Keeyask Generation Project

Fisheries Offsetting and Mitigation Plan

Lake Sturgeon Production and Stocking Report

FOMP-2020-01

KEEYASK

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KEEYASK GENERATION PROJECT

FISHERIES OFF-SETTING AND MITIGATION PLAN

REPORT #FOMP-2020-01

LAKE STURGEON PRODUCTION AND STOCKING SUMMARY FOR BIRTHDAY RAPIDS AND BURNTWOOD RIVER POPULATIONS

NOVEMBER 2018 TO OCTOBER 2019: YEAR 6 CONSTRUCTION

Prepared for

Manitoba Hydro

By

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SUMMARY

Background

Construction of the Keeyask Generation Project at Gull Rapids began in July 2014. Before government allowed construction to begin the Keeyask Hydropower Limited Partnership (KHLP) had to prepare a plan outlining activities that could reduce the potential effects of the Keeyask Generation Project on fish in the Nelson River (the Fisheries Offsetting and Mitigation Plan, FOMP). The plan also explained how the proposed activities would be completed and monitored.

Activities directed at Lake Sturgeon (*Namao* in Cree) were included in the plan because of its importance to the partner First Nations, because the population in Gull and Stephens lakes were low before the Project, and because the generating station will change or destroy habitat used for spawning and early life stages both upstream and downstream.

In 2017, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reviewed and maintained the previous (2006) recommendation of listing the Nelson River population of Lake Sturgeon as Endangered. The goal of the KHLP is to have self-sustaining populations of Lake Sturgeon in this area in the future. To help achieve this, the KHLP has made a commitment to produce and release hatchery-reared sturgeon into the Keeyask area (i.e., future Keeyask reservoir and Stephens Lake) and the Burntwood River until there are self-sustaining populations. These two areas are stocked in alternate years using the offspring from adults captured at Birthday Rapids on the Nelson River and First Rapids on the Burntwood River.

This report describes the hatchery production and stocking activities of Lake Sturgeon from November 2018 to October 2019.

Lake Sturgeon feeding on bloodworm at the Grand Rapids Fish Hatchery

Stocking Program

Lake Sturgeon are produced at the Grand Rapids Fish Hatchery (GRFH) located in Grand Rapids, MB from the eggs and milt (sperm) of wild adults. Offspring are reared in fiberglass troughs using well water. Fish are started on a diet of newly hatched brine shrimp and later transitioned to frozen bloodworm.

Lake Sturgeon are released as yearlings (12 months old) after spending their first winter in the hatchery. However, due to limited tank space, it is often necessary to release some of the sturgeon as fingerlings (3 to 4 months old) prior to winter. In the past, the hatchery also stocked larvae (less than 1 month old) but are no longer able to do that due to current virus testing procedures which require that the sturgeon be at least 9 weeks old. Virus testing before stocking is necessary to ensure hatchery fish do not increase the amount of Namao Virus present in wild populations. The virus does not appear to effect adults but can cause mortality among young sturgeon.

Prior to release, yearlings are marked with uniquely numbered Passive Integrated Transponder (PIT) tags, inserted into the muscle along the fish's back. PIT tag scanners held over the fish can detect a tag and display the number on a screen. This marking technique helps to identify hatchery-reared fish caught in the river and can be used to assess the movement and growth of individual fish following stocking. Fish released as fingerlings are not large enough to be PIT tagged. Instead, tissue samples from individuals representing all family groups are preserved to provide a genetic 'fingerprint', allowing future identification of stocked individuals.

PIT tagging activities at the Grand Rapids Fish Hatchery

Since 2013, when the KHLP began producing Lake Sturgeon, a large number of larvae, fingerlings and yearlings have been stocked (see table below).

Summary of Lake Sturgeon stocking in the Keeyask area since 2014

Year	Burntwood River			Future Keeyask Reservoir			Stephens Lake		
	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1
2014	0	0	595	152,926	4,656	0	0	0	0
2015	0	0	0	0	0	423	0	0	418
2016	0	0	23	192,167	780	0	184,134	799	0
2017	71,740	3,765	0	0	0	463	0	0	720
2018	0	0	739	0	933	0	0	1,009	0
2019	0	3,681	0	0	0	398	0	0	390
Total	**71,740**	**7,446**	**1,357**	**345,093**	**6,369**	**1,284**	**184,134**	**1,808**	**1,528**

BIRTHDAY RAPIDS POPULATION (2018 YEAR-CLASS)

Hatchery Production

Eggs and milt were collected in spring 2018 from spawning adults captured near Birthday Rapids. A total of 803 Birthday Rapids fingerlings were kept at the hatchery for the 2018/19 winter. Survival from the beginning of November 2018 until the spring stocking in June 2019 was over 95%.

Stocking

On June 6, 2019 a total of 398 Lake Sturgeon yearlings were transported by truck to the Keeyask camp and stocked upstream into the future Keeyask reservoir. With assistance from Manitoba Hydro's boat patrol crews, a group of 199 yearlings were released at Site 1 and another group of 199 yearlings were released at Site 2 (see map below).

On June 13, 2019 a total of 390 yearlings were transported by truck to the Keeyask camp and stocked downstream into Stephens Lake. Of those, 196 yearlings were released at Site 3 and 194 yearlings were released at Site 4 with assistance from Manitoba Hydro's boat patrol crews (see map below).

On average, yearlings were 27 cm long and weighed 67 g.

Stocking sites for Birthday Rapids (2018 year-class) released into the future Keeyask reservoir (Sites 1 & 2) and Stephens Lake (Sites 3 & 4) in spring 2019. Yearlings were the offspring of spawning adults collected near Birthday Rapids (Site A).

BURNTWOOD RIVER POPULATION (2019 YEAR-CLASS)

Spawn Camp

Wild Lake Sturgeon adults were captured using gill nets set downstream of First Rapids in June 2019. Adults identified as spawning fish were maintained in tanks along the shore of the Burntwood River for several days. Selected adults (2 females and 6 males) received a small dose of hormone to facilitate the release of eggs and milt. Use of this product does not present a threat to the Lake Sturgeon or to humans. The hormone is produced by the fish naturally and is present within their body during spawn.

On June 6, the milt of 6 males was mixed with the eggs from 1 female to create 6 family groups. The number of fertilized eggs transported to GRFH was estimated to be 211,865.

Following egg and milt collection, the wild adults were monitored closely and released back to the river within 24 hours. All were tested for Namao Virus and all tested negative (i.e., they did not have the virus). A sample of the offspring were also tested and results were negative.

Burntwood River spawn camp: holding tanks and egg collection

Hatchery Production

Prior to entering the GRFH, sturgeon eggs were soaked in a disinfectant for 10 minutes to kill any potential pathogens (e.g., viruses) that may have attached to the surface of the egg during fertilization and/or transportation. Five days following fertilization, the eggs were checked and generally the number of good eggs was high. Due to space constraints, approximately half of the eggs were removed from the system with some going to the University of Manitoba to support on-going research. Hatch began on June 15 resulting in an estimated 80,895 larvae (76% hatch success).

From the point of hatch to the end of October, monthly survival rates were greater than 80% and approached 100% in the months leading up to the fall stocking. Given the virus testing criteria, which does not allow the GRFH to stock larvae, an estimated 6,600 sturgeon were culled over the summer to avoid overcrowding.

Following the fall stocking, a total of 774 fish from the Burntwood River population were kept at GRFH for further growth over the winter.

Stocking

On September 26, 2019 a total of 1,664 fingerlings were transported by truck to the Orr Creek boat launch and released by boat with assistance from Manitoba Hydro's boat patrol crews (Site 1, see map below). On the same day, 50 fingerlings were transported by plane to Thompson, MB and then driven to Orr Creek boat launch for a Kischi Sipi Namao Committee stocking event. These fish were released from shore into the Burntwood River (Site 2, see map below).

On October 3, 2019 another 1,967 fingerlings were transported by truck to the Orr Creek boat launch and released into the Burntwood River with assistance from Manitoba Hydro's boat patrol crews (Site 3, see map below).

On average, fingerlings were 11 cm long and weighed 5 g.

Stocking sites for Burntwood River Lake Sturgeon (2019 year-class) released in September 2019 (Sites 1, 2) and October 2019 (Site 3). Fish were the offspring of spawning adults collected at First Rapids (Site A)

Kischi Sipi Namao Committee stocking event at the Orr Creek boat launch (Burntwood River) on September 26, 2019

Stocking Results

Since the stocking program began in 2013 a total of 600,967 larvae, 15,623 fingerlings and 4,169 yearlings have been released by the GRFH for the KHLP. Annual monitoring programs being conducted by the KHLP in the Keeyask area and Burntwood River have captured a total of 318 hatchery-reared sturgeon released as yearlings. Survival of stocked yearlings in the future Keeyask reservoir and Stephens Lake has been estimated to be over 80%. Additional data is required before estimates can be completed for the Burntwood River. There has been little evidence to support survival of Lake Sturgeon released as fingerlings.

Future Activities

Hatchery-reared sturgeon from the Burntwood River population will be released as yearlings back into the Burntwood River in 2020, pending provincial approval. Egg and milt collection from wild adults will take not take place in 2020 due to concerns regarding COVID-19. Egg collection will resume in spring 2021.

Renovations to the buildings and infrastructure at the GRFH will begin in spring 2020 and are expected to be completed by fall 2021.

PRODUCTION AND STOCKING TEAM

Grand Rapids Fish Hatchery

- Yhana Michaluk, Fish Culture Supervisor
- Shaun Kirchmann, Senior Fish Culturist
- Laura Groening, Senior Fish Culturist
- Jerry Cook, Fish Culturist
- Morgan Blacksmith, Fish Culturist
- Tobias Dolinski, Fish Culturist
- Cory Ferland, Fish Culturist
- Jesse Scott, Assistant Fish Culturist
- Emily Cook, Assistant Fish Culturist

Environmental Licensing and Protection

- Shelly Matkowski, Department Manager
- Warren Coughlin, Senior Environmental Specialist
- Cheryl Klassen, Environmental Specialist

Grand Rapids Generating Station

- Brian Fox, Station Manager

Field Operations and Waterways Management

- Randy Flett, Field Supervisor – Lower Nelson

North South Consultants

- Ken Ambrose, Senior Aquatic Technician
- Mike Legge, Biological Technician

Tataskweyak Cree Nation

- Leslie Flett, Field Assistant

War Lake First Nation

- Gary Spence, Field Assistant

Sustainable Sturgeon Culture

- Joe Hunter (Rainy River First Nation)

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1.0 INTRODUCTION

In June 2012, the Keeyask Hydropower Limited Partnership (KHLP) filed an Environmental Impact Statement (EIS) in support of the Keeyask Generation Project (the Project), a 695 megawatt hydroelectric generating station (GS) to be built at Gull Rapids on the Nelson River (Map 1). Construction of the Project began in July 2014 following regulatory approval.

As discussed in the EIS, construction and operation of the Project will result in the alteration and destruction of Lake Sturgeon habitat, thereby potentially affecting regional populations.

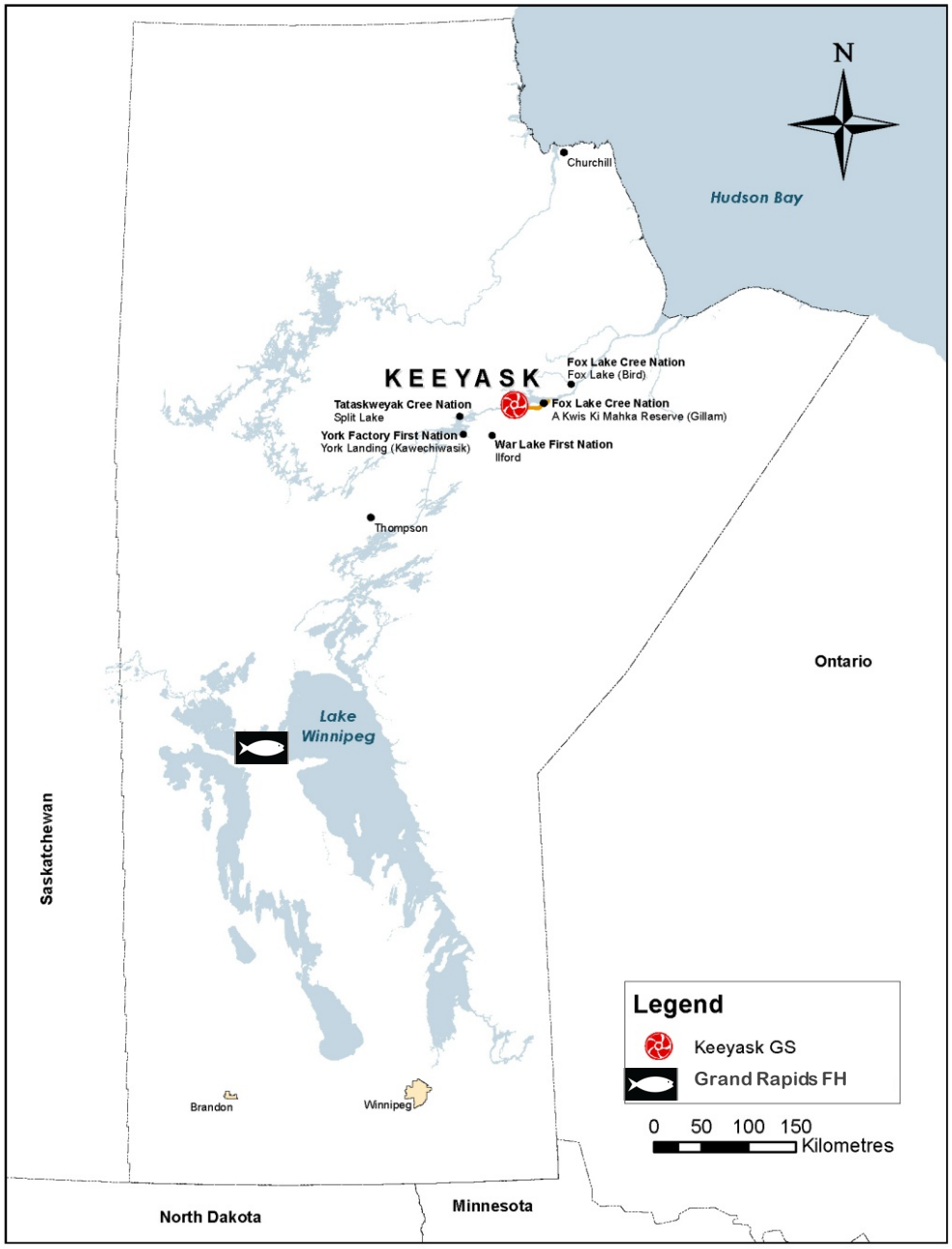
To mitigate impacts of the Project, the KHLP has developed a strategy that involves several components, including:

- management measures during construction to avoid mortality of sturgeon;
- stocking of sturgeon into Stephens Lake during construction to offset potential effects of the loss of spawning habitat in Gull Rapids;
- spawning habitat creation in the tailrace of the GS;
- alternations to habitat upstream of Birthday Rapids, if post-Project monitoring demonstrates that this area is no longer suitable for spawning sturgeon;
- creation of young-of-the-year rearing habitat at the upper end of Gull Lake following impoundment, if post-Project monitoring demonstrates that suitable habitat is not available;
- on-going studies to determine requirements (if any) for upstream fish passage;
- the use of monitoring of downstream movements and mortality to determine the need for any additional fish protection measures related to downstream passage at the GS;
- a conservation stocking program, with the objective of re-establishing a self-sustaining Lake Sturgeon population; and
- a conservation awareness program, highlighting the vulnerability of Lake Sturgeon.

Stocking was identified as being critically important because Stephens Lake may be able to support more Lake Sturgeon than are currently present. Therefore, a conservation stocking plan for the lower Nelson and Burntwood rivers was designed to address:

- existing low population numbers due to historic effects;
- potential effects of creation of the Keeyask reservoir, including possible emigration of adult Lake Sturgeon in response to water level changes at impoundment, and reduced year-class strength in the initial years of impoundment due to changes in spawning and young-of-the-year habitat. These effects are predicted to be restricted to the first years of impoundment, if they occur at all; and

- potential decrease in year-class strength of sturgeon in Stephens Lake, due to the alteration and ultimate loss of spawning habitat in Gull Rapids during construction of the GS. This effect is offset during the operation phase by the constructed spawning habitat.



Map 1: Location of Keeyask Generation Project and Grand Rapids Fish Hatchery

An initial 10-year stocking plan was developed and described in the Fisheries Offsetting and Mitigation Plan (FOMP). During the initial 10-year plan, the number of sturgeon released at each developmental stage (larval, fingerling and yearling) will be dependent upon:

- the number of Lake Sturgeon available at each developmental stage;
- the amount of hatchery space available to enable 'normal' growth of fish; and
- the end goal of maintaining 2,000 fingerlings annually through the winter to be released as yearlings the following spring.

Lake Sturgeon stocking in the lower Nelson and Burntwood rivers began in 2014 and has included the release of multiple stages over the years (Table 1).

Table 1: Summary of Lake Sturgeon stocking in the lower Nelson and Burntwood rivers since 2014

Year	Burntwood River			Future Keeyask Reservoir [a]			Stephens Lake		
	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1	Larvae	Fingerlings	Age-1
2014	0	0	595	152,926	4,656	0	0	0	0
2015	0	0	0	0	0	423	0	0	418
2016	0	0	23	192,167	780	0	184,134	799	0
2017	71,740	3,765	0	0	0	463	0	0	720
2018	0	0	739	0	933	0	0	1,009	0
2019	0	3,681	0	0	0	398	0	0	390
Total	**71,740**	**7,446**	**1,357**	**345,093**	**6,369**	**1,284**	**184,134**	**1,808**	**1,528**

[a] from Birthday Rapids to Gull Rapids

The Keeyask Fisheries Regulatory Review Committee (which also undertakes the role of Lake Sturgeon Advisory Committee as described in the *Environment Act* licence) may decide to modify the stocking plan based on annual monitoring activities.

Lake Sturgeon stocking in the lower Nelson and Burntwood rivers will continue until self-sustaining populations are established. At present, it is anticipated that stocking will occur for at least one full generation (25 years) to restore the historically depleted population.

To meet the goals outlined in the FOMP, the KHLP is stocking Lake Sturgeon hatched at the Grand Rapids Fish Hatchery (GRFH). The hatchery, located in the community of Grand Rapids, MB (Map 1), was constructed in the early 1970's by the province of Manitoba. The building was originally configured for production of Walleye, Whitefish and a variety of trout species. In 1994, GRFH began producing Lake Sturgeon for the Nelson River Sturgeon Board, in support of efforts to conserve populations in the upper Nelson River.

Manitoba Hydro purchased GRFH in 2007 and the facility was operated in partnership with Manitoba Conservation and Water Stewardship (now Agriculture & Resource Development) through a Joint Management Committee. At the end of 2012, Manitoba Hydro assumed full operation of the hatchery and currently employs 7 permanent and 2 seasonal staff. Operations and regulatory matters are overseen by Manitoba Hydro's Environmental Licensing and Protection Department. Building and equipment maintenance is conducted in partnership with the Grand Rapids Generating Station. Since 2012, GRFH has focused its production efforts exclusively on Lake Sturgeon and Walleye.

The facility currently houses 18 gray fiberglass rearing troughs measuring 4.6 x 0.55 x 0.25 m (L x W x H; Photo 1). The troughs have been configured to permit the use of both well water and surface water (Cedar Lake). However, current operations are restricted to well water use only due to the potential presence of pathogens (e.g., viruses) within the surface water. Large concrete floor tanks, originally used for fish production, now serve as water reservoirs in a simple sump pump operated water re-circulation system. Well water temperature (approximately 5°C) is warmed using ambient room temperature and submersible water heaters.

Photo 1: Rearing troughs used for Lake Sturgeon production at GRFH

Total usable rearing area for Lake Sturgeon is approximately 46 m^2. Rearing space is currently shared between the two stocking programs: Keeyask Generation Project and the Nelson River Sturgeon Board.

To meet future annual stocking targets, Manitoba Hydro is in the process of upgrading and expanding GRFH. In March 2014, a facility assessment was completed by HDR Inc. which confirmed that the existing infrastructure could not meet projected Lake Sturgeon production commitments. Upgrades are also necessary to reach national and provincial biosecurity standards which have been developed to reduce the risk of pathogens from entering and spreading within the facility. Planning for infrastructure upgrades and expansion of GRFH began at the end of 2014 and is being managed by Manitoba Hydro's Generation Project Management Department. A final design was completed by SNC Lavalin in spring 2019 and a contract was awarded to Newton Mechanical and Electrical for construction in fall 2019. The project is expected to be completed by fall 2021.

The purpose of this report is to provide a summary of Lake Sturgeon production at Grand Rapids Fish Hatchery and stocking activities for the Keeyask Generation Project in 2018/19.

2.0 BIRTHDAY RAPIDS POPULATION (2018 YEAR-CLASS)

2.1 PAST PRODUCTION AND STOCKING

Wild Lake Sturgeon adults from the Nelson River were captured downstream of Birthday Rapids (Map 2) in early June 2018. On June 6 the milt (sperm) from four males (M1, M2, M3, M4) was mixed with the eggs from one female (F1). The total number of eggs brought to GRFH was estimated to be 144,335. The overall percentage of viable eggs was estimated to be 86% resulting in a total of 124,765 hatched larvae (M1 = 29,309, M2 = 34,269, M3 = 29,303, M4 = 31,884).

Survival during the spring and summer months was at or greater than 70%, with the exception of July when mortality exceeded 50% within some family groups. Space constraints at GRFH resulted in the cull of approximately 82,000 larvae in early July with a total of 10,000 larvae retained for further growth. Survival during the months of September and October was close to 100%.

On September 26 a total of 958 fingerlings were released from shore into Stephens Lake at Keeyask's downstream boat launch. On September 28 a total of 51 fingerlings were released from shore into Stephens Lake at the Butnau Marina as part of a Kischi Sipi Namao Committee event. On October 10 a total of 933 fingerlings were released into the future Keeyask reservoir with assistance from Manitoba Hydro's boat patrol crews.

At the time of release fingerlings had an average total length of 99 mm (range: 75 to 121 mm) and an average body weight of 4.0 g (range: 2.1 to 7.3 g).

Klassen et al. (2019) provides additional detail on past production and stocking activities for the Birthday Rapids sturgeon (2018 year-class).

2.2 PRODUCTION

2.2.1 WINTER

A total of 803 Lake Sturgeon fingerlings were held at GRFH over the 2018/19 winter season for further grow-out (M1 = 139, M2 = 140, M3 = 140, M4 = 134, Mixed = 250). Offspring from the different family groups (including two mixed groups consisting of M1/M2/M3/M4) were held in separate rearing troughs; however, all groups were contained within the same water recirculation system. Well water was used exclusively to avoid potential contact with pathogens (e.g., viruses) that could be present in surface water. During the winter grow-out, sturgeon were fed frozen bloodworm twice daily to satiation at roughly 08:00 and 13:00.

Overwinter survival for the 2018 year-class was greater than 95% (Figure 1). There were three natural mortalities, two accidental mortalities from fish jumping out of their tank, and two fish were euthanized to support research. Eight fish were unaccounted for at the time of stocking. It is unknown if this was due to an initial miscount at the start of winter or missed mortalities throughout the season (Table A1-1).

