

**LEADING EDGE
(LE)**

1 **REFERENCE: Tab Introduction to Application; page (P) 2, first paragraph**

2
3 **QUESTION:**

4
5 a) Please confirm that YEC does not serve retail customers in Keno City but does
6 serve retail customers in Faro.

7
8 **ANSWER:**

9
10 **(a)**

11
12 Confirmed.

1 **REFERENCE: Tab Introduction to Application; P 5 top, (1.c.i.)**

2
3 **QUESTION:**

- 4
5 a) Were any of YEC's Board of Directors, or YEC's CEO, or those preparing the
6 Yukon Energy GRA aware that an Order in Council containing the directives
7 ultimately contained in OIC 2008/149 would be coming into effect prior to the
8 filing of Yukon Energy's 2008-2009 GRA? If so which of the above were aware of
9 the coming order?

10
11 **ANSWER:**

12
13 **(a)**

14
15 Please see response to YUB-YEC-1-20.

1 **REFERENCE: Tab Introduction to Application**

2
3 **QUESTION:**

4
5 a) If the answer to LE-YEC-1-2 is no, who gave instructions to those preparing the
6 GRA that no provisions for a Phase II hearing were to be made?

7
8 **ANSWER:**

9
10 **(a)**

11
12 See response to LE-YEC-1-2 and YUB-YEC-1-20.

1 **REFERENCE: Tab Introduction to Application; P 11, end of 2, and P 13-14**

2
3 **QUESTION:**

4
5 a) Correspondence on this GRA since the filing of Yukon Energy's application
6 suggests that no discussions with YECL regarding adjustments to the General
7 Service customer classes have yet taken place. Is this still the case or are
8 discussions now underway?

9
10 **ANSWER:**

11
12 **(a)**

13
14 No discussions are currently underway with YECL in regards to any possible future
15 adjustments to the General Service customer classes.

1 **REFERENCE: Tab 1 Introduction; P 1-6, Line (L) 24**

2
3 **QUESTION:**

4
5 a) Was the failure being referred to here in the transmission line itself or elsewhere
6 in the plant? Please explain in detail.

7
8 **ANSWER:**

9
10 **(a)**

11
12 The failure was related to the cables at the Aishihik Generating Station. A copy of the
13 April 11, 2006 detailed report provided to the Yukon Utilities Board in relation to this
14 matter is provided as Attachment 1 to this response



April 11, 2006

Ms. Wendy Shanks
Acting Chair
Yukon Utilities Board
19-1114 First Avenue
Whitehorse, Yukon Y1A 1A3

Dear Ms. Shanks,

RE: January 29, 2006 Outage Response and Reliability Plans

In response to the Yukon Utilities Board ("YUB") letter dated March 2, 2006, this submission contains the information as requested regarding the January 29, 2006 power outage on the Whitehorse-Aishihik-Faro (WAF) electrical grid in terms of emergency response and longer-term power reliability plans.

This submission contains the three questions asked by the Board and the utility's response.

1. *Outline the circumstances that caused the January 29, 2006 outage (a) and how YEC responded to this emergency (b) the likelihood for the event recurring (c) and what emergency plans YEC has in place for such an event (d). Outline what other system vulnerabilities are present and how they are being addressed, such as a potential fire at either the Aishihik plant or Whitehorse diesel plant (e).*

- a. On January 29 at approximately 13:34 the outgoing feeder at the underground Aishihik powerhouse tripped off due to a differential over-current fault on Aishihik outgoing feeder cables. The trip of the outgoing feeder also caused Aishihik unit 2 to trip off on over-speed. This resulted with the loss of both Aishihik units which, at that time, were supplying 49% of the total WAF generation as shown in the table below:

<u>Generating Unit</u>	<u>Output in MW's</u>	<u>Output in %</u>
Whse. Hydro Unit 4	18.2	37.1
Aish. Hydro Unit 1	11.9	24.3
Aish. Hydro Unit 2	11.9	24.3
Whse. Hydro Unit 3	7.0	14.3
WAF grid total	49.0	100.0

The resulting loss of generation resulted with a Whitehorse area blackout within seconds (WH3 remained on line until 14:03, energizing the 138kV system, with

those customers fed directly from the transmission through PT sub's i.e. Mendenhall and Deep Creek). The cause of the fault at the Aishihik Plant was determined to be a short in one of the cables running from the underground powerhouse to the surface substation. There are nine cables, three cables per phase running from the underground powerhouse to the substation. One of the cables on A-phase suffered a catastrophic insulation failure that also damaged one of the B-phase cables that was adjacent to it. There is no alternate route for power from Aishihik station to be delivered to the transmission system other than through these cables.

- b. The following sequence of events describes the outage and subsequent restorative and other actions taken by Yukon Energy in response to this emergency. A more complete review of Yukon Energy's secondary sales management during this period has been provided to the Board in Yukon Energy's March 13, 2006 filing in response to the YUB's letter of February 23, 2006 regarding a Utilities Consumers' Group complaint. For any additional information with respect to the restoration of power within the Whitehorse distribution system the Yukon Electrical Company Limited should be consulted as they have the operational responsibility for that system.

- 13:34 Jan. 29- Aishihik Hydro Plant separated from the 138 kV transmission system. AH1 remained on line feeding Haines Junction until 14:06. The plant was generating approximately 49% of the system generation at the time of the event.
- 13:34 - As a result of the lost generation from Aishihik Hydro Plant the remaining system generation (Whitehorse Hydro Units 3 and 4) were unable to carry the load. As a consequence Whitehorse distribution 34 kV primary feeder breakers trip due to under-frequency and under-voltage conditions.
- 13:34 - WH4 tripped due to over-speed.
- 13:40 - The Takhini switching station reactor tripped due to an over-current fault condition.
- 138 kV transmission line to Aishihik and Faro remained in service, being supplied by WH3.
- 13:42 – local Whitehorse system restoration was started. Restoration of Whitehorse was initiated using Whitehorse Hydro units 1 & 2 and local Whitehorse diesel. Aishihik Hydro Units 1 & 2, Takhini reactor and Whitehorse Hydro Unit 4 were unavailable due to trip conditions requiring further investigation. Whitehorse Diesel Units 1, 2, 3, 4, 6, 7 were available. WD5 was unavailable as it was out-of-service for maintenance.
- 13:44 - Faro and Ross River power was restored using local Faro diesel. Carmacks, Ross River, Haines Junction, and Teslin have their own local diesel owned by YECL.
- 14:03 - WH3 tripped and the head-gate closed.
- 14:06 – AH1, feeding Haines Junction, tripped off.
- Restoring the Whitehorse distribution system is slowed down due to the smaller size of available hydro units limiting their ability to pick up larger

blocks of loads. YECL was advised to sectionalize the Whitehorse distribution system into smaller loads of up to 2 MW's. This was acknowledged and done.

- Around 15:00, Yukon Energy contacted YECL specifically to request that they immediately contact all non-SCADA secondary sales customers and notify them that the 24-hour notice period for disconnection was being triggered and also, due to the current grid emergency, that if their secondary power systems were off, requested that they leave them off, or if they had turned them back on, requested that they shut them off. In addition, YECL was requested to contact the one SCADA-customer to remain off. YECL has informed us that these actions did take place that afternoon.
- 16:19 - WH4 was returned to service, which considerably increased the generation capacity and stability of the system.
- 17:13 - Full re-connection from the 138 kV transmission system and the 34 kV Whitehorse distribution was completed. Full restoration of power to all Whitehorse area distribution customers took several more hours by YECL.
- 22:21 - The Takhini reactor was re-energized followed by the transmission line to Faro at 22:26.
- Jan 30 - The cause of the Aishihik breakdown was found to be a faulty cable (1 of 9 cables, 3 per phase) that runs from the switchgear down stairs in the plant to the substation above.
- 7:00 Jan 31- The faulty cable was disconnected and the plant was synchronized to the system. However the plant output was de-rated to 19 MW due to restricted current carrying capacity of the remaining cables.
- 11:00 – Jan 31 – All WAF diesel was shut down.
- At approximately 15:00 on February 6, Yukon Energy notified YECL of the ability to allow reconnection of the one SCADA secondary sales customer (at that point, all WAF diesel generation had been off for 6 days, on-going availability of hydro generation was forecast and consequently Yukon Energy was able to offer limited availability of secondary power).
- At 11:00 on February 8, Yukon Energy notified YECL of the availability of secondary sales for the purpose of reconnecting the remainder of the Secondary Energy customers (by that time the system no longer faced any material risks with respect to the possible need for diesel generation within the next 7 day period).
- Feb 21 – Aishihik cabling was tested for current imbalance and the plant capacity rating was restored to 30 MW.

- c. In addressing the likelihood for the event recurring, it is important to note that loss of any one or more generating units on WAF can cause a grid blackout when such individual generating units are supplying between 14 % and 37 % of the total grid generation (as was occurring on January 29, during the winter season). At times of lower grid loads, such as the summertime, often the grid is being supplied by only one or two hydro units. Loss of one or more such units under the

conditions currently applicable on WAF therefore will almost always cause a grid blackout as there is no interconnection with a larger grid thus no potential to import power when it is needed. The probability of an unplanned loss of any one such hydro generating unit is assessed in system capacity planning studies, and (as demonstrated by system experience) is very low; system capacity planning also addresses the availability of other units to restore quickly the grid loads.

The specific event that occurred on January 29th involved failure of a cable connecting the Aishihik generating units with the transmission system. Absent proper remedy to ensure redundancy with regard to this cable connection, the specific event could well occur again. Prior to this event, Yukon Energy had recently adopted revised capacity planning criteria which had noted the need to address Aishihik-related transmission connection reliability, including the need to be able to deal with continuing supply to residential and commercial retail customers in the event of an emergency of this type in future.

The duration of the outage was longer than anticipated due to the loss of multiple generating units that caused the outage and the failure of some generating units to contribute during the restoration. This required modification to the standard blackout restoration plan listed in section d. below. This modification to the plan required utilization of smaller hydro units (WH1,2 instead of AH1, 2 and/or WH4) to bring up load which required more sectionalization of the distribution into smaller loads.

Work is presently underway by Yukon Energy to improve governor response on the Whitehorse Hydro and Diesel units to improve their load pickup capability that will shorten restoration times by reducing the need to sectionalize distribution loads. Discussions are presently underway with YECL to assess what, if any, improvements can be made by both utilities to shorten the restoration periods and to ensure affected customers can obtain more timely information on the extent and expected duration of major disturbances. Improvements under consideration include remote visibility and control of primary distribution breakers from the System Control Center, improved load shedding of distribution load to match loss of generation.

- d. The following restoration steps are followed in a normal system disturbance by Yukon Energy's System Control Center (SCC) using its computerized supervisory control and data acquisition (SCADA) system.
- SCC will stabilize the system frequency and voltage if the grid is not in a total blackout situation.
 - In a grid blackout SCC will begin restoring power by restarting the larger hydro units, typically Whitehorse Unit 4 and the Aishihik Hydro units.
 - Utilizing the SCADA system, SCC will identify which transmission/distribution system breakers have operated and/or the generating unit(s) that have tripped.

- SCC contacts YECL (if the event is on the WAF system) and informs them of the distribution feeders affected and any requirement to sectionalize the load (i.e. breaking up the load into smaller blocks). Sectionalizing the load is dependent on specific feeder loading and the season / temperature i.e. winter.
 - SCC contacts the appropriate on-call YEC maintenance staff and prioritizes their activities.
 - With the loss of any hydro generation in Whitehorse the operator is also required to spill water to maintain safe operating levels on Schwatka Lake as well as meeting the minimum down stream flow requirements on the Yukon River.
 - If the original generation prior to the disturbance remained on line, SCC will, at the direction of YECL, re-close any effected feeder breakers.
 - If the cause of the disturbance is a loss of generation SCC will replace the lost output with backup units. Units that have tripped off line may, depending on the cause, be placed back to service and used during the restoration.
 - The SCC, in conjunction with YECL service staff (on WAF), restores the system as quickly as possible by utilizing all available generation include diesel. On WAF, YECL prioritizes the order in which distribution customers are restored. The restoration process can and does work around the cause of the disturbances. If there are lines down the other feeders will be restored, if a generator failed others will be used until the repairs have been completed.
- e. Loss of multiple generating units or transmission line components remain a vulnerability to the WAF grid, in particular to the Whitehorse area as this is the area of the grid that has had significant growth in both energy sales and local demand since the shutdown of the Faro mine in 1998.

The reasons that the WAF grid is currently vulnerable include the fact that:

- the electrical grid is isolated with no interconnection for backup power,
- it involves (for sound economic reasons) typically radial transmission lines with no alternative transmission routes, and lastly,
- due to small grid loads, it can often be supplied with very few generating units thus making loss of even one generating unit problematic at times and loss of multiple units almost always causing a grid blackout.

The matter of system vulnerabilities and plans to address such capacity planning requirements has been addressed in recent years by various studies. Following these studies, as reviewed below in response to question 2, Yukon Energy has adopted a revised generation capacity planning criteria to address system vulnerabilities (particularly as regards radial transmission connection to the Aishihik generation) and to reduce the duration of major outages and blackouts and the potential for brown-out situations to occur.

With respect to specific vulnerabilities of facilities such as the Whitehorse Diesel Plant, reduction of the vulnerabilities is addressed as part of the Corporation's specific facility corrective action plans listed in Appendix 1 to this letter. See also the response to YUB Question #2. The specific vulnerabilities of the Aishihik plant which led to the January 29th emergency are also addressed in this appendix and the installation of a redundant cabling system from the underground powerhouse to the surface substation has been advanced from 2009 to 2007. The existing 7 cables remaining in the plant are being replaced before the end of June this year with 9 new cables.

With reference to BC Hydro's comments (at page 4-2 of its May 2004 Condition Assessment report) on the low maintenance costs observed on WAF generating units in 2002 and 2003 relative to industry experience, the Corporation notes that major overhauls are amortized in its accounts and thus do not show up in the Corporation's maintenance budgets as reviewed by BC Hydro. Major overhauls are done on hydro units every 10 years. Diesel unit major overhauls are also amortized and thus do not show up as "overhauls" in the Corporation's maintenance budgets. Diesel unit major overhauls are done on the basis of number of hours run and can be run up to 20,000 hours between major overhauls. As all of Yukon Energy's diesel units are now standby units they get very few hours run per year; accordingly, these diesel units currently may get 10 or more years between major overhauls.

With respect to fire vulnerability at the Whitehorse Diesel Plant there is a full dry-pipe sprinkler system throughout the diesel plant and fire shut-off valves are being installed in 2007 on the individual fuel lines to the diesel units.

At the Aishihik Plant there is a sprinkler system in the underground plant, elevator and cable shaft and the above ground service building. In addition there is a sprinkler system surrounding the surface buildings and substation in case of a forest fire. Emergency egress by the plant operator now utilizes both a safe room underground (the surge chamber) and provision for egress out the tailrace tunnel.

2. *Outline YEC's assessment of system reliability and expand on YEC's response to IR YUB-YEC-1.33.3 in light of the BC Hydro report and the January 29, 2006 power outage.*

Yukon Energy has completed its extensive review of its capacity planning criteria, including the reliability of system supply to the Whitehorse area, and as a result of that review Yukon Energy's Board of Directors in December 2005 adopted new capacity planning criteria applicable to the Whitehorse Aishihik Faro (WAF) grid and Mayo Dawson (MD) grid systems. Yukon Energy has also developed proposals to address near term requirements related to the new capacity planning criteria.

The following new capacity planning criteria have been adopted for the WAF and MD grid systems as a result of its review (no change has been made to the capacity planning criteria for isolated diesel communities):

WAF and MD Systems:

- a) **WAF and MD system-wide capacity planning criteria:** Each integrated grid system (WAF and MD) will be planned not to exceed a Loss of Load Expectation (or LOLE) of 2 hours/year.
- b) **Emergency (or “N-1”) WAF and MD system capacity planning criteria:** Each integrated grid system (WAF and MD) will be planned to be able to carry the forecast peak winter loads (excluding major industrial loads) under the largest single contingency (known as “N-1”). The N-1 criterion determines system capacity assuming the loss of the system’s single largest generating or transmission-related generation source. This criterion is not extended to major industrial customer loads which typically maintain sufficient on-site diesel for their own emergency purposes (these customers would be informed that they would not receive full supply should the Aishihik line be out of service during the coldest days of winter).
- c) **WAF and MD “community” criteria:** For communities on the WAF or MD grids, any location with a load large enough to justify a diesel unit of about 1 MW or more will be considered as a preferred location for new diesel units if that community does not already have back-up from another source (e.g., having an existing diesel unit). The new diesel units would provide grid support, and in times of line failures would provide local generation for the communities where they are located.

The new criteria is based on the approach used by other Canadian utilities today. It requires that Yukon Energy plan its grid systems so that on average no more than two hours of system outages per year would be expected as a result of the amount of generation and related transmission installed. It also ensures that even if a grid system’s single largest winter generating or transmission source is lost, the utility can continue to provide power to residential and commercial customers.

The new two-part capacity planning criteria for each Yukon Energy transmission grid system are essentially the same as the capacity criteria recently approved by the regulator for the Yellowknife system. The approach ensures that two different concerns are addressed on an ongoing basis:

- **Probability-based Criteria:** Most Canadian utilities today apply a probability-based approach to evaluate the maximum loads that a given system can safely carry. The new Yukon Energy criteria require each grid system to be planned so that the long-term average number of hours of system outages per year (including outages to

industrial customer loads) due to inadequate installed generation and transmission does not exceed 2 hours/year.

- **Emergency Criteria:** Each grid system will also be planned under the new criteria to carry the forecast peak winter loads (excluding major industrial loads) under the loss of the system's single largest generating or transmission-related source. These emergency criteria address the potential seriousness in Yukon of a sustained outage of the critical component in winter when there is the least amount of sunlight to effect repairs such as to transmission facilities.

The net effect of the new criteria is a 2006 WAF system capacity shortfall of 700 kW, compared with a WAF capacity surplus of about 11,300 kW under the previous capacity planning criteria. Under the new criteria any further load growth on WAF, as well as all future WAF system diesel unit retirements, will require new generation capacity for peak winter loads. Based on assessment of these factors, Yukon Energy has determined that near term projects (i.e., commitments prior to 2009) are required to increase WAF system capacity by between 15 and 27 MW within the next six years (i.e., by 2012) as load grows and certain diesel units are retired at Whitehorse. Capacity shortfalls begin to arise as soon as 2006, even before any Whitehorse diesel units are retired, and become sufficiently material in 2007 to require overall spending commitments exceeding the \$3 million level.

No near term capacity shortfall requirements are currently expected on the MD system.

Yukon Energy has identified three near-term generation or transmission projects of \$3 million or more which it is presently considering to commit prior to 2009 to address load growth, the scheduled retirement of certain diesel units at Whitehorse, opportunities to enhance existing facilities, and the adoption of the new capacity planning criteria. Together, these proposed projects along with other system enhancements, will provide over 21 MW of new firm winter capacity, which meets WAF capacity shortfalls by 2012 of 18.7 MW under the current Base Case load forecast as well as 21.5 MW under the Base Case forecast plus the Minto and Carmacks Copper mine loads (assuming new transmission connection for these mines to at least the WAF grid). The major proposals are summarized below along with contingency options to meet WAF loads to 2012.

Aishihik Third Turbine

This is a proposal that was initially reviewed by the Yukon Utilities Board in 1992. A third turbine can be installed at the existing Aishihik generation station at a cost of about \$7 million to reduce future costly diesel generation. Yukon Energy received environmental and Water Board approvals for this project under its new Aishihik Water License. If this project proceeds, Yukon Energy expects the turbine to go into production between late 2009 and 2012, depending on electrical needs and what other initiatives are put in place.

Carmacks-Stewart Transmission Line

This project would see a transmission line running from Carmacks to Stewart Crossing, connecting Yukon Energy's two power transmission systems. It will provide long-term benefits to all Yukon ratepayers in that it allows for more efficient use of existing surplus hydroelectric generation and enhances the future development of new least cost power options. The line is forecast to provide the Whitehorse-Aishihik-Faro grid with an additional 5.6 megawatts of firm winter capacity in 2012 at a cost in 2005 dollars of between \$30- and \$35-million. If the line is built, Yukon Energy is currently planning for it to be in service by late 2008, assuming that all permits and approvals are in place by the end of 2006 and construction commences in early 2007. This project will only go ahead after meaningful consultation occurs with First Nations and all environmental permits are obtained. As well, this project will only proceed if Yukon government infrastructure funding ensures no adverse impact on ratepayers.

Diesel Units Life Extension or Replacement

There are seven diesel generators at the Whitehorse Rapids Generating Station. The three oldest ones are currently scheduled for retirement between 2007 and 2011. Yukon Energy has been looking at whether it is technically feasible to refurbish these units, thus extending their lives by 10 to 20 years at a cost of up to \$4.5 million. Refurbishing these units would provide an added 14 megawatts of winter power on the Whitehorse-Aishihik-Faro grid. In order to secure in-service of the first unit by October 2007, planning and commitments for construction/implementation would need to begin by the summer of 2006 of the first unit, plus the plant updating, at an estimated cost of up to \$2.5 million.

If it is determined that refurbishing the three units is not technically feasible, Yukon Energy will likely focus on replacing those three units with new and larger diesel generators of at least 8 to 11 megawatts each. The cost in 2005 dollars of new diesel units is expected to be in the range of \$0.8 to \$0.9 million per megawatt. The first unit would need to be installed in 2007, requiring final planning work on this project by summer 2006, including orders for the necessary engine unit (with cancellation provisions) in order that the unit can be installed by October 2007.

Another option to replacing these three units is to build a second, back-up, transmission line from Aishihik to Whitehorse. The largest single factor affecting the winter reliability on the WAF grid is the Aishihik transmission line: if it goes down the WAF grid loses a large amount of its winter power supply. However, since the option to build a second, back-up, transmission line from Aishihik to Whitehorse appears to be more expensive than diesel-related improvements, it would only be examined if new mines are connected to the Whitehorse-Aishihik-Faro grid without the completion of the Carmacks-Stewart line and without the diesel generators' life extension being technically feasible.

No final decision has yet been made to implement any of these proposed projects. However, given the magnitude of the identified near term requirements on WAF, Yukon Energy is proceeding as required to carry out planning activities that will enable near term development of essential new capacity required on the WAF grid.

Yukon Energy will file with the YUB by June 1, 2006 its 20-year Resource Plan addressing major electrical generation and transmission needs in Yukon from 2006 to 2025. The last time we submitted a Resource Plan to the YUB was in 1992. The Resource Plan will provide background information on the Yukon's power systems and give an overview of what we expect our near-term and longer-term requirements will be, taking into account a number of industrial development scenarios as well as the new capacity criteria recently adopted by Yukon Energy to better protect customers from outages.

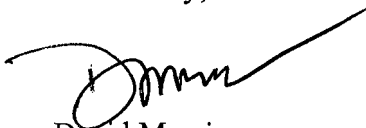
3. *Outline YEC's priority for responding to items in the BC Hydro report, indicating what recommendations have been implemented and the priority assigned to outstanding recommendations in terms of steps being taken to improve system reliability both in terms of the short and long terms.*

In 2004 the Corporation commissioned a number of independent engineers to provide an assessment of the current condition and remaining life of the Corporation's key generation and transmission assets and to make recommendations regarding the on-going operation, life extension, and replacement of these assets. The Corporation remains committed to addressing all of the recommendations contained in these reports. A corrective action plan arising from a review of the recommendations is contained in Appendix 1.

Yukon Energy allocates budgets in its capital plans for each year for upgrades to infrastructure (Transmission lines, Substations, and Generating plants). As there were numerous recommendations arising out of the Generation and Substation Assessment reports, Yukon Energy budgeted over three years; 2005, 2006, & 2007, to complete all of the action plans. Appendix 1 contains the list of Generation and Substation corrective action plans and the current status of each plan. Of 133 items, 44 are complete, and 49 are in progress. The most critical action plans were scheduled to be started in 2005 with the rest scheduled over the subsequent 2 years to balance resourcing requirements. The 2005 action plans included the following high priority activities: purchase of critical maintenance tools such as infrared camera, circuit breaker analyzer, replacement of various battery banks, overhaul of Whitehorse Hydro Unit 1, correcting of Aishihik overhead crane and bulkhead gate deficiencies and the planned replacement of Mayo Hydro T1 transformer in 2007.

Yukon Energy's ongoing capital and resource planning also focuses on near or longer-term major capital project requirements to the extent that these may arise from the earlier conditions assessment reports.

Yours truly,



David Morrison,
President and CEO

**Appendix 1 Detailed Generation and Substation Condition Assessment
Corrective action plans**

List of Facility/Plant Numbers and Descriptions

Facility Number	Description
P125	Whitehorse Hydro Plant – Units 1,2,3
P126	Whitehorse Diesel Plant –Units 1 thru 7
P127	Whitehorse Hydro Plant – Unit 4
P130	Aishihik Hydro Plant - Units 1,2
S150	Whitehorse Hydro/Diesel Substation
S164	Takhini Substation
S167	Aishihik Hydro Substation
S170	McIntyre Substation
S171	Riverside Substation (in Riverdale)
S249	Mayo Hydro Substation

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
Other						
	1 spare 38kV Vacuum Circuit Breaker	2006 Breaker Install will make one SF6 unit spare	2006	1		1
	1 spare Surge Arrester 108kV(rated 86kV MCOV, 5kJ/kV)	Part of 2005 / 2006 Insulation Coordination	2006	1		1
	3 spare Current Transformers 600/400/100: 5:5:5	Under review	2007	1		
	3 spare Ring disconnect 34.5kV, 600A	Under review	2007	1		
	3 spare Surge Arresters 30kV(rated 24kV MCOV, 5kJ/kV)	Part of 2005 / 2006 Insulation Coordination	2006	1		1
	Purchase Infrared Camera	Completed 2005	2005	1	1	
	Purchasing a Circuit Breaker Analyzer	Complete-Dec 2005	2005	1	1	
	Governor Testing	Governors overhauled every 2 years	2005+	1	1	
	Oil Separators	Oil detection to be added to sumps	2006	1		1
	Brake Dust Collection system - all units	Asbestos linings removed , no further action required	2007	1	1	
	Inspect Reactor phases at Kulan Storage area		2006	1		1
P125						
	HVDC absorption testing of WH1, 2 stators	PI and power factor tests performed annually.	2005+	1	1	
	HVDC testing of WH3 stator and 6.9kV AC Cables	PI and power factor tests performed bi-annually.	2005+	1	1	
	Investigate about spare coils for WH3	Under review	2007	1		
	Load testing the Battery Bank	Will investigate in 2006.	2006	1		1
	Relocation or Automation of Deluge valves	Part of 2006 Gen Capital Work	2006	1		1
	Replace 125VDC cable to Intake Gate house	Looked at in 2005 - decided to keep system as it is.	2005	1	1	
	Unit Protection Documentation and Review, adding or setting up inter-turn winding failure protection	Review as part of overall hydro unit protection standard	2007	1		
	WH1 & 2 single unit operation at the 6.9kV Bus	Under review	2007	1		
	WH2 slip-ring brush gear run-out on positive Slip-ring	Corrected in early 2006	2006	1	1	

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	Center Rotor & Adjust Guide Bearings	To be done at next major overhaul	2007	1		
	WH1 Overhaul	Completed 2005	2005	1	1	
	WH2 Overhaul	Completed 2004	2004	1	1	
	East Gate Rollers	Completed 2004	2004	1	1	
P126						
	Belly tank fuel level float switch installation or restoration	WD5 comp in 2005, WD4/6 to be done in 2006/7.	2007	1		1
	Check and replace non-functional instruments	WD5 expected completion in April 2006. WD4 in 2006/7 budget.	2007	1		1
	Restore WD7 PLC	Complete Feb 2006. Reconditioned HMI and purchased new power supply.	2006	1	1	
	Thermocouple mechanical switch replacement with a solid state scanner	WD5 completed in 2005. Installed new switch and digital display.	2005	1		1
	WD4,5,6 Cable Replacement		2007	1		
	Winding Insulation Testing	Part of 2006 PM plan	2006	1		1
	Waste Fuel System	Part of Diesel plant modernization	2007	1		
	Fuel Utilidor		2006	1		1
	Refill Swing Arm	Under review	2007	1		
	Testing of pressure vessels		2007	1		
	Air Dryers	Part of Diesel plant modernization	2007	1		
	Crankcase doors on WD4, 5 & 6	Under review	2007	1		
	Belly Tank Controls on WD 4, 5 & 6		2006	1		1
	Maint. Sched. on WD4 & 5 Heat Exchangers	(blank)	2005	1	1	
	Fire Valve	Location of valve under review	2007	1		
	Lube Oil Systems WD4, 5 & 6	Under review	2007	1		
	Positive Ventilation for the 125VDC battery room	Completed in Aug 2004	2004	1	1	
P127						
	Check, Calibrate and Replace the gauges of T9	Protection upgrade in 2004, Planned in 2006	2004	1	1	
	Excitation bus bar replacement	Replaced in 2005. Additional upgrades In progress.	2005	1		1
	Excitation system augmentation	Excitation assessed in 2005 - Excellent condition	2005	1	1	

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	Excitation transformer forced cooling	Plant Cooling Upgraded instead	2005	1	1	
	Fuse installation on 3 phase cables or replace with single phase cables (excitation and SS xfmr)	Will be done with exciter upgrade	2008+	1		
	HVDC absorption Testing	PI and power factor tests performed annually.	2005+	1	1	
	Implementing dual battery chargers in place of present single charger	Chargers Purchased in 2005, Installation in 2006	2005/6	1		1
	Lower pole brush gear run-out problem	Inspected in 2006, will monitor to next major overhaul	2006	1	1	
	Modification to the generator terminal equipment	Under review	2007	1		
	Power Cable HVDC testing	Currently perform PI and power factor tests.	2005+	1	1	
	Relocate PDA couplers to the bottom of the unit	Couplers were slightly relocated; GE assessment is location is good.	2005	1	1	
	Station service DC Battery replacement	Battery Bank purchased in 2005, Install in 2006	2005/6	1		1
	Rough Load Zone	Study completed in 2001, no further action required	2001	1	1	
	Start Problems	Part of governor work planned in 2006	2006	1		1
	Servo Isolating valves		2005	1	1	
	Oil Containment	Part of 2006 Capital Plan	2006	1		1
P130						
	48VDC battery replacement with station batteries or moving the auto batteries to different location		2006	1		1
	Automatic transfer of DC battery chargers	Reviewed in 2006, not required	2006	1	1	
	Connect motor operators for intake square butterfly valves	Bulkhead gates done in 2005	2007	1		1
	Fire Protection	Generator housing deluge system under review	2007	1		
	HVDC Absorption testing	Currently perform PI and power factor tests.	2005+	1	1	
	HVDC testing of 13.8kV Power Cables	Will develop schedule after new cables installed.	2007	1		

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	Load testing of Battery bank	Battery Bank replaced in 2005.	2005	1	1	
	PDA testing	Done bi-annually since 2005.	2005	1	1	
	Slip ring brush replacement with standard brushes in place of brushes with copper insert	Exist brushes have performed satisfactory for 30 years	2005+	1	1	
	Split generators at metal clad to two separate units and run cables to a tie breaker at switch yard	Identified in 2007 capital plan	2007	1		1
	Unit Protection upgrade	May be postponed for timing with AH3	2006	1		1
	AH2 Rewind	Rewind Planned for 2006	2006	1		1
	TIV Seal Leaks & positive Pressure		2007	1		
	Crane Cables & Maintenance	Completed 2005	2005	1	1	
	Governor Tests	Governors overhauled every 2 years	2005+	1	1	
	Draft Tube Crane Structure	Sandblasted & repainted	2005	1	1	
	Intake Valves - Align and Motorize		2007	1		
	Air Receivers	Under review	2007	1		
	Oil skimmer in sump	Oil detector	2006	1		1
	Aishihik Bulkhead Gates	Completed 2005	2005	1	1	
	AH2 Vibration Running Signature	Part of Rewind Project	2006	1		1
	AH2 Install Vibration Probes	During Rewind Project	2006	1		1
	Install automatic water deluge system for generators	Needs assessment in 2006 for possible 2007 capital project	2007	1		
S150						
	52-1, 2, 3, 4, 5, 8, 9 Fire stops at cable entry	Part of next PM in 2006	2006	1		1
	52-1, 2, 3, 4, 5, 8, 9 Fixing Rear panel Bolts	Part of next PM in 2006	2006	1		1
	52-11 fixing leaks on phases B & C	Part of next PM in 2006	2006	1		1
	52-12 fixing porcelain damage	Part of next PM in 2006	2006	1		1
	52-15, 52-19 install heaters inside the operating mechanism	Complete breakers being replaced in 2005/2006	2006	1		1
	52-23 grounding	Needs Investigation	2007	1		
	Battery bank replacement	Completed in 2004	2004	1	1	
	Check, Calibrate and Replace the gauges of T2	Part of next PM in 2006	2006	1		1

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	Check, Calibrate and Replace the gauges of T7	Part of next PM in 2006	2006	1		1
	Phase Identification	Part of next PM in 2006	2006	1		1
	Replacement of 138kV Nucletron switches with post type disconnect switch (89-HT2, 89-HT7)	Inspect and repair as necessary	2007	1		
	Replacement of 34.5kV Circuit breakers	2 Purchased in 2005, Installation in 2006	2006	1		1
	T3, T4 HV arrestor relocation	Insul Coord Study completed in 2005, Arrestor work planned for 2006	2006	1		1
	Timing test - Various Breakers	S150-52-11,12,13,14, & 15 completed in 2005	2005	1	1	
S164						
	Check, Calibrate and Replace the gauges of T7	Part of next PM in 2007	2007	1		
	Installation of a PT sub for Station Service	Under review	2007	1		
	Oil conditioning of R1	Part of next PM in 2007	2007	1		
	Phase Identification	Part of next PM in 2007	2007	1		
	Replacement of damaged insulators	Part of next PM in 2007	2007	1		
	Surge arresters upgrade with MOV type	Insul Coord Study 2005, Arrestor work 2006	2006	1		1
	Timing testing of Circuit breakers	S164-52-1,2,3 tested in 2004	2004	1	1	
	89-1L, 89-1S, 89-1B, 89-2L, 89-2S, 89-2B, 89-3L, 89-3S, 89-3B, 89-R1 disconnect switch (Morgan Power VBV) wiper alignment or replacement with new ones	Inspect and align as equipment is available	2007	1		
S167						
	89-2S, 89-2L, 89-2B, 89-HT3, 89-LT3 bases to be connected to station ground grid	Already done	2004	1	1	
	Battery bank to be fixed to the floor	Part of 2006 PM plan	2006	1		1
	Better mechanical support to the cable risers near R1, 89-LT3	Part of 2006 PM plan	2006	1		1
	Check LV bushings of T3	Planned PM in 2007	2007	1		
	Check, Calibrate and Replace the gauges	Planned PM in 2006	2006	1		1

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	of T1					
	Phase Identification	Part of 2006 PM plan	2006	1		1
	Repairs to Air Core reactor	Planned PM in 2007	2007	1		
	Retrofitting of 52-R1 pressure relief flaps, door latching and ventilation	Planned PM in 2007	2007	1		
	Surge arresters upgrade and installation for T1 & R1	Insul Coord Study 2005, Arrestor work 2006	2006	1		1
	TI pad to be leveled	Completed in 2005	2005	1	1	
	Timing testing of Circuit Breaker 52-1 ABB HLR	S167-52-1,2 tested in 2004	2004	1	1	
	89-1L, 89-1S, 89-1B disconnect switch (Morgan Power VBV) wiper alignment immediately or replacement with new ones	Inspect and align as equipment is available	2007	1		
S170						
	Check LV Bushings of T1	Planned Maint in 2006	2006	1		1
	Fence Grounding issues to be addressed	Completed in 2004	2004	1	1	
	Phase Identification	Part of 2006 PM plan	2006	1		1
	Rectify oil leaks of 52-1, b phase	Planned Maint in 2006	2006	1		1
	S170-52-1 Circuit Breaker Timing Tests	Both S170-52-1 & 2 were tested	2005	1	1	
	Surge arresters upgrade on T1 with MOV type	Insul Coord Study 2005, Arrestor work 2006	2006	1		1
S171						
	Installation of a PT sub for Station Service	Under review	2007	1		
	Installation of surge arrestors	Insul Coord Study in 2005, Arrestor work in 2006	2006	1		1
	Phase Identification	On-going, as equipment is scheduled out-of-service	2006	1		1
	Replacement of damaged insulators	Breaker insulators replaced	2005	1	1	
	Replacement of L172PT B phase leaking top Capacitor	Under review	2007	1		
	Timing testing of Circuit breakers	S171-52-1, 3 & 4 tested in 2004	2004	1	1	
S249						
	Grounding issues with 6.9 & 12 kV hook stick operated disconnect bases to be	Under review	2007	1		

FACILITY CORRECTIVE ACTION PLAN

Plant	Description	Comments	Planned or Completed	Count of Item	Complete	In Progress
	addressed					
	Phase Identification	On-going, as equipment is scheduled out-of-service	2007	1		
	Refurbish or replace T1	Part of Capital plan for 2007	2007	1		
	Refurbish or replace T2	T1, T2, & T3 back each other up	2007	1	1	
	Refurbish or replace T3	T1, T2, & T3 back each other up	2007	1	1	
	S7745,7747,7749,7750 & S249 bases to be connected to station ground grid	To be done during T1 replacement	2007	1		
	Surge arresters relocation & Upgrade	Mayo Arrestor work in 2007, will coordinate with T1 replacement	2007	1		1
Grand Total				133	44	49

1 **REFERENCE: Tab 1 Introduction**

2
3 **QUESTION:**

- 4
5 a) Further to LE-YEC 5, a fault at the Aishihik plant also caused a system wide
6 outage and kept the Aishihik plant off-line for a period of time late in 2008. Please
7 describe the faulted component and indicate how long the plant was restricted in
8 its output.

9
10 **ANSWER:**

11
12 **(a)**

13
14 On December 1, 2008 a pothead connecting a reactor to buss work at the Aishihik
15 switchyard failed. This caused the Aishihik plant to shutdown and subsequently caused
16 the entire WAF grid to shutdown. The output of the plant was restricted from
17 approximately 2:00 pm on December 1, 2008 to 7:00 pm on December 2, 2008.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation;**
2 **P 2-7, L 18**
3

4 **QUESTION:**
5

6 a) Are discussions with Alexco Resource Corp. on a power purchase agreement
7 now underway?
8

9 **ANSWER:**
10

11 **(a)**
12

13 Discussions with Alexco Resource Corp. are currently underway but have not
14 concluded. The special issues and considerations peculiar to the Power Purchase
15 Agreement with Minto Mine are not anticipated with regard to providing service to an
16 area previously service by YEC, i.e., United Keno Hill Mine.
17

18 Order in Council 2007/94 stipulates that rates charged to Major Industrial Customers
19 from January 1, 2008 until December 31, 2012 conform to Rate Schedule 39 provided
20 as an Attachment to the OIC. This effectively diminishes rate concerns to be addressed
21 with regard to the service to be provided to Alexco. Further, risks relating to financing of
22 capital cost contributions that were present in the Power Purchase Agreement with Minto
23 are not expected to arise in relation to any agreement with Alexco.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation; P 2-7, L25**

2
3 **QUESTION:**

4
5 a) What was the reason for the 3.1% decline in firm retail sales in 2006?

6
7 **ANSWER:**

8
9 **(a)**

10
11 This decline is due to decrease in general service sales. As detailed on page 2-8 of the
12 Application (lines no. 7-11), lower general service sales starting in 2006 and 2007
13 compared to 2005 can be attributed to a decline in total Faro load, related to the varying
14 load for dewatering activities at the Faro mine site. Total Faro general service load
15 dropped from 7,091 MW.h in 2005 to 5,488 MW.h in 2006 and 5,398 MW.h in 2007. This
16 change in load is fundamentally due to changes at the Faro Mine site.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation;**
2 **P 2-9, L 23**
3

4 **QUESTION:**
5

- 6 a) Please confirm the indication in the Application that on days that diesel peaking
7 is required this is only for portions of those days? Please confirm that this has not
8 already been required in the 2008-2009 winter season.
9

10 **ANSWER:**
11

12 **(a)**
13

14 Peaking diesel is typically only required for portions of the day. This occurred on WAF
15 from approximately December 16-23, 2008 and from December 29, 2008 to January 11,
16 2009.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation;**
2 **P 2-9, L 23**
3

4 **QUESTION:**
5

- 6 a) At approximately what Whitehorse temperature will peaking diesel be required?
7 At what Whitehorse temperature will 24 hour peaking diesel be required?
8

9 **ANSWER:**
10

11 **(a)**
12

13 Peaking diesel requirements are dependent on more variables than just temperature,
14 such as other loads and time of day. Peaking diesel is generally required on the WAF
15 grid once daytime temperatures reach below -25 Celsius.
16

17 Under current loads, there is no reasonable temperature at which peaking diesel would
18 be expected to be required on a 24 hour basis.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation;**
2 **P 2-9, L 23**
3

4 **QUESTION:**
5

- 6 a) At approximately what Dawson City / Mayo temperature will peaking diesel be
7 required on the M-D system? At what Dawson City temperature will 24 hour
8 peaking diesel be required?
9

10 **ANSWER:**
11

12 **(a)**
13

14 At present loads, peaking diesel will be required on the Mayo/Dawson system at
15 approximately -40 Celsius. Under present loads, 24 hour peaking diesel is not
16 anticipated.

1 **REFERENCE: Tab 2 Yukon Energy System Sales and Generation;**
2 **P 2-12, L 4**
3

4 **QUESTION:**
5

6 a) At approximately what percentage of long term average water inflow into the
7 Aishihik system (or the Whitehorse Rapids hydro system) will there be an energy
8 constraint on secondary sales?
9

10 **ANSWER:**
11

12 **(a)**
13

14 There is no specific threshold Aishihik inflow that would be used to constrain secondary
15 sales at any given point in time. Any decision to constrain secondary sales would be
16 based on several factors that would include actual and forecast inflows to both
17 Whitehorse and Aishihik systems, actual and forecast water levels in Marsh Lake and
18 Aishihik Lake reservoirs, water license constraints and forecast firm and secondary
19 power sales.
20

21 In regards to the test years, Yukon Energy assessed the situation where Aishihik started
22 fall 2008 at full levels, and using forecast loads (including secondary sales) determined
23 that even with Aishihik inflows at 50% of normal during the following 1.5 year period (to
24 spring 2010) Aishihik would not reach its lower supply level by that time.

1 **REFERENCE: Tab 2 Yukon Energy System Sales Generation**

2
3 **QUESTION:**

4
5 a) Further to LE-YEC-14, at what percentages of these flows will diesel energy be
6 required to serve firm load, assuming no net drawdown from storage?

7
8 **ANSWER:**

9
10 **(a)**

11
12 Baseload diesel generation is not anticipated to be required to serve firm load in 2009
13 under basically any water flow conditions.

14
15 As noted in LE-YEC-1-14(a), in the event very low flows occur at Aishihik during 2009,
16 and forecasts indicate that Aishihik will reach its lower supply level by spring 2010
17 (necessitating diesel baseload generation to serve firm load), secondary sales would be
18 interrupted for water flow reasons, which would reduce the extent of Aishihik drawdown
19 and help ensure baseload diesel is not required in 2010.

20
21 In general, any time secondary sales are constrained, hydro generation is at the
22 maximum available. Diesel would be required to serve any loads that exceed the hydro
23 generation available from actual inflows to YEC's hydro reservoirs, in order to have no
24 net drawdown from storage.

1 **REFERENCE: Tab 2 Yukon Energy System Sales Generation; P 2-12, L11**

2
3 **QUESTION:**

4
5 a) What is the winter capacity of the Mayo Hydro plant?

6
7 **ANSWER:**

8
9 **(a)**

10
11 The winter capacity of the Mayo hydro plant is currently approximately 4.9 MW,
12 depending on water conditions such as the level of Wareham Lake.

1 **REFERENCE: Tab 1 Introduction; P 2-13, L6**

2
3 **QUESTION:**

4
5 a) Has any diesel generation occurred at either Faro or Minto to date this winter? If
6 not, why not, and when will the Faro and Minto units be available for diesel
7 peaking?

8
9 **ANSWER:**

10
11 **(a)**

12
13 There has been 66 MWh of generation in Faro for the period of November 2008 to
14 January 2009. For further information on the FD1 unit please see response to LE-YEC-
15 1-54.

16
17 Minto diesels have not been used over this period for general WAF support or peaking.

1 **REFERENCE: Yukon Energy System Sales Generation; Table 2.5**

2
3 **QUESTION:**

- 4
5 a) Please explain why the energy supplied by the wind generators has been falling
6 steadily in recent years, and, since wind energy is more abundant in winter than
7 summer, what are Yukon Energy's plans to improve their winter performance to
8 reduce diesel generation?

9
10 **ANSWER:**

11
12 **(a)**

13
14 In recent years, production from the wind turbines has been curtailed for the following
15 reasons:

- 16
17 1. The remote and harsh operating environment has resulted in a greater number of
18 equipment failures and caused lengthier periods to effect repairs. Rime icing is
19 common in the early part of winter and often causes the units to shut down for
20 lengthy periods even though the blades are heated.
21
22 2. The Vestas turbine was not purchased as a unit designed for operating in a
23 "harsh northern" environment. Hence, the retrofitting has been experimental in
24 nature with little support from Vestas.
25
26 3. With no SCADA, the SCC operator was calling the turbines 2x a day. It is often
27 not obvious that there is a problem, since the unit may be in alarm due to icing,
28 etc. that may clear once the weather changes.
29
30 4. Due to exterior ladder design, the WW1 unit is not accessible in windy conditions.
31
32 5. WW2 (the Vestas 660kW) lost production in 2004 due to failure in its yawing
33 gear. It became a lengthy repair process due to the combination of the remote
34 and harsh operating environment (as noted in item 1 above) and the requirement
35 to transport a 150 tonne crane from Edmonton.
36 6. Parts from the suppliers are quite expensive for YEC to purchase, and as a result
37 very few spares are kept on site.

1 7. Due to small size and remote location, support from the vendors has been
2 problematic.

3
4 8. Wind on the mountain tops is quite variable; it can often be outside of the
5 operating parameters of the turbines or can prevent work on the units.

6
7 9. The priority for repair of the two units is lower than other firm production units,
8 due to lower amounts of generation available from the two turbines.

9
10 The actual wind generator output for 2008 was 437 MWh.

11
12 The higher forecast for 2009 takes into account the remediation activities planned for
13 2009. YEC's plan for increasing the output of the wind turbines is to reduce the amount
14 of downtime associated with these units. A comprehensive list of outage issues will be
15 prepared and remediation plans for the high priority items will be made.

1 **REFERENCE:** **Yukon Energy System Sales Generation**

2

3 **QUESTION:**

4

5 a) Are the leading edge blade heaters on the wind turbines operative?

6

7 **ANSWER:**

8

9 **(a)**

10

11 Yes.

1 **REFERENCE: Yukon Energy System Sales Generation**

2

3 **QUESTION:**

4

5 a) Are the wind turbines SCADA controlled, and if not when will they be brought
6 under SCADA control?

7

8 **ANSWER:**

9

10 **(a)**

11

12 Please see response to LE-YEC-1-26 which notes they are not SCADA controlled. At
13 the current time there are no plans to bring them under SCADA control.

1 **REFERENCE: Yukon Energy System Sales Generation**

2
3 **QUESTION:**

4
5 a) Where in the order of priority for operational attention and maintenance response
6 are the wind turbines placed relative to other generators on the WAF system?
7

8 **ANSWER:**

9
10 **(a)**

11
12 Please see response to LE-YEC-1-26 which lists reasons for curtailed production from
13 the units over the past few years. That response notes that due to the smaller generation
14 offered by the two turbines, the priority for repairing the two units is less than other firm
15 production units.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-4, Table 3.2**

2
3 **QUESTION:**

4
5 a) At what locations does Yukon Energy purchase wholesale power and what rates
6 are paid for power at these locations?

7
8 **ANSWER:**

9
10 **(a)**

11
12 As noted in the Application at page 3-5, Yukon Energy purchases wholesale power from
13 YECL at Johnson's Crossing at a rate of 20 cents/kWh.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-5, L18**

2
3 **QUESTION:**

- 4
5 a) It is stated here that Yukon Energy purchases power from YECL at Johnson's
6 Crossing for \$0.20 per kWh. This seems exorbitant considering YECL will
7 purchase this power for \$0.0685 per kWh (about one third of the cost) from
8 Yukon Energy. Please explain why Yukon Energy has not addresses this issue
9 with YECL to date.

10
11 **ANSWER:**

12
13 **(a)**

14
15 The following was provided in response to YUB/YEC 1-8 (provided during YEC's
16 Required Revenues and Related Matters hearing):

17
18 The current rate schedule for Johnson's Crossing was initially set in 1986
19 (before Yukon Energy existed) as a result of the construction of the 34 kV
20 powerline line from Whitehorse area south to Teslin. At that time there
21 was a premium put on all customer rates served by this new powerline in
22 order to pay for the line. Retail customers served by the new line were
23 paying in excess of 20 cents per kWh for their energy use. The rate
24 schedules for retail customers served by this line were reduced in 1991 to
25 match the large hydro zone rate schedules. The rate schedule for YECL
26 Wholesale power sales to Yukon Energy at Johnson's Crossing was left
27 virtually unchanged. At the time Yukon Energy's assets and operation
28 were being managed by YECL.

29
30 Yukon Energy expects to address this issue at an appropriate time in conjunction with a
31 more detailed review of rate design.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-8, Table 3.6**

2
3 **QUESTION:**

4
5 a) For 2008 and 2009 please provide a breakdown of the brushing cost, and
6 kilometers to be brushed, by transmission line.

7
8 **ANSWER:**

9
10 **(a)**

11
12 The breakdown of brushing cost and the length of kilometers to be brushed in 2009 is as
13 follows:

14

Line	Budget %	Estimated Distance (km)
L170 (Faro – Takhini)	60%	50
L355 (Faro Ross River)	30%	15-20
L174 (Mayo-Dawson)	10%	12

15
16 The 2008 preliminary actuals are not available.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-9, L 8**

2
3 **QUESTION:**

4
5 a) Please describe in detail what the full labour crew will be doing that was
6 previously not done, and justify why these things need to be done now.
7

8 **ANSWER:**

9
10 **(a)**

11
12 There is a capital budget increase from 2008 to 2009 of 40% (\$0.175 million to \$0.300
13 million) for transmission upgrades. As noted in Tab 5 (page 5-18) transmission lines on
14 the WAF system were constructed in the late 1960's to early 1970's. Due to the age of
15 the YEC transmission system, there is a requirement to replace old or damaged
16 structures. This work includes cross-arms, sway braces and insulation replacement. Any
17 additional damage or wear found by aerial or ground patrols will be prioritized and
18 addressed as required. This work is required to maintain reliability on the transmission
19 system. The "full labour crew" will allow the majority of this work to be performed by
20 YEC, at the necessary levels.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-19, L 13**

2
3 **QUESTION:**

- 4
5 a) Please provide the most recent available information on the present and forecast
6 of future long term Canada bond interest rates.
7

8 **ANSWER:**

9
10 **(a)**

11
12 The most recent available information on long-term Canada bond interest rates, as of
13 February 5, 2009, is as follows:
14

- 15 • Current long-term Canada benchmark bond yield per Bank of Canada: 3.72%.
16
17 • Forecast 2009 long-term Canada bond yield, per BCUC letter L-55-08 (Nov 20,
18 2008): 4.35%.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-19, L 19**

2
3 **QUESTION:**

- 4
5 a) Why did Yukon Energy finance the purchase of the Minto mine diesels at 7.5%
6 when Yukon Energy has available to it financing from YDC at substantially lower
7 interest rates?

8
9 **ANSWER:**

10
11 **(a)**

12
13 The acquisition of the Minto mine diesels was a term of the Minto Power Purchase
14 Agreement (PPA).

15
16 The monthly payments by YEC to Minto for the Assignment of the Diesel Units at the
17 Mine Site, pursuant to the PPA, were designed to enhance YEC's security with regard to
18 Minto's obligations to pay the Mine Spur Capital Cost Contribution. In this sense, the
19 payments to Minto for the diesel units mirror the payments to be made by Minto
20 regarding its Capital Contributions for the Mine Spur, with YEC paying for the Diesel
21 Units as Minto pays the costs of the Mine Spur and on the same general terms as the
22 Mine Spur costs are paid off, i.e., in equal blended monthly payments of interest and
23 principal over the first seven years of YEC service (unless otherwise provided for in the
24 PPA). Since Minto's contributions were secured at an interest rate of 7.5%, the financing
25 of the Minto Diesel units was secured at a similar rate of interest.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-20, L 8**

2
3 **QUESTION:**

4
5 a) How was the 6.55% interest rate on the Mayo – Dawson Note set?

