

**Flat Lake, Highway 103,  
HADD Compensation Project  
(DFO HADD Authorization 03-G8-068):  
2009 Vegetation Monitoring:  
September 11, 2009 (Year 4)**

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# HISTORY:

## Portion of Flat Lake In-filled in 2005

- Large rock then common fill used to in-fill
  - 1:1 slope to 2:1 slope
- Slope topped with stockpiled grubblings
- Clumps of salvaged vegetation nestled into the grubblings and pressed into place with excavator
- NS Highway Seed Mix spread by hand
- Bare soil covered with hay by hand
- Watered after installation with pumped lake water

# Purpose of Vegetating Slope

- To protect Flat Lake from erosion and soil loss;
- To protect water quality of Flat Lake; and
- To provide native riparian habitat and a continuing food source for aquatic biota.

# Yearly Monitoring

- Erosion or soil loss;
- Replacement/restoration of native shrub and tree cover; and
- Note species occupying most of vegetative cover.

# Monitoring Technique

- Stakes placed at top of slope, every 20 m;
- Visual monitoring for soil loss or erosion;
- Photo monitoring: photo from top at stake, towards water;
- Vegetative cover estimated by percent of slope vegetated vs. bare soil (or hay only);
- Percent of grasses, wildflowers and shrubs and trees estimated within an estimated 2 – 3 metre band from stake to water;
- Other photos taken as examples of vegetative cover; and
- Photos from east to west and west to east and from far side of lake.

# GPS Coordinates for Each Stake

Stake		N		W	
1	44 <sup>0</sup>	42.078'	063 <sup>0</sup>	51.073'	Photos
2	44 <sup>0</sup>	42.080'	063 <sup>0</sup>	51.087'	
2b	44 <sup>0</sup>	42.080'	063 <sup>0</sup>	51.088'	Photos
3	44 <sup>0</sup>	42.082'	063 <sup>0</sup>	51.103'	Photos
4	44 <sup>0</sup>	42.084'	063 <sup>0</sup>	51.118'	Photos
5	44 <sup>0</sup>	42.085'	063 <sup>0</sup>	51.133'	Photos
6	44 <sup>0</sup>	42.086'	063 <sup>0</sup>	51.145'	Photos
7	44 <sup>0</sup>	42.088'	063 <sup>0</sup>	51.163'	Photos
8	44 <sup>0</sup>	42.090'	063 <sup>0</sup>	51.176'	Photos



**East to West  
September 11, 2009**



# Stake 1: 100% Cover

- 30% turf species
- 70% wildflowers including:
  - Goldenrods
  - Evening Primrose
  - Pearly Everlasting

Sweetfern  
coming in.

## Stake 2: 100% Cover

- 30% Grass and Wildflowers (e.g. Goldenrods, Asters)
- 70% Trees and Shrubs, including:
  - Meadowsweet
  - Alder
  - Blackberry
  - Bush Honeysuckle
  - Red Maple
  - Sweetfern
  - Wild Rose
  - Birch.





## Stake 3: 100% Cover

- 5% Grasses
- 35% Wildflowers including
  - Goldenrod spp.
  - Aster spp.
  - Pearly Everlasting
- 60% Shrubs and Trees
  - Birch
  - Sweetfern
  - Raspberry
  - Wild Rose
  - Red Maple
  - Willow
  - Alder.

## Stake 4: 100% Cover



- 10% Grasses and Wildflowers (e.g. Goldenrods, Asters)
- 90% Shrubs and Trees, including:
  - Birch
  - Sweetfern
  - Bush Honeysuckle
  - Alders
  - Raspberry
  - Wild Cherry
  - Meadowsweet
  - Wild Strawberry.

## Stake 5: 100% Cover



- 5% Grasses and Wildflowers
- 95% Shrubs and Trees, including:
  - 60% Alder
  - Meadowsweet
  - Willow
  - Blackberry
  - Bush Honeysuckle
  - Raspberry.

# From Stake 5 Towards West



# From Stake 5 Towards East



# Stake 6: 100% Cover



- 10% Grass
- 20% Wildflowers, including:
  - 3 spp. of Goldenrods
  - Aster spp.
  - Pearly Everlasting
- 70% Shrubs and Trees, including:
  - Meadowsweet
  - Alder
  - Black Huckleberry
  - Black Chokeberry
  - Bracken Fern.

# Stake 6: Community



# Stake 7: 100% Cover



- 5% Grass
- 10% Wildflowers, including:
  - Goldenrod spp.
  - Pearly Everlasting
  - Aster spp.
- 85% Shrubs and Trees, including:
  - Wild Raisin
  - Raspberry
  - Alder
  - Red Maple
  - Birch
  - Bush Honeysuckle
  - Pin Cherry
  - Blackberry.

# Stake 8: 100% Cover



- 5% Grasses and Wildflowers, including:
  - Goldenrod spp.
  - Aster spp.
  - Narrow Leaf Goldenrod
- 95% Shrubs and Trees, including:
  - Mostly Wild Rose
  - Bracken Fern
  - Black Huckleberry
  - Pine – to right
  - Birch
  - Raspberry
  - Sweetfern
  - Pin Cherry
  - Meadowsweet.

# West to East

## From Stake 8



# From Toe of Slope at Stake 8



Red Elderberry at toe of slope

# View of Slope from Across Lake



# **SUMMARY**

- **Slope Vegetation is Successfully Protecting Lake From Surface Soil Erosion**
  - No indication of soil loss to lake or slope failure.
- **100% Vegetation Cover**
  - Grass has been replaced by native wildflowers and increasingly by shrubs and trees.
- **Vegetation and Soil (from Grubbings) is Successfully Allowing Native Trees and Shrubs to Establish.**
- **Native Species and Ecosystem are Successfully Re-establishing From Transplanted Clumps**
  - Native species have survived and are spreading; and
  - Riparian and forest habitats are re-establishing.