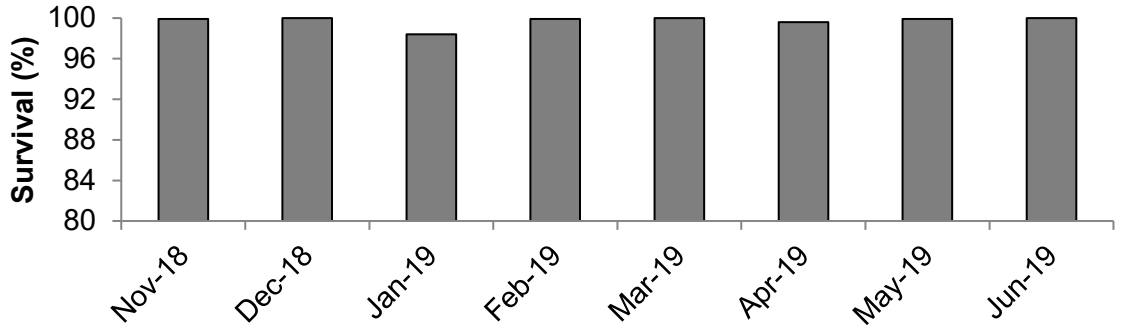


Figure 1: Monthly survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from November 1, 2018 to June 13, 2019

Average water temperature was 14.8°C (range: 8.3°C to 17.9°C) from November 1, 2018 to the final yearling release on June 13, 2019 (Figure 2). Temperatures were kept above 15°C until mid-February to ensure sturgeon would be large enough to mark with a Passive Integrated Transponder (PIT) tag. After this time temperatures were kept below 15.0°C to 1) maintain low ammonia levels, 2) avoid overcrowding in tanks due to rapid growth, and 3) reduce operational costs by feeding less bloodworm. Prior to the spring yearling release, water temperatures were adjusted in the hatchery to match ambient river temperatures in the Nelson River.

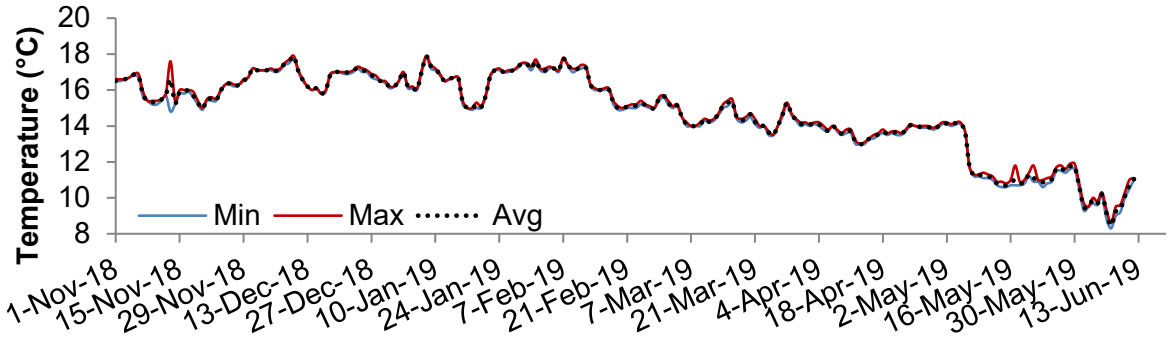


Figure 2: Average, minimum and maximum daily water temperature (°C) in rearing troughs holding Birthday Rapids (2018 year-class) at GRFH from November 1, 2018 to June 13, 2019

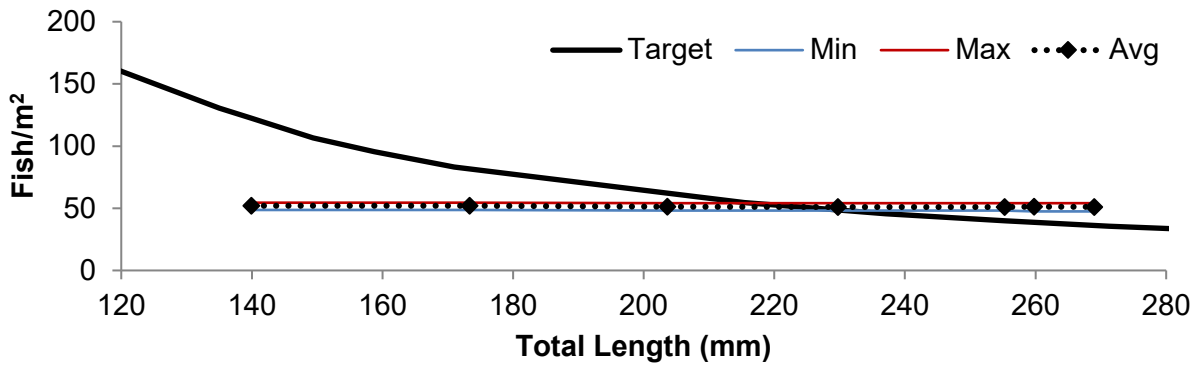


Figure 3: Average, minimum and maximum rearing density (fish per m²) of Birthday Rapids sturgeon (2018 year-class) at GRFH from November 1, 2018 to June 13, 2019

Rearing densities remained at or below target levels until the end of February, after which point densities were slightly above optimum (Figure 3). Prior to release, the number of fish in each rearing trough ranged from 122 to 139 individuals.

Water quality samples were tested weekly from rearing troughs throughout winter. Measurements included dissolved oxygen (DO; EcoSense DO 200A, Pentair), dissolved carbon dioxide (dCO2; GO2P, Oxygaurd International), pH (EcoSense pH 100A, YSI Environmental), total ammonia nitrogen (TAN; HI96700C Low Range Photometer, Hanna Instruments), un-ionized ammonia (UIA; Calculated by multiplying TAN with a multiplication factor based on temperature and pH, Emerson et al. 1975) and nitrite-nitrogen (NO2-N; test kit, LaMotte; Photo 2).

Average, minimum and maximum monthly water quality values, with the exception of TAN, are plotted in Figure 4. A detailed summary of monthly values is presented in Table A1-2. Recommended threshold values for sturgeon production are listed in Table A3-1.

Average monthly values for DO (>4 mg/L), dCO2 (<10 mg/L), pH (6.5 to 8.5), UIA (<0.01 mg/L) and NO2-N (<0.2 mg/L) were within acceptable limits during winter production. However, maximum values recorded for UIA exceeded the recommended threshold throughout winter production and maximum values for pH slightly exceeded the recommended threshold in November 2018 and January 2019. Despite this, survival remained high (>95%; Figure 1). Installation of new water treatment equipment as part of the hatchery's upgrade and expansion project is expected to address these issues.

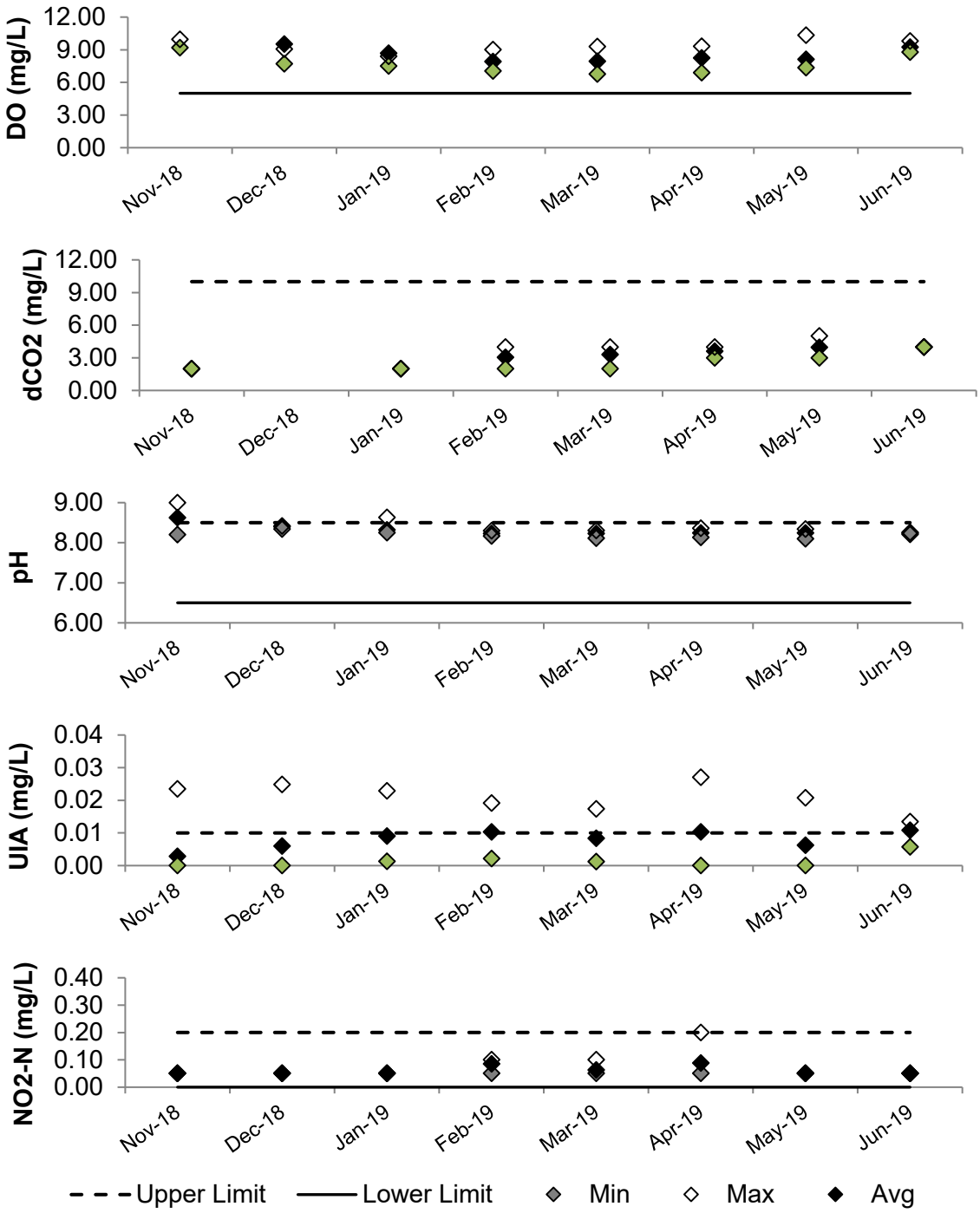


Figure 4: **Average, minimum and maximum monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO2), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO2-N) values in rearing troughs holding Birthday Rapids sturgeon (2018 year-class) at GRFH from November 1, 2018 to June 13, 2019**

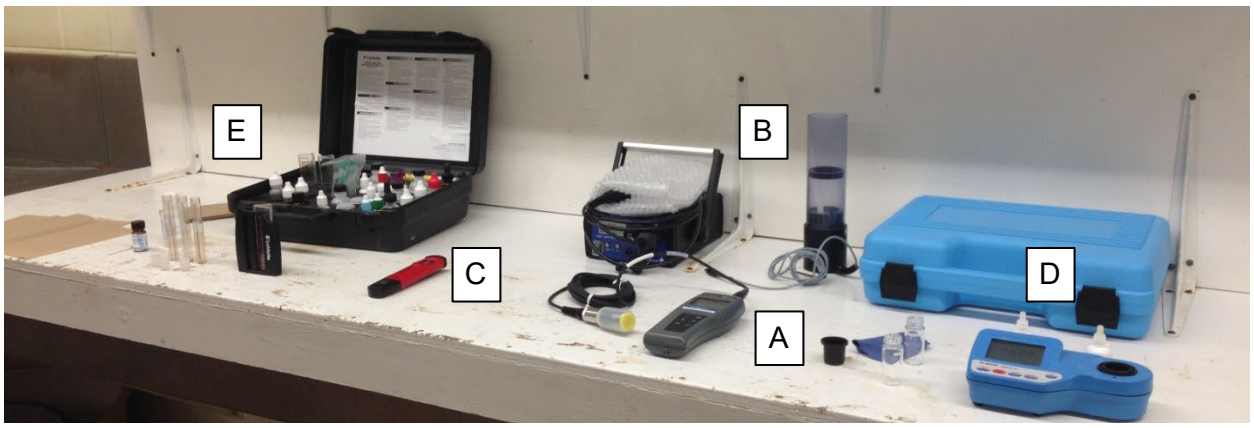


Photo 2: Equipment used to test dissolved oxygen (A), dissolved carbon dioxide (B), pH (C), total ammonia nitrogen (D) and nitrite-nitrogen (E) at GRFH

At the end of each month, 15 Birthday Rapids sturgeon were randomly selected and measured from each rearing tank. Growth increased steadily from November 2018 to March 2019 (Figure 5). Following a temperature decrease in February (Figure 2), growth rates began to plateau. As is typically observed, the range of sizes among fish increased over time (Figure 5). Due to space constraints, fish are not currently size sorted at GRFH.

At the time of the spring stocking yearlings had reached an overall average fork length of 229 mm (range: 164 to 295 mm), average total length of 269 mm (range: 206 to 340 mm) and average weight of 67 g (range: 32 to 147 g; Figure 5; Table A1-3).

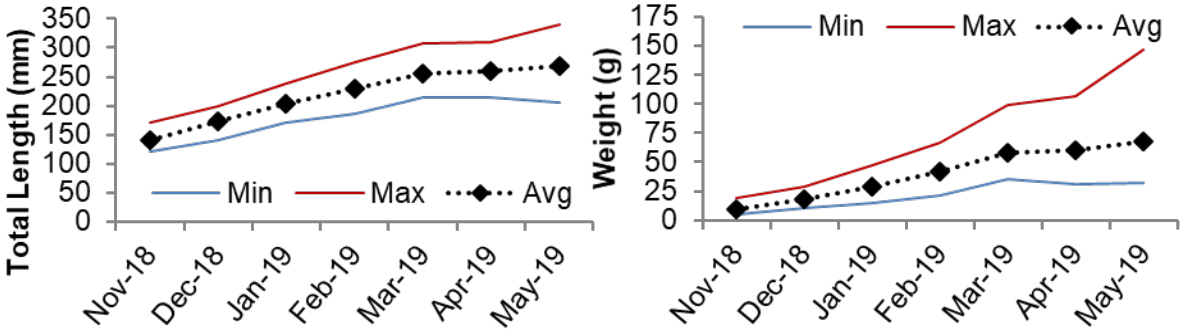


Figure 5: Average, minimum and maximum total length (mm) and weight (g) for Birthday Rapids sturgeon (2018 year-class) at GRFH from November 2018 to the end of May 2019

2.3 STOCKING

2.3.1 SPRING

All Birthday Rapids sturgeon were marked with uniquely numbered Passive Integrated Transponder (PIT) tags (8 mm long x 1.4 mm diameter) by inserting the tag into the muscle along the fish's back. This was completed by GRFH staff between March 28 and April 25, 2019 when fish were large enough to undergo the procedure. A PIT tag scanner held over the fish will detect the tag and display the unique number on a screen. This marking technique helps to identify hatchery-reared fish caught in the river and can be used to assess the movement and growth of individual fish following stocking.

Tissue samples (pectoral fin) were collected from 30 Birthday Rapids sturgeon on April 13, 2019 and sent to RPC Science & Engineering in Fredericton, New Brunswick. All samples tested negative for Namao Virus using a virus specific qPCR test. Yearlings were cleared by the provincial fish health officer for stocking.

Table 2: Number of Birthday Rapids sturgeon (2018 year-class) released into the Keeyask area in spring 2019

Family	Stocking				
	Date	Number	Age	Waterbody	Site ID
F1xM1	6-Jun-19	70	11	Future Keeyask Reservoir	1
F1xM2	6-Jun-19	67	11	Future Keeyask Reservoir	1
F1xM1/M2/M3/M4	6-Jun-19	62	11	Future Keeyask Reservoir	1
Total (Site 1)		**199**			
F1xM3	6-Jun-19	70	11	Future Keeyask Reservoir	2
F1xM4	6-Jun-19	67	11	Future Keeyask Reservoir	2
F1xM1/M2/M3/M4	6-Jun-19	62	11	Future Keeyask Reservoir	2
Total (Site 2)		**199**			
F1xM1	13-Jun-19	68	11	Stephens Lake	3
F1xM2	13-Jun-19	67	11	Stephens Lake	3
F1xM1/M2/M3/M4	13-Jun-19	61	11	Stephens Lake	3
Total (Site 3)		**196**			
F1xM3	13-Jun-19	69	11	Stephens Lake	4
F1xM4	13-Jun-19	64	11	Stephens Lake	4
F1xM1/M2/M3/M4	13-Jun-19	61	11	Stephens Lake	4
Total (Site 4)		**194**			

On June 6, a total of 398 yearlings were transported by truck to the Keeyask camp. Following a period of acclimation, the sturgeon were released at Site 1 and Site 2 (Map 2; Table 2; Table A1-4) with assistance from Manitoba Hydro's boat patrol crews. The river temperature was 13.0°C.

On June 13, a total of 390 yearlings were transported by truck to the Keeyask camp. Following a period of acclimation, the sturgeon were released at Site 3 and Site 4 (Photo 3; Map 2; Table 2; Table A1-4) with assistance from Manitoba Hydro's boat patrol crew. The river temperature was 12.5°C.

Map 2: Stocking locations for Birthday Rapids sturgeon (2018 year-class) released into the Keeyask area in spring 2019. Birthday Rapids is marked 'A'

3.0 BURNTWOOD RIVER POPULATION (2019 YEAR-CLASS)

3.1 SPAWN CAMP

3.1.1 BROODSTOCK COLLECTION

Lake Sturgeon adults were captured downstream of First Rapids on the Burntwood River with assistance from North South Consultants (Map 3). Two females were injected with a primer dose (20%) of Gonadotropin Releasing Hormone (GnRH; Product No. H-4070, Bachem Americas, Inc., Torrance, CA, USA) on June 3. The remaining dose (80%) was administered 12 hours later on June 4. Six males were injected using a similar protocol; however, the amount of hormone used per kg was less than half that used for females. M1 did not receive a primer dose because this fish was already expressing a large quantity of milt (sperm) on June 3 (Table 3).

Table 3: Broodstock tag numbers, weight and GnRH dose used during gamete collection on the Burntwood River, June 2019

Floy Tag ID	Hatchery ID	Body Mass (Kg)	Injection Date	Injection Time	Injection Temp	GnRH (µg/Kg)	Solution		
							GnRH (µl)[1]	Ringer's (µl)[2]	Total (µl)
Females									
114156	F1	20.5	3-Jun-19	19:03	10.0°C	4.5	9.2	399.8	409.0
			4-Jun-19	07:06	8.5°C	19.5	39.8	369.2	409.0
94499	F2	24.6	3-Jun-19	19:04	10.0°C	4.5	11.1	479.9	491.0
			4-Jun-19	07:06	8.5°C	19.5	47.9	443.1	491.0
Males									
89400	M1	5.9	3-Jun-19	No primer dose					
			4-Jun-19	07:13	7.5°C	6.0	3.5	114.7	118.2
88690	M2	7.7	3-Jun-19	19:11	9.0°C	1.5	1.2	153.4	154.6
			4-Jun-19	07:12	7.5°C	6.0	4.6	150.0	154.6
114154	M3	7.3	3-Jun-19	19:10	9.0°C	1.5	1.1	144.3	145.4
			4-Jun-19	07:10	7.5°C	6.0	4.4	141.0	145.4
108619	M4	10.9	3-Jun-19	19:10	9.0°C	1.5	1.6	216.6	218.2
			4-Jun-19	07:12	7.5°C	6.0	6.5	211.7	218.2
114153	M5	6.4	3-Jun-19	19:13	9.0°C	1.5	1.0	126.2	127.2
			4-Jun-19	07:14	7.5°C	6.0	3.8	123.4	127.2
75462	M6	10.5	3-Jun-19	19:09	9.0°C	1.5	1.6	207.4	209.0
			4-Jun-19	07:11	7.5°C	6.0	6.3	202.7	209.0

[1] GnRH solution = 10µg GnRH per µl
[2] Saline solution used to transport GnRH into fish muscle during injections

Administration of GnRH is useful for conservation aquaculture programs because it stimulates the production of sex steroids (estradiol and testosterone) necessary for maturation and production of eggs and milt. Research on the use of GnRH during Lake Sturgeon gamete collection suggests no lasting negative effects on broodstock health or human consumption complications (Genz et al. 2014).

Males and females were held separately using two tanks set up on shore (photo 3). Average water temperature from the time adults were first injected with hormone to the time of egg/milt collection was 10.8°C (range: 8.5 to 13.5°C) for the females and 8.9°C (range: 7.5 to 12.5°C) for the males. The higher temperature within the female tank was the result of field staff manipulating the incoming water flow on June 5 in an attempt to advance the egg collection activities (see section 3.1.2).

Photo 3: Broodstock holding tanks at the Burntwood River spawn camp, June 2019

3.1.2 EGG AND MILT COLLECTION

In 2019 eggs were not observed at the expected 36 hours following first hormone injection. Instead, they were first observed at 23:00 on June 5, approximately 50 hours following the first hormone injection. Interestingly, this timeline was nearly identical to the previous year at Birthday Rapids (Klassen et al. 2019). The dose administered to females in 2019 (24 µg/kg; Table 3) was higher than previously used (16-20 µg/kg; Klassen 2015; Klassen et al. 2016; 2017; 2018, 2019)

in an attempt to counteract the cooler water temperatures; however, it appears that an even higher dose would have been beneficial.

During the waiting period, field staff were concerned that the males would expel their milt prior to egg collection. Therefore, milt from all 6 males was collected around 13:30 and stored on ice in separate containers until fertilization. At 17:00 a clear, flexible hose was inserted into the oviduct of F1 and F2. Ovarian fluid was present in both females and eggs were present in the oviduct of F1; however, it was noted that the eggs appeared small and whitish in colour. The first sign of eggs being released was from F2 just after 23:00.

Approximately 2.1 L of eggs (unfertilized) were collected from F2 just after midnight on June 6. Prior to egg collection, the female was placed in an anaesthetic bath for approximately 6 min to make egg collection activities easier for the fish and field staff. Damp towels were placed over the female's head to reduce stress. Egg collection took approximately 7 min at which point fresh water was run over the female's gills. She was returned to the holding tank within 15 min of first being removed. No abdominal incision was required during egg collection.

Eggs from F2 were fertilized with the milt from all 6 males between 00:30 and 01:45 to create six families (F2xM1, F2xM2, F2xM3, F2xM4, F2xM5, F2xM6). Milt was mixed with the eggs for approximately 90 seconds at a volume of 28 ml per liter of eggs (or 10 ml per 350 ml of eggs). To improve the rate of fertilization, the milt was first activated by mixing it with water. Eggs were then rinsed with clean water and mixed with bentonite clay for approximately 40 min to prevent egg clumping. They were bagged and placed in coolers by 02:45 on June 6.

No eggs were released by F1 during this time. Given the successful collection of eggs from F2, it was decided that there would be no further attempt to collect eggs from F1.

Fresh water was added to the egg transport bags around 08:45 on the morning of June 6 and brought to the Orr Creek boat launch by boat. From there they were driven to GRFH, arriving at approximately 14:30.

3.1.3 BROODSTOCK HEALTH

To ensure the short and long-term health of broodstock, field crew members discussed roles and responsibilities the day before egg and milt collection activities. For example, one individual timed how long the female was out of the water and called out to the other field staff every minute. A second individual was dedicated to female recovery efforts immediately following egg collection. Egg collection is kept to a maximum time of 10 min and a submersible pump is used to run water over the female's gills.

F2 recovered following egg collection and was actively swimming in the holding tank. All broodstock were released back into the river within 24 hours of gamete collection.

Milt, ovarian fluid and fin tissue (pectoral) from broodstock were tested for Namao Virus. The Namao Virus has been detected in sturgeon throughout the Nelson River and appears to be

endemic (Clouthier et al. 2015). All samples tested negative for the virus and no offspring tested positive for the virus (see Section 3.3.1).