6
7 **ANSWER:**

8
9 **(a)**

10
11 The face value of interest payable on the Mayo-Dawson note is 6.55%. The 2005
12 Required Revenues and Related Matters Application (Page 5-18 at Footnote 5) provides
13 that the face interest on the note was calculated based on the following criteria:

14
15 Interest rate at 120 basis points over a Canada Benchmark long-term
16 bond at 5.35%, of similar 20-year average life to the Note, and assessed
17 approximately as at the Project in-service date (September 6, 2003).
18

19 While the interest payable on the note has a face value of 6.55%, the terms and
20 conditions of the promissory note provide that the actual interest payable in each year
21 may be adjusted downwards to ensure that during the life of the project ratepayers do
22 not pay any more in a given year than otherwise would have been paid had Dawson
23 remained on diesel generation. Please see also UCG-YEC-1-52.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-20, L 25**

2
3 **QUESTION:**

4
5 a) Why is the TD Canada Trust note not replaced with YDC debt at a much lower
6 interest rate?

7
8 **ANSWER:**

9
10 **(a)**

11
12 As noted in YUB-YEC-1-21 from the 2005 Required Revenues and Related Matters
13 hearing, securing lower financing for this debt is not possible. The balance outstanding
14 on the TD loan is due in 2011, and the terms of the note contain pre-payment provisions
15 that are designed to effectively prevent Yukon Energy from seeing any practical savings
16 from refinancing.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-21, L 8**

2
3 **QUESTION:**

4
5 a) What is the purposed ROE for Yukon Energy for 2009 based on the BCUC
6 decision?

7
8 **ANSWER:**

9
10 **(a)**

11
12 BCUC Letter No. L-55-08 provides a 8.47% benchmark return on equity for a low risk
13 utility. Considering the 0.52% risk premium proposed for Yukon Energy together with the
14 0.50% deduction directed by OIC 1998/32, the 2009 fair ROE for Yukon Energy is
15 8.49%.

1 **REFERENCE: Tab 3 Revenue Requirement; P 3-22, L 16**

2
3 **QUESTION:**

4
5 a) What is the interest rate earned by the Diesel Contingency Fund?

6
7 **ANSWER:**

8
9 **(a)**

10
11 Diesel Contingency Funds are monies invested in a pooled market fund. The short-term
12 securities held in the fund have an average maturity of less than 90 days. Earnings are
13 distributed monthly on a pro-rata share of the total fund. Annual return on investment for
14 2007 was 4.63%.

1 **REFERENCE: Tab 4 Rates; P 4-5, L 13**

2
3 **QUESTION:**

4
5 a) What is Yukon Energy's forecast of secondary energy rate should world oil prices
6 stay at the current level of about \$40 to \$50 per barrel?

7
8 **ANSWER:**

9
10 **(a)**

11
12 The latest forecast from Bureau of Statistics (January 28, 2009) is consistent with a retail
13 rate of approximately 6.4 cents/kW.h.

14
15 The most recent secondary sales advisory report is provided as Attachment 1 to this
16 response.



File: 3305-02-04

February 19, 2009

Yukon Utilities Board
Box 31728
Whitehorse, YT
Y1A 6L3

Attention: Ms. Wendy Shanks, Chair

Re: Quarterly Adjustment to Secondary Sales Rates as of April 1, 2009

Pursuant to Rate Schedule 32 Secondary Energy (as approved in Board Order 2005-12), the following sets out the quarterly adjustment to the Secondary Energy rate effective for bills issued on or after April 1, 2009.

April 1, 2009 Rate Determination

As outlined in Rate Schedule 32, the Secondary Energy rate for April 1, 2009 is based on the published Yukon Territorial Government – Bureau of Statistics biweekly price for Furnace Oil in Whitehorse for the three reporting periods prior to the 20th day of February 2009. The lowest value of the three (net of GST) is the “Oil Price Index”. The three reported values (including GST) are as follows:

January 14, 2009	= \$ 0.963 /litre
January 28, 2009	= \$ 0.958 /litre
February 11, 2009	= \$ 0.953 /litre

Consequently the Oil Price Index for the April 1, 2009 rate is 90.76 cents/litre (the February 11, 2009 value of 95.3 cents/litre less the GST included in that value). An Oil Price Index of 90.76 cents/litre equals a Secondary Energy price of 6.3 cents/kW.h (compared to the January 1 revised price of 7.8 cents/kW.h) and results in a Rate Schedule 43 Wholesale Secondary energy price of 5.2 cents/kW.h (compared to the January 1 revised price of 6.7 cents/kW.h).

Notification of Interested Parties

Rate Schedule 32 provides that the Secondary Energy Charge is to be filed with the Board at least 30 days in advance of the Rate Period. As with past notifications regarding the rate change Yukon Energy is providing Yukon Electrical Company Limited with notification of quarterly rate changes at the same time as notice is sent to the Board. Retail customers will be notified by a billing advisory message which will appear on their January bills.

Sincerely,



Hector Campbell, P.Eng, I.S.P.
Director, Resource Planning & Regulatory Affairs

c: Yukon Electrical Company Limited

1 **REFERENCE: Tab 4 Rates; P 4-5, L 22**

2
3 **QUESTION:**

- 4
- 5 a) Given that diesel generation for peaking will be required more and more starting
6 in 2009, what efforts have Yukon Energy expended to shorten the notice period
7 to cut off and reconnect secondary customers more quickly than the existing 7
8 days, or the proposed 5 days, to maximize secondary sales during shorter
9 periods of availability? What plans does Yukon Energy have on a go forward
10 basis to deal with this opportunity?

11
12 **ANSWER:**

13
14 **(a)**

15
16 First, the notice period for interruption is currently not seven days. The current, approved
17 Rate Schedule 32 provides that customers' supply will be interrupted after 24 hours
18 notice at any time that Yukon Energy forecasts a need to run diesel units for more than
19 10% of the hours in the subsequent seven day period, or that Yukon Energy begins
20 running diesels for unforecast reasons and expects the diesel operation to continue for
21 more than 48 hours.

22
23 Under Rate Schedule 32 secondary sales customers currently have two options for
24 service available with respect to interruption:

- 25
- 26 • The customer can opt for a standard manual service with their supply interrupted
27 after 24 hours notice at any time that Yukon Energy forecasts a need to run
28 diesel units for more than 10% of the time in the subsequent seven day period, or
29 that Yukon Energy begins running diesels for unforecast reasons and expects
30 the diesel operation to continue for more than 48 hours.
 - 31
32 • Alternately, the customer can opt for (and pay for) the costs of installing a
33 SCADA-controlled service which allows Yukon Energy to initiate interruptions on
34 short notice as needed only for actual real-time diesel generation being required
35 on the system. Customers opting for a SCADA controlled load are expected to
36 have more hours of Secondary Energy availability than those with standard
37 service.

1 **REFERENCE: Tab 4 Rates; P 4-8, L 5**

2
3 **QUESTION:**

4
5 a) Given the much lower world oil price today than when the GRA was prepared,
6 does Yukon Energy propose to update their fuel price forecast for 2009, and if so
7 what is the forecast price?

8
9 **ANSWER:**

10
11 **(a)**

12
13 Please see response to YUB-YEC-1-30.

1 **REFERENCE: Tab 5 Capital Projects; P 5-3, L 8**

2
3 **QUESTION:**

4
5 a) Are the final costs for Stage One of the Carmacks – Stewart Crossing
6 Transmission Project (CSTP) and the Minto Spur line now known, and if so what
7 are they? If still not known exactly, what are the most recent estimates?

8
9 **ANSWER:**

10
11 **(a)**

12
13 Please see LE-YEC-1-46 and LE-YEC-1-47.

1 **REFERENCE: Tab 5 Capital Projects; P 5-3, L 28**

2

3 **QUESTION:**

4

5 a) What is the length of the Minto Spur line, and what is the cost breakdown
6 between the line and substations?

7

8 **ANSWER:**

9

10 **(a)**

11

12 The approximate length of the Minto spur transmission line is 27 km.

13

14 The construction costs are set out at LE-YEC-1-47.

REFERENCE: Tab 5 Capital Projects; P 5-7, L 7

QUESTION:

- a) Please provide a detailed cost breakdown of the \$22.6 million CSTP Stage One budget and the same breakdown for the final or latest known costs (\$28,394 or otherwise).

ANSWER:

(a)

A detailed cost breakdown of the original CSTP Stage One budget and current (not yet finalized) CSTP Stage One budget is provided below (\$000s):

	Original Budget	Construction Approval	Current
CSTP Stage 1 Costs			
Planning	2.700	2.382	2.550
Project Management	n/a (1)	0.756	1.187
Line Construction	16.400	20.760	21.081
Substations	1.900	1.654	3.250
Owners Costs	n/a (1)	1.054	1.112
AFUDC	1.000	0.940	0.504
Inflation	0.500	0.242	
	<u>22.500</u>	<u>27.788</u>	<u>29.684</u>
	(2)	(3)	

Notes:

- (1) At early stages of planning, project management and owner's costs were not budgeted separately, but instead provided for in the construction costs.
- (2) These estimates were prepared prior to any engineering costing. Differences between the Original Budgets totals and \$22.6 million total quoted are due to rounding.
- (3) Construction approval budget included tendered costs for project management and line construction (including clearing and survey) and engineering cost estimates (substations).

REFERENCE: Tab 5 Capital Projects; P 5-7, L 17

QUESTION:

- a) Please provide a detailed cost breakdown of the \$3.83 million Minto Spur budget and the same breakdown for the final or latest known costs (\$9.989 million or otherwise).

ANSWER:

(a)

The detailed cost breakdown of the original Minto Spur budget and the current (not yet finalized) Minto Spur cost budget is provided below (\$000s):

Minto Spur Costs	Original Budget	Construction Approval	Current
Planning	0.300	0.904	0.917
Project Management	n/a (1)	0.492	0.588
Line Construction	2.700	3.623	3.313
Substations	0.500	3.132	5.345
Owners Costs	n/a (1)	0.289	0.455
AFUDC	0.200	0.298	0.182
Inflation	0.100	0.075	
	<u>3.800</u>	<u>8.813</u>	<u>10.800</u>
	(2)	(3)	

Notes:

- (1) At early stages of planning, project management and owner's costs were not budgeted separately, but instead provided for in the construction costs.
- (2) These estimates were prepared prior to any engineering costing.
- (3) Construction approval budget included tendered costs for project management and line construction (including clearing and survey) and engineering cost estimates (substations).

1 **REFERENCE: Tab 5 Capital Projects; P 5-9, L 1**

2
3 **QUESTION:**

- 4
5 a) In table form please provide complete information on each of the Minto diesel
6 units including manufacturer, model, RPM, year of manufacture, total hours of
7 use on each unit, continuous loading capacity in MW, and fuel efficiency in kWh
8 per litre.

9
10 **ANSWER:**

11
12 **(a)**

13
14 Please see Schedule G from the Minto PPA provided as Attachment 1 to this response
15 which provides unit descriptions. Section 10.2(e) of the PPA provides that as at
16 Commencement of Delivery each of the units was to have a continuous rating of at least
17 1600 kW per generator at 4160 V output and conform to the specifications and
18 description in Schedule G. Most recent information of hours of use for each unit is as
19 follows:

- 20
21 • S/n 7RN01200 Current Hours 7,229
22
23 • S/n 7RN01123 Current Hours 10,371
24
25 • S/n 7RN01208 Current Hours 10,006
26
27 • S/n 7RN01079 Current Hours 8,138

Schedule G



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

Generator Packages

Engine – Caterpillar Model 3516 B
2000 kW Standby/1825 kW Prime Power/ 1600 kW Continuous Duty
Electronic fuel injection turbocharged-after cooled

AIR INLET SYSTEM

Air cleaner, dual element heavy duty with service indicators

CHARGING SYSTEM

Battery charger, current limiting 20 amperes, automatic equalize/float
Charging alternator, 24 VDC, 35 ampere

CONTROL SYSTEM

Governor, Caterpillar ADEM Electronic

COOLING SYSTEM

Radiator, ECO52F stacked dual circuit dual core, 100° ambient with 50/50 glycol/water
Fuel cooler
Jacket water heater, dual 3kW, 120/240 VAC, single phase, 60 Hz
Low coolant level sensor

ENCLOSURES

ISO/TC104, ANSI/MH5.1, UICS92.1 ISO Container With:
Galvanized steel deck on floor, nine motorized air intake louvers, and motorized radiator air discharge roof doors to protect generator set from the weather. Switchgear located in front end of container.
Sound attenuation, including doors and louvers, to give a four point logarithmic average Of 85 dB (A) sound pressure level at a distance of 50 feet measured perpendicular to center of each side of the site at an elevation of 1.5 m (5 ft) above the ground.
Interior walls and ceiling are insulated with 50 mm (2 in) of acoustic glass and covered with aluminum for durable interior wall surface.
Safety decals on interior and exterior of container as required.
120 VAC incandescent light and 24 VDC light, switchgear and generator area

Switchgear has access door on side of module for external access to side of switchgear for cable connections and service. A side load cable opening is provided under bus bars of switchgear for connections. Container has three (3) entrance doors with stainless steel handle and steel hinges with brass pins, which allow access into engine room and switchgear area. ABS and CSC rated. Interior loads feed from circuit breaker distribution located at front of container by the switchgear (jacket water heaters, battery charger, space heaters, 120 V duplex receptacles, lights and fuel transfer pump) are powered off of the load bus, supplied by the utility source.

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

Two only portable stairs for access doors
Two only five 5 kW 240 VAC interior space heaters provided in switchgear area and in the generator area

EXHAUST SYSTEM

18" diameter with rain cap, bolt on
Flexible fitting, 305 mm (12")
Muffler, 30 dBA sound reduction of exhaust noise only, internally insulated, mounted inside the container
Exhaust system insulated with 25 mm (1") thick, soft-wrap insulation blanket from engine to module wall

FUEL SYSTEM

Fuel tanks, including level gauge and UL listed
1400 Gallon Double Wall Tank in container with leak detection alarm
Fuel priming pump, RH
Fuel Water Strainer
Automatic/manual fuel transfer system
Level switches control start/stop operation of the fuel transfer system when in the automatic mode
High-level switch prevents over filling in the automatic or manual mode
Low fuel level alarm
Low fuel level shutdown

GENERATORS AND GENERATOR ATTACHMENTS

Brushless PM excited, SR4B
Six lead generator with cable access box, R.H. side
4160V 826F frame (2 bearing) generator vacuum/pressure impregnation insulation protection on stator, form wound.
Volts per hertz automatic voltage regulator-switchgear mounted, BASLER DECS
Space heater, 115/230 VAC, 1200 watts, with cut-out relay

INSTRUMENTATION AND CONTROLS, EMCP II PLUS

Generator mounted, dust proof
Digital (LCD) Indication, keypad accessible
AC voltage (L-L & L-N)

AC amps
kW (total & per phase)
kV-A (total)
kV-AR (total)
kWhr (total)
kV-ARhr (total)

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-6725

PF (Average total & per phase)
% of rated kW (total)
Frequency
DC voltage
Coolant temperature
Oil pressure
Rpm
Hours run
System diagnostic
Controls
Auto start/stop
Emergency stop
Lamp test
Cycle crank
Voltage control
Phase selector switch
Load demand relay
Spare relay - programmable
Enclosure
NEMA 1, IP22
Vandal door
Panel lights
Auxiliary relay

INSTRUMENTATION AND CONTROLS, EMCP II PLUS - continued

Indicating Lights
Low oil pressure
High coolant temperature
Over Speed
Over Crank
Coolant level sensor, shutdown or alarm
Emergency stop
Fault shutdown
Fault alarms
3 Spare lights/4 spare inputs
Pre-alarm and LED indicators for:
 Approach high coolant temperature
 Low coolant temperature (70° F.)
 Approach low oil pressure
 Low DC volts
 System not in "automatic"
 Low fuel level

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5723

Charger failure

Low coolant level (shutdown or alarm)

Two (2) spares

Customer programmable (shutdown or alarm) to spare alarm or fault LEDs

Protective relaying

Programmable relays for:

- Over voltage
- Over/under frequency

Customer communication module for ZTR interface

LUBE SYSTEM

Lubricating oil - SAE 10W30, CF4 diesel engine oil

Lube oil drain (located on engine rail)

Lube oil sample valve

Sump pump, RH mounted

Low oil level alarm

STARTING SYSTEM

Batteries and battery rack: CCA rating 2600, 380 ampere-hours, includes 4 batteries above -30°C (-22°F)

Electric starter motor, dual, heavy duty

UNDERCARRIAGE:

Three (3) Axle container under carriage

Mechanical Suspension System

DOT Lighting Package

Air Brakes

GENERAL

Fire extinguisher, two (2), 10 LB, carbon dioxide

First Aid Kit

Literature

Generator test report

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-6725

5 KV SWITCHGEAR

Utility paralleling 4160 VAC class switchgear is intended for automatic, manual and black start operation involving a microprocessor based automatic loading control with soft loading, base load control and soft unloading. The controls allow for automatic operation, initiated locally or remotely.

Floor Standing Switchgear Featuring the Following:

Protection

Shutdowns: over speed, over crank, high water temperature, low oil pressure, emergency stop and coolant loss with indicator for each condition.

AC Metering

Three (3) phase volts, three (3) phase amperes and frequency with phase select push-button. Metering accuracy is 1%.

Power factor meter along with wattmeter

Control

Automatic starting with field adjustable cycle cranks over crank and cool down timer

Programming and diagnostics

Includes field programmable set points for engine control

Failure of the Programmable Logic Controller initiates a visual and audible alarm.

Alarm module

Flashing led warnings for: Low coolant temperature, high coolant temperature (pre-alarm), low oil pressure (pre-alarm), engine control switch not in automatic and low DC voltage. Includes alarm horn and acknowledge push-button.

CONTROLS

Engine Control Switch

Snap action rotary switch, four (4) position - off/reset, automatic, manual, stop/cool down
Off/reset for engine shutdown and resetting faults, automatic for local or remote automatic operation, when initiated by switch operation or contact closure, manual for local starting and manual paralleling, stop/cool down for manual operation cool down.

Circuit Breaker Control Switch

Heavy duty, three (3) position spring return to center with momentary trip and close position and slip contacts (NAC) for automatic closing.

Includes circuit breaker position indicating lamps, lamp test switch, momentary pushbutton

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5726

Emergency Stop Push Button

Mushroom head, twist to reset, causes engine shutdown and tripping of the generator circuit breaker.

Prevents engine starting when depressed

Remote Start/Stop Circuit

Accepts signals (normally open dry contact closure) from remote control or other device to initiate operation

Requires ZTR signals for generator start and generator stop.

Failed to Auto-Parallel

Time delay circuit to cause engine shutdown if the generator circuit breaker fails to close after initiation of automatic operation

Dead Bus Closing Circuit

For Prime power operation only. Permits automatic or manual closing of the generator set circuit breaker to a dead bus.

Low Fuel Level Shutdown

Circuit to cause engine shutdown via dry contact and trip the generator circuit breaker with approximately 15 minutes of fuel remaining in the power module day tank

Electric Louver Control Circuit

Circuit to control power module electrically operated louver.

CIRCUIT BREAKER

Draw out, vacuum type 3 pole, electrically operated 1200amp circuit breaker.

Includes 24 VDC shunt trip coil activated on any monitored engine or electrical fault

Circuit breaker is sized for full load capacity of the generator set at 0.8 power factor, with 36ka RMS interrupting capacity at 4160 VAC.

DIGITAL SPEED, SYNCHRONIZING AND LOAD CONTROL:

Electronic Load Sharing Governor and Associated Circuitry

Woodward DSLC w/Raise-Lower Voltage Switch & Raise-Lower Frequency Switch

Includes VAR/PF Control, Import & Export Capability

Speed Matching Automatic Synchronizer

Automatically synchronizes and parallels the generator with a utility source.

Manual Paralleling

Synchronizing lights (2) and switch for manual paralleling with sync-scope

Automatic Base Load Control

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

PLC based system provides soft loading and unloading of the generator set as it transitions on and off of the utility grid. Once the generator is connected to the utility generator output is gradually increased (one (1) minute time frame) up to the base load setting of the load control. Generator output will remain at the base load level until the generator is signalled to shutdown. When signalled to shutdown the load control will gradually decrease (one (1) minute time frame) generator output and trip open the generator circuit breaker when the unload setting of the load control is reached, the engine is then placed in cool down mode.

Field adjustable parameters include load time unload time and base load level (generator steady state output)

The load control is disabled operating isolated from the utility source.

Load Sharing

During prime power operation the engine governor set shall be set for isochronous load sharing with other parallel units.

Site interconnect of the load share lines is required.

Voltage Regulation and Power Factor Control

Switchgear mounted voltage regulator with voltage adjust raise-lower switch.

Power factor control for maintaining constant generator power factor while paralleled with the utility

Includes provisions for manual power factor adjustment

Controls are disabled when operating isolated from the utility.

Current Transformers (3) – Relay Class, Suitable For Metering

5 ampere secondary with shorting terminal strips

Potential Transformers (4) – Relay Class, Suitable For Metering

120 VAC secondary with primary and secondary fuse protection, two (2) connected to the generator side of the circuit breaker, two (2) connected to the utility side of the circuit breaker.

Potential transformers-draw out construction

Control Power Transformers (2)

120 VAC secondary connected to both sides of circuit breaker to supply 120 VAC in open or closed position. Transformer is fixed.

Electrical System Protective Relays

Schweitzer Model SEL-300G Multifunction-relay

Relays include field adjustable pick-up and time delay. Operation of relays is indicated by lamp and sounding of alarm horn, draw-out relay operation is indicated by trip target and sounding of the alarm horn.

Reverse Power Relay

ANSI device 32, single phase sensing, activation of relay causes tripping of the generator circuit breaker and immediate engine shutdown

Reverse VAR Relay

Acting as loss of excitation relay, ANSI device 40, single phase sensing, activation of the relay causes tripping of the generator circuit breaker and immediate engine shutdown.

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

Under Voltage Relay

ANSI device 27, three phase sensing. Activation of relay causes tripping of the generator circuit breaker and places the engine in cool down mode.

Over Voltage Relay

ANSI device 59, single phase sensing, activation of relay causes tripping of the generator circuit breaker and immediate engine shutdown.

Over/Under Frequency Rely

ANSI device 81O/U, Ssetting's for over frequency and under frequency with time delays, adjustable in cycles. Activation of relay causes tripping of the generator circuit breaker and places the engine in cool down mode. Relay is disabled when operating isolated from the utility.

Over Current Relay

ANSI device 50/51 activation of relay causes tripping of the generator circuit breaker and immediate engine shutdown. Relay is solid state with instantaneous setting.

Ground Over Current

ANSI device 51G, activation of relay causes tripping of the generator circuit breaker and immediate engine shutdown. Includes current transformer mounted on generator neutral - ground connection.

Lock-out Relay

ANSI device 86, high speed, manually re-settable, operated by protective relays, causes tripping of the generator circuit breaker and prevents resolving of the circuit breaker until reset.

Generator Differential Relay

ANSI device 87, solid-state draw-out type with field adjustable pick-up and time delay. Operation of a relay is indicated by relay trip target and sounding of alarm horn. Relay trips the generator circuit breaker via the generator lockout relay (ANSI device 86) and causes immediate engine shutdown. Includes six (6) current transformers, three (3) mounted within the generator housing on the neutral side of each stator winding and three (3) mounted at the generator circuit breaker.

Auxiliary Trip Circuit

Circuit accepts input (normally open dry contact) from customer's system protective relay(s) or other controlling device. Operation of contacts causes tripping of the generator circuit breaker via the generator lockout relay ANSI device 86, and places the engine in cool down mode. Circuit is disabled when operating isolated from the utility.

Bus Bars - Stabs Only

Three phase plus fully rated neutral bus bars are silver plated copper with NEMA standard hole pattern for connection of load cables and generator cables, bus bars are sized for full load

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 285-8725

capacity of the generator set at 0.8-power factor. Also includes ground bus, silver plated copper, connected to generator frame ground and container frame with holes for connection of field ground cable. Bus bars are accessible from outside of the power module via hinged, lockable cable access door.

AC Distribution

Distributes voltage to power module AC panel board
Provides sufficient power for all module accessories

Customer Monitoring Outputs

Form 'C' contacts for customer monitoring indicating the following conditions:
Circuit Breaker status, engine running, system in auto

Form 'A' contacts for customer monitoring indicating the following conditions: electrical
lockout, summary alarm.

UTILITY CONTAINER MONITORING AND CONTROL SYSTEM

One ZTR-Lynx™ Data Collection and Communication Hardware is mounted inside each Utility Container Switchgear. The hardware for the generators can be networked together and as a system or signally they provide following minimum monitoring and control points:

Points Monitored on the Generator Set

Engine Running

EMCPH+ (ECS) Not In Auto

Generator Set Locked Out

High Coolant Temperature Alarm

Low Coolant Temperature Alarm

Low Oil Pressure Alarm

EMCPH Diagnostic Code Shutdown

Emergency Stop Shutdown

Coolant Loss Shutdown

High Coolant Temperature Shutdown

Low Oil Pressure Shutdown

Over Crank Shutdown

Over Speed Shutdown

Engine Coolant Temperature

Engine Oil Pressure

Fuel Consumption

Exhaust Temperature Left / Right

Protective Relay function trip (as provided on the SEL Relay)

Generator Set Run Time Hours

Generator Voltage, Current (Amps/Phase), kW, kWh, and Frequency

Points Monitored on the Switchgear

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax: (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

Utility Status

Generator Available/Not Available

Control Locked Out

Common Alarm

Generator Connected to Utility

Control Power Status

Not in auto

Controller Failure

Remote Enable Status

Operational Mode Status

Failed to Sync Alarm

ZTR-Lynx System's Internal Alarms

Alarm and Event History Overflow

Communication Failure

Additional Generator Set System Points Monitored

Day and Main Tank Low / High Fuel Alarm

Day and Main Tank Fuel Level

Rupture Base Tank Alarm

Battery Charger Failure Alarm

Starting Battery Voltage

Container Internal Ambient Temperature

Supervisory Control Outputs

Remote Start/Stop

Scheduled Start/Stop

Generator Remote Load Adjust

Louver Control – Open and Close

Warning of Start – Start Warning Horn

Generator Set Start Alarm Horn Enclosure – It is mounted in the container to provide 30 seconds (continuous) warning prior to Generator Set start.

ZTR-Lynx Monitoring HMI Server Software

PC Based, installed on the on-site PC (see next item). MS Windows® NT based user-friendly graphical interface which provides easy to use menus and screens to display relevant Generator Set information, alarms, and events. In addition, provides the user the ability to adjust GenSet output power. Using the ZTR Monitoring and Control software on an off-site PC, the user is able to dial into the site and monitor and control the Generator Set and the breaker operation.

On-site PC Running HMI Server Software – by others

As a minimum – Pentium II Class PC, 300 MHz, MS Windows NT, Mouse Pointing Device, 128 Megabytes of Memory, 10 Gigabytes hard drive, SVGA Monitor, Modem.

Finning (Canada) is a division of Finning International Inc.

Head Office: 16830 107th Avenue, P.O. Box 2405, Edmonton Alberta, Canada T5J 2S1 Phone: (780) 930-4800 Fax: (780) 930-4801



FINNING (CANADA)

6735 11 Street N.E. Calgary, Alberta, Canada T2E 7H9 Phone: (403) 516-2881 Fax: (403) 295-5725

Remote Access to the Monitoring System

A user can access the monitoring system using a PC located offsite (supplied by others), equipped with modem and MS Internet Explorer Version 5 browser. The user shall dial the On-site PC (running the server software as described above) and use the browser software to link to the HMI Server Software. Once connected then the user has access to the monitoring and control items as described above.

SERVICES – BY OTHERS

Engineering services as required

Electrical Installation

- All Permits as required

Mechanical Installation

- Suitable pad for module placement
- Main fuel supply tank
- Supply and return piping from main fuel supply tank as required to modules
- Cranes for unloading as required
- Trenching as required

FINNING SUPPLIED SERVICES/COMPONENTS

Engineering Services as required including:

- Power module grounding design
- Complete drawing package
- Complete operation and maintenance manuals

Electrical Installation as required including:

- Cabling and system connection from container to container as required
- Ground grid connection as required
- Final termination to the distribution system
- Control cabling for networking modules

Mechanical Installation as required including:

- Spotting modules on customer supplied pad
- Installation of Finning (Canada) supplied fuel header
- Connection of fuel header to main fuel supply piping as required

Package to consist of three 1.6 MW continuous rated power modules, with total plant capacity being 4.8 MW

1 **REFERENCE: Tab 5 Capital Projects; P 5-9, L 3 to 7**

2
3 **QUESTION:**

- 4
5 a) Has the work on the Minto diesels described now been completed? If not all
6 completed what has been completed, what remains to be completed, and what is
7 the expected completion date?

8
9 **ANSWER:**

10
11 **(a)**

12
13 A portion of the work on the Minto Diesels has been completed. Work undertaken on the
14 units is as follows:

- 15
16 • The diesel generator sets are mobile units enclosed in highway style trailers and
17 sitting on wooden pilings. The wheels are still in place. Prior to the start up of the
18 Carmacks Stewart Transmission Project and the Minto Mine Spur Line, the units
19 were operated essentially 24 hours/day, 7 days/week. With their shutdown it was
20 necessary to install auxiliary heating for fuel and lubrication systems, as well as
21 space heating for the electrical controls. Mechanical work was also required to
22 enclose the units to ensure they would retain as much heat as possible. This
23 work has been completed.
24
25 • Electrical work was undertaken to connect the station service supply to grid
26 power and ensure switchover capability in circumstances where the grid was
27 down. This work has been completed.
28
29 • The ability to operate the switchgear in the Mine substation and to control the
30 diesel remotely from the System Control Center is required. This work has not
31 been completed and is expected to be complete by September 1, 2009. This
32 work comprises a portion of the \$0.750 million included in the 2008/2009 GRA for
33 2009 related to future expenditures on the units.

- 1 Upgrades to the enclosures and other systems are also under review for 2009. Project
- 2 planning for 2009 is currently underway. This work has not been completed and a
- 3 completion date for this work has not been determined.

1 **REFERENCE: Tab 5 Capital Projects; P 5-9, L 14**

2
3 **QUESTION:**

4
5 a) What will be the fuel efficiency of the refurbished Mirrlees diesel generators?

6
7 **ANSWER:**

8
9 **(a)**

10
11 Please see response to YCS-YEC-2-E6 and YUB-YEC-1-16 (footnote 1) both provided
12 during the Resource Plan hearing.

13
14 At that time YCS asked if the refurbished Mirrlees would be more efficient and reduce
15 GHG's. YEC was also asked to provide information on fuel usage/energy efficiency
16 compared for the rebuilt Mirrlees generators compared to new, state of the art energy
17 efficient generators. YEC responded that in general the Mirrlees would not be more fuel
18 efficient, but noted as follows with regard to the fact that the intended use of the units
19 needed to be considered in this regard:

20
21 The intended use of these units is for emergency backup power, with very
22 few hours of actual operation. As a result, they are expected to have a
23 negligible effect on diesel fuel use or GHG emissions due to the low
24 numbers of hours they are expected be run. The Mirrlees units, however,
25 as low speed baseload units, which are typically more efficient than high-
26 speed units.

27
28 In YUB-YEC-1-16 YEC was asked to provide economic analysis for the Whitehorse
29 Diesel Replacement/Expansion Project. Footnote 1 of the response notes as follows:

30
31 The project does not give rise to material operating costs distinct from the
32 major alternative of the Mirrlees Life Extension Project (Yukon Energy
33 uses an assumed \$4,400/MW/year (2005\$) as fixed operating and
34 maintenance costs for diesel units, and 1.6 cents/kW.h (2005\$) as
35 variable O&M costs). To the extent WAF hydro generation is not sufficient
36 to supply the full annual energy on the system (leading to baseload diesel
37 requirements) or the hydro capacity is not sufficient to meet the peak

1 loads without dispatching diesel (leading to peaking diesel requirements),
2 the cost of meeting this energy with the Mirrlees as compared to new
3 diesels is not likely to be materially different (There may be small
4 variances in the efficiency of new units as compared to the Mirrlees units,
5 but under Base Case loads, relatively little diesel is expected to be
6 required in the next 20 years so the cost impact of any efficiency
7 differences is expected to be minimal compared to the capital cost
8 distinction between the Whitehorse Diesel Replacement and Expansion
9 Project and the Mirrlees Life Extension Project.) The project also does not
10 give rise to materially different operating and maintenance costs than the
11 Aishihik 2nd transmission line that would affect the assessment, as in
12 either case operating costs are expected to be relatively insignificant
13 compared to capital costs of the projects.

1 **REFERENCE: Tab 5 Capital Projects; P 5-9, L 4**

2
3 **QUESTION:**

- 4
5 a) What would be the fuel efficiency of new base load diesel generators of similar
6 nature and capacity to the Mirrlees units? At what fuel price would it be more cost
7 effective to purchase new base load generators rather than refurbish Mirrlees
8 units?

9
10 **ANSWER:**

11
12 **(a)**

13
14 Please see response to LE-YEC-1-50.

1 **REFERENCE: Tab 5 Capital Projects; P 5-10, L 4**

2
3 **QUESTION:**

4
5 a) Would the projected cost of new diesels at the mine site of \$1.035 million per
6 MW include foundations, buildings, SCADA connection, and all other features the
7 mine diesels will have once Yukon Energy's planned work is complete?

8
9 **ANSWER:**

10
11 **(a)**

12
13 The projected all-in cost for the Minto Mine diesels is \$0.498 million/MW not \$1.035
14 million/MW. The higher number is the estimate for the purchase of new diesel sets of a
15 similar size to the Minto Mine diesels.

16
17 The \$0.498 million/MW figure does include the building, SCADA connection, foundations
18 and all of the other features described on page 5-9, lines 3-7.

1 **REFERENCE: Tab 5 Capital Projects; P 5-12, L 1**

2
3 **QUESTION:**

4
5 a) Please describe in detail how Yukon Energy specifies its large transformers,
6 distribution transformers, and other larger electrical equipment to ensure that the
7 lowest loss equipment that is economically justifiable is purchased.

8
9 **ANSWER:**

10
11 **(a)**

12
13 With regard to Large Transformers (i.e. CSTP Transformers) the manufacturer is
14 provided with a detailed specification that lists all the various standards Yukon Energy
15 will be using in order to ensure that the transformer meets Yukon Energy's requirements.
16 Yukon Energy also provides the manufacturer with the Load and No Load loss costs
17 based on the kW quoted to Yukon Energy by the manufacturer. Yukon Energy uses the
18 quoted loss figures and the costs provided to determine the overall cost of the
19 transformer over its life.

20
21 For Distribution Transformers Yukon Energy primarily uses the CSA standards with
22 some modifications based on previous experience.

1 **REFERENCE: Tab 5 Capital Projects; P 5-12, L 7**

2
3 **QUESTION:**

4
5 a) Please confirm that the Faro Mirrlees diesel unit is now available to be operated
6 on the WAF system as required.

7
8 **ANSWER:**

9
10 **(a)**

11
12 The Faro diesel unit (FD1) is not operable. Work is currently being performed to
13 complete the project, and the unit is expected to be available March 31, 2009.

1 **REFERENCE: Tab 5 Capital Projects; P 5-14, L 6**

2
3 **QUESTION:**

- 4
5 a) Media reports following a number of outages caused by Whitehorse Rapids
6 turbine No. 4 indicated that Yukon Energy had found the problem to be in the
7 governor system. Please describe the problem in detail and indicate whether the
8 necessary repairs or replacements will be completed as part of this budget or
9 whether it will result in additional costs.

10
11 **ANSWER:**

12
13 **(a)**

14
15 The failures of the WH4 governor system were primarily a result of the design of the
16 hydraulic manifold that controls the movement of the wicket gates. An internal valve was
17 causing the controls to stick and the electronics in the governor interpreted this as a
18 problem and shut the unit down. The manifold was replaced in 2008. The programmable
19 logic controller will also be replaced in 2009. There will be an increase in the 2009
20 capital expenditure in part to complete this work.

1 **REFERENCE: Tab 5 Capital Projects; P 5-15, L 6**

2

3 **QUESTION:**

4

5 a) Please provide a copy of the study completed in 2008, and outline what will be
6 done in 2009 to improve the spill regulation.

7

8 **ANSWER:**

9

10 **(a)**

11

12 The referenced study has not been completed.

1 **REFERENCE: Tab 5 Capital Projects; P 5-17, L 4**

2
3 **QUESTION:**

4
5 a) Please provide a copy of the assessment report.

6
7 **ANSWER:**

8
9 **(a)**

10
11 Please see the Current & Future State assessment report provided as Attachment 1 to
12 this response.



YUKON ENERGY CORPORATION

Financial Information Systems (FIS) Replacement Project

Phase 1: Systems Selection

Requirements – Current State & Future State

Version: 1.0





REVISION LOG

Revision	Date	Description	Revised By
1.0	14Jun2008	Initial document; consolidated from individual business area current state and future state documents.	eCorall Solutions Inc.



CONTENTS

1	Executive Summary	6
2	About this document.....	7
2.1	Document Flow.....	7
2.2	Current State	7
2.3	Fit/Gap Analysis.....	7
2.4	Future State.....	7
3	Terminology.....	8
4	Accounts Payable.....	10
4.1	Current State	10
4.2	Future State.....	15
5	Accounts Receivable	23
5.1	Current State	23
5.2	Future State.....	27
6	Budgeting & Forecasting.....	31
6.1	Current State	31
6.2	Future State.....	33
7	Financial Reporting	36
7.1	Current State	36
7.2	Future State.....	39
8	Fixed Assets.....	42
8.1	Current State	42
8.2	Future State.....	47
9	General Ledger	53
9.1	Current State	53
9.2	Future State.....	60



10 Human Resources	65
10.1 Current State	65
10.2 Future State	68
11 Inventory Management.....	70
11.1 Current State	70
11.2 Future State	75
11.3 Document Samples	79
12 Maintenance	81
12.1 Current State	81
12.2 Future State	82
13 Payroll Interface.....	85
13.1 Current State	85
13.2 Future State	86
14 Procurement	87
14.1 Current State	87
14.2 Future State	90
14.3 US Bank File Interface	94
15 Project Accounting / Job Cost.....	96
15.1 Current State	96
15.2 Future State	98

1 Executive Summary

Yukon Energy Corporation (YEC) has established the Financial Information Systems (FIS) project to source a replacement system for its current enterprise system. The FIS project is a two-phased project consisting of selecting a replacement system in phase one and implementing the selected system in phase two. This document is part of the phase one project deliverables which captures the “current state”, including “fits” and “gaps”, and serves to define the “future state” for the potential replacement system.

The business areas included in the Phase One study are:

- General Ledger (including the Chart of Accounts)
- Accounts Receivable
- Accounts Payable
- Fixed Assets
- Project Accounting / Job Cost
- Budgeting & Forecasting
- Financial Reporting
- Inventory Management
- Procurement
- Payroll Interfaces to JDE
- Human Resources
- Equipment Maintenance and Work Orders

2 About this document

2.1 Document Flow

This document is a consolidation of requirements gathered from reviews and meetings with each business area. The business areas studied are as listed in the project scope. The **current state** and **future state** of each business area is defined in its respective section within this document. The sections are ordered alphabetically by business area name.

A **Terminology** section follows consisting of explanations of terms used within this document.

2.2 Current State

Information on the Current State is captured in a tabular format for ease of reference. Functional items of a business area are grouped into Key Areas. The current state of each business area, be it current workings or deficiencies, are described with results of Fit/Gap Analyses where applicable. For each Key Area, a reference link is included to the Future State requirements.

2.3 Fit/Gap Analysis

The Fit/Gap Analysis is based on identifying whether there is a 'Fit' of the current requirement to the current JDE system. Current issues and deficiencies that cannot be accommodated by the JDE system are identified as 'Gaps'. 'Fits' identified allude to the existence of functionality that might support a requirement.

2.4 Future State

The Future State is depicted in a table of requirements. Schematics are included where applicable. Requirements consist of Current State requirements that must continue to be provided in the Future State with equivalent or improved effectiveness, or, new requirements that are not available in the Current State. A column entitled 'Additional Notes' provides further details where applicable.

A Criticality column is included to identify the criticality of each requirement as follows:

- '1' for Critical
- '2' for non-Critical

3 Terminology

For reference purposes, below is a list of acronyms and terminology used within this document.

ADP	Automatic Data Processing Inc.
AP	Accounts Payable
AR	Accounts Receivable
BOM	Bill of Materials
CIS	Customer Information System
Current State	Refers to aspects of the current business processes, deficiencies and the enterprise application system currently in use
EM	Electrical Maintenance
ESC	Energy Solutions Corporation
FA	Fixed Assets
FIS	Financial Information System
Future State	Refers to the 'To Be' model of business requirements and processes.
GL	General Ledger
IFRS	International Financial Reporting Standards
LPO	Local Purchase Order (Manual Purchase Order)
MM	Mechanical Maintenance

O&M	Operations and Maintenance
PID	Project Identification
PM	Preventive Maintenance
PO	Purchase Order
PRC	Project Review Committee
UOM	Units of Measure
Warehouse	Warehouse refers to a geographical site where inventory is held. In the JDE system, it is referred to as a Branch/Plant.
WCB	Workers' Compensation Board
WO	Work order (plural is WO's)
YEC	Yukon Energy Corporation
YTG	Yukon Territory Government
YUB	Yukon Utilities Board

4 Accounts Payable

The accounts payable is an integral part of YEC and YDC accounting system. The primary responsibility of Accounts Payable departments is Supplier Management, Voucher Processing and Payment Processing.

4.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
4.1.1	Supplier Master Information	The supplier master information is setup in conjunction with the address book. The following information is captured by YEC: • Alpha Name • Tax ID • Search Type (V is used for vendors) • Business Unit • Mailing Name • Full Mailing Address • Payable Flag • Payee Reference • Hold Payment Code (This is used to hold supplier payments) • Payment Instrument • Payment Terms • Default account codes • Default currency code • Tax Information: - o Tax Explanation Code - o Tax Rate Area - o Add Tax ID - o Tax Authority • Contact information • Email Information • Phone information	Fit	Current system functionality exists.	11.2.1
4.1.2	Payment Terms	<u>Payment Terms:</u> Payment terms are used by Accounts Payable system. There is consensus between the seller and buyer on when payment is due for goods or services. The use of payment terms makes for efficient entering of invoices and vouchers. The following payment terms are used:	Fit	Current system functionality exists.	4.2.2

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		Net 30 days			
4.1.3	Payment Types	YEC uses the standard JDE cheque format to print cheques in predefined TD bank cheque stationery. The cheques are manually signed. - Automatic Cheques - Manual Cheques	Fit	Current system functionality exists.	4.2.3
4.1.4	GL Class Allocation	The following GL Class accounts are used: - AP trade - Employee - Board	Fit	Current system functionality exists.	11.2.6
4.1.5	Tolerance Rules	The following tolerance rules exist under purchase order system; this is directly integrated into the AP module. The voucher match and receipts are applicable. The setup for the tolerance rules are as follows: - Quantity: - Tolerance Percentage - Tolerance Unit - Unit Costs: - Tolerance Percentage - Tolerance Amount - Extended Costs: - Tolerance Percentage - Tolerance Amount This is also supplemented with either a zero tolerance or not for each sub-category.	Fit	Current system functionality exists.	4.2.8
4.1.6	Voucher Types	<u>Vouchers Types</u> The invoices are entered into the system as vouchers and are systemically processed by due dates, cash requirements are produced in advance and ultimately paid when due. - Standard Voucher is required where supplier invoice is received and entered into the system. This is manually matched with LPO which typical under \$5000, this excludes utilities, freight and employee expenses. The ability to reference LPO (local Purchase Order) in the standard voucher. Include sub-ledger reference field. - Two Way Voucher Match, this is matched to PO. The invoice is the trigger when it's matched to the PO with the dollar value as stipulated on the invoice. Needs to ensure that the PO values default into AP voucher match. - Three Voucher Match, this is a receipting when the	Fit	Current system functionality exists.	4.2.6

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		inventory is entered to stores and corresponding is (Inventory receipts accrual) received not voucher account. Upon receipt of the invoice this is matched to receipt and paid. Needs to ensure that the PO values default into AP voucher match. - Recurring voucher is required where for similar repetitive invoice - Prepayments (Not used) - Voucher logging (Not used)			
4.1.7	Holdbacks	<u>Holdback Process</u> Holdback is the percentage of a committed amount that is withheld until a specified date. The payment being retained is often held until all work under a construction contract, service or receipt has been completed. This holdback amount is paid out at the time the owner has provided written notice of acceptance of the project. The retained portion represents a pre-determined amount to cover any unfinished work. YEC holdback process is manually executed where the holdback values are manually calculated and the corresponding account allocations are manual. - Upon receipt of a holdback invoice, the process is to balance the amount paid from the invoice to trade accounts, this is indicated by an allocation where the gross is debit to expense and the credit to the holdback account. - Where holdbacks are not authorized to be released, this is entered via a zero dollar invoice into the AP system. This clears the holdback account.	Fit	Current system functionality exists.	4.2.7
4.1.8	AP Cash Forecasting	<u>Cash Forecasting Activity</u> As part of cash management activities, it's imperative to review open vouchers. This would determine your cash requirements on a future basis. YEC generates the following summarization of information for cash forecasting: - The total amount of all open vouchers - Due dates of open vouchers - The amount required to pay vouchers	Fit	Current system functionality exists.	4.2.10

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
4.1.9	Taxes	<u>Taxes:</u> • GST tax calculation is used • PST is used • Date effective GST & PST tax calculations • Tax rules is used by rate and area • Tax Tolerance is used.	Fit	Current system functionality exists.	4.2.9
4.1.10	Approval Processes	• Levels of approval are defined for Accounts payable. • Approval by batch. • Approvals are module specific. i.e only can approve AP batches.	Fit	Current system functionality exists.	4.2.5
4.1.11	Payment Groups	After the vouchers are entered and posted into the system, then preparation of payments can be undertaken. This is an automated cheque printing process. The manual process is also used where the cheques are hand written and the corresponding detail entered after the fact into FIS system. Both processes are used extensively. Describe below is the automated process. <u>Create Payment Group</u> This is a batch process that groups payments by specified criteria: • Bank Account • Payment Type • Currency • GL Class • Range of dollar value • Payment Due Dates • Discount Due Dates • Payment Status • Company • Business Unit • Supplier • Supplier Type • Only Posted Vouchers <u>Work Payment Group</u> Upon completion of the create payment group, a review of the payments is accepted or changed. The following actions is available for payment group: • Write (This prints to cheque) • Update (Upon completion of the write, the payments are update to GL) • Reset (This allows for a batch reset, in the event of a reprint of a cheque) • Undo (This completes reverse the batch created)	Fit	Current system functionality exists.	4.2.11

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
4.1.12	System Integration	The following systems integrate with Accounts Payable. • General Accounting • Procurement • Inventory • Equipment and Plant Maintenance • Job Cost • Fixed Asset • Address Book	Fit	Current system functionality exists. Not used. Not used. Not used.	4.2.16
4.1.13	Integrity Report	<u>Integrity Report</u> Integrity reports are used to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. The following reports are used: • AP Original Document to GL by Batch Report • AP Payments to GL by Batch Report • AP to GL by offset Account Report	Fit	Current system functionality exists.	4.2.12
4.1.14	AP Periodic and Annual Close	• Monthly close routine is executed by fiscal date period. • Can work with both current and future period • Errors when incorrect periods are used. • No posting allowed to closed prior period. • Annual close updates supplier history.	Fit	Current system functionality exists.	4.2.13
4.1.15	Global Updates and Audit	• Global updates to vouchers • Global updates to supplier master • Audit list of user and batch approvers • Audit exception report for changes made to predetermined fields in supplier master. Eg bank account	Fit	Current system functionality exists.	4.2.14
4.1.16	Online AP Inquiries	The current system functionality allows for a variety of user-defined criteria to view accounts payable information. This includes supplier information, vouchers and payments. Repetitive use is made of the following: • Supplier information detailing all opened, paid, pending voucher information. • Account coding respective to the voucher being queried. • Reference to purchase orders where applicable • Supplier reference invoice numbers • Document type • Payee Number • General Ledger Date	Fit	Current system functionality exists	4.2.15

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		• Invoice Date • Due Date • Batch Number Reference • Cheque Numbers • Details of items paid with corresponding cheque number • On line "as off" supplier balances • Commitment Inquiry • Open Receipts • Un-posted Batches • Supplier specific information • Voucher information • Pay Status			
4.1.17	Interface from Third Party Software	TD Bank Electronic Funds Transfer software	Gap	Need to investigate the interface. This would automate the AP payment process. Immediate benefits can be realized and also fraud prevention with respect to cheque processes.	4.2.18
4.1.18	Staffing	Current staffing levels are as follows: To be determined in RFP.			
4.1.19	Reports	The following reports are used currently: • AP Ageing Report • AP "As off" Report • AP Audit Log Report • AP Voucher Report • AP Recurring Voucher Report • Post Reports • Cash Requirements Report • Create Payment Group Report • Check Register • Void Cheque Listing Report • Manual Cheque Listing Report • Discount Lost Report • Supplier Analysis Report	Fit	Current system functionality exists	4.2.17
4.1.20	Security	AP Module specific security exists. This is configured based on YEC requirements. (For details the security matrix needs to provided)	Fit	Current system functionality exists	

4.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
-----	----------	--------------	-------------	------------------

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
4.2.1	Supplier Master Information	The ability to provide for the following fields and functionality: • Supplier Name a minimum of 35 characters. • Supplier ID with a minimum of 6 digit code. • Reference field that specifies it is a supplier. • Department reference (ability to specify line of business) • Mailing Name (Ability to enter a different name from the supplier name if required) • Full Mailing Address (Address fields, city, country, postal code) • Payment Instrument (eg. Cheque, Electronic funds transfer) • Ability to provide for payment terms and discount terms. • Reference field that shows CAD currency code. • Ability to support the following tax setup. - o Tax Rates (GST and PST rates) - o Tax Area (Location) • Ability to support Bank Accounts details for electronic payments. - o Bank Transit Number - o Bank Account Number - o Account Type • Contact information • Email Address Information • Phone information • Ability to indicate possible duplicate supplier entries.	1	Electronic Funds Transfer will be expedited using TD Bank software. All electronic banking related information is required to be attached to Supplier Master.
4.2.2	Payment Terms	• The ability to provide for the establishment of discount and payment term for each vendor. (YEC uses net 30 day term as a minimum required)	1	
4.2.3	Payment Types	The ability to provide for the following payment types: • Automatic Cheques • Manual Cheques • Electronic Payment with notifications	1	The TD Balance electronic software will be required. It's recommended that used of electronic banking is utilized to eliminate cheque related fraud.
4.2.4	GL Class Allocation	The ability to have differentiated GL class allocation for Accounts Payable Trade accounts. • Regular Accounts Payable Trade • Employee Trade • Board Trade	2	
4.2.5	Approval Process	• Ability to support Management Approvals by batch. (The user will entered the batch and this can only be approved by a Manager if required)	1	
4.2.6	Voucher Types	<u>Vouchers Types</u> The invoices are entered into the system as vouchers and are systemically processed by due dates, cash requirements are produced in advance and ultimately paid when due. The ability to support the following voucher entry methods: • Ability to generate a payment voucher. (The following information is	1	<u>Automation Possibility:</u> If there is sufficient volume to warrant the use of imaging or digital technology, this would eliminate the need for manual invoice processing and improve efficiency. This will assist with eliminating user errors and also electronic data storage.

