52.72956	10.34529	5.096961	2.9E-05	31.42303	74.03609	31.42303	74.03609
X Variable	-1.51282	0.541321	-2.79468	0.009832	-2.62769	-0.39795	-2.62769	-0.39795

SUMMARY OUTPUT - Round 3 - Length vs Selenium (28d Fry)

<i>Regression Statistics</i>	
Multiple R	0.227705
R Square	0.05185
Adjusted R	0.013924
Standard E	4.417815
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	26.68237	26.68237	1.367129	0.253334
Residual	25	487.9273	19.51709		
Total	26	514.6096			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	56.14425	27.59331	2.034705	0.052616	-0.68523	112.9737	-0.68523	112.9737
X Variable	-1.59761	1.366359	-1.16924	0.253334	-4.41167	1.216464	-4.41167	1.216464

SUMMARY OUTPUT - Round 3- Weight vs Selenium (28d Fry)

<i>Regression Statistics</i>	
Multiple R	0.263566
R Square	0.069467
Adjusted R	0.032246
Standard E	4.376579
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	35.74853	35.74853	1.866331	0.18406
Residual	25	478.8611	19.15444		
Total	26	514.6096			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	36.71738	9.422636	3.896721	0.000646	17.3111	56.12366	17.3111	56.12366
X Variable	-0.26524	0.194156	-1.36614	0.18406	-0.66511	0.134628	-0.66511	0.134628

SUMMARY OUTPUT - Round 3 - Swim-up Weight vs Adult Female Weight

<i>Regression Statistics</i>	
Multiple R	0.688913
R Square	0.474602
Adjusted R	0.453586
Standard E	1.060604
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	25.40314	25.40314	22.58294	7.08E-05
Residual	25	28.12204	1.124882		
Total	26	53.52519			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	16.6812	0.540444	30.86572	2E-21	15.56813	17.79427	15.56813	17.79427
X Variable :	0.00512	0.001077	4.752151	7.08E-05	0.002901	0.007339	0.002901	0.007339

SUMMARY OUTPUT - Round 3 - Adult Female Weight vs Egg Selenium

<i>Regression Statistics</i>	
Multiple R	0.411246
R Square	0.169123
Adjusted R	0.135888
Standard E	179.4683
Observatio	27

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regression	1	163900.9	163900.9	5.088687	0.033081
Residual	25	805221.9	32208.87		
Total	26	969122.7			

	<i>Coefficients</i>	<i>andard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	890.9454	192.1803	4.635987	9.57E-05	495.1426	1286.748	495.1426	1286.748
X Variable	-17.8464	7.911318	-2.25581	0.033081	-34.1401	-1.55278	-34.1401	-1.55278

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golden
 Sample ID: Mountain Whitefish 13x
 Work Order #: n/a

Start Date & Time: Nov 6/13 @ 2100h
 Stop Date & Time: January 2014 (various)
 Test Species: P. williamsi

	Days											
	0				10				2			
	Init	Init	Init	Init	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.0	7.0	7.5	7.0	8.0	7.5	7.5	8.0	8.0	8.0	8.0	8.0
DO (mg/L)	12.2	12.1	11.9	12.1	11.8	11.9	12.1	12.1	12.1	12.1	12.1	12.1
pH	6.6	6.6	6.7	6.6	6.7	6.6	6.5	6.5	6.6	6.7	6.6	6.5
Cond. (µS/cm)	32	32	35	31	43	35	38	36	36	34	37	30
Tech. Initials	JAB				JBF				JAB			

	Days											
	50				7				9			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	8.0	7.5	7.5	8.0	7.5	7.5	7.5	8.0	7.5	7.5	8.0	8.5 ^{8.0}
DO (mg/L)	11.9	12.1	12.2	12.1	11.9	12.1	12.1	11.7	12.2	12.0	12.0	11.8
pH	6.9	6.9	7.0	7.1	6.7	6.8	6.7	6.9	7.0	7.0	7.1	7.0
Cond. (µS/cm)	32	32	34	29	30	30	30	29	30	29	30	29
Tech. Initials	JBF				JAB				JBF			

	Days											
	120				14				16			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	8.0	7.5	7.5	8.0	8.0	7.5	7.5	8.0	7.5	8.0	7.5	8.0
DO (mg/L)	11.9	11.9	12.0	11.7	11.8	12.0	12.0	12.0	11.9	11.9	11.9	11.8
pH	6.8	6.6	6.6	6.6	6.8	6.9	6.8	6.6	6.9	7.0	7.0	7.1
Cond. (µS/cm)	29	29	30	31	32	32	31	31	32	31	31	31
Tech. Initials	JAB				JBF				JAB			

	Days											
	190				21				230			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	8.0	7.5	7.5	7.5	7.5	7.5	7.5	7.5	8.0	7.5	8.0	8.0
DO (mg/L)	11.3	11.2	11.5	11.8	11.8	12.0	12.0	11.9	12.1	12.2	12.1	12.0
pH	6.4	6.6	6.6	6.5	6.7	6.6	6.6	6.6	6.8	6.8	6.8	6.8
Cond. (µS/cm)	31	32	32	30	31	31	31	30	29	31	32	30
Tech. Initials	JBF				JAB				JAB			

DO meter: DO-1/2 pH meter: pH-1/3 Conductivity meter: C-1/2

	Control	Control-2		
Hardness*	10	11		
Alkalinity*	6	8		

Analysts: JAB, JBF

Reviewed by: J

Date reviewed: 3/12/14

* mg/L as CaCO₃

Sample Description: ① 12.0 ② 12.1 Dechlor

Comments: ① Argentyne rinse

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: Mountain Whitefish
 Work Order #: n/a

Start Date & Time: Nov. 6/13 @ 2100h
 Stop Date & Time: January 2014 (various)
 Test Species: P. williamsoni

	Days											
	260				28				30①			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5	7.5	8.0	7.5	7.5	7.5	8.0	7.5	7.5	7.5	7.5
DO (mg/L)	11.9	11.7	11.8	11.8	11.8	11.9	11.6	11.3	11.9	11.9	11.8	11.9
pH	6.6	6.7	6.6	6.6	6.6	6.7	6.5	6.6	6.9	6.8	6.8	6.9
Cond. (µS/cm)	30	30	31	30	31	31	31	30	30	30	30	30
Tech. Initials	JAB				JBF				JAB			

	Days											
	JAB 33①				JAB 34 35				37			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5	7.5	8.0	7.5	7.5	7.5	8.0	8.0	8.0	7.5	8.0
DO (mg/L)	11.7	11.7	11.6	11.6	11.8	11.8	11.7	12.0	12.0	12.0	11.8	11.9
pH	6.7	6.8	6.8	6.9	7.0	7.1	7.0	7.1	7.2	7.2	7.3	7.3
Cond. (µS/cm)	31	31	31	30	31	32	32	31	30	31	30	30
Tech. Initials	JAB				JAB				JBF			

	Days											
	40①				42				44 47 JBF			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5	7.5	8.0	8.0	7.5	7.5	8.0	7.5	8.0	7.5	8.0
DO (mg/L)	11.6	11.3	11.6	11.9	11.9	11.9	12.0	12.0	12.0	12.0	11.9	11.9
pH	7.2	7.1	7.1	7.0	6.8	6.8	6.9	6.9	7.0	7.0	7.1	7.0
Cond. (µS/cm)	32	32	32	30	32	33	32	31	32	32	32	31
Tech. Initials	JBF				JBF				JBF			

	Days											
	47①				49 50				JAB 51 52②			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.5	7.5	7.5	8.0
DO (mg/L)	11.9	11.8	11.9	12.0	11.8	11.9	11.9	12.0	11.9	11.9	11.9	11.9
pH	7.2	7.2	7.3	7.2	7.1	6.9	7.0	7.0	7.0	6.9	7.0	7.1
Cond. (µS/cm)	30	29	30	30	30	31	31	31	31	31	31	31
Tech. Initials	YML				KLP				JAB			

DO meter: DO-1/2 pH meter: pH-1/3 Conductivity meter: C-1/2

	Control	Control-2		
Hardness*	11	9		
Alkalinity*	8	7		

Analysts: JAB, JBF, KLP
YML
 Reviewed by: YML
 Date reviewed: 3/16/14

* mg/L as CaCO₃

Sample Description: Dechlor

Comments: ① Argentine rinse ② 31 ③ hatched

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golden
 Sample ID: Mountain Whitefish
 Work Order #: n/a

Start Date & Time: ^{JAB} Nov 16 Nov 6/13 @ 100h
 Stop Date & Time: ^{JAB} January 2014 (various)
 Test Species: P. williamsoni

	Days											
	54				56				58			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5	7.5	8.0	7.5	7.5	7.5	8.0	8.0	7.5	7.5	8.0
DO (mg/L)	11.9	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.9	11.9	11.9
pH	6.8	6.7	6.7	6.9	6.7	6.8	6.7	7.0	6.8	6.7	6.8	6.9
Cond. (µS/cm)	32	32	32	31	34	32	32	32	33	34	33	32
Tech. Initials	JAB				JAB				JAB			

	Days											
	61				63				65			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5	7.5	8.0	7.5	7.5	8.0	8.0	8.0	7.5	7.5	8.0
DO (mg/L)	11.9	11.9	11.8	12.0	11.9	12.0	11.9	11.8	11.8	11.9	11.8	11.8
pH	6.9	6.9	6.8	6.8	6.6	6.6	6.5	6.8	6.8	6.9	6.8	7.0
Cond. (µS/cm)	34	33	33	32	33	33	32	32	33	33	32	32
Tech. Initials	JBF				JBF				EMM			

	Days											
	68				70				72			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	8.0	8.0	7.5	8.0	7.5	7.0	7.0	7.5	8.0	7.5	8.0	8.0
DO (mg/L)	11.9	12.0	12.0	12.0	11.9	12.1	12.0	12.1	11.8	11.9	12.0	12.0
pH	7.0	7.0	7.0	7.2	7.0	7.0	7.0	7.0	6.8	6.8	6.9	6.7
Cond. (µS/cm)	32	33	33	33	31	33	33	33	34	34	33	33
Tech. Initials	JBF				JBF				JBF			

	Days											
	75				77				79			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5		8.0	7.0	7.5		7.5		7.5		7.5
DO (mg/L)	11.8	11.9		11.9	11.9	11.9		12.0		11.7		11.7
pH	6.6	6.6		6.4	6.4	6.4		6.8		6.7		6.8
Cond. (µS/cm)	36	34		33	33	33		34		34		33
Tech. Initials	JAB				JAB				JAB			

DO meter: DO-1 pH meter: PH-1/2 Conductivity meter: C-1/2

	Control	Control-2		
Hardness*	9	11		
Alkalinity*	7	8		

* mg/L as CaCO3

Analysts: JAB, JBF, EMM

Reviewed by: [Signature]
 Date reviewed: 3/11/14

Sample Description: Dechlor

Comments: _____

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golden
 Sample ID: Mountain Whitefish
 Work Order #: n/a

Start Date & Time: Nov 6/13 @ 2:00h
 Stop Date & Time: January 2014 (various)
 Test Species: P. williamseni

	Days											
	82				84							
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		7.5		7.5						
DO (mg/L)		11.8		11.9		12.0						
pH		7.2		7.3		7.2						
Cond. (µS/cm)		34		33		35						
Tech. Initials	JAB				JAB							

	Days											
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
	Temperature (°C)											
DO (mg/L)												
pH												
Cond. (µS/cm)												
Tech. Initials												

	Days											
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
	Temperature (°C)											
DO (mg/L)												
pH												
Cond. (µS/cm)												
Tech. Initials												

	Days											
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
	Temperature (°C)											
DO (mg/L)												
pH												
Cond. (µS/cm)												
Tech. Initials												

DO meter: DO-1/2 pH meter: pH-1/2 Conductivity meter: C-1/2

	Control			
Hardness*	11			
Alkalinity*	8			

* mg/L as CaCO₃

Analysts: JAB
 Reviewed by: J
 Date reviewed: 3/12/14

Sample Description: Dechlor

Comments: _____

Embryo-Alevin-Fry Toxicity Test Daily Mortality- Summary

Client: Golder- MWF Start Date & Time: Nov 6/13 @2100h
 Sample ID: 13-x Stop Date: January 2014 (various)
 Work Order #: n/a Test Species: P.williamsoni

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-14	14-30	30-47	47-63	63-84			
13-01	1	1	9	0	0	1	2	9	60
	2	0	5	0	1	1	2	5	60
	3	0	6	0	2	1	4	5	60
	4	0	8	1	0	0	1	8	60
13-02	1	1	16	0	0	0	3	14	60
	2	0	8	0	2	0	2	8	60
	3	0	14	0	0	0	0	14	60
	4	0	11	0	0	0	0	11	60
13-03	1	0	11	2	5	0	7	11	60
	2	0	6	2	4	2	8	6	60
	3	0	9	0	0	0	1	8	60
	4	0	16	0	2	1	3	16	60
13-04	1	0	4	0	3	1	5	3	60
	2	0	2	0	18	3	21	2	60
	3	0	3	0	6	2	8	3	60
	4	0	5	0	5	2	8	4	60
13-05	1	1	3	0	7	0	8	3	60
	2	0	6	0	1	1	5	3	60
	3	0	3	1	1	0	2	3	60
	4	0	26	0	0	0	5	21	60
13-06	1	0	27	1	0	0	9	19	60
	2	0	20	1	0	0	3	18	60
	3	0	15	0	4	2	6	15	60
	4	0	11	0	1	0	2	10	60
13-07	1	0	3	0	1	0	1	3	60
	2	0	2	0	0	0	0	2	60
	3	0	2	1	2	5	8	2	60
	4	0	2	0	0	0	0	2	60
13-08	1	0	22	7	2	4	17	18	60
	2	0	24	3	2	1	13	17	60
	3	0	24	5	5	0	15	19	60
	4	0	16	13	2	1	20	12	60
Tech Initials									

Comments: _____

 Reviewed by: *W* Date reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Daily Mortality- Summary

Client: Golder- MWF Start Date & Time: Nov 6/13 @2100h
 Sample ID: 13-x Stop Date: January 2014 (various)
 Work Order #: n/a Test Species: P.williamsoni

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-14	14-30	30-47	47-63	63-84			
13-09	1	0	14	0	0	2	2	14	60
	2	0	8	0	1	1	2	8	60
	3	0	15	0	1	2	3	15	60
	4	0	12	1	3	0	5	11	60
13-10	1	0	2	0	0	0	0	2	60
	2	0	3	0	1	1	2	3	60
	3	0	1	0	1	0	1	1	60
	4	0	1	0	0	2	2	1	60
13-11	1	0	29	0	1	5	6	29	60
	2	0	33	0	0	0	2	31	60
	3	0	42	0	0	1	10	33	60
	4	0	34	0	0	0	0	34	60
13-12	1	0	22	0	0	0	0	22	60
	2	0	20	0	0	0	0	20	60
	3	0	23	0	0	0	0	23	60
	4	0	28	0	1	0	3	26	60
13-13	1	0	16	0	9	0	9	16	60
	2	0	18	0	0	0	0	18	60
	3	0	18	0	7	0	7	18	60
	4	0	14	0	1	1	2	14	60
13-14	1	0	4	0	14	2	16	4	60
	2	0	6	1	6	0	9	4	60
	3	0	3	0	9	2	12	2	60
	4	0	4	0	9	1	12	2	60
13-15	1	0	16	0	2	1	3	16	60
	2	0	17	1	5	0	6	17	60
	3	0	10	4	15	0	19	10	60
	4	0	15	0	0	0	0	15	60
13-16	1	0	5	0	3	0	3	5	60
	2	0	7	0	1	3	4	7	60
	3	0	6	0	1	1	2	6	60
	4	0	11	1	2	0	3	11	60
Tech Initials									

Comments:

Reviewed by:

M

Date reviewed:

3/12/14

Embryo-Alevin-Fry Toxicity Test Daily Mortality- Summary

Client: Golder- MWF **Start Date & Time:** Nov 6/13 @2100h
Sample ID: 13-x **Stop Date:** January 2014 (various)
Work Order #: n/a **Test Species:** *P.williamsoni*

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-14	14-30	30-47	47-63	63-84			
13-17	1	0	0	0	0	0	0	0	60
	2	0	0	0	21	0	21	0	60
	3	0	1	0	1	2	3	1	60
	4	0	0	0	8	2	10	0	60
13-18	1	0	5	0	2	1	3	5	60
	2	0	10	0	8	1	9	10	60
	3	0	2	0	1	1	2	2	60
	4	0	5	0	13	5	18	5	60
13-19	1	0	2	0	2	6	8	2	60
	2	0	6	0	0	0	0	6	60
	3	0	2	0	5	0	6	1	60
	4	0	4	0	0	0	0	4	60
13-20	1	0	7	0	0	0	0	7	60
	2	0	7	0	1	1	2	7	60
	3	0	3	0	1	0	1	3	60
	4	0	3	0	0	3	3	3	60
13-21	1	0	48	4	0	0	4	48	60
	2	0	49	0	1	2	3	49	60
	3	0	43	1	3	0	5	42	60
	4	3	39	1	1	0	5	39	60
13-22	1	0	4	0	0	3	3	4	60
	2	0	8	0	0	0	0	8	60
	3	1	9	2	1	0	6	7	60
	4	1	9	1	0	2	4	9	60
13-23	1	0	7	0	0	1	4	4	60
	2	0	2	0	6	2	8	2	60
	3	0	2	0	0	0	0	2	60
	4	0	5	0	0	0	0	5	60
13-24	1	0	2	0	2	0	2	2	60
	2	0	3	0	1	0	1	3	60
	3	3	21	0	1	1	9	17	60
	4	2	31	3	0	0	10	26	60
Tech Initials									

Comments:

Reviewed by:

rk

Date reviewed:

31/12/14

Embryo-Alevin-Fry Toxicity Test Daily Mortality- Summary

Client: Golder- MWF Start Date & Time: Nov 6/13 @2100h
 Sample ID: 13-x Stop Date: January 2014 (various)
 Work Order #: n/a Test Species: *P.williamsoni*

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-14	14-30	30-47	47-63	63-84			
13-25	1	1	8	1	1	0	3	8	60
	2	0	7	1	1	0	2	7	60
	3	0	12	0	3	0	6	9	60
	4	7	6	0	12	0	19	6	60
13-26	1	0	60	-	-	-	60	-	60
	2	0	60	-	-	-	60	-	60
	3	0	60	-	-	-	60	-	60
	4	0	60	-	-	-	60	-	60
13-27	1	0	2	0	1	0	1	2	60
	2	0	4	3	0	0	3	4	60
	3	0	3	0	0	1	1	3	60
	4	0	1	0	0	0	0	1	60
13-28	1	0	3	0	3	0	3	3	60
	2	0	2	0	3	1	4	2	60
	3	0	1	0	0	0	0	1	60
	4	-	-	-	-	-	-	-	0
	1								
	2								
	3								
	4								
	1								
	2								
	3								
	4								
	1								
	2								
	3								
	4								
Tech Initials									

Comments: _____

Reviewed by: *W* Date reviewed: 3/12/14

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golder
 Sample ID: MWF Swim-ups (13-x)
 Work Order #: n/a

Start Date & Time: Jan 2/14 @ 1400h
 Stop Date & Time: Feb 11, 12/14 @ n/a
 Test Species: P. willimonsi

	Days											
	0				1				2			
	Init	Init	Init	Init	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)				7.5		7.5		8.0		7.5		8.0
DO (mg/L)				11.5		12.0		11.8		11.9		11.7
pH				7.1		6.8		6.8		6.9		6.7
Cond. (µS/cm)				33		33		32		34		32
Tech. Initials	JAB				JAB				JAB			

	Days											
	4				5				6			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		8.0		7.0		8.0		7.0		8.0
DO (mg/L)	11.9	6.7	JAB	11.8	JAB	12.0		12.1		11.7		11.5
pH		6.7		6.8		6.4		6.6		6.8		6.7
Cond. (µS/cm)	34	32	JAB	32		34		32		34		32
Tech. Initials	JAB				JBF				JAB			

	Days											
	7				8				11			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		7.5		7.5		8.0		7.5		8.0
DO (mg/L)		12.0		12.0		11.7		11.7		11.8		11.9
pH		7.7		6.9		6.8		6.7		6.7		6.6
Cond. (µS/cm)		34		33		34		32		36		33
Tech. Initials	JAB				JAB				JAB			

	Days											
	12				13				14			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		8.0		7.5		7.0		8.0		7.5		8.0
DO (mg/L)		11.7		11.8		11.9		11.6		11.7		11.9
pH		7.1		6.7		6.7		6.8		6.7		6.7
Cond. (µS/cm)		36		34		35		33		37		33
Tech. Initials	EMM				JAB				EMM JAB EMM			

DO meter: DO-2/00-1 pH meter: pH-2 Conductivity meter: C-1

	Control			
Hardness*	11			
Alkalinity*	8			

Analysts: JAB, EMM, JBF
 Reviewed by: JL
 Date reviewed: 31/12/14

* mg/L as CaCO₃

Sample Description: 0.03 mg/L NH₃-N Dechlor

Comments: _____

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Golden
 Sample ID: Mountain Whitefish Swim-ups
 Work Order #: n/a

Start Date & Time: Jan 2/14 @ 1400h
 Stop Date & Time: Feb 11, 12 / 14 @ n/a
 Test Species: P. williamsi

	Days											
	<u>JAN 17 18</u>				19				20			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		8.0		7.5		8.0		7.5		7.5
DO (mg/L)		11.9		11.9		11.7		11.6		12.0		12.0
pH		6.5		6.5		6.6		6.6		6.5		6.5
Cond. (µS/cm)		37		33		35		33		34		33
Tech. Initials	JAB				JAB				EMM/XLP			

	Days											
	<u>21 ①</u>				22				<u>JAN 24 25</u>			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		7.5		7.5		7.5		7.5		7.5
DO (mg/L)		12.0		12.0		11.9		11.9		11.8		11.9
pH		6.9		6.9		6.7		6.7		7.2		7.3
Cond. (µS/cm)		35		33		34		33		37		33
Tech. Initials	EMM				JAB				EMM			

	Days											
	26				27				29			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)		7.5		7.5		7.0		8.0		7.5		8.0
DO (mg/L)		12.1		12.0		11.8		12.0		11.9		12.0
pH		7.2		7.4		7.2		7.3		6.8		6.9
Cond. (µS/cm)		34		33		36		33		36		33
Tech. Initials	JAB				JAB				JAB			

	Days											
	<u>32 ②</u>				33				34			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.0		8.0	7.5	7.5		8.0	7.5	7.5		8.0
DO (mg/L)	12.0	12.1		11.9	11.9	12.0		12.0	11.9	12.0		11.9
pH	7.0	7.0		7.0	6.9	7.0		7.0	7.0	7.0		6.9
Cond. (µS/cm)	34	39		33	34	36		33	36	35		33
Tech. Initials	JAB				EMM				JBF			

DO meter: DO-1/2 pH meter: pH-1/2 Conductivity meter: C-1/2

	Control			
Hardness*	11			
Alkalinity*	8			

* mg/L as CaCO₃

Analysts: JAB, JBF, EMM

Reviewed by: J

Date reviewed: 3/12/14

Sample Description: Dechlor

Comments: ① 0.08 mg/L NH₃-N ② MWF Swim-ups divided into two test containers

Embryo-Alevin-Fry Initial and Final Water Quality Measurements

Client: Gelder
 Sample ID: Mountain Whitefish Swim-ups
 Work Order #: n/a

Start Date & Time: Jan 2/14 @ 1400h
 Stop Date & Time: 2:30 Feb 11/14 + Feb 12/14 en/a
 Test Species: P. williamsoni

	Days											
	35				36				37 39			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5		7.5	7.5	7.5		7.5	7.5	7.5	7.5	7.5
DO (mg/L)	11.8	11.8		11.9	11.7	11.8		12.0	11.6	11.8		11.9
pH	6.9	6.9		6.9	6.9	6.9		6.8	6.9	7.0		6.9
Cond. (µS/cm)	37	37		33	36	37		33	35	36		31
Tech. Initials	EMM				Emm				YML			

	Days											
	38 40				39 41				40			
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)	7.5	7.5		8.0	7.5	7.5						
DO (mg/L)	11.9	11.7		12.0	11.8	11.9						
pH	7.2	7.1		7.2	7.2	7.2						
Cond. (µS/cm)	36	34		32	35	34						
Tech. Initials	EMM				Emm							

	Days											
	41											
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)												
DO (mg/L)												
pH												
Cond. (µS/cm)												
Tech. Initials												

	Days											
	Old	Old	Old	New	Old	Old	Old	New	Old	Old	Old	New
Temperature (°C)												
DO (mg/L)												
pH												
Cond. (µS/cm)												
Tech. Initials												

DO meter: DO-1/2 pH meter: pH-1/2 Conductivity meter: C-1/2

	Control			
Hardness*	11			
Alkalinity*	8			

* mg/L as CaCO3

Analysts: EMM, YML

Reviewed by: EM

Date reviewed: 3/12/14

Sample Description: Dechlor

Comments: _____

Embryo-Alevin-Fry Toxicity Test Daily Mortality- 28-d Swim-up

Client: Golder- MWF
 Sample ID: 13-x
 Work Order #: n/a

Start Date : Jan 2/14 - Jan 29/14
 Stop Date: Feb 11, 12/14 @n/a
 Test Species: P.williamsoni

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-13	14-26	27-34	35-41				
13-01	1	0	2	3	2		7	0	99
	2			0	0				
13-02	1	0	1	0	0		1	0	95
	2			0	0				
13-03	1	0	0	5	0		5	0	85
	2			0	0				
13-04	1	0	0	1	0		1	0	92
	2			0	0				
13-05	1	0	0	0	0		0	0	90
	2			0	0				
13-06	1	0	0	0	0		0	0	80
	2			0	0				
13-07	1	0	3	1	0		4	0	111
	2			0	0				
13-08	1	0	0	0	0		0	0	53
	2			0	0				
Tech Initials									

Comments: 28 day feeding

Reviewed by: W Date reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Daily Mortality- 30-d Swim-up

Client: Golder- MWF
 Sample ID: 13-x
 Work Order #: n/a

Start Date : Jan 2/14 - Jan 29/14
 Stop Date: Feb 11, 12/14 @n/a
 Test Species: P.williamsoni

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-13	14-26	27-34	35-41				
13-09	1	0	0	1	0		1	0	90
	2			0	0				
13-10	1	0	4	0	0		4	0	114
	2			0	0				
13-11	1	0	0	0	0		0	0	49
	2			0	0				
13-12	1	0	0	3	0		3	0	67
	2			0	0				
13-13	1	1	1	2	0		5	0	80
	2			1	0				
13-14	1	0	0	0	0		0	0	87
	2			0	0				
13-15	1	0	0	1	2		3	0	82
	2			0	0				
13-16	1	0	1	1	0		2	0	95
	2			0	0				
Tech Initials									

Comments: 28 day feeding

Reviewed by: W Date reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Daily Mortality- 30-d Swim-up

Client: Golder- MWF
 Sample ID: 13-x
 Work Order #: n/a

Start Date : Jan 2/14 - Jan 29/14
 Stop Date: Feb 11, 12/14 @n/a
 Test Species: P.williamsoni

Female ID	Rep	Days of Test - No. of Mortalities					Total Dead Fish	Total Undeveloped Embryos	Total Exposed
		0-13	14-26	27-34	35-41				
13-17	1	0	2	0	0		2	0	103
	2			0	0				
13-18	1	0	0	1	0		1	0	90
	2			0	0				
13-19	1	0	0	1	1		4	0	105
	2			0	2				
13-20	1	0	2	0	1		5	0	106
	2			2	0				
13-21	1	0	0	0	0		0	0	18
	2			0	0				
13-22	1	1	0	2	0		3	0	97
	2			0	0				
13-23	1	0	0	1	1		2	0	105
	2			0	0				
13-24	1	0	1	1	0		2	0	82
	2			0	0				
Tech Initials									

Comments: 28d feeding

Reviewed by: *W* Date reviewed: 2/12/14

APPENDIX C - Larval Deformity Data

2010-2011

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden Associates
 Work Order No.: N/A

Start Date: Nov. 11/2010
 Termination Date: Feb 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR 1	1	15.5	0	0	0	0	
	2	16.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.3571g
 Number of survivors: 14
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Godder Associates
Work Order No.: N/A

Start Date: Nov. 11, 2010
Termination Date: Feb. 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F08-1	1	15.0	0	0	0	0	
	2	16.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.7552	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	16.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.5	0	0	0	0	
	20	16.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	16.0	0	0	0	0	
	27	16.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	

Total Weight (pooled): 0.7613
Number of survivors: 38
Number of deformed/have difficulty swimming: 0

Initials: BCL

Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov. 11, 2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
31 <u>31 (cont)</u>	31	15.5	0	0	0	0	
	32	15.5	0	0	0	0	
	33	15.5	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.5	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.5	0	0	0	0	
	38	15.5	0	0	0	0	
	39						
	40						
	41						
	42						
	43						
	44						
	45						
	46						
	47						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): _____ ^{BPL}
 Number of survivors: _____
 Number of deformed/have difficulty swimming: 0

Initials: BPL
 Reviewed by: _____

Date Reviewed: 27 Mar 2012

Embryo-Alevin-Fry Toxicity Test Data Sheet

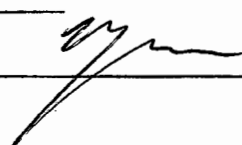
Swim-up wet weight, length and deformities

Client: Goldes Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Mar 3 / 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-1	1	15.5	0	0	0	0	
	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.5	0	0	0	0	
	25	16.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	16.0	0	0	0	0	
	29	16.5	0	0	0	0	
	30	16.0	0	0	0	0	

Total Weight (pooled): 1.0258
Number of survivors: 52
Number of deformed/have difficulty swimming: 1

Initials: BRL
Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov. 11. 2010
Termination Date: Mar 3/2011

Sample ID	Fish #	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-1	31	15.5	0	0	0	0	
(cont)	32	16.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.5	0	0	0	0	
	35	16.0	0	0	0	0	
	36	16.0	0	0	0	0	
	37	16.0	0	0	0	0	
	38	15.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	16.0	0	0	0	0	
	41	16.0	0	0	0	0	
	42	15.5	0	0	0	0	
	43	16.5	0	0	0	0	
*	44	15.0	0	2	0	2	Shortened jaw/snout; pericardial 3
	45	15.5	0	0	0	0	lytic sac
	46	15.0	0	0	0	0	edema
	47	16.0	0	0	0	0	
	48	16.0	0	0	0	0	
	49	16.0	0	0	0	0	
	50 20 th	15.0	0	0	0	0	
	51 21 st	15.5	0	0	0	0	
	52 22 nd	15.5	0	0	0	0	
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): _____
Number of survivors: 52
Number of deformed/have difficulty swimming: X

Initials: BPL

Reviewed by: _____

Date Reviewed: 27 Mar 2013

* 101-2245
101-2246

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier Associates
Work Order No.: N/A

Start Date: Nov 11, 2010
Termination Date: March 19, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-1	1	16.0	0	0	0	0	
	2	16.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	17.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.5	0	0	0	0	
	11	17.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.0	0	0	0	0	
	18	16.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	16.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	16.5	0	0	0	0	
	26	17.0	0	0	0	0	
	27	16.5	0	0	0	0	
	28	16.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	16.0	0	0	0	0	

Total Weight (pooled): 0.87763g
Number of survivors: 40
Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2012

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: March 10/11

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FDR-1 (cont)	31	16.0	0	0	0	0	
	32	16.0	0	0	0	0	
	33	16.0	0	0	0	0	
	34	16.0	0	0	0	0	
	35	16.0	0	0	0	0	
	36	16.0	0	0	0	0	
	37	16.0	0	0	0	0	
	38	16.5	0	0	0	0	
	39	16.0	0	0	0	0	
	40	15.5	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.87763 BRC
 Number of survivors: _____
 Number of deformed/have difficulty swimming: 0

Initials: BRC
 Reviewed by: _____
 Date Reviewed: 27 Mar 2011

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Godder Associates
Work Order No.: N/A

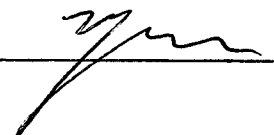
Start Date: Nov 11 / 2010
Termination Date: Mar. 18, 2011

Day 116

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-1	1	15.5	0	0	0	0	
	2	16.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	17.0	0	0	0	0	
	9	16.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.5	0	0	0	0	
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 282.76^{BR} mg 0.28276g
 Number of survivors: 12
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2011

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar. 18, 2011

Day 23

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-1	1	15.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.04459g
Number of survivors: 2
Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldier Associates
 Work Order No.: N/A

Start Date: Nov 11/2010
 Termination Date: Feb. 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
For-2	1	14	0	0	0	0	
	2	14	0	0	0	0	
	3	14	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15	0	0	0	0	
	6	15	0	0	0	0	
	7	14	0	0	0	0	
	8	15	0	0	0	0	
	9	14.5	0	0	1	0	tail fin slightly malformed
	10	14.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15	0	0	0	0	1 red mass near end of yolk sac *
	16	14.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.5	0	0	0	0	
	30	13.5	0	0	0	0	Expelling 3 red spheres. → photo taken. *

Total Weight (pooled): ~~0.9498~~ or 1.0133

Number of survivors: 46

Number of deformed/have difficulty swimming: 2 of 1

Initials: RR

Reviewed by: 

Date Reviewed: 27 Mar 2013

* Red masses/spheres were likely artemia cysts (unhatched artemia) that were passing through the digestive tract.

