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# Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report

**M. Kwiaton, P. Hazlett, D. Morris, R. Fleming, K. Webster, L. Venier, I. Aubin**

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**Natural Resources Canada  
Canadian Forest Service  
Great Lakes Forestry Centre**

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**Canada**

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## Abstract

The impact of intensified biomass harvesting on forest sustainability, specifically stand growth, soil productivity and forest biodiversity is of concern to a wide variety of stakeholders. Building on the success of the collaborative Natural Resources Canada (NRCan), Canadian Forest Service (CFS)/Ontario Ministry of Natural Resources and Forestry (OMNRF) Ontario component of the North American Long-Term Soil Productivity (LTSP) experiment, this report documents the establishment of a new study at the Island Lake Biomass Harvest Research and Demonstration Area near Chapleau, Ontario. The study is a partnership of government (NRCan, CFS, OMNRF), industry (Tembec, Ontario Power Generation), First Nations (Northeast Superior Regional Chiefs' Forum), and local communities (Northeast Superior Forest Community). This report describes the site, experimental treatments, and pre- and immediate post-harvest vegetation, woody debris and soil characteristics and will provide baseline information and data for ongoing and new research initiatives at the site.

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## Résumé

L'accroissement de la récolte de la biomasse a des effets sur la durabilité des forêts, et, plus précisément, sur la croissance des peuplements, la productivité des sols et la biodiversité forestière, ce qui préoccupe un grand nombre d'intervenants. Le présent projet s'inscrit dans le cadre de la collaboration entre le Service canadien des forêts (SCF) de Ressources naturelles Canada (RNCan) et le ministre des Richesses naturelles et des forêts de l'Ontario (MRNFO) au volet ontarien du projet expérimental nord-américain de productivité des sols à long terme ou *LTSP (Long-Term Soil Productivity)*. Ce rapport documente la mise en place d'une nouvelle étude dans le site de recherche et de démonstration sur la récolte de biomasse d'Island Lake, situé près de Chapleau, en Ontario. L'étude est réalisée dans le cadre d'un partenariat entre les gouvernements (SCF-RNCan et le MRNFO), l'industrie (Tembec et *Ontario Power Generation*), les Premières nations (*Northeast Superior Regional Chiefs' Forum*) et les communautés locales (la Collectivité forestière du nord-est du Lac Supérieur). Ce rapport comprend une description du site, des traitements expérimentaux et des caractéristiques de la végétation, des débris ligneux et des sols avant et immédiatement après la récolte. Il fournit également des informations et des données de base qui serviront aux initiatives de recherche nouvelles et en cours sur le site.

## 1.0 Introduction and background

The boreal forest is an ecological, economic and cultural source of wealth for Canadians. In the mid-2000s there were around 500 forestry dependent communities within the boreal forest region (Canadian Forest Service 2005). In addition to citizens whose economic and social requirements are met by the resources of the boreal forest, other Canadians, and especially native Canadians, have a close cultural bond with the natural values found in this region. The public has ownership of more than 93% of Canada's forests (Canadian Forest Service 2012) and the federal and provincial governments have a mandate to ensure that sustainable forestry practices are being utilized in land use management. In terms of the boreal forest and forestry this has evolved into considering not only environmental and economic impacts, but also the way of life that has developed in forestry dependent communities.

In Ontario, the boreal forest accounts for two-thirds of Ontario's forests covering approximately 50 million hectares; 86% of the productive forested area of the boreal forest is Crown land (OMNR 2011). From 2005 to 2010, the amount of forest harvested annually in the actively managed area of Ontario (referred to as the Area of the Undertaking) declined from approximately 210,000 ha to 100,000 ha due to declining markets for traditional wood products. This annual harvested area represented approximately 0.4% of the productive forested land base in the boreal region. Although declining, jack pine (*Pinus banksiana* Lamb.) harvest volumes (3.2 million m<sup>3</sup> in 2010) accounted for 43% of the total softwood harvested in 2010 (OMNR 2012). In response to concerns related to the declining forest sector, rising energy costs and the impacts of climate change the Ontario government introduced Ontario's Biofibre Allocation and Use Directive in 2008 to help stimulate Ontario's bioeconomy.

The development of the bioenergy sector has the potential for many social and economic benefits, including new and diversified markets and renewable energy sources. During the six years since the directive was implemented the forest bioeconomy has developed at a slow pace. The Ontario government is reviewing the directive and preparing recommendations to increase investment in this sector of the province's economy.

Despite potential benefits concerns remain regarding the impacts of biomass harvesting on the future sustainability of the forest (Smith et al. 2009, Greenpeace 2011). Developing integrative indicators that can be used to assess the ecological sustainability of biomass harvests is a need identified by a wide range of stakeholders, including forest managers, policy makers, the forest industry, eNGOs, and university and government researchers (Dagg et al. 2011, McBride et al. 2011). In 2009 a joint Federal-Provincial Bioeconomy Technical Working Group was created with the support of the Canada-Ontario Memorandum of Understanding Concerning Cooperation in Forestry (MOU) to address this concern.

The main objectives of this working group include:

- Identify provincial and national bioeconomy science and knowledge transfer opportunities;
- Identify and develop collaborative opportunities for bioeconomy science initiatives between Natural Resources Canada, Canadian Forest Service (NRCan, CFS) and Ontario Ministry of Natural Resources and Forestry (OMNRF) researchers, forest managers, policy makers and economists.

There is extensive collaboration between NRCan, CFS and the OMNRF to address aspects of the effects of biomass harvesting on soil processes and sustainable

site productivity in northern Ontario. Over the last twenty years efforts have been focused on a replicated series of experiments, established in the early 1990s, which are investigating the effects of three levels of organic matter removal in jack pine and black spruce ecosystems: operational tree-length harvest (stem only), operational full-tree harvest, and full-tree harvest with forest floor removal. These experiments, by themselves and as an integral part of the North American-wide Long-Term Soil Productivity (LTSP) program, are now providing highly valued empirical results related to important biomass harvesting issues. The growing interest in biomass harvesting for energy production in Ontario, however, continues to raise additional questions regarding sustainable soil productivity and biodiversity in addition to considerations regarding forest operations and economic issues.

To explore potential ecological, economic and social benefits and drawbacks of expanding the bioenergy sector, a consortium of government (NRCan, CFS, OMNRF), industry (Tembec, Ontario Power Generation), First Nations (Northeast Superior Regional Chiefs' Forum), and local communities (Northeast Superior Forest Community) have collaborated in an innovative research project on the impact of biomass removal on forest sustainability.

The project builds on the success of the Ontario LTSP studies in terms of scientific expertise and strong science partnerships. While the LTSP research has focused on stand growth and soil nutrients, more recently hired NRCan, CFS researchers involved in this new project have knowledge and experience related to forest biodiversity. Their emphasis will expand the work to examine key forest ecosystem taxa (soil microbes, soil microarthropods, surface macroarthropods, understorey vegetation) using a multi-trophic approach. These links in the food web and their response to varied biomass

removal also affects nutrient cycling and site productivity. This new project also further expands the research collaboration by including university, forest community (regional municipalities) and First Nations partners.

Overall the project is designed to address the following questions:

1. Does increased biomass removal beyond traditional product recovery negatively impact biodiversity or site productivity?
2. Can we identify threshold levels of biomass retention and removal to conserve biodiversity and maintain soil productivity over the long-term?
3. Is biomass harvesting a practical method for stand conversion of mid-rotation backlog sites?
4. What are the impacts of ameliorative wood ash applications on biodiversity, soil processes and site productivity?

## 2.0 Experimental approach

### 2.1 Study site

The Island Lake Biomass Harvest Research and Demonstration Area ( $47^{\circ} 42' N$ ,  $83^{\circ} 36' W$ ) is located approximately 20 km southwest of the Hwy. 101/Hwy. 129 junction (Sheppard Morse Rd.) near Chapleau, Ontario (Figure 2.1). The site is within the Ontario Shield ecoregion, ecoregion 3E (Lake Abitibi) of the Ontario Ecological Land Classification (ELC) (Crins et al. 2009).

Mean annual temperature for Chapleau is  $1.7^{\circ}C$  and mean annual precipitation is 797 mm (532 mm of rainfall, and 277 cm of snowfall) (Environment Canada 2013). The most common base temperatures used in calculating growing degree days (GDD) in Canada are  $5^{\circ}C$  and  $10^{\circ}C$ , with Chapleau having 1391 and 682 GDD, respectively. The growing season in Chapleau consists of

93 frost free days and typically runs from June 5th to September 6th (Environment Canada 2013).

The Island Lake study site was a second growth pure jack

initially considered for commercial thinning in the Martel Forest 2006-2011 Forest Management Plan. However, after a pre-harvest survey of the study area in the spring of 2010, it was deemed that the site did not meet the

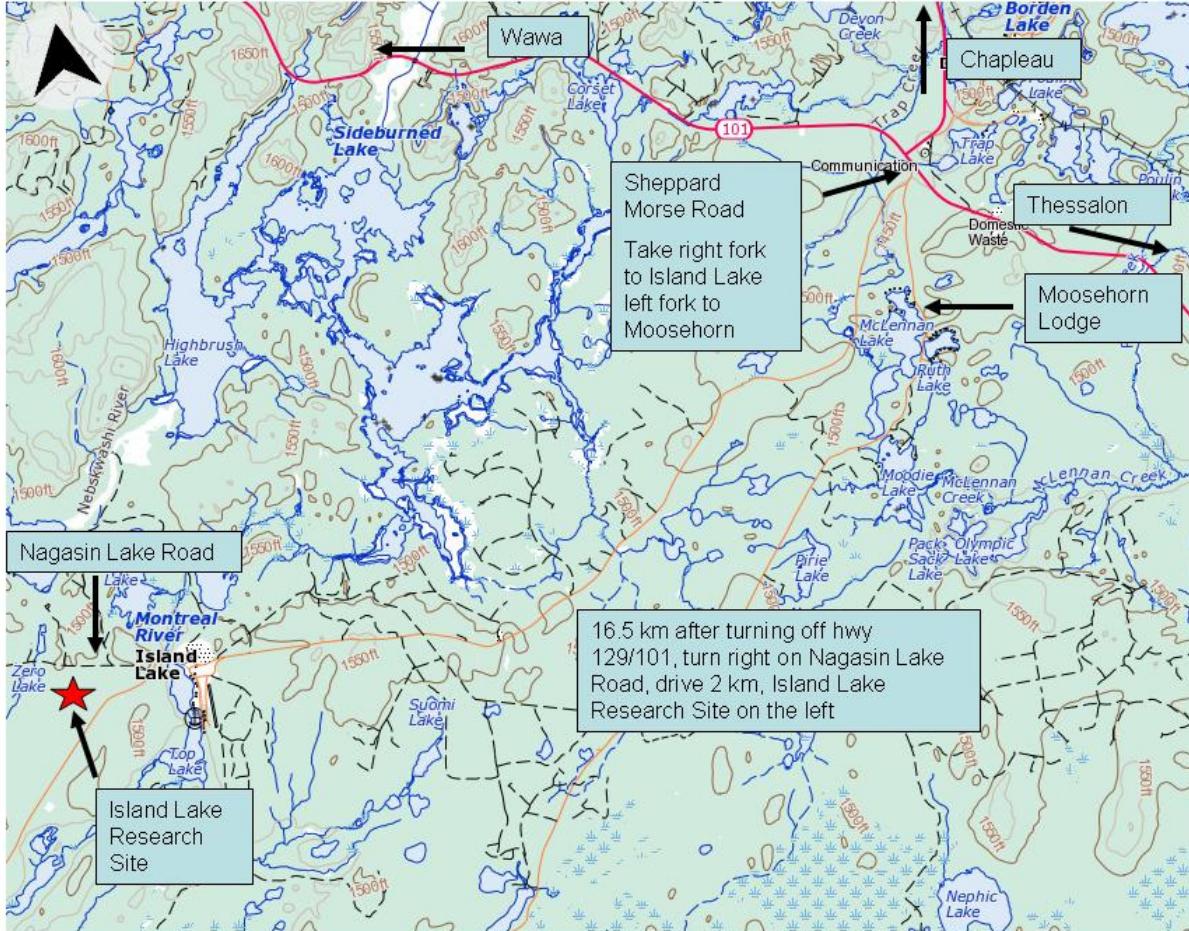


Figure 2.1. Location map of the Island Lake Biomass Harvest Research and Demonstration Area.

pine stand that was originally harvested in the fall of 1959 using a conventional clearcut harvesting system. The area was site prepared using Young's teeth scarification and hand seeded in 1960. In the spring/summer of 1962, the site was fill planted to ensure a 100% stocking. The adjacent block, along the east side of the study site boundary, which has a similar silvicultural history underwent pre-commercial thinning between 1990 and 1992. The block containing the study area was

stand requirements for a commercial thinning. The stand density in this area was too low to warrant commercial thinning and, because of the low stand density, the trees are overly branchy (poor form stems) and would not produce quality sawlog material in the future. Therefore, the Forest Management Plan was amended by the OMNR at the request of Tembec to accommodate the biomass project in November, 2010.

## 2.2 Experimental treatments

### 2.2.1 Biomass removals

The block was harvested from December 2010 to January 2011. The contractor used a 2005 Tigercat 870C feller buncher with a 24 inch GN Roy model # 2454 head and a 2007 Caterpillar 545C grapple skidder for the harvesting operation. The final total harvest area was 49.2 ha. An 8 ha uncut control (treatment 5) block (approximately 400 x 200 m) was maintained in the southeast portion of the study area. Sawlog sized trees were delivered to the Tembec sawmill in Chapleau and biomass materials were ground in two stages (January–February 2011 and November–December 2011) and delivered to the Tembec cogeneration plant in Kapuskasing. The final sawlog volume recovered was 5040 m<sup>3</sup> (average of 102 m<sup>3</sup> ha<sup>-1</sup>), and 115 truckloads of biomass averaging 38 green metric tons (GMT) for a total of 4373 GMT was produced from the harvest. Experimental plot biomass removal treatments (Table 2.1 and described below) were completed in July 2011, initial experimental plot vegetation control treatments in August 2011, site preparation of the entire cut block (including the buffer area between the experimental plots) with the exception of the bladed treatment plots by power disc trenching (average 2.1 m between trench centres) in September 2011 and wood ash applications in October, 2011.

Four treatments with a gradient of biomass removals were created (Figures 2.2, 2.3). From lowest to highest degree of removal, the treatments were: (1) Tree-length (stem only) harvest; (2) Full-tree biomass harvest; (3) Full-tree biomass harvest with removal of stumps; and (4) Full-tree biomass harvest with removal of stumps, coarse woody debris (standing and downed), and the forest floor. Tree-length and full-tree biomass harvest treatments were applied operationally, meaning that treatments were applied operationally, meaning that

maximum effort was used to retain all tops, branches, breakage and non-merchantable trees on the tree-length plots, and to remove these components from the full-tree biomass harvest. Standing dead trees were pushed over during harvest on all treatments. Treatment (2) removed entire sawlog sized trees and traditionally non-merchantable stems from the cutover to the roadside. Sawlog trees were delimbed at roadside (topped at 10 cm diameter) and piled separately as sawlogs and sawlog biomass. Biomass consisted of this sawlog biomass and the traditionally non-merchantable trees, and these were piled separately at the roadside. Treatment (2) was applied to all buffer areas. While harvest of the block was guided by OMNRF forest management guidelines that maintained a minimum of 25 residual trees per ha, this level was achieved through retention only in buffer areas between the experimental plots, so that stand development and ecosystem processes on the plots would reflect the biomass removal treatments and not effects from competition with residual trees. For treatment (1) the experimental plots were distributed within the site and were left to be harvested after treatment (2) had been completed across the entire study site. Sawlog sized trees were delimbed (topped at 10 cm diameter) over the experimental plots prior to being skidded to roadside and non-merchantable stems were cut and left on the plot. A Kobelco ED190 Blade Runner excavator equipped with a specialized bucket with a “thumb” was used to distribute the slash more evenly across the plots for treatment (1). Stump removal for treatments (3) and (4) was done using the excavator, enabling a “plucking” of stumps and attached coarse roots from the soil with minimal soil disturbance to other areas of the plot. After removal, stumps were progressively tossed across the experimental plots by the excavator until they were 10 m beyond the plot boundary. The same excavator equipped with a blade was used to remove the coarse

woody debris and forest floor from treatment (4) after stumping was completed.

The four biomass removal treatments were replicated five times using a randomized complete block design (Figure 2.4). Each biomass removal plot is 70 x 70 m (0.49 ha), and thus large enough to maintain treatment conditions and minimize edge effects over the course of stand development. Uncut control (treatment 5) plots are also 70 x 70 m. Biomass removal plots in each replicated block were separated by at least 20 m to allow for machine manoeuvring and debris piling. There was at least 20 m of cutover between the nearest edge of these plots and the surrounding uncut forest.

In an additional study, five sets of paired 20 x 20 m (0.04 ha) plots with treatments (1) and (2) applied adjacent to one another were established on landings created during the previous (1959) harvest. The forest floor and some upper mineral soil were removed at that time by blading and piled in berms around the perimeter of the plots. Due to the small size of the trees and the harvest operation logistics all of the trees for treatment (1) on the landings were left on plot. Some additional slash from the perimeter of each tree-length plot was also spread manually on each plot to provide an extreme high biomass retention treatment. Extra effort was also made to manually remove any slash from the treatment (2) landings to provide an extreme low biomass retention treatment. These plots, hereafter referred to as old landing plots, provide an opportunity to fast forward the potential impact on sustainability beyond the scope of the biomass removal treatment plots by using areas with little downed woody debris and thin or non-existent organic horizons.

Four replications of each of four wood ash application treatments were laid out using a randomized block design for a total of 16 - 25 x 25 m plots (0.0625 ha) plots. Wood ash plots were aligned in buffer areas

adjacent to biomass removal treatment (2) plots to provide a direct replicated control (treatment (2), no ash application). Each of the biomass removal plots was subdivided into four 35 x 35 m subplots (Figure 2.5). The two western subplots were hand sprayed in August 2011 with glyphosate herbicide at an application rate of 4 L of product per ha to control herbaceous and deciduous woody vegetation. Future herbicide applications will be undertaken on these subplots to provide a complete vegetation control treatment to give further insight into ecosystem processes. The eastern subplots, the old landing and wood ash plots, and the buffer areas will have no vegetation control (Figure 2.4). During May 2012 the two northern subplots of each biomass removal plot were planted with jack pine and the two southern subplots with black spruce (Figure 2.5). Over-wintered planting stock, grown in jiffy pots with improved seed from seed zone 24 was supplied by Tembec. Seedlings were planted at 1.8 m spacing along the trenches in trenched plots and along string (i.e., rows) placed at 2.1 m intervals on the bladed plots for an approximate planted tree density of 2645 trees per ha. The old landing plots, wood ash plots and the buffer areas were planted with jack pine at 1.8 m spacing along the trenches (rows) and at 2.1 m spacing between the rows (trenches). A refill planting was completed in May 2013 to replace seedlings that died after the 2012 planting. Planted tree assessment plots were established approximately centered in each treatment subplot for the 70 x 70 m plots (5 rows (trenches) x 6 trees along the rows = 30 trees) and centered in the treatment plot for the old landing and wood ash plots (5 rows (trenches) x 5 trees along the rows = 25 trees). All biomass removal, uncut control, old landing and wood ash plots were permanently marked at the corners with aluminum posts stamped with coding to represent the block number, treatment, vegetation control, and tree species planted (Appendix A).

Table 2.1. Experimental plot treatments.

<b>Harvest treatment #</b>	<b>Treatment</b>	<b>Vegetation control</b>	<b>Tree planting</b>	<b>n</b>	<b>Plot size</b>
<b>Biomass removal plots</b>					
1	Tree-length harvest, trenched	West half plot herbicided	North half plot Pj, south half plot Sb	5	70 x 70 m (0.49 ha)
2	Full-tree biomass harvest, trenched	West half plot herbicided	North half plot Pj, south half plot Sb	5	70 x 70 m (0.49 ha)
3	Full-tree biomass harvest, stumped, trenched	West half plot herbicided	North half plot Pj, south half plot Sb	5	70 x 70 m (0.49 ha)
4	Full-tree biomass harvest, stumped, forest floor removal	West half plot herbicided	North half plot Pj, south half plot Sb	5	70 x 70 m (0.49 ha)
<b>Uncut control plots</b>					
5	Uncut stand	NA	NA	5	70 x 70 m (0.49 ha)
<b>Old landing plots</b>					
1	Tree-length harvest, trenched	None	Entire plot Pj	5	20 x 20 m (0.04 ha)
2	Full-tree biomass harvest, trenched	None	Entire plot Pj	5	20 x 20 m (0.04 ha)
<b>Wood ash plots</b>					
2	Full-tree biomass harvest, trenched, ash application 50 kg Ca ha <sup>-1</sup>	None	Entire plot Pj	4	25 x 25 m (0.0625 ha)
2	Full-tree biomass harvest, trenched, ash application 100 kg Ca ha <sup>-1</sup>	None	Entire plot Pj	4	25 x 25 m (0.0625 ha)
2	Full-tree biomass harvest, trenched, ash application 200 kg Ca ha <sup>-1</sup>	None	Entire plot Pj	4	25 x 25 m (0.0625 ha)
2	Full-tree biomass harvest, trenched, ash application 400 kg Ca ha <sup>-1</sup>	None	Entire plot Pj	4	25 x 25 m (0.0625 ha)

a)



b)



Figure 2.2. a) Slash retention for tree length harvest b) biomass and sawlog bundling during full-tree biomass harvest.

a)



b)



Figure 2.3. a) Stump removal following full-tree biomass harvest b) woody debris and forest floor removal by blading.

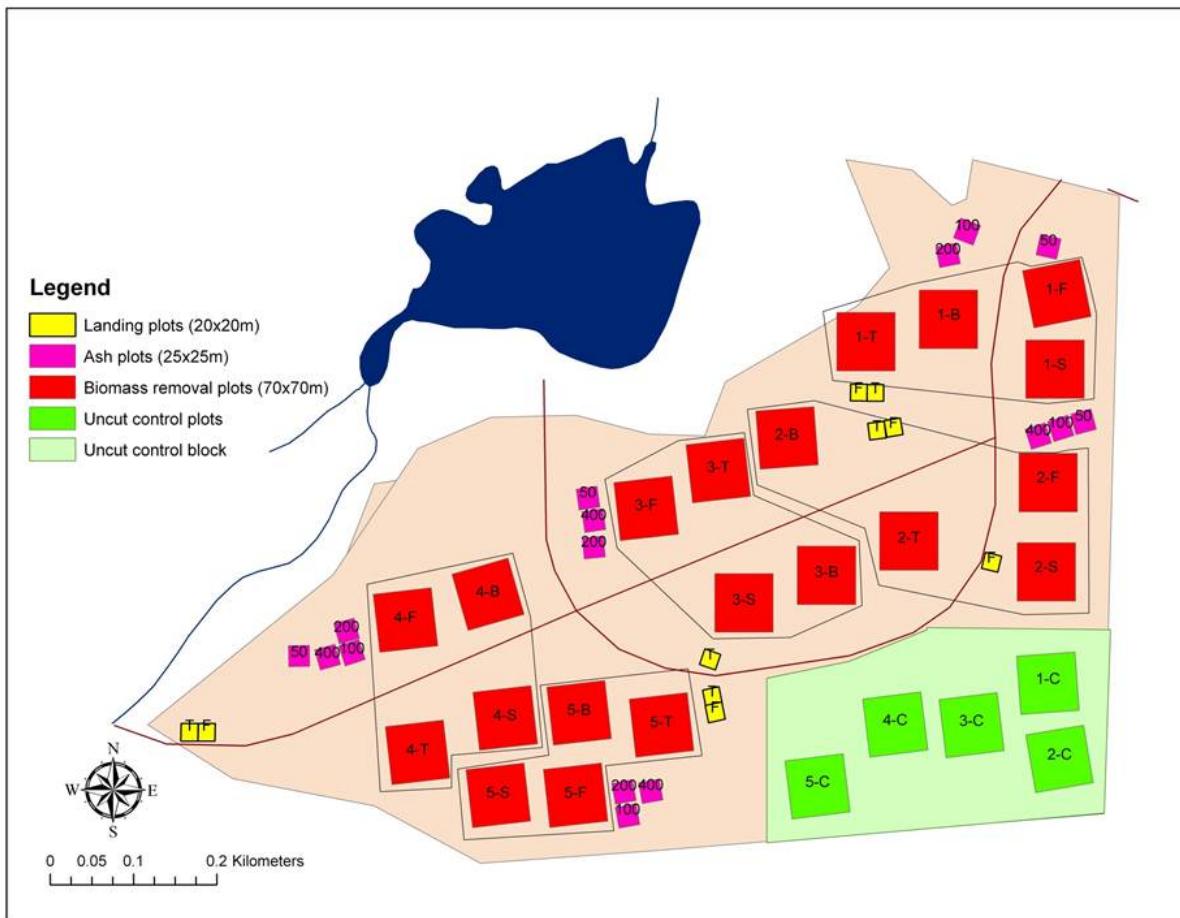


Figure 2.4. Map of the Island Lake Biomass Harvest Research and Demonstration Area. For the biomass removal plots the numbers indicate the block number and the letters indicate the harvest treatment: T = Tree Length, F = Full-tree, S = Stump Removal, B = Bladed, C = Uncut Control. For the wood ash plots, the number indicates the amount of Ca applied as wood ash in kg ha<sup>-1</sup>.

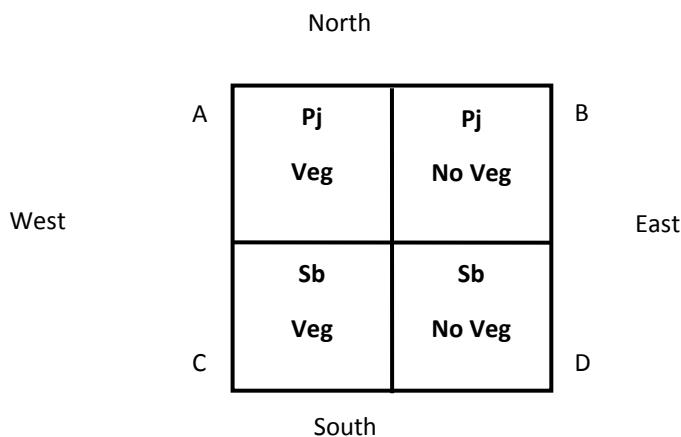


Figure 2.5. Biomass removal plot (70 x 70 m) sub-divided into four 35 x 35 m subplots. West subplots vegetation control, east no vegetation control. North subplots planted with jack pine (Pj), south planted with black spruce (Sb).

## 2.2.2 Wood ash application

Tembec provided wood ash waste from its seven megawatt wood-fired thermal electric generating facility at the Tembec Chapleau site. The Chapleau co-generation facility provides electricity to the Ontario grid and steam for sawmill operations. Plant feedstock consists of waste residues, predominately softwood bark, shavings and sawdust produced from various sawmill processes on site. While the Chapleau plant produces both bottom and fly ash we chose to use only the bottom ash in our trial because it was logically easier to spread due to lower moisture content and a more favorable size distribution. CFS LTSP experiments in NE Ontario have shown biomass Ca removals on the order of 120-200 kg ha<sup>-1</sup> (mean value 190 kg ha<sup>-1</sup>) for mature jack pine stands using operational full-tree harvesting.

Calcium is an element of interest due to its high content in woody materials removed during harvest and its depletion in forest soils due to acid deposition. Wood ash application rates were calculated in relation to harvest removals of Ca due to the full-tree biomass treatment (estimated at 200 kg ha<sup>-1</sup>). Application rates were 400, 200, 100 and 50 kg Ca ha<sup>-1</sup>. Biomass removal treatment (2) plots provided the no ash application control (0 kg Ca ha<sup>-1</sup>). Ash was applied to experimental plots using shovels and buckets October 17 to October 28, 2011. Plots were subdivided into smaller blocks to facilitate homogeneous application. Application rates were calculated based on ash chemistry (Table 2.2) and repeated measurements of ash field moisture and adjusted accordingly during the application period (Table 2.3)

Table 2.2. Chemical properties of wood ash.

	Acid microwave digestion													
	pH	pH	P	K	Ca	Mg	Na	S	Fe	Mn	Cu			
	H <sub>2</sub> O	CaCl <sub>2</sub>	mg kg <sup>-1</sup>											
Island Lake*	10.2	9.2	1839	14614	70682	7158	14564	1480	11112	2533	120			
SLU**			8260	48680	121740	14880	11950	1830	15210	6790	97			
Muffle 375°C      Combustion 1150°C														
LOI	LOI C	C	N	As	Cd	Co	Cr	Mo	Ni	Pb	Se	Sr	Zn	
		%									mg kg <sup>-1</sup>			
Island Lake	31.4	18.5	32.4	0.08	13.9	0.78	5.6	38.9	3.9	17.3	2.1	2.5	360	135
SLU	12.1	7.1	8.5	0.13	11.8	2.1	9.8	80.3	4.4	33.3	40.4	-	602	695

\* Island Lake refers to bottom ash from Tembec Chapleau co-generation plant, n=3

\*\* SLU refers to Swedish University of Agricultural Sciences wood ash database, bottom ash mean values, n=30 to 169 depending on chemistry

Table 2.3. Ash application rate calculations.

	Treatments			
	400 kg Ca ha <sup>-1</sup>	200 kg Ca ha <sup>-1</sup>	100 kg Ca ha <sup>-1</sup>	50 kg Ca ha <sup>-1</sup>
Mg dry ash/ha	5.7	2.8	1.4	0.7
Mg wet ash/ha	17.0	8.5	4.2	2.1
kg wet ash/plot	1061	530	265	133
block size	2.5 x 1.67m	2.5 x 3.13m	2.5 x 6.25m	2.5 x 8.3m
# blocks/plot	150	80	40	30
kg wet ash/block	7.1	6.6	6.6	4.4

Note: Calculations use laboratory-determined Ca concentration of 70.7 kg Ca Mg<sup>-1</sup> dry ash and an example of field-determined wet ash moisture content of 200%

### 2.3 Methods – pre-harvest characterization

#### 2.3.1 Stand productivity and structural attributes

Pre-harvest data collection on each treatment plot captured the inherent, pre-treatment variability across the study site and provides a plot-level baseline for comparison with the post-harvest treatments. Diameter at breast height (dbh) (1.3 m) was measured for all trees greater than 2.0 cm diameter within an 11.28 m radius (400 m<sup>2</sup>) circular plot at the center of each biomass removal and uncut control plot and within a 7.99 m radius circular plot (200 m<sup>2</sup>) for each old landing plot. Tree species and status (live or standing dead) were recorded, and 20 percent of live trees were randomly selected across the diameter distribution to be measured and recorded for total height.

Pre-harvest floristic composition was determined using linear vegetation surveys in mid-August, 2010. Fifteen circular points (15-cm radius) located 2 m apart were systematically sampled along a 30 m transect starting at the center of each biomass removal and uncut control plot.

Results were collated to obtain a species occurrence per block.

Vascular species (including all woody species with a dbh < 2 cm) were recorded. To describe vertical structure, vegetation was sampled for every 50 cm strata, from the soil surface to the top of the understorey vegetation. Additionally, presence of individual species found along transects (2 m on each side) but not in the circular points was recorded.

Using the diameter distribution from the tree inventory for the biomass removal, uncut control and old landing plots in the study area, 10 trees were selected from the biomass removal and uncut control plots and 10 trees were selected from the old landing plots and felled for component chemical analysis. Samples for stemwood, bark, and live crown components were obtained from five positions along the bole and live crown, and then bulked by individual tree and component. Trees were separated into the following components, dried and ground for chemical analysis: needles current, needles 1 year, cones, dead branches, live branches, twigs current, twigs 1 year,

stemwood, and bark. Allometric equations developed from previous NRCan, CFS nutrient cycling studies (I.K. Morrison unpublished data) and OMNRF, CNFER (Centre for Northern Forest Ecosystem Research) chronosequence studies (D.M. Morris unpublished data) were used to determine above ground stemwood, stembark, foliage, and branch biomass for black spruce and jack pine trees. We used used equations from Ter-Mikaelian and Korzukhin (1997) to estimate biomass components (Pastor and Bockheim (1981) for trembling aspen, Honer (1971) for balsam fir, Perala and Alban (1994) for willow, and Harding and Grigal (1985) for white spruce). All equations were of the form:

$$M = aD^b$$

Where,

M = the oven-dry weight of the biomass component of a tree (kg)

D = dbh (cm)

a and b = model parameters.

Fifteen additional trees from biomass removal and uncut control plots were destructively sampled from dominant/co-dominant crown class that were indicative of site quality. These were combined with five of the biomass trees used for component chemical analysis that met the dominant/co-dominant crown class criterion and did not show signs of suppression in their plotted height age profile for a total of 20 trees to examine site quality. Similarly, 15 additional trees from old landing plots were destructively sampled and combined with biomass trees for a total of 22 trees (three trees were removed because their young height-age curves and low total ages suggested they were established through natural seeding instead of artificial regeneration) to generate a height-age relationship and compare site quality. Discs were cut at the base (0.0 m),

stump (0.3 m), 1.0 m, dbh (1.3 m), 2.0 m, and at 1.0 m intervals to the top of the tree. The collected discs were aged and a separate site index was calculated for the biomass removal and uncut control plots combined, separately from the old landing plots.

### 2.3.2. Downed woody debris (DWD)

Three DWD transects, 15 m x 2 m (30 m<sup>2</sup>) for biomass removal and uncut control plots and 10 m x 2 m (20 m<sup>2</sup>) for old landing plots were established from each plot center starting with a random azimuth for the first transect. Transects two and three were repeatedly moved 2 m out from the end of the previous transect and offset 120° to complete a triangle and to avoid repeated measures of DWD (Figure 2.6). Upper and lower diameter, length, species, decay class (1=dead, bark on, twigs intact; 2=dead, bark flakey, stem solid; 3=no bark, partially punky; 4=soft, punky; 5=advanced rot) and vertical position (elevated, stump, surface, 25-50% moss covered, 51-90% moss covered) were determined for each piece of downed woody material greater than 2 cm in diameter within each transect. In addition, a narrow trench along the centre line of each transect was dug through the organic horizon exposing buried DWD. A single diameter and decay class was determined for each piece of buried wood. Standard wood density values, and C and nutrient concentrations, by decay class (decay class 1, 2, and 3) were obtained from previous OMNRF, CNFER studies (D.M. Morris unpublished data). Ten DWD discs of decay classes 4 and 5 were sampled to determine wood density, and subsequently dried and ground in preparation for chemical analysis to calculate DWD loading estimates.

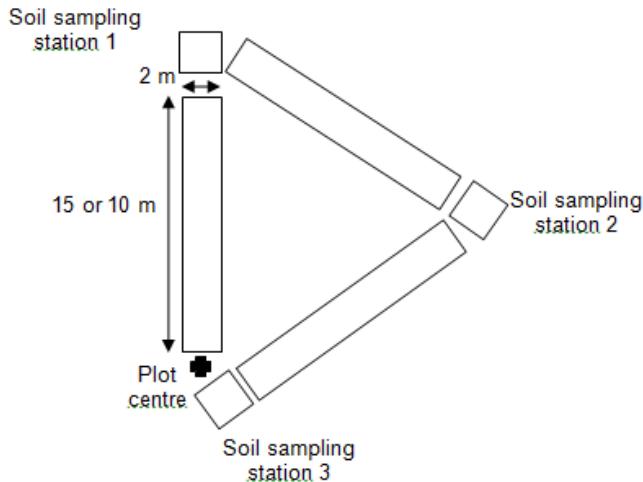


Figure 2.6. Downed woody debris (DWD) transects and soil sampling stations.

### 2.3.3 Soils

There were two components to the pre-harvest soils data collection. First, 10 soil pits were dug to a depth of 1.0 m in the buffer areas outside of all the plots at locations to represent the variation across the site. The pit locations were selected to provide mineral soil characterization for each experimental block (replicate set of biomass removal treatments) and the uncut control area. Profiles were described using the Canadian System of Soil Classification including horizon designations, horizon depths, rooting features and field determined texture. Coarse fragment content was estimated optically and bulk density cores were taken from the pit face for each identified horizon. All mineral horizons were sampled, air-dried and sieved (2 mm) in preparation for chemical analysis. There was significant mixing of the upper mineral soil and the organic layers (H horizon) due to site preparation after the 1959 harvest, and because of the difficulty in separating these horizons, a single horizon designated as H/Ah was sampled.

The second component consisted of a soil monitoring protocol. At each apex of the DWD sampling triangle in each biomass removal, uncut control and old landing plot a sampling station was established that represented the plot (Figure 2.6). Obvious hummocks and depressions, and in the case old landing plots, areas where bladed materials were piled (berms) were avoided. Entire L and F layers were separately removed from a 30 x 30 cm quadrat. Samples were oven dried with weights recorded once a constant weight was achieved and ground in preparation for chemical analysis. At each sampling station under the LF excavation, soil pits were dug to a depth of 60 cm; the genetic horizons and horizon depths were recorded. Mineral soil samples were collected from each horizon, air dried and sieved (2 mm) in preparation for chemical analysis. Organic and mineral horizons were bulked at the plot level prior to analysis.

## **2.4 Methods – post-harvest assessment**

### 2.4.1 Slash

Slash assessments were designed to quantify the amount of DWD remaining on the plots after harvest treatment. The results from the post-harvest DWD measurement were used in combination with the pre-harvest assessment to derive the total DWD and the portion that consisted of new harvesting residues. Post-harvest slash measurements were done after harvest slash was distributed using the Kobelco excavator on biomass removal treatment (1) plots and stumps were removed on treatment (3) plots but prior to site preparation of all plots by power disc trenching. The dellimbing over the biomass removal treatment (1) plots resulted in a linear pattern of slash across the plot area; the slash was re-distributed more evenly by the excavator. Fixed measurement quadrats and line intercept methods were used to estimate post-harvest slash loadings .

#### 2.4.1.1 Fixed quadrats

For the biomass removal plots for treatments (1), (2) and (3) each 70 x 70 m plot was divided into four equal subplots. In each subplot three circular 2.39 m radius sampling transects, termed coarse slash quadrats, were established using random XY distances from the treatment plot center (Figure 2.7). In the case of the old landing plots two coarse slash quadrats were established for each 20 x 20 m plot. The sampling surface consisted of a “doughnut”, 1 m wide centered on the 2.39 m radius, resulting in a 15 m<sup>2</sup> sample area. Upper and lower diameter, length, species and decomposition class (1=dead, bark on, twigs intact; 2=dead, bark flakey, stem solid) were determined for each piece of downed woody material greater than 5 cm in diameter within the quadrat. Any material that was in a further stage of decomposition was not recorded as it would have been present before harvest and would be accounted for in the pre-harvest DWD assessment. Fine slash was measured using 2 (treatment 1) or 3 (treatments 2 and 3) 30 x 30 cm fine slash quadrats nested within the coarse slash quadrats (Figure 2.7). The first quadrat was located at a random azimuth from the centre of the large slash quadrat radius the second and third were located at 120° offsets from the previous quadrat. All downed woody materials less than 5 cm diameter of decomposition classes 1 and 2 were collected within the fine slash quadrat. Samples were oven dried and the weights recorded once a constant weight was achieved. Twenty percent of the samples were sorted into the following components and weighed separately: needles, twigs (0-2 cm), branches (2-5 cm), cones, and other (bark, harvest chaff etc.). These samples were randomly selected, representing each of the treatments and old landing plots equally. After sorting and weighing, samples were ground in preparation for chemical analysis.

Post-harvest fine DWD (< 5 cm) C and nutrient contents were calculated using the chemical analysis obtained from ground needles, twigs and branches from the 30 x 30 cm fine slash quadrats, while C and nutrient concentrations for cones and other (other mostly consisted of broken stemwood/stembark) were used from the above-ground biomass chemical analysis described in Section 2.3.1. Post-harvest coarse DWD (> 5 cm) C and nutrient contents were calculated using stemwood C and nutrient concentrations from the above ground biomass chemical analysis (Section 2.3.1).

#### 2.4.1.2 Line intercept

For the biomass removal plots for treatments (1) and (2) three 20 m transects were established from each plot centre starting with a random azimuth for the first transect (Figure 2.7). Transects two and three were offset 120° to complete a triangle. DWD counts for post-harvest slash from 1 to 5 cm in diameter were tallied along the entire 20 m transect. Intercept diameter and species were determined for downed woody materials greater than 5 cm in diameter along the entire 20 m transect.

The line intercept data collected was compiled to enable estimations of post-harvest slash using two different methods (McRae et al. 1979, Marshall et al. 2000). For the McRae et al. (1979) calculations, DWD counts less than 1 cm in diameter were evenly distributed between size class 1 and 2 (0-0.49, 0.5-0.99 cm) and counts between 1-5 cm between size class 3 and 4 (1.0-2.99, 3-4.99 cm). Slash loading mass was calculated in Mg ha<sup>-1</sup>. Foliage loadings were calculated using the size class 1 loadings and a jack pine needle to slash weight ratio of 2.03. For the Marshall et al. (2000) calculations, wood volume for each transect was estimated using the following formula:

$$y_i = \frac{\pi^2}{8 \times L} \times \sum_{j=1}^{m_i} d_{ij}^2$$

Where,

$y_i$  = total volume in  $\text{m}^3$  per hectare based on transect i

$L$  = length of transect in m

$d_{ij}$  = intersecting diameter (cm) of individual pieces j to m measured along transect i.

DWD counts were converted to average slash diameters from the size classes to estimate total wood volume. Slash loading volume ( $\text{m}^3 \text{ ha}^{-1}$ ) was converted to mass ( $\text{Mg ha}^{-1}$ ) using wood density values from previous OMNR, CNFER studies (D.M. Morris unpublished data).

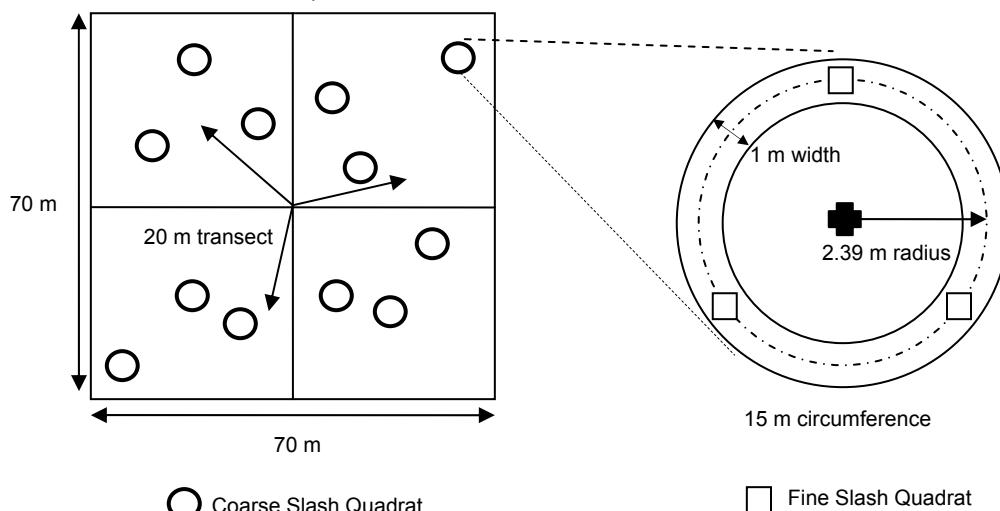


Figure 2.7. Coarse slash quadrat and line intercept transect layout within a biomass removal plot and associated fine slash quadrats. The 12 large slash quadrats per plot result in a sampling intensity of 3.7% of the plot area, while the 36 fine slash quadrats per plot represent 0.07% of the plot area.

#### 2.4.2 Stump and coarse roots

After the stumping treatment (3) was completed the following protocol was used to quantify the amount of stump, coarse root and associated soil material that was removed from each plot. Along all four sides of each stumped plot (stumps were piled as windrows outside the treatment plot boundaries) removed stumps that had significant soil attached to the stump/root system and removed stumps that had no soil, or an insignificant amount of soil, attached to the stump/root system were counted separately. Stumps that were tossed multiple times to remove them from the plot area had very little soil attached. At each stumped plot five stump/root systems spanning a range of diameters (25 stumps total across the site) were sampled. Only stumps that had significant soil still attached to the

stump/root system were selected. Stump diameter was recorded and the entire attached forest floor (L and F horizons) was sampled. The width (from stump) and depth (averaged over the width measured) of attached mineral soil from each individual stump /root system by horizon (H/Ah, Ae, B, C) at 4 directions (90 degree spacing) around the base of the stump were measured. After the soil measurements were completed all mineral soil was removed from the stump/root system and the fresh weight of the stump/root system was determined. Forest floor material was oven dried and weighed to determine an average removal per stump. The mass of mineral soil removed was calculated using the volume of soil determined from the stump measurements and mean bulk densities for each horizon from the pre-harvest soil pit sampling. A mid-stump disc was sampled, oven dried to

determine moisture content to enable conversion of stump fresh weights to oven dry weights, and ground in preparation for chemical analysis.