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		captured, invoice number, invoice value, invoice date, GL date, description field, GL allocation) • Ability to have a voucher match with purchase order. (A process of liquidating the Purchase order based on the invoice value) • Ability to have a voucher match with receipt voucher. (A process of liquidating the receipts which is referenced to the Purchase Order). • Recurring voucher (The ability to automatically generate with overrides and manual changes) • Voucher Prepayments (The ability to make prepayments without referencing an invoice) • Voucher logging. (The ability to log vouchers when received and send out for approvals before being paid) <u>Voucher Attributes required:</u> • Dates required are - o Invoice date - o Service date - o General ledger • Ability to change account coding on all vouchers • Ability to change dates before the voucher is posted. • Ability to restrict changes once the voucher is posted. • Able to reverse the vouchers before postings • Able to void vouchers • Ability to have taxes default from Supplier Master and auto calculate taxes using effective date tax rules. • Ability to select taxes and override tax values. • Ability to have handling codes. Eg Courier cheque, pickup. • Ability to show discount due dates • Ability to generate a hard error when invoice number is duplicated. • Ability to have a pay status attached to individual vouchers.(Eg Hold, Approved, Pending) • Ability to change payment terms on voucher entry • Ability to override due dates as required. • Ability to change payment bank accounts referenced on the voucher. • Ability to reference PO number when not using the PO voucher match or receipts. • Ability to identify the department originating the voucher. • The ability to force a decision to keep purchase order open or close during a match with a purchase order or receipt. • The ability to automatically retrieve supplier information based on purchase order input. • The ability to distinguish between a debit voucher and a credit voucher. (Possible uses of document types)		<u>Purchasing Cards:</u> For low dollar purchases, P-card is recommended. This eliminates AP transactions.
4.2.7	Holdbacks	<u>Holdback Process</u>	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		Holdback is the percentage of a committed amount that is withheld until a specified date. The payment being retained is often held until all work under a construction contract, service or receipt has been completed. This holdback amount is paid out at the time the owner designate has provided written notice of acceptance of the project. The retained portion represents a pre-determined amount to cover any unfinished work. The holdback functionality needs to be automated and the following is required: • Ability to work with purchase order and vouchers. • Ability to enter holdback percentage in PO. • The holdback calculations are automatic at voucher processing. • The holdback account allocations are automatic at voucher processing. • Ability to have partial holdback payments released. • Ability to reverse holdback entries when required. • Ability to have holdback with taxes or without.		
4.2.8	Tolerance Rules	The ability to setup tolerance rules for voucher-match and receipts matching with the option of zero tolerance. The following tolerance checks can be executed by the following categories. • Quantity: - o Tolerance Percentage - o Tolerance Unit • Unit Costs: - o Tolerance Percentage - o Tolerance Amount • Extended Costs: - o Tolerance Percentage - o Tolerance Amount	1	
4.2.9	Taxes	The following is required for efficient tax calculation and entry. • Ability to support the automatic calculation of taxes. • Ability to have date effective GST & PST taxes. • Ability to support tax rules. (GST is automatically calculated and allocated to tax account, PST is automatically calculated and allocated to the corresponding original expense account entry) • Ability to support tax tolerance rules: - o Ability to stipulate percentage tolerance.(eg GST will be allowed from 4.5% to 6%)	1	
4.2.10	AP Cash	The ability to provide the following information for cash management	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
	Forecasting	activities. Cash requirements for future periods. - The ability to show the amount due by days as required. - The ability to forecast by due dates, invoice date and GL date.		
4.2.11	Payment Process	After the vouchers are entered and posted into the system, then preparation of payments can be undertaken. This is an automated cheque printing process. The manual process is also used where the cheques are hand written and the corresponding detail entered after the fact into FIS system. Both processes are required. In addition the EFT payment process will also be required. The basic principle of paying the supplier based on due dates. <u>Create Payment Group or Groups:</u> The ability to create payment group or groups by the following criteria or combination of: - Payment Type (This would be grouping all cheque payment together). - Currency (Grouping all CAD payments together) - GL Class (eg paying all regular AP trade accounts) - Range of dollar value (eg. Greater than \$2.00 and less than \$100 000) - Payment Due Dates. - Discount Due Dates - Payment Status (Group all payments in "approved" status) - Company (Group payments by company) - Supplier (Paid an individual supplier) - Ability to restrict payment to only posted vouchers. <u>Finalizing the Payment Group</u> Upon completion of the create payment group, a review of the payments is undertaken to either accepted or make changes to the payment group. Once finalized, the ability to execute the following is required: - Print a cheque (This prints to cheque stationery stock, showing the remittance detail eg. Supplier ID, Supplier Invoice number, Amount Paid, Discount taken, Purchase Order reference, Explanation Remarks from voucher) - Ability to restart the payment process.(This completes reverse the batch created) - Reset the payment process (This allows for a batch reset, in the event of a reprint of a cheque) - Update process (Upon completion of the cheque printing, the payments entries are update to GL)	1	
4.2.12	AP Integrity	<u>Integrity Report</u> Integrity reports are used to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. The ability to generate the following reports as a minimum:	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- AP to GL by offset Account Report (Report showing any discrepancy with entries to AP and final postings to GL) - Out of Balance Batches in AP (Report showing any out of balance batch and the detail of the entries)		
4.2.13	AP Periodic and Annual Close	- Ability to run monthly close routine by fiscal date periods. - Ability to work with current and future period if required. - Ability to error when incorrect periods are used. - Ability to restrict postings to closed periods.	1	
4.2.14	Mass Updates and Audits	Ability to perform the following functions: - Mass updates to vouchers. (eg. Changing the hold code from "pending" to "approved" code for all vouchers to be paid). - Mass updates to supplier master. (eg changes to a payment term) - Ability to support audit list of user and batch approvers. - Ability to track changes made in Supplier Master. (Provide an exception report if changes are made to supplier master information) - Ability to check if duplicate payments are made. (if the same invoice reference and amount is paid twice) - Ability to check if duplicate supplier master information exists.	1	<u>Fraud prevention and detection measures:</u> - Code of Ethics - Segregation of Duties - So that no individual employee can single-handedly authorize and access payments. - Stringent controls to monitor AP - Duplicate invoices - Suspected duplicate payments - Contravention of SOD rules. - Managing Supplier files - Performing random audits.
4.2.15	AP Online Inquiries	Ability to view the following information via on-line inquiries. - Supplier information detailing all opened, paid, pending voucher information. - Account coding respective to the voucher being queried. - Reference to purchase orders where applicable - Supplier reference invoice numbers - Reference to debit voucher or credit voucher. - General Ledger Date - Invoice Date - Due Date - Batch Number Reference - Cheque Numbers - Details of items paid with corresponding cheque number - On line "as off" supplier balances - Open Receipts - Un-posted Supplier Batches - Supplier specific information (Supplier Name, Supplier ID, Address, Email Address, Contact Name, Payment terms, taxes) - Voucher information (Supplier Invoice number, Supplier ID, voucher value, invoice date, due date, GL date, Open Value, discount, Cheque Reference) - Pay Status (showing all pending, on hold or approved vouchers) - Ability to provide for supplier history retrieving vouchers, payment references and purchase orders. (This should include current history	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		and prior years)		
4.2.16	System Integration	The ability to support systems integration with the following modules: • General Accounting • Procurement • Inventory • Equipment and Plant Maintenance • Job Cost • Fixed Asset	1	
4.2.17	Reports	The ability to create the following reports, based on selection criteria when required: • AP Summary Ageing Report (The following data fields are required: Supplier ID, Supplier Name, Phone Number, Company Number, Balance Open, Current , Ageing days 31-60, Ageing Days 61-90, Ageing Days 91-120, Ageing Days Over 120) • AP Detail Ageing Report (The following data fields are required: Supplier ID, Supplier Name, Phone Number, Company Number, Invoice Number, Invoice Date, Due Date, Balance Open, Current , Ageing days 31-60, Ageing Days 61-90, Ageing Days 91-120, Ageing Days Over 120) • AP"As-of" Open Detail Ageing Report (The following data fields are required: Supplier ID, Supplier Name, Company Number, Invoice Number, Invoice Date, Due Date, Balance Open, Balance Original, Current , Ageing days 31-60, Ageing Days 61-90, Ageing Days 91-120, Ageing Days Over 120) • AP Account Totals by Supplier (The following data fields are required: Supplier ID, Supplier Name, Department, Account Code, Sub Account Code, Account Description, Amount) • AP Auto Payments Register (The following data fields are required: Payment Number, Payment Date, Supplier ID, Supplier Name, Payment Stub Message, Voucher Number, Company Number, Amount Paid, Supplier Invoice Number) • AP Payment History report (The following data fields are required: Supplier ID, Supplier Name, Invoice Number, Invoice Date, Due Date, Payment Amount, Voucher Number, Cheque Remark) • AP Voucher Report (The following data fields are required: Supplier ID, Supplier Name, Phone Number, Company Number, Invoice Number, Invoice Date, Due Date, Invoice Amount, PO Number, GL Date, Batch Number, User ID, Batch Date, GL Account Distribution, Department, Account Description)	1	
4.2.18	Interface from Third Party Software	• Forms Package (Consider using a forms package that as the ability to have corporate wide usage, eliminating the need for pre-printed stationery, which includes cheque stock, purchase orders and invoices. The forms package also as the ability to automate cheque	2	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		signatories). TD Bank for EFT. Check the EDI functionality available from TD bank for EFT payment process. Ensure its audit compliant and also has the security feature required for transfer of funds. Check with automatic notifications for vendors as feature functionality.		

5 Accounts Receivable

YEC's accounts receivable is a manual process with no interface into the existing FIS system. The system of recording invoices and mailing invoices is also manually executed. The account allocations are also manually entered into the GL system in the existing FIS. The balancing of trade accounts is manually done in an excel spreadsheets.

5.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis	Future State Reference
5.1.1	CIS	<u>CIS – Customer Information System</u> • YEC currently uses CIS (Customer Information System). This is not expected to change in the foreseeable future. Customer Information System is stand-alone software used exclusively for a specific customer billing type. The customer master and all related billing information resides in the CIS system. This includes: - o Customer name - o Customer number - o Billing address - o Tax information - o Payment terms - o Bank information. • Invoices are generated by CIS system based on billing cycle and recorded. • The customer copies of the invoices are mailed. • Incoming cash receipts from CIS based customers are entered into CIS system. This is matched against customer open items. • The ageing reports are generated out of the CIS system. • Only interface into JDE is a manual process. The use of an excel spreadsheet is to facilitate capture entries from CIS system. This includes invoices, credit memos, cash receipts, adjustments, NSF cheques. Entries are summarized and then manually keyed into JDE general ledger module. • Cash receipts are journalized and entered JDE into the CIS bank account.	Gap	11.2.1

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Separate control account that balance to CIS/JDE system - Separate bank account for CIS system. - Monthly control reports and statements are generated by CIS. - Manual accrual for billing cycles.			
5.1.2	Customer Master	The customer master information is setup in conjunction with the address book in JDE. The following information is captured by YEC: - Alpha Name - Tax ID - Search Type (C is used for customers) - Business Unit - Mailing Name - Full Mailing Address - Receivables Flag - Hold Payment Code (This is used to indicate that a customer is on hold status) - Payment Terms - Default account codes (Company, balance sheet, subsidiary) - Default currency code - Tax Information: - Tax Explanation Code - Tax Rate Area - Add Tax ID - Tax Authority - Contact information - Email Information - Phone information	Fit	Current system functionality exists.	5.2.2
5.1.3	Taxes	<u>Taxes:</u> - GST tax calculation is used - PST is used - Date effective GST & PST tax calculations - Tax rules is used by rate and area - Tax Tolerance is used	Fit	Current system functionality exists.	5.2.3
5.1.4	Payment Terms	<u>Payment Terms:</u> Payment terms are used by Accounts Receivable system. There is consensus between the seller and buyer on when payment is due for goods or services. The use of payment terms makes for efficient entering of invoices. The following payment terms are used:	Fit	Current system functionality exists.	11.2.6

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		Net 30 days			
5.1.5	GL Class Accounts	The following GL Class accounts are used: - Customer Billing- retail - Employee Billing - Generation Billing - Customer Extensions - Miscellaneous Billing	Fit	Current system functionality exists.	5.2.4
5.1.6	Approval Process	- Levels of approval are defined for Accounts receivable. - Approval by batch. (This is journal entries) - Approvals are module specific. i.e only can approve AR batches.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	5.2.5
5.1.7	Manual Billing	<u>Manual Billing</u> The manual billing process is direct entry into JDE system with no interface or automation. The customer master information is entered into JDE and is used for billing purposes. JDE address book number is used and also sub-ledger field is referenced. There are essentially three types of manual billing processes. <u>Generation Billing</u> The information is received manually and billed in JDE to Yukon Electric.(Wholesale revenue) <u>Customer Extensions</u> A cost estimate is provided by YEC to the customer. Only upon approval of the estimate, the customer is then billed. There could be potential difference from the initial cost estimates to the final billing. The differences are passed on to the customer by either an additional bill or a credit. <u>Miscellaneous Billing:</u> - A manual invoices are produced in an Excel spreadsheet and keyed in as a journal entry into JDE using the sub-ledger field. The sub-ledger field is used as a unique identifier in the address book as customer. - Invoice numbers are manually controlled. - Cash receipts are expedited through the bank reconciliation process, this mean via JE and then allocated referencing the sub-ledger field. - No statement is produced. - The control reference is by object account and sub-ledger. This is basically used as an AR receivable outstanding. - No integrity report. - No control accounts via invoices. - Cancelling and voiding are done manually done. - No bank charges or interest is captured via this process - No 30/60/90 day report is produced.	Fit	Current system functionality exists.	5.2.6

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
5.1.8	AR Integrity	Currently there are no automated integrity checks that are used. This is due to the manual nature of billing operations.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	5.2.9
5.1.9	Periodic Close & Annual Close	- Monthly close is run with GL close. - Monthly close routine is executed by fiscal date period. - Can work with both current and future period - Errors when incorrect periods are used. - No posting allowed to closed prior period. - Annual close updates customer history.	Fit	Current system functionality exists.	5.2.10
5.1.10	Global Updates and Audit	Currently none of the global updates or audit functionality is used.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	
5.1.11	AR Online Inquiries	AR online inquiry is currently not used. The collation and inquiry of AR information is a manual process.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	5.2.11
5.1.12	System Integration	<u>System Integration</u> General Ledger Budgeting & Forecasting Fixed Assets Job Costs Address Book	Fit	Current system functionality exists.	5.2.12
5.1.13	Interface from Third Party Software	CIS interface (Customer Interface System). Currently not interfaced.	Gap	Current system functionality exists. This is not used nor configured to leverage this automated feature.	5.2.13
5.1.14	Reports	No reports used currently off the AR system.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	5.2.14
5.1.15	Staffing	Billing currently undertaken by: - Tom is responsible for wholesale sales - Melaine is responsible for JE as assigned to her. - Darcie is responsible for miscellaneous one offs			
5.1.16	Security	AR Module is not used and consequently the security is not setup.	Fit	Current system functionality exists. This is not used nor configured to leverage this automated feature.	

5.2 Future State

YEC would ideally want to maintain an accurate record of customer invoices and payments, along with timely billing which is fundamental to how the business is managed. The efficiency gained from an automated system provides management with timely information on cash flows and collections from the Accounts Receivable system.

No.	Key Area	Requirements	Criticality	Additional Notes
5.2.1	CIS	<u>Customer Information System</u> - YEC currently uses CIS (Customer Information System). This is not expected to change in the foreseeable future. Customer Information System is stand-alone software used exclusively for a customer service billing. The customer master and all related billing information resides in the CIS system. This includes all of the following: - Customer name - Customer ID - Billing address - Tax information - Payment terms - Bank information. - The ability to support CIS interface is required. To interface billing information and general ledger entries into FIS. This process would provide for all Accounts Receivable transactions in a central repository, which in turn facilitates collections and month end balancing process.	2	
5.2.2	Customer Master Information	The ability to provide for the following Customer Master Fields: - Customer Name with a minimum of 35 characters. - Customer ID with a minimum of 6 digit code. - Reference field that specifies it is a customer. - Department Reference. (Ability to define revenue department) - Mailing Name (The ability to enter a different customer mailing name if different from customer name). - Full Mailing Address (Address fields, city, country, postal code) - Reference field for a hold code (ability to flag a customer that should not be supplied possibly a delinquent customer). - Payment Terms with a minimum of net 30 days required. - Customer Credit Limit field reference. - Contact information (Reference to customer contact name or department) - Email address field (Ability to use email feature for invoice delivery) - Area code and phone information fields.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
5.2.3	Taxes	- The ability to automatically calculate GST and PST based on the tax rates. - Ability to support date effective GST & PST tax calculations. (This is required to support changes in tax rates and also the ability to work with previous rate as required). - Ability to support tax by location.	1	
5.2.4	GL Class Accounts	The ability to support the following accounts receivable trade accounts: - CIS Trade Account (This is from the stand alone Customer Information System) - Employee Trade Account (two types- payroll deduction and miscellaneous advances) - Generation Billing Account - Customer Extensions Account - Miscellaneous Billing Account (sometimes captured in a work order request form i.e customer requests)	1	
5.2.5	Approval Process	Ability to support Management Approvals by batch. (The user will entered the batch and this can only be approved by a Manager if required)	1	
5.2.6	AR Billing	<u>AR Billing Process</u> - The ability to provide for invoice generation. - The ability to support the following required fields on invoicing system: - GL account allocation (Minimum of 3 segments and minimum of 14 digit code in total. The 3 segments comprising of department, account code and sub account revenue department, account code and sub account code). - Descriptions field with a minimum of 100 characters. - Work Order reference field - Invoice Date - Service Date - General Ledger Date - Discount Due Date - Quantity field - Unit of Measure - Unit Cost - Extended Cost - Discount Amount Field - Payment Terms field - Tax Amount (This is automatically calculated by the rate and area reference or manually overridden if required) - Additional Description field with minimum 100	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- characters. ▪ Department Field ▪ Company Reference Field - o Ability to have recurring invoice - o Ability to review and approve invoice - o Ability to make revisions to un-posted invoices. - o Ability to post invoice to GL. - o Ability to reverse posted invoices.		
5.2.7	AR Cash Receipts	<u>Receipts Process:</u> One of the most important steps in AR process is to enter payments as expeditiously as possible. This is in order to track the cash flow and also know what's outstanding from a collection point of view. The ability to support AR receipts process must have the following capabilities: • Ability to create a cash receipt • Ability to allocate cash receipts to AR or GL accounts. • Ability to support the selection of bank accounts to be debited. • Ability to support the various date options: - o Receipt Date - o General Ledger Date - o Received Date • Ability to review and approve receipts • Ability to reverse receipts • Ability to have automatic write off's for penny differences or amount stipulated in AR account balances. • Ability to have automatic charge back with cash receipt entry. • Ability to have reason codes for write offs with cash receipts entry. (eg Bank Charges written off) • Ability to automatically match invoices with cash receipts amounts or manually select invoices that are being paid. • Ability to offset invoices and credit note entries, this is required so that debit and credit entries are not shown in the aged accounts receivable report.	1	
5.2.8	Credit Collections	• Ability to print statements • Ability to print delinquency notices • Ability to charge interest on overdue accounts	1	
5.2.9	AR Integrity	Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. The ability to support the following integrity checks: • Accounts Receivables to General Ledger by batch (Shows discrepancies between any AR batch posted into the GL) • Accounts Receivables to General Ledger Trade Accounts (Ability to show that all the AR trade accounts are in balance with the AR sub-ledger)	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
5.2.10	Periodic Close & Annual Close	- Ability to run monthly close by fiscal date periods. - Ability to work with current and future period if required. - Ability to error when incorrect periods are used. - Ability to restrict postings to closed periods.	1	
5.2.11	AR Online Inquiries	Ability to view the following information via on-line inquiries and searchable fields: - Customer information detailing all open, paid, pending invoice information. - GL Account coding respective to the invoice being queried. - Reference to customer sales orders number - Customer ID numbers - Document type (Ability to distinguish between and invoice and credit note) - General Ledger Date - Invoice Date - Due Date - Batch Number Reference - Customer cheque reference numbers - Details of items paid with corresponding cheque number - On line "as off" customer balances - Un-posted Batches - Customer Master information (Customer ID, Customer Name, Billing Address, Taxes, Payment Terms, Contact Information) - Invoice information (Invoice Number, Invoice Date, Due Date, Discount Due Date, Invoice Description, Invoice Amount, Amount Outstanding)	1	
5.2.12	System Integration	The ability to support the integration into the following modules: - General Accounting - Equipment and Plant Maintenance - Job Cost - Fixed Asset - Inventory	1	
5.2.13	Interface from Third Party Software	The ability to support the interface from: CIS (Customer information System)	1	
5.2.14	Report	The ability to generate the following report: AR Open Summary Report (The following data fields are required: Customer ID, Customer Name, Customer Phone Number, Invoice Date, Invoice Number, Ageing days 31-60, Ageing Days 61-90, Ageing Days 91-120, Ageing Days Over 120, Total)	1	

6 Budgeting & Forecasting

Budgeting and forecasting for Yukon Development Corporation and Yukon Energy Corporation are extensively prepared on excel spreadsheets with approved budgets entered into FIS system. The process of forecasting revenue and capital is labour intensive with multiple variations of calculations that ultimately culminate into the final forecast projections. It's expected that the revenue projections will be undertaken using excel spreadsheets. The O&M expenses, capital plan and payroll costs can be automated in the new FIS system

6.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
6.1.1	Budgeting	<u>Budgeting</u> Budgeting provides a projection of future expenses and revenues. Using budget history, you can compare actual amounts to your projections and use the information to improve your budgeting process. <u>Sales Forecast</u> Sales forecasting is undertaken in excel spreadsheet. With details itemizing customers, energy requirements and demand forecast. The calculations are complex with varying degrees of data manipulations hence the use of excel. This is a manual process of collecting and collating data. <u>O&M Expenses (O&M)</u> Operating and Maintenance (O&M) is also undertaken in excel spreadsheets. The information is extracted out of JDE with two years of prior balances and current YTD for forecasting. <u>Capital Plan</u> Capital Plan is also undertaken in excel spreadsheets. This is a manual business process where PID (Project Identification Document) is used to derive at the final capital plan. This is a re-iterative process until the PID are approved and finalized into the budget process. <u>Total Payroll Costs</u> The information is extracted from ADP system. Here again the calculations are in an excel spreadsheets and thereafter consolidated and entered into JDE.	Gap	Forecasting on excel spreadsheet.	11.2.1
			Gap	Forecasting on excel spreadsheet.	11.2.1
			Fit	Current system functionality exists	11.2.1
			Fit	Current system functionality exists	11.2.1
6.1.2	JDE Budgeting	<u>JDE Budgeting Process:</u> - Uploads are electronically executed into JDE by year. Five separate uploads are executed. - Combination of business unit and account, sub ledger budgeting is done in JDE.(from uploads)	Fit	Current system functionality exists.	6.2.2

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Upon completion of the upload this is reconciled to the Board Approved Business Plan.(five separate only) - Consolidated the budget report to match Board approved Business Plan - Send Approved Budget Reports to Individual Managers. - Verification of allocation and Account Coding - This forms the monitoring of Actual to Budgets on Monthly Basis. - Report to Board on Quarterly basis against approved budget - Report to YUB with the approved Budget and Actual.(only on request) - This forms the basis for audit report and annual financial reports			
6.1.3	Ledgers Types	<u>Ledgers used in Budgeting Process</u> <u>Ledgers Types:</u> Ledger types define the ledgers that you maintain in the budgeting & forecast module. These ledgers contain management and control information for the following: - Actual Expenses - Units - Budgets - Forecasts - Projections <u>Ledgers as referenced in JDE:</u> - AA Actual ledger - BA Budget Ledger - JA (Job Cost) - UA (Units Ledger required) - UB (Units Budget)	Fit	Current system functionality exists.	6.2.4
6.1.4	System Integration	<u>System Integration</u> - General Ledger - Job Costs - Procurement	Fit	Current system functionality exists.	6.2.9
6.1.5	Approval Processes	<u>Approval Processes:</u> The approval process is separate into requested, approved and final. - Defined levels of approval. - Approvals by business unit. - Approval by object accounts.	Fit	Current system functionality exists.	6.2.5

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
6.1.6	Annual Budget Close	Annual Budget Close: - Rollover of budgets to following year. - Populated final budgets into approved Budget ledger type. - Carry forward of capital budgets is undertaken where applicable. - Updates to opening balances when annual budget close is complete. - Budget close programs are company specific.	Fit	Current system functionality exists.	6.2.6
6.1.7	Global Updates	Global Updates: - Global updates to Budget Spread patterns - Global updates to Object accounts - Audit list of user and batch approvers	Fit	Current system functionality exists.	6.2.7
6.1.8	Online Inquiries	Online Inquiries: - Budget comparison with actual by object account - Budget comparison with actual by business unit - Budget comparison with actual by subsidiary accounts - Budget comparison with actual by sub-ledger.	Fit	Current system functionality exists	6.2.8
6.1.9	Interface from Third Party Software	Interface from Third Party Software: - CIS interface (Customer Interface System) - ADP (Easy labour & Pay at work) - Project Identification Document (PID process)	Gap		

6.2 Future State

The emphasis on budgeting and forecasting for the future will be to automate the process for O&M, Capital Plan and Payroll Costs, which will benefit YEC in terms of efficiency and cost savings.

No.	Key Area	Requirements	Criticality	Additional Notes
6.2.1	Key Budgeting Areas	<u>Sales Forecast</u> It's expected that sales forecasting will still be undertaken in excel spreadsheet due to complex calculations with varying degrees of data manipulations. This manual process is expected to continue.	2	
		<u>O&M Expenses (O&M)</u> Operating and Maintenance (O&M) will be an automated process of extracting and forecasting directly out of the proposed FIS system.	1	
		<u>Capital Plan</u> Ideally an automated interface from PID (Project Identification) is expected to derive at the final budgeted capital plan. This is currently a manual process.	2	
		<u>Total Payroll Costs</u>	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		The proposed interface between ADP ezlabour manager and the proposed FIS system will automate the extraction of payroll costs for budgeting.		
6.2.2	Budgeting and Forecasting	<u>Budgeting and Forecasting Process:</u> - Ability to upload budgets electronically into FIS by year or month from Excel spreadsheets. - Ability to export budgets to spreadsheets. (Analysis can be performed on Excel or other spreadsheet based programmes) - Required to budget by department, account code and sub code. (Ability to support the multi-segment account code structure of minimum of 3 segments and minimum of 14 digit code in total) - Ability to budget in units and dollars. - Ability to support the use of budget spread patterns. (Seasonal spread patterns, regular 1/12 budget pattern, percentage based spreads. This is based on an annual budget amount entered and the system automatically spread the amounts to the months based on the spread pattern used.) - Ability to provide history of prior year expense and revenue. This should ideally span a seven-year period. (This would be used for budget comparisons in the budgeting module) - The ability to roll up budgets into departments, account codes and sub account codes. - The ability to identify budgets by original budget, approved budget and final budget. (This will be used for tracking amendments). - Ability to prevent unauthorized changes to approved budget items. - Ability to perform budget tracking by capital project. - Ability to perform budget reallocation. - Provide ability for 12 month rolling forecast, with total displayed - Provide ability to make adjustments to the forecast - Provide graphical presentations of history and forecast, with a selection of graph styles and options - Provide ability to generate automatic, low intervention forecasting methods. (The use of percentage based changes, or indexed changes) - Ability to attach documents to support budget details.	1	
6.2.3	Forecast evaluation tools:	<u>Provide forecast evaluation tools:</u> - Ability to download forecast data to spreadsheet formats - Ability to save forecast versions for accuracy analysis - Provide "what if" analysis tool.	2	
6.2.4	Ledgers	<u>Ledgers Types:</u> The ability to support the use of the following ledgers are required: - Budget Units - Budget - Forecast - Projection	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
6.2.5	Approval Process	- The ability to approve budgets based on delegation of authority. - The ability to support the approval by department, account code and sub account codes.	1	
6.2.6	Annual Budget Close	- Ability to rollover budgets to following year. - Ability to carry forward capital budgets if applicable. - Ability to close budget ledger by company.	1	
6.2.7	Mass Updates	Ability to carry out mass updates to budget spread patterns.	1	
6.2.8	Online Inquiries	The ability to compare actual amounts with budgeted amounts and display the variances as follows: - Comparison by account code - Comparison by department - Comparison by sub account structure - Comparison by combination of department, account code and sub account.	1	
6.2.9	System Integration	The ability to support the integration to the following modules: - General Ledger - Procurement - Job Cost	1	
6.2.10	Interface from Third Party Software	The ability to interface from: - ADP (Payroll) - CIS (Customer Information System)	1	
6.2.11	Reporting	<u>Budget Reporting:</u> - Monthly budget report by departments and account codes.(The following data fields are required, Department, Department description, Account Code, Account description, Total Budget Amount, Monthly Amounts Period 1-12) - Annual Budget Reports.(The following data fields are required, Department, Department description, Account Code, Account description, Total Budget Amount) - Budget Worksheet (The following data fields are required, Account Description, Prior Year YTD Actual, Current Year YTD Budget, Current Year YTD Actual, Projected, Next Year Requested Budget, % Change, New Year Final Budget, % Change)	1	
6.2.12	Managing Budget Overages	- Ability to restrict postings to accounts which exceeds the budget amount.(Have the option to accept this after an approval process) - Ability to generate an exception report for overages. (Where the actual amount exceeds the budgeted amount)	2	

7 Financial Reporting

Yukon Development Corporation (YDC) is a crown corporation created in 1986 by the Yukon Development Corporation Act. With Yukon Energy Corporation (YEC) created in 1987 as its subsidiary of Yukon Development Corporation. YEC is a publicly owned electrical utility that operates a business, at arms length from the Yukon government. Energy Solutions Centre (ESC) was also a subsidiary of Yukon Development Corporation until end of 2005; this is now integrated into Yukon government Department of Energy, Mines and Resources.

YDC and YEC are active companies in the proposed financial information systems (FIS) structure, with its respective diverse business structure and financial reporting requirements. ESC will only be entered into the proposed FIS for historical reporting and regulatory requirements. Cognizance needs to be taken of reporting for Yukon Territory Government (YTG) and Yukon Utilities Board (YUB).

Financial reporting is largely an effort to assess financial performance, that is, how well or how poorly the YEC performed with money entrusted to it. Financial reporting is critical part of YEC's accountability. Financial reporting is categorized as follows: transactional reporting, monthly reporting, variance reports, annual reporting, statutory reporting and management reporting.

7.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
7.1.1	Transactional Reporting	YEC uses the following transactional reports: - Account Balance by Month - Account Ledger Print - General Journal by Account - General Ledger by Business Unit - General Ledger by Object Account - General Ledger by Sub-ledger totals - JDE GL Inquiry of account balance export to excel - Journal Entry Details prior to Posting - Journal Entry Posting Report - Transaction Journal - Transactions by Object	Fit	Current system functionality exists.	11.2.1
7.1.2	Trial Balance	YEC uses the following trial balance reports: - Trial Balance by Account Code - Trial Balance by Sub- Account Code - Trial Balance by Business Unit - Trial Balance by Object with roll up - Trial Balance by Object with no roll up - Trial Balance by Company - Monthly Trial Balance Report	Fit	Current system functionality exists.	7.2.2

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
7.1.3	Variance Reporting	YEC uses the following variance reporting: Variance Analysis used as Control Report	Fit	Current system functionality exists.	7.2.3
7.1.4	Income Statement Reporting	YEC uses the following income statement reports: - Income Statement by function (BOD) - Operating Income Statement - Income Statement by Account Code - Income Statement by Sub-Account Code - Income Statement by Business Unit - Monthly Income Statement - Consolidated Income Statement - Income Statement from JDE by Cat Code2 Function for both labour and Non Labour Costs - Income Statement from JDE by Cat Code2 Function for labour costs only - Income Statement from JDE by Cat Code2 Function for non labour costs only - Income Statement from JDE by Cat Code10 broken out by cost type for all costs - Income Statement from JDE by Cat Code10 broken out by cost type for non labour costs only - Income Statement from JDE by Cat Code10 for labour costs only - Income Statement from JDE by Cat Code10 for non labour and labour costs only - Income Statement from JDE by Cat Code10 for non labour costs only - Income Statement from JDE by Cat Code10 broken out by cost type for labour costs only - Simple Income Statement used as Control report	Fit	Current system functionality exists.	7.2.4
7.1.5	Departmental & Management Reporting	YEC uses the following departmental reports: - YTD Board Expenses - YTD Consultants by Function - YTD General Admin Breakdown - YTD Labour by Department - YTD Labour by Department and Function - YTD Legal Costs by Business unit - YTD Non Labour by Department and Function - Management Reporting	Fit	Current system functionality exists.	7.2.5
7.1.6	Balance Sheet	YEC uses the following balance sheet reports: Balance Sheet from JDE provides lowest level of category	Fit	Current system functionality exists.	7.2.6

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- totals for Board package - Balance Sheet from JDE rolled up one level to provide Board package support - Balance Sheet from JDE rolled up to provide Board Package totals - Simple Balance Sheet Report used as a control report			
7.1.7	Cash Flow	YEC uses the following cash flow statement: As per current JDE reports	Fit	Current system functionality exists.	7.2.7
7.1.8	Quarterly Reporting	YEC uses the following quarterly reports: Quarterly YTD General Admin Breakdown	Fit	Current system functionality exists.	7.2.8
7.1.9	Board Reporting	YEC uses the following Board Reports: Board Package	Gap		7.2.9
7.1.10	System Integration	The financial information is predominantly obtained from the General Ledger. However current functionality allows for integration to other modules. - Accounts Receivable - Accounts Payable - Budgeting & Forecasting - Payroll - Fixed Assets - Job Costs - Procurement - Inventory - Address Book	Fit	Current system functionality exists.	
7.1.11	Integrity Report	<u>Integrity Report</u> Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. YEC uses these reports to ensure that the financial reports produced comply for accuracy, completeness and validity. - Un-posted batches - Transactions to Batch Header - Batch to Detail - Batches out of Balance - Batch and Company Within Batch Out of Balance - Companies in Balance - Accounts without Business Units - Account Balance with Account Master - Transaction without Account Master	Fit	Current system functionality exists.	7.2.11

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		Compare Account Balance to transactions			
7.1.12	Reporting Security	Financial Reporting security exists. This is configured based on YEC requirements. The security can be explicit with report reference and data fields for user access.	Fit	Current system functionality exists. This is not configured for optimal performance and security access.	7.2.12

7.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
7.2.1	Transactional Reporting	YEC requires the following transactional reports: - Account Balance by Month - Account Ledger Print - General Journal by Account - General Ledger by Business Unit - General Ledger by Object Account - General Ledger by Sub-ledger totals - JDE GL Inquiry of account balance export to excel - Journal Entry Details prior to Posting - Journal Entry Posting Report - Transaction Journal - Transactions by Object	1	
7.2.2	Trial Balance	YEC requires the following trial balance reports: - Trial Balance by Account Code - Trial Balance by Sub- Account Code - Trial Balance by Business Unit - Trial Balance by Object with roll up - Trial Balance by Object with no roll up - Trial Balance by Company - Monthly Trial Balance Report	1	
7.2.3	Variance Reporting	YEC requires the following variance reporting: Variance Analysis used as Control Report	1	
7.2.4	Income Statement Reporting	YEC requires the following income statement reports: - Income Statement by function (BOD) - Operating Income Statement - Income Statement by Account Code - Income Statement by Sub-Account Code - Income Statement by Business Unit - Monthly Income Statement	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Consolidated Income Statement - Income Statement from JDE by Cat Code2 Function for both labour and Non Labour Costs - Income Statement from JDE by Cat Code2 Function for labour costs only - Income Statement from JDE by Cat Code2 Function for non labour costs only - Income Statement from JDE by Cat Code10 broken out by cost type for all costs - Income Statement from JDE by Cat Code10 broken out by cost type for non labour costs only - Income Statement from JDE by Cat Code10 for labour costs only - Income Statement from JDE by Cat Code10 for non labour and labour costs only - Income Statement from JDE by Cat Code10 for non labour costs only - Income Statement from JDE by Cat Code10 broken out by cost type for labour costs only - Simple Income Statement used as Control report		
7.2.5	Departmental & Management Reporting	YEC requires the following departmental reports: - YTD Board Expenses - YTD Consultants by Function - YTD General Admin Breakdown - YTD Labour by Department - YTD Labour by Department and Function - YTD Legal Costs by Business unit - YTD Non Labour by Department and Function - Management Reporting - Year End Income Statement - Year End Balance Sheet - Year End Cash Flow - Year End Lead Sheet	1	
7.2.6	Balance Sheet	YEC requires the following balance sheet reports: - Balance Sheet from JDE provides lowest level of category totals for Board package - Balance Sheet from JDE rolled up one level to provide Board package support - Balance Sheet from JDE rolled up to provide Board Package totals - Simple Balance Sheet Report used as a control report	1	
7.2.7	Cash Flow	YEC uses the following cash flow statement: To be determined in RFP.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
7.2.8	Quarterly Reporting	YEC requires the following quarterly reports: Quarterly YTD General Admin Breakdown	1	
7.2.9	Board Reporting	YEC requires the following Board Reports: Board Package	1	
7.2.10	Project Cost Tracking	YEC requires the following Project Cost tracking Reports: - Actuals vs Approved BP vs Forecasting (1 year and multi-year projects) - Parents and Subs - Projects with no budgets – contingency - Blanket Budgets for like projects	1	
7.2.11	Integrity Report	<u>Integrity Report</u> Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. YEC requires these reports to ensure that the financial reports produced comply for accuracy, completeness and validity. - Un-posted batches - Transactions to Batch Header - Batch to Detail - Batches out of Balance - Batch and Company Within Batch Out of Balance - Companies in Balance - Accounts without Business Units - Account Balance with Account Master - Transaction without Account Master Compare Account Balance to transactions	1	
7.2.12	Reporting Security	Financial Reporting security is required. The security can be explicit with report reference and data fields for user access.	1	

8 Fixed Assets

Yukon Development Corporation (YDC) is a crown corporation created in 1986 by the Yukon Development Corporation Act. With Yukon Energy Corporation (YEC) created in 1987 as its subsidiary of Yukon Development Corporation. YEC is a publicly owned electrical utility that operates a business, at arms length from the Yukon government. Energy Solutions Centre (ESC) was also a subsidiary of Yukon Development Corporation until end of 2005, this is now integrated into Yukon government Department of Energy, Mines and Resources.

YDC and YEC are active companies in the proposed financial information systems (FIS) structure, with its respective diverse business structure and fixed asset functionality. ESC fixed asset data will only be entered into the proposed FIS for historical reporting and regulatory requirements.

8.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
8.1.1	Asset Master Information	<u>Fixed Assets:</u> Fixed Assets are assets owned by YEC that are permanent or have useful life that is used by the business in the production of its revenues. Over time the asset loses its usefulness and is depreciated to provide for the acquisition of a replacement asset. FA structure is unique to YEC for its operational and accounting requirements. <u>Fixed Asset Coding Structure:</u> The fixed asset coding structure consists of balance sheet business unit, object account and subsidiary account. This is a consistent approach for both companies and the object accounts are categorized by asset class. The subsidiary is also used as a sub-class to core operation of both YEC and YDC. The combination of business unit, object account and subsidiary account is used as a norm. <u>Asset Numbering:</u> - Asset Number, this is currently system assigned - Unit Number, this is the preferred reference number as this is referenced with YEC numbering convention. This is a user assigned number. - Serial Number, this is reference to manufacturers reference. - Parent Number, this referenced to system assigned numbering. Used as parent/child relationship. <u>Description Fields:</u> Three fields are used for asset descriptions. The following fields are currently used: - Company Reference	Fit	Current system functionality exists.	8.1.1

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		• Default Business Unit • Responsible Business Unit • Account Codes • Date Acquired • Date Disposed • Authorization for Expenditure • Status of the asset • Sub-ledger reference • Employee Assigned <u>Categorization of Assets:</u> YEC uses category codes to identify, track and report on assets. Category codes used are: • Accounting Class • Equipment Class • Manufacturer • Model Year • Usage • Customer Extensions • Vintage Year • True Up • Iowa Curve <u>Additional Information fields used:</u> • Three remarks fields • New or Used reference • State or Province • Tax Entity • Investment Tax Credit • Location • Current Item Quantity • Original Item Quantity <u>Accounting Information Used:</u> • Asset Cost Account • Accumulated Depreciation Account • Depreciation Expense Account • Revenue Account • Depreciation Method • Life Months • Computation Method • Start Depreciation Date • Salvage Value • Site Restoration Account used via UD ledger and this is journal back to Actual Ledger.			
8.1.2	Ledgers	The following ledgers are used currently:	Fit	Current system functionality exists.	

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Actual Ledger (AA) - Units Ledger (UA) - User Defined Depreciation Ledger (UD) - Would need to create User Defined Ledger.			
8.1.3	Depreciation Rules	The current depreciation rules used: - Straight Line Method with defined months (both indefinite YEC and definite YDC) - Negative Depreciation Rule - Positive Depreciation Rule - PP&E Depreciation - True-Up Depreciation. This is A/D from study that is depreciated. - Default Depreciation Codes, this is used to minimize setups - Create user defined rules - Rules is company specific - Rules are by asset classes if required. - Allow for over depreciation.	Fit	Current system functionality exists.	
8.1.4	Splitting Fixed Assets	Asset splitting is used to split an existing asset into one or more assets. Currently splits are done on: - Percentage basis - Monetary Value - Quantity - Journal Entry	Fit	Current system functionality exists.	
8.1.5	Transferring Fixed Asset	The option exists to transfer single assets of mass transfer. Transferring of assets by the following criteria is available: - Cost Accounts - Accumulated Depreciation - Depreciation Accounts - Responsible Business Unit - Revenue Business Unit - User Defined Category Codes - By asset number	Fit	Current system functionality exists.	
8.1.6	Fixed Asset Disposal	The following disposal methods are used: - Simple Disposal - Disposal with cash proceeds - Disposal with trade in - Disposal with trade in and cash proceeds - Journal Entry Disposal can either be done by a single asset disposal or by mass disposals.	Fit	Current system functionality exists.	

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
8.1.7	Monthly Depreciation Calculations	With the completion of the depreciation rules, depreciation methods and asset master. Monthly depreciation calculations can be run in a proof mode and in a final mode. • YEC currently calculates the depreciations based on an “as off “ date. The system runs a calculation in proof mode for necessary checks and corrections to errors. • Run in final mode. • Creates Journal Entries for posting in General Ledger • Review and posting of Journal Entries • Post Journal Report is produced.	Fit	Current system functionality exists.	
8.1.8	Approval Processes	• Levels of approval are defined for Fixed Asset. • Approval by batch, batch type or user ID. • Approvals are module specific. i.e only can approve FA batches.	Fit	Current system functionality exists.	
8.1.9	Global Updates and Audit	• Run global updates to depreciation rates • Run global updates to asset master • Run global updates for computation methods • Run global update for life months • Run global update depreciation method • Run to update other modules with FA related entries • Run global update to ledgers to assets • Updates to GL object accounts, translates into the FA system.	Fit	Current system functionality exists.	
8.1.10	Grants	Currently tracks grants by: • Contributions by Government • Contributions by Customers • Contributions by YDC	Fit	Current system functionality exists.	
8.1.11	Integrity	Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. Reports are available in summary or detail. The following integrity routines are followed: • Fixed Asset to GL integrity • Un-posted FA transactions • FA Transaction Report • GL to FA integrity	Fit	Current system functionality exists.	
8.1.12	Annual Close	<u>Annual Close</u> As part of period-end and year-end procedures, the following tasks are performed: • Closing an accounting period – Company specific. • Changing a financial reporting date	Fit	Current system functionality exists.	

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Closing a fiscal year - Annual close is company specific - Updates to opening balances - Can work with future periods.			
8.1.13	Online FA Inquiries	The current system functionality allows for a variety of user-defined criteria to view fixed asset information. This includes unit number, asset number and category codes. Repetitive use is made of the following: - Fixed Asset Master Information - Cost Summary - Depreciation Methods and rates - Net Book value - Category codes - Query by example - Depreciation values	Fit	Current system functionality exists.	
8.1.14	Audit	The need to track changes of critical information by user, date and approver.	Fit	Current system functionality exists. Not configured.	
8.1.15	Reports	Current reports used: - FA Continuity Schedule - Asset Additions - Asset Disposals - Asset Retirements - Asset by Class - Asset by Business Unit - Asset by Location - Asset Cost Summary - Depreciation Expense - Full FA Master Information - Insurance Value - Report by category codes	Fit		
8.1.16	System Integration	The following systems integrate with Fixed Assets. - General Accounting - Procurement - Inventory - Job Cost - Address Book - Accounts Payable	Fit	Current system functionality exists	
8.1.17	Third Party Software	Interface from Third Party Software - Project Identification Document (PID process) - PIDS create projects which close to FA.	Gap		

No.	Key Area	Current State	Fit / Gap Analysis	Future State Reference
		Work order close outs to fixed assets – PID creates work order.		

8.2 Future State

Fixed Assets is an integral part of YEC's financial systems. An efficient system of tracking and recording of expenses is needed to meet this inherent requirement. Anomalies in the valuation of assets and reporting need to be addressed.

No.	Key Area	Requirements	Criticality	Additional Notes
8.2.1	Asset Master Information	<u>Fixed Assets:</u> Fixed Assets are assets owned by YEC that are permanent or have useful life that is used by the business in the production of its revenues. Over time the asset loses its usefulness and is depreciated to provide for the acquisition of a replacement asset. The ability to support the following are required by YEC: <u>Fixed Asset GL Coding Structure:</u> - Ability to define multi-segment account codes. (Minimum of 3 segments and minimum of 14 digit code in total. The 3 segments (20.140002.004) comprising of department, account code and sub account code eg Balance Sheet department, account code referencing Computer and sub account code referencing hardware or software). <u>Asset Numbering:</u> The ability to have user assigned numbering and system assigned: - Ability to have asset number system assigned with a minimum of 6 digit code. - Unit Number, this is the preferred reference number as this is referenced with YEC numbering convention. This is a user assigned number which is alpha-numeric with a minimum of 6 digit code. - Ability to have a serial number which is user assigned and a minimum of 30 digit code. (This a manufacturer's reference) - Ability to support parent number which can be system assigned or user assigned. This is used to setup the hierarchy of parent/child relationship. <u>Description Fields:</u> The ability to support the following fields are required: - Asset descriptions with a minimum of 60 characters. - Company Reference field (YEC or YDC) - Department Location(Physical location of the asset) - Department that owns the asset.	1	

FIS Project Phase One

Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Date Acquired - Date Disposed - Reference field to store the authorization number (Project Identification number that is initiated for capital expenditure) - Employee Assigned field (Assigning responsibility to Project Managers) - Reference field for tracking easements - Licences reference field. - Status of the Asset (eg Active, Inactive, scrapped) <u>Categorization of Assets:</u> The ability to support the categorization of assets into the following classes: - Accounting Class (eg. Land, Building, Furniture and Fittings, Computers, Roads, Vehicles) - Equipment Class (eg. Land Operations, Software, Hardware, Trucks, Vans, Cars) - Manufacturer (eg. Caterpillar, Ford Co, Honeywell) - Model Year - Usage (eg. Hydro, Diesel, Wind) - Vintage Year (This is used to flag the assets acquired by YEC from YDC) - Iowa Curve field reference. The codes for the Iowa curve and the corresponding rates are entered. (This is a unique to a YEC corporation where the assets are re-valued for useful life and assigned new depreciation rates based Iowa Curve rate study). The ability to support this is mandatory. <u>Additional Information fields required:</u> - Additional field are required for remarks/explanation(A minimum of 60 characters is required) - New or Used reference (Refers to asset condition) - Financing Methods (eg Leasing, Bank, Owner finance) - Investment Tax Credit field (Amounts received as grants or sponsors for development of assets) - Current Item Quantity (eg poles, structures) - Original Item Quantity <u>Depreciation Information:</u> The ability to support the following depreciation information. - Asset Cost Account - Accumulated Depreciation Account - Depreciation Expense Account - Depreciation Method (eg Straight Line) - Asset Useful Life (ability to show in months or years) - Start Depreciation Date		

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Salvage Value - Site Restoration Account (the ability to expense secondary depreciation and have the offset entry in the balance sheet as site restoration account)		
8.2.2	Ledgers	The ability to support multiple books of records: - Actual Ledger - Units Ledger - YEC Depreciation Ledger (This is used to calculate depreciation based on the Iowa curve revaluation) - The ability to create additional ledgers as required. (Possible requirement for IFRS)	1	
8.2.3	Depreciation Rules	The ability to support predefined depreciation rules calculation and also the ability to create new depreciation rules calculation where required: - Straight Line Method with defined months - Ability to create own depreciation rules. (This would be a deviation from the straight line calculation this requirement will be driven from the Iowa curve study where new depreciation rates and rules are required). - Over-depreciation of an asset must be allowed. (This is unique to the YEC) - Different depreciation start dates is required eg. (1st day following in service date).	1	
8.2.4	Fixed Asset Splitting	Asset splitting is used to split an existing asset into one or more assets. - The ability to splits assets by: - Percentage basis - Monetary Value - Quantity - The ability to split by manual journal entry. (Creation of a new asset and transfer the cost and accumulate depreciation as required).	1	
8.2.5	Transferring Fixed Asset	The ability to transfer single asset or group of assets. Support the transfer of assets by the following criteria: - Cost Accounts - Accumulated Depreciation - Depreciation Accounts - Owner Department - Categorization codes. (eg Accounting Class, Equipment Class) - Location Department	1	
8.2.6	Fixed Asset Disposal	The ability to support the following disposal methods: - Simple Disposal - Disposal with cash proceeds - Disposal with trade in - Disposal with trade in and cash proceeds - Disposal by categorization codes (eg Accounting Class, Equipment	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		Class)		
8.2.7	Monthly Depreciation Calculations	The ability to run monthly depreciation calculations in a preliminary mode for review before being run in a final mode. • Ability to automatically calculate the depreciation based on an “as off “date. • Ability to run in preliminary mode. • Ability to run in final mode. • Ability to creates journal entries for posting in general ledger • Ability to review and post entries into General Ledger. • Ability to print a post report. • Ability to reverse depreciation calculations by batch if required. • Ability to re-run depreciation based on updated data.	1	
8.2.8	Approval Process	• Ability to support Management Approvals by batch. (The user will entered the batch and this can only be approved by a Manager if required)	1	
8.2.9	Mass Updates	Ability to perform the following mass updates: • Run mass updates for changes to depreciation rates in the asset master. • Run mass updates to asset master (eg changes to categorization of assets i.e. Accounting Class) • Run mass update for asset life. (eg a group of assets are now being change to be depreciate from 60 months to 72months) • Run mass update to ledgers. (The ability to attached assets to ledgers as required .i.e. all fixed assets will also be attached to new ledger defined by IFRS requirement)	1	
8.2.10	Grants	Ability to track grants by: • Contributions by Government of Yukon • Contributions by Customers • Contributions by YDC	1	
8.2.11	Integrity	<u>Integrity Report</u> Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. The ability to check the FA by the following criteria: • Fixed Asset to GL integrity (Ability to show posting discrepancies from the FA to GL) • Un-posted FA transactions (A report showing all un-posted FA transactions by batch number and batch totals) • FA Transaction Report showing transactions posted by batch and batch totals. • GL to FA integrity (Ability to show posting discrepancies from the GL to FA) • Integrity between actual ledger and user defined ledger must be	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		available.		
8.2.12	Period and Annual Close	The ability to support the following are required: - Closing a fixed asset period. - Closing a fiscal year (This process will carry forward the asset cost and accumulated depreciation balances to the new year) - Ability to post FA entries into future periods. - Ability to restrict posting to a close accounting period.	1	
8.2.13	FA Online Inquiries	Ability to view the following information via on-line inquiries. - Fixed Asset Master Information (The ability to show a minimum of the following searchable fields, Asset number, Unit number, Serial number, Department, Categorization Codes, Company, Asset Description fields) - Asset Cost Summary (The ability to show a minimum of the following searchable fields, Asset number, Unit number, Serial number, Department, Cost Amount, Accumulated Depreciation, Depreciation Expense, Net Book Value, Date Acquired, Asset Description Filed)	1	
8.2.14	Reports	The ability to produce the following reports: - FA Continuity Schedule (The following data fields are required: Asset ID, Asset Description, Beginning Asset Cost, Transfer In, Additions, Assets Sold or Retired, Assets Transfer Out, Ending Asset Cost, Beginning Accumulated Depreciation, Assets Transfer In, YTD Depreciation Expense, Asset Sold or Retired, Assets Transfer Out, Ending Accumulated Depreciation, Net Book Value) - Asset Additions (The following data fields are required: Asset ID, Asset Description, Date Acquired, Asset Cost, Accumulated Depreciation, Depreciation Expense, Net Book Value) - Asset Disposals (The following data fields are required: Asset ID, Asset Description, Disposal Date, Date Acquired, Asset Cost, Accumulated Depreciation, Net Book Value, Cash Proceeds, Gain or Loss on Disposal) - Asset by Location Department (The following data fields are required: Asset ID, Asset Description, Serial Number, Unit Number, Date Acquired) - Depreciation Expense Information (The following data fields are required: Asset ID, Asset Description, Asset Status, Ledger reference, Cost, Accumulated Depreciation, YTD Depreciation Expense, Current Period Depreciation Expense, Net Book Value, Start Depreciation Date, Depreciation Method, Asset Life) - Monthly Depreciation Calculation Report (The following data fields are required: Asset ID, Asset Description, Acquisition Date, Depreciation Start Date, Depreciation End Date, Asset Life, Cost, Accumulated Depreciation Inception to Date, Accumulated	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		Depreciation YTD, Depreciation Current, Depreciation Balance Adjustment).		
8.2.15	System Integration	The ability to integrate with the following modules: • General Accounting • Procurement • Inventory • Equipment and Plant Maintenance • Job Cost • Address Book • Accounts Payable	1	

9 General Ledger

Yukon Development Corporation (YDC) is a crown corporation created in 1986 by the Yukon Development Corporation Act. With Yukon Energy Corporation (YEC) created in 1987 as its subsidiary of Yukon Development Corporation. YEC is a publicly owned electrical utility that operates a business, at arms length from the Yukon government. Energy Solutions Centre (ESC) was also a subsidiary of Yukon Development Corporation until end of 2005; this is now integrated into Yukon government Department of Energy, Mines and Resources.

YDC and YEC are active companies in the proposed financial information systems (FIS) structure, with its respective diverse business structure and financial reporting requirements. ESC will only be entered into the proposed FIS for historical reporting and regulatory requirements. Cognizance needs to be taken of reporting for Yukon Territory Government (YTG) and Yukon Utilities Board (YUB).