Polypodium hydriforme, a sturgeon and paddlefish parasite (Raikova 2002), was observed within the eggs of Burntwood River broodstock in 2015 and 2017. There were no signs of this parasite in 2019.

3.2 PRODUCTION

3.2.1 EGG INCUBATION AND HATCH

There were an estimated 211,865 eggs from the F2 crosses with an average of 41 eggs/ml (M1 = 39, M2 = 40, M3 = 45, M4 = 40, M5 = 41, M6 = 40). Eggs were placed into McDonald hatching jars for incubation. The six family groups were incubated in separate hatching jars (two jars per family) but distributed across three rearing troughs to create three family groups (M1/M2, M3/M4, M5/M6). Troughs were contained within the same water recirculation system; therefore, water was shared across groups. Average incubation temperature was 13.7°C (range: 11.7 to 14.6°C; Figure 6). Well water was used exclusively during this period and following hatch.

Five days after egg collection, egg viability was assessed. The proportion of viable eggs within a jar was calculated from three samples collected containing at least 100 eggs. The average proportion of viable eggs from each jar was then multiplied by the total egg volume of that jar to estimate hatch success. The overall percentage of viable eggs was estimated to be 76% (M1 = 78%, M2 = 83%, M3 = 83%, M4 = 75%, M5 = 53%, M6 = 87%) with an estimated hatch of 161,993 larvae. To avoid issues associated with overcrowding, one jar of eggs from each family was removed from the system. Some of the eggs went to the University of Manitoba to support on-going research.

The majority of eggs hatched on June 18 with the total number of larvae estimated to be 80,895.

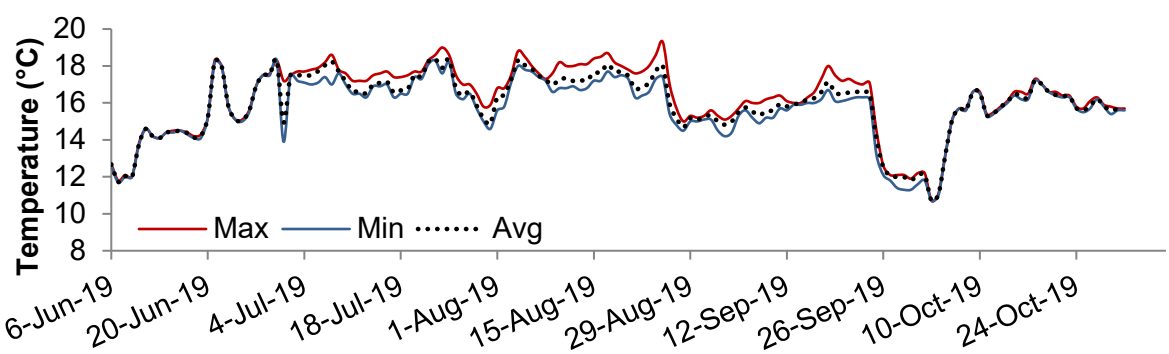


Figure 6: Average, minimum and maximum daily water temperature (°C) in rearing troughs holding Burntwood River sturgeon (2019 year-class) at GRFH from June 6 to October 31, 2019

3.2.2 LARVAE AND FINGERLINGS

Monthly survival rates remained at or above 80% prior to the fall stocking (Figure 7; Table A2-1). The greatest number of mortalities occurred during the months of June and July, a period when fish are started on a diet of brine shrimp and later transitioned onto bloodworm.

A large number of Burntwood River larvae (approximately 41,000) were unaccounted for following a recount at the end of July (Table A2-1). It may be that this value represents mortalities that went unrecorded or, more likely, is the result of overestimating the number of eggs brought to the hatchery and/or that hatched. Current procedures for estimating number of eggs and fertilization rates are under review.

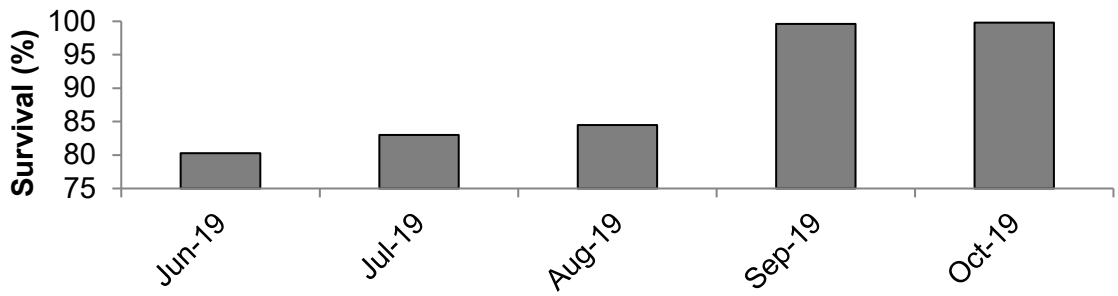


Figure 7: Monthly survival (%) of Burntwood River sturgeon (2019 year-class) at GRFH from June 6 to October 31, 2019. Survival does not include fish euthanized due to sampling events or overcrowding.

Larvae were first introduced to brine shrimp on June 23, 2019 with the majority of sturgeon feeding by June 30. Chopped bloodworm was first offered on July 14 and whole bloodworm on August 10. Sturgeon were feeding on whole bloodworm exclusively by August 24. Fish were fed to satiation three times daily at 8:00, 13:00 and 17:00 until September 11, at which time evening feedings were stopped.

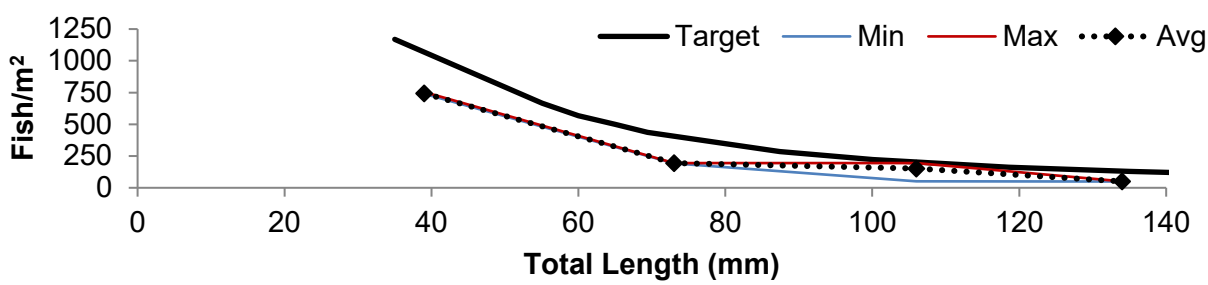


Figure 8: Average, minimum and maximum rearing density (fish per m²) of Burntwood River sturgeon (2019 year-class) at GRFH from the end of July to the end of October, 2019

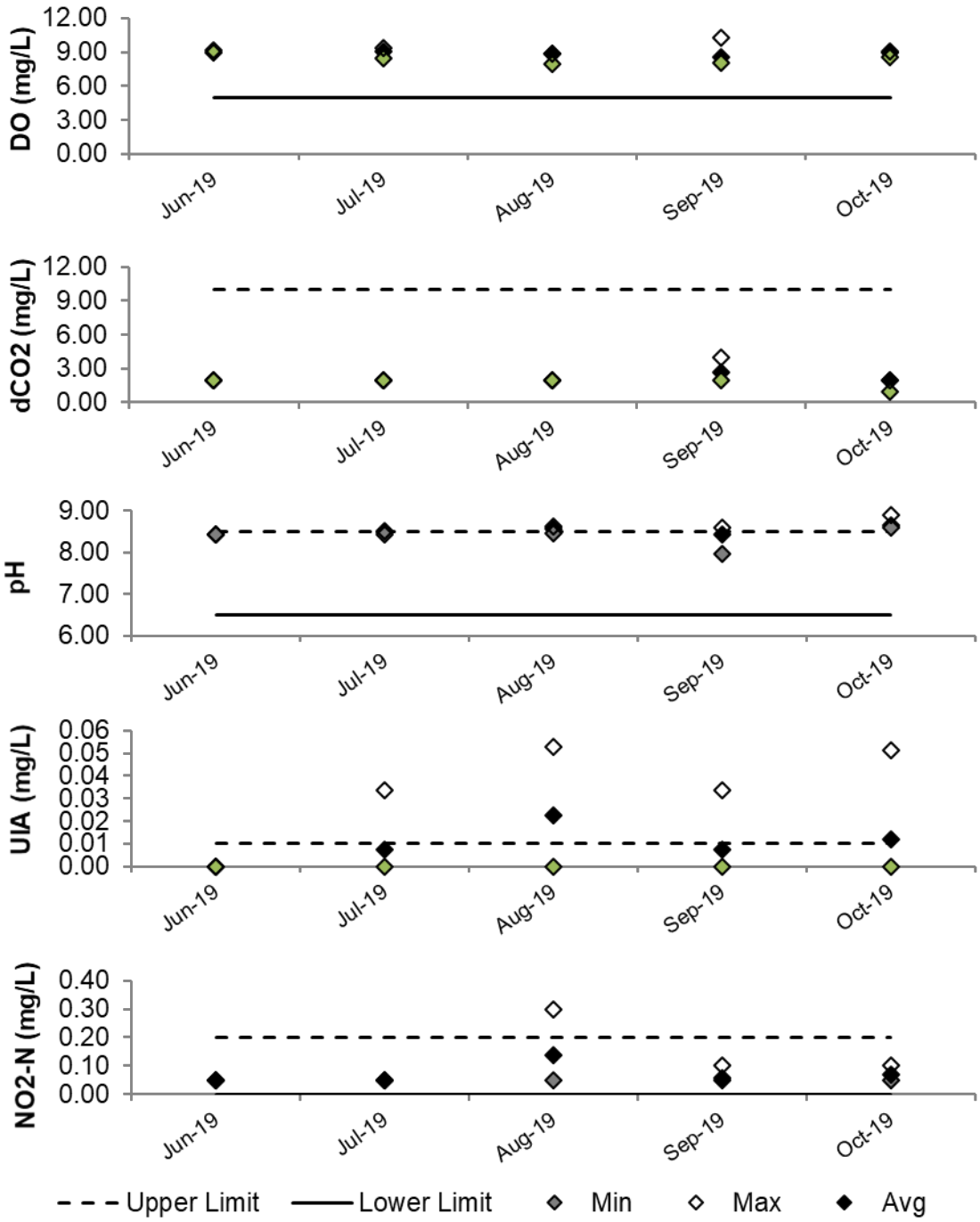


Figure 9: **Average, minimum and maximum monthly dissolved oxygen (DO), dissolved carbon dioxide (dCO2), pH, un-ionized ammonia (UIA) and nitrite-nitrogen (NO2-N) values in rearing troughs holding Burntwood River sturgeon (2019 year-class) at GRFH from June to the end of October 2019. Solid and dashed lines indicate lower and upper thresholds, respectively.**

Following a successful hatch, it became necessary to cull some larvae in July (approximately 3,000) and August (approximately 3,600) due to space constraints (Table A2-1). New virus testing criteria requires sampling to occur at least 9 weeks post-hatch. As a result, GRFH is no longer able to stock excess larvae.

Densities remained at or below target levels following the fish cull in July (Figure 8). Prior to this, fish densities were approximately 10,000 larvae/m^2 following hatch.

The Burntwood River sturgeon were held in 100% well water throughout the summer grow-out period. Average water temperature was 16.7°C (range: 13.9°C to 19.3°C) from hatch until September 24, at which point temperatures were slowly reduced in preparation for the fall stocking activities (Figure 6).

Water quality samples were tested weekly from each rearing trough throughout summer. Parameters assessed included dissolved oxygen (DO), dissolved carbon dioxide (dCO2), pH, total ammonia nitrogen (TAN), un-ionized ammonia (UIA) and nitrite-nitrogen (NO2-N; see section 2.2.1 for methods).

Average monthly water quality values, with the exception of TAN, are plotted in Figure 9. A detailed summary of monthly values is presented in Table A2-2. Recommended threshold values for sturgeon production are listed in Table A3-1. Average monthly values for DO (>4 mg/L), dCO2 (<10 mg/L), pH (6.5 to 8.5), UIA (<0.01 mg/L) and NO2-N (<0.2 mg/L) were typically within accepted limits. Exceptions were the average UIA value in August and pH value in October. Maximum UIA values recorded in July to October also exceeded the recommended threshold. Despite this, survival remained high (>80%; Figure 7). Installation of new water treatment equipment as part of the hatchery's upgrade and expansion project is expected to address these issues.

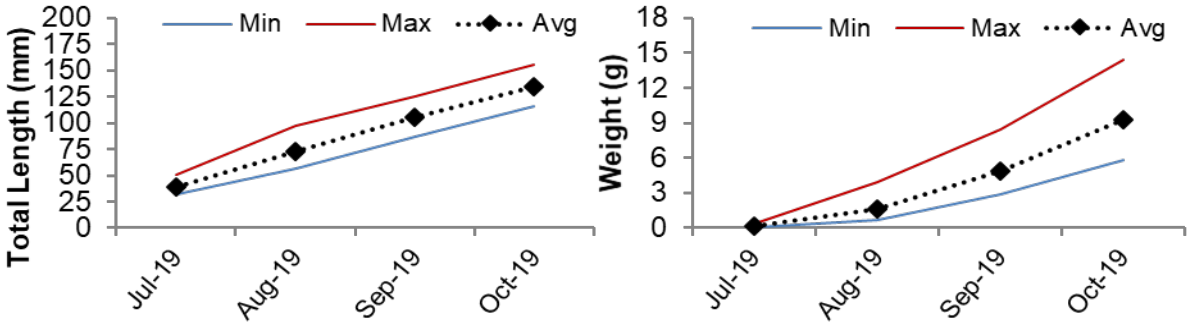


Figure 10: Average, minimum and maximum total length (mm) and weight (g) for Burntwood River sturgeon (2019 year-class) at GRFH from July to the end of October, 2019

At the end of each month, 15 Burntwood River sturgeon were randomly selected and measured from each rearing trough. By the end of October fingerlings had reached an overall average total length of 134 mm (range: 116 to 155 mm) and average weight of 9.3 g (range: 5.8 to 14.4 g; Figure 10; Table A2-3).

3.3 STOCKING

3.3.1 FALL

On August 15, sixty whole body samples representing all family groups were collected and sent to RPC Science and Engineering in Fredericton, New Brunswick. All samples tested negative for Namao Virus using a virus specific qPCR test. Fingerlings were cleared by the provincial fish health officer for stocking.

On September 26, a total of 1,664 fingerlings were transported by truck to the Orr Creek boat launch. Following a period of acclimation, the fingerlings were released by boat with assistance from Manitoba Hydro's boat patrol crews at Site 1 (Map 3; Table 4). The river temperature was 11.5°C. On the same day, 50 fingerlings were transported by plane to Thompson, MB and then driven to Orr Creek boat launch by truck for a Kischi Sipi Namao Committee stocking event. Fish were released from shore into the Burntwood River at Site 2 following acclimation (Photo 4; Map 3; Table 4).

On October 3, a total of 1,967 fingerlings were transported by truck to the Orr Creek boat launch. Following acclimation, the fish were released into the Burntwood River with assistance from Manitoba Hydro's boat patrol crews at Site 3 (Map 3; Table 4). The river temperature was 7.5°C.

At the end of September fingerlings had an average total length of 106 mm (range: 87 to 125 mm) and average body weight of 4.9 g (range: 2.9 to 8.5 g).

Table 4: Number of Burntwood River sturgeon (2019 year-class) released into the Burntwood River in 2019

Family	Stocking				
	Date	Number	Age	Waterbody	Site ID
F2xM1/M2	26-Sep-19	490	3 months	Burntwood River	1
F2xM3/M4	26-Sep-19	497	3 months	Burntwood River	1
F2xM5/M6	26-Sep-19	677	3 months	Burntwood River	1
Total (Site 1)		**1,664**			
F2xM5/M6	26-Sep-19	50	3 months	Burntwood River	2
Total (Site 2)		**50**			
F2xM1/M2	3-Oct-19	739	3 months	Burntwood River	3
F2xM3/M4	3-Oct-19	733	3 months	Burntwood River	3
F2xM5/M6	3-Oct-19	495	3 months	Burntwood River	3
Total (Site 3)		**1,967**			

Map 3: Stocking locations for Burntwood River sturgeon (2019 year-class) released into the Burntwood River in fall 2019. First Rapids is marked 'A'

Photo 4: Kischi Sipi Namao Committee stocking event at the Orr Creek boat launch (Burntwood River) on September 26, 2019

4.0 POST-STOCKING RECAPTURES

A total of 4,169 Lake Sturgeon yearlings have been stocked into the lower Nelson and Burntwood rivers since 2014 (Burntwood River = 1,357; Future Keeyask Reservoir = 1,284; Stephens Lake = 1,528). PIT tags injected into the sturgeon prior to release has allowed identification of 318 hatchery-reared fish from post-stocking monitoring in the Keeyask Study Area since 2014 (Table 5).

Table 5: Number of Lake Sturgeon yearlings stocked into the lower Nelson and Burntwood rivers and number recaptured between 2014 and 2019

Sample Year	Location	Number Stocked	Number Recaptured						
			Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	TOTAL
2019	Stephens Lake	390	84	0	13	0	20	1	118
	Future Keeyask Reservoir	398	27	1	16	0	12	1	57
	Burntwood River/ Split Lake	0	0	8	0	0	0	2	10
2018	Stephens Lake	0	0	7	0	10	0	n/a	17
	Future Keeyask Reservoir	0	1	8	0	8	1	n/a	18
	Burntwood River	739	0	0	0	0	1	n/a	1
2017	Stephens Lake	720	33	0	18	0	n/a	n/a	51
	Future Keeyask Reservoir	463	9	0	11	1	n/a	n/a	21
	Burntwood River/ Split Lake	0	0	0	0	3	n/a	n/a	3
2016	Stephens Lake	0	0	5	0	n/a	n/a	n/a	5
	Future Keeyask Reservoir	0	0	7	0	n/a	n/a	n/a	7
	Burntwood River/ Split Lake	23	0	0	1	n/a	n/a	n/a	1
2015	Stephens Lake	418	4	0	n/a	n/a	n/a	n/a	4
	Future Keeyask Reservoir	423	2	1	n/a	n/a	n/a	n/a	3
	Burntwood River/ Split Lake	0	0	0	n/a	n/a	n/a	n/a	0
2014	Stephens Lake	0	0	n/a	n/a	n/a	n/a	n/a	0
	Future Keeyask Reservoir	0	1	n/a	n/a	n/a	n/a	n/a	1
	Burntwood River/ Split Lake	595	1	n/a	n/a	n/a	n/a	n/a	1
	TOTAL	**4,169**	**162**	**37**	**59**	**22**	**34**	**4**	**318**
	Percentage (%)		**(51)**	**(12)**	**(18)**	**(7)**	**(11)**	**(1)**	

The majority of hatchery-reared sturgeon have been recaptured in Stephens Lake (61%, n = 195). Most of these fish were originally stocked into Stephens Lake (2015 = 46; 2017 = 43, 2019 = 78), with the exception of 27 individuals. Of these 27 fish, 26 sturgeon were stocked into the future Keeyask reservoir (2015 = 11; 2017 = 10; 2019 = 5) and 1 sturgeon was stocked into the Burntwood River in 2014. The stocking location of one hatchery-reared fish recaptured in

Stephens Lake is unknown and was either stocked into Stephens Lake or the future Keeyask reservoir in 2019.

Of the fish recaptured in Stephens Lake to date, 43% (n = 84) represent yearlings stocked in 2019. Over the course of the monitoring program, 62% (n = 121) were recaptured at age-1, 6% (n = 12) at age-2, 16% (n = 31) at age-3, 5% (n = 10) at age-4, 10% at age-5 (n = 20) and 0.5% at age-6 (n = 1). Survival of hatchery-reared sturgeon stocked as yearlings in Stephens Lake is currently estimated to be 93% (Burnett and Hrenchuk 2020).

The second most hatchery-reared fish have been recaptured in the future Keeyask reservoir (34%, n = 107). Of these fish, 100 sturgeon were originally stocked into the future Keeyask reservoir (2015 = 40; 2017 = 33; 2019 = 27) with 7 having been stocked upstream in the Burntwood River (2014 = 5; 2018 = 2). Over the course of the monitoring program, 37% (n = 40) were recaptured at age-1, 16% (n = 17) at age-2, 25% (n = 27) at age-3, 8% (n = 9) at age-4,12% (n = 13) at age-5 and 1% (n = 1) at age-6. Survival of hatchery-reared sturgeon stocked as yearlings in the future Keeyask reservoir is currently estimated to be 83% (Burnett and Hrenchuk 2020).

The least number of hatchery-reared fish recaptured to date has been in the Burntwood River and upper Split Lake area (5%, n = 16). All were stocked into the Burntwood River (2014 = 8; 2018 = 8). Over the course of the monitoring program, 6% (n = 1) were recaptured at age-1, 50% (n = 8) at age-2, 6% (n = 1) at age-3, 19% (n = 3) at age-4, 6% (n = 1) at age-5, and 13% (n = 2) at age-6. Additional recapture data is required before survival estimates can be generated for the Burntwood River (Burnett and Hrenchuk 2020).

Additional information about recaptured hatchery-reared sturgeon can be found in Henderson et al. (2015), Burnett et al. (2016; 2017; 2018), and Burnett and Hrenchuk (2019; 2020).

5.0 PRODUCTION AND STOCKING ACTIVITIES IN 2019/20

A total of 774 Burntwood River fingerlings were kept at the hatchery for the 2019/20 winter grow-out period. Fish will be released as yearlings into the Burntwood River during spring 2020, pending approval. Specific stocking locations will be determined at that time.

Construction activities for the hatchery's upgrade and expansion project will begin in spring 2020 and is expected to be completed by fall 2021. The project is being undertaken to increase the number of yearling Lake Sturgeon that can be produced at the hatchery and to improve the rearing conditions for the fish. Upgrades are also necessary to reach national and provincial biosecurity standards developed to reduce the risk of pathogens from entering and spreading within the facility.

Research activities being conducted at Grand Rapids Fish Hatchery in collaboration with the University of Manitoba ended in spring 2019. Collaboration on other Lake Sturgeon projects will be considered following the hatchery's upgrade and expansion project.

6.0 SUMMARY AND CONCLUSIONS

The Grand Rapids Fish Hatchery was able to successfully produce Lake Sturgeon for the Keeyask Hydropower Limited Partnership in 2019. A total of 788 yearlings were released in the Keeyask area in the spring. An abundance of eggs were acquired and hatched from adults captured in the Burntwood River such that another 3,681 fingerlings were released back into the Burntwood River in fall. A total of 774 individuals were retained to be stocked as yearlings in spring 2020.

Stocking activities for the construction and operation of the Keeyask Generating Station will continue until self-sustaining populations are present in the Keeyask area and the Burntwood River. Assessment of the program is on-going in order to meet this objective. Results from juvenile monitoring programs indicate high survival of the hatchery-reared sturgeon stocked as yearlings but there is little evidence to support survival of the released fingerlings. As such the program will continue to focus on the production and release of yearlings. Upgrades to the Grand Rapids Fish Hatchery will allow for greater numbers of yearling sturgeon to be produced for stocking.

