Initial Data and Observations Obtained From the Cominco Port Site Herbaceous Evaluation Plots

Presented to:

Cominco Alaska

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Division of Agriculture

Alaska Plant Materials Center

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Introduction

The North Latitude Revegetation and Seed Project at the Alaska Plant Materials Center (PMC), in the Alaska Department of Natural Resources, Division of Agriculture, is responsible for developing new plant varieties (cultivars) for land reclamation, habitat enhancement, and erosion control. In addition to the development of new plant cultivars, this project also is responsible for developing techniques for erosion control and reclamation. In order to accomplish these goals, it is beneficial for the PMC to work with industry. Resource extraction industries usually have disturbances on which these new varieties or techniques can be tested.

In the spring of 1987, Cominco Alaska provided the North Latitude Revegetation and Seed Project with two sites at the Red Dog Mine and Port Site for advance testing of potential and existing reclamation grasses.

Purpose

In order for new varieties to be released for commercial production, they must be tested throughout a region. The PMC required arctic test sites to complement the test sites elsewhere in Alaska.

Cominco Alaska needed answers to two questions; 1) what species and varieties would perform best in future Red Dog Mine revegetation programs; and, 2) how successful is dormant seeding in the arctic?

History & Site Description:

With the previous questions in mind, a site was selected at the Port Site. This site was simply a sandy-gravel beach area common to the region. The second site was at the original camp site fuel bladder containment area. Mine spoil was not yet available for trials.

On July 6, 1987, one plot (Figure 1), was established at the Port Site area.

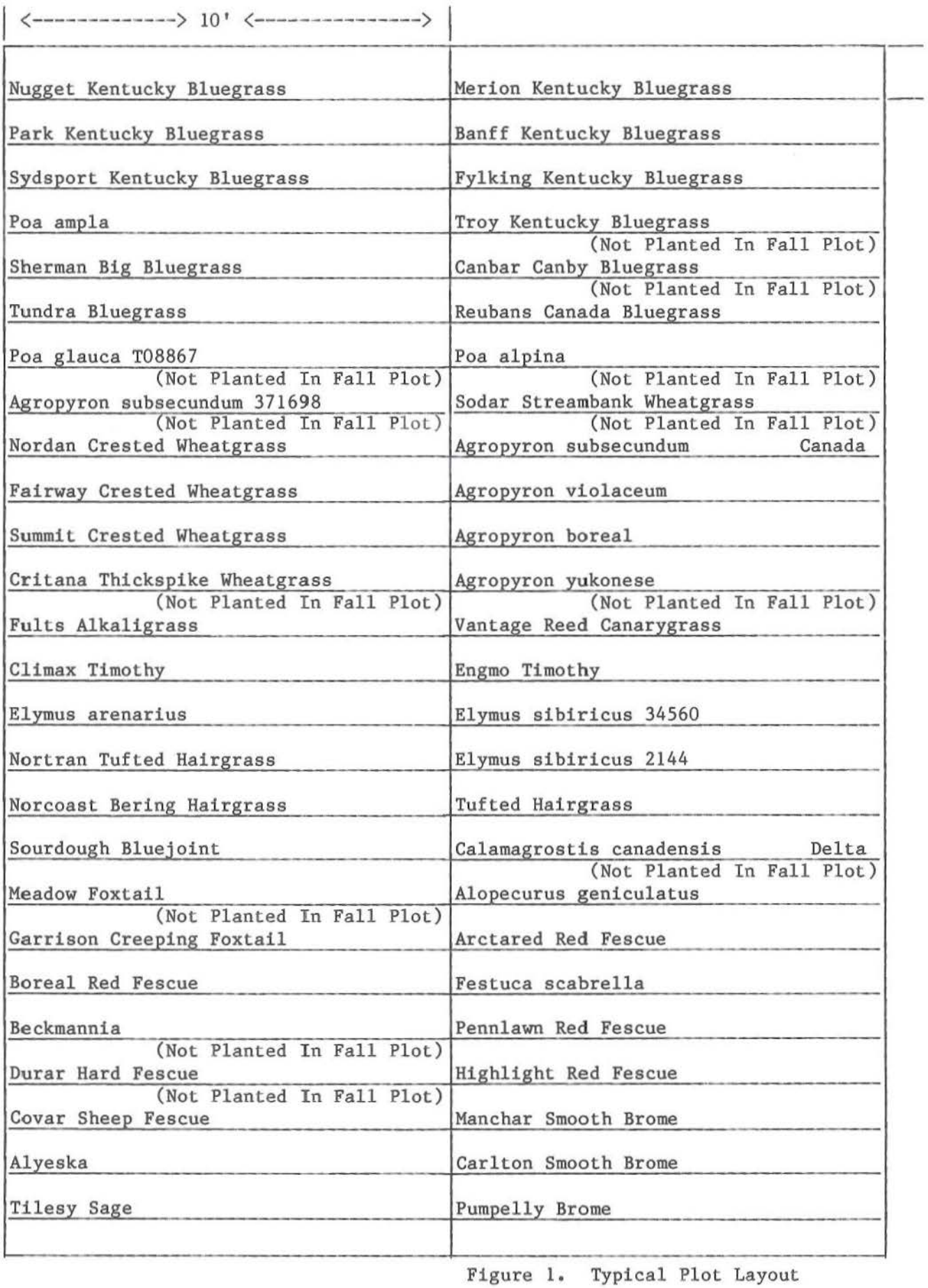
A dormant plot was seeded at the Camp Area on September 8, 1987. Because of space limitations, the plot dimensions were slightly reduced and 12 accessions were dropped from the plot. The accessions that were eliminated are species that have failed elsewhere in Alaska, and should not compromise the value of the information obtained from these plots.