9.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
9.1.1		<u>Company</u> Companies are organizational entities that required for operational purposes. Companies include information about fiscal patterns and fiscal periods. This setup provides for reporting and accounting at a lower level.			
9.1.2	Company	<u>Company Setup Requirements:</u> • Ability to have multiple companies. This would include YEC (Yukon Energy Corporation) and YDC (Yukon Development Corporation). Transactional history of ESC (Energy Solutions Centre) would be needed for data migration, historical reporting purposes and regulatory requirement. • Required that both companies operate as independent companies. Due to the diverse nature of operations of both companies, it's expected that the business unit and chart of accounts are unique to each company. • Given that YEC & YDC are independent companies. No inter-company transactions are expected. • Companies have a base reporting currency of Canadian Dollars. • Consolidation of both YEC & YDC is required. Fiscal periods are expected to be the same for both companies. • Company ID is numerical with digits from two to five. • The Company description should be a minimum of thirty	Fit	• Current system functionality provides for unlimited companies with varying degrees of diverseness as required. • Current system functionality provides for individual company setup. • Current system functionality provides for both inter-company and non inter-company transaction. • Current system functionality provides for multi-currency or domestic currency as required. • Current system functionality provides for consolidations as required. • Current system functionality provides for two to five digits. • Current system functionality provides for minimum as required.	9.2.1

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis	Future State Reference
		characters lengths. - Company as defined date fiscal patterns. Option to select defined date fiscal patterns to respective companies. (YEC uses a calendar year as date fiscal pattern). - Defined number of accounting periods eg. 12 periods or 13 periods. YEC currently uses 12 period reporting. - Ability to set company reporting period.	- Current system functionality provides for flexibility of date fiscal patterns. - Current system functionality provides for reporting periods up to 14 and also 52 weekly reporting if required. - Current system functionality provides for reporting period setup	
9.1.3		Business Units Business units are part of the basic J.D. Edwards account structure. A business unit is the "where" portion of an account. It is used to denote where transactions impact the organization, such as a warehouse, department or store. It is the lowest reporting level within your organization at which you need to account for assets, liabilities, equity, revenue, or expenses.		
9.1.4	Business Units	- Ability to have multiple business units. The assignment of the business unit is company specific. (This needs to support the unique structure of the respective companies. The number of business units is estimated to be in the region of five hundred per company) - The naming of business units needs to be alphanumeric with 6 to 8 digits. - The description of Business unit should exceed 35 characters. - Business unit needs to be user-defined description. Eg Human Resources Department - Able to have user defined business unit types. Eg Balance Sheet BU, Income Statement BU, Revenue BU, Operating and Maintenance BU, Job Cost BU, Model BU's. - Have a Posting Edit flag. This would be for the purposes of either posting transactions or not. - Ability to flag the business unit for consolidation purposes. i.e. no model business will be include in business unit consolidation - The ability to assign category codes to business units. This would be used predominantly for reporting purposes and consolidations. - Minimum of fifteen category codes are required for business units. (This would be required for reporting purposes) - Level of Detail required on Business Unit. Eg Balance	Fit	- Current system functionality provides for unlimited business units. - Current system functionality exists.

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		Sheet Business Unit is assigned level 2 and job cost assigned level 8. This is for reporting on level of detail and also for rollup purposes. - Ability to assign owner of business unit. Eg. Job cost business unit is assigned a Project Manager. - Ability to make changes to business unit via global updates. Eg changes to a category code or combination of changes. - Ability to attachment document to BU's - Ability to have effective Dates by Business Unit eg. Business Unit 123 is effective end date of 12/31/2007.			
9.1.5		Chart of Accounts After you set up your companies and business unit you need to set up object and subsidiary accounts for each business unit. These accounts form your chart of accounts. The object and subsidiary describe the kind of transaction with which you are working—for example, rent expense, office supplies expense, or sales revenue.			
9.1.6	Chart of Accounts	- Ability to create user defined chart of accounts, with the combination Business Unit. Object. Subsidiary. Typically the Business Unit length will be 6 to 8 character, Objects will be 4 digits, and subsidiary will be 3 to 4 characters. Eg. 963070.4400.001 - The chart of accounts requires the flexibility to be created in a hierarchy e.g. Balance Sheet Account: With headings under Assets, Liabilities, Owners Equity, Income Statement with Revenue and Expenses. - Level of detail required for object, subsidiary accounts. - Level of details (1 to 9) - The chart accounts are structured with Business Unit. - Require Category Codes for chart of accounts. (O&M 8, Job costs 8, Minimum 12 cat codes required) - Invalid accounts need to be flagged for errors. - Factors that determine whether an account posts or not. - Posting. - Non-posting accounts. - Budget Accounts - Machine generated. - Inactive Account - Units are required. - Monetary Account (USD bank type transactions) - Monetary not required. - Global updates to COA (to new account)	Fit	Current system functionality exists.	7.2.2

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Different COA by Company required. This is for YDC and YEC. - Ability to revise COA with relative ease. - Ability to copy accounts from one business unit to another.			
9.1.7		Ledgers Types Ledger types define the ledgers that you maintain in the general ledger. These ledgers contain management and control information for the following: - Actual Expenses - Units - Budgets - Forecasts - Accrual basis amounts - Cash basis amounts - Tax - Projections			
9.1.8	Ledgers Types	- AA Actual ledger - UD User Defined for Depreciations (Fixed Assets) - BA Budget Ledger - PA (Commitments Ledger) - JA (Job Cost) - Currency Ledgers (Check if this is required going forward) - UA (Units Ledger required) - Ability to have user defined ledger types - Ledger types rules eg. (Annual close, balancing, direct updates) - Define rules for posting and control - Drill down to transaction level detail from all ledgers	Fit	- Current system functionality exists. - Current system functionality exists, not used. - Current system functionality exists.	
9.1.9	Taxes	- GST tax calculation is required - PST is required - Date effective GST & PST tax calculations - Tax rules required by rate and area - Tax Tolerance is required	Fit	Current system functionality exists.	
9.1.10	System Integration	- Accounts Receivable (Not used) - Accounts Payable (currently utilized) - Budgeting & Forecasting - Payroll (ADP is used)	Fit	Current system functionality exists.	

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Fixed Assets - Job Costs (used partly) - Procurement - Equipment Maintenance (Not used) - Inventory - Address Book			
9.1.11		Journal Entry Processing Use journal entries to adjust or add transactions to accounts in your general ledger. Effective journal entry processing is fundamental to the accuracy of your general ledger.			
9.1.12	Journal Entry Processing	- Assign Journal ID's automatically - Ability to create basic journal entries. - Ability to create a reversing journal entry - Ability to create a model journal entry. - Ability to create a percentage journal entry - Ability to upload from Excel (Minimum number of transaction per batch is two thousands) - Ability to input from third party systems - Allocation JE entries - Automatic JE's (Generated from other modules) - Shortcut keys and automatic filling of entry fields - Import spreadsheet data for data entry - Use standard journals as templates/models - Post statistical and monetary amounts in the same journal entry - Reverse accruals or posted journal entries with full audit trail - Allow transactions to be posted to the current period even if the prior period has not been closed. - Prevent posting to a closed period. - Allow posting to future periods - Reverse journal entries. - Ability to copy JE from existing entries. - Ability to delete un-posted JE. - Ability to void JE. - Recurring Journal Entries. Similar journal entry with dates changing. - Require reference field that list Fixed Asset ID's - Require reference field that list sub ledgers - Ability to review JE before being posted. - Ability to make corrections before being posted.	Fit	Current system functionality exists.	7.2.3
9.1.13	Approval Processes	Ability to define levels of approval for Journal Entries. (Compliance with Segregation of Duties).	Fit	Current system functionality exists.	

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Ability to approve by Batch. - Approval should be module specific. i.e. only can approve Journal Batch.			
9.1.14		<u>Allocations</u> Allocations can serve many purposes, such as distributing expenses, creating annual or periodic budgets, and calculating currency conversions. Use allocations to redistribute amounts from one or more business units to accounts in other business units, or from one ledger type to another. You can set up model journal entries to work as allocations. Use model journal entries or recurring journal entries if the amounts never change.			
9.1.15	Allocations	- Choose multiple allocation types- copy, fixed, pro-rata, spread evenly or arithmetic - Ability to have indexed calculations. (Basically allocating funds from one account to another) - Ability to have variable numerator allocations. - Automatically generate journal entries with a complete audit trail - Allocation used to inception to date and allocate based on cat code. AFUDC (Allowance for funds used during construction) interest to be charged to projects. Credit offset to revenue.	Fit	Current system functionality exists.	7.2.4
9.1.16		<u>Integrity Report</u> Use integrity reports to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies.			
9.1.17	Integrity Report	- Un-posted batches - Transactions to Batch Header - Batch to Detail - Batches out of Balance - Batch and Company Within Batch Out of Balance - Companies in Balance - Accounts without Business Units - Account Balance with Account Master - Transaction without Account Master - Compare Account Balance to transactions	Fit	Current system functionality exists.	7.2.5
9.1.18		<u>Reconciliations</u> As part of your accounting processes, you might need to reconcile certain types of accounts in your system. For example, you might need to reconcile the balances in your bank accounts with those in your bank statement. Or you might want to reconcile debits to credits within a trade or suspense account.			

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
9.1.19	Reconciliations	- Account Reconciliation (For employee accounts, balance sheets accounts) - Bank Reconciliations Manual Process - Auto- reconciliations are electronic file bank Reconciliation feature not used currently.	Fit	Current system functionality exists.	
9.1.20		<u>Account Consolidations</u> The account consolidation programs enable you to group, or consolidate, business unit account balances for online review and reports, provided that the balances are in the same currency and all of the companies use the same fiscal date pattern.			
9.1.21	Account Consolidations	- Ability to inquire on Account consolidations. - Online consolidations by Business Unit, Cat Code, Owner - Company consolidations by both YEC & YDC - Ability to have rules for consolidation.	Fit	Current system functionality exists.	
9.1.22		<u>Periodic Close & Annual Close</u> As part of period-end and year-end procedures, the following tasks must be performed: - Closing an accounting period - Changing a financial reporting date - Closing a fiscal year			
9.1.23	Periodic Close	- Monthly close by module, GL, AP, AR, FA and Inventory - Ability to work with current and future period - Error if future period is used (Soft warning) - PBCO, no posting allowed to closed periods	Fit	Current system functionality exists.	7.2.6
9.1.24	Annual Close	- Close to Retained Earning - Ability to close any number of times - Ability to work with close period after an annual close. (This is for adjusting entries) - Updates to opening balances when annual close is complete. - Annual close is company specific	Fit	Current system functionality exists.	7.2.7
9.1.25	Global Updates and Audit	- Global updates to Business units - Global updates to Object accounts - Audit list of user and batch approvers	Fit	Current system functionality exists.	
9.1.26		<u>Online Inquiries</u> The ability to perform on-line inquiries on demand.			
9.1.27	Online Inquiries	- Inquiry by Trial Balance - Inquiry by Object Account - Inquiry by Business Unit - Inquiry by Company, Business Unit, Object - Inquiry by Balance Sheet	Fit	Current system functionality exists	

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		- Inquiry Income Statement - Inquiries should be level of detail - Inquiry should be by period or date - Inquiry by Sub-ledger			
9.1.28	Interface from Third Party Software	- CIS interface (Customer Interface System) - ADP (Easy labour & Pay at work) - Project Identification Document (PID process)			
9.1.29	Reporting	This is will be covered in Financial Reporting.			Refer to Current and Future state document for Financial Reporting.
9.1.30	GL Security	This will be covered globally from a foundation setup.			

9.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
9.2.1	Company	Companies are organizational entities that are required for operational purposes. This setup provides for reporting and accounting at various levels of the organization. <u>Company Setup Requirements:</u> - Ability to have multiple companies. (YEC and YDC are required). - Required that both companies operate as independent companies. (YEC and YDC function with its own unique chart of accounts) - Transactional currency of Canadian Dollars is required. (All inquiries and financial reporting to be shown in CAD). - Company ID is numerical with at least a 2 digit code. - The Company description must be a minimum of thirty characters in length. (eg Yukon Development Corporation) - Ability to define date patterns as a calendar year or as required. - Ability to define number of accounting periods. (YEC requires 13 periods, the 13th period will be used for audit adjustments) - Ability to specify accounting period on transactions. - Ability to support the use of multiple sub-ledgers (eg. Accounts receivable, accounts payable, fixed assets, job cost and inventory) - Ability to maintain up to 7 years of historical data. This information must be available for both system reports and inquiry functions.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
9.2.2	Departments	<u>Department Requirements:</u> - Ability to support the use of multiple departments. (eg Finance, Engineering, Human Resources) - The naming of departments must be alphanumeric with minimum 6 digit code. - The description of department must be a minimum 35 characters. - Ability to support department types. Eg Balance Sheet department, Income Statement department, Revenue department, Operating and Maintenance department, Job Cost department. - The ability to support either the posting or non-posting of transactions to a department. - Ability to flag the department for consolidation purposes.(i.e. group all income statement type departments) - The ability to assign categorization codes to departments. A minimum of 15 categorization codes are required. This would be used predominantly for reporting and consolidations purposes. - Ability to accommodate departmental hierarchy. - Ability to assign owner of department. (i.e. Joe B -Project manager is owner of capital job). - Ability to make changes to department via mass updates.(eg. Changing categorization codes for a number of departments with single update process). - Ability to attach documents/files to a department. - Ability to have effective dates by department.	1	
9.2.3	Chart of Accounts	<u>Chart of Accounts</u> A chart of accounts provides the structure for your general ledger accounts. It lists specific types of accounts, describes each account, and includes account numbers. A chart of accounts typically lists asset accounts first, followed by liability and capital accounts, and then by revenue and expense accounts. - Ability to define multi-segment account codes. (Minimum of 3 segments and minimum of 14 digit code in total) - Ability to support either the posting or non posting of transactions to an account. - Ability to maintain the chart of accounts online and prevent the deletion of any account with activity. - Ability to allow only input of valid account numbers. Invalid account numbers must be shown as an error. - Ability to support account hierarchy. (eg accounts can rollup to into higher level accounts). - The ability to assign categorization codes to accounts. A minimum of 12 categorization codes are required. This would be used predominantly for reporting and consolidations purposes.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Ability to make changes to accounts via mass updates.(eg. Changing categorization codes for a number of accounts with single update process). - Ability to copy accounts from one department to another.		
9.2.4	Ledgers	- Ability to support the following ledger types (Actual Ledger, Depreciations Ledger, Budget Ledger, Commitments Ledger, Job Cost Budget Ledger, Units Ledger, Forecast Ledger) - Ability to define ledger types rules. (the ability to have balance rollover to the following year based on the rule) - Ability to support drill down capabilities on all ledgers to source transactions.	1	
9.2.5	Taxes	- Ability to automatically calculate GST and PST. - Ability to support date effective tax rates for both GST and PST. - Ability to define tax rates and tax area. (i.e. 5% for GST) - Ability to support tax tolerance rules. (The ability to adjust the automatically calculated taxes within a percentage or dollar value as stipulated within a tax tolerance rule).	1	
9.2.6	System Integration	The ability to integrate into the following modules is required: - Accounts Receivable - Accounts Payable - Fixed Asset - Budgeting and Forecasting - Job Cost - Procurement - Inventory	1	
9.2.7	Journal Entry Processing	<u>Journal Entry Processing</u> Journal entries are used to adjust or add transactions to accounts in your general ledger. Effective journal entry processing is fundamental to the accuracy of your general ledger. - Ability to assign Journal ID's automatically - Ability to create basic journal entries. - Ability to create a reversing journal entry - Ability to create a model journal entry. (this will be reused later for repetitive type JE transactions) - Ability to create a percentage journal entry - Ability to upload from Excel (Minimum number of transaction per batch is two thousands) - Ability to input from third party systems (Payroll entries from ADP will be required for JE interface) - Ability to create allocation JE entries. - Ability to allow transactions to be posted to the current period even if the prior period has not been closed. - Ability to prevent posting to a closed period.	1	

FIS Project Phase One

Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Ability to support posting to future periods. - Ability to reverse journal entries. (Allow for a posted journal entry to be reversed if required) - Ability to copy JE from existing entries. - Ability to delete un-posted JE. - Ability to support recurring Journal Entries which are automatically generated with overrides and manual changes possible before posting. - Ability to reference a field that list Fixed Asset ID's - Ability to support reference field that list sub ledgers - Ability to review JE before being posted. - Ability to attach or enter explanatory notes for all transactions, with substantial field lengths. - Ability to provide for error identification and correction before actual posting occurs and notify the user of the deficiencies. - Ability to provide for convenient online maintenance of rejected batches of journal entries. - Ability to support an audit trail for manual journal entries and subsystem journal entries.		
9.2.8	Allocations	<u>Allocations</u> Allocations can serve many purposes, such as distributing expenses, creating annual or periodic budgets, and calculating currency conversions. The use of allocations to redistribute amounts from one or more departments to accounts in other departments, or from one ledger type to another. - Ability to support multiple allocation types. (i.e. fixed, pro-rata, spread evenly or arithmetic. - Ability to have indexed calculations. - Ability to have variable numerator allocations. - Ability to support allocations using inception to date balances and allocate based on categorization code. (eg. AFUDC (Allowance for funds used during construction) interest to be charged to projects. Credit offset to revenue).	1	
9.2.9	Integrity Report	<u>Integrity Report</u> Integrity reports are used to supplement your internal balancing procedures. Integrity reports locate potential balancing problems and data inconsistencies. - The ability to demonstrate that the General Ledger system is in balance with transactions and active sub-ledgers. - The ability to demonstrate that the companies are in balance.	1	
9.2.10	Account Consolidations	<u>Account Consolidations</u> The account consolidation programs enable you to group, or consolidate, departments account balances for online review and	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- reports. - Ability to inquire on Account consolidations. - Ability to support online consolidations by department, Categorization Code, Owner, account code.		
9.2.11	Periodic Close	- The ability to close the General Ledger by period. - The ability to support a close by module, GL, AP, AR, FA and Inventory. - Ability to post transactions to current period and future periods.	1	
9.2.12	Annual Close	- The ability to automatically perform the journal entry to close all income and expense items to retained earnings account at year end. - The ability to run the annual close processes any number of times as required. - The ability to run the annual close by company.	1	
9.2.13	Online Inquiries	The ability to support the following online inquiries: - Inquiry by Trial Balance - Inquiry by Object Account - Inquiry by Department - Inquiry by Company, Department, Account Code - Inquiry by Balance Sheet - Inquiry Income Statement - Inquiry by Sub-ledger reference.	1	
9.2.14	Interface from Third Party Software	- The ability to interface from CIS system using the journal entry process. (Customer Information System) - The ability to interface from ADP Payroll system using the journal entry process.	1	

10 Human Resources

Human Resource department utilizes software called "HR Manager". This is stand-alone software used by Human Resource department for very specific requirements. The system is used for entering all employee information with predominantly focus on performance reviews and vacation travel allowances. YEC has a combination of union based employees with approximately forty-six and the exempt staff of twenty four. The base salary is entered into HR Manager with no existing interfaces into payroll or the financial systems. A spreadsheet is sent to payroll for base salary and employee changes. The inclusion of Human Resource is to determine the feasibility of including this module in an existing FIS search criteria. List below is the type of information that's being used currently in HR Manager system.

10.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
10.1.1	Position Profiling	The following information is required: • Position # • Sequence • % FTE • Status (All, Active, Duplicate, Filled, Hold, Inactive, Proposed, Reserved) • Type (Permanent, contract, casual) • Effective Date • Expiry Date • Probation • Position Name (Administration Assistant) • Shift • Department Date • Position Department Level • Position's Location • Position Division • Union position reference	Gap		
10.1.2	Employee Information	The following information is required: • Employee Number • Location (Yukon Territory) • Department • Position • Salutations • Suffix • Preferred Name • Name First • Middle	Gap		

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		• Last • Birth Date • Age • Sex • S.I.N/S.S.N • Citizenship • Street Number • City/Town • Prov/State • Country • Email • Special ID • Telephone Home • Telephone Mobile • Telephone Facsimile			
10.1.3	Main Pay Information	• Entry Type • Change Reason • Location • Division • Department • Position • Position # • FTE • Shift • Termination Date • Status • Hours Per Day • Hours Per Week • Total Hours Worked • Start Date • End Date • Compensation % • Internal Reason • External Reason	Gap		
10.1.4	Compensation	• Status • Frequency • Weeks/Period • Pay Rate • Salary • Prev. Rate • Prev. Salary • % Increase • Reason	Gap		

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
10.1.5	Budget	• Rate • Increase • Salary • Increase • Company-ratio • Next Increase Date	Gap		
10.1.6	Spousal Information	• Married • Marital Status • Name First • Middle • Last Name • Maiden Name • S.I.N\ S.S.N • Sex • Birth Date • Age	Gap		
10.1.7	Dependent Information	• Married • Marital Status • Name First • Middle • Last Name • Maiden Name • S.I.N\ S.S.N • Sex • Birth Date • Age	Gap		
10.1.8	Training \ Education Tracking	• Continuing Education • Course • Date • Location • Account Number • Charge To • Results	Gap		
10.1.9	Performance Reviews	• Review Type • Date • Next Review • Ranking • Company Rating • Score • Review Period • Reviewed by	Gap		

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
10.1.10	Travel Allowance	- Anniversary Date - Email to Employees	Gap		
10.1.11	Interface from Third Party Software	ADP (Easy labour, Pay at work & People @work)	Gap		11.2.1

10.2 Future State

With the primary focus being FIS system, there is no intend to replace the existing HR Manager system, although it would be beneficial to explore the benefits of having seamless interfaces to ADP systems for payroll related transactions. The benefits would also extend to budgeting and forecasting of payroll costs. The future state will incorporate all the elements listed under current state and will include the under-listed.

No.	Key Area	Requirements	Criticality	Additional Notes
10.2.1	Interface to Third Party Software	HR provides payroll related information to payroll who in turns supplies this to ADP for payment processing. The payroll is exception based where variable items eg (overtime, leave requests) are processed two weeks in arrears.	1	
10.2.2	Employee Self Service	Self-Service features enable employees and managers to conduct business, initiate transactions, and obtain needed information with rapid, cost-effective, online access to HR and Payroll at any time. These robust features free HR personnel from administrative details so they can focus on strategic tasks. YEC can benefit from offering the following on-line features to employees: - Leave Balances (ezlabour) - Vacation (ezlabour) - Sick (ezlabour) - Beneficiary information - Pay Stub (e-post) - Overtime (ezlabour) - Years of Service - Performance Reviews - Training	2	
10.2.3	Auditing	Auditing The ability to track changes is becoming increasing important for compliance issues. Therefore the need for audit ability is needed for critical field tracking. - Employee Personal Information (people@work) - Pay Rate (people@work) - Benefits (people@work)	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
		- Reports for negative leave balances (ezlabour) - Exception items are two weeks behind (ezlabour)		
10.2.4	Security	Security The securing of data and access to data needs to be controlled. - Needs to comply all privacy laws - Information - Needs to be secure and access granted by business requirements	1	

11 Inventory Management

The Inventory Management function provides support for inventory at five warehouse locations; Kulan, Faro, Mayo, and 2 warehouses in Dawson. Inventory is purchased into the Main warehouse at Kulan and distributed by way of inventory transfers to the other satellite warehouses. Items stocked in warehouses primarily serve maintenance requirements and any requirements for new development projects.

11.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
11.1.1	Item Master	The Item Master is currently used to set up inventory or stock items only. Each item is identified with a unique number and 2 lines of description with an allowable maximum of 30-characters each. Units of measure for tracking, purchasing, shipping, volume and weight are defined for each item and with conversion factors where applicable.			11.2.1, 11.2.4, 11.2.5
11.1.2	Item Numbers	Item numbers are uniquely identified in the system with a 10-character code. The current format is 'pg-sg-9999' where - 'pg' is a code denoting a product group - 'sg' is a code denoting a product sub-group - '9999' is a number assigned to identify the item			11.2.2
11.1.3	Item Categorization	Items are catalogued and grouped into product groupings and within each group a further sub-grouping as required. For example, the product group 'Poles' and within which subgroups of 'Steel', 'Wood'.			11.2.3
11.1.4	Item Cross-References	References to vendor part numbers, alternates/supercedes are based on knowledge from experience and/or manual references to hardcopy manuals.	Fit	The current Item Cross-Reference function system function is not used. The system provides for the ability to set up item cross-references by effectivity dates to vendor part numbers, to alternate and superceding numbers.	11.2.6
11.1.5	Item Locations	An item's location in the warehouse is denoted by 5 segments; Area, Aisle, Section, Shelf and Slot. A primary location and multiple secondary (overflow) locations are set up for items as required.			11.2.7
11.1.6	Bill of Material	Components for building structures are manually compiled, picked and issued.	Fit	The current Bill of Material (BOM) system function is not used. The system function enables BOMs/Kits, with several levels of	11.2.8

FIS Project Phase One Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
				parent/child components to be defined and corresponding quantities specified for each component. Inventory requests are placed at the parent item level and the system generates the required child components to be issued.	
11.1.7	Inventory Quantities	Item quantities are tracked by warehouse. Onhands are tracked for each item at the warehouse location level. In addition on order, committed and availability quantities are also tracked for each item at the warehouse level.			11.2.13
11.1.8	Replenishment	Management and monitoring of inventory levels and replenishment requirements are expedited manually based on experience. Current system suggested replenishment functionality is not used.	Fit	The current system Replenishment facility is not used. The system provides for Max/Min Order Quantities, Re-order points and Re-Order Quantities to be specified. Based on the replenish parameters specified, the system generates a suggested replenishments with the option of purchase orders generated.	11.2.9
11.1.9	Inventory Costs	Inventory costs are captured by item by warehouse. The inventory cost method used is Weighted Average. Last-In costs and last purchase costs are also captured for each item.			11.2.11
11.1.10	Safety Stock	Safety stock levels have been configured for some critical maintenance items. However, the process to release safety stock when required is a cumbersome process. Safety stock can only be released in the current system by reducing the specified stocking level so that it becomes 'available' for release. The safety stock quantity will then have to be re-adjusted back to the required stocking level.	Gap	Require a more expedient method to specify a release from safety stock without adjusting the specified safety stock level.	11.2.12
11.1.11	Availability	Current availability is configured to equal to physical onhand minus the safety stocking level.			11.2.12 , 11.2.13
11.1.12	Serialization	Traceability by serial numbers is required for some item, namely Transformers, and is currently manually tracked on spreadsheets.	Fit	The current system serial number tracking facility is not used.	11.2.14
11.1.13	Inventory Issues	<u>Account Codes</u> : Work Order and Job expense account codes for inventory issues are manually entered per issue.	Fit	The current system's Automatic Accounting Instructions are not optimally utilized to eliminate the entry of account codes for issues.	11.2.15
11.1.14	Inventory Issues	<u>Picking/Shipping Documents</u> : The system does not generate any picking or shipping documentation for issues. Screenshots or exports to spreadsheets have to be done to generate the required documents.	Gap	The current system Inventory Issues application does not generate any documentation for picking/shipping.	11.2.15
11.1.15	Inventory Transfers	<u>In-Transit Time Lags</u> : Inventory transfers between warehouses are reflected immediately in the system for the destination warehouse before the parts arrive. Owing to in-transit shipping time lags, the inventory at the destination will therefore be misleading.	Fit	The Inventory Transfer function should not be used for transfers where there could be significant shipping time lags between two locations. The Sales Order Transfer application is	11.2.16

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
				an option to overcome this deficiency.	
11.1.16	Inventory Transfers	<u>Picking/Shipping Documents</u> : The system does not generate picking/shipping documentation for transfers. Screenshots or exports to spreadsheets have to be done to generate the required documentation.	Gap	The system's Inventory Transfer application is primarily a function to be used for transfer of inventory between locations within a warehouse with insignificant transfer time lags	11.2.16
11.1.17	Inventory Counts	<u>Frequency</u> : Weekly inventory counts are done for the Main warehouse (Kulan) based on pre-defined cycles by item. For example: 30, 90 day cycles. A yearend full count is expedited for the satellite warehouses.			11.2.17
11.1.18	Inventory Counts	<u>Process</u> : The current process to select and generate a count batch, and subsequently print count sheets requires too many steps and is not intuitive.	Fit	The current inventory count menus can be re-configured to be more intuitive and reduce the number of navigation steps by pre-configuring count batch generation and count sheet printing menus by warehouse.	11.2.18 , 11.2.19
11.1.19	ABC Classification	ABC Classification of inventory is currently not used for the management of inventory.	Fit	The current system enables ABC Classification of inventory by Sales, Margin, Costs.	11.2.20
11.1.20	Inventory Purchases	Purchases are initiated by the warehouse manager in the Main warehouse. The current process to generate a purchase order requires several steps and is fairly manual. A purchase order is entered into the system, routed for approval if required, printed and manually transposed into a spreadsheet Purchase Order template which is printed and sent, via email or fax, to the supplier.	Fit	The additional steps taken to transpose the JDE customized purchase order into a spreadsheet template is because the JDE custom version has been deemed not workable for YEC. The custom version can be enhanced to the required format.	11.2.21 , 11.2.23
11.1.21	Purchase Order	<u>Presentation</u> : Purchases are manually entered into a spreadsheet template because certain standard YEC language text is not printed by the system generated version.	Fit	Print Messages and attachment text can be set up in the current system for attachment to purchase orders. The current customized version of the purchase order can then be enhanced to print attached messages and text.	11.2.22
11.1.22	Purchase Order Approvals	<u>Process</u> : Orders are automatically routed by the system through various levels of approvals based on a hierarchy of threshold amounts. Changes to approved orders are re-routed for approval if the changed amount exceeds approval limits. Reasons can be entered for rejected orders.			11.2.24
11.1.23	Purchase Order Approvals	<u>Notification</u> : There are no system or email alerts to notify approvers that there are orders awaiting their approval and similar alerts to notify originators on whether an order has been approved or rejected.	Gap	The current system does not have system alerts for approval notification. Approvers and originators need to initiate periodic system queries via the Approvals Application to monitor approvals.	11.2.24

FIS Project Phase One

Current State & Future State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
11.1.24	Purchase Order Approvals	<u>Time-Driven Approval Workflow:</u> If an approver is away and unavailable to access the system to approve a purchase order, the order is not escalated to the next level approver.	Gap	The system does not have a time-driven workflow function whereby if an order is not approved by a certain time period, the order is escalated to the next person on the approval route. <u>Workaround:</u> Approvers prior to being away need to delegate their approval authority to another individual or alternatively, the next level approver can query for and approve all orders pending lower level approvers.	11.2.24
11.1.25	Quotations	Obtaining quotes for inventory purchases is currently a manual process. Items to be quoted are manually entered into spreadsheets and sent (emailed/faxed) to suppliers for quote responses. Proof of quotation sourcing, when required, has to be manually compiled from copies of quote responses received.	Fit	The current system quotation function is not used. The system function enables quotes to be entered, printed for distribution to suppliers, quote responses to be entered and purchase orders to be generated from user analysis and determination of "best" quotes.	11.2.25
11.1.26	Receiving	Receipt of all inventory purchases are expedited at the Main warehouse. A purchase receiver report on items outstanding on a purchase order is printed for validation of goods received. Receipts are then entered into the system and a copy of the packing slip is then forward to Accounts Payable for eventual reconciliation to the invoice when received.			11.2.26
11.1.27	Tolerances	Receiving and Voucher Match tolerances are configured for all items, for a commodity class or for a specific item. Depending on the requirement, a combination of units, unit cost, extended amount based on amount and/or percentage is configured.			11.2.26
11.1.28	Inquiry	Current system inquiries are minimally used.			11.2.27
11.1.29	Reports	Current system reports are minimally used. The most commonly used reports are the Stock Status and Inventory Valuation reports.	Fit	The system has several reports for the management of inventory.	11.2.27
11.1.30	Staffing	The staffing levels at each warehouse are as follows: • Kulan – 1 warehouse manager. • Dawson – 2 linesmen per site • Faro – 1 linesman • Mayo – 3 linesman			
11.1.31	Security	Current security levels are restricted by application and by responsibilities.			11.2.29



FIS Project Phase One Current State & Future State



11.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
11.2.1	Item Master	Ability to set up stock and non-stock items including services in a centralized Item Master for use by all warehouses and business units for non-inventory purchases. There should be no threshold on how many items can be set up on the item master.	1	
11.2.2	Item Identification	- Unique alphanumeric item number identification of at least a 10-character code including descriptive text of at least 60 characters long. - Identification of the type of item; namely, 'stock', 'non-stock', services. - Identification of item condition or status such as 'Active', 'Obsolete', 'Refurbished', 'Used', 'Discontinued'. - Ability to attach notes such as specifications, handling instructions, WHMIS alerts. - Support for Fortis naming convention of items.	1	
11.2.3	Item Categorization	Grouping of items into different categories and 2 additional levels of subcategories. For example, 'Poles' as a main category and within which subcategories 'Steel', 'Wood'.	1	
11.2.4	Units of Measure	Configuration of various units of measure (UOM) for tracking, purchasing, shipping/issuing, volume and weight for an item. UOM's should be configurable or available for non-tangible items such as services where, for example, items could be purchased in units of hours.	1	
11.2.5	Units of Measure Conversion	Specification of standard and non-standard units of measure conversion factors by item. Examples: 1 gallon = 3.79 litres, 32 eaches = 1 box.	1	
11.2.6	Item Cross-References	Cross-references to vendor part numbers by effectivity dates including references to alternates and supercedes.	1	
11.2.7	Warehouse Item Locations	- Ability to set up multiple (overflow) warehouse locations for an item. - A minimum of a 5-segment warehouse location identification format, AREA-AISLE-SECTION-SHELF-SLOT, with the following minimum requirements: AREA – 4 characters AISLE – 2 characters SECTION – 2 characters SHELF – 3 characters SLOT – 4 characters	1	
11.2.8	Bill of Materials	- Configuration of Bills of Material (BOM) for specific tasks or jobs with the ability to specify quantities per BOM component. - Submission of inventory request by BOM identification number for automatic generation of components for picking.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
11.2.9	Replenishment	- Specification of maximum and minimum stocking levels, reorder points, reorder quantities and safety stock levels by item. - Automatic generation of suggested order quantities, based on replenishment parameters, with the option of automatic generation of purchase orders.	1	
11.2.10	Suppliers	Configuration of primary and secondary suppliers by item and/or item grouping including the specification of discontinued suppliers.	1	
11.2.11	Inventory Costs	Option to cost inventory by item as follows: - Same unit cost across all warehouses - Same unit cost within a warehouse - Unit cost by warehouse location - Different unit costs for new, refurbished/used, obsolete items	1	
11.2.12	Safety Stock	Specification of safety stocking levels for emergency (maintenance) items and an expedient process to release safety stocks when required.	1	
11.2.13	Availability	- Visibility of inventory levels across all warehouses. - Ability to determine "true" inventory availability taking into account reservations and any safety stocking levels.	1	
11.2.14	Serialization	Capture of serial numbers for items such as Transformers requiring serial number traceability from receipts through to issues including installations.	1	
11.2.15	Inventory Issues	- Ability to initiate inventory requirements for work orders, jobs, project and other business units including the specification of required dates. - Pre-configured expense codes and automatic defaults of codes with the ability to override defaults as required. - Automatic generation of picking and shipping document when inventory requests are due.	1	
11.2.16	Inventory Transfers	- Ability to initiate inventory transfers by either the source or destination warehouse with the specification of required dates. - Automatic generation of picking and shipping documentation when transfers are due.	1	
11.2.17	Inventory Count	<u>Frequency:</u> Ability to configure cycle counts by items, by warehouse location and/or by item groups based on number-of-days frequency and/or by activity based on ABC classification.	1	
11.2.18	Inventory Count	<u>Controls:</u> Segregation of duties throughout the count process. System security and controls for different personnel to expedite the count generation, count entry, approvals and updates.	1	
11.2.19	Inventory Count	<u>Count Sheets:</u> - Option to suppress the display of system onhand quantities on count sheets. - Ability to generate write-in pages.	1	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
11.2.20	ABC Classifications	ABC classification of items based on various parameters such as by activity and/or costs.	2	
11.2.21	Purchase Orders	<u>Creation:</u> - Creation of purchase orders for goods and services with the option of system generated order numbers or manually assigned numbers for manual PO's. - Identification of different types of purchases orders for analysis. For example, services PO's and goods PO's. - Ability to print purchase orders as required or en masse whereby all purchase orders that are ready to be printed and transmitted to suppliers can be printed in a scheduled background mode without any manual intervention.	1	
11.2.22	Purchase Order	<u>Presentation:</u> The presentation of Purchase Orders should enable the following information to be captured, formatted to YEC requirements and printed: - YEC Purchase Order Number - YEC company logo, name and address "Attention To" and instructions for invoice remittance - Supplier name, address, phone and fax number - ShipTo address and optional 'Attention To' contact for delivery. - Reference to quotation/contract number and date where applicable - Shipping/Freight Handling Terms - Payment Terms - YEC Buyer/Contact (including phone number and email address) - Supplier Contact (including phone number and email address) - Shipping and delivery instructions - Special instructions to be specified as required - Additional charges, for example Taxes, Freight, Brokerage - Order Date, Requested/Required By Date, Promised Date - Standard YEC language/text on terms and conditions - Signatures and dates - Order quantities and corresponding units of measures - YEC item numbers and description - Supplier item numbers or catalogue numbers, if required - Unit cost - Extended costs - Applicable taxes - Order total	1	
11.2.23	Purchase Order	<u>Delivery:</u> Ability to seamlessly automate purchase order transmissions via email or fax including potential support for EDI transmission.	2	

FIS Project Phase One Current State & Future State

No.	Key Area	Requirements	Criticality	Additional Notes
11.2.24	Purchase Order Approvals	- Approvals by budget amount and/or by purchase order amount. - Ability to set up different approvers for different purchase order threshold amounts. For example, amounts $\geq \\$10,000$ is approved by J.Smith and $\geq \\$20,000$ is approved by J.Doe. - Automatic routing of purchase orders for approval when budget amounts and/or purchase order amounts have exceeded pre-configured threshold limits. - Automatic alerts to approvers on orders pending their approval. - Automatic notifications to originators on whether purchase orders have been approved or rejected. - Ability to enter reasons for rejected purchase orders. - Automatic escalation of orders to the next level approver if the current approver has not responded by a specified time period. - Automatic re-routing of approved orders for approval when subsequent changes violate approval thresholds.	1	
11.2.25	Quotations	- Entry and printing of items to be quoted. - Unique Identification Number to track each quote. - Entry and distribution of quotes to multiple suppliers. - Specification of required by dates. - Specification of special instructions, terms and conditions to suppliers. - Specification of price breaks by quantity. - Seamless transmission of quotes to suppliers via email and/or fax. - Capture of quote responses for comparison analysis. - Expedient release of 'best' quotes for automatic purchase order generation. - Traceability of quotes to purchase orders generated and vice-versa.	1	
11.2.26	Receiving	<u>Purchase Orders and Warehouse-To-Warehouse Transfers:</u> - Generation of receiving report by purchase order or by all outstanding purchase orders. - Ability to receive warehouse-to-warehouse transfers at each warehouse. - Ability to enter receipts as fully received, partially received with the option to backorder or cancel residual outstanding quantity and completely backorder any outstanding quantity. - Traceability of receipts by unique receipt numbers. - Capture of serial numbers when items are received. - Advise of designated warehouse stocking location when an item is received and the ability to create overflow locations as required. - Configuration of receiving tolerances by units based on percentage and/or amounts with warning/error alerts. - Option to suppress display of and changes to costs and amounts at receiving.	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		- Capture of supplier picking/packing slip numbers, container and shipping document information including any additional charges. - Process to return inventory with the ability to track returns with Return Authorization Numbers, notate reasons for returns and generate documentation to accompany return.		
11.2.27	Inquiries / Reports	Inquiry and reporting functions should, where applicable, display both quantities and costs. - Item Master Directory showing master list of items including description, item group/class, applicable units of measure and item status (for example, 'Obsolete', 'Discontinued', ...) - Item Cross-References to Supplier numbers, alternates and supercedes. - ABC Classifications by item and/or item group at each warehouse and across all warehouses. - Stock Status for all items, for a group of item or for a specific item; at a specific warehouse and/or across all warehouses. - Overstocks by item at each warehouse and overall across all warehouses.	1	
11.2.28	Reconciliations	Reconciliation facility is required, for example a report, to report any discrepancies between inventory values reported from Inventory and the General Ledger.	1	
11.2.29	Security	- Limitation of Item Master maintenance to specific personnel. - Creation and maintenance of purchase orders and types of purchase orders by responsibility. - Receiving of inventory by warehouse and by responsibility.	1	
11.2.30	Interfaces	- Technical Services (MSAccess) system for material requirements. - Procurement for purchases and receipts of inventory purchases. - General Ledger for inventory receipts, adjustments/counts	1	
11.2.31	Data Conversion	- Inventory data from JDE System - Purchase Orders from JDE System - Warehouses and locations from JDE System	1	

11.3 Document Samples

Inventory Purchase Order



purchaseorderEEcol(
7157-000).xls

Quote Request



QuoteformSTELLA(ju
LY 26 2007).xls

Distribution Structure Manual Sample Table of Contents



Dist Structure
Manual Table of Cont

Structure Component Specs



Structure Specs
docu0028.jpg

Distribution Structure Series Index



Distribution
Structure Series Inde

12 Maintenance

Maintenance is expedited by the Operations and Maintenance Department on all serviceable plant equipment including distribution lines. Electrical maintenance, mechanical maintenance, and line maintenance is expedited by three separate departmental groups with each group responsible for tracking their own maintenance schedules and requirements.

12.1 Current State

As the FIS project scope defines a high-level review of Maintenance requirements, the current state captured is therefore limited to a high-level overview of the current operations of the Maintenance function.

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
12.1.1	MainBoss System	The MainBoss system was initially implemented in 2003 for electrical maintenance. Mechanical maintenance was implemented in 2004. Owing to a single instance of the database, the inclusion of mechanical maintenance posed a problem as generation of mechanical maintenance schedules included schedules for electrical maintenance as well and vice-versa. To overcome this problem, mechanical maintenance was segregated into a separate database instance. Owing to staff and job responsibility changes, the system has been found to be under utilized. May 2005 appears to be the last time the MainBoss system was used for mechanical work. It is therefore assumed that <u>all</u> mechanical maintenance work is currently initiated, tracked and managed manually. Electrical maintenance uses the system to generate PM (scheduled in MainBoss) work orders only. It is therefore assumed that the unplanned electrical maintenance work is currently initiated, tracked and managed manually. Line maintenance does not use MainBoss and it is therefore assumed that <u>all</u> line maintenance work is currently initiated, tracked and managed manually.	Fit	The current JDE system has support for an integrated Equipment Maintenance module which enables equipment to be set up in an Equipment Master and preventive schedules defined for the generation of maintenance work orders.	
12.1.2	PM Schedules	PM schedules for both mechanical and electrical are programmed in MainBoss. Mechanical and line PM schedules are assumed to be tracked and managed manually. Electrical PM schedules in MainBoss are used to generate PM work orders. Owing to this, schedules for electrical, mechanical, and line maintenance cannot be effectively co-ordinated to minimize equipment service downtimes.	Fit	The JDE Equipment Maintenance enables PM schedules to be set up for different types of service and to base service intervals on hours, mileage, fuel, days and specific date.	12.2.6 , 12.2.8
12.1.3	Work Orders	Electrical maintenance PM work orders are currently generated by MainBoss and include a labour estimate; however, related work order documentation, for example, estimates and actual costs, description of work, status of work, deficiencies, labour and material requirements are not entered when closing the WO's. EM also has an add-on MainBoss program called @Request. This allows requests to be tracked from initiation stage to WO closed	Fit	The JDE Work Order system enables work orders to be generated as required or automatically based on PM schedules. Model work orders with pre-defined work steps, labour and material requirements can be set up for different types of maintenance.	15.2.3 , 15.2.7 , 15.2.8 , 12.2.13 , 15.2.9 , 15.2.10

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		stage while keeping the request initiator up to date on the tasks progress (i.e. request transferred to WO, WO closed). Mechanical and line WO's are assumed to be, as required, compiled, and issued manually. All related work order documentation, for example, estimates and actual costs, description of work, status of work, deficiencies, labour and material requirements and work steps are also assumed to be manually compiled on hardcopy Work Order forms.			
12.1.4	Spare Parts Inventory	Repositories of spare parts inventory exist at different plants and are not tracked. Parts could be, and sometimes are ordered without knowledge that units exist in inventory.	Fit	The current JDE inventory system in use can be used to set up and track maintenance spare parts inventory with the ability to specify safety stock levels for critical components.	12.2.7

12.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
12.2.1	Equipment Master	Unique identification of equipment and components by a unit number and serial number. Support for profiling of each piece of equipment as follows: 1. Description of equipment 2. Site / Location 3. Acquisition Date 4. Installation Date 5. In-Service Date 6. Disposal Date 7. Manufacturer profile including product and model number, model year, service and warranty agreements 8. Equipment Status; Available, Active, Inactive, Disposed 9. Parent unit reference for component units 10. Depreciation schedule 11. Salvage proceeds / disposal costs	1	
12.2.2	Component Relationships	• Configuration of parent/child component relationships with unlimited child components per level and unlimited number of levels. For example, parent substations with transformers and generators components and within transformers, protection meters, etc. • Tracking of parent history	1	
12.2.3	Location Tracking	Ability to maintain and inquire on the location of each component and track start and end dates, status at each location a history of transfers.	1	
12.2.4	Maintenance History	Tracking of service history of each piece of equipment including the capture of failures and causes, the number of downtimes, the duration of downtimes, maintenance dates, and the types of maintenance performed, for example, regular or emergency service.	1	
12.2.5	Meter Readings	Maintenance of meter readings including capture of original meter readings and readings at meter changes.	1	
12.2.6	PM Schedule	• Set up PM Schedules for different service types based on different intervals. For example, hours of operation, fuel usage, number of days interval from last maintenance and specific dates.	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		- Set up associations to link different types of maintenance to be performed at the same time. - Set up of maintenance loops for identical maintenance of multiple units of same equipment. - Notifications of upcoming maintenance requirements by pre-configured percentage due threshold limits. - Ability to attach model work orders and part lists to different types of maintenance. - Automatic generation of work orders when maintenance is due or coming due. - Ability to attach related documentation and notes to schedules. - Ability to print PM schedules as required.		
12.2.7	Parts Requirements	- Tracking of spare parts inventory at different locations with the ability to specify safety stocking levels for critical components. - Set up of parts list for different types of maintenance and association of parts list to work orders. - Automatic generation of parts list to be picked and issued from inventory when maintenance is coming due.	1	
12.2.8	Maintenance Costs	- Capture of total maintenance costs to date on a specific piece of equipment and at the parent level. - Capture of estimates and actuals by type of service/maintenance work. - Automatic capture of actual costs, where applicable, from - Internal labour timecard entry - Materials issued from inventory - Materials purchased - Subcontract labour - Equipment rentals	1	
12.2.9	Time Entry	- Set up of hourly labour rates by types of maintenance including overtime rates. - Capture/entry of labour hours by type of maintenance work performed on a work order and with reference to the applicable piece of equipment. - Automatic posting of labour hours to Financial and payroll systems.	1	
12.2.10	Work-Breakdown Structure	- Ability to set up parent/umbrella work orders with unlimited 'child' work orders. - Ability to capture and review estimated costs versus actual costs by individual work order and overall roll-up total costs to the parent work order.	1	
12.2.11	Work Order Initiation	- Automatic system generation of work orders when PM schedules become due. - Ability to set up work orders as required for unplanned and emergency maintenance. - Ability to route and print work orders to specific printers. - Information required on work orders are as follows: - Work Order Number - Equipment information including service history - Description of maintenance and work steps	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		4. Estimated labour hours 5. Parts list or material requirements 6. Attachments of additional related documentation 7. Planned start and completion dates		
12.2.12	Work Order Approvals	• Electronic routing of approvals for unplanned work orders and optional approvals for planned work orders. • Electronic alerts to approvers on work orders awaiting their approval. • Ability to specify rejection reasons by approver. • Automatic notification to originators on whether their work orders have been approved or rejected.	1	
12.2.13	Work Order Status	Ability to track the status of work orders from initiation to completion. Examples of statuses are: Initiation, Pending Approval, Approved, Awaiting Parts, Awaiting Labour Allocation, Parts Issued, In-Progress, Held, Completed.		
12.2.14	Work Order Costs	Ability to track work order estimated versus actual costs broken down by labour, materials and travel.	1	
12.2.15	Work Order Close-Out	Ability to capture and print (when required) the following close-out information on a work order. 1. Actual Start and Completion Dates 2. Description of actual work done 3. Deficiencies found 4. Actual labour hours expended 5. Actual material items used 6. Return of unused parts to inventory or to supplier 7. In-Service Date/Time or expected In-Service Date/Time of equipment 8. Description of additional unplanned maintenance and repairs 9. Meter readings 10. Sign-offs	1	
12.2.16	Inquiries / Reports	<i>To be determined.</i>	1	
12.2.17	Interfaces	1. Inventory for parts issues/returns 2. Procurement for procurement of non-inventory materials, services, equipment rentals 3. Payroll for time and labour costs 4. Finance for capture of all maintenance costs	1	
12.2.18	Data Conversion	MainBoss data for planned Electrical Maintenance Manual maintenance data for Mechanical, unplanned Electrical and Line Maintenance	1	
12.2.19	Security	<i>To be determined.</i>		
12.2.20	Staffing	<i>To be sourced.</i>		

13 Payroll Interface

The staff complement of YEC comprises of seventy employees, with forty-six union employees and twenty-four exempt staff each with two sets of distinct rules for each. The President is under the exempt but also with its own set of rules. ADP is used for Payroll processing specifically using the “people at work” module. The processing of bi-weekly and monthly payrolls is executed through ADP payroll system (pay at work). This payroll payment process and service provider is not expected to change in the foreseeable future. ADP offers the widest range of HR, payroll, tax and benefits administration solutions from a single source. ADP's easy-to-use solutions for employers provide superior value to YEC. ADP offers time and labour distribution integrated computing solutions, which YEC anticipates exploiting in the near future.

13.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
13.1.1	ADP Pay at Work	Payroll submits an approved base salary rates to ADP for payment processing. This is included the employee master information. The salary rates submission includes new employees and changes to existing employees where applicable.	Gap	The use of third party software.	
13.1.2	ADP Pay at Work	Bi-weekly timesheets are entered into ADP for the payroll processing.	Gap	The use of third party software.	
13.1.3	ADP Pay at Work	The payroll is exception based where variable items eg. (overtime, leave taken) are processed two weeks in arrears.	Gap	The use of third party software.	
13.1.4	ADP Pay at Work	Payments to employees are processed into employee bank accounts. Notifications are physical pay stubs or e-post.	Gap	The use of third party software.	
13.1.5	ADP Pay at Work	Only source deductions are withheld by ADP and subsequently remit to the relevant authorities (CPP, EI, Tax payments).	Gap	The use of third party software.	
13.1.6	ADP Pay at Work	YEC bank account is automatically debited with the required funds for pay and source deductions. This is an arrangement with YEC and ADP.	Gap	The use of third party software.	
13.1.7	ADP Pay at Work	Standard payroll reports are provided by ADP and include some of the following: • Payroll register • Time-entry report • Audit reports (changes to rates and profiles) • Leave Reports • Other Management Monitoring reports.	Gap	The use of third party software.	
13.1.8	ADP Pay at Work	ADP also processes the annual T4's and T4A's. Reconciliation of employee payments is manually reconciled by YEC with ADP T4's.	Gap	The use of third party software.	
13.1.9	ADP Pay at Work	Third party payments are assumed by YEC eg. Standard Life, Insurance payments and paid via the Accounts Payable system.	Gap	The use of third party software.	
13.1.10	ADP Pay at Work	Audit and exceptions reports are produced and distributed by ADP. This is an ad hoc requested by management.	Gap	The use of third party software.	
13.1.11	ADP Pay at Work	Final report and GL distribution is submitted to YEC.	Gap	The use of third party software.	

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
13.1.12	ADP Pay at Work	Journal Entries are manually inputted into JDE.	Gap	The use of third party software.	13.2.2
13.1.13	Interface from Third Party Software	No interface into FIS system at this time..	Gap		

13.2 Future State

The existing payroll service provider is not expected to change in the foreseeable future, however an automated interface from ADP to the proposed FIS system would be beneficial to YEC.

No.	Key Area	Requirements	Criticality	Additional Notes
13.2.1	ADP Interface	Create an electronic interface into the new FIS system from ADP Easy Labour	1	
13.2.2	ADP Interface	Create an electronic interface into the new FIS system from Pay at Work.	1	
13.2.3	ADP Interface	The interface is expected to map or reference to existing object accounts from the proposed FIS system into ADP. Completion of the payroll payment process which creates the final journal entries that will interface into FIS system.	1	
13.2.4	ADP Interface	Once the labour distribution is finalized in ADP Easy labour, this needs to be interface to FIS system also. This is a detailed time and labour distribution as opposed to the final journal entry for payment process.	1	
13.2.5	ADP Interface	Validation report for entries entered into FIS system that reconciles with respective Easy Labour and Pay at Work.	1	
13.2.6	Easy Labour	Standard labour cost needs to be mapped into FIS system.	1	

14 Procurement

Procurement is segregated into purchasing for inventory items and purchasing for non-inventory items (goods, services and equipment). All inventory purchasing is expedited by the warehouse manager in the Main warehouse (Kulan). Purchasing requirements documented herein are for the procurement of goods, services and equipment. Inventory purchasing requirements are captured within the Inventory Management Current & Future State Requirements document. Purchases greater than \$5,000 are expedited by the YEC Buyer. Purchases less than or equal to \$5,000 can be expedited using Visa or a Local Purchase Order (LPO) which is a manual purchase order.

