Appendix V6-5L

Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

MAC RESOURCES

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Bearberry (Arctostaphylos alpina)					
Sample ID	CFW2-B-ARCTRUB (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	4.20E-01	2.63E+00	3.91E-02	2.82E-01	2.91E+00	4.65E-01
Antimony	1.00E-03	6.25E-03	1.35E-07	9.72E-07	6.25E-03	1.00E-03
Arsenic	2.00E-03	1.25E-02	6.75E-07	4.86E-06	1.25E-02	2.00E-03
Barium	4.53E-01	2.83E+00	4.05E-06	2.91E-05	2.83E+00	4.53E-01
Beryllium	1.00E-03	6.25E-03	4.45E-07	3.21E-06	6.25E-03	1.00E-03
Bismuth	1.00E-03	6.25E-03	1.35E-07	9.72E-07	6.25E-03	1.00E-03
Cadmium	1.00E-03	6.25E-03	1.35E-07	9.72E-07	6.25E-03	1.00E-03
Calcium	9.70E+01	6.06E+02	4.32E-02	3.11E-01	6.07E+02	9.70E+01
Chromium	1.00E-02	6.25E-02	2.02E-04	1.46E-03	6.40E-02	1.02E-02
Cobalt	1.31E-02	8.19E-02	4.72E-05	3.40E-04	8.22E-02	1.32E-02
Copper	3.96E-01	2.48E+00	1.48E-04	1.07E-03	2.48E+00	3.96E-01
Iron	1.65E+00	1.03E+01	6.61E-02	4.76E-01	1.08E+01	1.73E+00
Lead	2.00E-03	1.25E-02	8.10E-07	5.83E-06	1.25E-02	2.00E-03
Magnesium	9.90E+01	6.19E+02	3.10E-02	2.23E-01	6.19E+02	9.90E+01
Manganese	7.11E-01	4.44E+00	1.26E-03	9.04E-03	4.45E+00	7.12E-01
Mercury	5.00E-04	3.13E-03	1.35E-08	9.72E-08	3.13E-03	5.00E-04
Molybdenum	1.47E-02	9.19E-02	6.75E-07	4.86E-06	9.19E-02	1.47E-02
Nickel	3.75E-01	2.34E+00	9.72E-05	7.00E-04	2.34E+00	3.75E-01
Phosphorus	1.46E+02	9.13E+02	2.97E-04	2.14E-03	9.13E+02	1.46E+02
Potassium	1.43E+03	8.94E+03	1.35E-04	9.72E-04	8.94E+03	1.43E+03
Selenium	1.00E-02	6.25E-02	6.75E-07	4.86E-06	6.25E-02	1.00E-02
Silver	5.00E-04	3.13E-03	1.35E-07	9.72E-07	3.13E-03	5.00E-04
Sodium	1.00E+02	6.25E+02	3.37E-04	2.43E-03	6.25E+02	1.00E+02
Strontium	2.83E-01	1.77E+00	1.89E-05	1.36E-04	1.77E+00	2.83E-01
Thallium	2.00E-04	1.25E-03	1.35E-07	9.72E-07	1.25E-03	2.00E-04
Tin	2.00E-03	1.25E-02	2.70E-06	1.94E-05	1.25E-02	2.00E-03
Titanium	5.00E-03	3.13E-02	2.97E-03	2.14E-02	5.26E-02	8.42E-03
Uranium	2.00E-04	1.25E-03	1.35E-07	9.72E-07	1.25E-03	2.00E-04
Vanadium	2.00E-03	1.25E-02	1.35E-04	9.72E-04	1.35E-02	2.16E-03
Zinc	1.79E+00	1.12E+01	7.96E-05	5.73E-04	1.12E+01	1.79E+00

Species	Bearberry (Arctostaphylos alpina)					
Sample ID	CFW1 ARTOSTAPHYLOS ALPINA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	6.40E-01	4.60E+00	2.83E-01	2.04E+00	6.64E+00	9.24E-01
Antimony	1.00E-03	7.19E-03	9.77E-07	7.04E-06	7.20E-03	1.00E-03
Arsenic	2.00E-03	1.44E-02	4.89E-06	3.52E-05	1.44E-02	2.00E-03
Barium	1.73E+00	1.24E+01	2.93E-05	2.11E-04	1.24E+01	1.73E+00
Beryllium	1.00E-03	7.19E-03	3.23E-06	2.32E-05	7.22E-03	1.00E-03
Bismuth	1.00E-03	7.19E-03	9.77E-07	7.04E-06	7.20E-03	1.00E-03
Cadmium	1.00E-03	7.19E-03	9.77E-07	7.04E-06	7.20E-03	1.00E-03
Calcium	1.63E+02	1.17E+03	3.13E-01	2.25E+00	1.17E+03	1.63E+02
Chromium	1.16E+01	8.35E+01	1.47E-03	1.06E-02	8.35E+01	1.16E+01
Cobalt	8.87E-02	6.38E-01	3.42E-04	2.46E-03	6.41E-01	8.90E-02
Copper	9.47E-01	6.81E+00	1.08E-03	7.74E-03	6.82E+00	9.48E-01
Iron	5.51E+01	3.96E+02	4.79E-01	3.45E+00	4.00E+02	5.56E+01
Lead	2.00E-03	1.44E-02	5.86E-06	4.22E-05	1.44E-02	2.01E-03
Magnesium	8.87E+01	6.38E+02	2.25E-01	1.62E+00	6.40E+02	8.89E+01
Manganese	1.99E+00	1.43E+01	9.09E-03	6.54E-02	1.44E+01	2.00E+00
Mercury	5.00E-04	3.60E-03	9.77E-08	7.04E-07	3.60E-03	5.00E-04
Molybdenum	2.73E-01	1.96E+00	4.89E-06	3.52E-05	1.96E+00	2.73E-01
Nickel	6.40E+00	4.60E+01	7.04E-04	5.07E-03	4.60E+01	6.40E+00
Phosphorus	1.91E+02	1.37E+03	2.15E-03	1.55E-02	1.37E+03	1.91E+02
Potassium	1.17E+03	8.42E+03	9.77E-04	7.04E-03	8.42E+03	1.17E+03
Selenium	1.00E-02	7.19E-02	4.89E-06	3.52E-05	7.20E-02	1.00E-02
Silver	5.00E-04	3.60E-03	9.77E-07	7.04E-06	3.60E-03	5.01E-04
Sodium	1.00E+01	7.19E+01	2.44E-03	1.76E-02	7.20E+01	1.00E+01
Strontium	3.38E-01	2.43E+00	1.37E-04	9.85E-04	2.43E+00	3.38E-01
Thallium	2.00E-04	1.44E-03	9.77E-07	7.04E-06	1.45E-03	2.01E-04
Tin	4.65E-01	3.35E+00	1.95E-05	1.41E-04	3.35E+00	4.65E-01
Titanium	5.00E-03	3.60E-02	2.15E-02	1.55E-01	1.91E-01	2.65E-02
Uranium	2.00E-04	1.44E-03	9.77E-07	7.04E-06	1.45E-03	2.01E-04
Vanadium	4.04E-02	2.91E-01	9.77E-04	7.04E-03	2.98E-01	4.14E-02
Zinc	2.14E+00	1.54E+01	5.77E-04	4.15E-03	1.54E+01	2.14E+00

Species	Bearberry (Arctostaphylos alpina)					
Sample ID	CFW2 ARTOSTAPHYLOS ALPINA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	4.60E-01	2.95E+00	3.91E-02	2.82E-01	3.23E+00	5.04E-01
Antimony	1.00E-03	6.41E-03	1.35E-07	9.72E-07	6.41E-03	1.00E-03
Arsenic	5.10E-03	3.27E-02	6.75E-07	4.86E-06	3.27E-02	5.10E-03
Barium	4.89E-01	3.13E+00	4.05E-06	2.91E-05	3.13E+00	4.89E-01
Beryllium	1.00E-03	6.41E-03	4.45E-07	3.21E-06	6.41E-03	1.00E-03
Bismuth	1.00E-03	6.41E-03	1.35E-07	9.72E-07	6.41E-03	1.00E-03
Cadmium	1.00E-03	6.41E-03	1.35E-07	9.72E-07	6.41E-03	1.00E-03
Calcium	1.12E+02	7.18E+02	4.32E-02	3.11E-01	7.18E+02	1.12E+02
Chromium	1.26E+01	8.08E+01	2.02E-04	1.46E-03	8.08E+01	1.26E+01
Cobalt	8.75E-02	5.61E-01	4.72E-05	3.40E-04	5.61E-01	8.76E-02
Copper	7.75E-01	4.97E+00	1.48E-04	1.07E-03	4.97E+00	7.75E-01
Iron	6.03E+01	3.87E+02	6.61E-02	4.76E-01	3.87E+02	6.04E+01
Lead	5.90E-03	3.78E-02	8.10E-07	5.83E-06	3.78E-02	5.90E-03
Magnesium	8.16E+01	5.23E+02	3.10E-02	2.23E-01	5.23E+02	8.16E+01
Manganese	2.51E+00	1.61E+01	1.26E-03	9.04E-03	1.61E+01	2.51E+00
Mercury	5.00E-04	3.21E-03	1.35E-08	9.72E-08	3.21E-03	5.00E-04
Molybdenum	3.16E-01	2.03E+00	6.75E-07	4.86E-06	2.03E+00	3.16E-01
Nickel	7.06E+00	4.53E+01	9.72E-05	7.00E-04	4.53E+01	7.06E+00
Phosphorus	1.44E+02	9.23E+02	2.97E-04	2.14E-03	9.23E+02	1.44E+02
Potassium	1.39E+03	8.91E+03	1.35E-04	9.72E-04	8.91E+03	1.39E+03
Selenium	1.00E-02	6.41E-02	6.75E-07	4.86E-06	6.41E-02	1.00E-02
Silver	5.00E-04	3.21E-03	1.35E-07	9.72E-07	3.21E-03	5.00E-04
Sodium	1.00E+01	6.41E+01	3.37E-04	2.43E-03	6.41E+01	1.00E+01
Strontium	2.65E-01	1.70E+00	1.89E-05	1.36E-04	1.70E+00	2.65E-01
Thallium	2.00E-04	1.28E-03	1.35E-07	9.72E-07	1.28E-03	2.00E-04
Tin	4.61E-01	2.96E+00	2.70E-06	1.94E-05	2.96E+00	4.61E-01
Titanium	5.00E-03	3.21E-02	2.97E-03	2.14E-02	5.34E-02	8.33E-03
Uranium	2.00E-04	1.28E-03	1.35E-07	9.72E-07	1.28E-03	2.00E-04
Vanadium	4.54E-02	2.91E-01	1.35E-04	9.72E-04	2.92E-01	4.56E-02
Zinc	1.91E+00	1.22E+01	7.96E-05	5.73E-04	1.22E+01	1.91E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Bearberry (Arctostaphylos alpina)						Bearberry (Arctostaphylos alpina)						Bearberry (Arctostaphylos alpina)					
Sample ID	CFW3 ARTOSTAPHYLOS ALPINA (no soil match)						CFW4 ARTOSTAPHYLOS ALPINA (no soil match)						CFW6 ARTOSTAPHYLOS ALPINA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.10E-01	2.97E+00	2.17E-01	1.56E+00	4.53E+00	6.25E-01	2.00E-01	1.27E+00	6.22E-02	4.48E-01	1.72E+00	2.70E-01	9.20E-01	6.22E+00	5.97E-02	4.30E-01	6.65E+00	9.84E-01
Antimony	1.00E-03	7.25E-03	7.48E-07	5.38E-06	7.25E-03	1.00E-03	1.00E-03	6.37E-03	2.14E-07	1.54E-06	6.37E-03	1.00E-03	1.00E-03	6.76E-03	2.06E-07	1.48E-06	6.76E-03	1.00E-03
Arsenic	2.00E-03	1.45E-02	3.74E-06	2.69E-05	1.45E-02	2.00E-03	4.50E-03	2.87E-02	1.07E-06	7.72E-06	2.87E-02	4.50E-03	2.00E-03	1.35E-02	1.03E-06	7.41E-06	1.35E-02	2.00E-03
Barium	5.16E-01	3.74E+00	2.24E-05	1.62E-04	3.74E+00	5.16E-01	2.83E-01	1.80E+00	6.43E-06	4.63E-05	1.80E+00	2.83E-01	3.09E-01	2.09E+00	6.18E-06	4.45E-05	2.09E+00	3.09E-01
Beryllium	1.00E-03	7.25E-03	2.47E-06	1.78E-05	7.26E-03	1.00E-03	1.00E-03	6.37E-03	7.08E-07	5.09E-06	6.37E-03	1.00E-03	1.00E-03	6.76E-03	6.80E-07	4.89E-06	6.76E-03	1.00E-03
Bismuth	1.00E-03	7.25E-03	7.48E-07	5.38E-06	7.25E-03	1.00E-03	1.00E-03	6.37E-03	2.14E-07	1.54E-06	6.37E-03	1.00E-03	1.00E-03	6.76E-03	2.06E-07	1.48E-06	6.76E-03	1.00E-03
Cadmium	1.00E-03	7.25E-03	7.48E-07	5.38E-06	7.25E-03	1.00E-03	3.50E-03	2.23E-02	2.14E-07	1.54E-06	2.23E-02	3.50E-03	1.00E-03	6.76E-03	2.06E-07	1.48E-06	6.76E-03	1.00E-03
Calcium	9.82E+01	7.12E+02	2.39E-01	1.72E+00	7.13E+02	9.84E+01	1.68E+02	1.07E+03	6.86E-02	4.94E-01	1.07E+03	1.68E+02	6.04E+01	4.08E+02	6.59E-02	4.74E-01	4.09E+02	6.05E+01
Chromium	9.27E+00	6.72E+01	1.12E-03	8.08E-03	6.72E+01	9.27E+00	1.45E+01	9.24E+01	3.22E-04	2.32E-03	9.24E+01	1.45E+01	3.25E+00	2.20E+01	3.09E-04	2.22E-03	2.20E+01	3.25E+00
Cobalt	1.50E-01	1.09E+00	2.62E-04	1.88E-03	1.09E+00	1.50E-01	8.47E-02	5.39E-01	7.51E-05	5.40E-04	5.40E-01	8.48E-02	7.59E-02	5.13E-01	7.21E-05	5.19E-04	5.13E-01	7.60E-02
Copper	5.83E-01	4.22E+00	8.23E-04	5.92E-03	4.23E+00	5.84E-01	8.64E-01	5.50E+00	2.36E-04	1.70E-03	5.50E+00	8.64E-01	6.18E-01	4.18E+00	2.27E-04	1.63E-03	4.18E+00	6.18E-01
Iron	4.38E+01	3.17E+02	3.66E-01	2.64E+00	3.20E+02	4.42E+01	6.72E+01	4.28E+02	1.05E-01	7.56E-01	4.29E+02	6.73E+01	1.78E+01	1.20E+02	1.01E-01	7.26E-01	1.21E+02	1.79E+01
Lead	2.00E-03	1.45E-02	4.49E-06	3.23E-05	1.45E-02	2.00E-03	2.00E-03	1.27E-02	1.29E-06	9.26E-06	1.27E-02	2.00E-03	2.00E-03	1.35E-02	1.24E-06	8.90E-06	1.35E-02	2.00E-03
Magnesium	7.25E+01	5.25E+02	1.72E-01	1.24E+00	5.27E+02	7.27E+01	8.17E+01	5.20E+02	4.93E-02	3.55E-01	5.21E+02	8.18E+01	7.60E+01	5.14E+02	4.74E-02	3.41E-01	5.14E+02	7.61E+01
Manganese	1.96E+00	1.42E+01	6.96E-03	5.01E-02	1.43E+01	1.97E+00	2.35E+00	1.50E+01	1.99E-03	1.44E-02	1.50E+01	2.35E+00	1.40E+00	9.46E+00	1.92E-03	1.38E-02	9.47E+00	1.40E+00
Mercury	5.00E-04	3.62E-03	7.48E-08	5.38E-07	3.62E-03	5.00E-04	5.00E-04	3.18E-03	2.14E-08	1.54E-07	3.18E-03	5.00E-04	5.00E-04	3.38E-03	2.06E-08	1.48E-07	3.38E-03	5.00E-04
Molybdenum	4.26E-01	3.09E+00	3.74E-06	2.69E-05	3.09E+00	4.26E-01	3.27E-01	2.08E+00	1.07E-06	7.72E-06	2.08E+00	3.27E-01	1.86E-01	1.26E+00	1.03E-06	7.41E-06	1.26E+00	1.86E-01
Nickel	5.24E+00	3.80E+01	5.38E-04	3.88E-03	3.80E+01	5.24E+00	7.59E+00	4.83E+01	1.54E-04	1.11E-03	4.83E+01	7.59E+00	2.10E+00	1.42E+01	1.48E-04	1.07E-03	1.42E+01	2.10E+00
Phosphorus	1.45E+02	1.05E+03	1.65E-03	1.18E-02	1.05E+03	1.45E+02	1.05E+02	6.69E+02	4.72E-04	3.40E-03	6.69E+02	1.05E+02	1.79E+02	1.21E+03	4.53E-04	3.26E-03	1.21E+03	1.79E+02
Potassium	1.20E+03	8.70E+03	7.48E-04	5.38E-03	8.70E+03	1.20E+03	1.33E+03	8.47E+03	2.14E-04	1.54E-03	8.47E+03	1.33E+03	1.19E+03	8.04E+03	2.06E-04	1.48E-03	8.04E+03	1.19E+03
Selenium	1.00E-02	7.25E-02	3.74E-06	2.69E-05	7.25E-02	1.00E-02	1.00E-02	6.37E-02	1.07E-06	7.72E-06	6.37E-02	1.00E-02	1.00E-02	6.76E-02	1.03E-06	7.41E-06	6.76E-02	1.00E-02
Silver	5.00E-04	3.62E-03	7.48E-07	5.38E-06	3.63E-03	5.01E-04	5.00E-04	3.18E-03	2.14E-07	1.54E-06	3.19E-03	5.00E-04	5.00E-04	3.38E-03	2.06E-07	1.48E-06	3.38E-03	5.00E-04
Sodium	1.00E+01	7.25E+01	1.87E-03	1.35E-02	7.25E+01	1.00E+01	1.00E+01	6.37E+01	5.36E-04	3.86E-03	6.37E+01	1.00E+01	1.00E+01	6.76E+01	5.15E-04	3.71E-03	6.76E+01	1.00E+01
Strontium	2.38E-01	1.72E+00	1.05E-04	7.54E-04	1.73E+00	2.38E-01	1.39E-01	8.85E-01	3.00E-05	2.16E-04	8.86E-01	1.39E-01	1.54E-01	1.04E+00	2.88E-05	2.08E-04	1.04E+00	1.54E-01
Thallium	2.00E-04	1.45E-03	7.48E-07	5.38E-06	1.45E-03	2.01E-04	2.00E-04	1.27E-03	2.14E-07	1.54E-06	1.28E-03	2.00E-04	2.00E-04	1.35E-03	2.06E-07	1.48E-06	1.35E-03	2.00E-04
Tin	3.76E-01	2.72E+00	1.50E-05	1.08E-04	2.72E+00	3.76E-01	5.08E-01	3.24E+00	4.29E-06	3.09E-05	3.24E+00	5.08E-01	2.12E-01	1.43E+00	4.12E-06	2.97E-05	1.43E+00	2.12E-01
Titanium	5.00E-03	3.62E-02	1.65E-02	1.18E-01	1.55E-01	2.13E-02	5.00E-03	3.18E-02	4.72E-03	3.40E-02	6.58E-02	1.03E-02	3.10E-02	2.09E-01	4.53E-03	3.26E-02	2.42E-01	3.58E-02
Uranium	2.00E-04	1.45E-03	7.48E-07	5.38E-06	1.45E-03	2.01E-04	2.00E-04	1.27E-03	2.14E-07	1.54E-06	1.28E-03	2.00E-04	2.00E-04	1.35E-03	2.06E-07	1.48E-06	1.35E-03	2.00E-04
Vanadium	5.68E-02	4.12E-01	7.48E-04	5.38E-03	4.17E-01	5.75E-02	4.96E-02	3.16E-01	2.14E-04	1.54E-03	3.17E-01	4.98E-02	2.19E-02	1.48E-01	2.06E-04	1.48E-03	1.49E-01	2.21E-02
Zinc	1.22E+00	8.84E+00	4.41E-04	3.18E-03	8.84E+00	1.22E+00	2.26E+00	1.44E+01	1.27E-04	9.11E-04	1.44E+01	2.26E+00	1.37E+00	9.26E+00	1.22E-04	8.75E-04	9.26E+00	1.37E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Bearberry (Arctostaphylos alpina)									Bearberry (Arctostaphylos alpina)					
Sample ID	D20 ARTOSTAPHYLOS ALPINA									D22 ARTOSTAPHYLOS ALPINA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	2.00E-01	1.63E+00	1.03E+04	1.58E-04	1.63E+00	8.72E-02	6.28E-01	2.26E+00	2.77E-01	1.28E+00	1.03E+01	1.38E-01	9.95E-01	1.13E+01	1.40E+00
Antimony	1.00E-03	8.13E-03	5.00E+00	1.63E-03	8.13E-03	3.01E-07	2.16E-06	8.13E-03	1.00E-03	1.00E-03	8.06E-03	4.77E-07	3.43E-06	8.07E-03	1.00E-03
Arsenic	2.00E-03	1.63E-02	2.50E+00	6.50E-03	1.63E-02	1.50E-06	1.08E-05	1.63E-02	2.00E-03	2.00E-03	1.61E-02	2.38E-06	1.72E-05	1.61E-02	2.00E-03
Barium	4.49E-01	3.65E+00	8.14E+01	4.48E-02	3.65E+00	9.02E-06	6.49E-05	3.65E+00	4.49E-01	5.08E-01	4.10E+00	1.43E-05	1.03E-04	4.10E+00	5.08E-01
Beryllium	1.00E-03	8.13E-03	2.50E-01	3.25E-02	8.13E-03	9.92E-07	7.14E-06	8.14E-03	1.00E-03	1.00E-03	8.06E-03	1.57E-06	1.13E-05	8.08E-03	1.00E-03
Bismuth	1.00E-03	8.13E-03	1.00E+01	8.13E-04	8.13E-03	3.01E-07	2.16E-06	8.13E-03	1.00E-03	1.00E-03	8.06E-03	4.77E-07	3.43E-06	8.07E-03	1.00E-03
Cadmium	3.60E-03	2.93E-02	2.50E-01	1.17E-01	2.93E-02	3.01E-07	2.16E-06	2.93E-02	3.60E-03	1.00E-03	8.06E-03	4.77E-07	3.43E-06	8.07E-03	1.00E-03
Calcium	1.43E+02	1.16E+03	1.11E+04	1.05E-01	1.16E+03	9.62E-02	6.93E-01	1.16E+03	1.43E+02	6.94E+01	5.60E+02	1.53E-01	1.10E+00	5.61E+02	6.95E+01
Chromium	9.72E-01	7.90E+00	8.19E+01	9.66E-02	7.91E+00	4.51E-04	3.25E-03	7.91E+00	9.73E-01	2.16E+00	1.74E+01	7.15E-04	5.15E-03	1.74E+01	2.16E+00
Cobalt	2.24E-02	1.82E-01	1.67E+01	1.09E-02	1.82E-01	1.05E-04	7.58E-04	1.83E-01	2.25E-02	4.75E-02	3.83E-01	1.67E-04	1.20E-03	3.84E-01	4.76E-02
Copper	3.49E-01	2.84E+00	3.82E+01	7.43E-02	2.84E+00	3.31E-04	2.38E-03	2.84E+00	3.50E-01	3.97E-01	3.20E+00	5.24E-04	3.77E-03	3.21E+00	3.97E-01
Iron	7.01E+00	5.70E+01	2.36E+04	2.41E-03	5.70E+01	1.47E-01	1.06E+00	5.81E+01	7.15E+00	1.17E+01	9.44E+01	2.34E-01	1.68E+00	9.60E+01	1.19E+01
Lead	2.00E-03	1.63E-02	1.50E+01	1.08E-03	1.63E-02	1.80E-06	1.30E-05	1.63E-02	2.00E-03	2.00E-03	1.61E-02	2.86E-06	2.06E-05	1.61E-02	2.00E-03
Magnesium	6.56E+01	5.33E+02	7.80E+03	6.85E-02	5.34E+02	6.91E-02	4.98E-01	5.34E+02	6.57E+01	7.04E+01	5.68E+02	1.10E-01	7.89E-01	5.69E+02	7.05E+01
Manganese	9.26E-01	7.53E+00	7.90E+02	9.53E-03	7.53E+00	2.80E-03	2.01E-02	7.55E+00	9.29E-01	1.32E+00	1.06E+01	4.43E-03	3.19E-02	1.07E+01	1.32E+00
Mercury	5.00E-04	4.07E-03	5.43E-02	7.49E-02	4.07E-03	3.01E-08	2.16E-07	4.07E-03	5.00E-04	5.00E-04	4.03E-03	4.77E-08	3.43E-07	4.03E-03	5.00E-04
Molybdenum	4.94E-02	4.02E-01	2.00E+00	2.01E-01	4.02E-01	1.50E-06	1.08E-05	4.02E-01	4.94E-02	1.36E-01	1.10E+00	2.38E-06	1.72E-05	1.10E+00	1.36E-01
Nickel	9.19E-01	7.47E+00	5.35E+01	1.40E-01	7.48E+00	2.16E-04	1.56E-03	7.48E+00	9.20E-01	1.44E+00	1.16E+01	3.43E-04	2.47E-03	1.16E+01	1.44E+00
Phosphorus	1.03E+02	8.37E+02	7.15E+02	1.17E+00	8.38E+02	6.61E-04	4.76E-03	8.38E+02	1.03E+02	1.56E+02	1.26E+03	1.05E-03	7.55E-03	1.26E+03	1.56E+02
Potassium	9.93E+02	8.07E+03	1.11E+03	7.27E+00	8.07E+03	3.01E-04	2.16E-03	8.07E+03	9.93E+02	1.05E+03	8.47E+03	4.77E-04	3.43E-03	8.47E+03	1.05E+03
Selenium	1.00E-02	8.13E-02	2.50E-01	3.25E-01	8.14E-02	1.50E-06	1.08E-05	8.14E-02	1.00E-02	1.00E-02	8.06E-02	2.38E-06	1.72E-05	8.07E-02	1.00E-02
Silver	5.00E-04	4.07E-03	1.00E+00	4.07E-03	4.07E-03	3.01E-07	2.16E-06	4.07E-03	5.00E-04	5.00E-04	4.03E-03	4.77E-07	3.43E-06	4.04E-03	5.00E-04
Sodium	1.00E+01	8.13E+01	1.00E+02	8.13E-01	8.14E+01	7.52E-04	5.41E-03	8.14E+01	1.00E+01	1.00E+01	8.06E+01	1.19E-03	8.58E-03	8.07E+01	1.00E+01
Strontium	1.05E-01	8.54E-01	3.33E+01	2.56E-02	8.54E-01	4.21E-05	3.03E-04	8.54E-01	1.05E-01	1.36E-01	1.10E+00	6.67E-05	4.80E-04	1.10E+00	1.36E-01
Thallium	2.00E-04	1.63E-03	5.00E-01	3.25E-03	1.63E-03	3.01E-07	2.16E-06	1.63E-03	2.00E-04	2.00E-04	1.61E-03	4.77E-07	3.43E-06	1.62E-03	2.00E-04
Tin	7.19E-02	5.85E-01	2.50E+00	2.34E-01	5.85E-01	6.01E-06	4.33E-05	5.85E-01	7.19E-02	1.60E-01	1.29E+00	9.53E-06	6.86E-05	1.29E+00	1.60E-01
Titanium	5.00E-03	4.07E-02	3.52E+02	1.16E-04	4.08E-02	6.61E-03	4.76E-02	8.84E-02	1.09E-02	4.40E-02	3.55E-01	1.05E-02	7.55E-02	4.30E-01	5.34E-02
Uranium	2.00E-04	1.63E-03	3.78E-01	4.30E-03	1.63E-03	3.01E-07	2.16E-06	1.63E-03	2.00E-04	2.00E-04	1.61E-03	4.77E-07	3.43E-06	1.62E-03	2.00E-04
Vanadium	6.40E-03	5.20E-02	4.63E+01	1.12E-03	5.21E-02	3.01E-04	2.16E-03	5.42E-02	6.67E-03	1.58E-02	1.27E-01	4.77E-04	3.43E-03	1.31E-01	1.62E-02
Zinc	1.88E+00	1.53E+01	4.71E+01	3.25E-01	1.53E+01	1.77E-04	1.28E-03	1.53E+01	1.88E+00	1.37E+00	1.10E+01	2.81E-04	2.02E-03	1.11E+01	1.37E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Bearberry (Arctostaphylos alpina)									Bearberry (Arctostaphylos alpina)					
Sample ID	D29 ARTOSTAPHYLOS ALPINA									D75 ARTOSTAPHYLOS ALPINA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	2.00E-01	1.56E+00	1.86E+04	7.48E-05	1.39E+00	3.13E-02	2.25E-01	1.62E+00	2.07E-01	7.20E-01	4.59E+00	2.92E-01	2.10E+00	6.69E+00	1.05E+00
Antimony	1.00E-03	7.81E-03	5.00E+00	1.56E-03	7.81E-03	1.08E-07	7.78E-07	7.81E-03	1.00E-03	1.00E-03	6.37E-03	1.01E-06	7.24E-06	6.38E-03	1.00E-03
Arsenic	2.00E-03	1.56E-02	2.50E+00	3.00E-03	7.51E-03	5.40E-07	3.89E-06	7.52E-03	9.62E-04	2.00E-03	1.27E-02	5.03E-06	3.62E-05	1.28E-02	2.01E-03
Barium	5.15E-01	4.02E+00	1.00E+02	3.33E-02	3.33E+00	3.24E-06	2.33E-05	3.33E+00	4.26E-01	8.39E-01	5.34E+00	3.02E-05	2.17E-04	5.34E+00	8.39E-01
Beryllium	1.00E-03	7.81E-03	5.30E-01	1.35E-02	7.14E-03	3.56E-07	2.57E-06	7.14E-03	9.14E-04	1.00E-03	6.37E-03	3.32E-06	2.39E-05	6.39E-03	1.00E-03
Bismuth	1.00E-03	7.81E-03	1.00E+01	7.81E-04	7.81E-03	1.08E-07	7.78E-07	7.81E-03	1.00E-03	1.00E-03	6.37E-03	1.01E-06	7.24E-06	6.38E-03	1.00E-03
Cadmium	3.10E-03	2.42E-02	2.50E-01	9.69E-02	2.42E-02	1.08E-07	7.78E-07	2.42E-02	3.10E-03	4.70E-03	2.99E-02	1.01E-06	7.24E-06	2.99E-02	4.70E-03
Calcium	1.44E+02	1.13E+03	9.02E+03	1.54E-01	1.39E+03	3.46E-02	2.49E-01	1.39E+03	1.78E+02	1.25E+02	7.96E+02	3.22E-01	2.32E+00	7.98E+02	1.25E+02
Chromium	1.34E+00	1.05E+01	5.18E+01	1.73E-01	8.95E+00	1.62E-04	1.17E-03	8.95E+00	1.15E+00	8.93E-01	5.69E+00	1.51E-03	1.09E-02	5.70E+00	8.95E-01
Cobalt	9.80E-03	7.66E-02	1.03E+01	5.94E-03	6.12E-02	3.78E-05	2.72E-04	6.14E-02	7.86E-03	3.07E-02	1.96E-01	3.52E-04	2.53E-03	1.98E-01	3.11E-02
Copper	5.21E-01	4.07E+00	2.84E+01	1.31E-01	3.73E+00	1.19E-04	8.55E-04	3.73E+00	4.78E-01	4.36E-01	2.78E+00	1.11E-03	7.96E-03	2.79E+00	4.37E-01
Iron	7.61E+00	5.95E+01	2.55E+04	1.95E-03	4.97E+01	5.29E-02	3.81E-01	5.01E+01	6.41E+00	5.87E+00	3.74E+01	4.93E-01	3.55E+00	4.09E+01	6.43E+00
Lead	1.28E-02	1.00E-01	1.50E+01	6.67E-03	1.00E-01	6.48E-07	4.67E-06	1.00E-01	1.28E-02	2.00E-03	1.27E-02	6.03E-06	4.34E-05	1.28E-02	2.01E-03
Magnesium	6.97E+01	5.45E+02	1.00E+04	4.65E-02	4.66E+02	2.48E-02	1.79E-01	4.66E+02	5.96E+01	7.38E+01	4.70E+02	2.31E-01	1.67E+00	4.72E+02	7.41E+01
Manganese	1.04E+00	8.13E+00	3.58E+02	2.21E-02	7.91E+00	1.00E-03	7.23E-03	7.91E+00	1.01E+00	1.11E+00	7.07E+00	9.35E-03	6.73E-02	7.14E+00	1.12E+00
Mercury	5.00E-04	3.91E-03	2.63E-02	2.77E-01	7.29E-03	1.08E-08	7.78E-08	7.29E-03	9.33E-04	5.00E-04	3.18E-03	1.01E-07	7.24E-07	3.19E-03	5.00E-04
Molybdenum	3.53E-02	2.76E-01	2.00E+00	1.38E-01	2.76E-01	5.40E-07	3.89E-06	2.76E-01	3.53E-02	6.19E-02	3.94E-01	5.03E-06	3.62E-05	3.94E-01	6.19E-02
Nickel	7.86E-01	6.14E+00	2.62E+01	1.89E-01	4.95E+00	7.78E-05	5.60E-04	4.95E+00	6.34E-01	7.48E-01	4.76E+00	7.24E-04	5.21E-03	4.77E+00	7.49E-01
Phosphorus	1.30E+02	1.02E+03	5.36E+02	1.97E+00	1.06E+03	2.38E-04	1.71E-03	1.06E+03	1.35E+02	1.82E+02	1.16E+03	2.21E-03	1.59E-02	1.16E+03	1.82E+02
Potassium	1.49E+03	1.16E+04	3.33E+03	3.07E+00	1.02E+04	1.08E-04	7.78E-04	1.02E+04	1.31E+03	1.34E+03	8.54E+03	1.01E-03	7.24E-03	8.54E+03	1.34E+03
Selenium	1.00E-02	7.81E-02	2.50E-01	3.13E-01	7.81E-02	5.40E-07	3.89E-06	7.82E-02	1.00E-02	1.00E-02	6.37E-02	5.03E-06	3.62E-05	6.37E-02	1.00E-02
Silver	5.00E-04	3.91E-03	1.00E+00	3.91E-03	3.91E-03	1.08E-07	7.78E-07	3.91E-03	5.00E-04	5.00E-04	3.18E-03	1.01E-06	7.24E-06	3.19E-03	5.01E-04
Sodium	1.00E+01	7.81E+01	1.03E+03	1.07E-01	1.10E+02	2.70E-04	1.94E-03	1.10E+02	1.41E+01	1.00E+01	6.37E+01	2.51E-03	1.81E-02	6.37E+01	1.00E+01
Strontium	1.86E-01	1.45E+00	3.64E+01	4.88E-02	1.78E+00	1.51E-05	1.09E-04	1.78E+00	2.27E-01	4.23E-01	2.69E+00	1.41E-04	1.01E-03	2.70E+00	4.23E-01
Thallium	2.00E-04	1.56E-03	5.00E-01	3.13E-03	1.56E-03	1.08E-07	7.78E-07	1.56E-03	2.00E-04	2.00E-04	1.27E-03	1.01E-06	7.24E-06	1.28E-03	2.01E-04
Tin	4.64E-01	3.63E+00	2.50E+00	1.45E+00	3.63E+00	2.16E-06	1.56E-05	3.63E+00	4.64E-01	1.51E-01	9.62E-01	2.01E-05	1.45E-04	9.62E-01	1.51E-01
Titanium	5.00E-03	3.91E-02	1.21E+03	2.79E-05	3.38E-02	2.38E-03	1.71E-02	5.09E-02	6.51E-03	5.00E-03	3.18E-02	2.21E-02	1.59E-01	1.91E-01	3.00E-02
Uranium	2.00E-04	1.56E-03	1.03E+00	1.06E-03	1.09E-03	1.08E-07	7.78E-07	1.10E-03	1.40E-04	2.00E-04	1.27E-03	1.01E-06	7.24E-06	1.28E-03	2.01E-04
Vanadium	5.40E-03	4.22E-02	5.38E+01	6.53E-04	3.51E-02	1.08E-04	7.78E-04	3.59E-02	4.60E-03	6.70E-03	4.27E-02	1.01E-03	7.24E-03	4.99E-02	7.84E-03
Zinc	2.11E+00	1.65E+01	5.58E+01	2.71E-01	1.51E+01	6.37E-05	4.59E-04	1.51E+01	1.93E+00	1.81E+00	1.15E+01	5.93E-04	4.27E-03	1.15E+01	1.81E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)									Berry Mix (species unidentified)					
Sample ID	D54-BERRY MIX									D55-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	5.20E-01	3.85E+00	6.30E+02	6.15E-03	3.88E+00	2.94E-02	2.12E-01	4.09E+00	5.52E-01	6.70E-01	3.72E+00	3.52E-02	2.54E-01	3.98E+00	7.16E-01
Antimony	1.00E-03	7.41E-03	5.00E+00	1.48E-03	7.41E-03	1.02E-07	7.31E-07	7.41E-03	1.00E-03	1.00E-03	5.56E-03	1.22E-07	8.75E-07	5.56E-03	1.00E-03
Arsenic	2.00E-03	1.48E-02	2.50E+00	5.93E-03	1.48E-02	5.08E-07	3.66E-06	1.48E-02	2.00E-03	2.00E-03	1.11E-02	6.08E-07	4.37E-06	1.11E-02	2.00E-03
Barium	5.08E-01	3.76E+00	3.60E+01	1.05E-01	3.76E+00	3.05E-06	2.19E-05	3.76E+00	5.08E-01	5.64E-01	3.13E+00	3.65E-06	2.62E-05	3.13E+00	5.64E-01
Beryllium	1.00E-03	7.41E-03	2.50E-01	2.96E-02	7.41E-03	3.35E-07	2.41E-06	7.41E-03	1.00E-03	1.00E-03	5.56E-03	4.01E-07	2.89E-06	5.56E-03	1.00E-03
Bismuth	1.00E-03	7.41E-03	1.00E+01	7.41E-04	7.41E-03	1.02E-07	7.31E-07	7.41E-03	1.00E-03	1.00E-03	5.56E-03	1.22E-07	8.75E-07	5.56E-03	1.00E-03
Cadmium	1.00E-03	7.41E-03	2.50E-01	2.96E-02	7.41E-03	1.02E-07	7.31E-07	7.41E-03	1.00E-03	1.00E-03	5.56E-03	1.22E-07	8.75E-07	5.56E-03	1.00E-03
Calcium	1.29E+02	9.56E+02	1.17E+04	8.17E-02	9.56E+02	3.25E-02	2.34E-01	9.56E+02	1.29E+02	9.02E+01	5.01E+02	3.89E-02	2.80E-01	5.01E+02	9.03E+01
Chromium	2.57E+00	1.90E+01	1.02E+00	1.90E+01	1.94E+01	1.52E-04	1.10E-03	1.94E+01	2.62E+00	2.99E+00	1.66E+01	1.82E-04	1.31E-03	1.66E+01	2.99E+00
Cobalt	4.32E-02	3.20E-01	3.60E+00	8.89E-02	3.20E-01	3.55E-05	2.56E-04	3.21E-01	4.33E-02	5.30E-02	2.94E-01	4.25E-05	3.06E-04	2.95E-01	5.31E-02
Copper	6.30E-01	4.67E+00	5.61E+00	8.33E-01	4.68E+00	1.12E-04	8.04E-04	4.68E+00	6.32E-01	6.43E-01	3.57E+00	1.34E-04	9.62E-04	3.57E+00	6.43E-01
Iron	1.37E+01	1.01E+02	4.09E+03	2.49E-02	1.02E+02	4.98E-02	3.58E-01	1.02E+02	1.38E+01	1.60E+01	8.89E+01	5.95E-02	4.29E-01	8.93E+01	1.61E+01
Lead	2.00E-03	1.48E-02	1.50E+01	9.88E-04	1.48E-02	6.09E-07	4.39E-06	1.48E-02	2.00E-03	2.00E-03	1.11E-02	7.29E-07	5.25E-06	1.11E-02	2.00E-03
Magnesium	8.04E+01	5.96E+02	2.53E+03	2.35E-01	5.96E+02	2.34E-02	1.68E-01	5.96E+02	8.05E+01	7.92E+01	4.40E+02	2.79E-02	2.01E-01	4.40E+02	7.92E+01
Manganese	2.57E+01	1.90E+02	2.26E+02	8.42E-01	1.90E+02	9.44E-04	6.80E-03	1.90E+02	2.57E+01	3.12E+00	1.73E+01	1.13E-03	8.14E-03	1.73E+01	3.12E+00
Mercury	5.00E-04	3.70E-03	1.58E-01	2.34E-02	3.70E-03	1.02E-08	7.31E-08	3.70E-03	5.00E-04	5.00E-04	2.78E-03	1.22E-08	8.75E-08	2.78E-03	5.00E-04
Molybdenum	1.73E-01	1.28E+00	2.00E+00	6.41E-01	1.28E+00	5.08E-07	3.66E-06	1.28E+00	1.73E-01	1.74E-01	9.67E-01	6.08E-07	4.37E-06	9.67E-01	1.74E-01
Nickel	1.54E+00	1.14E+01	2.51E+00	4.56E+00	1.15E+01	7.31E-05	5.26E-04	1.15E+01	1.55E+00	1.87E+00	1.04E+01	8.75E-05	6.30E-04	1.04E+01	1.87E+00
Phosphorus	1.28E+02	9.48E+02	6.74E+02	1.41E+00	9.48E+02	2.23E-04	1.61E-03	9.48E+02	1.28E+02	1.84E+02	1.02E+03	2.67E-04	1.92E-03	1.02E+03	1.84E+02
Potassium	1.07E+03	7.93E+03	8.30E+02	9.55E+00	7.93E+03	1.02E-04	7.31E-04	7.93E+03	1.07E+03	1.32E+03	7.33E+03	1.22E-04	8.75E-04	7.33E+03	1.32E+03
Selenium	1.00E-02	7.41E-02	2.50E-01	2.96E-01	7.41E-02	5.08E-07	3.66E-06	7.41E-02	1.00E-02	1.00E-02	5.56E-02	6.08E-07	4.37E-06	5.56E-02	1.00E-02
Silver	5.00E-04	3.70E-03	1.00E+00	3.70E-03	3.70E-03	1.02E-07	7.31E-07	3.70E-03	5.00E-04	5.00E-04	2.78E-03	1.22E-07	8.75E-07	2.78E-03	5.00E-04
Sodium	1.00E+01	7.41E+01	5.40E+02	1.37E-01	7.41E+01	2.54E-04	1.83E-03	7.41E+01	1.00E+01	1.00E+01	5.56E+01	3.04E-04	2.19E-03	5.56E+01	1.00E+01
Strontium	1.63E-01	1.21E+00	5.43E+01	2.22E-02	1.21E+00	1.42E-05	1.02E-04	1.21E+00	1.63E-01	1.93E-01	1.07E+00	1.70E-05	1.22E-04	1.07E+00	1.93E-01
Thallium	2.00E-04	1.48E-03	5.00E-01	2.96E-03	1.48E-03	1.02E-07	7.31E-07	1.48E-03	2.00E-04	2.00E-04	1.11E-03	1.22E-07	8.75E-07	1.11E-03	2.00E-04
Tin	3.80E-01	2.81E+00	2.50E+00	1.13E+00	2.82E+00	2.03E-06	1.46E-05	2.82E+00	3.80E-01	2.22E-01	1.23E+00	2.43E-06	1.75E-05	1.23E+00	2.22E-01
Titanium	5.00E-03	3.70E-02	1.90E+01	1.98E-03	3.76E-02	2.23E-03	1.61E-02	5.37E-02	7.25E-03	1.20E-02	6.67E-02	2.67E-03	1.92E-02	8.59E-02	1.55E-02
Uranium	2.00E-04	1.48E-03	2.50E-02	5.93E-02	1.48E-03	1.02E-07	7.31E-07	1.48E-03	2.00E-04	2.00E-04	1.11E-03	1.22E-07	8.75E-07	1.11E-03	2.00E-04
Vanadium	1.64E-02	1.21E-01	1.01E+00	1.21E-01	1.23E-01	1.02E-04	7.31E-04	1.24E-01	1.67E-02	2.14E-02	1.19E-01	1.22E-04	8.75E-04	1.20E-01	2.16E-02
Zinc	1.72E+00	1.27E+01	2.65E+01	4.81E-01	1.27E+01	5.99E-05	4.31E-04	1.27E+01	1.72E+00	1.84E+00	1.02E+01	7.17E-05	5.16E-04	1.02E+01	1.84E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)						Berry Mix (species unidentified)					
Sample ID	D62-BERRY MIX (no soil match)						D63-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals												
Aluminum	1.22E+00	9.04E+00	2.76E-02	1.99E-01	9.24E+00	1.25E+00	5.20E-01	3.29E+00	2.76E-02	1.99E-01	3.49E+00	5.51E-01
Antimony	1.00E-03	7.41E-03	9.52E-08	6.85E-07	7.41E-03	1.00E-03	1.00E-03	6.33E-03	9.52E-08	6.85E-07	6.33E-03	1.00E-03
Arsenic	2.00E-03	1.48E-02	4.76E-07	3.43E-06	1.48E-02	2.00E-03	2.00E-03	1.27E-02	4.76E-07	3.43E-06	1.27E-02	2.00E-03
Barium	6.45E-01	4.78E+00	2.86E-06	2.06E-05	4.78E+00	6.45E-01	9.73E-01	6.16E+00	2.86E-06	2.06E-05	6.16E+00	9.73E-01
Beryllium	1.00E-03	7.41E-03	3.14E-07	2.26E-06	7.41E-03	1.00E-03	1.00E-03	6.33E-03	3.14E-07	2.26E-06	6.33E-03	1.00E-03
Bismuth	1.00E-03	7.41E-03	9.52E-08	6.85E-07	7.41E-03	1.00E-03	1.00E-03	6.33E-03	9.52E-08	6.85E-07	6.33E-03	1.00E-03
Cadmium	3.60E-03	2.67E-02	9.52E-08	6.85E-07	2.67E-02	3.60E-03	1.00E-03	6.33E-03	9.52E-08	6.85E-07	6.33E-03	1.00E-03
Calcium	9.94E+01	7.36E+02	3.05E-02	2.19E-01	7.37E+02	9.94E+01	1.26E+02	7.97E+02	3.05E-02	2.19E-01	7.98E+02	1.26E+02
Chromium	4.26E+00	3.16E+01	1.43E-04	1.03E-03	3.16E+01	4.26E+00	2.71E+00	1.72E+01	1.43E-04	1.03E-03	1.72E+01	2.71E+00
Cobalt	3.30E-02	2.44E-01	3.33E-05	2.40E-04	2.45E-01	3.30E-02	4.46E-02	2.82E-01	3.33E-05	2.40E-04	2.83E-01	4.46E-02
Copper	6.58E-01	4.87E+00	1.05E-04	7.54E-04	4.87E+00	6.58E-01	1.05E+00	6.65E+00	1.05E-04	7.54E-04	6.65E+00	1.05E+00
Iron	2.12E+01	1.57E+02	4.67E-02	3.36E-01	1.57E+02	2.12E+01	1.42E+01	8.99E+01	4.67E-02	3.36E-01	9.02E+01	1.43E+01
Lead	2.00E-03	1.48E-02	5.71E-07	4.11E-06	1.48E-02	2.00E-03	2.00E-03	1.27E-02	5.71E-07	4.11E-06	1.27E-02	2.00E-03
Magnesium	6.61E+01	4.90E+02	2.19E-02	1.58E-01	4.90E+02	6.61E+01	6.47E+01	4.09E+02	2.19E-02	1.58E-01	4.10E+02	6.47E+01
Manganese	4.11E+00	3.04E+01	8.86E-04	6.38E-03	3.05E+01	4.11E+00	5.83E+00	3.69E+01	8.86E-04	6.38E-03	3.69E+01	5.83E+00
Mercury	5.00E-04	3.70E-03	9.52E-09	6.85E-08	3.70E-03	5.00E-04	5.00E-04	3.16E-03	9.52E-09	6.85E-08	3.16E-03	5.00E-04
Molybdenum	1.34E-01	9.93E-01	4.76E-07	3.43E-06	9.93E-01	1.34E-01	1.61E-01	1.02E+00	4.76E-07	3.43E-06	1.02E+00	1.61E-01
Nickel	2.36E+00	1.75E+01	6.86E-05	4.94E-04	1.75E+01	2.36E+00	1.58E+00	1.00E+01	6.86E-05	4.94E-04	1.00E+01	1.58E+00
Phosphorus	1.20E+02	8.89E+02	2.09E-04	1.51E-03	8.89E+02	1.20E+02	1.04E+02	6.58E+02	2.09E-04	1.51E-03	6.58E+02	1.04E+02
Potassium	1.06E+03	7.85E+03	9.52E-05	6.85E-04	7.85E+03	1.06E+03	9.35E+02	5.92E+03	9.52E-05	6.85E-04	5.92E+03	9.35E+02
Selenium	1.00E-02	7.41E-02	4.76E-07	3.43E-06	7.41E-02	1.00E-02	1.00E-02	6.33E-02	4.76E-07	3.43E-06	6.33E-02	1.00E-02
Silver	5.00E-04	3.70E-03	9.52E-08	6.85E-07	3.70E-03	5.00E-04	5.00E-04	3.16E-03	9.52E-08	6.85E-07	3.17E-03	5.00E-04
Sodium	1.00E+01	7.41E+01	2.38E-04	1.71E-03	7.41E+01	1.00E+01	1.00E+01	6.33E+01	2.38E-04	1.71E-03	6.33E+01	1.00E+01
Strontium	2.02E-01	1.50E+00	1.33E-05	9.60E-05	1.50E+00	2.02E-01	1.97E-01	1.25E+00	1.33E-05	9.60E-05	1.25E+00	1.97E-01
Thallium	2.00E-04	1.48E-03	9.52E-08	6.85E-07	1.48E-03	2.00E-04	2.00E-04	1.27E-03	9.52E-08	6.85E-07	1.27E-03	2.00E-04
Tin	2.17E-01	1.61E+00	1.90E-06	1.37E-05	1.61E+00	2.17E-01	3.28E-01	2.08E+00	1.90E-06	1.37E-05	2.08E+00	3.28E-01
Titanium	2.40E-02	1.78E-01	2.09E-03	1.51E-02	1.93E-01	2.60E-02	1.60E-02	1.01E-01	2.09E-03	1.51E-02	1.16E-01	1.84E-02
Uranium	2.00E-04	1.48E-03	9.52E-08	6.85E-07	1.48E-03	2.00E-04	2.00E-04	1.27E-03	9.52E-08	6.85E-07	1.27E-03	2.00E-04
Vanadium	1.81E-02	1.34E-01	9.52E-05	6.85E-04	1.35E-01	1.82E-02	1.81E-02	1.15E-01	9.52E-05	6.85E-04	1.15E-01	1.82E-02
Zinc	1.31E+00	9.70E+00	5.62E-05	4.04E-04	9.70E+00	1.31E+00	1.21E+00	7.66E+00	5.62E-05	4.04E-04	7.66E+00	1.21E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)									Berry Mix (species unidentified)					
Sample ID	D65-BERRY MIX									D71-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	1.03E+00	7.41E+00	2.65E+03	2.80E-03	7.42E+00	2.91E-02	2.10E-01	7.63E+00	1.06E+00	2.03E+00	1.45E+01	3.59E-01	2.58E+00	1.71E+01	2.39E+00
Antimony	1.00E-03	7.19E-03	5.00E+00	1.44E-03	7.19E-03	1.00E-07	7.23E-07	7.19E-03	1.00E-03	1.00E-03	7.14E-03	1.24E-06	8.90E-06	7.15E-03	1.00E-03
Arsenic	2.00E-03	1.44E-02	2.50E+00	5.76E-03	1.44E-02	5.02E-07	3.62E-06	1.44E-02	2.00E-03	2.00E-03	1.43E-02	6.18E-06	4.45E-05	1.43E-02	2.01E-03
Barium	9.72E-01	6.99E+00	1.66E+01	4.21E-01	6.99E+00	3.01E-06	2.17E-05	6.99E+00	9.72E-01	2.03E+00	1.45E+01	3.71E-05	2.67E-04	1.45E+01	2.03E+00
Beryllium	1.00E-03	7.19E-03	2.50E-01	2.88E-02	7.20E-03	3.31E-07	2.39E-06	7.20E-03	1.00E-03	1.00E-03	7.14E-03	4.08E-06	2.94E-05	7.17E-03	1.00E-03
Bismuth	1.00E-03	7.19E-03	1.00E+01	7.19E-04	7.19E-03	1.00E-07	7.23E-07	7.19E-03	1.00E-03	1.00E-03	7.14E-03	1.24E-06	8.90E-06	7.15E-03	1.00E-03
Cadmium	1.00E-03	7.19E-03	2.50E-01	2.88E-02	7.19E-03	1.00E-07	7.23E-07	7.20E-03	1.00E-03	1.00E-03	7.14E-03	1.24E-06	8.90E-06	7.15E-03	1.00E-03
Calcium	1.11E+02	7.99E+02	1.44E+03	5.55E-01	8.01E+02	3.21E-02	2.31E-01	8.01E+02	1.11E+02	1.85E+02	1.32E+03	3.96E-01	2.85E+00	1.32E+03	1.85E+02
Chromium	1.13E+00	8.13E+00	8.82E+00	9.24E-01	8.15E+00	1.51E-04	1.08E-03	8.15E+00	1.13E+00	2.10E+00	1.50E+01	1.85E-03	1.34E-02	1.50E+01	2.10E+00
Cobalt	2.41E-02	1.73E-01	1.00E+00	1.73E-01	1.74E-01	3.52E-05	2.53E-04	1.74E-01	2.42E-02	3.82E-02	2.73E-01	4.33E-04	3.12E-03	2.76E-01	3.86E-02
Copper	5.21E-01	3.75E+00	5.21E+00	7.21E-01	3.76E+00	1.10E-04	7.95E-04	3.76E+00	5.23E-01	6.97E-01	4.98E+00	1.36E-03	9.79E-03	4.99E+00	6.98E-01
Iron	6.71E+00	4.83E+01	6.32E+03	7.65E-03	4.83E+01	4.92E-02	3.54E-01	4.87E+01	6.77E+00	1.19E+01	8.50E+01	6.06E-01	4.36E+00	8.94E+01	1.25E+01
Lead	2.00E-03	1.44E-02	1.50E+01	9.59E-04	1.44E-02	6.03E-07	4.34E-06	1.44E-02	2.00E-03	2.00E-03	1.43E-02	7.42E-06	5.34E-05	1.43E-02	2.01E-03
Magnesium	6.93E+01	4.99E+02	1.62E+03	3.08E-01	5.00E+02	2.31E-02	1.66E-01	5.00E+02	6.95E+01	7.63E+01	5.45E+02	2.84E-01	2.05E+00	5.47E+02	7.66E+01
Manganese	1.03E+01	7.41E+01	4.89E+01	1.52E+00	7.43E+01	9.34E-04	6.72E-03	7.43E+01	1.03E+01	5.33E+01	3.81E+02	1.15E-02	8.28E-02	3.81E+02	5.33E+01
Mercury	5.00E-04	3.60E-03	2.50E-03	1.44E+00	3.60E-03	1.00E-08	7.23E-08	3.60E-03	5.00E-04	5.00E-04	3.57E-03	1.24E-07	8.90E-07	3.57E-03	5.00E-04
Molybdenum	8.09E-02	5.82E-01	2.00E+00	2.91E-01	5.82E-01	5.02E-07	3.62E-06	5.82E-01	8.09E-02	1.65E-01	1.18E+00	6.18E-06	4.45E-05	1.18E+00	1.65E-01
Nickel	7.73E-01	5.56E+00	2.51E+00	2.22E+00	5.58E+00	7.23E-05	5.21E-04	5.58E+00	7.76E-01	1.31E+00	9.36E+00	8.90E-04	6.41E-03	9.36E+00	1.31E+00
Phosphorus	1.27E+02	9.14E+02	3.60E+02	2.54E+00	9.14E+02	2.21E-04	1.59E-03	9.14E+02	1.27E+02	1.35E+02	9.64E+02	2.72E-03	1.96E-02	9.64E+02	1.35E+02
Potassium	1.23E+03	8.85E+03	4.20E+02	2.11E+01	8.85E+03	1.00E-04	7.23E-04	8.85E+03	1.23E+03	8.95E+02	6.39E+03	1.24E-03	8.90E-03	6.39E+03	8.95E+02
Selenium	1.00E-02	7.19E-02	2.50E-01	2.88E-01	7.20E-02	5.02E-07	3.62E-06	7.20E-02	1.00E-02	1.00E-02	7.14E-02	6.18E-06	4.45E-05	7.15E-02	1.00E-02
Silver	5.00E-04	3.60E-03	1.00E+00	3.60E-03	3.60E-03	1.00E-07	7.23E-07	3.60E-03	5.00E-04	5.00E-04	3.57E-03	1.24E-06	8.90E-06	3.58E-03	5.01E-04
Sodium	1.00E+01	7.19E+01	1.00E+02	7.19E-01	7.20E+01	2.51E-04	1.81E-03	7.20E+01	1.00E+01	1.00E+01	7.14E+01	3.09E-03	2.23E-02	7.15E+01	1.00E+01
Strontium	1.60E-01	1.15E+00	6.58E+00	1.75E-01	1.15E+00	1.41E-05	1.01E-04	1.15E+00	1.60E-01	1.90E-01	1.36E+00	1.73E-04	1.25E-03	1.36E+00	1.90E-01
Thallium	2.00E-04	1.44E-03	5.00E-01	2.88E-03	1.44E-03	1.00E-07	7.23E-07	1.44E-03	2.00E-04	2.00E-04	1.43E-03	1.24E-06	8.90E-06	1.44E-03	2.01E-04
Tin	2.84E-01	2.04E+00	2.50E+00	8.17E-01	2.04E+00	2.01E-06	1.45E-05	2.04E+00	2.84E-01	3.16E-01	2.26E+00	2.47E-05	1.78E-04	2.26E+00	3.16E-01