## 2.5 Chemical analysis

Chemical analyses were done at the Plant and Soil Analysis Laboratory at the Canadian Forest Service, Great Lakes Forestry Centre in Sault Ste. Marie, Ontario. Tree component (stemwood, bark, branches, cones, foliage), DWD, slash, stump and soil C and N concentrations were determined using a NCS combustion analyzer (Model Vario EL III, Elementar Americas Inc., Mt Laurel, NJ). Total elemental concentrations (P, K, Ca, Mg, S) of plant materials were determined with a Varian Vista simultaneous axial inductively coupled argon plasma (ICAP) emission spectrometer (Varian Analytical Instruments, Walnut Creek, CA) after microwave digestion with HNO<sub>3</sub> and HF. Soil samples were analyzed for pH in distilled, deionized water and 0.01 M CaCl<sub>2</sub> by glass electrode. Exchangeable Ca, Mg, and K were determined on the ICAP after mechanical vacuum extraction using unbuffered 1 M NH<sub>4</sub>Cl solution.

Organic matter concentrations were determined by loss on ignition for Land F horizons and by the Walkley Black method for mineral soils. Extractable P was determined on the ICAP after extraction with Bray and Kurtz No.1 solution. Soil texture (hydrometer method) and Fe and Al fractions (dithionite, oxalate and pyrophosphate extractions) were also determined for soil pit mineral soil samples.

## 3.0 Results

### 3.1 Pre-harvest characterization – biomass removal and uncut control plots

#### 3.1.1 Stand productivity and structural attributes

Pre-harvest stand mensuration data is presented for biomass removal and uncut control plots in Table 3.1. Pre-harvest stand inventory data was used to develop a dbh distribution comparing live jack pine in the biomass removal plots with those measured in the uncut control plots (Figure 3.1). Distributions were similar between the two areas of the stand with a slightly higher stocking density in the uncut control plots compared to the biomass removal plots.

Table 3.1. Pre-harvest stand characteristics for biomass removal and uncut control plots. Mean values are reported with standard deviations below each value in parenthesis.

	All live trees		Jack pine only				
	Density (trees ha <sup>-1</sup> )	Basal Area (m <sup>2</sup> ha <sup>-1</sup> )	Density (trees ha <sup>-1</sup> )	Quadratic mean diameter (cm)	Mean height (m)	Basal Area (m <sup>2</sup> ha <sup>-1</sup> )	Total volume (m <sup>3</sup> ha <sup>-1</sup> )
Biomass removal plots n=20	2005 (527)	30.1 (4.3)	1825 (514)	14.6 (1.2)	13.7 (0.6)	29.5 (4.3)	195.8 (33.8)
Uncut control plots n=5	2005 (250)	29.2 (2.9)	1940 (311)	13.9 (0.7)	13.2 (0.6)	29.0 (3.0)	189.6 (23.4)

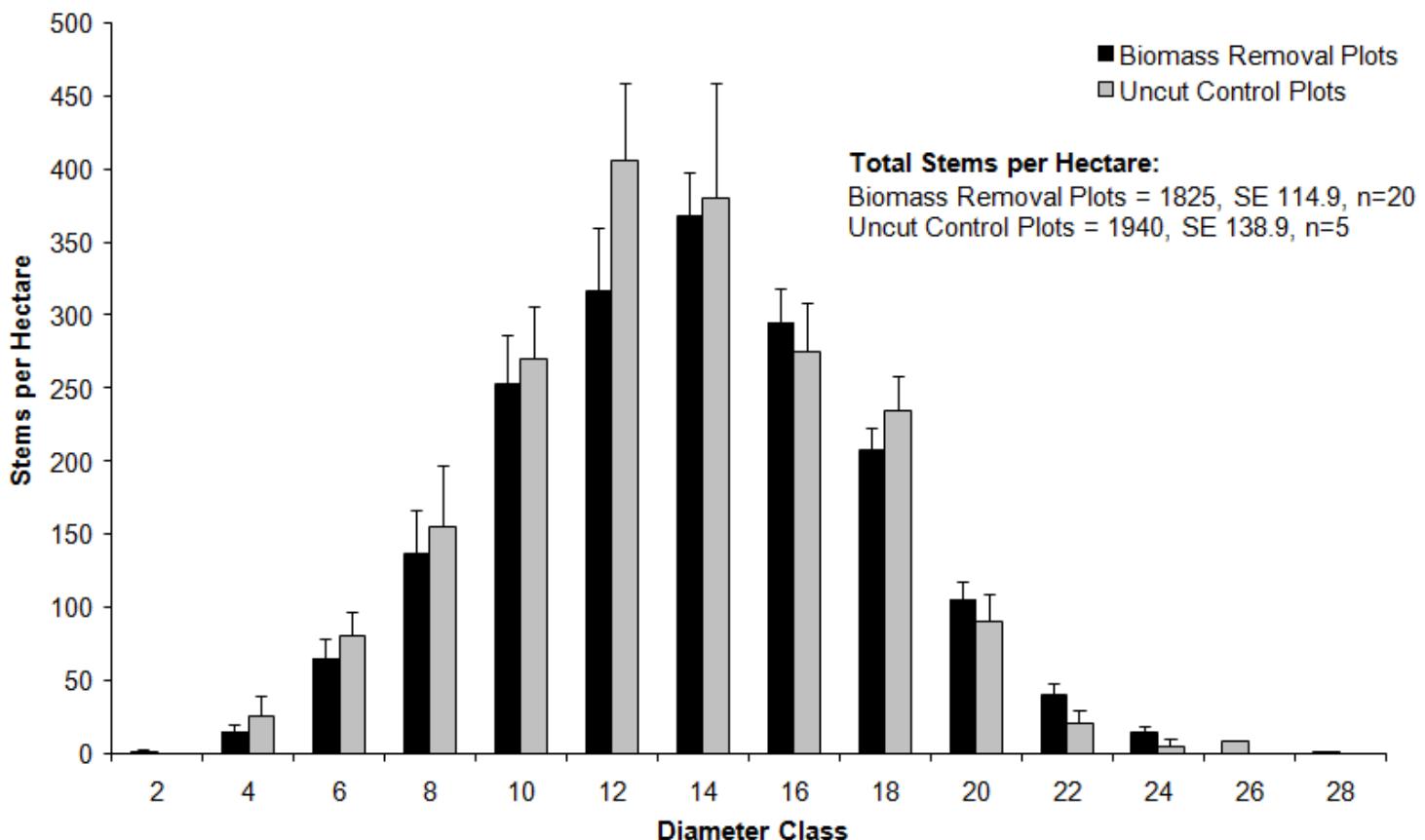
**dbh Distribution - Live Pj**

Figure 3.1. Pre-harvest jack pine dbh distribution comparing biomass removal (n=20) and uncut control (n=5) plots.

Stem analysis data was used to estimate site quality using a measure of site index (SI). Site index is defined as the height of dominant and co-dominant trees in a stand at a specific reference age (Carmean 1996) and provides an index of site productivity that can be used to account for site differences when modeling forest growth and yield (Kwiaton et al. 2011). Average SI was calculated using the stem analysis data and a site index curve (Carmean et al. 2001) was plotted to project the development of the stand (Figure 3.2). The Carmean et al. (2001) equation was developed using data up to 100 years above breast height, thus the height-age relationship was also described using a modified-Weibull function (Figure 3.2) that better fit the existing data (up to 35 years above breast height):

$$Y = 1.3 + b_0 [1 - \exp(-b_1 dbhage^{b_2})]$$

where  $Y$  - is the modelled total height,  $b_0$  - is a model-derived coefficient defining the upper asymptote of height, and  $b_1$  and  $b_2$  - are model-derived coefficients that define the shape of the curve.

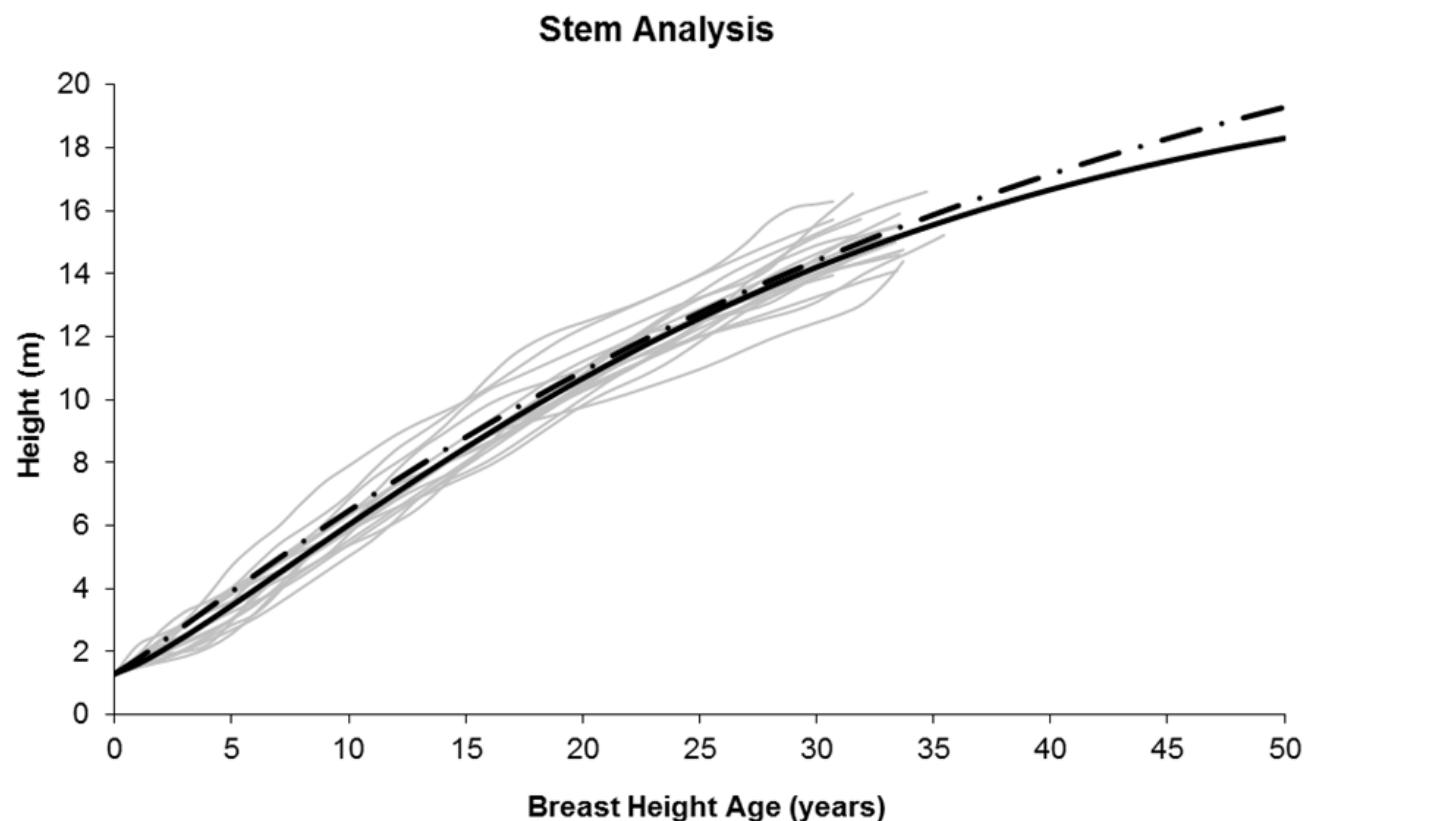


Figure 3.2. Pre-harvest height-age relationship from stem analysis data collected from twenty dominant/co-dominant jack pine trees (grey), Carmean et al. (2001) jack pine site index curve (dot-dash, black), and the associated modified-Weibull function (solid, black).

Dominant/co-dominant trees established in the biomass removal and uncut control plots had similar site indices of 19.3 m at the standard index age of 50 years above breast height (breast height age = BHA). The Weibull function describing the height-age relationship of the stem analysis data had an upper asymptote of 18.3 m. The difference in asymptotes was due to the differing age ranges of the two approaches.

Pre-harvest plot level mensuration and tree biomass data is reported in Appendix B. Trees from the biomass removal plots had a slightly greater amount of total above ground live biomass due to a slightly greater mass of stemwood (Figure 3.3). The range of variability is larger in the biomass removal plots ( $n = 20$ ) than in uncut control plots ( $n = 5$ ). Pre-harvest plot level C and nutrient contents of the stand are reported in Appendix C. Similar to the biomass differences, the amount of above ground live C, N, P, K, Ca and Mg was slightly greater in the biomass removal plots than in the uncut control plots (Table 3.2).

The pre-harvest understory vegetation was relatively homogeneous and representative of jack pine dominated stands. Dominant woody species included *Vaccinium angustifolium*, *Amelanchier* sp. and *Prunus pensylvanica*.

Among non-woody species, *Linnaea borealis* ssp. *longiflora*, *Epigaea repens* and the grass *Oryzopsis asperifolia* were among the most abundant throughout the site, although other species like *Gaultheria procumbens*, *Cornus canadensis* and *Maianthemum canadense* also dominated in certain areas. The relative occurrence (per block) of all vascular species detected is reported in Appendix D.

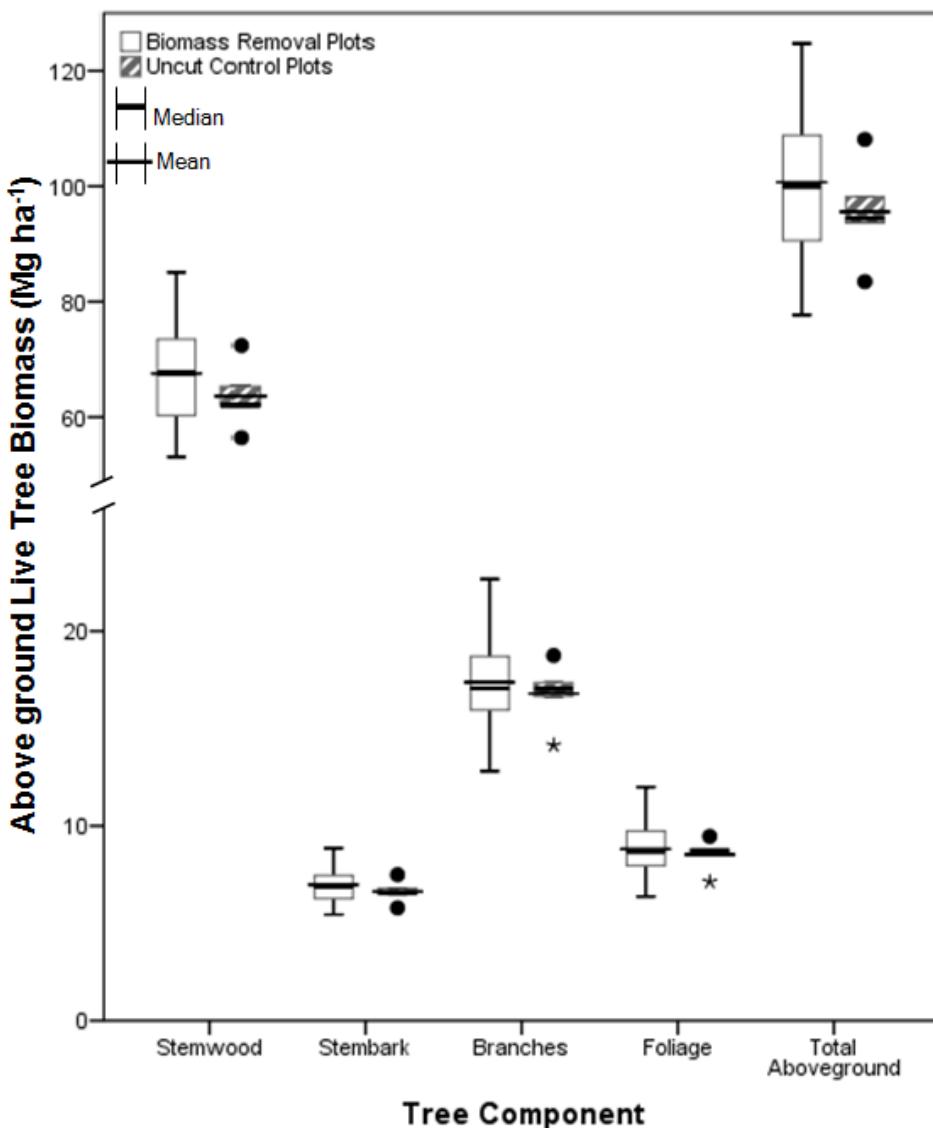


Figure 3.3. Boxplot comparisons of pre-harvest above ground live tree biomass by tree component (stemwood, stembark, branches, and foliage) for biomass removal (n=20) and uncut control (n=5) plots. Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

Table 3.2. Pre-harvest live above ground and standing dead biomass C and nutrient contents by tree component

Biomass removal plots (n=20)						
Tree Component	C ( $\text{Mg ha}^{-1}$ )	N ( $\text{kg ha}^{-1}$ )	P ( $\text{kg ha}^{-1}$ )	K ( $\text{kg ha}^{-1}$ )	Ca ( $\text{kg ha}^{-1}$ )	Mg ( $\text{kg ha}^{-1}$ )
<u>Live above ground</u>						
Stemwood	33.25	42.48	2.6	22.42	42.33	9.83
Stembark	3.75	21.98	1.04	2.49	16.87	1.43
Branches	8.78	51.42	4.26	13.62	34.27	6.2
Foliage	4.53	126.86	10.78	30.73	22.44	8.46
Total live above ground	50.31	242.75	18.69	69.26	115.92	25.93
<u>Standing dead</u>						
Stemwood	2.39	3.05	0.19	1.61	3.04	0.71
Stembark	0.32	1.85	0.09	0.21	1.42	0.12
Branches	0.86	4.10	0.20	0.43	3.48	0.44
Total standing dead	3.57	9.00	0.48	2.25	7.93	1.27
<b>Total above ground</b>	<b>53.88</b>	<b>251.75</b>	<b>19.17</b>	<b>71.51</b>	<b>123.85</b>	<b>27.20</b>
Uncut control plots (n=5)						
<u>Live above ground</u>						
Stemwood	31.32	40.01	2.45	21.12	39.87	9.26
Stembark	3.56	20.86	0.99	2.37	16.02	1.36
Branches	8.48	49.68	4.12	13.16	33.11	5.99
Foliage	4.39	122.82	10.44	29.75	21.72	8.19
Total live above ground	47.75	233.38	18	66.39	110.73	24.81
<u>Standing dead</u>						
Stemwood	1.52	1.94	0.12	1.02	1.93	0.45
Stembark	0.22	1.31	0.06	0.15	1.01	0.09
Branches	0.65	3.08	0.15	0.32	2.61	0.33
Total standing dead	2.39	6.33	0.33	1.49	5.55	0.86
<b>Total above ground</b>	<b>50.14</b>	<b>239.71</b>	<b>18.33</b>	<b>67.88</b>	<b>116.28</b>	<b>25.67</b>

### 3.1.2 Downed woody debris

Pre-harvest DWD biomass, volume and C and nutrient contents for each plot are reported in Appendix E and F. Minimal amounts of above ground DWD were present in biomass removal and uncut control plots (total DWD,  $< 5 \text{ Mg ha}^{-1}$  – Figure 3.4a), (coarse DWD,  $< 10 \text{ m}^3 \text{ ha}^{-1}$  – Figure 3.4b). Amounts of belowground DWD showed greater variability across the site than above ground DWD and on average were higher in biomass removal plots than in uncut control plots (Figures 3.4a and 3.4b).

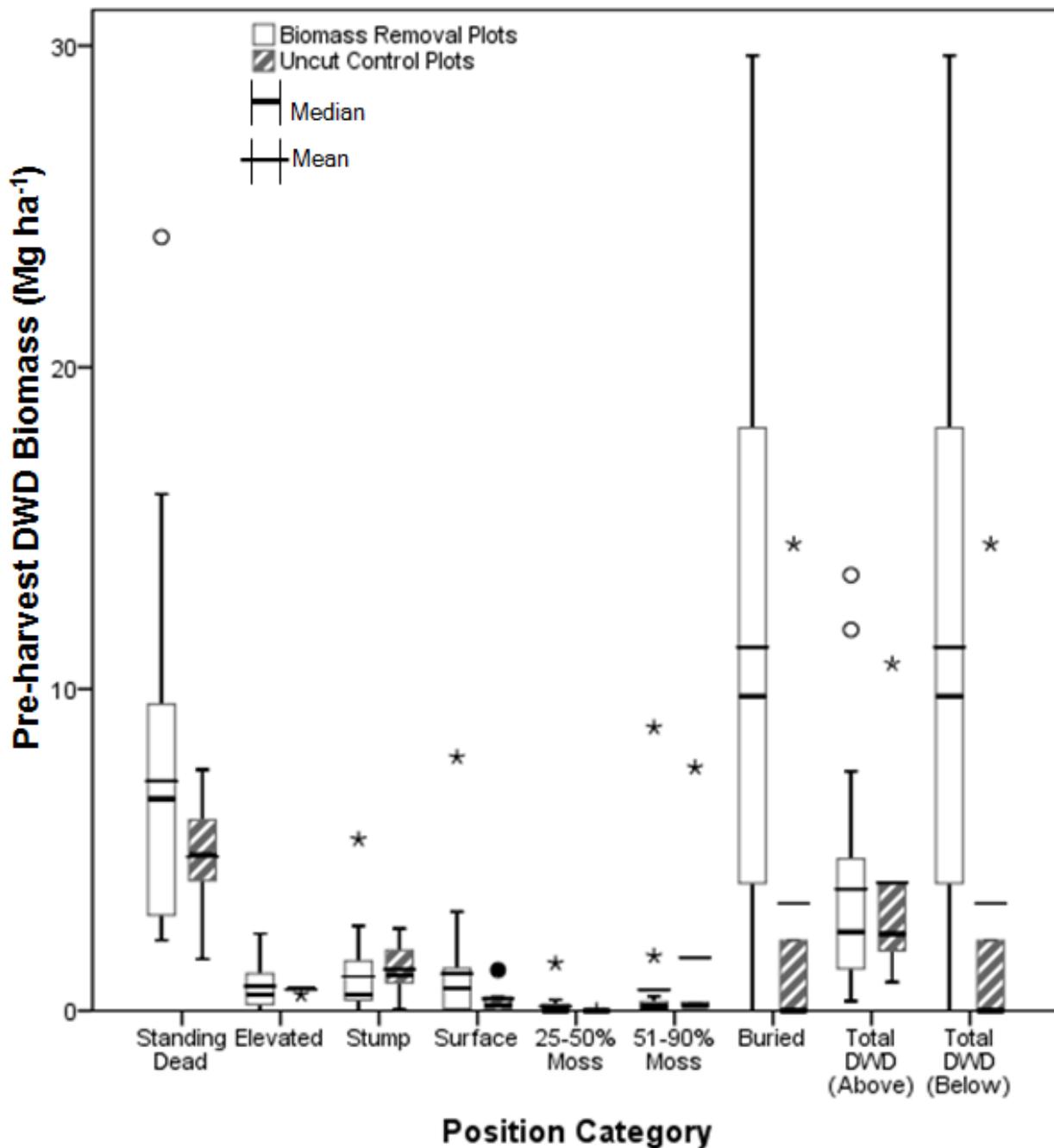


Figure 3.4a. Boxplot comparison of pre-harvest DWD biomass by vertical position (total above ground = elevated, + stump + surface + 25-50% moss covered + 51-90% moss covered; total below-ground = buried) and standing dead biomass for biomass removal (n=20) and uncut control (n=5) plots. Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

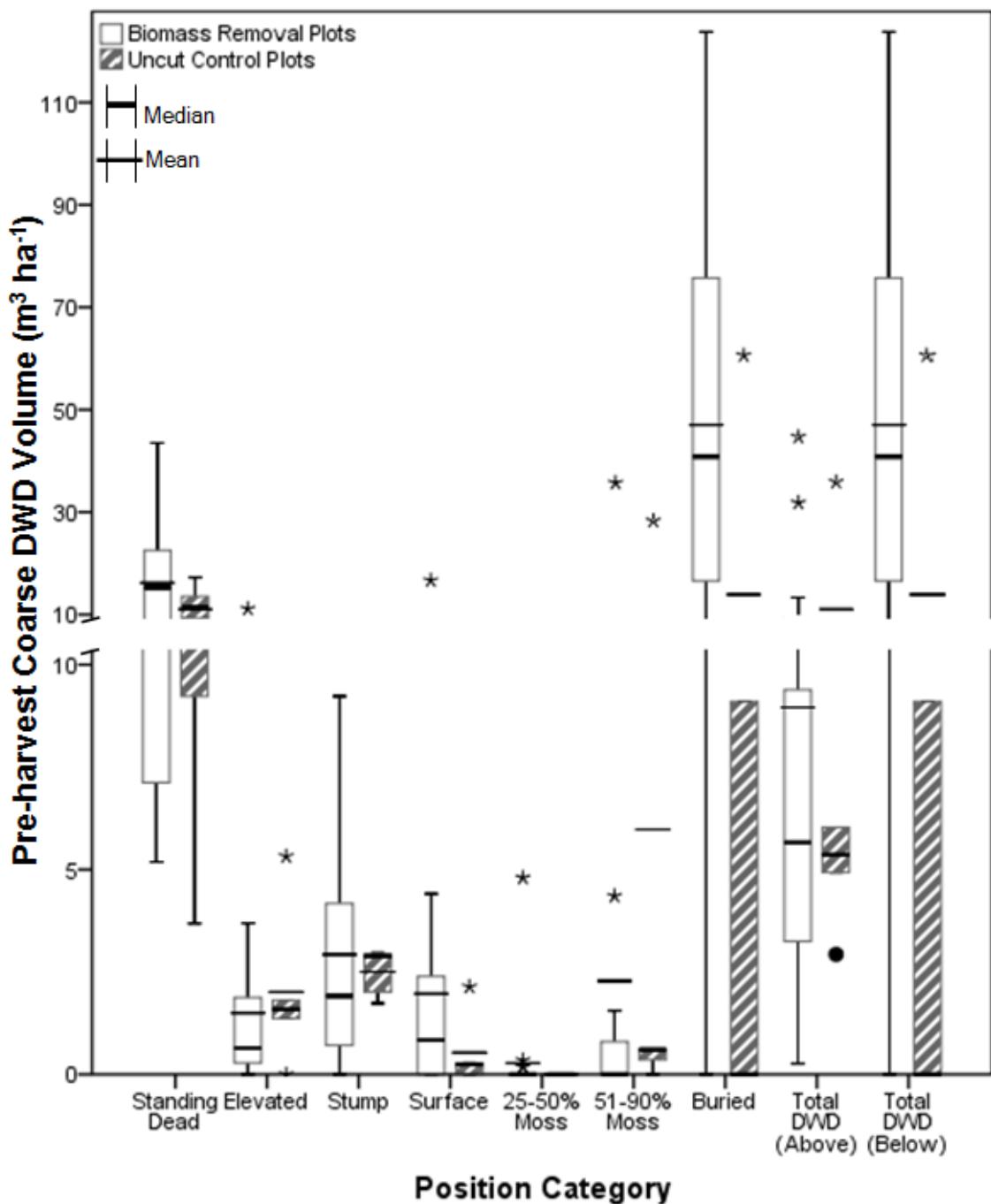


Figure 3.4b. Boxplot comparison of pre-harvest coarse ( $> 5 \text{ cm}$ ) DWD volume by vertical position (total above ground = elevated + stump + surface + 25-50% moss covered + 51-90% moss covered; total belowground = buried) and standing dead volume for biomass removal ( $n=20$ ) and uncut control ( $n=5$ ) plots. Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.1.3 Soils

Pre-harvest plot level horizon depths, pH, texture, coarse fragment content, bulk density, horizon dry weights and Fe and Al fractions are summarized in Appendix G. These data are summarized for the biomass removal and uncut control plots in Table 3.3. Data used for these summaries are a compilation of both the pit and soil monitoring data, with texture, coarse fragment, bulk density and Fe and Al fractions applied to individual plots from the closest soil pit. At the plot level, mineral soil horizon depths and dry weights for the upper portion of the soil profile, and L and F horizon dry weights are used in the data compilation. Soil C and nutrient concentrations and reserves are compiled in a similar manner with plot level concentration data utilized for the L and F horizons and mineral soil horizons to 60 cm depth from the soil monitoring sampling and deeper horizon data coming from the soil pits. Pre-harvest plot level soil C and nutrient concentrations and reserves to 1 m depth in the mineral soil are summarized in Appendix H. These data are summarized for the biomass removal and uncut control plots in Table 3.4 and Table 3.5.

Table 3.3. Pre-harvest physical and chemical soil properties from soil pit and soil monitoring sampling to 1 m depth in the mineral soil at the Island Lake Biomass Harvest Research and Demonstration Area. Mean values are reported with standard deviations below each value in parenthesis.

Soil horizon	Horizon depth (cm)	Coarse fragments (%)	Bulk density (g·cm <sup>-3</sup> )	pH	H <sub>2</sub> O	CaCl <sub>2</sub>	Sand	Texture (%)	Silt	Clay	Biomass removal plots (n = 20)			
											F (%)	Dithionite	Oxalate	Pyrophosphate
L	3.4 (0.92)		4.25 (0.12)	3.86 (0.14)							9.1 (1.5)			
F	3.6 (1.06)		3.71 (0.17)	3.27 (0.19)							24.7 (9.0)			
H/Ah	2.5 (0.55)	0.1 (0.31)	0.45 (0.13)	3.75 (0.16)	3.07 (0.12)						112.5 (36.4)			
Ae	3.6 (1.02)	0.7 (1.53)	0.99 (0.16)	4.00 (0.25)	3.40 (0.10)	65.2 (5.12)	27.9 (6.12)	6.9 (2.92)	363.3 (137.0)	0.14 (0.02)	0.09 (0.02)	0.06 (0.01)	0.08 (0.01)	0.11 (0.02)
Bm1	11.5 (3.12)	1.5 (2.14)	1.13 (0.06)	4.98 (0.16)	4.46 (0.12)	57.3 (7.69)	32.9 (7.51)	9.8 (4.10)	1282.2 (367.1)	0.71 (0.15)	0.56 (0.15)	0.13 (0.06)	0.59 (0.13)	1.14 (0.17)
Bm2	14.5 (2.70)	3.9 (2.85)	1.30 (0.10)	5.24 (0.16)	4.90 (0.12)	75.2 (13.33)	18.1 (14.65)	6.7 (4.52)	1813.7 (355.4)	0.20 (0.14)	0.18 (0.14)	0.03 (0.03)	0.17 (0.12)	0.41 (0.25)
C	35.7 (20.80)	13.0 (14.33)	1.38 (0.11)	5.30 (0.21)	5.00 (0.13)	92.1 (3.66)	2.9 (2.39)	5.0 (3.47)	4053.7 (2358.3)	0.07 (0.02)	0.05 (0.02)	0.05 (0.01)	0.12 (0.03)	0.06 (0.02)
IIC	20.4 (14.61)	29.0 (13.82)	1.13 (0.23)	5.65 (0.14)	5.01 (0.07)	91.4 (4.00)	2.8 (1.44)	5.9 (4.77)	1637.9 (1264.67)	0.08 (0.04)	0.08 (0.04)	0.02 (0.01)	0.09 (0.02)	0.04 (0.02)
IIIc	14.2 (18.02)	1.0 (0.00)	1.34 (0.02)	5.70 (0.09)	5.05 (0.09)	90.6 (3.33)	1.3 (0.00)	8.1 (3.33)	1890.3 (2389.22)	0.04 (0.01)	0.02 (0.01)	0.02 (0.00)	0.04 (0.00)	0.02 (0.00)
												Uncut control plots (n = 5)		
L	2.6 (0.55)		4.21 (0.12)	3.81 (0.11)							7.6 (0.6)			
F	3.8 (1.64)		3.66 (0.06)	3.18 (0.06)							25.1 (6.7)			
H/Ah	3.6 (2.19)	3.0 (2.74)	0.48 (0.21)	3.84 (0.19)	3.24 (0.24)						133.4 (18.1)			
Ae	3.9 (0.68)	3.0 (2.74)	0.96 (0.05)	4.01 (0.14)	3.51 (0.20)	75.8 (1.49)	19.4 (0.60)	4.8 (2.09)	362.0 (67.0)	0.35 (0.21)	0.23 (0.16)	0.17 (0.10)	0.14 (0.08)	0.19 (0.12)
Bm1	13.3 (1.25)	9.5 (4.11)	1.12 (0.02)	5.01 (0.05)	4.59 (0.08)	68.7 (1.48)	26.3 (1.47)	5.1 (0.02)	1352.8 (129.5)	0.63 (0.11)	0.45 (0.03)	0.10 (0.01)	0.48 (0.09)	0.31 (0.03)
Bm2	12.7 (2.76)	12.0 (2.74)	1.24 (0.07)	5.19 (0.11)	4.93 (0.09)	94.5 (0.68)	3.5 (1.37)	2.0 (0.69)	1380.3 (340.1)	0.07 (0.01)	0.05 (0.01)	0.06 (0.01)	0.15 (0.01)	0.06 (0.01)
C	37.4 (4.93)	3.4 (2.19)	1.31 (0.09)	5.23 (0.22)	5.05 (0.04)	98.0 (0.68)	1.3 (0.00)	0.7 (0.68)	4690.0 (204.9)	0.05 (0.01)	0.04 (0.01)	0.01 (0.00)	0.08 (0.01)	0.04 (0.01)
IIC	32.7 (5.96)	16.6 (21.36)	1.15 (0.31)	5.75 (0.10)	4.99 (0.02)	98.2 (0.71)	1.8 (0.00)	0.0 (0.71)	3111.0 (1161.6)	0.05 (0.01)	0.04 (0.02)	0.02 (0.00)	0.05 (0.01)	0.03 (0.00)

Table 3.4 Pre-harvest carbon and nutrient concentrations for biomass removal and uncut control plots at the Island Lake Biomass Harvest Research and Demonstration Area.

<b>Biomass removal plots (n = 20)</b>						
<b>Soil horizon</b>	<b>C (g·kg<sup>-1</sup>)</b>	<b>N (g·kg<sup>-1</sup>)</b>	<b>P (ppm)</b>	<b>K (cmol<sub>c</sub>·kg<sup>-1</sup>)</b>	<b>Ca (cmol<sub>c</sub>·kg<sup>-1</sup>)</b>	<b>Mg (cmol<sub>c</sub>·kg<sup>-1</sup>)</b>
L	479.0	9.79	268.2	6.54	15.33	5.74
F	447.8	12.43	218.0	1.71	11.92	2.49
H/Ah	78.5	3.00	13.9	0.26	2.32	0.39
Ae	13.6	0.60	7.5	0.08	0.35	0.09
Bm1	20.4	1.02	6.1	0.04	0.22	0.05
Bm2	6.6	0.36	16.9	0.02	0.10	0.03
C	1.9	0.09	43.7	0.00	0.04	0.02
IIC	0.6	0.04	26.2	0.01	0.08	0.02
IIIC	0.30	0.03	19.7	0.01	0.07	0.02
<b>Uncut control plots (n = 5)</b>						
L	477.7	9.91	321.2	5.92	14.27	5.81
F	454.4	12.48	215.5	1.92	13.92	2.84
H/Ah	81.1	2.84	13.1	0.27	2.95	0.43
Ae	14.7	0.63	6.2	0.07	0.13	0.06
Bm1	16.9	0.78	4.7	0.03	0.09	0.03
Bm2	4.4	0.23	25.4	0.01	0.04	0.01
C	1.0	0.08	47.7	0.00	0.03	0.01
IIC	0.2	0.02	18.2	0.01	0.10	0.02

Table 3.5 Pre-harvest carbon and nutrient soil reserves to 1 m depth in the mineral soil and forest floor (L, F, H/Ah) contribution to total soil reserves for biomass removal and uncut control plots at the Island Lake Biomass Harvest Research and Demonstration Area.

<b>Biomass removal plots (n = 20)</b>						
<b>Soil horizon</b>	<b>C</b>	<b>N</b>	<b>P</b>	<b>K</b>	<b>Ca</b>	<b>Mg</b>
Soil reserves - total C (Mg ha <sup>-1</sup> ); macronutrients (kg ha <sup>-1</sup> )						
L	4.34	88.37	2.45	23.24	27.51	6.27
F	10.88	299.66	5.14	15.56	57.19	7.07
H/Ah	8.51	323.25	1.55	10.54	49.37	4.96
Ae	4.62	200.29	2.41	10.22	20.34	3.45
Bm1	25.27	1266.29	7.77	20.48	50.87	6.98
Bm2	11.79	668.84	31.86	10.58	36.18	5.77
C	6.95	316.93	163.10	5.44	35.98	6.74
IIC	0.81	53.38	38.87	6.76	24.54	3.52
IIIC	0.57	44.98	37.32	6.06	25.44	3.78
Total soil reserves	73.7	3262.0	290.5	108.9	327.4	48.5
Forest floor contribution	32.2%	21.8%	3.1%	45.3%	40.9%	37.7%
<b>Uncut control plots (n = 5)</b>						
Soil reserves - total C (Mg ha <sup>-1</sup> ); macronutrients (kg ha <sup>-1</sup> )						
L	3.62	74.73	2.44	17.66	21.59	5.34
F	11.48	305.57	5.33	18.60	71.52	8.82
H/Ah	11.48	403.69	1.83	14.51	80.47	7.20
Ae	5.39	228.60	2.26	9.14	9.74	2.44
Bm1	23.23	1057.72	6.36	16.45	25.12	4.70
Bm2	6.16	323.50	34.93	3.73	11.70	1.75
C	4.55	388.45	224.36	0.45	30.14	3.00
IIC	0.74	74.64	53.42	12.16	58.54	7.11
Total soil reserves	66.6	2856.9	330.9	92.7	308.8	40.4
Forest floor contribution	39.9%	27.4%	2.9%	54.8%	56.2%	52.9%

## 3.2 Pre-harvest characterization – stand and old landing plots

### 3.2.1 Stand productivity and structural attributes

Pre-harvest stand mensuration data is presented for the combined biomass removal and uncut control plots (hereafter called stand plots) and old landing plots in Table 3.6. Pre-harvest stand inventory data was used to develop a dbh distribution comparing live jack pine in the stand plots with those measured in the old landing plots (Figure 3.5). Live jack pine trees from the old landing plots had a smaller range of dbh, with approximately 82% of the trees falling at or below the 12 cm dbh class. The stocking density in the old landing plots ( $2505 \text{ stems ha}^{-1}$ ), however, was greater than the stand plots ( $1848 \text{ stems ha}^{-1}$ ).

Table 3.6. Pre-harvest stand characteristics for stand and old landing plots. Mean values are reported with standard deviations below each value in parenthesis.

	All live trees		Jack pine only				
	Density (trees $\text{ha}^{-1}$ )	Basal Area ( $\text{m}^2 \text{ ha}^{-1}$ )	Density (trees $\text{ha}^{-1}$ )	Quadratic mean diameter (cm)	Mean height (m)	Basal Area ( $\text{m}^2 \text{ ha}^{-1}$ )	Total volume ( $\text{m}^3 \text{ ha}^{-1}$ )
Stand plots n=25	2005 (479)	30.0 (4.0)	1848 (488)	14.4 (1.2)	13.6 (0.6)	29.4 (4.1)	194.6 (31.6)
Old landing plots n=10			2505 (905)	10.5 (0.9)	10.8 (0.6)	21.0 (5.2)	116.1 (32.8)

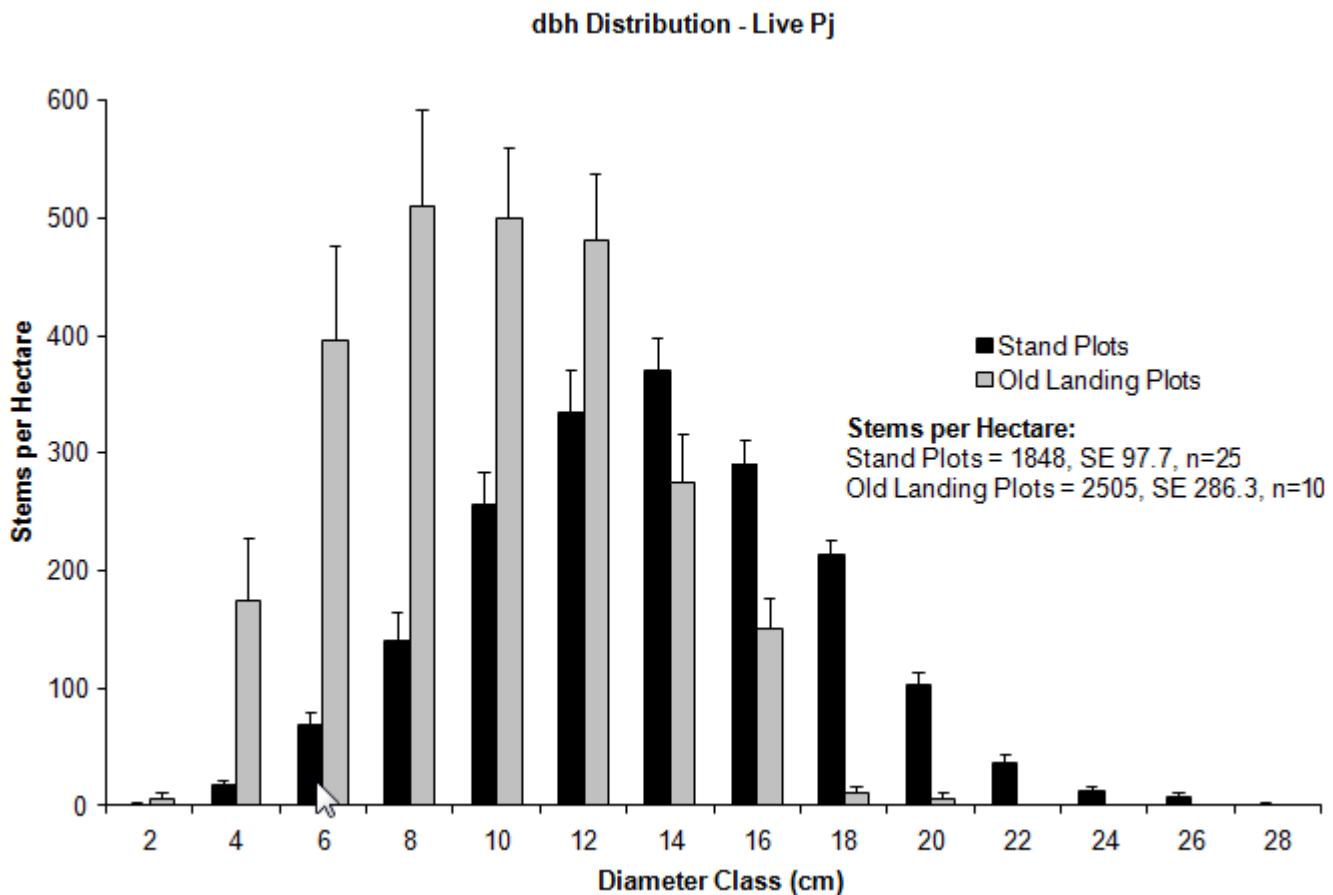


Figure 3.5. Pre-harvest jack pine dbh distribution comparing stand plots (n=25) with old landing plots (n=10) plots.

Mean SI was estimated using stem analysis data and the height-age relationship was compared between stand and old landing plot trees (Figure 3.6). Dominant/co-dominant trees established in the stand plots had a projected site index of 19.3 m, compared to 15.8 m for those found in the old landing plots at the standard index age of 50 years above breast height (breast height age = BHA). The Weibull function used to describe the height-age relationships for stand plots and old landing plots yielded upper asymptotes of 18.3 m and 13.7 m respectively at BHA 50. These differences represented an 18% (SI) and 25% (Weibull function) reduction in height growth resulting from the original blading of the organic horizons and the upper mineral soil on the old landings. The dominant trees in the old landing plots appeared to decline in height growth after 20 years of breast height age, which lowered the Weibull function curve (Figure 3.6). The difference between the two methods of describing and projecting stand productivity in terms of the height-age relationship has been discussed in section 3.1.1.

## Stem Analysis

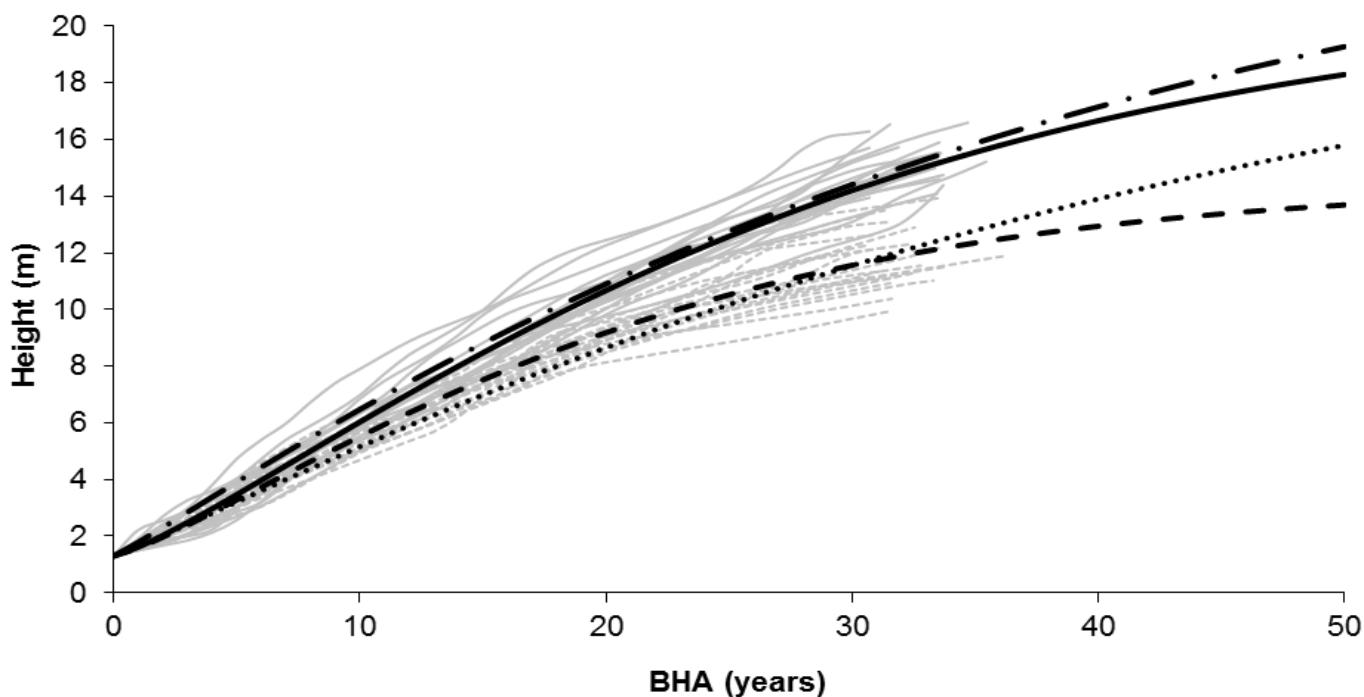


Figure 3.6. Pre-harvest height-age relationship from stem analysis data collected from twenty dominant/co-dominant jack pine stand plot trees (grey solid) and twenty-two dominant/co-dominant jack pine old landing plot trees (grey dashed). Carmean et al. (2001) jack pine site index curve for stand plots (black, dash-dot) and old landing plots (black, dotted) trees is displayed along with the associated modified-Weibull function for stand plots (black solid) and old landing plots (black dashed) trees.