14.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
14.1.1	Goods Purchases	Goods are purchased by units with pricing options of cost-plus, quantity breaks, quoted contract prices and supplier catalogue prices.			14.2.1
14.1.2	Services Purchases	Services are purchased as lump-sum contracts, time and materials contracts or monthly leases.			14.2.2
14.1.3	Contracts	Contracts are manually compiled and tracked on a Contract Record form and manually filed with all supporting and associating documents. The Contract Record form tracks all information relating to a contract including contract start and end dates, holdbacks and releases, invoices received and paid, status of Workers' Compensation Board (WCB) coverage, insurance coverage and warranties.	Fit	The current system functionality for the processing of contracts is not used.	14.2.3 , 14.2.4
14.1.4	Holdbacks & Releases	A percentage holdback, usually 10%, is applied to applicable contracts. The processing of holdbacks and releases is labour intensive as they are manually calculated and tracked on a pre-printed Contract Record form. Invoices are forwarded to the Contract Administrator for review and holdback calculation. The invoice plus amount of holdback is subsequently submitted to Accounts Payable for payment processing. Releases are manually tracked and when due are submitted to Accounts Payable for payment.	Fit	The current system has a holdback function that automatically calculates, at voucher match, the applicable holdback percentage specified in a purchase order contract. Since contracts are not implemented in the system, the holdback function is not used.	14.2.5
14.1.5	Commitments	The tracking of commitments versus actuals is manual and expedited on the Contract Record form. Budgets to commitments and to actuals are not adequately tracked.	Fit	The current system Commitment facility is not used.	14.2.6
14.1.6	Approvals	Signing authorities for approvals of purchasing agreements are based on the type of expense (whether O&M or Capital), the type of items purchased (whether inventory, non-inventory goods or services) and dollar limits. Approval for non-inventory purchases is a manual process. Exceptions: - The Board may delegate signing authority for major purchasing agreements, by resolution of the Board, to the President & CEO and/or Chief Financial Officer or Director of Corporate Services. - All leases and licenses or conditional Sale Agreements (i.e. lease	Fit	The current system Approval facility is only used for inventory purchases and not for the purchase of goods, services and equipment.	11.2.24

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		to purchase – operating or capital), regardless of the amount, will require the signature of the Director Corporate Services and the Chief Financial Officer.			
14.1.7	Requisitions	Requisitions are internal documents used to initiate purchases greater than \$5,000. A manual requisition form is filled out with the required approvals obtained and submitted to the Buyer for issuance of a purchase order.	Fit	The current system has a Requisition function that enables purchases to be initiated and routed internally for approvals. Approved requisitions can then be generated into purchase orders by the Buyer. This function is currently not used.	11.2.1
14.1.8	Visa Purchases	Visa can be used for purchases less than or equal to \$5,000. Monthly reports are received from Visa and manually distributed to employees for reconciliation/validation of purchases. Accounts Payable prints out the statement (from the US Bank website) for each cardholder which then gets coded manually and circulated for signatures (approvals). Reviews of Visa statements are done for duplicate charges and personal charges. Any such charges found are escalated to the Chief Financial Officer for further action.	Gap	The current system does not have functions and/or interfaces that are able to initiate or capture Visa purchases effectively.	11.2.2
14.1.9	Local Purchase Order	A Local Purchase Order (LPO) is a manual purchase order that can be used for purchases less than or equal to \$5,000. LPO books consisting of pre-printed LPO forms are issued to employees for such purchases. LPO purchases are not entered into the system and are only visible in the Accounts Payable system when invoices are entered for payments. 95% of LPOs are entered into the system after the fact, when invoices are received, for attaching to an invoice.	Fit	The current system enables different types of purchases to be created and tracked prior to receipt of invoices. This feature is currently not used.	11.2.3
14.1.10	Purchase Orders	With the exception of contracts, purchases greater than \$5,000 are entered into the JDE system. Purchases are basically initiated by a manual requisition, see 14.1.7, and submitted to the buyer for the issuance of a purchase order to the vendor. Purchase orders are printed from the system and emailed or faxed to the vendor. YEC terms & conditions are manually attached as required. Inconsistencies: 1. 2 Purchase Order formats used; inventory and non-inventory formats differ. 2. 3 different ways of printing a purchase order; process steps used by the Buyer, Warehouse Manager and Contract Administrator differ and with different levels of inefficiencies.	Fit	The current inconsistencies in printing purchase orders are caused by the following: 1. The Buyer uses a customized format that is deployed only to his local PC which only enables him to use. 2. The Warehouse Manager uses an old customized system generated format that does not support his requirements which results in him manually re-entering the order in a spreadsheet template. 3. The Contract Administrator does not have the same print program used by the Buyer and only has access to the Enterprise Server version of an old custom version. The above inconsistencies can be rectified by making the same, latest, custom version available on the Enterprise Server to be used by all.	11.2.21 , 11.2.22 , 11.2.23
14.1.11	Quotations	Obtaining quotes for inventory purchases is currently a manual process. Items to be quoted are manually entered into spreadsheets and sent (emailed/faxed) to suppliers for quote responses. Proof of quotation sourcing, when required, has to be manually compiled from copies of quote responses received.	Fit	The current system quotation function is not used. The system function enables quotes to be entered, printed for distribution to suppliers, quote responses to be entered and purchase orders to be generated from user analysis and determination of 'best' quotes.	11.2.25

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
14.1.12	Receiving	Goods The receipt of goods is manually indicated on packing slips and/or invoices and forwarded to Accounts Payables for payment. The matching of invoices to manual LPO's and system purchase orders is manual.	Fit	The current system has a 3-way match function which enables receipts to be entered into the system by the 'receiver' and thereby eliminating any requirements for manual indications and matching of receipts to purchase orders and invoices. This function is currently not used.	11.2.26
14.1.13	Receiving	Services Invoices received for services rendered are manually forwarded to the respective managers to confirm services and approve the invoice for payment.	Fit	The current system has the ability to 'receive' services as a confirmation of services rendered. This function is not in use.	11.2.26
14.1.14	Tolerances	Receiving and Voucher Match tolerances are configured for all items, for a commodity class or for a specific item. Depending on the requirement, a combination of units, unit cost, extended amount based on a specified amount and/or percentage is configured.			11.2.26
14.1.15	Suppliers	Suppliers are maintained in the current system's Supplier Master File. Supplier performance statistics are manually tracked on a hardcopy Contract Performance Evaluation Report for contracts. Performance statistics are not tracked to inventory or goods purchases.	Fit	The current system has a Quality Profile function that is currently not used.	14.2.21 , 14.2.22 , 14.2.23
14.1.16	Inquiry	Current system inquiries are minimally used.			See all Future State Inquiries/Reports
14.1.17	Reports	Current system reports are minimally used. The Open Purchase Orders report is used to determine orders that are still outstanding with suppliers. All reports on contracts and agreements are manually maintained.	Fit	The system has several reports for the management of Procurement activities.	See all Future State Inquiries/Reports
14.1.18	Staffing	• 1 Buyer • 1 Contract Administrator			
14.1.19	Security	Current security levels are restricted by application and by responsibilities.			11.2.29

14.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
14.2.1	Goods Purchases	Ability to purchase goods based on different pricing structures such as quantity breaks pricing, 'Cost Plus', quoted contract prices with effectivity dates and supplier catalogue prices.	1	
14.2.2	Services Purchases	Ability to set up service purchase orders or contracts for lump-sum, time and materials, 'Cost Plus' and monthly leases.	1	
14.2.3	Contracts	<u>Contract Profile</u> The contract data required to be captured and printed are as follows. 1. Contract Number; preferably system generated. 2. Description of contract with the ability to include additional details as required, 3. Vendor information including vendor contact (name, phone, email). 4. YEC Contact/Designate. 5. Contract (Agreement) date plus contract start and end dates. 6. Specification and electronic attachment of required transmittals and submittals such as WCB and insurance coverages 7. Holdback terms. 8. Security deposit specifications. 9. Contract terms and conditions including any additional special comments. 10. Warranties. 11. Applicable expenses. 12. Account (Expense) codes. 13. Contract status, for example, 'Initiated', 'Waiting Approval', 'In Progress', 'Completed', 'On Hold'.	1	
14.2.4	Contracts	<u>Transmittals and Submittals</u> • Specification of types of transmittals and submittals. For example, WCB and Insurance coverages. • Specification of whether a transmittal or submittal is mandatory and issue alerts to Accounts Payable when mandatory submittals have not been received. • Capture effectivity dates on coverages and issue system alerts, based on a specified number of days prior to expiration, when coverages are about to expire.	1	
14.2.5	Holdbacks & Releases	• Specification of a percentage holdback for purchase order or contracts. • Automatic system calculation of holdbacks at invoice voucher match with the option to execute holdbacks inclusive or net of taxes. • Electronic routing of approvals for holdback releases.	1	
14.2.6	Commitments	Automated tracking and reporting of commitments as follows: 1. budgets versus actuals 2. variances between commitments and actuals 3. budgets and commitments plus actuals.	1	
14.2.7	Requisitions	• Entry of purchase requisitions and routing of requisitions for approval. • Capture of expense codes when requisitions are created.	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		- Optional printing of requisitions. - Optional attachments of related documents, for example, specifications, drawings, manual quotations. - References to system generated quotes and vendor responses.		
14.2.8	Visa Purchases	- Facility to receive an electronic file or spreadsheet downloaded from Visa and route applicable Visa purchases to respective employees for validations and any required managerial reviews. - Electronic capture of Visa purchases for analysis and audit reviews.	1	
14.2.9	Emergency Purchases	Support for expedient system capture of emergency purchases ahead of invoice receipts.	2	
14.2.10	Serialization	Capture of serial numbers for items such as transformers requiring serial number traceability from receipts through to issues including installations.	1	
14.2.11	Purchase Orders	Creation - Creation of purchase orders for goods and services with the option of system generated order numbers or manually assigned numbers for manual PO's. - Identification of different types of purchases orders for analysis. For example, services PO's and goods PO's. - Ability to print purchase orders as required or en masse whereby all purchase orders that are ready to be printed and transmitted to suppliers can be printed in a scheduled background mode without any manual intervention. - Ability to create purchase order in foreign currency with pre-configured currency conversion rates. - Specification of applicable taxes and exemptions where applicable. - Ability to distribute a purchase order item line by units, amount or percentage to various business unit account codes. For example, place an order of 100 units of widgets with a supplier and allocate 20 units to account1, 30 to account2, 50 to account3.	1	
14.2.12	Purchase Order	Presentation The presentation of Purchase Orders should enable the following information to be captured, formatted to YEC requirements and printed: 24. YEC Purchase Order Number 25. YEC company logo, name and address 26. "Attention To" and instructions for invoice remittance 27. Supplier name, full address, phone and fax number 28. ShipTo address and optional 'Attention To' contact for delivery. 29. Reference to quotation/contract number and date where applicable 30. Shipping/Freight Handling Terms 31. Payment Terms 32. YEC Buyer/Contact (including phone number and email address) 33. Supplier Contact (including phone number and email address) 34. Shipping and delivery instructions 35. Special instructions to be specified as required 36. Additional charges, for example Taxes, Freight, Brokerage 37. Order Date, Requested/Required By Date, Promised Date 38. 'Order Taken By' name	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		39. Standard YEC language/text on terms and conditions 40. Order quantities and corresponding units of measures 41. YEC item numbers and description 42. Supplier item numbers or catalogue numbers, as required 43. Currency 44. Unit Price 45. Extended Price 46. Applicable taxes 47. Order total 48. Expense Code, as required 49. Signatures and corresponding dates		
14.2.13	Purchase Order	Distribution Ability to seamlessly automate purchase order transmissions via email or fax including potential support for EDI transmission.	2	
14.2.14	Approvals	• Approvals by budget amount and/or by purchase order amount. • Ability to set up different approvers for different purchase order threshold amounts. For example, amounts $\geq \\$10,000$ is approved by J.Smith and $\geq \\$20,000$ is approved by J.Doe. • Automatic routing of purchase orders for approval when budget amounts and/or purchase order amounts have exceeded pre-configured threshold limits. • Automatic alerts to approvers on purchase orders pending their approval. • Automatic notifications to originators on whether purchase orders have been approved or rejected. • Ability to enter reasons for rejected purchase orders. • Automatic escalation of purchase orders to the next level approver if the current approver has not responded by a specified time period. • Automatic re-routing of approved orders for approval when subsequent changes violate approval thresholds. • Various levels of signing authorities for purchasing agreements based on type of expense (whether O&M or Capital), the type of items purchased (whether inventory, non-inventory goods or services) and dollar limits. • Ability to delegate signing authority with effectivity dates,	1	
14.2.15	Quotations	• Entry and printing of items to be quoted. • Unique identification number to track each quote. • Entry and distribution of quotes to multiple suppliers. • Specification of required by dates. • Specification of special instructions, terms and conditions to suppliers. • Specification of price breaks by quantity. • Seamless transmission of quotes to suppliers via email and/or fax. • Capture of quote responses for comparison analysis. • Expedient release of 'best' quotes for automatic purchase order generation. • Traceability of quotes to purchase orders generated and vice-versa.	2	

No.	Key Area	Requirements	Criticality	Additional Notes
14.2.16	Multi-Currency	- Accommodations for creating purchase orders and contracts in foreign currency. - Ability to maintain foreign currency exchange rates with effectivity dates. - Automatic defaults of exchange rates with the option to overwrite defaults for a specific order.	1	
14.2.17	Change Orders	Tracking of changes to original service contracts including goods purchases.	1	
14.2.18	Receiving	<u>Goods</u> - Receive goods against a purchase order and backorder or cancel any residual outstanding quantities. - Ability to track receipts with a unique receipt identification number. - Capture serial numbers for units requiring serial number traceability. For example, transformers. - Capture supplier packing slips and Bills of Lading (BOL) reference numbers. - Ability to indicate condition of goods received and generate documents for the return of incorrectly shipped or damaged goods. - Electronic notification to buyer/originator of receipts and non-conformance items. - Capture of quality and delivery statistics for Supplier Performance Analysis.	1	
14.2.19	Receiving	<u>Services</u> Electronic routing of service invoices to respective managers for approvals.	1	
14.2.20	Supplier Catalogues	Support for electronic capture of supplier price catalogues.	2	
14.2.21	Supplier	<u>Supplier Profile</u> Ability to set up and maintain information on suppliers as follows: - Supplier Number - to uniquely identify each supplier. - Supplier Name, Address, Phone, Fax and Email Address. - Supplier (geographical) Locations. - Supplier Contacts including job title and contact information. - Payment Terms. - Types of services and products supplier including whether supplier is a primary/preferred source. - Supplier Status for example 'Inactive','Active'	1	
14.2.22	Supplier	<u>Goods Delivery Performance</u> Capture of performance statistics with the application of ratings for the following: - Fill rates and availability - Timeliness of delivery - Quality of goods delivered - Accuracy of shipments and invoices	1	
14.2.23	Supplier	<u>Contract Performance</u> Capture of performance statistics with the application of ratings for the following: - Quality of Workmanship including materials and equipment provided. - Timeliness of Completion.	1	

No.	Key Area	Requirements	Criticality	Additional Notes
		- Project Management with regards to co-ordination, quality control, scheduling and implementation. - Contract Management on all aspects of administration of a contract. - Health & Safety with regards to management and administration of all aspects of occupational health and safety provisions as stipulated in the contract, as per provincial/territorial legislature, as per YEC policies and COR Certification. - Automatic generation of Supplier Evaluation Questionnaire, at contract close, to project managers to capture feedback on supplier performance and the ability to customize questionnaires based on the different types of services performed.		
14.2.24	Security	- Limitation of Supplier Master maintenance to specific personnel. - Creation and maintenance of purchase orders and types of purchase orders by responsibility. - Receiving of goods by responsibility and/or originator.	1	
14.2.25	Inquiries/ Reports	Supplier Master Directory All information pertaining to a supplier including types of services and products offered, status ('Active', 'Inactive'), geographical locations whether a supplier is a primary/preferred supplier by product/services offering.	2	
14.2.26	Inquiries/ Reports	Supplier Price Catalogues Product and services offering including pricing and effectivity dates.	2	
14.2.27	Inquiries/ Reports	Open Purchase Orders Orders outstanding with suppliers including purchase order number, order date, required date, item number, description, order quantity, outstanding quantity, quantities received to date and last receipt date.	1	
14.2.28	Inquiries/ Reports	Contracts All information on a contract including history of holdbacks and releases, status of transmittals and submittals, invoices received and payments. Commitments versus actuals and commitments plus actuals versus budgets.	1	
14.2.29	Inquiries/ Reports	Supplier Performance Qualitative and quantitative statistics on the delivery of goods and services including accuracy of all supplier document such as invoices, packing/slips, contract progress reports.	1	
14.2.30	Interfaces	- Inventory for inventory purchases and receipts. - Accounts Payable for invoice voucher match. - Maintenance and Work Orders for Procurement of materials, services and equipment rentals. - Project Accounting/Job Costing for commitments capture.	1	
14.2.31	Data Conversion	- Purchase Orders from JDE System – outstanding and closed - Manually tracked Contracts		

14.3 US Bank File Interface

US Bank currently has two clients that are uploading visa transactions (Statement Billing File, SBF) into Peoplesoft System. The client downloads the visa flat file from US Bank and uploads the data into Peoplesoft and the cardholders perform the cost allocation in Peoplesoft.

US Bank Statement Billing File Layout Specifications Document:



US Bank SBF
layout.doc

15 Project Accounting / Job Cost

Project Accounting is a function used in the Engineering Department for the management of capital projects. Capital projects consist of new construction projects such as building a new substation and installing new distribution lines. Installation of new distribution lines or run-offs from existing lines are referred to as Customer Extensions which are customer initiated or driven. The Project Accounting function is currently a manual function, initiated, tracked and managed with a series of manual forms and spreadsheets.

15.1 Current State

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
15.1.1	Project Initiation	Process Business Plans for projects could be initiated by the Engineering Department on a Project Identification form with an initial planned budget amount and submitted for approval. When approved, quotes are obtained and project cost estimates are compiled for final approval to proceed.	Fit	The current system supports a Project Accounting / Job Cost module that enable the initiation of a project/job and the capture of the required information pertaining to a project including budgeted costs, estimates and actuals. Variances at any one point in time can be reported.	11.2.1
15.1.2	Project Identification	Form The Project Identification Document (PID) form is used for initiating a project and obtaining the required approvals to proceed. Information captured on the PID form includes a description of the initiative, alternatives/options, projected start and completion dates, planned and estimated costs, timing of cash flow requirements and, impacts to existing assets. <i>Further detailing of information capture requirements are documented under various Key Areas in the Future State section.</i>			11.2.1
15.1.3	Approvals	Approvals are obtained by manually routing the PID form to the various signing authorities for signatures. All PID's must be approved by the Project Manager, the respective Department/Section Head, the Director of Technical Services and the Chief Financial Officer. President Approval is required for projects over \$250,000 and Board Approval for projects over \$1,000,000.	Fit	The current system supports a workflow function that enable electronic routing of projects for approvals based on threshold limits.	15.2.2
15.1.4	Estimations	Project costs, both internal and external, are manually compiled in spreadsheets. Quotations/tenders for external labour/services, materials and equipment are obtained from suppliers and included in estimates.	Fit	The current system supports the capture of various ledgers for capturing estimates on labour, materials and other costs as required.	15.2.3, 15.2.4, 15.2.6
15.1.5	Work Orders	Work Orders are initiated on a Work Order Job Description Form. Two different Work Order Close-Out forms are used. One for internal projects and the other for customer extensions. Both forms vary in format but are similar in content. Forms are electronic copies which are manually entered, printed and filed. Internal project close-outs are done at year-end and the process can take from 2 hours to 2 days per project depending on discrepancies especially with the manual reconciliation of costs and expenditures. Customer extensions are closed out at project completion.	Fit	The current system supports a Work Order function which can generate a work order printout with close-out information as entered. Additional documentation can also be attached to a work order. Customer-specific information for close-outs can be configured via the Supplemental Data facility provided by the system.	15.2.7, 15.2.8, 15.2.9, 15.2.10, 11.2.6

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
15.1.6	Actual Costs	Actual costs are downloaded from the JDE system onto spreadsheets and further compiled into spreadsheets for tracking of actuals against estimated costs.	Fit	The current system's Job Cost function supports the capture of actuals costs into the Job Cost management inquiries and reports to enable analysis and comparisons to planned, estimates and actual cost.	15.2.5
15.1.7	Customer Extensions	<u>Initiation</u> A work order is created when a customer initiates a request for an extension or an installation of a distribution line. A deposit is collected from the customer and a site survey is done. Specifications are drawn up for the requirement and estimates for labour, materials and equipment are compiled and submitted to the customer for approval. The project cost of an extension comprises of the customer portion and possibly a contribution from the company. Extensions are owned by the company.	Fit	The Supplemental Data facility which is customizable could be used to capture information applicable to the processing customer extensions.	
15.1.8	Customer Extensions	<u>Costs</u> The total project cost primarily consists of 2 components; company investment and customer contribution. The "customer" component is either a direct contribution from one or more end customers or the government. The company investment is basically for electrical services and is regulated based on rate schedules for residential, commercial, size and types of services.			
15.1.9	Customer Extensions	<u>Estimates</u> Estimates are costed for materials and labour. Estimates for material costs are obtained from the JDE system from most recent material issues cost. Estimates for external equipment rentals and external labour is obtained from vendor quotations. Internal labour rates are based on preset rates for costing purposes. Internal equipment utilization rates are not identified separately but included in the internal labour rate. There has been an expressed need to identify internal equipment rates separately.	Fit		
15.1.10	Customer Extensions	<u>Material Issues</u> Inventory requirements are manually submitted (via email) to the warehouse manager. An inventory issue is created in the JDE system by the warehouse manager for the release of materials. If materials are not in stock, a purchase order is created in JDE and the order placed with vendors. Where applicable, quotations are manually obtained to source "best price" prior to placement of purchase orders.	Fit	The JDE system is currently in use to process inventory issues and purchasing as required. The system is able to provide for the processing of quotations.	
15.1.11	Customer Extensions	<u>Material (Actual) Costs Tracking</u> Currently the tracking of material returns, additions and change outs have been quite challenging. Changes to the initial materials list is more often than not not communicated for the compilation of the actual material used. It could take from 3 to 4 months to realize the actual material costs.	n / a	This issue is a procedural issue.	
15.1.12	Customer Extensions	<u>Customer Payments</u> A letter advising of the estimated costs is sent to the customer and the required deposit to be paid for the project to be initiated. A work order and an accounts receivable record is then set up for the customer in the JDE system.	Fit	The JDE system is currently in use to process customer payments.	
15.1.13	Customer Extensions	<u>Procurement</u> Any required procurement services and equipment rentals are processed via the JDE system. A requisition is	Fit	The current JDE system is in use for some procurement.	

No.	Key Area	Current State	Fit / Gap Analysis		Future State Reference
		submitted to the buyer for a purchase order or contract to be expedited. Currently, Standing Agreements are in place with some vendors for brushing and line work.			
15.1.14	Customer Extensions	Cost Sharing The calculation of cost sharing is currently manual. Costs are shared amongst initial customers requesting for a distribution line. The sharing portion may be adjusted later if another customer joins the community or group. There is also a time period that cost sharing applies. After the specified time period, additional customers could potentially join without incurring any costs.	Fit	The JDE system has a Service and Contract Billing module that might support the customization of formulas for the derivation of the cost sharing apportionment by customer.	
15.1.15	Customer Extensions	Refunds to Customers Projects that come in under the original estimate result in refunds to the customer. All refunds are routed for management approval. A letter is sent to the customer advising of the refund and a request is submitted to cut a refund cheque to the customer. A policy might be developed to only issue a refund if the amount exceeds a specific/tolerance amount.			
15.1.16	Customer Extensions	Customer Extension System A standalone custom system is currently being developed on the MSAccess platform to support requirements of Customer Extensions. Parts of this system has been developed and is currently in use. Additional functionality is planned to be added as per ongoing development. Feedback on this system has been positive. Interfacing of applicable transactions such as project costs (both estimates and actuals), procurement and customer payments/deposits/refunds to and from this system and the JDE system is manual.			15.1.14
15.1.17	Inquiries / Reports	Actual costs captured in the current General Ledger system is extrapolated and reported via MSAccess. Engineering does not have on-line inquiry access to actual costs captured in the General Ledger System. The information provided on MSAccess is not readily usable and have to be further re-worked/re-entered into spreadsheets to compile the required information of management purposes.			15.2.13

15.2 Future State

No.	Key Area	Requirements	Criticality	Additional Notes
15.2.1	Project Initiation	Ability to initiate a project with the capture of the following information: 1. Unique Project Identification Number 2. Project Title 3. Detailed Description, Objectives, Scope, discussion of alternatives/options where applicable 4. Project Initiator Name and Contact Information 5. Location of the project 6. Priority 7. Project Start and Completion Dates 8. Justification; Primary and Secondary 9. Initial Planned Costs	1	•

No.	Key Area	Requirements	Criticality	Additional Notes
		10. Timing of Cash Flow Projections 11. Qualification on the impacts on existing assets, if any		
15.2.2	Approvals	- Electronic routing of project for approvals based on one or more mandatory signing authorities and/or based on signing authorities by threshold limits. - Electronic notification/alert to approvers of projects awaiting their approval. - Ability to specify additional notes, queries and rejection reasons by approvers. - Notification to originators on whether a project has been approved or rejected.	1	•
15.2.3	Project Work-Breakdown Structure	- Ability to set up a parent project with multiple levels of subprojects and within which multiple work orders per subproject. - Ability to capture and review estimated costs versus actual costs by work order, subprojects and overall totals at the parent project level.	1	
15.2.4	Cost Capture	Ability to set up estimated costs and track actual costs for the following items: - Internal Labour (units and rates) - External Labour (units and rates or lump-sum agreements) - Material - Equipment (including rentals) - Travel (Accommodations, travel, meals, incidentals) - Salvages - Disposals	1	•
15.2.5	Actuals	Automatic capture of all actual costs from time/labour entry, material purchases, inventory issues, equipment rentals and contracts.	1	
15.2.6	Quotations	Electronic entry and issuance of quotations to multiple suppliers and the entry of responses for analysis. Ability to generate purchase orders from 'best' quote.	1	•
15.2.7	Work Order Initiation	Ability to set up and issue work orders for projects including customer extensions. Profiling information of work orders are to include: - Work Order Number - Reference to project number - In Service Date / Initiation Date - Contact Name and contact information - Service to be provided - Company Identification - Service Area - Customer Identification/Reference (for customer extensions) - Description of Work - Costs Estimates (labour and materials) including labour units and rates - Material Requirements (quantity, specifications) - Attachments of additional documentation such as drawings and specifications.	1	•
15.2.8	Work Order Approvals	- Electronic routing of work orders for approvals based on mandatory signatories and/or based on costs levels. - Electronic alerts to approvers on work orders awaiting their approval.	1	•

No.	Key Area	Requirements	Criticality	Additional Notes
		- Ability to specify rejection reasons by approver. - Automatic notification to originators on whether their work orders have been approved or rejected.		
15.2.9	Work Order Costs	Ability to track work order estimated versus actual costs broken down by labour, materials and travel.	1	•
15.2.10	Work Order Close-Out	Ability to capture and print (when required) the following close-out information for a work order. 11. In-Service Date or expected In-Service Date. 12. Project Status – In Use (Yes/No)? 13. Asset Replacement Information (Historical In-Service Date, Replacement Cost) 14. Purchases of Land, Computer Equipment or Office Equipment 15. Site restoration costs and percentage to total project costs 16. Salvage costs or proceeds 17. Approval of actual transaction amounts 18. Expected additional charges after close-out	1	•
15.2.11	Project & Work Order Statuses	Electronic tracking of project status from initiation to completion. Provide identification of parent project, subproject and work order statuses at initiation, review, awaiting approval, commencement, in progress, completion and close-out.	1	
15.2.12	Labour Time Entry	<i>To be determined.</i>		
15.2.13	Inquiries / Reports	<i>To be determined.</i>		
15.2.14	Interfaces	1. Inventory for material requirements. 2. Procurement for purchases of non-inventory materials, services, equipment rentals. 3. MSAccess Customer Extension System for estimates, work order initiation and status, material requirements, procurement of external services and rentals, customer payments and refunds to customers.	1	Regarding requirement 3, as the Customer Extension MSAccess system will be kept, only requirements for interfaces between this system and the replacement FIS system will be defined.
15.2.15	Data Conversion	Job Costs Budgets, Estimates, Forecasts from JDE	1	

1 **REFERENCE: Tab 5 Capital Projects; P 5-17, L 15**

2

3 **QUESTION:**

4

5 a) Please provide a copy of the report and the recommended solutions.

6

7 **ANSWER:**

8

9 **(a)**

10

11 No report has been prepared.

1 **REFERENCE: Tab 5 Capital Projects; P 5-17, L 15**

2
3 **QUESTION:**

- 4
5 a) Please provide an update on the upgrading or replacement of the power line
6 carrier system.

7
8 **ANSWER:**

9
10 **(a)**

11
12 Yukon Energy currently has two Power Line Carrier (PLC) systems in place. The vintage
13 for the systems is as follows:

- 14
15 • Takhini to Aishihik mid-1970s
16
17 • Takhini to Faro early 1970s
18

19 The scheduled replacement of the Takhini to Aishihik system is on hold, as YEC is this
20 year conducting a Communications System Study to determine if other cost effective
21 solutions are available. If other solutions are not available the replacement of this PLC
22 will be included in the budget.

23
24 The Takhini to Faro system is scheduled for replacement this year by implementing a
25 new ABB Digital PLC as part of the CSTP Phase 1 Project. This replacement will result
26 in YEC replacing one old link with the following three new links:

- 27
28 • Takhini Substation to Carmacks Airport Substation (New Substation).
29
30 • Carmacks Airport Substation (New Substation) to Faro Substation.
31
32 • Carmacks Airport Substation (New Substation) to Minto Landing Substation (New
33 Substation).

1 **REFERENCE: Tab 5 Capital Projects; P 5-18, L 22**

2
3 **QUESTION:**

4
5 a) Why are portions of the project described here repeated separately on the
6 following page (pole treatment, dead-end insulators)? Are they all one project
7 described here or is the description of the scope of this project incorrect?

8
9 **ANSWER:**

10
11 **(a)**

12
13 There is some overlap in the scope description between the projects. The description of
14 WAF Transmission upgrades as provided at page 5-18 (lines 25-26) of the Application
15 should not include the addition of pole test and treatment and dead end insulators
16 (discussed separately at page 5-19 of the Application). The scope of the WAF
17 Transmission Upgrades project properly includes the following: upgrade structures,
18 guys, cross arms, anchors switches and other insulators on the WAF system.

1 **REFERENCE: Tab 5 Capital Projects; P 5-20, L 19**

2
3 **QUESTION:**

4
5 a) Are there any sources of power other than hydro and geothermal that Yukon
6 Energy is studying, and if so what are they and what are the budgets for these
7 studies?

8
9 **ANSWER:**

10
11 **(a)**

12
13 Yes. In 2009, Yukon Energy will be assessing several internal DSM and supply side
14 enhancement (SSE) areas as part of their 20-Year Resource Plan objectives focused
15 first on improving the utilization of their existing facilities. This work will identify potential
16 options for improving water turbine efficiencies and reducing station services losses and
17 fossil fuel use. In addition, prefeasibility work is underway on a potential expansion to the
18 wind generation complement. This is part of the Other Generation Feasibility work
19 discussed on page 5-20 of the application; budgets are still being finalized for the
20 individual components of this work.

1 **REFERENCE: Tab 5 Capital Projects; P 5-21, L 1**

2
3 **QUESTION:**

4
5 a) Has Western Copper advanced Yukon Energy the \$1 million? If not when and
6 how will Western Copper pay Yukon Energy? Are there written agreements in
7 place?

8
9 **ANSWER:**

10
11 **(a)**

12
13 No. While preliminary discussions with Western Copper related to the provision of
14 electrical service to the mine site have commenced, discussion specifically related to a
15 Power Purchase Agreement or specific details on the spur line have yet to occur. The
16 timing and method of payment of the advance will be addressed in any subsequent PPA
17 negotiations and final PPA agreement.

1 **REFERENCE: Tab 5 Capital Projects; P 5-22, L 1**

2
3 **QUESTION:**

4
5 a) Why is the cost of this 2008 assessment not included in the cost of the 2009
6 scaling of this same rock face as described on page 5-15, L 16?

7
8 **ANSWER:**

9
10 **(a)**

11
12 The successful completion of the 2008 assessment has led to confirmation that the rock
13 scaling is required. Consequently, the project noted as a feasibility study will now be
14 included in WIP and combined with the rock scaling project when it occurs.

1 **REFERENCE: Tab 5 Capital Projects; P 5-22, L 14**

2
3 **QUESTION:**

4
5 a) We understand that the Aishihik Fisheries studies were completed. Please
6 provide any reports compiled as part of this assessment and provide the
7 conclusions of the work if not included in the reports. What are the practical
8 implications of the results of this work on the Aishihik water licence?

9
10 **ANSWER:**

11
12 **(a)**

13
14 The requested reports are provided as Attachment 1 (Data Report: 2007 Aishihik
15 Lake Whitefish Gillnetting) and Attachment 2 (Aishihik Lake Whitefish Population
16 Monitoring Program 2007 Program: Data Analysis) to this response.

17
18 The May 2008 Report provided as Attachment 2 to this response concludes that the fish
19 population in the lakes is healthy. Discussions are on-going with the members of the
20 Monitoring Group. If the Monitoring Group accepts the report's conclusion that the fish
21 population is healthy, the water usage restrictions could be lifted for the operation of the
22 Aishihik Generating station possibly making up to 6 GWh/yr of additional energy per year
23 (on average) available. If the report's conclusions are not accepted by the Monitoring
24 Group the operating restrictions on the plant would continue as has been the case for
25 the past 5 years.



EDI ENVIRONMENTAL DYNAMICS INC.
Natural Resource Consultants

**DATA REPORT: 2007 AISHIHIK
LAKE WHITEFISH GILLNETTING**

Prepared for:

YUKON ENERGY CORPORATION

Box 5920
Whitehorse, YT
Y1A 6S7

Prepared by:

Isaac Anderton, R.P. Bio.

EDI ENVIRONMENTAL DYNAMICS INC.

402 Hawkins St.
Whitehorse, YT
Y1A 1X8
(867) 393-4882

EDI Project No.: 07-YC-0047
October, 2007

TABLE OF CONTENTS

1.0	Introduction.....	1
2.0	Methods.....	1
2.1	Gillnetting Locations	1
3.0	Results	2
3.1	Gillnetting Site Data	2
3.2	Aishihik Lake Fish Data	5
3.3	Canyon Lake Fish Data.....	30
Appendix A: Maps of Sample Locations		50

1.0 INTRODUCTION

During late July and August of 2007, a study was undertaken to assess the current status of lake whitefish populations in the Aishihik Lake system. This report presents a summary of the fish capture data collected during the gillnetting component of the study.

2.0 METHODS

Sampling was completed over a 9 day period from July 25th through August 2nd, by biologists from EDI Environmental Dynamics Inc., Environment Yukon staff, and members of the Champagne and Aishihik First Nations.

Gillnetting was conducted at twelve locations in both Aishihik and Canyon Lakes, with the latter intended to provide control data. At each location, a gang consisting of seven gillnets with different mesh sizes was set for a duration of approximately twelve hours. Each gillnet panel was 22.9 metres long, 2.4 metres deep, and the seven mesh sizes employed were (in order) 3.8 cm (1.5"), 12.7 cm (5.0"), 6.4 cm (2.5"), 11.4 cm (4.5"), 7.6 cm (3.0"), 10.2 cm (4.0"), 8.9 cm (3.5"). The gangs were set with alternating ends (3.8 cm and 8.9 cm mesh panels) in-shore from location to location. Each fish captured was measured, weighed, and identified to species. The location and mesh size for each capture was recorded. For species other than lake whitefish, fish captured were released unharmed where possible. When this was not possible due to the trauma of capture, they were retained for further sampling. All lake whitefish captured were retained for further sampling. Ageing structures were subsequently removed from all lake whitefish, lake trout, arctic grayling, and subsets of other species captured. Aging structures taken included otoliths from lake whitefish, lake trout, round whitefish, and burbot, scales from Arctic grayling, cliethra from northern pike, and fin rays from longnose sucker. The sex and sexual maturity were also determined (where possible) for all fish captured. A subset of stomach samples were collected from lake whitefish, round whitefish, lake trout, and northern pike.

2.1 Gillnetting Locations

The maps illustrated in Figures 1, 2, and 3 located in Appendix A illustrate all sampling locations on Aishihik and Canyon Lakes. The sampling locations are labelled to correspond with the data tables presented for each location in Section 3.0. Efforts were made to duplicate the sampling locations from the 1991 study, with some modifications and site additions where necessary.

3.0 RESULTS

The sampling results from all data collected in the field are presented in four tables. Section 3.1 contains two tables (1 and 2) which detail the standard data collected regarding each gillnetting site, such as location, duration of set, anchor depth, etc. Section 3.2 contains the other two tables (3 and 4) which detail the information collected regarding each fish captured, such as fork length, weight, sex, maturity, etc.

3.1 Gillnetting Site Data

Tables 1 and 2 detail the standard gillnetting site data from from Aishihik and Canyon lakes, respectively.

TABLE 1: AISHIHIK LAKE GILLNETTING SITE DATA

Site	Waterbody	Sample Date	Surface Water (°C)	Shore Mesh (cm)	Anchor Depth (m)	Duration (hr)	Duration (min)	Location	Comments
1	Aishihik Lake	30-Jul-07	13.2	3.8	10	13	25	61.21525 N / 137.01019 W	
2	Aishihik Lake	30-Jul-07	13.8	8.9	8	13	15	61.21997 N / 136.9932 W	
4	Aishihik Lake	30-Jul-07	14	8.9	8	12		61.250667 N / 137.031611 W	Duration at least 12 hrs, however, time out not recorded
5	Aishihik Lake	30-Jul-07	13	3.8	16	12		61.254278 N / 137.031611 W	Duration at least 12 hrs, however, time out not recorded
6	Aishihik Lake	01-Aug-07	16.2	8.9	7	12		61.594972 N / 137.435222 W	Duration at least 12 hrs, however, time out not recorded
7	Aishihik Lake	01-Aug-07	16	3.8	6	12		61.588333 N / 137.434694 W	Duration at least 12 hrs, however, time out not recorded
8	Aishihik Lake	01-Aug-07	17.7	n/a	3.6	12	10	61.60221 N / 137.48594 W	
9	Aishihik Lake	01-Aug-07	17.7	n/a	2.4	13	15	61.60057 N / 137.49728 W	
10	Aishihik Lake	02-Aug-07	15.8	3.8	9.5	12	55	61.56903 N / 137.32759 W	
11	Aishihik Lake	02-Aug-07	n/a	8.9	18.2	12	40	61.54707 N / 137.32815 W	
12	Aishihik Lake	02-Aug-07	15.4	8.9	14	12		61.53551 N / 137.28645 W	Duration at least 12 hrs, however, time out not recorded
13	Aishihik Lake	02-Aug-07	15.6	3.8	4	12		61.5112833 N / 137.28645 W	Duration at least 12 hrs, however, time out not recorded

TABLE 2: CANYON LAKE GILLNETTING SITE DATA

Site	Waterbody	Sample Date	Surface Water (°C)	Shore Mesh (cm)	Anchor Depth (m)	Duration (hr)	Duration (min)	Location	Comments
1	Canyon Lake	26-Jul-07	n/a	3.8	2.6	12	0	61.08887 N / 137.01548 W	
2	Canyon Lake	26-Jul-07	n/a	8.9	3.8	12	30	61.10052 N / 137.00698 W	
3	Canyon Lake	27-Jul-07	n/a	3.8	5.2	12	15	61.12137 N / 137.00999 W	
4	Canyon Lake	27-Jul-07	n/a	8.9	4.5	12	40	61.12969 N / 137.02329 W	
5	Canyon Lake	28-Jul-07	n/a	3.8	5.8	13	15	61.14537 N / 137.00972 W	
6	Canyon Lake	28-Jul-07	n/a	8.9	7.5	12	45	61.15593 N / 137.00604 W	
7	Canyon Lake	28-Jul-07	16.2	3.8	7	12	15	61.161417 N / 137.012111 W	
8	Canyon Lake	28-Jul-07	n/a	8.9	n/a	12		61.122722 N / 137. 13306 W	duration at least 12 hrs; however time out not recorded
9	Canyon Lake	29-Jul-07	n/a	3.8	6.6	12	55	61.15217 N / 137. 0074 W	
10	Canyon Lake	29-Jul-07	n/a	8.9	7.2	13	35	61.16066 N / 137.00458 W	
11	Canyon Lake	29-Jul-07	16.6	8.9	6.3	11	55	61.173889 N / 137.0175 W	
12	Canyon Lake	29-Jul-07	16.5	3.8	7	12	40	61.162222 N / 137.021 W	

3.2 Aishihik Lake Fish Data

Tables 3 details all data collected from all fish captured in Aishihik Lake. Fish captured are listed numerically by gillnetting site and then by species in alphabetical order.