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APPENDIX 1:
BIRTHDAY RAPIDS (2018 YEAR-CLASS)

Table A1-1: Survival (%) of Birthday Rapids sturgeon (2018 year-class) at GRFH from November 1, 2018 to June 13, 2019

LOT	Tanks[a]	Month-Year	Start of Month Total	Mortality			Transfer		Recount Adjustment	End of Month Total	Monthly Survival (%)[b]
				Natural	Accidental	Euthanized	Stocking	Other			
LKST-BDR-18	6	Nov-18	803	1	0	0	0	0	0	802	99.9
LKST-BDR-18	6	Dec-18	802	0	0	0	0	0	0	802	100.0
LKST-BDR-18	6	Jan-19	802	0	1[c]	0	0	0	12 (-)	789	98.4
LKST-BDR-18	6	Feb-19	789	1	0	0	0	0	0	788	99.9
LKST-BDR-18	6	Mar-19	788	0	0	0	0	0	0	788	100.0
LKST-BDR-18	6	Apr-19	788	0	1[c]	2[d]	0	0	0	785	99.6
LKST-BDR-18	6	May-19	785	1	0	0	0	0	4 (+)	788	99.9
LKST-BDR-18	6	Jun-19	788	0	0	0	788[e]	0	0	0	100.0
		Total	**803**	**3**	**2**	**2**	**788**	**0**	**8 (-)**	**0**	**98.1**

a. 10A (F1xM1), 10B (F1xM1/2/3/4), 11A (F1xM3), 11B (F1xM2), 12A (F1xM4), 12B (F1xM1/2/3/4)
b. Monthly survival rates do not include euthanized fish or recount adjustments
c. Jumped out of tank
d. Sent to DFO for analysis of blisters
e. Stocked into the future Keeyask reservoir (398) and Stephens Lake (390)

Table A1-2: Monthly average (±SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-Ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Birthday Rapids (2018 year-class) reared at Grand Rapids Fish Hatchery

Parameter	Mth-Yr	N[a]	Mean	±SD	Min	Max
Dissolved O_2 (mg/L)	Nov-18	24	9.52	0.22	9.19	9.96
	Dec-18	30	8.68	0.34	7.71	9.06
	Jan-19	24	7.91	0.25	7.51	8.39
	Feb-19	26	7.95	0.50	7.06	9.01
	Mar-19	24	8.24	0.70	6.77	9.30
	Apr-19	28	8.12	0.71	6.90	9.31
	May-19	24	9.24	0.86	7.35	10.35
	Jun-19	6	9.28	0.41	8.78	9.80
Dissolved CO_2 (mg/L)	Nov-18	17[b]	2.00	0.00	2.00	2.00
	Dec-18	0[b]	n/a	n/a	n/a	n/a
	Jan-19	6[b]	2.00	0.00	2.00	2.00
	Feb-19	26	3.04	0.34	2.00	4.00
	Mar-19	24	3.29	0.55	2.00	4.00
	Apr-19	28	3.61	0.50	3.00	4.00
	May-19	24	3.96	0.46	3.00	5.00
	Jun-19	6	4.00	0.00	4.00	4.00
pH	Nov-18	18[b]	8.62	0.36	8.20	9.00
	Dec-18	18[b]	8.40	0.02	8.34	8.42
	Jan-19	24	8.32	0.08	8.25	8.63
	Feb-19	26	8.23	0.04	8.17	8.30
	Mar-19	24	8.23	0.06	8.11	8.31

Parameter	Mth-Yr	N[a]	Mean	±SD	Min	Max
	Apr-19	28	8.25	0.07	8.13	8.36
	May-19	24	8.25	0.06	8.10	8.34
	Jun-19	6	8.24	0.02	8.21	8.26
Total Ammonia (mg/L)	Nov-18	24	0.018	0.042	0.000	0.150
	Dec-18	30	0.072	0.090	0.000	0.290
	Jan-19	24	0.136	0.107	0.020	0.310
	Feb-19	26	0.207	0.107	0.040	0.430
	Mar-19	24	0.193	0.089	0.030	0.350
	Apr-19	28	0.241	0.173	0.000	0.700
	May-19	24	0.184	0.132	0.000	0.400
	Jun-19	6	0.378	0.104	0.200	0.470
UIA (mg/L)	Nov-18	24[c]	0.003	0.007	0.000	0.024
	Dec-18	30[c]	0.006	0.007	0.000	0.025
	Jan-19	24	0.009	0.008	0.001	0.023
	Feb-19	26	0.010	0.005	0.002	0.019
	Mar-19	24	0.008	0.004	0.001	0.017
	Apr-19	28	0.010	0.007	0.000	0.027
	May-19	24	0.006	0.006	0.000	0.021
	Jun-19	6	0.011	0.003	0.006	0.013
Nitrite Nitrogen (mg/L)	Nov-18	24	0.05	0.00	0.05	0.05
	Dec-18	30	0.05	0.00	0.05	0.05
	Jan-19	24	0.05	0.00	0.05	0.05
	Feb-19	26	0.08	0.02	0.05	0.10
	Mar-19	24	0.06	0.02	0.05	0.10

Parameter	Mth-Yr	N[a]	Mean	±SD	Min	Max
	Apr-19	28	0.09	0.04	0.05	0.20
	May-19	24	0.05	0.00	0.05	0.05
	Jun-19	6	0.05	0.00	0.05	0.05

a. Number of water samples per month
b. Probe/meter out of service
c. pH of 8.8 used in calculation when meter out of service

Table A1-3: Monthly average (±SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Birthday Rapids Lake Sturgeon (2018 year-class) reared at Grand Rapids Fish Hatchery

Measurement	Mth-Yr	n	Avg	±SD	Min	Max
Fork Length (mm)	Nov-18	90	121	9	105	148
	Dec-18	90	151	10	123	175
	Jan-19	90	175	13	145	205
	Feb-19	90	193	15	155	227
	Mar-19	90	218	18	185	272
	Apr-19	90	221	18	184	294
	May-19	780[a]	229	18	164	295
Total Length (mm)	Nov-18	90	140	10	121	171
	Dec-18	90	173	12	140	199
	Jan-19	90	204	15	170	237
	Feb-19	90	230	18	186	274
	Mar-19	90	255	19	215	307
	Apr-19	90	260	20	214	309
	May-19	780[a]	269	20	206	340
Weight (g)	Nov-18	90	9.8	2.2	5.6	18.8
	Dec-18	90	17.7	3.8	10.2	28.4
	Jan-19	90	28.8	6.8	15.0	47.7
	Feb-19	90	42.3	10.5	21.1	66.2
	Mar-19	90	58.4	14.3	35.6	99.1
	Apr-19	90	59.8	15.2	31.0	106.7
	May-19	779[b]	67.4	17.0	32.2	146.7

a. 8 fish did not have final length/weight measurements
b. 9 fish did not have final weight measurements

Table A1-4: Biological and PIT tag information for hatchery-reared Lake Sturgeon yearlings released into the Keeyask area in 2019

Lake Sturgeon				Final Hatchery Measurement				Stocking Activity		
PIT Tag ID	Lot	Family	Tank	Date	Fork Length (mm)	Total Length (mm)	Weight (g)	Date	Waterbody	Site ID
'900.067000107900	BDR-18	F1M1	'10A	05.22.2019	260	310	104.95	06.06.2019	'Gull Lake	1
'900.067000107911	BDR-18	F1M1	'10A	05.22.2019	225	260	65.41	06.06.2019	'Gull Lake	1
'900.067000107918	BDR-18	F1M1	'10A	05.22.2019	234	271	74.97	06.06.2019	'Gull Lake	1
'900.067000107947	BDR-18	F1M1	'10A	05.22.2019	235	277	69.54	06.06.2019	'Gull Lake	1
'900.067000107952	BDR-18	F1M1	'10A	05.22.2019	215	255	48.55	06.06.2019	'Gull Lake	1
'900.067000107968	BDR-18	F1M1	'10A	05.22.2019	215	246	53.52	06.06.2019	'Gull Lake	1
'900.067000109287	BDR-18	F1M1	'10A	05.22.2019	240	275	75.09	06.06.2019	'Gull Lake	1
'900.067000109299	BDR-18	F1M1	'10A	05.22.2019	200	235	40.76	06.06.2019	'Gull Lake	1
'900.067000109311	BDR-18	F1M1	'10A	05.22.2019	210	250	46.90	06.06.2019	'Gull Lake	1
'900.067000109315	BDR-18	F1M1	'10A	05.22.2019	235	275	67.11	06.06.2019	'Gull Lake	1
'900.067000109325	BDR-18	F1M1	'10A	05.22.2019	215	250	54.34	06.06.2019	'Gull Lake	1
'900.067000109326	BDR-18	F1M1	'10A	05.22.2019	220	260	60.56	06.06.2019	'Gull Lake	1

'900.067000109327	BDR-18	F1M1	'10A	05.22.2019	235	275	75.20	06.06.2019	'Gull Lake	1
'900.067000109330	BDR-18	F1M1	'10A	05.22.2019	219	260	60.31	06.06.2019	'Gull Lake	1
'900.067000109342	BDR-18	F1M1	'10A	05.22.2019	243	285	86.24	06.06.2019	'Gull Lake	1
'900.067000109364	BDR-18	F1M1	'10A	05.22.2019	229	260	55.29	06.06.2019	'Gull Lake	1
'900.067000109380	BDR-18	F1M1	'10A	05.22.2019	230	270	53.97	06.06.2019	'Gull Lake	1
'900.067000110998	BDR-18	F1M1	'10A	05.22.2019	210	250	52.42	06.06.2019	'Gull Lake	1
'900.067000113597	BDR-18	F1M1	'10A	05.22.2019	254	296	85.26	06.06.2019	'Gull Lake	1
'900.067000113602	BDR-18	F1M1	'10A	05.22.2019	242	277	75.77	06.06.2019	'Gull Lake	1
'900.067000113605	BDR-18	F1M1	'10A	05.22.2019	220	261	61.02	06.06.2019	'Gull Lake	1
'900.067000113651	BDR-18	F1M1	'10A	05.22.2019	255	304	90.12	06.06.2019	'Gull Lake	1
'900.067000113674	BDR-18	F1M1	'10A	05.22.2019	240	285	76.91	06.06.2019	'Gull Lake	1
'900.067000113680	BDR-18	F1M1	'10A	05.22.2019	265	310	105.62	06.06.2019	'Gull Lake	1
'900.067000113682	BDR-18	F1M1	'10A	05.22.2019	215	251	57.80	06.06.2019	'Gull Lake	1
'900.067000113683	BDR-18	F1M1	'10A	05.22.2019	230	265	60.68	06.06.2019	'Gull Lake	1
'900.067000113685	BDR-18	F1M1	'10A	05.22.2019	250	289	74.32	06.06.2019	'Gull Lake	1
'900.067000113687	BDR-18	F1M1	'10A	05.22.2019	234	275	78.68	06.06.2019	'Gull Lake	1

'900.067000113688	BDR-18	F1M1	'10A	05.22.2019	230	269	69.01	06.06.2019	'Gull Lake	1
'900.067000113691	BDR-18	F1M1	'10A	05.22.2019	255	305	83.60	06.06.2019	'Gull Lake	1
'900.067000113692	BDR-18	F1M1	'10A	05.22.2019	235	270	63.17	06.06.2019	'Gull Lake	1
'900.067000113693	BDR-18	F1M1	'10A	05.22.2019	215	260	54.42	06.06.2019	'Gull Lake	1
'900.067000113695	BDR-18	F1M1	'10A	05.22.2019	220	260	55.55	06.06.2019	'Gull Lake	1
'900.067000113696	BDR-18	F1M1	'10A	05.22.2019	239	280	73.66	06.06.2019	'Gull Lake	1
'900.067000113702	BDR-18	F1M1	'10A	05.22.2019	225	265	59.18	06.06.2019	'Gull Lake	1
'900.067000113704	BDR-18	F1M1	'10A	05.22.2019	230	271	63.32	06.06.2019	'Gull Lake	1
'900.067000113706	BDR-18	F1M1	'10A	05.22.2019	245	285	80.44	06.06.2019	'Gull Lake	1
'900.067000113714	BDR-18	F1M1	'10A	05.22.2019	230	280	70.40	06.06.2019	'Gull Lake	1
'900.067000113715	BDR-18	F1M1	'10A	05.22.2019	230	275	67.99	06.06.2019	'Gull Lake	1
'900.067000113718	BDR-18	F1M1	'10A	05.22.2019	225	265	65.56	06.06.2019	'Gull Lake	1
'900.067000113719	BDR-18	F1M1	'10A	05.22.2019	234	289	75.26	06.06.2019	'Gull Lake	1
'900.067000113720	BDR-18	F1M1	'10A	05.22.2019	210	250	55.59	06.06.2019	'Gull Lake	1
'900.067000113721	BDR-18	F1M1	'10A	05.22.2019	205	244	48.73	06.06.2019	'Gull Lake	1
'900.067000113722	BDR-18	F1M1	'10A	05.22.2019	240	284	75.94	06.06.2019	'Gull Lake	1

'900.067000113723	BDR-18	F1M1	'10A	05.22.2019	230	270	61.95	06.06.2019	'Gull Lake	1
'900.067000113724	BDR-18	F1M1	'10A	05.22.2019	235	277	72.83	06.06.2019	'Gull Lake	1
'900.067000113728	BDR-18	F1M1	'10A	05.22.2019	220	255	59.09	06.06.2019	'Gull Lake	1
'900.067000113729	BDR-18	F1M1	'10A	05.22.2019	230	275	70.62	06.06.2019	'Gull Lake	1
'900.067000113732	BDR-18	F1M1	'10A	05.22.2019	230	270	68.65	06.06.2019	'Gull Lake	1
'900.067000113733	BDR-18	F1M1	'10A	05.22.2019	240	285	76.65	06.06.2019	'Gull Lake	1
'900.067000113736	BDR-18	F1M1	'10A	05.22.2019	210	260	56.93	06.06.2019	'Gull Lake	1
'900.067000113739	BDR-18	F1M1	'10A	05.22.2019	235	275	69.05	06.06.2019	'Gull Lake	1
'900.067000113740	BDR-18	F1M1	'10A	05.22.2019	229	265	65.39	06.06.2019	'Gull Lake	1
'900.067000113743	BDR-18	F1M1	'10A	05.22.2019	255	301	89.55	06.06.2019	'Gull Lake	1
'900.067000113748	BDR-18	F1M1	'10A	05.22.2019	185	206	34.91	06.06.2019	'Gull Lake	1
'900.067000113749	BDR-18	F1M1	'10A	05.22.2019	220	260	49.44	06.06.2019	'Gull Lake	1
'900.067000113750	BDR-18	F1M1	'10A	05.22.2019	225	270	72.54	06.06.2019	'Gull Lake	1
'900.067000113751	BDR-18	F1M1	'10A	05.22.2019	225	265	67.77	06.06.2019	'Gull Lake	1
'900.067000113752	BDR-18	F1M1	'10A	05.22.2019	245	285	77.65	06.06.2019	'Gull Lake	1
'900.067000113753	BDR-18	F1M1	'10A	05.22.2019	232	270	64.64	06.06.2019	'Gull Lake	1

'900.067000113758	BDR-18	F1M1	'10A	05.22.2019	225	260	59.83	06.06.2019	'Gull Lake	1
'900.067000113760	BDR-18	F1M1	'10A	05.22.2019	255	294	55.16	06.06.2019	'Gull Lake	1
'900.067000113761	BDR-18	F1M1	'10A	05.22.2019	215	253	53.55	06.06.2019	'Gull Lake	1
'900.067000113765	BDR-18	F1M1	'10A	05.22.2019	215	255	57.27	06.06.2019	'Gull Lake	1
'900.067000113767	BDR-18	F1M1	'10A	05.22.2019	210	250	48.68	06.06.2019	'Gull Lake	1
'900.067000113768	BDR-18	F1M1	'10A	05.22.2019	230	270	66.36	06.06.2019	'Gull Lake	1
'900.067000113769	BDR-18	F1M1	'10A	05.22.2019	209	244	46.93	06.06.2019	'Gull Lake	1
'900.067000113773	BDR-18	F1M1	'10A	05.22.2019	230	271	61.52	06.06.2019	'Gull Lake	1
'900.067000113776	BDR-18	F1M1	'10A	05.22.2019	210	245	50.52	06.06.2019	'Gull Lake	1
'900.067000113779	BDR-18	F1M1	'10A	05.22.2019	225	260	61.62	06.06.2019	'Gull Lake	1
'900.067000109281	BDR-18	MIX	'10B	05.22.2019	255	294	85.16	06.06.2019	'Gull Lake	1
'900.067000109305	BDR-18	MIX	'10B	05.22.2019	240	284	74.09	06.06.2019	'Gull Lake	1
'900.067000109324	BDR-18	MIX	'10B	05.22.2019	231	269	64.83	06.06.2019	'Gull Lake	1
'900.067000109334	BDR-18	MIX	'10B	05.22.2019	164	306	99.63	06.06.2019	'Gull Lake	1
'900.067000109337	BDR-18	MIX	'10B	05.22.2019	234	274	60.64	06.06.2019	'Gull Lake	1
'900.067000109341	BDR-18	MIX	'10B	05.22.2019	245	280	73.07	06.06.2019	'Gull Lake	1

'900.067000109345	BDR-18	MIX	'10B	05.22.2019	195	230	41.86	06.06.2019	'Gull Lake	1
'900.067000109362	BDR-18	MIX	'10B	05.22.2019	245	291	118.33	06.06.2019	'Gull Lake	1
'900.067000109369	BDR-18	MIX	'10B	05.22.2019	275	311	99.82	06.06.2019	'Gull Lake	1
'900.067000109374	BDR-18	MIX	'10B	05.22.2019	205	241	49.18	06.06.2019	'Gull Lake	1
'900.067000109379	BDR-18	MIX	'10B	05.22.2019	234	276	76.54	06.06.2019	'Gull Lake	1
'900.067000112881	BDR-18	MIX	'10B	05.22.2019	231	271	66.39	06.06.2019	'Gull Lake	1
'900.067000112882	BDR-18	MIX	'10B	05.22.2019	220	264	54.45	06.06.2019	'Gull Lake	1
'900.067000112883	BDR-18	MIX	'10B	05.22.2019	240	281	81.75	06.06.2019	'Gull Lake	1
'900.067000112884	BDR-18	MIX	'10B	05.22.2019	252	292	89.78	06.06.2019	'Gull Lake	1
'900.067000112885	BDR-18	MIX	'10B	05.22.2019	255	296	86.55	06.06.2019	'Gull Lake	1
'900.067000112886	BDR-18	MIX	'10B	05.22.2019	230	269	67.30	06.06.2019	'Gull Lake	1
'900.067000112890	BDR-18	MIX	'10B	05.22.2019	245	286	89.92	06.06.2019	'Gull Lake	1
'900.067000112891	BDR-18	MIX	'10B	05.22.2019	237	282	81.74	06.06.2019	'Gull Lake	1
'900.067000112896	BDR-18	MIX	'10B	05.22.2019	240	281	78.70	06.06.2019	'Gull Lake	1
'900.067000112898	BDR-18	MIX	'10B	05.22.2019	233	265	63.75	06.06.2019	'Gull Lake	1
'900.067000112900	BDR-18	MIX	'10B	05.22.2019	220	261	64.69	06.06.2019	'Gull Lake	1

'900.067000112901	BDR-18	MIX	'10B	05.22.2019	215	255	56.21	06.06.2019	'Gull Lake	1
'900.067000112904	BDR-18	MIX	'10B	05.22.2019	225	260	56.87	06.06.2019	'Gull Lake	1
'900.067000112906	BDR-18	MIX	'10B	05.22.2019	210	250	51.33	06.06.2019	'Gull Lake	1
'900.067000112908	BDR-18	MIX	'10B	05.22.2019	245	291	79.76	06.06.2019	'Gull Lake	1
'900.067000112912	BDR-18	MIX	'10B	05.22.2019	255	291	85.91	06.06.2019	'Gull Lake	1
'900.067000112913	BDR-18	MIX	'10B	05.22.2019	230	271	66.77	06.06.2019	'Gull Lake	1
'900.067000112914	BDR-18	MIX	'10B	05.22.2019	245	291	93.65	06.06.2019	'Gull Lake	1
'900.067000112916	BDR-18	MIX	'10B	05.22.2019	232	275	68.59	06.06.2019	'Gull Lake	1
'900.067000112917	BDR-18	MIX	'10B	05.22.2019	260	303	95.13	06.06.2019	'Gull Lake	1
'900.067000112919	BDR-18	MIX	'10B	05.22.2019	220	260	61.44	06.06.2019	'Gull Lake	1
'900.067000112923	BDR-18	MIX	'10B	05.22.2019	255	291	95.51	06.06.2019	'Gull Lake	1
'900.067000112924	BDR-18	MIX	'10B	05.22.2019	260	304	90.85	06.06.2019	'Gull Lake	1
'900.067000112928	BDR-18	MIX	'10B	05.22.2019	281	312	111.45	06.06.2019	'Gull Lake	1
'900.067000112929	BDR-18	MIX	'10B	05.22.2019	235	271	61.90	06.06.2019	'Gull Lake	1
'900.067000112930	BDR-18	MIX	'10B	05.22.2019	265	305	97.54	06.06.2019	'Gull Lake	1
'900.067000112931	BDR-18	MIX	'10B	05.22.2019	225	270	64.55	06.06.2019	'Gull Lake	1

'900.067000112934	BDR-18	MIX	'10B	05.22.2019	255	304	98.45	06.06.2019	'Gull Lake	1
'900.067000112935	BDR-18	MIX	'10B	05.22.2019	244	292	90.83	06.06.2019	'Gull Lake	1
'900.067000112936	BDR-18	MIX	'10B	05.22.2019	225	266	64.78	06.06.2019	'Gull Lake	1
'900.067000112939	BDR-18	MIX	'10B	05.22.2019	227	266	62.64	06.06.2019	'Gull Lake	1
'900.067000112941	BDR-18	MIX	'10B	05.22.2019	210	246	35.53	06.06.2019	'Gull Lake	1
'900.067000112943	BDR-18	MIX	'10B	05.22.2019	256	295	94.77	06.06.2019	'Gull Lake	1
'900.067000112944	BDR-18	MIX	'10B	05.22.2019	256	304	55.74	06.06.2019	'Gull Lake	1
'900.067000112946	BDR-18	MIX	'10B	05.22.2019	225	262	58.47	06.06.2019	'Gull Lake	1
'900.067000112948	BDR-18	MIX	'10B	05.22.2019	231	272	66.20	06.06.2019	'Gull Lake	1
'900.067000112949	BDR-18	MIX	'10B	05.22.2019	266	310	116.55	06.06.2019	'Gull Lake	1
'900.067000112953	BDR-18	MIX	'10B	05.22.2019	225	262	69.25	06.06.2019	'Gull Lake	1
'900.067000112954	BDR-18	MIX	'10B	05.22.2019	230	270	70.82	06.06.2019	'Gull Lake	1
'900.067000112959	BDR-18	MIX	'10B	05.22.2019	234	271	67.74	06.06.2019	'Gull Lake	1
'900.067000112964	BDR-18	MIX	'10B	05.22.2019	245	290	90.46	06.06.2019	'Gull Lake	1
'900.067000112965	BDR-18	MIX	'10B	05.22.2019	255	301	98.79	06.06.2019	'Gull Lake	1
'900.067000112967	BDR-18	MIX	'10B	05.22.2019	225	265	56.87	06.06.2019	'Gull Lake	1