Pre-harvest plot level mensuration and tree biomass data for old landing plots are reported in Appendix B. On average stand plots ( $100 \text{ Mg ha}^{-1}$ ) had 62% more above ground live biomass than old landing plots ( $62 \text{ Mg ha}^{-1}$ ) (Figure 3.7). Stemwood, stembark, branch and foliage biomass were higher in stand plots than old landing plots. Pre-harvest plot level above ground live and standing dead C and nutrient contents of the old landing plots are reported in Appendix C.

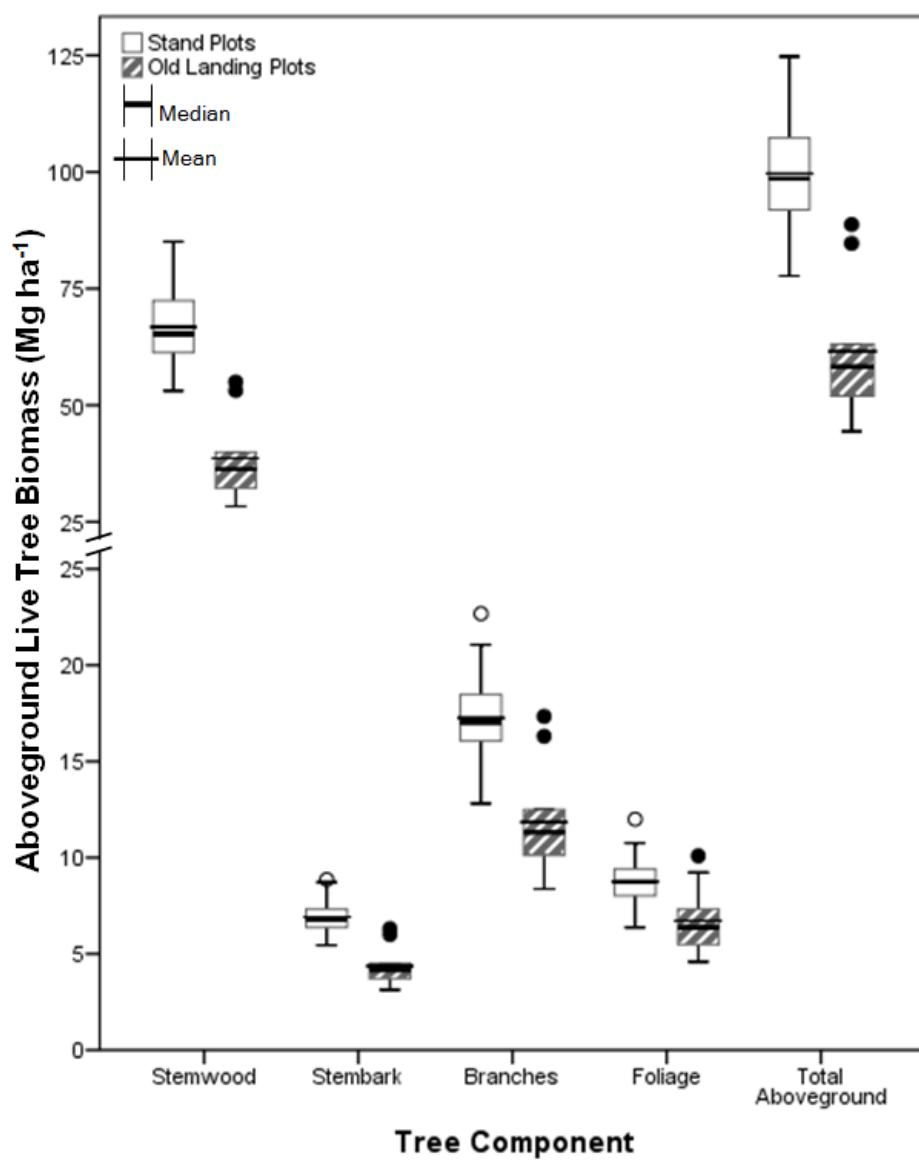


Figure 3.7. Boxplot comparison of per-harvest above ground live tree biomass by tree component (stemwood, stembark, foliage, and branches) for stand ( $n=25$ ) and landing plots ( $n=10$ ). Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.2.2 Downed woody debris

Pre-harvest DWD biomass, volume and C and nutrient contents for each old landing plot are reported in Appendices E and F. Old landing plots had low amounts of total DWD (mean value,  $4.2 \text{ Mg ha}^{-1}$ ), coarse DWD (mean value,  $6.8 \text{ m}^3 \text{ ha}^{-1}$ ) and no buried material (Figures 3.8a and 3.8b).

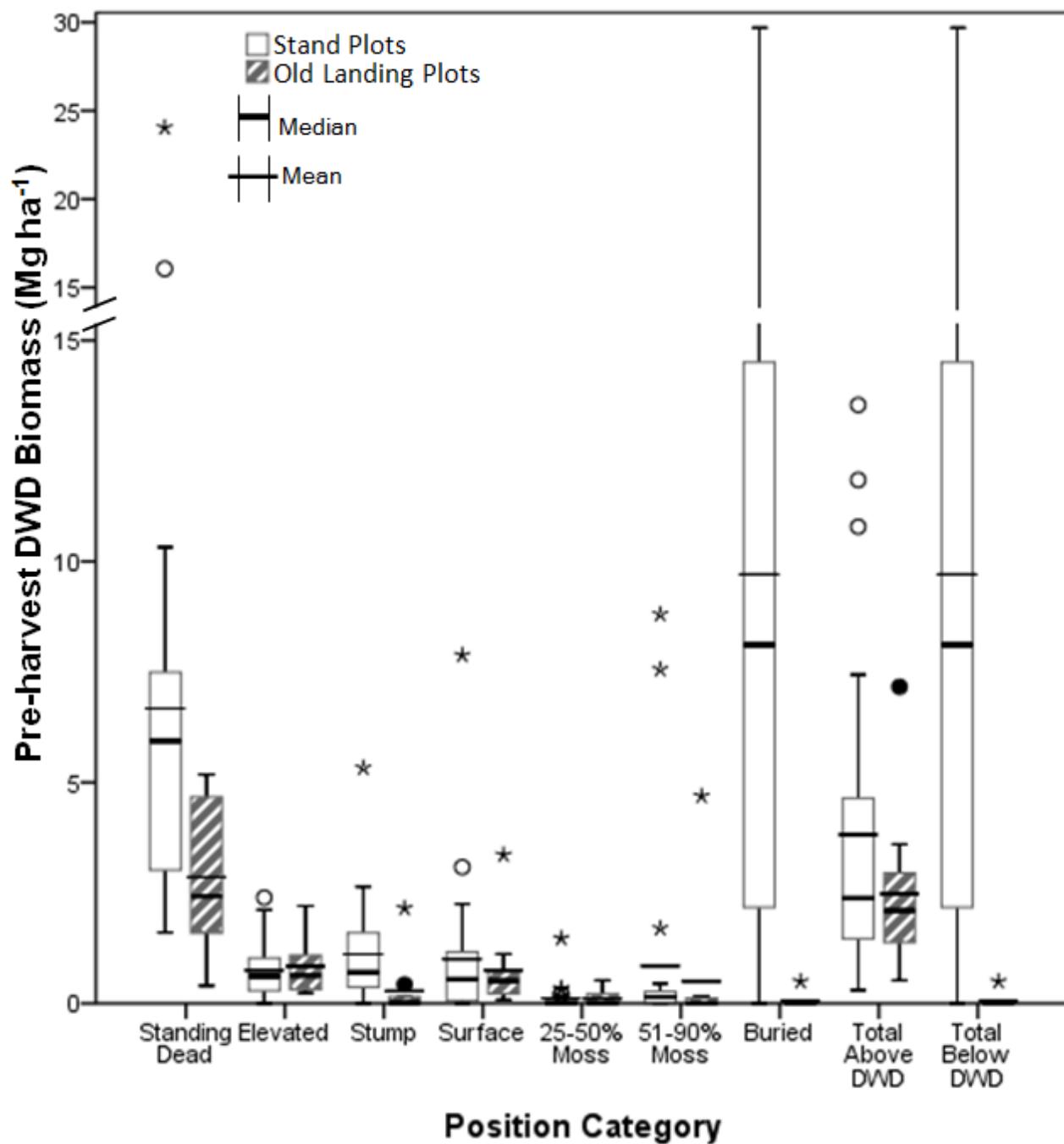


Figure 3.8a. Boxplot comparison of pre-harvest DWD biomass by vertical position (total above ground = elevated + stump + surface + 25-50% moss covered + 51-90% moss covered; total below-ground = buried) and standing dead biomass for stand (n=25) and old landing (n=10) plots. Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

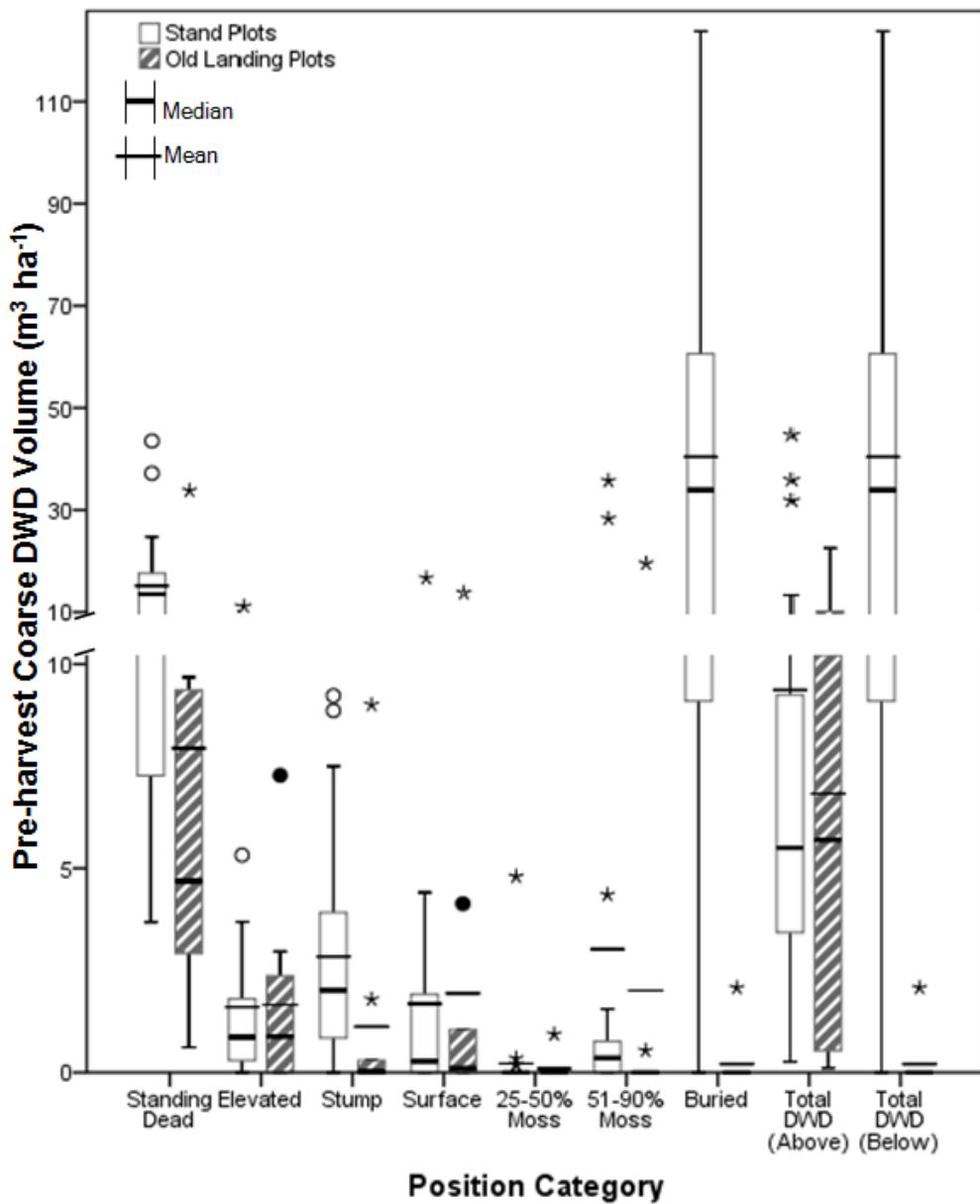


Figure 3.8b. Boxplot comparison of pre-harvest coarse ( $> 5 \text{ cm}$  diameter) DWD volume by vertical position (total above ground = elevated + stump + surface + 25-50% moss covered + 51-90% moss covered; total below-ground = buried) and standing dead volume for stand ( $n=25$ ) and old landing ( $n=10$ ) plots. Box represents 25th and 75th percentile and error bars represent 10th and 90th percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.2.3 Soils

Pre-harvest plot level horizon depths, pH, texture, coarse fragment content, bulk density, horizon dry weights and Fe and Al fractions for old landing plots are summarized in Appendix G. Data are summarized for the stand and old landing plots in Table 3.7. Data used for these summaries are a compilation of both the pit and soil monitoring data, with texture, coarse fragment, bulk density and Fe and Al fractions applied to individual plots from the closest soil pit. At the plot level, mineral soil horizon depths and dry weights for the upper portion of the soil profile, and L and F horizon dry weights are used in the data compilation. Soil C and nutrient concentrations and reserves are compiled in a similar manner with plot level concentration data utilized for the L and F horizons and mineral soil horizons to 60 cm depth from the soil monitoring sampling and deeper horizon data coming from the soil pits. Pre-harvest plot level soil C and nutrient concentrations and reserves to 1 m depth in the mineral soil are summarized in Appendix H. These data are summarized for the stand and old landing plots in Table 3.8 and Table 3.9.

Table 3.7. Pre-harvest physical and chemical soil properties from soil pit and soil monitoring sampling to 1 m depth in the mineral soil at the Island Lake Biomass Harvest Research and Demonstration Area. Mean values are reported with standard deviations below each value in parenthesis.

Soil horizon	Horizon depth (cm)	Coarse fragments (%)	Bulk density ( $\text{g}\cdot\text{cm}^{-3}$ )	pH	$\text{H}_2\text{O}$	$\text{CaCl}_2$	Sand	Silt	Clay	$(\text{Mg}\cdot\text{ha}^{-1})$	Stand plots (n = 25)				Al (%)
											Texture (%)	Horizon weight	Fe (%)	Dithionite Oxalate Pyrophosphate Dithionite Oxalate Pyrophosphate	
L	3.2 (0.91)	3.2 (1.65)	4.24 (0.12)	3.85 (0.13)							8.8 (34.0)				0.10 (0.07)
F	3.7 (1.16)	1.1 (2.01)	3.70 (0.16)	3.25 (0.17)							1.4 (1.4)	0.11 (0.06)	0.07 (0.05)		0.12 (0.05)
H/Ah	2.7 (1.11)	0.7 (0.14)	0.46 (0.17)	3.77 (0.16)	3.11 (0.16)	26.2 (6.46)	6.5 (2.87)	363.1 (124.9)	0.18 (0.12)	0.11 (0.09)	24.7 (8.4)				
Ae	3.7 (0.95)	1.1 (2.01)	0.99 (0.15)	4.00 (0.23)	67.3 (0.13)	26.2 (6.32)	6.5 (2.87)	363.1 (124.9)	0.18 (0.12)	0.11 (0.09)	24.7 (8.4)				
Bm1	11.9 (2.92)	3.1 (4.15)	1.13 (0.05)	4.98 (0.14)	4.48 (0.12)	59.6 (8.28)	31.6 (7.23)	8.8 (4.13)	1296.3 (332.2)	0.70 (0.14)	0.54 (0.14)				0.38 (0.11)
Bm2	14.1 (2.76)	5.5 (4.31)	1.29 (0.10)	5.23 (0.15)	4.90 (0.11)	79.1 (14.24)	15.2 (14.24)	5.7 (4.46)	1727.0 (388.0)	0.17 (0.14)	0.15 (0.13)				0.36 (0.12)
C	36.0 (18.63)	11.1 (13.37)	1.36 (0.11)	5.28 (0.21)	5.01 (0.12)	93.3 (4.05)	2.6 (2.23)	4.1 (3.55)	4181.0 (2116.0)	0.07 (0.02)	0.04 (0.01)				0.06 (0.02)
IIC	22.8 (14.2)	26.2 (16.15)	1.14 (0.24)	5.67 (0.14)	5.01 (0.06)	93.0 (4.56)	2.6 (1.36)	4.6 (4.87)	1932.5 (1361.16)	0.07 (0.04)	0.07 (0.06)				0.04 (0.02)
IIIC	11.4 (17.05)	1.0 (0.00)	1.34 (0.02)	5.70 (0.02)	5.05 (0.02)	90.6 (3.33)	1.3 (0.09)	8.1 (3.33)	1512.2 (2261.56)	0.04 (0.01)	0.02 (0.01)				0.02 (0.00)
<b>Old landing plots (n = 10)</b>															
L			4.02 (0.06)	3.57 (0.08)							8.0 (0.89)				0.47 (0.15)
F			3.94 (0.20)	3.44 (0.15)							5.0 (2.9)				0.16 (0.16)
Bm1	3.2 (2.07)	2.3 (2.38)	1.13 (0.05)	4.75 (0.33)	54.9 (0.14)	35.0 (8.31)	10.1 (10.02)	347.8 (4.61)	0.76 (244.50)	0.61 (0.15)	0.17 (0.17)				0.47 (0.15)
Bm2	12.1 (2.92)	4.1 (3.57)	1.28 (0.12)	5.07 (0.16)	4.71 (0.16)	74.3 (0.17)	19.7 (16.39)	6.0 (17.27)	1494.5 (45.53)	0.23 (420.04)	0.21 (0.18)				0.48 (0.10)
C	43.1 (24.25)	28.0 (19.61)	1.29 (1.14)	5.25 (1.14)	5.01 (0.13)	92.7 (0.09)	3.8 (3.67)	3.5 (1.87)	3573.8 (2.94)	0.08 (1460.61)	0.06 (0.02)				0.06 (0.02)
IIC	33.0 (23.03)	27.8 (16.65)	1.14 (1.37)	5.61 (5.73)	4.99 (4.96)	92.2 (87.5)	2.5 (1.64)	5.3 (1.64)	2905.4 (2286.23)	0.08 (0.04)	0.01 (0.07)				0.04 (0.02)
IIIC	8.7 (18.36)	1.0 (0.00)	1.37 (0.00)	5.73 (0.00)	4.96 (0.00)	87.5 (0.00)	1.2 (0.00)	11.2 (0.00)	1168.94 (2481.58)	0.03 (0.00)	0.02 (0.00)				0.02 (0.00)

Table 3.8 Pre-harvest carbon and nutrient concentrations for stand and old landing plots at the Island Lake Biomass Harvest Research and Demonstration Area.

Stand plots (n = 25)						
Soil horizon	C (g·kg <sup>-1</sup> )	N (g·kg <sup>-1</sup> )	P (ppm)	K (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Ca (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Mg (cmol <sub>c</sub> ·kg <sup>-1</sup> )
L	478.7	9.82	278.8	6.41	15.12	5.75
F	449.1	12.44	217.5	1.75	12.32	2.56
H/Ah	79.0	2.97	13.7	0.26	2.45	0.40
Ae	13.8	0.61	7.3	0.08	0.30	0.08
Bm1	19.7	0.97	5.8	0.04	0.20	0.04
Bm2	6.1	0.33	18.6	0.01	0.09	0.02
C	1.7	0.09	44.5	0.00	0.04	0.01
IIC	0.5	0.03	24.4	0.01	0.08	0.02
IIIC	0.3	0.03	19.7	0.01	0.07	0.02

Old landing plots (n = 10)						
Soil horizon	C	N	P	K	Ca	Mg
L	472.2	8.60	150.8	3.01	11.59	2.61
F	390.3	11.67	138.0	1.54	10.15	1.67
Bm1	14.9	0.70	14.5	0.05	0.10	0.04
Bm2	8.1	0.47	18.4	0.02	0.05	0.02
C	1.1	0.16	33.2	0.00	0.04	0.01
IIC	0.6	0.04	30.7	0.01	0.08	0.02
IIIC	0.2	0.02	18.7	0.01	0.07	0.02

Table 3.9 Pre-harvest carbon and nutrient soil reserves to 1 m depth in the mineral soil and forest floor (L, F, H/Ah) contribution to total soil reserves for stand and old landing plots at the Island Lake Biomass Harvest Research and Demonstration Area .

Stand plots (n = 25)						
Soil horizon	C	N	P	K	Ca	Mg
Soil reserves - total C (Mg ha <sup>-1</sup> ); macronutrients (kg ha <sup>-1</sup> )						
L	4.20	85.64	2.45	22.12	26.32	6.08
F	11.00	300.84	5.18	16.16	60.06	7.42
H/Ah	9.10	339.33	1.61	11.34	55.59	5.41
Ae	4.78	205.95	2.38	10.00	18.22	3.24
Bm1	24.86	1224.58	7.49	19.67	45.72	6.52
Bm2	10.66	599.77	32.48	9.21	31.29	4.97
C	6.47	331.23	175.35	4.44	34.81	5.99
IIC	0.80	57.63	41.78	7.84	31.34	4.23
IIIC	0.45	35.98	29.86	4.85	20.35	3.02
Total soil reserves	72.3	3181.0	298.6	105.6	323.7	46.9
Forest floor contribution	33.6%	22.8%	3.1%	47.0%	43.9%	40.3%

Old landing plots (n = 10)						
Soil horizon	C	N	P	K	Ca	Mg
Soil reserves - total C (Mg ha <sup>-1</sup> ); macronutrients (kg ha <sup>-1</sup> )						
L	3.78	68.50	1.21	9.45	18.55	2.54
F	1.79	55.96	0.59	2.81	9.35	0.93
Bm1	4.97	246.30	4.64	6.91	6.34	1.60
Bm2	11.89	685.14	27.86	12.56	13.50	4.19
C	4.07	533.04	121.62	7.22	25.75	5.88
IIC	1.37	91.27	78.62	10.32	44.10	6.55
IIIC	0.26	19.36	21.87	4.06	16.31	2.40
Total soil reserves	28.1	1699.6	256.4	53.3	133.9	24.1
Forest floor contribution	19.8%	7.3%	0.7%	23.0%	20.8%	14.4%

### 3.3 Post-harvest assessment – biomass removal and uncut control plots

#### 3.3.1 Slash

Post-harvest DWD was determined using a combination of slash estimates from fixed quadrat and line intercept (mean of McRae and Marshall calculation methods, see section 2.4.1.2) approaches. Estimates of coarse slash on tree-length plots were greater using the line intercept than with the fixed quadrat method (Table 3.10). Due to the larger lineal coverage afforded by the line intercept method, and incomplete dispersal of slash on tree-length plots, this approach was used for coarse slash estimates on these plots. In all other cases the fixed quadrat approach, where actual fine slash components were destructively sampled, was used to provide estimates.

Post-harvest plot level new residue and total DWD biomass and volume are summarized in Appendices I and J. New residues (fine, coarse and total) from the harvest were calculated as the difference between post-harvest slash (determined only for decay classes 1 and 2) and pre-harvest DWD (decay classes 1 and 2). Total DWD (fine, coarse and total) was calculated as the sum of new residues and pre-harvest DWD.

Table 3.10. Post-harvest slash loadings ( $\text{Mg ha}^{-1}$ ) for full-tree biomass and tree-length harvest plots.

Biomass Removal Plot	Fine Slash (< 5 cm)			Coarse Slash (> 5 cm)			Total Slash (Fine + Coarse)		
	Fixed Quad	McRae	Marshall	Fixed Quad	McRae	Marshall	Fixed Quad	McRae	Marshall
1-F	6.99	17.18	13.23	2.27	1.67	1.24	9.26	18.84	14.46
2-F	7.05	11.79	8.99	1.91	0.58	0.55	8.96	12.36	9.54
3-F	11.14	12.52	9.47	2.23	1.30	1.15	13.37	13.82	10.63
4-F	11.06	22.42	17.20	3.64	2.27	1.90	14.70	24.69	19.10
5-F	11.38	23.65	18.09	1.54	4.25	3.45	12.93	27.90	21.54
<b>Mean</b>	<b>9.53</b>	<b>17.51</b>	<b>13.40</b>	<b>2.32</b>	<b>2.01</b>	<b>1.66</b>	<b>11.84</b>	<b>19.52</b>	<b>15.05</b>
1-T	22.62	37.21	29.36	13.87	21.67	19.32	36.49	58.88	48.68
2-T	23.80	39.55	31.29	11.55	16.38	15.20	35.35	55.93	46.50
3-T	36.18	30.59	24.11	8.53	15.71	12.19	44.71	46.30	36.29
4-T	23.73	23.11	18.08	10.10	12.53	11.35	33.82	35.64	29.44
5-T	28.05	27.28	21.38	10.69	14.68	12.79	38.74	41.96	34.17
<b>Mean</b>	<b>26.87</b>	<b>31.55</b>	<b>24.84</b>	<b>10.95</b>	<b>16.20</b>	<b>14.17</b>	<b>37.82</b>	<b>47.74</b>	<b>39.02</b>

Tree-length plots had 3.2 to 4.3 times more post-harvest total DWD biomass than full-tree and stumped plots ( $44.1 \text{ Mg ha}^{-1}$  versus  $13.9$  and  $10.3 \text{ Mg ha}^{-1}$  respectively; Figure 3.9a) and between 2.7 and 3.1 times more post-harvest coarse DWD volume ( $36.1 \text{ m}^3 \text{ ha}^{-1}$  versus  $11.6$  and  $13.3 \text{ m}^3 \text{ ha}^{-1}$  respectively; Figure 3.9b). Post-harvest plot level total DWD C and nutrient contents are reported in Appendix I.

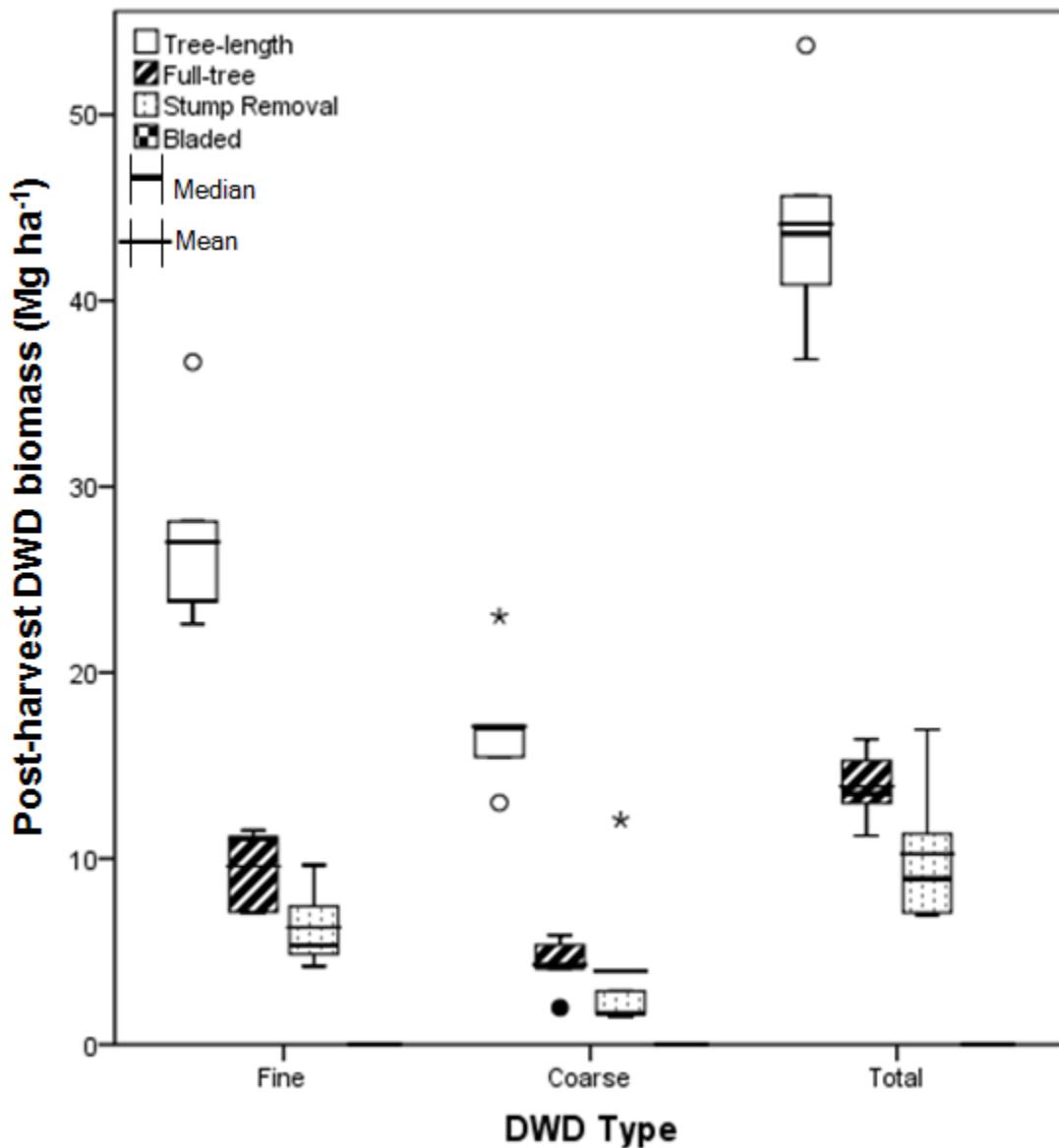


Figure 3.9a. Boxplot comparison of post-harvest total DWD biomass (new residue + pre-harvest DWD; new residue is the difference between post-harvest slash and pre-harvest DWD for decay classes 1 and 2) by treatment. Fine DWD is woody material < 5 cm diameter (stemwood, branches, twigs, cones, needles and other). Coarse DWD consists of stemwood and branches > 5 cm diameter. Box represents 25<sup>th</sup> and 75<sup>th</sup> percentile and error bars represent 10<sup>th</sup> and 90<sup>th</sup> percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

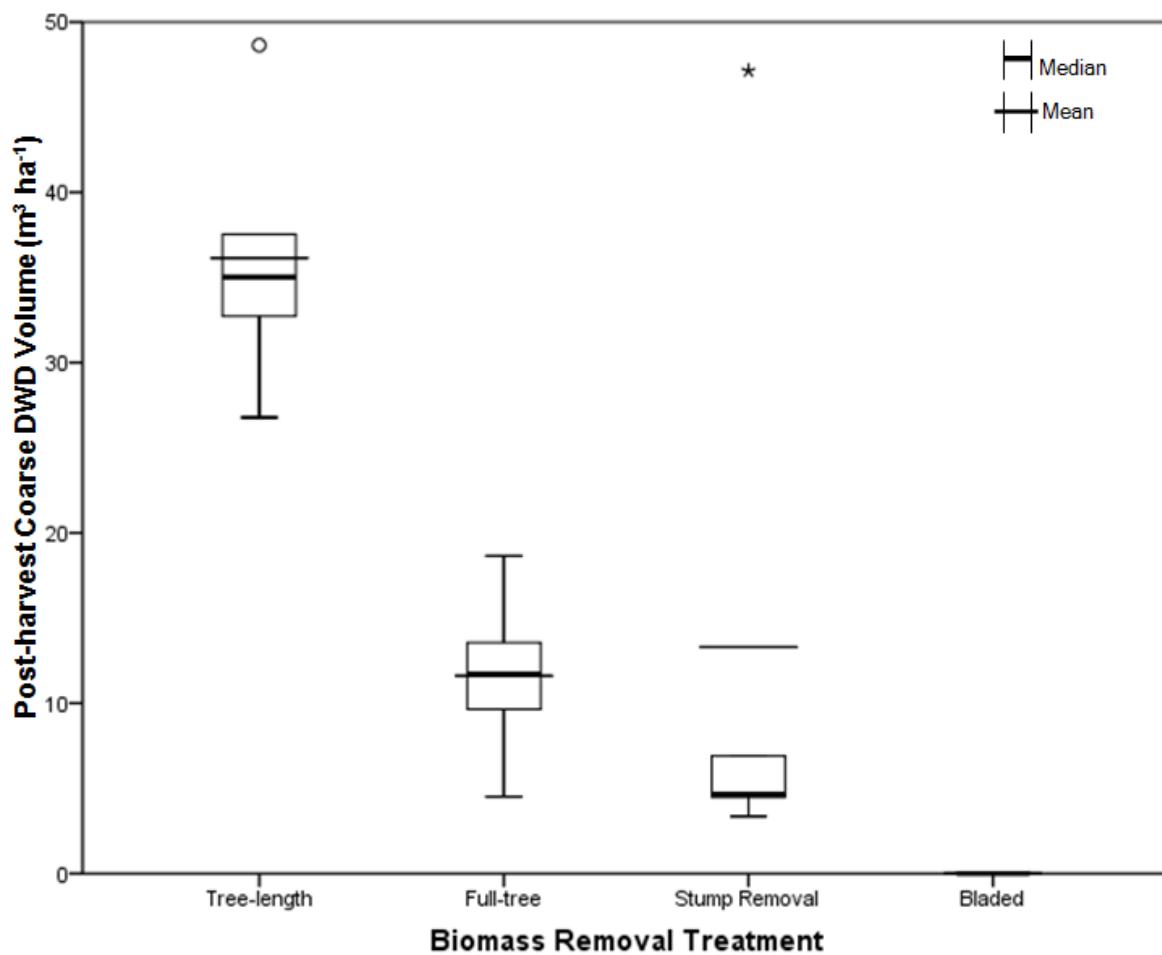


Figure 3.9b. Boxplot comparison of post-harvest total coarse (> 5 cm diameter) DWD volume (new residue + pre-harvest DWD; new residue is the difference between post-harvest slash and pre-harvest DWD for decay classes 1 and 2) by treatment. Box represents 25<sup>th</sup> and 75<sup>th</sup> percentile and error bars represent 10<sup>th</sup> and 90<sup>th</sup> percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.3.2 Stump and coarse roots

Plot level C and nutrient removals associated with the stump removal treatment are reported in Appendix K. A majority of the above ground stump material was removed during the stump removal treatment with little effect on the organic (mean value,  $0.19 \text{ Mg C ha}^{-1}$  removed) and mineral (mean value,  $0.36 \text{ Mg C ha}^{-1}$  removed) C pools (Figure 3.10).

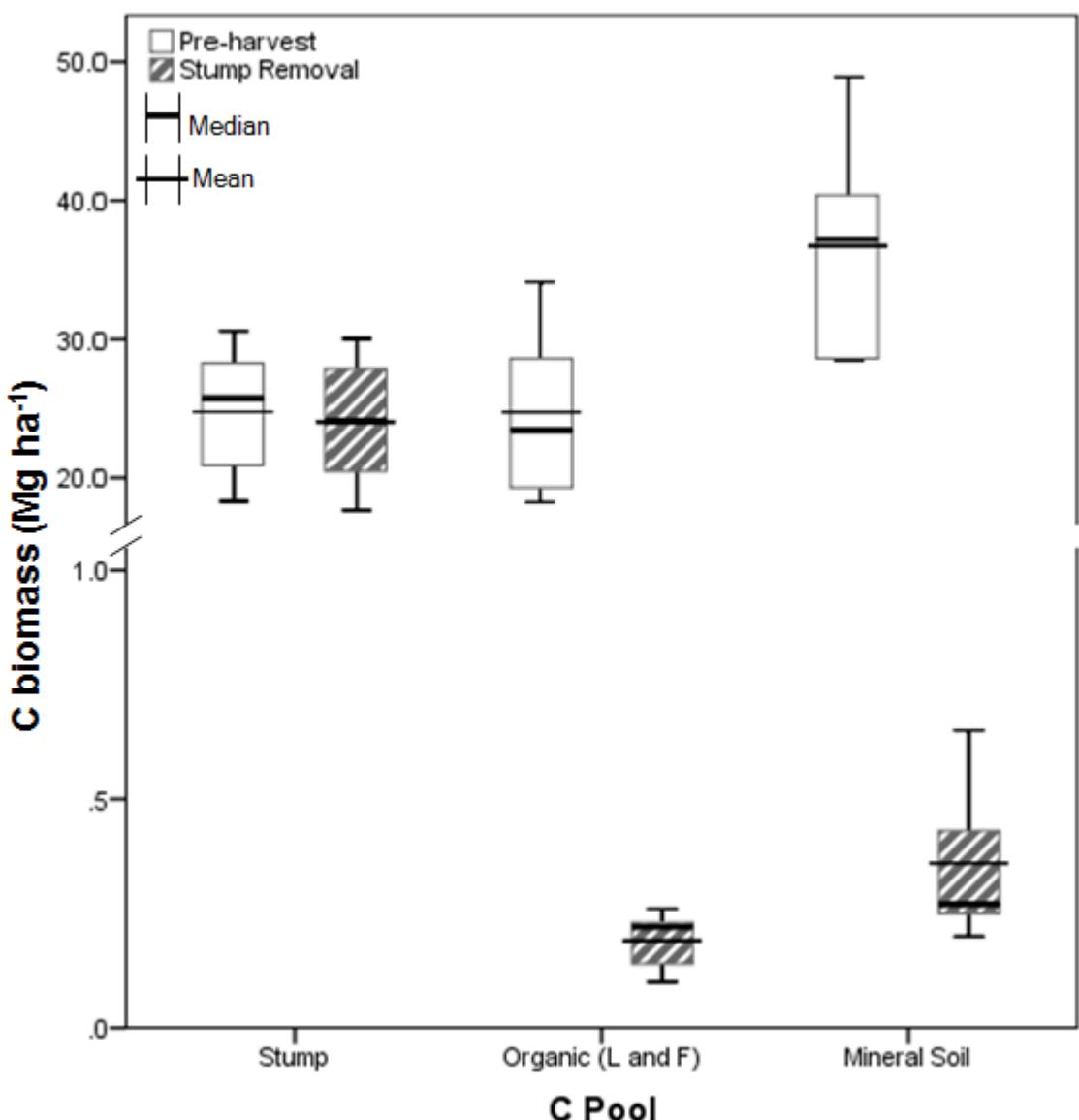


Figure 3.10. Boxplot comparison of pre-harvest stump and soil C pools and C removals associated with the stump removal treatment (n=5). Box represents 25<sup>th</sup> and 75<sup>th</sup> percentile and error bars represent 10<sup>th</sup> and 90<sup>th</sup> percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.4 Post-harvest assessment – stand and old landing plots

#### 3.4.1 Slash

Old landing tree-length plots had greater amounts of post-harvest DWD than biomass removal tree-length plots, and old landing full-tree plots had lesser amounts of post-harvest DWD than biomass removal full-tree plots (Figures 3.11a and 3.11b). The smaller trees on the old landing tree-length plots were not removed after harvest, resulting in greater amounts of DWD left on plots. In contrast, effort was made to remove all DWD by hand after harvest on the old landing full-tree plots. Old landing post-harvest plot level DWD biomass, volume and C and nutrient contents are reported in Appendices I and J.

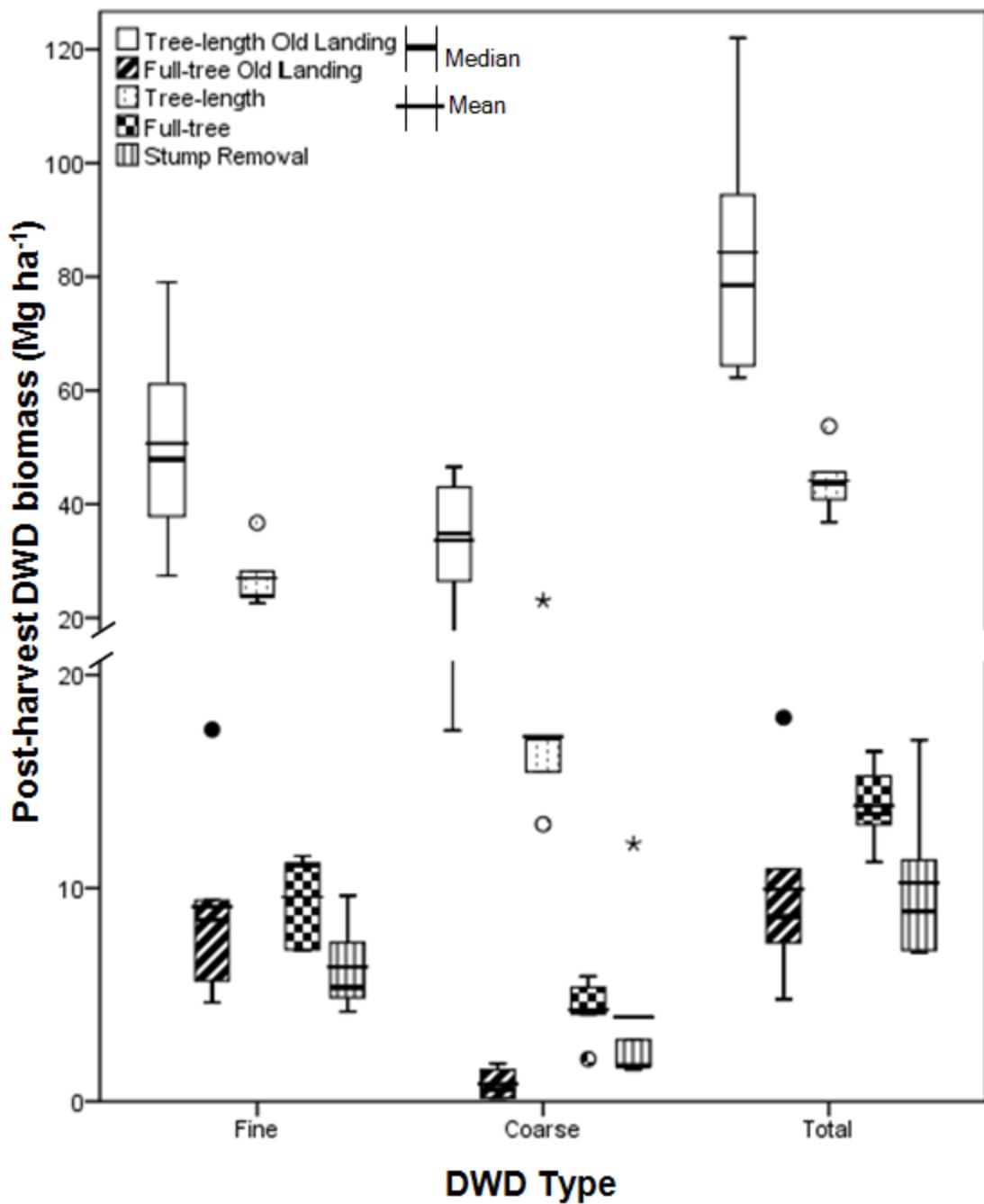


Figure 3.11a. Boxplot comparison of post-harvest total DWD biomass (new residue + pre-harvest DWD; new residue is the difference between post-harvest slash and pre-harvest DWD for decay classes 1 and 2) by treatment. Fine DWD is woody material < 5 cm diameter (stemwood, branches, twigs, cones, needles and other). Coarse DWD consists of stemwood and branches > 5 cm diameter. Box represents 25<sup>th</sup> and 75<sup>th</sup> percentile and error bars represent 10<sup>th</sup> and 90<sup>th</sup> percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

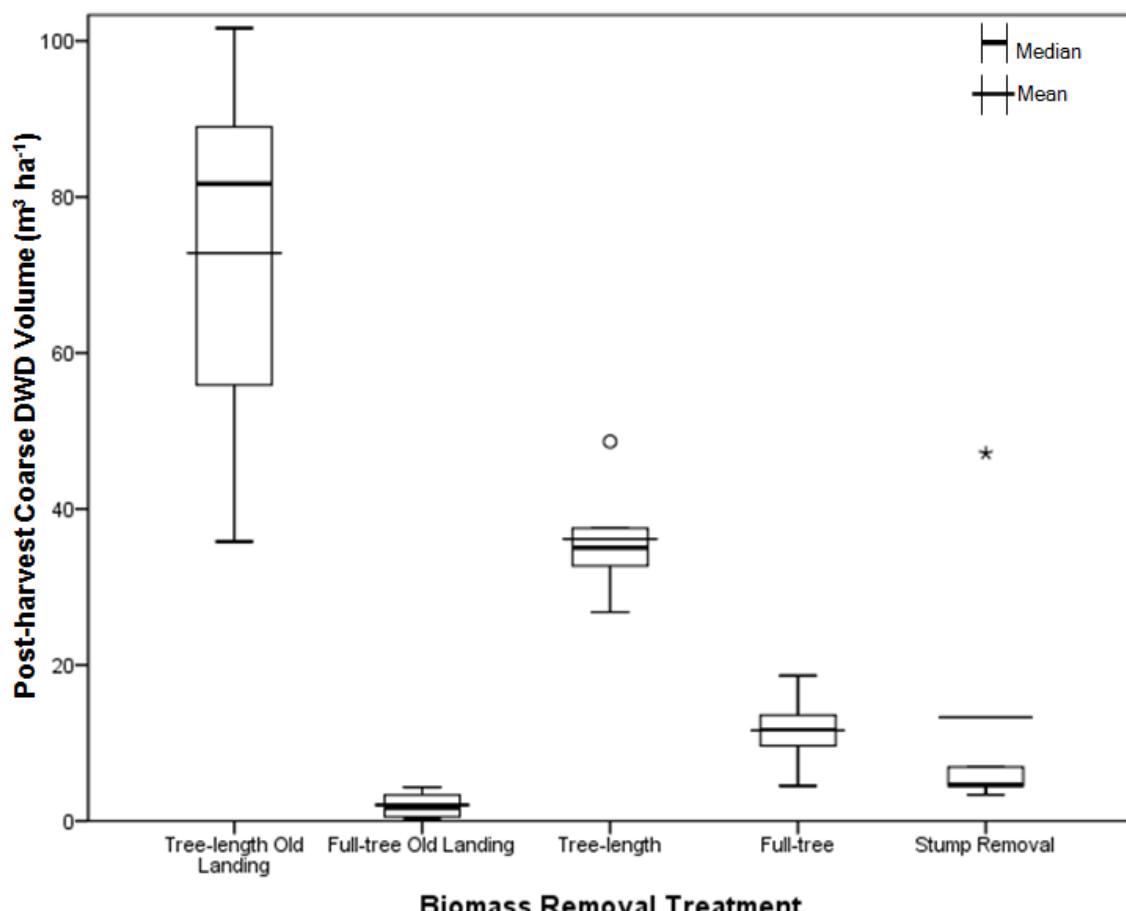


Figure 3.11b. Boxplot comparison of post-harvest total coarse (> 5 cm diameter) DWD (new residue + pre-harvest DWD; new residue is the difference between post-harvest slash and pre-harvest DWD for decay classes 1 and 2) by treatment. Box represents 25<sup>th</sup> and 75<sup>th</sup> percentile and error bars represent 10<sup>th</sup> and 90<sup>th</sup> percentile. Mean and median values have been displayed, as well as potential outliers (dots), and extreme values (asterisks).