Titanium	1.00E-02	7.19E-02	2.31E+02	3.11E-04	7.20E-02	2.21E-03	1.59E-02	8.79E-02	1.22E-02	5.00E-03	3.57E-02	2.72E-02	1.96E-01	2.32E-01	3.24E-02
Uranium	2.00E-04	1.44E-03	4.22E-01	3.41E-03	1.44E-03	1.00E-07	7.23E-07	1.44E-03	2.00E-04	2.00E-04	1.43E-03	1.24E-06	8.90E-06	1.44E-03	2.01E-04
Vanadium	8.40E-03	6.04E-02	1.43E+01	4.23E-03	6.05E-02	1.00E-04	7.23E-04	6.12E-02	8.51E-03	1.42E-02	1.01E-01	1.24E-03	8.90E-03	1.10E-01	1.54E-02
Zinc	1.30E+00	9.35E+00	7.81E+00	1.20E+00	9.36E+00	5.93E-05	4.27E-04	9.36E+00	1.30E+00	1.28E+00	9.14E+00	7.29E-04	5.25E-03	9.15E+00	1.28E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)									Berry Mix (species unidentified)								
Sample ID	D72-BERRY MIX									D06-BERRY MIX								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	7.64E+00	5.54E+01	1.66E+04	3.34E-03	5.55E+01	3.59E-01	2.58E+00	5.81E+01	8.02E+00	3.73E+00	3.45E+01	1.52E+04	2.27E-03	3.46E+01	2.45E-01	1.77E+00	3.64E+01	3.93E+00
Antimony	1.00E-03	7.25E-03	5.00E+00	1.45E-03	7.25E-03	1.24E-06	8.90E-06	7.26E-03	1.00E-03	1.00E-03	9.26E-03	5.00E+00	1.85E-03	9.26E-03	8.46E-07	6.09E-06	9.27E-03	1.00E-03
Arsenic	2.00E-03	1.45E-02	2.50E+00	5.80E-03	1.45E-02	6.18E-06	4.45E-05	1.45E-02	2.01E-03	2.00E-03	1.85E-02	2.50E+00	7.41E-03	1.85E-02	4.23E-06	3.05E-05	1.86E-02	2.00E-03
Barium	1.84E+00	1.33E+01	7.31E+01	1.82E-01	1.33E+01	3.71E-05	2.67E-04	1.33E+01	1.84E+00	5.79E-01	5.36E+00	8.27E+01	6.48E-02	5.36E+00	2.54E-05	1.83E-04	5.36E+00	5.79E-01
Beryllium	1.00E-03	7.25E-03	2.51E-01	2.90E-02	7.26E-03	4.08E-06	2.94E-05	7.29E-03	1.01E-03	1.00E-03	9.26E-03	2.50E-01	3.70E-02	9.27E-03	2.79E-06	2.01E-05	9.29E-03	1.00E-03
Bismuth	1.00E-03	7.25E-03	1.00E+01	7.25E-04	7.25E-03	1.24E-06	8.90E-06	7.26E-03	1.00E-03	1.00E-03	9.26E-03	1.00E+01	9.26E-04	9.26E-03	8.46E-07	6.09E-06	9.27E-03	1.00E-03
Cadmium	1.00E-03	7.25E-03	2.50E-01	2.90E-02	7.25E-03	1.24E-06	8.90E-06	7.26E-03	1.00E-03	1.00E-03	9.26E-03	2.50E-01	3.70E-02	9.26E-03	8.46E-07	6.09E-06	9.27E-03	1.00E-03
Calcium	2.32E+02	1.68E+03	3.33E+03	5.13E-01	1.71E+03	3.96E-01	2.85E+00	1.71E+03	2.36E+02	6.23E+01	5.77E+02	3.08E+03	1.90E-01	5.84E+02	2.71E-01	1.95E+00	5.86E+02	6.33E+01
Chromium	8.54E-01	6.19E+00	4.73E+01	1.31E-01	6.22E+00	1.85E-03	1.34E-02	6.23E+00	8.60E-01	5.30E+00	4.91E+01	4.78E+01	1.03E+00	4.92E+01	1.27E-03	9.14E-03	4.93E+01	5.32E+00
Cobalt	2.21E-02	1.60E-01	6.46E+00	2.50E-02	1.62E-01	4.33E-04	3.12E-03	1.65E-01	2.27E-02	8.56E-02	7.93E-01	9.84E+00	8.09E-02	7.96E-01	2.96E-04	2.13E-03	7.98E-01	8.62E-02
Copper	7.70E-01	5.58E+00	2.88E+01	1.95E-01	5.62E+00	1.36E-03	9.79E-03	5.62E+00	7.76E-01	7.02E-01	6.50E+00	2.02E+01	3.23E-01	6.54E+00	9.31E-04	6.70E-03	6.55E+00	7.07E-01
Iron	8.96E+00	6.49E+01	1.95E+04	3.35E-03	6.52E+01	6.06E-01	4.36E+00	6.96E+01	9.60E+00	2.94E+01	2.72E+02	2.33E+04	1.17E-02	2.73E+02	4.15E-01	2.98E+00	2.76E+02	2.98E+01
Lead	2.00E-03	1.45E-02	1.50E+01	9.66E-04	1.45E-02	7.42E-06	5.34E-05	1.45E-02	2.01E-03	1.74E-02	1.61E-01	1.50E+01	1.07E-02	1.61E-01	5.08E-06	3.65E-05	1.61E-01	1.74E-02
Magnesium	8.60E+01	6.23E+02	6.47E+03	9.69E-02	6.27E+02	2.84E-01	2.05E+00	6.29E+02	8.68E+01	5.23E+01	4.84E+02	8.51E+03	5.71E-02	4.86E+02	1.95E-01	1.40E+00	4.87E+02	5.26E+01
Manganese	2.32E+01	1.68E+02	1.37E+02	1.25E+00	1.70E+02	1.15E-02	8.28E-02	1.70E+02	2.35E+01	7.15E+00	6.62E+01	2.44E+02	2.72E-01	6.65E+01	7.87E-03	5.66E-02	6.65E+01	7.19E+00
Mercury	5.00E-04	3.62E-03	1.93E-02	1.88E-01	3.63E-03	1.24E-07	8.90E-07	3.63E-03	5.01E-04	5.00E-04	4.63E-03	9.41E-03	4.93E-01	4.64E-03	8.46E-08	6.09E-07	4.64E-03	5.01E-04
Molybdenum	6.40E-02	4.64E-01	2.00E+00	2.32E-01	4.64E-01	6.18E-06	4.45E-05	4.64E-01	6.40E-02	3.13E-01	2.90E+00	2.00E+00	1.45E+00	2.90E+00	4.23E-06	3.05E-05	2.90E+00	3.13E-01
Nickel	7.04E-01	5.10E+00	1.75E+01	2.93E-01	5.14E+00	8.90E-04	6.41E-03	5.14E+00	7.10E-01	3.09E+00	2.86E+01	2.48E+01	1.16E+00	2.87E+01	6.09E-04	4.39E-03	2.87E+01	3.10E+00
Phosphorus	1.54E+02	1.12E+03	5.31E+02	2.10E+00	1.12E+03	2.72E-03	1.96E-02	1.12E+03	1.54E+02	1.03E+02	9.54E+02	3.95E+02	2.41E+00	9.54E+02	1.86E-03	1.34E-02	9.54E+02	1.03E+02
Potassium	1.12E+03	8.12E+03	1.81E+03	4.48E+00	8.12E+03	1.24E-03	8.90E-03	8.12E+03	1.12E+03	1.06E+03	9.81E+03	2.95E+03	3.33E+00	9.82E+03	8.46E-04	6.09E-03	9.82E+03	1.06E+03
Selenium	1.00E-02	7.25E-02	2.51E-01	2.90E-01	7.27E-02	6.18E-06	4.45E-05	7.27E-02	1.00E-02	1.00E-02	9.26E-02	2.51E-01	3.70E-01	9.28E-02	4.23E-06	3.05E-05	9.28E-02	1.00E-02
Silver	5.00E-04	3.62E-03	1.00E+00	3.62E-03	3.62E-03	1.24E-06	8.90E-06	3.63E-03	5.01E-04	5.00E-04	4.63E-03	1.00E+00	4.63E-03	4.63E-03	8.46E-07	6.09E-06	4.64E-03	5.01E-04
Sodium	1.00E+01	7.25E+01	2.90E+02	2.50E-01	7.26E+01	3.09E-03	2.23E-02	7.26E+01	1.00E+01	1.00E+01	9.26E+01	4.80E+02	1.93E-01	9.26E+01	2.12E-03	1.52E-02	9.27E+01	1.00E+01
Strontium	3.13E-01	2.27E+00	2.74E+01	8.28E-02	2.27E+00	1.73E-04	1.25E-03	2.27E+00	3.13E-01	1.13E-01	1.05E+00	2.13E+01	4.91E-02	1.05E+00	1.18E-04	8.53E-04	1.05E+00	1.13E-01
Thallium	2.00E-04	1.45E-03	5.00E-01	2.90E-03	1.45E-03	1.24E-06	8.90E-06	1.46E-03	2.01E-04	2.00E-04	1.85E-03	5.00E-01	3.70E-03	1.85E-03	8.46E-07	6.09E-06	1.86E-03	2.01E-04
Tin	3.86E-01	2.80E+00	2.50E+00	1.12E+00	2.80E+00	2.47E-05	1.78E-04	2.80E+00	3.87E-01	3.29E-01	3.05E+00	2.50E+00	1.22E+00	3.05E+00	1.69E-05	1.22E-04	3.05E+00	3.29E-01
Titanium	2.23E-01	1.62E+00	1.08E+03	1.50E-03	1.62E+00	2.72E-02	1.96E-01	1.82E+00	2.51E-01	1.61E-01	1.49E+00	1.18E+03	1.26E-03	1.49E+00	1.86E-02	1.34E-01	1.63E+00	1.76E-01
Uranium	2.00E-04	1.45E-03	1.63E+00	8.89E-04	1.45E-03	1.24E-06	8.90E-06	1.46E-03	2.01E-04	2.00E-04	1.85E-03	1.37E+00	1.35E-03	1.85E-03	8.46E-07	6.09E-06	1.86E-03	2.01E-04
Vanadium	1.58E-02	1.14E-01	5.08E+01	2.26E-03	1.15E-01	1.24E-03	8.90E-03	1.24E-01	1.71E-02	4.12E-02	3.81E-01	5.13E+01	7.45E-03	3.82E-01	8.46E-04	6.09E-03	3.88E-01	4.19E-02
Zinc	1.43E+00	1.04E+01	3.47E+01	2.99E-01	1.04E+01	7.29E-04	5.25E-03	1.04E+01	1.43E+00	7.00E-01	6.48E+00	4.48E+01	1.45E-01	6.49E+00	4.99E-04	3.59E-03	6.49E+00	7.01E-01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)						Berry Mix (species unidentified)						Berry Mix (species unidentified)					
Sample ID	D12-BERRY MIX (no soil match)						D16-BERRY MIX (no soil match)						D26-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	8.40E-01	6.56E+00	1.31E-01	9.43E-01	7.51E+00	9.61E-01	2.00E-01	1.57E+00	6.11E-02	4.40E-01	2.01E+00	2.56E-01	2.00E-01	1.27E+00	3.17E-02	2.28E-01	1.49E+00	2.36E-01
Antimony	1.00E-03	7.81E-03	4.52E-07	3.25E-06	7.82E-03	1.00E-03	1.00E-03	7.87E-03	2.11E-07	1.52E-06	7.88E-03	1.00E-03	1.00E-03	6.33E-03	1.09E-07	7.88E-07	6.33E-03	1.00E-03
Arsenic	2.00E-03	1.56E-02	2.26E-06	1.63E-05	1.56E-02	2.00E-03	2.00E-03	1.57E-02	1.05E-06	7.59E-06	1.58E-02	2.00E-03	2.00E-03	1.27E-02	5.47E-07	3.94E-06	1.27E-02	2.00E-03
Barium	1.24E+00	9.69E+00	1.36E-05	9.76E-05	9.69E+00	1.24E+00	4.75E-01	3.74E+00	6.32E-06	4.55E-05	3.74E+00	4.75E-01	5.90E-01	3.73E+00	3.28E-06	2.36E-05	3.73E+00	5.90E-01
Beryllium	1.00E-03	7.81E-03	1.49E-06	1.07E-05	7.82E-03	1.00E-03	1.00E-03	7.87E-03	6.96E-07	5.01E-06	7.88E-03	1.00E-03	1.00E-03	6.33E-03	3.61E-07	2.60E-06	6.33E-03	1.00E-03
Bismuth	1.00E-03	7.81E-03	4.52E-07	3.25E-06	7.82E-03	1.00E-03	1.00E-03	7.87E-03	2.11E-07	1.52E-06	7.88E-03	1.00E-03	1.00E-03	6.33E-03	1.09E-07	7.88E-07	6.33E-03	1.00E-03
Cadmium	1.34E-02	1.05E-01	4.52E-07	3.25E-06	1.05E-01	1.34E-02	3.70E-03	2.91E-02	2.11E-07	1.52E-06	2.91E-02	3.70E-03	3.50E-03	2.22E-02	1.09E-07	7.88E-07	2.22E-02	3.50E-03
Calcium	1.47E+02	1.15E+03	1.45E-01	1.04E+00	1.15E+03	1.47E+02	1.43E+02	1.13E+03	6.75E-02	4.86E-01	1.13E+03	1.43E+02	1.69E+02	1.07E+03	3.50E-02	2.52E-01	1.07E+03	1.69E+02
Chromium	7.40E+00	5.78E+01	6.78E-04	4.88E-03	5.78E+01	7.40E+00	7.89E-01	6.21E+00	3.16E-04	2.28E-03	6.21E+00	7.89E-01	2.30E+00	1.46E+01	1.64E-04	1.18E-03	1.46E+01	2.30E+00
Cobalt	5.11E-02	3.99E-01	1.58E-04	1.14E-03	4.00E-01	5.12E-02	1.77E-02	1.39E-01	7.38E-05	5.31E-04	1.40E-01	1.78E-02	4.17E-02	2.64E-01	3.83E-05	2.76E-04	2.64E-01	4.17E-02
Copper	7.47E-01	5.84E+00	4.97E-04	3.58E-03	5.84E+00	7.47E-01	5.17E-01	4.07E+00	2.32E-04	1.67E-03	4.07E+00	5.17E-01	4.59E-01	2.91E+00	1.20E-04	8.67E-04	2.91E+00	4.59E-01
Iron	3.68E+01	2.88E+02	2.21E-01	1.59E+00	2.89E+02	3.70E+01	5.16E+00	4.06E+01	1.03E-01	7.44E-01	4.14E+01	5.25E+00	1.24E+01	7.85E+01	5.36E-02	3.86E-01	7.89E+01	1.25E+01
Lead	5.00E-03	3.91E-02	2.71E-06	1.95E-05	3.91E-02	5.00E-03	5.60E-03	4.41E-02	1.26E-06	9.11E-06	4.41E-02	5.60E-03	2.00E-03	1.27E-02	6.57E-07	4.73E-06	1.27E-02	2.00E-03
Magnesium	9.19E+01	7.18E+02	1.04E-01	7.48E-01	7.19E+02	9.20E+01	7.32E+01	5.76E+02	4.85E-02	3.49E-01	5.77E+02	7.32E+01	7.54E+01	4.77E+02	2.52E-02	1.81E-01	4.77E+02	7.54E+01
Manganese	1.40E+01	1.09E+02	4.20E-03	3.03E-02	1.09E+02	1.40E+01	1.86E+00	1.46E+01	1.96E-03	1.41E-02	1.47E+01	1.86E+00	3.06E+00	1.94E+01	1.02E-03	7.33E-03	1.94E+01	3.06E+00
Mercury	5.00E-04	3.91E-03	4.52E-08	3.25E-07	3.91E-03	5.00E-04	5.00E-04	3.94E-03	2.11E-08	1.52E-07	3.94E-03	5.00E-04	5.00E-04	3.16E-03	1.09E-08	7.88E-08	3.16E-03	5.00E-04
Molybdenum	1.81E-01	1.41E+00	2.26E-06	1.63E-05	1.41E+00	1.81E-01	4.22E-02	3.32E-01	1.05E-06	7.59E-06	3.32E-01	4.22E-02	1.13E-01	7.15E-01	5.47E-07	3.94E-06	7.15E-01	1.13E-01
Nickel	4.01E+00	3.13E+01	3.25E-04	2.34E-03	3.13E+01	4.01E+00	5.32E-01	4.19E+00	1.52E-04	1.09E-03	4.19E+00	5.32E-01	1.38E+00	8.73E+00	7.88E-05	5.67E-04	8.73E+00	1.38E+00
Phosphorus	1.84E+02	1.44E+03	9.94E-04	7.16E-03	1.44E+03	1.84E+02	1.13E+02	8.90E+02	4.64E-04	3.34E-03	8.90E+02	1.13E+02	1.19E+02	7.53E+02	2.41E-04	1.73E-03	7.53E+02	1.19E+02
Potassium	1.23E+03	9.61E+03	4.52E-04	3.25E-03	9.61E+03	1.23E+03	1.24E+03	9.76E+03	2.11E-04	1.52E-03	9.76E+03	1.24E+03	1.25E+03	7.91E+03	1.09E-04	7.88E-04	7.91E+03	1.25E+03
Selenium	1.00E-02	7.81E-02	2.26E-06	1.63E-05	7.81E-02	1.00E-02	1.00E-02	7.87E-02	1.05E-06	7.59E-06	7.87E-02	1.00E-02	1.00E-02	6.33E-02	5.47E-07	3.94E-06	6.33E-02	1.00E-02
Silver	5.00E-04	3.91E-03	4.52E-07	3.25E-06	3.91E-03	5.00E-04	5.00E-04	3.94E-03	2.11E-07	1.52E-06	3.94E-03	5.00E-04	5.00E-04	3.16E-03	1.09E-07	7.88E-07	3.17E-03	5.00E-04
Sodium	1.00E+01	7.81E+01	1.13E-03	8.13E-03	7.81E+01	1.00E+01	1.00E+01	7.87E+01	5.27E-04	3.79E-03	7.87E+01	1.00E+01	1.00E+01	6.33E+01	2.74E-04	1.97E-03	6.33E+01	1.00E+01
Strontium	1.54E-01	1.20E+00	6.33E-05	4.55E-04	1.20E+00	1.54E-01	1.60E-01	1.26E+00	2.95E-05	2.12E-04	1.26E+00	1.60E-01	1.89E-01	1.20E+00	1.53E-05	1.10E-04	1.20E+00	1.89E-01
Thallium	2.00E-04	1.56E-03	4.52E-07	3.25E-06	1.57E-03	2.00E-04	2.00E-04	1.57E-03	2.11E-07	1.52E-06	1.58E-03	2.00E-04	2.00E-04	1.27E-03	1.09E-07	7.88E-07	1.27E-03	2.00E-04
Tin	4.17E-01	3.26E+00	9.04E-06	6.51E-05	3.26E+00	4.17E-01	1.90E-01	1.50E+00	4.22E-06	3.04E-05	1.50E+00	1.90E-01	1.51E-01	9.56E-01	2.19E-06	1.58E-05	9.56E-01	1.51E-01
Titanium	1.90E-02	1.48E-01	9.94E-03	7.16E-02	2.20E-01	2.82E-02	5.00E-03	3.94E-02	4.64E-03	3.34E-02	7.28E-02	9.24E-03	5.00E-03	3.16E-02	2.41E-03	1.73E-02	4.90E-02	7.74E-03
Uranium	2.00E-04	1.56E-03	4.52E-07	3.25E-06	1.57E-03	2.00E-04	2.00E-04	1.57E-03	2.11E-07	1.52E-06	1.58E-03	2.00E-04	2.00E-04	1.27E-03	1.09E-07	7.88E-07	1.27E-03	2.00E-04
Vanadium	2.73E-02	2.13E-01	4.52E-04	3.25E-03	2.17E-01	2.77E-02	5.90E-03	4.65E-02	2.11E-04	1.52E-03	4.80E-02	6.09E-03	1.57E-02	9.94E-02	1.09E-04	7.88E-04	1.00E-01	1.58E-02
Zinc	2.00E+00	1.56E+01	2.67E-04	1.92E-03	1.56E+01	2.00E+00	1.89E+00	1.49E+01	1.24E-04	8.95E-04	1.49E+01	1.89E+00	1.92E+00	1.22E+01	6.46E-05	4.65E-04	1.22E+01	1.92E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)						Berry Mix (species unidentified)					
Sample ID	D39-BERRY MIX (no soil match)						D42-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals												
Aluminum	1.94E+00	1.47E+01	2.31E-02	1.67E-01	1.49E+01	1.96E+00	2.48E+01	1.89E+02	1.08E-01	7.79E-01	1.90E+02	2.49E+01
Antimony	1.00E-03	7.58E-03	7.98E-08	5.75E-07	7.58E-03	1.00E-03	1.00E-03	7.63E-03	3.73E-07	2.69E-06	7.64E-03	1.00E-03
Arsenic	2.00E-03	1.52E-02	3.99E-07	2.87E-06	1.52E-02	2.00E-03	2.90E-02	2.21E-01	1.87E-06	1.34E-05	2.21E-01	2.90E-02
Barium	6.28E-01	4.76E+00	2.39E-06	1.72E-05	4.76E+00	6.28E-01	1.47E+00	1.12E+01	1.12E-05	8.06E-05	1.12E+01	1.47E+00
Beryllium	1.00E-03	7.58E-03	2.63E-07	1.90E-06	7.58E-03	1.00E-03	1.00E-03	7.63E-03	1.23E-06	8.87E-06	7.64E-03	1.00E-03
Bismuth	1.00E-03	7.58E-03	7.98E-08	5.75E-07	7.58E-03	1.00E-03	1.00E-03	7.63E-03	3.73E-07	2.69E-06	7.64E-03	1.00E-03
Cadmium	1.00E-03	7.58E-03	7.98E-08	5.75E-07	7.58E-03	1.00E-03	1.00E-03	7.63E-03	3.73E-07	2.69E-06	7.64E-03	1.00E-03
Calcium	8.98E+01	6.80E+02	2.55E-02	1.84E-01	6.80E+02	8.98E+01	1.17E+02	8.93E+02	1.19E-01	8.60E-01	8.94E+02	1.17E+02
Chromium	2.48E+00	1.88E+01	1.20E-04	8.62E-04	1.88E+01	2.48E+00	5.91E+00	4.51E+01	5.60E-04	4.03E-03	4.51E+01	5.91E+00
Cobalt	4.14E-02	3.14E-01	2.79E-05	2.01E-04	3.14E-01	4.14E-02	1.13E-01	8.63E-01	1.31E-04	9.41E-04	8.64E-01	1.13E-01
Copper	8.06E-01	6.11E+00	8.78E-05	6.32E-04	6.11E+00	8.06E-01	1.24E+00	9.47E+00	4.11E-04	2.96E-03	9.47E+00	1.24E+00
Iron	1.49E+01	1.13E+02	3.91E-02	2.82E-01	1.13E+02	1.49E+01	2.30E+02	1.76E+03	1.83E-01	1.32E+00	1.76E+03	2.30E+02
Lead	2.00E-03	1.52E-02	4.79E-07	3.45E-06	1.52E-02	2.00E-03	2.77E-02	2.11E-01	2.24E-06	1.61E-05	2.11E-01	2.77E-02
Magnesium	5.26E+01	3.98E+02	1.84E-02	1.32E-01	3.99E+02	5.26E+01	7.32E+01	5.59E+02	8.59E-02	6.18E-01	5.59E+02	7.33E+01
Manganese	1.97E+00	1.49E+01	7.42E-04	5.34E-03	1.49E+01	1.97E+00	1.20E+01	9.16E+01	3.47E-03	2.50E-02	9.16E+01	1.20E+01
Mercury	5.00E-04	3.79E-03	7.98E-09	5.75E-08	3.79E-03	5.00E-04	1.25E-02	9.54E-02	3.73E-08	2.69E-07	9.54E-02	1.25E-02
Molybdenum	1.51E-01	1.14E+00	3.99E-07	2.87E-06	1.14E+00	1.51E-01	2.87E-01	2.19E+00	1.87E-06	1.34E-05	2.19E+00	2.87E-01
Nickel	1.49E+00	1.13E+01	5.75E-05	4.14E-04	1.13E+01	1.49E+00	3.43E+00	2.62E+01	2.69E-04	1.94E-03	2.62E+01	3.43E+00
Phosphorus	1.14E+02	8.64E+02	1.76E-04	1.26E-03	8.64E+02	1.14E+02	1.43E+02	1.09E+03	8.21E-04	5.91E-03	1.09E+03	1.43E+02
Potassium	1.06E+03	8.03E+03	7.98E-05	5.75E-04	8.03E+03	1.06E+03	1.14E+03	8.70E+03	3.73E-04	2.69E-03	8.70E+03	1.14E+03
Selenium	1.00E-02	7.58E-02	3.99E-07	2.87E-06	7.58E-02	1.00E-02	1.00E-02	7.63E-02	1.87E-06	1.34E-05	7.63E-02	1.00E-02
Silver	5.00E-04	3.79E-03	7.98E-08	5.75E-07	3.79E-03	5.00E-04	5.00E-04	3.82E-03	3.73E-07	2.69E-06	3.82E-03	5.00E-04
Sodium	1.00E+01	7.58E+01	2.00E-04	1.44E-03	7.58E+01	1.00E+01	1.00E+01	7.63E+01	9.33E-04	6.72E-03	7.63E+01	1.00E+01
Strontium	8.70E-02	6.59E-01	1.12E-05	8.04E-05	6.59E-01	8.70E-02	3.53E-01	2.69E+00	5.23E-05	3.76E-04	2.70E+00	3.53E-01
Thallium	2.00E-04	1.52E-03	7.98E-08	5.75E-07	1.52E-03	2.00E-04	4.80E-04	3.66E-03	3.73E-07	2.69E-06	3.67E-03	4.80E-04
Tin	4.53E-01	3.43E+00	1.60E-06	1.15E-05	3.43E+00	4.53E-01	1.62E-01	1.24E+00	7.47E-06	5.38E-05	1.24E+00	1.62E-01
Titanium	9.60E-02	7.27E-01	1.76E-03	1.26E-02	7.40E-01	9.77E-02	7.19E-01	5.49E+00	8.21E-03	5.91E-02	5.55E+00	7.27E-01
Uranium	2.00E-04	1.52E-03	7.98E-08	5.75E-07	1.52E-03	2.00E-04	5.70E-03	4.35E-02	3.73E-07	2.69E-06	4.35E-02	5.70E-03
Vanadium	1.98E-02	1.50E-01	7.98E-05	5.75E-04	1.51E-01	1.99E-02	9.86E-02	7.53E-01	3.73E-04	2.69E-03	7.55E-01	9.90E-02
Zinc	1.01E+00	7.65E+00	4.71E-05	3.39E-04	7.65E+00	1.01E+00	1.17E+00	8.93E+00	2.20E-04	1.59E-03	8.93E+00	1.17E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)									Berry Mix (species unidentified)					
Sample ID	D43-BERRY MIX									D40-BERRY MIX (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	7.30E-01	5.37E+00	1.64E+04	3.35E-04	5.51E+00	1.81E-01	1.30E+00	6.81E+00	9.26E-01	4.40E-01	2.53E+00	2.46E-02	1.77E-01	2.71E+00	4.71E-01
Antimony	1.00E-03	7.35E-03	5.00E+00	1.47E-03	7.35E-03	6.23E-07	4.48E-06	7.36E-03	1.00E-03	1.00E-03	5.75E-03	8.48E-08	6.11E-07	5.75E-03	1.00E-03
Arsenic	2.00E-03	1.47E-02	2.50E+00	5.88E-03	1.47E-02	3.11E-06	2.24E-05	1.47E-02	2.00E-03	2.00E-03	1.15E-02	4.24E-07	3.05E-06	1.15E-02	2.00E-03
Barium	2.63E-01	1.93E+00	9.30E+01	1.90E-02	1.76E+00	1.87E-05	1.34E-04	1.76E+00	2.40E-01	1.18E+00	6.78E+00	2.54E-06	1.83E-05	6.78E+00	1.18E+00
Beryllium	1.00E-03	7.35E-03	5.60E-01	1.39E-02	7.77E-03	2.05E-06	1.48E-05	7.79E-03	1.06E-03	1.00E-03	5.75E-03	2.80E-07	2.02E-06	5.75E-03	1.00E-03
Bismuth	1.00E-03	7.35E-03	1.00E+01	7.35E-04	7.35E-03	6.23E-07	4.48E-06	7.36E-03	1.00E-03	1.00E-03	5.75E-03	8.48E-08	6.11E-07	5.75E-03	1.00E-03
Cadmium	1.00E-03	7.35E-03	2.50E-01	2.94E-02	7.36E-03	6.23E-07	4.48E-06	7.36E-03	1.00E-03	1.00E-03	5.75E-03	8.48E-08	6.11E-07	5.75E-03	1.00E-03
Calcium	6.96E+01	5.12E+02	9.44E+03	5.69E-02	5.37E+02	1.99E-01	1.43E+00	5.38E+02	7.32E+01	1.22E+02	7.01E+02	2.71E-02	1.95E-01	7.01E+02	1.22E+02
Chromium	4.60E-01	3.38E+00	4.58E+01	7.76E-02	3.55E+00	9.34E-04	6.72E-03	3.56E+00	4.84E-01	1.44E+00	8.28E+00	1.27E-04	9.16E-04	8.28E+00	1.44E+00
Cobalt	1.73E-02	1.27E-01	9.43E+00	1.43E-02	1.35E-01	2.18E-04	1.57E-03	1.36E-01	1.85E-02	2.32E-02	1.33E-01	2.97E-05	2.14E-04	1.34E-01	2.32E-02
Copper	4.36E-01	3.21E+00	1.66E+01	1.47E-01	2.44E+00	6.85E-04	4.93E-03	2.44E+00	3.32E-01	9.38E-01	5.39E+00	9.33E-05	6.72E-04	5.39E+00	9.38E-01
Iron	3.66E+00	2.69E+01	2.28E+04	1.23E-03	2.81E+01	3.05E-01	2.20E+00	3.03E+01	4.12E+00	8.53E+00	4.90E+01	4.16E-02	2.99E-01	4.93E+01	8.58E+00
Lead	2.00E-03	1.47E-02	1.50E+01	9.80E-04	1.47E-02	3.74E-06	2.69E-05	1.47E-02	2.00E-03	2.00E-03	1.15E-02	5.09E-07	3.66E-06	1.15E-02	2.00E-03
Magnesium	7.72E+01	5.68E+02	9.57E+03	6.17E-02	5.90E+02	1.43E-01	1.03E+00	5.91E+02	8.04E+01	6.46E+01	3.71E+02	1.95E-02	1.40E-01	3.71E+02	6.46E+01
Manganese	1.58E+00	1.16E+01	2.49E+02	4.72E-02	1.17E+01	5.79E-03	4.17E-02	1.18E+01	1.60E+00	6.21E+00	3.57E+01	7.89E-04	5.68E-03	3.57E+01	6.21E+00
Mercury	5.00E-04	3.68E-03	1.75E-02	3.40E-01	5.96E-03	6.23E-08	4.48E-07	5.96E-03	8.11E-04	5.00E-04	2.87E-03	8.48E-09	6.11E-08	2.87E-03	5.00E-04
Molybdenum	2.82E-02	2.07E-01	2.00E+00	1.04E-01	2.07E-01	3.11E-06	2.24E-05	2.07E-01	2.82E-02	8.07E-02	4.64E-01	4.24E-07	3.05E-06	4.64E-01	8.07E-02
Nickel	3.46E-01	2.54E+00	2.44E+01	1.08E-01	2.64E+00	4.48E-04	3.23E-03	2.64E+00	3.59E-01	8.98E-01	5.16E+00	6.11E-05	4.40E-04	5.16E+00	8.98E-01
Phosphorus	1.86E+02	1.37E+03	4.06E+02	3.84E+00	1.56E+03	1.37E-03	9.86E-03	1.56E+03	2.12E+02	1.34E+02	7.70E+02	1.87E-04	1.34E-03	7.70E+02	1.34E+02
Potassium	1.38E+03	1.01E+04	3.96E+03	3.23E+00	1.28E+04	6.23E-04	4.48E-03	1.28E+04	1.74E+03	9.94E+02	5.71E+03	8.48E-05	6.11E-04	5.71E+03	9.94E+02
Selenium	1.00E-02	7.35E-02	2.50E-01	2.94E-01	7.37E-02	3.11E-06	2.24E-05	7.37E-02	1.00E-02	1.00E-02	5.75E-02	4.24E-07	3.05E-06	5.75E-02	1.00E-02
Silver	5.00E-04	3.68E-03	1.00E+00	3.68E-03	3.68E-03	6.23E-07	4.48E-06	3.68E-03	5.01E-04	5.00E-04	2.87E-03	8.48E-08	6.11E-07	2.87E-03	5.00E-04
Sodium	1.00E+01	7.35E+01	6.30E+02	1.15E-01	7.24E+01	1.56E-03	1.12E-02	7.24E+01	9.85E+00	1.00E+01	5.75E+01	2.12E-04	1.53E-03	5.75E+01	1.00E+01
Strontium	1.37E-01	1.01E+00	7.99E+01	1.30E-02	1.04E+00	8.72E-05	6.28E-04	1.04E+00	1.42E-01	1.84E-01	1.06E+00	1.19E-05	8.55E-05	1.06E+00	1.84E-01
Thallium	2.00E-04	1.47E-03	5.00E-01	2.94E-03	1.47E-03	6.23E-07	4.48E-06	1.48E-03	2.01E-04	2.00E-04	1.15E-03	8.48E-08	6.11E-07	1.15E-03	2.00E-04
Tin	8.16E-02	6.00E-01	2.50E+00	2.40E-01	6.00E-01	1.25E-05	8.96E-05	6.00E-01	8.17E-02	9.67E-02	5.56E-01	1.70E-06	1.22E-05	5.56E-01	9.67E-02
Titanium	1.40E-02	1.03E-01	9.98E+02	1.09E-04	1.09E-01	1.37E-02	9.86E-02	2.07E-01	2.82E-02	1.20E-02	6.90E-02	1.87E-03	1.34E-02	8.24E-02	1.43E-02
Uranium	2.00E-04	1.47E-03	8.37E-01	1.49E-03	1.25E-03	6.23E-07	4.48E-06	1.25E-03	1.70E-04	2.00E-04	1.15E-03	8.48E-08	6.11E-07	1.15E-03	2.00E-04
Vanadium	2.00E-03	1.47E-02	4.73E+01	3.12E-04	1.47E-02	6.23E-04	4.48E-03	1.92E-02	2.61E-03	1.01E-02	5.80E-02	8.48E-05	6.11E-04	5.87E-02	1.02E-02
Zinc	1.70E+00	1.25E+01	5.10E+01	2.57E-01	1.31E+01	3.67E-04	2.64E-03	1.31E+01	1.79E+00	1.19E+00	6.84E+00	5.01E-05	3.60E-04	6.84E+00	1.19E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Berry Mix (species unidentified)						Berry Mix (species unidentified)						Bog Blueberry (Vaccinium uliginosum)					
Sample ID	D50-BERRY MIX (no soil match)						D51-BERRY MIX (no soil match)						D52-VACCINIUM (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.80E-01	3.64E+00	2.26E-02	1.63E-01	3.80E+00	5.01E-01	5.50E-01	4.33E+00	2.09E-01	1.50E+00	5.84E+00	7.41E-01	7.20E-01	5.95E+00	1.66E+00	1.19E+01	1.79E+01	2.16E+00
Antimony	1.00E-03	7.58E-03	7.79E-08	5.61E-07	7.58E-03	1.00E-03	1.00E-03	7.87E-03	7.21E-07	5.19E-06	7.88E-03	1.00E-03	1.00E-03	8.26E-03	5.71E-06	4.11E-05	8.31E-03	1.00E-03
Arsenic	2.00E-03	1.52E-02	3.90E-07	2.81E-06	1.52E-02	2.00E-03	2.00E-03	1.57E-02	3.60E-06	2.59E-05	1.58E-02	2.00E-03	2.00E-03	1.65E-02	2.86E-05	2.06E-04	1.67E-02	2.02E-03
Barium	1.22E+00	9.24E+00	2.34E-06	1.68E-05	9.24E+00	1.22E+00	5.84E-01	4.60E+00	2.16E-05	1.56E-04	4.60E+00	5.84E-01	4.81E-01	3.98E+00	1.71E-04	1.23E-03	3.98E+00	4.81E-01
Beryllium	1.00E-03	7.58E-03	2.57E-07	1.85E-06	7.58E-03	1.00E-03	1.00E-03	7.87E-03	2.38E-06	1.71E-05	7.89E-03	1.00E-03	1.00E-03	8.26E-03	1.88E-05	1.36E-04	8.40E-03	1.02E-03
Bismuth	1.00E-03	7.58E-03	7.79E-08	5.61E-07	7.58E-03	1.00E-03	1.00E-03	7.87E-03	7.21E-07	5.19E-06	7.88E-03	1.00E-03	1.00E-03	8.26E-03	5.71E-06	4.11E-05	8.31E-03	1.00E-03
Cadmium	1.00E-03	7.58E-03	7.79E-08	5.61E-07	7.58E-03	1.00E-03	1.00E-03	7.87E-03	7.21E-07	5.19E-06	7.88E-03	1.00E-03	6.60E-03	5.45E-02	5.71E-06	4.11E-05	5.46E-02	6.60E-03
Calcium	1.77E+02	1.34E+03	2.49E-02	1.80E-01	1.34E+03	1.77E+02	7.84E+01	6.17E+02	2.31E-01	1.66E+00	6.19E+02	7.86E+01	1.33E+02	1.10E+03	1.83E+00	1.32E+01	1.11E+03	1.35E+02
Chromium	4.45E+00	3.37E+01	1.17E-04	8.42E-04	3.37E+01	4.45E+00	2.49E+00	1.96E+01	1.08E-03	7.78E-03	1.96E+01	2.49E+00	2.47E-01	2.04E+00	8.57E-03	6.17E-02	2.10E+00	2.54E-01
Cobalt	7.20E-02	5.45E-01	2.73E-05	1.96E-04	5.46E-01	7.20E-02	4.50E-02	3.54E-01	2.52E-04	1.82E-03	3.56E-01	4.52E-02	2.00E-03	1.65E-02	2.00E-03	1.44E-02	3.09E-02	3.74E-03
Copper	8.43E-01	6.39E+00	8.57E-05	6.17E-04	6.39E+00	8.43E-01	6.97E-01	5.49E+00	7.93E-04	5.71E-03	5.49E+00	6.98E-01	8.43E-01	6.97E+00	6.28E-03	4.52E-02	7.01E+00	8.48E-01
Iron	2.26E+01	1.71E+02	3.82E-02	2.75E-01	1.71E+02	2.26E+01	1.34E+01	1.06E+02	3.53E-01	2.54E+00	1.08E+02	1.37E+01	3.31E+00	2.74E+01	2.80E+00	2.01E+01	4.75E+01	5.75E+00
Lead	2.00E-03	1.52E-02	4.68E-07	3.37E-06	1.52E-02	2.00E-03	2.00E-03	1.57E-02	4.32E-06	3.11E-05	1.58E-02	2.00E-03	8.07E-02	6.67E-01	3.43E-05	2.47E-04	6.67E-01	8.07E-02
Magnesium	9.81E+01	7.43E+02	1.79E-02	1.29E-01	7.43E+02	9.81E+01	6.13E+01	4.83E+02	1.66E-01	1.19E+00	4.84E+02	6.15E+01	7.46E+01	6.17E+02	1.31E+00	9.45E+00	6.26E+02	7.57E+01
Manganese	6.23E+01	4.72E+02	7.25E-04	5.22E-03	4.72E+02	6.23E+01	8.62E+00	6.79E+01	6.70E-03	4.82E-02	6.79E+01	8.63E+00	1.64E+01	1.36E+02	5.31E-02	3.82E-01	1.36E+02	1.64E+01
Mercury	5.00E-04	3.79E-03	7.79E-09	5.61E-08	3.79E-03	5.00E-04	5.00E-04	3.94E-03	7.21E-08	5.19E-07	3.94E-03	5.00E-04	5.00E-04	4.13E-03	5.71E-07	4.11E-06	4.14E-03	5.00E-04
Molybdenum	2.59E-01	1.96E+00	3.90E-07	2.81E-06	1.96E+00	2.59E-01	1.23E-01	9.69E-01	3.60E-06	2.59E-05	9.69E-01	1.23E-01	8.38E-02	6.93E-01	2.86E-05	2.06E-04	6.93E-01	8.38E-02
Nickel	2.58E+00	1.95E+01	5.61E-05	4.04E-04	1.95E+01	2.58E+00	1.49E+00	1.17E+01	5.19E-04	3.74E-03	1.17E+01	1.49E+00	2.97E-01	2.45E+00	4.11E-03	2.96E-02	2.48E+00	3.01E-01
Phosphorus	1.82E+02	1.38E+03	1.71E-04	1.23E-03	1.38E+03	1.82E+02	1.28E+02	1.01E+03	1.59E-03	1.14E-02	1.01E+03	1.28E+02	1.59E+02	1.31E+03	1.26E-02	9.04E-02	1.31E+03	1.59E+02
Potassium	9.94E+02	7.53E+03	7.79E-05	5.61E-04	7.53E+03	9.94E+02	1.09E+03	8.58E+03	7.21E-04	5.19E-03	8.58E+03	1.09E+03	7.93E+02	6.55E+03	5.71E-03	4.11E-02	6.55E+03	7.93E+02
Selenium	1.00E-02	7.58E-02	3.90E-07	2.81E-06	7.58E-02	1.00E-02	1.00E-02	7.87E-02	3.60E-06	2.59E-05	7.88E-02	1.00E-02	1.00E-02	8.26E-02	2.86E-05	2.06E-04	8.29E-02	1.00E-02
Silver	5.00E-04	3.79E-03	7.79E-08	5.61E-07	3.79E-03	5.00E-04	5.00E-04	3.94E-03	7.21E-07	5.19E-06	3.94E-03	5.01E-04	5.00E-04	4.13E-03	5.71E-06	4.11E-05	4.17E-03	5.05E-04
Sodium	1.00E+01	7.58E+01	1.95E-04	1.40E-03	7.58E+01	1.00E+01	1.00E+01	7.87E+01	1.80E-03	1.30E-02	7.88E+01	1.00E+01	1.00E+01	8.26E+01	1.43E-02	1.03E-01	8.27E+01	1.00E+01
Strontium	4.15E-01	3.14E+00	1.09E-05	7.85E-05	3.14E+00	4.15E-01	1.23E-01	9.69E-01	1.01E-04	7.26E-04	9.69E-01	1.23E-01	2.71E-01	2.24E+00	7.99E-04	5.76E-03	2.25E+00	2.72E-01
Thallium	2.00E-04	1.52E-03	7.79E-08	5.61E-07	1.52E-03	2.00E-04	2.00E-04	1.57E-03	7.21E-07	5.19E-06	1.58E-03	2.01E-04	2.00E-04	1.65E-03	5.71E-06	4.11E-05	1.69E-03	2.05E-04
Tin	4.53E-01	3.43E+00	1.56E-06	1.12E-05	3.43E+00	4.53E-01	1.49E-01	1.17E+00	1.44E-05	1.04E-04	1.17E+00	1.49E-01	6.97E-01	5.76E+00	1.14E-04	8.22E-04	5.76E+00	6.97E-01
Titanium	5.00E-03	3.79E-02	1.71E-03	1.23E-02	5.02E-02	6.63E-03	1.70E-02	1.34E-01	1.59E-02	1.14E-01	2.48E-01	3.15E-02	1.40E-02	1.16E-01	1.26E-01	9.04E-01	1.02E+00	1.23E-01
Uranium	2.00E-04	1.52E-03	7.79E-08	5.61E-07	1.52E-03	2.00E-04	2.00E-04	1.57E-03	7.21E-07	5.19E-06	1.58E-03	2.01E-04	2.00E-04	1.65E-03	5.71E-06	4.11E-05	1.69E-03	2.05E-04
Vanadium	2.72E-02	2.06E-01	7.79E-05	5.61E-04	2.07E-01	2.73E-02	1.69E-02	1.33E-01	7.21E-04	5.19E-03	1.38E-01	1.76E-02	2.00E-03	1.65E-02	5.71E-03	4.11E-02	5.76E-02	6.97E-03
Zinc	1.84E+00	1.39E+01	4.60E-05	3.31E-04	1.39E+01	1.84E+00	1.15E+00	9.06E+00	4.25E-04	3.06E-03	9.06E+00	1.15E+00	3.55E+00	2.93E+01	3.37E-03	2.43E-02	2.94E+01	3.55E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)						Crowberry (Empetrum nigrum)						Crowberry (Empetrum nigrum)					
Sample ID	CFW1-A-EMPENIG (no soil match)						CWF1-EMPENIG (no soil match)						CWF5-EMPENIG (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.50E-01	1.98E+00	2.83E-01	2.04E+00	4.02E+00	9.13E-01	6.70E-01	3.30E+00	2.83E-01	2.04E+00	5.34E+00	1.08E+00	2.25E+00	1.33E+01	6.40E-02	4.61E-01	1.38E+01	2.33E+00
Antimony	1.00E-03	4.41E-03	9.77E-07	7.04E-06	4.41E-03	1.00E-03	1.00E-03	4.93E-03	9.77E-07	7.04E-06	4.93E-03	1.00E-03	1.00E-03	5.92E-03	2.21E-07	1.59E-06	5.92E-03	1.00E-03
Arsenic	2.00E-03	8.81E-03	4.89E-06	3.52E-05	8.85E-03	2.01E-03	2.00E-03	9.85E-03	4.89E-06	3.52E-05	9.89E-03	2.01E-03	4.20E-03	2.49E-02	1.10E-06	7.94E-06	2.49E-02	4.20E-03
Barium	2.21E+00	9.74E+00	2.93E-05	2.11E-04	9.74E+00	2.21E+00	1.84E+00	9.06E+00	2.93E-05	2.11E-04	9.06E+00	1.84E+00	1.01E+00	5.98E+00	6.62E-06	4.76E-05	5.98E+00	1.01E+00
Beryllium	1.00E-03	4.41E-03	3.23E-06	2.32E-05	4.43E-03	1.01E-03	1.00E-03	4.93E-03	3.23E-06	2.32E-05	4.95E-03	1.00E-03	1.00E-03	5.92E-03	7.28E-07	5.24E-06	5.92E-03	1.00E-03
Bismuth	1.00E-03	4.41E-03	9.77E-07	7.04E-06	4.41E-03	1.00E-03	1.00E-03	4.93E-03	9.77E-07	7.04E-06	4.93E-03	1.00E-03	1.00E-03	5.92E-03	2.21E-07	1.59E-06	5.92E-03	1.00E-03
Cadmium	1.00E-03	4.41E-03	9.77E-07	7.04E-06	4.41E-03	1.00E-03	1.00E-03	4.93E-03	9.77E-07	7.04E-06	4.93E-03	1.00E-03	1.00E-03	5.92E-03	2.21E-07	1.59E-06	5.92E-03	1.00E-03
Calcium	2.13E+02	9.38E+02	3.13E-01	2.25E+00	9.41E+02	2.14E+02	1.91E+02	9.41E+02	3.13E-01	2.25E+00	9.43E+02	1.91E+02	1.25E+02	7.40E+02	7.06E-02	5.08E-01	7.40E+02	1.25E+02
Chromium	1.00E-02	4.41E-02	1.47E-03	1.06E-02	5.46E-02	1.24E-02	8.59E+00	4.23E+01	1.47E-03	1.06E-02	4.23E+01	8.59E+00	9.89E+00	5.85E+01	3.31E-04	2.38E-03	5.85E+01	9.89E+00
Cobalt	5.60E-03	2.47E-02	3.42E-04	2.46E-03	2.71E-02	6.16E-03	5.24E-02	2.58E-01	3.42E-04	2.46E-03	2.61E-01	5.29E-02	6.58E-02	3.89E-01	7.72E-05	5.56E-04	3.90E-01	6.59E-02
Copper	1.52E+00	6.70E+00	1.08E-03	7.74E-03	6.70E+00	1.52E+00	1.43E+00	7.04E+00	1.08E-03	7.74E-03	7.05E+00	1.43E+00	3.04E+00	1.80E+01	2.43E-04	1.75E-03	1.80E+01	3.04E+00
Iron	2.89E+00	1.27E+01	4.79E-01	3.45E+00	1.62E+01	3.67E+00	3.95E+01	1.95E+02	4.79E-01	3.45E+00	1.98E+02	4.02E+01	5.21E+01	3.08E+02	1.08E-01	7.78E-01	3.09E+02	5.22E+01
Lead	4.40E-03	1.94E-02	5.86E-06	4.22E-05	1.94E-02	4.41E-03	5.90E-03	2.91E-02	5.86E-06	4.22E-05	2.91E-02	5.91E-03	7.90E-03	4.67E-02	1.32E-06	9.53E-06	4.68E-02	7.90E-03
Magnesium	1.29E+02	5.68E+02	2.25E-01	1.62E+00	5.70E+02	1.29E+02	1.17E+02	5.76E+02	2.25E-01	1.62E+00	5.78E+02	1.17E+02	8.49E+01	5.02E+02	5.07E-02	3.65E-01	5.03E+02	8.50E+01
Manganese	4.87E+00	2.15E+01	9.09E-03	6.54E-02	2.15E+01	4.88E+00	5.06E+00	2.49E+01	9.09E-03	6.54E-02	2.50E+01	5.07E+00	5.04E+00	2.98E+01	2.05E-03	1.48E-02	2.98E+01	5.04E+00
Mercury	5.00E-04	2.20E-03	9.77E-08	7.04E-07	2.20E-03	5.00E-04	5.00E-04	2.46E-03	9.77E-08	7.04E-07	2.46E-03	5.00E-04	5.00E-04	2.96E-03	2.21E-08	1.59E-07	2.96E-03	5.00E-04
Molybdenum	2.00E-03	8.81E-03	4.89E-06	3.52E-05	8.85E-03	2.01E-03	1.98E-01	9.75E-01	4.89E-06	3.52E-05	9.75E-01	1.98E-01	2.41E-01	1.43E+00	1.10E-06	7.94E-06	1.43E+00	2.41E-01
Nickel	1.57E-01	6.92E-01	7.04E-04	5.07E-03	6.97E-01	1.58E-01	4.40E+00	2.17E+01	7.04E-04	5.07E-03	2.17E+01	4.40E+00	5.32E+00	3.15E+01	1.59E-04	1.14E-03	3.15E+01	5.32E+00
Phosphorus	2.85E+02	1.26E+03	2.15E-03	1.55E-02	1.26E+03	2.85E+02	2.37E+02	1.17E+03	2.15E-03	1.55E-02	1.17E+03	2.37E+02	2.18E+02	1.29E+03	4.85E-04	3.49E-03	1.29E+03	2.18E+02
Potassium	1.66E+03	7.31E+03	9.77E-04	7.04E-03	7.31E+03	1.66E+03	1.53E+03	7.54E+03	9.77E-04	7.04E-03	7.54E+03	1.53E+03	1.21E+03	7.16E+03	2.21E-04	1.59E-03	7.16E+03	1.21E+03
Selenium	1.00E-02	4.41E-02	4.89E-06	3.52E-05	4.41E-02	1.00E-02	1.00E-02	4.93E-02	4.89E-06	3.52E-05	4.93E-02	1.00E-02	1.00E-02	5.92E-02	1.10E-06	7.94E-06	5.92E-02	1.00E-02
Silver	5.00E-04	2.20E-03	9.77E-07	7.04E-06	2.21E-03	5.02E-04	5.00E-04	2.46E-03	9.77E-07	7.04E-06	2.47E-03	5.01E-04	5.00E-04	2.96E-03	2.21E-07	1.59E-06	2.96E-03	5.00E-04
Sodium	1.00E+02	4.41E+02	2.44E-03	1.76E-02	4.41E+02	1.00E+02	1.00E+02	4.93E+02	2.44E-03	1.76E-02	4.93E+02	1.00E+02	1.00E+01	5.92E+01	5.52E-04	3.97E-03	5.92E+01	1.00E+01
Strontium	4.21E-01	1.85E+00	1.37E-04	9.85E-04	1.86E+00	4.21E-01	3.83E-01	1.89E+00	1.37E-04	9.85E-04	1.89E+00	3.83E-01	2.72E-01	1.61E+00	3.09E-05	2.22E-04	1.61E+00	2.72E-01
Thallium	2.00E-04	8.81E-04	9.77E-07	7.04E-06	8.88E-04	2.02E-04	2.00E-04	9.85E-04	9.77E-07	7.04E-06	9.92E-04	2.01E-04	2.00E-04	1.18E-03	2.21E-07	1.59E-06	1.19E-03	2.00E-04
Tin	2.00E-03	8.81E-03	1.95E-05	1.41E-04	8.95E-03	2.03E-03	9.32E-01	4.59E+00	1.95E-05	1.41E-04	4.59E+00	9.32E-01	4.79E-01	2.83E+00	4.41E-06	3.18E-05	2.83E+00	4.79E-01
Titanium	1.30E-02	5.73E-02	2.15E-02	1.55E-01	2.12E-01	4.81E-02	1.60E-02	7.88E-02	2.15E-02	1.55E-01	2.34E-01	4.74E-02	1.28E-01	7.57E-01	4.85E-03	3.49E-02	7.92E-01	1.34E-01
Uranium	2.00E-04	8.81E-04	9.77E-07	7.04E-06	8.88E-04	2.02E-04	2.00E-04	9.85E-04	9.77E-07	7.04E-06	9.92E-04	2.01E-04	2.00E-04	1.18E-03	2.21E-07	1.59E-06	1.19E-03	2.00E-04
Vanadium	2.00E-03	8.81E-03	9.77E-04	7.04E-03	1.58E-02	3.60E-03	2.96E-02	1.46E-01	9.77E-04	7.04E-03	1.53E-01	3.10E-02	4.28E-02	2.53E-01	2.21E-04	1.59E-03	2.55E-01	4.31E-02
Zinc	2.77E+00	1.22E+01	5.77E-04	4.15E-03	1.22E+01	2.77E+00	2.34E+00	1.15E+01	5.77E-04	4.15E-03	1.15E+01	2.34E+00	1.98E+00	1.17E+01	1.30E-04	9.37E-04	1.17E+01	1.98E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	REFA-01									REFA-02								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	6.70E-01	4.01E+00	7.33E+03	5.47E-04	4.01E+00	2.48E-02	1.78E-01	4.19E+00	7.00E-01	5.00E-01	2.42E+00	1.96E+04	1.23E-04	2.42E+00	2.48E-02	1.78E-01	2.59E+00	5.37E-01
Antimony	1.00E-03	5.99E-03	5.00E-02	1.20E-01	5.99E-03	8.55E-08	6.15E-07	5.99E-03	1.00E-03	1.00E-03	4.83E-03	5.00E-02	9.66E-02	4.83E-03	8.54E-08	6.15E-07	4.83E-03	1.00E-03
Arsenic	2.00E-03	1.20E-02	2.44E+00	4.91E-03	1.20E-02	4.27E-07	3.08E-06	1.20E-02	2.00E-03	2.00E-03	9.66E-03	2.39E+00	4.04E-03	9.66E-03	4.27E-07	3.07E-06	9.67E-03	2.00E-03
Barium	7.72E-01	4.62E+00	2.37E+01	1.95E-01	4.62E+00	2.56E-06	1.85E-05	4.62E+00	7.72E-01	9.48E-01	4.58E+00	1.31E+02	3.50E-02	4.58E+00	2.56E-06	1.84E-05	4.58E+00	9.48E-01
Beryllium	1.00E-03	5.99E-03	1.00E-01	5.99E-02	5.99E-03	2.82E-07	2.03E-06	5.99E-03	1.00E-03	1.00E-03	4.83E-03	6.40E-01	7.55E-03	4.83E-03	2.82E-07	2.03E-06	4.83E-03	1.00E-03
Bismuth	1.00E-03	5.99E-03	1.00E-01	5.99E-02	5.99E-03	8.55E-08	6.15E-07	5.99E-03	1.00E-03	1.00E-03	4.83E-03	2.10E-01	2.30E-02	4.83E-03	8.54E-08	6.15E-07	4.83E-03	1.00E-03
Cadmium	5.00E-04	2.99E-03	2.50E-02	1.20E-01	3.00E-03	8.55E-08	6.15E-07	3.00E-03	5.00E-04	5.00E-04	2.42E-03	6.00E-02	4.03E-02	2.42E-03	8.54E-08	6.15E-07	2.42E-03	5.00E-04
Calcium	9.74E+01	5.83E+02	2.66E+03	2.19E-01	5.84E+02	2.74E-02	1.97E-01	5.84E+02	9.76E+01	1.29E+02	6.23E+02	6.16E+03	1.01E-01	6.24E+02	2.73E-02	1.97E-01	6.24E+02	1.29E+02
Chromium	5.00E-03	2.99E-02	1.71E+01	1.75E-03	3.00E-02	1.28E-04	9.23E-04	3.09E-02	5.16E-03	5.00E-03	2.42E-02	5.44E+01	4.44E-04	2.42E-02	1.28E-04	9.22E-04	2.51E-02	5.19E-03
Cobalt	2.00E-03	1.20E-02	4.35E+00	2.75E-03	1.20E-02	2.99E-05	2.15E-04	1.22E-02	2.04E-03	2.00E-03	9.66E-03	1.19E+01	8.12E-04	9.67E-03	2.99E-05	2.15E-04	9.88E-03	2.05E-03
Copper	8.76E-01	5.25E+00	4.34E+00	1.21E+00	5.26E+00	9.40E-05	6.77E-04	5.26E+00	8.79E-01	1.05E+00	5.07E+00	2.52E+01	2.01E-01	5.07E+00	9.40E-05	6.76E-04	5.08E+00	1.05E+00
Iron	1.88E+00	1.13E+01	1.29E+04	8.73E-04	1.13E+01	4.19E-02	3.02E-01	1.16E+01	1.93E+00	2.02E+00	9.76E+00	2.85E+04	3.42E-04	9.76E+00	4.19E-02	3.01E-01	1.01E+01	2.08E+00
Lead	2.00E-03	1.20E-02	3.02E+00	3.97E-03	1.20E-02	5.13E-07	3.69E-06	1.20E-02	2.00E-03	2.00E-03	9.66E-03	7.93E+00	1.22E-03	9.66E-03	5.13E-07	3.69E-06	9.67E-03	2.00E-03
Magnesium	7.63E+01	4.57E+02	4.22E+03	1.08E-01	4.57E+02	1.97E-02	1.42E-01	4.57E+02	7.64E+01	1.06E+02	5.12E+02	1.26E+04	4.06E-02	5.12E+02	1.96E-02	1.41E-01	5.12E+02	1.06E+02