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Trout	1	6	6.4	353	600	Y	Female	Immature (virgin)	N	insects & unidentifiable fish	Dead	
Lake Trout	1	7	10.2	455	1200	Y	Male	Immature (virgin)	N		Dead	
Lake Trout	1		8.9	855	8200	N	Unknown	NA	N		Good	
Lake Trout	1		11.4	524	1900	N	Unknown	NA	N		Good	
Lake Trout	1		3.8	419	1200	N	Unknown	NA	N		Good	
Lake Trout	1		7.6	820	6600	N	Unknown	NA	N		Good	
Lake Trout	1		6.4	824	6200	N	Unknown	NA	N		Good	
Lake Whitefish	1	52	8.9	457	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	53	8.9	480	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	54	8.9	466	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	55	8.9	473	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	56	8.9	442	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	57	8.9	467	1500	Y	Male	Immature (virgin)	N		Dead	
Lake Whitefish	1	58	8.9	475	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	59	8.9	450	1100	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	60	6.4	440	1200	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	61	6.4	507	2100	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	62	6.4	455	1200	Y	Male	Immature (virgin)	N		Dead	
Lake Whitefish	1	63	12.7	523	2100	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	64	12.7	471	1500	Y	Male	Immature (virgin)	N		Dead	
Lake Whitefish	1	65	12.7	483	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	66	12.7	466	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	67	7.6	465	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	68	7.6	502	1500	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	1	69	7.6	466	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	70	7.6	504	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	71	7.6	454	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	72	7.6	464	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	73	7.6	469	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	74	7.6	480	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	75	10.2	478	1900	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	76	10.2	479	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	77	10.2	480	1600	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	1	78	10.2	480	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	79	10.2	457	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	80	10.2	492	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	81	10.2	455	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	1	82	10.2	506	2000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	83	10.2	453	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	84	10.2	486	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	85	10.2	483	1600	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	86	10.2	476	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	87	10.2	463	1500	Y	Female	Mature (spawner)	N		Dead	only 1 otolith
Lake Whitefish	1	88	3.8	443	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	89	3.8	498	1800	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	90	3.8	467	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	91	11.4	483	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	92	11.4	486	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	93	11.4	497	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	94	11.4	471	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	95	11.4	445	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	96	11.4	553	2600	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	97	11.4	463	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	98	11.4	454	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	99	11.4	446	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	100	11.4	447	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	101	11.4	459	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	1	102	11.4	452	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	1	103	11.4	435	1300	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	1	10	3.8	244	134	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	1	11	3.8	257	125	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	1	12	3.8	247	150	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	1	13	3.8	234	119	N	Male	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	1	14	3.8	216	98	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	1	15	3.8	219	98	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	1	16	3.8	205	83	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	1	17	3.8	243	134	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	1	18	6.4	361	500	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	1	19	6.4	345	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	20	6.4	356	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	21	6.4	342	500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	1	22	6.4	344	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	23	6.4	345	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	24	6.4	350	600	Y	Female	Mature (spawner)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	1	25	6.4	357	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	26	6.4	344	500	Y	Female	Mature (spawner)	Y		Dead	1 otolith sampled
Round Whitefish	1	27	6.4	307	400	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	28	6.4	368	600	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	29	6.4	363	600	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	1	30	6.4	355	500	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	1	31	6.4	308	400	Y	Female	Mature (spawner)	Y		Dead	
Lake Trout	2	1	7.6	382	700	Y	Female	Immature (virgin)	N	5 slimy sculpin	Dead	
Lake Trout	2	2	8.9	455	900	Y	Female	Immature (virgin)	N		Dead	
Lake Trout	2	3	10.2	468	1100	Y	Female	Immature (virgin)	N	1 slimy sculpin	Dead	
Lake Trout	2	4	6.4	347	500	Y	Unknown	Immature (sex unknown)	N	insect larvae	Dead	
Lake Trout	2	5	3.8	164	49	Y	Unknown	Immature (sex unknown)	N		Dead	1 otolith taken
Lake Trout	2		7.6	377	800	N	Unknown	NA	N		Good	
Lake Trout	2		3.8	350	700	N	Unknown	NA	N		Good	
Lake Whitefish	2	1	12.7	472	1700	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	2	12.7	476	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	3	12.7	484	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	4	12.7	450	1200	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	5	12.7	450	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	6	6.4	461	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	7	6.4	496	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	8	6.4	468	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	9	6.4	472	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	10	10.2	472	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	11	10.2	469	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	12	10.2	463	1200	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	13	10.2	449	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	14	10.2	486	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	15	10.2	449	1300	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	2	16	10.2	500	1500	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	17	10.2	468	1300	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	18	10.2	460	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	19	10.2	476	1400	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	20	10.2	465	1200	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	21	8.9	450	1200	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	22	8.9	470	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	23	8.9	457	1500	Y	Female	Mature (spawner)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	2	24	8.9	507	1700	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	25	8.9	474	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	26	8.9	494	1500	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	27	8.9	503	2100	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	2	28	8.9	484	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	29	8.9	480	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	30	8.9	474	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	31	7.6	428	1100	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	2	32	7.6	467	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	33	7.6	475	1500	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	34	7.6	456	1100	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	35	7.6	482	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	36	7.6	440	800	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	37	7.6	475	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	38	7.6	465	1400	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	39	7.6	454	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	2	40	11.4	504	1900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	41	11.4	488	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	42	11.4	507	1900	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	43	11.4	436	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	44	11.4	482	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	45	11.4	482	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	46	11.4	474	1600	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	2	47	11.4	463	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	48	11.4	448	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	49	11.4	500	1800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	50	11.4	466	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	51	11.4	466	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	2	1	3.8	229	104	Y	Unknown	Immature (sex unknown)	Y		Dead	Parr Marks present
Round Whitefish	2	2	3.8	231	112	Y	Unknown	Immature (sex unknown)	Y		Dead	Parr marks present
Round Whitefish	2	3	3.8	228	92	Y	Unknown	Immature (sex unknown)	Y		Dead	Parr marks present
Round Whitefish	2	4	3.8	283	205	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	2	5	6.4	352	400	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	2	6	6.4	361	400	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	7	6.4	314	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	8	6.4	308	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	9	6.4	336	500	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	4	55	12.7	628	2825	Y	Male	Mature (spawner)	N	empty	Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Trout	4	56	11.4	441	1000	Y	Male	Immature (virgin)	N	unidentifiable fish	Dead	
Lake Trout	4	57	6.4	473	1225	Y	Female	Immature (virgin)	N	insects & unidentifiable fish	Dead	
Lake Trout	4	58	6.4	412	725	Y	Female	Immature (virgin)	N	insects & unidentifiable fish	Dead	
Lake Trout	4		12.7	892		N	Unknown	NA	N		Good	
Lake Trout	4		12.7	587	2500	N	Unknown	NA	N		Good	
Lake Trout	4		6.4	540	1900	N	Unknown	NA	N		Good	
Lake Trout	4		6.4			N	Unknown	NA	N		Good	
Lake Trout	4		11.4	900		N	Unknown	NA	N		Good	
Lake Trout	4		10.2	440	900	N	Unknown	NA	N		Good	
Lake Trout	4		8.9	448	1000	N	Unknown	NA	N		Good	
Lake Trout	4		8.9	657	2600	N	Unknown	NA	N		Good	
Lake Whitefish	4	307	8.9	446	1325	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	308	8.9	460	1325	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	309	8.9	467	1225	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	310	8.9	449	1200	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	311	8.9	470	1300	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	312	8.9	470	1425	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	313	8.9	485	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	314	8.9	441	1100	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	315	8.9	451	1200	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	316	8.9	495	1600	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	317	8.9	482	1425	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	318	8.9	515	1650	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	319	8.9	475	1575	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	320	8.9	487	1600	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	321	8.9	462	1350	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	322	8.9	438	1150	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	4	323	8.9	550	1575	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	324	8.9	492	1550	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	325	8.9	500	1550	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	326	8.9	471	1400	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	327	8.9	468	1300	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	328	8.9	469	1375	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	353	3.8	487	1650	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	354	3.8	444	1275	Y	Female	Mature (non-spawner, resting)	?		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	4	355	3.8	489	1475	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	4	356	12.7	488	1750	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	357	12.7	480	1500	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	4	358	12.7	490	1725	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	4	359	12.7	468	1400	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	360	12.7	505	1500	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	4	361	12.7	476	1475	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	4	362	12.7	492	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	4	397	7.6	460	1325	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	398	7.6	450	1275	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	399	7.6	466	1325	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	400	7.6	482	1475	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	401	7.6	489	1600	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	402	7.6	463	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	403	7.6	454	1275	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	404	8.9	454	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	405	8.9	539	1700	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	406	8.9	490	1550	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	407	8.9	482	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	408	8.9	475	1550	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	409	8.9	480	1575	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	410	8.9	472	1450	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	411	8.9	459	1225	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	412	8.9	467	1325	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	413		471	1325	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	414	8.9	461	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	415	8.9	471	1350	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	416	8.9	470	1500	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	417	8.9	475	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	418	8.9	474	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	419	8.9	530	2500	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	420	8.9	450	1350	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	421	8.9	496	1600	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	422	8.9	467	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	423	8.9	482	1625	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	424	8.9	472	1450	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	425	8.9	473	1350	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	426	7.6	456	1225	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	427	7.6	439	1075	Y	Female	Mature (non-spawner, resting)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	4	428	7.6	442	1075	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	429	7.6	496	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	430	7.6	480	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	431	7.6	462	1250	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	432	11.4	502	1600	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	433	11.4	459	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	434	11.4	462	1450	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	435	11.4	486	1600	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	436	11.4	466	1650	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	437	11.4	474	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	438	11.4	480	1525	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	439	11.4	467	1225	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	440	11.4	491	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	441	11.4	465	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	442	11.4	465	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	443	11.4	498	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	444	8.9	484	1650	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	445	8.9	472	1350	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	446	11.4	476	1325	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	447	11.4	461	1400	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	448	11.4	435	1300	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	449	11.4	484	1425	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	450	11.4	478	1475	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	451	11.4	482	1450	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	452	6.4	509	1825	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	453	6.4	504	1775	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	454	6.4	487	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	455	6.4	489	1575	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	456	6.4	414	1025	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	457	6.4	452	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	458	6.4	437	1200	Y	Female	Mature (non-spawner, resting)	N		Dead	one gonad
Lake Whitefish	4	459	6.4	503	1650	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	4	460	10.2	494	1475	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	461	10.2	493	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	462	10.2	451	1250	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	463	10.2	486	1550	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	464	10.2	512	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	465	10.2	478	1525	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	466	10.2	505	1825	Y	Male	Mature (non-spawner, resting)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	4	467	10.2	474	1520	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	468	10.2	463	1275	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	469	10.2	478	1525	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	470	10.2	501	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	471	10.2	475	1550	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	472	10.2	473	1325	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	473	10.2	502	1675	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	474	10.2	494	1675	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	475	10.2	514	1625	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	476	10.2	465	1325	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	477	10.2	458	1528	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	478	10.2	492	1875	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	479	10.2	492	1525	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	480	10.2	439	1200	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	481	10.2	525	2000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	482	10.2	446	1000	Y	Female	Immature (virgin)	N		Dead	
Lake Whitefish	4	483	10.2	470	1425	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	484	10.2	470	1425	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	485	10.2	498	1800	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	486	10.2	466	1475	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	487	10.2	511	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	488	10.2	501	1850	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	489	10.2	495	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	4	490	10.2	504	1650	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	4	491	10.2	475	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	4		6.4	370	500	N	Unknown	NA	N		Good	
Round Whitefish	4		6.4	382	650	N	Unknown	NA	N		Good	
Round Whitefish	4		6.4	375	500	N	Unknown	NA	N		Good	
Lake Trout	5	51	7.6	494	1425	Y	Male	Mature (spawner)	N	shrimp	Dead	
Lake Trout	5	52	7.6	377	525	Y	Female	Immature (virgin)	N	shrimp	Dead	
Lake Trout	5	53	8.9	597	2775	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Trout	5	54	8.9	480	1325	Y	Female	Mature (spawner)	N	shrimp	Dead	
Lake Trout	5		10.2	447	1100	N	Unknown	NA	N		Good	
Lake Trout	5		11.4	475	1250	N	Unknown	NA	N		Good	
Lake Trout	5		10.2	477	1300	N	Unknown	NA	N		Good	
Lake Trout	5		7.6	377	700	N	Unknown	NA	N		Good	
Lake Trout	5		7.6	390	700	N	Unknown	NA	N		Good	
Lake Trout	5		7.6	382	450	N	Unknown	NA	N		Good	
Lake Trout	5		10.2	431	1100	N	Unknown	NA	N		Good	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Trout	5		10.2	447	1100	N	Unknown	NA	N		Good	
Lake Trout	5		10.2	566	2200	N	Unknown	NA	N		Good	
Lake Trout	5		6.4	350	500	N	Unknown	NA	N		Good	
Lake Whitefish	5	301	3.8	450	1300	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	302	3.8	450	1300	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	303	3.8	455	1325	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	304	3.8	480	1350	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	305	3.8	500	1500	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	306	3.8	472	1550	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	329	7.6	480	1475	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	330	7.6	473	1300	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	331	7.6	473	1425	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	332	7.6	489	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	333	7.6	488	1550	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	334	7.6	487	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	335	7.6	514	1775	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	336	10.2	466	1225	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	337	10.2	466	1475	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	338	10.2	482	1478	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	339	10.2	439	1050	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	340	10.2	487	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	341	8.9	477	1550	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	342	8.9	424	1050	Y	Female	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	343	8.9	492	1600	Y	Male	Immature (virgin)	?		Dead	
Lake Whitefish	5	344	8.9	459	1300	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	345	8.9	508	1750	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	346	8.9	424	1250	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	347	8.9	504	1800	N	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	348	8.9	477	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	349	8.9	479	1625	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	350	8.9	467	1425	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	351	8.9	484	1550	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	352	8.9	499	1525	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	363	12.7	509	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	364	12.7	463	1450	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	365	12.7	500	1625	Y	Male	Mature (spawner)	?		Dead	
Lake Whitefish	5	366	12.7	482	1425	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	367	12.7	475	1400	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	368	12.7	496	1675	Y	Female	Mature (spawner)	?		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	5	369	12.7	500	1725	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	370	12.7	485	1600	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	371	12.7	490	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	372	12.7	476	1300	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	373	12.7	490	1850	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	374	12.7	459	1400	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	5	375	12.7	477	1525	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	5	376	12.7	467	1425	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	377	6.4	482	1425	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	378	6.4	476	1550	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	379	6.4	472	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	380	6.4	462	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	381	6.4	477	1550	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	382	6.4	469	1350	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	5	383	11.4	479	1550	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	384	11.4	499	1550	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	385	11.4	502	1625	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	386	11.4	594	1850	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	387	11.4	480	1525	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	388	11.4	487	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	389	11.4	482	1400	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	5	390	11.4	477	1550	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	5	391	11.4	483	1575	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	5	392	11.4	468	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	393	11.4	461	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	394	11.4	493	1500	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	5	395	11.4	496	1825	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	5	396	11.4	466	1475	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	5	51	7.6	380	600	Y	Female	Mature (non-spawner, resting)	?		Dead	same sample # for 2 fish
Round Whitefish	5	52	7.6	358	450	Y	Female	Mature (non-spawner, resting)	?		Dead	same sample # for 2 fish
Round Whitefish	5		6.4	346	450		Unknown	NA			Good	
Round Whitefish	5		6.4	355	500		Unknown	NA			Good	
Round Whitefish	5		6.4	355	475		Unknown	NA			Good	
Round Whitefish	5		6.4	369	525		Unknown	NA			Good	
Round Whitefish	5		6.4	372	525		Unknown	NA			Good	
Round Whitefish	5		6.4	387	600		Unknown	NA			Good	
Round Whitefish	5		7.6	370	600		Unknown	NA			Good	
Round Whitefish	5		7.6	375	600		Unknown	NA			Good	
Round Whitefish	5		7.6	375	600		Unknown	NA			Good	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	5		7.6	380	500		Unknown	NA			Good	
Round Whitefish	5		7.6	385	600		Unknown	NA			Good	
Round Whitefish	5		7.6	390	600		Unknown	NA			Good	
Arctic Grayling	6		6.4	275	200	N	Unknown	NA	N		Good	
Lake Trout	6	59	10.2	524	1900	Y	Male	Mature (spawner)	N	6 small LWF	Dead	
Lake Trout	6	60	11.4	577	2025	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Trout	6	61	10.2	578	2125	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Lake Trout	6	62	10.2	607	2800	Y	Female	Mature (spawner)	N	1 small unidentifiable fish	Dead	
Lake Trout	6	63	12.7	605	2475	Y	Male	Mature (non-spawner, resting)	N	1 small LWF	Dead	
Lake Trout	6		11.4			N	Unknown	NA	N		Good	
Lake Trout	6		10.2	600	2700	N	Unknown	NA	N		Good	
Lake Trout	6		3.8	639	2700	N	Unknown	NA	N		Good	
Lake Whitefish	6	492	3.8	272	300	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	6	493	3.8	218	125	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	494	3.8	274	250	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	495	3.8	218	100	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	496	3.8	216	100	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	497	3.8	210	325	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	6	498	3.8	225	150	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	499	3.8	436	1200	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	500	3.8	455	1450	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	501	3.8	455	1425	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	502	8.9	445	1100	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	503	8.9	328	450	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	504	8.9	206	250	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	505	8.9	464	1375	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	506	8.9	476	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	507	8.9	439	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	508	8.9	425	1175	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	509	8.9	435	1125	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	510	10.2	440	1175	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	511	10.2	429	1100	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	512	10.2	475	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	513	10.2	439	1175	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	514	10.2	445	1250	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	515	7.6	455	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	516	7.6	443	1250	Y	Male	Mature (non-spawner, resting)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	6	517	7.6	396	800	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	518	7.6	414	725	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	519	7.6	441	1250	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	520	11.4	476	1350	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	521	11.4	440	1250	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	522	11.4	427	1075	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	523	11.4	485	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	524	11.4	417	1000	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	6	525	11.4	453	1325	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	526	11.4	414	950	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	527	11.4	453	1375	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	528	11.4	433	1150	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	529	11.4	466	1325	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	530	11.4	472	1550	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	531	12.7	500	1950	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	532	12.7	447	1250	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	533	12.7	435	1175	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	534	12.7	405	875	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Northern Pike	6		11.4	750	3000	N	Unknown	NA	N		Good	
Northern Pike	6		7.6	774	3750	N	Unknown	NA	N		Good	
Northern Pike	6		8.9	625	1700	N	Unknown	NA	N		Good	
Round Whitefish	6		11.4	357	400		Unknown	NA			Good	
Round Whitefish	6		6.4	356	400		Unknown	NA			Good	
Lake Trout	7	64	7.6	565	2150	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Trout	7	65	11.4	610	3225	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	7	535	7.6	339	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	536	7.6	449	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	537	7.6	472	1400	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	538	7.6	466	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	539	7.6	450	1150	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	540	7.6	473	1450	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	541	7.6	361	550	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	542	7.6	427	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	543	7.6	462	1375	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	544	10.2	433	1100	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	545	10.2	435	1150	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	546	10.2	524	2000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	547	10.2	467	1275	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	548	10.2	476	1525	Y	Female	Mature (spawner)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	7	549	8.9	487	1525	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	550	8.9	440	1250	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	7	551	8.9	429	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	552	8.9	413	950	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	553	8.9	492	1550	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	554	8.9	441	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	555	8.9	403	1000	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	556	8.9	457	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	557	8.9	456	1150	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	558	8.9	479	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	559	12.7	478	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	560	12.7	472	1575	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	561	12.7	572	2850	Y	Unknown	NA	N		Good	
Lake Whitefish	7	562	12.7	474	1575	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	563	12.7	436	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	564	6.4	487	1450	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	565	6.4	454	1275	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	566	6.4	456	1350	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	567	6.4	450	1150	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	568	11.4	456	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	569	11.4	477	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	570	11.4	453	1200	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	571	11.4	476	1525	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	7	572	11.4	472	1450	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	7	573	11.4	461	1300	Y	Female	Mature (spawner)	N		Dead	
Northern Pike	7	101	3.8	790	3625	Y	Male	Mature (non-spawner, resting)	N	1 sculpin, 1 LWF	Dead	
Northern Pike	7	102	3.8	670	2075	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	103	3.8	789	3675	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	104	6.4	644	2000	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	105	6.4	610	1575	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	106	7.6	635	1675	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	107	7.6	747	3025	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	108	7.6	771	3300	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	109	8.9	829	4075	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	110	10.2	769	2850	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	111	10.2	725	2600	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	7	112	12.7	892	6000	Y	Female	Mature (non-spawner, resting)	N		Dead	
Northern Pike	7		12.7	780	3500	N	Unknown	NA	N		Good	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Northern Pike	7		10.2	655	2300	N	Unknown	NA	N		Good	
Northern Pike	7		12.7	673	2475	N	Unknown	NA	N		Good	
Northern Pike	7		11.4	863	4900	N	Unknown	NA	N		Good	
Northern Pike	7		6.4	605	1600	N	Unknown	NA	N		Good	
Northern Pike	7		11.4	680	2400	N	Unknown	NA	N		Good	
Northern Pike	7		3.8			N	Unknown	NA	N		Good	
Northern Pike	7		6.4	548	1475	N	Unknown	NA	N		Good	
Lake Trout	8		3.8	619	3100	N	Unknown	NA	N		Good	
Lake Whitefish	8	104	3.8	438	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	105	3.8	443	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	106	11.4	484	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	107	11.4	483	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	108	11.4	477	1700	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	109	11.4	498	1900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	110	11.4	489	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	111	11.4	466	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	112	11.4	486	1800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	113	11.4	459	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	114	7.6	516	1900	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	115	7.6	499	2000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	116	7.6	499	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	117	7.6	542	1900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	118	10.2	484	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	119	10.2	448	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	120	10.2	484	1700	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	121	10.2	477	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	122	10.2	489	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	123	10.2	449	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	124	10.2	475	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	125	10.2	414	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	126	10.2	476	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	127	10.2	498	1800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	128	10.2	444	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	129	10.2	491	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	130	12.7	489	1700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	131	12.7	481	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	132	12.7	462	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	133	12.7	477	1700	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	134	6.4	486	1800	Y	Female	Mature (spawner)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	8	135	6.4	427	1000	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	136	6.4	468	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	137	6.4	451	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	8	138	6.4	500	2200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	139	6.4	464	1900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	140	6.4	443	1400	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	141	8.9	450	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	142	8.9	450	1400	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	143	8.9	472	1800	Y	Female	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	144	8.9	476	1300	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	145	8.9	459	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	8	146	8.9	460	1500	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	8	147	8.9	428	1000	Y	Male	Immature (virgin)	?		Dead	
Lake Whitefish	8	148	8.9	475	1800	Y	Male	Mature (non-spawner, resting)	?		Dead	
Northern Pike	8	1	3.8	614	1700	Y	Male	Mature (spawner)	N	empty	Dead	
Northern Pike	8	2	3.8	199	58	Y	Unknown	Immature (sex unknown)	N	8 burbot	Dead	
Northern Pike	8	3	11.4	670	1500	Y	Male	Mature (spawner)	N	empty	Dead	
Northern Pike	8	4	7.6	682	1500	Y	Female	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	8	5	7.6	609	1800	Y	Female	Mature (spawner)	N	LWF	Dead	
Northern Pike	8	6	7.6	564	1400	Y	Male	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	8	7	7.6	605	1700	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	8	8	7.6	524	1200	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	8	9	10.2	596	1600	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	8	10	6.4	555	1500	Y	Male	Immature (virgin)	N	unidentifiable fish	Dead	
Northern Pike	8	11	6.4	481	1000	Y	Male	Mature (spawner)	N	slimy sculpin	Dead	
Northern Pike	8	12	6.4	426	700	Y	Female	Mature (non-spawner, resting)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	8	13	8.9	636	2200	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	8	14	8.9	675	2500	Y	Female	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	8	15	8.9	822	4000	Y	Female	Mature (spawner)	N	empty	Dead	tapeworms
Lake Whitefish	9	149	11.4	488	1700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	150	11.4	454	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	151	11.4	473	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	152	11.4	482	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	153	11.4	500	2100	Y	Male	Mature (spawner)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	9	154	11.4	418	1300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	155	11.4	554	2700	Y	Unknown	Immature (sex unknown)	N		Dead	
Lake Whitefish	9	156	8.9	496	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	157	8.9	455	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	158	8.9	490	2000	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	159	8.9	475	1500	Y	Female	Mature (spawner)	N		Dead	1 otolith sampled
Lake Whitefish	9	160	8.9	466	1600	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	161	10.2	465	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	162	10.2	455	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	163	10.2	480	1800	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	164	10.2	471	1800	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	165	10.2	483	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	166	10.2	463	1900	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	167	10.2	457	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	168	3.8	456	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	169	3.8	522	2200	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	9	170	11.4	464	1800	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	171	11.4	498	1800	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	172	11.4	457	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	173	11.4	473	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	9	174	11.4	479	1600	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	9	175	11.4	495	2000	Y	Female	Mature (spawner)	N		Dead	
Northern Pike	9	16	11.4	750	3200	Y	Male	Mature (spawner)	N	empty	Dead	
Northern Pike	9	17	11.4	613	2000	Y	Male	Mature (spawner)	N	empty	Dead	
Northern Pike	9	18	11.4	643	2100	Y	Male	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	9	19	11.4	646	2000	Y	Female	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	9	20	11.4	554	1500	Y	Male	Immature (virgin)	N	empty	Dead	tapeworms
Northern Pike	9	21	11.4	591	1700	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	tapeworms
Northern Pike	9	22	8.9	769	3600	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	9	23	8.9	599	1700	Y	Female	Mature (non-spawner, resting)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	9	24	8.9	618	1600	Y	Female	Mature (spawner)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	9	25	8.9	532	1400	Y	Male	Immature (virgin)	N	burbot	Dead	
Northern Pike	9	26	8.9	560	1500	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	9	27	8.9	738	3000	Y	Male	Mature (spawner)	N	empty	Dead	tapeworms

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Northern Pike	9	28	8.9	541	1400	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	
Northern Pike	9	29	8.9	530	1300	Y	Male	Immature (virgin)	N	empty	Dead	
Northern Pike	9	30	8.9	542	1300	Y	Female	Mature (non-spawner, resting)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	9	31	7.6	545	1300	Y	Female	Immature (virgin)	N	empty	Dead	tapeworms
Northern Pike	9	32	7.6	616	1800	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	tapeworms
Northern Pike	9	33	7.6	698	2800	Y	Male	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	9	34	7.6	600	1800	Y	Female	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	9	35	7.6	609	1800	Y	Male	Mature (spawner)	N	empty	Dead	tapeworms
Northern Pike	9	36	7.6	522	1500	Y	Male	Immature (virgin)	N	empty	Dead	
Northern Pike	9	37	7.6	597	1500	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	tapeworms
Northern Pike	9	38	7.6	562	1500	Y	Male	Mature (spawner)	N	empty	Dead	
Northern Pike	9	39	7.6	557	1300	Y	Male	Mature (spawner)	N	unidentifiable fish	Dead	tapeworms
Northern Pike	9	40	7.6	762	3200	Y	Female	Mature (spawner)	N	empty	Dead	
Northern Pike	9	113	10.2	835	4600	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	114	10.2	560	1300	Y	Female	Mature (non-spawner, resting)	N	unidentifiable fish	Dead	
Northern Pike	9	115	10.2	745	2875	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	116	10.2	705	2600	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	117	10.2	575	1425	Y	Male	Mature (non-spawner, resting)	N	LWF	Dead	
Northern Pike	9	118	10.2	557	1375	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	119	3.8	536	1125	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	120	6.4	544	1175	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	121	6.4	560	1250	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	122	6.4	596	1700	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	123	6.4	555	1325	Y	Male	Mature (non-spawner, resting)	N	LWF	Dead	
Northern Pike	9	124	6.4	663	2200	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	9	125	6.4	625	1650	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Arctic Grayling	10	2	6.4	277	200	Y	Male	Mature (spawner)	N		Dead	
Lake Trout	10		12.7	544	2100	N	Unknown	NA	N		Good	
Lake Trout	10		6.4	500	1500	N	Unknown	NA	N		Good	
Lake Trout	10		7.6	610	3500	N	Unknown	NA	N		Good	
Lake Trout	10		8.9	690	3400	N	Unknown	NA	N		Good	
Lake Whitefish	10	214	12.7	495	1600	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	215	12.7	431	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	216	12.7	483	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	217	11.4	476	1400	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	10	218	12.7	500	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	10	219	12.7	493	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	220	12.7	457	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	221	12.7	467	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	222	12.7	476	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	223	11.4	482	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	224	8.9	495	2000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	225	8.9	404	1200	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	226	8.9	526	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	227	8.9	443	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	228	8.9	462	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	229	8.9	447	1100	Y	Female	Mature (spawner)	N		Dead	1 otolith sampled
Lake Whitefish	10	230	8.9	424	1200	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	231	3.8	474	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	232	3.8	423	1100	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	233	3.8	162	44	Y	Unknown	Immature (sex unknown)	N		Dead	
Lake Whitefish	10	234	3.8	151	43	Y	Unknown	Immature (sex unknown)	N		Dead	
Lake Whitefish	10	235	10.2	479	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	236	10.2	463	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	237	10.2	463	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	238	10.2	443	1100	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	239	10.2	510	1800	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	240	10.2	451	700	Y	Male	Mature (spawner)	N		Dead	
Lake Whitefish	10	241	10.2	422	1000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	242	10.2	418	1000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	243	10.2	442	1100	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	244	10.2	472	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	245	10.2	464	1000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	246	11.4	440	1000	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	247	11.4	495	1500	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	248	11.4	489	1500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	249	11.4	450	1000	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	250	11.4	453	1000	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	10	251	11.4	490	1500	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	10	252	11.4	467	1400	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	253	11.4	503	1700	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	254	11.4	440	1100	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	255	11.4	450	1200	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	10	256	11.4	443	1200	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	10	257	11.4	479	1400	Y	Male	Mature (spawner)	?		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	10	258	11.4	422	1100	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	10	639	7.6	470	1375	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	640	7.6	467	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	641	7.6	493	1775	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	642	7.6	418	1025	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	643	7.6	427	1150	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	644	7.6	449	1100	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	645	7.6	448	1300	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	646	7.6	490	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	647	7.6	456	1350	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	10	648	7.6	423	1000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	649	7.6	434	1125	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	650	7.6	442	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	10	651	7.6	459	1375	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	652	7.6	454	1200	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	653	6.4	435	1075	Y	Female	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	654	6.4	446	1200	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	10	655	6.4	440	1050	Y	Female	Mature (non-spawner, resting)	?		Dead	
Northern Pike	10	126	6.4	773	3725	Y	Female	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	10	40	3.8	207	73	Y	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	10	49	6.4	256	400	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	10	50	6.4	350	300	Y	Male	Mature (spawner)	?		Dead	
Round Whitefish	10	51	6.4	363	500	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	52	6.4	362	400	Y	Male	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	53	6.4	360	500	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	54	6.4	379	500	Y	Male	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	55	6.4	382	500	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	56	6.4	361	500	Y	Male	Mature (non-spawner, resting)	?		Dead	same sample # for 2 fish
Round Whitefish	10	56	6.4	360	400	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	57	6.4	363	475	Y	Male	Mature (non-spawner, resting)	?		Dead	same sample # for 2 fish
Round Whitefish	10	57	6.4	341	400	Y	Male	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	58	6.4	367	500	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	58	6.4	372	525	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	59	6.4	362	500	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	59	6.4	353	400	Y	Female	Mature (spawner)	?		Dead	same sample # for 2 fish
Round Whitefish	10	60	6.4	363	500	Y	Female	Mature (spawner)	?		Dead	
Round Whitefish	10	61	6.4	340	400	Y	Female	Mature (spawner)	?		Dead	
Arctic Grayling	11	1	6.4	312	300	Y	Female	Mature (spawner)	N		Dead	
Burbot	11		6.4	374	400	N	Unknown	NA	N		Good	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Burbot	11		3.8	235		N	Unknown	NA	N		Good	
Lake Trout	11	8	11.4	608	2200	Y	Female	Immature (virgin)	N	burbot	Dead	
Lake Trout	11	9	12.7	595	2600	Y	Female	Mature (spawner)	N		Dead	
Lake Trout	11	10	12.7	587	2100	Y	Male	Immature (virgin)	N	unidentifiable fish	Dead	
Lake Trout	11	11	7.6	476	1300	Y	Female	Immature (virgin)	N	slimy sculpin	Dead	
Lake Trout	11		3.8	330	350	N	Unknown	NA	N		Good	
Lake Trout	11		12.7	520	2000	N	Unknown	NA	N		Good	
Lake Trout	11		6.4	573	2400	N	Unknown	NA	N		Good	
Lake Whitefish	11	176	10.2	468	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	177	10.2	463	1600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	178	10.2	487	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	179	10.2	448	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	180	10.2	458	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	181	10.2	440	1100	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	182	10.2	444	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	183	10.2	437	1000	N	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	184	11.4	473	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	185	11.4	444	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	186	11.4	476	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	187	11.4	446	1100	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	188	11.4	485	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	189	11.4	466	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	190	11.4	473	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	191	11.4	470	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	192	11.4	473	1100	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	11	193	11.4	435	900	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	194	11.4	488	1400	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	195	11.4	463	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	196	11.4	510	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	197	11.4	432	1100	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	198	11.4	495	1500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	199	11.4	450	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	200	6.4	463	1000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	201	6.4	475	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	202	6.4	460	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	203	12.7	494	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	204	12.7	510	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	205	12.7	464	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	11	206	3.8	432	1000	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	11	207	3.8	405	800	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	11	208	8.9	434	1200	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	11	209	7.6	409	900	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	11	210	7.6	430	1000	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	11	211	7.6	445	1200	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	11	212	7.6	443	1100	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	11	213	7.6	433	1300	Y	Female	Mature (spawner)	N		Dead	1 otolith sampled
Northern Pike	11	41	10.2	960	6300	Y	Female	Mature (spawner)	N	empty	Dead	
Northern Pike	11	42	10.2	796	3500	Y	Female	Mature (spawner)	N	empty	Dead	
Northern Pike	11	43	10.2	813	4500	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	tapeworms
Northern Pike	11	44	8.9	805	4100	Y	Female	Mature (spawner)	N	empty	Dead	1 cleithra, tapeworms
Northern Pike	11	45	8.9	724	3000	Y	Female	Mature (spawner)	N		Dead	
Northern Pike	11	46	8.9	833	3700	Y	Female	Mature (spawner)	N	burbot	Dead	
Northern Pike	11	47	8.9	721	3100	Y	Female	Mature (spawner)	N		Dead	
Northern Pike	11	48	8.9	836	4600	Y	Female	Mature (spawner)	N	empty	Dead	
Northern Pike	11	49	7.6	832	4300	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	11	32	6.4	350	300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	33	6.4	314	200	Y	Female	Mature (non-spawner, resting)	N		Dead	1 otolith sampled
Round Whitefish	11	34	6.4	415	700	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	11	35	6.4	373	500	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	36	6.4	351	400	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	37	6.4	372	500	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	11	38	6.4	342	200	Y	Female	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	39	6.4	380	500	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	40	6.4	346	500	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	41	6.4	344	400	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	42	6.4	355	400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	43	6.4	355	400	Y	Female	Mature (spawner)	N		Dead	1 otolith sampled
Round Whitefish	11	44	6.4	352	300	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	11	45	3.8	232	108	Y	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	11	46	3.8	303	300	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	47	3.8	365	500	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	48	3.8	207	73	Y	Unknown	Immature (sex unknown)	N		Dead	
Lake Trout	12	66	3.8	190	100	Y	Male	Immature (virgin)	N	1 LWF	Dead	
Lake Trout	12	67	10.2	573	2275	Y	Male	Mature (spawner)	N	empty	Dead	
Lake Trout	12	68	11.4	663	2925	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Trout	12	69	11.4	588	825	Y	Male	Mature (spawner)	N	snails	Dead	
Lake Trout	12	70	12.7	610	2350	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Trout	12		7.6	655	3200	N	Unknown	NA	N		Good	
Lake Trout	12		12.7	555	2200	N	Unknown	NA	N		Good	
Lake Trout	12		11.4	610	2300	N	Unknown	NA	N		Good	
Lake Whitefish	12	574	3.8	469	1700	Y	Female	Mature (spawner)	?		Dead	
Lake Whitefish	12	575	8.9	453	1325	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Whitefish	12	576	8.9	443	1150	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	577	8.9	426	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	578	8.9	473	1375	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	579	8.9	447	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	580	8.9	446	1275	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	581	8.9	447	1275	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	582	10.2	454	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	583	10.2	469	1575	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	584	10.2	452	1375	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	585	10.2	453	1250	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	586	10.2	477	1500	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	587	10.2	469	1300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	588	10.2	463	1225	Y	Male	NA	Y		Good	
Lake Whitefish	12	589	10.2	471	1475	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	590	10.2	477	1325	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	591	10.2	482	1600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	592	10.2	463	1475	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	593	10.2	480	1525	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	594	10.2	468	1375	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	595	10.2	485	1450	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	596	10.2	444	1275	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	597	10.2	448	1250	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	598	7.6	464	1350	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	599	7.6	452	1150	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	600	7.6	447	1225	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	601	7.6	484	1475	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	602	7.6	446	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	603	11.4	458	1350	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	604	11.4	498	1650	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	605	11.4	478	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	606	11.4	493	1575	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	607	11.4	473	1475	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	608	11.4	464	1450	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	609	11.4	468	1600	Y	Female	Mature (spawner)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	12	610	11.4	498	1650	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	12	611	6.4	462	1400	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	12	612	12.7	491	1725	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	12	613	12.7	498	1700	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	12	614	12.7	490	1675	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	12	615	12.7	496	1675	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	12	616	12.7	516	1825	Y	Male	Mature (non-spawner, resting)	N		Dead	
Longnose Sucker	12		8.9	388	650		Unknown	NA	N		Good	
Round Whitefish	12		6.4	352	550		Unknown	NA			Good	
Round Whitefish	12		6.4	410	725		Unknown	NA			Good	
Round Whitefish	12		6.4	345	400		Unknown	NA			Good	
Round Whitefish	12		6.4	370	500		Unknown	NA			Good	
Round Whitefish	12		6.4	367	450		Unknown	NA			Good	
Round Whitefish	12		6.4	357	550		Unknown	NA			Good	
Round Whitefish	12		7.6	385	700		Unknown	NA			Good	
Round Whitefish	12		6.4	360	475		Unknown	NA			Good	
Round Whitefish	12		3.8	235	100		Unknown	NA			Good	
Round Whitefish	12		6.4	354	550		Unknown	NA			Good	
Lake Trout	13	71	12.7	444	1150	Y	Male	Immature (virgin)	N	LWF, sculpins	Dead	
Lake Trout	13	72	11.4	513	1550	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Trout	13	73	7.6	423	875	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Trout	13	74	8.9	502	1750	Y	Male	Mature (spawner)	N		Dead	
Lake Trout	13		6.4	500	1700	N	Unknown	NA	N		Good	
Lake Trout	13		11.4	562	2600	N	Unknown	NA	N		Good	
Lake Trout	13		8.9	565	2600	N	Unknown	NA	N		Good	
Lake Trout	13		6.4	576	2300	N	Unknown	NA	N		Good	
Lake Trout	13		7.6	413	1000	N	Unknown	NA	N		Good	
Lake Whitefish	13	617	6.4	470	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	618	12.7	473	1475	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	619	11.4	516	1950	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	620	11.4	489	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	621	11.4	482	1500	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	622	7.6	473	1950	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	623	7.6	480	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	624	10.2	467	1400	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	625	10.2	489	1650	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	626	10.2	463	1450	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	627	10.2	500	1725	Y	Male	Mature (non-spawner, resting)	N		Dead	

TABLE 3: AISIHIK LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	13	628	10.2	467	1350	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	629	10.2	457	1225	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	630	8.9	447	1325	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	631	8.9	454	1275	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	632	8.9	419	1000	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	633	8.9	462	1350	Y	Female	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	634	8.9	499	1800	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Whitefish	13	635	8.9	495	1700	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	636	8.9	463	1300	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	637	8.9	472	1375	Y	Female	Mature (spawner)	N		Dead	
Lake Whitefish	13	638	8.9	463	1375	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	13		6.4	352	600		Unknown	NA	N		Good	
Round Whitefish	13	53	3.8	230	125	Y	Unknown	Immature (sex unknown)	?		Dead	same sample # for 2 fish
Round Whitefish	13	54	3.8	230	100	Y	Unknown	Immature (sex unknown)	?		Dead	same sample # for 2 fish
Round Whitefish	13	55	3.8	270	100	Y	Unknown	Immature (sex unknown)	?		Dead	same sample # for 2 fish
Round Whitefish	13		6.4	337	475		Unknown	NA			Good	
Round Whitefish	13		6.4	371	600		Unknown	NA			Good	
Round Whitefish	13		8.9	355	550		Unknown	NA			Good	
Round Whitefish	13		8.9	357	475		Unknown	NA			Good	
Round Whitefish	13		6.4	370	600		Unknown	NA			Good	
Round Whitefish	13		8.9	363	550		Unknown	NA			Good	
Round Whitefish	13		6.4	336	400		Unknown	NA			Good	
Round Whitefish	13		6.4	342	500		Unknown	NA			Good	
Round Whitefish	13		6.4	337	400		Unknown	NA			Good	
Round Whitefish	13		6.4	382	575		Unknown	NA			Good	
Round Whitefish	13		6.4	355	525		Unknown	NA			Good	

3.3 Canyon Lake Fish Data

Table 4 details all data collected from all fish captured in Canyon Lake. Fish captured are listed numerically by gillnetting site and then by species in alphabetical order.

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	1	1	6.4	340	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	1	2	6.4	340	500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	1	4	6.4	315	400	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	1	6	8.9	440	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1	10	6.4	410	810	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	1	11	6.4	435	1150	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	1	12	6.4	385	700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1	13	6.4	355	625	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	1	14	6.4	365	600	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	1	15	6.4	360	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1	16	6.4	295	320	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	1	17	6.4	345	475	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	1	18	6.4	280	300	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	1	19	6.4	300	300	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	1	20	6.4	290	310	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	1	21	6.4	305	300	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	1	22	6.4	320	350	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	1	23	10.2	410	900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1	27	11.4	500	2000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1	28	11.4	450	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	1		6.4	355		N	Unknown	NA	Y		Good	
Longnose Sucker	1	5	6.4	425	775	Y	Male	NA	N		Dead	
Longnose Sucker	1	8	8.9	430	950	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	1	9	8.9	470	1400	Y	Male	Mature (spawner)	N		Dead	
Longnose Sucker	1	24	10.2	440	1000	Y	Male	Mature (spawner)	N		Dead	
Longnose Sucker	1		8.9	350		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	370		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	415		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	420		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	425		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	435		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	435		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	435		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	440		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	440		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	445		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	450		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	460		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	470		N	Unknown	NA	N		Good	
Longnose Sucker	1		8.9	470		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	405		N	Unknown	NA	N		Good	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	1		10.2	405		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	420		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	435		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	450		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	450		N	Unknown	NA	N		Good	
Longnose Sucker	1		10.2	475		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	385		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	430		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	440		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	440		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	440		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	445		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	450		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	455		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	455		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	455		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	455		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	460		N	Unknown	NA	N		Good	
Longnose Sucker	1		11.4	470		N	Unknown	NA	N		Good	
Northern Pike	1	7	8.9	720	3100	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	1	25	11.4	740	3150	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	1	26	12.7	780	3750	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	1		12.7	745		N	Unknown	NA	N		Good	
Round Whitefish	1	3	6.4	320	400	N	Female	Mature (spawner)	Y		Dead	
Round Whitefish	1		3.8	245		N	Unknown	NA	N		Good	
Lake Trout	2		6.4	570		N	Unknown	NA	N		Good	
Lake Whitefish	2	4	10.2	435	1000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	9	10.2	460	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	10	6.4	460	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	14	6.4	292	300	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	2	54	7.6	364	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	55	7.6	367	600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	2	56	7.6	347	500	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	2	57	11.4	453	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	2	58	12.7	545	2400	Y	Female	Mature (spawner)	Y		Dead	
Longnose Sucker	2	3	8.9	400	900	Y	Male	NA	N		Dead	
Longnose Sucker	2	6	10.2	415	1100	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	2	7	10.2	461	1300	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	2	19	6.4	305	300	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	20	6.4	313	400	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	21	6.4	283	300	Y	Unknown	Immature (sex unknown)	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	2	29	3.8	208	100	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	30	3.8	215	101	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	40	3.8	155	45	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	41	3.8	170	54	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	42	3.8	164	48	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	43	3.8	162	51	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	44	3.8	150	44	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	45	3.8	154	43	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	46	3.8	147	41	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	47	3.8	142	34	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	52	8.9	366	700	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	2	53	7.6	332	400	Y	Female	Mature (non-spawner, resting)	N		Dead	
Longnose Sucker	2	470	11.4			N	Unknown	NA	N		Good	
Longnose Sucker	2		6.4	340		N	Unknown	NA	N		Good	
Longnose Sucker	2		11.4	460		N	Unknown	NA	N		Good	
Longnose Sucker	2		6.4	480		N	Unknown	NA	N		Good	
Longnose Sucker	2		3.8	160		N	Unknown	NA	N		Good	
Longnose Sucker	2		3.8	195		N	Unknown	NA	N		Good	
Longnose Sucker	2		8.9	455		N	Unknown	NA	N		Good	
Longnose Sucker	2		3.8	225		N	Unknown	NA	N		Good	
Longnose Sucker	2		11.4	485		N	Unknown	NA	N		Good	
Longnose Sucker	2		7.6	415		N	Unknown	NA	N		Good	
Longnose Sucker	2		6.4	380		N	Unknown	NA	N		Good	
Longnose Sucker	2		6.4	290		N	Unknown	NA	N		Good	
Longnose Sucker	2		3.8	280		N	Unknown	NA	N		Good	
Longnose Sucker	2		10.2	430		N	Unknown	NA	N		Good	
Longnose Sucker	2		8.9	475		N	Unknown	NA	N		Good	
Longnose Sucker	2		6.4	420		N	Unknown	NA	N		Good	
Longnose Sucker	2		3.8	390		N	Unknown	NA	N		Good	
Longnose Sucker	2		8.9	480		N	Unknown	NA	N		Good	
Longnose Sucker	2		10.2	440		N	Unknown	NA	N		Good	
Longnose Sucker	2		8.9	440		N	Unknown	NA	N		Good	
Longnose Sucker	2		10.2	375		N	Unknown	NA	N		Good	
Northern Pike	2	1	7.6	675	2500	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2	5	10.2	712	2900	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2	8	10.2	753	3400	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	2	48	8.9	554	5000	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2	49	8.9	664	7000	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2	50	8.9	645	2400	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2	51	8.9	550	1300	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	2		7.6	770		N	Unknown	NA	N		Good	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	2		3.8	245		N	Unknown	NA	N		Good	
Round Whitefish	2	11	6.4	330	400	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	2	12	6.4	355	500	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	2	13	6.4	310	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	15	6.4	330	400	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	16	6.4	310	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	17	6.4	315	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	18	6.4	304	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	22	3.8	265	200	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	23	3.8	184	75	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	24	3.8	290	200	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	2	25	3.8	264	200	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	2	26	3.8	236	120	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	27	3.8	231	120	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	2	28	3.8	250	143	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	31	3.8	205	76	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	32	3.8	175	62	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	33	3.8	230	111	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	34	3.8	186	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	35	3.8	179	64	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	36	3.8	125	82	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	37	3.8	181	62	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	38	3.8	180	58	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	2	39	3.8	162	45	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Trout	3		8.9	695		N	Unknown	NA	N		Good	
Lake Trout	3		8.9	745		N	Unknown	NA	N		Good	
Lake Whitefish	3	3	6.4	472	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	4	6.4	469	1525	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	3	5	6.4	426	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	3	6	6.4	441	1225	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	12	10.2	466	1550	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	3	13	10.2	461	1450	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	14	10.2	433	1275	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	15	10.2	419	1050	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	3	18	11.4	537	2625	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	19	11.4	498	1800	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	20	11.4	446	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	3	21	11.4	467	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	3	22	11.4	434	1050	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Longnose Sucker	3	1	6.4	435	975	Y	Male	Mature (non-spawner, resting)	N		Dead	
Longnose Sucker	3	8	6.4	265	300	Y	Male	Immature (virgin)	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	3	9	3.8	303	325	Y	Male	Immature (virgin)	N		Dead	
Longnose Sucker	3	10	3.8	281	275	Y	Male	Immature (virgin)	N		Dead	
Longnose Sucker	3	11	10.2	398	850	Y	Male	Spent	N		Dead	
Longnose Sucker	3		6.4	465		N	Unknown	NA	N		Good	
Longnose Sucker	3		6.4	465		N	Unknown	NA	N		Good	
Longnose Sucker	3		6.4	468		N	Unknown	NA	N		Good	
Round Whitefish	3	2	6.4	295	275	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	3	7	6.4	304	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	3	16	3.8	238	125	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	3	17	3.8	238	125	Y	Male	Immature (virgin)	Y		Dead	
Lake Trout	4	26	11.4	581	3300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	2	8.9	400	800	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	4	4	8.9	390	800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	11	7.6	365	600	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	4	12	7.6	412	1000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	4	13	7.6	334	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	4	14	10.2	446	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	19	6.4	434	1100	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	20	6.4	410	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	21	6.4	353	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	22	6.4	350	500	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	4	24	6.4	417	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	4	25	11.4	470	1600	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Longnose Sucker	4	9	8.9	454	1000	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	4	17	10.2	490	1500	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	4	18	10.2	449	1000	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	4		3.8	267		N	Unknown	NA	N		Good	
Longnose Sucker	4		3.8	467		N	Male	NA	N		Good	
Longnose Sucker	4		12.7	467		N	Unknown	NA	N		Good	
Longnose Sucker	4		7.6	450		N	Unknown	NA	N		Good	
Northern Pike	4	1	8.9	758	3400	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	4	3	8.9	775	3500	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	4	5	8.9	774	3400	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	4	6	8.9	772	3700	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	4	7	8.9	825	4200	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	4	8	8.9	555	1400	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Northern Pike	4	10	12.7	735	3300	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	4	15	10.2	754	3300	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	4	16	10.2	850	4500	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	4		8.9	810		N	Unknown	NA	N		Good	
Northern Pike	4		10.2	870		N	Unknown	NA	N		Good	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	4	23	6.4	315	400	Y	Female	Mature (spawner)	?		Dead	
Round Whitefish	4	27	3.8	204	77	Y	Unknown	Immature (sex unknown)	?		Dead	
Round Whitefish	4	28	3.8	210	93	Y	Unknown	Immature (sex unknown)	?		Dead	
Round Whitefish	4	29	3.8	196	66	Y	Unknown	Immature (sex unknown)	?		Dead	
Round Whitefish	4	30	3.8	198	76	Y	Unknown	Immature (sex unknown)	?		Dead	
Round Whitefish	4	31	3.8	197	67	Y	Unknown	Immature (sex unknown)	?		Dead	
Lake Trout	5	9	8.9	587	2300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Trout	5	19	11.4	495	1300	Y	Female	Immature (virgin)	N	empty	Dead	
Lake Trout	5		6.4	520	1800	N	Unknown	NA	N		Good	
Lake Trout	5		12.7	560	2500	N	Unknown	NA	N		Good	
Lake Trout	5		3.8	681	3300	N	Unknown	NA	N		Good	
Lake Trout	5		10.2	563	2200	N	Unknown	NA	N		Good	
Lake Trout	5		10.2	715	4600	N	Unknown	NA	N		Good	
Lake Whitefish	5	1	7.6	420	1000	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	2	7.6	495	1800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	3	7.6	443	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	6	8.9	435	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	7	8.9	387	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	8	8.9	368	600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	10	6.4	457	1200	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	11	6.4	348	400	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	5	12	6.4	359	400	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	5	13	6.4	364	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	5	14	6.4	334	400	Y	Female	Immature (virgin)	N	empty	Dead	
Lake Whitefish	5	15	6.4	347	400	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	5	16	6.4	362	500	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	5	17	6.4	330	300	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	5	18	11.4	450	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	20	11.4	445	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	21	11.4	413	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	22	11.4	490	1500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	23	11.4	472	1400	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	5	24	11.4	425	1000	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	27	10.2	455	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	5	28	10.2	435	1000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	5	30	3.8	348	400	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	5	33	3.8	193	78	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	5	34	3.8	178	54	Y	Unknown	Immature (sex unknown)	N	empty	Dead	
Lake Whitefish	5	39	3.8	185	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	5	40	3.8	170	49	Y	Male	Immature (virgin)	Y		Dead	
Longnose Sucker	5	4	8.9	436	800	Y	Male	Spent	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	5	5	8.9	505	1300	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	5	25	11.4	474	1300	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	5		6.4	440	1100	N	Unknown	NA	N		Good	
Longnose Sucker	5		11.4	478	1500	N	Unknown	NA	N		Good	
Longnose Sucker	5		8.9	415	1000	N	Unknown	NA	N		Good	
Longnose Sucker	5		10.2	482	1400	N	Unknown	NA	N		Good	
Northern Pike	5	26	11.4	915	4500	Y	Female	Mature (spawner)	N	empty	Dead	
Round Whitefish	5	29	3.8	318	300	Y	Female	Mature (spawner)	N	empty	Dead	
Round Whitefish	5	31	3.8	254	100	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	5	32	3.8	203	68	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	5	35	3.8	204	72	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	5	36	3.8	229	94	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	5	37	3.8	200	74	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	5	38	3.8	196	69	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	6	2	6.4	324	300	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	6	3	6.4	332	400	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	4	6.4	323	300	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	5	6.4	343	500	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	6	6.4	350	500	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	6	7	6.4	414	1000	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	8	6.4	334	400	Y	Female	Immature (virgin)	N	empty	Dead	
Lake Whitefish	6	9	6.4	415	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	10	6.4	435	1200	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	11	6.4	475	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	6	13	12.7	502	1700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	14	10.2	435	1000	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	21	8.9	412	800	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	6	22	8.9	395	700	Y	Male	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	6	23	8.9	389	600	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	6	29	7.6	368	600	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	6	30	7.6	435	1100	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	6	31	7.6	375	500	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	6	32	7.6	387	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	33	7.6	474	1500	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	6	34	7.6	583	3300	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	6	36	3.8	190	70	Y	Unknown	Immature (sex unknown)	N	empty	Dead	
Lake Whitefish	6	55	3.8	190	73	Y	Unknown	Immature (virgin)	Y		Dead	
Lake Whitefish	6	56	3.8	174	57	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	6	57	3.8	185	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Longnose Sucker	6	16	10.2	418	800	Y	Male	Mature (spawner)	N		Dead	
Longnose Sucker	6	17	10.2	473	1000	Y	Female	Mature (non-spawner, resting)	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	6	18	10.2	434	1000	Y	Female	Mature (spawner)	N		Dead	
Longnose Sucker	6	19	10.2	427	900	Y	Male	Mature (spawner)	N		Dead	
Longnose Sucker	6	20	10.2	453	1000	Y	Female	Mature (non-spawner, resting)	N		Dead	
Longnose Sucker	6	28	7.6	354	700	Y	Female	Mature (non-spawner, resting)	N		Dead	
Longnose Sucker	6	37	3.8	160	48	Y	Unknown	Immature (sex unknown)	N		Dead	
Northern Pike	6	15	10.2	780	3700	Y	Female	Mature (spawner)	N	empty	Dead	
Northern Pike	6	24	8.9	836	4300	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	6	25	8.9	762	3200	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	tapeworms
Northern Pike	6	26	8.9	802	4200	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Northern Pike	6	27	8.9	935	6200	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Round Whitefish	6	1	6.4	294	300	Y	Female	Mature (spawner)	N	empty	Dead	
Round Whitefish	6	12	6.4	330	400	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	6	35	3.8	179	62	Y	Unknown	Immature (sex unknown)	N	empty	Dead	
Round Whitefish	6	38	3.8	234	129	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	6	39	3.8	250	154	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	6	40	3.8	235	120	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	6	41	3.8	250	200	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	6	42	3.8	223	160	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	43	3.8	240	130	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	6	44	3.8	223	113	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	6	45	3.8	212	87	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	46	3.8	224	110	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	6	47	3.8	197	68	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	48	3.8	259	177	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	6	49	3.8	200	70	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	50	3.8	207	75	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	51	3.8	207	76	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6	52	3.8	191	69	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	6	53	3.8	202	70	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	6	54	3.8	195	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	6		3.8	192	65	N	Unknown	Immature (sex unknown)	N		Dead	
Burbot	7		3.8	200	100	N	Unknown	NA	N		Good	
Lake Trout	7	26	11.4	495	1700	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	7	27	7.6	515	1800	Y	Female	Spent	Y		Dead	
Lake Trout	7	45	10.2	572	2523	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	7	46	8.9	600	3550	Y	Male	Mature (non-spawner, resting)	N		Dead	
Lake Trout	7		11.4	748		N	Unknown	NA	N		Good	
Lake Trout	7		3.8	620	3300	N	Unknown	NA	N		Good	
Lake Trout	7		8.9	642	3700	N	Unknown	NA	N		Good	
Lake Trout	7		3.8	542	1700	N	Unknown	NA	N		Good	
Lake Trout	7		3.8	503	1725	N	Unknown	NA	N		Good	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Trout	7		6.4	760		N	Unknown	NA	N		Good	
Lake Trout	7		6.4	588	2600	N	Unknown	NA	N		Good	
Lake Whitefish	7	1	3.8	240	200	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	16	6.4	360	525	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	17	6.4	372	600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	18	6.4	375	575	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	19	6.4	365	650	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	20	6.4	330	425	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	25	6.4	318	325	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	28	7.6	382	725	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	7	29	7.6	390	825	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	30	7.6	370	650	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	31	7.6	350	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	7	32	7.6	346	500	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	33	7.6	344	500	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	34	7.6	390	725	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	35	7.6	360	550	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	36	7.6	352	550	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	37	7.6	371	650	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	38	7.6	347	525	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	39	7.6	410	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	40	7.6	362	525	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	41	7.6	370	550	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	42	10.2	448	1325	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	43	10.2	395	850	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	44	10.2	415	950	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	47	8.9	398	700	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	48	8.9	372	700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	49	8.9	403	875	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	7	50	8.9	358	575	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	7	51	8.9	378	600	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	52	8.9	368	625	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	7	53	8.9	368	625	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	7	54	8.9	415	900	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Longnose Sucker	7	15	3.8	135	35	Y	Unknown	NA	N		Dead	
Longnose Sucker	7		3.8	153	100	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	155	100	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	175	175	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	162	125	N	Unknown	NA	N		Good	
Longnose Sucker	7		7.6	410	900	N	Unknown	NA	N		Good	
Longnose Sucker	7					N	Unknown	NA	N		Good	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	7		3.8	160	125	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	145	100	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	330	500	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	137	100	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	150	125	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	175	100	N	Unknown	NA	N		Good	
Longnose Sucker	7		3.8	185	175	N	Unknown	NA	N		Good	
Round Whitefish	7	2	3.8	265	182	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	7	3	3.8	270	188	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	7	4	3.8	258	157	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	7	5	3.8	245	147	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	7	6	3.8	230	105	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	7	7	3.8	230	101	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	7	8	3.8	198	66	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	7	9	3.8	215	91	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	7	10	3.8	205	77	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	7	11	3.8	193	66	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	7	12	3.8	185	63	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	7	13	3.8	200	68	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	7	14	3.8	194	68	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	7	21	6.4	328	425	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	7	22	6.4	347	450	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	7	23	6.4	300	300	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	7	24	6.4	290	225	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	7		6.4	290	300	N	Unknown	NA	N		Good	
Round Whitefish	7		6.4			N	Unknown	NA	N		Good	
Round Whitefish	7		3.8	224	200	N	Unknown	NA	N		Good	
Round Whitefish	7		3.8	200	200	N	Unknown	NA	N		Good	
Burbot	8	27	3.8	333	193	Y	Male	Immature (virgin)	Y		Dead	
Burbot	8		6.4	330	200	N	Unknown	NA	N		Good	
Lake Whitefish	8	1	10.2	494		Y	Male	Ripe	Y		Dead	
Lake Whitefish	8	2	10.2	427	1075	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	3	10.2	448	1225	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	4	10.2	473		Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	6	7.6	403	900	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	7	7.6	436	1275	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	8	7.6	378	650	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	9	7.6	400	750	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	10	7.6	470	1600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	11	8.9	470	1500	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	8	13	6.4	373	600	Y	Female	Mature (non-spawner, resting)	Y		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	8	14	6.4	382	650	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	17	6.4	400	850	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	18	6.4	480	1650	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	19	11.4	460	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	8	20	11.4	512	1750	Y	Male	Immature (virgin)	Y		Dead	
Longnose Sucker	8		3.8	275	275	N	Unknown	NA	N		Good	
Longnose Sucker	8		6.4	510		N	Unknown	NA	N		Good	
Longnose Sucker	8		10.2	470	1300	N	Unknown	NA	N		Good	
Longnose Sucker	8		7.6	455	1300	N	Unknown	NA	N		Good	
Longnose Sucker	8		3.8	155	75	N	Unknown	NA	N		Good	
Longnose Sucker	8		6.4	415	900	N	Unknown	NA	N		Good	
Longnose Sucker	8		3.8	165	150	N	Unknown	NA	N		Good	
Longnose Sucker	8		7.6	377	775	N	Unknown	NA	N		Good	
Longnose Sucker	8		6.4	293	350	N	Unknown	NA	N		Good	
Longnose Sucker	8		3.8	170	150	N	Unknown	NA	N		Good	
Northern Pike	8	5	10.2	825	4375	Y	Male	Spent	N	empty	Dead	
Round Whitefish	8	12	6.4	325	400	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	8	15	6.4	295	300	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	8	16	6.4	300	275	Y	Female	Mature (spawner)	Y		Dead	
Round Whitefish	8	21	3.8	270	200	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	8	22	3.8	260	171	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	8	23	3.8	227	105	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	8	24	3.8	224	105	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	8	25	3.8	224	105	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	8	26	3.8	200	72	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	8		3.8	210	150	N	Unknown	NA	N		Good	
Round Whitefish	8		3.8	210	200	N	Unknown	NA	N		Good	
Round Whitefish	8		3.8	200	175	N	Male	NA	N		Good	
Lake Trout	9	1	11.4	699	4400	Y	Male	Mature (spawner)	Y	1 RWF	Dead	
Lake Trout	9	16	10.2	593	2100	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Lake Trout	9		10.2	455	1100	N	Unknown	NA	N		Good	
Lake Whitefish	9	2	8.9	382	700	Y	Male	Immature (virgin)	N	empty	Dead	
Lake Whitefish	9	3	8.9	423	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	4	8.9	380	800	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	9	5	8.9	418	900	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	6	8.9	397	700	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	7	8.9	424	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	8	11.4	445	1400	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	9	7.6	402	800	Y	Female	Immature (virgin)	N	empty	Dead	
Lake Whitefish	9	10	7.6	367	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	11	10.2	414	1000	Y	Female	Mature (spawner)	Y		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	9	12	10.2	416	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	13	10.2	407	900	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	14	10.2	417	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	15	10.2	420	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	9	17	6.4	354	500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	18	6.4	323	400	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	9	19	6.4	324	400	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	9	20	6.4	298	300	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	9	23	6.4	349	500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	25	6.4	343	400	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	9	26	6.4	398	800	Y	Female	Mature (spawner)	Y		Dead	
Longnose Sucker	9	27	3.8	276	300	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	9	28	3.8	195	76	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	9	29	3.8	154	44	Y	Unknown	Immature (sex unknown)	N		Dead	
Longnose Sucker	9		6.4	250	200	N	Unknown	NA	N		Good	
Round Whitefish	9	21	6.4	295	300	Y	Male	Mature (spawner)	N	empty	Dead	
Round Whitefish	9	24	6.4	277	200	Y	Male	Mature (spawner)	N	empty	Dead	
Round Whitefish	9	30	3.8	198	68	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	9	31	3.8	265	169	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	9	32	3.8	240	124	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Round Whitefish	9	33	3.8	236	115	Y	Male	Immature (virgin)	Y		Dead	
Round Whitefish	9	34	3.8	197	66	Y	Unknown	Immature (sex unknown)	Y		Dead	
Round Whitefish	9	35	3.8	202	69	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	9	36	3.8	193	61	Y	Female	Immature (virgin)	Y		Dead	
Round Whitefish	9	37	3.8	257	152	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	9	38	3.8	201	71	Y	Male	Mature (spawner)	Y		Dead	
Round Whitefish	9	39	3.8	217	95	Y	Female	Immature (virgin)	Y		Dead	
Burbot	10	8	12.7	736	2500	Y	Male	Mature (non-spawner, resting)	?		Dead	
Lake Trout	10	9	12.7	593	2500	Y	Male	Mature (spawner)	N	insetcs	Dead	
Lake Trout	10	10	12.7	808	8100	Y	Male	Mature (spawner)	N	empty	Dead	
Lake Trout	10	31	10.2	548	2300	Y	Male	Mature (spawner)	?		Dead	
Lake Trout	10		3.8	714	5900	N	Unknown	NA	N		Good	
Lake Trout	10		3.8	550	1900	N	Unknown	NA	N		Good	
Lake Whitefish	10	1	7.6	466	1400	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	10	2	7.6	333	500	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	3	7.6	375	700	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	10	4	7.6	368	600	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	5	7.6	350	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	6	7.6	375	700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	7	7.6	366	700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	11	8.9	439	1040	Y	Female	Mature (spawner)	Y		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	10	12	8.9	445	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	13	8.9	444	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	14	8.9	371	700	Y	Female	Mature (non-spawner, resting)	N	empty	Dead	
Lake Whitefish	10	15	8.9	363	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	16	8.9	380	800	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	18	6.4	362	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	19	6.4	356	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	10	20	6.4	353	500	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	10	21	6.4	373	800	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	22	6.4	371	600	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	10	23	6.4	370	700	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	24	6.4	305	300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	25	6.4	394	800	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	10	26	6.4	304	300	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	32	10.2	449	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	10	33	10.2	441	1300	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	10	34	10.2	450	1300	Y	Female	Mature (spawner)	N	empty	Dead	
Lake Whitefish	10	35	11.4	465	1600	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	36	3.8	400	1000	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	37	3.8	372	700	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	10	38	3.8	356	600	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	10	39	3.8	193	77	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	10	40	3.8	186	62	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	10	41	3.8	173	55	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	10	42	3.8	194	75	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	10	43	3.8	167	51	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	10	44	3.8	183	66	Y	Unknown	Immature (sex unknown)	Y		Dead	
Longnose Sucker	10	30	6.4	270	300	Y	Unknown	NA	N		Dead	
Longnose Sucker	10		7.6	404	900	N	Unknown	NA	N		Good	
Longnose Sucker	10		7.6	394	800	N	Unknown	NA	N		Good	
Longnose Sucker	10		8.9	464	1200	N	Unknown	NA	N		Good	
Longnose Sucker	10		10.2	489	1300	N	Unknown	NA	N		Good	
Longnose Sucker	10		7.6	390	800	N	Unknown	NA	N		Good	
Northern Pike	10	17	8.9	619	2100	Y	Male	Mature (spawner)	N	identifiable f	Dead	
Round Whitefish	10	27	6.4	324	400	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	10	28	6.4	250	200	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	10	29	6.4	301	400	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	10	45	3.8	274	188	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	10	46	3.8	269	200	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	10	47	3.8	225	99	Y	Female	Immature (virgin)	N		Dead	
Round Whitefish	10	48	3.8	240	136	Y	Male	Mature (non-spawner, resting)	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	10	49	3.8	225	113	Y	Male	Immature (virgin)	N		Dead	
Round Whitefish	10	50	3.8	243	140	Y	Female	Mature (spawner)	N		Dead	
Round Whitefish	10	51	3.8	257	152	Y	Male	Mature (spawner)	N		Dead	
Round Whitefish	10	52	3.8	215	81	Y	Female	Immature (virgin)	N		Dead	
Round Whitefish	10	53	3.8	248	125	Y	Female	Immature (virgin)	N		Dead	
Round Whitefish	10	54	3.8	262	159	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	10	55	3.8	198	68	Y	Female	Immature (virgin)	N		Dead	
Round Whitefish	10	56	3.8	228	110	N	Unknown	NA	N		Dead	
Round Whitefish	10	57	3.8	205	82	Y	Male	Immature (virgin)	N		Dead	
Round Whitefish	10	58	3.8	196	60	Y	Female	Immature (virgin)	N		Dead	
Round Whitefish	10	59	3.8	198	70	Y	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	10	60	3.8	291	69	Y	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	10	61	3.8	219	97	Y	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	10	62	3.8	203	79	Y	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	10	63	3.8	199	70	Y	Unknown	NA	N		Dead	
Burbot	11		7.6	465	600	N	Unknown	NA	N		Good	
Burbot	11		8.9	495	800	N	Unknown	NA	N		Good	
Lake Trout	11	6	7.6	760	6500	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	11	13	11.4	565	2700	Y	Female	Mature (spawner)	Y		Dead	
Lake Trout	11		6.4	482	1400	N	Unknown	NA	N		Good	
Lake Trout	11		8.9	505	1600	N	Unknown	NA	N		Good	
Lake Trout	11		3.8	718		N	Unknown	NA	N		Good	
Lake Trout	11		10.2	487	1500	N	Unknown	NA	N		Good	
Lake Trout	11		8.9	705	6000	N	Unknown	NA	N		Good	
Lake Trout	11		7.6	643	3600	N	Unknown	NA	N		Good	
Lake Trout	11		11.4	495	1400	N	Unknown	NA	N		Good	
Lake Trout	11		6.4	692		N	Unknown	NA	N		Good	
Lake Trout	11		12.7	565	2400	N	Unknown	NA	N		Good	
Lake Whitefish	11	1	8.9	455	1450	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	2	8.9	462	1400	Y	Unknown	NA	Y		Dead	
Lake Whitefish	11	3	8.9	498	1625	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	7	7.6	412	975	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	8	7.6	405	800	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	9	7.6	368	625	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	10	7.6	335	475	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	11	7.6	342	475	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	12	11.4	427	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	14	6.4	372	400	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	15	6.4	355	495	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	16	6.4	343	425	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	11	17	6.4	363	500	Y	Female	Immature (virgin)	Y		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	11	18	6.4	370	625	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	19	6.4	315	450	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	20	6.4	315	325	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	21	6.4	353	550	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	22	6.4	345	475	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	11	23	6.4	370	600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	24	6.4	350	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	25	6.4	373	600	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	26	6.4	345	500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	27	6.4	365	600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	28	6.4	365	575	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	29	6.4	362	525	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	30	6.4	343	500	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	31	6.4	370	600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	32	6.4	353	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	33	6.4	353	575	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	11	34	6.4	257	225	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	35	3.8	358	825	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	36	3.8	363	625	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	11	37	3.8	350	550	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	11	38	3.8	323	350	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	11	39	3.8	190	79	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	40	3.8	185	70	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	41	3.8	182	75	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	42	3.8	192	80	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	43	3.8	187	72	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	44	3.8	200	91	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	45	3.8	185	64	Y	Male	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	46	3.8	192	77	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	47	3.8	185	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	48	3.8	180	64	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	11	49	3.8	170	60	Y	Unknown	Immature (sex unknown)	Y		Dead	
Longnose Sucker	11		6.4	465	1200	N	Unknown	NA	N		Good	
Northern Pike	11	4	8.9	790	4100	Y	Female	Mature (spawner)	Y		Dead	
Northern Pike	11	5	10.2	690	2775	Y	Male	Mature (spawner)	Y		Dead	
Northern Pike	11		8.9	742	3700	N	Unknown	NA	N		Good	
Round Whitefish	11	50	3.8	247	146	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	51	3.8	262	173	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	52	3.8	230	116	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	53	3.8	222	99	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	54	3.8	250	152	N	Unknown	NA	N		Dead	no aging structures