### 3.5 Post-harvest C and nutrient retention and removals

Site C and nutrient contents for the pre-harvest stand and retention for post-harvest biomass removal, old landing and wood ash plots were calculated using the ecosystem component data. Pre-harvest DWD and post-harvest slash assessments were used to directly determine retention of DWD after the harvesting treatments. Stump and coarse root retention for tree-length and full-tree plots were calculated using pre-harvest tree inventories and stump C and nutrient contents from the stump removal assessments. For the bladed treatment it was assumed that all of the organic horizons and the upper 5 cm of mineral soil were removed during plot treatment. Wood ash C and nutrient addition was determined from chemical analysis of the ash and application rate. Treatment mean C and nutrient retention are shown in Figure 3.12 and plot level retention is reported in Appendices L to Q.

Pre-harvest reserves and calculated retention values were used to calculate nutrient removals for each harvest treatment (Table 3.11). Plot level C and nutrient removals are reported in Appendix R. Negative values for any particular treatment or plot indicate that more of a particular nutrient was retained after harvest than was stored in pre-harvest reserves. Wood ash plots have greater reserves of K, Ca and Mg with the larger application rates as a consequence of high concentrations of base cations in the wood ash. Retention beyond pre-harvest reserves for the tree-length old landing treatment plots is the result of the addition of off-plot DWD.

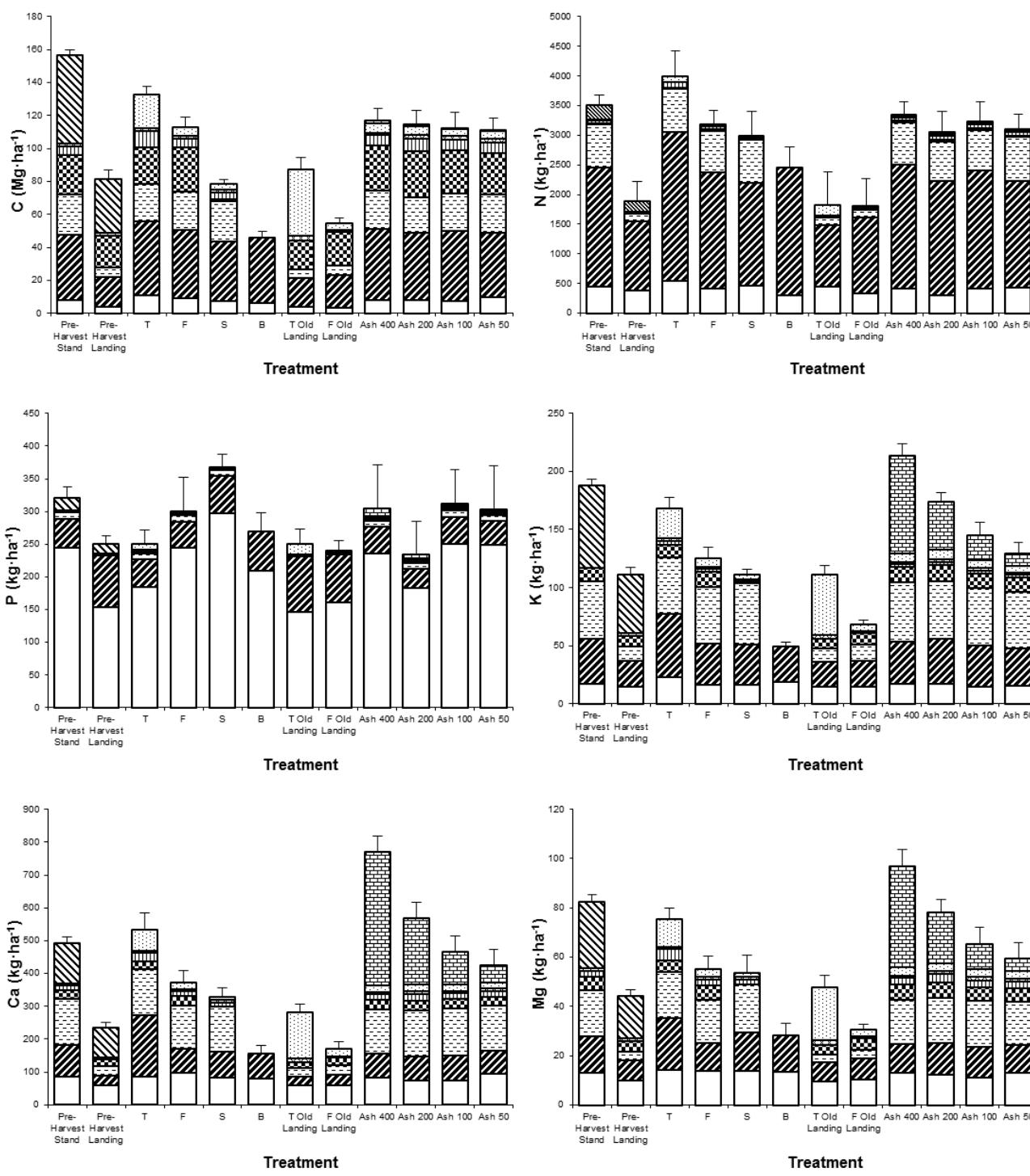


Figure 3.12.C, N, P, K, Ca, and Mg pre-harvest (stand [n=25]; landing [n=10]) and retention values for above and below ground ecosystem components across biomass removal treatments (T = tree-length [n=5], F = full-tree biomass [n=5], S = stump removal [n=5], B = bladed [n=5], T Old Landing = tree-length old landing [n=5], F Old Landing = full-tree old landing [n=5], Ash x = levels of wood ash addition (kg Ca ha<sup>-1</sup>) on full tree biomass harvest areas [n=4 per ash level]).

Table 3.11. Carbon and nutrient removal for biomass removal treatments (T = tree-length, F = full-tree biomass, S = stump removal, B = bladed, T Old Landing = tree-length old landing, F Old Landing = full-tree biomass old landing, Ash x = levels of wood ash addition ( $\text{kg ha}^{-1}$  Ca) on full tree biomass harvest areas).

Treatment	Nutrients removed ( $\text{kg ha}^{-1}$ , except C = $\text{Mg ha}^{-1}$ )					
	C	N	P	K	Ca	Mg
T	30.5	138.3	9.9	42.6	51.9	14.6
F	54.6	243.2	18.0	70.8	117.2	26.8
S	74.6	287.9	19.1	81.4	140.8	31.2
B	108.5	1119.1	20.6	137.6	296.6	54.1
T old landing	-8.7	-10.8	-2.1	-3.7	-54.4	-5.1
F old landing	30.2	144.3	12.1	47.4	71.4	15.4
Ash 400 kg	54.0	242.5	7.7	-11.4	-286.5	-13.8
Ash 200 kg	56.3	247.3	13.2	31.6	-82.3	7.2
Ash 100 kg	52.6	235.0	15.0	48.7	11.9	15.7
Ash 50 kg	52.8	231.7	15.9	57.6	62.5	20.7

## 4.0 Post-harvest studies

### 4.1 Microclimate monitoring

Air temperature, and soil temperature and moisture will be measured for biomass removal (two blocks of all four treatments) and the uncut control plots to provide microclimate profiles to assist in interpreting differences in ecosystem processes (e.g., soil respiration, N mineralization). Weather stations including temperature, precipitation, relative humidity, photosynthetically active radiation (PAR), wind speed and wind direction sensors will also be established at the site. All monitoring will be maintained through the development of the new stand until crown closure.

### 4.2 Plantation growth

Seedling growth assessments for the planted jack pine and black spruce, and natural ingress trees will be done at both the individual tree (i.e., total height, height increment, ground level diameter – gld, diameter at breast height – dbh) and stand-level (i.e., survival, density, basal area, volume, and biomass) using fixed area plots located in the centre of each treatment subplot. In addition, foliar clipping of current and previous year foliage from the upper 1/3 of the crown will be done in early August, when nutrient depletions are the greatest, and in late September to November, when foliar nutrient concentrations have stabilized. Samples will be taken from randomly selected trees, surrounding the fixed area plots, and bulked at the subplot levels to track changes in foliar nutrition (nutrient concentrations, uptake, nutrient use efficiencies – NUE).

Seedling assessments and foliar clipping will be done on a five year remeasurement schedule.

### 4.3 Understorey vegetation

Composition and structure of understorey vegetation will be measured through stand development for all biomass removal, uncut control, old landing and wood ash plots. Beginning in 2013 and recurring approximately every five years, percent cover measurements of 2 x 2 m quadrats will be used to estimate biomass using allometric equations. The relationship of above ground and below-ground biomass with live percent cover was estimated for key species via destructive sampling outside the experimental plots in 2013; these data points may be supplemented in the future to increase the accuracy of the regression curves. To assess the relative occurrence of species in the long-term, a modified contact-point transect method will be carried out every five

years. Although this method can over-estimate actual cover, and is therefore inadequate to assess biomass, it is the best method to minimize observer bias between years.

To document the mechanisms underlying vegetation response after treatment and the effect of composition change on ecosystem functioning, key functional traits will also be measured for all important understory species. This includes traits like foliar nutrient concentrations, specific leaf area and specific root length.

#### 4.4 Soil chemical properties

Soil pH, C and nutrient concentrations and contents will be re-measured every five years through stand development for all biomass removal, old landing and wood ash plots. Soil N mineralization using the *in situ* closed core method will be measured during the growing season every two years early after plantation establishment for full-tree harvested, uncut control and wood ash plots.

#### 4.5 Soil solution

Soil solution pH, C and nutrient concentrations will be sampled using tension lysimeters at 30, 50 and 100 cm depths for full-tree harvested, uncut control and wood ash plots. Solutions will be sampled monthly during the growing season and more frequently during spring and fall.

#### 4.6 Soil microbial communities

Soil microbial functioning will be assessed through measurements of *in situ* respiration (static chamber method), in vitro substrate induced respiration, microbial biomass (chloroform fumigation method), fungal : bacteria ratio (targeted qPCR for 16S and 18S ribosomal RNA), extracellular enzyme assays (lignase, cellulase, phosphatase and chitinase) and molecular fingerprinting using Terminal Restriction Length Polymorphisms (T-RFLP) of total amplified 16S and 18S ribosomal RNA sequences.

#### 4.7 Epigaeic fauna

Invertebrates living on the soil will be assessed in all biomass removal treatments as well as uncut controls and wood ash plots. Pitfall traps were used to sample ground beetles (Carabidae), spiders (Araneae), rove beetles (Staphylinidae), and millipedes (Diplopoda). Samples were taken in all subplots including those with and without herbicide and planted to either spruce or pine. Pitfall sampling was conducted in the summer of 2012 and 2013. Eight pitfalls were used in each plot (2 per subplot) for a total of 200 pitfalls. In addition, 4 pitfalls were placed near plot edges and biomass piles in each bladed and stumped plot for an additional 40 traps. The 16 wood ash plots were also sampled with 2 pitfalls each for an additional 32 traps. Two hundred and seventy-two traps were used in the entire Island Lake study area.

#### 4.8 Soil fauna

Microarthropod communities will be assessed for all biomass removal, uncut control and wood ash plots, specifically springtails (Collembola), and mites (Acari). Roundworms (Nematoda) will be examined in the wood ash plots. All microarthropods will be sampled with soil cores. Additional soil analysis will be conducted on soil cores to provide associated environmental data.

#### 4.9 Integrated impact assessment on biodiversity and ecosystem dynamics

A functional traits approach will be used to simultaneously assess the impact of the gradient of biomass retention levels on several taxa. The approach of evaluating a suite of forest and soil organisms and the processes they mediate will provide insight into the functional diversity of the ecosystem and a more comprehensive environmental assessment of biomass harvesting.

## 5.0 Data sharing and database

Research collaboration and the development of a comprehensive long-term knowledge base are key objectives of the Island Lake project. Following an integrative systems approach, each phase of the data life cycle is taken into consideration with the development of a data management plan. Each participating researcher will sign a collaboration agreement and adhere to data sharing guidelines that will enable all collected data to be stored in a common Island Lake Database. A project data catalogue which includes metadata describing individual datasets will enable researchers to search for data complementary to their work, make contact with other researchers, and forge new partnerships to answer current and future science and policy questions.

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## APPENDICES

**Appendix A—Island Lake Biomass Harvest Research and Demonstration Area plot list**

Block	Treatment	Vegetation control	Species planted	Calcium application level kg ha <sup>-1</sup>	Plot size	Pre-harvest plot ID	Plot corner post ID
1	Uncut control	NA	NA	NA	70 m x 70 m	1-C	1-C
2	Uncut control	NA	NA	NA	70 m x 70 m	2-C	2-C
3	Uncut control	NA	NA	NA	70 m x 70 m	3-C	3-C
4	Uncut control	NA	NA	NA	70 m x 70 m	4-C	4-C
5	Uncut control	NA	NA	NA	70 m x 70 m	5-C	5-C
1	Tree-length	Herbicided	spruce	NA	35 m x 35 m	1-T	1-T-H-S
1	Tree-length	Herbicided	pine	NA	35 m x 35 m	1-T	1-T-H-P
1	Tree-length	Non-herbicided	spruce	NA	35 m x 35 m	1-T	1-T-N-S
1	Tree-length	Non-herbicided	pine	NA	35 m x 35 m	1-T	1-T-N-P
1	Full-tree	Herbicided	spruce	NA	35 m x 35 m	1-F	1-F-H-S
1	Full-tree	Herbicided	pine	NA	35 m x 35 m	1-F	1-F-H-P
1	Full-tree	Non-herbicided	spruce	NA	35 m x 35 m	1-F	1-F-N-S
1	Full-tree	Non-herbicided	pine	NA	35 m x 35 m	1-F	1-F-N-P
1	Stumped	Herbicided	spruce	NA	35 m x 35 m	1-S	1-S-H-S
1	Stumped	Herbicided	pine	NA	35 m x 35 m	1-S	1-S-H-P
1	Stumped	Non-herbicided	spruce	NA	35 m x 35 m	1-S	1-S-N-S
1	Stumped	Non-herbicided	pine	NA	35 m x 35 m	1-S	1-S-N-P
1	Bladed	Herbicided	spruce	NA	35 m x 35 m	1-B	1-B-H-S
1	Bladed	Herbicided	pine	NA	35 m x 35 m	1-B	1-B-H-P
1	Bladed	Non-herbicided	spruce	NA	35 m x 35 m	1-B	1-B-N-S
1	Bladed	Non-herbicided	pine	NA	35 m x 35 m	1-B	1-B-N-P
2	Tree-length	Herbicided	spruce	NA	35 m x 35 m	2-T	2-T-H-S
2	Tree-length	Herbicided	pine	NA	35 m x 35 m	2-T	2-T-H-P
2	Tree-length	Non-herbicided	spruce	NA	35 m x 35 m	2-T	2-T-N-S
2	Tree-length	Non-herbicided	pine	NA	35 m x 35 m	2-T	2-T-N-P
2	Full-tree	Herbicided	spruce	NA	35 m x 35 m	2-F	2-F-H-S
2	Full-tree	Herbicided	pine	NA	35 m x 35 m	2-F	2-F-H-P
2	Full-tree	Non-herbicided	spruce	NA	35 m x 35 m	2-F	2-F-N-S
2	Full-tree	Non-herbicided	pine	NA	35 m x 35 m	2-F	2-F-N-P
2	Stumped	Herbicided	spruce	NA	35 m x 35 m	2-S	2-S-H-S
2	Stumped	Herbicided	pine	NA	35 m x 35 m	2-S	2-S-H-P
2	Stumped	Non-herbicided	spruce	NA	35 m x 35 m	2-S	2-S-N-S
2	Stumped	Non-herbicided	pine	NA	35 m x 35 m	2-S	2-S-N-P
2	Bladed	Herbicided	spruce	NA	35 m x 35 m	2-B	2-B-H-S
2	Bladed	Herbicided	pine	NA	35 m x 35 m	2-B	2-B-H-P
2	Bladed	Non-herbicided	spruce	NA	35 m x 35 m	2-B	2-B-N-S
2	Bladed	Non-herbicided	pine	NA	35 m x 35 m	2-B	2-B-N-P
3	Tree-length	Herbicided	spruce	NA	35 m x 35 m	3-T	3-T-H-S
3	Tree-length	Herbicided	pine	NA	35 m x 35 m	3-T	3-T-H-P
3	Tree-length	Non-herbicided	spruce	NA	35 m x 35 m	3-T	3-T-N-S
3	Tree-length	Non-herbicided	pine	NA	35 m x 35 m	3-T	3-T-N-P
3	Full-tree	Herbicided	spruce	NA	35 m x 35 m	3-F	3-F-H-S
3	Full-tree	Herbicided	pine	NA	35 m x 35 m	3-F	3-F-H-P

**Appendix A (continued)—Island Lake Biomass Harvest Research and Demonstration Area plot list**

<b>Block</b>	<b>Treatment</b>	<b>Vegetation control</b>	<b>Species planted</b>	<b>Calcium application level kg ha<sup>-1</sup></b>	<b>Plot size</b>	<b>Pre-harvest plot ID</b>	<b>Plot corner post ID</b>
3	Full-tree	Non-herbicided	spruce	NA	35 m x 35 m	3-F	3-F-N-S
3	Full-tree	Non-herbicided	pine	NA	35 m x 35 m	3-F	3-F-N-P
3	Stumped	Herbicided	spruce	NA	35 m x 35 m	3-S	3-S-H-S
3	Stumped	Herbicided	pine	NA	35 m x 35 m	3-S	3-S-H-P
3	Stumped	Non-herbicided	spruce	NA	35 m x 35 m	3-S	3-S-N-S
3	Stumped	Non-herbicided	pine	NA	35 m x 35 m	3-S	3-S-N-P
3	Bladed	Herbicided	spruce	NA	35 m x 35 m	3-B	3-B-H-S
3	Bladed	Herbicided	pine	NA	35 m x 35 m	3-B	3-B-H-P
3	Bladed	Non-herbicided	spruce	NA	35 m x 35 m	3-B	3-B-N-S
3	Bladed	Non-herbicided	pine	NA	35 m x 35 m	3-B	3-B-N-P
4	Tree-length	Herbicided	spruce	NA	35 m x 35 m	4-T	4-T-H-S
4	Tree-length	Herbicided	pine	NA	35 m x 35 m	4-T	4-T-H-P
4	Tree-length	Non-herbicided	spruce	NA	35 m x 35 m	4-T	4-T-N-S
4	Tree-length	Non-herbicided	pine	NA	35 m x 35 m	4-T	4-T-N-P
4	Full-tree	Herbicided	spruce	NA	35 m x 35 m	4-F	4-F-H-S
4	Full-tree	Herbicided	pine	NA	35 m x 35 m	4-F	4-F-H-P
4	Full-tree	Non-herbicided	spruce	NA	35 m x 35 m	4-F	4-F-N-S
4	Full-tree	Non-herbicided	pine	NA	35 m x 35 m	4-F	4-F-N-P
4	Stumped	Herbicided	spruce	NA	35 m x 35 m	4-S	4-S-H-S
4	Stumped	Herbicided	pine	NA	35 m x 35 m	4-S	4-S-H-P
4	Stumped	Non-herbicided	spruce	NA	35 m x 35 m	4-S	4-S-N-S
4	Stumped	Non-herbicided	pine	NA	35 m x 35 m	4-S	4-S-N-P
4	Bladed	Herbicided	spruce	NA	35 m x 35 m	4-B	4-B-H-S
4	Bladed	Herbicided	pine	NA	35 m x 35 m	4-B	4-B-H-P
4	Bladed	Non-herbicided	spruce	NA	35 m x 35 m	4-B	4-B-N-S
4	Bladed	Non-herbicided	pine	NA	35 m x 35 m	4-B	4-B-N-P
5	Tree-length	Herbicided	spruce	NA	35 m x 35 m	5-T	5-T-H-S
5	Tree-length	Herbicided	pine	NA	35 m x 35 m	5-T	5-T-H-P
5	Tree-length	Non-herbicided	spruce	NA	35 m x 35 m	5-T	5-T-N-S
5	Tree-length	Non-herbicided	pine	NA	35 m x 35 m	5-T	5-T-N-P
5	Full-tree	Herbicided	spruce	NA	35 m x 35 m	5-F	5-F-H-S
5	Full-tree	Herbicided	pine	NA	35 m x 35 m	5-F	5-F-H-P
5	Full-tree	Non-herbicided	spruce	NA	35 m x 35 m	5-F	5-F-N-S
5	Full-tree	Non-herbicided	pine	NA	35 m x 35 m	5-F	5-F-N-P
5	Stumped	Herbicided	spruce	NA	35 m x 35 m	5-S	5-S-H-S
5	Stumped	Herbicided	pine	NA	35 m x 35 m	5-S	5-S-H-P
5	Stumped	Non-herbicided	spruce	NA	35 m x 35 m	5-S	5-S-N-S
5	Stumped	Non-herbicided	pine	NA	35 m x 35 m	5-S	5-S-N-P
5	Bladed	Herbicided	spruce	NA	35 m x 35 m	5-B	5-B-H-S
5	Bladed	Herbicided	pine	NA	35 m x 35 m	5-B	5-B-H-P
5	Bladed	Non-herbicided	spruce	NA	35 m x 35 m	5-B	5-B-N-S
5	Bladed	Non-herbicided	pine	NA	35 m x 35 m	5-B	5-B-N-P

**Appendix A (continued)—Island Lake Biomass Harvest Research and Demonstration Area plot list**

Block	Treatment	Vegetation control	Species planted	Calcium application level kg ha <sup>-1</sup>	Plot size	Pre-harvest plot ID	Plot corner post ID
1	Old landing/tree-length	Non-herbicided	pine	NA	20 m x 20 m	1-L-T	1-L-T
1	Old landing/full-tree	Non-herbicided	pine	NA	20 m x 20 m	1-L-F	1-L-F
2	Old landing/tree-length	Non-herbicided	pine	NA	20 m x 20 m	2-L-T	2-L-T
2	Old landing/full-tree	Non-herbicided	pine	NA	20 m x 20 m	2-L-F	2-L-F
3	Old landing/tree-length	Non-herbicided	pine	NA	20 m x 20 m	3-L-T	3-L-T
3	Old landing/full-tree	Non-herbicided	pine	NA	20 m x 20 m	3-L-F	3-L-F
4	Old landing/tree-length	Non-herbicided	pine	NA	20 m x 20 m	4-L-T	4-L-T
4	Old landing/full-tree	Non-herbicided	pine	NA	20 m x 20 m	4-L-F	4-L-F
5	Old landing/tree-length	Non-herbicided	pine	NA	20 m x 20 m	5-L-T	5-L-T
5	Old landing/full-tree	Non-herbicided	pine	NA	20 m x 20 m	5-L-F	5-L-F
1	Full-tree/ash	Non-herbicided	pine	50	25 m x 25 m	1-A-50	1-A-50
1	Full-tree/ash	Non-herbicided	pine	100	25 m x 25 m	1-A-100	1-A-100
1	Full-tree/ash	Non-herbicided	pine	200	25 m x 25 m	1-A-200	1-A-200
2	Full-tree/ash	Non-herbicided	pine	400	25 m x 25 m	2-A-400	2-A-400
2	Full-tree/ash	Non-herbicided	pine	50	25 m x 25 m	2-A-50	2-A-50
2	Full-tree/ash	Non-herbicided	pine	100	25 m x 25 m	2-A-100	2-A-100
3	Full-tree/ash	Non-herbicided	pine	200	25 m x 25 m	3-A-200	3-A-200
3	Full-tree/ash	Non-herbicided	pine	400	25 m x 25 m	3-A-400	3-A-400
3	Full-tree/ash	Non-herbicided	pine	50	25 m x 25 m	3-A-50	3-A-50
4	Full-tree/ash	Non-herbicided	pine	100	25 m x 25 m	4-A-100	4-A-100
4	Full-tree/ash	Non-herbicided	pine	200	25 m x 25 m	4-A-200	4-A-200
4	Full-tree/ash	Non-herbicided	pine	400	25 m x 25 m	4-A-400	4-A-400
4	Full-tree/ash	Non-herbicided	pine	50	25 m x 25 m	4-A-50	4-A-50
5	Full-tree/ash	Non-herbicided	pine	100	25 m x 25 m	5-A-100	5-A-100
5	Full-tree/ash	Non-herbicided	pine	200	25 m x 25 m	5-A-200	5-A-200
5	Full-tree/ash	Non-herbicided	pine	400	25 m x 25 m	5-A-400	5-A-400

**Appendix B - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest/plot level mensuration and tree biomass data.**

Plot ID	Density all live (trees/ha <sup>-1</sup> )	Basal area all live (m <sup>2</sup> ·ha <sup>-1</sup> )	Quadratic mean diameter Pj (cm)	Live aboveground inventory					Aboveground biomass all live (Mg·ha <sup>-1</sup> )					Standing dead aboveground inventory								
				Pj	Sb	Sw	Bt	At	Salix	Stemwood	Stembark	Branches	Foliar	Total	Density (trees/ha <sup>-1</sup> )	Mean Dbh (cm)	Basal area (m <sup>2</sup> ·ha <sup>-1</sup> )	% Basal area by species Pj	Salix	Stemwood	Stembark	Branches
1-T	2225	35.8	15.2	13.7	97.0	0.9	2.0	0.1	813	8.3	21.1	10.8	121.5	825	5.7	2.3	96.4	3.6	2.9	0.4	1.3	4.6
1-F	1900	27.5	13.7	13.4	99.9	0.1	0.2	74.4	6.2	15.8	8.0	88.3	1175	6.2	4.2	100.0	6.6	0.8	1.3	2.3	9.2	
1-S	1975	32.7	14.7	13.4	98.8	1.0	0.2	68.5	7.6	18.9	9.4	110.3	1075	6.0	3.3	100.0	4.3	0.6	1.8	1.8	6.7	
1-B	1575	28.5	16.6	13.1	97.1	0.8	0.4	68.5	6.8	16.8	8.3	100.4	450	6.5	1.6	100.0	2.3	0.3	0.9	1.3	3.5	
1-C	2075	29.0	13.6	13.6	99.8	0.2	0.1	62.0	6.5	16.7	8.5	93.6	1000	5.3	2.5	100.0	3.1	0.4	1.3	1.3	4.8	
2-T	1450	25.3	15.5	13.3	98.7	1.2	0.1	59.0	5.9	14.6	7.1	86.7	200	6.9	0.9	100.0	1.5	0.2	0.5	2.2	5.2	
2-F	1550	26.1	14.6	12.9	100.0	0.0	0.0	59.0	6.0	15.1	7.4	87.6	600	5.2	1.4	100.0	1.6	0.2	0.7	2.5	5.2	
2-S	3100	32.5	11.6	13.1	100.0	0.0	0.0	63.1	6.9	18.5	10.1	98.6	2100	5.4	5.3	100.0	6.6	0.9	2.8	10.3	10.3	
2-B	2100	30.4	14.1	13.5	96.3	3.6	0.2	66.7	7.0	17.3	9.1	100.2	1125	6.5	4.4	100.0	6.8	0.8	2.4	10.0	10.0	
2-C	2025	30.1	13.8	12.4	100.0	0.0	0.0	65.3	6.8	17.4	8.8	98.2	800	5.3	2.0	100.0	2.6	0.4	0.4	4.0	4.0	
3-T	1725	31.4	15.7	14.3	98.5	0.4	1.1	72.6	7.3	18.4	9.0	107.3	625	5.3	1.5	100.0	1.8	0.2	0.8	2.8	7.2	
3-F	1900	31.2	14.7	13.8	98.5	1.4	0.1	70.4	7.2	17.9	9.0	104.6	1150	6.9	7.0	100.0	18.3	1.7	4.1	24.1	24.1	
3-S	1700	24.5	14.2	12.6	95.0	5.0	0.0	55.5	5.8	13.9	7.3	82.5	450	5.5	1.2	100.0	1.5	0.2	0.6	2.3	2.3	
3-B	1775	28.0	14.2	13.1	99.4	0.6	0.0	61.3	6.4	16.1	8.1	91.9	850	5.7	2.5	99.4	0.6	3.3	0.4	1.3	5.1	
3-C	2150	32.7	14.2	13.4	98.6	1.4	0.0	72.4	7.5	18.7	9.5	108.1	1100	5.3	2.9	100.0	3.8	0.5	1.6	5.9	5.9	
4-T	1350	22.3	15.9	13.0	93.5	3.4	1.5	53.1	5.5	12.8	6.4	77.7	425	6.9	2.5	100.0	5.2	0.5	1.4	7.2	7.2	
4-F	2300	35.2	15.6	14.7	93.3	2.8	1.3	85.1	8.9	20.6	10.2	124.8	1825	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1	
4-S	2600	35.4	14.0	13.9	97.8	1.7	0.2	77.6	8.1	20.3	10.4	116.3	425	5.4	3.2	100.0	4.3	0.6	1.7	6.6	6.6	
4-B	1450	28.2	16.6	15.0	96.4	3.6	0.0	68.8	6.9	16.2	7.9	90.8	475	6.0	1.5	97.7	2.0	0.3	0.8	3.0	3.0	
4-C	1575	24.7	14.8	12.8	97.2	2.7	0.0	56.4	5.8	14.1	7.1	83.5	275	5.5	0.8	100.0	1.0	0.1	0.4	1.6	5.1	
5-T	2075	28.3	13.6	14.0	97.3	2.6	0.0	61.3	6.5	16.1	8.4	92.3	1100	6.4	4.3	97.5	2.3	0.2	0.6	9.8	9.8	
5-F	3375	39.8	12.7	14.5	99.1	0.7	0.1	81.3	8.7	22.7	12.0	124.7	1500	5.3	3.7	100.0	4.7	0.6	2.0	7.3	7.3	
5-S	1950	28.0	14.0	13.4	97.9	2.1	0.0	62.6	6.5	16.1	8.2	93.3	425	5.0	3.7	100.0	1.9	0.2	0.7	2.9	2.9	
5-B	2025	31.6	14.3	13.9	99.8	0.1	0.0	70.0	7.2	18.2	9.1	104.5	1050	5.7	3.1	100.0	4.3	0.6	1.7	6.5	6.5	
5-C	2200	29.7	13.1	13.8	100.0	0.0	0.0	62.0	6.6	17.0	8.8	94.4	1275	5.7	3.7	100.0	4.8	0.7	2.0	7.5	7.5	
5-L-T	2550	20.7	10.2	10.5	100.0	0.0	0.0	37.3	4.3	11.7	6.7	59.9	1250	5.0	2.6	100.0	2.9	0.4	1.4	4.7	4.7	
1-L-F	2900	22.3	9.9	10.7	100.0	0.0	0.0	38.8	4.5	12.5	7.3	63.1	1500	5.6	6.1	100.0	3.2	0.5	1.5	5.2	5.2	
2-L-T	1400	14.8	11.6	11.8	100.0	0.0	0.0	28.3	3.1	8.4	4.6	44.4	500	4.9	1.0	100.0	1.1	0.2	0.5	1.8	1.8	
2-L-F	1650	17.8	11.7	11.1	100.0	0.0	0.0	34.6	3.8	10.1	5.5	54.0	350	4.6	0.6	100.0	0.6	0.1	0.3	1.0	1.0	
3-L-T	2500	19.5	10.0	11.2	100.0	0.0	0.0	35.4	4.0	11.0	6.3	56.6	1000	3.7	1.2	100.0	1.2	0.2	0.6	2.0	2.0	
3-L-F	2200	20.7	11.0	11.3	100.0	0.0	0.0	39.9	4.4	11.8	6.5	62.6	1300	3.8	1.7	100.0	1.7	0.3	0.9	2.9	2.9	
4-L-T	3400	28.9	10.4	11.0	100.0	0.0	0.0	53.2	6.0	16.3	9.2	84.7	1450	4.2	2.2	100.0	2.4	0.4	1.2	3.9	3.9	
4-L-F	4300	30.8	9.6	10.5	100.0	0.0	0.0	55.0	6.3	17.3	10.1	88.7	2700	3.7	3.2	100.0	3.0	0.5	1.6	5.1	5.1	
5-L-T	1450	16.0	11.9	10.2	100.0	0.0	0.0	32.3	3.5	9.1	4.9	49.7	400	2.9	0.3	100.0	0.2	0.0	0.1	0.4	0.4	
5-L-F	2700	18.4	9.3	10.7	100.0	0.0	0.0	59.3	3.7	10.3	6.1	51.9	800	3.8	1.0	100.0	0.9	0.1	0.5	1.6	1.6	
1-A-50	1900	27.5	13.7	13.9	99.9	0.1	0.1	70.4	7.2	17.9	9.0	104.6	1175	6.2	4.2	100.0	6.2	0.8	2.3	9.2	9.2	
3-A-100	1575	28.5	16.6	13.1	97.1	0.8	0.4	68.5	6.8	16.8	8.3	100.4	450	6.5	1.6	100.0	2.3	0.3	0.9	3.5	3.5	
1-A-200	1575	28.5	14.6	12.9	100.0	0.0	0.0	68.5	6.8	16.8	8.3	100.4	450	6.5	1.6	100.0	2.3	0.3	0.9	3.5	3.5	
2-A-50	1550	26.1	14.6	12.9	100.0	0.0	0.0	59.0	6.0	15.1	7.4	87.6	600	5.2	1.4	100.0	1.6	0.2	0.7	2.5	2.5	
2-A-100	1550	26.1	14.6	12.9	100.0	0.0	0.0	59.0	6.0	15.1	7.4	87.6	600	5.2	1.4	100.0	1.6	0.2	0.7	2.5	2.5	
2-A-400	1550	26.1	14.6	12.9	100.0	0.0	0.0	59.0	6.0	15.1	7.4	87.6	1248	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1	
3-A-50	1900	31.2	14.7	13.8	98.5	1.4	0.1	70.4	7.2	17.9	9.0	104.6	1150	6.9	7.0	100.0	10.9	1.3	3.8	16.1	16.1	
3-A-200	1900	31.2	14.7	13.8	98.5	1.4	0.1	70.4	7.2	17.9	9.0	104.6	1150	6.9	7.0	100.0	10.9	1.3	3.8	16.1	16.1	
3-A-400	1900	31.2	14.7	13.8	98.5	1.4	0.1	70.4	7.2	17.9	9.0	104.6	1150	6.9	7.0	100.0	10.9	1.3	3.8	16.1	16.1	
4-A-50	2300	35.2	15.5	14.7	93.3	2.8	1.3	2.6	85.1	8.9	20.6	10.2	124.8	1825	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1
4-A-100	2300	35.2	15.5	14.7	93.3	2.8	1.3	2.6	85.1	8.9	20.6	10.2	124.8	1825	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1
4-A-200	2300	35.2	15.5	14.7	93.3	2.8	1.3	2.6	85.1	8.9	20.6	10.2	124.8	1825	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1
4-A-400	2300	35.2	15.5	14.7	93.3	2.8	1.3	2.6	85.1	8.9	20.6	10.2	124.8	1825	6.4	7.0	100.0	10.9	1.3	3.8	16.1	16.1
5-A-100	3375	39.8	12.7	14.5	99.1	0.7	0.1	81.3	8.7	22.7	12.0	124.7	1500	5.3	3.7	100.0	4.7	0.6	2.0	7.3	7.3	
5-A-200	3375	39.8	12.7	14.5	99.1	0.7	0.1	81.3	8.7	22.7	12.0	124.7	1500	5.3	3.7	100.0	4.7	0.6	2.0	7.3	7.3	
5-A-400	3375	39.8	12.7	14.5	99.1	0.7	0.1	81.3	8.7	22.7	12.0	124.7	1500	5.3	3.7	100.0	4.7	0.6	2.0	7.3	7.3	

Notes:

\*Plot ID represents pre-harvest plot ID from Appendix A

### Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

**Appendix C: Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level C and nutrient contents.**

Plot ID	Carbon (Mg ha <sup>-1</sup> )			Nitrogen (kg ha <sup>-1</sup> )			Phosphorus (kg ha <sup>-1</sup> )			Boron (kg ha <sup>-1</sup> )			Calcium (kg ha <sup>-1</sup> )			Magnesium (kg ha <sup>-1</sup> )			Nitrogen (kg ha <sup>-1</sup> )			Phosphorus (kg ha <sup>-1</sup> )			Boron (kg ha <sup>-1</sup> )			Calcium (kg ha <sup>-1</sup> )								
	Sw	Sb	Bt	Fo	Total	Sw	Sb	Bt	Fo	Total	Sw	Sb	Bt	Fo	Total	Sw	Sb	Bt	Fo	Total	Sw	Sb	Bt	Fo	Total	Sw	Sb	Bt	Fo	Total						
<b>Aboveground biomass at live trees</b>																																				
1-T	40.0	5.5	60.7	51.1	162.2	156.8	36.1	30.0	16.5	132.2	27.0	30.0	16.5	15.2	132.2	14.0	30.0	16.5	132.2	15.7	30.3	16.5	15.2	132.2	14.0	30.0	16.5	15.2	132.2	15.7	30.3					
1-F	28.2	3.3	8.0	4.1	44.6	37.3	19.5	8.8	1.9	59.3	2.2	12.8	4.8	28.0	63.3	37.2	14.9	31.3	20.4	103.8	6.3	5.7	7.7	10.3	31.3	2.3	12.8	4.8	10.3	31.3	2.3	12.8	4.8	10.3	31.3	
1-S	36.6	1.9	9.6	4.8	5.9	46.5	23.9	1.4	4.6	11.5	24.7	32.8	11.2	79.0	18.3	26.2	10.8	16.8	90.0	28.2	3.1	2.1	0.3	1.0	4.6	2.3	12.5	4.8	0.6	1.0	5.5	1.2	1.6			
1-B	33.7	3.6	8.5	4.2	5.0	52.5	23.9	1.1	1.4	10.1	22.8	24.4	13.2	28.2	67.2	43.0	18.4	33.2	21.0	113.7	10.0	1.4	1.1	0.2	0.1	2.7	8.7	0.1	0.2	1.0	2.7	8.7	0.1	0.2	1.0	
1-C	34.8	4.4	8.6	4.4	4.8	39.0	23.6	1.4	1.1	10.4	17.9	20.2	12.0	21.1	76.5	38.8	15.7	24.4	31.7	109.1	10.0	1.3	5.9	8.2	24.5	1.5	6.2	2.2	0.1	0.2	1.5	0.9	1.2			
2-T	28.0	3.2	7.4	3.7	4.3	37.1	18.7	0.9	8.6	8.7	15.6	19.1	21.1	15.5	24.9	58.0	37.0	14.8	28.9	18.1	90.4	8.6	1.2	2.2	7.1	21.9	0.7	0.1	0.1	0.1	0.2	1.0	0.4	0.4		
2-F	32.7	7.6	3.8	4.3	4.7	37.1	18.9	0.9	8.7	11.9	21.5	28.8	14.6	27.5	57.0	35.0	14.5	29.8	18.9	86.2	8.7	1.2	2.2	7.1	21.3	0.8	0.1	0.1	0.1	0.2	1.0	0.5	0.5			
2-S	31.1	3.7	9.3	5.2	4.9	37.1	21.9	0.9	8.5	11.5	22.3	24.5	11.5	21.2	70.0	41.8	13.1	23.6	11.2	92.9	9.2	1.2	2.2	7.1	21.2	0.8	0.1	0.1	0.1	0.2	1.0	0.5	0.5			
2-B	32.1	3.6	8.8	4.5	4.9	41.9	21.4	1.1	4.3	10.7	16.5	21.7	12.4	17.3	63.6	30.5	68.2	10.9	16.4	22.3	11.8	95.7	1.4	6.2	8.5	1.3	0.2	2.6	5.4	0.1	0.1	0.1	0.1	0.2	0.7	
3-T	35.7	3.9	9.3	4.7	5.3	45.6	36.5	1.1	4.5	11.1	19.5	24.1	14.6	17.1	77.7	36.3	23.0	122.5	10.3	15.6	8.2	11.1	97.7	3.0	3.3	0.3	0.1	0.2	0.5	1.6	0.1	0.1	0.1	0.2	0.5	
3-F	34.7	3.9	9.1	4.6	5.2	44.3	22.7	0.9	8.4	9.1	11.0	19.2	23.6	14.1	31.3	71.3	44.1	17.5	29.6	10.3	15.6	8.2	11.1	97.7	3.0	3.3	0.3	0.1	0.2	0.5	1.6	0.1	0.1	0.1	0.2	0.5
3-S	27.3	3.1	7.0	3.8	4.2	34.9	18.3	1.0	4.0	9.9	17.2	20.3	2.3	12.6	28.3	63.5	38.4	15.4	31.8	20.6	16.2	8.9	1.3	5.8	7.8	16.2	0.7	0.1	0.2	0.5	1.6	0.1				
3-B	32.0	3.4	8.1	4.2	4.9	38.6	20.0	1.0	4.0	9.9	17.2	20.3	2.3	12.6	28.3	63.5	38.4	15.4	31.8	20.6	16.2	8.9	1.3	5.8	7.8	16.2	0.7	0.1	0.2	0.5	1.6	0.1				
3-C	34.3	4.0	9.5	4.9	5.0	45.6	23.6	0.8	8.7	11.6	19.6	21.5	11.6	11.6	70.0	47.7	33.0	74.4	18.1	37.0	24.1	12.6	8.6	1.2	2.7	2.7	12.7	0.7	0.1	0.2	0.5	1.6	0.1			
4-T	26.1	2.9	6.5	3.3	3.8	33.4	33.2	0.8	3.1	6.4	17.8	23.8	2.1	12.2	22.2	26.2	33.1	33.2	14.2	24.1	12.4	77.7	1.1	6.1	19.5	3.3	2.2	2.7	12.7	0.7	0.1	0.2	0.5	1.6	0.1	
4-F	41.9	4.8	10.4	5.3	6.2	53.3	27.9	0.8	5.7	10.4	22.2	28.2	3.2	15.1	22.5	31.2	36.7	35.7	83.3	53.3	31.1	31.2	14.7	9.8	31.4	1.4	6.2	17.8	0.6	0.1	0.2	0.5	1.6	0.1		
4-S	38.2	4.3	8.0	4.2	5.0	58.1	25.5	0.8	8.6	11.1	22.0	28.9	2.5	13.6	22.0	31.3	30.9	31.1	88.6	19.6	40.0	26.5	13.4	11.3	72.0	10.0	1.0	0.2	0.5	1.6	0.1					
4-B	40.8	4.3	8.2	4.1	4.9	43.3	21.6	0.9	9.1	11.1	22.8	22.8	2.1	10.4	27.3	31.1	30.0	30.0	100.0	10.0	1.2	1.2	0.8	0.6	4.0	0.1	0.1	0.1	0.2	0.5	0.1					
4-C	27.8	3.1	7.1	3.7	4.1	37.1	20.7	0.9	8.5	8.7	15.2	18.7	2.1	11.1	24.9	56.7	35.4	14.0	27.9	18.2	82.2	8.2	1.5	21.3	1.5	0.8	0.9	0.2	0.5	1.6	0.1					
5-T	30.2	3.4	8.1	4.2	4.9	38.6	20.0	1.0	4.0	9.9	17.2	22.7	2.4	10.4	31.3	70.7	37.7	12.7	23.0	19.1	89.7	8.9	1.3	5.8	7.8	16.2	0.7	0.1	0.2	0.5	1.6	0.1				
5-F	40.0	4.7	11.5	6.2	6.3	51.1	27.5	0.9	1.1	14.7	24.7	27.0	3.1	17.1	28.1	44.8	64.7	39.9	18.1	11.1	17.3	33.2	2.3	11.5	33.2	2.3	11.5	33.2	2.3	11.5	33.2					
5-S	35.5	4.0	9.5	4.9	5.0	45.6	23.6	0.8	8.7	11.6	22.0	28.1	2.4	16.6	24.7	31.1	33.2	30.0	15.6	39.9	2.1	7.7	29.0	1.6	2.1	27.7	0.9	0.1	0.2	0.5	1.6	0.1				
5-B	34.5	3.9	9.2	4.7	5.2	44.0	22.7	0.9	4.4	11.1	22.2	28.6	2.4	16.2	24.9	31.1	33.2	30.0	15.6	39.9	2.1	7.7	29.0	1.6	2.1	27.7	0.9	0.1	0.2	0.5	1.6	0.1				
5-C	34.5	3.9	9.2	4.7	5.2	44.0	22.7	0.9	4.4	11.1	22.2	28.6	2.4	16.2	24.9	31.1	33.2	30.0	15.6	39.9	2.1	7.7	29.0	1.6	2.1	27.7	0.9	0.1	0.2	0.5	1.6	0.1				
1-L-T	18.6	2.3	6.0	3.5	3.0	24.7	12.1	0.6	9.9	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6	1.5	3.6	20.6				
1-L-F	24.2	2.4	6.4	3.8	3.2	28.6	20.8	0.6	7.7	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6							
1-L-T	14.1	1.7	4.3	2.4	2.2	24.2	20.9	0.6	7.7	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6							
2-L-T	17.4	2.0	5.2	2.8	2.7	25.5	19.8	0.6	7.7	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6							
2-L-F	17.3	2.0	5.2	2.8	2.7	25.5	19.8	0.6	7.7	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6							
3-L-T	17.7	2.1	5.6	2.8	2.7	25.5	19.8	0.6	7.7	12.5	20.6	26.1	1.5	8.0	26.8	48.8	27.5	13.5	20.6	11.9	9.0	1.3	36.9	1.6	3.6	20.6	1.5	3.6	20.6							
3-L-F	19.9	2.4	6.0	3.4	3.1	28.4	22.5	0.7	8.6	12.7	20.6	26.1	1.5	8.0	26.8	48.8	29.4	14.0	25.9	18.8	6.6	1.2	22.3	1.7	3.6	20.6	1.5	3.6	20.6							
4-L-T	26.5	3.2	8.4	3.8	4.2	39.0	26.7	0.7	9.9	12.7	20.6	26.1	1.5	8.0	26.8	48.8	29.4	14.0	25.9	18.8	6.6	1.2	22.3	1.7	3.6	20.6	1.5	3.6	20.6							
4-L-F	23.5	3.1	8.9	4.7	5.2	40.6	26.7	0.7	9.9	12.7	20.6	26.1	1.5	8.0	26.8	48.8	29.4	14.0	25.9	18.8	6.6	1.2	22.3	1.7	3.6	20.6	1.5	3.6	20.6							
5-L-T	16.1	1.7	4.3	2.4	2.7	22.5	20.8	0.7	7.7	12.7	20.6	26.1	1.5	8.0	26.8	48.8	29.4	14.0	25.9	18.8	6.6	1.2	22.3	1.7	3.6	20.6	1.5	3.6	20.6							
5-L-F	15.9	1.9	5.0	3.2	2.6	23.0	20.8	0.7</																												