'900.067000112968	BDR-18	MIX	'10B	05.22.2019	230	281	77.66	06.06.2019	'Gull Lake	1
'900.067000112970	BDR-18	MIX	'10B	05.22.2019	250	295	95.50	06.06.2019	'Gull Lake	1
'900.067000112971	BDR-18	MIX	'10B	05.22.2019	245	285	79.27	06.06.2019	'Gull Lake	1
'900.067000112972	BDR-18	MIX	'10B	05.22.2019	244	283	79.59	06.06.2019	'Gull Lake	1
'900.067000112973	BDR-18	MIX	'10B	05.22.2019	220	255	59.27	06.06.2019	'Gull Lake	1
'900.067000112975	BDR-18	MIX	'10B	05.22.2019	235	275	74.32	06.06.2019	'Gull Lake	1
'900.067000112976	BDR-18	MIX	'10B	05.22.2019	211	245	49.44	06.06.2019	'Gull Lake	1
'900.067000112978	BDR-18	MIX	'10B	05.22.2019	229	266	64.21	06.06.2019	'Gull Lake	1
'900.067000108583	BDR-18	F1M2	'11B	05.24.2019	254	289	76.07	06.06.2019	'Gull Lake	1
'900.067000108584	BDR-18	F1M2	'11B	05.24.2019	236	272	72.85	06.06.2019	'Gull Lake	1
'900.067000108585	BDR-18	F1M2	'11B	05.24.2019	235	273	64.21	06.06.2019	'Gull Lake	1
'900.067000108586	BDR-18	F1M2	'11B	05.24.2019	226	272	71.52	06.06.2019	'Gull Lake	1
'900.067000108589	BDR-18	F1M2	'11B	05.24.2019	244	292	79.96	06.06.2019	'Gull Lake	1
'900.067000108592	BDR-18	F1M2	'11B	05.24.2019	224	263	57.37	06.06.2019	'Gull Lake	1
'900.067000108595	BDR-18	F1M2	'11B	05.24.2019	260	301	105.88	06.06.2019	'Gull Lake	1
'900.067000108597	BDR-18	F1M2	'11B	05.24.2019	242	285	80.31	06.06.2019	'Gull Lake	1

'900.067000108598	BDR-18	F1M2	'11B	05.24.2019	224	268	60.45	06.06.2019	'Gull Lake	1
'900.067000108599	BDR-18	F1M2	'11B	05.24.2019	213	246	53.85	06.06.2019	'Gull Lake	1
'900.067000108600	BDR-18	F1M2	'11B	05.24.2019	221	262	63.52	06.06.2019	'Gull Lake	1
'900.067000108601	BDR-18	F1M2	'11B	05.24.2019	254	297	91.36	06.06.2019	'Gull Lake	1
'900.067000108603	BDR-18	F1M2	'11B	05.24.2019	225	265	67.22	06.06.2019	'Gull Lake	1
'900.067000108604	BDR-18	F1M2	'11B	05.24.2019	222	257	61.11	06.06.2019	'Gull Lake	1
'900.067000108608	BDR-18	F1M2	'11B	05.24.2019	209	244	51.00	06.06.2019	'Gull Lake	1
'900.067000108610	BDR-18	F1M2	'11B	05.24.2019	208	242	50.15	06.06.2019	'Gull Lake	1
'900.067000108611	BDR-18	F1M2	'11B	05.24.2019	244	289	83.69	06.06.2019	'Gull Lake	1
'900.067000108614	BDR-18	F1M2	'11B	05.24.2019	209	244	47.64	06.06.2019	'Gull Lake	1
'900.067000108615	BDR-18	F1M2	'11B	05.24.2019	242	282	70.24	06.06.2019	'Gull Lake	1
'900.067000108616	BDR-18	F1M2	'11B	05.24.2019	248	288	79.38	06.06.2019	'Gull Lake	1
'900.067000108617	BDR-18	F1M2	'11B	05.24.2019	217	254	52.05	06.06.2019	'Gull Lake	1
'900.067000108619	BDR-18	F1M2	'11B	05.24.2019	251	294	98.23	06.06.2019	'Gull Lake	1
'900.067000108622	BDR-18	F1M2	'11B	05.24.2019	236	272	74.01	06.06.2019	'Gull Lake	1
'900.067000108624	BDR-18	F1M2	'11B	05.24.2019	245	284	79.84	06.06.2019	'Gull Lake	1

'900.067000108628	BDR-18	F1M2	'11B	05.24.2019	203	233	40.74	06.06.2019	'Gull Lake	1
'900.067000108632	BDR-18	F1M2	'11B	05.24.2019	224	258	55.53	06.06.2019	'Gull Lake	1
'900.067000108633	BDR-18	F1M2	'11B	05.24.2019	236	271	56.99	06.06.2019	'Gull Lake	1
'900.067000108635	BDR-18	F1M2	'11B	05.24.2019	245	288	77.67	06.06.2019	'Gull Lake	1
'900.067000108636	BDR-18	F1M2	'11B	05.24.2019	255	296	96.21	06.06.2019	'Gull Lake	1
'900.067000108638	BDR-18	F1M2	'11B	05.24.2019	246	292	77.79	06.06.2019	'Gull Lake	1
'900.067000108643	BDR-18	F1M2	'11B	05.24.2019	252	289	80.25	06.06.2019	'Gull Lake	1
'900.067000108644	BDR-18	F1M2	'11B	05.24.2019	211	245	53.32	06.06.2019	'Gull Lake	1
'900.067000108645	BDR-18	F1M2	'11B	05.24.2019	222	259	63.49	06.06.2019	'Gull Lake	1
'900.067000108649	BDR-18	F1M2	'11B	05.24.2019	218	254	57.80	06.06.2019	'Gull Lake	1
'900.067000108656	BDR-18	F1M2	'11B	05.24.2019	228	269	66.04	06.06.2019	'Gull Lake	1
'900.067000108657	BDR-18	F1M2	'11B	05.24.2019	238	273	70.41	06.06.2019	'Gull Lake	1
'900.067000108662	BDR-18	F1M2	'11B	05.24.2019	234	273	72.58	06.06.2019	'Gull Lake	1
'900.067000108664	BDR-18	F1M2	'11B	05.24.2019	215	246	52.73	06.06.2019	'Gull Lake	1
'900.067000108668	BDR-18	F1M2	'11B	05.24.2019	252	293	85.19	06.06.2019	'Gull Lake	1
'900.067000108671	BDR-18	F1M2	'11B	05.24.2019	225	260	53.47	06.06.2019	'Gull Lake	1

'900.067000108673	BDR-18	F1M2	'11B	05.24.2019	227	258	63.64	06.06.2019	'Gull Lake	1
'900.067000108678	BDR-18	F1M2	'11B	05.24.2019	258	304	104.01	06.06.2019	'Gull Lake	1
'900.067000109585	BDR-18	F1M2	'11B	05.24.2019	229	275	58.31	06.06.2019	'Gull Lake	1
'900.067000109590	BDR-18	F1M2	'11B	05.24.2019	220	258	52.53	06.06.2019	'Gull Lake	1
'900.067000109591	BDR-18	F1M2	'11B	05.24.2019	225	254	55.67	06.06.2019	'Gull Lake	1
'900.067000109595	BDR-18	F1M2	'11B	05.24.2019	202	232	43.68	06.06.2019	'Gull Lake	1
'900.067000109599	BDR-18	F1M2	'11B	05.24.2019	199	231	43.55	06.06.2019	'Gull Lake	1
'900.067000109609	BDR-18	F1M2	'11B	05.24.2019	203	232	46.53	06.06.2019	'Gull Lake	1
'900.067000109613	BDR-18	F1M2	'11B	05.24.2019	240	274	68.05	06.06.2019	'Gull Lake	1
'900.067000109615	BDR-18	F1M2	'11B	05.24.2019	232	273	63.23	06.06.2019	'Gull Lake	1
'900.067000109619	BDR-18	F1M2	'11B	05.24.2019	240	277	71.97	06.06.2019	'Gull Lake	1
'900.067000109623	BDR-18	F1M2	'11B	05.24.2019	231	272	66.54	06.06.2019	'Gull Lake	1
'900.067000109646	BDR-18	F1M2	'11B	05.24.2019	224	264	63.85	06.06.2019	'Gull Lake	1
'900.067000109653	BDR-18	F1M2	'11B	05.24.2019	201	235	41.50	06.06.2019	'Gull Lake	1
'900.067000109668	BDR-18	F1M2	'11B	05.24.2019	219	260	58.83	06.06.2019	'Gull Lake	1
'900.067000109670	BDR-18	F1M2	'11B	05.24.2019	201	233	44.65	06.06.2019	'Gull Lake	1

'900.067000112984	BDR-18	F1M2	'11B	05.24.2019	212	240	45.72	06.06.2019	'Gull Lake	1
'900.067000112990	BDR-18	F1M2	'11B	05.24.2019	243	287	78.15	06.06.2019	'Gull Lake	1
'900.067000112996	BDR-18	F1M2	'11B	05.24.2019	246	287	87.51	06.06.2019	'Gull Lake	1
'900.067000112999	BDR-18	F1M2	'11B	05.24.2019	224	260	59.60	06.06.2019	'Gull Lake	1
'900.067000113003	BDR-18	F1M2	'11B	05.24.2019	220	257	61.45	06.06.2019	'Gull Lake	1
'900.067000113009	BDR-18	F1M2	'11B	05.24.2019	260	309	93.90	06.06.2019	'Gull Lake	1
'900.067000113020	BDR-18	F1M2	'11B	05.24.2019	231	274	67.65	06.06.2019	'Gull Lake	1
'900.067000113062	BDR-18	F1M2	'11B	05.24.2019	234	267	63.36	06.06.2019	'Gull Lake	1
'900.067000113068	BDR-18	F1M2	'11B	05.24.2019	205	238	47.18	06.06.2019	'Gull Lake	1
'900.067000113071	BDR-18	F1M2	'11B	05.24.2019	215	254	51.26	06.06.2019	'Gull Lake	1
'900.067000113433	BDR-18	F1M2	'11B	05.24.2019	235	279	65.42	06.06.2019	'Gull Lake	1
'900.067000109285	BDR-18	MIX	'10B	05.22.2019	231	271	69.95	06.06.2019	'Gull Lake	2
'900.067000109294	BDR-18	MIX	'10B	05.22.2019	192	226	38.90	06.06.2019	'Gull Lake	2
'900.067000109295	BDR-18	MIX	'10B	05.22.2019	255	302	101.15	06.06.2019	'Gull Lake	2
'900.067000109306	BDR-18	MIX	'10B	05.22.2019	204	244	44.51	06.06.2019	'Gull Lake	2
'900.067000109317	BDR-18	MIX	'10B	05.22.2019	220	261	57.87	06.06.2019	'Gull Lake	2

'900.067000109320	BDR-18	MIX	'10B	05.22.2019	230	275	n/a	06.06.2019	'Gull Lake	2
'900.067000109331	BDR-18	MIX	'10B	05.22.2019	245	291	83.00	06.06.2019	'Gull Lake	2
'900.067000109343	BDR-18	MIX	'10B	05.22.2019	199	234	39.84	06.06.2019	'Gull Lake	2
'900.067000109356	BDR-18	MIX	'10B	05.22.2019	245	284	81.64	06.06.2019	'Gull Lake	2
'900.067000109360	BDR-18	MIX	'10B	05.22.2019	245	288	73.25	06.06.2019	'Gull Lake	2
'900.067000109368	BDR-18	MIX	'10B	05.22.2019	237	275	65.97	06.06.2019	'Gull Lake	2
'900.067000109371	BDR-18	MIX	'10B	05.22.2019	265	305	104.34	06.06.2019	'Gull Lake	2
'900.067000109375	BDR-18	MIX	'10B	05.22.2019	240	282	74.94	06.06.2019	'Gull Lake	2
'900.067000109378	BDR-18	MIX	'10B	05.22.2019	235	275	64.37	06.06.2019	'Gull Lake	2
'900.067000112887	BDR-18	MIX	'10B	05.22.2019	210	251	48.71	06.06.2019	'Gull Lake	2
'900.067000112888	BDR-18	MIX	'10B	05.22.2019	239	277	72.54	06.06.2019	'Gull Lake	2
'900.067000112889	BDR-18	MIX	'10B	05.22.2019	235	275	65.72	06.06.2019	'Gull Lake	2
'900.067000112892	BDR-18	MIX	'10B	05.22.2019	220	255	62.97	06.06.2019	'Gull Lake	2
'900.067000112893	BDR-18	MIX	'10B	05.22.2019	244	282	76.22	06.06.2019	'Gull Lake	2
'900.067000112894	BDR-18	MIX	'10B	05.22.2019	240	281	79.61	06.06.2019	'Gull Lake	2
'900.067000112895	BDR-18	MIX	'10B	05.22.2019	250	286	77.86	06.06.2019	'Gull Lake	2

'900.067000112897	BDR-18	MIX	'10B	05.22.2019	246	287	74.17	06.06.2019	'Gull Lake	2
'900.067000112899	BDR-18	MIX	'10B	05.22.2019	212	244	44.65	06.06.2019	'Gull Lake	2
'900.067000112902	BDR-18	MIX	'10B	05.22.2019	231	266	52.89	06.06.2019	'Gull Lake	2
'900.067000112903	BDR-18	MIX	'10B	05.22.2019	239	281	76.27	06.06.2019	'Gull Lake	2
'900.067000112905	BDR-18	MIX	'10B	05.22.2019	244	282	74.66	06.06.2019	'Gull Lake	2
'900.067000112907	BDR-18	MIX	'10B	05.22.2019	275	323	110.07	06.06.2019	'Gull Lake	2
'900.067000112909	BDR-18	MIX	'10B	05.22.2019	215	250	50.07	06.06.2019	'Gull Lake	2
'900.067000112910	BDR-18	MIX	'10B	05.22.2019	256	291	80.75	06.06.2019	'Gull Lake	2
'900.067000112911	BDR-18	MIX	'10B	05.22.2019	260	301	96.27	06.06.2019	'Gull Lake	2
'900.067000112915	BDR-18	MIX	'10B	05.22.2019	246	291	84.55	06.06.2019	'Gull Lake	2
'900.067000112918	BDR-18	MIX	'10B	05.22.2019	240	285	79.85	06.06.2019	'Gull Lake	2
'900.067000112920	BDR-18	MIX	'10B	05.22.2019	260	304	108.52	06.06.2019	'Gull Lake	2
'900.067000112921	BDR-18	MIX	'10B	05.22.2019	250	290	82.46	06.06.2019	'Gull Lake	2
'900.067000112922	BDR-18	MIX	'10B	05.22.2019	230	272	67.53	06.06.2019	'Gull Lake	2
'900.067000112925	BDR-18	MIX	'10B	05.22.2019	236	275	67.05	06.06.2019	'Gull Lake	2
'900.067000112926	BDR-18	MIX	'10B	05.22.2019	255	300	87.46	06.06.2019	'Gull Lake	2

'900.067000112927	BDR-18	MIX	'10B	05.22.2019	261	308	95.45	06.06.2019	'Gull Lake	2
'900.067000112932	BDR-18	MIX	'10B	05.22.2019	255	299	95.38	06.06.2019	'Gull Lake	2
'900.067000112933	BDR-18	MIX	'10B	05.22.2019	245	280	77.33	06.06.2019	'Gull Lake	2
'900.067000112937	BDR-18	MIX	'10B	05.22.2019	245	286	79.90	06.06.2019	'Gull Lake	2
'900.067000112938	BDR-18	MIX	'10B	05.22.2019	240	283	74.08	06.06.2019	'Gull Lake	2
'900.067000112940	BDR-18	MIX	'10B	05.22.2019	249	292	86.76	06.06.2019	'Gull Lake	2
'900.067000112942	BDR-18	MIX	'10B	05.22.2019	215	255	53.82	06.06.2019	'Gull Lake	2
'900.067000112945	BDR-18	MIX	'10B	05.22.2019	240	279	79.60	06.06.2019	'Gull Lake	2
'900.067000112947	BDR-18	MIX	'10B	05.22.2019	210	255	57.42	06.06.2019	'Gull Lake	2
'900.067000112950	BDR-18	MIX	'10B	05.22.2019	244	292	82.52	06.06.2019	'Gull Lake	2
'900.067000112951	BDR-18	MIX	'10B	05.22.2019	295	335	146.65	06.06.2019	'Gull Lake	2
'900.067000112952	BDR-18	MIX	'10B	05.22.2019	263	306	96.54	06.06.2019	'Gull Lake	2
'900.067000112955	BDR-18	MIX	'10B	05.22.2019	250	290	94.81	06.06.2019	'Gull Lake	2
'900.067000112956	BDR-18	MIX	'10B	05.22.2019	236	281	79.87	06.06.2019	'Gull Lake	2
'900.067000112957	BDR-18	MIX	'10B	05.22.2019	270	309	99.35	06.06.2019	'Gull Lake	2
'900.067000112958	BDR-18	MIX	'10B	05.22.2019	215	255	54.09	06.06.2019	'Gull Lake	2

'900.067000112961	BDR-18	MIX	'10B	05.22.2019	245	285	74.95	06.06.2019	'Gull Lake	2
'900.067000112962	BDR-18	MIX	'10B	05.22.2019	265	306	114.07	06.06.2019	'Gull Lake	2
'900.067000112963	BDR-18	MIX	'10B	05.22.2019	224	257	58.95	06.06.2019	'Gull Lake	2
'900.067000112966	BDR-18	MIX	'10B	05.22.2019	210	250	49.54	06.06.2019	'Gull Lake	2
'900.067000112969	BDR-18	MIX	'10B	05.22.2019	205	240	47.25	06.06.2019	'Gull Lake	2
'900.067000112974	BDR-18	MIX	'10B	05.22.2019	260	307	102.45	06.06.2019	'Gull Lake	2
'900.067000112977	BDR-18	MIX	'10B	05.22.2019	205	240	45.87	06.06.2019	'Gull Lake	2
'900.067000112979	BDR-18	MIX	'10B	05.22.2019	230	275	71.26	06.06.2019	'Gull Lake	2
'900.067000112980	BDR-18	MIX	'10B	05.22.2019	241	289	75.29	06.06.2019	'Gull Lake	2
'900.067000108605	BDR-18	F1M3	'11A	05.23.2019	235	285	77.26	06.06.2019	'Gull Lake	2
'900.067000108629	BDR-18	F1M3	'11A	05.23.2019	214	256	55.70	06.06.2019	'Gull Lake	2
'900.067000108650	BDR-18	F1M3	'11A	05.23.2019	210	243	51.15	06.06.2019	'Gull Lake	2
'900.067000109282	BDR-18	F1M3	'11A	05.23.2019	215	256	60.36	06.06.2019	'Gull Lake	2
'900.067000109288	BDR-18	F1M3	'11A	05.23.2019	225	261	61.03	06.06.2019	'Gull Lake	2
'900.067000109291	BDR-18	F1M3	'11A	05.23.2019	210	251	58.02	06.06.2019	'Gull Lake	2
'900.067000109292	BDR-18	F1M3	'11A	05.23.2019	218	259	54.68	06.06.2019	'Gull Lake	2

'900.067000109297	BDR-18	F1M3	'11A	05.23.2019	246	290	94.00	06.06.2019	'Gull Lake	2
'900.067000109300	BDR-18	F1M3	'11A	05.23.2019	240	287	83.90	06.06.2019	'Gull Lake	2
'900.067000109301	BDR-18	F1M3	'11A	05.23.2019	212	252	51.28	06.06.2019	'Gull Lake	2
'900.067000109303	BDR-18	F1M3	'11A	05.23.2019	235	279	75.04	06.06.2019	'Gull Lake	2
'900.067000109309	BDR-18	F1M3	'11A	05.23.2019	228	274	70.30	06.06.2019	'Gull Lake	2
'900.067000109318	BDR-18	F1M3	'11A	05.23.2019	224	265	62.52	06.06.2019	'Gull Lake	2
'900.067000109319	BDR-18	F1M3	'11A	05.23.2019	243	290	88.09	06.06.2019	'Gull Lake	2
'900.067000109321	BDR-18	F1M3	'11A	05.23.2019	211	252	52.94	06.06.2019	'Gull Lake	2
'900.067000109328	BDR-18	F1M3	'11A	05.23.2019	250	293	86.55	06.06.2019	'Gull Lake	2
'900.067000109329	BDR-18	F1M3	'11A	05.23.2019	208	246	49.10	06.06.2019	'Gull Lake	2
'900.067000109335	BDR-18	F1M3	'11A	05.23.2019	239	283	69.79	06.06.2019	'Gull Lake	2
'900.067000109338	BDR-18	F1M3	'11A	05.23.2019	230	267	68.72	06.06.2019	'Gull Lake	2
'900.067000109339	BDR-18	F1M3	'11A	05.23.2019	209	246	50.54	06.06.2019	'Gull Lake	2
'900.067000109346	BDR-18	F1M3	'11A	05.23.2019	208	244	53.87	06.06.2019	'Gull Lake	2
'900.067000109347	BDR-18	F1M3	'11A	05.23.2019	285	340	133.52	06.06.2019	'Gull Lake	2
'900.067000109348	BDR-18	F1M3	'11A	05.23.2019	236	277	73.02	06.06.2019	'Gull Lake	2

'900.067000109350	BDR-18	F1M3	'11A	05.23.2019	234	280	79.30	06.06.2019	'Gull Lake	2
'900.067000109353	BDR-18	F1M3	'11A	05.23.2019	235	280	79.58	06.06.2019	'Gull Lake	2
'900.067000109357	BDR-18	F1M3	'11A	05.23.2019	230	271	76.95	06.06.2019	'Gull Lake	2
'900.067000109358	BDR-18	F1M3	'11A	05.23.2019	220	266	61.45	06.06.2019	'Gull Lake	2
'900.067000109363	BDR-18	F1M3	'11A	05.23.2019	242	282	75.09	06.06.2019	'Gull Lake	2
'900.067000109367	BDR-18	F1M3	'11A	05.23.2019	236	273	67.92	06.06.2019	'Gull Lake	2
'900.067000109377	BDR-18	F1M3	'11A	05.23.2019	233	273	68.18	06.06.2019	'Gull Lake	2
'900.067000112982	BDR-18	F1M3	'11A	05.23.2019	209	249	48.03	06.06.2019	'Gull Lake	2
'900.067000112992	BDR-18	F1M3	'11A	05.23.2019	195	225	41.42	06.06.2019	'Gull Lake	2
'900.067000112993	BDR-18	F1M3	'11A	05.23.2019	204	245	49.16	06.06.2019	'Gull Lake	2
'900.067000112994	BDR-18	F1M3	'11A	05.23.2019	245	291	90.49	06.06.2019	'Gull Lake	2
'900.067000112995	BDR-18	F1M3	'11A	05.23.2019	233	279	64.33	06.06.2019	'Gull Lake	2
'900.067000112998	BDR-18	F1M3	'11A	05.23.2019	209	256	54.51	06.06.2019	'Gull Lake	2
'900.067000113002	BDR-18	F1M3	'11A	05.23.2019	230	269	58.25	06.06.2019	'Gull Lake	2
'900.067000113007	BDR-18	F1M3	'11A	05.23.2019	210	250	50.63	06.06.2019	'Gull Lake	2
'900.067000113008	BDR-18	F1M3	'11A	05.23.2019	215	254	56.16	06.06.2019	'Gull Lake	2