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldier Associates
 Work Order No.: N/A

Start Date: Nov 11/2010
 Termination Date: Feb 15/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-2	31	15.0	0	0	0	0	
(BPL)	32	14.5	0	0	0	0	1 red sphere in digestive tract
	33	14.5	0	0	0	0	
	34	14.5	0	0	0	0	
	35	14.5	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.5	0	0	0	0	
	39	14.5	0	0	0	0	
	40 ^{10^{hr}}	14.0	0	0	0	0	
	41 ^{17^{hr}}	14.0	0	0	0	0	
	42 ^{22^{hr}}	14.5	0	0	0	0	
	43 ^{28^{hr}}	14.0	0	0	0	0	
	44 ^{14^{hr}}	14.5	0	0	0	0	
	45 ^{15^{hr}}	14.5	0	0	0	0	
	46 ^{18^{hr}}	15.0	0	0	0	0	
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 1.0133g (all 43)^{hr}

Number of survivors: _____

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: _____

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldor Associates
Work Order No.: BR 1 N/A

Start Date: Nov 11/2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR 2	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	12.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.5	0	0	0	0	
	30	13.5	0	0	0	0	

Total Weight (pooled): 1.2584g

Number of survivors: 78

Number of deformed/have difficulty swimming: BR 1

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F02-2	31	13.0	0	0	0	0	
(cont.)	32	14.0	0	0	0	0	
	33	13.5	0	0	0	0	
	34	14.5	0	0	0	0	
	35	14.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	15.0	0	0	0	0	
	39	15.0	0	0	0	0	
	40	15.0	0	0	0	0	
	41	14.5	0	0	0	0	
	42	14.5	0	0	0	0	
	43	13.5	0	0	0	0	
	44	14.5	0	0	0	0	
	45	14.5	0	0	0	0	
	46	15.0	0	0	0	0	
	47	14.5	0	0	0	0	
	48	14.5	0	0	0	0	
	49	14.0	1	0	0	0	Scoliosis
	5028	13.5	0	0	0	0	
	5124	15.0	0	0	0	0	
	5222	14.0	0	0	0	0	
	5323	14.0	0	0	0	0	
	5424	15.0	0	0	0	0	
	5525	14.0	0	0	0	0	
	5628	14.0	0	0	0	0	
	5727	14.0	0	0	0	0	
	5828	14.5	0	0	0	0	
	5929	14.5	0	0	0	0	
	6030	14.0	0	0	0	0	

Total Weight (pooled): _____
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BR
 Reviewed by: _____

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Feb. 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>Box 2</u>	61	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	62	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	63	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	64	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	65	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	66	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	67	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	68	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	69	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	70	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	71	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	72	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	73	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	74	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	75	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	76	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	77	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	78	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): _____ BQL
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BQL
 Reviewed by: _____

Date Reviewed: 27 Mar 2012

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>FOR-2</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	8	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	9	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	10	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	11	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	12	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	13	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	14	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	15	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	16	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	17	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	18	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	19	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	20	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	21	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	22	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	23	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	24	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	25	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.5020
Number of survivors: 25
Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

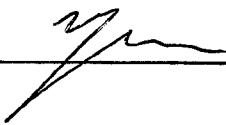
Start Date: Nov. 11, 2010
Termination Date: March 18, 2011

Day 123

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-2	1	14.5	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.01548g
 Number of survivors: 0 or 1
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gelder Associates
Work Order No.: N/A

Start Date: Nov. 11/2010
Termination Date: Feb. 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR3	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	13.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	13.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	13.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	1	Slight edema near yolk sac
	15	14.0	0	0	0	0	
	16	14.0	0	0	0	1	slight yolk sac edema
	17	15.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	13.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	13.0	0	0	0	1	Slight yolk sac edema
	27	14.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.0	0	0	0	0	
	30	13.0	0	0	0	0	

Total Weight (pooled): 0.7812
Number of survivors: 48
Number of deformed/have difficulty swimming: #BPL 3

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Colder Associates
Work Order No.: N/A

Start Date: Nov 11, 2010
Termination Date: Feb 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F0R3	31	14.0	0	0	0	0	
(cont.)	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.5	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	13.5	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.0	0	0	0	0	
	40 10 ⁰⁰	13.5	0	0	0	0	
	41 11 ⁰⁰	14.0	0	0	0	0	
	42 12 ⁰⁰	14.5	0	0	0	0	
	43 13 ⁰⁰	14.0	0	0	0	0	
	44 14 ⁰⁰	14.0	0	0	0	0	
	45 15 ⁰⁰	13.5	0	0	0	0	
	46 16 ⁰⁰	13.5	0	0	0	0	
	47 17 ⁰⁰	14.0	0	0	0	0	
	48 18 ⁰⁰	15.0	0	0	0	0	
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.7812 BRL BRL

Number of survivors: /

Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-3	1	13.5	0	0	0	0	
	2	13.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	13.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	13.0	0	0	0	0	
	7	13.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	13.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	12.0	2	0	0	0	7 mechanical damage
	13	14.5	0	0	0	0	
	14	14.5	0	0	0	0	
	15	12.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	13.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	13.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	13.5	0	0	0	0	
	23	13.5	0	0	0	0	
	24	13.5	0	0	0	0	
	25	13.5	0	0	0	0	
	26	13.5	0	0	0	0	
	27	13.5	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.5	0	0	0	0	

* pic. taken
not preserved
K. Lynch

Total Weight (pooled): 1.0512
Number of survivors: 77
Number of deformed/have difficulty swimming: 1

Initials: BPL
Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

* mechanical damage occurred during assessment therefore the fish was not preserved or photographed

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F02-3	31	14.5	0	0	0	0	
(cont.)	32	13.5	0	0	0	0	
	33	13.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	12.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	13.5	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	13.5	0	0	0	0	
	41	13.5	0	0	0	0	
	42	14.0	0	0	0	0	
	43	14.0	0	0	0	0	
	44	14.0	0	0	0	0	
	45	14.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	14.0	0	0	0	0	
	48	13.5	0	0	0	0	
	49	13.5	0	0	0	0	
	5020	14.5	0	0	0	0	
	5121	14.0	0	0	0	0	
	5222	14.0	0	0	0	0	
	5323	14.5	0	0	0	0	
	5424	13.5	0	0	0	0	
	5525	14.0	0	0	0	0	
	5626	14.0	0	0	0	0	
	5727	13.5	0	0	0	0	
	5828	13.0	0	0	0	0	
	5929	14.0	0	0	0	0	
	6030	13.5	0	0	0	0	

Total Weight (pooled): _____
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BP
 Reviewed by: _____
 Date Reviewed: 27 Mar 2013

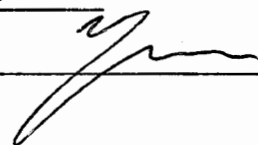
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gröder Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Feb 27, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F02-3	61	13.5	0	0	0	0	
(cont.)	62	14.0	0	0	0	0	
	63	14.0	0	0	0	0	
	64	14.0	0	0	0	0	
	65	14.0	0	0	0	0	
	66	13.0	0	0	0	0	
	67	14.5	0	0	0	0	
	68	13.5	0	0	0	0	
	69	13.5	0	0	0	0	
	70	14.0	0	0	0	0	
	71	13.5	0	0	0	0	
	72	13.5	0	0	0	0	
	73	13.5	0	0	0	0	
	74	14.0	0	0	0	0	
	75	13.5	0	0	0	0	
	76	14.0	0	0	0	0	
	77	13.0	0	0	0	0	
	78						
	79						
	80-20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): _____ ¹³⁹⁴
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BFL
 Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>FOR-3</u>	1	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	8	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	9	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	10	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	11	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	12	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	13	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	14	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	15	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	16	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	17	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	18	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	19	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	20	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	21	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	22	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	23	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	24	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	25	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	26	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	27	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	28	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	29	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	30	<u>13.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	

Total Weight (pooled): 0.6137
Number of survivors: 40
Number of deformed/have difficulty swimming: 0

Initials: BR
Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-3	31	14.5	0	0	0	0	
(cont.)	32	13.5	0	0	0	0	
	33	14.5	0	0	0	0	
	34	13.5	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	14.0	0	0	0	0	
	41						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.6137 ^{ea}
 Number of survivors: 40
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar 16/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>FOR-3</u>	1	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.01968
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2011

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities


Client: Gdder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: March 18, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-3	1	14.5	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 14.83mg BR 0.01483g
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden Associates
 Work Order No.: N/A

Start Date: Nov 11/2010
 Termination Date: Feb 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
For 4	1	15	0	0	0	0	
	2	15	0	0	0	0	
	3	13-14	BV+2	0	0	0	retrosp BPL kyphosis
	4	15	0	0	0	0	
	5	16	0	0	0	0	
	6	16	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.5	0	0	0	0	

Total Weight (pooled): 0.7731

Number of survivors: 46

Number of deformed/have difficulty swimming: 1

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

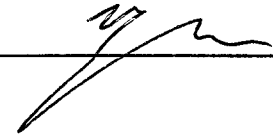
Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR4	31	15.0	0	0	0	0	
(cont.)	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	15.0	0	0	0	0	
	39	14.5	0	0	0	0	
	4018	15.0	0	0	0	0	
	4114	15.0	0	0	0	0	
	4212	15.5	0	0	0	0	
	4318	15.0	0	0	0	0	
	4414	14.0	0	0	0	0	
	4516	15.0	0	0	0	0	
	4618	15.5	0	0	0	0	
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): _____ ^{BPL}
 Number of survivors: _____
 Number of deformed/have difficulty swimming: 46 ^{BPL}

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2013

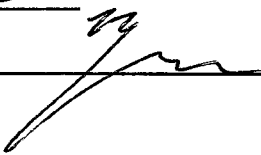
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F02-4	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.5	0	0	0	0	
	29	16.5/15.5	0	0	0	0	
	30	15.0	0	0	0	0	

Total Weight (pooled): 2.4483
Number of survivors: 128
Number of deformed/have difficulty swimming: 0

Initials: BPC
Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Feb. 22 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
For 24	31	15.0	0	0	0	0	
BR	32	14.5	0	0	0	0	
(cont.)	33	14.5	0	0	0	0	
	34	14.5	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	14.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	13.5	0	0	0	0	
	41	14.5	0	0	0	0	
	42	15.5	0	0	0	0	
	43	15.5	0	0	0	0	
	44	14.5	0	0	0	0	
	45	14.0	0	0	0	0	
	46	15.5	0	0	0	0	
	47	15.0	0	0	0	0	
	48	15.0	0	0	0	0	
	49	15.0	0	0	0	0	
	5020	14.5	0	0	0	0	
	5121	15.5	0	0	0	0	
	5222	15.0	0	0	0	0	
	5323	14.5	0	0	0	0	
	5424	15.0	0	0	0	0	
	5525	15.5	0	0	0	0	
	5626	15.0	0	0	0	0	
	5727	14.5	0	0	0	0	
	5828	14.5	0	0	0	0	
	5929	14.0	0	0	0	0	
	6030	14.5	0	0	0	0	

Total Weight (pooled): _____ ^{BR}
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BR
 Reviewed by: _____


Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
For 4	61	15.0	0	0	0	0	
(cont.)	62	15.0	0	0	0	0	
	63	15.0	0	0	0	0	
	64	15.0	0	0	0	0	
	65	15.5	0	0	0	0	
	66	15.0	0	0	0	0	
	67	15.0	0	0	0	0	
	68	15.0	0	0	0	0	
	69	14.5	0	0	0	0	
	70	14.5	0	0	0	0	
	71	15.0	0	0	0	0	
	72	15.0	0	0	0	0	
	73	15.5	0	0	0	0	
	74	15.0	0	0	0	0	
	75	15.0	0	0	0	0	
	76	14.5	0	0	0	0	
	77	15.5	0	0	0	0	
	78	14.5	0	0	0	0	
	79	14.5	0	0	0	0	
	80 20	15.5	0	0	0	0	
	81 21	15.5	0	0	0	0	
	82 22	14.5	0	0	0	0	
	83 23	15.0	0	0	0	0	
	84 24	14.5	0	0	0	0	
	85 25	15.5	0	0	0	0	
	86 26	14.5	0	0	0	0	
	87 27	15.0	0	0	0	0	
	88 28	15.0	0	0	0	0	
	89 29	15.0	0	0	0	0	
	90 30	15.5	0	0	0	0	

Total Weight (pooled): _____
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BPL
 Reviewed by: _____

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F0R4	9 1	14.5	0	0	0	0	
(cont)	9 2	14.5	0	0	0	0	
	9 3	15.0	0	0	0	0	
	9 4	15.0	0	0	0	0	
	9 5	15.0	0	0	0	0	
	9 6	15.5	0	0	0	0	
	9 7	14.5	0	0	0	0	
	9 8	15.0	0	0	0	0	
	9 9	14.0	0	0	0	0	
	10010	15.0	0	0	0	0	
	10111	14.0	0	0	0	0	
	10212	15.0	0	0	0	0	
	10313	14.5	0	0	0	0	
	10414	15.0	0	0	0	0	
	10515	14.5	0	0	0	0	
	10616	14.5	0	0	0	0	
	10717	14.5	0	0	0	0	
	10818	15.0	0	0	0	0	
	10919	15.0	0	0	0	0	
	11020	15.5	0	0	0	0	
	11121	15.5	0	0	0	0	
	11222	15.0	0	0	0	0	
	11323	15.0	0	0	0	0	
	11424	14.5	0	0	0	0	
	11525	14.5	0	0	0	0	
	11626	15.0	0	0	0	0	
	11727	15.0	0	0	0	0	
	11828	15.0	0	0	0	0	
	11929	15.0	0	0	0	0	
	12030	15.0	0	0	0	0	

Total Weight (pooled): _____ ^{BPL}
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BPL
 Reviewed by: _____

Date Reviewed: 27 Mar 2013

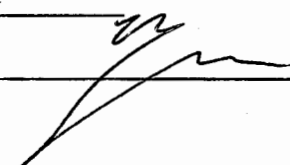
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Feb 22 - 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-4	121	15.0	0	0	0	0	
(cont.)	122	14.5	0	0	0	0	
	123	15.0	0	0	0	0	
	124	15.0	0	0	0	0	
	125	13.0	0	0	0	0	
	126	14.0	0	0	0	0	
	127	15.0	0	0	0	0	
	128	15.0	0	0	0	0	
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	27						
	28						
	29						
	30						

Total Weight (pooled): _____ BPL
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BPL
 Reviewed by: _____


Date Reviewed: 27 Mar 2013

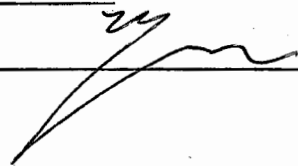
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11 / 2010
Termination Date: Mar 3 / 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-4	1	15.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.3423
Number of survivors: 18
Number of deformed/have difficulty swimming: 0

Initials: BPL
Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: March 11/11

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-4	1	16.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.02314
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities


Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-5	1	14.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	1	0	0	0	✓ 1 lordosis
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.5	0	0	0	0	
	29	13.5	0	0	0	0	
	30	14.5	0	0	0	0	

Total Weight (pooled): 0.8397
Number of survivors: 46
Number of deformed/have difficulty swimming: 0/46

Initials: DEL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 15/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
305 cont.	31	14.5	0	0	0	0	
	32	13.5	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.5	0	0	0	0	
	35	14.5	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	15.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40 18	15.0	0	0	0	0	
	41 11	14.5	0	0	0	0	
	42 12	14.5	0	0	0	0	
	43 13	15.0	0	0	0	0	
	44 14	14.5	0	0	0	0	
	45 15	15.0	0	0	0	0	
	46 16 ^{BP}	15.0	0	0	0	0	
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.8397 ^{BP}

Number of survivors: _____

Number of deformed/have difficulty swimming: 46 ^{BP}

Initials: BP

Reviewed by: _____

Date Reviewed: 27 Mar 2013

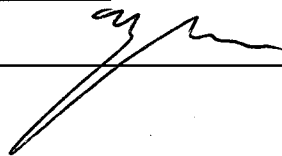
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb. 27, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F08-5	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.5	0	0	0	0	
	14	14.0	0	0	0	0	
	15	13.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.5	0	0	0	0	

Total Weight (pooled): 1.4893
Number of survivors: 88
Number of deformed/have difficulty swimming: 1

Initials: BR
Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Giddler Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb. 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F0R-5	31	14.5	0	0	0	0	
(cont.)	32	14.5	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	14.5	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	15.0	0	0	0	0	
	41	15.0	0	0	0	0	
	42	15.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	14.5	0	0	0	0	
	45	15.0	0	0	0	0	
	46	14.5	0	0	0	0	
	47	15.0	0	0	0	0	
	48	15.0	0	0	0	0	
	49	14.5	0	0	0	0	
	5020	14.5	0	0	0	0	
	5121	15.0	0	0	0	0	
	5222	14.5	0	0	0	0	
	5323	14.5	0	0	0	0	
	5424	15.0	0	0	0	0	
	5525	15.0	0	0	0	0	
	5626	14.5	0	0	0	0	
	5727	15.5	0	0	0	0	
	5828	14.5	0	0	0	0	
	5929	14.5	0	0	0	0	
	6020	14.5	0	0	0	0	

Total Weight (pooled): _____
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BR
 Reviewed by: _____

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb 22, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-5	61	14.5	0	0	0	0	
(cont)	62	14.5	0	0	0	0	
	63	15.0	0	0	0	0	
	64	13.5	0	0	0	0	
	65	14.5	2	0	0	0	scelrosce
	66	14.0	0	0	0	0	
	67	14.5	0	0	0	0	
	68	14.5	0	0	0	0	
	69	15.0	0	0	0	0	
	70	14.5	0	0	0	0	
	71	14.5	0	0	0	0	
	72	14.5	0	0	0	0	
	73	15.0	0	0	0	0	
	74	14.5	0	0	0	0	
	75	14.0	0	0	0	0	
	76	14.0	0	0	0	0	
	77	15.5	0	0	0	0	
	78	14.5	0	0	0	0	
	79	15.0	0	0	0	0	
	80 20 ^{hr}	14.0	0	0	0	0	
	81 21 ^{hr}	14.0	0	0	0	0	
	82 22 ^{hr}	15.0	0	0	0	0	
	83 23 ^{hr}	14.5	0	0	0	0	
	84 24 ^{hr}	15.0	0	0	0	0	
	85 25 ^{hr}	14.5	0	0	0	0	
	86 26 ^{hr}	15.0	0	0	0	0	
	87 27 ^{hr}	14.5	0	0	0	0	
	88 28 ^{hr}	15.0	0	0	0	0	
	89 29 ^{hr}						
	90 30 ^{hr}						

Total Weight (pooled): _____
Number of survivors: _____
Number of deformed/have difficulty swimming: _____

Initials: BPL

Reviewed by: _____

Date Reviewed: 27 Mar 2013

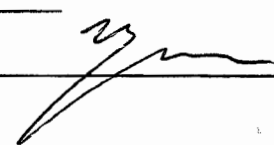
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder Associates
Work Order No.: N/A

Start Date: Nov 10/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-5	1	14.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.6	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	

Total Weight (pooled): 0.5133
 Number of survivors: 32
 Number of deformed/have difficulty swimming: 0

Initials: BL
 Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Grdder Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-5	31	14.5	0	0	0	0	
(cont)	32	15.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.5133 BR
 Number of survivors: 32
 Number of deformed/have difficulty swimming: 0

Initials: BR
 Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

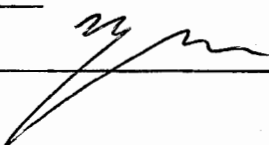
Client: Golden Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: March 10/11

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR5	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.04093
Number of survivors: 2
Number of deformed/have difficulty swimming: 0

Initials: BPC

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

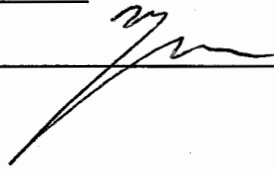
Client: Epider Associates
Work Order No.: N/A

Start Date: Nov 11/2010
Termination Date: Feb. 15, 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
For 6	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0 ^{BR} + 2	0	0	0	1 hypophis
	14	15.5	0 ^{BR}	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.4526
Number of survivors: 25
Number of deformed/have difficulty swimming: 0^{BR} 1

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Giddax Associates
Work Order No.: _____

Start Date: Nov 11/2010
Termination Date: Feb. 22. 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F016	1	15.0	0	0	0	0	
(centrifuge)	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.5 15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.5	0	0	0	0	

Total Weight (pooled): 0.8926g
Number of survivors: 52
Number of deformed/have difficulty swimming: 0

Initials: BPL
Reviewed by: _____


Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Exdax Associates
Work Order No.: _____

Start Date: Nov 10/2010
Termination Date: Feb. 22. 2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
F02-6	31	15.0	0	0	0	0	
(cont.)	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	15.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	15.0	0	0	0	0	
	41	14.5	0	0	0	0	
	42	15.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	15.0	0	0	0	0	
	46	15.0	0	0	0	0	
	47	15.0	0	0	0	0	
	48	14.5	0	0	0	0	
	49	15.5	0	0	0	0	
	50-20	15.0	0	0	0	0	
	51-21	14.5	0	0	0	0	
	52-22	15.0	0	0	0	0	
	53-23						
	54-24						
	55-25						
	56-26						
	57-27						
	58-28						
	59-29						
	60-30						

Total Weight (pooled): _____ ^{13g}
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BR

Reviewed by: [Signature]

Date Reviewed: 27 Mar 2013

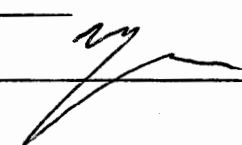
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden Associates
Work Order No.: _____

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-6	1	15.0	0	0	0	0	
(cont'd)	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	

Total Weight (pooled): 0.9005
Number of survivors: 47
Number of deformed/have difficulty swimming: 1

Initials: BR
Reviewed by: 

Date Reviewed: 27 Mar 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities


Client: Golden Associates
Work Order No.: _____

Start Date: Nov 11/2010
Termination Date: Mar 3/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR-6	31	14.5	0	0	0	0	
(cont.)	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.5	0	0	0	0	
	35	14.5	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	15.0	0	0	0	0	
	39	15.5	0	0	0	0	
	40	14.0	0	0	0	0	
	41	15.0	0	0	0	0	
	42	14.5	0	0	0	0	
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	14.5	0	0	0	0	
	46	15.5	0	0	0	0	
	47	15.0	1	0	0	0	scelrosis
	18						
	19						
	20						
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	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						

Total Weight (pooled): 0.9005 BPL
 Number of survivors: 47
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: 

Date Reviewed: 27 Mar 2011

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gibbs Associates
Work Order No.: _____

Start Date: Nov 11/2010
Termination Date: March 10/2011

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
FOR6	1	15.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
*	9	13.5	2	2	0	2	#7 kyphosis started nose, yolk sac, pericardial edema.
	10						
	11						
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	29						
	30						

Total Weight (pooled): 0.18385g
Number of survivors: 9
Number of deformed/have difficulty swimming: 1

Initials: BR
Reviewed by: _____

Date Reviewed: 27 Mar 2013

* 101-2304 - 101-2305

2011-2012

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Jan 27/12

Jan 13

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF14	1	15.0	0	0	0	0	
WF14 Jan 13 (F)	2	15.0	0	0	0	0	
Day 78 (3A)	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	13.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
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	30						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 482.74 mg
Number of survivors: 28
Number of deformed/have difficulty swimming: 0

+ 1 more in container all eating

Initials: BFL

Reviewed by: _____

Date Reviewed: 27/1/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gydder
Work Order No.: _____

Start Date: _____
Termination Date: Jan 27 / 12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF14	1	14.5	0	0	0	0	
Jan 13 (F) Day 78 (30B)	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
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	39						
	40						

Total Weight (pooled): 511.53
Number of survivors: 30
Number of deformed/have difficulty swimming: 0

all feeding.

Initials: ERL

Reviewed by: NE

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF14	1	15.0	0	0	0	0	
Jan 13 (F) Day 78 (13)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14						
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Total Weight (pooled): 232.68 mg
 Number of survivors: 13 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: TR

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier
Work Order No.: _____

Start Date: _____
Termination Date: Jan 31/11

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WPI4	1	15.0	0	0	0	0	
Jan 17 (15) (10)	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11						
	12						
	13						
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Total Weight (pooled): 179.85 mg
 Number of survivors: 10 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: M

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gddex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF14	1	15.0	0	0	0	0	
Jan 20(FY0)	2	12.5	0	0	0	0	
	3	13.0	0	0	0	1	mild yolk sac edema
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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Total Weight (pooled): 105.03
 Number of survivors: 5
 Number of deformed/have difficulty swimming: 1 *all feeding very mild edema*

Initials: BPC

Reviewed by: *W*

Date Reviewed: 27/3/13

101-2722

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

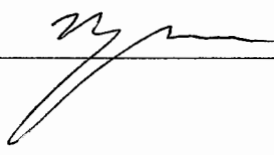
Client: Goldex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.0	0	0	0	0	
(P) Jan 13 (9)	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10						
	11						
	12						
	13						
	14						
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	39						
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Total Weight (pooled): 172.02mg
 Number of survivors: 9 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: RLC

Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.5	0	0	0	0	
Jan 13 (F) (30) A	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	16.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.5	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	16.0	0	0	0	0	
	26	16.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.5	0	0	0	0	
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 580.89 mg
 Number of survivors: 28
 Number of deformed/have difficulty swimming: 0

all feeding

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 31/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.0	0	0	0	0	
Jan17(4)(30)	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.5	0	0	0	0	
	25	15.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.5	0	0	0	0	
	29	15.5	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 565.13 mg
 Number of survivors: 30 *all Feedings*
 Number of deformed/have difficulty swimming: 0

Initials: ABC
 Reviewed by: 

Date Reviewed: 6 Feb 2012


Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 31/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.0	0	0	0	0	
Jan 17 (+) (34)	2	15.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.5	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.6	0	0	0	0	
	31	14.5	0	0	0	0	
	32	14.5	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 623.66mg
 Number of survivors: 34 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BR
 Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb. 3-12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF25</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 20 (F) (30)</u>	2	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>* technician error; squished</u>
	3	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	8	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	9	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	10	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	11	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	12	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	13	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	14	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	15	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	16	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	17	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	18	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	19	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	20	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	21	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	22	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	23	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	24	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	25	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	26	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	27	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	28	<u>15.5</u>	<u>0</u>	<u>BPL TO</u>	<u>0</u>	<u>0</u>	<u>slight malformed nose (short) BPL</u>
	29	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	30	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
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Total Weight (pooled): 605.69
 Number of survivors: 30 all feeding
 Number of deformed/have difficulty swimming: BPL TO

Initials: BRL

Reviewed by: _____

Date Reviewed: 6 Feb 2012

QAQC

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goddard
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.0	0	0	0	0	
Jan 20 (r) 60	2	15.5	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.5	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.5	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
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Total Weight (pooled): 605.69
Number of survivors: 30
Number of deformed/have difficulty swimming: 0

Initials: KSL
Reviewed by: _____

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

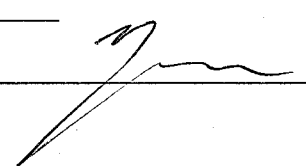
Swim-up wet weight, length and deformities

Client: Goldex
 Work Order No.: _____

Start Date: Nov 3/11
 Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.5	0	0	0	0	
Jan (20)(F)(117)	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
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Total Weight (pooled): 227.88
 Number of survivors: 11 *all feed*
 Number of deformed/have difficulty swimming: 0

Initials: BPL
 Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

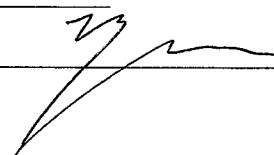
QAQC

Client: Goldier
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	15.5	0	0	0	0	
Jan (20)(F)(11)	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
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Total Weight (pooled): 227.88
 Number of survivors: 11
 Number of deformed/have difficulty swimming: 0

Initials: KJL
 Reviewed by:  _____

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Copdex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb. 7 (12)

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF25</u>	1	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 24 (T) (2)</u>	2	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	8	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	9	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
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Total Weight (pooled): 209.30mg
 Number of survivors: 9 all Feeding
 Number of deformed/have difficulty swimming: 0

Initials: BRL
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

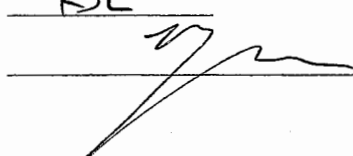
QA/QC

Client: Goldier
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF25	1	16.0	0	0	0	0	
Jan 24/12 (9)	2	15.5	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.5	0	0	0	0	
	7	16.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	16.0	0	0	0	0	
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Total Weight (pooled): 209.30mg
 Number of survivors: 9
 Number of deformed/have difficulty swimming: 0

Initials: KSL
 Reviewed by: 
 Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

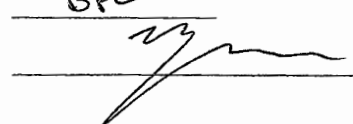
Swim-up wet weight, length and deformities

Client: Goldex
 Work Order No.: _____

Start Date: Nov 3/11
 Termination Date: Feb 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF25</u>	1	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 27(F) 4)</u>	2	<u>16.8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>17.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
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Total Weight (pooled): 21.36mg
 Number of survivors: 4 all feeding
 Number of deformed/have difficulty swimming: 0

Initials: BP
 Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldier
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 14/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF25</u>	1	<u>15.0</u>	0	0	0	0	
<u>Jan 31 (T) (2)</u>	2	<u>16.0</u>	0	0	0	0	
	3						
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Total Weight (pooled): 46.93mg
 Number of survivors: 2 all feeding
 Number of deformed/have difficulty swimming: 0

Initials: BRC
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Gobler
 Work Order No.: _____

Start Date: Nov 3/11
 Termination Date: Feb 17/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF25</u> <u>Feb 3 (F)(1)</u>	1	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2						
	3						
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Total Weight (pooled): 17.65 ^{BPL} 21.28
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0 Feeding

Initials: BPL
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

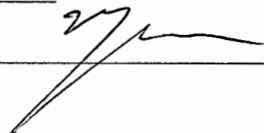
Client: Golder
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF 26	1	14.5	0	0	0	0	
Jan 13 15	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
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Total Weight (pooled): 281.54 mg
 Number of survivors: 15
 Number of deformed/have difficulty swimming: 0

all feeding

Initials: _____
 Reviewed by: 

Date Reviewed: 6 Feb 2012

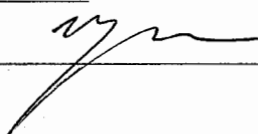
Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 31/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WI26	1	15.0	0	0	0	0	
Jan 17 (7) (3)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
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Total Weight (pooled): 118.84 mg
 Number of survivors: 7
 Number of deformed/have difficulty swimming: 0 *all feeding*

Initials: gsm
 Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

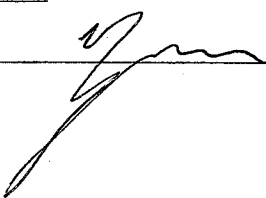
Client: Goldex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF26	1	15.0	0	0	0	0	
Jan20(F) (18)	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.5	0	0	0	0	
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Total Weight (pooled): 355.04
 Number of survivors: 18 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: _____

Reviewed by:  _____

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF26	1	16.0	0	0	0	0	more yolk sac than other fish
Jan24(5)(7)	2	13.0	0	0	0	1	yolk sac edema
	3	14.5	0	0	0	0	more yolk sac
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
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Total Weight (pooled): 7 12396mg
 Number of survivors: 6 all feeding
 Number of deformed/have difficulty swimming: 1

Initials: BR

Reviewed by: _____
101-2731

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

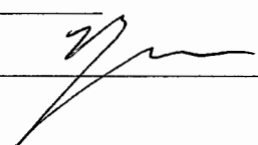
Client: Gdolat
 Work Order No.: _____

Start Date: 3 Nov 11
 Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27	1	15.0	0	0	0	0	
Jan13 (27)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
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Total Weight (pooled): 465.28 mg
 Number of survivors: 25
 Number of deformed/have difficulty swimming: 0

all Feeding

Initials: _____
 Reviewed by: 

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: 3 Nov 11
Termination Date: Jan 31/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27	1	15.0	0	0	0	0	
Jan 17 (5) (u)	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12						
	13						
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Total Weight (pooled): 192.13 mg
 Number of survivors: 11 all feeding
 Number of deformed/have difficulty swimming: 0

Initials: SA

Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gddex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Jan 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WI 27	1	15.0	0	0	0	0	
Jan 17 (T) (30)	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	* 5	12.5	0	1	0	0	slight malformed head, more yolk sac present compared to others not feeding
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0 ⁵	0	0	0	0	
	30	15.0 ⁵	0	0	0	0	
	31						
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Total Weight (pooled): 534.25 mg
 Number of survivors: 30 *all feeding but #5*
 Number of deformed/have difficulty swimming: 1

Initials: BQ

Reviewed by: _____

Date Reviewed: 6 Feb 2013

* 101-2719

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27	1	15.5	0	0	0	0	
Janzo(FX22)	2	16.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	16.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23						
	24						
	25						
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Total Weight (pooled): 449.88
 Number of survivors: 22 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BP

Reviewed by: _____

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27 ⁹⁸	1	15.0	0	0	0	0	
WF27 (30)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.5	0	0	0	0	
	27	15.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
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Total Weight (pooled): ~~30~~ 589.92