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	11	55	3.8	202	72	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	56	3.8	200	75	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	57	3.8	200	73	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	58	3.8	248	145	N	Unknown	NA	N		Dead	no aging structures
Round Whitefish	11	50-2	3.8	243	141	N	Female	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	51-2	3.8	194	67	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	11	52-2	3.8	197	65	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	11	53-2	3.8	244	137	N	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	54-2	3.8	221	92	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	11	55-2	3.8	220	103	N	Male	Mature (non-spawner, resting)	N		Dead	
Round Whitefish	11	56-2	3.8	199	68	N	Male	Immature (sex unknown)	N		Dead	
Round Whitefish	11	57-2	3.8	249	136	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	11	58-2	3.8	256	162	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	11		3.8	225	100	N	Unknown	NA	N		Good	
Round Whitefish	11		3.8	225	100	N	Unknown	NA	N		Good	
Burbot	12	34	7.6	443	575	Y	Male	Immature (virgin)	Y		Dead	
Burbot	12		6.4	384	400	N	Unknown	NA	N		Good	
Lake Trout	12	32	7.6	580	2600	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	12	33	10.2	363	575	Y	Female	Immature (virgin)	Y		Dead	
Lake Trout	12	35	8.9	617	2975	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Trout	12	36	8.9	512	1700	Y	Male	Mature (spawner)	Y		Dead	
Lake Trout	12	63	3.8	152	41	Y	Female	Immature (virgin)	Y		Dead	
Lake Trout	12		10.2	810		N	Unknown	NA	N		Good	
Lake Trout	12		10.2	520	2100	N	Unknown	NA	N		Good	
Lake Trout	12		3.8	680	4700	N	Unknown	NA	N		Good	
Lake Whitefish	12	55	3.8	175	54	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	50	3.8	178	61	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	60	3.8	178	56	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	53	3.8	180	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	51	3.8	182	63	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	52	3.8	182	63	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	54	3.8	182	65	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	56	3.8	185	67	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	49	3.8	187	65	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	47	3.8	188	69	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	62	3.8	188	73	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	46	3.8	190	69	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	57	3.8	190	71	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	61	3.8	192	71	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	58	3.8	212	92	Y	Unknown	Immature (sex unknown)	Y		Dead	
Lake Whitefish	12	48	3.8	217	116	Y	Male	Immature (virgin)	Y		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Lake Whitefish	12	59	3.8	242	149	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	6	6.4	320	375	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	8	6.4	325	375	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	12	7	6.4	335	450	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	24	10.2	337	450	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	4	6.4	347	500	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	5	6.4	347	500	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	19	7.6	347	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	28	10.2	347	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	43	8.9	348	525	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	3	3.8	349	525	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	23	10.2	351	525	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	12	29	10.2	352	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	45	8.9	353	650	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	11	7.6	355	525	Y	Male	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	27	10.2	357	550	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	15	7.6	358	525	Y	Female	Immature (virgin)	Y		Dead	
Lake Whitefish	12	22	10.2	359	525	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	20	7.6	360	475	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	37	8.9	362	650	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	16	7.6	367	575	Y	Male	Immature (virgin)	Y		Dead	
Lake Whitefish	12	26	10.2	368	675	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	39	8.9	368	600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	2	6.4	370	650	Y	Female	Mature (non-spawner, resting)	Y		Dead	
Lake Whitefish	12	44	8.9	373	700	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	17	7.6	374	600	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	21	10.2	380	625	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	25	10.2	390	750	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	38	8.9	390	775	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	13	7.6	392	725	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	12	7.6	393	825	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	30	10.2	398	875	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	1	6.4	400	825	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	40	8.9	402	875	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	42	8.9	414	775	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	18	7.6	419	1025	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	10	7.6	423	1025	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	41	8.9	425	1000	Y	Female	Mature (spawner)	Y		Dead	
Lake Whitefish	12	31	10.2	490	1600	Y	Male	Mature (spawner)	Y		Dead	
Lake Whitefish	12	14	3.8	385	775	Y	Male	Mature (spawner)	Y		Dead	
Longnose Sucker	12		3.8	145	60	N	Unknown	NA	N		Good	

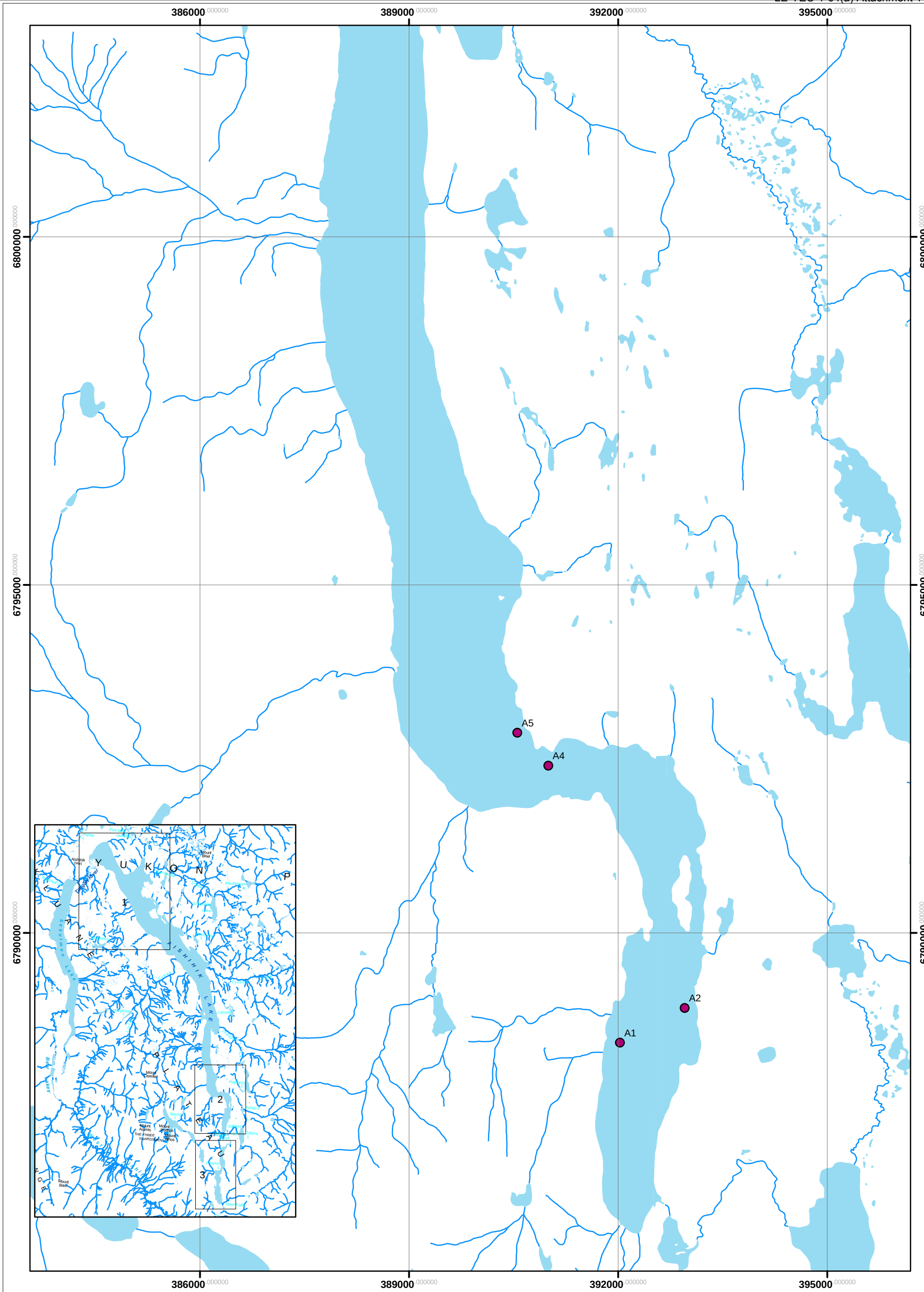
TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Longnose Sucker	12		3.8	225	125	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	155	62	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	152	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	147	40	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	167	57	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	174	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		6.4	255	250	N	Unknown	NA	N		Good	
Longnose Sucker	12		6.4	253	200	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	162	49	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	157	50	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	158	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		6.4	270	350	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	172	70	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	175	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	140	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		6.4	255	200	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	162	61	N	Male	NA	N		Good	
Longnose Sucker	12		6.4	290	350	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	153	60	N	Unknown	NA	N		Good	
Longnose Sucker	12		3.8	165	50	N	Unknown	NA	N		Good	
Round Whitefish	12	9	6.4	280	275	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	12			188	62	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	12			195	66	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	12			230	109	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	12			233	114	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	12			215	83	N	Female	Immature (virgin)	N		Dead	
Round Whitefish	12			250	142	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	12			250	159	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	12			235	117	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	12			210	82	N	Female	Mature (spawner)	N		Dead	
Round Whitefish	12	82	3.8	253	156	N	Male	NA	N		Dead	
Round Whitefish	12			218	96	N	Male	NA	N		Dead	
Round Whitefish	12			194	68	N	Male	Immature (virgin)	N		Dead	
Round Whitefish	12			251	154	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	12			260	170	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	12			255	158	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	12			225	101	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	12			257	172	N	Male	Mature (spawner)	N		Dead	
Round Whitefish	12	64	3.8	228	107	N	Unknown	NA	N		Dead	
Round Whitefish	12	65	3.8	254	161	N	Unknown	NA	N		Dead	
Round Whitefish	12	66	3.8	260	166	N	Unknown	NA	N		Dead	

TABLE 4: CANYON LAKE FISH DATA

Species	Site	Sample #	Mesh (cm)	Fork Length (mm)	Weight (g)	Aging Structure Collected (y/n)	Sex	Maturity	Stomach Collected (y/n)	Stomach Contents (field)	Release Condition	Comments
Round Whitefish	12	67	3.8	256	150	N	Unknown	NA	N		Dead	
Round Whitefish	12	68	3.8	200	75	N	Unknown	NA	N		Dead	
Round Whitefish	12	69	3.8	213	86	N	Unknown	NA	N		Dead	
Round Whitefish	12	70	3.8	232	109	N	Unknown	NA	N		Dead	
Round Whitefish	12	71	3.8	220	90	N	Unknown	NA	N		Dead	
Round Whitefish	12	72	3.8	255	167	N	Unknown	NA	N		Dead	
Round Whitefish	12	73	3.8	228	80	N	Unknown	NA	N		Dead	
Round Whitefish	12	74	3.8	263	175	N	Unknown	NA	N		Dead	
Round Whitefish	12	75	3.8	238	120	N	Unknown	NA	N		Dead	
Round Whitefish	12	76	3.8	200	73	N	Unknown	NA	N		Dead	
Round Whitefish	12	77	3.8	196	72	N	Unknown	NA	N		Dead	
Round Whitefish	12	78	3.8	267	200	N	Unknown	NA	N		Dead	
Round Whitefish	12	79	3.8	237	116	N	Unknown	NA	N		Dead	
Round Whitefish	12	80	3.8	265	150	N	Unknown	NA	N		Dead	
Round Whitefish	12	83	3.8	212	91	N	Unknown	NA	N		Dead	
Round Whitefish	12	84	3.8	205	82	N	Unknown	NA	N		Dead	
Round Whitefish	12	85	3.8	248	152	N	Unknown	NA	N		Dead	
Round Whitefish	12	86	3.8	263	200	N	Unknown	NA	N		Dead	
Round Whitefish	12	87	3.8	202	85	N	Unknown	NA	N		Dead	
Round Whitefish	12	88	3.8	270	200	N	Unknown	NA	N		Dead	
Round Whitefish	12	89	3.8	238	129	N	Unknown	NA	N		Dead	
Round Whitefish	12	90	3.8	227	105	N	Unknown	NA	N		Dead	
Round Whitefish	12			250	135	N	Unknown	NA	N		Dead	
Round Whitefish	12			252	141	N	Unknown	NA	N		Dead	
Round Whitefish	12			245	148	N	Unknown	NA	N		Dead	
Round Whitefish	12			262	171	N	Unknown	NA	N		Dead	
Round Whitefish	12			267	184	N	Unknown	NA	N		Dead	
Round Whitefish	12			203	72	N	Unknown	NA	N		Dead	
Round Whitefish	12			249	131	N	Unknown	NA	N		Dead	
Round Whitefish	12			196	75	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	12			230	105	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	12			193	65	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	12			207	76	N	Unknown	Immature (sex unknown)	N		Dead	
Round Whitefish	12	81	3.8	250	165	N	Unknown	NA	N		Good	
Round Whitefish	12		3.8	230	125	N	Unknown	NA	N		Good	
Round Whitefish	12		3.8	220	100	N	Unknown	NA	N		Good	
Round Whitefish	12		3.8	205	100	N	Unknown	NA	N		Good	
Round Whitefish	12		3.8	205	100	N	Unknown	NA	N		Good	
Round Whitefish	12		3.8	238	100	N	Unknown	NA	N		Good	

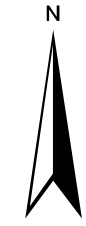
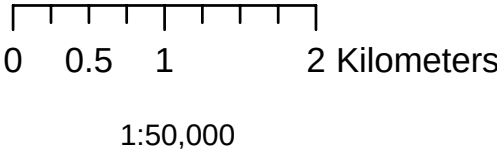
APPENDIX A: MAPS OF SAMPLE LOCATIONS

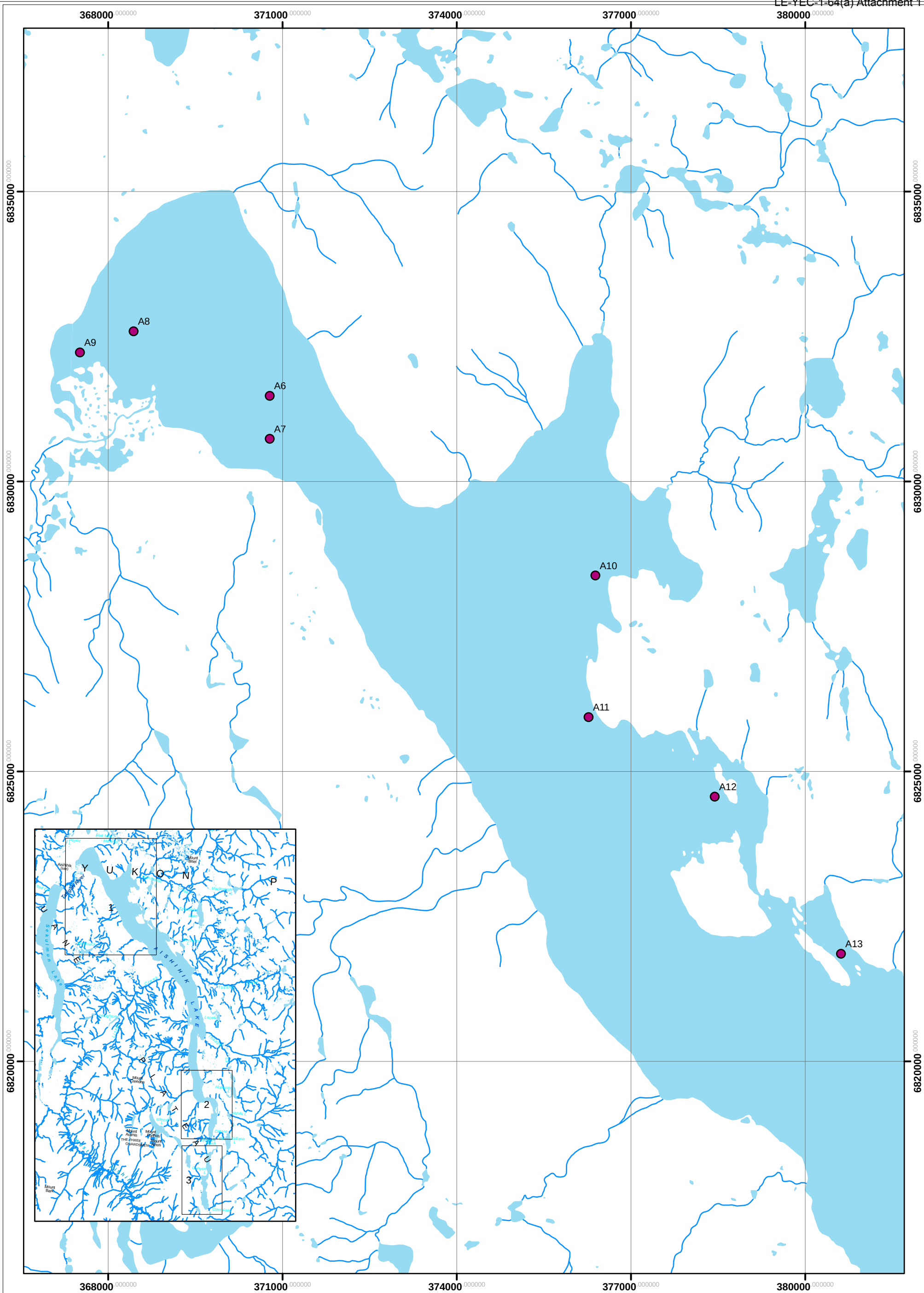


Drawn By:	S. Darling/I. Anderton
Checked By:	I. Anderton
Date:	August 23, 2007

Projection: Universal Transverse Mercator Zone 8N
False Easting: 500000.000000
False Northing: 0.000000
Central Meridian: -135.000000
Scale Factor: 0.999600
Datum: North American 1983

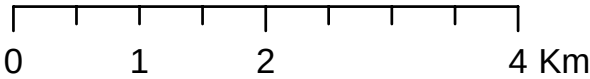
**Figure 1: Aishihik Lake
Gillnetting Locations (South)**





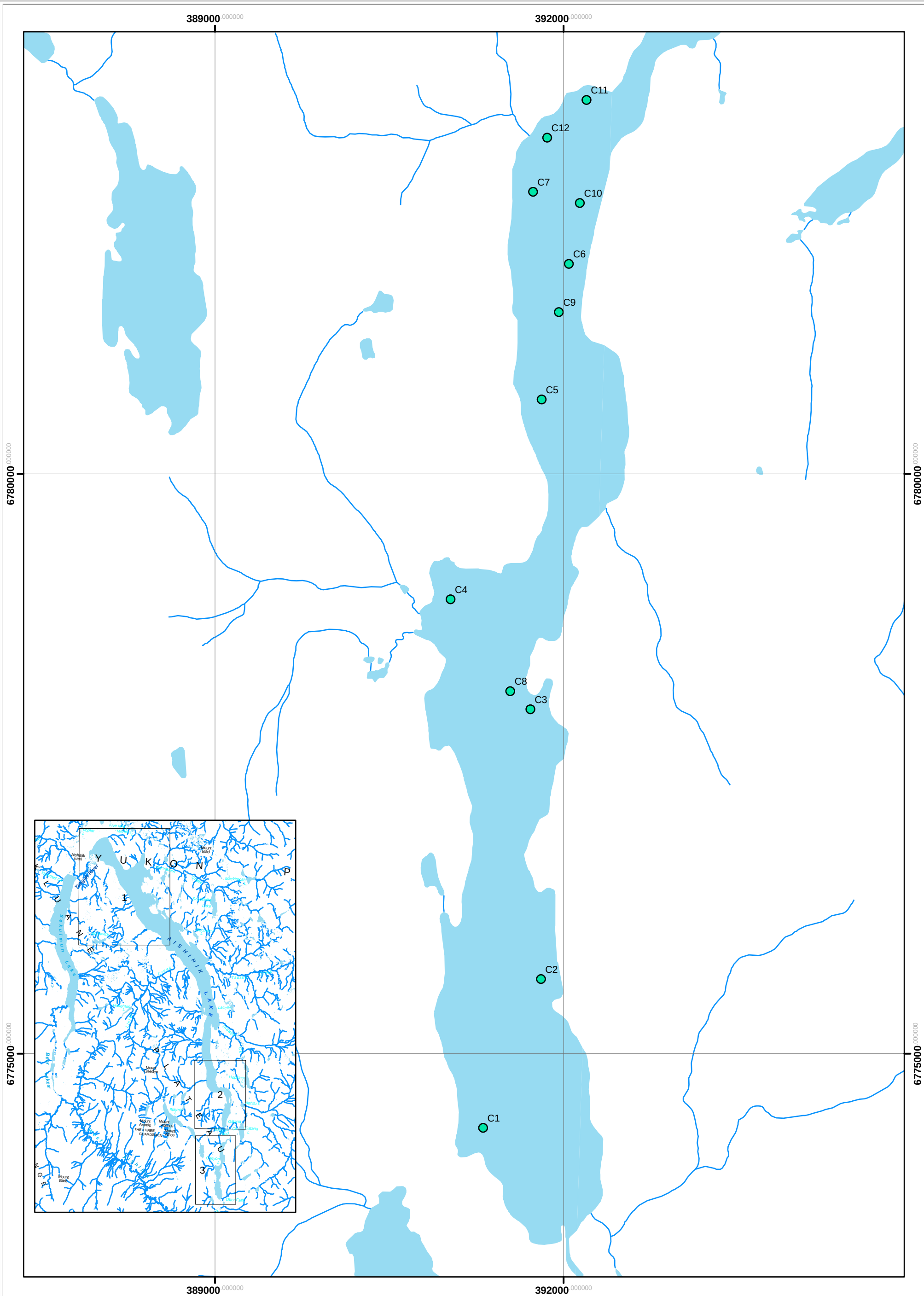
Drawn By:	S. Darling/I. Anderton
Checked By:	I. Anderton
Date:	August 23, 2007
Projection: Universal Transverse Mercator Zone 8N False Easting: 500000.000000 False Northing: 0.000000 Central Meridian: -135.000000 Scale Factor: 0.999600 Datum: North American 1983	

Figure 2: Aishihik Lake
Gillnetting Locations (North)



1:60,000

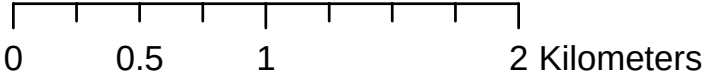




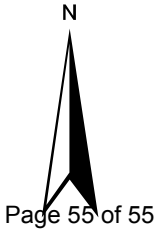
Drawn By:	S. Darling/I. Anderton
Checked By:	I. Anderton
Date:	August 23, 2007
Projection: Universal Transverse Mercator Zone 8N	
False Easting: 500000.000000	
False Northing: 0.000000	
Central Meridian: -135.000000	
Scale Factor: 0.999600	
Datum: North American 1983	

February 27, 2009

Figure 3: Canyon Lake
Gillnetting Locations



1:30,000





North/South Consultants Inc.

83 Scurfield Blvd.
Winnipeg, Manitoba R3Y 1G4
Tel: (204) 284-3366
Fax: (403) 410-5633
Email: kkroeker@nscons.ca
Web: www.nscons.ca

**Aishihik Lake Whitefish Population
Monitoring Program**

2007 Program: Data Analysis

Prepared for:

Yukon Energy Corporation

Prepared by:

North/South Consultants Inc.

May 2008

TABLE OF CONTENTS

	<u>Page</u>
<i>Table of Contents</i>	2
1.0 INTRODUCTION	4
2.0 ADULT LAKE WHITEFISH MONITORING PROGRAM BACKGROUND	5
2.1 Water Use Licence Requirements.....	5
2.2 Fisheries Act Authorization Requirements	6
3.0 ADULT LAKE WHITEFISH MONITORING PROGRAM RESULTS	7
3.1 Field Work	7
3.2 Data Analysis.....	7
3.2.1 Species Composition	7
3.2.2 Catch Per Unit Effort (CPUE).....	10
3.2.3 Length-Frequency Distribution	11
3.2.4 Age-Frequency Distribution.....	14
3.2.5 Determination of Relative Year-Class Strength for Aishihik Lake.....	19
4.0 ANNUAL BEACH SEINING SURVEYS	28
5.0 ANNUAL AQUATIC MACROPHYTE SURVEYS	30
6.0 REFERENCES	31

Notes on the Final Report

This report is an update of the draft report prepared for, and distributed to the Aishihik Monitoring Program Team (AMPT) in advance of the May 12, 2007, AMPT workshop held in Whitehorse. It includes a number of revisions that reflect the comments, requests and suggestions offered by the AMPT at that workshop. It therefore supersedes the draft report, which should be disregarded in all respects.

In addition to the revisions noted above, this final report also includes several corrections of data errors discovered upon review of the draft report. These included:

1. Section 3.2.1 Species Composition: The original figures comparing 1991 and 2007 relative species composition in Aishihik and Canyon lakes used composition data from de Graff (1993) that were erroneously assumed to represent composition by abundance. Upon review it was noted that the values provided in that report were actually expressed as biomass (i.e., relative composition by weight). The revised figures in this final report compare relative composition by numbers of fish caught, by species, for each lake and survey year.
2. Section 3.2.5 Determination of Relative Year-Class Strength for Aishihik Lake – Mortality Adjusted Age Distribution: Table 3 shows the matrix used to derive relative year-class strength based on mortality adjustment of the 2007 age distribution data. Upon review it was discovered that an incorrect formula had been entered into one of the spreadsheet columns used to populate the matrix. This error has been corrected in this final report. This correction also affected subsequent figures and tables that were based on the matrix-derived data (Figure 10; Tables 4 and 5), and these too have been corrected.

Although some numbers presented in the report have changed as a consequence of the corrections noted above, the changes were all relatively minor in nature and did not affect the results and discussions provided in the draft report.

1.0 INTRODUCTION

The Aishihik Relicensing Project Environmental Impact Assessment (YEC 1998) proposed and described a long-term monitoring program with the goals of protecting the lake whitefish (*Coregonus clupeaformis*) population in Aishihik Lake and ensuring that no significant adverse effects to the lake whitefish fishery result from the operation of the Aishihik Generating Station (the Project). The lake whitefish monitoring program has been designed to provide information that will aid in:

- ascertaining the actual (as opposed to predicted) impacts of the project;
- evaluating the need for mitigation to avoid or minimize potential future impacts; and
- evaluating the need for compensation of harvest losses.

Yukon Energy Corporation (YEC) received a Water Use Licence (HY99-011) for the Project in November of 2002, and in the same month it also received a *Fisheries Act* Authorization (#2002-1) under the provisions of Section 35(2) and Section 32 of the Act. In accordance with condition 1(c) of that Authorization, YEC struck an Aishihik Monitoring Program Team (AMPT) consisting of representatives from YEC, Fisheries and Oceans Canada (DFO), Champagne and Aishihik First Nations (CAFN) and the Yukon Territorial Government (YTG). The role of the AMPT was to cooperatively design a monitoring program agreeable to all its parties, then guide the program for the duration of the current licence. The AMPT met in Whitehorse on December 12-13, 2002, and developed the Aishihik Lake Aquatics Monitoring Program (the Program) that was finalized in January of 2003 and is currently in effect. Participants in the 2002 AMPT workshop included:

Ron Gee (YEC)
Hector Campbell (YEC)
Karl Kroeker (North/South Consultants Inc)
Don Toews (YTG)
Susan Thompson (YTG)
Lawrence Joe (CAFN)
Michael Jim (CAFN)
Harry Smith (CAFN)
Eric Val (DFO, Whitehorse)
Steve Gotch (DFO, Whitehorse)
Barbara Bowen (YEC, recorder)

The 2003 Program described a number of program elements to be conducted annually (e.g., Beach Seining, North End Aquatic Macrophyte Surveys and Subsistence Fishery Monitoring), trial surveys (e.g., Neuston Surveys) and Adult Lake Whitefish Monitoring. The Adult Lake Whitefish Monitoring Program (WMP) was required to be conducted in 2007 and 2017. The 2007 program was conducted in August, 2007 and is the primary focus of this data analysis report.

2.0 ADULT LAKE WHITEFISH MONITORING PROGRAM BACKGROUND

The WMP was developed in response to directives contained in the following authorizing documents:

- Water Use Licence HY99-011: Section 50; page 12
- Fisheries Act Authorization 2002-1: Condition 1 (a); page 2

2.1 WATER USE LICENCE REQUIREMENTS

Although the framework for the 2007 and 2017 WMP had been established and presented in the 2003 Program document, a considerable amount of detail was still to be worked out before this program could be successfully completed in the summer of 2007. To accomplish this, a workshop was convened in Whitehorse on May 10, 2007. At this workshop, details of the 2007 index gillnetting program were finalized according to the Water Use Licence requirements and the following principles:

- the program objective was to obtain age class strength information for adult lake whitefish in Aishihik Lake;
- the program was to be based on index gillnetting, conducted in 2007 and 2017;
- the methodology must be clear enough to all allow future replication; and
- the program must include a schedule for reporting data, conclusions and any proposed mitigation.

The May 10, 2007 workshop was attended by:

Ron Gee (YEC)
Karl Kroeker (North/South Consultants Inc)
Don Toews (YTG)
Susan Thompson (YTG)
Lorne La Rocque (YTG)
Lawrence Joe (CAFN)
Michael Jim (CAFN)
Paul Christensen (DFO)

In addition to the Aishihik Lake survey, workshop participants also decided to conduct index gillnetting on Canyon Lake, to determine the current status of fish populations in that lake. Canyon Lake had not been surveyed (i.e., index gillnetting) since the 1991 survey conducted by the Fish and Wildlife Branch of the Government of Yukon (de Graff 1993).

Other Program changes arising from the May 10 workshop included:

1. Set durations were reduced from 24 hr (i.e., as in 1991) to 12 hr, primarily to increase control over total number of fish captured and reduce lake trout mortalities;
2. The field crew supervisor was granted latitude to omit or move pre-determined fishing sites to reduce lake trout captures and mortalities; and
3. Three sites were added to the north end of Aishihik Lake to improve representation of that portion of the lake.

2.2 FISHERIES ACT AUTHORIZATION REQUIREMENTS

In addition to the Water Use Licence requirements, the *Fisheries Act* Authorization (the Authorization) stipulated that:

- monitoring of the adult lake whitefish population “at Aishihik Facility Watershed” was to use standard index gillnetting (sample size consistent with the 1991 monitoring).

3.0 ADULT LAKE WHITEFISH MONITORING PROGRAM RESULTS

3.1 FIELD WORK

The WMP index gillnetting programs on Aishihik and Canyon lakes were conducted during late July and early August, 2007, by EDI Environmental Dynamics Inc. (EDI). Results were presented in the *Data Report: 2007 Aishihik Lake Whitefish Gillnetting* (EDI 2007).

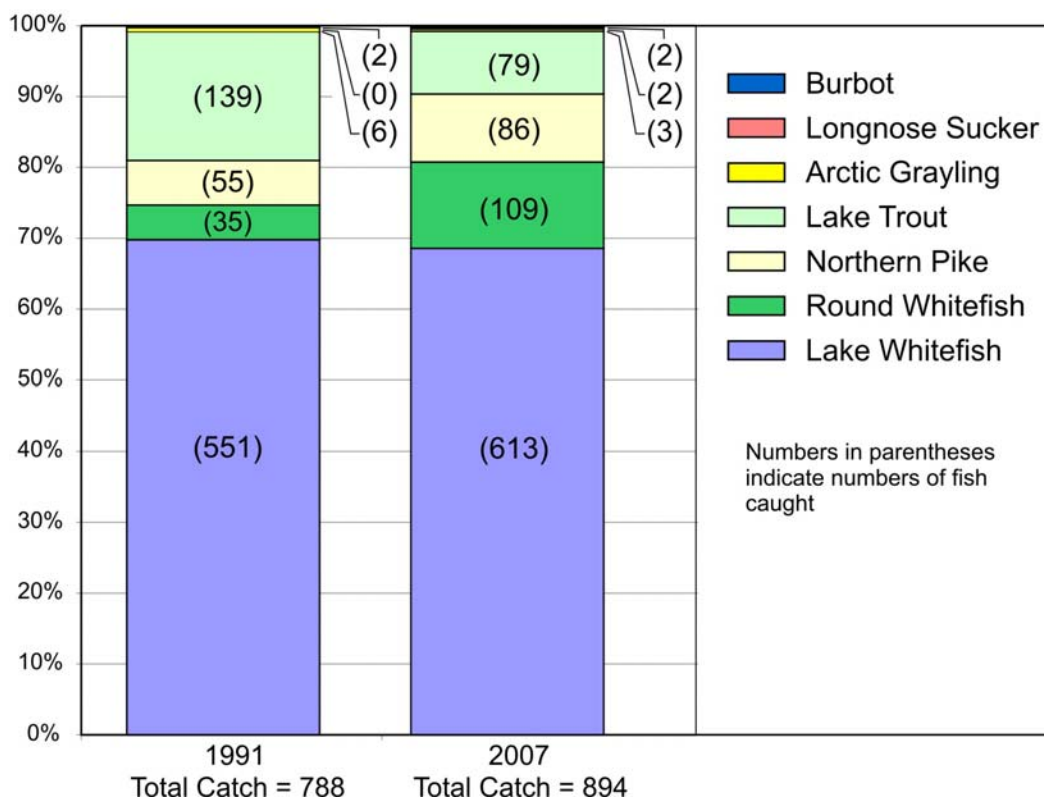
3.2 DATA ANALYSIS

3.2.1 Species Composition

Aishihik Lake

The relative species composition (%), or relative species abundance, for Aishihik Lake (1991 vs. 2007) is presented in Figure 1.

Figure 1 Aishihik Lake: Species Composition 1991 vs. 2007

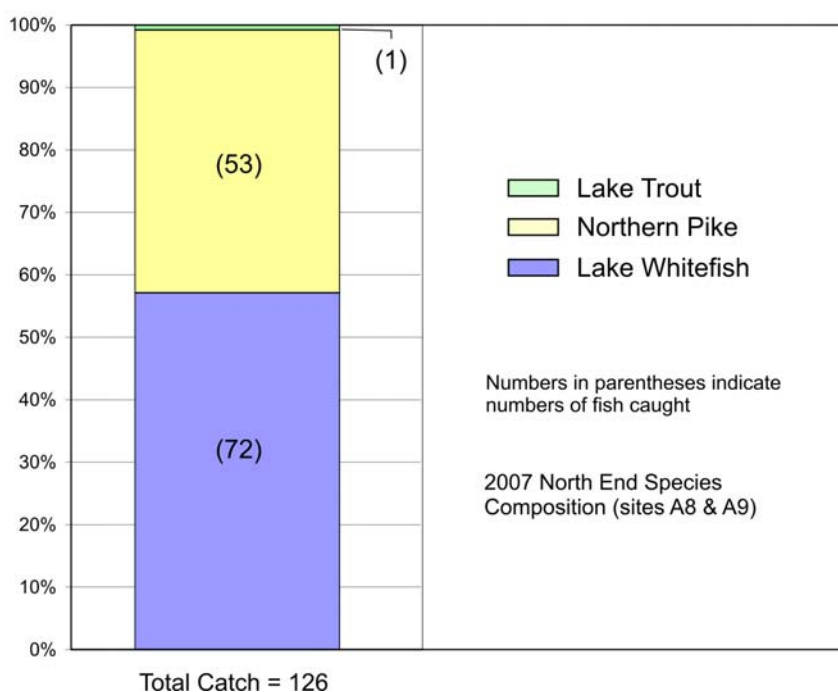


The figure shows several differences in the relative species composition between 1991 and 2007:

1. An increase in the relative abundance of round whitefish;
2. An increase in the relative abundance of northern pike; and
3. A reduction in the relative abundance of lake trout.

Although it is possible that the results reflect some differences in the actual species assemblages between the two years, it is likely that the differences are attributable largely to differences in sampling methodology. The focus on lake trout avoidance in 2007 likely reduced the number of lake trout captured, and may also have influenced the catch of other species that may be associated with lake trout. Switching from 24 hr sets to 12 hr night sets may have favoured the capture of species that are more active at night. Finally, addition of the three north end sites, particularly the near shore sites, probably increased the number of northern pike that were captured. CAFN fishermen have observed that pike numbers have increased in the north end of the lake since completion of the hydroelectric facilities, and this was recognized in the relicensing EIA (YEC 1998). To illustrate, the 2007 data for the two far north end sites are presented in Figure 2. Although the increased relative abundance of northern pike over time cannot be quantified, Figure 2 does show that northern pike are relatively more abundant in the north end (i.e., near Aishihik Village) compared to the lake as a whole.

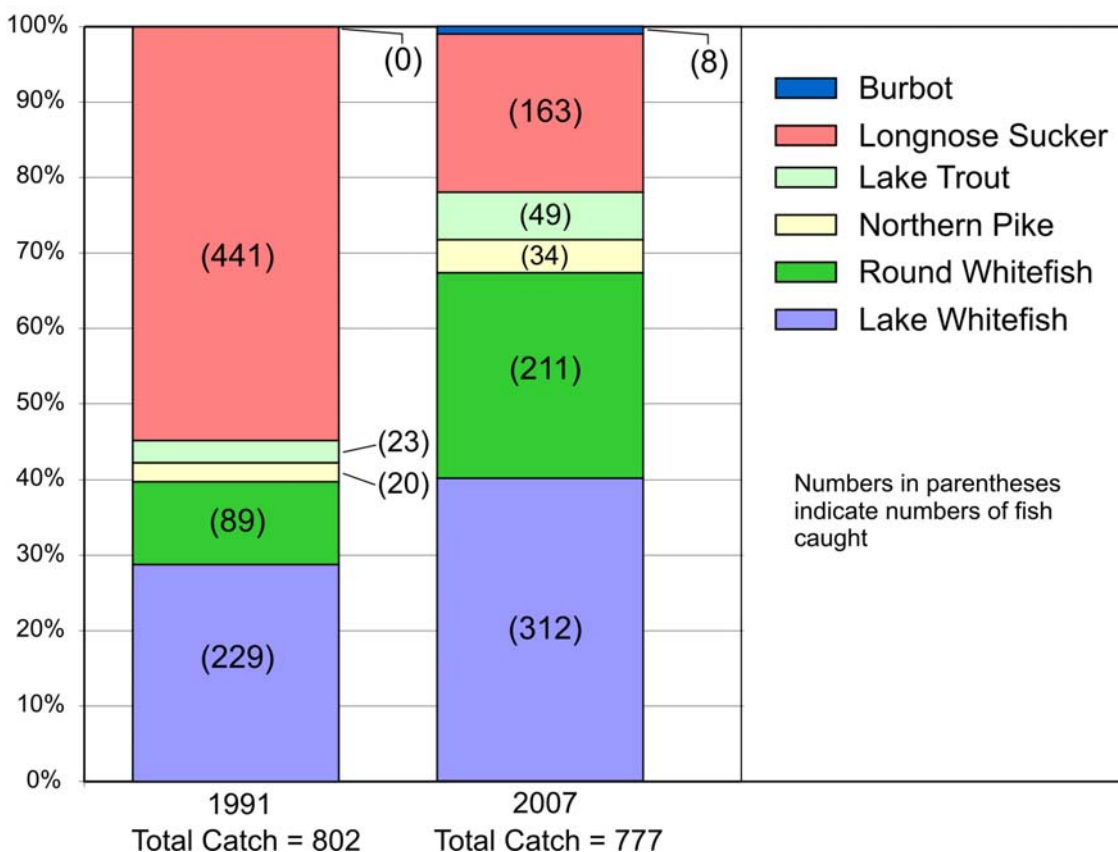
Figure 2 Relative Species Composition for North End Sites, 2007



Canyon Lake

The relative species composition (%) for Canyon Lake (1991 vs. 2007) is presented in Figure 3.

Figure 3 Canyon Lake: Species Composition 1991 vs. 2007



The data suggest that lake whitefish and round whitefish were relatively more abundant in 2007, while longnose sucker were substantially less abundant. Although it is likely that changed survey methodology accounts for some of these differences, it is difficult to conclude whether or not the data indicate that real changes have occurred in the species assemblage in Canyon Lake. Furthermore, since only two surveys have been conducted over a period 16 years, the role of natural variability is not understood.

3.2.2 Catch Per Unit Effort (CPUE)

Aishihik Lake

The CPUE for lake whitefish in Aishihik Lake (1991 vs. 2007) is presented in Table 1.

There has obviously been a substantial increase in CPUE, both by number and by weight, for lake whitefish in Aishihik Lake. Although much of this increase can likely be attributed to different methodology, primarily shorter net set durations, it seems reasonable to conclude that CPUE increased in 2007 compared to 1991. Table 1 also provides simplified CPUEs based on fish/set and kg/set only. This approach ignores the effect of altering the set durations, and therefore provides a very conservative estimate of increased fishing success in 2007 relative to 1991.

Table 1 Aishihik Lake: CPUE 1991 vs. 2007

	Aishihik Lake		
	1991 *	2007	Difference
No. of Sets	13	12	- 1
Mean duration	17.5	12.5	- 29%
Lake whitefish caught	551	613	+ 11%
fish/100m/24hr	38.75 ± 12.21	61.78 ± 33.90	+ 59%
kg/100m/24hr	45.74 ± 14.41	86.98 ± 50.81	+ 90%
fish/set	42.2	51.1	+ 21%
kg/set	50.0	71.9	+ 44%

* data from de Graff 1993

Canyon Lake

The CPUE for lake whitefish in Canyon Lake (1991 vs. 2007) is presented in Table 2. Similar comments can be made for Canyon Lake, as for Aishihik Lake (above).

Table 2 Canyon Lake: CPUE 1991 vs. 2007

	Canyon Lake		
	1991 *	2007	Difference
No. of Sets	8	12	+ 4
Mean duration	20.9	11.5	- 45%
Lake whitefish caught	230	312	+ 36%
fish/100m/24hr	20.75 ± 8.46	31.03 ± 16.89	+ 50%
kg/100m/24hr	13.46 ± 5.49	21.82 ± 6.18	+ 62%
fish/set	28.8	26.0	- 10%
kg/set	18.7	11.43	- 39%

* data from de Graff 1993

3.2.3 Length-Frequency Distribution

Aishihik Lake

The lake whitefish length-frequency distribution for Aishihik Lake (1991 vs. 2007) is presented in Figure 4. The length-frequency distributions were similar between years, the only real difference being that the 2007 fish were somewhat larger. The lack of smaller fish is a noteworthy feature for both years, suggesting that older juveniles (i.e., sub-adults that are vulnerable the mesh sizes used) were relatively scarce in Aishihik Lake in both years. This may be a feature of a stable population in both years, with respect to length distribution, for a relatively unexploited lake whitefish population at or near the carrying capacity for the lake.

Canyon Lake

The lake whitefish length-frequency distribution for Canyon Lake (1991 vs. 2007) is presented in Figure 5. There are some noteworthy differences between the two years that are difficult to explain (i.e., generally smaller fish and a more disbursed bimodal distribution), given the data that are available (i.e., only two surveys conducted 17 years apart).

**Figure 4 Aishihik Lake: Lake Whitefish Length Distribution
1991 vs. 2007**

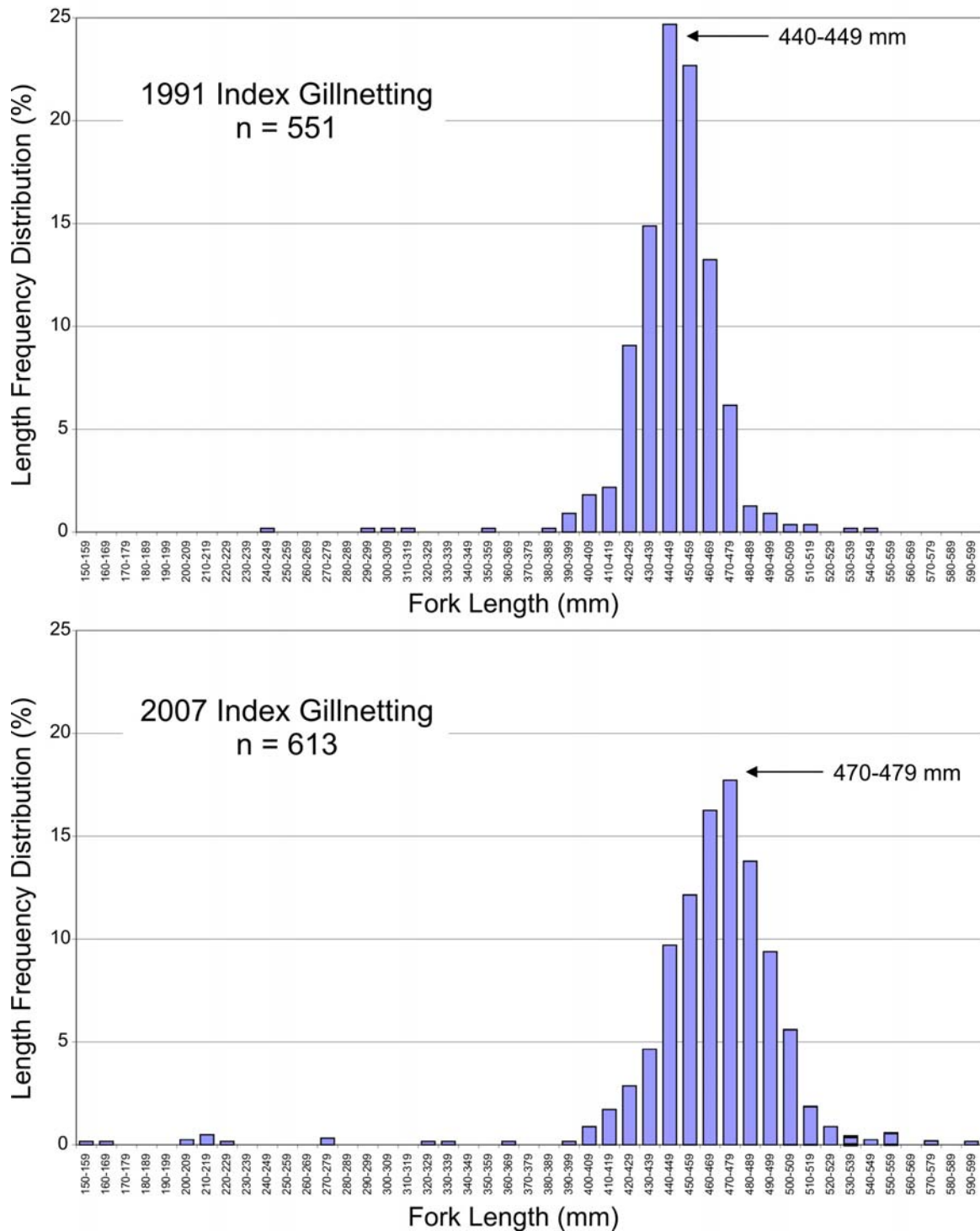
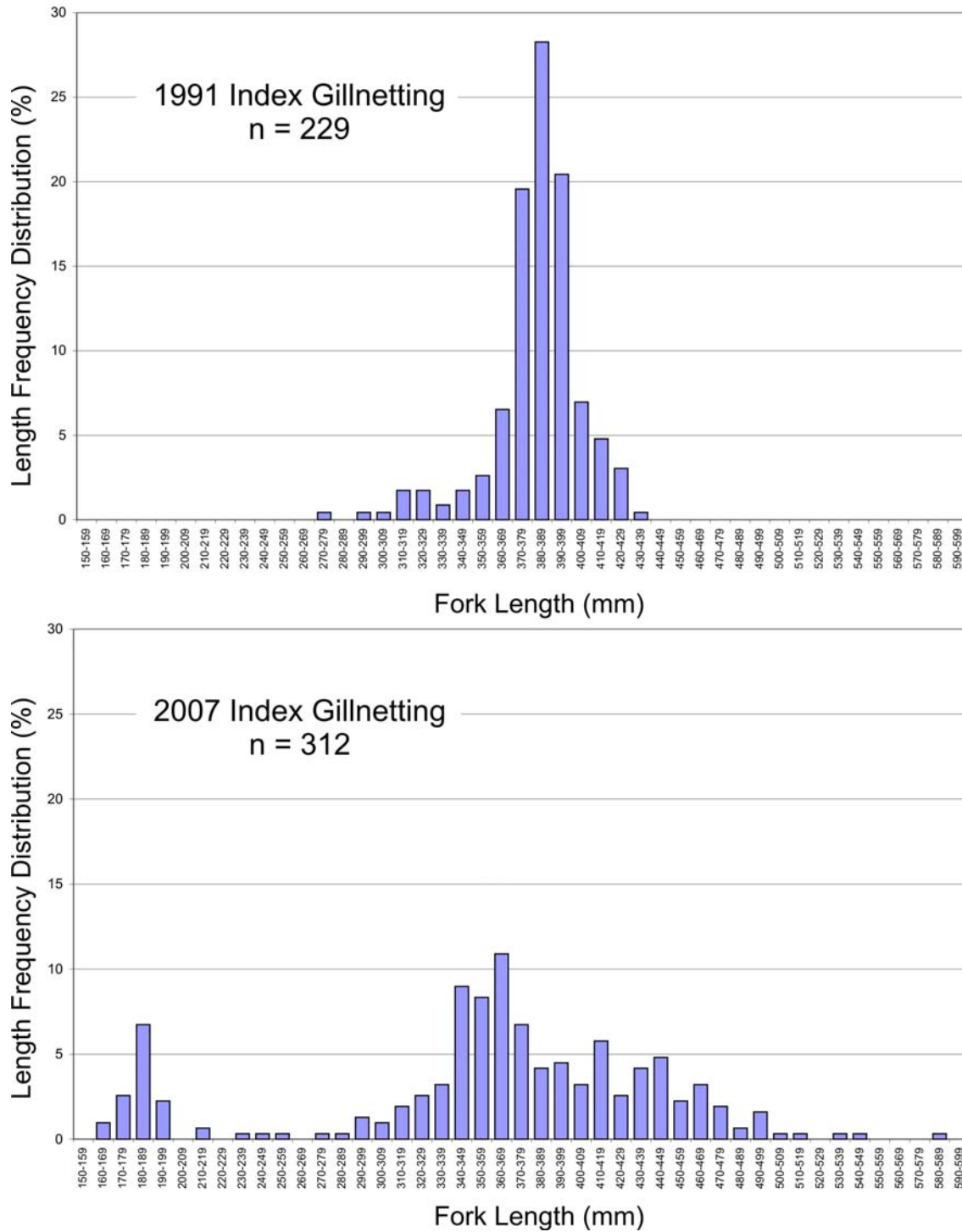


**Figure 5 Canyon Lake: Lake Whitefish Length Distribution
 1991 vs. 2007**



3.2.4 Age-Frequency Distribution

Aishihik Lake

A multi-year comparison of age distributions for lake whitefish is provided in Figure 6. Although the four surveys illustrated (1991, 1994, 1999 and 2007) were not carried out with consistent methodology, and can therefore not be compared directly, the figure provides a useful temporal perspective and illustrates that the age data available for 1991 and 2007 are probably reliable. Consistent tracking of strong year-classes, weak early 1980s year-classes and the overall progression of age modes suggest a high level of consistency in aging between years.