'900.067000113011	BDR-18	F1M3	'11A	05.23.2019	225	268	63.87	06.06.2019	'Gull Lake	2
'900.067000113012	BDR-18	F1M3	'11A	05.23.2019	217	260	51.33	06.06.2019	'Gull Lake	2
'900.067000113014	BDR-18	F1M3	'11A	05.23.2019	225	265	61.03	06.06.2019	'Gull Lake	2
'900.067000113015	BDR-18	F1M3	'11A	05.23.2019	210	246	53.64	06.06.2019	'Gull Lake	2
'900.067000113016	BDR-18	F1M3	'11A	05.23.2019	220	260	58.70	06.06.2019	'Gull Lake	2
'900.067000113017	BDR-18	F1M3	'11A	05.23.2019	210	254	51.32	06.06.2019	'Gull Lake	2
'900.067000113019	BDR-18	F1M3	'11A	05.23.2019	212	253	54.74	06.06.2019	'Gull Lake	2
'900.067000113026	BDR-18	F1M3	'11A	05.23.2019	187	218	35.77	06.06.2019	'Gull Lake	2
'900.067000113028	BDR-18	F1M3	'11A	05.23.2019	240	285	74.99	06.06.2019	'Gull Lake	2
'900.067000113034	BDR-18	F1M3	'11A	05.23.2019	225	263	59.39	06.06.2019	'Gull Lake	2
'900.067000113036	BDR-18	F1M3	'11A	05.23.2019	245	285	78.81	06.06.2019	'Gull Lake	2
'900.067000113037	BDR-18	F1M3	'11A	05.23.2019	195	229	43.79	06.06.2019	'Gull Lake	2
'900.067000113038	BDR-18	F1M3	'11A	05.23.2019	250	298	90.94	06.06.2019	'Gull Lake	2
'900.067000113039	BDR-18	F1M3	'11A	05.23.2019	210	257	54.77	06.06.2019	'Gull Lake	2
'900.067000113041	BDR-18	F1M3	'11A	05.23.2019	247	291	76.22	06.06.2019	'Gull Lake	2
'900.067000113044	BDR-18	F1M3	'11A	05.23.2019	204	246	50.15	06.06.2019	'Gull Lake	2

'900.067000113048	BDR-18	F1M3	'11A	05.23.2019	225	265	63.00	06.06.2019	'Gull Lake	2
'900.067000113049	BDR-18	F1M3	'11A	05.23.2019	212	255	52.48	06.06.2019	'Gull Lake	2
'900.067000113052	BDR-18	F1M3	'11A	05.23.2019	208	242	50.45	06.06.2019	'Gull Lake	2
'900.067000113055	BDR-18	F1M3	'11A	05.23.2019	209	247	54.46	06.06.2019	'Gull Lake	2
'900.067000113056	BDR-18	F1M3	'11A	05.23.2019	215	258	51.44	06.06.2019	'Gull Lake	2
'900.067000113057	BDR-18	F1M3	'11A	05.23.2019	228	268	69.39	06.06.2019	'Gull Lake	2
'900.067000113058	BDR-18	F1M3	'11A	05.23.2019	228	271	68.44	06.06.2019	'Gull Lake	2
'900.067000113059	BDR-18	F1M3	'11A	05.23.2019	222	267	62.70	06.06.2019	'Gull Lake	2
'900.067000113061	BDR-18	F1M3	'11A	05.23.2019	234	281	69.75	06.06.2019	'Gull Lake	2
'900.067000113064	BDR-18	F1M3	'11A	05.23.2019	198	239	41.51	06.06.2019	'Gull Lake	2
'900.067000113065	BDR-18	F1M3	'11A	05.23.2019	250	297	88.31	06.06.2019	'Gull Lake	2
'900.067000113066	BDR-18	F1M3	'11A	05.23.2019	206	244	50.40	06.06.2019	'Gull Lake	2
'900.067000113072	BDR-18	F1M3	'11A	05.23.2019	222	262	61.87	06.06.2019	'Gull Lake	2
'900.067000113073	BDR-18	F1M3	'11A	05.23.2019	248	299	90.86	06.06.2019	'Gull Lake	2
'900.067000113075	BDR-18	F1M3	'11A	05.23.2019	222	264	59.93	06.06.2019	'Gull Lake	2
'900.067000109583	BDR-18	F1M4	'12A	05.30.2019	235	270	65.75	06.06.2019	'Gull Lake	2

'900.067000109589	BDR-18	F1M4	'12A	05.30.2019	240	281	72.12	06.06.2019	'Gull Lake	2
'900.067000109593	BDR-18	F1M4	'12A	05.30.2019	232	270	66.92	06.06.2019	'Gull Lake	2
'900.067000109594	BDR-18	F1M4	'12A	05.30.2019	239	276	70.20	06.06.2019	'Gull Lake	2
'900.067000109596	BDR-18	F1M4	'12A	05.30.2019	220	259	51.34	06.06.2019	'Gull Lake	2
'900.067000109607	BDR-18	F1M4	'12A	05.30.2019	277	315	128.10	06.06.2019	'Gull Lake	2
'900.067000109608	BDR-18	F1M4	'12A	05.30.2019	230	269	61.78	06.06.2019	'Gull Lake	2
'900.067000109627	BDR-18	F1M4	'12A	05.30.2019	247	285	80.31	06.06.2019	'Gull Lake	2
'900.067000109629	BDR-18	F1M4	'12A	05.30.2019	250	295	80.91	06.06.2019	'Gull Lake	2
'900.067000109630	BDR-18	F1M4	'12A	05.30.2019	220	261	60.36	06.06.2019	'Gull Lake	2
'900.067000109631	BDR-18	F1M4	'12A	05.30.2019	190	225	41.07	06.06.2019	'Gull Lake	2
'900.067000109640	BDR-18	F1M4	'12A	05.30.2019	199	231	42.15	06.06.2019	'Gull Lake	2
'900.067000109644	BDR-18	F1M4	'12A	05.30.2019	224	258	61.47	06.06.2019	'Gull Lake	2
'900.067000109647	BDR-18	F1M4	'12A	05.30.2019	215	255	60.21	06.06.2019	'Gull Lake	2
'900.067000109649	BDR-18	F1M4	'12A	05.30.2019	226	271	65.74	06.06.2019	'Gull Lake	2
'900.067000109654	BDR-18	F1M4	'12A	05.30.2019	225	264	62.80	06.06.2019	'Gull Lake	2
'900.067000109655	BDR-18	F1M4	'12A	05.30.2019	249	287	87.59	06.06.2019	'Gull Lake	2

'900.067000109660	BDR-18	F1M4	'12A	05.30.2019	231	270	69.43	06.06.2019	'Gull Lake	2
'900.067000109661	BDR-18	F1M4	'12A	05.30.2019	245	285	79.10	06.06.2019	'Gull Lake	2
'900.067000109662	BDR-18	F1M4	'12A	05.30.2019	245	288	75.74	06.06.2019	'Gull Lake	2
'900.067000109663	BDR-18	F1M4	'12A	05.30.2019	220	258	62.88	06.06.2019	'Gull Lake	2
'900.067000109665	BDR-18	F1M4	'12A	05.30.2019	235	274	71.33	06.06.2019	'Gull Lake	2
'900.067000109666	BDR-18	F1M4	'12A	05.30.2019	212	245	51.40	06.06.2019	'Gull Lake	2
'900.067000109672	BDR-18	F1M4	'12A	05.30.2019	229	267	67.16	06.06.2019	'Gull Lake	2
'900.067000109675	BDR-18	F1M4	'12A	05.30.2019	205	240	47.49	06.06.2019	'Gull Lake	2
'900.067000113050	BDR-18	F1M4	'12A	05.30.2019	215	245	43.71	06.06.2019	'Gull Lake	2
'900.067000113182	BDR-18	F1M4	'12A	05.30.2019	227	271	64.70	06.06.2019	'Gull Lake	2
'900.067000113184	BDR-18	F1M4	'12A	05.30.2019	238	275	65.76	06.06.2019	'Gull Lake	2
'900.067000113186	BDR-18	F1M4	'12A	05.30.2019	220	255	54.80	06.06.2019	'Gull Lake	2
'900.067000113187	BDR-18	F1M4	'12A	05.30.2019	220	259	54.44	06.06.2019	'Gull Lake	2
'900.067000113188	BDR-18	F1M4	'12A	05.30.2019	215	252	52.13	06.06.2019	'Gull Lake	2
'900.067000113191	BDR-18	F1M4	'12A	05.30.2019	210	245	51.15	06.06.2019	'Gull Lake	2
'900.067000113195	BDR-18	F1M4	'12A	05.30.2019	208	249	49.95	06.06.2019	'Gull Lake	2

'900.067000113197	BDR-18	F1M4	'12A	05.30.2019	230	270	62.59	06.06.2019	'Gull Lake	2
'900.067000113198	BDR-18	F1M4	'12A	05.30.2019	225	265	62.68	06.06.2019	'Gull Lake	2
'900.067000113199	BDR-18	F1M4	'12A	05.30.2019	250	287	84.67	06.06.2019	'Gull Lake	2
'900.067000113202	BDR-18	F1M4	'12A	05.30.2019	215	255	51.72	06.06.2019	'Gull Lake	2
'900.067000113205	BDR-18	F1M4	'12A	05.30.2019	198	236	43.99	06.06.2019	'Gull Lake	2
'900.067000113206	BDR-18	F1M4	'12A	05.30.2019	240	280	72.09	06.06.2019	'Gull Lake	2
'900.067000113207	BDR-18	F1M4	'12A	05.30.2019	235	277	66.34	06.06.2019	'Gull Lake	2
'900.067000113209	BDR-18	F1M4	'12A	05.30.2019	244	283	76.24	06.06.2019	'Gull Lake	2
'900.067000113216	BDR-18	F1M4	'12A	05.30.2019	245	281	73.88	06.06.2019	'Gull Lake	2
'900.067000113217	BDR-18	F1M4	'12A	05.30.2019	217	260	60.95	06.06.2019	'Gull Lake	2
'900.067000113218	BDR-18	F1M4	'12A	05.30.2019	229	265	54.20	06.06.2019	'Gull Lake	2
'900.067000113220	BDR-18	F1M4	'12A	05.30.2019	215	255	56.31	06.06.2019	'Gull Lake	2
'900.067000113222	BDR-18	F1M4	'12A	05.30.2019	205	242	47.56	06.06.2019	'Gull Lake	2
'900.067000113225	BDR-18	F1M4	'12A	05.30.2019	210	253	58.24	06.06.2019	'Gull Lake	2
'900.067000113227	BDR-18	F1M4	'12A	05.30.2019	234	270	73.86	06.06.2019	'Gull Lake	2
'900.067000113228	BDR-18	F1M4	'12A	05.30.2019	224	261	62.09	06.06.2019	'Gull Lake	2

'900.067000113230	BDR-18	F1M4	'12A	05.30.2019	236	279	67.12	06.06.2019	'Gull Lake	2
'900.067000113233	BDR-18	F1M4	'12A	05.30.2019	225	265	61.08	06.06.2019	'Gull Lake	2
'900.067000113235	BDR-18	F1M4	'12A	05.30.2019	231	275	70.53	06.06.2019	'Gull Lake	2
'900.067000113243	BDR-18	F1M4	'12A	05.30.2019	205	242	48.93	06.06.2019	'Gull Lake	2
'900.067000113244	BDR-18	F1M4	'12A	05.30.2019	195	231	40.77	06.06.2019	'Gull Lake	2
'900.067000113249	BDR-18	F1M4	'12A	05.30.2019	225	265	66.27	06.06.2019	'Gull Lake	2
'900.067000113251	BDR-18	F1M4	'12A	05.30.2019	244	284	80.16	06.06.2019	'Gull Lake	2
'900.067000113253	BDR-18	F1M4	'12A	05.30.2019	245	285	80.27	06.06.2019	'Gull Lake	2
'900.067000113254	BDR-18	F1M4	'12A	05.30.2019	220	257	57.45	06.06.2019	'Gull Lake	2
'900.067000113257	BDR-18	F1M4	'12A	05.30.2019	205	237	43.85	06.06.2019	'Gull Lake	2
'900.067000113261	BDR-18	F1M4	'12A	05.30.2019	230	269	70.43	06.06.2019	'Gull Lake	2
'900.067000113266	BDR-18	F1M4	'12A	05.30.2019	220	261	59.34	06.06.2019	'Gull Lake	2
'900.067000113272	BDR-18	F1M4	'12A	05.30.2019	195	227	40.61	06.06.2019	'Gull Lake	2
'900.067000113274	BDR-18	F1M4	'12A	05.30.2019	214	247	52.11	06.06.2019	'Gull Lake	2
'900.067000113275	BDR-18	F1M4	'12A	05.30.2019	217	256	48.92	06.06.2019	'Gull Lake	2
'900.067000113276	BDR-18	F1M4	'12A	05.30.2019	205	240	47.73	06.06.2019	'Gull Lake	2

'900.067000113277	BDR-18	F1M4	'12A	05.30.2019	215	245	53.43	06.06.2019	'Gull Lake	2
'900.067000113280	BDR-18	F1M4	'12A	05.30.2019	205	241	49.55	06.06.2019	'Gull Lake	2
'900.067000107905	BDR-18	F1M1	'10A	05.22.2019	235	275	67.57	06.13.2019	'Stephens Lake	3
'900.067000109283	BDR-18	F1M1	'10A	05.22.2019	225	262	54.60	06.13.2019	'Stephens Lake	3
'900.067000109289	BDR-18	F1M1	'10A	05.22.2019	225	260	62.25	06.13.2019	'Stephens Lake	3
'900.067000109290	BDR-18	F1M1	'10A	05.22.2019	215	255	56.82	06.13.2019	'Stephens Lake	3
'900.067000109302	BDR-18	F1M1	'10A	05.22.2019	240	285	77.22	06.13.2019	'Stephens Lake	3
'900.067000109304	BDR-18	F1M1	'10A	05.22.2019	190	220	39.69	06.13.2019	'Stephens Lake	3
'900.067000109310	BDR-18	F1M1	'10A	05.22.2019	230	270	69.55	06.13.2019	'Stephens Lake	3
'900.067000109344	BDR-18	F1M1	'10A	05.22.2019	245	290	83.89	06.13.2019	'Stephens Lake	3
'900.067000109349	BDR-18	F1M1	'10A	05.22.2019	230	270	65.33	06.13.2019	'Stephens Lake	3
'900.067000109352	BDR-18	F1M1	'10A	05.22.2019	225	260	58.13	06.13.2019	'Stephens Lake	3
'900.067000109365	BDR-18	F1M1	'10A	05.22.2019	229	265	59.55	06.13.2019	'Stephens Lake	3
'900.067000109370	BDR-18	F1M1	'10A	05.22.2019	236	274	66.76	06.13.2019	'Stephens Lake	3
'900.067000113632	BDR-18	F1M1	'10A	05.22.2019	234	275	71.81	06.13.2019	'Stephens Lake	3
'900.067000113673	BDR-18	F1M1	'10A	05.22.2019	255	297	86.32	06.13.2019	'Stephens Lake	3

'900.067000113681	BDR-18	F1M1	'10A	05.22.2019	231	269	66.25	06.13.2019	'Stephens Lake	3
'900.067000113684	BDR-18	F1M1	'10A	05.22.2019	230	265	61.52	06.13.2019	'Stephens Lake	3
'900.067000113686	BDR-18	F1M1	'10A	05.22.2019	235	272	71.52	06.13.2019	'Stephens Lake	3
'900.067000113689	BDR-18	F1M1	'10A	05.22.2019	205	245	36.33	06.13.2019	'Stephens Lake	3
'900.067000113690	BDR-18	F1M1	'10A	05.22.2019	255	304	94.89	06.13.2019	'Stephens Lake	3
'900.067000113694	BDR-18	F1M1	'10A	05.22.2019	220	263	61.04	06.13.2019	'Stephens Lake	3
'900.067000113697	BDR-18	F1M1	'10A	05.22.2019	245	292	83.65	06.13.2019	'Stephens Lake	3
'900.067000113698	BDR-18	F1M1	'10A	05.22.2019	225	260	59.13	06.13.2019	'Stephens Lake	3
'900.067000113699	BDR-18	F1M1	'10A	05.22.2019	240	275	74.23	06.13.2019	'Stephens Lake	3
'900.067000113700	BDR-18	F1M1	'10A	05.22.2019	220	255	57.84	06.13.2019	'Stephens Lake	3
'900.067000113701	BDR-18	F1M1	'10A	05.22.2019	244	281	82.62	06.13.2019	'Stephens Lake	3
'900.067000113703	BDR-18	F1M1	'10A	05.22.2019	230	265	63.18	06.13.2019	'Stephens Lake	3
'900.067000113705	BDR-18	F1M1	'10A	05.22.2019	225	265	59.92	06.13.2019	'Stephens Lake	3
'900.067000113707	BDR-18	F1M1	'10A	05.22.2019	231	266	66.29	06.13.2019	'Stephens Lake	3
'900.067000113708	BDR-18	F1M1	'10A	05.22.2019	235	280	73.45	06.13.2019	'Stephens Lake	3
'900.067000113709	BDR-18	F1M1	'10A	05.22.2019	240	281	77.73	06.13.2019	'Stephens Lake	3

'900.067000113710	BDR-18	F1M1	'10A	05.22.2019	219	261	57.16	06.13.2019	'Stephens Lake	3
'900.067000113711	BDR-18	F1M1	'10A	05.22.2019	199	230	38.59	06.13.2019	'Stephens Lake	3
'900.067000113712	BDR-18	F1M1	'10A	05.22.2019	235	275	80.39	06.13.2019	'Stephens Lake	3
'900.067000113713	BDR-18	F1M1	'10A	05.22.2019	245	286	77.90	06.13.2019	'Stephens Lake	3
'900.067000113716	BDR-18	F1M1	'10A	05.22.2019	249	295	93.52	06.13.2019	'Stephens Lake	3
'900.067000113717	BDR-18	F1M1	'10A	05.22.2019	235	275	72.33	06.13.2019	'Stephens Lake	3
'900.067000113725	BDR-18	F1M1	'10A	05.22.2019	240	281	79.99	06.13.2019	'Stephens Lake	3
'900.067000113726	BDR-18	F1M1	'10A	05.22.2019	223	256	55.30	06.13.2019	'Stephens Lake	3
'900.067000113727	BDR-18	F1M1	'10A	05.22.2019	235	277	69.44	06.13.2019	'Stephens Lake	3
'900.067000113730	BDR-18	F1M1	'10A	05.22.2019	233	270	66.32	06.13.2019	'Stephens Lake	3
'900.067000113731	BDR-18	F1M1	'10A	05.22.2019	220	260	57.18	06.13.2019	'Stephens Lake	3
'900.067000113734	BDR-18	F1M1	'10A	05.22.2019	240	281	74.61	06.13.2019	'Stephens Lake	3
'900.067000113735	BDR-18	F1M1	'10A	05.22.2019	235	271	64.26	06.13.2019	'Stephens Lake	3
'900.067000113737	BDR-18	F1M1	'10A	05.22.2019	236	272	70.85	06.13.2019	'Stephens Lake	3
'900.067000113738	BDR-18	F1M1	'10A	05.22.2019	240	280	79.30	06.13.2019	'Stephens Lake	3
'900.067000113741	BDR-18	F1M1	'10A	05.22.2019	235	281	79.97	06.13.2019	'Stephens Lake	3

'900.067000113742	BDR-18	F1M1	'10A	05.22.2019	246	287	78.30	06.13.2019	'Stephens Lake	3
'900.067000113744	BDR-18	F1M1	'10A	05.22.2019	220	260	58.21	06.13.2019	'Stephens Lake	3
'900.067000113745	BDR-18	F1M1	'10A	05.22.2019	235	280	74.33	06.13.2019	'Stephens Lake	3
'900.067000113746	BDR-18	F1M1	'10A	05.22.2019	240	275	72.26	06.13.2019	'Stephens Lake	3
'900.067000113747	BDR-18	F1M1	'10A	05.22.2019	244	295	79.61	06.13.2019	'Stephens Lake	3
'900.067000113754	BDR-18	F1M1	'10A	05.22.2019	215	251	55.30	06.13.2019	'Stephens Lake	3
'900.067000113755	BDR-18	F1M1	'10A	05.22.2019	244	290	73.27	06.13.2019	'Stephens Lake	3
'900.067000113756	BDR-18	F1M1	'10A	05.22.2019	255	295	85.70	06.13.2019	'Stephens Lake	3
'900.067000113757	BDR-18	F1M1	'10A	05.22.2019	225	265	60.85	06.13.2019	'Stephens Lake	3
'900.067000113759	BDR-18	F1M1	'10A	05.22.2019	240	281	77.18	06.13.2019	'Stephens Lake	3
'900.067000113762	BDR-18	F1M1	'10A	05.22.2019	250	289	84.94	06.13.2019	'Stephens Lake	3
'900.067000113763	BDR-18	F1M1	'10A	05.22.2019	225	262	63.05	06.13.2019	'Stephens Lake	3
'900.067000113764	BDR-18	F1M1	'10A	05.22.2019	240	280	77.80	06.13.2019	'Stephens Lake	3
'900.067000113766	BDR-18	F1M1	'10A	05.22.2019	215	255	59.86	06.13.2019	'Stephens Lake	3
'900.067000113770	BDR-18	F1M1	'10A	05.22.2019	231	275	73.26	06.13.2019	'Stephens Lake	3
'900.067000113771	BDR-18	F1M1	'10A	05.22.2019	224	264	59.57	06.13.2019	'Stephens Lake	3

'900.067000113772	BDR-18	F1M1	'10A	05.22.2019	200	235	44.11	06.13.2019	'Stephens Lake	3
'900.067000113774	BDR-18	F1M1	'10A	05.22.2019	229	265	64.84	06.13.2019	'Stephens Lake	3
'900.067000113775	BDR-18	F1M1	'10A	05.22.2019	241	285	73.36	06.13.2019	'Stephens Lake	3
'900.067000113777	BDR-18	F1M1	'10A	05.22.2019	227	265	60.88	06.13.2019	'Stephens Lake	3
'900.067000113778	BDR-18	F1M1	'10A	05.22.2019	240	280	70.72	06.13.2019	'Stephens Lake	3
'900.067000113780	BDR-18	F1M1	'10A	05.22.2019	205	235	50.56	06.13.2019	'Stephens Lake	3
'900.067000108581	BDR-18	F1M2	'11B	05.24.2019	212	244	52.15	06.13.2019	'Stephens Lake	3
'900.067000108582	BDR-18	F1M2	'11B	05.24.2019	231	266	66.11	06.13.2019	'Stephens Lake	3
'900.067000108588	BDR-18	F1M2	'11B	05.24.2019	212	247	50.72	06.13.2019	'Stephens Lake	3
'900.067000108590	BDR-18	F1M2	'11B	05.24.2019	217	254	49.32	06.13.2019	'Stephens Lake	3
'900.067000108591	BDR-18	F1M2	'11B	05.24.2019	242	284	79.30	06.13.2019	'Stephens Lake	3
'900.067000108602	BDR-18	F1M2	'11B	05.24.2019	240	284	74.82	06.13.2019	'Stephens Lake	3
'900.067000108606	BDR-18	F1M2	'11B	05.24.2019	253	298	98.33	06.13.2019	'Stephens Lake	3
'900.067000108607	BDR-18	F1M2	'11B	05.24.2019	248	289	85.80	06.13.2019	'Stephens Lake	3
'900.067000108609	BDR-18	F1M2	'11B	05.24.2019	244	282	86.76	06.13.2019	'Stephens Lake	3
'900.067000108612	BDR-18	F1M2	'11B	05.24.2019	217	257	55.00	06.13.2019	'Stephens Lake	3