Number of survivors: 30

Number of deformed/have difficulty swimming: 0 *all feeding*

Initials: BR

Reviewed by: _____

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27	1	15.0	0	0	0	0	
Sanzol(P) (30)	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	13.0	0	0	0	0	not feeding (no signs)
	29	16.0	0	0	0	0	
1 mort.	30						
	31						
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Total Weight (pooled): 571.83
 Number of survivors: 29 *all but 1 feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPA
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex
Work Order No.: _____

Start Date: Nov 7/11
Termination Date: Feb. 7.12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF27	1	14.5	0	0	0	0	
Jan 24(17)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.0	0	0	0	0	
	18						
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Total Weight (pooled): 302.31 mg
 Number of survivors: 17
 Number of deformed/have difficulty swimming: 0 *all feeding*

Initials: BC
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gdeler
Work Order No.: _____

Start Date: Nov 3/11
Termination Date: Feb 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>W127</u>	1	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 27 (F) (3)</u>	2	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4						
	5						
	6						
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Total Weight (pooled): 64.15mg
 Number of survivors: 3 no feeding
 Number of deformed/have difficulty swimming: 0

Initials: BR
 Reviewed by: [Signature]

Date Reviewed: 6 Feb 2013

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	14.0	0	0	0	0	
Jan 13 13	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
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Total Weight (pooled): 255.83
 Number of survivors: 13 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gylden
Work Order No.: _____

Start Date: _____
Termination Date: Jan 27/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	15.5	0	0	0	0	
Jan 13 (F) (30)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.0					
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 602.13
Number of survivors: 30
Number of deformed/have difficulty swimming: 0

all feeding

Initials: BPC

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Jan 31/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
W#32	1	15.6	0	0	0	0	
Jan 17 (r) (9)	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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Total Weight (pooled): 177.13
 Number of survivors: 9 *see feeding*
 Number of deformed/have difficulty swimming: 0

Initials: RPL

Reviewed by: [Signature]

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Jan. 31.12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	15.0	0	0	0	0	
Jen17(T)(30)	2	16.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.5	0	0	0	0	
	22	15.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.5	0	0	0	0	
	30	14.5	0	0	0	0	
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Total Weight (pooled): 556.81 mg
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 0 *all feeding*

Initials: BR

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF4081	1	15.5	0	0	0	0	
Jan 20(F) (26)	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	possibly not feeding (very pale)
	12	16.0	0	0	0	0	possibly not feeding "
	13	16.0	0	0	0	0	
	14	15.0	0	0	0	0	possibly not feeding "
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	16.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.5	0	0	0	0	
	25	16.0	0	0	0	0	
	26	17.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	17.0	0	0	0	0	
	29	16.5	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.5	0	0	0	0	
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 693.23
 Number of survivors: 31 *most feeding*
 Number of deformed/have difficulty swimming: BEST φ

Initials: BRL

Reviewed by: u Date Reviewed: 2/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

QA/QC

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WFL032	1	15.5	0	0	0	0	
San20(F)(26)	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	16.0	0	0	0	0	
	23	15.0 15.5	0	0	0	0	
	24	15.5	0	0	0	0	
	25	16.0	0	0	0	0	
	26	17.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	17.0	0	0	0	0	
	29	16.5	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.5	0	0	0	0	
	32						
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Total Weight (pooled): 693.23
Number of survivors: 31
Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goblex
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	16.0	0	0	0	0	
Jan20(F)30	2	15.0	0	1*	0	0	tissue growth
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	technician error; squished behind head
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	17.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	16.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.5	0	0	0	0	
	29	16.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 586.54mg
 Number of survivors: 30 *all feeding*
 Number of deformed/have difficulty swimming: 30%

Initials: BPL

Reviewed by: M Date Reviewed: 27/3/13
 * Pic # 101-2723

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

QA/QC

Client: Folder
Work Order No.: _____

Start Date: _____
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	16.0	0	0	0	0	
Jan 20 (FX30)	2	15.0	0	1	0	0	tissue growth
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	17.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	16.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.5	0	0	0	0	
	29	16.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 586.54
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 1

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Gylden
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	16.0	0	0	0	0	
Four (4) (25)	2	16.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.5	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	17.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	16.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	17.0	0	0	0	0	
	22	16.5	0	0	0	0	
	23	16.0	0	0	0	0	
	24	17.0	0	0	0	0	
	25	16.0	0	0	0	0	
	26						
	27						
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Total Weight (pooled): 546.83
 Number of survivors: 25 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: *BR*

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldex
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	16.0	0	0	0	0	
Jan 24 (1) (11)	2	16.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12						
	13						
	14						
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Total Weight (pooled): 216.55ms
 Number of survivors: 11 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BA

Reviewed by: ME

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Giddex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF32</u>	1	<u>17.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 27 (F) (2)</u>	2	<u>17.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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Total Weight (pooled): 44.29
 Number of survivors: 2 feeding
 Number of deformed/have difficulty swimming: 0

Initials: BPC

Reviewed by: W

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 14/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF32	1	16.5	0	0	0	0	
Jan 31 (T)(1)	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	39						
	40						

Total Weight (pooled): 23.80
 Number of survivors: 1 *Feeding*
 Number of deformed/have difficulty swimming: 0

Initials: Brc

Reviewed by: *W*

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 3. 12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	13.0	0	0	0	0	
Janz 0(I) (18)	2	15.0	0	0	0	0	
	3	13.0	0	0	0	0	
	4	13.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.5	0	0	0	0	
	9	13.0	0	0	0	0	no sign of feeding
	10	13.0	0	0	0	0	no sign of feeding
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	13.5	0	0	0	0	does not appear to be feeding
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 303.56

Number of survivors: 18 some not feeding

Number of deformed/have difficulty swimming: 0

Initials: GBL

Reviewed by: N

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	15.0	0	0	0	0	
Sam 24 (7) (30)	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 495.31mg
 Number of survivors: 30 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPR

Reviewed by: M

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldor
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	14.0	0	0	0	0	
Jan 24 (r) (26)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	* 9	14.0	2	0	0	0	r lordosis
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.5	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 403.04 mg
 Number of survivors: 26 see feeding
 Number of deformed/have difficulty swimming: 1

Initials: RL

Reviewed by: RL

Date Reviewed: 27/3/13

* 101-3729-2730

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Feb. 10. 12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	14.5	0	0	0	0	
San27 (F)	2	16.0	0	0	0	0	
(29)	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.5	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	13.0	0	1	0	0	malformed head / shortened snout
	24	15.5	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.5	0	0	0	0	
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 497.42ms
 Number of survivors: 29 *all healthy*
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 2/13/13

10 101-2735/36

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldor
Work Order No.: _____

Start Date: _____
Termination Date: Feb 14/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WT 38</u>	1	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 31 (5) (1)</u>	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	40						

Total Weight (pooled): 17.58mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0 feeding

Initials: BL

Reviewed by: M Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 17/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF38</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Feb 3 (P)(1)</u>	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	39						
	40						

Total Weight (pooled): 17.08 mg
 Number of survivors: 1 per Reading
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: M

Date Reviewed: 2/17/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goilder
Work Order No.: _____

Start Date: _____
Termination Date: Fato 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
^{BL} WF 34 39	1	15.0	0	0	0	0	
Janz (P) (8)	2	16.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	17.0	0	0	0	0	
	7	17.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9						
	10						
	11						
	12						
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Total Weight (pooled): 182.40
 Number of survivors: 8 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BL

Reviewed by: RL

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

QA/QC

Client: Goldier
Work Order No.: _____

Start Date: _____
Termination Date: Feb 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF3439 88L Jan 20(F)(8)	1	150	0	0	0	0	
	2	160	0	0	0	0	
	3	155	0	0	0	0	
	4	160	0	0	0	0	
	5	160	0	0	0	0	
	6	170	0	0	0	0	
	7	170	0	0	0	0	
	8	160	0	0	0	0	
	9						
	10						
	11						
	12						
	13						
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Total Weight (pooled): 182.40
Number of survivors: 8
Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: M

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Gables
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	17.0	0	0	0	0	
WF39	2	17.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.5	0	0	0	0	
	9	17.0	0	0	0	0	
	10						
	11						
	12						
	13						
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	31						
	32						
	33						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 230.20 mg
 Number of survivors: 9 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: *[Signature]*

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gardner
Work Order No.: _____

Start Date: _____
Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	15.5	0	0	0	0	
Jan 24 (5) (30)	2	15.5	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	16.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	16.0	0	0	0	0	
	26	16.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	16.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
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	40						

Total Weight (pooled): 643.90mg
 Number of survivors: 30 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: ML

Date Reviewed: 2/7/13

Embryo-Alevin-Fry Toxicity Test Data Sheet QA/QC
Swim-up wet weight, length and deformities

Client: Goldier
Work Order No.: _____

Start Date: _____
Termination Date: Feb 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	15.5	0	0	0	0	
Jan 24 CT (30)	2	15.5	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	16.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	16.0	0	0	0	0	
	26	16.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	16.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
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Total Weight (pooled): 643.90ms
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: M

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 10-12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>W239</u>	1	16.0	0	0	0	0	
<u>Jan 27 (F) (36)</u>	2	16.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	16.5	0	0	0	0	
	6	15.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.0	0	0	0	0	
	18	16.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.5	0	0	0	0	
	21	16.0	0	0	0	0	
	22	16.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	16.5	0	0	0	0	
	25	16.0	0	0	0	0	
	26	16.0	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	16.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	16.0	0	0	0	0	
	33	16.5	0	0	0	0	
	34	16.0	0	0	0	0	
	35	15.5	0	0	0	0	
	36	16.0	0	0	0	0	
	37						
	38						
	39						
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Total Weight (pooled): 727.05 mg
 Number of survivors: 36 all feeding
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: W

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 14/13

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	16.5	0	0	0	0	
Jambi (T) (25)	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	16.0	0	0	0	0	
	19	15.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	16.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	16.0	0	0	0	0	
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Total Weight (pooled): 497.81mg
 Number of survivors: 23
 Number of deformed/have difficulty swimming: 0 *all feeding*

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Feb 17/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF 41	1	17.0	0	0	0	0	
Feb 3 (F) (24)	2	16.5	0	0	0	0	
GR	3	17.0	0	0	0	0	
	4	16.0	0	0	0	0	
	5						
	6						
	7						
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Total Weight (pooled): 96.98mg
 Number of survivors: 4
 Number of deformed/have difficulty swimming: 0 all feeding

Initials: BP

Reviewed by: ME

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 21/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>W139</u>	1	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Feb 7 (T) (2)</u>	2	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3						
	4						
	5						
	6						
	7						
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Total Weight (pooled): 31.12 mg
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0 all feeding

Initials: BP

Reviewed by: M

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 3/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF40	1	14.0	0	0	0	0	
Jan 20 (F) (2/1)	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	16.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27						
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Total Weight (pooled): 459.42 mg
 Number of survivors: 26
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: W

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gddex
Work Order No.: _____

Start Date: _____
Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF 40	1	15.0	0	0	0	0	
Jan 24 (5) (55)	2	15.0	0	0	0	0	
	3	13.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	13.0	0	0	0	0	eye hemorrhage.
	8	14.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	13.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.5	0	0	0	0	
	30	14.0	0	0	0	0	
	31	13.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.5	0	0	0	0	
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 521.75mg
 Number of survivors: 35 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BRC

Reviewed by: *[Signature]*

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldex
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
W540	1	14.5	0	0	0	0	
Jan 27 (F) (22)	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	16.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23						
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	40						

Total Weight (pooled): 396.72mg
 Number of survivors: 22 *all Feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BBL

Reviewed by: *[Signature]*

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gddex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 14/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF 40</u>	1	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>San 304(1)</u>	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	40						

Total Weight (pooled): 17.86mg
 Number of survivors: 1 feeding
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: ll

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golden
Work Order No.: _____

Start Date: _____
Termination Date: Feb. 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF41	1	15.5	0	0	0	0	
Jan 21 (5) (17)	2	16.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18						
	19						
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	40						

Total Weight (pooled): 288.68
 Number of survivors: 17 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: M

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Gadde
Work Order No.: _____

Start Date: _____
Termination Date: Feb 7/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF41	1	15.0	0	0	0	0	
Jan 24 (T) (30)	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
	* 16	9.0	3	2	2	0	malformed head, eye spots, malformed dorsal & tail fin
	17	14.0	0	0	0	0	no signs of feeding
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	* 21	15.5	1	0	0	0	~ scoliosis, malformed head, tissue growth
	22	15.0	0	0	0	0	still feeding
	23	15.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	15.5	0	0	0	0	
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Total Weight (pooled): 477.53mg
 Number of survivors: 30 feeding except 1
 Number of deformed/have difficulty swimming: 2

Initials: BQ

Reviewed by: Date Reviewed: 27/3/13

* 101-2724, 2725
* 101-2726, 2728

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF41	1	14.0	0	0	0	0	
Jan 27 (F)	2	15.5	0	0	0	0	
(23)	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.5	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.5	0	0	0	0	
	23						
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	39						
	40						

Total Weight (pooled): 381.04 mg
 Number of survivors: 22 + 1 missing due to technician error
 Number of deformed/have difficulty swimming: 0

Initials: BP

Reviewed by: [Signature]

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golden
 Work Order No.: _____

Start Date: _____
 Termination Date: 27 Feb. 10/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>W41</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan 27 (E) (30)</u>	2	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	8	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	9	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	10	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	11	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	12	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	13	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	14	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	15	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	16	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	17	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	18	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	19	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	20	<u>13.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	21	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	22	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	23	<u>16.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	24	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	25	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	26	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	27	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	28	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	29	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 538.12mg
 Number of survivors: 29 all feeding
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Feb 14/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>WF41</u>	1	<u>14.8</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Jan31(t)(5)</u>	2	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>13.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
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	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 79.12 mg
 Number of survivors: 5 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: n

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldor
Work Order No.: _____

Start Date: _____
Termination Date: Feb 17/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>BPL</u> <u>WF3A41</u>	1	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
<u>Feb 3 (F) (4)</u> <u>BPL 2</u>	2	<u>17.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 36.75mg
 Number of survivors: 2 BPL & BPL Reading
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: RE

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldor
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	17.0	0	0	0	0	
swim up (A)	2	17.0	0	0	0	0	
	3	17.5	0	0	0	0	
	4	16.0	0	0	0	0	
	5	18.0	0	0	0	0	
	6	17.0	0	0	0	0	
	7	17.0	0	0	0	0	
	8	18.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	18.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	18.0	0	0	0	0	
	13	17.5	0	0	0	0	
	14	17.0	0	0	0	0	
	15	18.0	0	0	0	0	
	16	17.0	0	0	0	0	
	17	18.0	0	0	0	0	
	18	17.0	0	0	0	0	
	19	18.5	0	0	0	0	
	20	17.0	0	0	2	0	fin ^{cranial} deformed, muscle also malform
	21	17.0	0	0	0	0	
	22	17.0	0	0	0	0	
	23	17.5	0	0	0	0	
	24	18.0	0	0	0	0	
	25	17.0	0	0	0	0	
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 675.84mg
 Number of survivors: 25
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

* 101-2750-52

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF38	1	16.5	0	0	0	0	
Swim up (B)	2	15.0	0	0	0	0	
	3	17.0	0	0	0	0	
	4	17.0	0	0	0	0	
	5	17.0	0	0	0	0	
	6	17.0	0	0	0	0	
	7	16.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.5	0	0	0	0	
	12	16.5	0	0	0	0	
	13	17.0	0	0	0	0	
	14	16.5	0	0	0	0	
	15	17.5	0	0	0	0	
	16	18.0	0	0	0	0	
	17	17.0	0	0	0	0	
	18	17.0	0	0	0	0	
	19	16.5	0	0	0	0	
	20	16.0	0	0	0	0	
	21	16.0	0	0	0	0	
	22	16.5	0	0	0	0	
	23	16.0	0	0	0	0	
	24	16.5	0	0	0	0	
	25	17.0	0	0	0	0	
	26	16.0	0	0	0	0	
	27	16.5	0	0	0	0	
	28	17.0	0	0	0	0	
	29	17.0	0	0	0	0	
	30	16.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	16.5	0	0	0	0	
	33	18.0	0	0	0	0	
	34	16.0	0	0	0	0	
	35	17.5	0	0	0	0	
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 823.37mg
 Number of survivors: 35 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: *ME*

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldier
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb. 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
W738	1	18.0	0	0	0	0	
swim-up (c)	2	19.0	0	0	0	0	
	3	17.0	0	0	0	0	
	4	17.0	0	0	0	0	
	5	18.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	16.5	0	0	0	0	
	8	18.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	17.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	17.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	17.0	0	0	0	0	
	18	16.0	0	0	0	0	
	19	17.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	17.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	18.0	0	0	0	0	
	24	17.0	0	0	0	0	
	25	16.5	0	0	0	0	
	26	16.0	0	0	0	0	
	27	17.0	0	0	0	0	
	28	17.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	17.0	0	0	0	0	
	33	16.5	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	16.5	0	0	0	0	
	37	16.0	0	0	0	0	
	38						
	39						
	40						

Total Weight (pooled): 833.90
 Number of survivors: 37
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Goldex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF 39 (A)	1	17.0	0	0	0	0	
Swim up	2	17.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	16.5	0	0	0	0	
	5	17.0	0	0	0	0	
	6	17.5	0	0	0	0	
	7	17.0	0	0	0	0	
	8	17.5	0	0	0	0	
	9	17.0	0	0	0	0	
	10	17.0	0	0	0	0	
	11	17.5	0	0	0	0	
	12	17.0	0	0	0	0	
	13	17.0	0	0	0	0	
	14	17.0	0	0	0	0	
	15	17.5	0	0	0	0	
	16	17.0	0	0	0	0	
	17	17.5	0	0	0	0	
	18	17.0	0	0	0	0	
	19	16.5	0	0	0	0	
	20	16.5	0	0	0	0	
	21	17.5	0	0	0	0	
	22	17.0	0	0	0	0	
	23	16.5	0	0	0	0	
	24	16.5	0	0	0	0	
	25	16.5	0	0	0	0	
	26	17.0	0	0	0	0	
	27	17.0	0	0	0	0	
	28	17.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	16.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	17.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	17.0	0	0	0	0	
	35	17.0	0	0	0	0	
	36	16.5	0	0	0	0	
	37	16.0	0	0	0	0	
	38	16.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	17.0	0	0	0	0	
	41	17.5	0	0	0	0	
	42	17.0	0	0	0	0	

technical error
mechanical damage to skull

Total Weight (pooled): 42 1191.69
Number of survivors: 42
Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: nr

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Giddex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	18.0	0	0	0	0	
swim up (5)	2	17.0	0	0	0	0	
	3	18.0	0	0	0	0	
	4	17.5	0	0	0	0	
	5	17.0	0	0	0	0	
	6	18.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	17.0	0	0	0	0	
	9	17.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	18.0	0	0	0	0	
	12	18.5	0	0	0	0	
	13	17.0	0	0	0	0	
	14	17.0	0	0	0	0	
	15	18.5	0	0	0	0	
	16	18.0	0	0	0	0	
	17	18.0	0	0	0	0	
	18	17.0	0	0	0	0	
	19	17.5	0	0	0	0	
	20	17.5	0	0	0	0	
	21	18.0	0	0	0	0	
	22	18.0	0	0	0	0	
	23	17.0	0	0	0	0	
	24	18.0	0	0	0	0	
	25	19.0	0	0	0	0	
	26	16.5	0	0	0	0	
	27	18.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	18.5	0	0	0	0	
	30	18.5	0	0	0	0	
	31	16.5	0	0	0	0	
	32	17.0	0	0	0	0	
	33	17.0	0	0	0	0	
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 885.34
 Number of survivors: 32
 Number of deformed/have difficulty swimming: 0

Initials: BP

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder
Work Order No.: _____

Start Date: _____
Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	18.0	0	0	0	0	
swim up	2	16.0	0	0	0	0	
	3	17.0	0	0	0	0	
	4	17.0	0	0	0	0	
	5	17.0	0	0	0	0	
	6	18.0	0	0	0	0	
	7	18.0	0	0	0	0	
	8	17.5	0	0	0	0	
	9	18.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.5	0	0	0	0	
	12	17.5	0	0	0	0	
	13	17.5	0	0	0	0	
	14	17.5	0	0	0	0	
	15	18.0	0	0	0	0	
	16	17.0	0	0	0	0	
	17	17.0	0	0	0	0	
	18	17.8	0	0	0	0	
	19	17.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	17.5	0	0	0	0	
	22	17.0	0	0	0	0	
	23	17.0	0	0	0	0	
	24	17.5	0	0	0	0	
	25	17.5	0	0	0	0	
	26	18.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	18.5	0	0	0	0	
	30	17.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	17.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	18.0	0	0	0	0	
	35	18.0	0	0	0	0	
	36	17.0	0	0	0	0	
	37	18.5	0	0	0	0	
	38						
	39						
	40						

Total Weight (pooled): 925.33
 Number of survivors: 37 *all feeding*
 Number of deformed/have difficulty swimming: 0

Initials: BPC

Reviewed by: M

Date Reviewed: 2/13/13

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

QAQC

Client: Goldex
Work Order No.: _____

Start Date: _____
Termination Date: Feb 28 / 12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF39	1	18.0	0	0	0	0	
Swimup	2	15.0	0	0	0	0	
	3	17.0	0	0	0	0	
	4	17.0	0	0	0	0	
	5	17.0	0	0	0	0	
	6	18.0	0	0	0	0	
	7	18.0	0	0	0	0	
	8	17.5	0	0	0	0	
	9	18.5	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.5	0	0	0	0	
	12	17.5	0	0	0	0	
	13	17.5	0	0	0	0	
	14	17.5	0	0	0	0	
	15	16.0	0	0	0	0	
	16	17.0	0	0	0	0	
	17	17.0	0	0	0	0	
	18	17.0	0	0	0	0	
	19	17.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	17.5	0	0	0	0	
	22	17.0	0	0	0	0	
	23	17.0	0	0	0	0	
	24	17.5	0	0	0	0	
	25	17.5	0	0	0	0	
	26	18.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	18.5	0	0	0	0	
	30	17.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	17.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	18.0	0	0	0	0	
	35	18.0	0	0	0	0	
	36	17.0	0	0	0	0	
	37	18.5	0	0	0	0	
	38						
	39						
	40						

Total Weight (pooled): 925.33
 Number of survivors: 37
 Number of deformed/have difficulty swimming: 0

Initials: KSL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldex
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF40	1	17.0	0	0	0	0	
swim up (A)	2	17.0	0	0	0	0	
	3	16.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	16.0	0	0	0	0	
	6	16.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	17.5	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	16.0	0	0	0	0	
	12	17.0	0	0	0	0	
	13	17.0	0	0	0	0	
	14	17.0	0	0	0	0	
	15	16.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	16.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	17.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	16.5	0	0	0	0	
	22	16.0	0	0	0	0	
	23	18.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	16.0	0	0	0	0	
	26	17.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	16.0	0	0	0	0	
	29	17.0	0	0	0	0	
	30	17.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 31 791.08mg
 Number of survivors: 31
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Goldent
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
W40	1	18.0	0	0	0	0	
swim up (B)	2	17.0	0	0	0	0	
	3	18.0	0	0	0	0	
	4	19.0	0	0	0	0	
	5	17.5	0	0	0	0	
	6	19.0	0	0	0	0	
	7	17.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	17.0	0	0	0	0	
	10	17.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	17.0	0	0	0	0	
	13	17.0	0	0	0	0	
	14	18.0	0	0	0	0	
	15	19.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	17.0	0	0	0	0	
	18	18.0	0	0	0	0	
	19	18.0	0	0	0	0	
	20	17.0	0	0	0	0	
	21	18.0	0	0	0	0	
	22	17.5	0	0	0	0	
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 639.65mg
 Number of survivors: BRL 22
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: [Signature] Date Reviewed: 27/3/13

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder
 Work Order No.: _____

Start Date: _____
 Termination Date: Feb 28/12

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
WF40	1	17.0	0	0	0	0	
swimup	2	18.0	0	0	0	0	
	3	18.5	0	0	0	0	
	4	16.0	0	0	0	0	
	5	18.5	0	0	0	0	
	6	17.5	0	0	0	0	
	7	18.5	0	0	0	0	
	8	17.0	0	0	0	0	
	9	18.0	0	0	0	0	
	10	18.5	0	0	0	0	
	11	17.5	0	0	0	0	
	12	17.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	17.0	0	0	0	0	
	15	17.0	0	0	0	0	
	16	18.5	0	0	0	0	
	17	17.0	0	0	0	0	
	18	17.0	0	0	0	0	
	19	17.5	0	0	0	0	
	20	18.0	0	0	0	0	
	21	17.0	0	0	0	0	
	22	17.0	0	0	0	0	
	23	18.0	0	0	0	0	
	24	18.0	0	0	0	0	
	25	17.5	0	0	0	0	
	26	18.0	0	0	0	0	
	27	18.5	0	0	0	0	
	28	17.0	0	0	0	0	
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 857.72
 Number of survivors: 28
 Number of deformed/have difficulty swimming: 0

Jar: -2 fish
~~not present~~ SPL

Initials: BSL

Reviewed by: [Signature]

Date Reviewed: 27/3/13

2013-2014

Embryo Alevin Fry Deformity Summary

Swim-up alevins

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h

Test Species: *P. williamsoni*

Sample ID	Deformities					Rate			
	Total GSI # skeletal	Total GSI # cranial	Total GSI # finfold	Total GSI # edema	GSI Total	Fish with Deformities (>0)	Percent Deformity (>0)	Fish with Deformities (>1)	Percent Deformity (>1)
13-01	4	7	3	5	19	6	5.9	5	4.9
13-02	1	2	1	3	7	3	3.2	1	1.1
13-03	17	2	b13	10	42	8	16.3	7	15.1
13-04	6	2	1	11	20	8	8.3	5	5.2
13-05	3	1	1	0	5	2	2.0	2	2.0
13-06	3	2	0	3	8	2	2.6	2	2.6
13-07	14	4	0	5	23	9	8.8	6	5.9
13-08	2	2	0	3	7	1	1.9	1	1.9
13-09	16	33	0	4	53	18	20.9	13	16.1
13-10	0	0	2	0	2	1	0.9	1	0.9
13-11	0	1	0	0	1	1	2.1	0	0.0
13-12	2	0	0	0	2	1	1.5	1	1.5
13-13	4	3	0	6	13	3	3.8	2	2.5
13-14	3	0	2	0	5	2	2.2	2	2.2
13-15	6	25	0	5	36	12	19.0	11	17.5
13-16	4	6	0	3	13	5	5.1	4	4.0
13-17	1	7	0	3	11	4	3.8	2	1.9
13-18	10	8	1	13	32	8	8.7	6	6.5
13-19	2	4	0	0	6	4	3.8	1	1.0
13-20	0	0	0	0	0	0	0.0	0	0.0
13-21	2	3	1	0	6	1	5.0	1	5.0
13-22	0	0	c 14	0	14	0	10.0	0	4.0
13-23	2	3	0	3	8	1	0.9	1	0.9
13-24	1	0	0	3	4	2	2.4	1	1.2
13-25	6	0	0	0	6	3	3.4	3	3.4
13-27	3	3	d 17	3	26	0	16.2	1	0.9
13-28	6	2	1	7	16	7	8.6	3	3.7

Comments: b) 6 Finfold excluded c) 10 fish finfold excluded d) 17 fish finfold excluded

Reviewed by: *W*

Date reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	11.0	3	0	0	0	lordosis
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 619.05 mg
 Number of survivors: 26
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: *JK*

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	15.5	0	0	0	0	
	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.5	0	0	1	0	1 malformed pectoral fin
	7	14.5	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	2	0	malformed pectoral fins
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 27^{est} 579.19 mg
 Number of survivors: 27
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.1	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.0	0	0	0	0	
two heads	36	11.5	3	0	0	0	*
	37						
	38						
	39						
	40						

Total Weight (pooled): 651.25mg
 Number of survivors: 36
 Number of deformed/have difficulty swimming: 1

Initials: _____

Reviewed by: TK Date Reviewed: 3/12/14

*two heads fully formed, separate hearts, joined yolk sac, separate digestive tract until lower portion; separate cardinal vascular system until close to anal pore

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
i3-01	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.5	0	1	0	2	shortened nose; yolk sac & eye edema
	12	14.0	excl 1	3	0	3	kyphosis & lordosis; shortened nose ↳ severely malformed lower jaw; eye cranial, yolk sac edema
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 226.78 mg
 Number of survivors: 12
 Number of deformed/have difficulty swimming: 2

Initials: BRV

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	1	0	1	yolk sac edema, shortened nose
	12		1	1	0	3	yolk sac, flat face, kyphosis eye edema
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): ~~12~~ 226.78 mg
 Number of survivors: 12
 Number of deformed/have difficulty swimming: 2

Initials: KJL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	14.5	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.53mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: BC

Reviewed by: R

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
(3-01)	1	14.5	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.53 mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: KJU

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.5	0	0	0	0	technician error - tail damaged
	37	14.5	0	0	0	0	
	38	14.5	0	0	0	0	
	39	14.5	0	0	0	0	
	40	15.0	0	0	0	0	

Total Weight (pooled): 827.58 mg
 Number of survivors: 45
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	41	15.0	0	0	0	0	
	42	16.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	14.5	0	0	0	0	
	45	14.5	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 827.58 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013

Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1	15.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	1	0	malformed caudal
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	16.0	0	0	0	0	snapped spine (technician error)
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17						
	18						
	19						
	20						
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Total Weight (pooled): 324.81 mg
 Number of survivors: 16
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	13.0	1	0	0	0	Kyphosis
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.0	0	2	0	3	Shortened nose + jaw
	27						eye, pericardial, yolk sac edema
	28						swollen lower digestive tract
	29						
	30						
	31						
	32						
	33						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 454.53
Number of survivors: 26
Number of deformed/have difficulty swimming: 2

Initials: BPL/KJL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7						
	8						
	9						
	10						
	11						
	12						
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Total Weight (pooled): 103.52 mg
 Number of survivors: 6
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: h

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 103.52 ms
 Number of survivors: 6
 Number of deformed/have difficulty swimming: 0

Initials: KOL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03	1	13.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	2	0	malformed fins (all)
	7	14.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.0	0	0	2	0	malformed fins (all)
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	2	0	malformed fins (all)
	16	11.5	3	0	0	0	sceliosis
	17	14.0	0	0	1	0	malformed fins (minors) (all)
	18	14.0	0	0	0	0	
	19	14.0	0	0	2	0	malformed fins (all)
	20	14.5	0	0	2	0	malformed fins (all)
	21	15.0	0	0	0	0	
	22	12.5	0	0	2	1	malformed fins (all); yolk sac edema
	23	13.5	0	0	0	0	technician escaped popped eye
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 445.85
 Number of survivors: 23
 Number of deformed/have difficulty swimming: 7 deformed

Initials: BA/KSL

Reviewed by: TK

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: **Nov 6 2013**
Termination Date: **Jan 15 2014**

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	13.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	13.5	0	0	0	0	
	16	11.0	3	0	0	3	yolk sac edema; scoliosis
	17	14.5	0	0	0	0	
	18	13.0	0	0	0	0	
	19	12.5 13.5	0	1	0	3	yolk sac edema; malformed nose (shortened)
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.5	3	0	0	0	scoliosis, lordosis
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	10.0	3	0	0	0	scoliosis, kyphosis
	35	14.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	13.0	2	0	0	0	lordosis, kyphosis
	39	14.0	0	0	0	0	
	40						

Total Weight (pooled): 635.23 mg
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 5

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	opaque lower jaw, rear head + ventral fin
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	1 pectoral fin opaque
	10	14.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	13.0	3	1	0	3	(1)
	25						
	26						
	27						
	28						
	29						
	30						
	31						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 491.31
 Number of survivors: 24
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature] Date Reviewed: 3/12/14

Kyphosis, shortened nose, eye, pericardial + yolk sac edema, lower digestive tract swollen

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	14.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7						
	8						
	9						
	10						
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Total Weight (pooled): 131.36 mg
 Number of survivors: 6
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	16.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	13.5	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.5	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.5	0	0	1	0	Caudal
	33	15.0	1	0	0	0	Kyphosis
	34	15.0	0	0	0	0	
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 657.656.83
 Number of survivors: 34
 Number of deformed/have difficulty swimming: 2

Initials: RPL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.8	0	0	0	0	
	10	14.0	0	0	0	3	eye and yolk sac edema
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	15.0	0	0	0	0	technician error - damaged eye
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0	0	0	0	2	eye and yolk sac edema
	35	13.0	0	0	0	0	
	36	14.5	0	0	0	0	
	37	14.5	0	0	0	0	
	38	15.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	14.5	0	0	0	0	

Total Weight (pooled): 1069.07 mg

Number of survivors: 53

Number of deformed/have difficulty swimming: 6

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	41	15.0	0	0	0	0	
	42	15.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	14.0	1	0	0	0	lordosis
	45	14.5	0	0	0	0	
	46	15.0	0	0	0	0	
	47	16.0	0	0	0	0	
	48	14.0	0	0	0	0	
	49	15.0	0	0	0	0	
	510	14.0	2	3	0	3	(1)
	511	14.0	0	0	0	0	
	512	14.0	0	2	0	3	
	513	11.5	2	0	0	0	shortened nose, malformed lower jaw; edema-eye, pericardial, cranial + yolk sac
	14						→ lordosis, cranial edema
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
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	40						

Total Weight (pooled): 1069.07mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 6

Initials: BPL/KJL

Reviewed by: [Signature] Date Reviewed: 3/12/14

(1) Kyphosis, shortened nose, malformed lower jaw. eye, pericardial, yolk sac edema and cranial

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	16.0	0	0	0	0	
	2	16.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
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	38						
	39						
	40						