**Appendix D – Island Lake Biomass Harvest Research and Demonstration Area**  
**pre-harvest relative occurrence (%) of understory species.**

Species	Block ID					Uncut Control
	1	2	3	4	5	
<i>Abies balsamea</i>	1.5	0.7	0.3			0.2
<i>Acer rubrum</i>					0.3	
<i>Alnus sp.</i>			0.3			
<i>Amelanchier sp.</i>	3.2	2.8	3.1	4	2.8	4.3
<i>Anemone quinquefolia</i>	0.6	0.4	0.9	0.9	1.2	
<i>Aralia nudicaulis</i>	1.2	0.7	0.3	0.3		0.2
<i>Arctostaphylos uva-ursi</i>			0.3			
<i>Aster macrophyllus</i>	1.7	0.4	1.9	0.6		0.2
<i>Betula papyrifera</i>	1.2	0.7	0.6	0.6	0.3	0.6
<i>Clintonia borealis</i>	0.6					0.4
<i>Comptonia peregrina</i>			1.5	0.3	0.9	0.8
<i>Coptis trifolia</i>	1.5	1.8	0.9	3.4	0.6	2.4
<i>Cornus canadensis</i>	11.1		8.4	2.5		0.4
<i>Corylus cornuta</i>	0.6		0.6	0.9		0.2
<i>Cypripedium acaule</i>	0.6	1.1	1.5	0.3	0.6	1.4
<i>Dryopteris intermedia</i>	1.7		0.9	0.6	0.3	0.2
<i>Dryopteris sp.</i>				0.3		
<i>Epigaea repens</i>	3.2	10.9	6.8	8.6	13.1	10.3
<i>Epilobium angustifolium</i>	0.9		0.9	0.6		1.2
<i>Gaultheria hispida</i>					0.3	
<i>Gaultheria procumbens</i>	3.5	7	4.6	8.3	9.7	6.7
<i>Ledum groenlandicum</i>					0.3	
<i>Linnaea borealis</i> ssp. <i>longiflora</i>	9.9	10.2	9.3	7.4	9	8.7
<i>Lycopodium obscurum</i>	0.6		0.3	0.3	0.3	0.4
<i>Maianthemum canadense</i>	11.4	12.6	6.8	8.6	7.2	7.5
<i>Melampyrum lineare</i>	0.6	2.1	0.9	2.5	4.4	4.5
<i>Moneses uniflora</i>				0.3		
<i>Monotropa sp.</i>			0.3			
<i>Oryzopsis asperifolia</i>	9.9	15.8	14.2	14.2	14	14.4
<i>Picea mariana</i>	0.9	1.1	1.2	0.9	0.3	0.6
<i>Pinus banksiana</i>	1.2	0.4	0.3	0.6		
<i>Poa sp.</i>					0.2	
<i>Polygala paucifolia</i>	1.2		0.9	1.2	0.6	1.6
<i>Potentilla tridentata</i>					0.3	0.6
<i>Prunus pensylvanica</i>	3.2	1.4	3.4	2.5	3.7	1.6
<i>Pyrola elliptica</i>				0.3		0.2
<i>Ribes glandulosum</i>					0.3	
<i>Ribes hudsonianum</i> var. <i>hudsonianum</i>	0.3					
<i>Rosa sp.</i>	2	2.5	1.9	1.5	1.9	1.6
<i>Rubus idaeus</i>			0.3			
<i>Rubus pubescens</i>			0.3			
<i>Rubus sp.</i>	0.3		0.3	0.3		
<i>Salix sp.</i>	1.7	2.1	2.8	2.8	2.2	2
<i>Solidago sp.</i>	0.9	1.1	0.9	1.5	1.2	2.4
<i>Sorbus sp.</i>	1.5					0.2
<i>Trientalis borealis</i>	2.3	3.2	4	1.5	3.4	3
<i>Vaccinium angustifolium</i>	16.9	21.1	15.5	18.2	18.7	20.8
<i>Vaccinium myrtilloides</i>	2.3	0.4	2.2	2.5	1.9	0.4
<i>Viola sp.</i>				0.3		

Notes:

\* Block ID represents block number from Appendix A

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## **Appendix E - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level DWD biomass weights, and C and nutrient contents.**

Plot ID	Type	Aboveground (kg·ha <sup>-1</sup> , except biomass, C = Mg·ha <sup>-1</sup> , volume = m <sup>3</sup> ·ha <sup>-1</sup> )							Belowground (kg·ha <sup>-1</sup> , except biomass, C = Mg·ha <sup>-1</sup> , volume = m <sup>3</sup> ·ha <sup>-1</sup> )								
		Biomass	Volume	C	N	P	K	Ca	Mg	Biomass	Volume	C	N	P	K	Ca	Mg
1-T	Fine	0.6	1.3	0.3	1.7	0.1	0.5	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-T	Coarse	2.4	6.7	1.2	8.1	0.6	1.4	4.3	0.8	24.4	101.9	13.3	112.8	5.3	4.9	37.0	6.0
1-T	Total	3.0	8.0	1.5	9.8	0.7	1.9	5.5	1.0	24.4	101.9	13.3	112.8	5.3	4.9	37.0	6.0
1-F	Fine	1.9	4.4	1.0	5.8	0.5	1.5	3.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-F	Coarse	11.6	31.8	6.0	39.3	2.7	7.0	21.1	3.7	5.2	21.7	2.8	24.1	1.1	1.0	7.9	1.3
1-F	Total	13.5	36.2	7.0	45.1	3.2	8.5	24.9	4.4	5.2	21.7	2.8	24.1	1.1	1.0	7.9	1.3
1-S	Fine	0.8	1.9	0.4	2.5	0.2	0.5	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-S	Coarse	11.0	44.7	6.0	49.9	2.4	2.6	17.1	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-S	Total	11.8	46.7	6.4	52.4	2.6	3.1	18.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-B	Fine	0.1	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-B	Coarse	1.7	5.5	0.9	6.5	0.4	0.7	2.8	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1	3.3
1-B	Total	1.8	5.7	0.9	6.7	0.4	0.8	3.0	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1	3.3
1-C	Fine	0.5	1.0	0.2	1.4	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-C	Coarse	10.3	35.9	5.6	41.6	2.1	2.7	15.3	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-C	Total	10.8	36.9	5.8	43.0	2.2	3.0	16.1	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-T	Fine	0.2	0.4	0.1	0.5	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-T	Coarse	0.1	0.3	0.1	0.4	0.0	0.1	0.3	0.0	20.7	86.6	11.3	95.9	4.5	4.2	31.5	5.1
2-T	Total	0.3	0.6	0.2	0.9	0.1	0.2	0.6	0.1	20.7	86.6	11.3	95.9	4.5	4.2	31.5	5.1
2-F	Fine	0.3	0.7	0.2	1.0	0.1	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-F	Coarse	2.3	9.2	1.2	10.3	0.5	0.5	3.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-F	Total	2.6	10.0	1.4	11.2	0.6	0.7	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-S	Fine	1.5	3.5	0.8	4.5	0.4	1.2	3.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-S	Coarse	5.6	13.3	2.8	17.2	1.4	4.1	10.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-S	Total	7.1	16.8	3.6	21.7	1.7	5.3	13.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-B	Fine	0.4	0.9	0.2	1.2	0.1	0.3	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-B	Coarse	0.7	3.1	0.4	3.4	0.2	0.1	1.1	0.2	8.1	33.9	4.4	37.5	1.8	1.6	12.3	2.0
2-B	Total	1.1	4.0	0.6	4.6	0.3	0.4	1.8	0.3	8.1	33.9	4.4	37.5	1.8	1.6	12.3	2.0
2-C	Fine	0.2	0.6	0.1	0.8	0.1	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-C	Coarse	1.6	4.9	0.8	5.9	0.4	0.8	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-C	Total	1.9	5.5	1.0	6.7	0.4	1.0	3.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-T	Fine	2.7	6.1	1.4	8.1	0.6	1.9	5.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-T	Coarse	4.8	12.5	2.5	16.0	1.0	2.5	8.1	1.4	12.5	52.3	6.8	57.9	2.7	2.5	19.0	3.1
3-T	Total	7.4	18.6	3.8	24.1	1.7	4.4	13.2	2.3	12.5	52.3	6.8	57.9	2.7	2.5	19.0	3.1
3-F	Fine	0.4	0.9	0.2	1.3	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-F	Coarse	1.9	4.9	1.0	6.3	0.3	0.3	2.2	0.3	10.7	44.6	5.8	49.4	2.3	2.1	16.2	2.6
3-F	Total	2.3	5.8	1.2	7.6	0.4	0.6	3.1	0.4	10.7	44.6	5.8	49.4	2.3	2.1	16.2	2.6
3-S	Fine	0.8	1.9	0.4	2.5	0.2	0.5	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-S	Coarse	1.1	3.4	0.6	4.1	0.3	0.7	2.1	0.4	8.9	37.1	4.8	41.1	1.9	1.8	13.5	2.2
3-S	Total	2.0	5.3	1.0	6.6	0.5	1.2	3.6	0.6	8.9	37.1	4.8	41.1	1.9	1.8	13.5	2.2
3-B	Fine	0.3	0.7	0.2	0.9	0.1	0.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-B	Coarse	1.2	4.7	0.7	5.3	0.3	0.3	1.9	0.3	17.6	73.7	9.6	81.6	3.9	3.5	26.8	4.4
3-B	Total	1.5	5.3	0.8	6.2	0.3	0.6	2.5	0.4	17.6	73.7	9.6	81.6	3.9	3.5	26.8	4.4
3-C	Fine	0.8	1.8	0.4	2.3	0.2	0.5	1.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-C	Coarse	1.6	5.4	0.9	6.2	0.4	0.7	2.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-C	Total	2.4	7.1	1.3	8.5	0.5	1.2	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-T	Fine	0.3	0.8	0.2	1.0	0.1	0.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-T	Coarse	0.1	0.3	0.1	0.4	0.0	0.1	0.2	0.0	29.6	123.8	16.2	137.1	6.5	6.0	45.0	7.3
4-T	Total	0.4	1.1	0.2	1.4	0.1	0.3	0.8	0.1	29.6	123.8	16.2	137.1	6.5	6.0	45.0	7.3
4-F	Fine	0.6	1.3	0.3	1.7	0.1	0.5	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-F	Coarse	3.4	9.5	1.8	11.6	0.8	1.8	5.9	1.0	29.7	120.9	16.2	134.8	6.3	5.8	44.3	7.1
4-F	Total	4.0	10.8	2.1	13.3	0.9	2.3	7.1	1.2	29.7	120.9	16.2	134.8	6.3	5.8	44.3	7.1
4-S	Fine	0.1	0.2	0.1	0.3	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-S	Coarse	0.7	2.0	0.4	2.4	0.1	0.3	1.2	0.2	18.6	77.7	10.2	86.1	4.1	3.7	28.2	4.6
4-S	Total	0.8	2.2	0.4	2.7	0.2	0.4	1.4	0.2	18.6	77.7	10.2	86.1	4.1	3.7	28.2	4.6
4-B	Fine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-B	Coarse	1.5	3.5	0.7	4.7	0.3	0.9	2.7	0.5	3.8	15.9	2.1	17.7	0.8	0.8	5.8	0.9
4-B	Total	1.5	3.6	0.8	4.7	0.3	1.0	2.7	0.5	3.8	15.9	2.1	17.7	0.8	0.8	5.8	0.9
4-C	Fine	0.2	0.5	0.1	0.6	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-C	Coarse	0.7	2.9	0.4	3.2	0.2	0.1	1.1	0.2	2.2	9.1	1.2	10.1	0.5	0.4	3.3	0.5
4-C	Total	0.9	3.4	0.5	3.8	0.2	0.2	1.3	0.2	2.2	9.1	1.2	10.1	0.5	0.4	3.3	0.5
5-T	Fine	1.8	4.0	0.9	5.3	0.4	1.3	3.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-T	Coarse	3.0	7.3	1.5	9.6	0.7	2.1	5.7	1.0	5.0	21.1	2.8	23.3	1.1	1.0	7.7	1.2
5-T	Total	4.8	11.3	2.4	14.9	1.1	3.4	9.1	1.6	5.0	21.1	2.8	23.3	1.1	1.0	7.7	1.2
5-F	Fine	1.4	3.1	0.7	4.2	0.3	1.1	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-F	Coarse	2.4	5.8	1.2	7.5	0.6	1.7	4.6	0.8	3.0	12.6	1.7	14.0	0.7	0.6	4.6	0.7
5-F	Total	3.9	8.9	2.0	11.7	0.9	2.8	7.4	1.3	3.0	12.6	1.7	14.0	0.7	0.6	4.6	0.7
5-S	Fine	0.4	1.0	0.2	1.2	0.1	0.2	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-S	Coarse	0.6	1.5	0.3	2.0	0.1	0.2	0.9	0.1	10.7	44.8	5.9	49.6	2.3	2.2	16.3	2.7
5-S	Total	1.0	2.4	0.5	3.2	0.2	0.4	1.6	0.2	10.7	44.8	5.9	49.6	2.3	2.2	16.3	2.7
5-B	Fine	1.2	2.7	0.6	3.7	0.3	0.9	2.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-B	Coarse	3.4	9.0	1.8	11.2	0.8	2.2	6.3	1.1	4.1	17.2	2.2	19.1	0.9	0.8	6.3	1.0
5-B	Total	4.6	11.7	2.4	14.8	1.1	3.1	8.6	1.5	4.1	17.2	2.2	19.1	0.9	0.8	6.3	1.0
5-C	Fine	1.4	3.2	0.7	4.2	0.3	1.1	2.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-C	Coarse	2.6	6.0	1.3	7.8	0.6	1.6	4.5	0.8	14.5	60.6	7.9	67.1	3.2	2.9	22.0	3.6
5-C	Total	4.0	9.2	2.0	12.0	0.9	2.7	7.3	1.3	14.5	60.6	7.9	67.1	3.2	2.9	22.0	3.6

### Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

### Appendix E (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level DWD biomass weights, and C and nutrient contents.

Plot ID	Type	Aboveground (kg·ha <sup>-1</sup> , except biomass, C = Mg·ha <sup>-1</sup> , volume = m <sup>3</sup> ·ha <sup>-1</sup> )							Belowground (kg·ha <sup>-1</sup> , except biomass, C = Mg·ha <sup>-1</sup> , volume = m <sup>3</sup> ·ha <sup>-1</sup> )							
		Biomass	Volume	C	N	P	K	Ca	Mg	Biomass	Volume	C	N	P	K	Ca
1-L-T	Fine	3.4	7.4	1.7	10.3	0.8	2.6	6.6	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-L-T	Coarse	6.1	22.5	3.3	25.8	1.4	2.0	9.9	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-L-T	Total	9.5	29.9	5.0	36.1	2.2	4.6	16.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-L-F	Fine	3.0	6.6	1.5	8.8	0.7	2.2	5.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-L-F	Coarse	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-L-F	Total	3.0	6.7	1.5	9.0	0.7	2.2	5.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-L-T	Fine	2.0	4.6	1.0	6.2	0.5	1.4	3.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-L-T	Coarse	0.5	1.1	0.3	1.6	0.1	0.4	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-L-T	Total	2.6	5.8	1.3	7.7	0.6	1.7	4.7	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-L-F	Fine	1.2	2.9	0.6	3.6	0.2	0.6	2.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-L-F	Coarse	3.0	7.4	1.6	9.4	0.7	2.3	5.9	1.1	0.5	2.1	0.3	2.3	0.1	0.1	0.8
2-L-F	Total	4.2	10.3	2.2	13.0	1.0	2.9	7.8	1.4	0.5	2.1	0.3	2.3	0.1	0.1	0.8
3-L-T	Fine	2.2	5.1	1.1	6.7	0.5	1.5	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-L-T	Coarse	3.5	7.3	1.8	10.5	0.9	2.8	7.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-L-T	Total	5.8	12.3	2.9	17.2	1.4	4.3	11.1	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-L-F	Fine	1.0	2.4	0.5	3.1	0.3	0.8	2.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-L-F	Coarse	0.1	0.3	0.1	0.4	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-L-F	Total	1.2	2.7	0.6	3.4	0.3	0.8	2.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-T	Fine	0.6	1.2	0.3	1.7	0.1	0.4	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-T	Coarse	4.0	10.2	2.2	13.2	0.6	0.7	4.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-T	Total	4.6	11.4	2.4	14.8	0.7	1.1	5.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-F	Fine	1.3	3.2	0.7	4.1	0.3	0.9	2.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-F	Coarse	1.7	4.1	0.9	5.3	0.3	0.7	2.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-L-F	Total	3.0	7.3	1.6	9.4	0.6	1.5	4.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-T	Fine	0.2	0.4	0.1	0.5	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-T	Coarse	6.9	14.6	3.5	20.4	1.7	5.4	13.6	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-T	Total	7.1	15.1	3.6	20.9	1.7	5.5	13.9	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-F	Fine	0.7	1.7	0.4	2.1	0.2	0.5	1.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-F	Coarse	0.2	0.5	0.1	0.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-L-F	Total	0.9	2.2	0.4	2.8	0.2	0.5	1.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-A-50	Fine	1.9	4.4	1.0	5.8	0.5	1.5	3.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-A-50	Coarse	11.6	31.8	6.0	39.3	2.7	7.0	21.1	3.7	5.2	21.7	2.8	24.1	1.1	1.0	7.9
1-A-50	Total	13.5	36.2	7.0	45.1	3.2	8.5	24.9	4.4	5.2	21.7	2.8	24.1	1.1	1.0	7.9
1-A-100	Fine	0.1	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-A-100	Coarse	1.7	5.5	0.9	6.5	0.4	0.7	2.8	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1
1-A-100	Total	1.8	5.7	0.9	6.7	0.4	0.8	3.0	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1
1-A-200	Fine	0.1	0.2	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1-A-200	Coarse	1.7	5.5	0.9	6.5	0.4	0.7	2.8	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1
1-A-200	Total	1.8	5.7	0.9	6.7	0.4	0.8	3.0	0.5	13.2	55.2	7.2	61.2	2.9	2.7	20.1
2-A-50	Fine	0.3	0.7	0.2	1.0	0.1	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-50	Coarse	2.3	9.2	1.2	10.3	0.5	0.5	3.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-50	Total	2.6	10.0	1.4	11.2	0.6	0.7	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-100	Fine	0.3	0.7	0.2	1.0	0.1	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-100	Coarse	2.3	9.2	1.2	10.3	0.5	0.5	3.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-100	Total	2.6	10.0	1.4	11.2	0.6	0.7	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-400	Fine	0.3	0.7	0.2	1.0	0.1	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-400	Coarse	2.3	9.2	1.2	10.3	0.5	0.5	3.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2-A-400	Total	2.6	10.0	1.4	11.2	0.6	0.7	4.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-A-50	Fine	0.4	0.9	0.2	1.3	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-A-50	Coarse	1.9	4.9	1.0	6.3	0.3	0.3	2.2	0.3	10.7	44.6	5.8	49.4	2.3	2.1	16.2
3-A-50	Total	2.3	5.8	1.2	7.6	0.4	0.6	3.1	0.4	10.7	44.6	5.8	49.4	2.3	2.1	16.2
3-A-200	Fine	0.4	0.9	0.2	1.3	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-A-200	Coarse	1.9	4.9	1.0	6.3	0.3	0.3	2.2	0.3	10.7	44.6	5.8	49.4	2.3	2.1	16.2
3-A-200	Total	2.3	5.8	1.2	7.6	0.4	0.6	3.1	0.4	10.7	44.6	5.8	49.4	2.3	2.1	16.2
3-A-400	Fine	0.4	0.9	0.2	1.3	0.1	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3-A-400	Coarse	1.9	4.9	1.0	6.3	0.3	0.3	2.2	0.3	10.7	44.6	5.8	49.4	2.3	2.1	16.2
3-A-400	Total	2.3	5.8	1.2	7.6	0.4	0.6	3.1	0.4	10.7	44.6	5.8	49.4	2.3	2.1	16.2
4-A-50	Fine	0.6	1.3	0.3	1.7	0.1	0.5	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-A-50	Coarse	3.4	9.5	1.8	11.6	0.8	1.8	5.9	1.0	29.7	120.9	16.2	134.8	6.3	5.8	44.3
4-A-50	Total	4.0	10.8	2.1	13.3	0.9	2.3	7.1	1.2	29.7	120.9	16.2	134.8	6.3	5.8	44.3
4-A-100	Fine	1.4	3.1	0.7	4.2	0.3	1.1	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-A-100	Coarse	3.4	9.5	1.8	11.6	0.8	1.8	5.9	1.0	29.7	120.9	16.2	134.8	6.3	5.8	44.3
4-A-100	Total	4.0	10.8	2.1	13.3	0.9	2.3	7.1	1.2	29.7	120.9	16.2	134.8	6.3	5.8	44.3
4-A-200	Fine	0.6	1.3	0.3	1.7	0.1	0.5	1.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4-A-200	Coarse	3.4	9.5	1.8	11.6	0.8	1.8	5.9	1.0	29.7	120.9	16.2	134.8	6.3	5.8	44.3
4-A-200	Total	4.0	10.8	2.1	13.3	0.9	2.3	7.1	1.2	29.7	120.9	16.2	134.8	6.3	5.8	44.3
5-A-100	Fine	1.4	3.1	0.7	4.2	0.3	1.1	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-A-100	Coarse	2.4	5.8	1.2	7.5	0.6	1.7	4.6	0.8	3.0	12.6	1.7	14.0	0.7	0.6	4.6
5-A-100	Total	3.9	8.9	2.0	11.7	0.9	2.8	7.4	1.3	3.0	12.6	1.7	14.0	0.7	0.6	4.6
5-A-200	Fine	1.4	3.1	0.7	4.2	0.3	1.1	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-A-200	Coarse	2.4	5.8	1.2	7.5	0.6	1.7	4.6	0.8	3.0	12.6	1.7	14.0	0.7	0.6	4.6
5-A-200	Total	3.9	8.9	2.0	11.7	0.9	2.8	7.4	1.3	3.0	12.6	1.7	14.0	0.7	0.6	4.6
5-A-400	Fine	1.4	3.1	0.7	4.2	0.3	1.1	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-A-400	Coarse	2.4	5.8	1.2	7.5	0.6	1.7	4.6	0.8	3.0	12.					

## Appendix F - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level DWD biomass weights and volumes by decay class.

Plot ID	Type	Aboveground (Mg·ha <sup>-1</sup> )					Belowground (Mg·ha <sup>-1</sup> )					Aboveground (m <sup>3</sup> ·ha <sup>-1</sup> )					Belowground (m <sup>3</sup> ·ha <sup>-1</sup> )								
		Decay class					Decay class					Decay class					Decay class								
		1	2	3	4	5		4	5	1	2	3	4	5		4	5	1	2	3	4	5			
1-T	Fine	0.06	0.53	0.00	0.00	0.00	0.00	0.00	0.00	0.12	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-T	Coarse	0.00	1.47	0.38	0.00	0.55	0.00	24.38	0.00	3.38	0.98	0.00	2.29	0.00	101.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-T	Total	0.06	2.00	0.38	0.00	0.55	0.00	24.38	0.12	4.61	0.98	0.00	2.29	0.00	101.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-F	Fine	0.60	1.22	0.12	0.00	0.00	0.00	0.00	0.00	1.23	2.82	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-F	Coarse	1.82	6.18	0.34	0.40	2.86	0.00	5.20	3.73	14.26	0.88	1.02	11.94	0.00	21.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-F	Total	2.42	7.40	0.47	0.40	2.86	0.00	5.20	4.96	17.09	1.20	1.02	11.94	0.00	21.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-S	Fine	0.10	0.25	0.46	0.00	0.00	0.00	0.00	0.00	0.20	0.57	1.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-S	Coarse	0.42	0.27	0.02	0.00	10.33	0.00	0.00	0.87	0.62	0.05	0.00	43.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-S	Total	0.52	0.52	0.48	0.00	10.33	0.00	0.00	1.06	1.19	1.23	0.00	43.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-B	Fine	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-B	Coarse	0.00	0.68	0.00	0.24	0.79	0.00	13.21	0.00	1.58	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-B	Total	0.06	0.70	0.00	0.24	0.79	0.00	13.21	0.12	1.62	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-C	Fine	0.39	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.81	0.00	0.03	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-C	Coarse	0.53	0.00	1.78	2.03	5.99	0.00	0.00	1.10	0.00	4.57	5.20	25.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-C	Total	0.93	0.00	1.80	2.07	5.99	0.00	0.00	1.91	0.00	4.60	5.32	25.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-T	Fine	0.16	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-T	Coarse	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.72	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.59		
2-T	Total	0.29	0.00	0.02	0.00	0.00	0.00	0.00	0.00	20.72	0.59	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.59		
2-F	Fine	0.09	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-F	Coarse	0.00	0.00	0.15	0.00	2.12	0.00	0.00	0.00	0.00	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-F	Total	0.09	0.24	0.15	0.00	2.12	0.00	0.00	0.18	0.55	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-S	Fine	0.20	1.24	0.08	0.00	0.00	0.00	0.00	0.00	0.41	2.87	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-S	Coarse	1.18	4.02	0.00	0.00	0.39	0.00	0.00	0.24	2.42	9.27	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-S	Total	1.37	5.26	0.08	0.00	0.39	0.00	0.00	0.28	12.14	0.21	0.00	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-B	Fine	0.27	0.03	0.05	0.06	0.00	0.00	0.00	0.00	0.55	0.07	0.13	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-B	Coarse	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.81	0.00	0.00	0.00	0.00	3.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.91		
2-B	Total	0.27	0.03	0.05	0.06	0.73	0.00	0.00	0.81	0.55	0.07	0.13	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.91		
2-C	Fine	0.04	0.04	0.14	0.03	0.00	0.00	0.00	0.00	0.09	0.09	0.35	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-C	Coarse	0.36	0.54	0.00	0.04	0.69	0.00	0.00	0.74	1.24	0.00	0.10	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2-C	Total	0.40	0.57	0.14	0.06	0.69	0.00	0.00	0.82	1.33	0.35	0.16	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-T	Fine	0.89	1.28	0.48	0.03	0.00	0.00	0.00	0.00	1.83	2.95	1.24	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-T	Coarse	1.91	0.77	0.25	0.89	0.94	0.00	0.00	12.52	3.93	1.77	0.63	2.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.32		
3-T	Total	2.81	2.05	0.73	0.92	0.94	0.00	0.00	12.52	5.76	4.72	1.87	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.32		
3-F	Fine	0.37	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.77	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-F	Coarse	0.00	0.00	0.09	1.70	0.08	0.00	0.00	10.67	0.00	0.00	0.24	4.35	0.32	0.00	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-F	Total	0.37	0.04	0.11	1.70	0.08	0.00	0.00	10.67	0.77	0.09	0.29	4.35	0.32	0.00	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-S	Fine	0.33	0.24	0.18	0.08	0.00	0.00	0.00	0.00	0.67	0.55	0.46	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-S	Coarse	0.00	0.72	0.00	0.00	0.42	0.00	0.00	8.88	0.00	1.67	0.00	0.00	0.00	1.75	0.00	0.00	37.10	0.00	0.00	0.00	0.00	0.00		
3-S	Total	0.33	0.96	0.18	0.08	0.42	0.00	0.00	8.88	0.67	2.23	0.46	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-B	Fine	0.09	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-B	Coarse	0.13	0.00	0.00	0.05	1.02	0.00	0.00	17.64	0.26	0.00	0.00	0.14	4.25	0.00	0.00	73.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3-B	Total	0.22	0.21	0.00	0.05	1.02	0.00	0.00	17.64	0.46	0.49	0.00	0.14	4.25	0.00	0.00	73.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3-C	Fine	0.15	0.48	0.04	0.11	0.00	0.00	0.00	0.00	0.30	1.10	0.09	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3-C	Coarse	0.06	0.32	0.43	0.00	0.81	0.00	0.00	0.00	0.03	0.00	0.13	0.74	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-C	Total	0.21	0.80	0.47	0.11	0.81	0.00	0.00	0.43	1.84	2.07	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4-T	Fine	0.14	0.07	0.12	0.00	0.00	0.00	0.00	0.00	0.28	0.16	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4-T	Coarse	0.00	0.00	0.12	0.00	0																			

**Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)**

**Appendix F (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level DWD biomass weights and volumes by decay class.**

Plot ID	Type	Aboveground ( $\text{Mg}\cdot\text{ha}^{-1}$ ) Decay class					Belowground ( $\text{Mg}\cdot\text{ha}^{-1}$ ) Decay class					Aboveground ( $\text{m}^3\cdot\text{ha}^{-1}$ ) Decay class					Belowground ( $\text{m}^3\cdot\text{ha}^{-1}$ ) Decay class						
		1	2	3	4	5	4	5	1	2	3	4	5	4	5	4	5	4	5	4	5		
1-L-T	Fine	2.51	0.55	0.38	0.00	0.00	0.00	0.00	5.15	1.27	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1-L-T	Coarse	1.04	0.36	0.02	0.00	4.67	0.00	0.00	2.13	0.84	0.05	0.00	19.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-L-T	Total	3.54	0.91	0.40	0.00	4.67	0.00	0.00	7.28	2.11	1.02	0.00	19.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-L-F	Fine	1.39	1.15	0.36	0.03	0.02	0.00	0.00	2.85	2.64	0.93	0.07	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-L-F	Coarse	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-L-F	Total	1.39	1.19	0.36	0.03	0.02	0.00	0.00	2.85	2.75	0.93	0.07	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-L-T	Fine	0.65	1.02	0.03	0.35	0.00	0.00	0.00	1.33	2.36	0.07	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-L-T	Coarse	0.43	0.00	0.09	0.00	0.00	0.00	0.00	0.88	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-L-T	Total	1.08	1.02	0.12	0.35	0.00	0.00	0.00	2.21	2.36	0.31	0.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-L-F	Fine	0.06	0.42	0.53	0.15	0.00	0.00	0.00	0.12	0.97	1.37	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-L-F	Coarse	0.00	2.82	0.00	0.00	0.22	0.00	0.00	0.50	0.00	6.50	0.00	0.00	0.94	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	
2-L-F	Total	0.06	3.24	0.53	0.15	0.22	0.00	0.00	0.50	0.12	7.47	1.37	0.39	0.94	0.00	0.00	2.07	0.00	0.00	0.00	0.00	0.00	
3-L-T	Fine	0.79	0.92	0.25	0.27	0.00	0.00	0.00	1.61	2.13	0.64	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-L-T	Coarse	3.54	0.00	0.00	0.00	0.00	0.00	0.00	7.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-L-T	Total	4.33	0.92	0.25	0.27	0.00	0.00	0.00	8.89	2.13	0.64	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-L-F	Fine	0.09	0.87	0.07	0.00	0.00	0.00	0.00	0.19	2.01	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-L-F	Coarse	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-L-F	Total	0.09	0.87	0.18	0.00	0.00	0.00	0.00	0.19	2.01	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-T	Fine	0.48	0.08	0.00	0.00	0.00	0.00	0.00	0.99	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-T	Coarse	0.08	0.00	0.41	3.51	0.00	0.00	0.00	0.17	0.00	1.04	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-T	Total	0.56	0.08	0.41	3.51	0.00	0.00	0.00	1.16	0.18	1.04	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-F	Fine	0.21	0.68	0.32	0.13	0.00	0.00	0.00	0.44	1.57	0.83	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-F	Coarse	0.25	0.20	0.52	0.70	0.00	0.00	0.00	0.51	0.46	1.34	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-L-F	Total	0.46	0.88	0.84	0.83	0.00	0.00	0.00	0.95	2.03	2.16	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-T	Fine	0.00	0.16	0.01	0.00	0.00	0.00	0.00	0.00	0.38	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-T	Coarse	4.89	1.99	0.00	0.00	0.00	0.00	0.00	10.04	4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-T	Total	4.89	2.16	0.01	0.00	0.00	0.00	0.00	10.04	4.98	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-F	Fine	0.19	0.21	0.30	0.00	0.00	0.00	0.00	0.38	0.49	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-F	Coarse	0.00	0.00	0.00	0.05	0.10	0.00	0.00	0.00	0.00	0.12	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-L-F	Total	0.19	0.21	0.30	0.05	0.10	0.00	0.00	0.38	0.49	0.78	0.12	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-50	Fine	0.60	1.22	0.12	0.00	0.00	0.00	0.00	1.23	2.82	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-50	Coarse	1.82	6.18	0.34	0.40	2.86	0.00	5.20	3.73	14.26	0.88	1.02	11.94	0.00	21.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-50	Total	2.42	7.40	0.47	0.40	2.86	0.00	5.20	4.96	17.09	1.20	1.02	11.94	0.00	21.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-100	Fine	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-100	Coarse	0.00	0.68	0.00	0.24	0.79	0.00	13.21	0.00	1.58	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-100	Total	0.06	0.70	0.00	0.24	0.79	0.00	13.21	0.12	1.62	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-200	Fine	0.06	0.22	0.00	0.24	0.79	0.00	13.21	0.00	1.58	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-200	Coarse	0.00	0.68	0.00	0.24	0.79	0.00	13.21	0.12	1.62	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-A-200	Total	0.06	0.70	0.00	0.24	0.79	0.00	13.21	0.12	1.62	0.00	0.61	3.31	0.00	55.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-A-50	Fine	0.09	0.24	0.00	0.00	0.00	0.00	0.00	0.18	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-A-50	Coarse	0.00	0.00	0.15	0.00	2.12	0.00	0.00	0.00	0.00	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-A-50	Total	0.09	0.24	0.15	0.00	2.12	0.00	0.00	0.00	0.18	0.55	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-A-100	Fine	0.09	0.24	0.00	0.00	0.00	0.00	0.00	0.18	0.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-A-100	Coarse	0.00	0.00	0.15	0.00	2.12	0.00	0.00	0.00	0.18	0.55	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-A-100	Total	0.09	0.24	0.15	0.00	2.12	0.00	0.00	0.00	0.18	0.55	0.38	0.00	8.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-A-50	Fine	0.37	0.04	0.02	0.00	0.00	0.00	0.00	0.77	0.09	0.29	4.35	0.32	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-A-50	Coarse	0.00	0.37	0.04	1.11	1.70	0.08	0.00	10.67	0.77	0.29	4.35	0.32	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-A-200	Fine	0.37	0.04	0.02	0.00	0.00	0.00	0.00	0.77	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-A-200	Coarse	0.00	0.00	0.09	0.00	1.70	0.08	0.00	10.67	0.00	0.00	0.24	4.35	0.32	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-A-200	Total	0.37	0.04	0.02	0.00	1.70</td																	

## Appendix G - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil physical and chemical properties.

Plot ID	Horizon	Horizon thickness (cm)	Coarse fragments (%)	Bulk density (g·cm⁻³)	pH H <sub>2</sub> O	Texture (%)			Horizon weight (Mg·ha⁻¹)	Fe extractions (%)			Al extractions (%)		
						CaCl <sub>2</sub>	Sand	Silt		Dithionite	Oxalate	Pyrophosphate	Dithionite	Oxalate	Pyrophosphate
1-T	L	3.0			4.54	4.15			8.53						
1-T	F	2.0			4.13	3.81			24.27						
1-T	H/Ah	2.0	1	0.54	3.74	3.17			106.25						
1-T	Ae	2.8	5	1.22	3.97	3.35	56.0	41.5	2.5	329.65	0.16	0.08	0.08	0.04	0.04
1-T	Bm1	10.2	5	1.05	5.03	4.36	46.6	48.3	5.1	1009.42	0.87	0.68	0.26	0.76	1.17
1-T	Bm2	11.8	10	1.26	5.52	4.83	52.3	43.9	3.8	1339.44	0.52	0.45	0.12	0.43	0.77
1-T	C	75.2	50	1.44	5.47	4.89	96.2	2.5	1.3	5407.37	0.08	0.06	0.01	0.05	0.12
1-F	L	0.1			4.26	3.90			7.25						
1-F	F	2.5			3.55	3.13			25.04						
1-F	H/Ah	1.5	0	0.72	3.60	3.01			107.56						
1-F	Ae	4.7	0	1.03	3.78	3.20	67.1	27.8	5.1	478.54	0.15	0.12	0.12	0.08	0.10
1-F	Bm1	11.3	0	1.08	5.06	4.46	68.4	26.5	5.1	1218.89	0.57	0.53	0.12	0.47	0.97
1-F	Bm2	9.7	1	1.40	5.44	4.84	66.0	28.9	5.0	1343.24	0.23	0.21	0.03	0.20	0.47
1-F	C	74.3	1	1.56	5.33	5.05	98.7	0.0	1.3	11464.19	0.05	0.06	0.01	0.04	0.09
1-S	L	3.0			4.14	3.81			10.46						
1-S	F	5.0			3.80	3.35			21.35						
1-S	H/Ah	3.0	0	0.56	3.58	2.96			167.32						
1-S	Ae	4.3	0	1.16	4.02	3.49	62.3	32.7	5.0	500.69	0.14	0.07	0.09	0.06	0.07
1-S	Bm1	14.7	0	1.04	4.94	4.61	59.3	34.3	6.4	1524.58	0.81	0.65	0.12	0.70	1.32
1-S	Bm2	20.0	1	1.36	5.28	4.97	72.3	23.9	3.8	2684.37	0.24	0.18	0.03	0.23	0.46
1-S	C	52.0	10	1.41	5.15	5.00	90.2	0.0	9.8	6602.16	0.07	0.03	0.01	0.04	0.08
1-S	IIC	9.0	1	1.52	5.90	4.95	91.4	0.0	9.2	1351.90	0.04	0.03	0.01	0.02	0.04
1-B	L	3.0			4.51	4.12			9.63						
1-B	F	2.0			3.97	3.50			19.58						
1-B	H/Ah	2.0	1	0.54	3.74	3.17			106.25						
1-B	Ae	5.2	5	1.22	3.95	3.37	56.0	41.5	2.5	601.13	0.16	0.08	0.08	0.04	0.04
1-B	Bm1	12.3	5	1.05	4.93	4.35	46.6	48.3	5.1	1224.54	0.87	0.68	0.26	0.76	1.17
1-B	Bm2	15.0	10	1.26	5.21	4.90	52.3	43.9	3.8	1697.88	0.52	0.45	0.12	0.43	0.77
1-B	C	67.5	50	1.44	5.29	5.01	96.2	2.5	1.3	4855.85	0.08	0.06	0.01	0.05	0.12
1-C	L	3.0			4.28	3.90			6.95						
1-C	F	5.0			3.69	3.16			34.01						
1-C	H/Ah	2.0	5	0.63	3.98	3.42			120.24						
1-C	Ae	4.3	5	0.92	3.98	3.54	74.7	19.0	6.3	378.18	0.50	0.35	0.25	0.20	0.28
1-C	Bm1	14.3	13	1.11	4.94	4.66	69.7	25.2	5.0	1390.13	0.54	0.42	0.09	0.41	0.86
1-C	Bm2	8.7	10	1.29	5.34	5.05	95.0	2.5	2.5	1004.16	0.08	0.06	0.01	0.06	0.06
1-C	C	41.0	5	1.24	5.27	5.10	97.5	1.2	1.2	4839.59	0.05	0.04	0.01	0.03	0.07
1-C	IIC	31.7	1	1.38	5.68	5.01	98.7	1.3	0.0	4340.13	0.04	0.02	0.01	0.01	0.04
2-T	L	4.0			4.25	3.87			7.72						
2-T	F	5.0			3.79	3.36			14.38						
2-T	H/Ah	2.0	0	0.50	4.06	3.25			99.07						
2-T	Ae	3.8	1	1.18	4.98	3.38	66.1	28.9	5.0	445.94	0.09	0.07	0.07	0.05	0.07
2-T	Bm1	11.0	5	1.12	4.96	4.51	59.6	32.9	7.6	1166.70	0.92	0.81	0.21	0.73	1.39
2-T	Bm2	14.8	5	1.37	5.40	4.99	64.4	33.0	2.5	1926.66	0.33	0.34	0.04	0.27	0.77
2-T	C	23.0	20	1.41	5.23	4.87	92.5	6.3	1.3	2600.16	0.11	0.04	0.02	0.08	0.10
2-T	IIC	47.3	35	1.26	5.59	5.07	96.3	3.7	0.0	3865.24	0.07	0.06	0.01	0.03	0.07
2-F	L	3.0			4.13	3.79			8.94						
2-F	F	5.0			3.67	3.22			22.74						
2-F	H/Ah	3.0	0	0.56	3.58	2.96			167.32						
2-F	Ae	4.7	0	1.16	3.90	3.36	62.3	32.7	5.0	539.20	0.14	0.07	0.09	0.06	0.07
2-F	Bm1	12.7	0	1.04	5.02	4.40	59.3	34.3	6.4	1316.68	0.81	0.65	0.12	0.70	1.32
2-F	Bm2	13.0	1	1.36	5.06	5.21	72.3	23.9	3.8	1744.84	0.24	0.18	0.03	0.23	0.46
2-F	C	52.0	10	1.41	5.23	5.34	90.2	0.0	9.8	6602.16	0.07	0.03	0.01	0.04	0.08
2-F	IIC	17.7	1	1.52	5.90	4.95	91.4	0.0	9.2	2653.73	0.04	0.03	0.01	0.02	0.04
2-S	L	3.0			4.20	3.82			9.18						
2-S	F	5.0			3.57	3.08			34.21						
2-S	H/Ah	3.0	0	0.56	3.58	2.96			167.32						
2-S	Ae	1.7	0	1.16	3.98	3.49	62.3	32.7	5.0	192.57	0.14	0.07	0.09	0.06	0.07
2-S	Bm1	12.2	0	1.04	5.32	4.62	59.3	34.3	6.4	1264.71	0.81	0.65	0.12	0.70	1.32
2-S	Bm2	14.3	1	1.36	5.23	4.91	72.3	23.9	3.8	1923.80	0.24	0.18	0.03	0.23	0.46
2-S	C	52.0	10	1.41	5.38	5.03	90.2	0.0	9.8	6602.16	0.07	0.03	0.01	0.04	0.08
2-S	IIC	19.8	1	1.52	5.90	4.95	91.4	0.0	9.2	2979.18	0.04	0.03	0.01	0.02	0.04
2-B	L	4.0			4.20	3.84			8.98						
2-B	F	5.0			3.69	3.25			23.37						
2-B	H/Ah	2.0	0	0.50	4.06	3.25			99.07						
2-B	Ae	5.3	1	1.18	4.01	3.45	66.1	28.9	5.0	620.44	0.09	0.07	0.07	0.05	0.07
2-B	Bm1	7.7	5	1.12	5.01	4.27	59.6	32.9	7.6	813.16	0.92	0.81	0.21	0.73	1.39
2-B	Bm2	16.7	5	1.37	5.28	4.77	64.4	33.0	2.5	2164.78	0.33	0.34	0.04	0.27	0.77
2-B	C	23.0	20	1.41	5.42	4.80	92.5	6.3	1.3	2600.16	0.11	0.04	0.02	0.08	0.17
2-B	IIC	47.3	35	1.26	5.59	5.07	96.3	3.7	0.0	3865.24	0.07	0.06	0.01	0.03	0.07
2-C	L	3.0			4.08	3.70			8.23						
2-C	F	5.0			3.66	3.22			16.85						
2-C	H/Ah	2.0	5	0.63	3.98	3.42			120.24						
2-C	Ae	4.3	5	0.92	4.25	3.84	74.7	19.0	6.3	378.18	0.50	0.35	0.25	0.20	0.28
2-C	Bm1	13.0	13	1.11	5.06	4.65	69.7	25.2	5.0	1260.82	0.54	0.42	0.09	0.41	0.86
2-C	Bm2	16.3	10	1.29	5.23	4.89	95.0	2.5	2.5	1892.46	0.08	0.06	0.01	0.06	0.16
2-C	C	41.0	5	1.24	5.08	4.99	97.5	1.2	1.2	4839.59	0.05	0.04	0.01	0.03	0.07
2-C	IIC	25.3	1	1.38	5.68	5.01	98.7	1.3	0.0	3472.10	0.04	0.02	0.01	0.01	0.04