'900.067000108620	BDR-18	F1M2	'11B	05.24.2019	273	322	116.51	06.13.2019	'Stephens Lake	3
'900.067000108621	BDR-18	F1M2	'11B	05.24.2019	244	281	77.60	06.13.2019	'Stephens Lake	3
'900.067000108625	BDR-18	F1M2	'11B	05.24.2019	224	255	52.51	06.13.2019	'Stephens Lake	3
'900.067000108626	BDR-18	F1M2	'11B	05.24.2019	232	274	69.98	06.13.2019	'Stephens Lake	3
'900.067000108627	BDR-18	F1M2	'11B	05.24.2019	222	253	60.29	06.13.2019	'Stephens Lake	3
'900.067000108630	BDR-18	F1M2	'11B	05.24.2019	214	259	46.07	06.13.2019	'Stephens Lake	3
'900.067000108637	BDR-18	F1M2	'11B	05.24.2019	255	299	90.18	06.13.2019	'Stephens Lake	3
'900.067000108639	BDR-18	F1M2	'11B	05.24.2019	222	257	52.12	06.13.2019	'Stephens Lake	3
'900.067000108640	BDR-18	F1M2	'11B	05.24.2019	252	302	81.14	06.13.2019	'Stephens Lake	3
'900.067000108641	BDR-18	F1M2	'11B	05.24.2019	265	307	121.73	06.13.2019	'Stephens Lake	3
'900.067000108646	BDR-18	F1M2	'11B	05.24.2019	189	222	35.95	06.13.2019	'Stephens Lake	3
'900.067000108647	BDR-18	F1M2	'11B	05.24.2019	200	232	41.98	06.13.2019	'Stephens Lake	3
'900.067000108648	BDR-18	F1M2	'11B	05.24.2019	238	280	68.21	06.13.2019	'Stephens Lake	3
'900.067000108651	BDR-18	F1M2	'11B	05.24.2019	197	239	38.28	06.13.2019	'Stephens Lake	3
'900.067000108652	BDR-18	F1M2	'11B	05.24.2019	226	264	62.65	06.13.2019	'Stephens Lake	3
'900.067000108653	BDR-18	F1M2	'11B	05.24.2019	233	270	60.43	06.13.2019	'Stephens Lake	3

'900.067000108655	BDR-18	F1M2	'11B	05.24.2019	208	245	51.19	06.13.2019	'Stephens Lake	3
'900.067000108658	BDR-18	F1M2	'11B	05.24.2019	232	267	64.30	06.13.2019	'Stephens Lake	3
'900.067000108659	BDR-18	F1M2	'11B	05.24.2019	227	262	61.77	06.13.2019	'Stephens Lake	3
'900.067000108660	BDR-18	F1M2	'11B	05.24.2019	217	257	55.37	06.13.2019	'Stephens Lake	3
'900.067000108663	BDR-18	F1M2	'11B	05.24.2019	252	287	83.69	06.13.2019	'Stephens Lake	3
'900.067000108665	BDR-18	F1M2	'11B	05.24.2019	230	269	73.85	06.13.2019	'Stephens Lake	3
'900.067000108666	BDR-18	F1M2	'11B	05.24.2019	194	224	38.34	06.13.2019	'Stephens Lake	3
'900.067000108667	BDR-18	F1M2	'11B	05.24.2019	265	304	95.44	06.13.2019	'Stephens Lake	3
'900.067000108669	BDR-18	F1M2	'11B	05.24.2019	242	278	74.02	06.13.2019	'Stephens Lake	3
'900.067000108670	BDR-18	F1M2	'11B	05.24.2019	240	282	71.15	06.13.2019	'Stephens Lake	3
'900.067000108672	BDR-18	F1M2	'11B	05.24.2019	259	290	97.63	06.13.2019	'Stephens Lake	3
'900.067000108674	BDR-18	F1M2	'11B	05.24.2019	229	265	57.28	06.13.2019	'Stephens Lake	3
'900.067000108675	BDR-18	F1M2	'11B	05.24.2019	196	229	46.30	06.13.2019	'Stephens Lake	3
'900.067000108676	BDR-18	F1M2	'11B	05.24.2019	229	273	65.64	06.13.2019	'Stephens Lake	3
'900.067000108677	BDR-18	F1M2	'11B	05.24.2019	222	259	52.53	06.13.2019	'Stephens Lake	3
'900.067000108679	BDR-18	F1M2	'11B	05.24.2019	226	277	63.54	06.13.2019	'Stephens Lake	3

'900.067000108680	BDR-18	F1M2	'11B	05.24.2019	231	267	60.74	06.13.2019	'Stephens Lake	3
'900.067000109598	BDR-18	F1M2	'11B	05.24.2019	219	254	57.02	06.13.2019	'Stephens Lake	3
'900.067000109610	BDR-18	F1M2	'11B	05.24.2019	234	276	65.45	06.13.2019	'Stephens Lake	3
'900.067000109612	BDR-18	F1M2	'11B	05.24.2019	217	253	52.60	06.13.2019	'Stephens Lake	3
'900.067000109616	BDR-18	F1M2	'11B	05.24.2019	201	235	41.88	06.13.2019	'Stephens Lake	3
'900.067000109624	BDR-18	F1M2	'11B	05.24.2019	197	227	38.69	06.13.2019	'Stephens Lake	3
'900.067000109626	BDR-18	F1M2	'11B	05.24.2019	238	282	71.11	06.13.2019	'Stephens Lake	3
'900.067000109639	BDR-18	F1M2	'11B	05.24.2019	181	211	32.24	06.13.2019	'Stephens Lake	3
'900.067000109641	BDR-18	F1M2	'11B	05.24.2019	218	255	54.30	06.13.2019	'Stephens Lake	3
'900.067000109648	BDR-18	F1M2	'11B	05.24.2019	202	237	44.16	06.13.2019	'Stephens Lake	3
'900.067000112987	BDR-18	F1M2	'11B	05.24.2019	217	252	55.74	06.13.2019	'Stephens Lake	3
'900.067000113001	BDR-18	F1M2	'11B	05.24.2019	232	270	59.57	06.13.2019	'Stephens Lake	3
'900.067000113004	BDR-18	F1M2	'11B	05.24.2019	232	274	66.56	06.13.2019	'Stephens Lake	3
'900.067000113005	BDR-18	F1M2	'11B	05.24.2019	229	272	69.16	06.13.2019	'Stephens Lake	3
'900.067000113006	BDR-18	F1M2	'11B	05.24.2019	231	271	64.65	06.13.2019	'Stephens Lake	3
'900.067000113021	BDR-18	F1M2	'11B	05.24.2019	262	305	89.44	06.13.2019	'Stephens Lake	3

'900.067000113024	BDR-18	F1M2	'11B	05.24.2019	215	253	51.68	06.13.2019	'Stephens Lake	3
'900.067000113025	BDR-18	F1M2	'11B	05.24.2019	246	292	81.22	06.13.2019	'Stephens Lake	3
'900.067000113032	BDR-18	F1M2	'11B	05.24.2019	255	294	97.26	06.13.2019	'Stephens Lake	3
'900.067000113042	BDR-18	F1M2	'11B	05.24.2019	211	244	46.82	06.13.2019	'Stephens Lake	3
'900.067000113051	BDR-18	F1M2	'11B	05.24.2019	207	242	48.15	06.13.2019	'Stephens Lake	3
'900.067000113069	BDR-18	F1M2	'11B	05.24.2019	247	282	75.23	06.13.2019	'Stephens Lake	3
'900.067000113076	BDR-18	F1M2	'11B	05.24.2019	244	284	74.42	06.13.2019	'Stephens Lake	3
'900.067000113078	BDR-18	F1M2	'11B	05.24.2019	234	271	66.48	06.13.2019	'Stephens Lake	3
'900.067000113417	BDR-18	F1M2	'11B	05.24.2019	217	253	45.65	06.13.2019	'Stephens Lake	3
'900.067000113190	BDR-18	MIX	'12B	05.30.2019	243	285	82.27	06.13.2019	'Stephens Lake	3
'900.067000113201	BDR-18	MIX	'12B	05.30.2019	225	265	65.90	06.13.2019	'Stephens Lake	3
'900.067000113203	BDR-18	MIX	'12B	05.30.2019	260	309	93.06	06.13.2019	'Stephens Lake	3
'900.067000113210	BDR-18	MIX	'12B	05.30.2019	235	273	75.50	06.13.2019	'Stephens Lake	3
'900.067000113212	BDR-18	MIX	'12B	05.30.2019	262	307	98.86	06.13.2019	'Stephens Lake	3
'900.067000113213	BDR-18	MIX	'12B	05.30.2019	190	218	37.85	06.13.2019	'Stephens Lake	3
'900.067000113219	BDR-18	MIX	'12B	05.30.2019	220	260	47.20	06.13.2019	'Stephens Lake	3

'900.067000113226	BDR-18	MIX	'12B	05.30.2019	245	290	84.59	06.13.2019	'Stephens Lake	3
'900.067000113231	BDR-18	MIX	'12B	05.30.2019	230	273	72.55	06.13.2019	'Stephens Lake	3
'900.067000113236	BDR-18	MIX	'12B	05.30.2019	233	275	68.18	06.13.2019	'Stephens Lake	3
'900.067000113241	BDR-18	MIX	'12B	05.30.2019	220	258	57.55	06.13.2019	'Stephens Lake	3
'900.067000113250	BDR-18	MIX	'12B	05.30.2019	240	285	86.68	06.13.2019	'Stephens Lake	3
'900.067000113268	BDR-18	MIX	'12B	05.30.2019	255	295	94.65	06.13.2019	'Stephens Lake	3
'900.067000113269	BDR-18	MIX	'12B	05.30.2019	237	275	57.43	06.13.2019	'Stephens Lake	3
'900.067000113279	BDR-18	MIX	'12B	05.30.2019	235	275	66.80	06.13.2019	'Stephens Lake	3
'900.067000113381	BDR-18	MIX	'12B	05.30.2019	210	245	49.61	06.13.2019	'Stephens Lake	3
'900.067000113384	BDR-18	MIX	'12B	05.30.2019	242	278	73.38	06.13.2019	'Stephens Lake	3
'900.067000113385	BDR-18	MIX	'12B	05.30.2019	203	247	46.44	06.13.2019	'Stephens Lake	3
'900.067000113392	BDR-18	MIX	'12B	05.30.2019	215	250	52.02	06.13.2019	'Stephens Lake	3
'900.067000113394	BDR-18	MIX	'12B	05.30.2019	245	266	66.34	06.13.2019	'Stephens Lake	3
'900.067000113397	BDR-18	MIX	'12B	05.30.2019	222	261	61.40	06.13.2019	'Stephens Lake	3
'900.067000113398	BDR-18	MIX	'12B	05.30.2019	230	270	69.56	06.13.2019	'Stephens Lake	3
'900.067000113401	BDR-18	MIX	'12B	05.30.2019	225	268	69.30	06.13.2019	'Stephens Lake	3

'900.067000113405	BDR-18	MIX	'12B	05.30.2019	245	280	75.28	06.13.2019	'Stephens Lake	3
'900.067000113407	BDR-18	MIX	'12B	05.30.2019	240	280	79.40	06.13.2019	'Stephens Lake	3
'900.067000113409	BDR-18	MIX	'12B	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	3
'900.067000113410	BDR-18	MIX	'12B	05.30.2019	257	295	90.53	06.13.2019	'Stephens Lake	3
'900.067000113411	BDR-18	MIX	'12B	05.30.2019	250	293	84.72	06.13.2019	'Stephens Lake	3
'900.067000113412	BDR-18	MIX	'12B	05.30.2019	235	288	84.08	06.13.2019	'Stephens Lake	3
'900.067000113413	BDR-18	MIX	'12B	05.30.2019	230	273	69.82	06.13.2019	'Stephens Lake	3
'900.067000113414	BDR-18	MIX	'12B	05.30.2019	228	267	61.97	06.13.2019	'Stephens Lake	3
'900.067000113415	BDR-18	MIX	'12B	05.30.2019	205	245	48.82	06.13.2019	'Stephens Lake	3
'900.067000113418	BDR-18	MIX	'12B	05.30.2019	228	265	72.03	06.13.2019	'Stephens Lake	3
'900.067000113420	BDR-18	MIX	'12B	05.30.2019	213	245	54.24	06.13.2019	'Stephens Lake	3
'900.067000113421	BDR-18	MIX	'12B	05.30.2019	190	220	35.54	06.13.2019	'Stephens Lake	3
'900.067000113422	BDR-18	MIX	'12B	05.30.2019	250	292	82.46	06.13.2019	'Stephens Lake	3
'900.067000113423	BDR-18	MIX	'12B	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	3
'900.067000113424	BDR-18	MIX	'12B	05.30.2019	210	243	51.49	06.13.2019	'Stephens Lake	3
'900.067000113428	BDR-18	MIX	'12B	05.30.2019	223	260	66.68	06.13.2019	'Stephens Lake	3

'900.067000113431	BDR-18	MIX	'12B	05.30.2019	233	279	70.75	06.13.2019	'Stephens Lake	3
'900.067000113436	BDR-18	MIX	'12B	05.30.2019	235	272	70.50	06.13.2019	'Stephens Lake	3
'900.067000113437	BDR-18	MIX	'12B	05.30.2019	240	278	74.70	06.13.2019	'Stephens Lake	3
'900.067000113439	BDR-18	MIX	'12B	05.30.2019	240	283	82.08	06.13.2019	'Stephens Lake	3
'900.067000113443	BDR-18	MIX	'12B	05.30.2019	265	310	115.28	06.13.2019	'Stephens Lake	3
'900.067000113447	BDR-18	MIX	'12B	05.30.2019	267	310	117.00	06.13.2019	'Stephens Lake	3
'900.067000113450	BDR-18	MIX	'12B	05.30.2019	205	240	45.04	06.13.2019	'Stephens Lake	3
'900.067000113453	BDR-18	MIX	'12B	05.30.2019	260	308	103.60	06.13.2019	'Stephens Lake	3
'900.067000113457	BDR-18	MIX	'12B	05.30.2019	242	278	76.39	06.13.2019	'Stephens Lake	3
'900.067000113458	BDR-18	MIX	'12B	05.30.2019	233	270	74.85	06.13.2019	'Stephens Lake	3
'900.067000113459	BDR-18	MIX	'12B	05.30.2019	238	280	74.50	06.13.2019	'Stephens Lake	3
'900.067000113461	BDR-18	MIX	'12B	05.30.2019	250	295	100.68	06.13.2019	'Stephens Lake	3
'900.067000113463	BDR-18	MIX	'12B	05.30.2019	235	274	61.82	06.13.2019	'Stephens Lake	3
'900.067000113464	BDR-18	MIX	'12B	05.30.2019	220	258	62.12	06.13.2019	'Stephens Lake	3
'900.067000113465	BDR-18	MIX	'12B	05.30.2019	240	278	80.05	06.13.2019	'Stephens Lake	3
'900.067000113469	BDR-18	MIX	'12B	05.30.2019	216	250	52.05	06.13.2019	'Stephens Lake	3

'900.067000113470	BDR-18	MIX	'12B	05.30.2019	218	255	62.68	06.13.2019	'Stephens Lake	3
'900.067000113472	BDR-18	MIX	'12B	05.30.2019	250	295	103.90	06.13.2019	'Stephens Lake	3
'900.067000113473	BDR-18	MIX	'12B	05.30.2019	222	260	61.32	06.13.2019	'Stephens Lake	3
'900.067000113476	BDR-18	MIX	'12B	05.30.2019	260	304	91.84	06.13.2019	'Stephens Lake	3
'900.067000113478	BDR-18	MIX	'12B	05.30.2019	235	275	72.57	06.13.2019	'Stephens Lake	3
'900.067000113480	BDR-18	MIX	'12B	05.30.2019	235	277	74.45	06.13.2019	'Stephens Lake	3
'900.067000108118	BDR-18	F1M3	'11A	05.23.2019	220	256	58.62	06.13.2019	'Stephens Lake	4
'900.067000108587	BDR-18	F1M3	'11A	05.23.2019	239	259	69.55	06.13.2019	'Stephens Lake	4
'900.067000108593	BDR-18	F1M3	'11A	05.23.2019	227	262	57.40	06.13.2019	'Stephens Lake	4
'900.067000108594	BDR-18	F1M3	'11A	05.23.2019	234	281	74.02	06.13.2019	'Stephens Lake	4
'900.067000108596	BDR-18	F1M3	'11A	05.23.2019	226	266	65.00	06.13.2019	'Stephens Lake	4
'900.067000108613	BDR-18	F1M3	'11A	05.23.2019	223	261	57.10	06.13.2019	'Stephens Lake	4
'900.067000108618	BDR-18	F1M3	'11A	05.23.2019	215	255	56.44	06.13.2019	'Stephens Lake	4
'900.067000108623	BDR-18	F1M3	'11A	05.23.2019	264	305	91.24	06.13.2019	'Stephens Lake	4
'900.067000108631	BDR-18	F1M3	'11A	05.23.2019	223	267	60.44	06.13.2019	'Stephens Lake	4
'900.067000108634	BDR-18	F1M3	'11A	05.23.2019	211	253	52.86	06.13.2019	'Stephens Lake	4

'900.067000108642	BDR-18	F1M3	'11A	05.23.2019	230	274	68.82	06.13.2019	'Stephens Lake	4
'900.067000108654	BDR-18	F1M3	'11A	05.23.2019	195	235	46.11	06.13.2019	'Stephens Lake	4
'900.067000108661	BDR-18	F1M3	'11A	05.23.2019	204	242	44.41	06.13.2019	'Stephens Lake	4
'900.067000109284	BDR-18	F1M3	'11A	05.23.2019	192	229	45.20	06.13.2019	'Stephens Lake	4
'900.067000109286	BDR-18	F1M3	'11A	05.23.2019	215	252	62.66	06.13.2019	'Stephens Lake	4
'900.067000109293	BDR-18	F1M3	'11A	05.23.2019	215	255	58.00	06.13.2019	'Stephens Lake	4
'900.067000109296	BDR-18	F1M3	'11A	05.23.2019	230	273	64.00	06.13.2019	'Stephens Lake	4
'900.067000109298	BDR-18	F1M3	'11A	05.23.2019	245	291	87.24	06.13.2019	'Stephens Lake	4
'900.067000109308	BDR-18	F1M3	'11A	05.23.2019	238	281	76.71	06.13.2019	'Stephens Lake	4
'900.067000109312	BDR-18	F1M3	'11A	05.23.2019	220	259	58.52	06.13.2019	'Stephens Lake	4
'900.067000109313	BDR-18	F1M3	'11A	05.23.2019	231	282	66.17	06.13.2019	'Stephens Lake	4
'900.067000109314	BDR-18	F1M3	'11A	05.23.2019	253	297	92.19	06.13.2019	'Stephens Lake	4
'900.067000109316	BDR-18	F1M3	'11A	05.23.2019	226	266	67.44	06.13.2019	'Stephens Lake	4
'900.067000109322	BDR-18	F1M3	'11A	05.23.2019	214	254	56.00	06.13.2019	'Stephens Lake	4
'900.067000109323	BDR-18	F1M3	'11A	05.23.2019	198	238	44.65	06.13.2019	'Stephens Lake	4
'900.067000109332	BDR-18	F1M3	'11A	05.23.2019	244	290	85.41	06.13.2019	'Stephens Lake	4

'900.067000109333	BDR-18	F1M3	'11A	05.23.2019	210	253	56.43	06.13.2019	'Stephens Lake	4
'900.067000109336	BDR-18	F1M3	'11A	05.23.2019	242	293	84.14	06.13.2019	'Stephens Lake	4
'900.067000109340	BDR-18	F1M3	'11A	05.23.2019	202	237	44.66	06.13.2019	'Stephens Lake	4
'900.067000109351	BDR-18	F1M3	'11A	05.23.2019	203	237	44.73	06.13.2019	'Stephens Lake	4
'900.067000109355	BDR-18	F1M3	'11A	05.23.2019	253	301	92.82	06.13.2019	'Stephens Lake	4
'900.067000109359	BDR-18	F1M3	'11A	05.23.2019	213	254	52.00	06.13.2019	'Stephens Lake	4
'900.067000109361	BDR-18	F1M3	'11A	05.23.2019	220	260	61.02	06.13.2019	'Stephens Lake	4
'900.067000109366	BDR-18	F1M3	'11A	05.23.2019	222	262	57.54	06.13.2019	'Stephens Lake	4
'900.067000109372	BDR-18	F1M3	'11A	05.23.2019	226	266	71.45	06.13.2019	'Stephens Lake	4
'900.067000109373	BDR-18	F1M3	'11A	05.23.2019	225	274	73.81	06.13.2019	'Stephens Lake	4
'900.067000109376	BDR-18	F1M3	'11A	05.23.2019	230	276	74.62	06.13.2019	'Stephens Lake	4
'900.067000112981	BDR-18	F1M3	'11A	05.23.2019	219	254	58.00	06.13.2019	'Stephens Lake	4
'900.067000112983	BDR-18	F1M3	'11A	05.23.2019	218	254	52.00	06.13.2019	'Stephens Lake	4
'900.067000112985	BDR-18	F1M3	'11A	05.23.2019	200	239	46.06	06.13.2019	'Stephens Lake	4
'900.067000112986	BDR-18	F1M3	'11A	05.23.2019	230	275	68.00	06.13.2019	'Stephens Lake	4
'900.067000112988	BDR-18	F1M3	'11A	05.23.2019	225	267	62.94	06.13.2019	'Stephens Lake	4

'900.067000112989	BDR-18	F1M3	'11A	05.23.2019	228	268	65.12	06.13.2019	'Stephens Lake	4
'900.067000112997	BDR-18	F1M3	'11A	05.23.2019	216	254	49.50	06.13.2019	'Stephens Lake	4
'900.067000113000	BDR-18	F1M3	'11A	05.23.2019	200	235	44.15	06.13.2019	'Stephens Lake	4
'900.067000113010	BDR-18	F1M3	'11A	05.23.2019	201	235	46.33	06.13.2019	'Stephens Lake	4
'900.067000113013	BDR-18	F1M3	'11A	05.23.2019	219	254	57.50	06.13.2019	'Stephens Lake	4
'900.067000113018	BDR-18	F1M3	'11A	05.23.2019	230	275	69.90	06.13.2019	'Stephens Lake	4
'900.067000113022	BDR-18	F1M3	'11A	05.23.2019	206	246	52.75	06.13.2019	'Stephens Lake	4
'900.067000113023	BDR-18	F1M3	'11A	05.23.2019	256	288	76.50	06.13.2019	'Stephens Lake	4
'900.067000113027	BDR-18	F1M3	'11A	05.23.2019	225	272	67.66	06.13.2019	'Stephens Lake	4
'900.067000113029	BDR-18	F1M3	'11A	05.23.2019	215	255	57.66	06.13.2019	'Stephens Lake	4
'900.067000113030	BDR-18	F1M3	'11A	05.23.2019	196	232	45.80	06.13.2019	'Stephens Lake	4
'900.067000113031	BDR-18	F1M3	'11A	05.23.2019	254	300	97.29	06.13.2019	'Stephens Lake	4
'900.067000113033	BDR-18	F1M3	'11A	05.23.2019	210	251	53.66	06.13.2019	'Stephens Lake	4
'900.067000113035	BDR-18	F1M3	'11A	05.23.2019	225	267	63.61	06.13.2019	'Stephens Lake	4
'900.067000113040	BDR-18	F1M3	'11A	05.23.2019	236	277	78.03	06.13.2019	'Stephens Lake	4
'900.067000113045	BDR-18	F1M3	'11A	05.23.2019	205	244	47.12	06.13.2019	'Stephens Lake	4