Total Weight (pooled): 65.17mg

Number of survivors: 3

Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: n

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
B-04	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 65.17mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: 0

Initials: RJL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
B-05	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	16.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17						
	18						
	19						
	20						
	21						
	22						
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	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 332.8¹⁰²68
 Number of survivors: 16
 Number of deformed/have difficulty swimming: 0

Initials: BPLIKJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	16.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	14.5	2	0	1	0	torticollis; malformed caudal
	28	14.0	0	0	0	0	
	29	14.0	1	1	0	0	scoliosis (back of head); shortened nose
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 582.30 mg
 Number of survivors: 29
 Number of deformed/have difficulty swimming: 2

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	16.0	0	0	0	0	
	32	15.5	0	0	0	0	
	33	14.5	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	15.0	0	0	0	0	

Total Weight (pooled): 991.20
Number of survivors: 50
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJV

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	41	15.0	0	0	0	0	
	42	15.5	0	0	0	0	
	43	15.0	0	0	0	0	
	44	14.5	0	0	0	0	
	45	15.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	15.0	0	0	0	0	
	48	14.5	0	0	0	0	
	49	14.5	0	0	0	0	
	50	14.5	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 991.20
 Number of survivors: 50
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013

Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1	16.0	0	0	0	0	
	2	17.0	0	0	0	0	
	3	17.0	0	0	0	0	
	4	16.5	0	0	0	0	
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	30						
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	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 109.86 mg

Number of survivors: 4

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	38						
	39						
	40						

Total Weight (pooled): 109.86 mg
 Number of survivors: 4
 Number of deformed/have difficulty swimming: 0

Initials: KJC

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	13.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13						
	14						
	15						
	16						
	17						
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Total Weight (pooled): 223.46

Number of survivors: 12

Number of deformed/have difficulty swimming: 0

Initials: PR/KSL

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.5	0	0	0	0	
	31	14.5	0	0	0	0	
	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	15.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	15.5	0	0	0	0	

Total Weight (pooled): 887.54 mg

Number of survivors: 45

Number of deformed/have difficulty swimming: 6

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	4 1	15.0	0	0	0	0	
	4 2	15.0	0	0	0	0	
	4 3	15.5	0	0	0	0	
	4 4	15.0	0	0	0	0	
	4 5	14.5	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 887.54 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	15.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.0	2	1	0	0	lordosis, lower jaw malformed
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 386.90
 Number of survivors: 20
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJ

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	14.0			0	5	Kyphosis; shortened nose; eye, gills & pericardial edema
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 34.48mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 1

Initials: BL

Reviewed by: TK

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

G/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
M15 13-06 FJL	1		0	1	0	3	yolk sac, eye, cranial edema flattened nose
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 34.48 mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 1

Initials: FJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	1	15.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	15.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.5	0	0	0	0	
	36	14.5	0	0	0	0	
	37	14.0	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.0	0	0	0	0	
	40	14.5	0	0	0	0	

Total Weight (pooled): 808.16mg
Number of survivors: 46
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	41	14.0	0	0	0	0	
	42	14.5	0	0	0	0	
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	14.0	0	0	0	0	
	46	15.0	0	0	0	0	
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): _____
 Number of survivors: _____
 Number of deformed/have difficulty swimming: _____

Initials: BRL / KSL

Reviewed by: M

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: **Nov 6 2013**
Termination Date: **Jan 15 2014**

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	1	12.5	2	0	0	1	lordosis (base of head), yolk sac edema
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	13.0	0	0	0	0	
	5	13.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	13.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	10.5	2	1	0	3	Kyphosis, malformed nose (shortened) *1
11	14.0	0	0	0	0		
12	14.0	0	0	0	0		
13	14.0	0	0	0	0		
14	14.5	0	0	0	0		
15	14.0	0	0	0	0		
16	15.0	0	0	0	0		
17	15.0	0	0	0	0		
18	15.0	0	0	0	0		
19	14.0	0	0	0	0		
20	14.0	0	0	0	0		
21	13.0	2	0	0	0	scoliosis	
22	13.5	0	0	0	0		
23	15.0	0	0	0	0		
24							
25							
26							
27							
28							
29							
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35							
36							
37							
38							
39							
40							

Total Weight (pooled): 361.53
 Number of survivors: 23
 Number of deformed/have difficulty swimming: 3

Initials: BRL/KJL

Reviewed by: [Signature] Date Reviewed: 3/12/14

*1 edema - yolk sac, pericardial, ^{BRL}digest eyes; digestive tract swollen

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	1	13.5	1	0	0	1	lordosis; yolk sac edema; opaque part of head
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	opaque regions (head, caudal fin)
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	opaque head, regions of caudal fin
	7	14.0	0	0	0	0	"
	8	14.0	0	0	0	0	"
	9	14.0	0	0	0	0	"
	10	14.0	0	0	0	0	"
	11	15.0	0	0	0	0	"
	12	15.0	0	0	0	0	"
	13	14.5	0	0	0	0	"
	14	15.0	0	0	0	0	cut tail off
	15	14.0	0	0	0	0	opaque head, regions of fins
	16	15.0	0	0	0	0	opaque regions of body
	17	14.0	0	0	0	0	opaque head & caudal fin
	18	15.0	0	0	0	0	opaque head & some fin regions
	19	15.0	0	0	0	0	tech error, severed spine; opaque
	20	15.0	0	0	0	0	opaque head & regions of fins
	21	15.0	0	0	0	0	"
	22	14.5	0	0	0	0	"
	23	14.0	1	0	0	0	kyphosis; opaque head (fins)
	24	15.0	1	0	0	0	lordosis; scoliosis; "
	25	14.0	0	0	0	0	opaque head/fin
	26	15.0	0	0	0	0	"
	27	15.0	0	0	0	0	
	28	15.0	0	1	0	0	1 malformed eye; v opaque regions
	29	14.5	0	0	0	0	
	30	15.0	0	0	0	0	"
	31	15.0	0	0	0	0	"
	32	13.0	2	0	0	0	" & caudal fin exposed (clubbed)
	33	14.0	3	2	0	0	kyphosis; malformed nox; & kyphosis; lower jaw
	34	14.0					
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 795.10 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 6

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-08	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	31						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 159.10
 Number of survivors: 11
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-08	1	14.0	0	0	0	0	
	2	13.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	13.5	0	0	0	0	
	33	9.0	2	2	0	3	*
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 640.25 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

* Kyphosis; malformed eye, shortened lower jaw; pericardial $\frac{1}{2}$ yolk sac edema

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-08	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0					
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	22						
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	37						
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	39						
	40						

Total Weight (pooled): 186.99
 Number of survivors: 10
 Number of deformed/have difficulty swimming: 0

Initials: BPL/VJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 155.12
 Number of survivors: 8
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	13.0	0	3	0	0	Shortened nose, long lower jaw, 1 eye malformed, 1 eye min. devel.
	18	14.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	2	0	0	1 malformed eye
	24	14.5	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	1	0	0	0	Kyphosis
	27	14.0	0	1	0	0	malformed eye (1)
	28	14.0	0	1	0	0	1 malformed eye
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 20 503.23
 Number of survivors: 28
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/11/14



Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014


Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	14.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	13.0	1	0	0	0	kyphosis/lordosis (1)
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.0	0	0	0	0	
	24	13.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	13.0	0	3	0	0	1 severely malformed eye
	31	14.0	0	0	0	0	
	32	14.0	0	3	0	0	1 severely malformed eye
	33	14.0	0	0	0	0	
	34	14.0	0	3	0	0	1 severely malformed eye
	35	14.5	0	0	0	0	
	36	14.0	0	0	0	0	
	37	13.0	0	0	0	0	
	38	13.5	0	3	0	0	1 severely malformed eye
	39	14.0	0	3	0	0	1 severely malformed eye
	40	14.0	0	3	0	0	1 severely malformed eye

Total Weight (pooled): 786.80
 Number of survivors: 47
 Number of deformed/have difficulty swimming: 13

Initials: BPL/KJV

Reviewed by: [Signature]

Date Reviewed: 3/12/14

① skeletal and muscular tissue malformed 

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	41	15.0	3	KV P 1	0	0	scoliosis, lordosis, eye sig. smaller
	42	10.0	3	0	0	0	scoliosis
	43	12.5	0	0	0	0	
	44	14.0	0	0	0	1	yolk sac edema
	45	14.0	3 2	3	0	1	*
	46	11.0	3	0	0	0	scoliosis, kyphosis, lordosis
	47	14.0	0	3	0	0	1 severely reduced eye
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
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	26						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 786.80
Number of survivors: 47
Number of deformed/have difficulty swimming: 13

Initials: BPL/KJL

Reviewed by: TK Date Reviewed: 31/12/14

* lordosis; both eyes under developed, shortened nose, mal formed lower jaw; yolk sac edema

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	11.5	3	1	0	2	lordosis; shortened nose; <i>egg yolk edema</i>
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 48.73 mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1		0	0	0	0	
	2		0	0	0	0	
	3		2	1	0	1	lordosis, shortened nose, yolk sac edema
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 48.73mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: 1

Initials: KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	15.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.38 mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: BPC

Reviewed by: YK

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	15.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.38mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	13.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	25						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 262.62 mg
 Number of survivors: 14
 Number of deformed/have difficulty swimming: 0

Initials: BR/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	13.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	13.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.0	0	0	0	0	technician error
	26	14.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.5	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	14.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	14.0	0	0	0	0	

Total Weight (pooled): 1228.86 mg
Number of survivors: 64
Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

2012

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	4 1	14.0	0	0	0	0	
	4 2	15.0	0	0	0	0	
	4 3	15.0	0	0	0	0	
	4 4	14.5	0	0	0	0	
	4 5	15.0	0	0	0	0	caudal fin frayed at edges
	4 6	14.0	0	0	0	0	
	4 7	14.0	0	0	0	0	
	4 8	14.0	0	0	0	0	
	4 9	14.0	0	0	0	0	
	5 10	14.0	0	0	0	0	
	5 11	14.0	0	0	0	0	injury to dorsal muscle?
	5 12	13.5	0	0	0	0	
	5 13	15.0	0	0	0	0	
	5 14	14.5	0	0	0	0	
	5 15	14.0	0	0	0	0	
	5 16	14.0	0	0	2	0	malformed caudal fin
	5 17	14.0	0	0	0	0	
	5 18	16.0	0	0	0	0	
	5 19	14.5	0	0	0	0	
	6 20	14.5	0	0	0	0	
	6 21	15.0	0	0	0	0	
	6 22	14.0	0	0	0	0	
	6 23	14.0	0	0	0	0	
	6 24	14.0	0	0	0	0	
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1228.86mg
 Number of survivors: 64
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJ

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.5	0	0	0	0	
	31	15.0	0	0	0	0	
	32	14.5	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.5	0	0	0	0	
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 629.20
 Number of survivors: 35
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1	15.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 20.74 mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1		D	o	o	o	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	19						
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	36						
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	39						
	40						

Total Weight (pooled): 20.44mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 6

Initials: KJ

Reviewed by: n

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-11	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
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Total Weight (pooled): 186.26

Number of survivors: 6

Number of deformed/have difficulty swimming: 0

Initials: BPYKJC

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-11	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	1	0	0	Shortened nose.
	5	15.0	0	0	0	0	
	6	16.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27						
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Total Weight (pooled): 565.81 mg
 Number of survivors: 26
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
B-11	1	16.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	16.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	16.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13						
	14						
	15						
	16						
	17						
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Total Weight (pooled): 260.03 mg
 Number of survivors: 12
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.6	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9						
	10						
	11						
	12						
	13						
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Total Weight (pooled): 148.57mg
 Number of survivors: 8
 Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

1 of 2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.5	0	0	0	0	
	28	15.5	0	0	0	0	technician error-damaged head
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.5	0	0	0	0	
	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	14.5	0	0	0	0	
	37	15.0	0	0	0	0	
	38	15.0	0	0	0	0	
	39	15.0	0	0	0	0	
	40	14.5	0	0	0	0	

Total Weight (pooled): 984.74
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: Bow/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2 of 2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	41	15.0	0	0	0	0	
	42	14.0	0	0	0	0	
	43	14.5	0	0	0	0	
	44	14.0	0	0	0	0	
	45	15.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	15.0	0	0	0	0	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	39						
	40						

Total Weight (pooled): 984.74
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BSC/KSC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	1	15.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.5	0	0	0	0	
	10	13.0	2	0	0	0	Kyph lordosis
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 199.64 mg
 Number of survivors: 10
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KOV

Reviewed by: n

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-13	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23						
	24						
	25						
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	27						
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	39						
	40						

Total Weight (pooled): 486.54
 Number of survivors: 22
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-13	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.5	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 563.37
 Number of survivors: 27
 Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-13	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	16.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	16.0	0	0	0	0	
	12	16.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	16.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	14.0	1	0	0	0	lordosis
	27	14.5	0	0	0	0	
	28	13.5	0	0	0	0	
	29	15.0	0	2	0	3	lower jaw malformed; eye, per
	30	12.0	3	1	0	3	① lateral yolk sac edema
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 841.82 mg
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 3

Initials: BRL/KJV

Reviewed by: [Signature] Date Reviewed: 3/12/14

① scoliosis, shortened nose, eye and yolk sac edema

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1	12.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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	40						

Total Weight (pooled): 32.71
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSW

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1	14.0	0	0	0	0	
	2	15.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	13.5	0	0	0	0	
	26	14.5	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	15.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	15.0	0	0	0	0	
	35	13.0	0	0	0	0	
	36	13.0	3	0	0	0	lordosis
	37	15.0	0	0	2	0	Malformed caudal + dorsal; technician crushed sp
	38						
	39						
	40						

Total Weight (pooled): 728.90 mg
 Number of survivors: 37
 Number of deformed/have difficulty swimming: 2

Initials: BPL/KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	13.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.5	0	0	0	0	
	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0 15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	14.5	0	0	0	0	
	39	14.5	0	0	0	0	
	40	15.0	0	0	0	0	

Total Weight (pooled): 735.50 mg
 Number of survivors: 45
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	41	14.5	0	0	0	0	
	42	15.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	15.0	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	19						
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	31						
	32						
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	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 735.0^{KJL} 50 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 0

Initials: BRL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: **Nov 6 2013**
Termination Date: **Jan 30 2014**

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 105.66mg
 Number of survivors: 5
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 105.66 mg
 Number of survivors: 5
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	15.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	13.0	0	3	0	0	1 barely formed eye; 1 missing eye
	4	14.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	13.0	0	3	0	2	1 eye malformed, 1 eye missing, yolk sac + pericardial edema
	19	14.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	12.0	1	3	0	0	scotiosis; missing eye
	23	15.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	13.5	0	2	0	0	malformed eye (1)
	27	14.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	1	1	0	0	lordosis (right behind head); 1 malformed eye
	31	14.5	0	0	0	0	
	32	15.0	0	0	0	0	
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 547.20 mg
 Number of survivors: 32
 Number of deformed/have difficulty swimming: 5

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	1	0	0	2 eye malformed
	4	13.0	0	3	0	0	malformed head, 1 missing eye, 1 undeveloped eye
	5	11.0	2	ky 3	0	3	*
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	13.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	3	0	0	1 eye malformed, 1 eye undeveloped
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 360.07
 Number of survivors: 19
 Number of deformed/have difficulty swimming: 3 4 BTL

Initials: BPL/KSL

Reviewed by: u

Date Reviewed: 3/12/14

* kyphosis, shortened nose, shortened lower jaw; eye, pericardial and yolk sac edema. Swollen anal pore

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	14.5	0	0	0	0	
	2	13.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	3	0	0	1 eye malformed 1 eye missing
	6	14.0 15.0	0	0	0	0	
	7	15.0 14.5	0	0 3	0	0	1 eye severely undeveloped
	8	14.0 14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
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	24						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 179.19mg
 Number of survivors: 10
 Number of deformed/have difficulty swimming: 2

Initials: BRL / KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	14.0	0	0	0	0	
	2	14.5	2	0	0	0	Kyphosis; opaque region of head.
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 38.22
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 1

Initials: BRL

Reviewed by: h

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-15	1		0	0	0	0	
	2		1	1	0	1	Shortened nose, eye edema
	3						kyphosis
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
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	26						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 38.22
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 1

Initials: KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1	14.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	30	0	0	
	7	14.0	0	3	0	0	malformed/mostly missing 1 eye
	8	14.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	13.5	0	2	0	0	1 malformed eye.
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	13.0	3	0	0	0	scoliosis, lordosis
	24	13.5	1	0	0	0	scoliosis
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 450.87 mg
Number of survivors: 24
Number of deformed/have difficulty swimming: 4

Initials: BR

Reviewed by: M

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1	13.5	0	0	0	0	
	2	13.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.5	0	0	0	0	frayed fins
	24	15.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	12.5	0	0	0	0	
	33	13.0	0	1	0	3	Shortened nose; eye and yolk sac edema
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 64.36 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: _____

Initials: BPL/KJ

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1	14.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.0	0	0	0	0	
	40						

Total Weight (pooled): 619.06
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17 13-16	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 49.23 mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 49.23 mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: _____

Initials: KJE

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	2	0	0	malformed eye (1 eye)
	20	15.0	0	0	0	0	
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 420.44
 Number of survivors: 20
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KIL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.5	0	1	0	0	1 malformed eye (minor)
	10	15.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.5	0	0	0	0	
	26	15.5	0	0	0	0	
	27	16.0	0	1	0	0	1 malformed eye
	28	15.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	15.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	15.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.5	0	0	0	0	
	37	15.0	0	0	0	0	
	38	15.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	15.0	0	0	0	0	

Total Weight (pooled): BPL 100.9 1009.33
Number of survivors: 52
Number of deformed/have difficulty swimming: 2

Initials: BPL/KSL

Reviewed by: JK

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	41	14.5	0	0	0	0	
	42	15.0	0	0	0	0	
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	15.0	0	0	0	0	
	46	15.0	0	0	0	0	
	47	14.0	0	0	0	0	
	48	14.0	0	0	0	0	
	49	15.0	0	0	0	0	
	510	15.0	0	0	0	0	
	511	15.0	0	0	0	0	
	512	15.0	0	0	0	0	
	513						
	614						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1009.33
Number of survivors: 52
Number of deformed/have difficulty swimming: 2

Initials: BPV/KSL

Reviewed by: 12

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	16.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	13.0	1	3	0	3	*
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 577.84 mg
 Number of survivors: 29
 Number of deformed/have difficulty swimming: 1

Initials: DPL/EJL

Reviewed by: u

Date Reviewed: 3/12/14

* Kyphosis, shortened nose, shortened lower jaw, cranial pericardial, yolk sac edema, swollen lower digestive tract.

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1	15.0	0	0	0	0	
	2	15.5	0	0	0	0	
	3	16.0	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
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	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 49.80 mg
 Number of survivors: 3
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: ku

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 49.80mg

Number of survivors: 3

Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
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	32						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 183.53

Number of survivors: 9

Number of deformed/have difficulty swimming: 0

Initials: BRL/KIL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 15 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.5	0	0	0	0	
	14	15.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.5	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.5	0	0	0	0	
	20	15.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	16.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 523.22
 Number of survivors: 27
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	16.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.5	0	0	0	0	
	13	14.5	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	16.0	0	0	0	0	
	28	14.5	0	0	0	0	
	29	15.5	0	0	0	0	
	30	14.5	0	0	0	0	
	31	15.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.5	0	0	0	0	
	35	15.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	13.5	1	0	0	0	Kyphosis
	39	14.5	0	0	0	0	
	40	13.0	0	1	0	3	Shortened nose, eye, pericardial + yolk sac edema swollen ^{lower} digestive tract

Total Weight (pooled): 945.96 mg
 Number of survivors: 45
 Number of deformed/have difficulty swimming: 7

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	41	13.0	1	0	1	0	lordosis; 1 malformed pectoral fin
	42	13.0	1	0	0	1	lordosis; yolk sac edema
	43	14.0	0	0	0	1	yolk sac edema
	44	14.0	2	2	0	3	(1)
	45	14.0	2	3	0	3	(2)
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
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	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 945.96 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 7

Initials: BPL/KJL

Reviewed by: U Date Reviewed: 3/12/14

- ① Kyphosis, shortened nose, malformed lower jaw; eye and yolk sac edema, swollen lower digestive tract
- ② Kyphosis, shortened nose, malformed lower jaw and head; eye, yolk sac, pericardial, cranial edema; swollen lower digestive tract

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1	15.5	0	0	0	0	
	2	16.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	16.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	14.5	0	0	0	0	
	7	15.5	0	0	0	0	
	8	17.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	3	B ⁰ B ²	0	2	Kyphosis; shortened nose, malform lower jaw; yolk sac edema
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 248.12 mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 1

Initials: BR

Reviewed by: n

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		2	1	0	3	yolk sac, eye edema kyphosis, shortened nose
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 248.12 mg
Number of survivors: 11
Number of deformed/have difficulty swimming: 1

Initials: KJL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.0	0	0	0	0	
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 368.33
 Number of survivors: 23
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: TR

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities


Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	14.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	3	0	0	Malformed eye
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	15.0 15.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	14.5	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	15.0	0	0	0	0	
	39	15.0	0	0	0	0	
	40	14.0	0	0	0	0	

Total Weight (pooled): 989.79 mg
 Number of survivors: 59
 Number of deformed/have difficulty swimming: 4

Initials: BRL/KSL

Reviewed by: 

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	41	15.0	0	0	0	0	
	42	15.0	0	0	0	0	
	43	14.5	0	0	0	0	
	44	14.5	0	0	0	0	
	45	15.0	0	0	0	0	
	46	15.5	0	0	0	0	
	47	15.5	0	0	0	0	
	48	14.5	0	0	0	0	
	49	15.0	0	0	0	0	
	410	14.5	0	0	0	0	
	511	14.0	0	0	0	0	
	512	14.0	0	0	0	0	
	513	15.0	0	0	0	0	
	514	14.0	0	0	0	0	
	515	14.5	0	0	0	0	
	516	14.0	0	0	0	0	
	517	12.0	0	1	0	0	shortened nose
	518	13.0	1	0	0	0	lordosis
	519	13.5	1	0	0	0	lordosis
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 989.79 mg
Number of survivors: 59
Number of deformed/have difficulty swimming: 4

Initials: BPL/KJ

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	14.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	tech error - damaged one eye
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
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	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 348.79 mg
 Number of survivors: 20
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21						
	22						
	23						
	24						
	25						
	26						
	27						
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	29						
	30						
	31						
	32						
	33						
	34						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 348.79mg
 Number of survivors: 20
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: u

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
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	30						
	31						
	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 27.21
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: SP

Reviewed by: m

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>1519</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 27.21 mg
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: n

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1	14.0	0	0	0	0	
	2	13.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	38						
	39						
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Total Weight (pooled): 63.16
 Number of survivors: 4
 Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1	14.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	13.5	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.0	0	0	0	0	
	26	13.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	13.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.0	0	0	0	0	
	40	13.0	0	0	0	0	

Total Weight (pooled): 55
Number of survivors: 992.04
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

2072

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	41	14.0	0	0	0	0	
	42	14.0	0	0	0	0	
	43	14.0	0	0	0	0	
	44	14.0	0	0	0	0	
	45	15.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	14.0	0	0	0	0	
	48	14.0	0	0	0	0	
	49	14.0	0	0	0	0	
	50-10	14.0	0	0	0	0	
	51-11	14.0	0	0	0	0	
	52-12	14.5	0	0	0	0	
	53-13	14.0	0	0	0	0	
	54-14	14.5	0	0	0	0	
	55-15	14.0	0	0	0	0	
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 992.04
 Number of survivors: 55
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

1 of 2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.5 14.5	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	13.5	0	0	0	0	
	34	13.5	0	0	0	0	
	35	14.5	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	13.0	0	0	0	0	

Total Weight (pooled): 791.30 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	41	14.5	0	0	0	0	
	42	14.0	0	0	0	0	
	43	14.5	0	0	0	0	
	44	14.5	0	0	0	0	
	45	15.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	14.0	0	0	0	0	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
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	30						
	31						
	32						
	33						
	34						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 791.30 mg
 Number of survivors: 47
 Number of deformed/have difficulty swimming: 6

Initials: BPL/KSL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>13-20</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 16.70 mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: DPL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013

Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1		0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 16.70 mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: KSL

Reviewed by: M

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-21	1	15.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	12.5	2	3	1	0	lordosis; both eyes malformed; malformed fin
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 165.84
 Number of survivors: 9
 Number of deformed/have difficulty swimming: 1

Initials: BP/KW

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-21	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	19						
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	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 180.33 mg

Number of survivors: 9

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-21	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 38.71 mg
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	1	14.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	13.0	0	0	0	0	Technician error - cut spinal cord
	36	14.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.0	0	0	0	0	
	40						

Total Weight (pooled): 798.61
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 0

Initials: BQL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	1	13.0	0	0	0	0	
	2	14.5	0	0	2	0	1 pectoral malformed; caudal slightly malformed
	3	14.0	0	0	0	0	
	4	14.0	0	0	2	0	1 pectoral malformed; caudal slightly malformed
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	1	0	caudal fin malformed
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.0	0	0	2	0	1 pectoral malformed; caudal slightly malformed
	14	14.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	damage to eye (technician error)
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	14.5	0	0	0	0	frayed fins
	26	15.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.5	0	0	0	0	
	32	15.0	0	0	0	0	caudal frayed/damaged?
	33	15.0	0	0	0	0	caudal frayed/damaged?
	34	15.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.0	0	0	2	0	1 malformed caudal and pectoral fin
	38	15.0	0	0	0	0	
	39	15.0	0	0	0	0	caudal fin frayed
	40	15.0	0	0	1	0	caudal fin malformed

Total Weight (pooled): 975.94 mg
Number of survivors: 48
Number of deformed/have difficulty swimming: 10

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

2 of 2

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	41	15.0	0	0	1	0	damaged pectoral fins and caudal fin
	42	14.0	0	0	1	0	damaged caudal fin
	43	13.0	0	0	0	0	
	44	14.0	0	0	0	0	
	45	14.0	0	0	0	0	
	46	15.0	0	0	1	0	damaged/curled caudal fin; opaque lower head
	47	15.0	0	0	0	0	
	48	14.0	0	0	1	0	damaged/curled caudal fin; opaque lower head
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 975.94 mg
 Number of survivors: 48
 Number of deformed/have difficulty swimming: 10

Initials: BPL/KZ

Reviewed by: TR

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	1	15.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	14.5	0	0	0	0	
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 215.97
 Number of survivors: 13
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.7					
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 30.22 mg
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: BRC/155L

Reviewed by: [Signature]

Date Reviewed: 3/11/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
¹⁰² 13-22-23	1	14.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.0	0	0	0	0	
	5	13.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.5	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.5	0	0	0	0	damaged eye - technician error
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 476.80 mg
 Number of survivors: 27
 Number of deformed/have difficulty swimming: 0

Initials: APL/KSL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	13.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.0	0	0	0	0	
	26	13.5	0	0	0	0	
	27	14.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.0	0	0	0	0	
	31	14.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	14.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	13.5	0	0	0	0	
	39	14.0	0	0	0	0	
	40	15.0	0	0	0	0	

Total Weight (pooled): 1032.53 mg
Number of survivors: 62
Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	41	14.5	0	0	0	0	
	42	15.0	0	0	0	0	
	43	14.5	0	0	0	0	
	44	14.0	0	0	0	0	
	45	14.0	0	0	0	0	
	46	14.0	0	0	0	0	
	47	13.5	0	0	0	0	
	48	14.0	0	0	0	0	
	49	13.5	0	0	0	0	
	510	14.0	0	0	0	0	
	511	14.0	0	0	0	0	
	512	14.0	0	0	0	0	
	513	14.0	0	0	0	0	
	514	15.0	0	0	0	0	
	515	14.0	0	0	0	0	
	516	13.5	0	0	0	0	
	517	15.0	0	0	0	0	
	518	14.0	0	0	0	0	
	519	14.5	0	0	0	0	
	620	14.0	0	0	0	0	
	621	14.0	0	0	0	0	
	622	13.0	2	3	0	3	①
	23						
	24						
	25						
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	31						
	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1032.53mg
 Number of survivors: 62
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJV

Reviewed by: [Signature] Date Reviewed: 3/12/14

① Kyphosis, shortened nose, malformed lower jaw; edema (yolk sac, pericardial, eye), lower digestive tract swollen

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	14.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16						
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	38						
	39						
	40						

Total Weight (pooled): 272.53 mg
 Number of survivors: 15
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16						
	17						
	18						
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	37						
	38						
	39						
	40						

Total Weight (pooled): 272.83 mg
 Number of survivors: 15
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>B-23</u>	1	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>12.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 37.26 mg
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

QIA

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	14.5	0	0	0	0	
	2	14.0	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 37.26
 Number of survivors: 2
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>13-24</u>	1	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7	15.0					
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
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	37						
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	39						
	40						

Total Weight (pooled): 114.29

Number of survivors: 6

Number of deformed/have difficulty swimming: 0

Initials: BR/KSL

Reviewed by: M

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	15.0	0	0	0	0	
	2	15.5	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	15.5	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	14.5	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	15.0	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	15.0	0	0	0	0	
	32	14.0	0	0	0	0	
	33	15.0	0	0	0	0	
	34	14.0	0	0	0	0	
	35	15.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.5	0	0	0	0	
	39	15.0	0	0	0	0	
	40	14.0	0	0	0	0	

Total Weight (pooled): 892.00 mg
Number of survivors: 46
Number of deformed/have difficulty swimming: 1

Initials: BAL/KSL

Reviewed by: TR

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	41	15.0	0	0	0	0	
	42	13.0	1	0	0	2	Kyphosis; yolk sac edema
	43	15.0	0	0	0	0	
	44	15.0	0	0	0	0	
	45	14.0	0	0	0	0	
	46	15.0	0	0	0	0	
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	39						
	40						

Total Weight (pooled): 892.00 mg
Number of survivors: 46
Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	15.5	0	0	0	0	
	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	15.0	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	15.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	1	yolk sac edema.
	25	15.0	0	0	0	0	
	26						
	27						
	28						
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	32						
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Total Weight (pooled): 534.75mg
Number of survivors: 25
Number of deformed/have difficulty swimming: 1

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>13-24</u>	1	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	3	<u>16.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	4	<u>15.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	5	<u>15.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	6	<u>14.5</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	7						
	8						
	9						
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	11						
	12						
	13						
	14						
	15						
	16						
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	36						
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	40						

Total Weight (pooled): 125.73 mg
 Number of survivors: 6
 Number of deformed/have difficulty swimming: 0

Initials: BPC

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

QA

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 125.73 mg
 Number of survivors: ~~12~~ 6
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	16.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	19						
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	30						
	31						
	32						
	33						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 21.66 mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: h

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 6 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	16.0	0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
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	31						
	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 21.66mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	1	15.0	0	0	0	0	technician error; damaged head
	2	14.5	0	0	0	0	" " ; damaged spine
	3	15.0	0	0	0	0	
	4	14.5	0	0	0	0	
	5	16.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	15.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	14.5	0	0	0	0	
	16	14.5	0	0	0	0	
	17	15.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	14.5	0	0	0	0	
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 478.68
 Number of survivors: 24
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	1	14.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	13.0	2	0	0	0	Kyphosis
	5	14.0	0	0	0	0	
	6	14.0	0	0	0	0	
	7	14.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	15.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	15.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 575.69 mg
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	1	15.0	0	0	0	0	
	2	15.5	0	0	0	0	
	3	15.5	0	0	0	0	
	4	15.5	0	0	0	0	
	5	15.0	0	0	0	0	
	6	15.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.0	0	0	0	0	
	11	15.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.5	0	0	0	0	
	22	14.5	0	0	0	0	
	23	14.0	0	0	0	0	
	24	14.0	0	0	0	0	
	25	14.5	0	0	0	0	
	26	15.0	0	0	0	0	
	27	15.5	0	0	0	0	
	28	15.0	0	0	0	0	
	29	14.5	0	0	0	0	
	30	14.0	2	0	0	0	Kyphosis
	31	15.5	0	0	0	0	
	32	14.5	0	0	0	0	
	33	14.0	2	0	0	0	Kyphosis
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 617.10
Number of survivors: 33
Number of deformed/have difficulty swimming: 2

Initials: BR/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1	13.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.5	0	0	0	0	
	4	13.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	13.5	0	0	0	0	
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	13.0	0	0	0	0	
	12	13.5	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.5	0	0	0	0	
	15	13.5	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	13.0	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0 13.5	0	0	0	0	
	23	14.5	0	0	0	0	
	24	14.0	0	0	0	0	
	25	13.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	13.5	0	0	0	0	
	28	14.0	0	0	0	0	
	29	14.0	0	0	0	0	
	30	14.5	0	0	0	0	
	31	14.0	0	0	0	0	
	32	13.0	0	0	0	0	
	33	13.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.0	0	0	0	0	
	36	14.5	0	0	0	0	
	37	14.5	0	0	0	0	
	38	14.0	0	0	0	0	
	39	14.5	0	0	0	0	
	40	14.0	0	0	0	0	

Total Weight (pooled): 636.92
Number of survivors: 42
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	41	13.0	0	0	0	0	
	42	13.5	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 636.92
Number of survivors: 42
Number of deformed/have difficulty swimming: 0