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

### Appendix G (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil physical and chemical properties.

Plot ID	Horizon	Horizon thickness (cm)	Coarse fragments (%)	Bulk density ( $\text{g}\cdot\text{cm}^{-3}$ )	pH			Texture (%)			Horizon weight ( $\text{Mg}\cdot\text{ha}^{-1}$ )	Fe extractions (%)			Al extractions (%)		
					$\text{H}_2\text{O}$	$\text{CaCl}_2$	Sand	Silt	Clay	Dithionite		Oxalate	Pyrophosphate	Dithionite	Oxalate	Pyrophosphate	
3-T	L	3.0			4.30	3.93					7.82						
3-T	F	4.0			3.84	3.39					23.37						
3-T	H/Ah	2.0	0	0.35	3.75	3.07					70.75						
3-T	Ae	2.3	0	0.81	4.17	3.52	59.9	27.6	12.5	189.69	0.16	0.11	0.10	0.06	0.08	0.11	
3-T	Bm1	8.7	0	1.18	4.94	4.45	47.0	40.4	12.6	1024.67	0.76	0.54	0.11	0.62	1.19	0.37	
3-T	Bm2	20.0	5	1.07	5.11	4.68	92.5	5.0	2.5	2039.92	0.08	0.05	0.01	0.06	0.15	0.06	
3-T	C	44.0	15	1.13	5.09	4.98	93.7	3.8	2.5	4217.95	0.06	0.04	0.01	0.03	0.08	0.03	
3-T	IIC	25.0	35	1.09	5.48	4.95	93.7	3.8	2.5	1765.25	0.07	0.04	0.01	0.03	0.06	0.02	
3-F	L	3.0			4.34	3.95					8.60						
3-F	F	4.0			3.76	3.35					13.99						
3-F	H/Ah	2.0	0	0.35	3.75	3.07					70.75						
3-F	Ae	3.2	0	0.81	4.00	3.60	59.9	27.6	12.5	257.44	0.16	0.11	0.10	0.06	0.08	0.11	
3-F	Bm1	8.0	0	1.18	4.72	4.45	47.0	40.4	12.6	945.85	0.76	0.54	0.11	0.62	1.19	0.37	
3-F	Bm2	15.3	5	1.07	5.06	4.86	92.5	5.0	2.5	1563.94	0.08	0.05	0.01	0.06	0.15	0.06	
3-F	C	44.0	15	1.13	5.11	4.92	93.7	3.8	2.5	4217.95	0.06	0.04	0.01	0.03	0.08	0.03	
3-F	IIC	29.5	35	1.09	5.48	4.95	93.7	3.8	2.5	2083.00	0.07	0.04	0.01	0.03	0.06	0.02	
3-S	L	3.0			4.28	3.88					7.58						
3-S	F	4.0			3.79	3.35					12.81						
3-S	H/Ah	2.0	0	0.35	3.75	3.07					70.75						
3-S	Ae	2.3	0	0.81	3.87	3.27	59.9	27.6	12.5	189.69	0.16	0.11	0.10	0.06	0.08	0.11	
3-S	Bm1	11.2	0	1.18	4.78	4.34	47.0	40.4	12.6	1320.24	0.76	0.54	0.11	0.62	1.19	0.37	
3-S	Bm2	12.2	5	1.07	5.08	4.84	92.5	5.0	2.5	1240.95	0.08	0.05	0.01	0.06	0.15	0.06	
3-S	C	44.0	15	1.13	5.15	5.19	93.7	3.8	2.5	4217.95	0.06	0.04	0.01	0.03	0.08	0.03	
3-S	IIC	30.3	35	1.09	5.48	4.95	93.7	3.8	2.5	2141.84	0.07	0.04	0.01	0.03	0.06	0.02	
3-B	L	4.0			4.24	3.85					9.05						
3-B	F	5.0			3.77	3.36					16.47						
3-B	H/Ah	2.0	0	0.50	4.06	3.25					99.07						
3-B	Ae	4.2	1	1.18	3.90	3.26	66.1	28.9	5.0	484.72	0.09	0.07	0.07	0.05	0.07	0.10	
3-B	Bm1	9.3	5	1.12	4.75	4.42	59.6	32.9	7.6	989.93	0.92	0.81	0.21	0.73	1.39	0.59	
3-B	Bm2	14.0	5	1.37	5.20	4.81	64.4	33.0	2.5	1818.42	0.33	0.34	0.04	0.27	0.77	0.19	
3-B	C	23.0	20	1.41	5.20	4.83	92.5	6.3	1.3	2600.16	0.11	0.04	0.02	0.08	0.17	0.10	
3-B	IIC	49.5	35	1.26	5.59	5.07	96.3	3.7	0.0	4042.17	0.07	0.06	0.01	0.03	0.07	0.03	
3-C	L	3.0			4.08	3.70					8.09						
3-C	F	5.0			3.58	3.10					28.03						
3-C	H/Ah	2.0	5	0.63	3.98	3.42					120.24						
3-C	Ae	3.3	5	0.92	3.90	3.35	74.7	19.0	6.3	290.91	0.50	0.35	0.25	0.20	0.28	0.25	
3-C	Bm1	13.7	13	1.11	5.04	4.51	69.7	25.2	5.0	1325.47	0.54	0.42	0.09	0.41	0.86	0.28	
3-C	Bm2	13.0	10	1.29	5.13	4.88	95.0	2.5	2.5	1506.24	0.08	0.06	0.01	0.06	0.16	0.06	
3-C	C	41.0	5	1.24	5.59	5.08	97.5	1.2	1.2	4839.59	0.05	0.04	0.01	0.03	0.07	0.03	
3-C	IIC	29.0	1	1.38	5.68	5.01	98.7	1.3	0.0	3974.64	0.04	0.02	0.01	0.01	0.04	0.03	
4-T	L	4.0			4.18	3.81					8.53						
4-T	F	3.0			3.43	3.02					42.27						
4-T	H/Ah	3.0	0	0.50	3.62	2.92					149.71						
4-T	Ae	3.7	0	0.85	3.96	3.49	72.0	20.4	7.6	312.31	0.14	0.10	0.12	0.07	0.09	0.13	
4-T	Bm1	13.0	1	1.17	4.95	4.59	67.2	23.9	8.8	1507.70	0.57	0.43	0.09	0.45	1.01	0.32	
4-T	Bm2	14.0	5	1.32	5.01	5.05	90.3	0.0	9.7	1760.65	0.07	0.04	0.01	0.05	0.13	0.06	
4-T	C	16.0	1	1.43	5.37	4.90	94.3	0.6	5.1	2262.68	0.06	0.04	0.01	0.04	0.10	0.05	
4-T	IIC	14.0	30	1.06	5.69	5.11	92.5	3.8	3.8	1042.72	0.07	0.06	0.02	0.03	0.06	0.03	
4-T	IIIIC	39.3	1	1.32	5.68	5.13	93.7	1.3	5.0	5143.67	0.04	0.03	0.01	0.02	0.04	0.03	
4-F	L	4.0			4.38	4.03					6.90						
4-F	F	3.0			3.80	3.28					38.59						
4-F	H/Ah	3.0	0	0.50	3.62	2.92					149.71						
4-F	Ae	4.0	0	0.85	4.04	3.44	72.0	20.4	7.6	340.70	0.14	0.10	0.12	0.07	0.09	0.13	
4-F	Bm1	15.7	1	1.17	5.34	4.70	67.2	23.9	8.8	1816.98	0.57	0.43	0.09	0.45	1.01	0.32	
4-F	Bm2	12.3	5	1.32	5.48	4.95	90.3	0.0	9.7	1551.05	0.07	0.04	0.01	0.05	0.13	0.06	
4-F	C	16.0	1	1.43	5.50	5.10	94.3	0.6	5.1	2262.68	0.06	0.04	0.01	0.04	0.10	0.05	
4-F	IIC	14.0	30	1.06	5.69	5.11	92.5	3.8	3.8	1042.72	0.07	0.06	0.02	0.03	0.06	0.03	
4-F	IIIIC	38.0	1	1.32	5.68	5.13	93.7	1.3	5.0	4969.31	0.04	0.03	0.01	0.02	0.04	0.03	
4-S	L	4.0			4.25	3.83					9.28						
4-S	F	3.0			3.56	3.10					32.93						
4-S	H/Ah	3.0	0	0.50	3.62	2.92					149.71						
4-S	Ae	4.3	0	0.85	3.96	3.38	72.0	20.4	7.6	369.09	0.14	0.10	0.12	0.07	0.09	0.13	
4-S	Bm1	10.7	1	1.17	5.02	4.46	67.2	23.9	8.8	1237.09	0.57	0.43	0.09	0.45	1.01	0.32	
4-S	Bm2	18.0	5	1.32	5.23	4.98	90.3	0.0	9.7	2263.69	0.07	0.04	0.01	0.05	0.13	0.06	
4-S	C	16.0	1	1.43	5.15	5.03	94.3	0.6	5.1	2262.68	0.06	0.04	0.01	0.04	0.10	0.05	
4-S	IIC	14.0	30	1.06	5.69	5.11	92.5	3.8	3.8	1042.72	0.07	0.06	0.02	0.03	0.06	0.03	
4-S	IIIIC	37.0	1	1.32	5.68	5.13	93.7	1.3	5.0	4838.54	0.04	0.03	0.01	0.02	0.04	0.03	
4-B	L	4.0			4.10	3.59					11.24						
4-B	F	3.0			3.60	3.08					20.76						
4-B	H/Ah	3.0	0	0.50	3.62	2.92					149.71						
4-B	Ae	4.3	0	0.85	4.01	3.41	72.0	20.4	7.6	369.09	0.14	0.10	0.12	0.07	0.09	0.13	
4-B	Bm1	15.0	1	1.17	5.09	4.54	67.2	23.9	8.8	1739.66	0.57	0.43	0.09	0.45	1.01	0.32	
4-B	Bm2	13.0	5	1.32	5.41	4.94	90.3	0.0	9.7	1634.89	0.07	0.04	0.01	0.05	0.13	0.06	
4-B	C	16.0	1	1.43	5.96	5.12	94.3	0.6	5.1	2262.68	0.06	0.04	0.01	0.04	0.10	0.05	
4-B	IIC	14.0	30	1.06	5.69	5.11	92.5	3.8	3.8	1042.72	0.07	0.06	0.02	0.03	0.06	0.03	
4-B	IIIIC	37.7	1	1.32	5.68	5.13	93.7	1.3	5.0	4925.72	0.04	0.03	0.01	0.02	0.04	0.03	
4-C	L	2.0			4.29	3.85					7.35						
4-C	F	2.0			3.74	3.23					26.55						

# Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

**Appendix G (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil physical and chemical properties.**

Plot ID	Horizon	Coarse fragments (%)	Bulk density (g·cm⁻³)	pH			Texture (%)			Horizon weight (Mg·ha⁻¹)	Fe extractions (%)			Al extractions (%)		
				H <sub>2</sub> O	CaCl <sub>2</sub>	Sand	Silt	Clay	Dithionite		Oxalate	Pyrophosphate	Dithionite	Oxalate	Pyrophosphate	
5-T	L	4.0	4.28	3.84						10.21				0.06	0.07	0.09
5-T	F	3.0	3.84	3.38						20.00				0.46	0.93	0.30
5-T	H/Ah	3.0	0	0.27	3.80	3.15				79.75						
5-T	Ae	2.5	0	0.88	3.97	3.49	67.9	24.5	7.5	220.86	0.13	0.07	0.08	0.06	0.07	0.09
5-T	Bm1	6.3	0	1.17	4.93	4.31	54.6	29.0	16.4	738.89	0.55	0.39	0.08	0.46	0.93	0.30
5-T	Bm2	16.2	1	1.36	5.03	4.69	71.1	15.1	13.8	2180.54	0.14	0.13	0.02	0.11	0.38	0.11
5-T	C	19.0	5	1.39	5.22	4.86	86.2	5.0	8.8	2508.76	0.07	0.06	0.01	0.06	0.15	0.08
5-T	IIC	19.0	40	0.84	5.57	4.95	85.0	2.5	12.5	959.76	0.14	0.18	0.03	0.07	0.18	0.08
5-T	IIIC	37.0	1	1.37	5.73	4.96	87.5	1.2	11.2	5000.10	0.033	0.022	0.007	0.015	0.040	0.023
5-F	L	4.0	4.08	3.69						11.71						
5-F	F	3.0	3.50	3.10						19.74						
5-F	H/Ah	3.0	0	0.27	3.80	3.15				79.75						
5-F	Ae	3.0	0	0.88	3.83	3.40	67.9	24.5	7.5	265.03	0.13	0.07	0.08	0.06	0.07	0.09
5-F	Bm1	19.3	0	1.17	4.91	4.37	54.6	29.0	16.4	2255.56	0.55	0.39	0.08	0.46	0.93	0.30
5-F	Bm2	11.3	1	1.36	5.37	4.89	71.1	15.1	13.8	1528.62	0.14	0.13	0.02	0.11	0.38	0.11
5-F	C	19.0	5	1.39	5.44	5.11	86.2	5.0	8.8	2508.76	0.07	0.06	0.01	0.06	0.15	0.08
5-F	IIC	19.0	40	0.84	5.57	4.95	85.0	2.5	12.5	959.76	0.14	0.18	0.03	0.07	0.18	0.08
5-F	IIIC	28.3	1	1.37	5.73	4.96	87.5	1.2	11.2	3828.90	0.033	0.022	0.007	0.015	0.040	0.023
5-S	L	4.0	4.28	3.92						7.89						
5-S	F	3.0	3.71	3.22						24.32						
5-S	H/Ah	3.0	0	0.27	3.80	3.15				79.75						
5-S	Ae	3.0	0	0.88	3.98	3.42	67.9	24.5	7.5	265.03	0.13	0.07	0.08	0.06	0.07	0.09
5-S	Bm1	13.0	0	1.17	4.96	4.53	54.6	29.0	16.4	1516.67	0.55	0.39	0.08	0.46	0.93	0.30
5-S	Bm2	13.3	1	1.36	5.27	4.94	71.1	15.1	13.8	1798.38	0.14	0.13	0.02	0.11	0.38	0.11
5-S	C	19.0	5	1.39	5.18	5.01	86.2	5.0	8.8	2508.76	0.07	0.06	0.01	0.06	0.15	0.08
5-S	IIC	19.0	40	0.84	5.57	4.95	85.0	2.5	12.5	959.76	0.14	0.18	0.03	0.07	0.18	0.08
5-S	IIIC	32.7	1	1.37	5.73	4.96	87.5	1.2	11.2	4414.49	0.033	0.022	0.007	0.015	0.040	0.023
5-B	L	4.0	4.12	3.62						12.08						
5-B	F	3.0	3.51	3.05						42.89						
5-B	H/Ah	3.0	0	0.27	3.80	3.15				79.75						
5-B	Ae	3.3	0	0.88	3.80	3.25	67.9	24.5	7.5	294.48	0.13	0.07	0.08	0.06	0.07	0.09
5-B	Bm1	8.7	0	1.17	4.87	4.38	54.6	29.0	16.4	1011.11	0.55	0.39	0.08	0.46	0.93	0.30
5-B	Bm2	15.3	1	1.36	5.20	4.91	71.1	15.1	13.8	2068.14	0.14	0.13	0.02	0.11	0.38	0.11
5-B	C	19.0	5	1.39	5.04	4.99	86.2	5.0	8.8	2508.76	0.07	0.06	0.01	0.06	0.15	0.08
5-B	IIC	19.0	40	0.84	5.57	4.95	85.0	2.5	12.5	959.76	0.14	0.18	0.03	0.07	0.18	0.08
5-B	IIIC	34.7	1	1.37	5.73	4.96	87.5	1.2	11.2	4684.77	0.033	0.022	0.007	0.015	0.040	0.023
5-C	L	2.0	4.33	3.92						7.29						
5-C	F	2.0	3.63	3.22						20.20						
5-C	H/Ah	6.0	0	0.26	3.63	2.98				153.23						
5-C	Ae	4.5	0	1.02	3.91	3.38	77.4	20.1	2.5	457.64	0.12	0.05	0.06	0.05	0.05	0.06
5-C	Bm1	11.3	5	1.14	5.03	4.50	67.0	27.9	5.1	1230.93	0.75	0.48	0.12	0.57	0.88	0.34
5-C	Bm2	13.3	15	1.16	5.05	4.83	93.7	5.0	1.3	1314.96	0.06	0.04	0.01	0.05	0.14	0.06
5-C	C	32.0	1	1.41	5.14	5.02	98.7	1.3	0.0	4465.58	0.04	0.03	0.01	0.04	0.09	0.05
5-C	IIC	38.8	40	0.81	5.85	4.98	97.5	2.5	0.0	1888.14	0.06	0.06	0.02	0.02	0.05	0.03
1-L-T	L		4.11	3.65						6.93						
1-L-T	F		3.90	3.33						2.30						
1-L-T	Bm1	4.3	5	1.05	3.96	4.18	46.6	48.3	5.1	430.20	0.87	0.68	0.26	0.76	1.17	0.61
1-L-T	Bm2	14.0	10	1.26	4.74	4.41	52.3	43.9	3.8	1584.70	0.52	0.45	0.12	0.43	0.77	0.32
1-L-T	C	81.7	50	1.44	5.10	4.95	96.2	2.5	1.3	5875.00	0.08	0.06	0.01	0.05	0.12	0.05
1-L-F	L		3.97	3.57						9.02						
1-L-F	F		3.83	3.35						3.58						
1-L-F	Bm1	3.5	5	1.05	4.75	4.31	46.6	48.3	5.1	347.50	0.87	0.68	0.26	0.76	1.17	0.61
1-L-F	Bm2	10.8	10	1.26	5.20	4.84	64.4	33.0	2.5	1226.30	0.52	0.45	0.12	0.43	0.77	0.32
1-L-F	C	85.7	50	1.44	5.27	4.77	52.3	43.9	3.8	6162.70	0.08	0.06	0.01	0.05	0.12	0.05
2-L-T	L		4.02	3.52						7.79						
2-L-T	F		3.89	3.48						6.40						
2-L-T	Bm1	6.7	5	1.12	4.52	59.6	32.9	7.6		707.10	0.92	0.81	0.21	0.73	1.39	0.59
2-L-T	Bm2	10.8	5	1.37	5.20	4.84	64.4	33.0	2.5	1407.10	0.33	0.34	0.04	0.27	0.77	0.19
2-L-T	C	23.0	20	1.41	5.38	4.94	92.5	6.3	1.3	2600.20	0.11	0.04	0.02	0.08	0.17	0.10
2-L-T	IIC	59.5	35	1.26	5.59	5.07	96.3	3.7	0.0	4858.80	0.07	0.06	0.01	0.03	0.07	0.03
2-L-F	L		3.94	3.43						7.45						
2-L-F	F		3.87	3.40						10.16						
2-L-F	Bm1	1.8	2	1.12	4.84	4.36	59.6	32.9	7.6	206.00	0.92	0.81	0.21	0.73	1.39	0.59
2-L-F	Bm2	7.5	2	1.37	5.27	4.85	64.4	33.0	2.5	1004.90	0.33	0.34	0.04	0.27	0.77	0.19
2-L-F	C	23.0	20	1.41	5.27	5.03	92.5	6.3	1.3	2600.20	0.11	0.04	0.02	0.08	0.17	0.10
2-L-F	IIC	67.7	35	1.26	5.59	5.07	96.3	3.7	0.0	5525.70	0.07	0.06	0.01	0.03	0.07	0.03
3-L-T	L		4.00	3.55						8.73						
3-L-T	F		3.72	3.21						0.00						
3-L-T	Bm2	10.0	5	1.07	4.96	4.47	92.5	5.0	2.5	1020.00	0.08	0.05	0.01	0.06	0.15	0.06
3-L-T	C	44.0	15	1.13	4.83	4.93	93.7	3.8	2.5	4218.00	0.06	0.04	0.01	0.03	0.08	0.03
3-L-T	IIC	46.0	35	1.09	5.48	4.95	93.7	3.8	2.5	3248.10	0.07	0.04	0.01	0.03	0.06	0.02
3-L-F	L		4.09	3.65						7.40						
3-L-F	F		4.07	3.59						4.01						
3-L-F	Bm1	3.3	0	1.18	4.79	4.28	47.0	40.4	12.6	394.10	0.76	0.54	0.11	0.62	1.19	0.37
3-L-F	Bm2	12.5	5	1.07	5.09	4.94	92.5	5.0	2.5	1274.90	0.08	0.05	0.01	0.06	0.15	0.06
3-L-F	C	44.0	15	1.13	5.26	5.10	93.7	3.8	2.5	4218.00	0.06	0.04	0.01	0.03	0.08	0.03
3-L-F	IIC	40.2	35	1.09	5.48	4.95	93.7	3.8	2.5	2836.20	0.07	0.04	0.01	0.03	0.06	0.02
4-L-T	L		4.08	3.65						7.85						
4-L-T	F		4.44	3.73						13.14						
4-L-T	Bm2	14.7	1	1.36	4.99	4										

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

**Appendix G (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil physical and chemical properties.**

Plot ID	Horizon	Coarse fragments (%)	Bulk density (g·cm <sup>-3</sup> )	Texture (%)		Horizon weight (Mg·ha <sup>-1</sup> )	Fe extractions (%)			Al extractions (%)			
				H <sub>2</sub> O	CaCl <sub>2</sub>		Sand	Silt	Clay	Dithionite Oxalate Pyrophosphate	Dithionite Oxalate Pyrophosphate		
1-A-50	L	0.1	4.26	3.90		7.25							
1-A-50	F	2.5	3.55	3.13		25.04							
1-A-50	H/Ah	1.5	0	0.72	3.60	3.01							
1-A-50	Ae	4.7	0	1.03	3.78	3.20	67.1	27.8	5.1	475.54	0.15	0.12	0.08
1-A-50	Bm1	11.3	0	1.08	5.06	4.46	68.4	26.5	5.1	1218.89	0.57	0.53	0.12
1-A-50	Bm2	9.7	1	1.40	5.44	4.84	66.0	26.9	5.0	1343.24	0.23	0.21	0.03
1-A-50	C	74.3	1	1.56	5.33	5.05	98.7	0.0	1.3	11464.19	0.05	0.06	0.01
1-A-100	L	0.1	4.26	3.90		7.25							
1-A-100	F	2.5	3.55	3.13		25.04							
1-A-100	H/Ah	1.5	0	0.72	3.60	3.01							
1-A-100	Ae	4.7	0	1.03	3.78	3.20	67.1	27.8	5.1	475.54	0.15	0.12	0.08
1-A-100	Bm1	11.3	0	1.08	5.06	4.46	68.4	26.5	5.1	1218.89	0.57	0.53	0.12
1-A-100	Bm2	9.7	1	1.40	5.44	4.84	66.0	26.9	5.0	1343.24	0.23	0.21	0.03
1-A-100	C	74.3	1	1.56	5.33	5.05	98.7	0.0	1.3	11464.19	0.05	0.06	0.01
1-A-200	L	0.1	4.26	3.90		7.25							
1-A-200	F	2.5	3.55	3.13		25.04							
1-A-200	H/Ah	1.5	0	0.72	3.60	3.01							
1-A-200	Ae	4.7	0	1.03	3.78	3.20	67.1	27.8	5.1	475.54	0.15	0.12	0.08
1-A-200	Bm1	11.3	0	1.08	5.06	4.46	68.4	26.5	5.1	1218.89	0.57	0.53	0.12
1-A-200	Bm2	9.7	1	1.40	5.44	4.84	66.0	26.9	5.0	1343.24	0.23	0.21	0.03
1-A-200	C	74.3	1	1.56	5.33	5.05	98.7	0.0	1.3	11464.19	0.05	0.06	0.01
2-A-50	L	3.0											
2-A-50	F	5.0											
2-A-50	H/Ah	3.0	0	0.56	3.90	2.96							
2-A-50	Ae	4.7	0	1.16	3.90	3.36	62.3	32.7	5.0	530.20	0.14	0.07	0.09
2-A-50	Bm1	12.7	0	1.04	5.02	4.40	59.3	34.3	6.4	1316.68	0.81	0.65	0.12
2-A-50	Bm2	13.0	1	1.36	5.06	5.21	72.3	23.9	3.8	1744.84	0.24	0.18	0.03
2-A-50	C	52.0	10	1.41	5.23	5.34	90.2	0.0	9.8	6602.16	0.07	0.03	0.01
2-A-50	II/C	17.7	1	1.52	5.90	4.95	91.4	0.0	9.2	2653.73	0.04	0.03	0.01
2-A-100	L	3.0											
2-A-100	F	5.0											
2-A-100	H/Ah	3.0	0	0.56	3.90	2.96							
2-A-100	Ae	4.7	0	1.16	3.90	3.36	62.3	32.7	5.0	530.20	0.14	0.07	0.09
2-A-100	Bm1	12.7	0	1.04	5.02	4.40	59.3	34.3	6.4	1316.68	0.81	0.65	0.12
2-A-100	Bm2	13.0	1	1.36	5.06	5.21	72.3	23.9	3.8	1744.84	0.24	0.18	0.03
2-A-100	C	52.0	10	1.41	5.23	5.34	90.2	0.0	9.8	6602.16	0.07	0.03	0.01
2-A-100	II/C	17.7	1	1.52	5.90	4.95	91.4	0.0	9.2	2653.73	0.04	0.03	0.01
2-A-400	L	3.0											
2-A-400	F	5.0											
2-A-400	H/Ah	3.0	0	0.56	3.90	2.96							
2-A-400	Ae	4.7	0	1.16	3.90	3.36	62.3	32.7	5.0	530.20	0.14	0.07	0.09
2-A-400	Bm1	12.7	0	1.04	5.02	4.40	59.3	34.3	6.4	1316.68	0.81	0.65	0.12
2-A-400	Bm2	13.0	1	1.36	5.06	5.21	72.3	23.9	3.8	1744.84	0.24	0.18	0.03
2-A-400	C	52.0	10	1.41	5.23	5.34	90.2	0.0	9.8	6602.16	0.07	0.03	0.01
2-A-400	II/C	17.7	1	1.52	5.90	4.95	91.4	0.0	9.2	2653.73	0.04	0.03	0.01
3-A-50	L	3.0											
3-A-50	F	4.0											
3-A-50	H/Ah	2.0	0	0.35	3.75	3.07							
3-A-50	Ae	3.2	0	0.81	4.00	3.60							
3-A-50	Bm1	8.0	0	1.18	5.02	4.40							
3-A-50	Bm2	12.3	5	1.37	5.06	4.45							
3-A-50	C	44.0	15	1.13	5.11	4.92							
3-A-50	II/C	29.5	35	1.09	5.48	4.95							
3-A-200	L	3.0											
3-A-200	F	4.0											
3-A-200	H/Ah	2.0	0	0.35	3.75	3.07							
3-A-200	Ae	3.2	0	0.81	4.00	3.60							
3-A-200	Bm1	8.0	0	1.18	4.72	4.45							
3-A-200	Bm2	12.3	5	1.37	5.06	4.45							
3-A-200	C	44.0	15	1.13	5.11	4.92							
3-A-200	II/C	38.0	1	1.32	5.68	5.13							
4-A-100	L	4.0											
4-A-100	F	3.0											
4-A-100	H/Ah	2.0	0	0.50	3.80	2.92							
4-A-100	Ae	4.0	0	0.85	4.04	3.44							
4-A-100	Bm1	15.7	1	1.17	5.34	4.70							
4-A-100	Bm2	12.3	5	1.32	5.48	4.86							
4-A-100	C	16.0	1	1.43	5.50	5.10							
4-A-100	II/C	38.0	1	1.32	5.68	5.13							
4-A-200	L	4.0											
4-A-200	F	3.0											
4-A-200	H/Ah	3.0	0	0.50	3.82	2.92							
4-A-200	Ae	4.0	0	0.85	4.04	3.44							
4-A-200	Bm1	15.7	1	1.17	5.34	4.70							
4-A-200	Bm2	12.3	5	1.32	5.48	4.86							
4-A-200	C	16.0	1	1.43	5.50	5.10							
4-A-200	II/C	14.0	30	1.06	5.69	5.11							
4-A-200	III/C	38.0	1	1.32	5.68	5.13							
4-A-400	L	4.0											
4-A-400	F	3.0											
4-A-400	H/Ah	3.0	0	0.55	3.82	3.28							
4-A-400	Ae	4.0	0	0.85	4.04	3.44							
4-A-400	Bm1	15.7	1	1.17	5.34	4.70							
4-A-400	Bm2	12.3	5	1.32	5.48	4.86							
4-A-400	C	16.0	1	1.43	5.50	5.10							
4-A-400	II/C	14.0	30	1.06	5.69	5.11							
4-A-400	III/C	38.0	1	1.32	5.68	5.13							
5-A-100	L	4.0											
5-A-100	F	3.0											
5-A-100	H/Ah	3.0	0	0.27	3.80	3.15							
5-A-100	Ae	3.0	0	0.88	3.83	3.40							
5-A-100	Bm1	19.3	0	1.17	4.91	4.37							
5-A-100	Bm2	11.3	1	1.36	5.37	4.89							
5-A-100	C	19.0	5	1.39	5.44	5.11							
5-A-100	II/C	19.0	40	0.84	5.57	4.95							
5-A-100	III/C	28.3	1	1.37	5.73	4.96							
5-A-200	L	4.0											
5-A-200	F	3.0											
5-A-200	H/Ah	3.0	0	0.27	3.80	3.15							
5-A-200	Ae	3.0	0	0.88	3.83	3.40							
5-A-200	Bm1	19.3	0	1.17	4.91	4.37							
5-A-200	Bm2	11.3	1	1.36	5.37	4.89							
5-A-200	C	19.0	5	1.39	5.44	5.11							
5-A-200	II/C	19.0	40	0.84	5.57	4.95							
5-A-200	III/C	28.3	1	1.37	5.73	4.96							
5-A-400	L	4.0											
5-A-400	F	3.0											
5-A-400	H/Ah	3.0	0	0.27	3.80	3.15							
5-A-400	Ae	3.0	0	0.88	3.83	3.40							
5-A-400	Bm1	19.3	0	1.17	4.91	4.37</td							

## Appendix H - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil C and nutrient concentrations and reserves.

Plot ID	Horizon	Nutrient concentrations				Soil reserves ( $\text{kg}\cdot\text{ha}^{-1}$ , except C = $\text{Mg}\cdot\text{ha}^{-1}$ )							
		C ( $\text{g}\cdot\text{kg}^{-1}$ )	N ( $\text{g}\cdot\text{kg}^{-1}$ )	P (ppm)	K ( $\text{cmol}_{\text{c}}\cdot\text{kg}^{-1}$ )	Ca ( $\text{cmol}_{\text{c}}\cdot\text{kg}^{-1}$ )	Mg ( $\text{cmol}_{\text{c}}\cdot\text{kg}^{-1}$ )	C	N	P	K	Ca	Mg
1-T	L	490.4	11.24	281.39	7.66	20.81	7.53	4.18	95.92	2.40	25.56	35.59	7.80
1-T	F	463.2	14.59	299.56	2.00	15.04	3.35	11.24	354.24	7.27	18.96	73.19	9.87
1-T	H/Ah	45.1	2.13	13.79	0.27	2.46	0.33	4.79	225.93	1.46	11.03	52.32	4.29
1-T	Ae	15.9	0.70	5.91	0.12	0.91	0.18	5.25	231.08	1.95	15.98	60.45	7.28
1-T	Bm1	30.0	1.49	4.89	0.10	0.66	0.10	30.29	1508.03	4.94	38.56	133.38	12.59
1-T	Bm2	11.4	0.47	4.69	0.04	0.35	0.07	15.25	634.48	6.28	20.77	95.34	10.47
1-T	C	2.2	0.09	24.94	0.01	0.06	0.02	11.90	507.81	134.86	25.21	65.48	11.50
1-F	L	481.8	9.51	248.58	5.54	15.42	5.80	3.49	68.90	1.80	15.70	22.39	5.11
1-F	F	443.0	13.11	228.56	1.82	10.04	2.22	11.09	328.32	5.72	17.85	50.40	6.75
1-F	H/Ah	67.4	2.79	15.79	0.20	2.04	0.24	7.25	299.75	1.70	8.35	44.03	3.11
1-F	Ae	7.6	0.34	5.10	0.05	0.08	0.04	3.62	162.28	2.44	8.85	7.86	2.21
1-F	Bm1	17.6	0.83	5.26	0.03	0.09	0.02	21.44	1005.65	6.41	14.74	23.05	3.34
1-F	Bm2	5.6	0.11	6.65	0.01	0.14	0.02	7.47	153.12	8.93	6.55	39.11	2.62
1-F	C	1.4	0.04	25.89	0.00	0.07	0.02	16.09	495.71	296.77	13.78	156.57	18.47
1-S	L	470.5	10.13	322.74	6.79	13.64	5.21	4.92	105.96	3.38	27.78	28.59	6.62
1-S	F	462.1	14.16	246.08	2.33	14.22	3.18	9.87	302.28	5.25	19.50	60.84	8.25
1-S	H/Ah	51.6	1.99	9.32	0.13	1.58	0.21	8.64	332.96	1.56	8.64	52.85	4.34
1-S	Ae	8.7	0.37	6.15	0.05	0.09	0.05	4.36	185.64	3.08	10.57	9.61	3.18
1-S	Bm1	13.2	0.19	3.94	0.03	0.12	0.02	20.19	284.04	6.01	15.35	37.50	4.87
1-S	Bm2	2.8	0.12	50.60	0.01	0.05	0.01	7.39	327.22	135.82	4.24	26.83	3.48
1-S	C	1.4	0.01	40.42	0.00	0.02	0.00	8.93	65.82	266.88	3.38	34.30	2.52
1-S	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.37	30.51	13.64	4.52	17.27	1.95
1-B	L	483.1	12.64	364.00	5.92	22.69	6.76	4.65	121.70	3.51	22.28	43.79	7.92
1-B	F	450.4	11.86	172.58	1.38	14.28	2.87	8.82	232.26	3.38	10.58	56.06	6.84
1-B	H/Ah	45.1	2.13	13.79	0.27	2.46	0.33	4.79	225.93	1.46	11.03	52.32	4.29
1-B	Ae	9.1	0.28	3.40	0.06	0.19	0.07	5.50	165.50	2.05	13.01	22.62	5.22
1-B	Bm1	17.2	0.66	6.10	0.04	0.10	0.04	21.00	809.39	7.47	18.12	24.10	5.88
1-B	Bm2	4.6	0.18	6.72	0.02	0.03	0.02	7.87	307.39	11.41	9.75	12.27	2.82
1-B	C	1.4	0.05	28.52	0.00	0.02	0.01	6.62	238.74	138.51	5.97	23.39	3.26
1-C	L	484.4	11.60	273.73	4.58	16.14	5.85	3.37	80.62	1.90	12.44	22.48	4.94
1-C	F	499.3	10.44	187.69	1.28	12.12	2.85	16.98	355.03	6.38	17.01	82.58	11.76
1-C	H/Ah	47.5	1.59	8.78	0.20	2.54	0.37	5.71	191.46	1.06	9.59	61.36	5.36
1-C	Ae	14.5	0.73	5.12	0.05	0.10	0.05	5.49	275.92	1.94	7.71	7.40	2.10
1-C	Bm1	13.4	0.75	4.76	0.03	0.08	0.02	18.67	1044.52	6.62	15.06	23.52	4.39
1-C	Bm2	4.6	0.14	14.00	0.01	0.04	0.01	4.65	143.96	14.06	2.12	8.72	0.98
1-C	C	0.8	0.09	52.99	0.00	0.03	0.01	3.86	432.83	256.45	0.00	35.84	3.46
1-C	IIC	0.2	0.03	15.63	0.01	0.08	0.02	0.98	107.16	67.81	15.81	69.91	7.29
2-T	L	482.0	12.29	249.20	5.29	13.85	5.47	3.72	94.82	1.92	15.97	21.42	5.13
2-T	F	436.1	14.52	257.33	1.99	15.01	3.29	6.27	208.81	3.70	11.21	43.25	5.76
2-T	H/Ah	75.0	3.08	8.65	0.13	1.26	0.17	7.43	305.08	0.86	4.85	25.10	2.08
2-T	Ae	13.5	0.65	6.11	0.07	0.14	0.06	6.03	287.44	2.72	12.50	12.82	3.28
2-T	Bm1	16.5	1.02	7.08	0.03	0.10	0.03	19.30	1188.78	8.26	15.09	23.51	4.61
2-T	Bm2	7.6	0.35	10.03	0.02	0.10	0.02	14.70	669.78	19.32	10.63	40.27	5.18
2-T	C	5.4	0.04	31.37	0.01	0.07	0.02	14.10	102.21	81.56	4.14	36.24	5.40
2-T	IIC	0.5	0.03	25.81	0.01	0.08	0.02	1.90	123.46	99.74	15.68	60.23	7.93
2-F	L	486.1	9.20	310.10	7.24	14.57	5.83	4.34	82.19	2.77	25.31	26.09	6.34
2-F	F	473.9	12.27	197.91	1.56	11.89	2.34	10.77	278.97	4.50	13.87	54.16	6.47
2-F	H/Ah	51.6	1.99	9.32	0.13	1.58	0.21	8.64	332.96	1.56	8.64	52.85	4.34
2-F	Ae	13.0	0.45	5.60	0.05	0.11	0.05	6.99	244.46	3.02	10.78	12.05	3.01
2-F	Bm1	18.9	0.82	6.53	0.03	0.12	0.03	24.89	1084.00	8.60	15.61	31.61	4.63
2-F	Bm2	6.7	0.35	33.27	0.01	0.05	0.02	11.62	615.42	58.06	2.69	17.35	2.87
2-F	C	1.1	0.10	49.07	0.00	0.02	0.00	7.21	643.74	323.98	0.00	27.16	2.31
2-F	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.72	59.88	26.78	8.88	33.91	3.83
2-S	L	473.6	9.03	304.60	7.30	16.20	6.39	4.35	82.83	2.80	26.19	29.79	7.13
2-S	F	456.6	11.23	190.45	1.56	9.91	2.33	15.62	384.08	6.51	20.87	67.94	9.66
2-S	H/Ah	51.6	1.99	9.32	0.13	1.58	0.21	8.64	332.96	1.56	8.64	52.85	4.34
2-S	Ae	11.2	0.32	5.35	0.07	0.21	0.07	2.16	61.20	1.03	5.65	8.25	1.49
2-S	Bm1	20.3	1.00	5.46	0.04	0.19	0.05	25.71	1262.90	6.90	20.90	49.41	8.15
2-S	Bm2	6.3	0.11	9.69	0.02	0.09	0.02	12.14	216.24	18.65	11.69	35.91	5.02
2-S	C	1.6	0.09	46.46	0.00	0.05	0.01	10.57	586.21	306.74	9.11	62.93	7.33
2-S	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.81	67.23	30.07	9.97	38.06	4.30
2-B	L	477.9	10.41	266.80	5.86	12.22	4.84	4.29	93.55	2.40	20.58	21.99	5.28
2-B	F	471.7	12.51	242.97	1.53	11.74	2.14	11.02	292.44	5.68	14.01	54.99	6.09
2-B	H/Ah	75.0	3.08	8.65	0.13	1.26	0.17	7.43	305.08	0.86	4.85	25.10	2.08
2-B	Ae	10.4	0.40	6.72	0.07	0.14	0.07	6.48	250.12	4.17	17.42	18.11	4.89
2-B	Bm1	26.5	1.21	9.63	0.04	0.13	0.05	21.58	983.76	7.83	13.19	22.24	4.53
2-B	Bm2	6.6	0.29	17.54	0.02	0.14	0.02	14.37	631.55	37.97	12.88	62.51	6.86
2-B	C	2.3	0.03	51.40	0.00	0.04	0.02	5.92	79.04	133.65	3.76	22.35	5.19
2-B	IIC	0.5	0.03	25.81	0.01	0.08	0.02	1.90	123.46	99.74	15.68	60.23	7.93
2-C	L	474.8	9.44	339.71	6.37	12.47	5.06	3.91	77.64	2.80	20.48	20.56	5.06
2-C	F	452.9	13.67	217.16	1.60	12.69	2.62	7.63	230.28	3.66	10.53	42.85	5.36
2-C	H/Ah	47.5	1.59	8.78	0.20	2.54	0.37	5.71	191.46	1.06	9.59	61.36	5.36
2-C	Ae	12.7	0.26	7.57	0.04	0.04	0.02	4.81	99.82	2.86	5.47	3.04	1.08
2-C	Bm1	13.9	0.60	4.69	0.03	0.14	0.02	17.59	755.78	5.91	14.01	34.71	4.14
2-C	Bm2	4.5	0.18	30.30	0.01	0.03	0.01	8.44	340.94	57.33	3.88	13.20	1.94
2-C	C	0.8	0.04	62.00	0.00	0.04	0.01	3.81	174.37	300.03	0.00	42.28	2.86
2-C	IIC	0.2	0.03	15.63	0.01	0.08	0.02	0.79	85.73	54.25	12.65	55.93	5.83