Figure 7 shows the age-frequency/year-class distributions for Aishihik Lake based on the 1991 and 2007 gillnetting data. The 1991 histogram shows two adult modes; a primary mode at ages 16 and 17, and a secondary mode at age 25. This bi-modality is somewhat unusual and is not reflected in the corresponding length-frequency distribution (Figure 4). It may represent a period of low recruitment around 1970 (i.e., pre-project), but this can not be verified. The smaller third juvenile mode at age seven is an artefact resulting from the weak or missing year-classes in the early 1980s, as reported by de Graff (1993) and YEC (1998). These weak or missing year-classes have since moved on, and are represented by the relatively weak right-hand limb of the 2007 histogram.

The 2007 histogram in Figure 7 also shows an adult mode at age 16. Overall, the irregular profile of the 2007 histogram, highlighted by exceptionally strong year-classes in 1991 (age 16) and 1998 (age 9), suggests a recruitment response to vacancies left by the poor recruitment of the early 1980s year-classes. Since the 2007 length-frequency distribution is normal in appearance, this suggests that juveniles and sub-adults grew relatively quickly to assume their positions in the adult population.

Figure 8 relates the 2007 lake whitefish age-class distribution to historical lake elevations for Aishihik Lake. As illustrated, there were some very strong year classes produced in years when lake elevations dropped below the natural (i.e., established pre-1975) minimum (914.1 m) but above current low supply elevation (913.0 m). Monitoring conducted since 1999 has shown that lake elevations below the natural minimum result in an expansion of littoral zone in the north end of the lake as evidenced by the expansion of aquatic plant communities. This expansion of the littoral zone likely equates to increased productivity, which would explain, at least in part, the occurrence of strong year-classes despite the low lake elevations. At some point below 913 m increased productivity is likely offset by loss of north end spawning habitat, resulting in weak or failed year-class as observed in the early 1980s.

Figure 6 Multi-year Comparison of Age-Frequency Distributions for Aishihik Lake based on previous Gillnetting Surveys

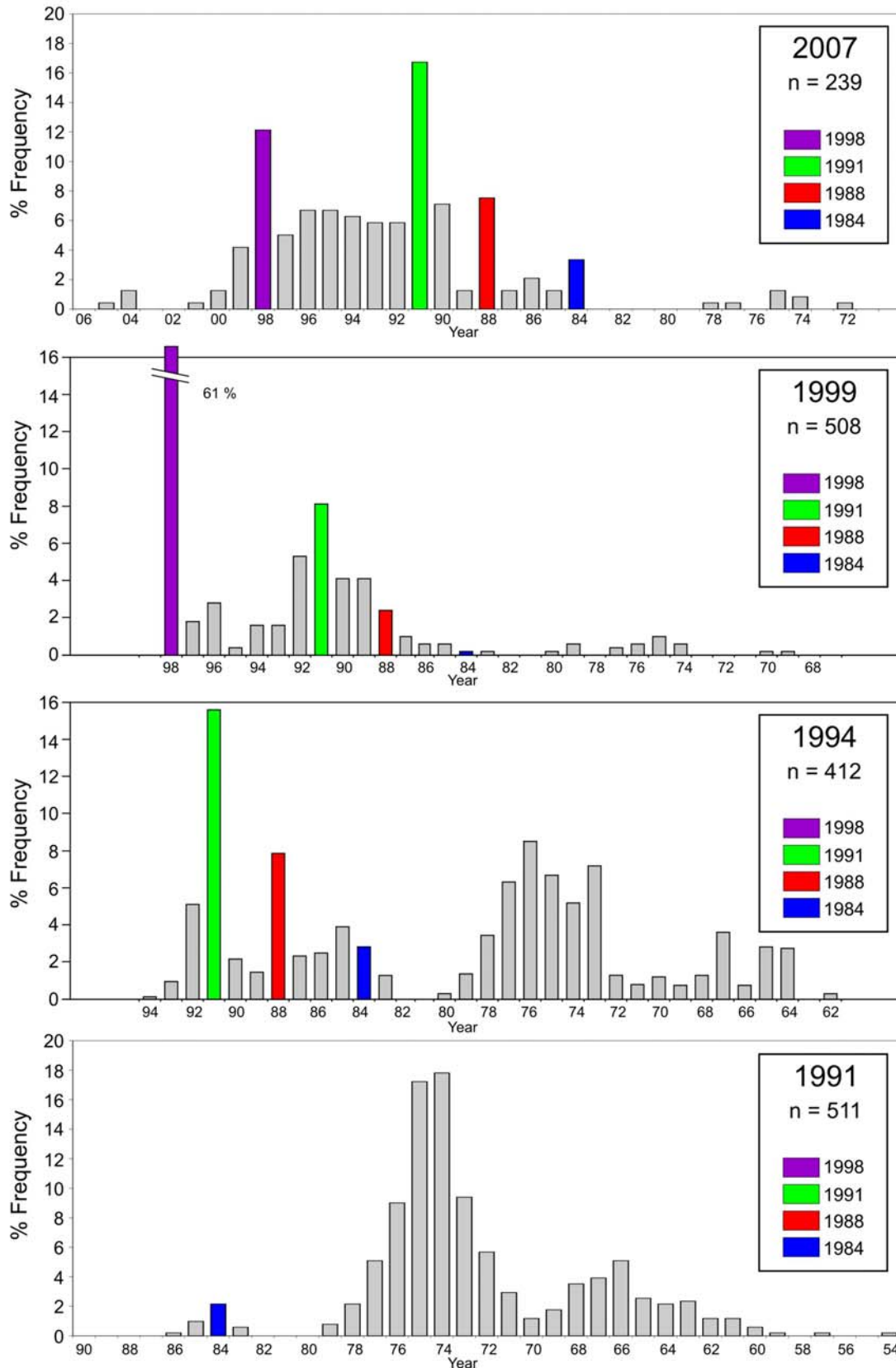


**Figure 7 Aishihik Lake: Lake Whitefish Age Distribution
 1991 vs. 2007**

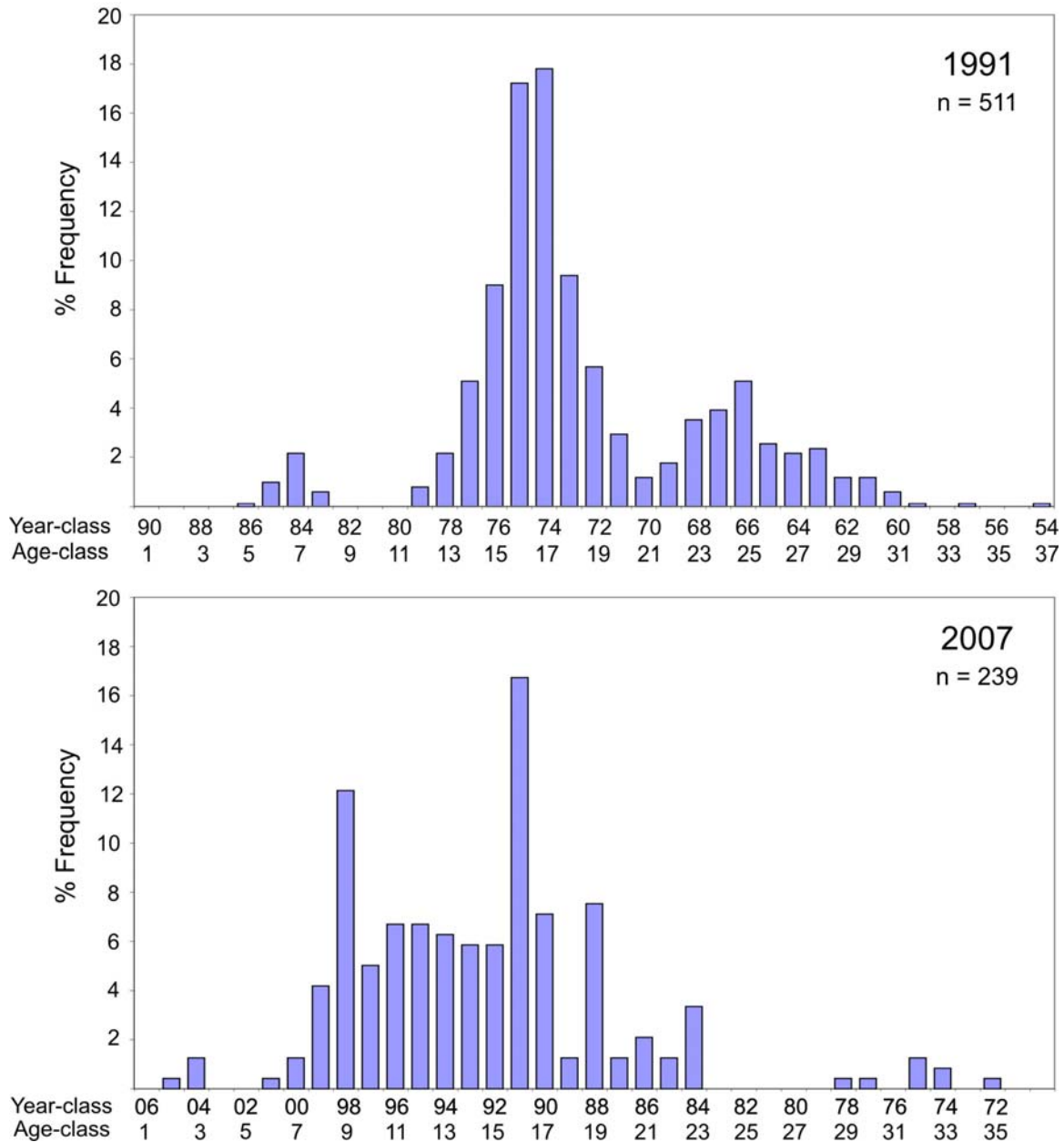
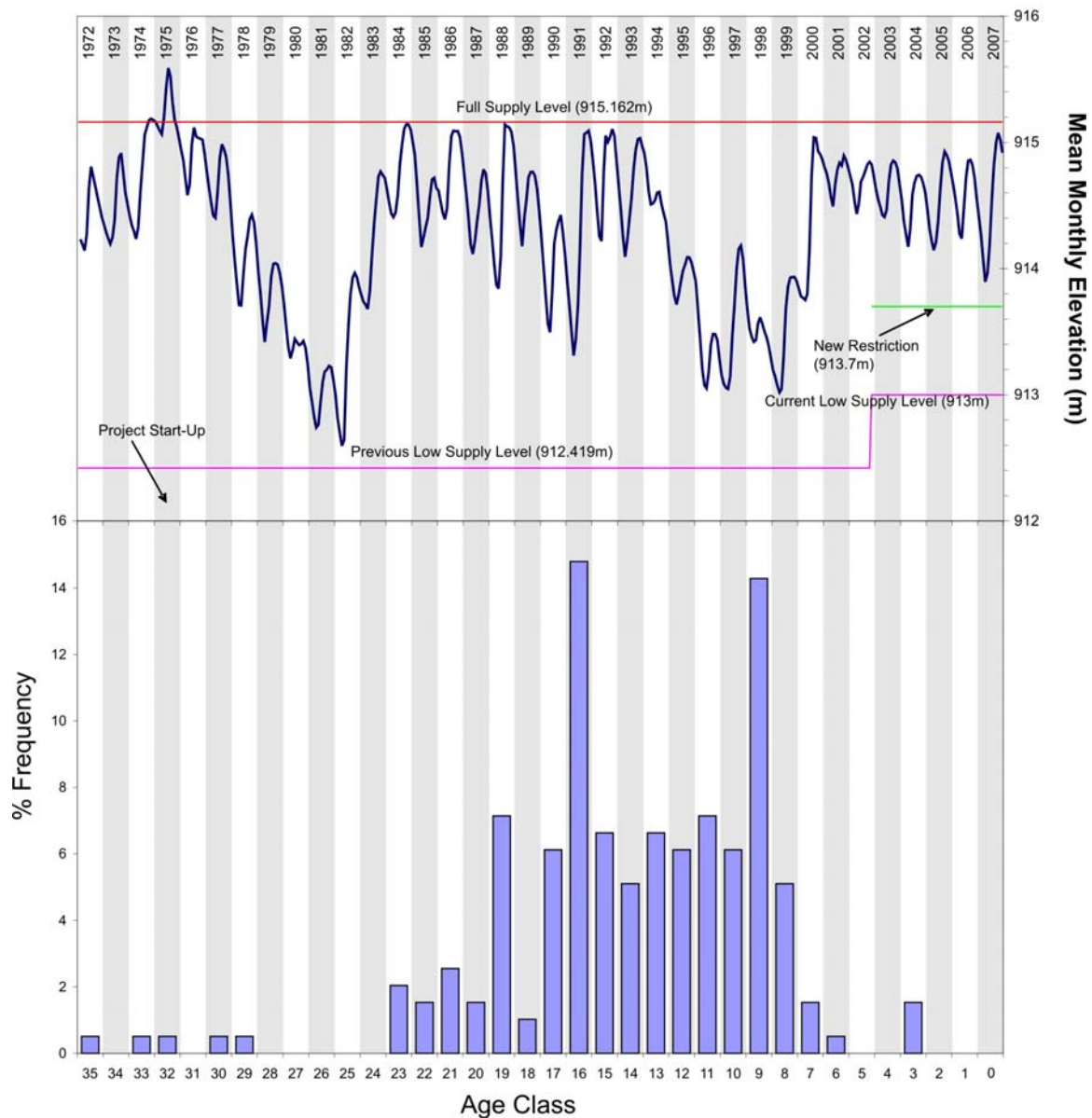


Figure 8 Aishihik Lake Mean Monthly Historical Elevations and Lake whitefish Age Distribution based on the 2007 Data

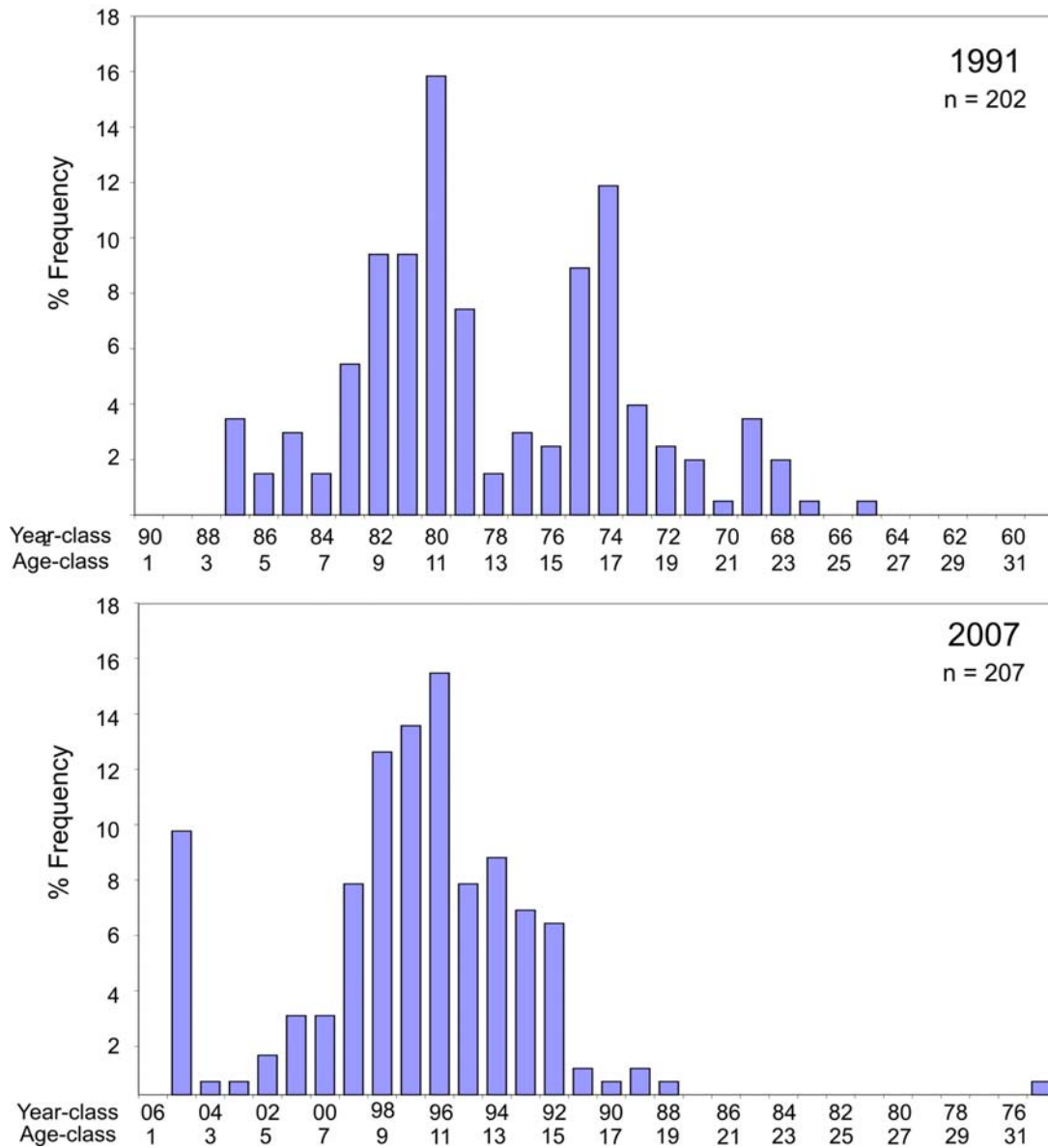


Canyon Lake

Figure 9 shows the age-frequency/year-class distributions for Canyon Lake based on the 1991 and 2007 gillnetting data. The 1991 histogram shows a primary age mode at age 11 (1980) and a secondary mode at age 17 (1974). The reason for this bi-modality can not be determined based on existing information, but suggest variable recruitment that may be either natural or related to human activity (i.e., related to the Project, fishing pressure or both).

The 2007 histogram shows a similar adult mode at age 11 (1996) but the previously strong 1980 year-class is no longer evident. The abundance of two year old fish in the 2007 catch suggests that this may develop as a strong year-class.

**Figure 9 Canyon Lake: Lake Whitefish Age Distribution
1991 vs. 2007**



3.2.5 Determination of Relative Year-Class Strength for Aishihik Lake

Mortality Adjusted Age Distribution

Paragraph 4(a) of the Authorization stipulates:

“In the event that the results from the 2007 adult lake whitefish monitoring program indicate adult recruitment for 1996 to 1999 year classes on average (i.e., the arithmetic mean) to be at or above normal year class strength (i.e., the average for year classes, mortality adjusted, when minimum daily spring elevations were 914.13 m ASL or higher) (“Normal Year Class Strength”) then, subject to paragraph 4(d), the conditions set out in paragraph 3 shall no longer apply and no minimum Ten-Year Rolling Average shall be required to be maintained;”

Paragraph 3 of the Authorization requires that a ten-year rolling average of minimum daily spring water elevations shall not be lower than 913.7 m (the current restriction elevation), and that the minimum daily spring elevation shall not be lower than 913.7 more than two years for the period 2003-2007 (Note: the second requirement was met). Paragraph 4(d) sets out several provisions that will remain in effect after 2007, regardless of the 2007 monitoring results and any subsequent modifications to YEC’s operational requirements. The implications of Paragraph 4(d) are discussed further in Section 4.0 of this report.

The process of mortality adjustment assumes that a fish population is subject to a constant rate of annul mortality, and that a population’s age distribution (e.g., as illustrated in Figure 7) can be standardized by adding the accumulated losses for each successive year beyond a selected starting point. In other words, the process results in an index of relative year-class strength.

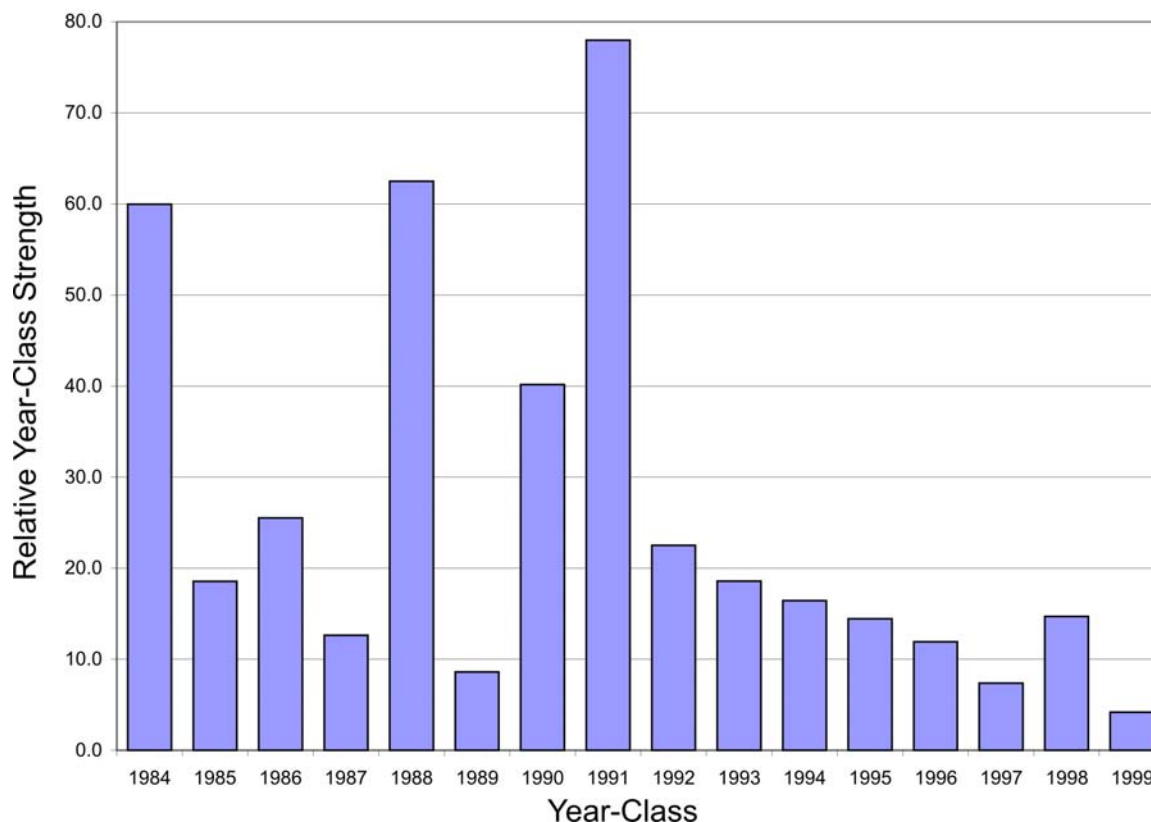
Since the age distribution data for Aishihik Lake whitefish are not reliable at the young end of the scale (i.e., young fish [< 9 or 10 years] are not fully recruited and are less vulnerable to the gill net mesh sizes used) and the older end (just not enough of them around any more), the mortality adjustment in Table 3 was based on ages 8-23 (1984 to 1999). Although it is unlikely that the age 8 and age 9 year-classes were fully recruited in 2007, the mortality adjustment included these years in compliance with the requirements of the Authorization. To complete the adjustment in Table 3, the Annual Mortality value calculated by de Graff (1993) for the 1991 survey was used (i.e., $A = 0.175$). The resulting distribution of Relative Year-Class Strength (RYCS) is illustrated in Figure 10.

Table 3 Derivation of Relative Year-Class Strength Based on Mortality Adjusted Age Distribution

Year	Unadjusted Values from Fig 7	Annual Mortality Adjustment (Annual Mortality [A] = 0.175 *)															Relative Year-Class Strength
1984	3.3	4.1	4.9	6.0	7.2	8.8	10.6	12.9	15.6	18.9	22.9	27.8	33.7	40.8	49.5	60.0	60.0
1985	1.3	1.5	1.8	2.2	2.7	3.3	4.0	4.8	5.8	7.1	8.6	10.4	12.6	15.3	18.6		18.6
1986	2.1	2.5	3.1	3.7	4.5	5.5	6.6	8.0	9.7	11.8	14.3	17.4	21.0	25.5			25.5
1987	1.3	1.5	1.8	2.2	2.7	3.3	4.0	4.8	5.8	7.1	8.6	10.4	12.6				12.6
1988	7.5	9.1	11.1	13.4	16.3	19.7	23.9	29.0	35.1	42.5	51.6	62.5					62.5
1989	1.3	1.5	1.8	2.2	2.7	3.3	4.0	4.8	5.8	7.1	8.6						8.6
1990	7.1	8.6	10.5	12.7	15.4	18.6	22.6	27.3	33.1	40.2							40.2
1991	16.7	20.3	24.6	29.8	36.1	43.8	53.1	64.3	78.0								78.0
1992	5.9	7.1	8.6	10.4	12.6	15.3	18.6	22.5									22.5
1993	5.9	7.1	8.6	10.4	12.6	15.3	18.6										18.6
1994	6.3	7.6	9.2	11.2	13.5	16.4											16.4
1995	6.7	8.1	9.8	11.9	14.5												14.5
1996	6.7	8.1	9.8	11.9													11.9
1997	5.0	6.1	7.4														7.4
1998	12.1	14.7															14.7
1999	4.2																4.2

* de Graff (1993)

Figure 10 Aishihik Lake 1984 - 1999 Lake Whitefish Mortality Adjusted Relative Year-Class Strength



The RYCS values in Table 3 were then tabulated and calculations performed to determine year-class performance relative to historical lake elevations. Table 4 presents this comparison as stipulated in the Authorization; i.e., the mean RYCS for the 1996-1999 period is compared to the mean for “normal” years; i.e., years with minimum late winter lake elevations above 914.1 m. The comparison indicates that the mean RYCS for 1996-1999 was below the mean RYCS for the normal years between 1984 and 1994.

**Table 4 Aishihik Lake 1984 - 1999 Lake Whitefish Mortality
Adjusted Relative Year-Class Strength, Comparing
the 1996 - 1999 Period to Years When Minimum Lake
Elevations Were Above 914.1 m asl**

Minimum Lake Elevation: 914.1		
Year	Relative Year-Class Strength for Years Above and Below 914.1	
	Above	Below
1984	60.0	
1985	18.6	
1986	25.5	
1987	12.6	
1988		
1989	8.6	
1990		
1991		
1992	22.5	
1993	18.6	
1994	16.4	
1995		
1996		11.9
1997		7.4
1998		14.7
1999		4.2
Average	22.8	9.5
Difference		-13.3

Although the Authorization stipulates that the mean RYCS for 1996 to 1999 be compared to normal years, this approach excludes a number of years when lake elevations were below the 914.1 m benchmark elevation. Furthermore, the prescribed comparison includes only four

values (1996 – 1999), which includes two year-classes that were probably not fully recruited in 2007 (i.e., 1998 and 1999). To make the comparison more balanced and inclusive, therefore, comparisons were also made using all years in the 1984-1999 period (Table 5).

Table 5 compares the mean RYCS for those years when the minimum winter lake elevation was above or below the natural low of 914.1 m. The table also provides the same comparison for years when the minimum winter lake elevation was above and below the current restriction elevation of 913.7 m. Both comparisons indicate that mean RYCS was higher for the lower water years.

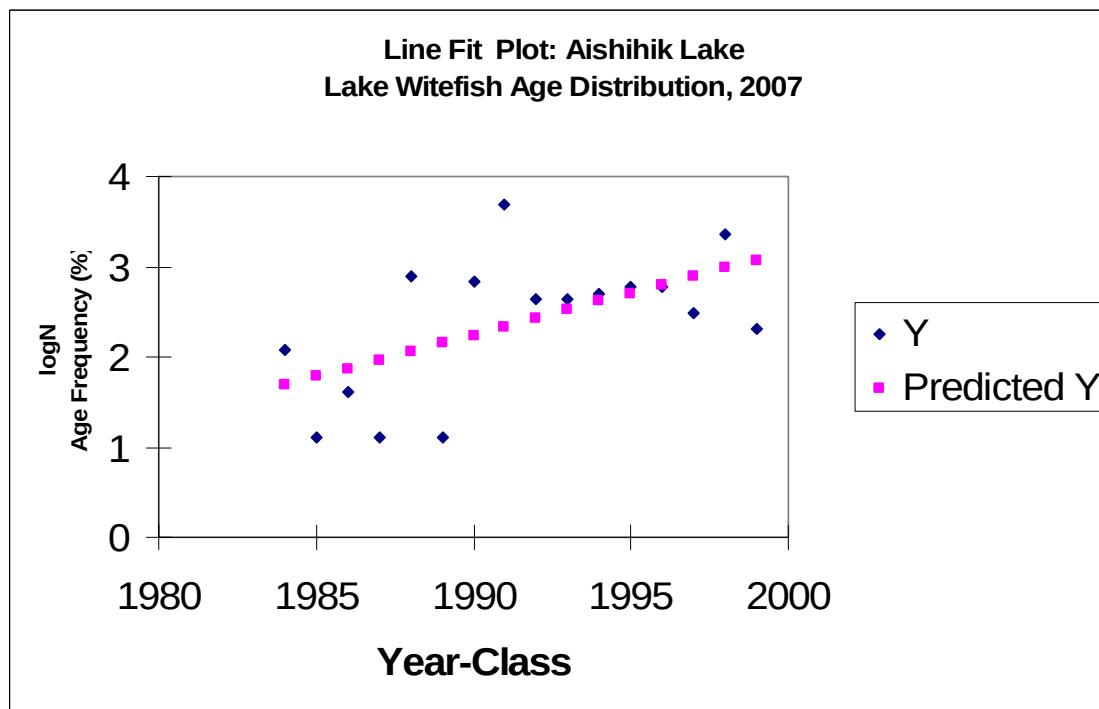
Table 5 Aishihik Lake 1984 - 1999 Lake Whitefish Mortality Adjusted Relative Year-Class Strength, Comparing Years When Minimum Lake Elevations Were Above and Below 914.1 and 913.7 m asl

Minimum Lake Elevation: 914.1			Minimum Lake Elevation: 913.7		
Year	Relative Year-Class Strength for Years Above and Below 914.1		Year	Relative Year-Class Strength for Years Above and Below 913.7	
	Above	Below		Above	Below
1984	60.0		1984	60.0	
1985	18.6		1985	18.6	
1986	25.5		1986	25.5	
1987	12.6		1987	12.6	
1988		62.5	1988	62.5	
1989	8.6		1989	8.6	
1990		40.2	1990		40.2
1991		78.0	1991		78.0
1992	22.5		1992	22.5	
1993	18.6		1993	18.6	
1994	16.4		1994	16.4	
1995		14.5	1995		14.5
1996		11.9	1996		11.9
1997		7.4	1997		7.4
1998		14.7	1998		14.7
1999		4.2	1999		4.2
Average	21.8	29.2	Average	26.0	26.1
Difference		+6.3	Difference		+0.1

Plotting Regression Residuals

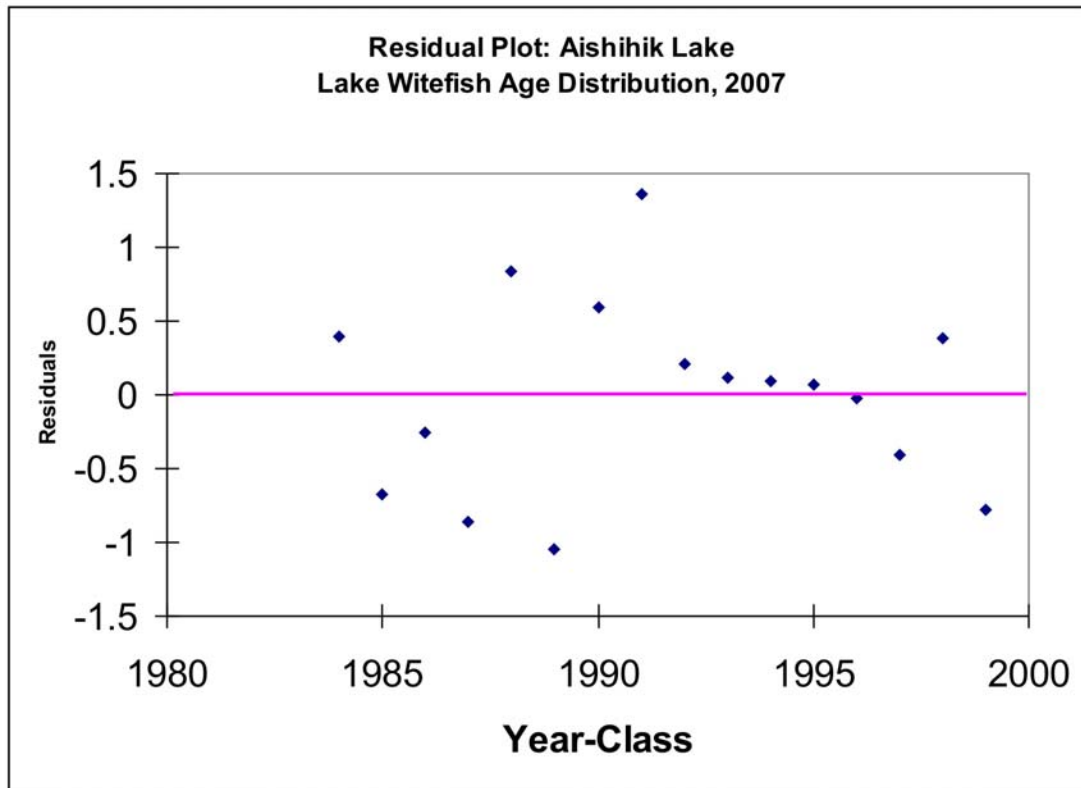
It is difficult to find examples of other cases where RYCS analyses are attempted, but one method that does get used more than others is an analysis of residuals (Maceina 1997). Simply put, this involves a regression analysis done on the descending limb of a normal catch curve, the same way that it is done when calculating mortality. However, unlike with mortality calculations, in which you typically exclude odd year-classes that throw off the accuracy of the line fit, an analysis of residuals aims to tease out and quantify the oddities (i.e., the variations from the normal). In this case, years that are substantially below or above the normal (i.e., predicted) value represent weak or strong year-classes, respectively. Also in contrast to the mortality adjustment method, analysis of residuals does not require assumptions about the data regarding mortality and does not involve manipulation of the data, other than converting catch numbers to natural log values. Two kinds of plots are generated. Figure 11 shows a Line Fit Plot that indicates the predicted age distribution (predicted Y) if annual recruitment and mortality are constant. The “Y” values, on the other hand, show the observed values and the variations above and below the line that indicate deviations from the prediction.

Figure 11 Line Fit Plot for Aishihik Lake Whitefish Age Distribution, 1984 – 1999, Based on 2007 Data



A Residual Plot (Figure 12) plots these variations as residuals which can be quantified.

Figure 12 Residual Plot for Aishihik Lake Whitefish Age Distribution, 1984 – 1999, Based on 2007 Data



If the residuals are tabulated and analyzed in the same manner as for the Adjusted Mortality method (above), the following results are obtained (Table 6 and Table 7).

Table 6 Aishihik Lake 1984 - 1999 Lake Whitefish Relative Year-Class Strength, Comparing the 1996 - 1999 Period to Years When Minimum Lake Elevations Were Above 914.1 m asl

Minimum Lake Elevation: 914.1		
	Relative Year-Class Strength for Years Above and Below 914.1	
	Above	Below
1984	0.395	
1985	-0.678	
1986	-0.260	
1987	-0.864	
1988		
1989	-1.050	
1990		
1991		
1992	0.212	
1993	0.120	
1994	0.096	
1995		
1996		-0.025
1997		-0.406
1998		0.384
1999		-0.774
Average	-0.254	-0.205
Difference		+0.049

Table 7 Aishihik Lake 1984 - 1999 Lake Whitefish Relative Year-Class Strength Calculated by Plotting Residuals, Comparing Years When Minimum Lake Elevations Were Above and Below 914.1 and 913.7 m asl

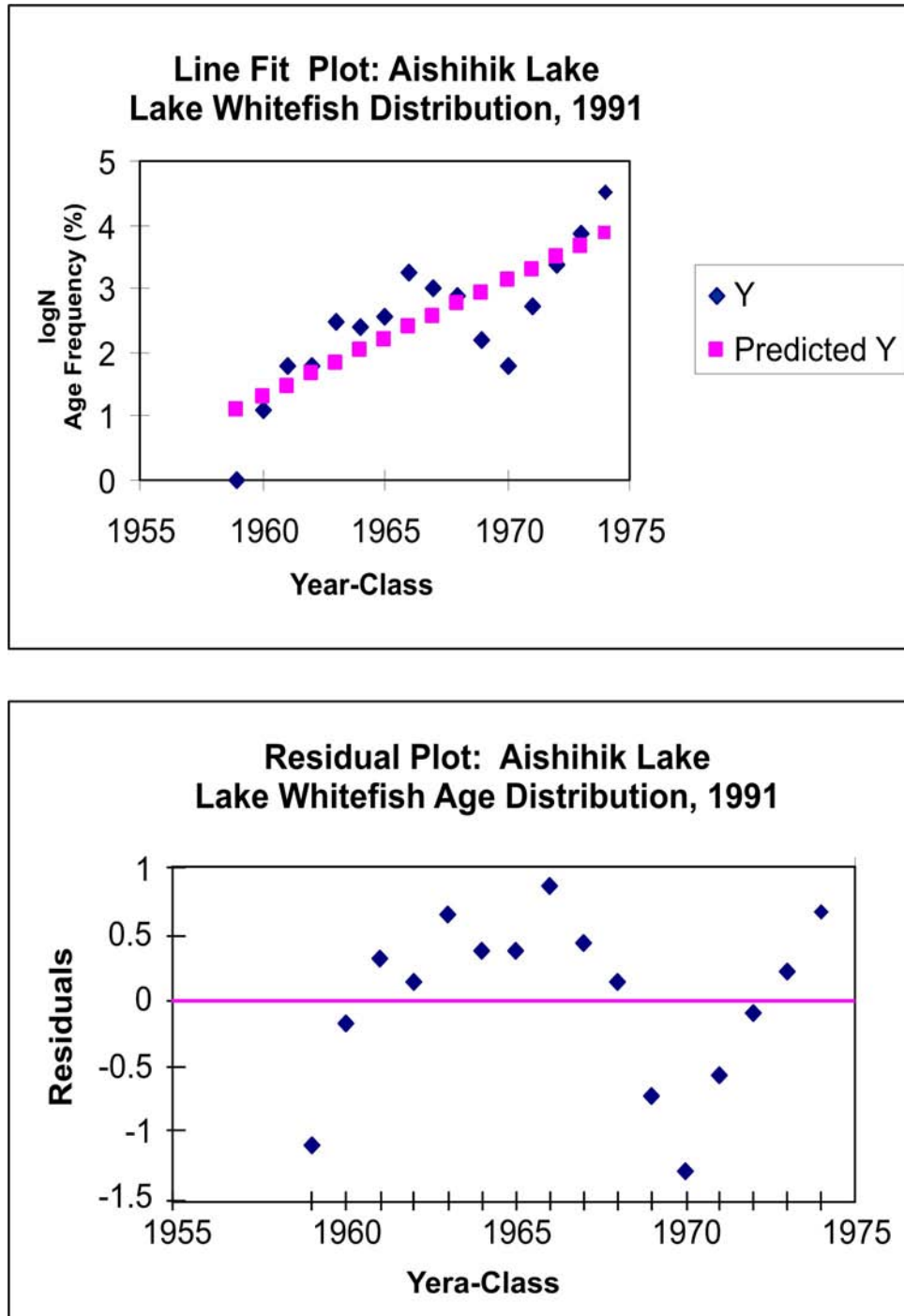
Minimum Lake Elevation: 914.1			Minimum Lake Elevation: 913.7		
Relative Year-Class Strength for Years Above and Below 914.1			Relative Year-Class Strength for Years Above and Below 913.7		
	Above	Below		Above	Below
1984	0.395		1984	0.395	
1985	-0.678		1985	-0.678	
1986	-0.260		1986	-0.260	
1987	-0.864		1987	-0.864	
1988		0.835	1988	0.835	
1989	-1.050		1989	-1.050	
1990		0.592	1990		0.592
1991		1.355	1991		1.355
1992	0.212		1992	0.212	
1993	0.120		1993	0.120	
1994	0.096		1994	0.096	
1995		0.067	1995		0.067
1996		-0.025	1996		-0.025
1997		-0.406	1997		-0.406
1998		0.384	1998		0.384
1999		-0.774	1999		-0.774
Average	-0.254	0.254	Average	-0.113	0.188
Difference		+0.508	Difference		+0.301

Using this approach the mean RYCS associated with low water years is higher in all three comparisons relative to the normal years.

As a final illustration, and to provide some context, one additional analysis was performed using the 1991 lake whitefish age distribution data (de Graff 1993). Figure 13 presents Line Fit and Residual plots for the 1959-1974 period (i.e., pre-project). The plots indicate a range of RYCS variability that is comparable to that observed for the 2007 data (Figures 11 and 12). In this case the variability is assumed to represent natural variability since the year-

classes in question were recruited prior to the completion of the Aishihik hydroelectric facilities in 1975.

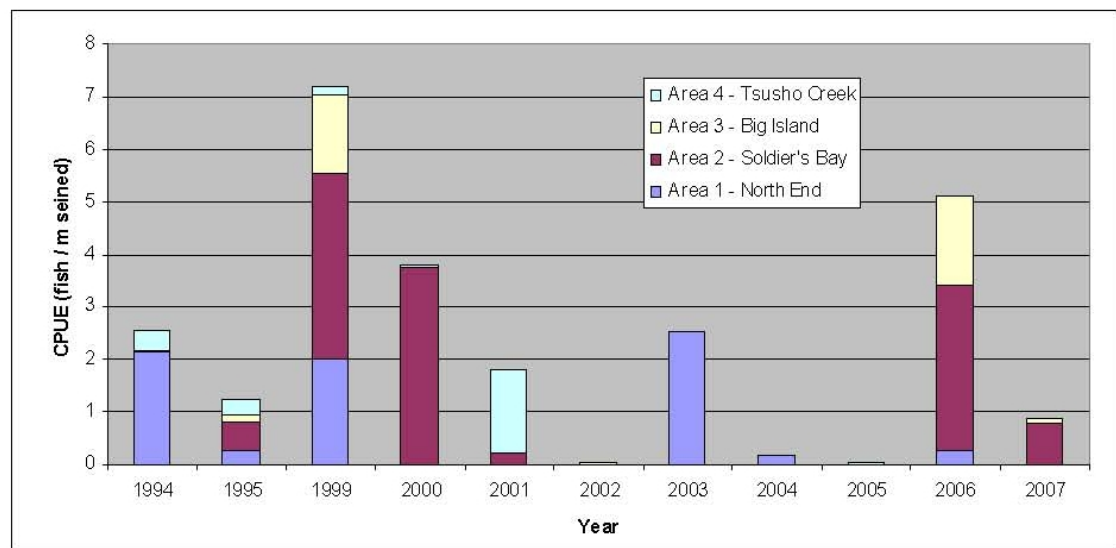
Figure 13 Line Fit and Residual Plots for Aishihik Lake Whitefish Age Distribution, 1959 – 1974, Based on 1991 Data



4.0 ANNUAL BEACH SEINING SURVEYS

A total of 11 beach seining surveys have been conducted since 1994 (Figure 13), including nine standardized monitoring surveys (1999-2007). The primary objective of the monitoring surveys was to determine if summer beach seining results could be used as an early predictor of adult recruitment. In other words, is the abundance of young-of-the-year (YOY) lake whitefish in a given year, expressed as catch-per-unit-effort (CPU), a useful predictor of the strength of that year-class when it becomes recruited into the adult population?

Figure 13 Comparison of YOY lake whitefish capture rates based on beach seining CPUE (fish/m seined), 1994-2007 (from EDI 2007)



To date, no trend has been observed that relates beach seining success to minimum spring lake elevations. Catch numbers have varied widely between years with no apparent relationship to lake levels, and both high and low CPUE values have been reported for low and high water years. It is likely that other environmental factors (e.g., spring and summer weather, water temperatures at the time of the surveys) play a major role in catch success and, therefore, represent a significant confounding factor.

The principal question of whether the catch data correlate to eventual adult recruitment can not be answered conclusively since most of the year-classes represented in the annual beach seining surveys (i.e., 1999-2007) were not fully recruited at the time of the 2007 index gillnetting program. For the younger year-classes that are represented in the 2007 gillnetting catch, there appears to be a poor correlation to beach seining CPUE values. The 1999 year-class was strong in 1999 and is fairly well represented in the 2007 gillnetting catch. In contrast however, age-3 fish (2004) are better represented in the gillnetting catch data than

other juvenile year-classes (e.g., 2003 and 2006) even though beach seining CPUE was relatively low in 2004 compared to 2003 and 2006.

Based on existing information it is difficult to determine if annual beach seining is a useful predictor of adult recruitment. However, continued monitoring may eventually answer this question when the data are eventually compared to future index gillnetting surveys.

Paragraph 4(d) of the Authorization sets out several provisions that will remain in effect after 2007, regardless of the 2007 monitoring results and any subsequent modifications to YEC's operational requirements. Paragraph 4(d)(i) goes on to say:

“Should anytime after 2007 lake whitefish monitoring results in two of any five year period, demonstrate, for years when minimum daily spring elevations were below 913.7 m ASL, poor recruitment results (i.e., juvenile recruitment at or below 50% of Normal Year Class Strength), then, subject to 4(d)(ii), the Ten Year Rolling Average shall be re-instituted as soon as reasonably practicable and the minimum daily spring elevation shall not be lower than 913.7 m ASL more than two years in any five year period, or other mitigation measures acceptable to DFP and Yukon Energy shall be established.”

Paragraph 4(d)(ii) states:

“Should anytime after 2007 lake whitefish monitoring results in four out of any five year period demonstrate juvenile recruitment greater than 50% of Normal Year Class Strength, then, subject to paragraph 4(d)(i), the Ten Year Rolling Average Requirement and any requirement that the minimum daily spring elevation not be lower than 913.7 m ASL more than two years in any subsequent five year period both shall not apply.”

Given the uncertainties regarding the usefulness of the annual beach seining results to date, it is unlikely that the provisions in the two Authorization paragraphs above can be met at this time.

5.0 ANNUAL AQUATIC MACROPHYTE SURVEYS

Aquatic macrophyte (plant) surveys were conducted in the north end of Aishihik Lake in 1993 and annually since 2000 as part of the Aishihik Lake Monitoring Program. The annual surveys have been conducted in accordance with the Water Use Licence requirement to monitor habitat changes in that part of the lake, particularly as these changes relate to lake regulation.

Between 1995 and 2000, Aishihik Lake experienced relatively low lake elevations which resulted in the substantial expansion of littoral aquatic habitats in the north end of the lake. Since 2000, the elevation of Aishihik Lake has returned to the natural range (pre-project) and consequently littoral plant communities have been reverting to distribution patterns and composition observed and recorded prior to the low water period. Surveys completed in recent years (2003-2007) provide evidence that the aquatic macrophyte communities in the north end have become more stable with regard to distribution and community composition, although minor differences continue to occur between years. Some differences between years would be anticipated in any event, as plant communities respond to intra-annual differences in environmental conditions such as weather. It therefore appears that the aquatic macrophytes community in the north end of Aishihik Lake has attained a level of stability that it is likely to maintain unless significant environmental changes occur (e.g., a substantial change in lake elevation).

6.0 REFERENCES

- de Graff, N.M. 1993. Fisheries assessment of Aishihik, Canyon and Sekulmun lakes, 1991-992. Fish and Wildlife Branch, Yukon Department of Renewable Resources. Technical Report TR-93-1. 68 pp + app.
- Environmental Dynamics Inc. (EDI). 2007. Aishihik Lake Whitefish Monitoring Program 2007. Prepared for Yukon Energy Corp. 23 pp. + 2 App.
- Maceina, M.J. 1997. Simple application of using residuals from catch curve regressions to assess year class strength in fish. Fisheries Research 32:115–121.
- YEC 1998. Aishihik Relicensing Project Environmental Impact Assessment. Vol. 6: Aquatic Studies. Prepared for Yukon Energy Corporation by North/South Consultants Inc. 244 pp. + 1 App.

1 **REFERENCE: Tab 5 Capital Projects; P 5-22, L 26**

2
3 **QUESTION:**

4
5 a) The Mayo Lake dam was first built in the mid 1950s and extensively rebuilt in
6 1988 and 1989. Please describe in detail the portions of this dam needed to be
7 assessed.

8
9 **ANSWER:**

10
11 **(a)**

12
13 All wooden portions of the dam will be assessed including the connections, spill boards,
14 and the valve structure for their soundness and design. The location of the valves will
15 also be assessed to determine if there is a more optimal design for its operation.

1 **REFERENCE: Tab 5 Capital Projects; P 5-23, L 1**

2

3 **QUESTION:**

4

5 a) Has the Alexco mine paid for this work in advance? If not what is the agreement
6 between Yukon Energy and Alexco? Please provide a copy of any written
7 agreements.

8

9 **ANSWER:**

10

11 **(a)**

12

13 No. As noted in response to LE-YEC-1-8, discussions with Alexco related to a Power
14 Purchase Agreement are currently underway.

1 **REFERENCE: Tab 9 Audited Financial Statements; P 9-11, Amortization**
2 **periods**
3

4 **QUESTION:**
5

- 6 a) The amortization of wind turbines in Europe is typically 20 years (sometimes 25
7 years in USA), and turbines typically have a design life of 20 years. This being
8 the case it seems inappropriate to amortize them over 30 years, why does Yukon
9 Energy do so?

10
11 **ANSWER:**
12

13 **(a)**
14

15 Yukon Energy adopted its current depreciation rates out of the Gannett Fleming
16 depreciation study completed for the 2005 Required Revenues and Related Matters
17 Application. That study recommended a 30 year amortization period for wind turbines.