Initials: BPLIKR

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1	14.0	0	0	0	0	
	2	14.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	13.5	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	1	0	caudal fin frayed & clubbed
	7	15.0	0	0	0	0	
	8	14.0	0	0	0	0	
	9	14.0	0	0	1	0	caudal fin clubbed
	10	15.0	0	0	0	0	
	11	14.5	0	0	1	0	caudal fin clubbed
	12	14.0	0	0	1	0	caudal fin clubbed
	13	14.5	0	0	1	0	caudal fin clubbed
	14	15.0	0	0	1	0	caudal fin clubbed
	15	14.5	0	0	0	0	
	16	14.0	0	0	1	0	caudal fin clubbed; eye damage
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.0	0	0	0	0	
	20	12.5	0	0	1	0	caudal fin clubbed;
	21	14.0	0	0	1	0	caudal fin clubbed
	22	14.0	0	0	1	0	
	23	15.0	0	0	0	0	
	24	14.0	0	0	1	0	BT - clubbed ventral fins
	25	14.0	0	0	0	0	
	26	14.0	0	0	0	0	
	27	14.0	0	0	0	0	
	28	14.5	0	0	1	0	clubbed dorsal + ventral fins
	29	14.5	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.5	0	0	1	0	clubbed fins
	32	14.5	0	0	0	0	
	33	14.0	0	0	1	0	clubbed fins
	34	14.5	0	0	0	0	
	35	14.5	0	0	0	0	
	36	14.0	0	0	0	0	
	37	14.0	0	0	0	0	
	38	14.0	0	0	0	0	
	39	13.0	0	0	0	0	
	40	14.5	0	0	0	0	

Total Weight (pooled): 754.28 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 17

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	41	14.0	0	0	1	0	clubbed fins
	42	14.0	0	0	1	0	clubbed fins
	43	14.0	0	0	1	0	clubbed fins
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
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	30						
	31						
	32						
	33						
	34						
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	36						
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	38						
	39						
	40						

Total Weight (pooled): 754.28 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 17

Initials: BRL/KSL

Reviewed by: ru

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 23 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1	14.0	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	14.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.5	0	0	0	0	
	8	14.0	0	0	0	0	
	9	13.5	0	0	0	0	
	10	14.0	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.5	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.0	0	0	0	0	
	19	14.5	0	0	0	0	
	20	14.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.0	0	0	0	0	
	23	14.0	0	0	0	0	
	24	12.0	0	0	0	0	
	25	13.0	3	3	0	3	Kyphosis, lordosis, shortened nose, malformed lower jaw, cranial, pericardial, yolk sac and eye edema.
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 403.60 mg
 Number of survivors: 25
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSU

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
<u>13-27</u>	1	<u>14.0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
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	31						
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	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.42 mg

Number of survivors: 1

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1		0	0	0	0	
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
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	21						
	22						
	23						
	24						
	25						
	26						
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	29						
	30						
	31						
	32						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 17.42mg
 Number of survivors: 1
 Number of deformed/have difficulty swimming: 0

Initials: KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 9 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	14.5	0	0	0	0	
	2	13.5	0	0	0	0	
	3	14.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	14.5	0	0	0	1	pericardial edema
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 128.44
 Number of survivors: 7
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 16 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	14.5	0	0	0	0	
	2	15.0	0	0	0	0	
	3	15.0	0	0	0	0	
	4	14.0	0	0	0	0	
	5	15.0	0	0	0	0	
	6	14.5	0	0	0	0	
	7	14.0	0	0	0	0	
	8	14.5	0	0	0	0	
	9	15.0	0	0	0	0	
	10	14.5	0	0	0	0	
	11	14.0	0	0	0	0	
	12	14.0	0	0	0	0	
	13	14.0	0	0	0	0	
	14	14.0	0	0	0	0	
	15	14.0	0	0	0	0	
	16	14.5	0	0	0	0	
	17	14.0	0	0	0	0	
	18	14.5	0	0	0	0	
	19	15.0	0	0	0	0	
	20	15.0	0	0	0	0	
	21	14.0	0	0	0	0	
	22	14.5	0	0	0	0	
	23	15.0	0	0	1	0	clubbed fins
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 541.96 mg
 Number of survivors: 25
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 22 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	15.0	0	0	0	0	
	2	15.0	0	0	0	0	
	3	14.0	0	0	0	0	
	4	15.0	0	0	0	0	
	5	15.5	0	0	0	0	
	6	14.0	0	0	0	0	
	7	15.0	0	0	0	0	
	8	15.0	0	0	0	0	
	9	15.0	0	0	0	0	
	10	15.5	0	0	0	0	
	11	14.5	0	0	0	0	
	12	15.5	0	0	0	0	
	13	15.0	0	0	0	0	
	14	15.0	0	0	0	0	
	15	15.0	0	0	0	0	
	16	15.0	0	0	0	0	
	17	14.0	0	0	0	0	
	18	15.5	0	0	0	0	
	19	14.0	0	0	0	0	
	20	14.5	0	0	0	0	
	21	14.0	0	0	0	0	
	22	15.0	0	0	0	0	
	23	15.0	0	0	0	0	
	24	15.0	0	0	0	0	
	25	15.0	0	0	0	0	
	26	14.5	0	0	0	0	
	27	14.0	0	0	0	0	
	28	15.0	0	0	0	0	
	29	15.0	0	0	0	0	
	30	15.0	0	0	0	0	
	31	14.0	0	0	0	1	yolk sac edema
	32	15.0	0	0	0	0	
	33	14.5	0	0	0	0	
	34	14.0	0	0	0	0	
	35	14.5	0	0	0	0	
	36	15.0	0	0	0	0	
	37	15.0	0	0	0	0	
	38	14.0	0	0	0	1	yolk sac edema
	39	14.0	0	0	0	0	
	40	13.5	2	1	0	2	Shortened nose; lordosis; yolk sac edema

Total Weight (pooled): 906.20
887.54 mg
Number of survivors: 44
Number of deformed/have difficulty swimming: 4

Initials: BRC

Reviewed by: tr

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	15.5	0	0	0	0	
	2	14.5	0	0	0	0	
	3	14.5	0	0	0	0	
	4	14.5, 0	0	0	0	0	
	5	13.0	1	1	0	2	lordosis; shortened nose; jugular sac & eye edema
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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	31						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 99.85mg
 Number of survivors: 5
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: W

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Jan 30 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	3	0	3	yolk sac eye edema's shortened nose
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 99.85mg
 Number of survivors: 5
 Number of deformed/have difficulty swimming: 1

Initials: ~~BA~~ KJL

Reviewed by: h

Date Reviewed: 3/12/14

Embryo Alevin Fry Deformity Summary

Feeding exposure fry

Client: Golder

Start Date/Time: Nov 6/13 @ 2100h

Test Species: *P. williamsoni*

Sample ID	Deformities					Rate			
	Total GSI # skeletal	Total GSI # cranial	Total GSI # finfold	Total GSI # edema	GSI Total	Fish with Deformities (>0)	Percent Deformity (>0)	Fish with Deformities (>1)	Percent Deformity (>1)
13-01	1	2	0	3	6	3	3.3	2	3.3
13-02	0	0	0	0	0	0	0.0	0	0.0
13-03	8	3	0	0	11	3	3.8	3	3.8
13-04	1	2	0	3	6	3	3.3	3	3.3
13-05	0	0	0	1	1	1	1.1	0	0.0
13-06	0	0	0	1	1	1	1.3	0	0.0
13-07	0	1	0	0	1	1	0.9	0	0.0
13-08	0	1	0	1	2	1	1.9	1	1.9
13-09	2	21	0	0	23	10	11.2	7	7.9
13-10	0	0	0	0	0	0	0.0	0	0.0
13-11	0	0	0	0	0	0	0.0	0	0.0
13-12	0	0	0	0	0	0	0.0	0	0.0
13-13	0	0	0	0	0	0	0.0	0	0.0
13-14	0	0	0	0	0	0	0.0	0	0.0
13-15	5	16	0	2	23	9	11.4	6	7.6
13-16	6	1	0	1	8	3	3.2	2	2.2
13-17	0	0	0	0	0	0	0.0	0	0.0
13-18	0	0	0	0	0	0	0.0	0	0.0
13-19	0	0	0	0	0	0	0.0	0	0.0
13-20	0	0	0	0	0	0	0.0	0	0.0
13-21	0	0	0	0	0	0	0.0	0	0.0
13-22	0	3	0	0	3	1	1.1	1	1.1
13-23	0	0	0	0	0	0	0.0	0	0.0
13-24	0	0	0	0	0	0	0.0	0	0.0
13-25	0	0	0	0	0	0	0.0	0	0.0
13-27	0	1	0	1	2	1	0.9	1	0.9
13-28	0	0	0	0	0	0	0.0	0	0.0

Comments: 28d feeding exposure

Reviewed by: ME

Date reviewed: 3/12/14

cofz

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	19.0	0	0	0	0	
A	2	18.0	0	0	0	0	
	3	19.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	22.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	18.0	0	0	0	0	
	9	17.0	0	0	0	0	
	10	18.0	0	0	0	0	
	11	18.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	21.5	0	0	0	0	
	15	22	0	0	0	0	
	16	19.5	0	0	0	0	
	17	18.5	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	18.0	0	0	0	0	
	21	18.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	18.0	0	1	0	1	Shortened nose, edema behind
	24	22.0	0	0	0	0	cranial cavity
	25	22.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.5	0	0	0	0	
	29	21.0	0	0	0	0	
	30	18.0	0	0	0	0	
	31	21.5	0	0	0	0	
	32	18.0	0	0	0	0	
	33	17.0	0	0	0	0	
	34	23.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	18.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	18.0	0	0	0	0	

Total Weight (pooled): 2135.78 mg
Number of survivors: 49
Number of deformed/have difficulty swimming: 2

Initials: BPL/KSL

Reviewed by: ME

Date Reviewed: 3/12/16

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	41	19.0	0	0	0	0	
A	42	20.0	0	0	0	0	
	43	18.0	0	0	0	0	
	44	18.0	0	0	0	0	
	45	21.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	21.0	0	0	0	0	
	48	16.0	0	0	0	0	
	49	21.0	0	1	0	2	shortened nose; eye edema and behind cranial cavity
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 235.78
Number of survivors: 49
Number of deformed/have difficulty swimming: 2

Initials: BP/KJC

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-02	1	21.0	0	0	0	0	
A	2	21.0	0	0	0	0	
	3	21.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	23.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	22.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	22.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	19.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	22.5	0	0	0	0	
	17	22.0	0	0	0	0	
	18	21.5	0	0	0	0	
	19	21.0	0	0	0	0	
	20	21.5	0	0	0	0	
	21	22.0	0	0	0	0	
	22	23.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	19.5	0	0	0	0	
	27	20.0	0	0	0	0	
	28	22.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	17.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	21.0	0	0	0	0	
	34	18.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	15.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	22.0	0	0	0	0	

Total Weight (pooled): 42
 Number of survivors: 2014.10 mg
 Number of deformed/have difficulty swimming: _____

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	41	18.0	0	0	0	0	
A	42	18.5	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): ^{KAL} 42 2014.10mg

Number of survivors: 42

Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03	1	19.6	0	0	0	0	
A	2	21.5	0	0	0	0	
	3	20.5	0	0	0	0	
	4	19.0	0	0	0	0	
	5	20.5	0	0	0	0	
	6	20.5	0	0	0	0	
	7	21.0	0	0	0	0	
	8	21.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	21.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	19.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	22.10	0	0	0	0	
	21	19.0	0	0	0	0	
	22	18.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	19.0	0	0	0	0	
	26	20.5	0	0	0	0	
	27	20.0	0	0	0	0	
	28	19.5	0	0	0	0	
	29	18.0	2	0	0	0	minor scoliosis & absent Kyphosis
	30	20.0	0	0	0	0	
	31	18.5	0	0	0	0	
	32	20.0	0	0	0	0	
	33	19.0	0	0	0	0	
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1556.65 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	20.0	0	0	0	0	
A	2	19.5	0	0	0	0	
	3	20.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	18.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	23.0	0	0	0	0	
	8	21.0	0	0	0	0	
	9	18.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	20.5	0	0	0	0	
	13	20.0	0	0	0	0	
	14	21.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.5	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	19.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	21.5	0	0	0	0	
	25	22.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	19.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	22.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	21.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	21.5	0	0	0	0	
	36	19.5	0	0	0	0	
	37	11.5	3	0	0	0	exelosis
	38						
	39						
	40						

Total Weight (pooled): 1617. 1616.95 mg
 Number of survivors: 37
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1	21.5	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	23.5	0	0	0	0	
	4	20.5	0	0	0	0	
	5	22.5	0	0	0	0	
	6	22.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	19.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	23.0	0	0	0	0	
	15	25.0	0	0	0	0	
	16	18.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	23.0	0	0	0	0	
	21	20.5	0	0	0	0	
	22	20.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	21.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	20.5	0	0	0	0	
	28	20.5	0	0	0	0	
	29	18.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	22.0	0	0	0	0	
	32	22.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	19.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	18.0	0	0	0	1	yolk sac
	40	23.0	0	0	0	0	

Total Weight (pooled): 2491.55 mg
Number of survivors: 50
Number of deformed/have difficulty swimming: 1

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-05	41	22.0	0	0	0	0	
A	42	22.0	0	0	0	0	
	43	20.0	0	0	0	0	
	44	20.0	0	0	0	0	
	45	20.0	0	0	0	0	
	46	20.0	0	0	0	0	
	47	19.5	0	0	0	0	
	48	22.0	0	0	0	0	
	49	23.0	0	0	0	0	
	510	22.0	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2491.55 mg
Number of survivors: 50
Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	19.5	0	0	0	0	
A	2	22.0	0	0	0	0	
	3	21.5	0	0	0	0	
	4	20.0	0	0	0	0	
	5	19.0	0	0	0	0	
	6	20.5	0	0	0	0	
	7	21.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	23.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.5	0	0	0	0	
	16	21.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	21.5	0	0	0	0	
	19	23.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	23.0	0	0	0	0	
	26	20.5	0	0	0	0	
	27	22.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30	19.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	20.5	0	0	0	0	
	37	21.0	0	0	0	0	
	38	22.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	19.0	0	0	0	0	

Total Weight (pooled): 2385.60 mg
 Number of survivors: 51
 Number of deformed/have difficulty swimming: 0

Initials: RQL/KCL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-06	41	21.0	0	0	0	0	
A	42	21.0	0	0	0	0	
	43	21.0	0	0	0	0	
	44	19.0	0	0	0	0	
	45	19.0	0	0	0	0	
	46	21.0	0	0	0	0	
	47	21.0	0	0	0	0	
	48	20.0	0	0	0	0	
	49	22.0	0	0	0	0	
	50	18.0	0	0	0	0	
	51	19.5	0	0	0	0	
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2385.60 mg
Number of survivors: 51
Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	1	21.0	0	0	0	0	
A	2	21.5	0	0	0	0	
	3	21.5	0	0	0	0	
	4	21.0	0	0	0	0	
	5	18.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	17.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	19.0	0	0	0	0	
	10	18.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	18.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	21.5	0	0	0	0	
	18	19.0	0	0	0	0	
	19	18.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	18.0	0	0	0	0	
	22	18.5	0	0	0	0	
	23	18.0	0	0	0	0	
	24	18.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	22.0	0	0	0	0	
	27	21.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	19.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	21.0	0	0	0	0	
	33	17.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	21.0	0	0	0	0	
	37	21.0	0	0	0	0	
	38	18.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	20.0	0	1	0	0	1 eye mobility hindered due to tissue growth

Total Weight (pooled): 2145.18 mg
 Number of survivors: 50
 Number of deformed/have difficulty swimming: 1

Initials: BPL/KJ

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	41	19.0	0	0	0	0	
A	42	18.0	0	0	0	0	
	43	17.0	0	0	0	0	
	44	21.0	0	0	0	0	
	45	22.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	19.0	0	0	0	0	
	48	21.5	0	0	0	0	
	49	21.0	0	0	0	0	
	510	19.5	0	0	0	0	tech error - 1 damaged eye
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2145.18mg
Number of survivors: 50
Number of deformed/have difficulty swimming: 1

Initials: BR/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-08	1	20.0	0	0	0	0	
	2	19.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	19.5	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	19.2	0	0	0	0	
	9	22.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	21.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	19.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	18.0	0	0	0	0	
	21	19.5	0	0	0	0	
	22	20.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	20.5	0	0	0	0	
	25	19.5	0	0	0	0	
	26	20.0	0	0	0	0	
	27	20.5	0	0	0	0	
	28	22.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	20.5	0	0	0	0	
	34	21.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	20.5	0	0	0	0	
	37	22.0	0	0	0	0	
	38	19.5	0	0	0	0	
	39	20.5	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2852, 51 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 1

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-08	4 1	21.0	0	0	0	0	
	4 2	21.0	0	0	0	0	
	4 3	21.0	0	0	0	0	
	4 4	22.0	0	0	0	0	
	4 5	21.0	0	0	0	0	
	4 6	18.0	0	0	0	0	
	4 7	20.0	0	0	0	0	
	4 8	20.0	0	0	0	0	
	4 9	20.0	0	0	0	0	
	5 10	20.5	0	0	0	0	
	5 11	19.0	0	0	0	0	
	5 12	17.0	0	0	0	1	shortened nose; eye edema,
	5 13	20.0	0	0	0	0	Swelling behind cranial cavity,
	14						pericardial edema
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2852.51 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 1

Initials: BGL/KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

1072

Embryo-Alevin-Fry Toxicity Test Data Sheet Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	19.0	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	23.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	21.0	0	0	0	0	
	6	21.5	0	0	0	0	
	7	21.0	0	0	0	0	
	8	20.0	0	3	0	0	1 eye mostly undeveloped
	9	19.0	0	0	0	0	
	10	20.5	0	0	0	0	
	11	20.0	0	0	0	0	
	12	20.5	0	3	0	0	malformed lower jaw, 1 eye severely undeveloped
	13	18.5	0	0	0	0	
	14	21.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	19.0	1	0	0	0	lordosis
	21	19.0	0	0	0	0	
	22	19.5	0	0	0	0	
	23	19.0	0	0	0	0	
	24	18.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	18.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	19.5	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	19.0	0	0	0	0	
	38	18.0	0	0	0	0	
	39	20.0	0	3	0	0	1 eye severely undeveloped
	40	20.5	0	0	0	0	

Total Weight (pooled): 2448.79 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 7

Initials: BR/KSL

Reviewed by: U

Date Reviewed: 3/12/14

2012

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	41	22.0	0	0	0	0	
A	42	20.0	0	0	0	0	
	43	19.0	1	0	0	0	Kyphosis
	44	21.0	0	0	0	0	
	45	21.0	0	0	0	0	
	46	21.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	19.0	0	2	0	0	1 eye underdeveloped
	49	21.5	0	0	0	0	
	510	20.5	0	0	0	0	
	511	19.0	0	3	0	0	1 eye severely underdeveloped
	512	20.0	0	0	0	0	
	513	18.0	0	0	0	0	
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2448.79 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 7

Initials: pac/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	1	20.0	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	18.5	0	0	0	0	
	5	21.0	0	0	0	0	
	6	22.0	0	0	0	0	
	7	21.5	0	0	0	0	
	8	19.5	0	0	0	0	
	9	19.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	19.0	0	0	0	0	
	12	19.5	0	0	0	0	
	13	17.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	18.5	0	0	0	0	
	19	20.0	0	0	0	0	
	20	19.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	18.0	0	0	0	0	
	27	18.0	0	0	0	0	
	28	19.5	0	0	0	0	
	29	19.0	0	0	0	0	
	30	19.5	0	0	0	0	
	31	19.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	18.5	0	0	0	0	
	35	21.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	19.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2642.55mg
Number of survivors: 63
Number of deformed/have difficulty swimming: 0

Initials: BR/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
1310	3541	20.0	0	0	0	0	
	42	20.0	0	0	0	0	
	43	20.0	0	0	0	0	
	44	20.0	0	0	0	0	
	45	20.0	0	0	0	0	
	46	21.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	21.5	0	0	0	0	
	49	20.5	0	0	0	0	
	510	24.0	0	0	0	0	
	511	20.5	0	0	0	0	
	512	20.0	0	0	0	0	
	513	18.0	0	0	0	0	
	514	20.0	0	0	0	0	
	515	18.0	0	0	0	0	
	516	21.0	0	0	0	0	
	517	21.0	0	0	0	0	
	518	20.0	0	0	0	0	
	519	19.0	0	0	0	0	
	620	20.0	0	0	0	0	
	621	20.0	0	0	0	0	
	622	19.0	0	0	0	0	
	623	12.5	0	0	0	0	
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2642.55mg
Number of survivors: 63
Number of deformed/have difficulty swimming: 0

Initials: BR/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-11	1	21.0	0	0	0	0	
	2	20.5	0	0	0	0	
	3	21.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	23.0	0	0	0	0	
	6	21.5	0	0	0	0	
	7	22.0	0	0	0	0	
	8	22.5	0	0	0	0	
	9	21.5	0	0	0	0	
	10	22.0	0	0	0	0	
	11	23.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	22.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	21.5	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	23.0	0	0	0	0	
	20	21.5	0	0	0	0	
	21	20.0	0	0	0	0	
	22	23.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	20.5	0	0	0	0	
	25	20.0	0	0	0	0	
	26	23.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	22.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	22.0	0	0	0	0	
	32	23.0	0	0	0	0	
	33	22.0	0	0	0	0	
	34	22.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	22.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	22.0	0	0	0	0	
	39	22.5	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2729.172 mg
 Number of survivors: 49
 Number of deformed/have difficulty swimming: 0

Initials: BSL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-11	41	22.0	0	0	0	0	
	42	19.0	0	0	0	0	
	43	22.0	0	0	0	0	
	44	21.0	0	0	0	0	
	45	21.0	0	0	0	0	
	46	20.5	0	0	0	0	
	47	20.0	0	0	0	0	
	48	20.0	0	0	0	0	
	49	20.0	0	0	0	0	
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2729.12 mg
Number of survivors: 49
Number of deformed/have difficulty swimming: 0

Initials: BR/SL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	1	21.5	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	21.5	0	0	0	0	
	4	21.5	0	0	0	0	
	5	22.0	0	0	0	0	
	6	22.0	0	0	0	0	
	7	21.5	0	0	0	0	
	8	22.0	0	0	0	0	
	9	23.5	0	0	0	0	
	10	22.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	19.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.5	0	0	0	0	
	16	21.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	22.0	0	0	0	0	
	19	22.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	21.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	21.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	21.0	0	0	0	0	
	29	22.0	0	0	0	0	
	30	19.5	0	0	0	0	
	31	21.5	0	0	0	0	
	32	19.5	0	0	0	0	
	33	19.0	0	0	0	0	
	34	21.5	0	0	0	0	
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1614.79 mg
 Number of survivors: 34
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-12	1		0	0	0	0	
A	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1614.79 mg
 Number of survivors: 34
 Number of deformed/have difficulty swimming: 0

Initials: KJC

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-13	1	22.0	0	0	0	0	
	2	20.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	21.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	22.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	22.0	0	0	0	0	
	9	21.5	0	0	0	0	
	10	20.5	0	0	0	0	
	11	22.0	0	0	0	0	
	12	22.5	0	0	0	0	
	13	20.5	0	0	0	0	
	14	20.5	0	0	0	0	
	15	22.0	0	0	0	0	
	16	22.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	22.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	22.0	0	0	0	0	
	22	21.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	22.5	0	0	0	0	
	25	21.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	18.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	19.5	0	0	0	0	
	30	19.0	0	0	0	0	
	31	18.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1767.76 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

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Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14 A	1	19.5	0	0	0	0	
	2	20.0	0	0	0	0	
	3	19.0	0	0	0	0	
	4	18.5	0	0	0	0	
	5	19.0	0	0	0	0	
	6	15.5	0	0	0	0	
	7	19.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	16.0	0	0	0	0	
	10	19.5	0	0	0	0	
	11	18.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	20.5	0	0	0	0	
	14	19.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	19.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	19.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	19.5	0	0	0	0	
	24	20.0	0	0	0	0	
	25	18.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	19.0	0	0	0	0	
	30	19.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	20.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	18.5	0	0	0	0	
	36	17.0	0	0	0	0	
	37	17.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	20.5	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 1732.45 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: ML

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
B-14	41	20.0	0	0	0	0	
A	42	19.0	0	0	0	0	
	43	16.0	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1732.45 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	19.0	0	0	0	0	
	2	20.5	0	0	0	0	
	3	19.5	0	0	0	0	
	4	19.5	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	19.5	0	0	0	0	
	9	19.0	0	0	0	0	
	10	19.5	0	0	0	0	
	11	20.5	0	0	0	0	
	12	20.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	19.5	0	0	0	0	
	15	21.0	0	0	0	0	
	16	20.0	0	0	0	1	pericardial edema
	17	20.5	0	0	0	0	
	18	19.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	18.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	18.0	0	0	0	0	
	26	19.0	0	0	0	0	
	27	22.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30	18.5	0	1	0	0	malformed eye
	31	18.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	19.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	18.0	0	0	0	0	
	36	18.0	0	3 ⁴ 73	0	0	1 underdeveloped eye
	37	19.0	0	0	0	0	
	38	21.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2068.50 mg
 Number of survivors: 51
 Number of deformed/have difficulty swimming: 8

Initials: BPL

Reviewed by: ML

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

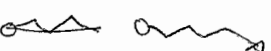
Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	41	20.0	0	0	0	0	
	42	19.5	0	0	0	0	
	43	18.0	0	0	0	0	
	44	18.0	0	3	0	0	1 eye severely undeveloped
	45	19.0	0	0	0	0	
	46	18.0	0	3	0	0	both eyes malformed
	47	18.0	0	0	0	0	
	48	15.0	0	0	0	0	
	49	16.0	3	3	0	0	2
	510	17.0	2	0	0	0	lordosis & kyphosis
	511	14.0	0	0	0	1	pericardial edema
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2068.50 mg
Number of survivors: 51
Number of deformed/have difficulty swimming: 8

Initials: BPL

Reviewed by: M Date Reviewed: 3/12/14

1 Kyphosis & lordosis ; 2 undeveloped eyes; malformed nose

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1	23.0	0	0	0	0	
A	2	19.5	0	0	0	0	
	3	19.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	19.5	0	0	0	0	
	6	20.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	21.5	0	0	0	0	
	9	19.5	0	0	0	0	
	10	20.5	0	0	0	0	
	11	19.0	0	0	0	0	
	12	19.0	0	0	0	1	abdominal
	13	19.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	19.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	19.0	0	0	0	0	
	18	19.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	22.0	0	0	0	0	
	21	20.5	0	0	0	0	
	22	20.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	18.0	0	0	0	0	
	25	19.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	23.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	19.0	0	0	0	0	
	31	21.0	0	0	0	0	
	32	18.5	0	0	0	0	
	33	21.0	0	0	0	0	
	34	21.5	0	0	0	0	
	35	15.0 20.0	0	0	0	0	
	36	21.0	0	0	0	0	
	37	19.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2376.34 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 2

Initials: BPL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	41	21.0	0	0	0	0	
A	42	19.0	0	0	0	0	
	43	19.0	0	0	0	0	
	44	22.0	0	0	0	0	
	45	19.0	0	0	0	0	
	46	15.5	0	0	0	0	
	47	20.0	0	0	0	0	
	48	17.0	0	0	0	0	
	49	19.0	0	0	0	0	
	510	18.0	0	0	0	0	
	511	20.0	0	0	0	0	
	512	17.5	0	0	0	0	
	513	14.0	3	0	0	0	severe blastosis
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2376.34 mg
 Number of survivors: 53
 Number of deformed/have difficulty swimming: _____

Initials: BPL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	1	19.0	0	0	0	0	
A	2	18.5	0	0	0	0	
	3	20.0	0	0	0	0	
	4	21.5	0	0	0	0	
	5	19.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	21.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	21.0	0	0	0	0	
	11	19.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	19.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	19.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	19.5	0	0	0	0	
	22	19.5	0	0	0	0	
	23	20.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	18.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	18.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	19.0	0	0	0	0	
	35	18.0	0	0	0	0	
	36	19.5	0	0	0	0	
	37	22.0	0	0	0	0	
	38	21.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	18.0	0	0	0	0	

Total Weight (pooled): 2972.51 mg
 Number of survivors: 62
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17	41	19.0	0	0	0	0	
A	42	19.0	0	0	0	0	
	43	19.5	0	0	0	0	
	44	21.0	0	0	0	0	
	45	18.0	0	0	0	0	
	46	20.0	0	0	0	0	
	47	17.0	0	0	0	0	
	48	19.0	0	0	0	0	
	49	18.0	0	0	0	0	
	510	22.5	0	0	0	0	
	511	17.0	0	0	0	0	
	512	20.0	0	0	0	0	
	513	20.0	0	0	0	0	
	514	19.0	0	0	0	0	
	515	21.0	0	0	0	0	
	516	20.0	0	0	0	0	
	517	19.0	0	0	0	0	
	518	19.0	0	0	0	0	
	519	20.0	0	0	0	0	
	620	19.5	0	0	0	0	
	621	19.0	0	0	0	0	
	622	19.0	0	0	0	0	
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2972.51 mg
 Number of survivors: 62
 Number of deformed/have difficulty swimming: 0

Initials: SP/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1	21.0	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	19.0	0	0	0	0	
	4	19.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	17.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	17.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	22.0	0	0	0	0	
	13	19.5	0	0	0	0	
	14	21.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	22.0	0	0	0	0	
	17	19.5	0	0	0	0	
	18	21.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	23.5	0	0	0	0	
	22	22.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	20.5	0	0	0	0	
	27	16.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	16.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	19.5	0	0	0	0	
	32	20.0	0	0	0	0	
	33	20.5	0	0	0	0	
	34	21.5	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	18.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	20.5	0	0	0	0	
	40	22.0	0	0	0	0	

Total Weight (pooled): 2548.78 mg
Number of survivors: 57
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-8 12-18	41	19.0	0	0	0	0	
A	42	19.0	0	0	0	0	
	43	17.5	0	0	0	0	
	44	20.0	0	0	0	0	
	45	20.5	0	0	0	0	
	46	21.0	0	0	0	0	
	47	20.2	0	0	0	0	
	48	19.0	0	0	0	0	
	49	17.0	0	0	0	0	
	510	19.5	0	0	0	0	
	511	19.0	0	0	0	0	
	512	19.0	0	0	0	0	
	513	20.0	0	0	0	0	
	514	19.0	0	0	0	0	
	515	19.0	0	0	0	0	
	516	20.2	0	0	0	0	
	517	19.5	0	0	0	0	
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2548.78mg
Number of survivors: 57
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

QIA

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40		0	0	0	0	

Total Weight (pooled): 2548.78mg
Number of survivors: 57
Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2012

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18 A	41		0	0	0	0	
	42		0	0	0	0	
	43		0	0	0	0	
	44		0	0	0	0	
	45		0	0	0	0	
	46		0	0	0	0	
	47		0	0	0	0	
	48		0	0	0	0	
	49		0	0	0	0	
	50		0	0	0	0	
	51		0	0	0	0	
	52		0	0	0	0	
	53		0	0	0	0	
	54		0	0	0	0	
	55		0	0	0	0	
	56		0	0	0	0	
	57		0	0	0	0	
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2548.78 mg
Number of survivors: 57
Number of deformed/have difficulty swimming: 0

Initials: RJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

1572

Embryo-Alevin-Fry Toxicity Test Data Sheet Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	21.0	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	21.0	0	0	0	0	
	4	18.0 with 18.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	18.5	0	0	0	0	
	9	19.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	18.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	19.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	18.0	0	0	0	0	
	18	19.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	19.5	0	0	0	0	
	21	19.5	0	0	0	0	
	22	21.0	0	0	0	0	
	23	16.0	0	0	0	0	
	24	21.5	0	0	0	0	
	25	18.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	18.0	0	0	0	0	
	30	18.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	21.0	0	0	0	0	
	33	19.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	16.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	18.0	0	0	0	0	

Total Weight (pooled): 1977.93 mg
Number of survivors: 50
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	41	20.5	0	0	0	0	
A	42	20.0	0	0	0	0	
	43	16.0	0	0	0	0	
	44	19.5	0	0	0	0	
	45	19.0	0	0	0	0	
	46	18.5	0	0	0	0	
	47	20.0	0	0	0	0	
	48	18.5	0	0	0	0	
	49	19.0	0	0	0	0	
	40	20.5	0	0	0	0	
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
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	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1977.93 mg
Number of survivors: 50
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1	20.0	0	0	0	0	
A	2	20.0	0	0	0	0	
	3	18.0	0	0	0	0	
	4	21.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	18.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	19.0	0	0	0	0	
	11	19.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	21.5	0	0	0	0	
	14	20.5	0	0	0	0	
	15	19.5	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	20.0	0	6	0	0	
	19	20.0	0	0	0	0	
	20	19.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	20.0	0	0	0	0	
	27	19.5	0	0	0	0	
	28	20.5	0	0	0	0	
	29	20.5	0	0	0	0	
	30	18.0	0	0	0	0	
	31	20.5	0	0	0	0	
	32	21.0	0	0	0	0	
	33	20.5	0	0	0	0	
	34	20.0	0	0	0	0	
	35	18.5	0	0	0	0	
	36	19.5	0	0	0	0	
	37	21.0	0	0	0	0	
	38	20.5	0	0	0	0	
	39	19.0	0	0	0	0	
	40	19.0	0	0	0	0	

Total Weight (pooled): 2191.38 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

2/2

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	41	20.0	0	0	0	0	
A	42	18.5	0	0	0	0	
	43	19.0	0	0	0	0	
	44	20.0	0	0	0	0	
	45	21.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	19.0	0	0	0	0	
	48	18.0	0	0	0	0	
	49	18.0	0	0	0	0	
	510	19.0	0	0	0	0	
	511	19.0	0	0	0	0	
	512	19.0	0	0	0	0	
	513	17.5	0	0	0	0	
	514						
	515						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2191.38mg
 Number of survivors: 53
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: h