Manganese	3.71E+00	2.22E+01	1.26E+02	1.76E-01	2.22E+01	7.95E-04	5.72E-03	2.22E+01	3.71E+00	6.46E+00	3.12E+01	3.48E+02	8.97E-02	3.12E+01	7.94E-04	5.72E-03	3.12E+01	6.46E+00
Mercury	5.00E-04	2.99E-03	6.60E-03	4.54E-01	2.99E-03	8.55E-09	6.15E-08	2.99E-03	5.00E-04	5.00E-04	2.42E-03	2.50E-03	9.66E-01	2.42E-03	8.54E-09	6.15E-08	2.42E-03	5.00E-04
Molybdenum	1.03E-02	6.17E-02	7.30E-01	8.45E-02	6.17E-02	4.27E-07	3.08E-06	6.17E-02	1.03E-02	1.13E-02	5.46E-02	5.50E-01	9.93E-02	5.46E-02	4.27E-07	3.07E-06	5.46E-02	1.13E-02
Nickel	6.00E-02	3.59E-01	8.57E+00	4.20E-02	3.60E-01	6.16E-05	4.43E-04	3.60E-01	6.01E-02	8.10E-02	3.91E-01	2.99E+01	1.31E-02	3.91E-01	6.15E-05	4.43E-04	3.92E-01	8.11E-02
Phosphorus	1.58E+02	9.46E+02	2.54E+02	3.72E+00	9.46E+02	1.88E-04	1.35E-03	9.46E+02	1.58E+02	2.19E+02	1.06E+03	7.14E+02	1.48E+00	1.06E+03	1.88E-04	1.35E-03	1.06E+03	2.19E+02
Potassium	1.35E+03	8.08E+03	9.00E+02	8.98E+00	8.08E+03	8.55E-05	6.15E-04	8.08E+03	1.35E+03	1.64E+03	7.92E+03	5.83E+03	1.36E+00	7.92E+03	8.54E-05	6.15E-04	7.92E+03	1.64E+03
Selenium	5.00E-03	2.99E-02	1.00E-01	2.99E-01	3.00E-02	4.27E-07	3.08E-06	3.00E-02	5.00E-03	5.00E-03	2.42E-02	1.00E-01	2.42E-01	2.42E-02	4.27E-07	3.07E-06	2.42E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	7.30E+00	4.37E+01	3.00E+02	1.46E-01	4.37E+01	2.14E-04	1.54E-03	4.37E+01	7.30E+00	8.70E+00	4.20E+01	1.45E+03	2.90E-02	4.20E+01	2.14E-04	1.54E-03	4.20E+01	8.70E+00
Strontium	1.13E-01	6.77E-01	1.46E+01	4.63E-02	6.77E-01	1.20E-05	8.62E-05	6.77E-01	1.13E-01	1.78E-01	8.60E-01	3.97E+01	2.17E-02	8.60E-01	1.20E-05	8.61E-05	8.60E-01	1.78E-01
Thallium	2.00E-04	1.20E-03	5.90E-02	2.03E-02	1.20E-03	8.55E-08	6.15E-07	1.20E-03	2.00E-04	2.00E-04	9.66E-04	2.58E-01	3.74E-03	9.66E-04	8.54E-08	6.15E-07	9.67E-04	2.00E-04
Tin	8.40E-02	5.03E-01	1.00E+00	5.03E-01	5.03E-01	1.71E-06	1.23E-05	5.03E-01	8.40E-02	8.80E-02	4.25E-01	1.00E+00	4.25E-01	4.25E-01	1.71E-06	1.23E-05	4.25E-01	8.80E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.20E-03	4.95E-01	2.42E-03	1.20E-03	8.55E-08	6.15E-07	1.20E-03	2.00E-04	2.00E-04	9.66E-04	1.69E+00	5.72E-04	9.66E-04	8.54E-08	6.15E-07	9.67E-04	2.00E-04
Vanadium	1.00E-02	5.99E-02	3.25E+01	1.84E-03	5.99E-02	8.55E-05	6.15E-04	6.05E-02	1.01E-02	1.00E-02	4.83E-02	6.23E+01	7.75E-04	4.83E-02	8.54E-05	6.15E-04	4.89E-02	1.01E-02
Zinc	9.80E-01	5.87E+00	1.76E+01	3.33E-01	5.87E+00	5.04E-05	3.63E-04	5.87E+00	9.80E-01	1.46E+00	7.05E+00	5.87E+01	1.20E-01	7.05E+00	5.04E-05	3.63E-04	7.05E+00	1.46E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	REFA-03									REFB-01								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.14E+00	5.57E+03	2.05E-04	1.14E+00	2.51E-02	1.81E-01	1.32E+00	2.32E-01	1.35E+00	7.14E+00	4.75E+03	1.50E-03	7.15E+00	2.27E-02	1.63E-01	7.31E+00	1.38E+00
Antimony	1.00E-03	5.71E-03	5.00E-02	1.14E-01	5.72E-03	8.66E-08	6.23E-07	5.72E-03	1.00E-03	1.00E-03	5.29E-03	5.00E-02	1.06E-01	5.29E-03	7.81E-08	5.62E-07	5.29E-03	1.00E-03
Arsenic	2.00E-03	1.14E-02	7.24E-01	1.58E-02	1.14E-02	4.33E-07	3.12E-06	1.14E-02	2.00E-03	2.00E-03	1.06E-02	9.21E-01	1.15E-02	1.06E-02	3.91E-07	2.81E-06	1.06E-02	2.00E-03
Barium	9.16E-01	5.23E+00	1.45E+01	3.61E-01	5.23E+00	2.60E-06	1.87E-05	5.23E+00	9.16E-01	9.53E-01	5.04E+00	1.60E+01	3.15E-01	5.04E+00	2.34E-06	1.69E-05	5.04E+00	9.53E-01
Beryllium	1.00E-03	5.71E-03	1.00E-01	5.71E-02	5.72E-03	2.86E-07	2.06E-06	5.72E-03	1.00E-03	1.00E-03	5.29E-03	1.00E-01	5.29E-02	5.29E-03	2.58E-07	1.86E-06	5.29E-03	1.00E-03
Bismuth	1.00E-03	5.71E-03	1.00E-01	5.71E-02	5.71E-03	8.66E-08	6.23E-07	5.72E-03	1.00E-03	1.00E-03	5.29E-03	1.00E-01	5.29E-02	5.29E-03	7.81E-08	5.62E-07	5.29E-03	1.00E-03
Cadmium	5.00E-04	2.86E-03	2.50E-02	1.14E-01	2.86E-03	8.66E-08	6.23E-07	2.86E-03	5.00E-04	5.00E-04	2.65E-03	2.50E-02	1.06E-01	2.65E-03	7.81E-08	5.62E-07	2.65E-03	5.00E-04
Calcium	1.22E+02	6.97E+02	2.04E+03	3.42E-01	6.98E+02	2.77E-02	1.99E-01	6.99E+02	1.22E+02	1.44E+02	7.62E+02	1.51E+03	5.05E-01	7.64E+02	2.50E-02	1.80E-01	7.64E+02	1.44E+02
Chromium	5.00E-03	2.86E-02	1.11E+01	2.57E-03	2.86E-02	1.30E-04	9.35E-04	2.96E-02	5.17E-03	1.50E-02	7.94E-02	9.95E+00	7.99E-03	7.95E-02	1.17E-04	8.43E-04	8.03E-02	1.52E-02
Cobalt	2.00E-03	1.14E-02	4.10E+00	2.79E-03	1.14E-02	3.03E-05	2.18E-04	1.17E-02	2.04E-03	2.00E-03	1.06E-02	4.28E+00	2.47E-03	1.06E-02	2.73E-05	1.97E-04	1.08E-02	2.04E-03
Copper	1.14E+00	6.51E+00	9.87E+00	6.61E-01	6.52E+00	9.52E-05	6.86E-04	6.52E+00	1.14E+00	1.11E+00	5.87E+00	9.96E+00	5.90E-01	5.88E+00	8.59E-05	6.19E-04	5.88E+00	1.11E+00
Iron	2.20E+00	1.26E+01	1.05E+04	1.20E-03	1.26E+01	4.24E-02	3.05E-01	1.29E+01	2.25E+00	2.68E+00	1.42E+01	8.47E+03	1.68E-03	1.42E+01	3.83E-02	2.76E-01	1.45E+01	2.73E+00
Lead	2.00E-03	1.14E-02	1.66E+00	6.88E-03	1.14E-02	5.19E-07	3.74E-06	1.14E-02	2.00E-03	2.00E-03	1.06E-02	1.50E+00	7.05E-03	1.06E-02	4.69E-07	3.37E-06	1.06E-02	2.00E-03
Magnesium	9.25E+01	5.29E+02	3.40E+03	1.55E-01	5.29E+02	1.99E-02	1.43E-01	5.29E+02	9.26E+01	1.06E+02	5.61E+02	3.26E+03	1.72E-01	5.61E+02	1.80E-02	1.29E-01	5.61E+02	1.06E+02
Manganese	3.82E+00	2.18E+01	1.01E+02	2.16E-01	2.19E+01	8.05E-04	5.80E-03	2.19E+01	3.83E+00	8.19E+00	4.33E+01	9.64E+01	4.50E-01	4.34E+01	7.26E-04	5.23E-03	4.34E+01	8.20E+00
Mercury	5.00E-04	2.86E-03	6.00E-03	4.76E-01	2.86E-03	8.66E-09	6.23E-08	2.86E-03	5.00E-04	5.00E-04	2.65E-03	2.50E-03	1.06E+00	2.65E-03	7.81E-09	5.62E-08	2.65E-03	5.00E-04
Molybdenum	1.17E-02	6.69E-02	2.50E-01	2.67E-01	6.69E-02	4.33E-07	3.12E-06	6.69E-02	1.17E-02	2.00E-03	1.06E-02	2.50E-01	4.23E-02	1.06E-02	3.91E-07	2.81E-06	1.06E-02	2.00E-03
Nickel	7.90E-02	4.51E-01	7.68E+00	5.89E-02	4.52E-01	6.23E-05	4.49E-04	4.52E-01	7.92E-02	9.30E-02	4.92E-01	8.12E+00	6.07E-02	4.93E-01	5.62E-05	4.05E-04	4.93E-01	9.32E-02
Phosphorus	1.97E+02	1.13E+03	2.99E+02	3.76E+00	1.13E+03	1.90E-04	1.37E-03	1.13E+03	1.97E+02	2.24E+02	1.19E+03	2.49E+02	4.76E+00	1.19E+03	1.72E-04	1.24E-03	1.19E+03	2.24E+02
Potassium	1.23E+03	7.03E+03	5.10E+02	1.38E+01	7.03E+03	8.66E-05	6.23E-04	7.03E+03	1.23E+03	1.61E+03	8.52E+03	5.90E+02	1.44E+01	8.52E+03	7.81E-05	5.62E-04	8.52E+03	1.61E+03
Selenium	5.00E-03	2.86E-02	1.00E-01	2.86E-01	2.86E-02	4.33E-07	3.12E-06	2.86E-02	5.00E-03	5.00E-03	2.65E-02	1.00E-01	2.65E-01	2.65E-02	3.91E-07	2.81E-06	2.65E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	1.13E+01	6.46E+01	1.50E+02	4.30E-01	6.46E+01	2.16E-04	1.56E-03	6.46E+01	1.13E+01	1.21E+01	6.40E+01	5.00E+01	1.28E+00	6.41E+01	1.95E-04	1.41E-03	6.41E+01	1.21E+01
Strontium	2.53E-01	1.45E+00	9.37E+00	1.54E-01	1.45E+00	1.21E-05	8.72E-05	1.45E+00	2.53E-01	2.87E-01	1.52E+00	7.65E+00	1.98E-01	1.52E+00	1.09E-05	7.87E-05	1.52E+00	2.87E-01
Thallium	2.00E-04	1.14E-03	2.50E-02	4.57E-02	1.14E-03	8.66E-08	6.23E-07	1.14E-03	2.00E-04	2.00E-04	1.06E-03	2.50E-02	4.23E-02	1.06E-03	7.81E-08	5.62E-07	1.06E-03	2.00E-04
Tin	3.70E-02	2.11E-01	1.00E+00	2.11E-01	2.11E-01	1.73E-06	1.25E-05	2.11E-01	3.70E-02	4.00E-02	2.12E-01	1.00E+00	2.12E-01	2.12E-01	1.56E-06	1.12E-05	2.12E-01	4.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.14E-03	3.29E-01	3.47E-03	1.14E-03	8.66E-08	6.23E-07	1.14E-03	2.00E-04	2.00E-04	1.06E-03	3.26E-01	3.25E-03	1.06E-03	7.81E-08	5.62E-07	1.06E-03	2.00E-04
Vanadium	1.00E-02	5.71E-02	2.41E+01	2.37E-03	5.72E-02	8.66E-05	6.23E-04	5.78E-02	1.01E-02	1.00E-02	5.29E-02	1.75E+01	3.02E-03	5.29E-02	7.81E-05	5.62E-04	5.35E-02	1.01E-02
Zinc	1.23E+00	7.03E+00	1.56E+01	4.51E-01	7.03E+00	5.11E-05	3.68E-04	7.03E+00	1.23E+00	1.45E+00	7.67E+00	1.53E+01	5.01E-01	7.68E+00	4.61E-05	3.32E-04	7.68E+00	1.45E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	REFB-02									REFB-03								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.14E+00	9.36E+03	1.22E-04	1.14E+00	2.26E-02	1.63E-01	1.31E+00	2.29E-01	6.60E-01	2.92E+00	6.78E+03	4.31E-04	2.92E+00	2.26E-02	1.63E-01	3.08E+00	6.97E-01
Antimony	1.00E-03	5.71E-03	5.00E-02	1.14E-01	5.72E-03	7.79E-08	5.61E-07	5.72E-03	1.00E-03	1.00E-03	4.42E-03	5.00E-02	8.85E-02	4.43E-03	7.79E-08	5.61E-07	4.43E-03	1.00E-03
Arsenic	2.00E-03	1.14E-02	9.49E-01	1.20E-02	1.14E-02	3.90E-07	2.81E-06	1.14E-02	2.00E-03	2.00E-03	8.85E-03	1.08E+00	8.19E-03	8.85E-03	3.90E-07	2.80E-06	8.85E-03	2.00E-03
Barium	7.36E-01	4.21E+00	1.87E+01	2.25E-01	4.21E+00	2.34E-06	1.68E-05	4.21E+00	7.36E-01	1.16E+00	5.13E+00	1.87E+01	2.74E-01	5.13E+00	2.34E-06	1.68E-05	5.13E+00	1.16E+00
Beryllium	1.00E-03	5.71E-03	1.00E-01	5.71E-02	5.72E-03	2.57E-07	1.85E-06	5.72E-03	1.00E-03	1.00E-03	4.42E-03	1.00E-01	4.42E-02	4.43E-03	2.57E-07	1.85E-06	4.43E-03	1.00E-03
Bismuth	1.00E-03	5.71E-03	1.00E-01	5.71E-02	5.71E-03	7.79E-08	5.61E-07	5.72E-03	1.00E-03	1.00E-03	4.42E-03	1.00E-01	4.42E-02	4.43E-03	7.79E-08	5.61E-07	4.43E-03	1.00E-03
Cadmium	5.00E-04	2.86E-03	6.20E-02	4.61E-02	2.86E-03	7.79E-08	5.61E-07	2.86E-03	5.00E-04	5.00E-04	2.21E-03	2.50E-02	8.85E-02	2.21E-03	7.79E-08	5.61E-07	2.21E-03	5.00E-04
Calcium	1.20E+02	6.86E+02	1.97E+03	3.48E-01	6.87E+02	2.49E-02	1.80E-01	6.87E+02	1.20E+02	1.67E+02	7.39E+02	2.62E+03	2.82E-01	7.40E+02	2.49E-02	1.80E-01	7.40E+02	1.67E+02
Chromium	5.00E-03	2.86E-02	1.72E+01	1.66E-03	2.86E-02	1.17E-04	8.42E-04	2.94E-02	5.15E-03	5.00E-03	2.21E-02	2.18E+01	1.01E-03	2.21E-02	1.17E-04	8.41E-04	2.30E-02	5.19E-03
Cobalt	2.00E-03	1.14E-02	5.85E+00	1.95E-03	1.14E-02	2.73E-05	1.96E-04	1.16E-02	2.04E-03	2.00E-03	8.85E-03	7.47E+00	1.18E-03	8.85E-03	2.73E-05	1.96E-04	9.05E-03	2.05E-03
Copper	8.31E-01	4.75E+00	1.00E+01	4.75E-01	4.75E+00	8.57E-05	6.17E-04	4.75E+00	8.32E-01	1.46E+00	6.46E+00	1.16E+01	5.57E-01	6.47E+00	8.57E-05	6.17E-04	6.47E+00	1.46E+00
Iron	1.50E+00	8.57E+00	1.56E+04	5.49E-04	8.57E+00	3.82E-02	2.75E-01	8.85E+00	1.55E+00	2.37E+00	1.05E+01	1.32E+04	7.94E-04	1.05E+01	3.82E-02	2.75E-01	1.08E+01	2.43E+00
Lead	2.00E-03	1.14E-02	2.96E+00	3.86E-03	1.14E-02	4.68E-07	3.37E-06	1.14E-02	2.00E-03	2.00E-03	8.85E-03	2.07E+00	4.28E-03	8.85E-03	4.68E-07	3.37E-06	8.85E-03	2.00E-03
Magnesium	8.03E+01	4.59E+02	4.81E+03	9.54E-02	4.59E+02	1.79E-02	1.29E-01	4.59E+02	8.04E+01	1.07E+02	4.73E+02	4.48E+03	1.06E-01	4.74E+02	1.79E-02	1.29E-01	4.74E+02	1.07E+02
Manganese	2.68E+00	1.53E+01	1.57E+02	9.75E-02	1.53E+01	7.25E-04	5.22E-03	1.53E+01	2.68E+00	6.21E+00	2.75E+01	2.37E+02	1.16E-01	2.75E+01	7.25E-04	5.22E-03	2.75E+01	6.21E+00
Mercury	5.00E-04	2.86E-03	2.87E-02	9.96E-02	2.86E-03	7.79E-09	5.61E-08	2.86E-03	5.00E-04	5.00E-04	2.21E-03	2.50E-03	8.85E-01	2.21E-03	7.79E-09	5.61E-08	2.21E-03	5.00E-04
Molybdenum	2.00E-03	1.14E-02	2.50E-01	4.57E-02	1.14E-02	3.90E-07	2.81E-06	1.14E-02	2.00E-03	6.00E-03	2.65E-02	2.50E-01	1.06E-01	2.66E-02	3.90E-07	2.80E-06	2.66E-02	6.00E-03
Nickel	6.50E-02	3.71E-01	1.35E+01	2.75E-02	3.72E-01	5.61E-05	4.04E-04	3.72E-01	6.51E-02	1.11E-01	4.91E-01	1.17E+01	4.20E-02	4.91E-01	5.61E-05	4.04E-04	4.92E-01	1.11E-01
Phosphorus	1.65E+02	9.43E+02	2.82E+02	3.34E+00	9.43E+02	1.71E-04	1.23E-03	9.43E+02	1.65E+02	2.11E+02	9.34E+02	3.98E+02	2.35E+00	9.34E+02	1.71E-04	1.23E-03	9.34E+02	2.11E+02
Potassium	1.19E+03	6.80E+03	6.50E+02	1.05E+01	6.80E+03	7.79E-05	5.61E-04	6.80E+03	1.19E+03	1.54E+03	6.81E+03	5.20E+02	1.31E+01	6.81E+03	7.79E-05	5.61E-04	6.81E+03	1.54E+03
Selenium	5.00E-03	2.86E-02	1.00E-01	2.86E-01	2.86E-02	3.90E-07	2.81E-06	2.86E-02	5.00E-03	5.00E-03	2.21E-02	1.00E-01	2.21E-01	2.21E-02	3.90E-07	2.80E-06	2.21E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	6.10E+00	3.49E+01	1.10E+02	3.17E-01	3.49E+01	1.95E-04	1.40E-03	3.49E+01	6.10E+00	7.60E+00	3.36E+01	2.00E+02	1.68E-01	3.36E+01	1.95E-04	1.40E-03	3.36E+01	7.60E+00
Strontium	2.30E-01	1.31E+00	1.17E+01	1.12E-01	1.31E+00	1.09E-05	7.86E-05	1.31E+00	2.30E-01	3.79E-01	1.68E+00	1.37E+01	1.22E-01	1.68E+00	1.09E-05	7.85E-05	1.68E+00	3.79E-01
Thallium	2.00E-04	1.14E-03	2.50E-02	4.57E-02	1.14E-03	7.79E-08	5.61E-07	1.14E-03	2.00E-04	2.00E-04	8.85E-04	2.50E-02	3.54E-02	8.85E-04	7.79E-08	5.61E-07	8.86E-04	2.00E-04
Tin	4.30E-02	2.46E-01	1.00E+00	2.46E-01	2.46E-01	1.56E-06	1.12E-05	2.46E-01	4.30E-02	4.00E-02	1.77E-01	1.00E+00	1.77E-01	1.77E-01	1.56E-06	1.12E-05	1.77E-01	4.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.14E-03	4.17E-01	2.74E-03	1.14E-03	7.79E-08	5.61E-07	1.14E-03	2.00E-04	2.00E-04	8.85E-04	9.09E-01	9.74E-04	8.85E-04	7.79E-08	5.61E-07	8.86E-04	2.00E-04
Vanadium	1.00E-02	5.71E-02	3.13E+01	1.83E-03	5.72E-02	7.79E-05	5.61E-04	5.77E-02	1.01E-02	1.00E-02	4.42E-02	2.86E+01	1.55E-03	4.43E-02	7.79E-05	5.61E-04	4.48E-02	1.01E-02
Zinc	9.60E-01	5.49E+00	2.85E+01	1.92E-01	5.49E+00	4.60E-05	3.31E-04	5.49E+00	9.60E-01	2.07E+00	9.16E+00	2.19E+01	4.18E-01	9.16E+00	4.60E-05	3.31E-04	9.16E+00	2.07E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	REFC-01									REFC-02								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.82E+00	1.12E+01	1.70E+04	6.57E-04	1.12E+01	2.31E-02	1.67E-01	1.13E+01	1.85E+00	3.73E+01	1.90E+02	4.62E+03	4.12E-02	1.90E+02	2.44E-02	1.76E-01	1.91E+02	3.74E+01
Antimony	1.00E-03	6.13E-03	5.00E-02	1.23E-01	6.14E-03	7.98E-08	5.74E-07	6.14E-03	1.00E-03	1.00E-03	5.10E-03	5.00E-02	1.02E-01	5.10E-03	8.41E-08	6.06E-07	5.10E-03	1.00E-03
Arsenic	2.00E-03	1.23E-02	2.93E+00	4.19E-03	1.23E-02	3.99E-07	2.87E-06	1.23E-02	2.00E-03	2.00E-03	1.02E-02	8.70E-01	1.17E-02	1.02E-02	4.21E-07	3.03E-06	1.02E-02	2.00E-03
Barium	8.75E-01	5.37E+00	7.70E+01	6.97E-02	5.37E+00	2.39E-06	1.72E-05	5.37E+00	8.75E-01	1.03E+00	5.26E+00	1.68E+01	3.13E-01	5.26E+00	2.52E-06	1.82E-05	5.26E+00	1.03E+00
Beryllium	1.00E-03	6.13E-03	4.40E-01	1.39E-02	6.14E-03	2.63E-07	1.90E-06	6.14E-03	1.00E-03	1.00E-03	5.10E-03	1.00E-01	5.10E-02	5.10E-03	2.78E-07	2.00E-06	5.11E-03	1.00E-03
Bismuth	1.00E-03	6.13E-03	1.00E-01	6.13E-02	6.14E-03	7.98E-08	5.74E-07	6.14E-03	1.00E-03	1.00E-03	5.10E-03	1.00E-01	5.10E-02	5.10E-03	8.41E-08	6.06E-07	5.10E-03	1.00E-03
Cadmium	5.00E-04	3.07E-03	2.50E-02	1.23E-01	3.07E-03	7.98E-08	5.74E-07	3.07E-03	5.00E-04	5.00E-04	2.55E-03	2.50E-02	1.02E-01	2.55E-03	8.41E-08	6.06E-07	2.55E-03	5.00E-04
Calcium	1.32E+02	8.10E+02	5.09E+03	1.59E-01	8.10E+02	2.55E-02	1.84E-01	8.11E+02	1.32E+02	1.69E+02	8.62E+02	2.05E+03	4.21E-01	8.64E+02	2.69E-02	1.94E-01	8.64E+02	1.69E+02
Chromium	5.00E-03	3.07E-02	4.36E+01	7.04E-04	3.07E-02	1.20E-04	8.61E-04	3.15E-02	5.14E-03	1.23E-01	6.28E-01	1.36E+01	4.61E-02	6.28E-01	1.26E-04	9.08E-04	6.29E-01	1.23E-01
Cobalt	2.00E-03	1.23E-02	1.05E+01	1.17E-03	1.23E-02	2.79E-05	2.01E-04	1.25E-02	2.03E-03	2.67E-02	1.36E-01	4.46E+00	3.05E-02	1.36E-01	2.94E-05	2.12E-04	1.37E-01	2.68E-02
Copper	7.25E-01	4.45E+00	1.68E+01	2.65E-01	4.45E+00	8.77E-05	6.32E-04	4.45E+00	7.26E-01	1.15E+00	5.87E+00	4.85E+00	1.21E+00	5.88E+00	9.25E-05	6.66E-04	5.88E+00	1.15E+00
Iron	3.18E+00	1.95E+01	2.51E+04	7.77E-04	1.95E+01	3.91E-02	2.81E-01	1.98E+01	3.23E+00	5.23E+01	2.67E+02	9.92E+03	2.69E-02	2.67E+02	4.12E-02	2.97E-01	2.67E+02	5.24E+01
Lead	2.00E-03	1.23E-02	6.16E+00	1.99E-03	1.23E-02	4.79E-07	3.45E-06	1.23E-02	2.00E-03	2.00E-03	1.02E-02	1.65E+00	6.18E-03	1.02E-02	5.05E-07	3.63E-06	1.02E-02	2.00E-03
Magnesium	7.53E+01	4.62E+02	7.53E+03	6.13E-02	4.62E+02	1.83E-02	1.32E-01	4.62E+02	7.53E+01	1.15E+02	5.87E+02	2.70E+03	2.17E-01	5.87E+02	1.93E-02	1.39E-01	5.87E+02	1.15E+02
Manganese	3.31E+00	2.03E+01	2.53E+02	8.03E-02	2.03E+01	7.42E-04	5.34E-03	2.03E+01	3.31E+00	6.39E+00	3.26E+01	1.05E+02	3.10E-01	3.26E+01	7.82E-04	5.63E-03	3.26E+01	6.40E+00
Mercury	5.00E-04	3.07E-03	1.01E-02	3.04E-01	3.07E-03	7.98E-09	5.74E-08	3.07E-03	5.00E-04	5.00E-04	2.55E-03	2.50E-03	1.02E+00	2.55E-03	8.41E-09	6.06E-08	2.55E-03	5.00E-04
Molybdenum	1.59E-02	9.75E-02	2.50E-01	3.90E-01	9.76E-02	3.99E-07	2.87E-06	9.76E-02	1.59E-02	6.00E-03	3.06E-02	2.50E-01	1.22E-01	3.06E-02	4.21E-07	3.03E-06	3.06E-02	6.00E-03
Nickel	5.20E-02	3.19E-01	2.19E+01	1.46E-02	3.19E-01	5.74E-05	4.13E-04	3.20E-01	5.21E-02	1.23E-01	6.28E-01	6.64E+00	9.47E-02	6.28E-01	6.06E-05	4.36E-04	6.29E-01	1.23E-01
Phosphorus	1.88E+02	1.15E+03	4.14E+02	2.79E+00	1.15E+03	1.75E-04	1.26E-03	1.15E+03	1.88E+02	2.21E+02	1.13E+03	3.50E+02	3.22E+00	1.13E+03	1.85E-04	1.33E-03	1.13E+03	2.21E+02
Potassium	1.24E+03	7.61E+03	2.73E+03	2.79E+00	7.61E+03	7.98E-05	5.74E-04	7.61E+03	1.24E+03	1.56E+03	7.96E+03	5.90E+02	1.35E+01	7.96E+03	8.41E-05	6.06E-04	7.96E+03	1.56E+03
Selenium	5.00E-03	3.07E-02	1.00E-01	3.07E-01	3.07E-02	3.99E-07	2.87E-06	3.07E-02	5.00E-03	5.00E-03	2.55E-02	1.00E-01	2.55E-01	2.55E-02	4.21E-07	3.03E-06	2.55E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	5.80E+00	3.56E+01	4.60E+02	7.74E-02	3.56E+01	1.99E-04	1.44E-03	3.56E+01	5.80E+00	6.80E+00	3.47E+01	1.40E+02	2.48E-01	3.47E+01	2.10E-04	1.51E-03	3.47E+01	6.80E+00
Strontium	2.91E-01	1.79E+00	3.48E+01	5.13E-02	1.79E+00	1.12E-05	8.04E-05	1.79E+00	2.91E-01	2.93E-01	1.49E+00	1.16E+01	1.29E-01	1.50E+00	1.18E-05	8.48E-05	1.50E+00	2.93E-01
Thallium	2.00E-04	1.23E-03	1.68E-01	7.30E-03	1.23E-03	7.98E-08	5.74E-07	1.23E-03	2.00E-04	2.00E-04	1.02E-03	2.50E-02	4.08E-02	1.02E-03	8.41E-08	6.06E-07	1.02E-03	2.00E-04
Tin	2.90E-02	1.78E-01	1.00E+00	1.78E-01	1.78E-01	1.60E-06	1.15E-05	1.78E-01	2.90E-02	4.50E-02	2.30E-01	1.00E+00	2.30E-01	2.30E-01	1.68E-06	1.21E-05	2.30E-01	4.50E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	9.30E-04	5.71E-03	1.44E+00	3.96E-03	5.71E-03	7.98E-08	5.74E-07	5.71E-03	9.30E-04	2.00E-04	1.02E-03	4.15E-01	2.46E-03	1.02E-03	8.41E-08	6.06E-07	1.02E-03	2.00E-04
Vanadium	1.00E-02	6.13E-02	5.33E+01	1.15E-03	6.14E-02	7.98E-05	5.74E-04	6.19E-02	1.01E-02	1.21E-01	6.17E-01	2.30E+01	2.68E-02	6.18E-01	8.41E-05	6.06E-04	6.18E-01	1.21E-01
Zinc	1.30E+00	7.98E+00	4.11E+01	1.94E-01	7.98E+00	4.71E-05	3.39E-04	7.98E+00	1.30E+00	1.27E+00	6.48E+00	1.33E+01	4.87E-01	6.48E+00	4.96E-05	3.57E-04	6.48E+00	1.27E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	REFC-03									LSA-01								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.10E-01	2.75E+00	5.65E+03	4.87E-04	2.75E+00	2.47E-02	1.78E-01	2.93E+00	4.37E-01	9.50E-01	7.20E+00	9.51E+03	7.59E-04	7.22E+00	1.89E-01	1.36E+00	8.57E+00	1.13E+00
Antimony	1.00E-03	6.71E-03	5.00E-02	1.34E-01	6.71E-03	8.52E-08	6.14E-07	6.71E-03	1.00E-03	1.00E-03	7.58E-03	5.01E-02	1.52E-01	7.59E-03	6.50E-07	4.68E-06	7.59E-03	1.00E-03
Arsenic	2.00E-03	1.34E-02	9.17E-01	1.46E-02	1.34E-02	4.26E-07	3.07E-06	1.34E-02	2.00E-03	2.00E-03	1.52E-02	2.97E+00	5.10E-03	1.52E-02	3.25E-06	2.34E-05	1.52E-02	2.00E-03
Barium	4.95E-01	3.32E+00	1.54E+01	2.16E-01	3.32E+00	2.56E-06	1.84E-05	3.32E+00	4.95E-01	7.80E-01	5.91E+00	3.53E+01	1.67E-01	5.91E+00	1.95E-05	1.40E-04	5.91E+00	7.80E-01
Beryllium	1.00E-03	6.71E-03	1.00E-01	6.71E-02	6.71E-03	2.81E-07	2.02E-06	6.72E-03	1.00E-03	1.00E-03	7.58E-03	1.00E-01	7.58E-02	7.60E-03	2.15E-06	1.54E-05	7.61E-03	1.00E-03
Bismuth	1.00E-03	6.71E-03	1.00E-01	6.71E-02	6.71E-03	8.52E-08	6.14E-07	6.71E-03	1.00E-03	1.00E-03	7.58E-03	1.00E-01	7.58E-02	7.58E-03	6.50E-07	4.68E-06	7.59E-03	1.00E-03
Cadmium	5.00E-04	3.36E-03	2.50E-02	1.34E-01	3.36E-03	8.52E-08	6.14E-07	3.36E-03	5.00E-04	5.00E-04	3.79E-03	2.51E-02	1.52E-01	3.80E-03	6.50E-07	4.68E-06	3.81E-03	5.02E-04
Calcium	7.95E+01	5.34E+02	1.86E+03	2.87E-01	5.35E+02	2.73E-02	1.96E-01	5.35E+02	7.97E+01	9.88E+01	7.48E+02	3.50E+03	2.16E-01	7.54E+02	2.08E-01	1.50E+00	7.56E+02	9.98E+01
Chromium	5.00E-03	3.36E-02	1.73E+01	1.94E-03	3.36E-02	1.28E-04	9.20E-04	3.45E-02	5.14E-03	1.20E-02	9.09E-02	4.10E+01	2.22E-03	9.12E-02	9.75E-04	7.02E-03	9.82E-02	1.30E-02
Cobalt	2.00E-03	1.34E-02	4.99E+00	2.69E-03	1.34E-02	2.98E-05	2.15E-04	1.36E-02	2.03E-03	2.00E-03	1.52E-02	9.95E+00	1.53E-03	1.52E-02	2.28E-04	1.64E-03	1.68E-02	2.22E-03
Copper	8.08E-01	5.42E+00	1.14E+01	4.76E-01	5.43E+00	9.38E-05	6.75E-04	5.43E+00	8.09E-01	7.40E-01	5.61E+00	2.36E+01	2.39E-01	5.63E+00	7.15E-04	5.15E-03	5.63E+00	7.44E-01
Iron	1.17E+00	7.85E+00	1.07E+04	7.34E-04	7.86E+00	4.18E-02	3.01E-01	8.16E+00	1.22E+00	2.34E+00	1.77E+01	1.91E+04	9.28E-04	1.78E+01	3.19E-01	2.29E+00	2.01E+01	2.65E+00
Lead	2.00E-03	1.34E-02	1.64E+00	8.18E-03	1.34E-02	5.11E-07	3.68E-06	1.34E-02	2.00E-03	2.00E-03	1.52E-02	2.43E+00	6.24E-03	1.52E-02	3.90E-06	2.81E-05	1.52E-02	2.00E-03
Magnesium	6.74E+01	4.52E+02	3.73E+03	1.21E-01	4.53E+02	1.96E-02	1.41E-01	4.53E+02	6.75E+01	6.74E+01	5.11E+02	6.68E+03	7.67E-02	5.12E+02	1.50E-01	1.08E+00	5.13E+02	6.77E+01
Manganese	4.52E+00	3.03E+01	1.25E+02	2.43E-01	3.04E+01	7.93E-04	5.71E-03	3.04E+01	4.52E+00	2.06E+00	1.56E+01	2.84E+02	5.51E-02	1.57E+01	6.05E-03	4.35E-02	1.57E+01	2.07E+00
Mercury	5.00E-04	3.36E-03	2.50E-03	1.34E+00	3.36E-03	8.52E-09	6.14E-08	3.36E-03	5.00E-04	5.00E-04	3.79E-03	8.41E-03	4.51E-01	3.79E-03	6.50E-08	4.68E-07	3.79E-03	5.01E-04
Molybdenum	2.00E-03	1.34E-02	2.50E-01	5.37E-02	1.34E-02	4.26E-07	3.07E-06	1.34E-02	2.00E-03	2.48E-02	1.88E-01	2.50E-01	7.52E-01	1.88E-01	3.25E-06	2.34E-05	1.88E-01	2.48E-02
Nickel	5.70E-02	3.83E-01	1.02E+01	3.75E-02	3.83E-01	6.14E-05	4.42E-04	3.83E-01	5.71E-02	8.60E-02	6.52E-01	2.73E+01	2.40E-02	6.53E-01	4.68E-04	3.37E-03	6.56E-01	8.66E-02
Phosphorus	1.45E+02	9.73E+02	2.82E+02	3.45E+00	9.73E+02	1.88E-04	1.35E-03	9.73E+02	1.45E+02	1.52E+02	1.15E+03	2.42E+02	4.76E+00	1.15E+03	1.43E-03	1.03E-02	1.15E+03	1.52E+02
Potassium	1.21E+03	8.12E+03	5.80E+02	1.40E+01	8.12E+03	8.52E-05	6.14E-04	8.12E+03	1.21E+03	1.21E+03	9.17E+03	1.05E+03	8.73E+00	9.17E+03	6.50E-04	4.68E-03	9.17E+03	1.21E+03
Selenium	5.00E-03	3.36E-02	1.00E-01	3.36E-01	3.36E-02	4.26E-07	3.07E-06	3.36E-02	5.00E-03	5.00E-03	3.79E-02	1.00E-01	3.79E-01	3.80E-02	3.25E-06	2.34E-05	3.81E-02	5.02E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	6.30E+00	4.23E+01	1.20E+02	3.52E-01	4.23E+01	2.13E-04	1.53E-03	4.23E+01	6.30E+00	8.80E+00	6.67E+01	2.40E+02	2.78E-01	6.67E+01	1.63E-03	1.17E-02	6.67E+01	8.81E+00
Strontium	1.27E-01	8.52E-01	9.21E+00	9.25E-02	8.52E-01	1.19E-05	8.59E-05	8.53E-01	1.27E-01	2.03E-01	1.54E+00	1.49E+01	1.03E-01	1.54E+00	9.10E-05	6.55E-04	1.54E+00	2.03E-01
Thallium	2.00E-04	1.34E-03	2.50E-02	5.37E-02	1.34E-03	8.52E-08	6.14E-07	1.34E-03	2.00E-04	2.00E-04	1.52E-03	5.61E-02	2.71E-02	1.52E-03	6.50E-07	4.68E-06	1.52E-03	2.01E-04
Tin	4.30E-02	2.89E-01	1.00E+00	2.89E-01	2.89E-01	1.70E-06	1.23E-05	2.89E-01	4.30E-02	8.30E-02	6.29E-01	1.00E+00	6.29E-01	6.30E-01	1.30E-05	9.36E-05	6.30E-01	8.32E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.34E-03	3.36E-01	3.99E-03	1.34E-03	8.52E-08	6.14E-07	1.34E-03	2.00E-04	2.00E-04	1.52E-03	4.76E-01	3.18E-03	1.52E-03	6.50E-07	4.68E-06	1.52E-03	2.01E-04
Vanadium	1.00E-02	6.71E-02	2.31E+01	2.91E-03	6.71E-02	8.52E-05	6.14E-04	6.78E-02	1.01E-02	1.00E-02	7.58E-02	3.87E+01	1.96E-03	7.59E-02	6.50E-04	4.68E-03	8.06E-02	1.06E-02
Zinc	8.10E-01	5.44E+00	1.68E+01	3.24E-01	5.44E+00	5.03E-05	3.62E-04	5.44E+00	8.10E-01	9.20E-01	6.97E+00	3.44E+01	2.03E-01	6.98E+00	3.84E-04	2.76E-03	6.98E+00	9.22E-01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-02									LSA-03								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	9.90E-01	4.95E+00	2.72E+04	1.82E-04	4.95E+00	4.05E-02	2.91E-01	5.24E+00	1.05E+00	1.03E+00	6.32E+00	5.60E+03	1.13E-03	6.33E+00	4.33E-02	3.11E-01	6.64E+00	1.08E+00
Antimony	1.00E-03	5.00E-03	5.00E-02	1.00E-01	5.00E-03	1.40E-07	1.00E-06	5.00E-03	1.00E-03	1.00E-03	6.13E-03	5.00E-02	1.23E-01	6.14E-03	1.49E-07	1.07E-06	6.14E-03	1.00E-03
Arsenic	2.00E-03	1.00E-02	3.77E+00	2.65E-03	1.00E-02	6.98E-07	5.02E-06	1.00E-02	2.00E-03	2.00E-03	1.23E-02	7.26E-01	1.69E-02	1.23E-02	7.46E-07	5.37E-06	1.23E-02	2.00E-03
Barium	1.89E+00	9.45E+00	1.64E+02	5.76E-02	9.45E+00	4.19E-06	3.01E-05	9.45E+00	1.89E+00	9.95E-01	6.10E+00	2.18E+01	2.80E-01	6.10E+00	4.48E-06	3.22E-05	6.10E+00	9.95E-01
Beryllium	1.00E-03	5.00E-03	7.90E-01	6.33E-03	5.00E-03	4.60E-07	3.31E-06	5.00E-03	1.00E-03	1.00E-03	6.13E-03	1.00E-01	6.13E-02	6.14E-03	4.92E-07	3.54E-06	6.14E-03	1.00E-03
Bismuth	1.00E-03	5.00E-03	2.30E-01	2.17E-02	5.00E-03	1.40E-07	1.00E-06	5.00E-03	1.00E-03	1.00E-03	6.13E-03	1.00E-01	6.13E-02	6.14E-03	1.49E-07	1.07E-06	6.14E-03	1.00E-03
Cadmium	5.00E-04	2.50E-03	2.50E-02	1.00E-01	2.50E-03	1.40E-07	1.00E-06	2.50E-03	5.01E-04	5.00E-04	3.07E-03	2.50E-02	1.23E-01	3.07E-03	1.49E-07	1.07E-06	3.07E-03	5.01E-04
Calcium	1.74E+02	8.70E+02	6.80E+03	1.28E-01	8.71E+02	4.46E-02	3.21E-01	8.71E+02	1.74E+02	1.30E+02	7.98E+02	1.87E+03	4.29E-01	8.00E+02	4.77E-02	3.44E-01	8.01E+02	1.31E+02
Chromium	5.00E-03	2.50E-02	7.78E+01	3.21E-04	2.50E-02	2.09E-04	1.51E-03	2.65E-02	5.30E-03	5.00E-03	3.07E-02	1.43E+01	2.15E-03	3.07E-02	2.24E-04	1.61E-03	3.23E-02	5.27E-03
Cobalt	2.00E-03	1.00E-02	1.59E+01	6.29E-04	1.00E-02	4.88E-05	3.52E-04	1.04E-02	2.07E-03	4.70E-03	2.88E-02	4.72E+00	6.12E-03	2.89E-02	5.22E-05	3.76E-04	2.93E-02	4.77E-03
Copper	1.18E+00	5.90E+00	4.12E+01	1.43E-01	5.90E+00	1.53E-04	1.10E-03	5.90E+00	1.18E+00	9.56E-01	5.87E+00	6.49E+00	9.06E-01	5.88E+00	1.64E-04	1.18E-03	5.89E+00	9.59E-01
Iron	3.28E+00	1.64E+01	3.98E+04	4.12E-04	1.64E+01	6.84E-02	4.92E-01	1.69E+01	3.38E+00	2.26E+00	1.39E+01	1.01E+04	1.37E-03	1.39E+01	7.31E-02	5.26E-01	1.44E+01	2.35E+00
Lead	2.00E-03	1.00E-02	9.46E+00	1.06E-03	1.00E-02	8.37E-07	6.03E-06	1.00E-02	2.00E-03	2.00E-03	1.23E-02	1.78E+00	6.89E-03	1.23E-02	8.95E-07	6.44E-06	1.23E-02	2.00E-03
Magnesium	1.17E+02	5.85E+02	1.79E+04	3.27E-02	5.85E+02	3.21E-02	2.31E-01	5.85E+02	1.17E+02	8.74E+01	5.36E+02	3.64E+03	1.47E-01	5.37E+02	3.43E-02	2.47E-01	5.37E+02	8.76E+01
Manganese	1.40E+01	7.00E+01	4.13E+02	1.69E-01	7.00E+01	1.30E-03	9.34E-03	7.00E+01	1.40E+01	6.42E+00	3.94E+01	1.23E+02	3.20E-01	3.94E+01	1.39E-03	9.99E-03	3.95E+01	6.43E+00
Mercury	5.00E-04	2.50E-03	7.30E-03	3.42E-01	2.50E-03	1.40E-08	1.00E-07	2.50E-03	5.00E-04	5.00E-04	3.07E-03	7.40E-03	4.15E-01	3.07E-03	1.49E-08	1.07E-07	3.07E-03	5.00E-04
Molybdenum	2.00E-03	1.00E-02	2.50E-01	4.00E-02	1.00E-02	6.98E-07	5.02E-06	1.00E-02	2.00E-03	6.20E-03	3.80E-02	2.50E-01	1.52E-01	3.81E-02	7.46E-07	5.37E-06	3.81E-02	6.20E-03
Nickel	1.26E-01	6.30E-01	3.99E+01	1.58E-02	6.30E-01	1.00E-04	7.23E-04	6.31E-01	1.26E-01	7.70E-02	4.72E-01	8.26E+00	5.73E-02	4.73E-01	1.07E-04	7.73E-04	4.74E-01	7.73E-02
Phosphorus	2.00E+02	1.00E+03	3.63E+02	2.75E+00	1.00E+03	3.07E-04	2.21E-03	1.00E+03	2.00E+02	1.82E+02	1.12E+03	2.27E+02	4.92E+00	1.12E+03	3.28E-04	2.36E-03	1.12E+03	1.82E+02
Potassium	1.62E+03	8.10E+03	7.79E+03	1.04E+00	8.10E+03	1.40E-04	1.00E-03	8.10E+03	1.62E+03	1.38E+03	8.47E+03	8.60E+02	9.84E+00	8.47E+03	1.49E-04	1.07E-03	8.47E+03	1.38E+03
Selenium	5.00E-03	2.50E-02	1.00E-01	2.50E-01	2.50E-02	6.98E-07	5.02E-06	2.50E-02	5.01E-03	5.00E-03	3.07E-02	1.00E-01	3.07E-01	3.07E-02	7.46E-07	5.37E-06	3.07E-02	5.01E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	1.31E+01	6.55E+01	1.07E+03	6.12E-02	6.55E+01	3.49E-04	2.51E-03	6.55E+01	1.31E+01	6.30E+00	3.87E+01	1.80E+02	2.15E-01	3.87E+01	3.73E-04	2.68E-03	3.87E+01	6.30E+00
Strontium	3.85E-01	1.93E+00	3.23E+01	5.96E-02	1.93E+00	1.95E-05	1.41E-04	1.93E+00	3.85E-01	1.90E-01	1.17E+00	9.66E+00	1.21E-01	1.17E+00	2.09E-05	1.50E-04	1.17E+00	1.90E-01
Thallium	2.00E-04	1.00E-03	3.56E-01	2.81E-03	1.00E-03	1.40E-07	1.00E-06	1.00E-03	2.00E-04	2.00E-04	1.23E-03	2.50E-02	4.91E-02	1.23E-03	1.49E-07	1.07E-06	1.23E-03	2.00E-04
Tin	1.00E-02	5.00E-02	1.00E+00	5.00E-02	5.00E-02	2.79E-06	2.01E-05	5.00E-02	1.00E-02	2.40E-02	1.47E-01	1.00E+00	1.47E-01	1.47E-01	2.98E-06	2.15E-05	1.47E-01	2.40E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.00E-03	8.63E-01	1.16E-03	1.00E-03	1.40E-07	1.00E-06	1.00E-03	2.00E-04	2.00E-04	1.23E-03	3.92E-01	3.13E-03	1.23E-03	1.49E-07	1.07E-06	1.23E-03	2.00E-04
Vanadium	1.00E-02	5.00E-02	8.20E+01	6.10E-04	5.00E-02	1.40E-04	1.00E-03	5.10E-02	1.02E-02	1.00E-02	6.13E-02	2.31E+01	2.66E-03	6.14E-02	1.49E-04	1.07E-03	6.25E-02	1.02E-02
Zinc	1.56E+00	7.80E+00	8.05E+01	9.69E-02	7.80E+00	8.23E-05	5.93E-04	7.80E+00	1.56E+00	1.15E+00	7.06E+00	1.64E+01	4.30E-01	7.06E+00	8.80E-05	6.34E-04	7.06E+00	1.15E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-04									LSA-05								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	6.40E-01	4.08E+00	1.23E+04	3.31E-04	4.08E+00	1.14E-01	8.24E-01	4.91E+00	7.70E-01	4.90E-01	2.82E+00	5.55E+03	5.07E-04	2.82E+00	2.30E-02	1.66E-01	2.98E+00	5.19E-01
Antimony	1.00E-03	6.37E-03	5.01E-02	1.27E-01	6.38E-03	3.95E-07	2.84E-06	6.38E-03	1.00E-03	1.00E-03	5.75E-03	5.00E-02	1.15E-01	5.75E-03	7.95E-08	5.72E-07	5.75E-03	1.00E-03
Arsenic	2.00E-03	1.27E-02	2.35E+00	5.42E-03	1.27E-02	1.97E-06	1.42E-05	1.28E-02	2.00E-03	2.00E-03	1.15E-02	3.92E+00	2.93E-03	1.15E-02	3.97E-07	2.86E-06	1.15E-02	2.00E-03
Barium	9.28E-01	5.91E+00	5.42E+01	1.09E-01	5.91E+00	1.18E-05	8.52E-05	5.91E+00	9.28E-01	2.83E+00	1.63E+01	6.85E+00	2.37E+00	1.63E+01	2.38E-06	1.72E-05	1.63E+01	2.83E+00
Beryllium	1.00E-03	6.37E-03	2.30E-01	2.77E-02	6.37E-03	1.30E-06	9.37E-06	6.38E-03	1.00E-03	1.00E-03	5.75E-03	1.00E-01	5.75E-02	5.75E-03	2.62E-07	1.89E-06	5.75E-03	1.00E-03
Bismuth	1.00E-03	6.37E-03	1.00E-01	6.37E-02	6.37E-03	3.95E-07	2.84E-06	6.38E-03	1.00E-03	1.00E-03	5.75E-03	1.00E-01	5.75E-02	5.75E-03	7.95E-08	5.72E-07	5.75E-03	1.00E-03
Cadmium	5.00E-04	3.18E-03	2.51E-02	1.27E-01	3.19E-03	3.95E-07	2.84E-06	3.19E-03	5.01E-04	5.00E-04	2.87E-03	2.50E-02	1.15E-01	2.87E-03	7.95E-08	5.72E-07	2.88E-03	5.00E-04
Calcium	1.24E+02	7.90E+02	4.74E+03	1.67E-01	7.93E+02	1.26E-01	9.09E-01	7.94E+02	1.25E+02	1.95E+02	1.12E+03	1.74E+03	6.44E-01	1.12E+03	2.54E-02	1.83E-01	1.12E+03	1.95E+02
Chromium	1.40E-02	8.92E-02	3.98E+01	2.25E-03	8.93E-02	5.92E-04	4.26E-03	9.36E-02	1.47E-02	5.00E-03	2.87E-02	1.50E+01	1.92E-03	2.88E-02	1.19E-04	8.58E-04	2.96E-02	5.15E-03
Cobalt	2.00E-03	1.27E-02	1.11E+01	1.15E-03	1.28E-02	1.38E-04	9.94E-04	1.38E-02	2.16E-03	5.00E-03	2.87E-02	5.72E+00	5.02E-03	2.88E-02	2.78E-05	2.00E-04	2.90E-02	5.04E-03
Copper	9.10E-01	5.80E+00	2.39E+01	2.44E-01	5.81E+00	4.34E-04	3.12E-03	5.81E+00	9.13E-01	1.31E+00	7.53E+00	2.71E+01	2.78E-01	7.53E+00	8.74E-05	6.29E-04	7.53E+00	1.31E+00
Iron	2.20E+00	1.40E+01	2.09E+04	6.70E-04	1.40E+01	1.93E-01	1.39E+00	1.54E+01	2.42E+00	2.17E+00	1.25E+01	1.22E+04	1.02E-03	1.25E+01	3.89E-02	2.80E-01	1.28E+01	2.22E+00
Lead	2.00E-03	1.27E-02	3.32E+00	3.84E-03	1.27E-02	2.37E-06	1.70E-05	1.28E-02	2.00E-03	2.00E-03	1.15E-02	1.75E+00	6.57E-03	1.15E-02	4.77E-07	3.43E-06	1.15E-02	2.00E-03
Magnesium	7.19E+01	4.58E+02	7.50E+03	6.11E-02	4.59E+02	9.08E-02	6.53E-01	4.59E+02	7.21E+01	8.31E+01	4.78E+02	3.08E+03	1.55E-01	4.78E+02	1.83E-02	1.32E-01	4.78E+02	8.32E+01
Manganese	1.68E+00	1.07E+01	3.27E+02	3.27E-02	1.07E+01	3.67E-03	2.64E-02	1.07E+01	1.69E+00	8.33E+00	4.79E+01	1.45E+02	3.30E-01	4.79E+01	7.39E-04	5.32E-03	4.79E+01	8.34E+00
Mercury	5.00E-04	3.18E-03	8.81E-03	3.62E-01	3.19E-03	3.95E-08	2.84E-07	3.19E-03	5.00E-04	5.00E-04	2.87E-03	2.50E-03	1.15E+00	2.87E-03	7.95E-09	5.72E-08	2.87E-03	5.00E-04
Molybdenum	9.80E-03	6.24E-02	2.50E-01	2.50E-01	6.25E-02	1.97E-06	1.42E-05	6.25E-02	9.81E-03	4.70E-03	2.70E-02	2.50E-01	1.08E-01	2.70E-02	3.97E-07	2.86E-06	2.70E-02	4.70E-03
Nickel	5.90E-02	3.76E-01	2.40E+01	1.57E-02	3.76E-01	2.84E-04	2.05E-03	3.78E-01	5.94E-02	8.40E-02	4.83E-01	9.87E+00	4.90E-02	4.83E-01	5.72E-05	4.12E-04	4.84E-01	8.41E-02
Phosphorus	1.07E+02	6.82E+02	1.70E+02	4.01E+00	6.82E+02	8.68E-04	6.25E-03	6.82E+02	1.07E+02	1.58E+02	9.08E+02	1.13E+02	8.04E+00	9.08E+02	1.75E-04	1.26E-03	9.08E+02	1.58E+02
Potassium	1.26E+03	8.03E+03	2.16E+03	3.72E+00	8.03E+03	3.95E-04	2.84E-03	8.03E+03	1.26E+03	9.41E+02	5.41E+03	1.60E+02	3.38E+01	5.41E+03	7.95E-05	5.72E-04	5.41E+03	9.41E+02
Selenium	5.00E-03	3.18E-02	1.00E-01	3.18E-01	3.19E-02	1.97E-06	1.42E-05	3.19E-02	5.02E-03	5.00E-03	2.87E-02	1.00E-01	2.87E-01	2.88E-02	3.97E-07	2.86E-06	2.88E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	9.60E+00	6.11E+01	4.60E+02	1.33E-01	6.12E+01	9.87E-04	7.10E-03	6.12E+01	9.60E+00	6.90E+00	3.97E+01	5.00E+01	7.93E-01	3.97E+01	1.99E-04	1.43E-03	3.97E+01	6.90E+00
Strontium	1.50E-01	9.55E-01	2.15E+01	4.44E-02	9.56E-01	5.52E-05	3.98E-04	9.56E-01	1.50E-01	4.11E-01	2.36E+00	7.52E+00	3.14E-01	2.36E+00	1.11E-05	8.01E-05	2.36E+00	4.11E-01
Thallium	2.00E-04	1.27E-03	1.14E-01	1.12E-02	1.27E-03	3.95E-07	2.84E-06	1.28E-03	2.01E-04	2.00E-04	1.15E-03	2.50E-02	4.60E-02	1.15E-03	7.95E-08	5.72E-07	1.15E-03	2.00E-04
Tin	3.10E-02	1.97E-01	1.00E+00	1.97E-01	1.98E-01	7.89E-06	5.68E-05	1.98E-01	3.10E-02	1.00E-02	5.75E-02	1.00E+00	5.75E-02	5.75E-02	1.59E-06	1.14E-05	5.75E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.27E-03	3.69E-01	3.45E-03	1.27E-03	3.95E-07	2.84E-06	1.28E-03	2.00E-04	2.00E-04	1.15E-03	4.05E-01	2.84E-03	1.15E-03	7.95E-08	5.72E-07	1.15E-03	2.00E-04
Vanadium	1.00E-02	6.37E-02	4.70E+01	1.36E-03	6.38E-02	3.95E-04	2.84E-03	6.66E-02	1.05E-02	1.00E-02	5.75E-02	2.79E+01	2.06E-03	5.75E-02	7.95E-05	5.72E-04	5.81E-02	1.01E-02
Zinc	1.00E+00	6.37E+00	3.42E+01	1.86E-01	6.38E+00	2.33E-04	1.68E-03	6.38E+00	1.00E+00	1.19E+00	6.84E+00	1.34E+01	5.10E-01	6.84E+00	4.69E-05	3.37E-04	6.84E+00	1.19E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-06									LSA-07A								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	8.30E-01	4.88E+00	4.80E+03	1.02E-03	4.89E+00	2.46E-02	1.77E-01	5.06E+00	8.61E-01	4.70E-01	2.44E+00	6.96E+03	3.50E-04	2.44E+00	2.28E-02	1.64E-01	2.60E+00	5.02E-01
Antimony	1.00E-03	5.88E-03	5.00E-02	1.18E-01	5.88E-03	8.48E-08	6.11E-07	5.88E-03	1.00E-03	1.00E-03	5.18E-03	5.00E-02	1.04E-01	5.18E-03	7.86E-08	5.66E-07	5.18E-03	1.00E-03