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

### Appendix H (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil C and nutrient concentrations and reserves.

Plot ID	Horizon	Nutrient concentrations				Soil reserves (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )					
		C (g·kg <sup>-1</sup> )	N (g·kg <sup>-1</sup> )	P (ppm)	K (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Ca (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Mg (cmol <sub>c</sub> ·kg <sup>-1</sup> )	C	N	P	K
3-T	L	486.5	10.56	190.26	5.87	18.12	5.76	3.80	82.55	1.49	17.96
3-T	F	455.0	15.08	222.42	1.93	14.06	2.63	10.63	352.39	5.20	17.67
3-T	H/Ah	120.4	4.90	18.12	0.50	3.56	0.67	8.52	346.90	1.28	13.93
3-T	Ae	14.1	0.76	7.31	0.16	1.62	0.25	2.67	143.30	1.39	11.75
3-T	Bm1	24.3	1.08	4.94	0.08	0.79	0.11	24.88	1108.59	5.06	34.13
3-T	Bm2	7.2	0.33	8.14	0.02	0.09	0.02	14.70	678.81	16.61	19.38
3-T	C	1.0	0.03	43.32	0.00	0.03	0.02	4.39	136.81	182.71	2.47
3-T	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.57	43.71	41.05	7.80
3-F	L	471.4	10.11	273.97	6.62	13.57	5.73	4.05	86.92	2.36	22.27
3-F	F	478.8	13.36	273.24	2.68	13.41	3.02	6.70	186.93	3.82	14.65
3-F	H/Ah	120.4	4.90	18.12	0.50	3.56	0.67	8.52	346.90	1.28	13.93
3-F	Ae	12.7	0.60	6.35	0.09	0.28	0.07	3.27	155.39	1.64	9.51
3-F	Bm1	21.9	0.91	4.28	0.05	0.09	0.03	20.69	861.79	4.05	19.66
3-F	Bm2	7.7	0.42	4.93	0.02	0.05	0.02	12.10	656.46	7.72	12.66
3-F	C	2.4	0.05	8.96	0.01	0.04	0.02	10.13	217.54	37.81	8.66
3-F	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.67	51.57	48.44	9.21
3-S	L	481.6	10.08	317.17	5.73	13.27	5.08	3.65	76.47	2.41	16.98
3-S	F	473.5	13.36	256.00	2.02	12.85	3.04	6.07	171.12	3.28	10.13
3-S	H/Ah	120.4	4.90	18.12	0.50	3.56	0.67	8.52	346.90	1.28	13.93
3-S	Ae	24.2	1.03	38.54	0.12	0.49	0.12	4.59	195.59	7.31	8.79
3-S	Bm1	28.3	1.42	7.83	0.05	0.16	0.06	37.35	1879.68	10.34	24.27
3-S	Bm2	5.4	0.24	21.01	0.01	0.04	0.02	6.67	292.88	26.07	6.62
3-S	C	0.8	0.07	56.09	0.00	0.03	0.01	3.24	279.36	236.57	1.91
3-S	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.69	53.03	49.80	9.47
3-B	L	474.0	8.98	266.38	6.68	12.79	5.44	4.29	81.26	2.41	23.64
3-B	F	472.9	14.00	266.88	2.05	13.02	3.20	7.79	230.60	4.39	13.21
3-B	H/Ah	75.0	3.08	8.65	0.13	1.26	0.17	7.43	305.08	0.86	4.85
3-B	Ae	11.4	0.50	7.81	0.06	0.23	0.07	5.52	243.56	3.78	10.76
3-B	Bm1	22.0	1.18	10.21	0.04	0.16	0.04	21.78	1167.08	10.10	13.56
3-B	Bm2	9.9	0.54	15.73	0.02	0.09	0.02	17.91	973.43	28.61	11.06
3-B	C	2.4	0.08	35.17	0.00	0.04	0.02	6.30	212.28	91.44	2.41
3-B	IIC	0.5	0.03	25.81	0.01	0.08	0.02	1.99	129.11	104.31	16.40
3-C	L	474.8	8.65	297.96	6.75	14.55	6.16	3.84	69.98	2.41	21.36
3-C	F	458.7	12.70	191.73	2.42	23.38	3.55	12.86	355.98	5.37	26.50
3-C	H/Ah	47.5	1.59	8.78	0.20	2.54	0.37	5.71	191.46	1.06	9.59
3-C	Ae	14.1	0.56	6.68	0.11	0.18	0.08	4.11	162.31	1.94	12.47
3-C	Bm1	13.3	0.66	3.95	0.04	0.10	0.03	17.67	869.96	5.23	19.50
3-C	Bm2	6.5	0.41	7.97	0.02	0.07	0.02	9.80	623.33	12.01	9.34
3-C	C	0.7	0.04	37.13	0.00	0.04	0.01	3.45	210.23	179.67	2.25
3-C	IIC	0.2	0.03	15.63	0.01	0.08	0.02	0.90	98.13	62.10	14.48
4-T	L	472.0	6.89	232.44	7.25	15.06	6.24	4.03	58.71	1.98	24.17
4-T	F	384.3	11.46	169.92	1.20	10.79	1.79	16.24	484.43	7.18	19.77
4-T	H/Ah	92.9	3.30	18.73	0.28	2.30	0.45	13.91	493.58	2.80	16.38
4-T	Ae	25.1	1.07	5.95	0.10	0.22	0.08	7.84	332.77	1.86	12.03
4-T	Bm1	20.6	1.19	5.55	0.05	0.16	0.05	31.07	1794.06	8.37	26.61
4-T	Bm2	0.9	0.05	48.67	0.00	0.03	0.02	1.63	84.23	85.69	0.87
4-T	C	6.2	0.36	18.13	0.01	0.04	0.02	13.99	816.26	41.03	12.31
4-T	IIC	0.6	0.04	19.93	0.01	0.08	0.02	0.61	43.95	20.78	5.26
4-T	IIIIC	0.4	0.03	20.68	0.01	0.06	0.02	1.88	155.96	106.36	15.27
4-F	L	490.1	10.36	185.35	6.47	20.87	6.75	3.38	71.46	1.28	17.46
4-F	F	339.6	10.26	171.96	1.25	11.38	1.66	13.10	395.98	6.64	18.82
4-F	H/Ah	92.9	3.30	18.73	0.28	2.30	0.45	13.91	493.58	2.80	16.38
4-F	Ae	15.4	0.57	5.53	0.08	0.30	0.07	5.25	193.19	1.88	10.40
4-F	Bm1	14.9	0.91	6.24	0.01	0.11	0.02	27.04	1659.34	11.34	9.44
4-F	Bm2	7.0	0.29	11.17	0.01	0.11	0.02	10.84	443.15	17.32	8.05
4-F	C	1.0	0.00	67.50	0.00	0.06	0.02	2.19	0.00	152.74	2.54
4-F	IIC	0.6	0.04	19.93	0.01	0.08	0.02	0.61	43.95	20.78	5.26
4-F	IIIIC	0.4	0.03	20.68	0.01	0.06	0.02	1.82	150.67	102.76	14.76
4-S	L	470.6	9.75	215.29	6.50	17.68	6.03	4.37	90.42	2.00	23.58
4-S	F	481.6	11.45	180.99	1.57	10.26	2.10	15.86	377.09	5.96	20.26
4-S	H/Ah	92.9	3.30	18.73	0.28	2.30	0.45	13.91	493.58	2.80	16.38
4-S	Ae	9.8	0.61	4.80	0.06	0.17	0.08	3.63	225.61	1.77	9.15
4-S	Bm1	12.0	0.84	4.94	0.03	0.18	0.07	14.85	1044.31	6.12	14.84
4-S	Bm2	5.3	0.57	8.83	0.02	0.11	0.05	11.98	1293.04	19.98	13.23
4-S	C	0.6	0.19	72.49	0.00	0.05	0.04	1.39	418.42	164.01	0.56
4-S	IIC	0.6	0.04	19.93	0.01	0.08	0.02	0.61	43.95	20.78	5.26
4-S	IIIIC	0.4	0.03	20.68	0.01	0.06	0.02	1.77	146.70	100.05	14.37
4-B	L	470.0	9.59	253.44	6.86	13.99	5.41	5.28	107.84	2.85	30.15
4-B	F	474.4	7.32	177.97	1.07	7.89	1.84	9.85	151.90	3.69	8.68
4-B	H/Ah	92.9	3.30	18.73	0.28	2.30	0.45	13.91	493.58	2.80	16.38
4-B	Ae	7.6	0.30	4.56	0.04	0.09	0.06	2.80	109.82	1.68	6.15
4-B	Bm1	20.0	1.03	4.57	0.03	0.10	0.03	34.83	1799.35	7.96	18.04
4-B	Bm2	7.7	0.47	7.85	0.01	0.07	0.02	12.54	762.97	12.84	7.67
4-B	C	1.1	0.00	67.55	0.00	0.03	0.02	2.44	0.00	152.85	0.29
4-B	IIC	0.6	0.04	19.93	0.01	0.08	0.02	0.61	43.95	20.78	5.26
4-B	IIIIC	0.4	0.03	20.68	0.01	0.06	0.02	1.80	149.35	101.85	14.63
4-C	L	483.1	10.23	302.70	4.23	14.14	5.70	3.55	75.15	2.22	12.15
4-C	F	400.7	11.04	239.58	2.07	11.20	2.70	10.64	293.04	6.36	21.51
4-C	H/Ah	131.4	4.71	19.55	0.37	3.55	0.53	20.13	722.03	2.99	21.90
4-C	Ae	14.7	0.76	4.58	0.06	0.08	0.06	4.49	231.49	1.40	7.11
4-C	Bm1	25.9	0.94	4.45	0.03	0.06	0.02	40.34	1466.43	6.93	16.29
4-C	Bm2	2.6	0.24	52.09	0.00	0.03	0.01	3.09	285.16	61.64	0.96
4-C	C	1.3	0.14	45.90	0.00	0.01	0.00	5.85	642.95	204.99	0.00
4-C	IIC	0.3	0.02	22.01	0.01	0.13	0.03	0.51	41.00	41.38	8.91
4-C	IIIIC	0.3	0.02	22.01	0.01	0.13	0.03	0.51	51.30	7.85	

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

**Appendix H (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil C and nutrient concentrations and reserves.**

Plot ID	Horizon	C (g·kg <sup>-1</sup> )	N (g·kg <sup>-1</sup> )	Nutrient concentrations				Soil reserves (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )					
				P (ppm)	K (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Ca (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Mg (cmol <sub>c</sub> ·kg <sup>-1</sup> )	C	N	P	K	Ca	Mg
5-T	L	482.7	8.57	311.79	5.58	10.66	4.41	4.93	87.46	3.18	22.29	21.80	5.48
5-T	F	458.3	13.03	182.36	1.65	12.55	2.49	9.17	260.51	3.65	12.95	50.29	6.07
5-T	H/Ah	75.1	2.46	12.83	0.26	2.78	0.47	5.99	196.04	1.02	8.16	44.54	4.57
5-T	Ae	14.7	0.67	8.30	0.09	0.82	0.11	3.25	148.80	1.83	7.40	36.42	2.97
5-T	Bm1	26.7	1.46	6.65	0.06	0.65	0.07	19.70	1078.25	4.92	16.04	95.76	5.70
5-T	Bm2	12.0	1.13	4.33	0.03	0.21	0.03	26.23	2464.71	9.44	28.29	90.54	9.47
5-T	C	2.2	0.34	43.83	0.01	0.08	0.02	5.49	846.71	109.95	10.03	40.59	6.48
5-T	IIC	1.1	0.06	47.07	0.01	0.08	0.02	1.04	52.47	45.18	4.16	15.96	2.93
5-T	IIIC	0.2	0.02	18.71	0.01	0.07	0.02	1.13	82.80	93.56	17.36	69.78	10.26
5-F	L	478.7	8.74	274.63	6.56	12.09	4.91	5.60	102.29	3.21	30.03	28.35	6.98
5-F	F	434.9	12.27	262.25	1.76	9.77	2.06	8.59	242.24	5.18	13.56	38.64	4.93
5-F	H/Ah	75.1	2.46	12.83	0.26	2.78	0.47	5.99	196.04	1.02	8.16	44.54	4.57
5-F	Ae	15.6	0.59	5.65	0.08	0.11	0.06	4.12	156.85	1.50	7.91	5.75	1.75
5-F	Bm1	18.4	0.91	9.08	0.04	0.16	0.03	41.45	2056.25	20.48	35.98	72.69	8.86
5-F	Bm2	5.7	0.32	31.71	0.01	0.05	0.02	8.76	487.27	48.47	4.29	17.51	2.86
5-F	C	1.2	0.05	38.06	0.00	0.04	0.02	3.12	134.90	95.49	1.74	23.17	4.73
5-F	IIC	1.1	0.06	47.07	0.01	0.08	0.02	1.04	52.47	45.18	4.16	15.96	2.93
5-F	IIIC	0.2	0.02	18.71	0.01	0.07	0.02	0.86	63.41	71.64	13.29	53.43	7.86
5-S	L	477.3	9.27	249.34	8.63	17.06	6.42	3.76	73.07	1.97	26.61	26.95	6.16
5-S	F	391.9	11.66	197.64	1.85	10.44	2.48	9.53	283.52	4.81	17.59	50.88	7.31
5-S	H/Ah	75.1	2.46	12.83	0.26	2.78	0.47	5.99	196.04	1.02	8.16	44.54	4.57
5-S	Ae	12.2	0.66	5.25	0.05	0.23	0.07	3.23	175.84	1.39	5.59	12.50	2.10
5-S	Bm1	18.1	0.93	4.27	0.04	0.16	0.04	27.47	1404.37	6.48	26.31	47.84	7.83
5-S	Bm2	3.6	0.11	31.16	0.01	0.05	0.02	6.43	204.66	56.04	3.77	19.31	4.61
5-S	C	0.9	0.08	58.77	0.00	0.02	0.01	2.31	196.49	147.43	0.54	9.68	3.69
5-S	IIC	1.1	0.06	47.07	0.01	0.08	0.02	1.04	52.47	45.18	4.16	15.96	2.93
5-S	IIIC	0.2	0.02	18.71	0.01	0.07	0.02	1.00	73.10	82.60	15.33	61.60	9.06
5-B	L	479.0	8.53	246.06	6.39	12.07	4.72	5.79	103.00	2.97	30.20	29.21	6.93
5-B	F	453.5	11.08	161.99	1.01	9.77	1.83	19.45	474.99	6.95	16.99	83.92	9.58
5-B	H/Ah	75.1	2.46	12.83	0.26	2.78	0.47	5.99	196.04	1.02	8.16	44.54	4.57
5-B	Ae	20.1	1.15	5.96	0.09	0.50	0.12	5.91	337.35	1.76	10.18	29.58	4.26
5-B	Bm1	19.6	1.33	3.81	0.05	0.16	0.05	19.83	1346.18	3.85	19.12	32.13	5.91
5-B	Bm2	7.3	0.72	5.80	0.02	0.11	0.04	15.17	1479.94	12.00	16.43	46.26	10.88
5-B	C	1.1	0.14	66.58	0.00	0.04	0.04	2.68	360.48	167.02	0.03	21.38	11.80
5-B	IIC	1.1	0.06	47.07	0.01	0.08	0.02	1.04	52.47	45.18	4.16	15.96	2.93
5-B	IIIC	0.2	0.02	18.71	0.01	0.07	0.02	1.06	77.58	87.66	16.27	65.38	9.62
5-C	L	471.3	9.64	391.69	7.68	14.05	6.28	3.43	70.25	2.85	21.89	20.52	5.56
5-C	F	460.4	14.53	241.50	2.21	10.20	2.50	9.30	293.53	4.88	17.44	41.30	6.14
5-C	H/Ah	131.4	4.71	19.55	0.37	3.55	0.53	20.13	722.03	2.99	21.90	109.14	9.95
5-C	Ae	17.6	0.82	6.95	0.07	0.25	0.07	8.04	373.47	3.18	12.92	23.05	4.09
5-C	Bm1	17.8	0.94	5.78	0.04	0.08	0.03	21.89	1151.92	7.11	17.40	20.39	4.67
5-C	Bm2	3.7	0.17	22.54	0.01	0.03	0.01	4.81	224.10	29.63	2.37	7.35	1.59
5-C	C	1.3	0.11	40.46	0.00	0.01	0.01	5.77	481.88	180.68	0.00	15.55	2.67
5-C	IIC	0.3	0.02	22.01	0.01	0.13	0.01	0.51	41.18	41.56	8.94	51.52	7.88
1-T	L	453.6	8.16	196.50	4.30	11.12	2.92	3.14	56.58	1.36	11.66	15.45	2.46
1-T	F	389.6	10.50	176.60	1.56	10.61	1.63	0.90	24.19	0.41	1.41	4.90	0.46
1-T	Bm1	15.6	0.46	27.77	0.05	0.07	0.03	6.73	199.63	11.95	8.84	6.17	1.42
1-T	Bm2	8.5	0.21	41.69	0.02	0.04	0.02	13.47	340.04	66.06	13.30	14.19	3.13
1-T	C	1.0	0.01	29.37	0.01	0.04	0.01	5.65	30.37	172.53	17.96	43.18	5.93
1-LF	L	475.0	7.89	188.41	4.11	10.73	2.78	4.28	71.20	1.70	14.49	19.40	3.05
1-LF	F	468.0	14.76	122.21	2.02	11.31	2.28	1.68	52.90	0.44	2.83	8.12	0.99
1-LF	Bm1	12.5	0.68	5.33	0.04	0.07	0.03	4.33	235.14	1.85	5.96	5.02	1.33
1-LF	Bm2	4.4	0.13	17.86	0.02	0.02	0.02	5.42	159.73	21.90	7.96	6.12	2.83
1-LF	C	0.9	0.01	33.82	0.00	0.03	0.01	5.84	31.86	208.42	10.50	37.38	8.41
2-L-T	L	481.3	8.35	118.89	2.73	10.01	2.26	3.75	65.00	0.93	8.31	15.62	2.14
2-L-T	F	467.9	13.96	200.60	1.92	10.51	2.22	2.99	89.35	1.28	4.81	13.48	1.73
2-L-T	Bm1	9.8	0.50	15.02	0.05	0.05	0.03	6.93	354.41	10.62	14.29	7.22	2.66
2-L-T	Bm2	4.8	0.20	15.73	0.01	0.04	0.02	6.72	275.30	22.13	7.50	11.24	2.90
2-L-T	C	0.8	0.07	36.29	0.00	0.05	0.02	2.21	169.83	94.36	3.57	23.93	5.20
2-L-T	IIC	0.5	0.03	25.81	0.01	0.08	0.02	2.39	155.19	125.38	19.72	75.71	9.97
2-LF	L	481.3	8.56	120.60	3.46	12.53	2.69	3.58	63.77	0.90	10.07	18.70	2.43
2-LF	F	393.7	11.76	144.84	1.67	10.36	1.55	4.00	119.44	1.47	6.62	21.09	1.91
2-LF	Bm1	13.8	0.39	29.74	0.03	0.09	0.03	2.77	77.39	5.97	2.47	3.48	0.74
2-LF	Bm2	9.2	0.23	22.53	0.02	0.04	0.03	9.20	228.88	22.64	9.17	9.04	3.17
2-LF	C	1.1	0.01	33.49	0.00	0.02	0.01	2.93	24.91	87.07	2.72	11.99	3.83
2-LF	IIC	0.5	0.03	25.81	0.01	0.08	0.02	2.72	176.49	142.59	22.42	86.10	11.34
3-L-T	L	467.0	9.61	148.78	2.30	10.82	2.27	4.08	83.88	1.30	7.84	18.93	2.41
3-L-T	F	455.2	11.56	178.48	1.41	9.45	1.30	0.00	0.00	0.00	0.00	0.00	0.00
3-L-T	Bm2	12.7	0.85	12.13	0.04	0.05	0.03	12.91	863.61	12.37	16.49	9.67	4.20
3-L-T	C	2.1	0.62	42.95	0.01	0.03	0.02	8.79	2599.78	181.15	10.28	29.23	8.80
3-L-T	IIC	0.3	0.03	23.25	0.01	0.07	0.02	1.05	80.42	75.53	14.36	48.09	7.64
3-LF	L	473.8	8.65	114.33	1.80	12.08	2.13	3.51	64.06	0.65	5.20	17.92	1.91
3-LF	F	326.5	11.85	142.02	1.64	13.61	1.95	1.31	47.52	0.57	2.57	10.94	0.95
3-LF	Bm1	19.7	1.12	6.98	0.09	0.22	0.06	7.75	441.83	2.75	13.60	17.70	2.96
3-LF	Bm2	10.2	1.03	5.83	0.03	0.06	0.03	12.97	1307.54	7.43	16.36	15.57	4.67
3-LF	C	1.4	0.16	46.50	0.01	0.05	0.02	5.74	683.14	196.12	12.67	42.15	8.88
3-LF	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.92	70.22	65.95	12.54	41.99	6.67
4-L-T	L	463.4	8.13	111.19	2.35	12.15	2.65	3.64	63.79	0.87	7.20	19.11	2.53
4-L-T	F	203.8	7.92	24.34	0.71	4.95	0.64	2.68	104.06	0.32	3.64	13.04	1.03
4-L-T	Bm1	9.3	0.15	15.11	0.02								

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

**Appendix H (continued) - Island Lake Biomass Harvest Research and Demonstration Area pre-harvest plot level soil C and nutrient concentrations and reserves.**

Plot ID	Horizon	C (g·kg <sup>-1</sup> )	N (g·kg <sup>-1</sup> )	Nutrient concentrations					Soil reserves (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )				
				P (ppm)	K (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Ca (cmol <sub>c</sub> ·kg <sup>-1</sup> )	Mg (cmol <sub>c</sub> ·kg <sup>-1</sup> )	C	N	P	K	Ca	Mg
1-A-50	L	481.8	9.51	248.58	5.54	15.42	5.80	3.49	68.90	1.80	15.70	22.39	5.11
1-A-50	F	445.0	13.11	226.56	5.52	10.54	2.22	11.09	25.12	5.17	17.45	50.89	6.75
1-A-50	H/Ah	67.4	2.79	15.70	0.20	2.04	0.24	7.25	239.75	1.70	0.35	44.03	3.11
1-A-50	Ae	7.6	0.34	5.10	0.05	0.08	0.04	3.62	162.25	2.44	8.85	7.86	2.21
1-A-50	Bm1	17.6	0.83	5.26	0.03	0.09	0.02	21.44	1005.65	6.41	14.74	23.05	3.34
1-A-50	Bm2	5.6	0.11	6.65	0.01	0.14	0.02	7.47	153.12	8.93	6.55	39.11	2.62
1-A-50	C	1.4	0.04	25.89	0.00	0.07	0.02	16.09	495.71	296.77	13.78	156.57	18.47
1-A-100	L	481.8	9.51	248.58	5.54	15.42	5.80	3.49	68.90	1.80	15.70	22.39	5.11
1-A-100	F	445.0	13.11	226.56	5.52	10.54	2.22	11.09	325.02	5.17	17.45	50.89	6.75
1-A-100	H/Ah	67.4	2.79	15.70	0.20	2.04	0.24	7.25	239.75	1.70	0.35	44.03	3.11
1-A-100	Ae	7.6	0.34	5.10	0.05	0.08	0.04	3.62	162.25	2.44	8.85	7.86	2.21
1-A-100	Bm1	17.6	0.83	5.26	0.03	0.09	0.02	21.44	1005.65	6.41	14.74	23.05	3.34
1-A-100	Bm2	5.6	0.11	6.65	0.01	0.14	0.02	7.47	153.12	8.93	6.55	39.11	2.62
1-A-100	C	1.4	0.04	25.89	0.00	0.07	0.02	16.09	495.71	296.77	13.78	156.57	18.47
1-A-200	L	481.8	9.51	310.10	7.24	14.57	5.80	4.34	82.19	2.77	25.31	26.09	6.34
1-A-200	F	473.9	12.27	197.91	1.96	11.89	2.34	10.77	278.97	4.50	13.87	54.16	6.47
1-A-200	H/Ah	51.6	1.99	9.32	0.13	0.15	0.21	8.49	345.57	0.63	0.47	4.34	
1-A-200	Ae	13.0	0.45	5.60	0.05	0.11	0.05	6.99	244.46	3.02	10.78	12.05	3.01
1-A-200	Bm1	18.9	0.82	6.53	0.03	0.12	0.03	24.89	1054.00	8.60	15.61	31.61	4.63
1-A-200	Bm2	6.7	0.35	33.27	0.01	0.05	0.02	11.62	615.42	58.06	2.69	17.33	2.87
1-A-200	C	1.1	0.10	49.07	0.00	0.02	0.00	7.21	643.74	323.90	0.00	27.16	2.31
1-A-200	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.72	59.88	26.78	8.88	33.91	3.83
2-A-50	L	480.1	9.20	310.10	7.24	14.57	5.80	4.34	82.19	2.77	25.31	26.09	6.34
2-A-50	F	473.9	12.27	197.91	1.96	11.89	2.34	10.77	278.97	4.50	13.87	54.16	6.47
2-A-50	H/Ah	51.6	1.99	9.32	0.13	0.15	0.21	8.49	332.96	1.56	8.64	52.85	6.47
2-A-50	Ae	13.0	0.45	5.60	0.05	0.11	0.05	6.99	244.46	3.02	10.78	12.05	3.01
2-A-50	Bm1	18.9	0.82	6.53	0.03	0.12	0.03	24.89	1054.00	8.60	15.61	31.61	4.63
2-A-50	Bm2	6.7	0.35	33.27	0.01	0.05	0.02	11.62	615.42	58.06	2.69	17.33	2.87
2-A-50	C	1.1	0.10	49.07	0.00	0.02	0.00	7.21	643.74	323.90	0.00	27.16	2.31
2-A-50	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.72	59.88	26.78	8.88	33.91	3.83
2-A-100	L	480.1	9.20	310.10	7.24	14.57	5.80	4.34	82.19	2.77	25.31	26.09	6.34
2-A-100	F	473.9	12.27	197.91	1.96	11.89	2.34	10.77	278.97	4.50	13.87	54.16	6.47
2-A-100	H/Ah	51.6	1.99	9.32	0.13	0.15	0.21	8.49	332.96	1.56	8.64	52.85	6.47
2-A-100	Ae	13.0	0.45	5.60	0.05	0.11	0.05	6.99	244.46	3.02	10.78	12.05	3.01
2-A-100	Bm1	18.9	0.82	6.53	0.03	0.12	0.03	24.89	1054.00	8.60	15.61	31.61	4.63
2-A-100	Bm2	6.7	0.35	33.27	0.01	0.05	0.02	11.62	615.42	58.06	2.69	17.33	2.87
2-A-100	C	1.1	0.10	49.07	0.00	0.02	0.00	7.21	643.74	323.90	0.00	27.16	2.31
2-A-100	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.72	59.88	26.78	8.88	33.91	3.83
2-A-200	L	481.8	10.11	273.97	6.82	13.57	5.73	4.05	86.92	2.36	22.27	23.39	5.99
2-A-200	F	473.9	13.36	273.24	2.68	13.41	3.02	6.70	186.93	3.82	14.65	37.60	5.14
2-A-200	H/Ah	51.6	1.99	9.32	0.13	0.15	0.21	8.64	332.96	1.56	8.64	52.85	6.47
2-A-200	Ae	13.0	0.45	5.60	0.05	0.11	0.05	6.99	244.46	3.02	10.78	12.05	3.01
2-A-200	Bm1	18.9	0.82	6.53	0.03	0.12	0.03	24.89	1054.00	8.60	15.61	31.61	4.63
2-A-200	Bm2	6.7	0.35	33.27	0.01	0.05	0.02	11.62	615.42	58.06	2.69	17.33	2.87
2-A-200	C	1.1	0.10	49.07	0.00	0.02	0.00	7.21	643.74	323.90	0.00	27.16	2.31
2-A-200	IIC	0.3	0.02	10.09	0.01	0.06	0.01	0.72	59.88	26.78	8.88	33.91	3.83
3-A-200	L	471.4	10.11	273.97	6.82	13.57	5.73	4.05	86.92	2.36	22.27	23.39	5.99
3-A-200	F	478.8	13.36	273.24	2.68	13.41	3.02	6.70	186.93	3.82	14.65	37.60	5.14
3-A-200	H/Ah	120.4	4.90	18.12	0.50	0.36	0.67	8.52	346.90	1.28	13.93	50.42	5.76
3-A-200	Ae	12.7	0.60	5.65	0.09	0.28	0.07	3.27	155.39	1.64	9.51	14.60	2.39
3-A-200	Bm1	21.9	0.91	11.35	0.05	0.09	0.03	20.69	861.79	4.05	19.66	16.58	2.42
3-A-200	Bm2	7.7	0.42	4.93	0.02	0.05	0.02	12.10	656.46	7.72	12.05	16.52	4.00
3-A-200	C	2.4	0.05	8.96	0.01	0.04	0.02	10.13	217.54	37.81	8.66	36.02	6.74
3-A-200	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.67	51.57	48.44	9.21	30.84	4.90
3-A-400	L	471.4	10.11	273.97	6.82	13.57	5.73	4.05	86.92	2.36	22.27	23.39	5.99
3-A-400	F	478.8	13.36	273.24	2.68	13.41	3.02	6.70	186.93	3.82	14.65	37.60	5.14
3-A-400	H/Ah	120.4	4.90	18.12	0.50	0.36	0.67	8.52	346.90	1.28	13.93	50.42	5.76
3-A-400	Ae	12.7	0.60	5.65	0.09	0.28	0.07	3.27	155.39	1.64	9.51	14.60	2.39
3-A-400	Bm1	21.9	0.91	11.35	0.05	0.09	0.03	20.69	861.79	4.05	19.66	16.58	2.42
3-A-400	Bm2	7.7	0.42	4.93	0.02	0.05	0.02	12.10	656.46	7.72	12.05	16.52	4.00
3-A-400	C	2.4	0.05	8.96	0.01	0.04	0.02	10.13	217.54	37.81	8.66	36.02	6.74
3-A-400	IIC	0.3	0.03	23.25	0.01	0.07	0.02	0.67	51.57	48.44	9.21	30.84	4.90
4-A-50	L	490.1	10.36	185.35	6.47	20.67	6.75	3.38	71.46	1.28	17.46	28.88	5.68
4-A-50	F	339.6	10.26	175.26	1.55	11.58	1.66	3.00	395.98	6.64	18.82	87.98	7.81
4-A-50	H/Ah	92.9	3.30	18.73	0.28	2.30	0.45	13.91	493.58	2.80	16.38	68.85	8.16
4-A-50	Ae	15.4	0.57	5.53	0.08	0.30	0.07	5.25	193.19	1.88	10.40	20.28	3.07
4-A-50	Bm1	14.9	0.91	6.24	0.01	0.11	0.02	27.04	1659.34	11.34	9.44	40.68	5.70
4-A-50	Bm2	7.0	0.29	11.17	0.01	0.01	0.02	10.84	443.15	17.32	8.05	36.06	5.27
4-A-50	C	1.0	0.00	67.50	0.00	0.06	0.02	2.19	0.00	152.74	2.54	25.67	5.74
4-A-50	IIC	0.6	0.04	19.93	0.01	0.08	0.02	0.61	43.95	20.78	5.26	16.39	2.97
4-A-50	III	0.4	0.03	20.68	0.01	0.06	0.02	1.82	150.67	102.76	14.76	64.67	6.68
4-A-100	L	478.7	8.74	274.63	6.56	12.09	4.91	5.60	102.29	3.21	30.03	28.63	6.98
4-A-100	F	434.9	12.27	262.25	1.76	9.77	2.06	8.59	242.24	5.18	13.56	38.64	4.93
4-A-100	H/Ah	75.1	2.46	12.83	2.68	2.78	0.47	5.99	196.04	1.02	8.16	44.54	4.57
4-A-100	Ae	15.6	0.59	5.65	0.08	0.11	0.06	4.12	156.85	1.50	7.91	5.75	1.75
4-A-100	Bm1	18.4	0.91	9.08	0.04	0.16	0.03	41.45	2056.25	20.48	35.98	72.69	8.86
4-A-100	Bm2	5.7	0.32	31.71	0.01	0.05	0.02	8.76	487.27	48.47	4.29	17.51	2.86
4-A-100	C	1.2	0.05	38.06	0.00	0.04	0.02	3.12	134.90	95.49	1.74	23.17</td	

## Appendix I - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level DWD biomass weights, volumes, and C and nutrient contents.

Plot ID	Fine ( $\text{Mg}\cdot\text{ha}^{-1}$ )			Coarse ( $\text{Mg}\cdot\text{ha}^{-1}$ )			Total ( $\text{Mg}\cdot\text{ha}^{-1}$ )			Total DWD nutrients ( $\text{kg}\cdot\text{ha}^{-1}$ , except C = $\text{Mg}\cdot\text{ha}^{-1}$ )			Mg		
	New residue	Total DWD	New residue	Total DWD	New residue	Total DWD	New residue	Total DWD	New residue	Total DWD	C K N P				
1-T	22.03	22.62	42.32	43.66	20.62	23.02	41.98	48.64	42.65	45.63	84.31	22.30	5.67	16.88	
2-T	23.64	23.82	40.12	40.76	16.92	17.05	34.76	35.02	40.56	40.86	74.51	20.62	9.31	28.29	
3-T	34.01	36.70	60.61	66.72	12.27	17.02	25.00	37.53	53.72	85.61	104.25	27.22	150.74	12.58	
4-T	23.52	23.85	39.52	40.27	12.88	13.00	26.45	26.77	36.40	36.85	65.97	67.03	18.66	99.86	
5-T	26.36	28.13	49.78	49.76	12.45	15.47	25.40	27.72	38.80	43.60	71.18	82.48	22.16	92.42	
<b>Mean</b>	<b>25.91</b>	<b>27.02</b>	<b>45.60</b>	<b>48.11</b>	<b>15.03</b>	<b>17.11</b>	<b>30.72</b>	<b>36.14</b>	<b>40.34</b>	<b>44.13</b>	<b>76.32</b>	<b>84.24</b>	<b>22.30</b>	<b>110.12</b>	
1-F	5.17	7.12	8.73	13.10	-0.42	5.87	-0.94	18.65	4.75	12.98	7.78	31.75	6.73	8.79	
2-F	6.73	7.05	10.73	20.88	2.23	4.10	4.73	9.65	12.96	16.63	26.60	5.84	20.27	2.61	
3-F	10.48	11.16	17.36	18.63	1.93	5.35	2.18	11.70	12.41	16.42	31.61	3.13	31.41	3.51	
5-F	10.08	11.51	16.14	19.25	-0.46	1.98	-1.32	4.51	9.62	13.48	30.33	8.01	47.35	3.95	
<b>Mean</b>	<b>8.64</b>	<b>9.58</b>	<b>15.08</b>	<b>17.16</b>	<b>1.04</b>	<b>4.30</b>	<b>1.79</b>	<b>11.61</b>	<b>9.68</b>	<b>13.87</b>	<b>16.88</b>	<b>28.77</b>	<b>7.07</b>	<b>45.76</b>	
1-S	4.06	4.86	6.55	8.50	1.04	12.08	2.43	5.10	6.94	8.98	55.64	9.90	65.47	3.79	
2-S	3.82	5.34	5.91	9.39	-0.24	1.65	-0.32	4.32	3.57	5.58	13.87	3.61	31.57	2.61	
3-S	8.82	9.65	13.43	15.32	0.53	1.67	1.21	4.64	9.35	11.32	14.64	5.74	30.06	3.40	
4-S	4.10	4.21	7.56	7.78	2.19	2.88	6.89	6.90	7.09	12.45	14.68	3.60	16.57	3.15	
5-S	7.04	7.45	11.63	12.60	0.86	1.47	1.90	3.36	7.90	8.91	13.53	4.58	33.70	2.61	
<b>Mean</b>	<b>5.57</b>	<b>6.30</b>	<b>9.02</b>	<b>10.72</b>	<b>0.88</b>	<b>3.95</b>	<b>2.02</b>	<b>13.30</b>	<b>6.44</b>	<b>10.25</b>	<b>24.02</b>	<b>5.31</b>	<b>35.21</b>	<b>2.49</b>	
1-L-T	27.44	43.59	50.98	50.98	28.73	34.82	59.16	81.70	52.73	62.26	102.76	31.75	10.84	98.05	
2-L-T	35.84	37.88	65.65	70.29	25.98	26.50	54.76	61.82	61.82	62.17	126.17	32.84	123.54	12.30	
3-L-T	76.83	79.05	141.43	146.50	39.44	42.98	81.71	88.99	116.27	122.03	223.14	23.48	62.15	276.68	
4-L-T	47.31	47.87	90.27	91.43	42.53	46.53	91.44	101.66	89.84	94.40	181.71	47.99	175.70	14.72	
5-L-T	60.94	61.11	112.56	112.97	10.52	17.40	21.18	35.82	71.45	78.51	133.74	40.18	211.31	19.33	
<b>Mean</b>	<b>48.98</b>	<b>50.67</b>	<b>90.70</b>	<b>94.44</b>	<b>29.44</b>	<b>33.65</b>	<b>61.65</b>	<b>72.81</b>	<b>78.42</b>	<b>84.32</b>	<b>152.35</b>	<b>40.98</b>	<b>167.25</b>	<b>16.80</b>	
1-L-F	6.48	9.42	10.79	17.39	1.42	1.47	3.23	3.34	52.73	62.26	132.69	31.75	10.84	98.05	
2-L-F	16.27	17.44	32.28	35.13	-2.48	0.56	-0.72	1.72	13.80	18.00	26.56	9.25	45.92	124.76	
3-L-F	3.61	4.64	5.78	8.15	0.04	0.16	0.09	0.38	3.65	4.79	8.53	2.46	7.75	18.82	
4-L-F	4.32	5.66	9.50	9.50	0.10	1.77	0.22	4.33	4.41	7.43	13.83	3.85	34.90	219.09	
5-L-F	7.81	8.51	13.76	13.76	0.00	0.15	0.00	0.64	8.81	8.86	12.11	14.30	4.47	145.03	
<b>Mean</b>	<b>7.70</b>	<b>9.13</b>	<b>13.46</b>	<b>16.79</b>	<b>0.18</b>	<b>0.92</b>	<b>0.44</b>	<b>2.06</b>	<b>7.51</b>	<b>9.55</b>	<b>13.02</b>	<b>18.85</b>	<b>5.13</b>	<b>42.30</b>	
1-A-T	5.17	7.12	8.73	13.10	-0.42	5.87	-0.94	18.65	4.75	12.98	7.78	31.75	6.73	3.38	7.59
2-A-T	6.73	7.05	12.30	13.03	1.91	4.18	4.32	8.64	11.23	16.63	26.60	5.84	46.63	1.39	124.76
3-A-T	11.16	20.88	21.78	22.23	4.10	4.73	9.65	12.96	15.26	21.42	31.43	8.01	47.35	3.51	219.09
4-A-T	11.06	17.36	18.63	19.25	-0.46	1.98	2.18	11.70	12.41	16.42	21.42	30.33	8.01	47.35	3.95
5-A-T	11.51	16.14	19.25	-0.46	1.98	-1.32	4.51	9.62	13.48	14.82	23.76	6.94	53.18	4.84	19.35
<b>Mean</b>	<b>8.28</b>	<b>9.10</b>	<b>14.82</b>	<b>16.64</b>	<b>1.41</b>	<b>4.88</b>	<b>2.57</b>	<b>13.39</b>	<b>9.69</b>	<b>13.97</b>	<b>17.39</b>	<b>30.03</b>	<b>7.10</b>	<b>43.91</b>	<b>3.42</b>
1-A-F	5.17	7.12	8.73	13.10	-0.42	5.87	-0.94	18.65	4.75	12.98	7.78	31.75	6.73	3.38	7.59
2-A-F	6.73	7.05	12.30	13.03	1.91	4.18	4.32	8.64	11.23	16.63	26.60	5.84	46.63	1.39	124.76
3-A-F	11.16	20.88	21.78	22.23	4.10	4.73	9.65	12.96	15.26	21.42	31.43	8.01	47.35	3.51	219.09
4-A-F	11.06	17.36	18.63	19.25	-0.46	1.98	2.18	11.70	12.41	16.42	21.42	30.33	8.01	47.35	3.95
5-A-F	11.51	16.14	19.25	-0.46	1.98	-1.32	4.51	9.62	13.48	14.82	23.76	6.94	53.18	4.84	19.35
<b>Mean</b>	<b>8.12</b>	<b>9.19</b>	<b>13.63</b>	<b>16.00</b>	<b>0.74</b>	<b>4.35</b>	<b>1.06</b>	<b>12.11</b>	<b>8.86</b>	<b>13.53</b>	<b>16.69</b>	<b>28.11</b>	<b>6.98</b>	<b>46.35</b>	<b>3.42</b>
1-A-L-T	5.17	7.12	8.73	13.10	-0.42	5.87	-0.94	18.65	4.75	12.98	7.78	31.75	6.73	3.38	7.59
2-A-L-T	6.73	7.05	12.30	13.03	1.91	4.18	4.32	8.64	11.23	16.63	26.60	5.84	46.63	1.39	124.76
3-A-L-T	11.16	20.88	21.78	22.23	4.10	4.73	9.65	12.96	15.26	21.42	31.43	8.01	47.35	3.51	219.09
4-A-L-T	11.06	17.36	18.63	19.25	-0.46	1.98	2.18	11.70	12.41	16.42	21.42	30.33	8.01	47.35	3.95
5-A-L-T	11.51	16.14	19.25	-0.46	1.98	-1.32	4.51	9.62	13.48	14.82	23.76	6.94	53.18	4.84	19.35
<b>Mean</b>	<b>8.20</b>	<b>9.05</b>	<b>16.67</b>	<b>18.17</b>	<b>1.40</b>	<b>3.90</b>	<b>2.48</b>	<b>9.86</b>	<b>10.91</b>	<b>14.10</b>	<b>19.15</b>	<b>28.03</b>	<b>7.16</b>	<b>45.05</b>	<b>3.73</b>

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

\* New residue = post harvest slash - pre-harvest DWD (decay classes 1, 2, 3, 4, and 5);

\* Total DWD = new residue + pre-harvest DWD (decay classes 1, 2, 3, 4, and 5);

\* Fine slash volume was calculated from fine slash quadrat weight data using wood density values from previous OMNR-CNFRR studies (D.M. Morris unpublished data) for twig, branch, and other components. Foliage and cones are not accounted for in the volume calculation.

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

### Appendix J - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level total DWD biomass weights and volumes by decay class.

Plot ID	Type	Aboveground (Mg·ha <sup>-1</sup> )			Aboveground (m <sup>3</sup> ·ha <sup>-1</sup> )					
		Decay class	1 & 2	3	4	5	Decay class	1 & 2	3	4
1-T	Fine	22.62	0.00	0.00	0.00	43.66	0.00	0.00	0.00	0.00
1-T	Coarse	22.09	0.38	0.00	0.55	45.37	0.98	0.00	2.29	
1-T	Total	44.70	0.38	0.00	0.55	89.03	0.98	0.00	2.29	
1-F	Fine	6.99	0.12	0.00	0.00	12.78	0.32	0.00	0.00	
1-F	Coarse	2.27	0.34	0.40	2.86	4.81	0.88	1.02	11.94	
1-F	Total	9.26	0.47	0.40	2.86	17.59	1.20	1.02	11.94	
1-S	Fine	4.40	0.46	0.00	0.00	7.32	1.18	0.00	0.00	
1-S	Coarse	1.73	0.02	0.00	10.33	3.91	0.05	0.00	43.18	
1-S	Total	6.13	0.48	0.00	10.33	11.23	1.23	0.00	43.18	
1-B	Fine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-B	Coarse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-B	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1-C	Fine	0.39	0.01	0.04	0.00	0.81	0.03	0.11	0.00	
1-C	Coarse	0.53	1.78	2.03	5.99	1.10	4.57	5.20	25.02	
1-C	Total	0.93	1.80	2.07	5.99	1.91	4.60	5.32	25.02	
2-T	Fine	23.80	0.02	0.00	0.00	40.08	0.04	0.00	0.00	
2-T	Coarse	17.05	0.00	0.00	0.00	35.02	0.00	0.00	0.00	
2-T	Total	40.85	0.02	0.00	0.00	75.10	0.04	0.00	0.00	
2-F	Fine	7.05	0.00	0.00	0.00	13.03	0.00	0.00	0.00	
2-F	Coarse	1.91	0.15	0.00	2.12	4.32	0.38	0.00	8.86	
2-F	Total	8.96	0.15	0.00	2.12	17.35	0.38	0.00	8.86	
2-S	Fine	5.26	0.08	0.00	0.00	9.18	0.21	0.00	0.00	
2-S	Coarse	1.26	0.00	0.00	0.39	2.86	0.00	0.00	1.63	
2-S	Total	6.52	0.08	0.00	0.39	12.03	0.21	0.00	1.63	
2-B	Fine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-B	Coarse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-B	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2-C	Fine	0.08	0.14	0.03	0.00	0.18	0.35	0.07	0.00	
2-C	Coarse	0.89	0.00	0.04	0.69	1.97	0.00	0.10	2.87	
2-C	Total	0.98	0.14	0.06	0.69	2.15	0.35	0.16	2.87	
3-T	Fine	36.18	0.48	0.03	0.00	65.39	1.24	0.09	0.00	
3-T	Coarse	14.95	0.25	0.89	0.94	30.70	0.63	2.28	3.92	
3-T	Total	51.13	0.73	0.92	0.94	96.09	1.87	2.36	3.92	
3-F	Fine	11.14	0.02	0.00	0.00	21.74	0.05	0.00	0.00	
3-F	Coarse	2.23	0.09	1.70	0.08	4.73	0.24	4.35	0.32	
3-F	Total	13.37	0.11	1.70	0.08	26.47	0.29	4.35	0.32	
3-S	Fine	9.39	0.18	0.08	0.00	14.66	0.46	0.20	0.00	
3-S	Coarse	1.25	0.00	0.00	0.42	2.88	0.00	0.00	1.75	
3-S	Total	10.64	0.18	0.08	0.42	17.54	0.46	0.20	1.75	
3-B	Fine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-B	Coarse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-B	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3-C	Fine	0.62	0.04	0.11	0.00	1.40	0.09	0.27	0.00	
3-C	Coarse	0.38	0.43	0.00	0.81	0.87	1.10	0.00	3.40	
3-C	Total	1.00	0.47	0.11	0.81	2.26	1.20	0.27	3.40	
4-T	Fine	23.73	0.12	0.00	0.00	39.96	0.31	0.00	0.00	
4-T	Coarse	12.88	0.12	0.00	0.00	26.45	0.31	0.00	0.00	
4-T	Total	36.61	0.24	0.00	0.00	66.41	0.62	0.00	0.00	
4-F	Fine	11.06	0.00	0.00	0.00	18.63	0.00	0.00	0.00	
4-F	Coarse	3.64	0.73	0.24	0.74	6.12	1.87	0.63	3.09	
4-F	Total	14.70	0.73	0.24	0.74	24.75	1.87	0.63	3.09	
4-S	Fine	4.21	0.00	0.00	0.00	7.78	0.00	0.00	0.00	
4-S	Coarse	2.42	0.27	0.00	0.19	5.41	0.70	0.00	0.78	
4-S	Total	6.63	0.27	0.00	0.19	13.20	0.70	0.00	0.78	
4-B	Fine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-B	Coarse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-B	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4-C	Fine	0.06	0.06	0.07	0.00	0.12	0.15	0.19	0.00	
4-C	Coarse	0.00	0.00	0.00	0.70	0.00	0.00	0.00	2.93	
4-C	Total	0.06	0.06	0.07	0.70	0.12	0.15	0.19	2.93	
5-T	Fine	28.05	0.04	0.05	0.00	49.54	0.09	0.13	0.00	
5-T	Coarse	14.79	0.30	0.00	0.38	30.38	0.78	0.00	1.57	
5-T	Total	42.84	0.34	0.05	0.38	79.92	0.87	0.13	1.57	
5-F	Fine	11.38	0.12	0.00	0.00	18.94	0.31	0.00	0.00	
5-F	Coarse	1.54	0.31	0.00	0.13	3.19	0.79	0.00	0.52	
5-F	Total	12.93	0.43	0.00	0.13	22.13	1.10	0.00	0.52	
5-S	Fine	7.21	0.24	0.00	0.00	12.00	0.61	0.00	0.00	
5-S	Coarse	1.06	0.00	0.41	0.00	2.31	0.00	1.05	0.00	
5-S	Total	8.27	0.24	0.41	0.00	14.30	0.61	1.05	0.00	
5-B	Fine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-B	Coarse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-B	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5-C	Fine	1.28	0.11	0.01	0.01	2.83	0.29	0.02	0.03	
5-C	Coarse	1.54	0.81	0.21	0.00	3.42	2.08	0.53	0.00	
5-C	Total	2.82	0.92	0.21	0.01	6.26	2.36	0.55	0.03	

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

\* Total DWD = new residue + pre-harvest DWD (decay classes 1, 2, 3, 4, and 5)

\* New residue = post harvest slash - pre-harvest DWD (decay classes 1 and 2);

\* Fine slash volume was calculated from fine slash quadrat weight data using wood density values from previous OMNR-CNFER studies (D.M. Morris unpublished data) for twig, branch, and other components. Foliage and cones are not accounted for in the volume calculation.