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

BCL
#2
1/2

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20 A	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40		0	0	0	0	

Total Weight (pooled): 2191.38 mg
 Number of survivors: 53
 Number of deformed/have difficulty swimming: 0

Initials: KYL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013

Termination Date: Feb 11 2014

2/2

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	41		0	0	0	0	
A	42		0	0	0	0	
	43		0	0	0	0	
	44		0	0	0	0	
	45		0	0	0	0	
	46		0	0	0	0	
	47		0	0	0	0	
	48		0	0	0	0	
	49		0	0	0	0	
	50		0	0	0	0	
	51		0	0	0	0	
	52		0	0	0	0	
	53		0	0	0	0	
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2191.38 mg

Number of survivors: 53

Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-21	1	22.0	0	0	0	0	
	2	23.0	0	0	0	0	
	3	22.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	22.0	0	0	0	0	
	6	22.5	0	0	0	0	
	7	20.0	0	0	0	0	
	8	23.0	0	0	0	0	
	9	23.0	0	0	0	0	
	10	23.0	0	0	0	0	
	11	23.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	23.0	0	0	0	0	
	15	20.5	0	0	0	0	
	16	22.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	22.0	0	0	0	0	
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1023.22 mg
 Number of survivors: 18
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJ

Reviewed by: u

Date Reviewed: 2/12/14

1 of 2

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	1	21.0	0	0	0	0	
A	2	17.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	19.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	21.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	22.0	0	0	0	0	
	11	20.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.5	0	0	0	0	
	14	21.5	0	0	0	0	
	15	21.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	19.5	0	0	0	0	
	18	23.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	20.5	0	0	0	0	
	23	21.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	21.0	0	0	0	0	
	26	20.5	0	0	0	0	
	27	20.5	0	0	0	0	
	28	20.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	18.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2081.41 mg
 Number of survivors: 45
 Number of deformed/have difficulty swimming: 0

Initials: BPL/LJC

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	41	16.5	0	0	0	0	
A	42	19.5	0	0	0	0	
	43	19.0	0	0	0	0	
	44	18.5	0	0	0	0	
	45	20.0	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
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	39						
	40						

Total Weight (pooled): 2081.41 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	18.5	0	0	0	0	
A	2	19.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	18.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	19.5	0	0	0	0	
	7	18.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	17.0	0	0	0	0	
	10	17.5	0	0	0	0	
	11	18.0	0	0	0	0	
	12	19.0	0	0	0	0	
	13	22.0	0	0	0	0	
	14	19.0	0	0	0	0	
	15	19.5	0	0	0	0	
	16	20.0	0	0	0	0	
	17	19.5	0	0	0	0	
	18	19.0	0	0	0	0	
	19	18.0	0	0	0	0	
	20	18.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	18.0	0	0	0	0	
	24	19.0	0	0	0	0	
	25	19.0	0	0	0	0	
	26	19.5	0	0	0	0	
	27	16.5	0	0	0	0	
	28	20.0	0	0	0	0	
	29	18.5	0	0	0	0	
	30	17.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	18.0	0	0	0	0	
	33	19.5	0	0	0	0	
	34	20.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.5	0	0	0	0	
	37	18.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	19.5	0	0	0	0	
	40	19.0	0	0	0	0	

Total Weight (pooled): 2510.30 mg
 Number of survivors: 60
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	41	19.5	0	0	0	0	
A	42	20.5	0	0	0	0	
	43	18.5	0	0	0	0	
	44	19.0	0	0	0	0	
	45	19.0	0	0	0	0	
	46	20.0	0	0	0	0	
	47	18.0	0	0	0	0	
	48	20.0	0	0	0	0	
	49	18.0	0	0	0	0	
	510	19.5	0	0	0	0	
	511	19.0	0	0	0	0	
	512	18.0	0	0	0	0	
	513	19.0	0	0	0	0	
	514	21.0	0	0	0	0	
	515	19.0	0	0	0	0	
	516	18.0	0	0	0	0	
	517	19.5	0	0	0	0	
	518	18.5	0	0	0	0	
	519	19.5	0	0	0	0	
	620	18.0	0	0	0	0	
	21						
	22						
	23						
	24						
	25						
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	29						
	30						
	31						
	32						
	33						
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	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2510.30mg
 Number of survivors: 60
 Number of deformed/have difficulty swimming: 0

Initials: BPLIKJ

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	21.5	0	0	0	0	
A	2	22.0	0	0	0	0	
	3	19.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	19.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	18.5	0	0	0	0	
	9	18.0	0	0	0	0	
	10	21.0	0	0	0	0	
	11	20.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	19.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	21.0	0	0	0	0	
	18	19.0	0	0	0	0	
	19	22.0	0	0	0	0	
	20	19.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	21.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	18.5	0	0	0	0	
	28	21.0	0	0	0	0	
	29	19.5	0	0	0	0	
	30	20.5	0	0	0	0	
	31	20.0	0	0	0	0	
	32	19.5	0	0	0	0	
	33	20.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	21.0	0	0	0	0	
	37	18.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	19.5	0	0	0	0	
	40	22.0	0	0	0	0	

Total Weight (pooled): 230-2319.02 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BPL/KX

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 11 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	41	19.0	0	0	0	0	
A	42	18.0	0	0	0	0	
	43	17.0	0	0	0	e	
	44	20.0	0	0	0	e	
	45	19.0	0	0	0	0	
	46	21.0	0	0	0	0	
	47	21.0	0	0	0	0	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2319.02 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	1	20.0	0	0	0	0	
A	2	19.5	0	0	0	0	
	3	22.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	24.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	21.5	0	0	0	0	
	11	22.5	0	0	0	0	
	12	21.5	0	0	0	0	
	13	23.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	23.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	23.5	0	0	0	0	
	19	20.5	0	0	0	0	
	20	22.0	0	0	0	0	
	21	22.0	0	0	0	0	
	22	23.5	0	0	0	0	
	23	22.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	21.0	0	0	0	0	
	26	22.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	19.5	0	0	0	0	
	29	22.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	22.0	0	0	0	0	
	33	21.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	19.5	0	0	0	0	
	38	19.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	22.0	0	0	0	0	

Total Weight (pooled): 2140.18mg
 Number of survivors: 45
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	41	20.0	0	0	0	0	
A	42	22.5	0	0	0	0	
	43	22.5	0	0	0	0	
	44	20.0	0	0	0	0	
	45	22.0	0	0	0	0	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
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	38						
	39						
	40						

Total Weight (pooled): 2140.18 mg
Number of survivors: 45
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

1/2

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1	19.0	0	0	0	0	
A	2	17.0	0	0	0	0	
	3	18.0	0	0	0	0	
	4	19.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	17.5	0	0	0	0	
	8	17.0	0	0	0	0	
	9	19.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	18.0	0	0	0	0	
	13	18.0	0	0	0	0	
	14	19.5	0	0	0	0	
	15	20.5	0	0	0	0	
	16	21.5	0	0	0	0	
	17	18.5	0	0	0	0	
	18	20.0 18.5	0	0	0	0	
	19	17.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	19.0	0	0	0	0	
	22	17.0	0	0	0	0	
	23	18.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	17.5	0	0	0	0	
	26	20.0	0	0	0	0	
	27	22.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	19.0	0	0	0	0	
	30	22.5	0	0	0	0	
	31	21.5	0	0	0	0	
	32	19.0	0	0	0	0	
	33	19.0	0	0	0	0	
	34	21.5	0	0	0	0	
	35	19.5	0	0	0	0	
	36	20.0	0	0	0	0	
	37	19.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2361.88 mg
 Number of survivors: 56
 Number of deformed/have difficulty swimming: 0

Initials: BR

Reviewed by: n

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

2/2

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	41	19.0	0	0	0	0	
A	42	18.0	0	0	0	0	
	43	22.0	0	0	0	0	
	44	19.5	0	0	0	0	
	45	20.0	0	0	0	0	
	46	22.0	0	0	0	0	
	47	19.0	0	0	0	0	
	48	20.0	0	0	0	0	
	49	18.0	0	0	0	0	
	510	17.5	0	0	0	0	
	511	19.0	0	0	0	0	
	512	18.0	0	0	0	0	
	513	21.5	0	0	0	0	
	514	17.0	0	0	0	0	
	515	19.0	0	0	0	0	
	516	18.0	0	0	0	0	
	17						
	18						
	19						
	20						
	21						
	22						
	23						
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	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2364.88 mg
 Number of survivors: 56
 Number of deformed/have difficulty swimming: 0

Initials: BGL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	20.0	0	0	0	0	
A	2	22.0	0	0	0	0	
	3	21.0	0	0	0	0	
	4	19.5	0	0	0	0	
	5	19.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	16.5	0	0	0	0	
	13	21.0	0	0	0	0	
	14	21.5	0	0	0	0	
	15	20.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	21.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	22.0	0	0	0	0	
	22	19.5	0	0	0	0	
	23	19.5	0	0	0	0	
	24	21.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	21.5	0	0	0	0	
	27	17.5	0	0	0	0	
	28	22.0	0	0	0	0	
	29	17.5	0	0	0	0	
	30	20.0	0	0	0	0	
	31	22.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	21.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	18.5	0	0	0	0	
	36	21.0	0	0	0	0	
	37	22.0	0	0	0	0	
	38	19.5	0	0	0	0	
	39						
	40						

Total Weight (pooled): 1762.56
 Number of survivors: 38
 Number of deformed/have difficulty swimming: 0

Initials: _____

Reviewed by: W

Date Reviewed: 3/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	1	22.0	0	0	0	0	
B	2	21.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	19.0	0	0	0	0	
	5	21.5	0	0	0	0	
	6	22.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	22.0	0	0	0	0	
	11	18.0	0	0	0	0	
	12	19.0	0	0	0	0	
	13	19.0	0	0	0	0	
	14	19.5	0	0	0	0	
	15	21.0	0	0	0	0	
	16	22.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	12.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	21.5	0	0	0	0	
	21	21.0	0	0	0	0	
	22	21.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	19.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	22.5	0	0	0	0	
	30	19.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	23.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	23.0	0	0	0	0	
	35	22.0	0	0	0	0	
	36	18.0	1	0	0	0	sceliosis
	37	20.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	18.0	0	0	0	0	

Total Weight (pooled): 2052.80 mg

Number of survivors: 43

Number of deformed/have difficulty swimming: 1 BTL

Initials: BRL/KJ

Reviewed by: [Signature]

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-01	41	23.0	0	0	0	0	
B	42	19.5	0	0	0	0	
	43	20.5	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
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	39						
	40						

Total Weight (pooled): 2052.80 mg

Number of survivors: 43

Number of deformed/have difficulty swimming: ~~0~~ 1 BTL

Initials: BPL/KJU

Reviewed by: M

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	1	20.0	0	0	0	0	
B	2	21.5	0	0	0	0	
	3	18.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	19.0	0	0	0	0	
	6	21.5	0	0	0	0	
	7	20.5	0	0	0	0	
	8	20.0	0	0	0	0	
	9	22.0	0	0	0	0	
	10	19.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	19.0	0	0	0	0	
	13	19.0	0	0	0	0	
	14	16.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	17.0	0	0	0	0	
	17	16.0	0	0	0	0	
	18	20.5	0	0	0	0	
	19	20.5	0	0	0	0	
	20	19.0	0	0	0	0	
	21	22.0	0	0	0	0	
	22	18.0	0	0	0	0	
	23	22.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	22.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	23.0	0	0	0	0	
	32	22.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	21.5	0	0	0	0	
	36	18.0	0	0	0	0	
	37	19.5	0	0	0	0	
	38	20.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2617.17 mg
Number of survivors: 52
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-02	41	22.5	0	0	0	0	
B	42	21.0	0	0	0	0	
	43	17.0	0	0	0	0	
	44	21.0	0	0	0	0	
	45	18.0	0	0	0	0	
	46	22.0	0	0	0	0	
	47	21.0	0	0	0	0	
	48	21.0	0	0	0	0	
	49	19.0	0	0	0	0	
	510	22.0	0	0	0	0	
	511	21.0	0	0	0	0	
	512	22.0	0	0	0	0	
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2617.17mg
Number of survivors: 52
Number of deformed/have difficulty swimming: 0

Initials: BAL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

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Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03	1	21.5	0	0	0	0	
B	2	22.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	21.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	18.5	0	0	0	0	
	9	20.0	0	0	0	0	
	10	19.0	0	0	0	0	
	11	18.0	0	0	0	0	
	12	19.0	0	0	0	0	
	13	18.0	0	0	0	0	
	14	19.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	20.5	0	0	0	0	
	18	18.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	20.5	0	0	0	0	
	24	18.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	20.0	0	0	0	0	
	27	20.5	0	0	0	0	
	28	20.5	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	17.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2426.2125,84 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 2

Initials: RLKJL

Reviewed by: ML

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-03 B	41	20.5	0	0	0	0	
	42	20.5	0	0	0	0	
	43	21.0	0	0	0	0	
	44	20.0	0	0	0	0	
	45	12.5	0	0	0	0	emaciated
	46	12.0	3	0	0	0	Scaliosis
	47	14.0	3	3	0	0	sceliosis 3 vertebrae; eye undeveloped
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

Total Weight (pooled): 2125.84 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 2

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 31/12/14

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Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	1	24.0	0	0	0	0	
B	2	21.0	0	0	0	0	
	3	21.5	0	0	0	0	
	4	21.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	23.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	21.5	0	0	0	0	
	9	21.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	21.5	0	0	0	0	
	12	20.0	0	0	0	0	
	13	20.5	0	0	0	0	
	14	20.5	0	0	0	0	
	15	21.5	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.5	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	21.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	21.0	0	0	0	0	
	28	22.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	19.5	0	0	0	0	
	33	20.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	21.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	21.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 27 2579.23 mg
 Number of survivors: 54
 Number of deformed/have difficulty swimming: 2

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-04	41	20.5	0	0	0	0	
B	42	16.5	0	0	0	2	eye + yolk sac edema
	43	21.0	0	0	0	0	
	44	18.0	0	0	0	0	
	45	22.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	20.0	0	0	0	0	
	49	21.0	0	0	0	0	
	50	22.0	0	0	0	0	
	51	22.0	0	0	0	0	
	512	20.5	0	0	0	0	
	513	21.0	0	0	0	0	
	514	15.0	0	1	0	3	shortened nose; edema behind cranial cavity, eye, yolk sac 3 ventral side
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2579.23 mg
Number of survivors: 54
Number of deformed/have difficulty swimming: 2

Initials: BPL/KJV

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-05	1	21.5	0	0	0	0	
B	2	20.0	0	0	0	0	
	3	21.5	0	0	0	0	
	4	22.0	0	0	0	0	
	5	21.5	0	0	0	0	
	6	22.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	22.0	0	0	0	0	
	10	21.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	23.0	0	0	0	0	
	13	20.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.5	0	0	0	0	
	16	19.5	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	22.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	19.5	0	0	0	0	
	27	20.5	0	0	0	0	
	28	19.5	0	0	0	0	
	29	22.0	0	0	0	0	
	30	23.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	19.5	0	0	0	0	
	33	19.0	0	0	0	0	
	34	19.0	0	0	0	0	
	35	23.0	0	0	0	0	
	36	18.0	0	0	0	0	
	37	19.0	0	0	0	0	
	38	20.5	0	0	0	0	
	39	20.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 1944.17 mg

Number of survivors: 40

Number of deformed/have difficulty swimming: 0

Initials: BPLKJL

Reviewed by: WZ

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-06	1	19.5	0	0	0	0	
8	2	22.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	22.0	0	0	0	0	
	6	20.5	0	0	0	0	
	7	22.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	21.5	0	0	0	0	
	11	19.0	0	0	0	0	eye edema
	12	22.0	0	0	0	0	
	13	22.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	20.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	22.0	0	0	0	0	
	19	21.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	21.5	0	0	0	0	
	26	19.5	0	0	0	0	
	27	20.5	0	0	0	0	
	28	19.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1444.62 mg
 Number of survivors: 29
 Number of deformed/have difficulty swimming: 1

Initials: BPL/SL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
1307	1	21.5	0	0	0	0	
B	2	18.5	0	0	0	0	
	3	18.5	0	0	0	0	
	4	18.5	0	0	0	0	
	5	19.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	22.0	0	0	0	0	
	9	21.0	0	0	0	0	
	10	20.5	0	0	0	0	
	11	22.5	0	0	0	0	
	12	18.0	0	0	0	0	
	13	20.5	0	0	0	0	
	14	20.5	0	0	0	0	
	15	18.0	0	0	0	0	
	16	20.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	18.5	0	0	0	0	
	19	20.0	0	0	0	0	
	20	20.5	0	0	0	0	
	21	19.0	0	0	0	0	
	22	18.0	0	0	0	0	
	23	22.0	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	19.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	21.0	0	0	0	0	
	29	18.0	0	0	0	0	
	30	18.0	0	0	0	0	
	31	21.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	18.0	0	0	0	0	
	34	19.0	0	0	0	0	
	35	18.5	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	20.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2895.94 mg
Number of survivors: 57
Number of deformed/have difficulty swimming: 0

Initials: BR/KS

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-07	41	20.5	0	0	0	0	
B	42	21.0	0	0	0	0	
	43	21.0	0	0	0	0	
	44	19.5	0	0	0	0	
	45	22.0	0	0	0	0	
	46	21.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	19.0	0	0	0	0	
	49	17.0	0	0	0	0	
	510	21.0	0	0	0	0	
	511	19.0	0	0	0	0	
	512	21.0	0	0	0	0	
	513	21.5	0	0	0	0	
	514	20.0	0	0	0	0	
	515	21.0	0	0	0	0	
	516	18.0	0	0	0	0	
	517	17.0	0	0	0	0	
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2895.94 mg
 Number of survivors: 57
 Number of deformed/have difficulty swimming: 0

Initials: BSL/KS

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-09	1	19.0	0	0	0	0	
B	2	22.0	0	0	0	0	
	3	21.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	19.0	0	0	0	0	
	6	20.0	0	3	0	0	1 malformed eye
	7	20.0	0	1	0	0	malformed eye
	8	19.0	0	0	0	0	
	9	21.5	0	0	0	0	
	10	21.0	0	0	0	0	
	11	21.0 19.0	0	0	0	0	
	12	20.0 19.5	0	0	0	0	
	13	21.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	21.5	0	0	0	0	
	18	21.0	0	3	0	0	malformed eye
	19	22.0	0	0	0	0	
	20	22.0	0	0	0	0	
	21	20.2	0	0	0	0	
	22	20.5	0	0	0	0	
	23	21.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	22.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	23.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	21.0	0	0	0	0	
	34	21.5	0	0	0	0	
	35	20.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37						
	38						
	39						
	40						

Total Weight (pooled): 1777.28mg
 Number of survivors: 36
 Number of deformed/have difficulty swimming: ~~0~~ 3 BTC

Initials: BPL/KJL

Reviewed by: *ML*

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
1370	1	20.0	0	0	0	0	
B	2	21.0	0	0	0	0	
	3	19.5	0	0	0	0	
	4	20.0	0	0	0	0	
	5	19.5	0	0	0	0	
	6	20.5	0	0	0	0	
	7	20.0	0	0	0	0	
	8	19.0	0	0	0	0	
	9	17.0	0	0	0	0	
	10	20.5	0	0	0	0	
	11	20.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	21.5	0	0	0	0	
	17	19.5	0	0	0	0	
	18	19.0	0	0	0	0	
	19	22.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.5	0	0	0	0	
	22	21.0	0	0	0	0	
	23	21.0	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	20.5	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.5	0	0	0	0	
	29	18.5	0	0	0	0	
	30	19.0	0	0	0	0	
	31	23.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	19.0	0	0	0	0	
	34	20.5	0	0	0	0	
	35	18.0	0	0	0	0	
	36	20.5	0	0	0	0	
	37	20.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	19.0	0	0	0	0	

Total Weight (pooled): 2123.48 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-10	41	19.0	0	0	0	0	
B	42	21.0	0	0	0	0	
	43	19.5	0	0	0	0	
	44	20.0	0	0	0	0	
	45	19.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	19.0	0	0	0	0	
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
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Total Weight (pooled): 2123.48 mg
Number of survivors: 47
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJV

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
(3-12)	1	20.0	0	0	0	0	
B	2	20.5	0	0	0	0	
	3	19	0	0	0	0	
	4	21.5	0	0	0	0	
	5	19	0	0	0	0	
	6	19	0	0	0	0	
	7	22 19	0	0	0	0	
	8	22	0	0	0	0	
	9	20 22	0	0	0	0	
	10	20	0	0	0	0	
	11	21.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	22.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	22.0	0	0	0	0	
	16	23.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	21.0	0	0	0	0	
	23	20 20.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	22.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	21.0	0	0	0	0	
	29	21.0	0	0	0	0	
	30	20.5	0	0	0	0	
	31						
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Total Weight (pooled): 1688.01 mg
 Number of survivors: 30
 Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-13	1	20.5	0	0	0	0	
B	2	20.0	0	0	0	0	
	3	20.25	0	0	0	0	
	4	22.0	0	0	0	0	
	5	21.0	0	0	0	0	
	6	23.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	22.5	0	0	0	0	
	9	20.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	20.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	19.5	0	0	0	0	
	14	22.0	0	0	0	0	
	15	22.0	0	0	0	0	
	16	23.0	0	0	0	0	
	17	22.5	0	0	0	0	
	18	22.5	0	0	0	0	
	19	20.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	19.5	0	0	0	0	
	22	19.5	0	0	0	0	
	23	19.0	0	0	0	0	
	24	22.0	0	0	0	0	
	25	21.5	0	0	0	0	
	26	22.0	0	0	0	0	
	27	21.5	0	0	0	0	
	28	23.0	0	0	0	0	
	29	22.0	0	0	0	0	
	30	20.5	0	0	0	0	
	31	20.0	0	0	0	0	
	32	18.5	0	0	0	0	
	33	21.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	21.0	0	0	0	0	
	37	21.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	20.5	0	0	0	0	

Total Weight (pooled): 2438.98 mg
Number of survivors: 42
Number of deformed/have difficulty swimming: 0

Initials: BBL/KSL

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
15-13	41	22.5	0	0	0	0	
B	42	20.5	0	0	0	0	
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
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Total Weight (pooled): 2438.98 mg
Number of survivors: 42
Number of deformed/have difficulty swimming: 0

Initials: MJC/BR

Reviewed by: [Signature]

Date Reviewed: 31/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14	1	14.0	0	0	0	0	
B	2	18.0	0	0	0	0	
	3	19.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	20.5	0	0	0	0	
	8	19.0	0	0	0	0	
	9	20.5	0	0	0	0	
	10	19.0	0	0	0	0	
	11	19.0	0	0	0	0	
	12	20.0	0	0	0	0	
	13	18.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	19.0	0	0	0	0	
	17	21.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	20.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	17.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	20.5	0	0	0	0	
	29	20.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	21.0	0	0	0	0	
	35	20.5	0	0	0	0	
	36	20.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2071.94 mg
Number of survivors: 44
Number of deformed/have difficulty swimming: 0

Initials: BPL / KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

212

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14 6	41	21.0	0	0	0	0	
	42	20.0	0	0	0	0	
	43	19.0	0	0	0	0	
	44	22.0	0	0	0	0	
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
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	40						

Total Weight (pooled): 2071.94 mg
Number of survivors: 44
Number of deformed/have difficulty swimming: 0

Initials: BRL/KSL

Reviewed by: 212

Date Reviewed: 31/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-15	1	22.5	0	0	0	0	
B	2	22.5	0	0	0	0	
	3	22.0	0	0	0	0	
	4	19.0	0	0	0	0	
	5	22.5	0	0	0	0	
	6	22.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	22.5	0	0	0	0	
	10	22.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	21.5	0	0	0	0	
	13	20.0	0	0	0	0	
	14	21.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	18.0	0	0	0	0	
	21	20.0	0	0	0	0	
	22	20.5	0	0	0	0	
	23	18.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	20.5	0	0	0	0	
	26	20.5	0	0	0	0	
	27	23.0	0	0	0	0	
	28	17.0	0	3	0	0	but one eye malformed, one eye missing
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1394.92 mg
 Number of survivors: 28
 Number of deformed/have difficulty swimming: 1

Initials: BRL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-16	1	19.0	0	0	0	0	
B	2	20.6	0	0	0	0	
	3	20.0	0	0	0	0	
	4	21.5	0	0	0	0	
	5	23.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	21.5	0	0	0	0	
	8	18.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	19.0	0	0	0	0	
	12	22.5	0	0	0	0	
	13	20.5	0	0	0	0	
	14	20.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	17.0	0	0	0	0	
	17	22.0	0	0	0	0	
	18	23.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	19.5	0	0	0	0	
	21	21.5	0	0	0	0	
	22	19.0	0	0	0	0	
	23	20.5	0	0	0	0	
	24	20.0	0	0	0	0	
	25	21.5	0	0	0	0	
	26	18.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	18.0	0	0	0	0	
	29	19.0	0	0	0	0	
	30	18.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	20.0	0	0	0	0	
	34	18.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	20.5	0	0	0	0	
	37	19.0	0	0	0	0	
	38	20.0	0	0	0	0	
	39	21.0	0	0	0	0	
	40	9.5	3	1	0	0	scoliosis; shortened nbsa

Total Weight (pooled): 1918.70 mg
 Number of survivors: 40
 Number of deformed/have difficulty swimming: 1

Initials: BEL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-17 B	1	22.0	0	0	0	0	
	2	21.0	0	0	0	0	
	3	23.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.5	0	0	0	0	
	7	21.5	0	0	0	0	
	8	19.5	0	0	0	0	
	9	19.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	22.0	0	0	0	0	
	12	22.0	0	0	0	0	
	13	23.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.5	0	0	0	0	
	18	20.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	19.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	20.5	0	0	0	0	
	25	21.0	0	0	0	0	
	26	22.0	0	0	0	0	
	27	20.5	0	0	0	0	
	28	18.0	0	0	0	0	
	29	21.5	0	0	0	0	
	30	18.0	0	0	0	0	
	31	21.0	0	0	0	0	
	32	22.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	19.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	19.5	0	0	0	0	
	39	20.0	0	0	0	0	
	40		2 ^{ex}				

Total Weight (pooled): 2253.40 mg
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 0

Initials: BRL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-18 B	1	20.0	0	0	0	0	
	2	19.0	0	0	0	0	
	3	22.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	20.5	0	0	0	0	
	6	23.5	0	0	0	0	
	7	20.0	0	0	0	0	
	8	22.5	0	0	0	0	
	9	21.5	0	0	0	0	
	10	20.0	0	0	0	0	
	11	23.0	0	0	0	0	
	12	21.5	0	0	0	0	
	13	20.0	0	0	0	0	
	14	20.0	0	0	0	0	
	15	19.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	18.0	0	0	0	0	
	18	20.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	21.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	22.0	0	0	0	0	
	23	19.0	0	0	0	0	
	24	20.0	0	0	0	0	
	25	22.5	0	0	0	0	
	26	22.0	0	0	0	0	
	27	21.0	0	0	0	0	
	28	22.5	0	0	0	0	
	29	20.5	0	0	0	0	
	30	22.0	0	0	0	0	
	31	21.5	0	0	0	0	
	32	21.0	0	0	0	0	
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1845.71 mg
 Number of survivors: 32
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-19	1	20.0	0	0	0	0	
B	2	20.0	0	0	0	0	
	3	20.5	0	0	0	0	
	4	21.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	17.5	0	0	0	0	
	8	19.5	0	0	0	0	
	9	19.0	0	0	0	0	
	10	21.0	0	0	0	0	
	11	20	0	0	0	0	
	12	20.5	0	0	0	0	
	13	19.5	0	0	0	0	
	14	19.5	0	0	0	0	
	15	20.0	0	0	0	0	
	16	18.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	19.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	19.0	0	0	0	0	
	21	20.5	0	0	0	0	
	22	20.0	0	0	0	0	
	23	20.0	0	0	0	0	
	24	20.5	0	0	0	0	
	25	18.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	18.5	0	0	0	0	
	29	19.0	0	0	0	0	
	30	19.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	20.0	0	0	0	0	
	34	20.0	0	0	0	0	
	35	18.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	20.5	0	0	0	0	
	38	20.0	0	0	0	0	
	39	18.5	0	0	0	0	
	40	20.5	0	0	0	0	

Total Weight (pooled): 236.40 mg
Number of survivors: 51
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJC

Reviewed by: u

Date Reviewed: 3/12/14

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Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-14 B	41	20.5	0	0	0	0	
	42	19.5	0	0	0	0	
	43	21.5	0	0	0	0	
	44	20.5	0	0	0	0	
	45	20.5	0	0	0	0	
	46	20.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	21.5	0	0	0	0	
	49	20.0	0	0	0	0	
	510	20.0	0	0	0	0	
	511	18.0	0	0	0	0	
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
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	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2361.40 mg
Number of survivors: 51
Number of deformed/have difficulty swimming: 0

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	1	22.0	0	0	0	0	
B	2	19.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	19.5	0	0	0	0	
	5	20.0	0	0	0	0	
	6	20.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	22.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	19.5	0	0	0	0	
	12	20.0	0	0	0	0	
	13	19.0	0	0	0	0	
	14	20.5	0	0	0	0	
	15	20.5	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.5	0	0	0	0	
	18	19.0	0	0	0	0	
	19	21.0	0	0	0	0	
	20	19.5	0	0	0	0	
	21	19.0	0	0	0	0	
	22	18.5	0	0	0	0	
	23	20.0	0	0	0	0	
	24	19.5	0	0	0	0	
	25	20.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	19.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.5	0	0	0	0	
	31	20.0	0	0	0	0	
	32	22.0	0	0	0	0	
	33	20.5	0	0	0	0	
	34	19.0	0	0	0	0	
	35	20.0	0	0	0	0	
	36	19.0	0	0	0	0	Technician error - damaged skull
	37	20.0	0	0	0	0	
	38	19.0	0	0	0	0	
	39	22.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 2304.93mg
Number of survivors: 48
Number of deformed/have difficulty swimming: 0

Initials: BPL/LJV

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-20	41	20.0	0	0	0	0	
B	42	20.0	0	0	0	0	
	43	20.0	0	0	0	0	
	44	19.0	0	0	0	0	
	45	20.5	0	0	0	0	
	46	20.5	0	0	0	0	
	47	19.0	0	0	0	0	
	48	19.0	0	0	0	0	
	9	BR20					
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2304.93mg
Number of survivors: 48
Number of deformed/have difficulty swimming: 0

Initials: BPL/KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

212

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-22	41	20.0	0	0	0	0	
B	42	20.0	0	0	0	0	
	43	19.0	0	0	0	0	
	44	19.0	0	0	0	0	
	45	20.0	0	0	0	0	
	46	19.0	0	0	0	0	
	47	20.0	0	0	0	0	
	48	18.5	0	0	0	0	
	49	17.5	0	3	0	0	one eye underdeveloped
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2729.50mg
Number of survivors: 49
Number of deformed/have difficulty swimming: 1

Initials: BPL/KSL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

1/2

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1	26.0	0	0	0	0	
B	2	22.5	0	0	0	0	
	3	22.0	0	0	0	0	
	4	20.0	0	0	0	0	
	5	18.0	0	0	0	0	
	6	21.0	0	0	0	0	
	7	18.5	0	0	0	0	
	8	21.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	18.5	0	0	0	0	
	12	21.0	0	0	0	0	
	13	20.0	0	0	0	0	
	14	19.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	18.5	0	0	0	0	
	17	19.0	0	0	0	0	
	18	18.0	0	0	0	0	
	19	19.0	0	0	0	0	
	20	18.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	17.5	0	0	0	0	
	23	19.5	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	19.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	22.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	20.0	0	0	0	0	
	32	20.5	0	0	0	0	
	33	19.0	0	0	0	0	
	34	17.0	0	0	0	0	
	35	21.0	0	0	0	0	
	36	15.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	18.0	0	0	0	0	
	39	19.0	0	0	0	0	
	40	20.0	0	0	0	0	

Total Weight (pooled): 1738.28 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	41	19.0	0	0	0	0	
B	42	17.5	0	0	0	0	
	43	20.0	0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1738.28mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

12

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	1		0	0	0	0	
B	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40		0	0	0	0	

Total Weight (pooled): 1738.28 mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

2/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-23	41		0	0	0	0	
0	42		0	0	0	0	
	43		0	0	0	0	
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1738.28mg
Number of survivors: 43
Number of deformed/have difficulty swimming: 0

Initials: KJW

Reviewed by: W

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1	22.0	0	0	0	0	
B	2	22.5	0	0	0	0	
	3	21.0	0	0	0	0	
	4	22.0	0	0	0	0	
	5	22.0	0	0	0	0	
	6	23.0	0	0	0	0	
	7	19.0	0	0	0	0	
	8	18.0	0	0	0	0	
	9	20.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	20.5	0	0	0	0	
	13	22.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	21.0	0	0	0	0	
	16	21.5	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	20.0	0	0	0	0	
	20	20.0	0	0	0	0	
	21	22.5	0	0	0	0	
	22	20.0	0	0	0	0	
	23	22.5	0	0	0	0	
	24	22.0	0	0	0	0	
	25	21.0	0	0	0	0	
	26	21.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	20.0	0	0	0	0	
	29	22.0	0	0	0	0	
	30	21.0	0	0	0	0	
	31	19.0	0	0	0	0	
	32	19.0	0	0	0	0	
	33	21.0	0	0	0	0	
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1879.83 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 0