Arsenic	2.00E-03	1.18E-02	8.55E-01	1.38E-02	1.18E-02	4.24E-07	3.05E-06	1.18E-02	2.00E-03	2.00E-03	1.04E-02	3.03E+00	3.42E-03	1.04E-02	3.93E-07	2.83E-06	1.04E-02	2.00E-03
Barium	1.47E+00	8.65E+00	1.19E+01	7.27E-01	8.65E+00	2.54E-06	1.83E-05	8.65E+00	1.47E+00	1.31E+00	6.79E+00	2.50E+01	2.72E-01	6.79E+00	2.36E-06	1.70E-05	6.79E+00	1.31E+00
Beryllium	1.00E-03	5.88E-03	1.00E-01	5.88E-02	5.88E-03	2.80E-07	2.02E-06	5.89E-03	1.00E-03	1.00E-03	5.18E-03	1.00E-01	5.18E-02	5.18E-03	2.59E-07	1.87E-06	5.19E-03	1.00E-03
Bismuth	1.00E-03	5.88E-03	1.00E-01	5.88E-02	5.88E-03	8.48E-08	6.11E-07	5.88E-03	1.00E-03	1.00E-03	5.18E-03	1.00E-01	5.18E-02	5.18E-03	7.86E-08	5.66E-07	5.18E-03	1.00E-03
Cadmium	5.00E-04	2.94E-03	2.50E-02	1.18E-01	2.94E-03	8.48E-08	6.11E-07	2.94E-03	5.00E-04	5.00E-04	2.59E-03	2.50E-02	1.04E-01	2.59E-03	7.86E-08	5.66E-07	2.59E-03	5.00E-04
Calcium	1.70E+02	1.00E+03	1.53E+03	6.54E-01	1.00E+03	2.71E-02	1.95E-01	1.00E+03	1.70E+02	1.84E+02	9.53E+02	2.31E+03	4.13E-01	9.55E+02	2.51E-02	1.81E-01	9.55E+02	1.84E+02
Chromium	5.00E-03	2.94E-02	1.30E+01	2.26E-03	2.95E-02	1.27E-04	9.16E-04	3.04E-02	5.16E-03	5.00E-03	2.59E-02	1.82E+01	1.42E-03	2.59E-02	1.18E-04	8.48E-04	2.68E-02	5.17E-03
Cobalt	2.00E-03	1.18E-02	5.11E+00	2.30E-03	1.18E-02	2.97E-05	2.14E-04	1.20E-02	2.04E-03	2.00E-03	1.04E-02	7.28E+00	1.42E-03	1.04E-02	2.75E-05	1.98E-04	1.06E-02	2.04E-03
Copper	1.07E+00	6.29E+00	1.22E+01	5.16E-01	6.30E+00	9.33E-05	6.72E-04	6.30E+00	1.07E+00	9.56E-01	4.95E+00	1.65E+01	3.00E-01	4.96E+00	8.64E-05	6.22E-04	4.96E+00	9.57E-01
Iron	1.91E+00	1.12E+01	1.14E+04	9.86E-04	1.12E+01	4.16E-02	2.99E-01	1.15E+01	1.96E+00	1.83E+00	9.48E+00	1.40E+04	6.77E-04	9.49E+00	3.85E-02	2.77E-01	9.76E+00	1.88E+00
Lead	2.00E-03	1.18E-02	1.42E+00	8.29E-03	1.18E-02	5.09E-07	3.66E-06	1.18E-02	2.00E-03	2.00E-03	1.04E-02	3.08E+00	3.36E-03	1.04E-02	4.71E-07	3.39E-06	1.04E-02	2.00E-03
Magnesium	9.42E+01	5.54E+02	2.87E+03	1.93E-01	5.55E+02	1.95E-02	1.40E-01	5.55E+02	9.43E+01	9.48E+01	4.91E+02	4.61E+03	1.07E-01	4.91E+02	1.81E-02	1.30E-01	4.92E+02	9.49E+01
Manganese	4.25E+00	2.50E+01	1.32E+02	1.89E-01	2.50E+01	7.89E-04	5.68E-03	2.50E+01	4.25E+00	6.79E+00	3.52E+01	1.75E+02	2.01E-01	3.52E+01	7.31E-04	5.26E-03	3.52E+01	6.79E+00
Mercury	5.00E-04	2.94E-03	2.50E-03	1.18E+00	2.94E-03	8.48E-09	6.11E-08	2.94E-03	5.00E-04	5.00E-04	2.59E-03	1.48E-02	1.75E-01	2.59E-03	7.86E-09	5.66E-08	2.59E-03	5.00E-04
Molybdenum	4.00E-03	2.35E-02	2.50E-01	9.41E-02	2.35E-02	4.24E-07	3.05E-06	2.35E-02	4.00E-03	1.42E-02	7.36E-02	2.50E-01	2.94E-01	7.36E-02	3.93E-07	2.83E-06	7.36E-02	1.42E-02
Nickel	9.20E-02	5.41E-01	8.67E+00	6.25E-02	5.42E-01	6.11E-05	4.40E-04	5.42E-01	9.22E-02	7.60E-02	3.94E-01	1.39E+01	2.83E-02	3.94E-01	5.66E-05	4.07E-04	3.94E-01	7.61E-02
Phosphorus	1.56E+02	9.18E+02	1.61E+02	5.70E+00	9.18E+02	1.87E-04	1.34E-03	9.18E+02	1.56E+02	1.69E+02	8.76E+02	3.51E+02	2.49E+00	8.76E+02	1.73E-04	1.24E-03	8.76E+02	1.69E+02
Potassium	9.76E+02	5.74E+03	2.60E+02	2.21E+01	5.74E+03	8.48E-05	6.11E-04	5.74E+03	9.76E+02	1.25E+03	6.48E+03	6.40E+02	1.01E+01	6.48E+03	7.86E-05	5.66E-04	6.48E+03	1.25E+03
Selenium	5.00E-03	2.94E-02	1.00E-01	2.94E-01	2.94E-02	4.24E-07	3.05E-06	2.94E-02	5.00E-03	5.00E-03	2.59E-02	1.00E-01	2.59E-01	2.59E-02	3.93E-07	2.83E-06	2.59E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	6.80E+00	4.00E+01	1.20E+02	3.33E-01	4.00E+01	2.12E-04	1.53E-03	4.00E+01	6.80E+00	6.60E+00	3.42E+01	5.00E+01	6.84E-01	3.42E+01	1.96E-04	1.41E-03	3.42E+01	6.60E+00
Strontium	4.48E-01	2.64E+00	7.71E+00	3.42E-01	2.64E+00	1.19E-05	8.55E-05	2.64E+00	4.48E-01	2.81E-01	1.46E+00	1.01E+01	1.44E-01	1.46E+00	1.10E-05	7.92E-05	1.46E+00	2.81E-01
Thallium	2.00E-04	1.18E-03	2.50E-02	4.71E-02	1.18E-03	8.48E-08	6.11E-07	1.18E-03	2.00E-04	2.00E-04	1.04E-03	2.50E-02	4.15E-02	1.04E-03	7.86E-08	5.66E-07	1.04E-03	2.00E-04
Tin	4.60E-02	2.71E-01	1.00E+00	2.71E-01	2.71E-01	1.70E-06	1.22E-05	2.71E-01	4.60E-02	2.30E-02	1.19E-01	1.00E+00	1.19E-01	1.19E-01	1.57E-06	1.13E-05	1.19E-01	2.30E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.18E-03	3.10E-01	3.80E-03	1.18E-03	8.48E-08	6.11E-07	1.18E-03	2.00E-04	2.00E-04	1.04E-03	5.41E-01	1.92E-03	1.04E-03	7.86E-08	5.66E-07	1.04E-03	2.00E-04
Vanadium	1.00E-02	5.88E-02	2.47E+01	2.38E-03	5.89E-02	8.48E-05	6.11E-04	5.95E-02	1.01E-02	1.00E-02	5.18E-02	2.45E+01	2.11E-03	5.18E-02	7.86E-05	5.66E-04	5.24E-02	1.01E-02
Zinc	1.32E+00	7.76E+00	1.43E+01	5.43E-01	7.77E+00	5.01E-05	3.60E-04	7.77E+00	1.32E+00	1.30E+00	6.74E+00	2.17E+01	3.10E-01	6.74E+00	4.64E-05	3.34E-04	6.74E+00	1.30E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-07B									LSA-08								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	9.90E-01	5.92E+03	1.67E-04	9.91E-01	2.28E-02	1.64E-01	1.15E+00	2.33E-01	5.24E+00	2.80E+01	7.07E+03	3.96E-03	2.80E+01	2.27E-02	1.64E-01	2.82E+01	5.27E+00
Antimony	1.00E-03	4.95E-03	5.00E-02	9.90E-02	4.95E-03	7.86E-08	5.66E-07	4.95E-03	1.00E-03	1.00E-03	5.35E-03	5.00E-02	1.07E-01	5.35E-03	7.84E-08	5.64E-07	5.35E-03	1.00E-03
Arsenic	2.00E-03	9.90E-03	2.37E+00	4.18E-03	9.90E-03	3.93E-07	2.83E-06	9.90E-03	2.00E-03	2.00E-03	1.07E-02	1.31E+00	8.16E-03	1.07E-02	3.92E-07	2.82E-06	1.07E-02	2.00E-03
Barium	1.13E+00	5.59E+00	2.06E+01	2.72E-01	5.59E+00	2.36E-06	1.70E-05	5.59E+00	1.13E+00	1.11E+00	5.94E+00	1.86E+01	3.19E-01	5.94E+00	2.35E-06	1.69E-05	5.94E+00	1.11E+00
Beryllium	1.00E-03	4.95E-03	1.00E-01	4.95E-02	4.95E-03	2.59E-07	1.87E-06	4.95E-03	1.00E-03	1.00E-03	5.35E-03	1.00E-01	5.35E-02	5.35E-03	2.59E-07	1.86E-06	5.35E-03	1.00E-03
Bismuth	1.00E-03	4.95E-03	1.00E-01	4.95E-02	4.95E-03	7.86E-08	5.66E-07	4.95E-03	1.00E-03	1.00E-03	5.35E-03	1.00E-01	5.35E-02	5.35E-03	7.84E-08	5.64E-07	5.35E-03	1.00E-03
Cadmium	5.00E-04	2.48E-03	2.50E-02	9.90E-02	2.48E-03	7.86E-08	5.66E-07	2.48E-03	5.00E-04	5.00E-04	2.67E-03	2.50E-02	1.07E-01	2.67E-03	7.84E-08	5.64E-07	2.68E-03	5.00E-04
Calcium	1.59E+02	7.87E+02	2.06E+03	3.82E-01	7.88E+02	2.51E-02	1.81E-01	7.89E+02	1.59E+02	1.38E+02	7.38E+02	2.26E+03	3.27E-01	7.39E+02	2.51E-02	1.81E-01	7.39E+02	1.38E+02
Chromium	5.00E-03	2.48E-02	2.07E+01	1.20E-03	2.48E-02	1.18E-04	8.48E-04	2.56E-02	5.18E-03	5.00E-03	2.67E-02	1.64E+01	1.63E-03	2.68E-02	1.18E-04	8.47E-04	2.76E-02	5.16E-03
Cobalt	2.00E-03	9.90E-03	5.87E+00	1.69E-03	9.91E-03	2.75E-05	1.98E-04	1.01E-02	2.04E-03	6.50E-03	3.48E-02	6.87E+00	5.06E-03	3.48E-02	2.74E-05	1.98E-04	3.50E-02	6.54E-03
Copper	1.09E+00	5.40E+00	1.29E+01	4.18E-01	5.40E+00	8.64E-05	6.22E-04	5.40E+00	1.09E+00	1.28E+00	6.84E+00	3.34E+01	2.05E-01	6.85E+00	8.62E-05	6.21E-04	6.85E+00	1.28E+00
Iron	1.75E+00	8.66E+00	1.20E+04	7.22E-04	8.67E+00	3.85E-02	2.77E-01	8.94E+00	1.81E+00	5.07E+00	2.71E+01	1.36E+04	1.99E-03	2.71E+01	3.84E-02	2.77E-01	2.74E+01	5.12E+00
Lead	2.00E-03	9.90E-03	2.37E+00	4.18E-03	9.90E-03	4.71E-07	3.39E-06	9.90E-03	2.00E-03	2.00E-03	1.07E-02	2.55E+00	4.19E-03	1.07E-02	4.70E-07	3.39E-06	1.07E-02	2.00E-03
Magnesium	9.27E+01	4.59E+02	3.91E+03	1.17E-01	4.59E+02	1.81E-02	1.30E-01	4.59E+02	9.28E+01	8.26E+01	4.42E+02	3.40E+03	1.30E-01	4.42E+02	1.80E-02	1.30E-01	4.42E+02	8.27E+01
Manganese	6.44E+00	3.19E+01	1.27E+02	2.51E-01	3.19E+01	7.31E-04	5.26E-03	3.19E+01	6.45E+00	3.23E+00	1.73E+01	1.12E+02	1.54E-01	1.73E+01	7.29E-04	5.25E-03	1.73E+01	3.23E+00
Mercury	5.00E-04	2.48E-03	1.03E-02	2.40E-01	2.48E-03	7.86E-09	5.66E-08	2.48E-03	5.00E-04	5.00E-04	2.67E-03	7.90E-03	3.38E-01	2.67E-03	7.84E-09	5.64E-08	2.67E-03	5.00E-04
Molybdenum	1.67E-02	8.27E-02	2.50E-01	3.31E-01	8.27E-02	3.93E-07	2.83E-06	8.27E-02	1.67E-02	2.00E-03	1.07E-02	2.50E-01	4.28E-02	1.07E-02	3.92E-07	2.82E-06	1.07E-02	2.00E-03
Nickel	7.20E-02	3.56E-01	1.30E+01	2.74E-02	3.57E-01	5.66E-05	4.07E-04	3.57E-01	7.21E-02	9.00E-02	4.81E-01	1.32E+01	3.65E-02	4.82E-01	5.64E-05	4.06E-04	4.82E-01	9.01E-02
Phosphorus	1.77E+02	8.76E+02	2.77E+02	3.16E+00	8.76E+02	1.73E-04	1.24E-03	8.76E+02	1.77E+02	1.50E+02	8.02E+02	1.31E+02	6.12E+00	8.02E+02	1.72E-04	1.24E-03	8.02E+02	1.50E+02
Potassium	1.38E+03	6.83E+03	6.40E+02	1.07E+01	6.83E+03	7.86E-05	5.66E-04	6.83E+03	1.38E+03	1.14E+03	6.10E+03	3.70E+02	1.65E+01	6.10E+03	7.84E-05	5.64E-04	6.10E+03	1.14E+03
Selenium	5.00E-03	2.48E-02	1.00E-01	2.48E-01	2.48E-02	3.93E-07	2.83E-06	2.48E-02	5.00E-03	5.00E-03	2.67E-02	1.00E-01	2.67E-01	2.68E-02	3.92E-07	2.82E-06	2.68E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	6.10E+00	3.02E+01	1.00E+02	3.02E-01	3.02E+01	1.96E-04	1.41E-03	3.02E+01	6.10E+00	7.80E+00	4.17E+01	2.30E+02	1.81E-01	4.17E+01	1.96E-04	1.41E-03	4.17E+01	7.80E+00
Strontium	2.25E-01	1.11E+00	8.33E+00	1.34E-01	1.11E+00	1.10E-05	7.92E-05	1.11E+00	2.25E-01	2.07E-01	1.11E+00	1.26E+01	8.79E-02	1.11E+00	1.10E-05	7.90E-05	1.11E+00	2.07E-01
Thallium	2.00E-04	9.90E-04	2.50E-02	3.96E-02	9.91E-04	7.86E-08	5.66E-07	9.91E-04	2.00E-04	2.00E-04	1.07E-03	2.50E-02	4.28E-02	1.07E-03	7.84E-08	5.64E-07	1.07E-03	2.00E-04
Tin	2.30E-02	1.14E-01	1.00E+00	1.14E-01	1.14E-01	1.57E-06	1.13E-05	1.14E-01	2.30E-02	3.40E-02	1.82E-01	1.00E+00	1.82E-01	1.82E-01	1.57E-06	1.13E-05	1.82E-01	3.40E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	9.90E-04	1.07E+00	9.25E-04	9.90E-04	7.86E-08	5.66E-07	9.91E-04	2.00E-04	2.00E-04	1.07E-03	4.08E-01	2.62E-03	1.07E-03	7.84E-08	5.64E-07	1.07E-03	2.00E-04
Vanadium	1.00E-02	4.95E-02	2.37E+01	2.09E-03	4.95E-02	7.86E-05	5.66E-04	5.01E-02	1.01E-02	1.00E-02	5.35E-02	3.00E+01	1.78E-03	5.35E-02	7.84E-05	5.64E-04	5.41E-02	1.01E-02
Zinc	1.41E+00	6.98E+00	1.94E+01	3.60E-01	6.98E+00	4.64E-05	3.34E-04	6.98E+00	1.41E+00	1.19E+00	6.36E+00	1.65E+01	3.86E-01	6.37E+00	4.63E-05	3.33E-04	6.37E+00	1.19E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-09A									LSA-09B								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.75E+00	1.04E+01	3.49E+03	2.98E-03	1.04E+01	5.55E-02	4.00E-01	1.08E+01	1.82E+00	4.60E-01	2.74E+00	3.93E+03	6.98E-04	2.74E+00	5.55E-02	4.00E-01	3.14E+00	5.28E-01
Antimony	1.00E-03	5.92E-03	5.00E-02	1.18E-01	5.92E-03	1.91E-07	1.38E-06	5.92E-03	1.00E-03	1.00E-03	5.95E-03	5.00E-02	1.19E-01	5.96E-03	1.91E-07	1.38E-06	5.96E-03	1.00E-03
Arsenic	2.00E-03	1.18E-02	9.99E-01	1.18E-02	1.18E-02	9.57E-07	6.89E-06	1.18E-02	2.00E-03	2.00E-03	1.19E-02	1.01E+00	1.18E-02	1.19E-02	9.57E-07	6.89E-06	1.19E-02	2.00E-03
Barium	8.86E-01	5.24E+00	1.46E+01	3.59E-01	5.24E+00	5.74E-06	4.14E-05	5.24E+00	8.86E-01	7.84E-01	4.67E+00	1.82E+01	2.56E-01	4.67E+00	5.74E-06	4.14E-05	4.67E+00	7.84E-01
Beryllium	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.92E-03	6.32E-07	4.55E-06	5.93E-03	1.00E-03	1.00E-03	5.95E-03	1.00E-01	5.95E-02	5.96E-03	6.32E-07	4.55E-06	5.96E-03	1.00E-03
Bismuth	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.92E-03	1.91E-07	1.38E-06	5.92E-03	1.00E-03	1.00E-03	5.95E-03	1.00E-01	5.95E-02	5.95E-03	1.91E-07	1.38E-06	5.96E-03	1.00E-03
Cadmium	5.00E-04	2.96E-03	2.50E-02	1.18E-01	2.96E-03	1.91E-07	1.38E-06	2.96E-03	5.01E-04	5.00E-04	2.98E-03	2.50E-02	1.19E-01	2.98E-03	1.91E-07	1.38E-06	2.98E-03	5.01E-04
Calcium	1.39E+02	8.22E+02	2.57E+03	3.21E-01	8.25E+02	6.13E-02	4.41E-01	8.26E+02	1.40E+02	1.23E+02	7.32E+02	2.55E+03	2.88E-01	7.34E+02	6.13E-02	4.41E-01	7.35E+02	1.23E+02
Chromium	5.00E-03	2.96E-02	1.22E+01	2.43E-03	2.97E-02	2.87E-04	2.07E-03	3.17E-02	5.37E-03	5.00E-03	2.98E-02	1.31E+01	2.27E-03	2.98E-02	2.87E-04	2.07E-03	3.19E-02	5.36E-03
Cobalt	6.10E-03	3.61E-02	2.85E+00	1.27E-02	3.62E-02	6.70E-05	4.83E-04	3.67E-02	6.20E-03	2.00E-03	1.19E-02	3.11E+00	3.84E-03	1.19E-02	6.70E-05	4.83E-04	1.24E-02	2.09E-03
Copper	8.62E-01	5.10E+00	4.09E+00	1.26E+00	5.14E+00	2.11E-04	1.52E-03	5.14E+00	8.68E-01	8.15E-01	4.85E+00	4.89E+00	9.98E-01	4.88E+00	2.11E-04	1.52E-03	4.88E+00	8.20E-01
Iron	3.33E+00	1.97E+01	8.16E+03	2.42E-03	1.97E+01	9.38E-02	6.76E-01	2.04E+01	3.45E+00	1.70E+00	1.01E+01	8.66E+03	1.17E-03	1.01E+01	9.38E-02	6.76E-01	1.08E+01	1.82E+00
Lead	2.00E-03	1.18E-02	2.17E+00	5.45E-03	1.18E-02	1.15E-06	8.27E-06	1.18E-02	2.00E-03	2.00E-03	1.19E-02	2.19E+00	5.44E-03	1.19E-02	1.15E-06	8.27E-06	1.19E-02	2.00E-03
Magnesium	9.51E+01	5.63E+02	1.95E+03	2.90E-01	5.64E+02	4.40E-02	3.17E-01	5.65E+02	9.54E+01	8.69E+01	5.17E+02	2.17E+03	2.39E-01	5.19E+02	4.40E-02	3.17E-01	5.19E+02	8.72E+01
Manganese	5.04E+00	2.98E+01	9.18E+01	3.26E-01	2.99E+01	1.78E-03	1.28E-02	2.99E+01	5.06E+00	4.32E+00	2.57E+01	9.24E+01	2.79E-01	2.58E+01	1.78E-03	1.28E-02	2.58E+01	4.33E+00
Mercury	5.00E-04	2.96E-03	2.50E-03	1.18E+00	2.96E-03	1.91E-08	1.38E-07	2.96E-03	5.01E-04	5.00E-04	2.98E-03	2.50E-03	1.19E+00	2.98E-03	1.91E-08	1.38E-07	2.98E-03	5.01E-04
Molybdenum	9.90E-03	5.86E-02	2.50E-01	2.34E-01	5.86E-02	9.57E-07	6.89E-06	5.86E-02	9.91E-03	6.80E-03	4.05E-02	2.50E-01	1.62E-01	4.05E-02	9.57E-07	6.89E-06	4.05E-02	6.80E-03
Nickel	9.60E-02	5.68E-01	5.45E+00	1.05E-01	5.70E-01	1.38E-04	9.93E-04	5.71E-01	9.65E-02	8.30E-02	4.94E-01	5.88E+00	8.43E-02	4.96E-01	1.38E-04	9.93E-04	4.97E-01	8.34E-02
Phosphorus	1.86E+02	1.10E+03	4.29E+02	2.57E+00	1.10E+03	4.21E-04	3.03E-03	1.10E+03	1.86E+02	1.61E+02	9.58E+02	3.64E+02	2.63E+00	9.58E+02	4.21E-04	3.03E-03	9.58E+02	1.61E+02
Potassium	1.37E+03	8.11E+03	6.10E+02	1.33E+01	8.11E+03	1.91E-04	1.38E-03	8.11E+03	1.37E+03	1.24E+03	7.38E+03	7.90E+02	9.34E+00	7.38E+03	1.91E-04	1.38E-03	7.38E+03	1.24E+03
Selenium	5.00E-03	2.96E-02	1.00E-01	2.96E-01	2.96E-02	9.57E-07	6.89E-06	2.96E-02	5.01E-03	5.00E-03	2.98E-02	1.00E-01	2.98E-01	2.98E-02	9.57E-07	6.89E-06	2.98E-02	5.01E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	8.60E+00	5.09E+01	2.20E+02	2.31E-01	5.09E+01	4.79E-04	3.45E-03	5.09E+01	8.60E+00	7.80E+00	4.64E+01	2.30E+02	2.02E-01	4.64E+01	4.79E-04	3.45E-03	4.64E+01	7.80E+00
Strontium	2.33E-01	1.38E+00	1.24E+01	1.11E-01	1.38E+00	2.68E-05	1.93E-04	1.38E+00	2.33E-01	2.04E-01	1.21E+00	1.33E+01	9.13E-02	1.21E+00	2.68E-05	1.93E-04	1.21E+00	2.04E-01
Thallium	2.00E-04	1.18E-03	2.50E-02	4.73E-02	1.18E-03	1.91E-07	1.38E-06	1.19E-03	2.00E-04	2.00E-04	1.19E-03	2.50E-02	4.76E-02	1.19E-03	1.91E-07	1.38E-06	1.19E-03	2.00E-04
Tin	2.90E-02	1.72E-01	1.00E+00	1.72E-01	1.72E-01	3.83E-06	2.76E-05	1.72E-01	2.90E-02	1.00E-02	5.95E-02	1.00E+00	5.95E-02	5.96E-02	3.83E-06	2.76E-05	5.96E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.18E-03	6.78E-01	1.75E-03	1.18E-03	1.91E-07	1.38E-06	1.18E-03	2.00E-04	2.00E-04	1.19E-03	6.41E-01	1.86E-03	1.19E-03	1.91E-07	1.38E-06	1.19E-03	2.00E-04
Vanadium	1.00E-02	5.92E-02	1.90E+01	3.11E-03	5.93E-02	1.91E-04	1.38E-03	6.06E-02	1.02E-02	1.00E-02	5.95E-02	2.00E+01	2.98E-03	5.96E-02	1.91E-04	1.38E-03	6.10E-02	1.02E-02
Zinc	1.18E+00	6.98E+00	8.92E+00	7.85E-01	6.99E+00	1.13E-04	8.13E-04	6.99E+00	1.18E+00	1.05E+00	6.25E+00	1.03E+01	6.07E-01	6.26E+00	1.13E-04	8.13E-04	6.26E+00	1.05E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-10									LSA-11								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.09E+00	6.59E+03	1.66E-04	1.09E+00	2.38E-02	1.71E-01	1.26E+00	2.31E-01	7.10E-01	3.66E+00	1.86E+04	1.97E-04	3.66E+00	2.34E-02	1.69E-01	3.83E+00	7.43E-01
Antimony	1.00E-03	5.46E-03	5.00E-02	1.09E-01	5.47E-03	8.20E-08	5.91E-07	5.47E-03	1.00E-03	1.00E-03	5.15E-03	5.00E-02	1.03E-01	5.16E-03	8.08E-08	5.82E-07	5.16E-03	1.00E-03
Arsenic	2.00E-03	1.09E-02	1.11E+00	9.85E-03	1.09E-02	4.10E-07	2.95E-06	1.09E-02	2.00E-03	2.00E-03	1.03E-02	3.92E+00	2.63E-03	1.03E-02	4.04E-07	2.91E-06	1.03E-02	2.00E-03
Barium	1.57E+00	8.58E+00	1.72E+01	4.99E-01	8.58E+00	2.46E-06	1.77E-05	8.58E+00	1.57E+00	1.92E+00	9.90E+00	1.02E+02	9.70E-02	9.90E+00	2.42E-06	1.75E-05	9.90E+00	1.92E+00
Beryllium	1.00E-03	5.46E-03	1.00E-01	5.46E-02	5.47E-03	2.71E-07	1.95E-06	5.47E-03	1.00E-03	1.00E-03	5.15E-03	6.80E-01	7.58E-03	5.15E-03	2.67E-07	1.92E-06	5.16E-03	1.00E-03
Bismuth	1.00E-03	5.46E-03	1.00E-01	5.46E-02	5.47E-03	8.20E-08	5.91E-07	5.47E-03	1.00E-03	1.00E-03	5.15E-03	1.00E-01	5.15E-02	5.16E-03	8.08E-08	5.82E-07	5.16E-03	1.00E-03
Cadmium	5.00E-04	2.73E-03	2.50E-02	1.09E-01	2.73E-03	8.20E-08	5.91E-07	2.73E-03	5.00E-04	5.00E-04	2.58E-03	2.50E-02	1.03E-01	2.58E-03	8.08E-08	5.82E-07	2.58E-03	5.00E-04
Calcium	1.74E+02	9.51E+02	1.73E+03	5.50E-01	9.53E+02	2.63E-02	1.89E-01	9.53E+02	1.74E+02	2.13E+02	1.10E+03	5.23E+03	2.10E-01	1.10E+03	2.59E-02	1.86E-01	1.10E+03	2.13E+02
Chromium	5.00E-03	2.73E-02	2.46E+01	1.11E-03	2.73E-02	1.23E-04	8.86E-04	2.82E-02	5.17E-03	5.00E-03	2.58E-02	4.92E+01	5.24E-04	2.58E-02	1.21E-04	8.73E-04	2.67E-02	5.17E-03
Cobalt	2.00E-03	1.09E-02	6.40E+00	1.71E-03	1.09E-02	2.87E-05	2.07E-04	1.11E-02	2.04E-03	2.00E-03	1.03E-02	9.20E+00	1.12E-03	1.03E-02	2.83E-05	2.04E-04	1.05E-02	2.04E-03
Copper	1.11E+00	6.07E+00	1.14E+01	5.32E-01	6.07E+00	9.02E-05	6.50E-04	6.07E+00	1.11E+00	1.29E+00	6.65E+00	2.13E+01	3.12E-01	6.65E+00	8.89E-05	6.40E-04	6.65E+00	1.29E+00
Iron	1.67E+00	9.13E+00	1.37E+04	6.66E-04	9.13E+00	4.02E-02	2.89E-01	9.42E+00	1.72E+00	1.72E+00	8.87E+00	2.37E+04	3.74E-04	8.87E+00	3.96E-02	2.85E-01	9.15E+00	1.78E+00
Lead	2.00E-03	1.09E-02	2.15E+00	5.08E-03	1.09E-02	4.92E-07	3.54E-06	1.09E-02	2.00E-03	2.00E-03	1.03E-02	7.50E+00	1.37E-03	1.03E-02	4.85E-07	3.49E-06	1.03E-02	2.00E-03
Magnesium	8.32E+01	4.55E+02	4.15E+03	1.10E-01	4.55E+02	1.89E-02	1.36E-01	4.55E+02	8.33E+01	1.09E+02	5.62E+02	9.02E+03	6.23E-02	5.62E+02	1.86E-02	1.34E-01	5.62E+02	1.09E+02
Manganese	5.01E+00	2.74E+01	1.49E+02	1.84E-01	2.74E+01	7.63E-04	5.49E-03	2.74E+01	5.01E+00	3.95E+00	2.04E+01	1.99E+02	1.02E-01	2.04E+01	7.52E-04	5.41E-03	2.04E+01	3.95E+00
Mercury	5.00E-04	2.73E-03	6.80E-03	4.02E-01	2.73E-03	8.20E-09	5.91E-08	2.73E-03	5.00E-04	5.00E-04	2.58E-03	1.73E-02	1.49E-01	2.58E-03	8.08E-09	5.82E-08	2.58E-03	5.00E-04
Molybdenum	4.70E-03	2.57E-02	2.50E-01	1.03E-01	2.57E-02	4.10E-07	2.95E-06	2.57E-02	4.70E-03	8.80E-03	4.54E-02	2.50E-01	1.81E-01	4.54E-02	4.04E-07	2.91E-06	4.54E-02	8.80E-03
Nickel	6.00E-02	3.28E-01	1.35E+01	2.43E-02	3.28E-01	5.91E-05	4.25E-04	3.28E-01	6.01E-02	1.31E-01	6.75E-01	2.67E+01	2.53E-02	6.75E-01	5.82E-05	4.19E-04	6.76E-01	1.31E-01
Phosphorus	1.45E+02	7.92E+02	1.60E+02	4.95E+00	7.92E+02	1.80E-04	1.30E-03	7.92E+02	1.45E+02	2.19E+02	1.13E+03	3.91E+02	2.89E+00	1.13E+03	1.78E-04	1.28E-03	1.13E+03	2.19E+02
Potassium	1.04E+03	5.68E+03	3.10E+02	1.83E+01	5.68E+03	8.20E-05	5.91E-04	5.68E+03	1.04E+03	1.19E+03	6.13E+03	3.84E+03	1.60E+00	6.13E+03	8.08E-05	5.82E-04	6.13E+03	1.19E+03
Selenium	5.00E-03	2.73E-02	1.00E-01	2.73E-01	2.73E-02	4.10E-07	2.95E-06	2.73E-02	5.00E-03	5.00E-03	2.58E-02	1.00E-01	2.58E-01	2.58E-02	4.04E-07	2.91E-06	2.58E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	9.10E+00	4.97E+01	1.40E+02	3.55E-01	4.97E+01	2.05E-04	1.48E-03	4.97E+01	9.10E+00	9.20E+00	4.74E+01	5.80E+02	8.18E-02	4.74E+01	2.02E-04	1.45E-03	4.74E+01	9.20E+00
Strontium	2.63E-01	1.44E+00	9.07E+00	1.58E-01	1.44E+00	1.15E-05	8.27E-05	1.44E+00	2.63E-01	5.27E-01	2.72E+00	5.17E+01	5.25E-02	2.72E+00	1.13E-05	8.14E-05	2.72E+00	5.27E-01
Thallium	2.00E-04	1.09E-03	2.50E-02	4.37E-02	1.09E-03	8.20E-08	5.91E-07	1.09E-03	2.00E-04	2.00E-04	1.03E-03	1.81E-01	5.70E-03	1.03E-03	8.08E-08	5.82E-07	1.03E-03	2.00E-04
Tin	3.20E-02	1.75E-01	1.00E+00	1.75E-01	1.75E-01	1.64E-06	1.18E-05	1.75E-01	3.20E-02	4.30E-02	2.22E-01	1.00E+00	2.22E-01	2.22E-01	1.62E-06	1.16E-05	2.22E-01	4.30E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.09E-03	3.49E-01	3.13E-03	1.09E-03	8.20E-08	5.91E-07	1.09E-03	2.00E-04	2.00E-04	1.03E-03	1.06E+00	9.73E-04	1.03E-03	8.08E-08	5.82E-07	1.03E-03	2.00E-04
Vanadium	1.00E-02	5.46E-02	2.87E+01	1.90E-03	5.47E-02	8.20E-05	5.91E-04	5.53E-02	1.01E-02	1.00E-02	5.15E-02	4.86E+01	1.06E-03	5.16E-02	8.08E-05	5.82E-04	5.21E-02	1.01E-02
Zinc	1.33E+00	7.27E+00	1.55E+01	4.69E-01	7.27E+00	4.84E-05	3.48E-04	7.27E+00	1.33E+00	1.87E+00	9.64E+00	4.00E+01	2.41E-01	9.64E+00	4.77E-05	3.43E-04	9.64E+00	1.87E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-12									LSA-13A								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.18E+00	1.12E+04	1.05E-04	1.18E+00	2.59E-02	1.87E-01	1.36E+00	2.32E-01	1.65E+00	9.38E+00	2.01E+04	4.66E-04	9.38E+00	1.36E-01	9.78E-01	1.04E+01	1.82E+00
Antimony	1.00E-03	5.88E-03	5.00E-02	1.18E-01	5.88E-03	8.94E-08	6.44E-07	5.88E-03	1.00E-03	1.00E-03	5.68E-03	5.01E-02	1.14E-01	5.69E-03	4.68E-07	3.37E-06	5.69E-03	1.00E-03
Arsenic	2.00E-03	1.18E-02	1.74E+00	6.76E-03	1.18E-02	4.47E-07	3.22E-06	1.18E-02	2.00E-03	2.00E-03	1.14E-02	3.04E+00	3.74E-03	1.14E-02	2.34E-06	1.69E-05	1.14E-02	2.00E-03
Barium	1.22E+00	7.18E+00	7.12E+01	1.01E-01	7.18E+00	2.68E-06	1.93E-05	7.18E+00	1.22E+00	1.13E+00	6.42E+00	1.08E+02	5.94E-02	6.42E+00	1.41E-05	1.01E-04	6.42E+00	1.13E+00
Beryllium	1.00E-03	5.88E-03	3.30E-01	1.78E-02	5.88E-03	2.95E-07	2.12E-06	5.89E-03	1.00E-03	1.00E-03	5.68E-03	5.60E-01	1.01E-02	5.68E-03	1.55E-06	1.11E-05	5.70E-03	1.00E-03
Bismuth	1.00E-03	5.88E-03	1.00E-01	5.88E-02	5.88E-03	8.94E-08	6.44E-07	5.88E-03	1.00E-03	1.00E-03	5.68E-03	1.00E-01	5.68E-02	5.69E-03	4.68E-07	3.37E-06	5.69E-03	1.00E-03
Cadmium	5.00E-04	2.94E-03	2.50E-02	1.18E-01	2.94E-03	8.94E-08	6.44E-07	2.94E-03	5.00E-04	5.00E-04	2.84E-03	2.51E-02	1.14E-01	2.85E-03	4.68E-07	3.37E-06	2.85E-03	5.02E-04
Calcium	1.46E+02	8.59E+02	4.21E+03	2.04E-01	8.60E+02	2.86E-02	2.06E-01	8.60E+02	1.46E+02	1.39E+02	7.90E+02	4.18E+03	1.90E-01	7.94E+02	1.50E-01	1.08E+00	7.95E+02	1.40E+02
Chromium	5.00E-03	2.94E-02	3.08E+01	9.55E-04	2.94E-02	1.34E-04	9.65E-04	3.04E-02	5.17E-03	5.00E-03	2.84E-02	6.35E+01	4.48E-04	2.85E-02	7.03E-04	5.06E-03	3.35E-02	5.90E-03
Cobalt	2.00E-03	1.18E-02	7.65E+00	1.54E-03	1.18E-02	3.13E-05	2.25E-04	1.20E-02	2.04E-03	2.00E-03	1.14E-02	1.20E+01	9.47E-04	1.14E-02	1.64E-04	1.18E-03	1.26E-02	2.21E-03
Copper	1.15E+00	6.76E+00	1.90E+01	3.56E-01	6.77E+00	9.83E-05	7.08E-04	6.77E+00	1.15E+00	9.36E-01	5.32E+00	2.66E+01	2.01E-01	5.33E+00	5.15E-04	3.71E-03	5.34E+00	9.39E-01
Iron	1.31E+00	7.71E+00	1.67E+04	4.61E-04	7.71E+00	4.38E-02	3.15E-01	8.02E+00	1.36E+00	2.59E+00	1.47E+01	2.92E+04	5.04E-04	1.47E+01	2.30E-01	1.65E+00	1.64E+01	2.88E+00
Lead	2.00E-03	1.18E-02	4.79E+00	2.46E-03	1.18E-02	5.36E-07	3.86E-06	1.18E-02	2.00E-03	2.00E-03	1.14E-02	7.88E+00	1.44E-03	1.14E-02	2.81E-06	2.02E-05	1.14E-02	2.00E-03
Magnesium	7.86E+01	4.62E+02	5.50E+03	8.41E-02	4.63E+02	2.06E-02	1.48E-01	4.63E+02	7.87E+01	8.13E+01	4.62E+02	1.07E+04	4.32E-02	4.63E+02	1.08E-01	7.76E-01	4.63E+02	8.15E+01
Manganese	4.57E+00	2.69E+01	2.10E+02	1.28E-01	2.69E+01	8.31E-04	5.99E-03	2.69E+01	4.57E+00	3.22E+00	1.83E+01	2.51E+02	7.32E-02	1.83E+01	4.36E-03	3.14E-02	1.84E+01	3.23E+00
Mercury	5.00E-04	2.94E-03	5.40E-03	5.45E-01	2.94E-03	8.94E-09	6.44E-08	2.94E-03	5.00E-04	5.00E-04	2.84E-03	1.16E-02	2.45E-01	2.84E-03	4.68E-08	3.37E-07	2.84E-03	5.00E-04
Molybdenum	2.00E-03	1.18E-02	2.50E-01	4.71E-02	1.18E-02	4.47E-07	3.22E-06	1.18E-02	2.00E-03	6.10E-03	3.47E-02	2.50E-01	1.39E-01	3.47E-02	2.34E-06	1.69E-05	3.47E-02	6.11E-03
Nickel	5.70E-02	3.35E-01	1.59E+01	2.11E-02	3.35E-01	6.44E-05	4.63E-04	3.36E-01	5.71E-02	7.20E-02	4.09E-01	3.29E+01	1.24E-02	4.10E-01	3.37E-04	2.43E-03	4.12E-01	7.25E-02
Phosphorus	1.24E+02	7.29E+02	2.89E+02	2.52E+00	7.29E+02	1.97E-04	1.42E-03	7.29E+02	1.24E+02	1.47E+02	8.35E+02	3.92E+02	2.13E+00	8.36E+02	1.03E-03	7.42E-03	8.36E+02	1.47E+02
Potassium	1.11E+03	6.53E+03	1.99E+03	3.28E+00	6.53E+03	8.94E-05	6.44E-04	6.53E+03	1.11E+03	1.34E+03	7.61E+03	3.95E+03	1.93E+00	7.61E+03	4.68E-04	3.37E-03	7.61E+03	1.34E+03
Selenium	5.00E-03	2.94E-02	1.00E-01	2.94E-01	2.94E-02	4.47E-07	3.22E-06	2.94E-02	5.00E-03	5.00E-03	2.84E-02	1.00E-01	2.84E-01	2.85E-02	2.34E-06	1.69E-05	2.85E-02	5.02E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	4.70E+00	2.76E+01	4.10E+02	6.74E-02	2.76E+01	2.24E-04	1.61E-03	2.77E+01	4.70E+00	9.00E+00	5.11E+01	5.50E+02	9.30E-02	5.12E+01	1.17E-03	8.43E-03	5.12E+01	9.00E+00
Strontium	2.69E-01	1.58E+00	2.16E+01	7.33E-02	1.58E+00	1.25E-05	9.01E-05	1.58E+00	2.69E-01	1.85E-01	1.05E+00	2.41E+01	4.36E-02	1.05E+00	6.56E-05	4.72E-04	1.05E+00	1.85E-01
Thallium	2.00E-04	1.18E-03	1.27E-01	9.26E-03	1.18E-03	8.94E-08	6.44E-07	1.18E-03	2.00E-04	2.00E-04	1.14E-03	2.08E-01	5.46E-03	1.14E-03	4.68E-07	3.37E-06	1.14E-03	2.01E-04
Tin	4.80E-02	2.82E-01	1.00E+00	2.82E-01	2.82E-01	1.79E-06	1.29E-05	2.82E-01	4.80E-02	4.80E-02	2.73E-01	1.00E+00	2.73E-01	2.73E-01	9.37E-06	6.74E-05	2.73E-01	4.81E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.18E-03	7.82E-01	1.50E-03	1.18E-03	8.94E-08	6.44E-07	1.18E-03	2.00E-04	2.00E-04	1.14E-03	1.75E+00	6.49E-04	1.14E-03	4.68E-07	3.37E-06	1.14E-03	2.01E-04
Vanadium	1.00E-02	5.88E-02	3.72E+01	1.58E-03	5.88E-02	8.94E-05	6.44E-04	5.95E-02	1.01E-02	1.00E-02	5.68E-02	6.53E+01	8.71E-04	5.69E-02	4.68E-04	3.37E-03	6.02E-02	1.06E-02
Zinc	1.22E+00	7.18E+00	2.87E+01	2.50E-01	7.18E+00	5.27E-05	3.80E-04	7.18E+00	1.22E+00	1.05E+00	5.97E+00	5.64E+01	1.06E-01	5.97E+00	2.76E-04	1.99E-03	5.97E+00	1.05E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-13B									LSA-14								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.35E+00	8.28E+00	1.73E+04	4.79E-04	8.29E+00	1.36E-01	9.78E-01	9.27E+00	1.51E+00	8.00E-01	4.76E+00	8.11E+03	5.88E-04	4.77E+00	6.44E-02	4.64E-01	5.23E+00	8.79E-01
Antimony	1.00E-03	6.13E-03	5.01E-02	1.23E-01	6.14E-03	4.68E-07	3.37E-06	6.15E-03	1.00E-03	1.00E-03	5.95E-03	5.00E-02	1.19E-01	5.96E-03	2.22E-07	1.60E-06	5.96E-03	1.00E-03
Arsenic	2.00E-03	1.23E-02	2.96E+00	4.15E-03	1.23E-02	2.34E-06	1.69E-05	1.23E-02	2.00E-03	2.00E-03	1.19E-02	1.87E+00	6.37E-03	1.19E-02	1.11E-06	7.99E-06	1.19E-02	2.00E-03
Barium	1.08E+00	6.63E+00	8.90E+01	7.44E-02	6.63E+00	1.41E-05	1.01E-04	6.63E+00	1.08E+00	9.17E-01	5.46E+00	1.98E+01	2.76E-01	5.46E+00	6.66E-06	4.80E-05	5.46E+00	9.17E-01
Beryllium	1.00E-03	6.13E-03	5.20E-01	1.18E-02	6.14E-03	1.55E-06	1.11E-05	6.15E-03	1.00E-03	1.00E-03	5.95E-03	1.00E-01	5.95E-02	5.96E-03	7.33E-07	5.28E-06	5.96E-03	1.00E-03
Bismuth	1.00E-03	6.13E-03	1.00E-01	6.13E-02	6.14E-03	4.68E-07	3.37E-06	6.14E-03	1.00E-03	1.00E-03	5.95E-03	1.00E-01	5.95E-02	5.95E-03	2.22E-07	1.60E-06	5.96E-03	1.00E-03
Cadmium	5.00E-04	3.07E-03	2.51E-02	1.23E-01	3.08E-03	4.68E-07	3.37E-06	3.08E-03	5.02E-04	5.00E-04	2.98E-03	2.50E-02	1.19E-01	2.98E-03	2.22E-07	1.60E-06	2.98E-03	5.01E-04
Calcium	1.33E+02	8.16E+02	3.92E+03	2.09E-01	8.20E+02	1.50E-01	1.08E+00	8.21E+02	1.34E+02	1.06E+02	6.31E+02	2.38E+03	2.66E-01	6.33E+02	7.11E-02	5.12E-01	6.34E+02	1.07E+02
Chromium	5.00E-03	3.07E-02	5.45E+01	5.64E-04	3.07E-02	7.03E-04	5.06E-03	3.58E-02	5.83E-03	5.00E-03	2.98E-02	3.69E+01	8.07E-04	2.98E-02	3.33E-04	2.40E-03	3.22E-02	5.41E-03
Cobalt	2.00E-03	1.23E-02	1.03E+01	1.19E-03	1.23E-02	1.64E-04	1.18E-03	1.35E-02	2.20E-03	2.00E-03	1.19E-02	8.57E+00	1.39E-03	1.19E-02	7.77E-05	5.60E-04	1.25E-02	2.10E-03
Copper	9.59E-01	5.88E+00	2.39E+01	2.47E-01	5.90E+00	5.15E-04	3.71E-03	5.90E+00	9.62E-01	7.96E-01	4.74E+00	2.01E+01	2.36E-01	4.75E+00	2.44E-04	1.76E-03	4.75E+00	7.98E-01
Iron	2.41E+00	1.48E+01	2.60E+04	5.69E-04	1.48E+01	2.30E-01	1.65E+00	1.65E+01	2.68E+00	1.96E+00	1.17E+01	1.50E+04	7.78E-04	1.17E+01	1.09E-01	7.83E-01	1.25E+01	2.09E+00
Lead	2.00E-03	1.23E-02	7.25E+00	1.69E-03	1.23E-02	2.81E-06	2.02E-05	1.23E-02	2.00E-03	2.00E-03	1.19E-02	2.02E+00	5.89E-03	1.19E-02	1.33E-06	9.59E-06	1.19E-02	2.00E-03
Magnesium	8.10E+01	4.97E+02	9.56E+03	5.20E-02	4.98E+02	1.08E-01	7.76E-01	4.98E+02	8.12E+01	6.42E+01	3.82E+02	5.53E+03	6.92E-02	3.83E+02	5.11E-02	3.68E-01	3.83E+02	6.43E+01
Manganese	3.31E+00	2.03E+01	2.19E+02	9.32E-02	2.04E+01	4.36E-03	3.14E-02	2.04E+01	3.32E+00	3.98E+00	2.37E+01	2.13E+02	1.11E-01	2.37E+01	2.07E-03	1.49E-02	2.37E+01	3.99E+00
Mercury	5.00E-04	3.07E-03	1.03E-02	2.98E-01	3.07E-03	4.68E-08	3.37E-07	3.07E-03	5.00E-04	5.00E-04	2.98E-03	2.50E-03	1.19E+00	2.98E-03	2.22E-08	1.60E-07	2.98E-03	5.01E-04
Molybdenum	6.40E-03	3.93E-02	2.50E-01	1.57E-01	3.93E-02	2.34E-06	1.69E-05	3.93E-02	6.41E-03	2.00E-03	1.19E-02	2.50E-01	4.76E-02	1.19E-02	1.11E-06	7.99E-06	1.19E-02	2.00E-03
Nickel	7.20E-02	4.42E-01	2.79E+01	1.58E-02	4.42E-01	3.37E-04	2.43E-03	4.45E-01	7.25E-02	1.02E-01	6.07E-01	2.41E+01	2.52E-02	6.08E-01	1.60E-04	1.15E-03	6.09E-01	1.02E-01
Phosphorus	1.44E+02	8.83E+02	3.90E+02	2.27E+00	8.84E+02	1.03E-03	7.42E-03	8.84E+02	1.44E+02	1.15E+02	6.85E+02	1.37E+02	5.00E+00	6.85E+02	4.89E-04	3.52E-03	6.85E+02	1.15E+02
Potassium	1.40E+03	8.59E+03	3.19E+03	2.69E+00	8.59E+03	4.68E-04	3.37E-03	8.59E+03	1.40E+03	1.05E+03	6.25E+03	3.80E+02	1.64E+01	6.25E+03	2.22E-04	1.60E-03	6.25E+03	1.05E+03
Selenium	5.00E-03	3.07E-02	1.00E-01	3.07E-01	3.08E-02	2.34E-06	1.69E-05	3.08E-02	5.02E-03	5.00E-03	2.98E-02	1.00E-01	2.98E-01	2.98E-02	1.11E-06	7.99E-06	2.98E-02	5.01E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	8.00E+00	4.91E+01	4.30E+02	1.14E-01	4.91E+01	1.17E-03	8.43E-03	4.91E+01	8.00E+00	1.42E+01	8.45E+01	3.00E+02	2.82E-01	8.45E+01	5.55E-04	4.00E-03	8.45E+01	1.42E+01
Strontium	1.75E-01	1.07E+00	2.20E+01	4.88E-02	1.07E+00	6.56E-05	4.72E-04	1.07E+00	1.75E-01	2.17E-01	1.29E+00	1.01E+01	1.28E-01	1.29E+00	3.11E-05	2.24E-04	1.29E+00	2.17E-01
Thallium	2.00E-04	1.23E-03	2.14E-01	5.73E-03	1.23E-03	4.68E-07	3.37E-06	1.23E-03	2.01E-04	2.00E-04	1.19E-03	2.50E-02	4.76E-02	1.19E-03	2.22E-07	1.60E-06	1.19E-03	2.01E-04
Tin	4.10E-02	2.52E-01	1.00E+00	2.52E-01	2.52E-01	9.37E-06	6.74E-05	2.52E-01	4.11E-02	3.40E-02	2.02E-01	1.00E+00	2.02E-01	2.03E-01	4.44E-06	3.20E-05	2.03E-01	3.40E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.23E-03	1.60E+00	7.67E-04	1.23E-03	4.68E-07	3.37E-06	1.23E-03	2.01E-04	2.00E-04	1.19E-03	3.02E-01	3.94E-03	1.19E-03	2.22E-07	1.60E-06	1.19E-03	2.00E-04
Vanadium	1.00E-02	6.13E-02	5.78E+01	1.06E-03	6.14E-02	4.68E-04	3.37E-03	6.48E-02	1.06E-02	1.00E-02	5.95E-02	3.53E+01	1.69E-03	5.96E-02	2.22E-04	1.60E-03	6.12E-02	1.03E-02
Zinc	1.05E+00	6.44E+00	5.03E+01	1.28E-01	6.45E+00	2.76E-04	1.99E-03	6.45E+00	1.05E+00	1.00E+00	5.95E+00	2.25E+01	2.65E-01	5.96E+00	1.31E-04	9.43E-04	5.96E+00	1.00E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-15									LSA-16								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.37E+00	1.39E+04	9.86E-05	1.37E+00	3.27E-02	2.35E-01	1.61E+00	2.34E-01	1.05E+00	6.14E+00	1.33E+04	4.62E-04	6.15E+00	8.39E-02	6.04E-01	6.75E+00	1.15E+00
Antimony	1.00E-03	6.85E-03	5.00E-02	1.37E-01	6.85E-03	1.13E-07	8.11E-07	6.85E-03	1.00E-03	1.00E-03	5.85E-03	5.00E-02	1.17E-01	5.85E-03	2.89E-07	2.08E-06	5.85E-03	1.00E-03
Arsenic	2.00E-03	1.37E-02	2.78E+00	4.93E-03	1.37E-02	5.63E-07	4.05E-06	1.37E-02	2.00E-03	2.00E-03	1.17E-02	7.17E+00	1.63E-03	1.17E-02	1.45E-06	1.04E-05	1.17E-02	2.00E-03
Barium	1.12E+00	7.67E+00	7.10E+01	1.08E-01	7.67E+00	3.38E-06	2.43E-05	7.67E+00	1.12E+00	8.16E-01	4.77E+00	4.79E+01	9.96E-02	4.77E+00	8.68E-06	6.25E-05	4.77E+00	8.16E-01
Beryllium	1.00E-03	6.85E-03	4.10E-01	1.67E-02	6.85E-03	3.72E-07	2.68E-06	6.85E-03	1.00E-03	1.00E-03	5.85E-03	2.40E-01	2.44E-02	5.85E-03	9.54E-07	6.87E-06	5.86E-03	1.00E-03
Bismuth	1.00E-03	6.85E-03	1.00E-01	6.85E-02	6.85E-03	1.13E-07	8.11E-07	6.85E-03	1.00E-03	1.00E-03	5.85E-03	1.00E-01	5.85E-02	5.85E-03	2.89E-07	2.08E-06	5.85E-03	1.00E-03
Cadmium	5.00E-04	3.42E-03	2.50E-02	1.37E-01	3.43E-03	1.13E-07	8.11E-07	3.43E-03	5.00E-04	5.00E-04	2.92E-03	2.50E-02	1.17E-01	2.93E-03	2.89E-07	2.08E-06	2.93E-03	5.01E-04
Calcium	1.54E+02	1.05E+03	3.55E+03	2.97E-01	1.06E+03	3.60E-02	2.59E-01	1.06E+03	1.54E+02	1.39E+02	8.13E+02	4.12E+03	1.98E-01	8.15E+02	9.25E-02	6.66E-01	8.16E+02	1.40E+02
Chromium	5.00E-03	3.42E-02	4.41E+01	7.77E-04	3.43E-02	1.69E-04	1.22E-03	3.55E-02	5.18E-03	2.40E-02	1.40E-01	4.50E+01	3.13E-03	1.41E-01	4.34E-04	3.12E-03	1.44E-01	2.46E-02
Cobalt	2.00E-03	1.37E-02	8.87E+00	1.55E-03	1.37E-02	3.94E-05	2.84E-04	1.40E-02	2.04E-03	2.00E-03	1.17E-02	1.49E+01	7.85E-04	1.17E-02	1.01E-04	7.29E-04	1.24E-02	2.13E-03
Copper	1.20E+00	8.22E+00	1.68E+01	4.89E-01	8.23E+00	1.24E-04	8.92E-04	8.23E+00	1.20E+00	8.87E-01	5.19E+00	4.06E+01	1.28E-01	5.19E+00	3.18E-04	2.29E-03	5.19E+00	8.88E-01
Iron	1.75E+00	1.20E+01	2.06E+04	5.82E-04	1.20E+01	5.52E-02	3.97E-01	1.24E+01	1.81E+00	2.66E+00	1.56E+01	2.59E+04	6.01E-04	1.56E+01	1.42E-01	1.02E+00	1.66E+01	2.84E+00
Lead	2.00E-03	1.37E-02	5.51E+00	2.49E-03	1.37E-02	6.76E-07	4.86E-06	1.37E-02	2.00E-03	2.00E-03	1.17E-02	2.97E+00	3.94E-03	1.17E-02	1.74E-06	1.25E-05	1.17E-02	2.00E-03
Magnesium	7.38E+01	5.05E+02	7.18E+03	7.04E-02	5.06E+02	2.59E-02	1.86E-01	5.06E+02	7.39E+01	7.31E+01	4.27E+02	9.13E+03	4.69E-02	4.28E+02	6.65E-02	4.79E-01	4.28E+02	7.33E+01
Manganese	7.47E+00	5.12E+01	2.07E+02	2.47E-01	5.12E+01	1.05E-03	7.54E-03	5.12E+01	7.48E+00	4.66E+00	2.73E+01	3.94E+02	6.92E-02	2.73E+01	2.69E-03	1.94E-02	2.73E+01	4.67E+00
Mercury	5.00E-04	3.42E-03	1.20E-02	2.85E-01	3.43E-03	1.13E-08	8.11E-08	3.43E-03	5.00E-04	5.00E-04	2.92E-03	6.00E-03	4.87E-01	2.93E-03	2.89E-08	2.08E-07	2.93E-03	5.00E-04
Molybdenum	2.00E-03	1.37E-02	2.50E-01	5.48E-02	1.37E-02	5.63E-07	4.05E-06	1.37E-02	2.00E-03	1.29E-02	7.54E-02	2.50E-01	3.02E-01	7.55E-02	1.45E-06	1.04E-05	7.55E-02	1.29E-02
Nickel	7.70E-02	5.27E-01	2.47E+01	2.14E-02	5.28E-01	8.11E-05	5.84E-04	5.28E-01	7.71E-02	5.20E-02	3.04E-01	3.36E+01	9.05E-03	3.04E-01	2.08E-04	1.50E-03	3.06E-01	5.23E-02
Phosphorus	1.64E+02	1.12E+03	1.82E+02	6.17E+00	1.12E+03	2.48E-04	1.78E-03	1.12E+03	1.64E+02	1.55E+02	9.06E+02	3.57E+02	2.54E+00	9.07E+02	6.36E-04	4.58E-03	9.07E+02	1.55E+02