'900.067000113046	BDR-18	F1M3	'11A	05.23.2019	193	227	38.86	06.13.2019	'Stephens Lake	4
'900.067000113047	BDR-18	F1M3	'11A	05.23.2019	215	256	58.61	06.13.2019	'Stephens Lake	4
'900.067000113053	BDR-18	F1M3	'11A	05.23.2019	205	245	52.38	06.13.2019	'Stephens Lake	4
'900.067000113054	BDR-18	F1M3	'11A	05.23.2019	208	251	49.46	06.13.2019	'Stephens Lake	4
'900.067000113060	BDR-18	F1M3	'11A	05.23.2019	234	284	74.70	06.13.2019	'Stephens Lake	4
'900.067000113063	BDR-18	F1M3	'11A	05.23.2019	220	258	59.47	06.13.2019	'Stephens Lake	4
'900.067000113067	BDR-18	F1M3	'11A	05.23.2019	205	244	48.62	06.13.2019	'Stephens Lake	4
'900.067000113070	BDR-18	F1M3	'11A	05.23.2019	214	258	50.37	06.13.2019	'Stephens Lake	4
'900.067000113074	BDR-18	F1M3	'11A	05.23.2019	206	249	50.14	06.13.2019	'Stephens Lake	4
'900.067000113079	BDR-18	F1M3	'11A	05.23.2019	230	272	73.00	06.13.2019	'Stephens Lake	4
'900.067000113080	BDR-18	F1M3	'11A	05.23.2019	220	260	64.71	06.13.2019	'Stephens Lake	4
'900.067000109581	BDR-18	F1M4	'12A	05.30.2019	275	315	120.42	06.13.2019	'Stephens Lake	4
'900.067000109582	BDR-18	F1M4	'12A	05.30.2019	230	275	73.75	06.13.2019	'Stephens Lake	4
'900.067000109584	BDR-18	F1M4	'12A	05.30.2019	235	280	74.37	06.13.2019	'Stephens Lake	4
'900.067000109586	BDR-18	F1M4	'12A	05.30.2019	205	241	44.15	06.13.2019	'Stephens Lake	4
'900.067000109587	BDR-18	F1M4	'12A	05.30.2019	225	263	68.48	06.13.2019	'Stephens Lake	4

'900.067000109600	BDR-18	F1M4	'12A	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000109601	BDR-18	F1M4	'12A	05.30.2019	244	284	79.70	06.13.2019	'Stephens Lake	4
'900.067000109602	BDR-18	F1M4	'12A	05.30.2019	230	274	73.94	06.13.2019	'Stephens Lake	4
'900.067000109603	BDR-18	F1M4	'12A	05.30.2019	225	264	59.80	06.13.2019	'Stephens Lake	4
'900.067000109604	BDR-18	F1M4	'12A	05.30.2019	245	283	78.83	06.13.2019	'Stephens Lake	4
'900.067000109605	BDR-18	F1M4	'12A	05.30.2019	240	280	79.32	06.13.2019	'Stephens Lake	4
'900.067000109611	BDR-18	F1M4	'12A	05.30.2019	230	275	65.41	06.13.2019	'Stephens Lake	4
'900.067000109617	BDR-18	F1M4	'12A	05.30.2019	235	275	72.16	06.13.2019	'Stephens Lake	4
'900.067000109618	BDR-18	F1M4	'12A	05.30.2019	245	285	87.48	06.13.2019	'Stephens Lake	4
'900.067000109620	BDR-18	F1M4	'12A	05.30.2019	235	270	63.46	06.13.2019	'Stephens Lake	4
'900.067000109621	BDR-18	F1M4	'12A	05.30.2019	245	287	83.62	06.13.2019	'Stephens Lake	4
'900.067000109622	BDR-18	F1M4	'12A	05.30.2019	245	277	72.67	06.13.2019	'Stephens Lake	4
'900.067000109628	BDR-18	F1M4	'12A	05.30.2019	265	307	115.31	06.13.2019	'Stephens Lake	4
'900.067000109632	BDR-18	F1M4	'12A	05.30.2019	224	262	58.27	06.13.2019	'Stephens Lake	4
'900.067000109633	BDR-18	F1M4	'12A	05.30.2019	225	265	64.14	06.13.2019	'Stephens Lake	4
'900.067000109635	BDR-18	F1M4	'12A	05.30.2019	220	255	57.42	06.13.2019	'Stephens Lake	4

'900.067000109637	BDR-18	F1M4	'12A	05.30.2019	250	295	87.40	06.13.2019	'Stephens Lake	4
'900.067000109638	BDR-18	F1M4	'12A	05.30.2019	239	280	76.17	06.13.2019	'Stephens Lake	4
'900.067000109642	BDR-18	F1M4	'12A	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000109643	BDR-18	F1M4	'12A	05.30.2019	240	281	77.89	06.13.2019	'Stephens Lake	4
'900.067000109645	BDR-18	F1M4	'12A	05.30.2019	238	282	73.86	06.13.2019	'Stephens Lake	4
'900.067000109651	BDR-18	F1M4	'12A	05.30.2019	254	295	93.67	06.13.2019	'Stephens Lake	4
'900.067000109652	BDR-18	F1M4	'12A	05.30.2019	210	245	49.64	06.13.2019	'Stephens Lake	4
'900.067000109656	BDR-18	F1M4	'12A	05.30.2019	229	266	66.59	06.13.2019	'Stephens Lake	4
'900.067000109657	BDR-18	F1M4	'12A	05.30.2019	216	259	55.14	06.13.2019	'Stephens Lake	4
'900.067000109658	BDR-18	F1M4	'12A	05.30.2019	235	274	78.82	06.13.2019	'Stephens Lake	4
'900.067000109659	BDR-18	F1M4	'12A	05.30.2019	230	265	60.20	06.13.2019	'Stephens Lake	4
'900.067000109664	BDR-18	F1M4	'12A	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000109667	BDR-18	F1M4	'12A	05.30.2019	235	275	71.29	06.13.2019	'Stephens Lake	4
'900.067000109671	BDR-18	F1M4	'12A	05.30.2019	245	285	83.34	06.13.2019	'Stephens Lake	4
'900.067000109673	BDR-18	F1M4	'12A	05.30.2019	215	254	57.26	06.13.2019	'Stephens Lake	4
'900.067000109674	BDR-18	F1M4	'12A	05.30.2019	281	321	131.95	06.13.2019	'Stephens Lake	4

'900.067000109676	BDR-18	F1M4	'12A	05.30.2019	230	269	64.03	06.13.2019	'Stephens Lake	4
'900.067000109677	BDR-18	F1M4	'12A	05.30.2019	230	271	69.21	06.13.2019	'Stephens Lake	4
'900.067000109678	BDR-18	F1M4	'12A	05.30.2019	230	270	69.68	06.13.2019	'Stephens Lake	4
'900.067000109679	BDR-18	F1M4	'12A	05.30.2019	220	250	63.69	06.13.2019	'Stephens Lake	4
'900.067000109680	BDR-18	F1M4	'12A	05.30.2019	214	250	49.19	06.13.2019	'Stephens Lake	4
'900.067000113185	BDR-18	F1M4	'12A	05.30.2019	230	272	68.51	06.13.2019	'Stephens Lake	4
'900.067000113193	BDR-18	F1M4	'12A	05.30.2019	244	285	78.46	06.13.2019	'Stephens Lake	4
'900.067000113194	BDR-18	F1M4	'12A	05.30.2019	209	241	46.43	06.13.2019	'Stephens Lake	4
'900.067000113196	BDR-18	F1M4	'12A	05.30.2019	210	244	44.85	06.13.2019	'Stephens Lake	4
'900.067000113200	BDR-18	F1M4	'12A	05.30.2019	195	235	42.68	06.13.2019	'Stephens Lake	4
'900.067000113211	BDR-18	F1M4	'12A	05.30.2019	235	275	70.79	06.13.2019	'Stephens Lake	4
'900.067000113215	BDR-18	F1M4	'12A	05.30.2019	226	270	63.51	06.13.2019	'Stephens Lake	4
'900.067000113224	BDR-18	F1M4	'12A	05.30.2019	205	245	48.12	06.13.2019	'Stephens Lake	4
'900.067000113237	BDR-18	F1M4	'12A	05.30.2019	205	241	45.69	06.13.2019	'Stephens Lake	4
'900.067000113239	BDR-18	F1M4	'12A	05.30.2019	225	269	61.83	06.13.2019	'Stephens Lake	4
'900.067000113245	BDR-18	F1M4	'12A	05.30.2019	225	265	65.44	06.13.2019	'Stephens Lake	4

'900.067000113247	BDR-18	F1M4	'12A	05.30.2019	240	285	77.32	06.13.2019	'Stephens Lake	4
'900.067000113248	BDR-18	F1M4	'12A	05.30.2019	220	255	53.20	06.13.2019	'Stephens Lake	4
'900.067000113252	BDR-18	F1M4	'12A	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000113256	BDR-18	F1M4	'12A	05.30.2019	229	271	65.11	06.13.2019	'Stephens Lake	4
'900.067000113258	BDR-18	F1M4	'12A	05.30.2019	196	227	38.92	06.13.2019	'Stephens Lake	4
'900.067000113259	BDR-18	F1M4	'12A	05.30.2019	235	275	71.44	06.13.2019	'Stephens Lake	4
'900.067000113260	BDR-18	F1M4	'12A	05.30.2019	205	240	45.05	06.13.2019	'Stephens Lake	4
'900.067000113262	BDR-18	F1M4	'12A	05.30.2019	235	274	63.81	06.13.2019	'Stephens Lake	4
'900.067000113265	BDR-18	F1M4	'12A	05.30.2019	216	255	53.88	06.13.2019	'Stephens Lake	4
'900.067000113267	BDR-18	F1M4	'12A	05.30.2019	199	235	43.93	06.13.2019	'Stephens Lake	4
'900.067000113271	BDR-18	F1M4	'12A	05.30.2019	224	256	54.99	06.13.2019	'Stephens Lake	4
'900.067000109592	BDR-18	MIX	'12B	05.30.2019	263	306	105.58	06.13.2019	'Stephens Lake	4
'900.067000109650	BDR-18	MIX	'12B	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000113181	BDR-18	MIX	'12B	05.30.2019	230	269	61.67	06.13.2019	'Stephens Lake	4
'900.067000113183	BDR-18	MIX	'12B	05.30.2019	240	288	80.71	06.13.2019	'Stephens Lake	4
'900.067000113189	BDR-18	MIX	'12B	05.30.2019	230	268	65.81	06.13.2019	'Stephens Lake	4

'900.067000113192	BDR-18	MIX	'12B	05.30.2019	228	265	66.61	06.13.2019	'Stephens Lake	4
'900.067000113204	BDR-18	MIX	'12B	05.30.2019	223	257	58.26	06.13.2019	'Stephens Lake	4
'900.067000113214	BDR-18	MIX	'12B	05.30.2019	238	279	70.38	06.13.2019	'Stephens Lake	4
'900.067000113221	BDR-18	MIX	'12B	n/a	n/a	n/a	n/a	06.13.2019	'Stephens Lake	4
'900.067000113223	BDR-18	MIX	'12B	05.30.2019	233	270	74.62	06.13.2019	'Stephens Lake	4
'900.067000113229	BDR-18	MIX	'12B	05.30.2019	190	224	35.61	06.13.2019	'Stephens Lake	4
'900.067000113232	BDR-18	MIX	'12B	05.30.2019	245	280	77.53	06.13.2019	'Stephens Lake	4
'900.067000113234	BDR-18	MIX	'12B	05.30.2019	212	248	48.69	06.13.2019	'Stephens Lake	4
'900.067000113240	BDR-18	MIX	'12B	05.30.2019	200	235	45.95	06.13.2019	'Stephens Lake	4
'900.067000113242	BDR-18	MIX	'12B	05.30.2019	210	247	40.98	06.13.2019	'Stephens Lake	4
'900.067000113246	BDR-18	MIX	'12B	05.30.2019	242	285	83.02	06.13.2019	'Stephens Lake	4
'900.067000113255	BDR-18	MIX	'12B	05.30.2019	240	277	71.95	06.13.2019	'Stephens Lake	4
'900.067000113263	BDR-18	MIX	'12B	05.30.2019	245	287	79.01	06.13.2019	'Stephens Lake	4
'900.067000113264	BDR-18	MIX	'12B	05.30.2019	225	260	58.25	06.13.2019	'Stephens Lake	4
'900.067000113270	BDR-18	MIX	'12B	05.30.2019	228	269	65.73	06.13.2019	'Stephens Lake	4
'900.067000113273	BDR-18	MIX	'12B	05.30.2019	250	290	80.44	06.13.2019	'Stephens Lake	4

'900.067000113278	BDR-18	MIX	'12B	05.30.2019	225	265	58.02	06.13.2019	'Stephens Lake	4
'900.067000113382	BDR-18	MIX	'12B	05.30.2019	218	255	52.33	06.13.2019	'Stephens Lake	4
'900.067000113383	BDR-18	MIX	'12B	05.30.2019	235	273	69.52	06.13.2019	'Stephens Lake	4
'900.067000113386	BDR-18	MIX	'12B	05.30.2019	218	258	62.33	06.13.2019	'Stephens Lake	4
'900.067000113389	BDR-18	MIX	'12B	05.30.2019	204	239	42.57	06.13.2019	'Stephens Lake	4
'900.067000113391	BDR-18	MIX	'12B	05.30.2019	210	247	47.73	06.13.2019	'Stephens Lake	4
'900.067000113393	BDR-18	MIX	'12B	05.30.2019	205	242	48.38	06.13.2019	'Stephens Lake	4
'900.067000113399	BDR-18	MIX	'12B	05.30.2019	263	310	113.68	06.13.2019	'Stephens Lake	4
'900.067000113400	BDR-18	MIX	'12B	05.30.2019	233	271	64.27	06.13.2019	'Stephens Lake	4
'900.067000113402	BDR-18	MIX	'12B	05.30.2019	210	240	45.52	06.13.2019	'Stephens Lake	4
'900.067000113404	BDR-18	MIX	'12B	05.30.2019	240	278	68.81	06.13.2019	'Stephens Lake	4
'900.067000113406	BDR-18	MIX	'12B	05.30.2019	220	260	53.63	06.13.2019	'Stephens Lake	4
'900.067000113408	BDR-18	MIX	'12B	05.30.2019	200	233	41.00	06.13.2019	'Stephens Lake	4
'900.067000113416	BDR-18	MIX	'12B	05.30.2019	245	290	86.39	06.13.2019	'Stephens Lake	4
'900.067000113427	BDR-18	MIX	'12B	05.30.2019	180	210	32.34	06.13.2019	'Stephens Lake	4
'900.067000113429	BDR-18	MIX	'12B	05.30.2019	210	243	46.80	06.13.2019	'Stephens Lake	4

'900.067000113430	BDR-18	MIX	'12B	05.30.2019	250	296	92.21	06.13.2019	'Stephens Lake	4
'900.067000113432	BDR-18	MIX	'12B	05.30.2019	218	255	55.60	06.13.2019	'Stephens Lake	4
'900.067000113434	BDR-18	MIX	'12B	05.30.2019	240	278	76.00	06.13.2019	'Stephens Lake	4
'900.067000113435	BDR-18	MIX	'12B	05.30.2019	230	268	68.91	06.13.2019	'Stephens Lake	4
'900.067000113438	BDR-18	MIX	'12B	05.30.2019	220	251	59.80	06.13.2019	'Stephens Lake	4
'900.067000113440	BDR-18	MIX	'12B	05.30.2019	200	235	42.36	06.13.2019	'Stephens Lake	4
'900.067000113441	BDR-18	MIX	'12B	05.30.2019	275	312	127.60	06.13.2019	'Stephens Lake	4
'900.067000113442	BDR-18	MIX	'12B	05.30.2019	236	268	69.78	06.13.2019	'Stephens Lake	4
'900.067000113444	BDR-18	MIX	'12B	05.30.2019	250	295	90.52	06.13.2019	'Stephens Lake	4
'900.067000113445	BDR-18	MIX	'12B	05.30.2019	250	293	77.87	06.13.2019	'Stephens Lake	4
'900.067000113446	BDR-18	MIX	'12B	05.30.2019	255	305	93.40	06.13.2019	'Stephens Lake	4
'900.067000113448	BDR-18	MIX	'12B	05.30.2019	235	278	80.31	06.13.2019	'Stephens Lake	4
'900.067000113449	BDR-18	MIX	'12B	05.30.2019	240	280	72.42	06.13.2019	'Stephens Lake	4
'900.067000113451	BDR-18	MIX	'12B	05.30.2019	240	280	77.71	06.13.2019	'Stephens Lake	4
'900.067000113454	BDR-18	MIX	'12B	05.30.2019	213	245	47.90	06.13.2019	'Stephens Lake	4
'900.067000113455	BDR-18	MIX	'12B	05.30.2019	235	279	70.09	06.13.2019	'Stephens Lake	4

'900.067000113460	BDR-18	MIX	'12B	05.30.2019	210	250	53.88	06.13.2019	'Stephens Lake	4
'900.067000113462	BDR-18	MIX	'12B	05.30.2019	230	270	65.80	06.13.2019	'Stephens Lake	4
'900.067000113468	BDR-18	MIX	'12B	05.30.2019	250	300	75.28	06.13.2019	'Stephens Lake	4
'900.067000113471	BDR-18	MIX	'12B	05.30.2019	248	292	85.70	06.13.2019	'Stephens Lake	4
'900.067000113474	BDR-18	MIX	'12B	05.30.2019	232	275	66.33	06.13.2019	'Stephens Lake	4
'900.067000113475	BDR-18	MIX	'12B	05.30.2019	205	235	43.82	06.13.2019	'Stephens Lake	4
'900.067000113477	BDR-18	MIX	'12B	05.30.2019	215	256	55.01	06.13.2019	'Stephens Lake	4
'900.067000113479	BDR-18	MIX	'12B	05.30.2019	245	285	87.14	06.13.2019	'Stephens Lake	4

APPENDIX 2:
BURNTWOOD RIVER (2019 YEAR-CLASS)

Table A2-1: Survival (%) of Burntwood River sturgeon (2019 year-class) at GRFH from June 18 (hatch) to October 31, 2019

LOT	Tanks	Month-Year	Start of Month Total	Mortality			Transfer		Recount Adjustment	End of Month Total	Monthly Survival (%)[a]
				Natural	Accidental	Euthanized	Stocking	Other			
LKST-BWR-19	3[b]	Jun-19	80,895[c]	15,930	0	30[d]	0	0	0	64,935	80.3
LKST-BWR-19	3[b]	Jul-19	64,935	11,001	0	3,325[e]	0	0	41,057 (-)	9,552	83.1
LKST-BWR-19	9[f]	Aug-19	9,552	1,482	0	3,667[g]	0	0	74 (+)	4,477	84.5
LKST-BWR-19	9[f]	Sep-19	4,477	17	0	0	1,714[h]	0	0	2,746	99.6
LKST-BWR-19	6[i]	Oct-19	2,746	5	0	0	1,967[h]	0	0	774	99.8
		Total	**80,895**	**28,435**	**0**	**7,022**	**3,681**	**0**	**40,983 (-)**	**774**	**64.8**

a. Monthly survival does not include euthanized fish or recount adjustments
b. 3B (F2xM1/2), 4A (F2xM3/4), 4B (F2xM5/6)
c. Estimated value based on egg counts and fertilization rates
d. 30 larvae (5 per cross) euthanized for genetics
e. Culled due to space constraints
f. 3B/10A/10B (F2xM1/2), 4A/11A/11B (F2xM3/4), 4B/12A/12B (F2xM5/6)
g. 3,607 fish culled due to space constraints; 60 fish euthanized for Namao Virus testing
h. Stocked into Burntwood River
i. 10A/10B (F2xM1/2), 11A/11B (F2xM3/4), 12A/12B (F2xM5/6)

Table A2-2: Monthly average (±SD), minimum and maximum Dissolved Oxygen (mg/L), Dissolved Carbon Dioxide (mg/L), pH, Total Ammonia-Nitrogen (mg/L), Un-Ionized Ammonia (mg/L) and Nitrite Nitrogen (mg/L) values for Burntwood River Sturgeon (2019 year-class) reared at Grand Rapids Fish Hatchery

Parameter	Mth-Yr	N[a]	Mean	±SD	Min	Max
Dissolved O_2 (mg/L)	Jun-19	3	9.01	0.11	8.94	9.14
	Jul-19	19	8.90	0.29	8.46	9.37
	Aug-19	36	8.57	0.20	7.92	8.81
	Sep-19	43	8.99	0.63	8.08	10.24
	Oct-19	24	8.78	0.13	8.57	9.01
Dissolved CO_2 (mg/L)	Jun-19	3	2.00	0.00	2.00	2.00
	Jul-19	19	2.00	0.00	2.00	2.00
	Aug-19	36	2.00	0.00	2.00	2.00
	Sep-19	43	2.70	0.67	2.00	4.00
	Oct-19	24	1.96	0.20	1.00	2.00
pH	Jun-19	3	8.43	0.01	8.42	8.43
	Jul-19	19	8.47	0.02	8.43	8.51
	Aug-19	36	8.55	0.04	8.45	8.62
	Sep-19	43	8.42	0.14	7.97	8.58
	Oct-19	24	8.64	0.06	8.59	8.88
Total Ammonia (mg/L)	Jun-19	3	0.000	0.000	0.000	0.000
	Jul-19	19	0.102	0.166	0.000	0.490
	Aug-19	36	0.204	0.159	0.000	0.440
	Sep-19	43	0.081	0.084	0.000	0.320
	Oct-19	24	0.113	0.144	0.000	0.490
	Jun-19	3	0.000	0.000	0.000	0.000

Parameter	Mth-Yr	N[a]	Mean	±SD	Min	Max
UIA (mg/L)	Jul-19	19	0.007	0.011	0.000	0.034
	Aug-19	36	0.023	0.017	0.000	0.053
	Sep-19	43	0.007	0.009	0.000	0.034
	Oct-19	24	0.012	0.015	0.000	0.051
Nitrite Nitrogen (mg/L)	Jun-19	3	0.05	0.00	0.05	0.05
	Jul-19	19	0.05	0.00	0.05	0.05
	Aug-19	36	0.14	0.12	0.05	0.30
	Sep-19	43	0.06	0.02	0.05	0.10
	Oct-19	24	0.07	0.02	0.05	0.10

a. Number of water samples per month

Table A2-3: Monthly average (±SD), minimum and maximum fork length (mm), total length (mm) and weight (g) for Burntwood River Lake Sturgeon (2019 year-class) reared at Grand Rapids Fish Hatchery

Measurement	Mth-Yr	n	Avg	±SD	Min	Max
Fork Length (mm)	Jul-19	0	n/a	n/a	n/a	n/a
	Aug-19	135	63	6	45	84
	Sep-19	105	90	7	75	106
	Oct-19	90	113	8	98	134
Total Length (mm)	Jul-19	75	39	4	32	51
	Aug-19	135	73	7	56	97
	Sep-19	105	106	8	87	125
	Oct-19	90	134	10	116	155
Weight (g)	Jul-18	75	0.20	0.06	0.10	0.40
	Aug-19	135	1.64	0.49	0.72	3.88
	Sep-19	105	4.90	1.12	2.85	8.47
	Oct-19	90	9.25	1.94	5.81	14.36

APPENDIX 3:
WATER QUALITY THRESHOLDS

Table A3-1: Reported Lake Sturgeon threshold values for Dissolved Oxygen, Dissolved Carbon Dioxide, pH, Ammonia-Nitrogen and Nitrite Nitrogen

Parameter	Threshold Values	References
Dissolved O_2 (mg/L)	> 6.0	Hochleithner and Gessner 2012
	> 4.0	Chebanov and Galich 2011
	> 5.0	Mims et al 2002
	> 6.0	Dettlaff et al 1993
Dissolved CO_2 (mg/L)	< 10.0	Hochleithner and Gessner 2012
	< 10.0	Chebanov and Galich 2011
pH	6.5 to 8.0	Hochleithner and Gessner 2012
	6.5 to 7.5	Chebanov and Galich 2011
	6.5 to 8.5	Mims et al 2002
	6.5 to 8.0	Dettlaff et al 1993
Ammonia NH_3-N (mg/L)	< 0.010	Hochleithner and Gessner 2012
	< 0.003	Chebanov and Galich 2011
	< 0.010	Mims et al 2002
Nitrite Nitrogen (mg/L)	0.1 to 0.2	Chebanov and Galich 2011
	< 0.1	Mims et al 2002

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