Initials: BPV

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-24	1		0	0	0	0	
B	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 1879.83 mg
 Number of survivors: 33
 Number of deformed/have difficulty swimming: 0

Initials: KJC

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-25	1	19.0	0	0	0	0	
B	2	21.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	23.0	0	0	0	0	
	5	20.0	0	0	0	0	
	6	19.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	20.0	0	0	0	0	
	9	21.0	0	0	0	0	
	10	22.0	0	0	0	0	
	11	21.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	21.0	0	0	0	0	
	14	19.5	0	0	0	0	
	15	20.0 21.0	0	0	0	0	
	16	21.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	21.0	0	0	0	0	
	19	20.5	0	0	0	0	
	20	21.0	0	0	0	0	
	21	22.0	0	0	0	0	
	22	22.0	0	0	0	0	
	23	18.5	0	0	0	0	
	24	19.0	0	0	0	0	
	25	20.0	0	0	0	0	
	26	20.0	0	0	0	0	
	27	20.0	0	0	0	0	
	28	21.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	20.0	0	0	0	0	
	31	22.5	0	0	0	0	
	32	22.0	0	0	0	0	
	33	20.5	0	0	0	0	
	34	23.0	0	0	0	0	
	35	22.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	20.5	0	0	0	0	
	38	22.0	0	0	0	0	
	39	22.0	0	0	0	0	
	40	21.5	0	0	0	0	

Total Weight (pooled): 2028.22mg
 Number of survivors: 40
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: N

Date Reviewed: 2/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
12-25	1		0	0	0	0	
B	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40		0	0	0	0	

Total Weight (pooled): 2028.22mg
 Number of survivors: 40
 Number of deformed/have difficulty swimming: 0

Initials: KJL

Reviewed by: ML

Date Reviewed: 31/12/14

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Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-287 B	1	19.0	0	0	0	0	
	2	21.0	0	0	0	0	
	3	18.0	0	0	0	0	
	4	18.0	0	0	0	0	
	5	21.0	0	0	0	0	
	6	18.0	0	0	0	0	
	7	21.0	0	0	0	0	
	8	18.0	0	0	0	0	
	9	19.0	0	0	0	0	
	10	18.0	0	0	0	0	
	11	19.0	0	0	0	0	
	12	18.5	0	0	0	0	
	13	17.0	0	0	0	0	shortened nose, yolk sac edema
	14	19.0	0	0	0	0	
	15	20.0	0	0	0	0	
	16	20.0	0	0	0	0	
	17	20.0	0	0	0	0	
	18	19.0	0	0	0	0	
	19	16.0	0	0	0	0	
	20	17.5	0	0	0	0	
	21	20.0	0	0	0	0	
	22	20.5	0	0	0	0	
	23	20.0	0	0	0	0	
	24	18.5	0	0	0	0	
	25	19.5	0	0	0	0	
	26	20.5	0	0	0	0	
	27	19.0	0	0	0	0	
	28	19.0	0	0	0	0	
	29	20.0	0	0	0	0	
	30	19.0	0	0	0	0	
	31	21.0	0	0	0	0	
	32	21.5	0	0	0	0	
	33	20.0	0	0	0	0	technician error - damage to cranial cavity
	34	17.0	0	0	0	0	
	35	19.0	0	0	0	0	
	36	19.0	0	0	0	0	
	37	20.0	0	0	0	0	
	38	18.0	0	0	0	0	
	39	19.5	0	0	0	0	
	40	21.0	0	0	0	0	

Total Weight (pooled): 2174.17 mg
 Number of survivors: 53
 Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	41	20.0	0	0	0	0	
B	42	20.5	0	0	0	0	
	43	20.0	0	0	0	0	
	44	19.0	0	0	0	0	
	45	21.0	0	0	0	0	
	46	20.0	0	0	0	0	
	47	19.5	0	0	0	0	
	48	19.0	0	0	0	0	
	49	20.5	0	0	0	0	
	510	21.0	0	0	0	0	
	511	20.0	0	0	0	0	
	512	18.0	0	0	0	0	
	513	18.0	0	0	0	0	
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2174.17mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 1

Initials: BPL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

4/2

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	1		0	0	0	0	
	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	1	ydksac edema
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40		0	0	0	0	

Total Weight (pooled): 2174.17 mg
Number of survivors: 53
Number of deformed/have difficulty swimming: 1

Initials: KJL

Reviewed by: M

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet

Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q1A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-27	41		0	0	0	0	
B	42		0	0	0	0	
	43		0	0	0	0	
	44		0	0	0	0	
	45		0	0	0	0	
	46		0	0	0	0	
	47		0	0	0	0	
	48		0	0	0	0	
	49		0	0	0	0	
	510		0	0	0	0	
	511		0	0	0	0	
	512		0	0	0	0	
	513		0	0	0	0	
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
	37						
	38						
	39						
	40						

Total Weight (pooled): 2174.17mg

Number of survivors: 53

Number of deformed/have difficulty swimming: 1

Initials: KJL

Reviewed by: [Signature]

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1	21.0	0	0	0	0	
B	2	20.0	0	0	0	0	
	3	20.0	0	0	0	0	
	4	20.5	0	0	0	0	
	5	22.5	0	0	0	0	
	6	21.0	0	0	0	0	
	7	20.0	0	0	0	0	
	8	20.5	0	0	0	0	
	9	22.0	0	0	0	0	
	10	20.0	0	0	0	0	
	11	20.0	0	0	0	0	
	12	21.0	0	0	0	0	
	13	22.0	0	0	0	0	
	14	22.0	0	0	0	0	
	15	22.0	0	0	0	0	
	16	21.5	0	0	0	0	
	17	22.0	0	0	0	0	
	18	22.0	0	0	0	0	
	19	19.5	0	0	0	0	
	20	20.0	0	0	0	0	
	21	21.0	0	0	0	0	
	22	21.5	0	0	0	0	
	23	21.0	0	0	0	0	
	24	21.0	0	0	0	0	
	25	19.0	0	0	0	0	
	26	23.0	0	0	0	0	
	27	20.5	0	0	0	0	
	28	21.5	0	0	0	0	
	29	20.5	0	0	0	0	
	30	20 21.0	0	0	0	0	
	31	23.0	0	0	0	0	
	32	20.0	0	0	0	0	
	33	22.0	0	0	0	0	
	34	20.5	0	0	0	0	
	35	21.0	0	0	0	0	
	36	20.0	0	0	0	0	
	37	21.5	0	0	0	0	
	38	22.0	0	0	0	0	
	39	22.5	0	0	0	0	
	40						

Total Weight (pooled): 2187.80 mg
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 0

Initials: BPL

Reviewed by: u

Date Reviewed: 3/12/14

Embryo-Alevin-Fry Toxicity Test Data Sheet
Swim-up wet weight, length and deformities

Client: Golder

Start Date: Nov 6 2013
Termination Date: Feb 12 2014

Q/A

Sample ID	Fish	Length (mm)	Skeletal	Craniofacial	Finfold	Edema	Comments
13-28	1		0	0	0	0	
B	2		0	0	0	0	
	3		0	0	0	0	
	4		0	0	0	0	
	5		0	0	0	0	
	6		0	0	0	0	
	7		0	0	0	0	
	8		0	0	0	0	
	9		0	0	0	0	
	10		0	0	0	0	
	11		0	0	0	0	
	12		0	0	0	0	
	13		0	0	0	0	
	14		0	0	0	0	
	15		0	0	0	0	
	16		0	0	0	0	
	17		0	0	0	0	
	18		0	0	0	0	
	19		0	0	0	0	
	20		0	0	0	0	
	21		0	0	0	0	
	22		0	0	0	0	
	23		0	0	0	0	
	24		0	0	0	0	
	25		0	0	0	0	
	26		0	0	0	0	
	27		0	0	0	0	
	28		0	0	0	0	
	29		0	0	0	0	
	30		0	0	0	0	
	31		0	0	0	0	
	32		0	0	0	0	
	33		0	0	0	0	
	34		0	0	0	0	
	35		0	0	0	0	
	36		0	0	0	0	
	37		0	0	0	0	
	38		0	0	0	0	
	39		0	0	0	0	
	40						

Total Weight (pooled): 2187.80mg
 Number of survivors: 39
 Number of deformed/have difficulty swimming: 0

Initials: RJL

Reviewed by: u

Date Reviewed: 3/12/14

APPENDIX D - Tissue Chemistry Data

	Sample collection Site	Sample collection ID (Lotic)	Toxicity Lab ID (Nautilus)	Chemistry Lab ID	Date Sampled	% Moisture	Egg Se ww	Egg Se dw (ALS)	Egg Se dw (Applied Speciation)	Muscle Se dw (Applied Speciation)	ALS vs Applied Speciation	Egg:muscle
2010	FOR1	FOR1-1	FOR-1	MWF-1	10-Nov-10	66.2	5.4		15.98			
	FOR1	FOR1-2	FOR-2	MWF-2	10-Nov-10	67.8	4.99		15.50			
	FOR1	FOR1-3	FOR-3	MWF-3	10-Nov-10	68.6	6.29		20.03			
	FOR1	FOR1-4	FOR-4	MWF-4	10-Nov-10	68.2	5.29		16.64			
	FOR1	FOR1-5	FOR-5	MWF-5	10-Nov-10	65.8	5.76		16.84			
	MIC2	MIC2-1	FOR-6	MWF-6	10-Nov-10	65.9	6.74		19.77			
2011	FO23	F1	WF1	WF1	26-OCT-11	65.6	9.28	26.98				
	FO23	F2	WF2	WF2	26-OCT-11	61.6	13.2	34.38				
	FO23	F3	WF3	WF3	26-OCT-11	65	7.85	22.43				
	FO23	F4	WF4	WF4	26-OCT-11	65.3	8.26	23.80				
	FO23	F5	WF5	WF5	26-OCT-11	65.3	7.26	20.92				
	FO23	F6	WF6	WF6	26-OCT-11	64.9	8.69	24.76				
	FO23	F7	WF7	WF7	26-OCT-11	65.6	8.27	24.04				
	MI3	F22	WF8	WF8	26-OCT-11	66	8.92	26.24				
	MI3	F19	WF9	WF9	26-OCT-11	65.2	11.2	32.18				
	MI3	F10	WF10	WF10	26-OCT-11	66.4	5.96	17.74				
	MI3	F11	WF11	WF11	26-OCT-11	67	11	33.33				
	MI3	F12	WF12	WF12	26-OCT-11	64	11.8	32.78				
	MI3	F13	WF13	WF13	26-OCT-11	68.8	10	32.05				
	MI3	F14	WF14	WF14	26-OCT-11	66.3	11.2	33.23	33.10	4.10	100.4%	8.07
	MI3	F15	WF15	WF15	26-OCT-11	64.6	9.96	28.14				
	MI3	F21	WF16	WF16	26-OCT-11	65.1	9.45	27.08				
	MI3	F17	WF17	WF17	26-OCT-11	64.9	12.5	35.61				
	MI2	F23	WF23	WF23	03-NOV-11	65.2	6.78	19.48				
	MI2	F24	WF24	WF24	03-NOV-11	68.7	9.11	29.11				
	MI2	F25	WF25	WF25	03-NOV-11	66	10.5	30.88	32.60	3.50	94.7%	9.31
	MI2	F26	WF26	WF26	03-NOV-11	70.7	5.36	18.29	15.20	3.80	120.4%	4.00
	MI2	F27	WF27	WF27	03-NOV-11	65.2	8.97	25.78	26.00	4.20	99.1%	6.19
	MI2	F28	WF28	WF28	03-NOV-11	66.6	7.68	22.99				
	Fo23	F29	WF29	WF29	03-NOV-11	65.9	5.38	15.78				
	Fo23	F30	WF30	WF30	03-NOV-11	69.2	9.61	31.20				
	Fo23	F31	WF31	WF31	03-NOV-11	68.9	8.14	26.17				
	Fo23	F32	WF32	WF32	03-NOV-11	67.2	9.35	28.51	28.90	4.40	98.6%	6.57
	Fo23	F33	WF33	WF33	03-NOV-11	67.3	6.18	18.90				
	Fo23	F34	WF34	WF34	03-NOV-11	67.3	12	36.70				
	Fo23	F35	WF35	WF35	03-NOV-11	66.5	6.98	20.84				
	Fo23	F36	WF36	WF36	03-NOV-11	65.6	7.12	20.70				
	Fo23	F37	WF37	WF37	03-NOV-11	66.8	7.73	23.28				
	MI3	F38	WF38	WF38	09-NOV-11	68.6	10.2	32.48	31.50	3.30	103.1%	9.55
	MI3	F39	WF39	WF39	09-NOV-11	64.9	6.48	18.46	21.60	3.50	85.5%	6.17
	MI3	F40	WF40	WF40	09-NOV-11	67.8	7.58	23.54	25.70	3.00	91.6%	8.57
	MI3	F41	WF41	WF41	14-NOV-11	68.3	8.81	27.79	26.10	2.80	106.5%	9.32
										Mean	100.0%	7.53
										SD	9.9%	1.90



January 7, 2011

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7
(604) 420-8773

Project: Selenium

Mr. Elphick,

Attached is the report associated with seven (7) fish egg samples submitted for total selenium analysis on December 13, 2010. The samples were received on December 15, 2010 in a sealed container at 4.5°C. Total selenium analysis was performed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS). Any analytical issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink, appearing to read "Russell Gerads".

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report Prepared for:

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7

Project: Selenium

January 7, 2011

1. Sample Reception

Seven (7) fish egg samples were submitted for total selenium quantification on December 13, 2010. The samples were received in acceptable condition on December 15, 2010 in a sealed container at 4.5°C.

The samples were received in a laminar flow clean hood void of trace metals contamination and ultra-violet radiation. Immediately upon reception all samples were designated discrete sample identifiers and stored in a secure monitored cryofreezer (maintained at a temperature of -80°C) until digestion and analysis could be performed. The solid samples were digested with concentrated HNO₃ and analyzed for total selenium by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Total Selenium Analysis by ICP-DRC-MS (Solid) Approximately 0.1g of each sample was transferred to a polyethylene digestion tube and 5mL of concentrated HNO₃ was added to each sample. The samples were heated at 95°C for 30 minutes on a Hotblock digestion apparatus. An additional 5mL of concentrated HNO₃ was added to each sample and they were heated for an additional 3 hours. The samples were then allowed to cool and 2mL of H₂O₂ was added. The samples were heated for an additional 3 hours at 95°C. All digests were removed from heat, allowed to cool, and brought to a final volume of 50mL.

3. Sample Analysis

All sample analysis is precluded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Total Selenium Quantification by ICP-DRC-MS All samples for total selenium quantification were analyzed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS) on January 6, 2011. Aliquots of each sample are introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer, on the basis of their mass-to-charge ratio (m/z), and the resulting current is processed by a data handling system.

4. Analytical Issues

The overall analysis went very well and no analytical issues were encountered. All quality control parameters associated with these samples were within acceptance limits.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,



Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Total Selenium Results for Nautilus Environmental
Contact: James Elphick
Project: Selenium

Date: January 7, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Total Se (Wet weight)	% Moisture	Total Se (Dry weight)	
MWF 1	5.40	66.2%	16.0	Fish 1 through 5
MWF 2	4.99	67.8%	15.5	from Fording nr
MWF 3	6.29	68.6%	20.0	Line Creek.
MWF 4	5.29	68.2%	16.6	
MWF 5	5.76	65.8%	16.8	
MWF 6	6.74	65.9%	19.8	Fish 6 from Michel
MWF 6 DUP	5.29	66.9%	16.0	Duplicate for MWF4

All results are reported in mg/kg unless otherwise specified

Total Selenium Results for Nautilus Environmental
 Contact: James Elphick
 Project: Selenium

Date: January 7, 2011
 Report Generated by: Russell Gerads
 Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (mg/kg)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL
Total Se	0.0010	-0.0040	0.0003	-0.0028	-0.0014	0.0024	0.0072

Quality Control Summary - Certified Reference Materials

Analyte (mg/kg)	CRM	True Value	Result	Recovery
Total Se	DORM-3	3.3	2.9	88.7

Quality Control Summary - Matrix Duplicate

Analyte (mg/kg)	Sample ID	Rep 1	Rep 2	Mean	RPD
Total Se	MWF 3	6.2876	6.4462	6.3669	2.5
% Moisture	MWF 3	68.6%	69.4%	69.0%	1.2

Quality Control Summary - Matrix Spike

Analyte (mg/kg)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Total Se	MWF 3	95.42	95.90	93.8	91.49	93.10	94.8	1.0



NAUTILUS ENVIRONMENTAL
ATTN: James Elphick
8664 Commerce Court
Imperial Square Lake City
Burnaby BC V5A 4N7

Date Received: 27-OCT-11
Report Date: 01-NOV-11 11:21 (MT)
Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1077496
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 0517, 0518
Legal Site Desc:

Can Dang
Senior Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1077496-6 EGGS 26-OCT-11 WF6	L1077496-7 EGGS 26-OCT-11 WF7	L1077496-8 EGGS 26-OCT-11 WF8	L1077496-9 EGGS 26-OCT-11 WF9	L1077496-10 EGGS 26-OCT-11 WF10
Grouping					
Analyte					
TISSUE					
Physical Tests					
% Moisture (%)	64.9	65.6	66.0	65.2	66.4
Metals					
Selenium (Se)-Total (mg/kg wwt)	8.69	8.27	8.92	11.2	5.96

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1077496-11	L1077496-12	L1077496-13	L1077496-14	L1077496-15
Description	EGGS	EGGS	EGGS	EGGS	EGGS
Sampled Date	26-OCT-11	26-OCT-11	26-OCT-11	26-OCT-11	26-OCT-11
Sampled Time					
Client ID	WF11	WF12	WF13	WF14	WF15
Grouping	Analyte				
TISSUE					
Physical Tests	% Moisture (%)				
	67.0	64.0	68.8	66.3	64.6
Metals	Selenium (Se)-Total (mg/kg wwt)				
	11.0	11.8	10.0	11.2	9.96

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1077496-16 EGGS 26-OCT-11 WF16	L1077496-17 EGGS 26-OCT-11 WF17		
Grouping	Analyte				
TISSUE					
Physical Tests	% Moisture (%)	65.1	64.9		
Metals	Selenium (Se)-Total (mg/kg wwt)	9.45	12.5		

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.			
SE-WET-HRMS-VA	Tissue	Selenium in Tissue by HR-ICPMS (WET)	EPA 200.3/200.8
Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

0517 0518

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

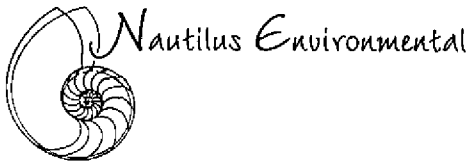
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.




① **BRITISH COLUMBIA**
 8664 Commerce Court
 Burnaby British Columbia Canada V5A 4N7
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

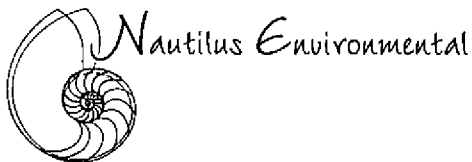
- 0518

Date 27 Oct 2011 Page 1 of 2

Sample Collection by: <u>Lois</u>							ANALYSIS REQUIRED										RECEIPT TEMPERATURE (°C)					
Report to:				Invoice to:			Total Selenium	% Moisture														
Company ①				Company ①																		
Address				Address																		
City _____ Prov. _____ PC _____				City _____ Prov. _____ PC _____																		
Contact <u>JAMES ELPHICK</u>				Contact _____																		
Phone No. _____				Phone No. _____																		
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NUMBER OF CONTAINERS	COMMENTS																
WF1	26 Oct 11		Eggs				✓	✓														
WF2							✓	✓														
WF3							✓	✓														
WF4							✓	✓														
WF5							✓	✓														
WF6							✓	✓														
WF7							✓	✓														
WF8							✓	✓														
WF9							✓	✓														
WF10							✓	✓														



PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
CLIENT	TOTAL NO. OF CONTAINERS			(Signature) <u>[Signature]</u>	(Time)	(Signature)	(Time)
P.O. NO.	REC'D GOOD CONDITION			(Printed Name) <u>JAMES ELPHICK</u>	(Date)	(Printed Name)	(Date)
SHIPPED VIA:				(Company) <u>NAUTILUS</u>		(Company)	
SPECIAL INSTRUCTIONS/COMMENTS: <u>Pls report results by COB on Monday</u> <u>- see Can Dang. RUSH</u>				RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
				(Signature)	(Time)	(Signature) <u>[Signature]</u>	(Time) <u>8:42</u>
				(Printed Name)	(Date)	(Printed Name) <u>DEAN MASON</u>	(Date) <u>27/10</u>
				(Company)		<u>14°C</u>	




BRITISH COLUMBIA
 8664 Commerce Court
 Burnaby British Columbia Canada V5A 4N7
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

0517

Date 27 Oct 2011 Page 2 of 2

Sample Collection by: _____							ANALYSIS REQUIRED										RECEIPT TEMPERATURE (°C)					
Report to:				Invoice to:			Total Selenium	% Moisture														
Company <u>①</u>				Company <u>①</u>																		
Address _____				Address _____																		
City _____ Prov. _____ PC _____				City _____ Prov. _____ PC _____																		
Contact _____				Contact _____																		
Phone No. _____				Phone No. _____																		
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NUMBER OF CONTAINERS	COMMENTS																
WF 11	26 Oct/11		Eggs				✓	✓														
WF 12	↓		↓				✓	✓														
WF 13							✓	✓														
WF 14							✓	✓														
WF 15							✓	✓														
WF 16							✓	✓														
WF 17							✓	✓														



* L 1 0 7 7 4 9 6 - C O F C *

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
CLIENT	TOTAL NO. OF CONTAINERS	REC'D GOOD CONDITION		(Signature) <u>[Signature]</u>	(Time)	(Signature)	(Time)
P.O. NO.				(Printed Name) <u>JAMES ELDONICK</u>	(Date)	(Printed Name)	(Date)
SHIPPED VIA:				(Company) <u>NAUTILUS</u>		(Company)	
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
				(Signature)	(Time)	(Signature) <u>[Signature]</u>	(Time)
				(Printed Name)	(Date)	(Printed Name) <u>KEVIN MASON</u>	(Date) <u>8.92</u>
				(Company)			(Date) <u>27/10</u>
						14.60C	

Additional costs may be required for sample disposal or storage. Net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator



NAUTILUS ENVIRONMENTAL
ATTN: James Elphick
8664 Commerce Court
Imperial Square Lake City
Burnaby BC V5A 4N7

Date Received: 04-NOV-11
Report Date: 09-NOV-11 17:57 (MT)
Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1081494
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 0403, 0404
Legal Site Desc:

Can Dang
Senior Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1081494-6	L1081494-7	L1081494-8	L1081494-9	L1081494-10
	EGGS	03-NOV-11		WF-28					
	EGGS	03-NOV-11		WF-29					
	EGGS	03-NOV-11		WF-30					
	EGGS	03-NOV-11		WF-31					
	EGGS	03-NOV-11		WF-32					
Grouping	Analyte								
TISSUE									
Physical Tests	% Moisture (%)				66.6	65.9	69.2	68.9	67.2
Metals	Selenium (Se)-Total (mg/kg wwt)				7.68	5.38	9.61	8.14	9.35

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1081494-11	L1081494-12	L1081494-13	L1081494-14	L1081494-15
Description	EGGS	EGGS	EGGS	EGGS	EGGS
Sampled Date	03-NOV-11	03-NOV-11	03-NOV-11	03-NOV-11	03-NOV-11
Sampled Time					
Client ID	WF-33	WF-34	WF-35	WF-36	WF-37
Grouping	Analyte				
TISSUE					
Physical Tests	% Moisture (%)				
	67.3	67.3	66.5	65.6	66.8
Metals	Selenium (Se)-Total (mg/kg wwt)				
	6.18	12.0	6.98	7.12	7.73

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.			
SE-WET-HRMS-VA	Tissue	Selenium in Tissue by HR-ICPMS (WET)	EPA 200.3/200.8
Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

0403 0404

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



BRITISH COLUMBIA ①
 8664 Commerce Court
 Burnaby British Columbia Canada V5A 4N7
 Phone 604.420.8773
 Fax 604.357.1361

L1081494

Chain of Custody

0403

Date Nov 4, 11 Page 1 of 2

Sample Collection by: <u>JRE</u>							ANALYSIS REQUIRED										RECEIPT TEMPERATURE (°C)					
Report to:				Invoice to:			Total Selenium	% Moisture														
Company <u>①</u>				Company _____																		
Address _____				Address _____																		
City _____ Prov. _____ PC _____				City _____ Prov. _____ PC _____																		
Contact <u>james@nautilusenvironmental.com</u>				Contact _____																		
Phone No. _____				Phone No. _____																		
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NUMBER OF CONTAINERS	COMMENTS																
WF-23	Nov 3 2011	N/A	eggs	white PVC bags	1		✓	✓														
WF-24																						
WF-25																						
WF-26																						
WF-27																						
WF-28																						
WF-29																						
WF-30																						
WF-31																						
WF-32																						

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
CLIENT		TOTAL NO. OF CONTAINERS		(Signature)	(Time)	(Signature)	(Time)
P.O. NO.		REC'D GOOD CONDITION		<u>[Signature]</u>	<u>18:00</u>	<u>[Signature]</u>	<u>[Time]</u>
SHIPPED VIA:				(Printed Name)	(Date)	(Printed Name)	(Date)
				<u>BP</u>	<u>Nov 4/11</u>		
				(Company)		(Company)	
				<u>Nautilus</u>			
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
				(Signature)	(Time)	(Signature)	(Time)
				(Printed Name)	(Date)	(Printed Name)	(Date)
				(Company)		(Company)	
						<u>18:30</u>	
				<u>[Signature]</u>	<u>Nov 4/11</u>	<u>Temp 9°</u>	

Additional costs may be required for sample disposal or storage. Net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator



BRITISH COLUMBIA (1)
 8664 Commerce Court
 Burnaby British Columbia Canada V5A 4N7
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

0404

Date Nov 4.11 Page 2 of 2

Sample Collection by: <u>JRE</u>							ANALYSIS REQUIRED										RECEIPT TEMPERATURE (°C)			
Report to: Company <u>(1)</u> Address _____ City _____ Prov. _____ PC _____ Contact <u>james@nautilusenvironmental.com</u> Phone No. _____				Invoice to: Company _____ Address _____ City _____ Prov. _____ PC _____ Contact _____ Phone No. _____			Total Selenium		% Moisture											
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NUMBER OF CONTAINERS	COMMENTS	Total Selenium		% Moisture											
WF-33	Nov 3 2011	N/A	eggs	whirl pak	1		✓	✓												
WF-34	↓	↓	↓	↓	↓		↓	↓												
WF-35	↓	↓	↓	↓	↓		↓	↓												
WF-36	↓	↓	↓	↓	↓		↓	↓												
WF-37	↓	↓	↓	↓	↓		↓	↓												
PROJECT INFORMATION			SAMPLE RECEIPT			RELINQUISHED BY (CLIENT)				RELINQUISHED BY (COURIER)										
CLIENT			TOTAL NO. OF CONTAINERS			(Signature) <u>Benoit</u> (Time) <u>1800</u>				(Signature) _____ (Time) _____										
P.O. NO.			REC'D GOOD CONDITION			(Printed Name) <u>BFC</u> (Date) <u>Nov 4/11</u>				(Printed Name) _____ (Date) _____										
SHIPPED VIA:						(Company) <u>Nautilus</u>				(Company) _____										
SPECIAL INSTRUCTIONS/COMMENTS:						RECEIVED BY (COURIER)				RECEIVED BY (LABORATORY)										
						(Signature) _____ (Time) _____				(Signature) _____ (Time) <u>18:30</u>										
						(Printed Name) _____ (Date) _____				(Printed Name) <u>Jeremy</u> (Date) <u>Nov 4/11</u>										
						(Company) _____				(Company) <u>Temp 9</u>										

Additional costs may be required for sample disposal or storage. Net 30 unless otherwise contracted.

DISTRIBUTION: WHITE - Nautilus Environmental, COLOR - Originator



NAUTILUS ENVIRONMENTAL
ATTN: Josh Baker
8664 Commerce Court
Imperial Square Lake City
Burnaby BC V5A 4N7

Date Received: 16-NOV-11
Report Date: 05-JAN-12 17:40 (MT)
Version: FINAL

Client Phone: 604-420-8773

Certificate of Analysis

Lab Work Order #: L1085486
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:

Can Dang
Senior Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1085486-1	L1085486-2	L1085486-3	L1085486-4	
Description	EGGS	EGGS	EGGS	EGGS	
Sampled Date	09-NOV-11	09-NOV-11	09-NOV-11	14-NOV-11	
Sampled Time					
Client ID	WF38	WF39	WF40	WF41	
Grouping	Analyte				
TISSUE					
Physical Tests	% Moisture (%)				
	68.6	64.9	67.8	68.3	
Metals	Selenium (Se)-Total (mg/kg wwt)				
	10.2	6.48	7.58	8.81	

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
MOISTURE-TISS-VA	Tissue	% Moisture in Tissues	ASTM D2974-00 Method A
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.			
SE-WET-HRMS-VA	Tissue	Selenium in Tissue by HR-ICPMS (WET)	EPA 200.3/200.8
Trace metals in tissue are analyzed by high resolution inductively coupled plasma mass spectrometry (HR-ICPMS) modified from US EPA Method 200.8, (Revision 5.5). The sample preparation procedure is modified from US EPA 200.3. Analytical results are reported on wet weight basis.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

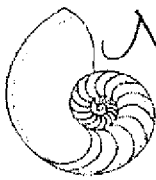
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Nautilus Environmental

TESTING LOCATION (Please Circle)

California
5550 Morehouse Drive, Suite 150
San Diego, CA 92121
Phone 858.587.7333
Fax 858.587.3961

Washington
5009 Pacific Highway East, Suite 2
Tacoma, WA 98424
Phone 253.922.4296
Fax 253.922.5814

① British Columbia
8664 Commerce Court
Burnaby, British Columbia, Canada V5A 4N3
Phone 604.420.8773
Fax 604.357.1361

Chain of Custody

L1085486

Date Nov 16/11 Page 1 of 1

Sample Collection By: <u>Josh Baker</u>							ANALYSES REQUIRED														
Report to:				Invoice To:			Total Selenium	% Moisture											Receipt Temperature (°C)		
Company	Address	City/State/Zip	Contact	Phone	Email	Company			Address	City/State/Zip	Contact	Phone	Email								
<u>Nautilus Environmental</u> ①				<u>Same as report</u>																	
<u>josh@nautilusenvironmental.com</u>																					
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS															
1	<u>Nov 9/11</u>		<u>Eggs</u>	<u>Whirl-Pak</u>	<u>1</u>		X	X													
2	↓		↓	↓	↓		X	X													
3	↓		↓	↓	↓		X	X													
4	<u>Nov 14/11</u>		↓	↓	↓		X	X													
5																					
6																					
7																					
8																					
9																					
10																					

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
Client:		Total No. of Containers		(Signature) <u>Josh Baker</u>	(Time) <u>1155h</u>	(Signature)	(Time)
PO No.:		Received Good Condition?		(Printed Name) <u>Josh Baker</u>	(Date) <u>Nov 16/11</u>	(Printed Name)	(Date)
Shipped Via:		Matches Test Schedule?		(Company) <u>Nautilus</u>		(Company)	
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
				(Signature)	(Time)	(Signature) <u>[Signature]</u>	(Time) <u>6:10</u>
				(Printed Name)	(Date)	(Printed Name) <u>REU</u>	(Date) <u>12:34</u>
				(Company)		(Company)	

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.



July 13, 2012

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7
(604) 420-8773

Mr. Elphick,

Attached is the report associated with the twenty (20) fish tissue and egg samples submitted for total selenium analyses. The samples were received on June 26, 2012 in a sealed container at 8.5°C. Total selenium analysis was performed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is written in a cursive, flowing style.

Ben Wozniak
Project Manager
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report Prepared for:

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7

July 13, 2012

1. Sample Reception

Twenty (20) fish tissue and egg samples were submitted for total selenium quantitation. The samples were received in acceptable condition in a sealed container at 8.5°C on June 26, 2012.

The samples were received in a laminar flow clean hood void of trace metals contamination and ultra-violet radiation. Immediately upon reception all samples were designated discrete sample identifiers and stored in a secure monitored freezer (maintained at a temperature of $\leq -4^{\circ}\text{C}$) until digestion and analysis could be performed.

It should be noted that the sample identified as W41 (Fish Muscle) was absent from the shipment and another sample not included on the chain of custody (COC), identified as F14, was present. These discrepancies have been documented on the attached COC.

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Prior to digestion, per the client's request, the skin was removed from each submitted fish muscle sample using a razor blade.

Total Selenium Analyses by ICP-DRC-MS All samples submitted for total selenium quantitation were digested via EPA Method 3050B. In summary, a known mass of each sample was weighed into a polypropylene centrifuge tube. Each resulting sample was digested in a hotblock digestion apparatus (set to maintain a temperature of 95°C) using repeated additions of nitric acid and hydrogen peroxide. All resulting digests were analyzed for total selenium inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS).

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Total Selenium Analyses by ICP-DRC-MS All samples for total selenium quantitation were analyzed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS) on July 9, 2012. Aliquots of each sample are introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer, on the basis of their mass-to-charge ratio (m/z), and the resulting current is processed by a data handling system.