Potassium	1.07E+03	7.33E+03	2.18E+03	3.36E+00	7.33E+03	1.13E-04	8.11E-04	7.33E+03	1.07E+03	1.15E+03	6.73E+03	1.40E+03	4.80E+00	6.73E+03	2.89E-04	2.08E-03	6.73E+03	1.15E+03
Selenium	5.00E-03	3.42E-02	1.00E-01	3.42E-01	3.43E-02	5.63E-07	4.05E-06	3.43E-02	5.00E-03	5.00E-03	2.92E-02	1.00E-01	2.92E-01	2.93E-02	1.45E-06	1.04E-05	2.93E-02	5.01E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	5.80E+00	3.97E+01	4.50E+02	8.83E-02	3.97E+01	2.82E-04	2.03E-03	3.97E+01	5.80E+00	1.24E+01	7.25E+01	3.20E+02	2.27E-01	7.25E+01	7.23E-04	5.20E-03	7.25E+01	1.24E+01
Strontium	1.57E-01	1.08E+00	1.97E+01	5.46E-02	1.08E+00	1.58E-05	1.13E-04	1.08E+00	1.57E-01	1.15E-01	6.73E-01	1.35E+01	4.98E-02	6.73E-01	4.05E-05	2.91E-04	6.73E-01	1.15E-01
Thallium	2.00E-04	1.37E-03	1.47E-01	9.32E-03	1.37E-03	1.13E-07	8.11E-07	1.37E-03	2.00E-04	2.00E-04	1.17E-03	9.30E-02	1.26E-02	1.17E-03	2.89E-07	2.08E-06	1.17E-03	2.00E-04
Tin	6.10E-02	4.18E-01	1.00E+00	4.18E-01	4.18E-01	2.25E-06	1.62E-05	4.18E-01	6.10E-02	4.00E-02	2.34E-01	1.00E+00	2.34E-01	2.34E-01	5.78E-06	4.16E-05	2.34E-01	4.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.37E-03	1.06E+00	1.29E-03	1.37E-03	1.13E-07	8.11E-07	1.37E-03	2.00E-04	2.00E-04	1.17E-03	4.85E-01	2.41E-03	1.17E-03	2.89E-07	2.08E-06	1.17E-03	2.00E-04
Vanadium	1.00E-02	6.85E-02	4.62E+01	1.48E-03	6.85E-02	1.13E-04	8.11E-04	6.93E-02	1.01E-02	1.00E-02	5.85E-02	5.60E+01	1.04E-03	5.85E-02	2.89E-04	2.08E-03	6.06E-02	1.04E-02
Zinc	1.49E+00	1.02E+01	3.29E+01	3.10E-01	1.02E+01	6.64E-05	4.78E-04	1.02E+01	1.49E+00	1.10E+00	6.43E+00	4.14E+01	1.55E-01	6.44E+00	1.71E-04	1.23E-03	6.44E+00	1.10E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-17									LSA-18								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.00E-01	1.18E+00	3.25E+03	3.68E-04	1.19E+00	1.89E-01	1.36E+00	2.55E+00	4.31E-01	2.00E-01	1.07E+00	2.57E+03	4.16E-04	1.07E+00	2.72E-02	1.96E-01	1.27E+00	2.37E-01
Antimony	1.00E-03	5.92E-03	5.01E-02	1.18E-01	5.93E-03	6.50E-07	4.68E-06	5.93E-03	1.00E-03	1.00E-03	5.35E-03	5.00E-02	1.07E-01	5.35E-03	9.38E-08	6.75E-07	5.35E-03	1.00E-03
Arsenic	2.00E-03	1.18E-02	7.56E-01	1.57E-02	1.18E-02	3.25E-06	2.34E-05	1.19E-02	2.01E-03	2.00E-03	1.07E-02	6.45E-01	1.66E-02	1.07E-02	4.69E-07	3.38E-06	1.07E-02	2.00E-03
Barium	7.71E-01	4.56E+00	1.91E+01	2.39E-01	4.56E+00	1.95E-05	1.40E-04	4.56E+00	7.71E-01	1.47E+00	7.86E+00	1.41E+01	5.58E-01	7.86E+00	2.81E-06	2.03E-05	7.86E+00	1.47E+00
Beryllium	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.93E-03	2.15E-06	1.54E-05	5.95E-03	1.01E-03	1.00E-03	5.35E-03	1.00E-01	5.35E-02	5.35E-03	3.10E-07	2.23E-06	5.35E-03	1.00E-03
Bismuth	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.92E-03	6.50E-07	4.68E-06	5.93E-03	1.00E-03	1.00E-03	5.35E-03	1.00E-01	5.35E-02	5.35E-03	9.38E-08	6.75E-07	5.35E-03	1.00E-03
Cadmium	5.00E-04	2.96E-03	2.51E-02	1.18E-01	2.97E-03	6.50E-07	4.68E-06	2.97E-03	5.03E-04	5.00E-04	2.67E-03	2.50E-02	1.07E-01	2.68E-03	9.38E-08	6.75E-07	2.68E-03	5.00E-04
Calcium	1.03E+02	6.09E+02	1.88E+03	3.29E-01	6.19E+02	2.08E-01	1.50E+00	6.20E+02	1.05E+02	1.98E+02	1.06E+03	1.90E+03	5.57E-01	1.06E+03	3.00E-02	2.16E-01	1.06E+03	1.98E+02
Chromium	5.00E-03	2.96E-02	1.10E+01	2.71E-03	2.99E-02	9.75E-04	7.02E-03	3.70E-02	6.25E-03	5.00E-03	2.67E-02	9.11E+00	2.94E-03	2.68E-02	1.41E-04	1.01E-03	2.78E-02	5.20E-03
Cobalt	2.00E-03	1.18E-02	2.90E+00	4.12E-03	1.20E-02	2.28E-04	1.64E-03	1.36E-02	2.30E-03	2.00E-03	1.07E-02	2.25E+00	4.75E-03	1.07E-02	3.28E-05	2.36E-04	1.10E-02	2.05E-03
Copper	7.50E-01	4.44E+00	6.23E+00	7.24E-01	4.51E+00	7.15E-04	5.15E-03	4.51E+00	7.63E-01	1.25E+00	6.68E+00	8.16E+00	8.20E-01	6.70E+00	1.03E-04	7.43E-04	6.70E+00	1.25E+00
Iron	1.45E+00	8.58E+00	7.56E+03	1.14E-03	8.63E+00	3.19E-01	2.29E+00	1.09E+01	1.85E+00	1.81E+00	9.68E+00	7.02E+03	1.38E-03	9.69E+00	4.60E-02	3.31E-01	1.00E+01	1.87E+00
Lead	2.00E-03	1.18E-02	1.91E+00	6.20E-03	1.18E-02	3.90E-06	2.81E-05	1.19E-02	2.01E-03	2.00E-03	1.07E-02	1.59E+00	6.73E-03	1.07E-02	5.63E-07	4.05E-06	1.07E-02	2.00E-03
Magnesium	7.72E+01	4.57E+02	1.72E+03	2.69E-01	4.62E+02	1.50E-01	1.08E+00	4.63E+02	7.83E+01	9.27E+01	4.96E+02	1.26E+03	3.93E-01	4.97E+02	2.16E-02	1.55E-01	4.97E+02	9.29E+01
Manganese	4.03E+00	2.38E+01	6.78E+01	3.56E-01	2.41E+01	6.05E-03	4.35E-02	2.42E+01	4.09E+00	4.97E+00	2.66E+01	4.97E+01	5.36E-01	2.66E+01	8.73E-04	6.28E-03	2.66E+01	4.98E+00
Mercury	5.00E-04	2.96E-03	2.51E-03	1.18E+00	2.97E-03	6.50E-08	4.68E-07	2.97E-03	5.02E-04	5.00E-04	2.67E-03	2.50E-03	1.07E+00	2.68E-03	9.38E-09	6.75E-08	2.68E-03	5.00E-04
Molybdenum	3.80E-01	2.25E+00	2.50E-01	8.99E+00	2.25E+00	3.25E-06	2.34E-05	2.25E+00	3.81E-01	8.20E-03	4.39E-02	2.50E-01	1.75E-01	4.39E-02	4.69E-07	3.38E-06	4.39E-02	8.20E-03
Nickel	9.10E-02	5.38E-01	5.00E+00	1.09E-01	5.45E-01	4.68E-04	3.37E-03	5.49E-01	9.27E-02	7.30E-02	3.90E-01	3.82E+00	1.02E-01	3.91E-01	6.76E-05	4.86E-04	3.92E-01	7.33E-02
Phosphorus	1.48E+02	8.76E+02	2.89E+02	3.03E+00	8.76E+02	1.43E-03	1.03E-02	8.76E+02	1.48E+02	1.94E+02	1.04E+03	3.25E+02	3.19E+00	1.04E+03	2.06E-04	1.49E-03	1.04E+03	1.94E+02
Potassium	1.31E+03	7.75E+03	6.00E+02	1.29E+01	7.75E+03	6.50E-04	4.68E-03	7.75E+03	1.31E+03	1.06E+03	5.67E+03	2.80E+02	2.02E+01	5.67E+03	9.38E-05	6.75E-04	5.67E+03	1.06E+03
Selenium	5.00E-03	2.96E-02	1.00E-01	2.96E-01	2.97E-02	3.25E-06	2.34E-05	2.97E-02	5.03E-03	5.00E-03	2.67E-02	1.00E-01	2.67E-01	2.68E-02	4.69E-07	3.38E-06	2.68E-02	5.00E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	5.40E+00	3.20E+01	1.50E+02	2.13E-01	3.20E+01	1.63E-03	1.17E-02	3.20E+01	5.41E+00	7.80E+00	4.17E+01	1.40E+02	2.98E-01	4.17E+01	2.35E-04	1.69E-03	4.17E+01	7.80E+00
Strontium	1.30E-01	7.69E-01	9.00E+00	8.56E-02	7.70E-01	9.10E-05	6.55E-04	7.71E-01	1.30E-01	2.71E-01	1.45E+00	7.88E+00	1.84E-01	1.45E+00	1.31E-05	9.46E-05	1.45E+00	2.71E-01
Thallium	2.00E-04	1.18E-03	2.51E-02	4.73E-02	1.19E-03	6.50E-07	4.68E-06	1.19E-03	2.01E-04	2.00E-04	1.07E-03	2.50E-02	4.28E-02	1.07E-03	9.38E-08	6.75E-07	1.07E-03	2.00E-04
Tin	4.60E-02	2.72E-01	1.00E+00	2.72E-01	2.73E-01	1.30E-05	9.36E-05	2.73E-01	4.61E-02	3.40E-02	1.82E-01	1.00E+00	1.82E-01	1.82E-01	1.88E-06	1.35E-05	1.82E-01	3.40E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.18E-03	5.17E-01	2.29E-03	1.18E-03	6.50E-07	4.68E-06	1.19E-03	2.01E-04	2.00E-04	1.07E-03	4.56E-01	2.35E-03	1.07E-03	9.38E-08	6.75E-07	1.07E-03	2.00E-04
Vanadium	1.00E-02	5.92E-02	1.72E+01	3.46E-03	5.95E-02	6.50E-04	4.68E-03	6.42E-02	1.08E-02	1.00E-02	5.35E-02	1.72E+01	3.11E-03	5.35E-02	9.38E-05	6.75E-04	5.42E-02	1.01E-02
Zinc	8.10E-01	4.79E+00	9.15E+00	5.27E-01	4.82E+00	3.84E-04	2.76E-03	4.82E+00	8.15E-01	1.76E+00	9.41E+00	6.41E+00	1.47E+00	9.42E+00	5.54E-05	3.99E-04	9.42E+00	1.76E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Crowberry (Empetrum nigrum)								
Sample ID	LSA-19									LSA-20								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	8.50E-01	5.03E+00	6.59E+03	7.63E-04	5.03E+00	3.60E-02	2.59E-01	5.29E+00	8.94E-01	8.60E-01	4.60E+00	1.21E+04	3.80E-04	4.60E+00	2.35E-02	1.69E-01	4.77E+00	8.92E-01
Antimony	1.00E-03	5.92E-03	5.00E-02	1.18E-01	5.92E-03	1.24E-07	8.94E-07	5.92E-03	1.00E-03	1.00E-03	5.35E-03	5.00E-02	1.07E-01	5.35E-03	8.09E-08	5.82E-07	5.35E-03	1.00E-03
Arsenic	2.00E-03	1.18E-02	1.83E+00	6.47E-03	1.18E-02	6.21E-07	4.47E-06	1.18E-02	2.00E-03	2.00E-03	1.07E-02	1.37E+00	7.81E-03	1.07E-02	4.04E-07	2.91E-06	1.07E-02	2.00E-03
Barium	7.01E-01	4.15E+00	1.94E+01	2.14E-01	4.15E+00	3.72E-06	2.68E-05	4.15E+00	7.01E-01	1.26E+00	6.74E+00	6.18E+01	1.09E-01	6.74E+00	2.43E-06	1.75E-05	6.74E+00	1.26E+00
Beryllium	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.92E-03	4.10E-07	2.95E-06	5.92E-03	1.00E-03	1.00E-03	5.35E-03	3.00E-01	1.78E-02	5.35E-03	2.67E-07	1.92E-06	5.35E-03	1.00E-03
Bismuth	1.00E-03	5.92E-03	1.00E-01	5.92E-02	5.92E-03	1.24E-07	8.94E-07	5.92E-03	1.00E-03	1.00E-03	5.35E-03	1.00E-01	5.35E-02	5.35E-03	8.09E-08	5.82E-07	5.35E-03	1.00E-03
Cadmium	5.00E-04	2.96E-03	2.50E-02	1.18E-01	2.96E-03	1.24E-07	8.94E-07	2.96E-03	5.00E-04	5.00E-04	2.67E-03	2.50E-02	1.07E-01	2.68E-03	8.09E-08	5.82E-07	2.68E-03	5.01E-04
Calcium	1.22E+02	7.22E+02	1.84E+03	3.94E-01	7.24E+02	3.97E-02	2.86E-01	7.24E+02	1.22E+02	1.47E+02	7.86E+02	5.74E+03	1.37E-01	7.88E+02	2.59E-02	1.86E-01	7.88E+02	1.47E+02
Chromium	5.00E-03	2.96E-02	1.96E+01	1.51E-03	2.96E-02	1.86E-04	1.34E-03	3.10E-02	5.23E-03	5.00E-03	2.67E-02	3.19E+01	8.41E-04	2.68E-02	1.21E-04	8.73E-04	2.77E-02	5.17E-03
Cobalt	2.00E-03	1.18E-02	9.84E+00	1.20E-03	1.18E-02	4.34E-05	3.13E-04	1.22E-02	2.05E-03	2.00E-03	1.07E-02	8.00E+00	1.34E-03	1.07E-02	2.83E-05	2.04E-04	1.09E-02	2.04E-03
Copper	7.34E-01	4.34E+00	4.17E+01	1.04E-01	4.35E+00	1.37E-04	9.83E-04	4.35E+00	7.34E-01	1.09E+00	5.83E+00	1.32E+01	4.42E-01	5.85E+00	8.90E-05	6.40E-04	5.85E+00	1.09E+00
Iron	1.84E+00	1.09E+01	1.27E+04	8.57E-04	1.09E+01	6.08E-02	4.38E-01	1.13E+01	1.92E+00	2.86E+00	1.53E+01	1.82E+04	8.40E-04	1.53E+01	3.96E-02	2.85E-01	1.56E+01	2.92E+00
Lead	2.00E-03	1.18E-02	2.40E+00	4.93E-03	1.18E-02	7.45E-07	5.36E-06	1.18E-02	2.00E-03	2.00E-03	1.07E-02	3.77E+00	2.84E-03	1.07E-02	4.85E-07	3.49E-06	1.07E-02	2.00E-03
Magnesium	7.51E+01	4.44E+02	3.81E+03	1.17E-01	4.45E+02	2.85E-02	2.06E-01	4.45E+02	7.52E+01	9.49E+01	5.07E+02	7.02E+03	7.24E-02	5.08E+02	1.86E-02	1.34E-01	5.08E+02	9.50E+01
Manganese	5.56E+00	3.29E+01	1.90E+02	1.73E-01	3.29E+01	1.15E-03	8.31E-03	3.29E+01	5.57E+00	3.33E+00	1.78E+01	2.24E+02	7.95E-02	1.78E+01	7.52E-04	5.41E-03	1.78E+01	3.34E+00
Mercury	5.00E-04	2.96E-03	6.10E-03	4.85E-01	2.96E-03	1.24E-08	8.94E-08	2.96E-03	5.00E-04	5.00E-04	2.67E-03	9.10E-03	2.94E-01	2.67E-03	8.09E-09	5.82E-08	2.68E-03	5.00E-04
Molybdenum	9.00E-03	5.33E-02	2.50E-01	2.13E-01	5.33E-02	6.21E-07	4.47E-06	5.33E-02	9.00E-03	2.00E-03	1.07E-02	2.50E-01	4.28E-02	1.07E-02	4.04E-07	2.91E-06	1.07E-02	2.00E-03
Nickel	6.80E-02	4.02E-01	1.28E+01	3.14E-02	4.03E-01	8.94E-05	6.43E-04	4.03E-01	6.82E-02	8.50E-02	4.55E-01	1.76E+01	2.58E-02	4.55E-01	5.82E-05	4.19E-04	4.56E-01	8.52E-02
Phosphorus	1.44E+02	8.52E+02	1.28E+02	6.66E+00	8.52E+02	2.73E-04	1.97E-03	8.52E+02	1.44E+02	1.60E+02	8.56E+02	2.79E+02	3.07E+00	8.56E+02	1.78E-04	1.28E-03	8.56E+02	1.60E+02
Potassium	1.21E+03	7.16E+03	3.50E+02	2.05E+01	7.16E+03	1.24E-04	8.94E-04	7.16E+03	1.21E+03	1.44E+03	7.70E+03	2.09E+03	3.68E+00	7.70E+03	8.09E-05	5.82E-04	7.70E+03	1.44E+03
Selenium	5.00E-03	2.96E-02	1.00E-01	2.96E-01	2.96E-02	6.21E-07	4.47E-06	2.96E-02	5.00E-03	5.00E-03	2.67E-02	1.00E-01	2.67E-01	2.68E-02	4.04E-07	2.91E-06	2.68E-02	5.01E-03
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	6.20E+00	3.67E+01	1.80E+02	2.04E-01	3.67E+01	3.10E-04	2.23E-03	3.67E+01	6.20E+00	9.90E+00	5.29E+01	3.90E+02	1.36E-01	5.30E+01	2.02E-04	1.46E-03	5.30E+01	9.90E+00
Strontium	1.18E-01	6.98E-01	8.40E+00	8.31E-02	6.98E-01	1.74E-05	1.25E-04	6.99E-01	1.18E-01	2.21E-01	1.18E+00	3.05E+01	3.87E-02	1.18E+00	1.13E-05	8.15E-05	1.18E+00	2.21E-01
Thallium	2.00E-04	1.18E-03	2.50E-02	4.73E-02	1.18E-03	1.24E-07	8.94E-07	1.19E-03	2.00E-04	2.00E-04	1.07E-03	1.20E-01	8.91E-03	1.07E-03	8.09E-08	5.82E-07	1.07E-03	2.00E-04
Tin	5.00E-02	2.96E-01	1.00E+00	2.96E-01	2.96E-01	2.48E-06	1.79E-05	2.96E-01	5.00E-02	4.50E-02	2.41E-01	1.00E+00	2.41E-01	2.41E-01	1.62E-06	1.16E-05	2.41E-01	4.50E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-04	1.18E-03	3.99E-01	2.97E-03	1.18E-03	1.24E-07	8.94E-07	1.18E-03	2.00E-04	2.00E-04	1.07E-03	4.49E-01	2.38E-03	1.07E-03	8.09E-08	5.82E-07	1.07E-03	2.00E-04
Vanadium	1.00E-02	5.92E-02	2.78E+01	2.13E-03	5.92E-02	1.24E-04	8.94E-04	6.01E-02	1.02E-02	1.00E-02	5.35E-02	3.96E+01	1.35E-03	5.35E-02	8.09E-05	5.82E-04	5.41E-02	1.01E-02
Zinc	9.60E-01	5.68E+00	1.75E+01	3.25E-01	5.68E+00	7.32E-05	5.27E-04	5.68E+00	9.61E-01	1.30E+00	6.95E+00	3.76E+01	1.85E-01	6.96E+00	4.77E-05	3.44E-04	6.96E+00	1.30E+00

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Crowberry (Empetrum nigrum)									Lichen (Flavocetraria culcullata)					
Sample ID	LSA-21									D73 FLAVOCETRARIA CUCULLATA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	2.00E-01	1.16E+00	4.78E+03	2.43E-04	1.16E+00	1.39E-01	9.99E-01	2.16E+00	3.74E-01	6.47E+01	7.04E+01	1.31E-01	1.09E-01	7.05E+01	6.48E+01
Antimony	1.00E-03	5.78E-03	5.01E-02	1.16E-01	5.79E-03	4.78E-07	3.44E-06	5.79E-03	1.00E-03	3.70E-03	4.02E-03	4.51E-07	3.74E-07	4.02E-03	3.70E-03
Arsenic	2.00E-03	1.16E-02	9.63E-01	1.20E-02	1.16E-02	2.39E-06	1.72E-05	1.16E-02	2.00E-03	3.85E-02	4.19E-02	2.25E-06	1.87E-06	4.19E-02	3.85E-02
Barium	1.36E+00	7.86E+00	1.60E+01	4.91E-01	7.86E+00	1.44E-05	1.03E-04	7.86E+00	1.36E+00	8.32E+00	9.05E+00	1.35E-05	1.12E-05	9.05E+00	8.32E+00
Beryllium	1.00E-03	5.78E-03	1.00E-01	5.78E-02	5.79E-03	1.58E-06	1.14E-05	5.80E-03	1.00E-03	2.10E-03	2.28E-03	1.49E-06	1.23E-06	2.29E-03	2.10E-03
Bismuth	1.00E-03	5.78E-03	1.00E-01	5.78E-02	5.78E-03	4.78E-07	3.44E-06	5.79E-03	1.00E-03	1.00E-03	1.09E-03	4.51E-07	3.74E-07	1.09E-03	1.00E-03
Cadmium	5.00E-04	2.89E-03	2.51E-02	1.16E-01	2.90E-03	4.78E-07	3.44E-06	2.90E-03	5.02E-04	6.57E-02	7.15E-02	4.51E-07	3.74E-07	7.15E-02	6.57E-02
Calcium	1.49E+02	8.61E+02	2.24E+03	3.88E-01	8.69E+02	1.53E-01	1.10E+00	8.70E+02	1.51E+02	4.41E+03	4.80E+03	1.44E-01	1.20E-01	4.80E+03	4.41E+03
Chromium	5.00E-03	2.89E-02	2.74E+01	1.06E-03	2.90E-02	7.18E-04	5.17E-03	3.42E-02	5.91E-03	4.73E-01	5.14E-01	6.76E-04	5.61E-04	5.15E-01	4.74E-01
Cobalt	2.00E-03	1.16E-02	5.85E+00	1.98E-03	1.16E-02	1.67E-04	1.21E-03	1.28E-02	2.22E-03	8.93E-02	9.71E-02	1.58E-04	1.31E-04	9.73E-02	8.94E-02
Copper	8.58E-01	4.96E+00	6.47E+00	7.75E-01	5.01E+00	5.26E-04	3.79E-03	5.02E+00	8.68E-01	7.07E-01	7.69E-01	4.96E-04	4.12E-04	7.69E-01	7.07E-01
Iron	1.66E+00	9.60E+00	1.08E+04	8.88E-04	9.62E+00	2.34E-01	1.69E+00	1.13E+01	1.96E+00	7.29E+01	7.93E+01	2.21E-01	1.83E-01	7.95E+01	7.31E+01
Lead	2.00E-03	1.16E-02	1.53E+00	7.56E-03	1.16E-02	2.87E-06	2.07E-05	1.16E-02	2.00E-03	2.05E-01	2.23E-01	2.70E-06	2.25E-06	2.23E-01	2.05E-01
Magnesium	7.53E+01	4.35E+02	3.29E+03	1.33E-01	4.37E+02	1.10E-01	7.92E-01	4.38E+02	7.58E+01	5.54E+02	6.03E+02	1.04E-01	8.61E-02	6.03E+02	5.54E+02
Manganese	4.19E+00	2.42E+01	1.50E+02	1.63E-01	2.43E+01	4.45E-03	3.20E-02	2.43E+01	4.21E+00	4.13E+01	4.49E+01	4.19E-03	3.48E-03	4.49E+01	4.13E+01
Mercury	5.00E-04	2.89E-03	8.81E-03	3.28E-01	2.89E-03	4.78E-08	3.44E-07	2.89E-03	5.00E-04	3.64E-02	3.96E-02	4.51E-08	3.74E-08	3.96E-02	3.64E-02
Molybdenum	6.60E-03	3.82E-02	2.50E-01	1.53E-01	3.82E-02	2.39E-06	1.72E-05	3.82E-02	6.61E-03	3.03E-02	3.30E-02	2.25E-06	1.87E-06	3.30E-02	3.03E-02
Nickel	7.20E-02	4.16E-01	1.30E+01	3.20E-02	4.18E-01	3.44E-04	2.48E-03	4.20E-01	7.27E-02	4.73E-01	5.14E-01	3.25E-04	2.69E-04	5.15E-01	4.73E-01
Phosphorus	1.40E+02	8.09E+02	1.92E+02	4.21E+00	8.10E+02	1.05E-03	7.58E-03	8.10E+02	1.40E+02	6.00E+02	6.53E+02	9.92E-04	8.23E-04	6.53E+02	6.00E+02
Potassium	1.15E+03	6.65E+03	3.10E+02	2.14E+01	6.65E+03	4.78E-04	3.44E-03	6.65E+03	1.15E+03	1.45E+03	1.58E+03	4.51E-04	3.74E-04	1.58E+03	1.45E+03
Selenium	5.00E-03	2.89E-02	1.00E-01	2.89E-01	2.90E-02	2.39E-06	1.72E-05	2.90E-02	5.02E-03	4.90E-02	5.33E-02	2.25E-06	1.87E-06	5.33E-02	4.90E-02
Silver	-	-	-	-	-	-	-	-	-	3.90E-03	4.24E-03	4.51E-07	3.74E-07	4.24E-03	3.90E-03
Sodium	8.90E+00	5.14E+01	1.10E+02	4.68E-01	5.15E+01	1.20E-03	8.61E-03	5.15E+01	8.91E+00	4.50E+02	4.89E+02	1.13E-03	9.36E-04	4.89E+02	4.50E+02
Strontium	3.09E-01	1.79E+00	7.87E+00	2.27E-01	1.79E+00	6.70E-05	4.82E-04	1.79E+00	3.09E-01	2.81E+01	3.06E+01	6.31E-05	5.24E-05	3.06E+01	2.81E+01
Thallium	2.00E-04	1.16E-03	2.51E-02	4.62E-02	1.16E-03	4.78E-07	3.44E-06	1.16E-03	2.01E-04	6.96E-03	7.57E-03	4.51E-07	3.74E-07	7.57E-03	6.96E-03
Tin	4.00E-02	2.31E-01	1.00E+00	2.31E-01	2.32E-01	9.57E-06	6.89E-05	2.32E-01	4.01E-02	4.42E-02	4.81E-02	9.01E-06	7.48E-06	4.81E-02	4.42E-02
Titanium	-	-	-	-	-	-	-	-	-	3.35E+00	3.64E+00	9.92E-03	8.23E-03	3.65E+00	3.36E+00
Uranium	2.00E-04	1.16E-03	3.14E-01	3.68E-03	1.16E-03	4.78E-07	3.44E-06	1.16E-03	2.01E-04	4.83E-03	5.25E-03	4.51E-07	3.74E-07	5.25E-03	4.83E-03
Vanadium	1.00E-02	5.78E-02	2.65E+01	2.19E-03	5.79E-02	4.78E-04	3.44E-03	6.14E-02	1.06E-02	1.66E-01	1.81E-01	4.51E-04	3.74E-04	1.81E-01	1.66E-01
Zinc	1.01E+00	5.84E+00	1.58E+01	3.70E-01	5.85E+00	2.82E-04	2.03E-03	5.85E+00	1.01E+00	2.88E+01	3.13E+01	2.66E-04	2.21E-04	3.13E+01	2.88E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)									Lichen (Flavocetraria culcullata)					
Sample ID	D82 FLAVOCETRARIA CUCULLATA									D114 FLAVOCETRARIA CUCULLATA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	1.02E+02	1.16E+02	3.49E+03	3.32E-02	1.16E+02	1.12E-01	9.31E-02	1.16E+02	1.03E+02	3.61E+01	5.63E+01	3.05E-02	2.54E-02	5.63E+01	3.61E+01
Antimony	3.60E-03	4.08E-03	5.00E+00	8.15E-04	4.08E-03	3.87E-07	3.21E-07	4.08E-03	3.60E-03	3.10E-03	4.84E-03	1.05E-07	8.75E-08	4.84E-03	3.10E-03
Arsenic	3.71E-02	4.20E-02	2.50E+00	1.68E-02	4.20E-02	1.93E-06	1.61E-06	4.20E-02	3.71E-02	2.42E-02	3.78E-02	5.27E-07	4.37E-07	3.78E-02	2.42E-02
Barium	6.37E+00	7.21E+00	2.31E+01	3.12E-01	7.21E+00	1.16E-05	9.63E-06	7.21E+00	6.37E+00	3.65E+00	5.69E+00	3.16E-06	2.62E-06	5.69E+00	3.65E+00
Beryllium	4.90E-03	5.55E-03	2.50E-01	2.22E-02	5.55E-03	1.28E-06	1.06E-06	5.55E-03	4.90E-03	1.00E-03	1.56E-03	3.48E-07	2.89E-07	1.56E-03	1.00E-03
Bismuth	1.00E-03	1.13E-03	1.00E+01	1.13E-04	1.13E-03	3.87E-07	3.21E-07	1.13E-03	1.00E-03	1.00E-03	1.56E-03	1.05E-07	8.75E-08	1.56E-03	1.00E-03
Cadmium	3.65E-02	4.13E-02	2.50E-01	1.65E-01	4.13E-02	3.87E-07	3.21E-07	4.13E-02	3.65E-02	4.20E-02	6.55E-02	1.05E-07	8.75E-08	6.55E-02	4.20E-02
Calcium	1.40E+03	1.59E+03	1.95E+03	8.22E-01	1.60E+03	1.24E-01	1.03E-01	1.60E+03	1.41E+03	4.65E+03	7.25E+03	3.37E-02	2.80E-02	7.25E+03	4.65E+03
Chromium	1.43E+00	1.62E+00	1.07E+01	1.53E-01	1.63E+00	5.80E-04	4.82E-04	1.63E+00	1.44E+00	7.04E-01	1.10E+00	1.58E-04	1.31E-04	1.10E+00	7.04E-01
Cobalt	1.75E-01	1.98E-01	2.62E+00	7.62E-02	2.00E-01	1.35E-04	1.12E-04	2.00E-01	1.76E-01	5.22E-02	8.14E-02	3.69E-05	3.06E-05	8.15E-02	5.22E-02
Copper	8.35E-01	9.46E-01	7.06E+00	1.35E-01	9.53E-01	4.25E-04	3.53E-04	9.54E-01	8.42E-01	5.71E-01	8.91E-01	1.16E-04	9.62E-05	8.91E-01	5.71E-01
Iron	1.10E+02	1.25E+02	8.34E+03	1.50E-02	1.25E+02	1.89E-01	1.57E-01	1.25E+02	1.10E+02	3.99E+01	6.22E+01	5.16E-02	4.29E-02	6.23E+01	3.99E+01
Lead	1.66E-01	1.88E-01	1.50E+01	1.25E-02	1.88E-01	2.32E-06	1.93E-06	1.88E-01	1.66E-01	2.37E-01	3.70E-01	6.32E-07	5.25E-07	3.70E-01	2.37E-01
Magnesium	6.61E+02	7.49E+02	1.93E+03	3.90E-01	7.53E+02	8.89E-02	7.38E-02	7.53E+02	6.65E+02	3.22E+02	5.02E+02	2.42E-02	2.01E-02	5.02E+02	3.22E+02
Manganese	8.43E+01	9.55E+01	6.43E+01	1.50E+00	9.62E+01	3.60E-03	2.99E-03	9.62E+01	8.49E+01	3.41E+01	5.32E+01	9.80E-04	8.13E-04	5.32E+01	3.41E+01
Mercury	3.41E-02	3.86E-02	7.11E-03	5.44E+00	3.86E-02	3.87E-08	3.21E-08	3.86E-02	3.41E-02	2.57E-02	4.01E-02	1.05E-08	8.75E-09	4.01E-02	2.57E-02
Molybdenum	3.52E-02	3.99E-02	2.00E+00	1.99E-02	3.99E-02	1.93E-06	1.61E-06	3.99E-02	3.52E-02	2.06E-02	3.21E-02	5.27E-07	4.37E-07	3.21E-02	2.06E-02
Nickel	7.72E-01	8.74E-01	2.54E+00	3.50E-01	8.87E-01	2.78E-04	2.31E-04	8.88E-01	7.84E-01	3.94E-01	6.15E-01	7.58E-05	6.30E-05	6.15E-01	3.94E-01
Phosphorus	1.01E+03	1.14E+03	2.80E+02	4.09E+00	1.14E+03	8.51E-04	7.06E-04	1.14E+03	1.01E+03	3.50E+02	5.46E+02	2.32E-04	1.92E-04	5.46E+02	3.50E+02
Potassium	2.20E+03	2.49E+03	4.20E+02	5.93E+00	2.49E+03	3.87E-04	3.21E-04	2.49E+03	2.20E+03	1.24E+03	1.93E+03	1.05E-04	8.75E-05	1.93E+03	1.24E+03
Selenium	4.00E-02	4.53E-02	2.50E-01	1.81E-01	4.53E-02	1.93E-06	1.61E-06	4.53E-02	4.00E-02	4.00E-02	6.24E-02	5.27E-07	4.37E-07	6.24E-02	4.00E-02
Silver	6.50E-03	7.36E-03	1.00E+00	7.36E-03	7.36E-03	3.87E-07	3.21E-07	7.36E-03	6.50E-03	4.00E-03	6.24E-03	1.05E-07	8.75E-08	6.24E-03	4.00E-03
Sodium	7.30E+02	8.27E+02	1.00E+02	8.27E+00	8.28E+02	9.67E-04	8.03E-04	8.28E+02	7.31E+02	3.00E+02	4.68E+02	2.63E-04	2.19E-04	4.68E+02	3.00E+02
Strontium	2.63E+00	2.98E+00	8.90E+00	3.35E-01	2.98E+00	5.41E-05	4.49E-05	2.98E+00	2.63E+00	2.43E+00	3.79E+00	1.47E-05	1.22E-05	3.79E+00	2.43E+00
Thallium	1.47E-02	1.66E-02	5.00E-01	3.33E-02	1.66E-02	3.87E-07	3.21E-07	1.66E-02	1.47E-02	6.29E-03	9.81E-03	1.05E-07	8.75E-08	9.81E-03	6.29E-03
Tin	2.05E-02	2.32E-02	2.50E+00	9.29E-03	2.32E-02	7.73E-06	6.42E-06	2.32E-02	2.05E-02	8.96E-02	1.40E-01	2.11E-06	1.75E-06	1.40E-01	8.96E-02
Titanium	6.47E+00	7.33E+00	3.58E+02	2.05E-02	7.35E+00	8.51E-03	7.06E-03	7.36E+00	6.50E+00	1.94E+00	3.03E+00	2.32E-03	1.92E-03	3.03E+00	1.94E+00
Uranium	9.30E-03	1.05E-02	4.53E-01	2.33E-02	1.05E-02	3.87E-07	3.21E-07	1.05E-02	9.30E-03	2.73E-03	4.26E-03	1.05E-07	8.75E-08	4.26E-03	2.73E-03
Vanadium	2.27E-01	2.57E-01	2.01E+01	1.29E-02	2.58E-01	3.87E-04	3.21E-04	2.58E-01	2.28E-01	8.51E-02	1.33E-01	1.05E-04	8.75E-05	1.33E-01	8.52E-02
Zinc	2.53E+01	2.87E+01	9.83E+00	2.92E+00	2.87E+01	2.28E-04	1.89E-04	2.87E+01	2.54E+01	1.39E+01	2.17E+01	6.22E-05	5.16E-05	2.17E+01	1.39E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)									Lichen (Flavocetraria culcullata)								
Sample ID	023 FLAVOCETRARIA CUCULLATA									021 FLAVOCETRARIA CUCULLATA								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.18E+01	8.20E+01	2.19E+04	3.74E-03	8.20E+01	9.62E-02	7.99E-02	8.21E+01	3.18E+01	4.19E+02	8.41E+02	2.25E+04	3.74E-02	8.42E+02	7.38E-02	6.13E-02	8.42E+02	4.19E+02
Antimony	3.30E-03	8.51E-03	5.00E+00	1.70E-03	8.51E-03	3.32E-07	2.75E-07	8.51E-03	3.30E-03	8.90E-03	1.79E-02	5.00E+00	3.57E-03	1.79E-02	2.54E-07	2.11E-07	1.79E-02	8.90E-03
Arsenic	1.67E-02	4.30E-02	2.50E+00	1.72E-02	4.30E-02	1.66E-06	1.38E-06	4.30E-02	1.67E-02	6.99E-02	1.40E-01	2.50E+00	5.61E-02	1.40E-01	1.27E-06	1.06E-06	1.40E-01	6.99E-02
Barium	1.56E+00	4.02E+00	1.34E+02	3.00E-02	4.02E+00	9.95E-06	8.26E-06	4.02E+00	1.56E+00	2.41E+00	4.84E+00	1.27E+02	3.81E-02	4.84E+00	7.63E-06	6.34E-06	4.84E+00	2.41E+00
Beryllium	1.00E-03	2.58E-03	6.60E-01	3.91E-03	2.58E-03	1.09E-06	9.09E-07	2.58E-03	1.00E-03	6.40E-03	1.29E-02	6.10E-01	2.11E-02	1.29E-02	8.40E-07	6.97E-07	1.29E-02	6.40E-03
Bismuth	1.00E-03	2.58E-03	1.00E+01	2.58E-04	2.58E-03	3.32E-07	2.75E-07	2.58E-03	1.00E-03	2.30E-03	4.62E-03	1.00E+01	4.62E-04	4.62E-03	2.54E-07	2.11E-07	4.62E-03	2.30E-03
Cadmium	1.50E-02	3.87E-02	2.50E-01	1.55E-01	3.87E-02	3.32E-07	2.75E-07	3.87E-02	1.50E-02	2.64E-02	5.30E-02	2.50E-01	2.12E-01	5.30E-02	2.54E-07	2.11E-07	5.30E-02	2.64E-02
Calcium	9.91E+02	2.55E+03	4.33E+03	5.91E-01	2.56E+03	1.06E-01	8.81E-02	2.56E+03	9.94E+02	4.47E+03	8.98E+03	5.48E+03	1.64E+00	8.99E+03	8.14E-02	6.76E-02	8.99E+03	4.48E+03
Chromium	3.60E-01	9.28E-01	6.57E+01	1.41E-02	9.29E-01	4.97E-04	4.13E-04	9.29E-01	3.61E-01	3.65E+00	7.33E+00	6.54E+01	1.12E-01	7.34E+00	3.82E-04	3.17E-04	7.34E+00	3.65E+00
Cobalt	4.20E-02	1.08E-01	1.29E+01	8.39E-03	1.08E-01	1.16E-04	9.64E-05	1.08E-01	4.21E-02	4.68E-01	9.40E-01	1.36E+01	6.91E-02	9.41E-01	8.91E-05	7.40E-05	9.41E-01	4.68E-01
Copper	3.53E-01	9.10E-01	2.62E+01	3.47E-02	9.11E-01	3.65E-04	3.03E-04	9.12E-01	3.54E-01	1.63E+00	3.27E+00	2.48E+01	1.32E-01	3.28E+00	2.80E-04	2.32E-04	3.28E+00	1.63E+00
Iron	4.06E+01	1.05E+02	3.09E+04	3.39E-03	1.05E+02	1.63E-01	1.35E-01	1.05E+02	4.07E+01	7.85E+02	1.58E+03	3.31E+04	4.76E-02	1.58E+03	1.25E-01	1.04E-01	1.58E+03	7.85E+02
Lead	7.29E-02	1.88E-01	1.50E+01	1.25E-02	1.88E-01	1.99E-06	1.65E-06	1.88E-01	7.29E-02	2.51E-01	5.04E-01	1.50E+01	3.36E-02	5.04E-01	1.53E-06	1.27E-06	5.04E-01	2.51E-01
Magnesium	3.88E+02	1.00E+03	1.30E+04	7.69E-02	1.00E+03	7.63E-02	6.33E-02	1.00E+03	3.88E+02	9.45E+02	1.90E+03	1.37E+04	1.39E-01	1.90E+03	5.85E-02	4.86E-02	1.90E+03	9.46E+02
Manganese	5.18E+01	1.34E+02	2.94E+02	4.54E-01	1.34E+02	3.08E-03	2.56E-03	1.34E+02	5.19E+01	3.85E+01	7.73E+01	3.45E+02	2.24E-01	7.74E+01	2.37E-03	1.97E-03	7.74E+01	3.85E+01
Mercury	1.04E-02	2.68E-02	1.01E-02	2.65E+00	2.68E-02	3.32E-08	2.75E-08	2.68E-02	1.04E-02	2.34E-02	4.70E-02	7.80E-03	6.02E+00	4.70E-02	2.54E-08	2.11E-08	4.70E-02	2.34E-02
Molybdenum	2.31E-02	5.95E-02	2.00E+00	2.98E-02	5.95E-02	1.66E-06	1.38E-06	5.95E-02	2.31E-02	5.18E-02	1.04E-01	2.00E+00	5.20E-02	1.04E-01	1.27E-06	1.06E-06	1.04E-01	5.18E-02
Nickel	2.49E-01	6.42E-01	3.50E+01	1.83E-02	6.42E-01	2.39E-04	1.98E-04	6.43E-01	2.49E-01	1.93E+00	3.88E+00	3.23E+01	1.20E-01	3.88E+00	1.83E-04	1.52E-04	3.88E+00	1.93E+00
Phosphorus	2.40E+02	6.19E+02	4.90E+02	1.26E+00	6.19E+02	7.30E-04	6.06E-04	6.19E+02	2.40E+02	4.00E+02	8.03E+02	4.46E+02	1.80E+00	8.03E+02	5.60E-04	4.65E-04	8.03E+02	4.00E+02
Potassium	7.30E+02	1.88E+03	4.77E+03	3.94E-01	1.88E+03	3.32E-04	2.75E-04	1.88E+03	7.30E+02	1.02E+03	2.05E+03	5.48E+03	3.74E-01	2.05E+03	2.54E-04	2.11E-04	2.05E+03	1.02E+03
Selenium	1.00E-02	2.58E-02	2.50E-01	1.03E-01	2.58E-02	1.66E-06	1.38E-06	2.58E-02	1.00E-02	3.00E-02	6.02E-02	2.50E-01	2.41E-01	6.03E-02	1.27E-06	1.06E-06	6.03E-02	3.00E-02
Silver	3.20E-03	8.25E-03	1.00E+00	8.25E-03	8.25E-03	3.32E-07	2.75E-07	8.25E-03	3.20E-03	7.30E-03	1.47E-02	1.00E+00	1.47E-02	1.47E-02	2.54E-07	2.11E-07	1.47E-02	7.30E-03
Sodium	2.00E+02	5.15E+02	5.10E+02	1.01E+00	5.16E+02	8.29E-04	6.88E-04	5.16E+02	2.00E+02	2.50E+02	5.02E+02	7.10E+02	7.07E-01	5.02E+02	6.36E-04	5.28E-04	5.02E+02	2.50E+02
Strontium	1.95E+00	5.03E+00	2.68E+01	1.88E-01	5.03E+00	4.64E-05	3.86E-05	5.03E+00	1.95E+00	4.42E+00	8.88E+00	3.02E+01	2.94E-01	8.88E+00	3.56E-05	2.96E-05	8.88E+00	4.42E+00
Thallium	1.51E-03	3.89E-03	5.00E-01	7.78E-03	3.89E-03	3.32E-07	2.75E-07	3.89E-03	1.51E-03	2.56E-03	5.14E-03	5.00E-01	1.03E-02	5.14E-03	2.54E-07	2.11E-07	5.14E-03	2.56E-03
Tin	1.47E-02	3.79E-02	2.50E+00	1.52E-02	3.79E-02	6.63E-06	5.51E-06	3.79E-02	1.47E-02	2.06E-02	4.14E-02	2.50E+00	1.65E-02	4.14E-02	5.09E-06	4.23E-06	4.14E-02	2.06E-02
Titanium	2.01E+00	5.18E+00	1.47E+03	3.52E-03	5.18E+00	7.30E-03	6.06E-03	5.19E+00	2.01E+00	2.83E+01	5.68E+01	1.54E+03	3.69E-02	5.69E+01	5.60E-03	4.65E-03	5.69E+01	2.83E+01
Uranium	2.53E-03	6.52E-03	2.23E+00	2.92E-03	6.52E-03	3.32E-07	2.75E-07	6.52E-03	2.53E-03	1.12E-02	2.25E-02	1.57E+00	1.43E-02	2.25E-02	2.54E-07	2.11E-07	2.25E-02	1.12E-02
Vanadium	9.39E-02	2.42E-01	7.17E+01	3.38E-03	2.42E-01	3.32E-04	2.75E-04	2.42E-01	9.41E-02	2.08E+00	4.18E+00	7.27E+01	5.75E-02	4.18E+00	2.54E-04	2.11E-04	4.18E+00	2.08E+00
Zinc	9.78E+00	2.52E+01	5.90E+01	4.27E-01	2.52E+01	1.96E-04	1.62E-04	2.52E+01	9.78E+00	1.33E+01	2.67E+01	5.71E+01	4.68E-01	2.67E+01	1.50E-04	1.25E-04	2.67E+01	1.33E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)								
Sample ID	010 FLAVOCETRARIA CUCULLATA (no soil match)						011 FLAVOCETRARIA CUCULLATA								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	6.47E+01	8.32E+01	2.81E-02	2.33E-02	8.32E+01	6.47E+01	6.44E+01	7.50E+01	3.46E+03	2.17E-02	7.51E+01	5.82E-02	4.84E-02	7.52E+01	6.46E+01
Antimony	4.10E-03	5.27E-03	9.68E-08	8.04E-08	5.27E-03	4.10E-03	4.10E-03	4.77E-03	5.00E+00	9.55E-04	4.77E-03	2.01E-07	1.67E-07	4.77E-03	4.10E-03
Arsenic	3.57E-02	4.59E-02	4.84E-07	4.02E-07	4.59E-02	3.57E-02	4.12E-02	4.80E-02	2.50E+00	1.92E-02	4.80E-02	1.00E-06	8.34E-07	4.80E-02	4.12E-02
Barium	6.53E+00	8.39E+00	2.90E-06	2.41E-06	8.39E+00	6.53E+00	6.91E+00	8.04E+00	1.92E+01	4.19E-01	8.04E+00	6.03E-06	5.00E-06	8.04E+00	6.91E+00
Beryllium	2.80E-03	3.60E-03	3.19E-07	2.65E-07	3.60E-03	2.80E-03	3.40E-03	3.96E-03	2.50E-01	1.58E-02	3.96E-03	6.63E-07	5.50E-07	3.96E-03	3.40E-03
Bismuth	1.00E-03	1.29E-03	9.68E-08	8.04E-08	1.29E-03	1.00E-03	1.00E-03	1.16E-03	1.00E+01	1.16E-04	1.16E-03	2.01E-07	1.67E-07	1.16E-03	1.00E-03
Cadmium	3.13E-02	4.02E-02	9.68E-08	8.04E-08	4.02E-02	3.13E-02	3.99E-02	4.64E-02	2.50E-01	1.86E-01	4.65E-02	2.01E-07	1.67E-07	4.65E-02	3.99E-02
Calcium	1.49E+03	1.92E+03	3.10E-02	2.57E-02	1.92E+03	1.49E+03	1.29E+03	1.50E+03	1.08E+03	1.40E+00	1.51E+03	6.43E-02	5.34E-02	1.51E+03	1.30E+03
Chromium	5.31E-01	6.83E-01	1.45E-04	1.21E-04	6.83E-01	5.31E-01	3.61E-01	4.20E-01	8.54E+00	4.94E-02	4.22E-01	3.01E-04	2.50E-04	4.22E-01	3.63E-01
Cobalt	1.57E-01	2.02E-01	3.39E-05	2.81E-05	2.02E-01	1.57E-01	1.40E-01	1.63E-01	2.21E+00	7.41E-02	1.64E-01	7.03E-05	5.84E-05	1.64E-01	1.41E-01
Copper	7.48E-01	9.61E-01	1.06E-04	8.84E-05	9.62E-01	7.48E-01	7.75E-01	9.02E-01	6.23E+00	1.46E-01	9.06E-01	2.21E-04	1.83E-04	9.07E-01	7.79E-01
Iron	6.55E+01	8.42E+01	4.74E-02	3.94E-02	8.42E+01	6.55E+01	6.19E+01	7.21E+01	7.48E+03	9.65E-03	7.22E+01	9.84E-02	8.17E-02	7.23E+01	6.21E+01
Lead	1.94E-01	2.49E-01	5.81E-07	4.82E-07	2.49E-01	1.94E-01	2.00E-01	2.33E-01	1.50E+01	1.55E-02	2.33E-01	1.21E-06	1.00E-06	2.33E-01	2.00E-01
Magnesium	4.71E+02	6.05E+02	2.23E-02	1.85E-02	6.05E+02	4.71E+02	6.99E+02	8.14E+02	1.92E+03	4.26E-01	8.16E+02	4.62E-02	3.84E-02	8.16E+02	7.01E+02
Manganese	5.00E+01	6.43E+01	9.00E-04	7.48E-04	6.43E+01	5.00E+01	5.73E+01	6.67E+01	4.84E+01	1.38E+00	6.71E+01	1.87E-03	1.55E-03	6.71E+01	5.76E+01
Mercury	4.04E-02	5.19E-02	9.68E-09	8.04E-09	5.19E-02	4.04E-02	3.87E-02	4.51E-02	6.40E-03	7.04E+00	4.51E-02	2.01E-08	1.67E-08	4.51E-02	3.87E-02
Molybdenum	2.13E-02	2.74E-02	4.84E-07	4.02E-07	2.74E-02	2.13E-02	2.43E-02	2.83E-02	2.00E+00	1.41E-02	2.83E-02	1.00E-06	8.34E-07	2.83E-02	2.43E-02
Nickel	4.50E-01	5.78E-01	6.97E-05	5.79E-05	5.78E-01	4.50E-01	3.46E-01	4.03E-01	2.52E+00	1.61E-01	4.06E-01	1.45E-04	1.20E-04	4.06E-01	3.49E-01
Phosphorus	5.90E+02	7.58E+02	2.13E-04	1.77E-04	7.58E+02	5.90E+02	8.50E+02	9.90E+02	1.77E+02	5.59E+00	9.90E+02	4.42E-04	3.67E-04	9.90E+02	8.50E+02
Potassium	1.59E+03	2.04E+03	9.68E-05	8.04E-05	2.04E+03	1.59E+03	1.88E+03	2.19E+03	4.80E+02	4.56E+00	2.19E+03	2.01E-04	1.67E-04	2.19E+03	1.88E+03
Selenium	5.80E-02	7.46E-02	4.84E-07	4.02E-07	7.46E-02	5.80E-02	3.70E-02	4.31E-02	2.50E-01	1.72E-01	4.31E-02	1.00E-06	8.34E-07	4.31E-02	3.70E-02
Silver	5.00E-03	6.43E-03	9.68E-08	8.04E-08	6.43E-03	5.00E-03	6.00E-03	6.98E-03	1.00E+00	6.98E-03	6.99E-03	2.01E-07	1.67E-07	6.99E-03	6.00E-03
Sodium	3.50E+02	4.50E+02	2.42E-04	2.01E-04	4.50E+02	3.50E+02	8.10E+02	9.43E+02	1.00E+02	9.43E+00	9.44E+02	5.02E-04	4.17E-04	9.44E+02	8.11E+02
Strontium	2.85E+00	3.66E+00	1.36E-05	1.13E-05	3.66E+00	2.85E+00	3.08E+00	3.59E+00	6.93E+00	5.17E-01	3.59E+00	2.81E-05	2.33E-05	3.59E+00	3.08E+00
Thallium	1.40E-02	1.80E-02	9.68E-08	8.04E-08	1.80E-02	1.40E-02	2.00E-02	2.33E-02	5.00E-01	4.66E-02	2.33E-02	2.01E-07	1.67E-07	2.33E-02	2.00E-02
Tin	1.83E-02	2.35E-02	1.94E-06	1.61E-06	2.35E-02	1.83E-02	3.55E-02	4.13E-02	2.50E+00	1.65E-02	4.13E-02	4.02E-06	3.34E-06	4.13E-02	3.55E-02
Titanium	3.99E+00	5.13E+00	2.13E-03	1.77E-03	5.13E+00	3.99E+00	2.83E+00	3.29E+00	3.10E+02	1.07E-02	3.30E+00	4.42E-03	3.67E-03	3.30E+00	2.84E+00
Uranium	4.49E-03	5.77E-03	9.68E-08	8.04E-08	5.77E-03	4.49E-03	4.44E-03	5.17E-03	3.79E-01	1.36E-02	5.17E-03	2.01E-07	1.67E-07	5.17E-03	4.44E-03
Vanadium	1.44E-01	1.85E-01	9.68E-05	8.04E-05	1.85E-01	1.44E-01	1.33E-01	1.55E-01	1.68E+01	9.22E-03	1.55E-01	2.01E-04	1.67E-04	1.55E-01	1.33E-01
Zinc	1.83E+01	2.35E+01	5.71E-05	4.74E-05	2.35E+01	1.83E+01	2.78E+01	3.24E+01	1.05E+01	3.08E+00	3.24E+01	1.19E-04	9.84E-05	3.24E+01	2.78E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)					
Sample ID	024 FLAVOCETRARIA CUCULLATA (no soil match)						LICHEN 1 - F. CUCULATTA (no soil match)						LICHEN 2 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.34E+01	6.32E+01	6.81E-02	5.66E-02	6.32E+01	4.34E+01	1.04E+02	1.09E+02	2.31E-02	1.92E-02	1.09E+02	1.04E+02	1.01E+02	1.07E+02	2.31E-02	1.92E-02	1.07E+02	1.01E+02
Antimony	4.60E-03	6.70E-03	2.35E-07	1.95E-07	6.70E-03	4.60E-03	5.00E-03	5.26E-03	7.97E-08	6.62E-08	5.26E-03	5.00E-03	5.00E-03	5.29E-03	7.97E-08	6.62E-08	5.29E-03	5.00E-03
Arsenic	3.81E-02	5.55E-02	1.17E-06	9.75E-07	5.55E-02	3.81E-02	1.42E-01	1.49E-01	3.99E-07	3.31E-07	1.49E-01	1.42E-01	5.90E-02	6.24E-02	3.99E-07	3.31E-07	6.24E-02	5.90E-02
Barium	1.97E+00	2.87E+00	7.05E-06	5.85E-06	2.87E+00	1.97E+00	5.89E+00	6.20E+00	2.39E-06	1.99E-06	6.20E+00	5.89E+00	6.41E+00	6.78E+00	2.39E-06	1.99E-06	6.78E+00	6.41E+00
Beryllium	1.00E-03	1.46E-03	7.75E-07	6.44E-07	1.46E-03	1.00E-03	5.00E-02	5.26E-02	2.63E-07	2.18E-07	5.26E-02	5.00E-02	5.00E-02	5.29E-02	2.63E-07	2.18E-07	5.29E-02	5.00E-02
Bismuth	1.00E-03	1.46E-03	2.35E-07	1.95E-07	1.46E-03	1.00E-03	1.50E-02	1.58E-02	7.97E-08	6.62E-08	1.58E-02	1.50E-02	1.50E-02	1.59E-02	7.97E-08	6.62E-08	1.59E-02	1.50E-02
Cadmium	8.55E-02	1.24E-01	2.35E-07	1.95E-07	1.24E-01	8.55E-02	6.54E-02	6.88E-02	7.97E-08	6.62E-08	6.88E-02	6.54E-02	5.15E-02	5.45E-02	7.97E-08	6.62E-08	5.45E-02	5.15E-02
Calcium	2.77E+04	4.03E+04	7.52E-02	6.24E-02	4.03E+04	2.77E+04	2.89E+03	3.04E+03	2.55E-02	2.12E-02	3.04E+03	2.89E+03	1.86E+03	1.97E+03	2.55E-02	2.12E-02	1.97E+03	1.86E+03
Chromium	5.85E-01	8.52E-01	3.52E-04	2.93E-04	8.52E-01	5.85E-01	4.06E+00	4.27E+00	1.20E-04	9.93E-05	4.27E+00	4.06E+00	1.07E+01	1.13E+01	1.20E-04	9.93E-05	1.13E+01	1.07E+01
Cobalt	3.59E-02	5.23E-02	8.22E-05	6.83E-05	5.23E-02	3.59E-02	1.70E-01	1.79E-01	2.79E-05	2.32E-05	1.79E-01	1.70E-01	2.54E-01	2.69E-01	2.79E-05	2.32E-05	2.69E-01	2.54E-01
Copper	1.24E+00	1.80E+00	2.58E-04	2.15E-04	1.81E+00	1.24E+00	2.33E+00	2.45E+00	8.77E-05	7.28E-05	2.45E+00	2.33E+00	2.30E+00	2.43E+00	8.77E-05	7.28E-05	2.43E+00	2.30E+00
Iron	6.05E+01	8.81E+01	1.15E-01	9.56E-02	8.82E+01	6.06E+01	1.49E+02	1.57E+02	3.91E-02	3.24E-02	1.57E+02	1.49E+02	1.63E+02	1.72E+02	3.91E-02	3.24E-02	1.72E+02	1.63E+02