## Island Lake Biomass Harvest Research and Demonstration Area: Establishment Report (2014)

### Appendix J (continued) - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level total DWD biomass weights and volumes by decay class.

Plot ID	Type	Aboveground (Mg·ha <sup>-1</sup> )				Aboveground (m <sup>3</sup> ·ha <sup>-1</sup> )			
		Decay class			Decay class				
		1 & 2	3	4	5	1 & 2	3	4	5
1-L-T	Fine	27.06	0.38	0.00	0.00	50.02	0.97	0.00	0.00
1-L-T	Coarse	30.13	0.02	0.00	4.67	62.13	0.05	0.00	19.53
1-L-T	Total	57.19	0.40	0.00	4.67	112.15	1.02	0.00	19.53
1-L-F	Fine	9.01	0.36	0.03	0.02	16.28	0.93	0.07	0.10
1-L-F	Coarse	1.47	0.00	0.00	0.00	3.34	0.00	0.00	0.00
1-L-F	Total	10.48	0.36	0.03	0.02	19.62	0.93	0.07	0.10
2-L-T	Fine	37.51	0.03	0.35	0.00	69.33	0.07	0.89	0.00
2-L-T	Coarse	26.41	0.09	0.00	0.00	55.64	0.24	0.00	0.00
2-L-T	Total	63.92	0.12	0.35	0.00	124.98	0.31	0.89	0.00
2-L-F	Fine	16.75	0.53	0.15	0.00	33.37	1.37	0.39	0.00
2-L-F	Coarse	0.34	0.00	0.00	0.22	0.78	0.00	0.00	0.94
2-L-F	Total	17.09	0.53	0.15	0.22	34.15	1.37	0.39	0.94
3-L-T	Fine	78.54	0.25	0.27	0.00	145.18	0.64	0.68	0.00
3-L-T	Coarse	42.98	0.00	0.00	0.00	88.99	0.00	0.00	0.00
3-L-T	Total	121.52	0.25	0.27	0.00	234.16	0.64	0.68	0.00
3-L-F	Fine	4.57	0.07	0.00	0.00	7.98	0.17	0.00	0.00
3-L-F	Coarse	0.04	0.12	0.00	0.00	0.09	0.30	0.00	0.00
3-L-F	Total	4.61	0.18	0.00	0.00	8.06	0.47	0.00	0.00
4-L-T	Fine	47.87	0.00	0.00	0.00	91.43	0.00	0.00	0.00
4-L-T	Coarse	42.61	0.41	3.51	0.00	91.61	1.04	9.00	0.00
4-L-T	Total	90.48	0.41	3.51	0.00	183.05	1.04	9.00	0.00
4-L-F	Fine	5.21	0.32	0.13	0.00	8.35	0.83	0.33	0.00
4-L-F	Coarse	0.55	0.52	0.70	0.00	1.20	1.34	1.79	0.00
4-L-F	Total	5.76	0.84	0.83	0.00	9.55	2.16	2.12	0.00
5-L-T	Fine	61.10	0.01	0.00	0.00	112.94	0.03	0.00	0.00
5-L-T	Coarse	17.40	0.00	0.00	0.00	35.82	0.00	0.00	0.00
5-L-T	Total	78.50	0.01	0.00	0.00	148.76	0.03	0.00	0.00
5-L-F	Fine	8.21	0.30	0.00	0.00	12.98	0.78	0.00	0.00
5-L-F	Coarse	0.00	0.00	0.05	0.10	0.00	0.00	0.12	0.42
5-L-F	Total	8.21	0.30	0.05	0.10	12.98	0.78	0.12	0.42
1-A-50	Fine	6.99	0.12	0.00	0.00	12.78	0.32	0.00	0.00
1-A-50	Coarse	2.27	0.34	0.40	2.86	4.81	0.88	1.02	11.94
1-A-50	Total	9.26	0.47	0.40	2.86	17.59	1.20	1.02	11.94
1-A-100	Fine	0.08	0.00	0.00	0.00	0.16	0.00	0.00	0.00
1-A-100	Coarse	0.68	0.00	0.24	0.79	1.58	0.00	0.61	3.31
1-A-100	Total	0.76	0.00	0.24	0.79	1.74	0.00	0.61	3.31
1-A-200	Fine	0.08	0.00	0.00	0.00	0.16	0.00	0.00	0.00
1-A-200	Coarse	0.68	0.00	0.24	0.79	1.58	0.00	0.61	3.31
1-A-200	Total	0.76	0.00	0.24	0.79	1.74	0.00	0.61	3.31
2-A-50	Fine	7.05	0.00	0.00	0.00	13.03	0.00	0.00	0.00
2-A-50	Coarse	1.91	0.15	0.00	2.12	4.32	0.38	0.00	8.86
2-A-50	Total	8.96	0.15	0.00	2.12	17.35	0.38	0.00	8.86
2-A-100	Fine	7.05	0.00	0.00	0.00	13.03	0.00	0.00	0.00
2-A-100	Coarse	1.91	0.15	0.00	2.12	4.32	0.38	0.00	8.86
2-A-100	Total	8.96	0.15	0.00	2.12	17.35	0.38	0.00	8.86
3-A-50	Fine	11.14	0.02	0.00	0.00	21.74	0.05	0.00	0.00
3-A-50	Coarse	2.23	0.09	1.70	0.08	4.73	0.24	4.35	0.32
3-A-50	Total	13.37	0.11	1.70	0.08	26.47	0.29	4.35	0.32
3-A-200	Fine	11.14	0.02	0.00	0.00	21.74	0.05	0.00	0.00
3-A-200	Coarse	2.23	0.09	1.70	0.08	4.73	0.24	4.35	0.32
3-A-200	Total	13.37	0.11	1.70	0.08	26.47	0.29	4.35	0.32
3-A-400	Fine	11.14	0.02	0.00	0.00	21.74	0.05	0.00	0.00
3-A-400	Coarse	2.23	0.09	1.70	0.08	4.73	0.24	4.35	0.32
3-A-400	Total	13.37	0.11	1.70	0.08	26.47	0.29	4.35	0.32
4-A-50	Fine	11.06	0.00	0.00	0.00	18.63	0.00	0.00	0.00
4-A-50	Coarse	3.64	0.73	0.24	0.74	6.12	1.87	0.63	3.09
4-A-50	Total	14.70	0.73	0.24	0.74	24.75	1.87	0.63	3.09
4-A-100	Fine	11.06	0.00	0.00	0.00	18.63	0.00	0.00	0.00
4-A-100	Coarse	3.64	0.73	0.24	0.74	6.12	1.87	0.63	3.09
4-A-100	Total	14.70	0.73	0.24	0.74	24.75	1.87	0.63	3.09
4-A-200	Fine	11.06	0.00	0.00	0.00	18.63	0.00	0.00	0.00
4-A-200	Coarse	3.64	0.73	0.24	0.74	6.12	1.87	0.63	3.09
4-A-200	Total	14.70	0.73	0.24	0.74	24.75	1.87	0.63	3.09
4-A-400	Fine	11.06	0.00	0.00	0.00	18.63	0.00	0.00	0.00
4-A-400	Coarse	3.64	0.73	0.24	0.74	6.12	1.87	0.63	3.09
4-A-400	Total	14.70	0.73	0.24	0.74	24.75	1.87	0.63	3.09
5-A-100	Fine	11.38	0.12	0.00	0.00	18.94	0.31	0.00	0.00
5-A-100	Coarse	1.54	0.31	0.00	0.13	3.19	0.79	0.00	0.52
5-A-100	Total	12.93	0.43	0.00	0.13	22.13	1.10	0.00	0.52
5-A-200	Fine	11.38	0.12	0.00	0.00	18.94	0.31	0.00	0.00
5-A-200	Coarse	1.54	0.31	0.00	0.13	3.19	0.79	0.00	0.52
5-A-200	Total	12.93	0.43	0.00	0.13	22.13	1.10	0.00	0.52
5-A-400	Fine	11.38	0.12	0.00	0.00	18.94	0.31	0.00	0.00
5-A-400	Coarse	1.54	0.31	0.00	0.13	3.19	0.79	0.00	0.52
5-A-400	Total	12.93	0.43	0.00	0.13	22.13	1.10	0.00	0.52

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A  
 + Total DWD = new residue + pre-harvest DWD (decay classes 1, 2, 3, 4, and 5)

\* New residue = post harvest slash - pre-harvest DWD (decay classes 1 and 2);

\* Fine slash volume was calculated from fine slash quadrat weight data using wood density values from previous OMNR-CNFER studies (D.M. Morris unpublished data) for twig, branch, and other components. Foliage and cones are not accounted for in the volume calculation.

**Appendix K - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level C and nutrients removed during the stumping treatment.**

Plot ID	Mass (Mg·ha <sup>-1</sup> )	Stump removal (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )					Organic (L,F) removal (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )					Mineral soil removal (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )					Total removal (kg·ha <sup>-1</sup> , except C = Mg·ha <sup>-1</sup> )										
		C	N	P	K	Mg	Ca	Mg	Mass (Mg·ha <sup>-1</sup> )	C	N	P	K	Ca	Mg	Mass (Mg·ha <sup>-1</sup> )	C	N	P	K	Ca	Mg					
1-S	46.39	24.08	27.82	0.95	12.01	25.57	5.33	2.24	0.10	4.04	0.02	0.10	0.64	0.05	17.76	0.20	4.58	0.09	0.25	0.40	0.08	24.39	36.44	1.05	12.37	26.62	5.46
2-S	57.88	30.04	34.48	1.18	14.98	31.91	6.65	4.87	0.23	8.80	0.04	0.23	1.40	0.11	36.86	0.65	28.40	0.21	0.83	1.57	0.27	30.92	71.68	1.43	16.04	34.87	7.04
3-S	33.98	17.65	20.30	0.70	8.79	18.73	3.91	2.03	0.22	9.03	0.03	0.36	1.31	0.15	16.10	0.43	20.46	0.32	0.47	0.93	0.16	18.30	49.79	1.05	9.63	20.98	4.21
4-S	53.68	27.87	31.97	1.10	13.89	29.59	6.17	3.10	0.26	9.27	0.05	0.31	1.29	0.15	24.58	0.27	18.53	0.12	0.42	0.87	0.21	28.40	59.77	1.27	14.62	31.75	6.54
5-S	39.48	20.49	23.53	0.81	10.22	21.76	4.54	1.99	0.14	4.45	0.02	0.19	1.01	0.10	15.82	0.25	13.03	0.07	0.30	0.59	0.10	20.88	41.01	0.90	10.70	23.37	4.74

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Appendix L - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level C retention.

Plot ID	Standing biomass	Wood ash	DWD (below)	C retention ( $Mg \cdot ha^{-1}$ )					Total ecosystem	
				DWD (above)	New residue slash	Stump and coarse roots	Organic horizons	Mineral soil 0-30 cm		
1-C	49.21		0.00	5.80		23.30	26.06	29.07	4.59	138.03
2-C	51.08		0.00	0.97		23.26	17.25	27.91	7.52	127.99
3-C	56.97		0.00	1.25		25.74	22.41	31.58	4.35	142.30
4-C	42.49		1.19	0.48		17.69	34.32	48.04	6.24	150.46
5-C	50.94		7.92	2.03		25.13	32.87	34.88	6.13	159.89
1-T			13.32	1.54	21.32	26.87	20.22	51.60	11.08	145.94
2-T			11.32	0.15	20.47	17.75	17.42	40.24	15.80	123.15
3-T			6.84	3.84	23.38	22.68	22.96	41.51	5.69	126.90
4-T			16.18	0.23	18.43	16.98	34.17	40.47	16.56	143.02
5-T			2.76	2.45	19.71	24.16	20.09	50.62	6.21	125.99
1-F			2.84	4.30	2.43	23.40	21.83	33.47	15.15	103.42
2-F			0.00	1.40	4.44	19.32	23.76	43.19	8.22	100.34
3-F			5.83	1.23	6.60	26.69	19.27	36.86	9.99	106.46
4-F			16.21	2.08	5.94	30.52	30.39	41.37	6.38	132.88
5-F			1.65	1.96	4.98	33.34	20.18	51.50	7.86	121.48
1-S			0.00	6.42	2.58	1.67	23.32	28.40	12.62	75.02
2-S			0.00	1.75	1.86	0.55	28.38	39.73	11.01	83.27
3-S			4.85	1.02	4.73	0.65	18.01	48.49	3.62	81.37
4-S			10.16	0.41	3.19	0.41	33.87	28.19	5.77	82.00
5-S			5.85	0.53	4.05	0.41	19.15	36.96	4.26	71.22
1-B								29.28	8.18	37.45
2-B								37.73	6.65	44.38
3-B								47.28	6.44	53.71
4-B								47.78	6.94	54.71
5-B								36.09	3.85	39.93
1-L-T			0.00	5.01	26.74	19.81	4.04	21.00	4.84	81.45
2-L-T			0.00	1.31	31.53	12.43	6.74	14.85	3.40	70.27
3-L-T			0.00	2.93	59.23	17.45	4.08	16.90	5.84	106.43
4-L-T			0.00	2.43	45.57	25.87	6.32	19.41	4.28	103.87
5-L-T			0.00	3.57	36.61	12.37	5.31	15.31	1.41	74.58
1-L-F			0.00	1.52	4.08	23.54	5.96	10.82	4.77	50.70
2-L-F			0.27	2.15	7.11	14.15	7.58	14.60	3.02	48.88
3-L-F			0.00	0.58	1.88	18.30	4.82	22.57	4.81	52.96
4-L-F			0.00	1.57	2.28	30.04	5.86	23.00	3.87	66.62
5-L-F			0.00	0.44	4.03	16.86	5.04	25.89	2.24	54.51
1-A-50		0.23	2.84	4.30	2.43	23.40	21.83	33.47	15.15	103.65
2-A-50		0.23	0.00	1.40	4.44	19.32	23.76	43.19	8.22	100.57
3-A-50		0.23	5.83	1.23	6.60	26.69	19.27	36.86	9.99	106.69
4-A-50		0.23	16.21	2.08	5.94	30.52	30.39	41.37	6.38	133.12
1-A-100		0.46	7.22	4.30	2.43	20.39	18.27	33.06	7.93	94.06
2-A-100		0.46	0.00	1.40	4.44	19.32	23.76	43.19	8.22	100.80
4-A-100		0.46	16.21	2.08	5.94	30.52	30.39	41.37	6.38	133.35
5-A-100		0.46	1.65	1.96	4.98	33.34	20.18	51.50	7.86	121.94
1-A-200		0.93	7.22	4.30	2.43	20.39	18.27	33.06	7.93	94.52
3-A-200		0.93	5.83	1.23	6.60	26.69	19.27	36.86	9.99	107.39
4-A-200		0.93	16.21	2.08	5.94	30.52	30.39	41.37	6.38	133.81
5-A-200		0.93	1.65	1.96	4.98	33.34	20.18	51.50	7.86	122.40
2-A-400		1.86	0.00	1.40	4.44	19.32	23.76	43.19	8.22	102.19
3-A-400		1.86	5.83	1.23	6.60	26.69	19.27	36.86	9.99	108.32
4-A-400		1.86	16.21	2.08	5.94	30.52	30.39	41.37	6.38	134.74
5-A-400		1.86	1.65	1.96	4.98	33.34	20.18	51.50	7.86	123.33

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

**Appendix M - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level N retention.**

Plot ID	Standing Biomass	Wood Ash	DWD (Below)	N Retention ( $\text{kg}\cdot\text{ha}^{-1}$ )				Organic Horizons	Mineral Soil 0-30 cm	Mineral Soil 31-100 cm	Total Ecosystem
				DWD (Above)	New Residue Slash	Stump and Coarse Root					
1-C	237.73		0.00	42.99		26.68	627.11	1492.55	511.83	2938.90	
2-C	245.19		0.00	6.71		26.63	499.38	1078.25	378.38	2234.55	
3-C	268.68		0.00	8.55		29.48	617.41	1655.60	308.37	2888.09	
4-C	200.32		10.07	3.84		20.25	1090.22	1996.47	670.56	3991.73	
5-C	246.59		67.13	12.00		28.77	1085.81	1762.03	510.51	3712.84	
1-T			112.83	9.82	76.43	30.76	676.08	2408.50	472.90	3787.33	
2-T			95.89	0.89	105.58	20.32	608.70	2147.48	224.19	3203.05	
3-T			57.94	24.05	126.69	25.96	781.85	1896.76	214.46	3127.71	
4-T			137.10	1.37	91.05	19.44	1036.72	2207.05	1020.18	4512.91	
5-T			23.35	14.91	99.79	27.67	544.01	3914.57	759.16	5383.46	
1-F			24.07	29.38	19.22	26.80	696.98	1349.94	466.81	2613.20	
2-F			0.00	11.25	25.02	22.13	694.12	1928.11	719.41	3400.03	
3-F			49.37	7.57	35.84	30.56	620.75	1690.95	251.81	2686.85	
4-F			134.83	13.31	34.04	34.94	961.02	2223.82	266.48	3668.45	
5-F			13.99	11.72	41.46	38.17	540.57	2542.73	408.42	3597.06	
1-S			0.00	52.38	13.09	1.67	737.15	645.07	243.58	1692.94	
2-S			0.00	10.78	12.76	0.55	791.06	1532.60	632.76	2980.51	
3-S			41.09	6.59	30.19	0.65	585.46	2375.19	304.87	3344.05	
4-S			86.09	2.72	13.86	0.41	951.82	2328.93	824.58	4208.40	
5-S			49.60	3.20	30.50	0.41	548.18	1778.73	315.17	2725.79	
1-B								1130.34	298.81	1429.15	
2-B								1649.28	197.21	1846.49	
3-B								2453.30	285.20	2738.50	
4-B								2562.32	350.07	2912.38	
5-B								2971.58	356.27	3327.85	
1-L-T			0.00	36.07	100.00	22.68	80.77	544.02	26.04	809.57	
2-L-T			0.00	7.74	155.32	14.24	154.35	722.01	232.72	1286.37	
3-L-T			0.00	17.21	259.48	19.99	83.88	2045.33	1498.48	3924.37	
4-L-T			0.00	14.84	160.85	29.62	167.85	407.76	368.77	1149.69	
5-L-T			0.00	20.89	190.42	14.17	128.16	1488.15	126.15	1967.93	
1-L-F			0.00	8.98	35.65	26.96	124.11	400.70	26.04	622.42	
2-L-F			2.30	12.97	56.02	16.20	183.21	328.66	179.02	778.38	
3-L-F			0.00	3.42	19.43	20.96	111.58	1969.32	533.41	2658.12	
4-L-F			0.00	9.38	25.53	34.40	100.43	1959.55	519.43	2648.71	
5-L-F			0.00	2.76	42.35	19.30	110.26	1798.46	383.53	2356.65	
1-A-50	0.59		24.07	29.38	19.22	26.80	696.98	1349.94	466.81	2613.79	
2-A-50	0.59		0.00	11.25	25.02	22.13	694.12	1928.11	719.41	3400.62	
3-A-50	0.59		49.37	7.57	35.84	30.56	620.75	1690.95	251.81	2687.44	
4-A-50	0.59		134.83	13.31	34.04	34.94	961.02	2223.82	266.48	3669.04	
1-A-100	1.18		61.15	29.38	19.22	23.35	579.89	1231.04	289.97	2235.17	
2-A-100	1.18		0.00	11.25	25.02	22.13	694.12	1928.11	719.41	3401.20	
4-A-100	1.18		134.83	13.31	34.04	34.94	961.02	2223.82	266.48	3669.62	
5-A-100	1.18		13.99	11.72	41.46	38.17	540.57	2542.73	408.42	3598.24	
1-A-200	2.35		61.15	29.38	19.22	23.35	579.89	1231.04	289.97	2236.34	
3-A-200	2.35		49.37	7.57	35.84	30.56	620.75	1690.95	251.81	2689.21	
4-A-200	2.35		134.83	13.31	34.04	34.94	961.02	2223.82	266.48	3670.80	
5-A-200	2.35		13.99	11.72	41.46	38.17	540.57	2542.73	408.42	3599.41	
2-A-400	4.70		0.00	11.25	25.02	22.13	694.12	1928.11	719.41	3404.73	
3-A-400	4.70		49.37	7.57	35.84	30.56	620.75	1690.95	251.81	2691.56	
4-A-400	4.70		134.83	13.31	34.04	34.94	961.02	2223.82	266.48	3673.15	
5-A-400	4.70		13.99	11.72	41.46	38.17	540.57	2542.73	408.42	3601.76	

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

**Appendix N - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level P retention.**

Plot ID	Standing Biomass	Wood Ash	DWD (Below)	P Retention (kg·ha <sup>-1</sup> )					Mineral Soil 0-30 cm	Mineral Soil 31-100 cm	Total Ecosystem
				DWD (Above)	New Residue Slash	Stump and Coarse Root	Organic Horizons				
1-C	18.20		0.00	2.17		0.92	9.34	39.30	307.59		377.52
2-C	18.78		0.00	0.43		0.92	7.51	46.21	374.17		448.03
3-C	20.50		0.00	0.53		1.01	8.84	19.18	241.77		291.84
4-C	15.35		0.48	0.19		0.70	11.58	74.24	242.10		344.63
5-C	18.83		3.17	0.90		0.99	10.73	44.63	217.51		296.76
1-T			5.33	0.70	4.98	1.06	11.14	22.43	125.59		171.23
2-T			4.53	0.07	9.24	0.70	6.48	31.49	180.12		232.63
3-T			2.74	1.67	10.91	0.89	7.97	22.23	224.59		270.99
4-T			6.48	0.10	8.03	0.67	11.97	91.83	172.25		291.33
5-T			1.10	1.14	8.38	0.95	7.85	45.12	219.75		284.30
1-F			1.14	1.88	1.75	0.92	9.22	35.08	279.47		329.46
2-F			0.00	0.57	2.04	0.76	8.83	68.19	352.25		432.65
3-F			2.33	0.38	3.14	1.05	7.46	16.41	83.24		114.01
4-F			6.34	0.90	3.05	1.20	10.72	27.74	279.08		329.03
5-F			0.66	0.92	3.92	1.31	9.42	54.76	227.99		298.98
1-S			0.00	2.61	1.18	0.07	10.17	83.71	341.64		439.37
2-S			0.00	0.82	0.89	0.02	10.83	37.19	325.99		375.74
3-S			1.94	0.45	2.60	0.03	6.93	66.70	263.08		341.73
4-S			4.07	0.18	1.09	0.02	10.71	24.42	288.17		328.65
5-S			2.34	0.19	2.42	0.02	7.77	69.01	270.03		351.80
1-B								23.72	145.54		169.26
2-B								77.05	212.94		289.99
3-B								72.31	176.47		248.78
4-B								46.27	265.83		312.10
5-B								83.24	245.11		328.35
1-L-T			0.00	2.19	8.65	0.78	1.77	102.66	147.88		263.93
2-L-T			0.00	0.59	13.80	0.49	2.21	84.04	168.46		269.59
3-L-T			0.00	1.37	23.34	0.69	1.30	94.71	174.34		295.74
4-L-T			0.00	0.73	13.99	1.02	1.19	52.74	189.75		259.42
5-L-T			0.00	1.73	17.60	0.49	1.79	87.10	55.07		163.78
1-L-F			0.00	0.71	2.67	0.93	2.14	61.87	170.31		238.62
2-L-F			0.11	0.98	4.01	0.56	2.37	106.84	151.42		266.29
3-L-F			0.00	0.27	1.49	0.72	1.42	73.33	198.92		276.15
4-L-F			0.00	0.61	2.01	1.18	2.25	38.71	180.88		225.65
5-L-F			0.00	0.19	3.37	0.66	1.63	83.83	104.58		194.26
1-A-50		1.32	1.14	1.88	1.75	0.92	9.22	35.08	279.47		330.78
2-A-50		1.32	0.00	0.57	2.04	0.76	8.83	68.19	352.25		433.97
3-A-50		1.32	2.33	0.38	3.14	1.05	7.46	16.41	83.24		115.33
4-A-50		1.32	6.34	0.90	3.05	1.20	10.72	27.74	279.08		330.34
1-A-100		2.63	2.89	1.88	1.75	0.80	8.35	19.02	140.41		177.73
2-A-100		2.63	0.00	0.57	2.04	0.76	8.83	68.19	352.25		435.28
4-A-100		2.63	6.34	0.90	3.05	1.20	10.72	27.74	279.08		331.66
5-A-100		2.63	0.66	0.92	3.92	1.31	9.42	54.76	227.99		301.61
1-A-200		5.26	2.89	1.88	1.75	0.80	8.35	19.02	140.41		180.37
3-A-200		5.26	2.33	0.38	3.14	1.05	7.46	16.41	83.24		119.27
4-A-200		5.26	6.34	0.90	3.05	1.20	10.72	27.74	279.08		334.29
5-A-200		5.26	0.66	0.92	3.92	1.31	9.42	54.76	227.99		304.25
2-A-400		10.53	0.00	0.57	2.04	0.76	8.83	68.19	352.25		443.18
3-A-400		10.53	2.33	0.38	3.14	1.05	7.46	16.41	83.24		124.54
4-A-400		10.53	6.34	0.90	3.05	1.20	10.72	27.74	279.08		339.55
5-A-400		10.53	0.66	0.92	3.92	1.31	9.42	54.76	227.99		309.51

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Appendix O - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level K retention.

Plot ID	Standing Biomass	Wood Ash	DWD (Below)	K Retention (kg·ha <sup>-1</sup> )				Organic Horizons	Mineral Soil 0-30 cm	Mineral Soil 31-100 cm	Total Ecosystem
				DWD (Above)	New Residue Slash	Stump and Coarse Root					
1-C	67.14		0.00	3.00		11.62	39.04	24.89	15.81		161.50
2-C	69.49		0.00	0.97		11.60	40.60	22.02	13.99		158.67
3-C	76.26		0.00	1.17		12.83	57.44	41.32	16.73		205.76
4-C	57.24		0.44	0.22		8.82	55.56	24.36	8.91		155.55
5-C	69.29		2.92	2.66		12.53	61.24	32.68	8.94		190.27
1-T			4.90	1.89	14.98	13.39	55.54	77.04	23.48		191.23
2-T			4.17	0.23	28.06	8.85	32.02	38.28	19.76		131.37
3-T			2.52	4.43	32.02	11.30	49.56	64.29	11.24		175.35
4-T			5.96	0.27	24.42	8.46	60.32	39.47	32.88		171.77
5-T			1.01	3.40	27.09	12.05	43.39	54.37	28.91		170.23
1-F			1.05	4.37	4.41	11.67	41.91	30.94	12.97		107.32
2-F			0.00	0.75	4.58	9.63	47.82	29.01	8.95		100.74
3-F			2.15	0.59	8.02	13.30	50.85	42.52	17.18		134.61
4-F			5.81	2.30	7.75	15.21	52.66	26.59	23.86		134.18
5-F			0.61	2.81	10.23	16.62	51.75	46.79	20.58		149.39
1-S			0.00	3.10	3.34	0.83	55.81	27.99	9.81		100.90
2-S			0.00	2.43	1.42	0.27	55.48	37.73	18.76		116.09
3-S			1.79	1.19	5.96	0.33	40.68	39.40	11.19		100.54
4-S			3.74	0.42	2.72	0.21	59.92	34.59	22.39		123.99
5-S			2.16	0.45	4.90	0.21	52.17	35.39	20.01		115.28
1-B								28.50	7.82		36.32
2-B									28.03		48.26
3-B									36.17		55.85
4-B									25.75		49.20
5-B									35.56		58.36
1-L-T			0.00	4.61	31.12	9.88	13.06	24.71	15.40		98.77
2-L-T			0.00	1.74	44.18	6.20	13.12	23.73	21.35		110.31
3-L-T			0.00	4.26	77.64	8.70	7.84	21.17	19.97		139.58
4-L-T			0.00	1.11	50.81	12.90	10.84	15.78	15.20		106.63
5-L-T			0.00	5.53	54.16	6.17	10.26	20.41	4.69		101.22
1-L-F			0.00	2.20	5.40	11.74	17.32	15.84	8.58		61.08
2-L-F			0.10	2.89	8.44	7.05	16.70	14.08	22.70		71.96
3-L-F			0.00	0.84	2.94	9.13	7.77	34.04	21.13		75.84
4-L-F			0.00	1.54	3.99	14.98	14.78	22.31	16.70		74.29
5-L-F			0.00	0.48	6.90	8.40	10.95	26.63	5.62		58.97
1-A-50		10.46	1.05	4.37	4.41	11.67	41.91	30.94	12.97		117.77
2-A-50		10.46	0.00	0.75	4.58	9.63	47.82	29.01	8.95		111.19
3-A-50		10.46	2.15	0.59	8.02	13.30	50.85	42.52	17.18		145.07
4-A-50		10.46	5.81	2.30	7.75	15.21	52.66	26.59	23.86		144.64
1-A-100		20.91	2.66	4.37	4.41	10.17	43.88	39.25	7.60		133.25
2-A-100		20.91	0.00	0.75	4.58	9.63	47.82	29.01	8.95		121.65
4-A-100		20.91	5.81	2.30	7.75	15.21	52.66	26.59	23.86		155.10
5-A-100		20.91	0.61	2.81	10.23	16.62	51.75	46.79	20.58		170.30
1-A-200		41.83	2.66	4.37	4.41	10.17	43.88	39.25	7.60		154.17
3-A-200		41.83	2.15	0.59	8.02	13.30	50.85	42.52	17.18		176.44
4-A-200		41.83	5.81	2.30	7.75	15.21	52.66	26.59	23.86		176.01
5-A-200		41.83	0.61	2.81	10.23	16.62	51.75	46.79	20.58		191.21
2-A-400		83.65	0.00	0.75	4.58	9.63	47.82	29.01	8.95		184.39
3-A-400		83.65	2.15	0.59	8.02	13.30	50.85	42.52	17.18		218.26
4-A-400		83.65	5.81	2.30	7.75	15.21	52.66	26.59	23.86		217.84
5-A-400		83.65	0.61	2.81	10.23	16.62	51.75	46.79	20.58		233.04

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

## Appendix P - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level Ca retention.

Plot ID	Standing Biomass	Wood Ash	DWD (Below)	Ca Retention ( $\text{kg}\cdot\text{ha}^{-1}$ )				Organic Horizons	Mineral Soil 0-30 cm	Mineral Soil 31-100 cm	Total Ecosystem
				DWD (Above)	New Residue Slash	Stump and Coarse Root					
1-C	114.75		0.00	16.10		24.74	166.42	41.97	103.42		467.40
2-C	118.55		0.00	3.25		24.70	124.77	46.37	102.79		420.44
3-C	131.41		0.00	4.06		27.34	216.26	57.99	109.25		546.32
4-C	97.24		3.30	1.35		18.79	189.52	33.68	62.88		406.76
5-C	119.42		22.02	7.26		26.68	170.96	51.20	66.67		464.22
1-T			37.01	5.48	61.36	28.53	161.10	293.67	60.97		648.14
2-T			31.46	0.59	58.48	18.85	89.77	77.13	95.94		372.22
3-T			19.01	13.19	86.68	24.08	144.67	259.34	53.61		600.58
4-T			44.97	0.78	57.79	18.03	186.00	73.86	105.01		486.44
5-T			7.66	9.11	61.85	25.66	116.64	233.40	115.65		569.97
1-F			7.90	14.43	11.33	24.85	116.82	79.14	147.44		401.91
2-F			0.00	4.09	15.97	20.52	133.10	60.56	61.51		295.76
3-F			16.20	3.05	28.52	28.34	111.41	49.85	63.99		301.36
4-F			44.34	7.06	22.54	32.41	185.70	91.17	113.58		496.80
5-F			4.59	7.38	22.37	35.40	111.53	90.28	98.23		369.78
1-S			0.00	18.47	9.12	1.78	141.64	61.47	63.65		296.13
2-S			0.00	6.53	5.77	0.57	149.19	94.22	98.77		355.06
3-S			13.48	3.56	16.48	0.70	102.28	74.41	52.77		263.67
4-S			28.24	1.37	8.39	0.44	168.11	97.21	111.19		414.95
5-S			16.27	1.57	16.02	0.44	121.36	79.39	86.90		321.96
1-B								37.90	26.30		64.21
2-B									91.07	83.76	174.82
3-B									97.58	85.96	183.54
4-B									62.81	106.00	168.81
5-B									87.01	103.52	190.54
1-L-T			0.00	16.51	81.55	21.04	20.35	26.53	37.01		202.98
2-L-T			0.00	4.72	120.03	13.20	29.10	31.46	86.63		285.14
3-L-T			0.00	11.05	208.04	18.54	18.93	22.96	64.03		343.55
4-L-T			0.00	5.92	139.12	27.48	32.15	25.31	90.02		320.00
5-L-T			0.00	13.92	151.08	13.14	26.40	33.38	18.71		256.63
1-L-F			0.00	5.73	22.78	25.00	27.52	17.97	30.55		129.55
2-L-F			0.75	7.84	39.52	15.03	39.79	23.30	87.32		213.54
3-L-F			0.00	2.18	11.81	19.44	28.86	46.84	70.57		179.70
4-L-F			0.00	4.92	14.43	31.90	29.36	42.36	97.24		220.22
5-L-F			0.00	1.47	24.42	17.90	26.44	23.28	21.42		114.93
1-A-50	50.58	7.90	14.43	11.33	24.85	116.82	79.14	147.44			452.48
2-A-50	50.58	0.00	4.09	15.97	20.52	133.10	60.56	61.51			346.34
3-A-50	50.58	16.20	3.05	28.52	28.34	111.41	49.85	63.99			351.93
4-A-50	50.58	44.34	7.06	22.54	32.41	185.70	91.17	113.58			547.37
1-A-100	101.15	20.06	14.43	11.33	21.66	152.17	56.95	25.44			403.18
2-A-100	101.15	0.00	4.09	15.97	20.52	133.10	60.56	61.51			396.91
4-A-100	101.15	44.34	7.06	22.54	32.41	185.70	91.17	113.58			597.95
5-A-100	101.15	4.59	7.38	22.37	35.40	111.53	90.28	98.23			470.93
1-A-200	202.30	20.06	14.43	11.33	21.66	152.17	56.95	25.44			504.33
3-A-200	202.30	16.20	3.05	28.52	28.34	111.41	49.85	63.99			503.66
4-A-200	202.30	44.34	7.06	22.54	32.41	185.70	91.17	113.58			699.10
5-A-200	202.30	4.59	7.38	22.37	35.40	111.53	90.28	98.23			572.08
2-A-400	404.60	0.00	4.09	15.97	20.52	133.10	60.56	61.51			700.37
3-A-400	404.60	16.20	3.05	28.52	28.34	111.41	49.85	63.99			705.96
4-A-400	404.60	44.34	7.06	22.54	32.41	185.70	91.17	113.58			901.40
5-A-400	404.60	4.59	7.38	22.37	35.40	111.53	90.28	98.23			774.38

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

**Appendix Q - Island Lake Biomass Harvest Research and Demonstration Area post-harvest plot level Mg retention.**

Plot ID	Standing Biomass	Wood Ash	DWD (Below)	Mg Retention ( $\text{kg}\cdot\text{ha}^{-1}$ )					Mineral Soil 0-30 cm	Mineral Soil 31-100 cm	Total Ecosystem
				DWD (Above)	New Residue Slash	Stump and Coarse Root	Organic Horizons				
1-C	25.35		0.00	2.54		5.16	22.06	7.69	10.53		73.34
2-C	26.23		0.00	0.56		5.15	15.79	6.48	9.37		63.58
3-C	28.93		0.00	0.69		5.70	23.53	10.91	10.72		80.47
4-C	21.58		0.54	0.22		3.92	23.76	8.59	9.76		68.37
5-C	26.25		3.59	1.27		5.56	21.65	10.42	10.48		79.22
1-T			6.03	0.96	8.67	5.95	21.97	31.13	10.71		85.42
2-T			5.13	0.11	11.23	3.93	12.97	13.15	13.26		59.77
3-T			3.10	2.27	14.22	5.02	18.71	25.47	11.63		80.42
4-T			7.33	0.13	10.42	3.76	23.80	15.22	18.02		78.68
5-T			1.25	1.62	11.45	5.35	16.11	19.85	17.96		73.60
1-F			1.29	2.49	1.65	5.18	14.98	9.24	17.39		52.22
2-F			0.00	0.68	2.43	4.28	17.14	10.44	6.21		41.18
3-F			2.64	0.43	3.59	5.91	16.89	11.16	11.10		51.72
4-F			7.13	1.22	3.48	6.76	21.62	13.19	18.84		72.23
5-F			0.75	1.32	4.16	7.38	16.48	12.55	16.44		59.08
1-S			0.00	3.04	1.47	0.37	19.16	9.88	6.04		39.97
2-S			0.00	1.17	0.87	0.12	21.01	14.65	11.37		49.20
3-S			2.20	0.62	2.78	0.15	15.02	14.92	10.39		46.07
4-S			4.60	0.23	1.45	0.09	23.19	25.46	25.82		80.84
5-S			2.65	0.25	2.46	0.09	17.94	14.57	15.55		53.50
1-B								8.98	3.85		12.83
2-B									12.90		25.66
3-B									15.99		28.41
4-B									13.67		32.26
5-B									21.55		42.52
1-L-T			0.00	2.85	12.85	4.39	2.92	5.40	5.08		33.48
2-L-T			0.00	0.83	17.99	2.75	3.87	8.39	12.34		46.18
3-L-T			0.00	1.97	32.13	3.87	2.41	8.20	12.44		61.01
4-L-T			0.00	0.81	22.02	5.73	3.56	7.08	14.93		54.12
5-L-T			0.00	2.52	22.11	2.74	3.30	9.76	3.67		44.10
1-L-F			0.00	1.02	2.51	5.21	4.04	5.70	6.87		25.35
2-L-F			0.12	1.38	4.17	3.13	4.34	7.35	11.73		32.22
3-L-F			0.00	0.39	1.34	4.05	2.86	10.49	12.69		31.83
4-L-F			0.00	0.80	1.70	6.65	3.83	8.86	15.80		37.64
5-L-F			0.00	0.25	3.04	3.73	3.54	10.35	5.04		25.94
1-A-50	5.12	1.29	2.49	1.65	5.18	14.98	9.24	17.39			57.34
2-A-50	5.12	0.00	0.68	2.43	4.28	17.14	10.44	6.21			46.31
3-A-50	5.12	2.64	0.43	3.59	5.91	16.89	11.16	11.10			56.84
4-A-50	5.12	7.13	1.22	3.48	6.76	21.62	13.19	18.84			77.36
1-A-100	10.24	3.27	2.49	1.65	4.52	19.05	13.45	3.73			58.40
2-A-100	10.24	0.00	0.68	2.43	4.28	17.14	10.44	6.21			51.43
4-A-100	10.24	7.13	1.22	3.48	6.76	21.62	13.19	18.84			82.48
5-A-100	10.24	0.75	1.32	4.16	7.38	16.48	12.55	16.44			69.32
1-A-200	20.49	3.27	2.49	1.65	4.52	19.05	13.45	3.73			68.64
3-A-200	20.49	2.64	0.43	3.59	5.91	16.89	11.16	11.10			72.21
4-A-200	20.49	7.13	1.22	3.48	6.76	21.62	13.19	18.84			92.72
5-A-200	20.49	0.75	1.32	4.16	7.38	16.48	12.55	16.44			79.56
2-A-400	40.98	0.00	0.68	2.43	4.28	17.14	10.44	6.21			82.16
3-A-400	40.98	2.64	0.43	3.59	5.91	16.89	11.16	11.10			92.70
4-A-400	40.98	7.13	1.22	3.48	6.76	21.62	13.19	18.84			113.21
5-A-400	40.98	0.75	1.32	4.16	7.38	16.48	12.55	16.44			100.05

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A

**Appendix R - Island Lake Biomass Harvest Research and Demonstration Area**  
**post-harvest plot level C and nutrient removals.**

Plot ID	C ( $Mg \cdot ha^{-1}$ ) and nutrient ( $kg \cdot ha^{-1}$ ) removals					
	C	N	P	K	Ca	Mg
1-T	41.65	224.18	18.05	70.43	84.00	23.55
2-T	23.91	98.91	6.38	30.66	42.29	11.03
3-T	31.61	130.49	8.77	41.52	39.12	13.61
4-T	23.96	97.49	6.22	29.69	37.60	10.35
5-T	31.32	140.47	9.86	40.65	56.37	14.38
1-F	49.51	227.39	17.08	64.93	113.31	25.14
2-F	40.56	185.97	14.10	55.66	87.25	20.38
3-F	57.60	240.00	17.47	71.00	115.08	27.22
4-F	64.37	275.94	20.20	80.54	136.72	30.74
5-F	61.01	286.75	21.28	81.77	133.51	30.41
1-S	80.26	294.25	20.48	86.14	151.51	33.37
2-S	85.39	344.93	22.52	93.77	166.91	36.23
3-S	55.95	222.11	13.96	61.24	102.00	23.09
4-S	86.63	338.46	22.52	94.73	165.59	36.44
5-S	64.90	239.63	16.04	70.98	118.10	26.85
1-B	102.27	1000.84	20.75	136.33	332.71	57.64
2-B	114.26	1243.26	25.04	142.05	281.39	53.03
3-B	100.16	946.54	19.73	120.20	249.57	47.96
4-B	103.48	982.43	14.73	136.28	271.99	51.59
5-B	122.13	1422.67	22.84	153.38	347.10	60.10
1-L-T	5.96	71.80	5.45	19.18	8.92	4.28
2-L-T	-8.13	-35.92	-4.02	-8.91	-56.38	-5.92
3-L-T	-29.53	-101.18	-10.25	-31.05	-125.99	-16.42
4-L-T	-0.67	74.75	5.40	18.50	-15.64	1.50
5-L-T	-11.21	-63.22	-7.18	-16.30	-82.99	-9.13
1-L-F	30.52	149.55	12.59	48.70	73.67	17.28
2-L-F	20.79	86.08	7.66	33.69	35.95	8.95
3-L-F	31.22	149.47	12.33	46.88	78.29	10.60
4-L-F	45.22	228.97	18.98	70.56	117.69	9.92
5-L-F	23.07	107.65	9.11	37.11	51.60	35.19
1-A-50	49.27	226.81	15.77	54.47	62.73	20.02
2-A-50	40.33	185.38	12.78	45.20	36.68	15.25
3-A-50	57.37	239.41	16.16	60.54	64.50	22.10
4-A-50	64.14	275.35	18.89	70.09	86.14	25.62
1-A-100	45.66	194.83	12.28	39.39	-6.27	12.07
2-A-100	40.10	184.80	11.47	34.75	-13.90	10.13
4-A-100	63.91	274.76	17.57	59.63	35.57	20.50
5-A-100	60.55	285.58	18.64	60.85	32.36	20.16
1-A-200	45.20	193.65	9.64	18.48	-107.42	1.82
3-A-200	56.67	237.65	12.21	29.17	-87.22	6.73
4-A-200	63.45	273.58	14.94	38.72	-65.58	10.26
5-A-200	60.08	284.40	16.01	39.94	-68.79	9.92
2-A-400	38.70	181.27	3.57	-27.99	-317.35	-20.60
3-A-400	55.74	235.30	6.94	-12.66	-289.52	-13.76
4-A-400	62.52	271.23	9.68	-3.11	-267.89	-10.23
5-A-400	59.16	282.05	10.75	-1.89	-271.09	-10.57

Notes:

\* Plot ID represents pre-harvest plot ID from Appendix A