Methods:

Each plot (Figure 1), was hand-seeded with pre-measured amounts of seed. The seeding rates of each block were approximately 40 pounds per acre. Following seeding, the entire plots were fertilized with 20-20-10 fertilizer at a rate of 450 pounds per acre (100 pounds actual nitrogen, 100 pounds actual phosphorus, and 50 pounds actual potash).

After each plot was seeded and fertilized, the area was raked by hand to incorporate the seed and fertilizer.

Typical Plot Layout



Nugget Kentucky Bluegrass	Merion Kentucky Bluegrass
Park Kentucky Bluegrass	Banff Kentucky Bluegrass
Sydsport Kentucky Bluegrass	Fylking Kentucky Bluegrass
Poa ampla	Troy Kentucky Bluegrass
Sherman Big Bluegrass	(Not Planted In Fall Plot) Canbar Canby Bluegrass
Tundra Bluegrass	(Not Planted In Fall Plot) Reubans Canada Bluegrass
Poa glauca T08867	Poa alpina
(Not Planted In Fall Plot) Agropyron subsecundum 371698	(Not Planted In Fall Plot) Sodar Streambank Wheatgrass
(Not Planted In Fall Plot) Nordan Crested Wheatgrass	(Not Planted In Fall Plot) Agropyron subsecundum Canada
Fairway Crested Wheatgrass	Agropyron violaceum
Summit Crested Wheatgrass	Agropyron boreal
Critana Thickspike Wheatgrass	Agropyron yukonese
(Not Planted In Fall Plot) Fults Alkaligrass	(Not Planted In Fall Plot) Vantage Reed Canarygrass
Climax Timothy	Engmo Timothy
Elymus arenarius	Elymus sibiricus 34560
Nortran Tufted Hairgrass	Elymus sibiricus 2144
Norcoast Bering Hairgrass	Tufted Hairgrass
Sourdough Bluejoint	Calamagrostis canadensis Delta
Meadow Foxtail	(Not Planted In Fall Plot) Alopecurus geniculatus
(Not Planted In Fall Plot) Garrison Creeping Foxtail	Arctared Red Fescue
Boreal Red Fescue	Festuca scabrella
Beckmannia	Pennlawn Red Fescue
(Not Planted In Fall Plot) Durar Hard Fescue	Highlight Red Fescue
(Not Planted In Fall Plot) Covar Sheep Fescue	Manchar Smooth Brome
Alyeska	Carlton Smooth Brome
Tilesy Sage	Pumpelly Brome

Figure 1. Typical Plot Layout

The advanced evaluation plots are evaluated at least once a year. The accessions are rated for vigor, percent stand, and numerous other hardiness and disease-resistant, related characteristics. However, we have found that vigor and percent stand give a reliable indication of how the different accessions compare with each other. The next page is an example of the evaluation sheets that will be presented in this report (Figure 2). The following numbers, followed by brief explanations, correspond to numbers on the example evaluation sheet:

1. Location and title of evaluation plot.

2. Number of evaluation blocks. This number may range from 1 to 3 blocks.

3. Year of Record--the year that evaluation data was collected.

4. Vigor--this number can range from 1 to 9. One is best and 9 is the worst rating. If possible, this rating is determined by comparison with other accessions of the same species. The rating is based on color, height, health, flowering and/or seed production and on the evaluator's knowledge of the plant and its expected performance. If more than one block is planted, this number will be an average of the ratings for each block.