Lead	2.81E-01	4.09E-01	1.41E-06	1.17E-06	4.09E-01	2.81E-01	1.96E-01	2.06E-01	4.78E-07	3.97E-07	2.06E-01	1.96E-01	2.14E-01	2.26E-01	4.78E-07	3.97E-07	2.26E-01	2.14E-01
Magnesium	2.88E+02	4.19E+02	5.40E-02	4.49E-02	4.19E+02	2.88E+02	7.60E+02	7.99E+02	1.83E-02	1.52E-02	7.99E+02	7.60E+02	6.65E+02	7.04E+02	1.83E-02	1.52E-02	7.04E+02	6.65E+02
Manganese	6.05E+00	8.81E+00	2.18E-03	1.81E-03	8.81E+00	6.05E+00	1.12E+02	1.18E+02	7.41E-04	6.15E-04	1.18E+02	1.12E+02	7.38E+01	7.81E+01	7.41E-04	6.15E-04	7.81E+01	7.38E+01
Mercury	2.13E-02	3.10E-02	2.35E-08	1.95E-08	3.10E-02	2.13E-02	4.39E-02	4.62E-02	7.97E-09	6.62E-09	4.62E-02	4.39E-02	7.19E-02	7.61E-02	7.97E-09	6.62E-09	7.61E-02	7.19E-02
Molybdenum	2.67E-02	3.89E-02	1.17E-06	9.75E-07	3.89E-02	2.67E-02	8.30E-02	8.73E-02	3.99E-07	3.31E-07	8.73E-02	8.30E-02	8.40E-02	8.89E-02	3.99E-07	3.31E-07	8.89E-02	8.40E-02
Nickel	4.10E-01	5.97E-01	1.69E-04	1.40E-04	5.97E-01	4.10E-01	1.86E+00	1.96E+00	5.74E-05	4.77E-05	1.96E+00	1.86E+00	4.96E+00	5.25E+00	5.74E-05	4.77E-05	5.25E+00	4.96E+00
Phosphorus	2.30E+02	3.35E+02	5.17E-04	4.29E-04	3.35E+02	2.30E+02	1.02E+03	1.07E+03	1.75E-04	1.46E-04	1.07E+03	1.02E+03	7.82E+02	8.27E+02	1.75E-04	1.46E-04	8.27E+02	7.82E+02
Potassium	1.07E+03	1.56E+03	2.35E-04	1.95E-04	1.56E+03	1.07E+03	2.45E+03	2.58E+03	7.97E-05	6.62E-05	2.58E+03	2.45E+03	1.98E+03	2.09E+03	7.97E-05	6.62E-05	2.09E+03	1.98E+03
Selenium	2.90E-02	4.22E-02	1.17E-06	9.75E-07	4.22E-02	2.90E-02	1.00E-01	1.05E-01	3.99E-07	3.31E-07	1.05E-01	1.00E-01	1.00E-01	1.06E-01	3.99E-07	3.31E-07	1.06E-01	1.00E-01
Silver	5.20E-03	7.57E-03	2.35E-07	1.95E-07	7.57E-03	5.20E-03	1.10E-02	1.16E-02	7.97E-08	6.62E-08	1.16E-02	1.10E-02	1.30E-02	1.38E-02	7.97E-08	6.62E-08	1.38E-02	1.30E-02
Sodium	3.50E+02	5.09E+02	5.87E-04	4.88E-04	5.09E+02	3.50E+02	8.60E+02	9.05E+02	1.99E-04	1.65E-04	9.05E+02	8.60E+02	8.30E+02	8.78E+02	1.99E-04	1.65E-04	8.78E+02	8.30E+02
Strontium	9.66E+00	1.41E+01	3.29E-05	2.73E-05	1.41E+01	9.66E+00	5.90E+00	6.21E+00	1.12E-05	9.27E-06	6.21E+00	5.90E+00	5.60E+00	5.92E+00	1.12E-05	9.27E-06	5.92E+00	5.60E+00
Thallium	1.09E-03	1.59E-03	2.35E-07	1.95E-07	1.59E-03	1.09E-03	5.00E-03	5.26E-03	7.97E-08	6.62E-08	5.26E-03	5.00E-03	5.00E-03	5.29E-03	7.97E-08	6.62E-08	5.29E-03	5.00E-03
Tin	2.25E-02	3.28E-02	4.70E-06	3.90E-06	3.28E-02	2.25E-02	2.50E-02	2.63E-02	1.59E-06	1.32E-06	2.63E-02	2.50E-02	2.50E-02	2.64E-02	1.59E-06	1.32E-06	2.65E-02	2.50E-02
Titanium	2.68E+00	3.90E+00	5.17E-03	4.29E-03	3.91E+00	2.68E+00	7.20E+00	7.57E+00	1.75E-03	1.46E-03	7.57E+00	7.20E+00	8.20E+00	8.68E+00	1.75E-03	1.46E-03	8.68E+00	8.20E+00
Uranium	5.43E-03	7.90E-03	2.35E-07	1.95E-07	7.90E-03	5.43E-03	7.80E-03	8.20E-03	7.97E-08	6.62E-08	8.20E-03	7.80E-03	9.50E-03	1.01E-02	7.97E-08	6.62E-08	1.01E-02	9.50E-03
Vanadium	1.59E-01	2.31E-01	2.35E-04	1.95E-04	2.32E-01	1.59E-01	3.20E-01	3.37E-01	7.97E-05	6.62E-05	3.37E-01	3.20E-01	3.20E-01	3.39E-01	7.97E-05	6.62E-05	3.39E-01	3.20E-01
Zinc	1.18E+01	1.72E+01	1.39E-04	1.15E-04	1.72E+01	1.18E+01	2.32E+01	2.44E+01	4.70E-05	3.90E-05	2.44E+01	2.32E+01	2.31E+01	2.44E+01	4.70E-05	3.90E-05	2.44E+01	2.31E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)					
Sample ID	LICHEN 3 - F. CUCULATTA (no soil match)						LICHEN 4 - F. CUCULATTA (no soil match)						LICHEN 5 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	9.48E+01	9.93E+01	2.32E-02	1.92E-02	9.93E+01	9.48E+01	6.63E+01	7.33E+01	2.31E-02	1.92E-02	7.33E+01	6.63E+01	9.31E+01	9.72E+01	2.32E-02	1.93E-02	9.72E+01	9.31E+01
Antimony	5.00E-03	5.24E-03	7.99E-08	6.63E-08	5.24E-03	5.00E-03	5.00E-03	5.53E-03	7.97E-08	6.61E-08	5.53E-03	5.00E-03	5.00E-03	5.22E-03	8.01E-08	6.65E-08	5.22E-03	5.00E-03
Arsenic	8.40E-02	8.80E-02	3.99E-07	3.32E-07	8.80E-02	8.40E-02	5.20E-02	5.75E-02	3.98E-07	3.31E-07	5.75E-02	5.20E-02	5.30E-02	5.53E-02	4.00E-07	3.32E-07	5.53E-02	5.30E-02
Barium	9.40E+00	9.85E+00	2.40E-06	1.99E-06	9.85E+00	9.40E+00	5.09E+00	5.63E+00	2.39E-06	1.98E-06	5.63E+00	5.09E+00	1.12E+01	1.17E+01	2.40E-06	1.99E-06	1.17E+01	1.12E+01
Beryllium	5.00E-02	5.24E-02	2.64E-07	2.19E-07	5.24E-02	5.00E-02	5.00E-02	5.53E-02	2.63E-07	2.18E-07	5.53E-02	5.00E-02	5.00E-02	5.22E-02	2.64E-07	2.19E-07	5.22E-02	5.00E-02
Bismuth	1.50E-02	1.57E-02	7.99E-08	6.63E-08	1.57E-02	1.50E-02	1.50E-02	1.66E-02	7.97E-08	6.61E-08	1.66E-02	1.50E-02	1.50E-02	1.57E-02	8.01E-08	6.65E-08	1.57E-02	1.50E-02
Cadmium	1.69E-01	1.77E-01	7.99E-08	6.63E-08	1.77E-01	1.69E-01	3.28E-02	3.63E-02	7.97E-08	6.61E-08	3.63E-02	3.28E-02	7.25E-02	7.57E-02	8.01E-08	6.65E-08	7.57E-02	7.25E-02
Calcium	7.10E+03	7.44E+03	2.56E-02	2.12E-02	7.44E+03	7.10E+03	1.76E+03	1.95E+03	2.55E-02	2.12E-02	1.95E+03	1.76E+03	3.14E+03	3.28E+03	2.56E-02	2.13E-02	3.28E+03	3.14E+03
Chromium	1.90E+00	1.99E+00	1.20E-04	9.95E-05	1.99E+00	1.90E+00	5.77E+00	6.38E+00	1.19E-04	9.92E-05	6.38E+00	5.77E+00	1.21E+00	1.26E+00	1.20E-04	9.97E-05	1.26E+00	1.21E+00
Cobalt	1.72E-01	1.80E-01	2.80E-05	2.32E-05	1.80E-01	1.72E-01	1.83E-01	2.02E-01	2.79E-05	2.31E-05	2.02E-01	1.83E-01	1.23E-01	1.28E-01	2.80E-05	2.33E-05	1.28E-01	1.23E-01
Copper	9.05E-01	9.48E-01	8.79E-05	7.30E-05	9.48E-01	9.05E-01	2.15E+00	2.38E+00	8.76E-05	7.28E-05	2.38E+00	2.15E+00	9.26E-01	9.66E-01	8.81E-05	7.31E-05	9.66E-01	9.26E-01
Iron	9.27E+01	9.71E+01	3.91E-02	3.25E-02	9.72E+01	9.27E+01	8.81E+01	9.74E+01	3.90E-02	3.24E-02	9.74E+01	8.81E+01	8.19E+01	8.55E+01	3.92E-02	3.26E-02	8.55E+01	8.19E+01
Lead	6.19E-01	6.49E-01	4.79E-07	3.98E-07	6.49E-01	6.19E-01	2.09E-01	2.31E-01	4.78E-07	3.97E-07	2.31E-01	2.09E-01	1.00E-01	1.04E-01	4.80E-07	3.99E-07	1.04E-01	1.00E-01
Magnesium	1.01E+03	1.06E+03	1.84E-02	1.53E-02	1.06E+03	1.01E+03	5.35E+02	5.91E+02	1.83E-02	1.52E-02	5.92E+02	5.35E+02	9.56E+02	9.98E+02	1.84E-02	1.53E-02	9.98E+02	9.56E+02
Manganese	4.76E+01	4.99E+01	7.43E-04	6.17E-04	4.99E+01	4.76E+01	9.78E+01	1.08E+02	7.41E-04	6.15E-04	1.08E+02	9.78E+01	6.49E+01	6.77E+01	7.45E-04	6.18E-04	6.77E+01	6.49E+01
Mercury	4.73E-02	4.96E-02	7.99E-09	6.63E-09	4.96E-02	4.73E-02	4.05E-02	4.48E-02	7.97E-09	6.61E-09	4.48E-02	4.05E-02	1.50E-03	1.57E-03	8.01E-09	6.65E-09	1.57E-03	1.50E-03
Molybdenum	4.40E-02	4.61E-02	3.99E-07	3.32E-07	4.61E-02	4.40E-02	6.20E-02	6.85E-02	3.98E-07	3.31E-07	6.85E-02	6.20E-02	5.70E-02	5.95E-02	4.00E-07	3.32E-07	5.95E-02	5.70E-02
Nickel	8.40E-01	8.80E-01	5.75E-05	4.78E-05	8.80E-01	8.40E-01	2.62E+00	2.90E+00	5.74E-05	4.76E-05	2.90E+00	2.62E+00	5.30E-01	5.53E-01	5.77E-05	4.79E-05	5.53E-01	5.30E-01
Phosphorus	3.33E+02	3.49E+02	1.76E-04	1.46E-04	3.49E+02	3.33E+02	4.01E+02	4.43E+02	1.75E-04	1.46E-04	4.43E+02	4.01E+02	4.63E+02	4.83E+02	1.76E-04	1.46E-04	4.83E+02	4.63E+02
Potassium	1.24E+03	1.30E+03	7.99E-05	6.63E-05	1.30E+03	1.24E+03	1.55E+03	1.71E+03	7.97E-05	6.61E-05	1.71E+03	1.55E+03	1.36E+03	1.42E+03	8.01E-05	6.65E-05	1.42E+03	1.36E+03
Selenium	1.00E-01	1.05E-01	3.99E-07	3.32E-07	1.05E-01	1.00E-01	1.00E-01	1.11E-01	3.98E-07	3.31E-07	1.11E-01	1.00E-01	1.00E-01	1.04E-01	4.00E-07	3.32E-07	1.04E-01	1.00E-01
Silver	1.00E-02	1.05E-02	7.99E-08	6.63E-08	1.05E-02	1.00E-02	1.30E-02	1.44E-02	7.97E-08	6.61E-08	1.44E-02	1.30E-02	5.00E-03	5.22E-03	8.01E-08	6.65E-08	5.22E-03	5.00E-03
Sodium	3.12E+02	3.27E+02	2.00E-04	1.66E-04	3.27E+02	3.12E+02	7.90E+02	8.73E+02	1.99E-04	1.65E-04	8.73E+02	7.90E+02	4.72E+02	4.93E+02	2.00E-04	1.66E-04	4.93E+02	4.72E+02
Strontium	2.33E+01	2.44E+01	1.12E-05	9.29E-06	2.44E+01	2.33E+01	5.09E+00	5.63E+00	1.12E-05	9.26E-06	5.63E+00	5.09E+00	1.38E+01	1.44E+01	1.12E-05	9.31E-06	1.44E+01	1.38E+01
Thallium	5.00E-03	5.24E-03	7.99E-08	6.63E-08	5.24E-03	5.00E-03	5.00E-03	5.53E-03	7.97E-08	6.61E-08	5.53E-03	5.00E-03	5.00E-03	5.22E-03	8.01E-08	6.65E-08	5.22E-03	5.00E-03
Tin	2.50E-02	2.62E-02	1.60E-06	1.33E-06	2.62E-02	2.50E-02	2.50E-02	2.76E-02	1.59E-06	1.32E-06	2.76E-02	2.50E-02	2.50E-02	2.61E-02	1.60E-06	1.33E-06	2.61E-02	2.50E-02
Titanium	5.87E+00	6.15E+00	1.76E-03	1.46E-03	6.15E+00	5.87E+00	4.10E+00	4.53E+00	1.75E-03	1.46E-03	4.53E+00	4.10E+00	6.10E+00	6.37E+00	1.76E-03	1.46E-03	6.37E+00	6.10E+00
Uranium	6.10E-02	6.39E-02	7.99E-08	6.63E-08	6.39E-02	6.10E-02	8.80E-03	9.73E-03	7.97E-08	6.61E-08	9.73E-03	8.80E-03	5.15E-02	5.37E-02	8.01E-08	6.65E-08	5.37E-02	5.15E-02
Vanadium	2.40E-01	2.51E-01	7.99E-05	6.63E-05	2.52E-01	2.40E-01	1.80E-01	1.99E-01	7.97E-05	6.61E-05	1.99E-01	1.80E-01	1.70E-01	1.77E-01	8.01E-05	6.65E-05	1.77E-01	1.70E-01
Zinc	1.88E+01	1.97E+01	4.71E-05	3.91E-05	1.97E+01	1.88E+01	2.10E+01	2.32E+01	4.70E-05	3.90E-05	2.32E+01	2.10E+01	2.42E+01	2.53E+01	4.72E-05	3.92E-05	2.53E+01	2.42E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)					
Sample ID	LICHEN 6 - F. CUCULATTA (no soil match)						LICHEN 7 - F. CUCULATTA (no soil match)						LICHEN 8 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	5.29E+01	5.55E+01	2.32E-02	1.93E-02	5.55E+01	5.29E+01	5.97E+01	1.21E+02	2.51E-02	2.08E-02	1.21E+02	5.97E+01	1.11E+02	1.99E+02	2.51E-02	2.08E-02	1.99E+02	1.11E+02
Antimony	5.00E-03	5.24E-03	8.01E-08	6.65E-08	5.24E-03	5.00E-03	5.00E-03	1.02E-02	8.65E-08	7.19E-08	1.02E-02	5.00E-03	5.00E-03	8.98E-03	8.64E-08	7.17E-08	8.98E-03	5.00E-03
Arsenic	6.60E-02	6.92E-02	4.00E-07	3.32E-07	6.92E-02	6.60E-02	2.70E-02	5.49E-02	4.33E-07	3.59E-07	5.49E-02	2.70E-02	3.90E-02	7.00E-02	4.32E-07	3.59E-07	7.00E-02	3.90E-02
Barium	1.45E+01	1.52E+01	2.40E-06	1.99E-06	1.52E+01	1.45E+01	8.13E+00	1.65E+01	2.60E-06	2.16E-06	1.65E+01	8.13E+00	3.35E+00	6.01E+00	2.59E-06	2.15E-06	6.01E+00	3.35E+00
Beryllium	5.00E-02	5.24E-02	2.64E-07	2.19E-07	5.24E-02	5.00E-02	5.00E-02	1.02E-01	2.86E-07	2.37E-07	1.02E-01	5.00E-02	5.00E-02	8.98E-02	2.85E-07	2.37E-07	8.98E-02	5.00E-02
Bismuth	1.50E-02	1.57E-02	8.01E-08	6.65E-08	1.57E-02	1.50E-02	1.50E-02	3.05E-02	8.65E-08	7.19E-08	3.05E-02	1.50E-02	1.50E-02	2.69E-02	8.64E-08	7.17E-08	2.69E-02	1.50E-02
Cadmium	7.59E-02	7.96E-02	8.01E-08	6.65E-08	7.96E-02	7.59E-02	3.51E-02	7.13E-02	8.65E-08	7.19E-08	7.13E-02	3.51E-02	3.04E-02	5.46E-02	8.64E-08	7.17E-08	5.46E-02	3.04E-02
Calcium	2.68E+03	2.81E+03	2.56E-02	2.13E-02	2.81E+03	2.68E+03	2.10E+03	4.27E+03	2.77E-02	2.30E-02	4.27E+03	2.10E+03	1.66E+03	2.98E+03	2.76E-02	2.30E-02	2.98E+03	1.66E+03
Chromium	1.18E+00	1.24E+00	1.20E-04	9.97E-05	1.24E+00	1.18E+00	1.05E+00	2.13E+00	1.30E-04	1.08E-04	2.13E+00	1.05E+00	4.53E+00	8.13E+00	1.30E-04	1.08E-04	8.13E+00	4.53E+00
Cobalt	2.48E-01	2.60E-01	2.80E-05	2.33E-05	2.60E-01	2.48E-01	1.30E-01	2.64E-01	3.03E-05	2.51E-05	2.64E-01	1.30E-01	2.07E-01	3.72E-01	3.02E-05	2.51E-05	3.72E-01	2.07E-01
Copper	8.18E-01	8.58E-01	8.81E-05	7.31E-05	8.58E-01	8.18E-01	4.79E-01	9.74E-01	9.52E-05	7.90E-05	9.74E-01	4.79E-01	1.13E+00	2.03E+00	9.50E-05	7.89E-05	2.03E+00	1.13E+00
Iron	4.02E+01	4.22E+01	3.92E-02	3.26E-02	4.22E+01	4.02E+01	5.81E+01	1.18E+02	4.24E-02	3.52E-02	1.18E+02	5.81E+01	1.58E+02	2.84E+02	4.23E-02	3.52E-02	2.84E+02	1.58E+02
Lead	9.40E-02	9.86E-02	4.80E-07	3.99E-07	9.86E-02	9.40E-02	1.58E-01	3.21E-01	5.19E-07	4.31E-07	3.21E-01	1.58E-01	1.22E-01	2.19E-01	5.18E-07	4.30E-07	2.19E-01	1.22E-01
Magnesium	1.67E+03	1.75E+03	1.84E-02	1.53E-02	1.75E+03	1.67E+03	6.45E+02	1.31E+03	1.99E-02	1.65E-02	1.31E+03	6.45E+02	5.15E+02	9.25E+02	1.99E-02	1.65E-02	9.25E+02	5.15E+02
Manganese	1.05E+02	1.10E+02	7.45E-04	6.18E-04	1.10E+02	1.05E+02	5.35E+01	1.09E+02	8.05E-04	6.68E-04	1.09E+02	5.35E+01	3.44E+01	6.18E+01	8.04E-04	6.67E-04	6.18E+01	3.44E+01
Mercury	5.00E-04	5.24E-04	8.01E-09	6.65E-09	5.24E-04	5.00E-04	2.16E-02	4.39E-02	8.65E-09	7.19E-09	4.39E-02	2.16E-02	2.62E-02	4.70E-02	8.64E-09	7.17E-09	4.70E-02	2.62E-02
Molybdenum	3.60E-02	3.78E-02	4.00E-07	3.32E-07	3.78E-02	3.60E-02	2.10E-02	4.27E-02	4.33E-07	3.59E-07	4.27E-02	2.10E-02	4.10E-02	7.36E-02	4.32E-07	3.59E-07	7.36E-02	4.10E-02
Nickel	5.80E-01	6.08E-01	5.77E-05	4.79E-05	6.08E-01	5.80E-01	4.50E-01	9.15E-01	6.23E-05	5.17E-05	9.15E-01	4.50E-01	2.03E+00	3.64E+00	6.22E-05	5.17E-05	3.64E+00	2.03E+00
Phosphorus	5.95E+02	6.24E+02	1.76E-04	1.46E-04	6.24E+02	5.95E+02	2.72E+02	5.53E+02	1.90E-04	1.58E-04	5.53E+02	2.72E+02	4.66E+02	8.37E+02	1.90E-04	1.58E-04	8.37E+02	4.66E+02
Potassium	1.50E+03	1.57E+03	8.01E-05	6.65E-05	1.57E+03	1.50E+03	7.13E+02	1.45E+03	8.65E-05	7.19E-05	1.45E+03	7.13E+02	9.80E+02	1.76E+03	8.64E-05	7.17E-05	1.76E+03	9.80E+02
Selenium	1.00E-01	1.05E-01	4.00E-07	3.32E-07	1.05E-01	1.00E-01	1.00E-01	2.03E-01	4.33E-07	3.59E-07	2.03E-01	1.00E-01	1.00E-01	1.80E-01	4.32E-07	3.59E-07	1.80E-01	1.00E-01
Silver	5.00E-03	5.24E-03	8.01E-08	6.65E-08	5.24E-03	5.00E-03	5.00E-03	1.02E-02	8.65E-08	7.19E-08	1.02E-02	5.00E-03	5.00E-03	8.98E-03	8.64E-08	7.17E-08	8.98E-03	5.00E-03
Sodium	6.10E+02	6.40E+02	2.00E-04	1.66E-04	6.40E+02	6.10E+02	2.35E+02	4.78E+02	2.16E-04	1.80E-04	4.78E+02	2.35E+02	5.25E+02	9.43E+02	2.16E-04	1.79E-04	9.43E+02	5.25E+02
Strontium	1.78E+01	1.87E+01	1.12E-05	9.31E-06	1.87E+01	1.78E+01	6.15E+00	1.25E+01	1.21E-05	1.01E-05	1.25E+01	6.15E+00	3.93E+00	7.06E+00	1.21E-05	1.00E-05	7.06E+00	3.93E+00
Thallium	5.00E-03	5.24E-03	8.01E-08	6.65E-08	5.24E-03	5.00E-03	5.00E-03	1.02E-02	8.65E-08	7.19E-08	1.02E-02	5.00E-03	5.00E-03	8.98E-03	8.64E-08	7.17E-08	8.98E-03	5.00E-03
Tin	2.50E-02	2.62E-02	1.60E-06	1.33E-06	2.62E-02	2.50E-02	2.50E-02	5.08E-02	1.73E-06	1.44E-06	5.08E-02	2.50E-02	2.50E-02	4.49E-02	1.73E-06	1.43E-06	4.49E-02	2.50E-02
Titanium	2.17E+00	2.28E+00	1.76E-03	1.46E-03	2.28E+00	2.17E+00	4.70E+00	9.55E+00	1.90E-03	1.58E-03	9.55E+00	4.70E+00	6.70E+00	1.20E+01	1.90E-03	1.58E-03	1.20E+01	6.70E+00
Uranium	1.00E-03	1.05E-03	8.01E-08	6.65E-08	1.05E-03	1.00E-03	5.95E-02	1.21E-01	8.65E-08	7.19E-08	1.21E-01	5.95E-02	1.56E-02	2.80E-02	8.64E-08	7.17E-08	2.80E-02	1.56E-02
Vanadium	1.00E-01	1.05E-01	8.01E-05	6.65E-05	1.05E-01	1.00E-01	1.70E-01	3.46E-01	8.65E-05	7.19E-05	3.46E-01	1.70E-01	4.20E-01	7.54E-01	8.64E-05	7.17E-05	7.54E-01	4.20E-01
Zinc	3.48E+01	3.65E+01	4.72E-05	3.92E-05	3.65E+01	3.48E+01	1.52E+01	3.09E+01	5.11E-05	4.24E-05	3.09E+01	1.52E+01	2.24E+01	4.02E+01	5.10E-05	4.23E-05	4.02E+01	2.24E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)					
Sample ID	LICHEN 9 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	4.49E+01	8.41E+01	2.51E-02	2.08E-02	8.41E+01	4.49E+01
Antimony	5.00E-03	9.36E-03	8.64E-08	7.17E-08	9.36E-03	5.00E-03
Arsenic	3.90E-02	7.30E-02	4.32E-07	3.59E-07	7.30E-02	3.90E-02
Barium	8.12E+00	1.52E+01	2.59E-06	2.15E-06	1.52E+01	8.12E+00
Beryllium	5.00E-02	9.36E-02	2.85E-07	2.37E-07	9.36E-02	5.00E-02
Bismuth	1.50E-02	2.81E-02	8.64E-08	7.17E-08	2.81E-02	1.50E-02
Cadmium	4.33E-02	8.11E-02	8.64E-08	7.17E-08	8.11E-02	4.33E-02
Calcium	3.17E+03	5.94E+03	2.76E-02	2.30E-02	5.94E+03	3.17E+03
Chromium	1.22E+00	2.28E+00	1.30E-04	1.08E-04	2.28E+00	1.22E+00
Cobalt	1.70E-01	3.18E-01	3.02E-05	2.51E-05	3.18E-01	1.70E-01
Copper	1.41E+00	2.64E+00	9.50E-05	7.89E-05	2.64E+00	1.41E+00
Iron	5.93E+01	1.11E+02	4.23E-02	3.52E-02	1.11E+02	5.93E+01
Lead	1.07E-01	2.00E-01	5.18E-07	4.30E-07	2.00E-01	1.07E-01
Magnesium	8.10E+02	1.52E+03	1.99E-02	1.65E-02	1.52E+03	8.10E+02
Manganese	5.56E+01	1.04E+02	8.04E-04	6.67E-04	1.04E+02	5.56E+01
Mercury	1.73E-02	3.24E-02	8.64E-09	7.17E-09	3.24E-02	1.73E-02
Molybdenum	2.40E-02	4.49E-02	4.32E-07	3.59E-07	4.49E-02	2.40E-02
Nickel	6.30E-01	1.18E+00	6.22E-05	5.17E-05	1.18E+00	6.30E-01
Phosphorus	3.12E+02	5.84E+02	1.90E-04	1.58E-04	5.84E+02	3.12E+02
Potassium	9.00E+02	1.69E+03	8.64E-05	7.17E-05	1.69E+03	9.00E+02
Selenium	1.00E-01	1.87E-01	4.32E-07	3.59E-07	1.87E-01	1.00E-01
Silver	5.00E-03	9.36E-03	8.64E-08	7.17E-08	9.36E-03	5.00E-03
Sodium	2.89E+02	5.41E+02	2.16E-04	1.79E-04	5.41E+02	2.89E+02
Strontium	1.04E+01	1.95E+01	1.21E-05	1.00E-05	1.95E+01	1.04E+01
Thallium	5.00E-03	9.36E-03	8.64E-08	7.17E-08	9.36E-03	5.00E-03
Tin	2.50E-02	4.68E-02	1.73E-06	1.43E-06	4.68E-02	2.50E-02
Titanium	3.21E+00	6.01E+00	1.90E-03	1.58E-03	6.01E+00	3.21E+00
Uranium	5.00E-03	9.36E-03	8.64E-08	7.17E-08	9.36E-03	5.00E-03
Vanadium	1.60E-01	3.00E-01	8.64E-05	7.17E-05	3.00E-01	1.60E-01
Zinc	1.97E+01	3.69E+01	5.10E-05	4.23E-05	3.69E+01	1.97E+01

Species	Lichen (Flavocetraria culcullata)					
Sample ID	LICHEN 10 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	2.62E+01	2.87E+01	4.15E-01	3.44E-01	2.91E+01	2.65E+01
Antimony	5.00E-03	5.48E-03	1.43E-06	1.19E-06	5.48E-03	5.00E-03
Arsenic	4.00E-02	4.39E-02	7.15E-06	5.94E-06	4.39E-02	4.00E-02
Barium	1.32E+01	1.45E+01	4.29E-05	3.56E-05	1.45E+01	1.32E+01
Beryllium	5.00E-02	5.48E-02	4.72E-06	3.92E-06	5.48E-02	5.00E-02
Bismuth	1.50E-02	1.65E-02	1.43E-06	1.19E-06	1.65E-02	1.50E-02
Cadmium	1.53E-01	1.68E-01	1.43E-06	1.19E-06	1.68E-01	1.53E-01
Calcium	6.82E+03	7.48E+03	4.58E-01	3.80E-01	7.48E+03	6.82E+03
Chromium	5.80E-01	6.36E-01	2.15E-03	1.78E-03	6.38E-01	5.82E-01
Cobalt	9.80E-02	1.07E-01	5.01E-04	4.16E-04	1.08E-01	9.84E-02
Copper	9.30E-01	1.02E+00	1.57E-03	1.31E-03	1.02E+00	9.31E-01
Iron	2.85E+01	3.13E+01	7.01E-01	5.82E-01	3.18E+01	2.90E+01
Lead	1.97E-01	2.16E-01	8.58E-06	7.13E-06	2.16E-01	1.97E-01
Magnesium	8.29E+02	9.09E+02	3.29E-01	2.73E-01	9.09E+02	8.29E+02
Manganese	1.40E+02	1.54E+02	1.33E-02	1.10E-02	1.54E+02	1.40E+02
Mercury	4.72E-02	5.18E-02	1.43E-07	1.19E-07	5.18E-02	4.72E-02
Molybdenum	3.90E-02	4.28E-02	7.15E-06	5.94E-06	4.28E-02	3.90E-02
Nickel	4.50E-01	4.94E-01	1.03E-03	8.55E-04	4.94E-01	4.51E-01
Phosphorus	5.53E+02	6.06E+02	3.15E-03	2.61E-03	6.06E+02	5.53E+02
Potassium	1.76E+03	1.93E+03	1.43E-03	1.19E-03	1.93E+03	1.76E+03
Selenium	1.00E-01	1.10E-01	7.15E-06	5.94E-06	1.10E-01	1.00E-01
Silver	5.00E-03	5.48E-03	1.43E-06	1.19E-06	5.48E-03	5.00E-03
Sodium	5.10E+02	5.59E+02	3.58E-03	2.97E-03	5.59E+02	5.10E+02
Strontium	1.14E+01	1.25E+01	2.00E-04	1.66E-04	1.25E+01	1.14E+01
Thallium	5.00E-03	5.48E-03	1.43E-06	1.19E-06	5.48E-03	5.00E-03
Tin	2.50E-02	2.74E-02	2.86E-05	2.38E-05	2.74E-02	2.50E-02
Titanium	2.40E+00	2.63E+00	3.15E-02	2.61E-02	2.66E+00	2.42E+00
Uranium	4.10E-03	4.50E-03	1.43E-06	1.19E-06	4.50E-03	4.10E-03
Vanadium	5.00E-02	5.48E-02	1.43E-03	1.19E-03	5.60E-02	5.11E-02
Zinc	2.70E+01	2.96E+01	8.44E-04	7.01E-04	2.96E+01	2.70E+01

Species	Lichen (Flavocetraria culcullata)					
Sample ID	SITE 11 - F. CUCULATTA (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals						
Aluminum	7.82E+01	9.05E+01	2.28E-02	1.89E-02	9.05E+01	7.82E+01
Antimony	5.00E-03	5.79E-03	7.86E-08	6.53E-08	5.79E-03	5.00E-03
Arsenic	5.30E-02	6.13E-02	3.93E-07	3.26E-07	6.13E-02	5.30E-02
Barium	8.57E+00	9.92E+00	2.36E-06	1.96E-06	9.92E+00	8.57E+00
Beryllium	5.00E-02	5.79E-02	2.59E-07	2.15E-07	5.79E-02	5.00E-02
Bismuth	1.50E-02	1.74E-02	7.86E-08	6.53E-08	1.74E-02	1.50E-02
Cadmium	2.18E-02	2.52E-02	7.86E-08	6.53E-08	2.52E-02	2.18E-02
Calcium	9.71E+02	1.12E+03	2.51E-02	2.09E-02	1.12E+03	9.71E+02
Chromium	1.68E+00	1.94E+00	1.18E-04	9.79E-05	1.94E+00	1.68E+00
Cobalt	6.50E-02	7.52E-02	2.75E-05	2.28E-05	7.53E-02	6.50E-02
Copper	8.21E-01	9.50E-01	8.64E-05	7.18E-05	9.50E-01	8.21E-01
Iron	7.06E+01	8.17E+01	3.85E-02	3.20E-02	8.17E+01	7.06E+01
Lead	2.01E-01	2.33E-01	4.72E-07	3.92E-07	2.33E-01	2.01E-01
Magnesium	3.62E+02	4.19E+02	1.81E-02	1.50E-02	4.19E+02	3.62E+02
Manganese	6.98E+01	8.08E+01	7.31E-04	6.07E-04	8.08E+01	6.98E+01
Mercury	2.49E-02	2.88E-02	7.86E-09	6.53E-09	2.88E-02	2.49E-02
Molybdenum	3.30E-02	3.82E-02	3.93E-07	3.26E-07	3.82E-02	3.30E-02
Nickel	7.90E-01	9.14E-01	5.66E-05	4.70E-05	9.14E-01	7.90E-01
Phosphorus	3.80E+02	4.40E+02	1.73E-04	1.44E-04	4.40E+02	3.80E+02
Potassium	1.45E+03	1.68E+03	7.86E-05	6.53E-05	1.68E+03	1.45E+03
Selenium	1.00E-01	1.16E-01	3.93E-07	3.26E-07	1.16E-01	1.00E-01
Silver	5.00E-03	5.79E-03	7.86E-08	6.53E-08	5.79E-03	5.00E-03
Sodium	4.75E+02	5.50E+02	1.96E-04	1.63E-04	5.50E+02	4.75E+02
Strontium	2.50E+00	2.89E+00	1.10E-05	9.14E-06	2.89E+00	2.50E+00
Thallium	5.00E-03	5.79E-03	7.86E-08	6.53E-08	5.79E-03	5.00E-03
Tin	2.50E-02	2.89E-02	1.57E-06	1.31E-06	2.89E-02	2.50E-02
Titanium	3.81E+00	4.41E+00	1.73E-03	1.44E-03	4.41E+00	3.81E+00
Uranium	9.90E-03	1.15E-02	7.86E-08	6.53E-08	1.15E-02	9.90E-03
Vanadium	1.60E-01	1.85E-01	7.86E-05	6.53E-05	1.85E-01	1.60E-01
Zinc	1.68E+01	1.94E+01	4.64E-05	3.85E-05	1.94E+01	1.68E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables). Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.*

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria culcullata)					
Sample ID	SITE 12 - F. CUCULATTA (no soil match)						SITE 13 - F. CUCULATTA (no soil match)						SITE 14 - F CUCULATTA. (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.10E+02	1.24E+02	2.27E-02	1.89E-02	1.24E+02	1.10E+02	8.18E+01	9.13E+01	2.38E-02	1.97E-02	9.13E+01	8.18E+01	4.76E+01	5.36E+01	2.34E-02	1.94E-02	5.36E+01	4.76E+01
Antimony	5.00E-03	5.66E-03	7.84E-08	6.51E-08	5.66E-03	5.00E-03	5.00E-03	5.58E-03	8.20E-08	6.81E-08	5.58E-03	5.00E-03	5.00E-03	5.63E-03	8.08E-08	6.71E-08	5.63E-03	5.00E-03
Arsenic	7.50E-02	8.48E-02	3.92E-07	3.26E-07	8.48E-02	7.50E-02	5.70E-02	6.36E-02	4.10E-07	3.40E-07	6.36E-02	5.70E-02	4.10E-02	4.62E-02	4.04E-07	3.35E-07	4.62E-02	4.10E-02
Barium	8.43E+00	9.54E+00	2.35E-06	1.95E-06	9.54E+00	8.43E+00	1.21E+01	1.35E+01	2.46E-06	2.04E-06	1.35E+01	1.21E+01	1.69E+01	1.90E+01	2.42E-06	2.01E-06	1.90E+01	1.69E+01
Beryllium	5.00E-02	5.66E-02	2.59E-07	2.15E-07	5.66E-02	5.00E-02	5.00E-02	5.58E-02	2.71E-07	2.25E-07	5.58E-02	5.00E-02	5.00E-02	5.63E-02	2.67E-07	2.21E-07	5.63E-02	5.00E-02
Bismuth	1.50E-02	1.70E-02	7.84E-08	6.51E-08	1.70E-02	1.50E-02	1.50E-02	1.67E-02	8.20E-08	6.81E-08	1.67E-02	1.50E-02	1.50E-02	1.69E-02	8.08E-08	6.71E-08	1.69E-02	1.50E-02
Cadmium	1.60E-02	1.81E-02	7.84E-08	6.51E-08	1.81E-02	1.60E-02	7.79E-02	8.69E-02	8.20E-08	6.81E-08	8.69E-02	7.79E-02	4.33E-02	4.88E-02	8.08E-08	6.71E-08	4.88E-02	4.33E-02
Calcium	3.26E+02	3.69E+02	2.51E-02	2.08E-02	3.69E+02	3.26E+02	2.68E+03	2.99E+03	2.62E-02	2.18E-02	2.99E+03	2.68E+03	2.40E+03	2.70E+03	2.58E-02	2.15E-02	2.70E+03	2.40E+03
Chromium	4.81E+00	5.44E+00	1.18E-04	9.77E-05	5.44E+00	4.81E+00	1.38E+00	1.54E+00	1.23E-04	1.02E-04	1.54E+00	1.38E+00	1.04E+00	1.17E+00	1.21E-04	1.01E-04	1.17E+00	1.04E+00
Cobalt	1.35E-01	1.53E-01	2.75E-05	2.28E-05	1.53E-01	1.35E-01	1.77E-01	1.98E-01	2.87E-05	2.38E-05	1.98E-01	1.77E-01	9.30E-02	1.05E-01	2.83E-05	2.35E-05	1.05E-01	9.30E-02
Copper	1.23E+00	1.39E+00	8.63E-05	7.16E-05	1.39E+00	1.23E+00	6.83E-01	7.62E-01	9.02E-05	7.49E-05	7.62E-01	6.83E-01	6.11E-01	6.88E-01	8.88E-05	7.38E-05	6.88E-01	6.11E-01
Iron	1.49E+02	1.69E+02	3.84E-02	3.19E-02	1.69E+02	1.49E+02	6.85E+01	7.65E+01	4.02E-02	3.34E-02	7.65E+01	6.85E+01	3.61E+01	4.07E+01	3.96E-02	3.29E-02	4.07E+01	3.61E+01
Lead	1.17E-01	1.32E-01	4.71E-07	3.91E-07	1.32E-01	1.17E-01	3.11E-01	3.47E-01	4.92E-07	4.08E-07	3.47E-01	3.11E-01	2.70E-01	3.04E-01	4.85E-07	4.02E-07	3.04E-01	2.70E-01
Magnesium	4.47E+02	5.06E+02	1.80E-02	1.50E-02	5.06E+02	4.47E+02	9.11E+02	1.02E+03	1.89E-02	1.57E-02	1.02E+03	9.11E+02	6.74E+02	7.59E+02	1.86E-02	1.54E-02	7.59E+02	6.74E+02
Manganese	3.76E+01	4.25E+01	7.29E-04	6.06E-04	4.25E+01	3.76E+01	5.49E+01	6.13E+01	7.62E-04	6.33E-04	6.13E+01	5.49E+01	8.10E+01	9.12E+01	7.51E-04	6.24E-04	9.12E+01	8.10E+01
Mercury	5.00E-04	5.66E-04	7.84E-09	6.51E-09	5.66E-04	5.00E-04	2.36E-02	2.63E-02	8.20E-09	6.81E-09	2.63E-02	2.36E-02	6.60E-03	7.43E-03	8.08E-09	6.71E-09	7.43E-03	6.60E-03
Molybdenum	4.90E-02	5.54E-02	3.92E-07	3.26E-07	5.54E-02	4.90E-02	3.30E-02	3.68E-02	4.10E-07	3.40E-07	3.68E-02	3.30E-02	3.00E-02	3.38E-02	4.04E-07	3.35E-07	3.38E-02	3.00E-02
Nickel	2.01E+00	2.27E+00	5.65E-05	4.69E-05	2.27E+00	2.01E+00	6.80E-01	7.59E-01	5.90E-05	4.90E-05	7.59E-01	6.80E-01	4.30E-01	4.84E-01	5.81E-05	4.83E-05	4.84E-01	4.30E-01
Phosphorus	4.50E+02	5.09E+02	1.73E-04	1.43E-04	5.09E+02	4.50E+02	3.00E+02	3.35E+02	1.80E-04	1.50E-04	3.35E+02	3.00E+02	4.19E+02	4.72E+02	1.78E-04	1.48E-04	4.72E+02	4.19E+02
Potassium	1.52E+03	1.72E+03	7.84E-05	6.51E-05	1.72E+03	1.52E+03	1.24E+03	1.38E+03	8.20E-05	6.81E-05	1.38E+03	1.24E+03	1.50E+03	1.69E+03	8.08E-05	6.71E-05	1.69E+03	1.50E+03
Selenium	1.00E-01	1.13E-01	3.92E-07	3.26E-07	1.13E-01	1.00E-01	1.00E-01	1.12E-01	4.10E-07	3.40E-07	1.12E-01	1.00E-01	1.00E-01	1.13E-01	4.04E-07	3.35E-07	1.13E-01	1.00E-01
Silver	5.00E-03	5.66E-03	7.84E-08	6.51E-08	5.66E-03	5.00E-03	5.00E-03	5.58E-03	8.20E-08	6.81E-08	5.58E-03	5.00E-03	5.00E-03	5.63E-03	8.08E-08	6.71E-08	5.63E-03	5.00E-03
Sodium	5.28E+02	5.97E+02	1.96E-04	1.63E-04	5.97E+02	5.28E+02	3.24E+02	3.62E+02	2.05E-04	1.70E-04	3.62E+02	3.24E+02	3.39E+02	3.82E+02	2.02E-04	1.68E-04	3.82E+02	3.39E+02
Strontium	2.97E+00	3.36E+00	1.10E-05	9.12E-06	3.36E+00	2.97E+00	1.15E+01	1.28E+01	1.15E-05	9.53E-06	1.28E+01	1.15E+01	6.04E+00	6.80E+00	1.13E-05	9.39E-06	6.80E+00	6.04E+00
Thallium	1.60E-02	1.81E-02	7.84E-08	6.51E-08	1.81E-02	1.60E-02	5.00E-03	5.58E-03	8.20E-08	6.81E-08	5.58E-03	5.00E-03	5.00E-03	5.63E-03	8.08E-08	6.71E-08	5.63E-03	5.00E-03
Tin	2.50E-02	2.83E-02	1.57E-06	1.30E-06	2.83E-02	2.50E-02	2.50E-02	2.79E-02	1.64E-06	1.36E-06	2.79E-02	2.50E-02	2.50E-02	2.82E-02	1.62E-06	1.34E-06	2.82E-02	2.50E-02
Titanium	7.88E+00	8.91E+00	1.73E-03	1.43E-03	8.92E+00	7.88E+00	5.18E+00	5.78E+00	1.80E-03	1.50E-03	5.78E+00	5.18E+00	2.46E+00	2.77E+00	1.78E-03	1.48E-03	2.77E+00	2.46E+00
Uranium	1.00E-03	1.13E-03	7.84E-08	6.51E-08	1.13E-03	1.00E-03	1.45E-02	1.62E-02	8.20E-08	6.81E-08	1.62E-02	1.45E-02	9.50E-03	1.07E-02	8.08E-08	6.71E-08	1.07E-02	9.50E-03
Vanadium	2.80E-01	3.17E-01	7.84E-05	6.51E-05	3.17E-01	2.80E-01	1.70E-01	1.90E-01	8.20E-05	6.81E-05	1.90E-01	1.70E-01	1.00E-01	1.13E-01	8.08E-05	6.71E-05	1.13E-01	1.00E-01
Zinc	1.94E+01	2.19E+01	4.63E-05	3.84E-05	2.19E+01	1.94E+01	2.34E+01	2.61E+01	4.84E-05	4.02E-05	2.61E+01	2.34E+01	2.01E+01	2.26E+01	4.76E-05	3.96E-05	2.26E+01	2.01E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria culcullata)						Lichen (Flavocetraria nivalis)					
Sample ID	SITE 15 - F. CUCULATTA (no soil match)						D63 FLAVOCETRARIA NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals												
Aluminum	9.86E+01	1.22E+02	2.29E-02	1.90E-02	1.22E+02	9.86E+01	3.87E+01	4.77E+01	2.76E-02	2.29E-02	4.77E+01	3.87E+01
Antimony	5.00E-03	6.20E-03	7.90E-08	6.56E-08	6.20E-03	5.00E-03	2.80E-03	3.45E-03	9.52E-08	7.91E-08	3.45E-03	2.80E-03
Arsenic	7.00E-02	8.67E-02	3.95E-07	3.28E-07	8.67E-02	7.00E-02	2.31E-02	2.84E-02	4.76E-07	3.95E-07	2.84E-02	2.31E-02
Barium	1.28E+01	1.59E+01	2.37E-06	1.97E-06	1.59E+01	1.28E+01	1.11E+01	1.37E+01	2.86E-06	2.37E-06	1.37E+01	1.11E+01
Beryllium	5.00E-02	6.20E-02	2.61E-07	2.17E-07	6.20E-02	5.00E-02	2.50E-03	3.08E-03	3.14E-07	2.61E-07	3.08E-03	2.50E-03
Bismuth	1.50E-02	1.86E-02	7.90E-08	6.56E-08	1.86E-02	1.50E-02	1.00E-03	1.23E-03	9.52E-08	7.91E-08	1.23E-03	1.00E-03
Cadmium	9.86E-02	1.22E-01	7.90E-08	6.56E-08	1.22E-01	9.86E-02	6.14E-02	7.56E-02	9.52E-08	7.91E-08	7.56E-02	6.14E-02
Calcium	3.08E+03	3.82E+03	2.53E-02	2.10E-02	3.82E+03	3.08E+03	3.67E+03	4.52E+03	3.05E-02	2.53E-02	4.52E+03	3.67E+03
Chromium	1.61E+00	2.00E+00	1.19E-04	9.84E-05	2.00E+00	1.61E+00	4.54E-01	5.59E-01	1.43E-04	1.19E-04	5.59E-01	4.54E-01
Cobalt	1.85E-01	2.29E-01	2.77E-05	2.30E-05	2.29E-01	1.85E-01	1.44E-01	1.77E-01	3.33E-05	2.77E-05	1.77E-01	1.44E-01
Copper	1.86E+00	2.30E+00	8.69E-05	7.22E-05	2.30E+00	1.86E+00	5.61E-01	6.91E-01	1.05E-04	8.70E-05	6.91E-01	5.61E-01
Iron	1.06E+02	1.31E+02	3.87E-02	3.22E-02	1.31E+02	1.06E+02	4.26E+01	5.25E+01	4.67E-02	3.87E-02	5.25E+01	4.26E+01
Lead	6.03E-01	7.47E-01	4.74E-07	3.94E-07	7.47E-01	6.03E-01	3.65E-01	4.50E-01	5.71E-07	4.74E-07	4.50E-01	3.65E-01
Magnesium	8.97E+02	1.11E+03	1.82E-02	1.51E-02	1.11E+03	8.97E+02	9.68E+02	1.19E+03	2.19E-02	1.82E-02	1.19E+03	9.68E+02
Manganese	4.08E+01	5.06E+01	7.35E-04	6.10E-04	5.06E+01	4.08E+01	8.86E+01	1.09E+02	8.86E-04	7.35E-04	1.09E+02	8.86E+01
Mercury	3.70E-02	4.58E-02	7.90E-09	6.56E-09	4.58E-02	3.70E-02	3.26E-02	4.01E-02	9.52E-09	7.91E-09	4.01E-02	3.26E-02
Molybdenum	3.80E-02	4.71E-02	3.95E-07	3.28E-07	4.71E-02	3.80E-02	2.60E-02	3.20E-02	4.76E-07	3.95E-07	3.20E-02	2.60E-02
Nickel	8.90E-01	1.10E+00	5.69E-05	4.73E-05	1.10E+00	8.90E-01	3.35E-01	4.13E-01	6.86E-05	5.69E-05	4.13E-01	3.35E-01
Phosphorus	2.35E+02	2.91E+02	1.74E-04	1.44E-04	2.91E+02	2.35E+02	5.20E+02	6.40E+02	2.09E-04	1.74E-04	6.40E+02	5.20E+02
Potassium	9.62E+02	1.19E+03	7.90E-05	6.56E-05	1.19E+03	9.62E+02	1.56E+03	1.92E+03	9.52E-05	7.91E-05	1.92E+03	1.56E+03
Selenium	1.00E-01	1.24E-01	3.95E-07	3.28E-07	1.24E-01	1.00E-01	6.00E-02	7.39E-02	4.76E-07	3.95E-07	7.39E-02	6.00E-02
Silver	5.00E-03	6.20E-03	7.90E-08	6.56E-08	6.20E-03	5.00E-03	1.04E-02	1.28E-02	9.52E-08	7.91E-08	1.28E-02	1.04E-02
Sodium	2.64E+02	3.27E+02	1.98E-04	1.64E-04	3.27E+02	2.64E+02	3.50E+02	4.31E+02	2.38E-04	1.98E-04	4.31E+02	3.50E+02
Strontium	1.36E+01	1.69E+01	1.11E-05	9.19E-06	1.69E+01	1.36E+01	7.82E+00	9.63E+00	1.33E-05	1.11E-05	9.63E+00	7.82E+00
Thallium	5.00E-03	6.20E-03	7.90E-08	6.56E-08	6.20E-03	5.00E-03	4.64E-03	5.71E-03	9.52E-08	7.91E-08	5.71E-03	4.64E-03
Tin	2.50E-02	3.10E-02	1.58E-06	1.31E-06	3.10E-02	2.50E-02	1.58E-02	1.95E-02	1.90E-06	1.58E-06	1.95E-02	1.58E-02
Titanium	6.22E+00	7.71E+00	1.74E-03	1.44E-03	7.71E+00	6.22E+00	3.29E+00	4.05E+00	2.09E-03	1.74E-03	4.05E+00	3.29E+00
Uranium	2.65E-02	3.28E-02	7.90E-08	6.56E-08	3.28E-02	2.65E-02	2.36E-03	2.91E-03	9.52E-08	7.91E-08	2.91E-03	2.36E-03
Vanadium	2.40E-01	2.97E-01	7.90E-05	6.56E-05	2.97E-01	2.40E-01	1.05E-01	1.29E-01	9.52E-05	7.91E-05	1.29E-01	1.05E-01
Zinc	1.80E+01	2.23E+01	4.66E-05	3.87E-05	2.23E+01	1.80E+01	3.06E+01	3.77E+01	5.62E-05	4.66E-05	3.77E+01	3.06E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)					
Sample ID	D65 FLAVOCETRARIA NIVALIS									D62 FLAVOCETRARIA NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	3.99E+01	4.41E+01	2.65E+03	1.66E-02	4.42E+01	2.91E-02	2.42E-02	4.42E+01	4.00E+01	6.07E+01	9.45E+01	2.76E-02	2.29E-02	9.46E+01	6.07E+01
Antimony	2.50E-03	2.76E-03	5.00E+00	5.53E-04	2.76E-03	1.00E-07	8.34E-08	2.76E-03	2.50E-03	5.40E-03	8.41E-03	9.52E-08	7.91E-08	8.41E-03	5.40E-03
Arsenic	3.33E-02	3.68E-02	2.50E+00	1.47E-02	3.68E-02	5.02E-07	4.17E-07	3.68E-02	3.33E-02	1.03E-01	1.60E-01	4.76E-07	3.95E-07	1.60E-01	1.03E-01
Barium	2.09E+01	2.31E+01	1.66E+01	1.39E+00	2.31E+01	3.01E-06	2.50E-06	2.31E+01	2.09E+01	1.39E+01	2.17E+01	2.86E-06	2.37E-06	2.17E+01	1.39E+01
Beryllium	3.00E-03	3.32E-03	2.50E-01	1.33E-02	3.32E-03	3.31E-07	2.75E-07	3.32E-03	3.00E-03	4.30E-03	6.70E-03	3.14E-07	2.61E-07	6.70E-03	4.30E-03
Bismuth	1.00E-03	1.11E-03	1.00E+01	1.11E-04	1.11E-03	1.00E-07	8.34E-08	1.11E-03	1.00E-03	2.20E-03	3.43E-03	9.52E-08	7.91E-08	3.43E-03	2.20E-03
Cadmium	6.49E-02	7.17E-02	2.50E-01	2.87E-01	7.17E-02	1.00E-07	8.34E-08	7.17E-02	6.49E-02	5.00E-02	7.79E-02	9.52E-08	7.91E-08	7.79E-02	5.00E-02
Calcium	5.01E+03	5.54E+03	1.44E+03	3.84E+00	5.55E+03	3.21E-02	2.67E-02	5.55E+03	5.02E+03	4.57E+03	7.12E+03	3.05E-02	2.53E-02	7.12E+03	4.57E+03
Chromium	5.87E-01	6.49E-01	8.82E+00	7.37E-02	6.50E-01	1.51E-04	1.25E-04	6.50E-01	5.88E-01	6.83E-01	1.06E+00	1.43E-04	1.19E-04	1.06E+00	6.83E-01
Cobalt	2.05E-01	2.27E-01	1.00E+00	2.27E-01	2.28E-01	3.52E-05	2.92E-05	2.28E-01	2.06E-01	2.40E-01	3.74E-01	3.33E-05	2.77E-05	3.74E-01	2.40E-01
Copper	6.31E-01	6.97E-01	5.21E+00	1.34E-01	6.99E-01	1.10E-04	9.17E-05	6.99E-01	6.33E-01	7.01E-01	1.09E+00	1.05E-04	8.70E-05	1.09E+00	7.01E-01
Iron	4.88E+01	5.39E+01	6.32E+03	8.55E-03	5.40E+01	4.92E-02	4.09E-02	5.40E+01	4.89E+01	8.79E+01	1.37E+02	4.67E-02	3.87E-02	1.37E+02	8.79E+01
Lead	3.20E-01	3.54E-01	1.50E+01	2.36E-02	3.54E-01	6.03E-07	5.00E-07	3.54E-01	3.20E-01	3.93E-01	6.12E-01	5.71E-07	4.74E-07	6.12E-01	3.93E-01
Magnesium	8.18E+02	9.04E+02	1.62E+03	5.58E-01	9.06E+02	2.31E-02	1.92E-02	9.06E+02	8.20E+02	6.83E+02	1.06E+03	2.19E-02	1.82E-02	1.06E+03	6.83E+02
Manganese	1.12E+02	1.24E+02	4.89E+01	2.54E+00	1.24E+02	9.34E-04	7.75E-04	1.24E+02	1.12E+02	9.27E+01	1.44E+02	8.86E-04	7.35E-04	1.44E+02	9.27E+01
Mercury	3.72E-02	4.11E-02	2.50E-03	1.64E+01	4.11E-02	1.00E-08	8.34E-09	4.11E-02	3.72E-02	2.38E-02	3.71E-02	9.52E-09	7.91E-09	3.71E-02	2.38E-02
Molybdenum	2.51E-02	2.77E-02	2.00E+00	1.39E-02	2.77E-02	5.02E-07	4.17E-07	2.77E-02	2.51E-02	2.51E-02	3.91E-02	4.76E-07	3.95E-07	3.91E-02	2.51E-02
Nickel	6.07E-01	6.71E-01	2.51E+00	2.68E-01	6.73E-01	7.23E-05	6.00E-05	6.73E-01	6.09E-01	5.78E-01	9.00E-01	6.86E-05	5.69E-05	9.00E-01	5.78E-01
Phosphorus	3.80E+02	4.20E+02	3.60E+02	1.17E+00	4.20E+02	2.21E-04	1.83E-04	4.20E+02	3.80E+02	2.70E+02	4.21E+02	2.09E-04	1.74E-04	4.21E+02	2.70E+02
Potassium	1.71E+03	1.89E+03	4.20E+02	4.50E+00	1.89E+03	1.00E-04	8.34E-05	1.89E+03	1.71E+03	1.03E+03	1.60E+03	9.52E-05	7.91E-05	1.60E+03	1.03E+03
Selenium	7.50E-02	8.29E-02	2.50E-01	3.32E-01	8.29E-02	5.02E-07	4.17E-07	8.29E-02	7.50E-02	1.00E-02	1.56E-02	4.76E-07	3.95E-07	1.56E-02	1.00E-02
Silver	8.10E-03	8.95E-03	1.00E+00	8.95E-03	8.95E-03	1.00E-07	8.34E-08	8.95E-03	8.10E-03	8.90E-03	1.39E-02	9.52E-08	7.91E-08	1.39E-02	8.90E-03
Sodium	4.50E+02	4.97E+02	1.00E+02	4.97E+00	4.97E+02	2.51E-04	2.08E-04	4.97E+02	4.50E+02	3.00E+02	4.67E+02	2.38E-04	1.98E-04	4.67E+02	3.00E+02
Strontium	1.04E+01	1.15E+01	6.58E+00	1.75E+00	1.15E+01	1.41E-05	1.17E-05	1.15E+01	1.04E+01	1.08E+01	1.68E+01	1.33E-05	1.11E-05	1.68E+01	1.08E+01
Thallium	1.38E-02	1.53E-02	5.00E-01	3.05E-02	1.53E-02	1.00E-07	8.34E-08	1.53E-02	1.38E-02	4.41E-03	6.87E-03	9.52E-08	7.91E-08	6.87E-03	4.41E-03
Tin	1.86E-02	2.06E-02	2.50E+00	8.22E-03	2.06E-02	2.01E-06	1.67E-06	2.06E-02	1.86E-02	2.38E-02	3.71E-02	1.90E-06	1.58E-06	3.71E-02	2.38E-02