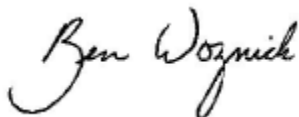
4. Analytical Issues

The overall analysis went well and no significant analytical issues were encountered. All quality control parameters associated with these samples were within acceptance limits.

Due to the limited mass submitted for each sample, the submitted egg samples and the submitted fish muscle samples were composited separately for the total solids determination.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,



Ben Wozniak
Project Manager
Applied Speciation and Consulting, LLC

Total Selenium Results for Nautilus Environmental
Contact: James Elphick

Date: July 13, 2012

Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Sample Results **Sample Results**

Sample ID	Matrix	Total Se (Wet Wt.)	Total Se (Dry Wt.)	Total Solids (%)*
WF14	Egg	9.75	33.1	29.5
WF14	Fish Muscle	1.08	4.09	26.5
WF25	Egg	9.61	32.6	29.5
WF25	Fish Muscle	0.931	3.52	26.5
WF26	Egg	4.49	15.2	29.5
WF26	Fish Muscle	1.00	3.79	26.5
WF27	Egg	7.68	26.0	29.5
WF27	Fish Muscle	1.10	4.15	26.5
WF32	Egg	8.52	28.9	29.5
WF32	Fish Muscle	1.16	4.39	26.5
WF38	Egg	9.29	31.5	29.5
WF38	Fish Muscle	0.875	3.31	26.5
WF39	Egg	6.37	21.6	29.5
WF39	Fish Muscle	0.921	3.48	26.5
WF40	Egg	7.58	25.7	29.5
WF40	Fish Muscle	0.794	3.00	26.5
WF41	Egg	7.71	26.1	29.5
F14	Fish Muscle	0.742	2.81	26.5
WF26-Normal	Egg	2.09	7.09	29.5
WF26-Abnormal	Egg	0.270	0.915	29.5

All results are reported in mg/kg, with the exception of Total Solids

* Determined from composited samples

Total Selenium Results for Nautilus Environmental
 Contact: James Elphick

Date: July 13, 2012
 Report Generated by: Ben Wozniak
 Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte	Units	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL
Total Se	mg/kg (wet wt.)	0.001	0.001	0.002	0.001	0.001	0.000	0.001

eMDL = estimated Method Detection Limit

Quality Control Summary - Certified Reference Materials

Analyte	Units	CRM	True Value	Result	Recovery
Total Se	mg/kg (wet wt.)	DORM-3	3.30	3.100	93.9

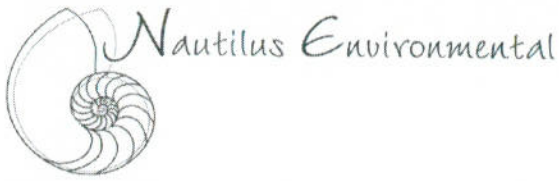
Quality Control Summary - Matrix Duplicates

Analyte	Units	Sample ID	Rep 1	Rep 2	Mean	RPD
Total Se	mg/kg (wet wt.)	WF26-Normal	2.093	1.999	2.046	4.6
Total Solids	%	Eggs Composite*	29.51	30.67	30.09	3.9

* Please see narrative regarding these results

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte	Units	Sample ID	MS Conc	MS Result	Recovery
Total Se	mg/kg (wet wt.)	WF26-Normal	7.924	9.414	93.0



TESTING LOCATION (Please Circle)

California
 5550 Morehouse Drive, Suite 150
 San Diego, CA 92121
 Phone 858.587.7333
 Fax 858.587.3961

Washington
 5009 Pacific Highway East, Suite 2
 Tacoma, WA 98424
 Phone 253.922.4296
 Fax 253.922.5814

British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date May 30/12 Page 1 of 2

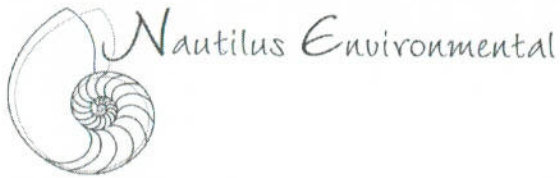
Sample Collection By: JAB

Report to: Company <u>Nautilus Environmental</u> ^① Address <u>8664 Commerce Court</u> City/State/Zip <u>Burnaby, BC V5A 4N3</u> Contact <u>Josh Baker, James Elphick</u> Phone <u>604 420 8773</u> Email <u>josh@nautilusenvironmental.com</u>	Invoice To: Company <u>Same as report</u> ^① Address _____ City/State/Zip _____ Contact _____ Phone _____ Email _____
--	--

SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	Total Se	ANALYSES REQUIRED										Receipt Temperature (°C)		
WF14	Oct 26/11	1900h	Egg	Whirlpack	1	Frozen	x													
WF14	Oct 26/11	1900h	Fish Muscle	Vial	1	Frozen	x													
WF25	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	x													
WF25	Nov 3/11	1900h	Fish Muscle	Whirlpack	1	Frozen	x													
WF26	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	x													
WF26	Nov 3/11	1900h	Fish Muscle	Whirlpack	1	Frozen	x													
WF27	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	x													
WF27	Nov 3/11	1900h	Fish Muscle	Whirlpack	1	Frozen	x													
WF32	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	x													
WF32	Nov 3/11	1900h	Fish Muscle	Whirlpack	1	Frozen	x													

PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)		RELINQUISHED BY (COURIER)	
Client:		Total No. of Containers		(Signature) <u>Josh Baker</u>	(Time)	(Signature)	(Time)
PO No.:		Received Good Condition?		(Printed Name) <u>Josh Baker</u>	(Date)	(Printed Name)	(Date)
Shipped Via:		Matches Test Schedule?		(Company) <u>Nautilus Environmental</u>		(Company)	
SPECIAL INSTRUCTIONS/COMMENTS: Please remove skin from fish muscle plug				RECEIVED BY (COURIER)		RECEIVED BY (LABORATORY)	
				(Signature)	(Time)	(Signature)	(Time)
				(Printed Name)	(Date)	<u>Nancy Cullinan</u>	<u>8:50AM</u>
				(Company)		<u>Nancy Cullinan</u>	<u>6/26/12</u>
						<u>ASC</u>	<u>Temp: 8.5°C</u>

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.



TESTING LOCATION (Please Circle)

California
 5550 Morehouse Drive, Suite 150
 San Diego, CA 92121
 Phone 858.587.7333
 Fax 858.587.3961

Washington
 5009 Pacific Highway East, Suite 2
 Tacoma, WA 98424
 Phone 253.922.4296
 Fax 253.922.5814

British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date May 30/12 Page 2 of 2

Sample Collection By: <u>JAB</u>							ANALYSES REQUIRED										Receipt Temperature (°C)	
Report to:				Invoice To:														
Company <u>Nautilus Environmental</u> ①				Company <u>Same as report</u> ①														
Address <u>8664 Commerce Court</u>				Address _____														
City/State/Zip <u>Burnaby, BC V5A 4N3</u>				City/State/Zip _____														
Contact <u>Josh Baker, James Elphick</u>				Contact _____														
Phone <u>604 420 8773</u>				Phone _____														
Email <u>josh@nautilusenvironmental.com</u>				Email _____														
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	Total Se											
WF38	Nov 11/11	1900h	Egg	Whirlpack	1	Frozen	X											
WF38	Nov 11/11	1900h	Fish Muscle	Whirlpack	1	Frozen	X											
WF39	Nov 11/11	1900h	Egg	Whirlpack	1	Frozen	X											
WF39	Nov 11/11	1900h	Fish Muscle	Whirlpack	1	Frozen	X											
WF40	Nov 11/11	1900h	Egg	Whirlpack	1	Frozen	X											
WF40	Nov 11/11	1900h	Fish Muscle	Whirlpack	1	Frozen	X											
WF41	Nov 14/11	1900h	Egg	Whirlpack	1	Frozen	X											
WF41	Nov 14/11	1900h	Fish Muscle	Whirlpack	1	Frozen	X											
WF26-Normal	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	X											
WF26-Abnormal	Nov 3/11	1900h	Egg	Whirlpack	1	Frozen	X											
PROJECT INFORMATION		SAMPLE RECEIPT			RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)										
Client:		Total No. of Containers			(Signature) <u>Josh Baker</u>	(Time)	(Signature)	(Time)										
PO No.:		Received Good Condition?			(Printed Name) <u>Josh Baker</u>	(Date)	(Printed Name)	(Date)										
Shipped Via:		Matches Test Schedule?			(Company) <u>Nautilus Environmental</u>		(Company)											
SPECIAL INSTRUCTIONS/COMMENTS: Please remove skin from fish muscle plug					RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)										
					(Signature)	(Time)	(Signature)	(Time)										
					(Printed Name)	(Date)	(Printed Name) <u>Nancy Cullinan</u>	(Date) <u>8:50Am</u>										
					(Company)		(Company) <u>Nancy Cullinan</u>	(Date) <u>6/26/12</u>										
								Temp: <u>8.5°C</u>										

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.

✶ - No sample rec'd with WF41 ID. One sample rec'd with F14 that is a solid. NGC 6/26/12



December 24, 2013

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7
(604) 420-8773

Ms. Elphick,

Attached is the report associated with the thirty-one (31) fish egg and twenty-eight (28) fish muscle samples submitted for total selenium and sulfur quantitation on November 13, 2013. The samples were received on November 14, 2013 in a sealed container at 0.4°C. Total selenium and sulfur analyses were performed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS). Any issues associated with the analyses are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is written in a cursive, flowing style.

Ben Wozniak
Project Manager
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report Prepared for:

James Elphick
Nautilus Environmental
8664 Commerce Court
Burnaby, British Columbia
Canada V5A 4N7

December 24, 2013

1. Sample Reception

Thirty-one (31) fish egg and twenty-eight (28) fish muscle samples were submitted for total selenium and sulfur quantitation on November 13, 2013. The samples were received in acceptable condition in a sealed container at 0.4°C on November 14, 2013.

The samples were received in a laminar flow clean hood void of trace metals contamination and ultra-violet radiation. Immediately upon reception all samples were designated discrete sample identifiers and stored in a secure, monitored freezer (maintained at a temperature of $\leq -4^{\circ}\text{C}$) until digestion and analysis could be performed.

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Prior to digestion each fish muscle was homogenized using a pre-cleaned ceramic knife. As requested by the client, any discernable skin was removed from each muscle sample before homogenization.

Total Selenium and Sulfur Analyses by ICP-DRC-MS All samples submitted for total selenium and sulfur quantitation were digested via EPA Method 3050B. In summary, a known mass of each sample was weighed into a polypropylene centrifuge tube. Each resulting sample was digested in a hotblock digestion apparatus (set to maintain a temperature of 95°C) using repeated additions of nitric acid and hydrogen peroxide. All resulting digests were analyzed for total selenium and sulfur by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS).

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. All calibration curves, associated with each species of

interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimum interval of every ten analytical runs.

Total Selenium and Sulfur Analyses by ICP-DRC-MS The samples for total selenium and sulfur quantitation were analyzed by inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS). Batches A and B were analyzed for Se on November 26th – 27th and for S on December 23rd. Batches C and D were analyzed for Se on December 7th. Aliquots of each sample digest are introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts either with interfering ions of the same target mass to charge ratios (m/z) or with the target analyte, producing an entirely different mass to charge ratio (m/z) which can then be differentiated from the initial interferences. A solid-state detector detects ions transmitted through the mass analyzer, on the basis of their mass-to-charge ratio (m/z), and the resulting current is processed by a data handling system.

Total Solids Analysis A known mass of each sample was placed into a pre-weighed pan, then the combined mass of the sample and pan was recorded. All samples were placed into a convection oven maintained at a temperature of 60°C. After drying for a minimum of sixteen (16) hours, all samples were briefly cooled and reweighed. The total solids percentage of each sample was calculated by dividing the weight of the dried sample by the weight of the original sample.

Due to limited sample mass, analysis of the submitted fish muscle samples for total solids was not possible.

4. Analytical Issues

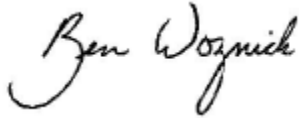
No significant analytical issues were encountered during the requested analyses. All quality control parameters associated with these samples were within acceptance limits.

It should be noted that no spike results (blank spike or matrix spikes) are available for sulfur due to the fact that the client requested sulfur quantitation on the submitted egg samples after they had been digested for total selenium. Since little sample mass remained after the first digestion, no re-digestion of the samples for sulfur was possible. The fact that no spike recovery results are available for sulfur should be considered when evaluating the data.

It should also be noted that the estimated method detection limit (eMDL) for each batch of samples has been calculated using the standard deviation of the method blanks prepared and analyzed concurrently with the submitted samples.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Ben Wozniak". The signature is written in a cursive style with a large, prominent initial "B".

Ben Wozniak
Project Manager
Applied Speciation and Consulting, LLC

Results for Nautilus Environmental
Contact: James Elphick

Date: December 24, 2013

Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Matrix	Batch ID	Total Se (Wet Wt.)	Total Se (Dry Wt.)	Total S (Wet Wt.)	Total S (Dry Wt.)	Total Solids (%)
13-01	Fish Eggs	A, F	7.66	23.8	2,610	8,090	32.2
13-02	Fish Eggs	A, F	6.28	19.5	2,600	8,080	32.2
13-03	Fish Eggs	A, F	7.84	25.0	2,420	7,690	31.4
13-04	Fish Eggs	A, F	7.59	23.6	2,680	8,340	32.2
13-05	Fish Eggs	A, F	5.37	15.8	2,630	7,740	34.0
13-06	Fish Eggs	A, F	9.98	32.4	2,530	8,200	30.8
13-07	Fish Eggs	A, F	8.17	25.7	2,470	7,760	31.8
13-08	Fish Eggs	A, F	9.54	31.0	2,600	8,470	30.7
13-09	Fish Eggs	A, F	10.6	32.5	2,620	8,030	32.6
13-10	Fish Eggs	A, F	6.28	20.7	2,490	8,200	30.3
13-11	Fish Eggs	A, F	5.79	18.7	2,590	8,380	30.9
13-12	Fish Eggs	A, F	8.60	28.5	2,440	8,100	30.1
13-13	Fish Eggs	A, F	6.56	21.7	2,390	7,920	30.2
13-14	Fish Eggs	A, F	6.66	21.0	2,320	7,290	31.8
13-15	Fish Eggs	A, F	7.81	25.1	2,460	7,910	31.1
13-16	Fish Eggs	A, F	8.04	23.4	2,540	7,400	34.4
13-17	Fish Eggs	A, F	7.11	22.1	2,560	7,930	32.3
13-18	Fish Eggs	A, F	6.96	21.7	2,380	7,430	32.0
13-19	Fish Eggs	A, F	7.79	23.5	2,360	7,110	33.2
13-20	Fish Eggs	A, F	8.29	26.9	2,230	7,240	30.9

All results are reported in mg/kg, with the exception of Total Solids

ND = Not detected at the applied dilution

Results for Nautilus Environmental
Contact: James Elphick

Date: December 24, 2013
Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Matrix	Batch ID	Total Se (Wet Wt.)	Total Se (Dry Wt.)	Total S (Wet Wt.)	Total S (Dry Wt.)	Total Solids (%)
13-21	Fish Eggs	B, G	7.34	24.7	2,000	6,730	29.8
13-22	Fish Eggs	B, G	6.18	20.7	1,840	6,140	29.9
13-23	Fish Eggs	B, G	9.46	28.8	2,230	6,800	32.8
13-24	Fish Eggs	B, G	6.03	17.9	2,060	6,110	33.8
13-25	Fish Eggs	B, G	8.10	24.5	2,460	7,440	33.1
13-26	Fish Eggs	B, G	9.05	27.9	2,300	7,120	32.4
13-27	Fish Eggs	B, G	9.16	28.7	2,160	6,770	31.9
13-28	Fish Eggs	B, G	6.04	17.3	1,860	5,330	35.0
13-101	Fish Eggs	B, G	5.69	17.6	2,310	7,140	32.3
13-102	Fish Eggs	B, G	6.12	18.5	2,220	6,720	33.1
13-100	Fish Eggs	B, G	6.01	19.0	2,250	7,110	31.7

All results are reported in mg/kg, with the exception of Total Solids

ND = Not detected at the applied dilution

Results for Nautilus Environmental
Contact: James Elphick

Date: December 24, 2013
Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Matrix	Batch ID	Total Se (Wet Wt.)	Total Se (Dry Wt.)	Total Solids (%)
13-01	Muscle Plug	C	1.15	NA	NA
13-02	Muscle Plug	C	1.03	NA	NA
13-03	Muscle Plug	C	1.01	NA	NA
13-04	Muscle Plug	C	1.05	NA	NA
13-05	Muscle Plug	C	1.44	NA	NA
13-06	Muscle Plug	C	0.826	NA	NA
13-07	Muscle Plug	C	0.943	NA	NA
13-08	Muscle Plug	C	0.988	NA	NA
13-09	Muscle Plug	C	1.19	NA	NA
13-10	Muscle Plug	C	0.879	NA	NA
13-11	Muscle Plug	C	1.35	NA	NA
13-12	Muscle Plug	C	0.778	NA	NA
13-13	Muscle Plug	C	1.07	NA	NA
13-14	Muscle Plug	C	1.02	NA	NA
13-15	Muscle Plug	C	1.43	NA	NA
13-16	Muscle Plug	C	0.980	NA	NA
13-17	Muscle Plug	C	0.807	NA	NA
13-18	Muscle Plug	C	1.24	NA	NA
13-19	Muscle Plug	C	0.889	NA	NA
13-20	Muscle Plug	C	0.911	NA	NA

All results are reported in mg/kg, with the exception of Total Solids

ND = Not detected at the applied dilution

NA = Not available

Results for Nautilus Environmental
Contact: James Elphick

Date: December 24, 2013
Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Matrix	Batch ID	Total Se (Wet Wt.)	Total Se (Dry Wt.)	Total Solids (%)
13-21	Muscle Plug	D	1.10	NA	NA
13-22	Muscle Plug	D	1.04	NA	NA
13-23	Muscle Plug	D	1.01	NA	NA
13-24	Muscle Plug	D	1.32	NA	NA
13-25	Muscle Plug	D	0.968	NA	NA
13-26	Muscle Plug	D	0.930	NA	NA
13-27	Muscle Plug	D	1.05	NA	NA
13-28	Muscle Plug	D	1.83	NA	NA

All results are reported in mg/kg, with the exception of Total Solids

ND = Not detected at the applied dilution

NA = Not available

Results for Nautilus Environmental
Contact: James Elphick

Date: December 24, 2013
Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte	Units	Batch ID	PB1	PB2	PB3	PB4	Mean	StdDev	eMDL
Total Se	mg/kg (wet wt.)	A	0.003	0.002	0.002	0.001	0.002	0.001	0.002
Total Se	mg/kg (wet wt.)	B	0.002	0.002	0.002	0.002	0.002	0.000	0.001
Total S	mg/kg (wet wt.)	A	0.9	0.9	1.0	1.7	1.1	0.4	1.3
Total S	mg/kg (wet wt.)	B	0.54	0.37	0.74	0.35	0.50	0.18	0.54
Total Se	mg/kg (wet wt.)	C	0.002	-0.001	-0.001	0.003	0.001	0.002	0.006
Total Se	mg/kg (wet wt.)	D	0.002	0.003	0.005	0.004	0.003	0.001	0.003

eMDL = estimated Method Detection Limit

Quality Control Summary - Certified Reference Materials

Analyte	Units	Batch ID	CRM	True Value	Result	Recovery
Total Se	mg/kg (wet wt.)	A	DORM-3	3.30	3.436	104.1
Total Se	mg/kg (wet wt.)	B	DORM-3	3.30	3.382	102.5
Total Se	mg/kg (wet wt.)	C	DORM-3	3.30	3.343	101.3
Total Se	mg/kg (wet wt.)	D	DORM-3	3.30	3.437	104.2

Results for Nautilus Environmental
Contact: James Elphick

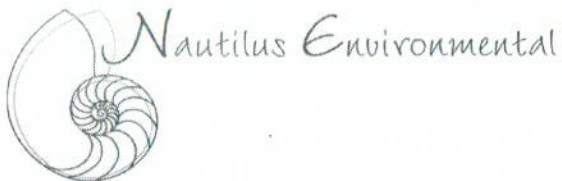
Date: December 24, 2013
Report Generated by: Ben Wozniak
Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte	Units	Batch ID	Sample ID	Rep 1	Rep 2	Mean	RPD
Total Se	mg/kg (wet wt.)	A	13-13 (Fish Eggs)	6.559	6.319	6.439	3.7
Total Se	mg/kg (wet wt.)	B	13-100 (Fish Eggs)	6.012	6.682	6.347	10.6
Total S	mg/kg (wet wt.)	A	13-13 (Fish Eggs)	2,390	2,225	2,307	7.1
Total S	mg/kg (wet wt.)	B	13-100 (Fish Eggs)	2,253	2,485	2,369	9.8
Total Se	mg/kg (wet wt.)	C	13-03 (Muscle plug)	1.012	1.102	1.057	8.5
Total Se	mg/kg (wet wt.)	D	13-25 (Muscle plug)	0.968	0.942	0.955	2.7
Total Solids	%	F	13-13 (Fish Eggs)	30.2	30.0	30.1	0.7
Total Solids	%	G	13-102 (Fish Eggs)	33.1	33.0	33.0	0.4

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte	Units	Batch ID	Sample ID	MS Conc	MS Result	Recovery	MSD Conc	MSD Result	Recovery	RPD
Total Se	mg/kg (wet wt.)	A	13-13 (Fish Eggs)	9.116	14.81	91.8	8.764	14.36	90.3	1.6
Total Se	mg/kg (wet wt.)	B	13-100 (Fish Eggs)	9.183	15.12	95.5	8.170	13.86	91.9	3.8
Total Se	mg/kg (wet wt.)	C	13-15 (Muscle plug)	29.85	31.20	99.7	-	-	-	-
Total Se	mg/kg (wet wt.)	D	13-21 (Muscle plug)	48.31	49.62	100.4	-	-	-	-



TESTING LOCATION (Please Circle)

California
 5550 Morehouse Drive, Suite 150
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Washington
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 Tacoma, WA 98424
 Phone 253.922.4296
 Fax 253.922.5814

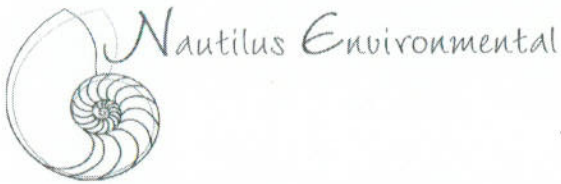
British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date Nov 12/13 Page 1 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED										Receipt Temperature (°C)
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids									
Company	Address	City/State/Zip	Contact	Phone	Email	Company											Address
Nautilus Environmental	8664 Commerce Court	Burnaby, BC V5A 4N3	James Elphick	604 420 8773	james@nautilusenvironmental.com												
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS											
13-01	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-02	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-03	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-04	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-05	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-06	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-07	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-08	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-09	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-10	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)										
Client:		Total No. of Containers		(Signature)	(Time)	(Signature)	(Time)										
PO No.:		Received Good Condition?		(Printed Name)	(Date)	(Printed Name)	(Date)										
Shipped Via:		Matches Test Schedule?		(Company)		(Company)											
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)										
				(Signature)	(Time)	(Signature)	(Time)										
				(Printed Name)	(Date)	(Printed Name)	(Date)										
				(Company)		(Company)											

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.



TESTING LOCATION (Please Circle)

California
 5550 Morehouse Drive, Suite 150
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 Fax 253.922.5814

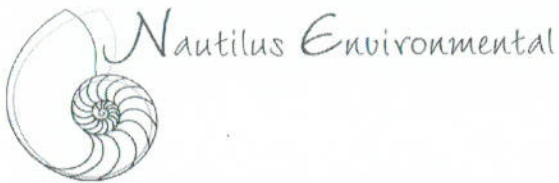
British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date Nov 12/13 Page 2 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED										Receipt Temperature (°C)								
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids																	
Company	Nautilus Environmental			Company																					
Address	8664 Commerce Court			Address																					
City/State/Zip	Burnaby, BC V5A 4N3			City/State/Zip																					
Contact	James Elphick			Contact																					
Phone	604 420 8773			Phone																					
Email	james@nautilusenvironmental.com			Email																					
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS	Total Se	Percent Moisture/Total Solids																	
13-11	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-12	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-13	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-14	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-15	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-16	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-17	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-18	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-19	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
13-20	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X																	
PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)																		
Client:		Total No. of Containers		(Signature)		(Time)	(Signature)					(Time)													
				<i>Josh Baker</i>		1000h																			
PO No.:		Received Good Condition?		(Printed Name)		(Date)	(Printed Name)					(Date)													
				<i>Josh Baker</i>		Nov 13/13																			
Shipped Via:		Matches Test Schedule?		(Company)			(Company)																		
				<i>Nautilus</i>																					
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)																		
				(Signature)		(Time)	(Signature)							(Time)											
							<i>[Signature]</i>							14:30											
			(Printed Name)		(Date)	(Printed Name)					(Date)														
						<i>Aubrey Ernst</i>					11/14/13														
			(Company)			(Company)																			
						<i>ASC Temp 0.40c</i>					11/14/13														

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.



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 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date Nov 12/13 Page 3 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED											
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids										Receipt Temperature (°C)
Company	<u>Nautilus Environmental</u>			Company	_____													
Address	<u>8664 Commerce Court</u>			Address	_____													
City/State/Zip	<u>Burnaby, BC V5A 4N3</u>			City/State/Zip	_____													
Contact	<u>James Elphick</u>			Contact	_____													
Phone	<u>604 420 8773</u>			Phone	_____													
Email	<u>james@nautilusenvironmental.com</u>			Email	_____													

SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS											
13-21	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-22	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-23	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-24	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-25	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-26	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-27	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									
13-28	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		X	X									

PROJECT INFORMATION	SAMPLE RECEIPT	RELINQUISHED BY (CLIENT)	RELINQUISHED BY (COURIER)
Client:	Total No. of Containers	(Signature) <u>Josh Baker</u> (Time) <u>1000h</u>	(Signature) _____ (Time) _____
PO No.:	Received Good Condition?	(Printed Name) <u>Josh Baker</u> (Date) <u>Nov 13/13</u>	(Printed Name) _____ (Date) _____
Shipped Via:	Matches Test Schedule?	(Company) <u>Nautilus</u>	(Company) _____
SPECIAL INSTRUCTIONS/COMMENTS:		RECEIVED BY (COURIER)	RECEIVED BY (LABORATORY)
		(Signature) _____ (Time) _____	(Signature) <u>Josh Baker</u> (Time) <u>1430</u>
		(Printed Name) _____ (Date) _____	(Printed Name) <u>Aubrey Ernest</u> (Date) <u>11/14/13</u>
		(Company) _____	(Company) <u>ASC Temp 24°C * 11/14/13</u>

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.



TESTING LOCATION (Please Circle)

California
 5550 Morehouse Drive, Suite 150
 San Diego, CA 92121
 Phone 858.587.7333
 Fax 858.587.3961

Washington
 5009 Pacific Highway East, Suite 2
 Tacoma, WA 98424
 Phone 253.922.4296
 Fax 253.922.5814

British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

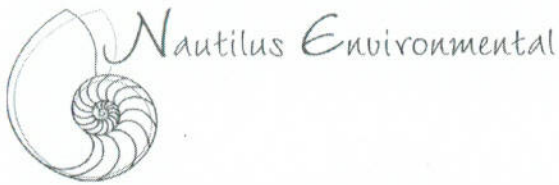
Chain of Custody

Date Nov 12/13 Page 4 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED										Receipt Temperature (°C)					
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids														
Company	Address	City/State/Zip	Contact	Phone	Email	Company											Address					City/State/Zip
Company: Nautilus Environmental Address: 8664 Commerce Court City/State/Zip: Burnaby, BC V5A 4N3 Contact: James Elphick Phone: 604 420 8773 Email: james@nautilusenvironmental.com				Company: _____ Address: _____ City/State/Zip: _____ Contact: _____ Phone: _____ Email: _____																		
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS																
13-101	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		x	x														
13-102	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		x	x														
13-103	Nov 6/13	n/a	Fish Eggs	Whirlpack	1		x	x														
* 13-100 * 13-1000 * 11/14/13																						
PROJECT INFORMATION			SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)														
Client:			Total No. of Containers		(Signature) <i>Joshua Baker</i>	(Time) 1000h	(Signature)	(Time)														
PO No.:			Received Good Condition?		(Printed Name) Joshua Baker	(Date) Nov 13/13	(Printed Name)	(Date)														
Shipped Via:			Matches Test Schedule?		(Company) Nautilus		(Company)															
SPECIAL INSTRUCTIONS/COMMENTS:					RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)														
					(Signature)	(Time)	(Signature)	(Time)														
					(Printed Name)	(Date)	(Printed Name) <i>Aubrey Ernst</i>	(Date) 11/14/13														
					(Company)		(Company) <i>ASC</i>	temp 0.4°C * 11/14/13														

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* sample not included, 2* extra sample included of 11/14/13



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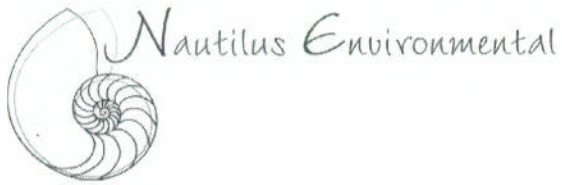
British Columbia
 8664 Commerce Court
 Burnaby, British Columbia, Canada V5A 4N3
 Phone 604.420.8773
 Fax 604.357.1361

Chain of Custody

Date Nov 12/13 Page 5 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED										Receipt Temperature (°C)		
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids											
Company	Address	City/State/Zip	Contact	Phone	Email	Company											Address		
Company: <u>Nautilus Environmental</u> Address: <u>8664 Commerce Court</u> City/State/Zip: <u>Burnaby, BC V5A 4N3</u> Contact: <u>James Elphick</u> Phone: <u>604 420 8773</u> Email: <u>james@nautilusenvironmental.com</u>				Company: _____ Address: _____ City/State/Zip: _____ Contact: _____ Phone: _____ Email: _____															
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS													
13-01 (01)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-02 (02)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-03 (03)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-04 (04)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-05 (05)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-06 (06)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-07 (07)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-08 (08)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-09 (09)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
13-10 (10)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		X	X											
PROJECT INFORMATION		SAMPLE RECEIPT		RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)												
Client:		Total No. of Containers		(Signature)	(Time)	(Signature)	(Time)												
PO No.:		Received Good Condition?		<u>Joshua Baker</u>	<u>1000h</u>														
Shipped Via:		Matches Test Schedule?		(Printed Name)	(Date)	(Printed Name)	(Date)												
				<u>Joshua Baker</u>	<u>Nov 13/13</u>														
				(Company)		(Company)													
				<u>Nautilus</u>															
SPECIAL INSTRUCTIONS/COMMENTS:				RECEIVED BY (COURIER)			RECEIVED BY (LABORATORY)												
<u>Please remove skin from muscle plug</u> <u>Total Solids on composite</u>				(Signature)	(Time)	(Signature)	(Time)												
				(Printed Name)	(Date)	(Printed Name)	(Date)												
				(Company)		(Company)													
						<u>Julian S...</u>	<u>14:30</u>												
						<u>Subrey Ernst</u>	<u>11/14/13</u>												
						<u>ASC</u>	<u>Temp 0.4°C</u>	<u>11/14/13</u>											

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Chain of Custody

Date Nov 12/13 Page 7 of 7

Sample Collection By: Lotic, JAB, JBF							ANALYSES REQUIRED										Receipt Temperature (°C)		
Report to:				Invoice To:			Total Se	Percent Moisture/Total Solids											
Company	Address	City/State/Zip	Contact	Phone	Email	Company											Address		
Nautilus Environmental	8664 Commerce Court	Burnaby, BC V5A 4N3	James Elphick	604 420 8773	james@nautilusenvironmental.com														
SAMPLE ID	DATE	TIME	MATRIX	CONTAINER TYPE	NO. OF CONTAINERS	COMMENTS													
13-21 (21)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-22 (22)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-23 (23)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-24 (24)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-25 (25)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-26 (26)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-27 (27)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
13-28 (28)	Nov 6/13	n/a	Muscle Plug	Plastic Vial	1		x	x											
PROJECT INFORMATION							RELINQUISHED BY (CLIENT)			RELINQUISHED BY (COURIER)									
Client:	Total No. of Containers			(Signature) <i>Joshua Baker</i>		(Time) 1000h	(Signature)		(Time)										
PO No.:	Received Good Condition?			(Printed Name) Joshua Baker		(Date) Nov 13/13	(Printed Name)		(Date)										
Shipped Via:	Matches Test Schedule?			(Company) Nautilus		(Company)		(Company)											
SPECIAL INSTRUCTIONS/COMMENTS: Please remove skin from muscle plug Total Solids on composite							RECEIVED BY (COURIER)				RECEIVED BY (LABORATORY)								
							(Signature)		(Time)		(Signature) <i>Arbyr Ernest</i>		(Time) 14:30						
							(Printed Name)		(Date)		(Printed Name)		(Date) 11/14/13						
(Company)				(Company)		ASC Temp 0.4°C <i>11/14/13</i>													

Additional costs may be required for sample disposal or storage. Payment net 30 unless otherwise contracted.

APPENDIX B - Larval Rearing Data

APPENDIX C - Larval Deformity Data

APPENDIX D - Tissue Chemistry Data