5. Percent Stand--this number represents the percentage of the ground that is covered by the accession.

1	3									
	2 # of Blocks	4	5							
1	6									1
2	'Merion' Kentucky Bluegrass									2
3	'Banff' Kentucky Bluegrass									3
4	'Park' Kentucky Bluegrass									4
5	etc.									5
6										6
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Figure 2. Sample Advanced Evaluation Page.

Only live plant material is included, litter from previous years' growth and other species are not included. If more than one block is planted, this number will be an average of the ratings for each block.

6. The accession that is being rated. The accession is identified by its varietal and common name or its common name and its accession number.

Results:

This report is intended to be informative, describing the evaluation process during the last year. While the information contained in this report is interesting, it is premature to draw any conclusion at this time. Conclusions will be included in the 1990 report.

The initial evaluation results can be found on Figure 3. To interpret this data, please refer to the methods section which describes the numerical ratings.

Only 'Garrison' Creeping Foxtail, 'Sourdough' Bluejoint, Siberian Wildrye 2144, Yukon Wheatgrass and the two accessions of Bearded Wheatgrass failed to produce measurable stands after the first growing season.

No data was reported for the dormant seeded plot at the Mine Camp Site as this plot was planted in September 1987.

Port Site Evaluation Plot		09-08-87								
	One Block Planted 07-06-87									
1	'Nugget' Kentucky Bluegrass	3	30							1
2	'Merion' Kentucky Bluegrass	7	10							2
3	'Banff' Kentucky Bluegrass	3	25							3
4	'Park' Kentucky Bluegrass	1	15							4
5	'Sydsport' Kentucky Bluegrass	7	5							5
6	'Fylking' Kentucky Bluegrass	1	30							6
7	'Troy' Kentucky Bluegrass	7	10							7
8	Big Bluegrass 387931	5	10							8
9	'Sherman' Big Bluegrass	3	20							9
10	'Canbar' Canby Bluegrass	3	40							10
11	'Reubans' Canada Bluegrass	5	30							11
12	'Tundra' glaucus Bluegrass	1	30							12
13	Glaucus Bluegrass T08867	1	25							13
14	'Gruening' Alpine Bluegrass	1	90							14
15	'Sodar' Streambank wheatgrass	1	25							15
16	Bearded wheatgrass 371698	-	-							16
17	Bearded wheatgrass 236693	-	-							17
18	'Nordan' Crested wheatgrass	1	15							18
19	'Fairway' Crested wheatgrass	7	10							19
20	'Summit' Crested wheatgrass	5	10							20
21	Violet wheatgrass T12050	3	20							21
22	Boreal wheatgrass T12048	1	40							22
23	Yukon wheatgrass T12051	-	-							23
24	'Critana' Thickspike wheatgrass	5	20							24
25	'Fults' Alkaligrass	1	20							25
26	'Vantage' Reed Canarygrass	1	10							26
27	'Engmo' timothy	5	5							27
28	'Climax' timothy	1	25							28
29	Beach wildrye 345978	1	5							29
30	Siberian wildrye 345600	7	10							30
31	Siberian wildrye 2144	-	-							31
32	'Nortran' Tufted Hairgrass	7	5							32
33	'Norcoast' Bering hairgrass	5	5							33
34	Tufted hairgrass 372690	1	20							34
35	Bluejoint	3	10							35
36	'Sourdough Bluejoint	-	-							36
37	Meadow foxtail	1	50							37
38	Geniculated foxtail 314565	5	25							38
39	Garrison Creeping foxtail	-	-							39
40	'Arctared' Creeping red fescue	5	30							40
41	'Boreal' Creeping red fescue	1	60							41
42	'Pennlawn' Creeping red fescue	3	50							42
43	Rough fescue 236849	1	80							43
44	American Sloughgrass T12053	5	20							44
45	'Durar' Hard fescue	7	10							45
46	'Highlight' Sheep fescue	3	30							46
47	'Covar' Sheep fescue	3	75							47
48	'Manchar' Smooth Brome	9	10							48
49	'Carlton' Smooth Brome	7	10							49
50	'Alyeska' Polar grass	7	10							50
51	Tilesy Sage T12052	1	100							51
52										52

Figure 3.