Titanium	2.64E+00	2.92E+00	2.31E+02	1.26E-02	2.92E+00	2.21E-03	1.83E-03	2.92E+00	2.65E+00	5.84E+00	9.10E+00	2.09E-03	1.74E-03	9.10E+00	5.84E+00
Uranium	8.51E-03	9.40E-03	4.22E-01	2.23E-02	9.40E-03	1.00E-07	8.34E-08	9.40E-03	8.51E-03	9.49E-03	1.48E-02	9.52E-08	7.91E-08	1.48E-02	9.49E-03
Vanadium	1.30E-01	1.44E-01	1.43E+01	1.00E-02	1.44E-01	1.00E-04	8.34E-05	1.44E-01	1.30E-01	1.79E-01	2.79E-01	9.52E-05	7.91E-05	2.79E-01	1.79E-01
Zinc	2.34E+01	2.59E+01	7.81E+00	3.32E+00	2.59E+01	5.93E-05	4.92E-05	2.59E+01	2.34E+01	1.61E+01	2.51E+01	5.62E-05	4.66E-05	2.51E+01	1.61E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	D89 FLAVOCETRARIA NIVALIS (no soil match)						D97 FLAVOCETRARIA NIVALIS (no soil match)						D93 FLAVOCETRARIA NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.21E+01	2.70E+01	2.38E-02	1.98E-02	2.70E+01	2.21E+01	3.59E+01	4.05E+01	4.11E-02	3.41E-02	4.06E+01	3.59E+01	3.80E+01	4.58E+01	3.27E-02	2.71E-02	4.59E+01	3.80E+01
Antimony	2.00E-03	2.44E-03	8.20E-08	6.81E-08	2.44E-03	2.00E-03	2.70E-03	3.05E-03	1.42E-07	1.18E-07	3.05E-03	2.70E-03	2.20E-03	2.65E-03	1.13E-07	9.35E-08	2.65E-03	2.20E-03
Arsenic	2.77E-02	3.38E-02	4.10E-07	3.41E-07	3.38E-02	2.77E-02	3.68E-02	4.15E-02	7.08E-07	5.88E-07	4.15E-02	3.68E-02	2.30E-02	2.77E-02	5.63E-07	4.67E-07	2.77E-02	2.30E-02
Barium	6.28E+00	7.67E+00	2.46E-06	2.04E-06	7.67E+00	6.28E+00	1.45E+01	1.64E+01	4.25E-06	3.53E-06	1.64E+01	1.45E+01	5.77E+00	6.96E+00	3.38E-06	2.80E-06	6.96E+00	5.77E+00
Beryllium	1.00E-03	1.22E-03	2.71E-07	2.25E-07	1.22E-03	1.00E-03	2.60E-03	2.93E-03	4.67E-07	3.88E-07	2.93E-03	2.60E-03	1.00E-03	1.21E-03	3.72E-07	3.09E-07	1.21E-03	1.00E-03
Bismuth	1.00E-03	1.22E-03	8.20E-08	6.81E-08	1.22E-03	1.00E-03	2.10E-03	2.37E-03	1.42E-07	1.18E-07	2.37E-03	2.10E-03	1.00E-03	1.21E-03	1.13E-07	9.35E-08	1.21E-03	1.00E-03
Cadmium	1.15E-01	1.40E-01	8.20E-08	6.81E-08	1.40E-01	1.15E-01	6.29E-02	7.10E-02	1.42E-07	1.18E-07	7.10E-02	6.29E-02	9.42E-02	1.14E-01	1.13E-07	9.35E-08	1.14E-01	9.42E-02
Calcium	1.26E+04	1.54E+04	2.63E-02	2.18E-02	1.54E+04	1.26E+04	5.50E+03	6.21E+03	4.53E-02	3.76E-02	6.21E+03	5.50E+03	4.91E+03	5.92E+03	3.60E-02	2.99E-02	5.92E+03	4.91E+03
Chromium	2.90E-01	3.54E-01	1.23E-04	1.02E-04	3.54E-01	2.90E-01	4.21E-01	4.75E-01	2.12E-04	1.76E-04	4.75E-01	4.21E-01	2.52E-01	3.04E-01	1.69E-04	1.40E-04	3.04E-01	2.52E-01
Cobalt	2.83E-02	3.46E-02	2.87E-05	2.38E-05	3.46E-02	2.83E-02	1.42E-01	1.60E-01	4.96E-05	4.12E-05	1.60E-01	1.42E-01	1.29E-01	1.56E-01	3.94E-05	3.27E-05	1.56E-01	1.29E-01
Copper	6.49E-01	7.92E-01	9.02E-05	7.49E-05	7.93E-01	6.49E-01	5.92E-01	6.68E-01	1.56E-04	1.29E-04	6.68E-01	5.92E-01	5.12E-01	6.18E-01	1.24E-04	1.03E-04	6.18E-01	5.12E-01
Iron	2.70E+01	3.30E+01	4.02E-02	3.34E-02	3.30E+01	2.70E+01	4.20E+01	4.74E+01	6.94E-02	5.76E-02	4.75E+01	4.21E+01	3.08E+01	3.72E+01	5.52E-02	4.58E-02	3.72E+01	3.08E+01
Lead	1.97E-01	2.41E-01	4.92E-07	4.09E-07	2.41E-01	1.97E-01	3.03E-01	3.42E-01	8.50E-07	7.06E-07	3.42E-01	3.03E-01	3.48E-01	4.20E-01	6.76E-07	5.61E-07	4.20E-01	3.48E-01
Magnesium	5.85E+02	7.14E+02	1.89E-02	1.57E-02	7.14E+02	5.85E+02	8.34E+02	9.41E+02	3.26E-02	2.71E-02	9.41E+02	8.34E+02	8.51E+02	1.03E+03	2.59E-02	2.15E-02	1.03E+03	8.51E+02
Manganese	5.42E+01	6.62E+01	7.63E-04	6.33E-04	6.62E+01	5.42E+01	1.13E+02	1.28E+02	1.32E-03	1.09E-03	1.28E+02	1.13E+02	5.15E+01	6.21E+01	1.05E-03	8.70E-04	6.21E+01	5.15E+01
Mercury	2.53E-02	3.09E-02	8.20E-09	6.81E-09	3.09E-02	2.53E-02	3.20E-02	3.61E-02	1.42E-08	1.18E-08	3.61E-02	3.20E-02	2.62E-02	3.16E-02	1.13E-08	9.35E-09	3.16E-02	2.62E-02
Molybdenum	2.61E-02	3.19E-02	4.10E-07	3.41E-07	3.19E-02	2.61E-02	2.57E-02	2.90E-02	7.08E-07	5.88E-07	2.90E-02	2.57E-02	2.25E-02	2.71E-02	5.63E-07	4.67E-07	2.71E-02	2.25E-02
Nickel	2.24E-01	2.74E-01	5.91E-05	4.90E-05	2.74E-01	2.24E-01	3.69E-01	4.16E-01	1.02E-04	8.47E-05	4.17E-01	3.69E-01	3.51E-01	4.23E-01	8.11E-05	6.73E-05	4.23E-01	3.51E-01
Phosphorus	3.10E+02	3.79E+02	1.80E-04	1.50E-04	3.79E+02	3.10E+02	3.40E+02	3.84E+02	3.12E-04	2.59E-04	3.84E+02	3.40E+02	3.30E+02	3.98E+02	2.48E-04	2.06E-04	3.98E+02	3.30E+02
Potassium	1.21E+03	1.48E+03	8.20E-05	6.81E-05	1.48E+03	1.21E+03	1.39E+03	1.57E+03	1.42E-04	1.18E-04	1.57E+03	1.39E+03	1.17E+03	1.41E+03	1.13E-04	9.35E-05	1.41E+03	1.17E+03
Selenium	4.00E-02	4.88E-02	4.10E-07	3.41E-07	4.88E-02	4.00E-02	3.40E-02	3.84E-02	7.08E-07	5.88E-07	3.84E-02	3.40E-02	1.00E-02	1.21E-02	5.63E-07	4.67E-07	1.21E-02	1.00E-02
Silver	5.00E-03	6.11E-03	8.20E-08	6.81E-08	6.11E-03	5.00E-03	7.00E-03	7.90E-03	1.42E-07	1.18E-07	7.90E-03	7.00E-03	5.60E-03	6.76E-03	1.13E-07	9.35E-08	6.76E-03	5.60E-03
Sodium	3.50E+02	4.27E+02	2.05E-04	1.70E-04	4.27E+02	3.50E+02	4.50E+02	5.08E+02	3.54E-04	2.94E-04	5.08E+02	4.50E+02	4.00E+02	4.83E+02	2.82E-04	2.34E-04	4.83E+02	4.00E+02
Strontium	9.93E+00	1.21E+01	1.15E-05	9.54E-06	1.21E+01	9.93E+00	9.92E+00	1.12E+01	1.98E-05	1.65E-05	1.12E+01	9.92E+00	6.52E+00	7.86E+00	1.58E-05	1.31E-05	7.86E+00	6.52E+00
Thallium	1.41E-03	1.72E-03	8.20E-08	6.81E-08	1.72E-03	1.41E-03	3.78E-03	4.27E-03	1.42E-07	1.18E-07	4.27E-03	3.78E-03	2.01E-03	2.42E-03	1.13E-07	9.35E-08	2.42E-03	2.01E-03
Tin	1.94E-02	2.37E-02	1.64E-06	1.36E-06	2.37E-02	1.94E-02	4.45E-02	5.02E-02	2.83E-06	2.35E-06	5.02E-02	4.45E-02	3.02E-02	3.64E-02	2.25E-06	1.87E-06	3.64E-02	3.02E-02
Titanium	1.51E+00	1.84E+00	1.80E-03	1.50E-03	1.85E+00	1.51E+00	3.50E+00	3.95E+00	3.12E-03	2.59E-03	3.95E+00	3.50E+00	1.57E+00	1.89E+00	2.48E-03	2.06E-03	1.90E+00	1.57E+00
Uranium	1.91E-03	2.33E-03	8.20E-08	6.81E-08	2.33E-03	1.91E-03	4.42E-03	4.99E-03	1.42E-07	1.18E-07	4.99E-03	4.42E-03	1.90E-03	2.29E-03	1.13E-07	9.35E-08	2.29E-03	1.90E-03
Vanadium	5.96E-02	7.28E-02	8.20E-05	6.81E-05	7.28E-02	5.97E-02	1.03E-01	1.16E-01	1.42E-04	1.18E-04	1.16E-01	1.03E-01	6.24E-02	7.53E-02	1.13E-04	9.35E-05	7.54E-02	6.25E-02
Zinc	1.44E+01	1.76E+01	4.84E-05	4.02E-05	1.76E+01	1.44E+01	1.99E+01	2.25E+01	8.36E-05	6.94E-05	2.25E+01	1.99E+01	1.48E+01	1.79E+01	6.64E-05	5.52E-05	1.79E+01	1.48E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	D116 FLAVOCETRARIA NIVALIS (no soil match)						D86 FLAVOCETRARIA NIVALIS (no soil match)						D114 FLAVOCETRARIA NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.03E+01	3.60E+01	3.20E-02	2.66E-02	3.60E+01	3.03E+01	2.63E+01	2.92E+01	1.11E-01	9.24E-02	2.93E+01	2.64E+01	2.13E+01	3.35E+01	3.05E-02	2.54E-02	3.35E+01	2.13E+01
Antimony	3.70E-03	4.39E-03	1.10E-07	9.16E-08	4.39E-03	3.70E-03	2.80E-03	3.11E-03	3.84E-07	3.19E-07	3.11E-03	2.80E-03	3.10E-03	4.87E-03	1.05E-07	8.75E-08	4.87E-03	3.10E-03
Arsenic	3.08E-02	3.66E-02	5.51E-07	4.58E-07	3.66E-02	3.08E-02	3.95E-02	4.38E-02	1.92E-06	1.59E-06	4.38E-02	3.95E-02	2.08E-02	3.27E-02	5.27E-07	4.37E-07	3.27E-02	2.08E-02
Barium	2.04E+01	2.42E+01	3.31E-06	2.75E-06	2.42E+01	2.04E+01	1.33E+01	1.48E+01	1.15E-05	9.56E-06	1.48E+01	1.33E+01	8.65E+00	1.36E+01	3.16E-06	2.62E-06	1.36E+01	8.65E+00
Beryllium	3.40E-03	4.04E-03	3.64E-07	3.02E-07	4.04E-03	3.40E-03	1.00E-03	1.11E-03	1.27E-06	1.05E-06	1.11E-03	1.00E-03	1.00E-03	1.57E-03	3.48E-07	2.89E-07	1.57E-03	1.00E-03
Bismuth	1.00E-03	1.19E-03	1.10E-07	9.16E-08	1.19E-03	1.00E-03	1.00E-03	1.11E-03	3.84E-07	3.19E-07	1.11E-03	1.00E-03	1.00E-03	1.57E-03	1.05E-07	8.75E-08	1.57E-03	1.00E-03
Cadmium	6.75E-02	8.02E-02	1.10E-07	9.16E-08	8.02E-02	6.75E-02	4.78E-02	5.30E-02	3.84E-07	3.19E-07	5.30E-02	4.78E-02	6.87E-02	1.08E-01	1.05E-07	8.75E-08	1.08E-01	6.87E-02
Calcium	3.25E+03	3.86E+03	3.53E-02	2.93E-02	3.86E+03	3.25E+03	3.76E+03	4.17E+03	1.23E-01	1.02E-01	4.17E+03	3.76E+03	4.63E+03	7.28E+03	3.37E-02	2.80E-02	7.28E+03	4.63E+03
Chromium	2.87E-01	3.41E-01	1.65E-04	1.37E-04	3.41E-01	2.87E-01	5.53E-01	6.13E-01	5.75E-04	4.78E-04	6.14E-01	5.53E-01	1.10E+00	1.73E+00	1.58E-04	1.31E-04	1.73E+00	1.10E+00
Cobalt	1.40E-01	1.66E-01	3.86E-05	3.20E-05	1.66E-01	1.40E-01	7.21E-02	8.00E-02	1.34E-04	1.11E-04	8.01E-02	7.22E-02	7.30E-02	1.15E-01	3.69E-05	3.06E-05	1.15E-01	7.30E-02
Copper	5.69E-01	6.76E-01	1.21E-04	1.01E-04	6.76E-01	5.69E-01	6.97E-01	7.73E-01	4.22E-04	3.50E-04	7.74E-01	6.97E-01	5.33E-01	8.38E-01	1.16E-04	9.62E-05	8.38E-01	5.33E-01
Iron	3.29E+01	3.91E+01	5.40E-02	4.49E-02	3.91E+01	3.29E+01	2.83E+01	3.14E+01	1.88E-01	1.56E-01	3.15E+01	2.84E+01	2.88E+01	4.53E+01	5.16E-02	4.29E-02	4.53E+01	2.88E+01
Lead	2.97E-01	3.53E-01	6.62E-07	5.49E-07	3.53E-01	2.97E-01	1.85E-01	2.05E-01	2.30E-06	1.91E-06	2.05E-01	1.85E-01	2.40E-01	3.77E-01	6.32E-07	5.25E-07	3.77E-01	2.40E-01
Magnesium	7.48E+02	8.88E+02	2.54E-02	2.11E-02	8.88E+02	7.48E+02	7.68E+02	8.52E+02	8.82E-02	7.33E-02	8.52E+02	7.68E+02	5.61E+02	8.82E+02	2.42E-02	2.01E-02	8.82E+02	5.61E+02
Manganese	8.64E+01	1.03E+02	1.03E-03	8.52E-04	1.03E+02	8.64E+01	1.45E+02	1.61E+02	3.57E-03	2.96E-03	1.61E+02	1.45E+02	8.70E+01	1.37E+02	9.80E-04	8.13E-04	1.37E+02	8.70E+01
Mercury	2.80E-02	3.33E-02	1.10E-08	9.16E-09	3.33E-02	2.80E-02	3.60E-02	3.99E-02	3.84E-08	3.19E-08	3.99E-02	3.60E-02	2.67E-02	4.20E-02	1.05E-08	8.75E-09	4.20E-02	2.67E-02
Molybdenum	2.71E-02	3.22E-02	5.51E-07	4.58E-07	3.22E-02	2.71E-02	2.38E-02	2.64E-02	1.92E-06	1.59E-06	2.64E-02	2.38E-02	3.52E-02	5.53E-02	5.27E-07	4.37E-07	5.53E-02	3.52E-02
Nickel	2.73E-01	3.24E-01	7.94E-05	6.59E-05	3.24E-01	2.73E-01	3.29E-01	3.65E-01	2.76E-04	2.29E-04	3.65E-01	3.29E-01	6.06E-01	9.53E-01	7.58E-05	6.30E-05	9.53E-01	6.06E-01
Phosphorus	4.90E+02	5.82E+02	2.43E-04	2.01E-04	5.82E+02	4.90E+02	5.40E+02	5.99E+02	8.44E-04	7.01E-04	5.99E+02	5.40E+02	2.80E+02	4.40E+02	2.32E-04	1.92E-04	4.40E+02	2.80E+02
Potassium	1.59E+03	1.89E+03	1.10E-04	9.16E-05	1.89E+03	1.59E+03	1.90E+03	2.11E+03	3.84E-04	3.19E-04	2.11E+03	1.90E+03	1.12E+03	1.76E+03	1.05E-04	8.75E-05	1.76E+03	1.12E+03
Selenium	3.80E-02	4.51E-02	5.51E-07	4.58E-07	4.51E-02	3.80E-02	5.30E-02	5.88E-02	1.92E-06	1.59E-06	5.88E-02	5.30E-02	2.90E-02	4.56E-02	5.27E-07	4.37E-07	4.56E-02	2.90E-02
Silver	6.90E-03	8.19E-03	1.10E-07	9.16E-08	8.19E-03	6.90E-03	4.70E-03	5.21E-03	3.84E-07	3.19E-07	5.21E-03	4.70E-03	3.10E-03	4.87E-03	1.05E-07	8.75E-08	4.87E-03	3.10E-03
Sodium	4.00E+02	4.75E+02	2.76E-04	2.29E-04	4.75E+02	4.00E+02	4.00E+02	4.44E+02	9.59E-04	7.96E-04	4.44E+02	4.00E+02	3.50E+02	5.50E+02	2.63E-04	2.19E-04	5.50E+02	3.50E+02
Strontium	7.93E+00	9.42E+00	1.54E-05	1.28E-05	9.42E+00	7.93E+00	4.30E+00	4.77E+00	5.37E-05	4.46E-05	4.77E+00	4.30E+00	5.35E+00	8.41E+00	1.47E-05	1.22E-05	8.41E+00	5.35E+00
Thallium	8.39E-03	9.96E-03	1.10E-07	9.16E-08	9.96E-03	8.39E-03	6.86E-03	7.61E-03	3.84E-07	3.19E-07	7.61E-03	6.86E-03	3.23E-03	5.08E-03	1.05E-07	8.75E-08	5.08E-03	3.23E-03
Tin	1.44E-02	1.71E-02	2.21E-06	1.83E-06	1.71E-02	1.44E-02	2.97E-02	3.29E-02	7.67E-06	6.37E-06	3.30E-02	2.97E-02	2.60E-02	4.09E-02	2.11E-06	1.75E-06	4.09E-02	2.60E-02
Titanium	1.99E+00	2.36E+00	2.43E-03	2.01E-03	2.37E+00	1.99E+00	1.42E+00	1.58E+00	8.44E-03	7.01E-03	1.58E+00	1.43E+00	1.44E+00	2.26E+00	2.32E-03	1.92E-03	2.27E+00	1.44E+00
Uranium	2.72E-03	3.23E-03	1.10E-07	9.16E-08	3.23E-03	2.72E-03	2.23E-03	2.47E-03	3.84E-07	3.19E-07	2.47E-03	2.23E-03	2.03E-03	3.19E-03	1.05E-07	8.75E-08	3.19E-03	2.03E-03
Vanadium	7.00E-02	8.31E-02	1.10E-04	9.16E-05	8.32E-02	7.01E-02	6.50E-02	7.21E-02	3.84E-04	3.19E-04	7.24E-02	6.53E-02	5.68E-02	8.93E-02	1.05E-04	8.75E-05	8.94E-02	5.69E-02
Zinc	2.33E+01	2.77E+01	6.51E-05	5.40E-05	2.77E+01	2.33E+01	2.60E+01	2.88E+01	2.26E-04	1.88E-04	2.88E+01	2.60E+01	1.73E+01	2.72E+01	6.22E-05	5.16E-05	2.72E+01	1.73E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	D125 FLAVOCETRARIA NIVALIS (no soil match)						LICHEN 1 - F. NIVALIS (no soil match)						LICHEN 2 - F. NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.96E+01	4.73E+01	2.35E-02	1.95E-02	4.73E+01	3.96E+01	4.14E+01	4.39E+01	2.31E-02	1.92E-02	4.39E+01	4.14E+01	4.78E+01	5.09E+01	2.31E-02	1.92E-02	5.09E+01	4.78E+01
Antimony	3.10E-03	3.70E-03	8.11E-08	6.73E-08	3.70E-03	3.10E-03	5.00E-03	5.30E-03	7.97E-08	6.62E-08	5.30E-03	5.00E-03	5.00E-03	5.32E-03	7.97E-08	6.62E-08	5.32E-03	5.00E-03
Arsenic	2.97E-02	3.54E-02	4.05E-07	3.37E-07	3.54E-02	2.97E-02	8.60E-02	9.11E-02	3.99E-07	3.31E-07	9.11E-02	8.60E-02	6.60E-02	7.02E-02	3.99E-07	3.31E-07	7.02E-02	6.60E-02
Barium	1.07E+01	1.28E+01	2.43E-06	2.02E-06	1.28E+01	1.07E+01	6.23E+00	6.60E+00	2.39E-06	1.99E-06	6.60E+00	6.23E+00	1.28E+01	1.36E+01	2.39E-06	1.99E-06	1.36E+01	1.28E+01
Beryllium	3.10E-03	3.70E-03	2.67E-07	2.22E-07	3.70E-03	3.10E-03	5.00E-02	5.30E-02	2.63E-07	2.18E-07	5.30E-02	5.00E-02	5.00E-02	5.32E-02	2.63E-07	2.18E-07	5.32E-02	5.00E-02
Bismuth	3.10E-03	3.70E-03	8.11E-08	6.73E-08	3.70E-03	3.10E-03	1.50E-02	1.59E-02	7.97E-08	6.62E-08	1.59E-02	1.50E-02	1.50E-02	1.60E-02	7.97E-08	6.62E-08	1.60E-02	1.50E-02
Cadmium	6.96E-02	8.31E-02	8.11E-08	6.73E-08	8.31E-02	6.96E-02	9.16E-02	9.71E-02	7.97E-08	6.62E-08	9.71E-02	9.16E-02	1.36E-01	1.45E-01	7.97E-08	6.62E-08	1.45E-01	1.36E-01
Calcium	4.68E+03	5.58E+03	2.59E-02	2.15E-02	5.58E+03	4.68E+03	2.86E+03	3.03E+03	2.55E-02	2.12E-02	3.03E+03	2.86E+03	6.05E+03	6.44E+03	2.55E-02	2.12E-02	6.44E+03	6.05E+03
Chromium	4.96E-01	5.92E-01	1.22E-04	1.01E-04	5.92E-01	4.96E-01	1.90E+00	2.01E+00	1.20E-04	9.93E-05	2.01E+00	1.90E+00	1.06E+00	1.13E+00	1.20E-04	9.93E-05	1.13E+00	1.06E+00
Cobalt	1.04E-01	1.24E-01	2.84E-05	2.36E-05	1.24E-01	1.04E-01	1.63E-01	1.73E-01	2.79E-05	2.32E-05	1.73E-01	1.63E-01	2.92E-01	3.11E-01	2.79E-05	2.32E-05	3.11E-01	2.92E-01
Copper	6.16E-01	7.35E-01	8.92E-05	7.40E-05	7.35E-01	6.16E-01	9.58E-01	1.02E+00	8.77E-05	7.28E-05	1.02E+00	9.58E-01	8.05E-01	8.57E-01	8.77E-05	7.28E-05	8.57E-01	8.05E-01
Iron	4.60E+01	5.49E+01	3.97E-02	3.30E-02	5.49E+01	4.60E+01	6.01E+01	6.37E+01	3.91E-02	3.24E-02	6.37E+01	6.01E+01	5.21E+01	5.54E+01	3.91E-02	3.24E-02	5.55E+01	5.21E+01
Lead	3.89E-01	4.64E-01	4.86E-07	4.04E-07	4.64E-01	3.89E-01	2.54E-01	2.69E-01	4.78E-07	3.97E-07	2.69E-01	2.54E-01	3.77E-01	4.01E-01	4.78E-07	3.97E-07	4.01E-01	3.77E-01
Magnesium	5.79E+02	6.91E+02	1.86E-02	1.55E-02	6.91E+02	5.79E+02	8.81E+02	9.33E+02	1.83E-02	1.52E-02	9.33E+02	8.81E+02	1.11E+03	1.18E+03	1.83E-02	1.52E-02	1.18E+03	1.11E+03
Manganese	4.17E+01	4.98E+01	7.54E-04	6.26E-04	4.98E+01	4.17E+01	1.06E+02	1.12E+02	7.41E-04	6.15E-04	1.12E+02	1.06E+02	7.54E+01	8.02E+01	7.41E-04	6.15E-04	8.02E+01	7.54E+01
Mercury	3.23E-02	3.85E-02	8.11E-09	6.73E-09	3.85E-02	3.23E-02	3.34E-02	3.54E-02	7.97E-09	6.62E-09	3.54E-02	3.34E-02	5.37E-02	5.71E-02	7.97E-09	6.62E-09	5.71E-02	5.37E-02
Molybdenum	4.68E-02	5.58E-02	4.05E-07	3.37E-07	5.58E-02	4.68E-02	3.40E-02	3.60E-02	3.99E-07	3.31E-07	3.60E-02	3.40E-02	2.80E-02	2.98E-02	3.99E-07	3.31E-07	2.98E-02	2.80E-02
Nickel	3.58E-01	4.27E-01	5.84E-05	4.85E-05	4.27E-01	3.58E-01	9.20E-01	9.75E-01	5.74E-05	4.77E-05	9.75E-01	9.20E-01	5.70E-01	6.07E-01	5.74E-05	4.77E-05	6.07E-01	5.70E-01
Phosphorus	3.60E+02	4.30E+02	1.78E-04	1.48E-04	4.30E+02	3.60E+02	5.03E+02	5.33E+02	1.75E-04	1.46E-04	5.33E+02	5.03E+02	4.72E+02	5.02E+02	1.75E-04	1.46E-04	5.02E+02	4.72E+02
Potassium	1.20E+03	1.43E+03	8.11E-05	6.73E-05	1.43E+03	1.20E+03	1.50E+03	1.59E+03	7.97E-05	6.62E-05	1.59E+03	1.50E+03	1.55E+03	1.65E+03	7.97E-05	6.62E-05	1.65E+03	1.55E+03
Selenium	4.70E-02	5.61E-02	4.05E-07	3.37E-07	5.61E-02	4.70E-02	1.00E-01	1.06E-01	3.99E-07	3.31E-07	1.06E-01	1.00E-01	1.00E-01	1.06E-01	3.99E-07	3.31E-07	1.06E-01	1.00E-01
Silver	1.04E-02	1.24E-02	8.11E-08	6.73E-08	1.24E-02	1.04E-02	1.20E-02	1.27E-02	7.97E-08	6.62E-08	1.27E-02	1.20E-02	1.20E-02	1.28E-02	7.97E-08	6.62E-08	1.28E-02	1.20E-02
Sodium	4.00E+02	4.77E+02	2.03E-04	1.68E-04	4.77E+02	4.00E+02	5.00E+02	5.30E+02	1.99E-04	1.65E-04	5.30E+02	5.00E+02	3.96E+02	4.21E+02	1.99E-04	1.65E-04	4.21E+02	3.96E+02
Strontium	7.79E+00	9.30E+00	1.13E-05	9.42E-06	9.30E+00	7.79E+00	7.29E+00	7.72E+00	1.12E-05	9.27E-06	7.72E+00	7.29E+00	1.92E+01	2.04E+01	1.12E-05	9.27E-06	2.04E+01	1.92E+01
Thallium	5.82E-03	6.95E-03	8.11E-08	6.73E-08	6.95E-03	5.82E-03	5.00E-03	5.30E-03	7.97E-08	6.62E-08	5.30E-03	5.00E-03	5.00E-03	5.32E-03	7.97E-08	6.62E-08	5.32E-03	5.00E-03
Tin	2.71E-02	3.23E-02	1.62E-06	1.35E-06	3.23E-02	2.71E-02	2.50E-02	2.65E-02	1.59E-06	1.32E-06	2.65E-02	2.50E-02	2.50E-02	2.66E-02	1.59E-06	1.32E-06	2.66E-02	2.50E-02
Titanium	2.45E+00	2.92E+00	1.78E-03	1.48E-03	2.93E+00	2.45E+00	3.60E+00	3.81E+00	1.75E-03	1.46E-03	3.82E+00	3.60E+00	3.19E+00	3.39E+00	1.75E-03	1.46E-03	3.40E+00	3.19E+00
Uranium	4.97E-03	5.93E-03	8.11E-08	6.73E-08	5.93E-03	4.97E-03	3.80E-03	4.03E-03	7.97E-08	6.62E-08	4.03E-03	3.80E-03	8.60E-03	9.15E-03	7.97E-08	6.62E-08	9.15E-03	8.60E-03
Vanadium	1.24E-01	1.48E-01	8.11E-05	6.73E-05	1.48E-01	1.24E-01	1.40E-01	1.48E-01	7.97E-05	6.62E-05	1.48E-01	1.40E-01	1.10E-01	1.17E-01	7.97E-05	6.62E-05	1.17E-01	1.10E-01
Zinc	1.55E+01	1.85E+01	4.78E-05	3.97E-05	1.85E+01	1.55E+01	2.61E+01	2.77E+01	4.70E-05	3.90E-05	2.77E+01	2.61E+01	1.72E+01	1.83E+01	4.70E-05	3.90E-05	1.83E+01	1.72E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	LICHEN 3 - F. NIVALIS (no soil match)						LICHEN 4 - F. NIVALIS (no soil match)						LICHEN 5 - F. NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	8.13E+01	8.81E+01	2.32E-02	1.92E-02	8.81E+01	8.13E+01	6.37E+01	6.65E+01	2.31E-02	1.92E-02	6.66E+01	6.37E+01	7.34E+01	7.91E+01	2.32E-02	1.93E-02	7.91E+01	7.34E+01
Antimony	5.00E-03	5.42E-03	7.99E-08	6.63E-08	5.42E-03	5.00E-03	5.00E-03	5.22E-03	7.97E-08	6.61E-08	5.22E-03	5.00E-03	5.00E-03	5.39E-03	8.01E-08	6.65E-08	5.39E-03	5.00E-03
Arsenic	7.70E-02	8.34E-02	3.99E-07	3.32E-07	8.34E-02	7.70E-02	7.20E-02	7.52E-02	3.98E-07	3.31E-07	7.52E-02	7.20E-02	4.30E-02	4.63E-02	4.00E-07	3.32E-07	4.63E-02	4.30E-02
Barium	5.65E+00	6.12E+00	2.40E-06	1.99E-06	6.12E+00	5.65E+00	1.38E+01	1.44E+01	2.39E-06	1.98E-06	1.44E+01	1.38E+01	6.16E+00	6.64E+00	2.40E-06	1.99E-06	6.64E+00	6.16E+00
Beryllium	5.00E-02	5.42E-02	2.64E-07	2.19E-07	5.42E-02	5.00E-02	5.00E-02	5.22E-02	2.63E-07	2.18E-07	5.22E-02	5.00E-02	5.00E-02	5.39E-02	2.64E-07	2.19E-07	5.39E-02	5.00E-02
Bismuth	1.50E-02	1.62E-02	7.99E-08	6.63E-08	1.62E-02	1.50E-02	1.50E-02	1.57E-02	7.97E-08	6.61E-08	1.57E-02	1.50E-02	1.50E-02	1.62E-02	8.01E-08	6.65E-08	1.62E-02	1.50E-02
Cadmium	5.36E-02	5.81E-02	7.99E-08	6.63E-08	5.81E-02	5.36E-02	9.54E-02	9.97E-02	7.97E-08	6.61E-08	9.97E-02	9.54E-02	4.00E-02	4.31E-02	8.01E-08	6.65E-08	4.31E-02	4.00E-02
Calcium	2.08E+03	2.25E+03	2.56E-02	2.12E-02	2.25E+03	2.08E+03	3.89E+03	4.06E+03	2.55E-02	2.12E-02	4.06E+03	3.89E+03	1.92E+03	2.07E+03	2.56E-02	2.13E-02	2.07E+03	1.92E+03
Chromium	4.65E+00	5.04E+00	1.20E-04	9.95E-05	5.04E+00	4.65E+00	1.19E+00	1.24E+00	1.19E-04	9.92E-05	1.24E+00	1.19E+00	5.88E+00	6.34E+00	1.20E-04	9.97E-05	6.34E+00	5.88E+00
Cobalt	1.48E-01	1.60E-01	2.80E-05	2.32E-05	1.60E-01	1.48E-01	1.59E-01	1.66E-01	2.79E-05	2.31E-05	1.66E-01	1.59E-01	1.89E-01	2.04E-01	2.80E-05	2.33E-05	2.04E-01	1.89E-01
Copper	1.93E+00	2.09E+00	8.79E-05	7.30E-05	2.09E+00	1.93E+00	8.23E-01	8.60E-01	8.76E-05	7.28E-05	8.60E-01	8.23E-01	1.18E+00	1.27E+00	8.81E-05	7.31E-05	1.27E+00	1.18E+00
Iron	1.11E+02	1.20E+02	3.91E-02	3.25E-02	1.20E+02	1.11E+02	5.84E+01	6.10E+01	3.90E-02	3.24E-02	6.10E+01	5.84E+01	1.01E+02	1.09E+02	3.92E-02	3.26E-02	1.09E+02	1.01E+02
Lead	2.03E-01	2.20E-01	4.79E-07	3.98E-07	2.20E-01	2.03E-01	3.65E-01	3.81E-01	4.78E-07	3.97E-07	3.81E-01	3.65E-01	1.62E-01	1.75E-01	4.80E-07	3.99E-07	1.75E-01	1.62E-01
Magnesium	5.45E+02	5.90E+02	1.84E-02	1.53E-02	5.90E+02	5.45E+02	8.55E+02	8.93E+02	1.83E-02	1.52E-02	8.93E+02	8.55E+02	5.56E+02	5.99E+02	1.84E-02	1.53E-02	5.99E+02	5.56E+02
Manganese	5.50E+01	5.96E+01	7.43E-04	6.17E-04	5.96E+01	5.50E+01	7.70E+01	8.04E+01	7.41E-04	6.15E-04	8.04E+01	7.70E+01	6.58E+01	7.09E+01	7.45E-04	6.18E-04	7.09E+01	6.58E+01
Mercury	5.76E-02	6.24E-02	7.99E-09	6.63E-09	6.24E-02	5.76E-02	2.56E-02	2.67E-02	7.97E-09	6.61E-09	2.67E-02	2.56E-02	4.03E-02	4.34E-02	8.01E-09	6.65E-09	4.34E-02	4.03E-02
Molybdenum	5.30E-02	5.74E-02	3.99E-07	3.32E-07	5.74E-02	5.30E-02	3.20E-02	3.34E-02	3.98E-07	3.31E-07	3.34E-02	3.20E-02	8.30E-02	8.94E-02	4.00E-07	3.32E-07	8.94E-02	8.30E-02
Nickel	2.10E+00	2.27E+00	5.75E-05	4.78E-05	2.27E+00	2.10E+00	5.10E-01	5.33E-01	5.74E-05	4.76E-05	5.33E-01	5.10E-01	2.70E+00	2.91E+00	5.77E-05	4.79E-05	2.91E+00	2.70E+00
Phosphorus	5.90E+02	6.39E+02	1.76E-04	1.46E-04	6.39E+02	5.90E+02	3.32E+02	3.47E+02	1.75E-04	1.46E-04	3.47E+02	3.32E+02	6.78E+02	7.31E+02	1.76E-04	1.46E-04	7.31E+02	6.78E+02
Potassium	2.02E+03	2.19E+03	7.99E-05	6.63E-05	2.19E+03	2.02E+03	1.31E+03	1.37E+03	7.97E-05	6.61E-05	1.37E+03	1.31E+03	1.94E+03	2.09E+03	8.01E-05	6.65E-05	2.09E+03	1.94E+03
Selenium	1.00E-01	1.08E-01	3.99E-07	3.32E-07	1.08E-01	1.00E-01	1.00E-01	1.04E-01	3.98E-07	3.31E-07	1.04E-01	1.00E-01	1.00E-01	1.08E-01	4.00E-07	3.32E-07	1.08E-01	1.00E-01
Silver	1.00E-02	1.08E-02	7.99E-08	6.63E-08	1.08E-02	1.00E-02	1.00E-02	1.04E-02	7.97E-08	6.61E-08	1.04E-02	1.00E-02	1.10E-02	1.19E-02	8.01E-08	6.65E-08	1.19E-02	1.10E-02
Sodium	9.50E+02	1.03E+03	2.00E-04	1.66E-04	1.03E+03	9.50E+02	3.38E+02	3.53E+02	1.99E-04	1.65E-04	3.53E+02	3.38E+02	9.80E+02	1.06E+03	2.00E-04	1.66E-04	1.06E+03	9.80E+02
Strontium	6.24E+00	6.76E+00	1.12E-05	9.29E-06	6.76E+00	6.24E+00	1.36E+01	1.42E+01	1.12E-05	9.26E-06	1.42E+01	1.36E+01	4.99E+00	5.38E+00	1.12E-05	9.31E-06	5.38E+00	4.99E+00
Thallium	5.00E-03	5.42E-03	7.99E-08	6.63E-08	5.42E-03	5.00E-03	5.00E-03	5.22E-03	7.97E-08	6.61E-08	5.22E-03	5.00E-03	1.10E-02	1.19E-02	8.01E-08	6.65E-08	1.19E-02	1.10E-02
Tin	2.50E-02	2.71E-02	1.60E-06	1.33E-06	2.71E-02	2.50E-02	2.50E-02	2.61E-02	1.59E-06	1.32E-06	2.61E-02	2.50E-02	2.50E-02	2.69E-02	1.60E-06	1.33E-06	2.69E-02	2.50E-02
Titanium	6.10E+00	6.61E+00	1.76E-03	1.46E-03	6.61E+00	6.10E+00	3.76E+00	3.93E+00	1.75E-03	1.46E-03	3.93E+00	3.76E+00	4.90E+00	5.28E+00	1.76E-03	1.46E-03	5.28E+00	4.90E+00
Uranium	2.26E-02	2.45E-02	7.99E-08	6.63E-08	2.45E-02	2.26E-02	6.10E-03	6.37E-03	7.97E-08	6.61E-08	6.37E-03	6.10E-03	4.68E-02	5.04E-02	8.01E-08	6.65E-08	5.04E-02	4.68E-02
Vanadium	2.20E-01	2.38E-01	7.99E-05	6.63E-05	2.38E-01	2.20E-01	1.40E-01	1.46E-01	7.97E-05	6.61E-05	1.46E-01	1.40E-01	1.80E-01	1.94E-01	8.01E-05	6.65E-05	1.94E-01	1.80E-01
Zinc	2.14E+01	2.32E+01	4.71E-05	3.91E-05	2.32E+01	2.14E+01	2.25E+01	2.35E+01	4.70E-05	3.90E-05	2.35E+01	2.25E+01	2.18E+01	2.35E+01	4.72E-05	3.92E-05	2.35E+01	2.18E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables). Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.*

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	LICHEN 6 - F. NIVALIS (no soil match)						LICHEN 7 - F. NIVALIS (no soil match)						LICHEN 8 - F. NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	6.95E+01	7.32E+01	2.32E-02	1.93E-02	7.32E+01	6.95E+01	6.41E+01	1.26E+02	2.51E-02	2.08E-02	1.26E+02	6.41E+01	4.49E+01	7.68E+01	2.51E-02	2.08E-02	7.68E+01	4.49E+01
Antimony	5.00E-03	5.26E-03	8.01E-08	6.65E-08	5.26E-03	5.00E-03	5.00E-03	9.86E-03	8.65E-08	7.19E-08	9.86E-03	5.00E-03	5.00E-03	8.55E-03	8.64E-08	7.17E-08	8.55E-03	5.00E-03
Arsenic	5.60E-02	5.90E-02	4.00E-07	3.32E-07	5.90E-02	5.60E-02	2.20E-02	4.34E-02	4.33E-07	3.59E-07	4.34E-02	2.20E-02	3.00E-02	5.13E-02	4.32E-07	3.59E-07	5.13E-02	3.00E-02
Barium	5.25E+00	5.53E+00	2.40E-06	1.99E-06	5.53E+00	5.25E+00	3.47E+00	6.84E+00	2.60E-06	2.16E-06	6.84E+00	3.47E+00	5.76E+00	9.85E+00	2.59E-06	2.15E-06	9.85E+00	5.76E+00
Beryllium	5.00E-02	5.26E-02	2.64E-07	2.19E-07	5.26E-02	5.00E-02	5.00E-02	9.86E-02	2.86E-07	2.37E-07	9.86E-02	5.00E-02	5.00E-02	8.55E-02	2.85E-07	2.37E-07	8.55E-02	5.00E-02
Bismuth	1.50E-02	1.58E-02	8.01E-08	6.65E-08	1.58E-02	1.50E-02	1.50E-02	2.96E-02	8.65E-08	7.19E-08	2.96E-02	1.50E-02	1.50E-02	2.56E-02	8.64E-08	7.17E-08	2.56E-02	1.50E-02
Cadmium	4.29E-02	4.52E-02	8.01E-08	6.65E-08	4.52E-02	4.29E-02	1.29E-02	2.54E-02	8.65E-08	7.19E-08	2.54E-02	1.29E-02	6.14E-02	1.05E-01	8.64E-08	7.17E-08	1.05E-01	6.14E-02
Calcium	1.86E+03	1.96E+03	2.56E-02	2.13E-02	1.96E+03	1.86E+03	6.87E+02	1.36E+03	2.77E-02	2.30E-02	1.36E+03	6.87E+02	2.91E+03	4.97E+03	2.76E-02	2.30E-02	4.97E+03	2.91E+03
Chromium	3.61E+00	3.80E+00	1.20E-04	9.97E-05	3.80E+00	3.61E+00	2.83E+00	5.58E+00	1.30E-04	1.08E-04	5.58E+00	2.83E+00	6.00E-01	1.03E+00	1.30E-04	1.08E-04	1.03E+00	6.00E-01
Cobalt	1.63E-01	1.72E-01	2.80E-05	2.33E-05	1.72E-01	1.63E-01	1.00E-01	1.97E-01	3.03E-05	2.51E-05	1.97E-01	1.00E-01	1.02E-01	1.74E-01	3.02E-05	2.51E-05	1.74E-01	1.02E-01
Copper	1.35E+00	1.42E+00	8.81E-05	7.31E-05	1.42E+00	1.35E+00	7.97E-01	1.57E+00	9.52E-05	7.90E-05	1.57E+00	7.97E-01	4.90E-01	8.38E-01	9.50E-05	7.89E-05	8.38E-01	4.90E-01
Iron	8.83E+01	9.30E+01	3.92E-02	3.26E-02	9.30E+01	8.83E+01	7.95E+01	1.57E+02	4.24E-02	3.52E-02	1.57E+02	7.95E+01	4.27E+01	7.30E+01	4.23E-02	3.52E-02	7.30E+01	4.27E+01
Lead	2.80E-01	2.95E-01	4.80E-07	3.99E-07	2.95E-01	2.80E-01	9.00E-02	1.78E-01	5.19E-07	4.31E-07	1.78E-01	9.00E-02	1.58E-01	2.70E-01	5.18E-07	4.30E-07	2.70E-01	1.58E-01
Magnesium	7.79E+02	8.20E+02	1.84E-02	1.53E-02	8.20E+02	7.79E+02	4.03E+02	7.95E+02	1.99E-02	1.65E-02	7.95E+02	4.03E+02	7.42E+02	1.27E+03	1.99E-02	1.65E-02	1.27E+03	7.42E+02
Manganese	4.76E+01	5.01E+01	7.45E-04	6.18E-04	5.01E+01	4.76E+01	3.71E+01	7.32E+01	8.05E-04	6.68E-04	7.32E+01	3.71E+01	5.56E+01	9.50E+01	8.04E-04	6.67E-04	9.50E+01	5.56E+01
Mercury	3.25E-02	3.42E-02	8.01E-09	6.65E-09	3.42E-02	3.25E-02	2.14E-02	4.22E-02	8.65E-09	7.19E-09	4.22E-02	2.14E-02	2.40E-02	4.10E-02	8.64E-09	7.17E-09	4.10E-02	2.40E-02
Molybdenum	4.20E-02	4.42E-02	4.00E-07	3.32E-07	4.42E-02	4.20E-02	2.50E-02	4.93E-02	4.33E-07	3.59E-07	4.93E-02	2.50E-02	1.80E-02	3.08E-02	4.32E-07	3.59E-07	3.08E-02	1.80E-02
Nickel	1.65E+00	1.74E+00	5.77E-05	4.79E-05	1.74E+00	1.65E+00	1.43E+00	2.82E+00	6.23E-05	5.17E-05	2.82E+00	1.43E+00	2.80E-01	4.79E-01	6.22E-05	5.17E-05	4.79E-01	2.80E-01
Phosphorus	8.31E+02	8.75E+02	1.76E-04	1.46E-04	8.75E+02	8.31E+02	4.70E+02	9.27E+02	1.90E-04	1.58E-04	9.27E+02	4.70E+02	2.63E+02	4.50E+02	1.90E-04	1.58E-04	4.50E+02	2.63E+02
Potassium	2.05E+03	2.16E+03	8.01E-05	6.65E-05	2.16E+03	2.05E+03	9.81E+02	1.93E+03	8.65E-05	7.19E-05	1.93E+03	9.81E+02	9.21E+02	1.57E+03	8.64E-05	7.17E-05	1.57E+03	9.21E+02
Selenium	1.00E-01	1.05E-01	4.00E-07	3.32E-07	1.05E-01	1.00E-01	1.00E-01	1.97E-01	4.33E-07	3.59E-07	1.97E-01	1.00E-01	1.00E-01	1.71E-01	4.32E-07	3.59E-07	1.71E-01	1.00E-01
Silver	1.00E-02	1.05E-02	8.01E-08	6.65E-08	1.05E-02	1.00E-02	5.00E-03	9.86E-03	8.65E-08	7.19E-08	9.86E-03	5.00E-03	5.00E-03	8.55E-03	8.64E-08	7.17E-08	8.55E-03	5.00E-03
Sodium	1.21E+03	1.27E+03	2.00E-04	1.66E-04	1.27E+03	1.21E+03	4.16E+02	8.21E+02	2.16E-04	1.80E-04	8.21E+02	4.16E+02	3.25E+02	5.56E+02	2.16E-04	1.79E-04	5.56E+02	3.25E+02
Strontium	6.17E+00	6.50E+00	1.12E-05	9.31E-06	6.50E+00	6.17E+00	1.76E+00	3.47E+00	1.21E-05	1.01E-05	3.47E+00	1.76E+00	8.39E+00	1.43E+01	1.21E-05	1.00E-05	1.43E+01	8.39E+00
Thallium	5.00E-03	5.26E-03	8.01E-08	6.65E-08	5.26E-03	5.00E-03	5.00E-03	9.86E-03	8.65E-08	7.19E-08	9.86E-03	5.00E-03	5.00E-03	8.55E-03	8.64E-08	7.17E-08	8.55E-03	5.00E-03
Tin	2.50E-02	2.63E-02	1.60E-06	1.33E-06	2.63E-02	2.50E-02	2.50E-02	4.93E-02	1.73E-06	1.44E-06	4.93E-02	2.50E-02	2.50E-02	4.27E-02	1.73E-06	1.43E-06	4.27E-02	2.50E-02
Titanium	4.70E+00	4.95E+00	1.76E-03	1.46E-03	4.95E+00	4.70E+00	3.97E+00	7.83E+00	1.90E-03	1.58E-03	7.83E+00	3.97E+00	2.90E+00	4.96E+00	1.90E-03	1.58E-03	4.96E+00	2.90E+00
Uranium	1.73E-02	1.82E-02	8.01E-08	6.65E-08	1.82E-02	1.73E-02	4.10E-03	8.09E-03	8.65E-08	7.19E-08	8.09E-03	4.10E-03	1.63E-02	2.79E-02	8.64E-08	7.17E-08	2.79E-02	1.63E-02
Vanadium	1.70E-01	1.79E-01	8.01E-05	6.65E-05	1.79E-01	1.70E-01	1.90E-01	3.75E-01	8.65E-05	7.19E-05	3.75E-01	1.90E-01	1.20E-01	2.05E-01	8.64E-05	7.17E-05	2.05E-01	1.20E-01
Zinc	2.37E+01	2.49E+01	4.72E-05	3.92E-05	2.50E+01	2.37E+01	1.73E+01	3.41E+01	5.11E-05	4.24E-05	3.41E+01	1.73E+01	2.41E+01	4.12E+01	5.10E-05	4.23E-05	4.12E+01	2.41E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	LICHEN 9 - F. NIVALIS (no soil match)						LICHEN 10 - F. NIVALIS (no soil match)						SITE 11 - F. NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m²/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.04E+02	1.85E+02	2.51E-02	2.08E-02	1.85E+02	1.04E+02	5.63E+01	6.19E+01	4.15E-01	3.44E-01	6.23E+01	5.66E+01	4.58E+01	5.33E+01	2.28E-02	1.89E-02	5.33E+01	4.58E+01
Antimony	5.00E-03	8.88E-03	8.64E-08	7.17E-08	8.88E-03	5.00E-03	5.00E-03	5.50E-03	1.43E-06	1.19E-06	5.50E-03	5.00E-03	5.00E-03	5.81E-03	7.86E-08	6.53E-08	5.81E-03	5.00E-03
Arsenic	3.60E-02	6.39E-02	4.32E-07	3.59E-07	6.39E-02	3.60E-02	4.20E-02	4.62E-02	7.15E-06	5.94E-06	4.62E-02	4.20E-02	4.10E-02	4.77E-02	3.93E-07	3.26E-07	4.77E-02	4.10E-02
Barium	3.66E+00	6.50E+00	2.59E-06	2.15E-06	6.50E+00	3.66E+00	5.57E+00	6.13E+00	4.29E-05	3.56E-05	6.13E+00	5.57E+00	1.54E+01	1.79E+01	2.36E-06	1.96E-06	1.79E+01	1.54E+01
Beryllium	5.00E-02	8.88E-02	2.85E-07	2.37E-07	8.88E-02	5.00E-02	5.00E-02	5.50E-02	4.72E-06	3.92E-06	5.50E-02	5.00E-02	5.00E-02	5.81E-02	2.59E-07	2.15E-07	5.81E-02	5.00E-02
Bismuth	1.50E-02	2.66E-02	8.64E-08	7.17E-08	2.66E-02	1.50E-02	1.50E-02	1.65E-02	1.43E-06	1.19E-06	1.65E-02	1.50E-02	1.50E-02	1.74E-02	7.86E-08	6.53E-08	1.74E-02	1.50E-02
Cadmium	2.08E-02	3.69E-02	8.64E-08	7.17E-08	3.69E-02	2.08E-02	8.35E-02	9.19E-02	1.43E-06	1.19E-06	9.19E-02	8.35E-02	6.35E-02	7.38E-02	7.86E-08	6.53E-08	7.38E-02	6.35E-02
Calcium	1.18E+03	2.10E+03	2.76E-02	2.30E-02	2.10E+03	1.18E+03	3.17E+03	3.49E+03	4.58E-01	3.80E-01	3.49E+03	3.17E+03	2.94E+03	3.42E+03	2.51E-02	2.09E-02	3.42E+03	2.94E+03
Chromium	4.02E+00	7.14E+00	1.30E-04	1.08E-04	7.14E+00	4.02E+00	2.14E+00	2.35E+00	2.15E-03	1.78E-03	2.36E+00	2.14E+00	2.02E+00	2.35E+00	1.18E-04	9.79E-05	2.35E+00	2.02E+00
Cobalt	1.45E-01	2.58E-01	3.02E-05	2.51E-05	2.58E-01	1.45E-01	1.09E-01	1.20E-01	5.01E-04	4.16E-04	1.20E-01	1.09E-01	1.13E-01	1.31E-01	2.75E-05	2.28E-05	1.31E-01	1.13E-01
Copper	9.39E-01	1.67E+00	9.50E-05	7.89E-05	1.67E+00	9.39E-01	1.93E+00	2.12E+00	1.57E-03	1.31E-03	2.12E+00	1.93E+00	1.42E+00	1.65E+00	8.64E-05	7.18E-05	1.65E+00	1.42E+00
Iron	1.31E+02	2.33E+02	4.23E-02	3.52E-02	2.33E+02	1.31E+02	6.36E+01	7.00E+01	7.01E-01	5.82E-01	7.06E+01	6.41E+01	4.30E+01	5.00E+01	3.85E-02	3.20E-02	5.00E+01	4.30E+01
Lead	8.90E-02	1.58E-01	5.18E-07	4.30E-07	1.58E-01	8.90E-02	1.26E-01	1.39E-01	8.58E-06	7.13E-06	1.39E-01	1.26E-01	2.55E-01	2.97E-01	4.72E-07	3.92E-07	2.97E-01	2.55E-01
Magnesium	4.73E+02	8.40E+02	1.99E-02	1.65E-02	8.40E+02	4.73E+02	5.62E+02	6.18E+02	3.29E-01	2.73E-01	6.19E+02	5.62E+02	6.49E+02	7.55E+02	1.81E-02	1.50E-02	7.55E+02	6.49E+02
Manganese	2.86E+01	5.08E+01	8.04E-04	6.67E-04	5.08E+01	2.86E+01	8.25E+01	9.08E+01	1.33E-02	1.10E-02	9.08E+01	8.25E+01	1.14E+02	1.33E+02	7.31E-04	6.07E-04	1.33E+02	1.14E+02
Mercury	2.33E-02	4.14E-02	8.64E-09	7.17E-09	4.14E-02	2.33E-02	5.02E-02	5.52E-02	1.43E-07	1.19E-07	5.52E-02	5.02E-02	1.36E-02	1.58E-02	7.86E-09	6.53E-09	1.58E-02	1.36E-02
Molybdenum	3.20E-02	5.68E-02	4.32E-07	3.59E-07	5.68E-02	3.20E-02	4.10E-02	4.51E-02	7.15E-06	5.94E-06	4.51E-02	4.10E-02	3.40E-02	3.95E-02	3.93E-07	3.26E-07	3.95E-02	3.40E-02
Nickel	1.72E+00	3.06E+00	6.22E-05	5.17E-05	3.06E+00	1.72E+00	1.05E+00	1.16E+00	1.03E-03	8.55E-04	1.16E+00	1.05E+00	8.50E-01	9.88E-01	5.66E-05	4.70E-05	9.88E-01	8.50E-01
Phosphorus	3.99E+02	7.09E+02	1.90E-04	1.58E-04	7.09E+02	3.99E+02	6.01E+02	6.61E+02	3.15E-03	2.61E-03	6.61E+02	6.01E+02	3.41E+02	3.97E+02	1.73E-04	1.44E-04	3.97E+02	3.41E+02
Potassium	1.19E+03	2.11E+03	8.64E-05	7.17E-05	2.11E+03	1.19E+03	2.02E+03	2.22E+03	1.43E-03	1.19E-03	2.22E+03	2.02E+03	1.34E+03	1.56E+03	7.86E-05	6.53E-05	1.56E+03	1.34E+03
Selenium	1.00E-01	1.78E-01	4.32E-07	3.59E-07	1.78E-01	1.00E-01	1.00E-01	1.10E-01	7.15E-06	5.94E-06	1.10E-01	1.00E-01	1.00E-01	1.16E-01	3.93E-07	3.26E-07	1.16E-01	1.00E-01
Silver	5.00E-03	8.88E-03	8.64E-08	7.17E-08	8.88E-03	5.00E-03	5.00E-03	5.50E-03	1.43E-06	1.19E-06	5.50E-03	5.00E-03	5.00E-03	5.81E-03	7.86E-08	6.53E-08	5.81E-03	5.00E-03
Sodium	4.19E+02	7.44E+02	2.16E-04	1.79E-04	7.44E+02	4.19E+02	6.90E+02	7.59E+02	3.58E-03	2.97E-03	7.59E+02	6.90E+02	3.45E+02	4.01E+02	1.96E-04	1.63E-04	4.01E+02	3.45E+02
Strontium	3.07E+00	5.45E+00	1.21E-05	1.00E-05	5.45E+00	3.07E+00	4.48E+00	4.93E+00	2.00E-04	1.66E-04	4.93E+00	4.48E+00	1.02E+01	1.19E+01	1.10E-05	9.14E-06	1.19E+01	1.02E+01
Thallium	5.00E-03	8.88E-03	8.64E-08	7.17E-08	8.88E-03	5.00E-03	5.00E-03	5.50E-03	1.43E-06	1.19E-06	5.50E-03	5.00E-03	5.00E-03	5.81E-03	7.86E-08	6.53E-08	5.81E-03	5.00E-03
Tin	2.50E-02	4.44E-02	1.73E-06	1.43E-06	4.44E-02	2.50E-02	2.50E-02	2.75E-02	2.86E-05	2.38E-05	2.75E-02	2.50E-02	2.50E-02	2.91E-02	1.57E-06	1.31E-06	2.91E-02	2.50E-02
Titanium	6.77E+00	1.20E+01	1.90E-03	1.58E-03	1.20E+01	6.77E+00	3.80E+00	4.18E+00	3.15E-02	2.61E-02	4.21E+00	3.82E+00	2.79E+00	3.24E+00	1.73E-03	1.44E-03	3.25E+00	2.79E+00
Uranium	9.50E-03	1.69E-02	8.64E-08	7.17E-08	1.69E-02	9.50E-03	5.60E-03	6.16E-03	1.43E-06	1.19E-06	6.16E-03	5.60E-03	4.30E-03	5.00E-03	7.86E-08	6.53E-08	5.00E-03	4.30E-03
Vanadium	3.40E-01	6.04E-01	8.64E-05	7.17E-05	6.04E-01	3.40E-01	1.30E-01	1.43E-01	1.43E-03	1.19E-03	1.44E-01	1.31E-01	5.00E-02	5.81E-02	7.86E-05	6.53E-05	5.82E-02	5.01E-02
Zinc	1.66E+01	2.95E+01	5.10E-05	4.23E-05	2.95E+01	1.66E+01	2.70E+01	2.97E+01	8.44E-04	7.01E-04	2.97E+01	2.70E+01	2.27E+01	2.64E+01	4.64E-05	3.85E-05	2.64E+01	2.27E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.

*[b] Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)					
Sample ID	SITE 12 - F. NIVALIS (no soil match)						SITE 13 - F. NIVALIS (no soil match)						SITE 14 - F. NIVALIS (no soil match)					
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	8.07E+01	9.12E+01	2.27E-02	1.89E-02	9.12E+01	8.07E+01	9.76E+01	1.10E+02	2.38E-02	1.97E-02	1.10E+02	9.76E+01	7.59E+01	8.60E+01	2.34E-02	1.94E-02	8.60E+01	7.59E+01
Antimony	5.00E-03	5.65E-03	7.84E-08	6.51E-08	5.65E-03	5.00E-03	5.00E-03	5.64E-03	8.20E-08	6.81E-08	5.64E-03	5.00E-03	5.00E-03	5.66E-03	8.08E-08	6.71E-08	5.66E-03	5.00E-03
Arsenic	6.40E-02	7.23E-02	3.92E-07	3.26E-07	7.23E-02	6.40E-02	5.10E-02	5.75E-02	4.10E-07	3.40E-07	5.75E-02	5.10E-02	4.60E-02	5.21E-02	4.04E-07	3.35E-07	5.21E-02	4.60E-02
Barium	1.60E+01	1.81E+01	2.35E-06	1.95E-06	1.81E+01	1.60E+01	5.72E+00	6.45E+00	2.46E-06	2.04E-06	6.45E+00	5.72E+00	9.49E+00	1.07E+01	2.42E-06	2.01E-06	1.07E+01	9.49E+00
Beryllium	5.00E-02	5.65E-02	2.59E-07	2.15E-07	5.65E-02	5.00E-02	5.00E-02	5.64E-02	2.71E-07	2.25E-07	5.64E-02	5.00E-02	5.00E-02	5.66E-02	2.67E-07	2.21E-07	5.66E-02	5.00E-02
Bismuth	1.50E-02	1.69E-02	7.84E-08	6.51E-08	1.69E-02	1.50E-02	1.50E-02	1.69E-02	8.20E-08	6.81E-08	1.69E-02	1.50E-02	1.50E-02	1.70E-02	8.08E-08	6.71E-08	1.70E-02	1.50E-02
Cadmium	7.31E-02	8.26E-02	7.84E-08	6.51E-08	8.26E-02	7.31E-02	2.64E-02	2.98E-02	8.20E-08	6.81E-08	2.98E-02	2.64E-02	1.85E-02	2.10E-02	8.08E-08	6.71E-08	2.10E-02	1.85E-02
Calcium	2.43E+03	2.75E+03	2.51E-02	2.08E-02	2.75E+03	2.43E+03	9.81E+02	1.11E+03	2.62E-02	2.18E-02	1.11E+03	9.81E+02	1.69E+03	1.91E+03	2.58E-02	2.15E-02	1.91E+03	1.69E+03
Chromium	1.59E+00	1.80E+00	1.18E-04	9.77E-05	1.80E+00	1.59E+00	7.10E+00	8.00E+00	1.23E-04	1.02E-04	8.00E+00	7.10E+00	3.82E+00	4.33E+00	1.21E-04	1.01E-04	4.33E+00	3.82E+00
Cobalt	1.22E-01	1.38E-01	2.75E-05	2.28E-05	1.38E-01	1.22E-01	1.63E-01	1.84E-01	2.87E-05	2.38E-05	1.84E-01	1.63E-01	1.07E-01	1.21E-01	2.83E-05	2.35E-05	1.21E-01	1.07E-01
Copper	7.13E-01	8.06E-01	8.63E-05	7.16E-05	8.06E-01	7.13E-01	1.91E+00	2.15E+00	9.02E-05	7.49E-05	2.15E+00	1.91E+00	1.50E+00	1.70E+00	8.88E-05	7.38E-05	1.70E+00	1.50E+00
Iron	6.31E+01	7.13E+01	3.84E-02	3.19E-02	7.13E+01	6.31E+01	1.40E+02	1.58E+02	4.02E-02	3.34E-02	1.58E+02	1.40E+02	8.95E+01	1.01E+02	3.96E-02	3.29E-02	1.01E+02	8.95E+01
Lead	6.13E-01	6.93E-01	4.71E-07	3.91E-07	6.93E-01	6.13E-01	1.48E-01	1.67E-01	4.92E-07	4.08E-07	1.67E-01	1.48E-01	1.50E-01	1.70E-01	4.85E-07	4.02E-07	1.70E-01	1.50E-01
Magnesium	7.68E+02	8.68E+02	1.80E-02	1.50E-02	8.68E+02	7.68E+02	4.02E+02	4.53E+02	1.89E-02	1.57E-02	4.53E+02	4.02E+02	4.56E+02	5.16E+02	1.86E-02	1.54E-02	5.16E+02	4.56E+02
Manganese	6.38E+01	7.21E+01	7.29E-04	6.06E-04	7.21E+01	6.38E+01	5.81E+01	6.55E+01	7.62E-04	6.33E-04	6.55E+01	5.81E+01	5.48E+01	6.21E+01	7.51E-04	6.24E-04	6.21E+01	5.48E+01
Mercury	1.90E-03	2.15E-03	7.84E-09	6.51E-09	2.15E-03	1.90E-03	3.51E-02	3.96E-02	8.20E-09	6.81E-09	3.96E-02	3.51E-02	2.38E-02	2.70E-02	8.08E-09	6.71E-09	2.70E-02	2.38E-02
Molybdenum	3.00E-02	3.39E-02	3.92E-07	3.26E-07	3.39E-02	3.00E-02	6.10E-02	6.88E-02	4.10E-07	3.40E-07	6.88E-02	6.10E-02	4.70E-02	5.32E-02	4.04E-07	3.35E-07	5.32E-02	4.70E-02
Nickel	8.40E-01	9.49E-01	5.65E-05	4.69E-05	9.49E-01	8.40E-01	3.11E+00	3.51E+00	5.90E-05	4.90E-05	3.51E+00	3.11E+00	1.66E+00	1.88E+00	5.81E-05	4.83E-05	1.88E+00	1.66E+00
Phosphorus	2.46E+02	2.78E+02	1.73E-04	1.43E-04	2.78E+02	2.46E+02	5.72E+02	6.45E+02	1.80E-04	1.50E-04	6.45E+02	5.72E+02	6.60E+02	7.47E+02	1.78E-04	1.48E-04	7.47E+02	6.60E+02
Potassium	1.21E+03	1.37E+03	7.84E-05	6.51E-05	1.37E+03	1.21E+03	2.01E+03	2.27E+03	8.20E-05	6.81E-05	2.27E+03	2.01E+03	2.33E+03	2.64E+03	8.08E-05	6.71E-05	2.64E+03	2.33E+03
Selenium	1.00E-01	1.13E-01	3.92E-07	3.26E-07	1.13E-01	1.00E-01	1.00E-01	1.13E-01	4.10E-07	3.40E-07	1.13E-01	1.00E-01	1.00E-01	1.13E-01	4.04E-07	3.35E-07	1.13E-01	1.00E-01
Silver	5.00E-03	5.65E-03	7.84E-08	6.51E-08	5.65E-03	5.00E-03	5.00E-03	5.64E-03	8.20E-08	6.81E-08	5.64E-03	5.00E-03	5.00E-03	5.66E-03	8.08E-08	6.71E-08	5.66E-03	5.00E-03
Sodium	2.97E+02	3.36E+02	1.96E-04	1.63E-04	3.36E+02	2.97E+02	6.50E+02	7.33E+02	2.05E-04	1.70E-04	7.33E+02	6.50E+02	6.40E+02	7.25E+02	2.02E-04	1.68E-04	7.25E+02	6.40E+02
Strontium	9.30E+00	1.05E+01	1.10E-05	9.12E-06	1.05E+01	9.30E+00	3.00E+00	3.38E+00	1.15E-05	9.53E-06	3.38E+00	3.00E+00	3.13E+00	3.54E+00	1.13E-05	9.39E-06	3.54E+00	3.13E+00
Thallium	1.00E-02	1.13E-02	7.84E-08	6.51E-08	1.13E-02	1.00E-02	5.00E-03	5.64E-03	8.20E-08	6.81E-08	5.64E-03	5.00E-03	1.10E-02	1.25E-02	8.08E-08	6.71E-08	1.25E-02	1.10E-02
Tin	2.50E-02	2.82E-02	1.57E-06	1.30E-06	2.82E-02	2.50E-02	2.50E-02	2.82E-02	1.64E-06	1.36E-06	2.82E-02	2.50E-02	2.50E-02	2.83E-02	1.62E-06	1.34E-06	2.83E-02	2.50E-02
Titanium	3.58E+00	4.05E+00	1.73E-03	1.43E-03	4.05E+00	3.58E+00	7.60E+00	8.57E+00	1.80E-03	1.50E-03	8.57E+00	7.60E+00	6.90E+00	7.81E+00	1.78E-03	1.48E-03	7.82E+00	6.90E+00
Uranium	9.10E-03	1.03E-02	7.84E-08	6.51E-08	1.03E-02	9.10E-03	1.20E-02	1.35E-02	8.20E-08	6.81E-08	1.35E-02	1.20E-02	1.70E-02	1.93E-02	8.08E-08	6.71E-08	1.93E-02	1.70E-02
Vanadium	1.60E-01	1.81E-01	7.84E-05	6.51E-05	1.81E-01	1.60E-01	2.50E-01	2.82E-01	8.20E-05	6.81E-05	2.82E-01	2.50E-01	1.70E-01	1.93E-01	8.08E-05	6.71E-05	1.93E-01	1.70E-01
Zinc	2.14E+01	2.42E+01	4.63E-05	3.84E-05	2.42E+01	2.14E+01	1.89E+01	2.13E+01	4.84E-05	4.02E-05	2.13E+01	1.89E+01	1.62E+01	1.83E+01	4.76E-05	3.96E-05	1.83E+01	1.62E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables). Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.*

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)						Lichen (Flavocetraria nivalis)								
Sample ID	SITE 15 - F. NIVALIS (no soil match)						REFA-01								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals															
Aluminum	1.21E+02	1.56E+02	2.29E-02	1.90E-02	1.56E+02	1.21E+02	7.49E+01	8.48E+01	7.33E+03	1.16E-02	8.49E+01	2.48E-02	2.06E-02	8.49E+01	7.50E+01
Antimony	5.00E-03	6.43E-03	7.90E-08	6.56E-08	6.43E-03	5.00E-03	3.40E-03	3.85E-03	5.00E-02	7.70E-02	3.85E-03	8.55E-08	7.10E-08	3.85E-03	3.40E-03
Arsenic	6.90E-02	8.87E-02	3.95E-07	3.28E-07	8.87E-02	6.90E-02	3.83E-02	4.34E-02	2.44E+00	1.78E-02	4.34E-02	4.27E-07	3.55E-07	4.34E-02	3.83E-02
Barium	7.21E+00	9.27E+00	2.37E-06	1.97E-06	9.27E+00	7.21E+00	1.32E+01	1.49E+01	2.37E+01	6.31E-01	1.49E+01	2.56E-06	2.13E-06	1.49E+01	1.32E+01
Beryllium	5.00E-02	6.43E-02	2.61E-07	2.17E-07	6.43E-02	5.00E-02	3.10E-03	3.51E-03	1.00E-01	3.51E-02	3.51E-03	2.82E-07	2.34E-07	3.51E-03	3.10E-03
Bismuth	1.50E-02	1.93E-02	7.90E-08	6.56E-08	1.93E-02	1.50E-02	2.00E-03	2.27E-03	1.00E-01	2.27E-02	2.27E-03	8.55E-08	7.10E-08	2.27E-03	2.00E-03
Cadmium	3.61E-02	4.64E-02	7.90E-08	6.56E-08	4.64E-02	3.61E-02	6.20E-02	7.02E-02	2.50E-02	2.81E+00	7.02E-02	8.55E-08	7.10E-08	7.02E-02	6.20E-02
Calcium	1.32E+03	1.70E+03	2.53E-02	2.10E-02	1.70E+03	1.32E+03	3.75E+03	4.25E+03	2.66E+03	1.60E+00	4.25E+03	2.74E-02	2.27E-02	4.25E+03	3.76E+03
Chromium	4.73E+00	6.08E+00	1.19E-04	9.84E-05	6.08E+00	4.73E+00	1.58E-01	1.79E-01	1.71E+01	1.05E-02	1.79E-01	1.28E-04	1.06E-04	1.79E-01	1.58E-01
Cobalt	1.53E-01	1.97E-01	2.77E-05	2.30E-05	1.97E-01	1.53E-01	1.44E-01	1.63E-01	4.35E+00	3.75E-02	1.63E-01	2.99E-05	2.48E-05	1.63E-01	1.44E-01
Copper	1.58E+00	2.03E+00	8.69E-05	7.22E-05	2.03E+00	1.58E+00	7.47E-01	8.46E-01	4.34E+00	1.95E-01	8.48E-01	9.40E-05	7.81E-05	8.49E-01	7.49E-01
Iron	1.54E+02	1.98E+02	3.87E-02	3.22E-02	1.98E+02	1.54E+02	-	-	-	-	-	-	-	-	-
Lead	4.17E-01	5.36E-01	4.74E-07	3.94E-07	5.36E-01	4.17E-01	2.68E-01	3.04E-01	3.02E+00	1.01E-01	3.04E-01	5.13E-07	4.26E-07	3.04E-01	2.68E-01
Magnesium	4.53E+02	5.82E+02	1.82E-02	1.51E-02	5.82E+02	4.53E+02	1.05E+03	1.19E+03	4.22E+03	2.82E-01	1.19E+03	1.97E-02	1.63E-02	1.19E+03	1.05E+03
Manganese	3.02E+01	3.88E+01	7.35E-04	6.10E-04	3.88E+01	3.02E+01	1.03E+02	1.17E+02	1.26E+02	9.26E-01	1.17E+02	7.95E-04	6.60E-04	1.17E+02	1.03E+02
Mercury	3.31E-02	4.25E-02	7.90E-09	6.56E-09	4.25E-02	3.31E-02	4.43E-02	5.02E-02	6.60E-03	7.60E+00	5.02E-02	8.55E-09	7.10E-09	5.02E-02	4.43E-02
Molybdenum	5.20E-02	6.68E-02	3.95E-07	3.28E-07	6.68E-02	5.20E-02	2.57E-02	2.91E-02	7.30E-01	3.99E-02	2.91E-02	4.27E-07	3.55E-07	2.91E-02	2.57E-02
Nickel	2.24E+00	2.88E+00	5.69E-05	4.73E-05	2.88E+00	2.24E+00	2.02E-01	2.29E-01	8.57E+00	2.67E-02	2.29E-01	6.16E-05	5.11E-05	2.29E-01	2.02E-01
Phosphorus	3.62E+02	4.65E+02	1.74E-04	1.44E-04	4.65E+02	3.62E+02	6.44E+02	7.29E+02	2.54E+02	2.87E+00	7.29E+02	1.88E-04	1.56E-04	7.29E+02	6.44E+02
Potassium	1.54E+03	1.98E+03	7.90E-05	6.56E-05	1.98E+03	1.54E+03	1.63E+03	1.85E+03	9.00E+02	2.05E+00	1.85E+03	8.55E-05	7.10E-05	1.85E+03	1.63E+03
Selenium	1.00E-01	1.29E-01	3.95E-07	3.28E-07	1.29E-01	1.00E-01	6.30E-02	7.13E-02	1.00E-01	7.13E-01	7.14E-02	4.27E-07	3.55E-07	7.14E-02	6.30E-02
Silver	1.10E-02	1.41E-02	7.90E-08	6.56E-08	1.41E-02	1.10E-02	-	-	-	-	-	-	-	-	-
Sodium	4.90E+02	6.30E+02	1.98E-04	1.64E-04	6.30E+02	4.90E+02	4.31E+02	4.88E+02	3.00E+02	1.63E+00	4.88E+02	2.14E-04	1.77E-04	4.88E+02	4.31E+02
Strontium	5.41E+00	6.95E+00	1.11E-05	9.19E-06	6.95E+00	5.41E+00	9.83E+00	1.11E+01	1.46E+01	7.63E-01	1.11E+01	1.20E-05	9.94E-06	1.11E+01	9.83E+00
Thallium	5.00E-03	6.43E-03	7.90E-08	6.56E-08	6.43E-03	5.00E-03	4.37E-03	4.95E-03	5.90E-02	8.39E-02	4.95E-03	8.55E-08	7.10E-08	4.95E-03	4.37E-03
Tin	2.50E-02	3.21E-02	1.58E-06	1.31E-06	3.21E-02	2.50E-02	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	1.71E-06	1.42E-06	1.13E-02	1.00E-02
Titanium	9.50E+00	1.22E+01	1.74E-03	1.44E-03	1.22E+01	9.50E+00	-	-	-	-	-	-	-	-	-
Uranium	1.17E-02	1.50E-02	7.90E-08	6.56E-08	1.50E-02	1.17E-02	8.52E-03	9.65E-03	4.95E-01	1.95E-02	9.65E-03	8.55E-08	7.10E-08	9.65E-03	8.52E-03
Vanadium	3.10E-01	3.98E-01	7.90E-05	6.56E-05	3.99E-01	3.10E-01	2.00E-01	2.27E-01	3.25E+01	6.97E-03	2.27E-01	8.55E-05	7.10E-05	2.27E-01	2.00E-01
Zinc	1.46E+01	1.88E+01	4.66E-05	3.87E-05	1.88E+01	1.46E+01	2.33E+01	2.64E+01	1.76E+01	1.50E+00	2.64E+01	5.04E-05	4.19E-05	2.64E+01	2.33E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	REFA-02									REFA-03								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.74E+02	1.99E+02	1.96E+04	1.01E-02	1.99E+02	2.48E-02	2.06E-02	1.99E+02	1.74E+02	1.63E+02	1.86E+02	5.57E+03	3.34E-02	1.86E+02	2.51E-02	2.08E-02	1.86E+02	1.63E+02
Antimony	3.70E-03	4.23E-03	5.00E-02	8.46E-02	4.23E-03	8.54E-08	7.09E-08	4.23E-03	3.70E-03	3.70E-03	4.22E-03	5.00E-02	8.44E-02	4.22E-03	8.66E-08	7.19E-08	4.22E-03	3.70E-03
Arsenic	4.99E-02	5.70E-02	2.39E+00	2.39E-02	5.70E-02	4.27E-07	3.55E-07	5.70E-02	4.99E-02	5.05E-02	5.76E-02	7.24E-01	7.95E-02	5.76E-02	4.33E-07	3.59E-07	5.76E-02	5.05E-02
Barium	1.12E+01	1.28E+01	1.31E+02	9.77E-02	1.28E+01	2.56E-06	2.13E-06	1.28E+01	1.12E+01	1.03E+01	1.17E+01	1.45E+01	8.10E-01	1.17E+01	2.60E-06	2.16E-06	1.17E+01	1.03E+01
Beryllium	6.90E-03	7.89E-03	6.40E-01	1.23E-02	7.89E-03	2.82E-07	2.34E-07	7.89E-03	6.90E-03	4.40E-03	5.02E-03	1.00E-01	5.02E-02	5.02E-03	2.86E-07	2.37E-07	5.02E-03	4.40E-03
Bismuth	3.00E-03	3.43E-03	2.10E-01	1.63E-02	3.43E-03	8.54E-08	7.09E-08	3.43E-03	3.00E-03	2.80E-03	3.19E-03	1.00E-01	3.19E-02	3.19E-03	8.66E-08	7.19E-08	3.19E-03	2.80E-03
Cadmium	8.65E-02	9.89E-02	6.00E-02	1.65E+00	9.89E-02	8.54E-08	7.09E-08	9.89E-02	8.65E-02	4.93E-02	5.62E-02	2.50E-02	2.25E+00	5.62E-02	8.66E-08	7.19E-08	5.62E-02	4.93E-02
Calcium	4.03E+03	4.61E+03	6.16E+03	7.48E-01	4.61E+03	2.73E-02	2.27E-02	4.61E+03	4.03E+03	2.82E+03	3.22E+03	2.04E+03	1.58E+00	3.22E+03	2.77E-02	2.30E-02	3.22E+03	2.83E+03
Chromium	4.29E-01	4.90E-01	5.44E+01	9.01E-03	4.90E-01	1.28E-04	1.06E-04	4.91E-01	4.29E-01	3.01E-01	3.43E-01	1.11E+01	3.09E-02	3.44E-01	1.30E-04	1.08E-04	3.44E-01	3.02E-01
Cobalt	1.76E-01	2.01E-01	1.19E+01	1.69E-02	2.01E-01	2.99E-05	2.48E-05	2.01E-01	1.76E-01	1.88E-01	2.14E-01	4.10E+00	5.23E-02	2.15E-01	3.03E-05	2.52E-05	2.15E-01	1.88E-01
Copper	9.79E-01	1.12E+00	2.52E+01	4.44E-02	1.12E+00	9.40E-05	7.80E-05	1.12E+00	9.80E-01	9.22E-01	1.05E+00	9.87E+00	1.07E-01	1.05E+00	9.52E-05	7.91E-05	1.05E+00	9.23E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	4.39E-01	5.02E-01	7.93E+00	6.33E-02	5.02E-01	5.13E-07	4.26E-07	5.02E-01	4.39E-01	3.65E-01	4.16E-01	1.66E+00	2.51E-01	4.16E-01	5.19E-07	4.31E-07	4.16E-01	3.65E-01
Magnesium	1.35E+03	1.54E+03	1.26E+04	1.22E-01	1.54E+03	1.96E-02	1.63E-02	1.54E+03	1.35E+03	9.84E+02	1.12E+03	3.40E+03	3.30E-01	1.12E+03	1.99E-02	1.65E-02	1.12E+03	9.85E+02
Manganese	8.69E+01	9.93E+01	3.48E+02	2.85E-01	9.93E+01	7.94E-04	6.60E-04	9.93E+01	8.69E+01	1.14E+02	1.30E+02	1.01E+02	1.29E+00	1.30E+02	8.05E-04	6.68E-04	1.30E+02	1.14E+02
Mercury	5.49E-02	6.27E-02	2.50E-03	2.51E+01	6.28E-02	8.54E-09	7.09E-09	6.28E-02	5.49E-02	6.06E-02	6.91E-02	6.00E-03	1.15E+01	6.91E-02	8.66E-09	7.19E-09	6.91E-02	6.06E-02
Molybdenum	4.67E-02	5.34E-02	5.50E-01	9.70E-02	5.34E-02	4.27E-07	3.55E-07	5.34E-02	4.67E-02	3.79E-02	4.32E-02	2.50E-01	1.73E-01	4.32E-02	4.33E-07	3.59E-07	4.32E-02	3.79E-02
Nickel	4.43E-01	5.06E-01	2.99E+01	1.69E-02	5.06E-01	6.15E-05	5.11E-05	5.06E-01	4.43E-01	2.88E-01	3.28E-01	7.68E+00	4.28E-02	3.29E-01	6.23E-05	5.18E-05	3.29E-01	2.88E-01
Phosphorus	5.07E+02	5.79E+02	7.14E+02	8.12E-01	5.79E+02	1.88E-04	1.56E-04	5.79E+02	5.07E+02	4.57E+02	5.21E+02	2.99E+02	1.74E+00	5.21E+02	1.90E-04	1.58E-04	5.21E+02	4.57E+02
Potassium	1.38E+03	1.58E+03	5.83E+03	2.71E-01	1.58E+03	8.54E-05	7.09E-05	1.58E+03	1.38E+03	1.28E+03	1.46E+03	5.10E+02	2.86E+00	1.46E+03	8.66E-05	7.19E-05	1.46E+03	1.28E+03
Selenium	7.00E-02	8.00E-02	1.00E-01	8.00E-01	8.00E-02	4.27E-07	3.55E-07	8.00E-02	7.00E-02	6.50E-02	7.41E-02	1.00E-01	7.41E-01	7.42E-02	4.33E-07	3.59E-07	7.42E-02	6.50E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.71E+02	4.24E+02	1.45E+03	2.92E-01	4.24E+02	2.14E-04	1.77E-04	4.24E+02	3.71E+02	4.46E+02	5.09E+02	1.50E+02	3.39E+00	5.09E+02	2.16E-04	1.80E-04	5.09E+02	4.46E+02
Strontium	1.30E+01	1.49E+01	3.97E+01	3.74E-01	1.49E+01	1.20E-05	9.93E-06	1.49E+01	1.30E+01	8.86E+00	1.01E+01	9.37E+00	1.08E+00	1.01E+01	1.21E-05	1.01E-05	1.01E+01	8.86E+00
Thallium	5.44E-03	6.22E-03	2.58E-01	2.41E-02	6.22E-03	8.54E-08	7.09E-08	6.22E-03	5.44E-03	5.94E-03	6.77E-03	2.50E-02	2.71E-01	6.78E-03	8.66E-08	7.19E-08	6.78E-03	5.94E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.71E-06	1.42E-06	1.14E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.73E-06	1.44E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	3.50E-02	4.00E-02	1.69E+00	2.37E-02	4.00E-02	8.54E-08	7.09E-08	4.00E-02	3.50E-02	1.61E-02	1.84E-02	3.29E-01	5.58E-02	1.84E-02	8.66E-08	7.19E-08	1.84E-02	1.61E-02
Vanadium	4.57E-01	5.22E-01	6.23E+01	8.38E-03	5.22E-01	8.54E-05	7.09E-05	5.22E-01	4.57E-01	4.59E-01	5.23E-01	2.41E+01	2.17E-02	5.24E-01	8.66E-05	7.19E-05	5.24E-01	4.59E-01
Zinc	1.96E+01	2.24E+01	5.87E+01	3.82E-01	2.24E+01	5.04E-05	4.18E-05	2.24E+01	1.96E+01	1.89E+01	2.16E+01	1.56E+01	1.38E+00	2.16E+01	5.11E-05	4.24E-05	2.16E+01	1.89E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	REFB-01									REFB-02								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.15E+02	1.31E+02	4.75E+03	2.77E-02	1.32E+02	2.27E-02	1.88E-02	1.32E+02	1.15E+02	1.29E+02	1.48E+02	9.36E+03	1.58E-02	1.48E+02	2.26E-02	1.88E-02	1.48E+02	1.29E+02
Antimony	3.90E-03	4.46E-03	5.00E-02	8.91E-02	4.46E-03	7.81E-08	6.49E-08	4.46E-03	3.90E-03	3.50E-03	4.02E-03	5.00E-02	8.04E-02	4.02E-03	7.79E-08	6.47E-08	4.02E-03	3.50E-03
Arsenic	7.81E-02	8.93E-02	9.21E-01	9.69E-02	8.93E-02	3.91E-07	3.24E-07	8.93E-02	7.81E-02	6.00E-02	6.89E-02	9.49E-01	7.26E-02	6.89E-02	3.90E-07	3.24E-07	6.89E-02	6.00E-02
Barium	1.43E+01	1.63E+01	1.60E+01	1.02E+00	1.63E+01	2.34E-06	1.95E-06	1.63E+01	1.43E+01	1.23E+01	1.41E+01	1.87E+01	7.55E-01	1.41E+01	2.34E-06	1.94E-06	1.41E+01	1.23E+01
Beryllium	6.90E-03	7.89E-03	1.00E-01	7.89E-02	7.89E-03	2.58E-07	2.14E-07	7.89E-03	6.90E-03	9.60E-03	1.10E-02	1.00E-01	1.10E-01	1.10E-02	2.57E-07	2.14E-07	1.10E-02	9.60E-03
Bismuth	4.30E-03	4.91E-03	1.00E-01	4.91E-02	4.91E-03	7.81E-08	6.49E-08	4.91E-03	4.30E-03	3.20E-03	3.67E-03	1.00E-01	3.67E-02	3.67E-03	7.79E-08	6.47E-08	3.67E-03	3.20E-03
Cadmium	9.17E-02	1.05E-01	2.50E-02	4.19E+00	1.05E-01	7.81E-08	6.49E-08	1.05E-01	9.17E-02	1.16E-01	1.33E-01	6.20E-02	2.15E+00	1.33E-01	7.79E-08	6.47E-08	1.33E-01	1.16E-01
Calcium	4.90E+03	5.60E+03	1.51E+03	3.71E+00	5.61E+03	2.50E-02	2.08E-02	5.61E+03	4.91E+03	5.09E+03	5.84E+03	1.97E+03	2.97E+00	5.85E+03	2.49E-02	2.07E-02	5.85E+03	5.10E+03
Chromium	2.19E-01	2.50E-01	9.95E+00	2.52E-02	2.51E-01	1.17E-04	9.73E-05	2.51E-01	2.19E-01	2.09E-01	2.40E-01	1.72E+01	1.40E-02	2.40E-01	1.17E-04	9.71E-05	2.40E-01	2.09E-01
Cobalt	1.85E-01	2.11E-01	4.28E+00	4.94E-02	2.12E-01	2.73E-05	2.27E-05	2.12E-01	1.85E-01	3.95E-01	4.54E-01	5.85E+00	7.75E-02	4.54E-01	2.73E-05	2.27E-05	4.54E-01	3.95E-01
Copper	9.18E-01	1.05E+00	9.96E+00	1.05E-01	1.05E+00	8.59E-05	7.13E-05	1.05E+00	9.19E-01	9.96E-01	1.14E+00	1.00E+01	1.14E-01	1.14E+00	8.57E-05	7.12E-05	1.14E+00	9.97E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.41E-01	7.33E-01	1.50E+00	4.88E-01	7.33E-01	4.69E-07	3.89E-07	7.33E-01	6.41E-01	6.75E-01	7.75E-01	2.96E+00	2.62E-01	7.75E-01	4.68E-07	3.88E-07	7.75E-01	6.75E-01
Magnesium	9.13E+02	1.04E+03	3.26E+03	3.20E-01	1.04E+03	1.80E-02	1.49E-02	1.04E+03	9.14E+02	1.09E+03	1.25E+03	4.81E+03	2.60E-01	1.25E+03	1.79E-02	1.49E-02	1.25E+03	1.09E+03
Manganese	9.49E+01	1.08E+02	9.64E+01	1.13E+00	1.09E+02	7.26E-04	6.03E-04	1.09E+02	9.50E+01	5.61E+01	6.44E+01	1.57E+02	4.10E-01	6.44E+01	7.25E-04	6.02E-04	6.44E+01	5.61E+01
Mercury	6.66E-02	7.61E-02	2.50E-03	3.04E+01	7.61E-02	7.81E-09	6.49E-09	7.61E-02	6.66E-02	6.89E-02	7.91E-02	2.87E-02	2.76E+00	7.91E-02	7.79E-09	6.47E-09	7.91E-02	6.89E-02
Molybdenum	2.96E-02	3.38E-02	2.50E-01	1.35E-01	3.38E-02	3.91E-07	3.24E-07	3.38E-02	2.96E-02	2.49E-02	2.86E-02	2.50E-01	1.14E-01	2.86E-02	3.90E-07	3.24E-07	2.86E-02	2.49E-02
Nickel	2.84E-01	3.25E-01	8.12E+00	4.00E-02	3.25E-01	5.62E-05	4.67E-05	3.25E-01	2.84E-01	4.00E-01	4.59E-01	1.35E+01	3.40E-02	4.59E-01	5.61E-05	4.66E-05	4.60E-01	4.00E-01
Phosphorus	3.56E+02	4.07E+02	2.49E+02	1.63E+00	4.07E+02	1.72E-04	1.43E-04	4.07E+02	3.56E+02	3.74E+02	4.29E+02	2.82E+02	1.52E+00	4.29E+02	1.71E-04	1.42E-04	4.29E+02	3.74E+02
Potassium	1.17E+03	1.34E+03	5.90E+02	2.27E+00	1.34E+03	7.81E-05	6.49E-05	1.34E+03	1.17E+03	1.20E+03	1.38E+03	6.50E+02	2.12E+00	1.38E+03	7.79E-05	6.47E-05	1.38E+03	1.20E+03
Selenium	7.90E-02	9.03E-02	1.00E-01	9.03E-01	9.03E-02	3.91E-07	3.24E-07	9.03E-02	7.90E-02	7.20E-02	8.27E-02	1.00E-01	8.27E-01	8.27E-02	3.90E-07	3.24E-07	8.27E-02	7.20E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	2.62E+02	2.99E+02	5.00E+01	5.99E+00	3.00E+02	1.95E-04	1.62E-04	3.00E+02	2.62E+02	3.19E+02	3.66E+02	1.10E+02	3.33E+00	3.66E+02	1.95E-04	1.62E-04	3.66E+02	3.19E+02
Strontium	1.45E+01	1.66E+01	7.65E+00	2.17E+00	1.66E+01	1.09E-05	9.08E-06	1.66E+01	1.45E+01	1.97E+01	2.26E+01	1.17E+01	1.93E+00	2.26E+01	1.09E-05	9.06E-06	2.26E+01	1.97E+01
Thallium	1.10E-02	1.26E-02	2.50E-02	5.03E-01	1.26E-02	7.81E-08	6.49E-08	1.26E-02	1.10E-02	6.81E-03	7.82E-03	2.50E-02	3.13E-01	7.82E-03	7.79E-08	6.47E-08	7.82E-03	6.81E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.56E-06	1.30E-06	1.14E-02	1.00E-02	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.56E-06	1.29E-06	1.15E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.63E-02	3.01E-02	3.26E-01	9.22E-02	3.01E-02	7.81E-08	6.49E-08	3.01E-02	2.63E-02	4.33E-02	4.97E-02	4.17E-01	1.19E-01	4.97E-02	7.79E-08	6.47E-08	4.97E-02	4.33E-02
Vanadium	3.25E-01	3.71E-01	1.75E+01	2.12E-02	3.72E-01	7.81E-05	6.49E-05	3.72E-01	3.25E-01	3.77E-01	4.33E-01	3.13E+01	1.38E-02	4.33E-01	7.79E-05	6.47E-05	4.33E-01	3.77E-01
Zinc	1.99E+01	2.27E+01	1.53E+01	1.49E+00	2.28E+01	4.61E-05	3.83E-05	2.28E+01	1.99E+01	2.06E+01	2.37E+01	2.85E+01	8.30E-01	2.37E+01	4.60E-05	3.82E-05	2.37E+01	2.06E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	REFB-03									REFC-01								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	7.74E+01	8.89E+01	6.78E+03	1.31E-02	8.89E+01	2.26E-02	1.88E-02	8.89E+01	7.75E+01	4.54E+01	5.19E+01	1.70E+04	3.05E-03	5.19E+01	2.31E-02	1.92E-02	5.19E+01	4.54E+01
Antimony	2.90E-03	3.33E-03	5.00E-02	6.66E-02	3.33E-03	7.79E-08	6.47E-08	3.33E-03	2.90E-03	1.00E-03	1.14E-03	5.00E-02	2.29E-02	1.14E-03	7.98E-08	6.62E-08	1.14E-03	1.00E-03
Arsenic	4.67E-02	5.36E-02	1.08E+00	4.96E-02	5.36E-02	3.90E-07	3.23E-07	5.36E-02	4.67E-02	3.83E-02	4.38E-02	2.93E+00	1.49E-02	4.38E-02	3.99E-07	3.31E-07	4.38E-02	3.83E-02
Barium	1.15E+01	1.32E+01	1.87E+01	7.06E-01	1.32E+01	2.34E-06	1.94E-06	1.32E+01	1.15E+01	1.13E+01	1.29E+01	7.70E+01	1.68E-01	1.29E+01	2.39E-06	1.99E-06	1.29E+01	1.13E+01
Beryllium	4.40E-03	5.05E-03	1.00E-01	5.05E-02	5.05E-03	2.57E-07	2.14E-07	5.05E-03	4.40E-03	2.40E-03	2.74E-03	4.40E-01	6.23E-03	2.74E-03	2.63E-07	2.19E-07	2.74E-03	2.40E-03
Bismuth	3.10E-03	3.56E-03	1.00E-01	3.56E-02	3.56E-03	7.79E-08	6.47E-08	3.56E-03	3.10E-03	2.10E-03	2.40E-03	1.00E-01	2.40E-02	2.40E-03	7.98E-08	6.62E-08	2.40E-03	2.10E-03
Cadmium	9.24E-02	1.06E-01	2.50E-02	4.24E+00	1.06E-01	7.79E-08	6.47E-08	1.06E-01	9.24E-02	9.54E-02	1.09E-01	2.50E-02	4.36E+00	1.09E-01	7.98E-08	6.62E-08	1.09E-01	9.54E-02
Calcium	4.44E+03	5.10E+03	2.62E+03	1.95E+00	5.10E+03	2.49E-02	2.07E-02	5.10E+03	4.45E+03	3.64E+03	4.16E+03	5.09E+03	8.17E-01	4.16E+03	2.55E-02	2.12E-02	4.16E+03	3.64E+03
Chromium	1.33E-01	1.53E-01	2.18E+01	7.00E-03	1.53E-01	1.17E-04	9.70E-05	1.53E-01	1.33E-01	6.70E-02	7.66E-02	4.36E+01	1.76E-03	7.66E-02	1.20E-04	9.94E-05	7.67E-02	6.71E-02
Cobalt	1.23E-01	1.41E-01	7.47E+00	1.89E-02	1.41E-01	2.73E-05	2.26E-05	1.41E-01	1.23E-01	8.04E-02	9.19E-02	1.05E+01	8.75E-03	9.19E-02	2.79E-05	2.32E-05	9.19E-02	8.04E-02
Copper	7.44E-01	8.54E-01	1.16E+01	7.36E-02	8.55E-01	8.57E-05	7.12E-05	8.55E-01	7.45E-01	5.45E-01	6.23E-01	1.68E+01	3.71E-02	6.23E-01	8.77E-05	7.29E-05	6.23E-01	5.45E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.69E-01	7.68E-01	2.07E+00	3.71E-01	7.68E-01	4.68E-07	3.88E-07	7.68E-01	6.69E-01	2.83E-01	3.23E-01	6.16E+00	5.25E-02	3.23E-01	4.79E-07	3.97E-07	3.23E-01	2.83E-01
Magnesium	8.42E+02	9.67E+02	4.48E+03	2.16E-01	9.67E+02	1.79E-02	1.49E-02	9.67E+02	8.42E+02	9.20E+02	1.05E+03	7.53E+03	1.40E-01	1.05E+03	1.83E-02	1.52E-02	1.05E+03	9.20E+02
Manganese	5.87E+01	6.74E+01	2.37E+02	2.84E-01	6.74E+01	7.25E-04	6.02E-04	6.74E+01	5.87E+01	7.87E+01	8.99E+01	2.53E+02	3.56E-01	9.00E+01	7.42E-04	6.16E-04	9.00E+01	7.87E+01
Mercury	4.43E-02	5.09E-02	2.50E-03	2.03E+01	5.09E-02	7.79E-09	6.47E-09	5.09E-02	4.43E-02	3.88E-02	4.43E-02	1.01E-02	4.39E+00	4.43E-02	7.98E-09	6.62E-09	4.43E-02	3.88E-02
Molybdenum	3.61E-02	4.14E-02	2.50E-01	1.66E-01	4.15E-02	3.90E-07	3.23E-07	4.15E-02	3.61E-02	2.66E-02	3.04E-02	2.50E-01	1.22E-01	3.04E-02	3.99E-07	3.31E-07	3.04E-02	2.66E-02
Nickel	2.21E-01	2.54E-01	1.17E+01	2.17E-02	2.54E-01	5.61E-05	4.66E-05	2.54E-01	2.21E-01	1.27E-01	1.45E-01	2.19E+01	6.63E-03	1.45E-01	5.74E-05	4.77E-05	1.45E-01	1.27E-01
Phosphorus	2.88E+02	3.31E+02	3.98E+02	8.31E-01	3.31E+02	1.71E-04	1.42E-04	3.31E+02	2.88E+02	3.42E+02	3.91E+02	4.14E+02	9.44E-01	3.91E+02	1.75E-04	1.46E-04	3.91E+02	3.42E+02
Potassium	1.15E+03	1.32E+03	5.20E+02	2.54E+00	1.32E+03	7.79E-05	6.47E-05	1.32E+03	1.15E+03	1.13E+03	1.29E+03	2.73E+03	4.73E-01	1.29E+03	7.98E-05	6.62E-05	1.29E+03	1.13E+03
Selenium	6.60E-02	7.58E-02	1.00E-01	7.58E-01	7.58E-02	3.90E-07	3.23E-07	7.58E-02	6.60E-02	6.60E-02	7.54E-02	1.00E-01	7.54E-01	7.55E-02	3.99E-07	3.31E-07	7.55E-02	6.60E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.57E+02	4.10E+02	2.00E+02	2.05E+00	4.10E+02	1.95E-04	1.62E-04	4.10E+02	3.57E+02	3.66E+02	4.18E+02	4.60E+02	9.09E-01	4.18E+02	1.99E-04	1.66E-04	4.18E+02	3.66E+02
Strontium	1.68E+01	1.93E+01	1.37E+01	1.41E+00	1.93E+01	1.09E-05	9.06E-06	1.93E+01	1.68E+01	1.03E+01	1.18E+01	3.48E+01	3.38E-01	1.18E+01	1.12E-05	9.27E-06	1.18E+01	1.03E+01
Thallium	4.70E-03	5.40E-03	2.50E-02	2.16E-01	5.40E-03	7.79E-08	6.47E-08	5.40E-03	4.70E-03	4.59E-03	5.25E-03	1.68E-01	3.12E-02	5.25E-03	7.98E-08	6.62E-08	5.25E-03	4.59E-03
Tin	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.56E-06	1.29E-06	1.15E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.60E-06	1.32E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.67E-02	1.92E-02	9.09E-01	2.11E-02	1.92E-02	7.79E-08	6.47E-08	1.92E-02	1.67E-02	1.47E-02	1.68E-02	1.44E+00	1.17E-02	1.68E-02	7.98E-08	6.62E-08	1.68E-02	1.47E-02
Vanadium	1.84E-01	2.11E-01	2.86E+01	7.39E-03	2.11E-01	7.79E-05	6.47E-05	2.11E-01	1.84E-01	1.00E-01	1.14E-01	5.33E+01	2.14E-03	1.14E-01	7.98E-05	6.62E-05	1.14E-01	1.00E-01
Zinc	1.61E+01	1.85E+01	2.19E+01	8.44E-01	1.85E+01	4.60E-05	3.82E-05	1.85E+01	1.61E+01	2.35E+01	2.69E+01	4.11E+01	6.53E-01	2.69E+01	4.71E-05	3.91E-05	2.69E+01	2.35E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	REFC-02									REFC-03								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.01E+02	1.16E+02	4.62E+03	2.51E-02	1.16E+02	2.44E-02	2.03E-02	1.16E+02	1.01E+02	1.08E+02	1.23E+02	5.65E+03	2.17E-02	1.23E+02	2.47E-02	2.05E-02	1.23E+02	1.08E+02
Antimony	2.50E-03	2.87E-03	5.00E-02	5.74E-02	2.87E-03	8.41E-08	6.98E-08	2.87E-03	2.50E-03	2.70E-03	3.07E-03	5.00E-02	6.14E-02	3.07E-03	8.52E-08	7.08E-08	3.07E-03	2.70E-03
Arsenic	4.88E-02	5.60E-02	8.70E-01	6.44E-02	5.60E-02	4.21E-07	3.49E-07	5.60E-02	4.88E-02	5.84E-02	6.64E-02	9.17E-01	7.25E-02	6.64E-02	4.26E-07	3.54E-07	6.64E-02	5.84E-02
Barium	8.89E+00	1.02E+01	1.68E+01	6.08E-01	1.02E+01	2.52E-06	2.10E-06	1.02E+01	8.89E+00	1.33E+01	1.51E+01	1.54E+01	9.83E-01	1.51E+01	2.56E-06	2.12E-06	1.51E+01	1.33E+01
Beryllium	6.00E-03	6.89E-03	1.00E-01	6.89E-02	6.89E-03	2.78E-07	2.31E-07	6.89E-03	6.00E-03	5.00E-03	5.69E-03	1.00E-01	5.69E-02	5.69E-03	2.81E-07	2.34E-07	5.69E-03	5.00E-03
Bismuth	3.10E-03	3.56E-03	1.00E-01	3.56E-02	3.56E-03	8.41E-08	6.98E-08	3.56E-03	3.10E-03	2.80E-03	3.19E-03	1.00E-01	3.19E-02	3.19E-03	8.52E-08	7.08E-08	3.19E-03	2.80E-03
Cadmium	6.45E-02	7.41E-02	2.50E-02	2.96E+00	7.41E-02	8.41E-08	6.98E-08	7.41E-02	6.45E-02	1.02E-01	1.16E-01	2.50E-02	4.64E+00	1.16E-01	8.52E-08	7.08E-08	1.16E-01	1.02E-01
Calcium	4.49E+03	5.15E+03	2.05E+03	2.51E+00	5.16E+03	2.69E-02	2.24E-02	5.16E+03	4.50E+03	4.69E+03	5.34E+03	1.86E+03	2.87E+00	5.35E+03	2.73E-02	2.26E-02	5.35E+03	4.70E+03
Chromium	2.42E-01	2.78E-01	1.36E+01	2.04E-02	2.78E-01	1.26E-04	1.05E-04	2.78E-01	2.42E-01	1.85E-01	2.10E-01	1.73E+01	1.22E-02	2.11E-01	1.28E-04	1.06E-04	2.11E-01	1.85E-01
Cobalt	1.80E-01	2.07E-01	4.46E+00	4.63E-02	2.07E-01	2.94E-05	2.44E-05	2.07E-01	1.80E-01	1.82E-01	2.07E-01	4.99E+00	4.15E-02	2.07E-01	2.98E-05	2.48E-05	2.07E-01	1.82E-01
Copper	8.08E-01	9.28E-01	4.85E+00	1.92E-01	9.30E-01	9.25E-05	7.68E-05	9.30E-01	8.10E-01	7.06E-01	8.03E-01	1.14E+01	7.05E-02	8.04E-01	9.38E-05	7.78E-05	8.04E-01	7.07E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	3.28E-01	3.77E-01	1.65E+00	2.28E-01	3.77E-01	5.05E-07	4.19E-07	3.77E-01	3.28E-01	4.13E-01	4.70E-01	1.64E+00	2.86E-01	4.70E-01	5.11E-07	4.25E-07	4.70E-01	4.13E-01
Magnesium	1.08E+03	1.24E+03	2.70E+03	4.59E-01	1.24E+03	1.93E-02	1.61E-02	1.24E+03	1.08E+03	1.08E+03	1.23E+03	3.73E+03	3.29E-01	1.23E+03	1.96E-02	1.63E-02	1.23E+03	1.08E+03
Manganese	8.77E+01	1.01E+02	1.05E+02	9.59E-01	1.01E+02	7.82E-04	6.50E-04	1.01E+02	8.78E+01	6.14E+01	6.99E+01	1.25E+02	5.59E-01	6.99E+01	7.93E-04	6.58E-04	6.99E+01	6.15E+01
Mercury	4.84E-02	5.56E-02	2.50E-03	2.22E+01	5.56E-02	8.41E-09	6.98E-09	5.56E-02	4.84E-02	4.68E-02	5.32E-02	2.50E-03	2.13E+01	5.33E-02	8.52E-09	7.08E-09	5.33E-02	4.68E-02
Molybdenum	3.66E-02	4.20E-02	2.50E-01	1.68E-01	4.20E-02	4.21E-07	3.49E-07	4.20E-02	3.66E-02	2.40E-02	2.73E-02	2.50E-01	1.09E-01	2.73E-02	4.26E-07	3.54E-07	2.73E-02	2.40E-02
Nickel	2.54E-01	2.92E-01	6.64E+00	4.40E-02	2.92E-01	6.06E-05	5.03E-05	2.92E-01	2.54E-01	2.42E-01	2.75E-01	1.02E+01	2.70E-02	2.76E-01	6.14E-05	5.10E-05	2.76E-01	2.42E-01
Phosphorus	4.18E+02	4.80E+02	3.50E+02	1.37E+00	4.80E+02	1.85E-04	1.54E-04	4.80E+02	4.18E+02	4.04E+02	4.60E+02	2.82E+02	1.63E+00	4.60E+02	1.88E-04	1.56E-04	4.60E+02	4.04E+02
Potassium	1.26E+03	1.45E+03	5.90E+02	2.45E+00	1.45E+03	8.41E-05	6.98E-05	1.45E+03	1.26E+03	1.20E+03	1.37E+03	5.80E+02	2.35E+00	1.37E+03	8.52E-05	7.08E-05	1.37E+03	1.20E+03
Selenium	8.30E-02	9.53E-02	1.00E-01	9.53E-01	9.53E-02	4.21E-07	3.49E-07	9.53E-02	8.30E-02	8.50E-02	9.67E-02	1.00E-01	9.67E-01	9.68E-02	4.26E-07	3.54E-07	9.68E-02	8.50E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	4.17E+02	4.79E+02	1.40E+02	3.42E+00	4.79E+02	2.10E-04	1.75E-04	4.79E+02	4.17E+02	3.61E+02	4.11E+02	1.20E+02	3.42E+00	4.11E+02	2.13E-04	1.77E-04	4.11E+02	3.61E+02
Strontium	1.36E+01	1.56E+01	1.16E+01	1.35E+00	1.56E+01	1.18E-05	9.78E-06	1.56E+01	1.36E+01	1.43E+01	1.63E+01	9.21E+00	1.77E+00	1.63E+01	1.19E-05	9.91E-06	1.63E+01	1.43E+01
Thallium	4.53E-03	5.20E-03	2.50E-02	2.08E-01	5.20E-03	8.41E-08	6.98E-08	5.20E-03	4.53E-03	5.65E-03	6.43E-03	2.50E-02	2.57E-01	6.43E-03	8.52E-08	7.08E-08	6.43E-03	5.65E-03
Tin	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.68E-06	1.40E-06	1.15E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.70E-06	1.42E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	3.42E-02	3.93E-02	4.15E-01	9.46E-02	3.93E-02	8.41E-08	6.98E-08	3.93E-02	3.42E-02	8.02E-03	9.12E-03	3.36E-01	2.72E-02	9.12E-03	8.52E-08	7.08E-08	9.12E-03	8.02E-03
Vanadium	3.05E-01	3.50E-01	2.30E+01	1.52E-02	3.50E-01	8.41E-05	6.98E-05	3.50E-01	3.05E-01	3.14E-01	3.57E-01	2.31E+01	1.55E-02	3.57E-01	8.52E-05	7.08E-05	3.57E-01	3.14E-01
Zinc	1.89E+01	2.17E+01	1.33E+01	1.63E+00	2.17E+01	4.96E-05	4.12E-05	2.17E+01	1.89E+01	2.28E+01	2.59E+01	1.68E+01	1.54E+00	2.59E+01	5.03E-05	4.18E-05	2.59E+01	2.28E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-01									LSA-02								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.56E+02	1.78E+02	9.51E+03	1.88E-02	1.79E+02	1.89E-01	1.57E-01	1.79E+02	1.57E+02	1.65E+02	1.87E+02	2.72E+04	6.89E-03	1.87E+02	4.05E-02	3.36E-02	1.87E+02	1.65E+02
Antimony	4.00E-03	4.58E-03	5.01E-02	9.15E-02	4.58E-03	6.50E-07	5.40E-07	4.59E-03	4.01E-03	5.10E-03	5.79E-03	5.00E-02	1.16E-01	5.79E-03	1.40E-07	1.16E-07	5.79E-03	5.10E-03
Arsenic	6.74E-02	7.71E-02	2.97E+00	2.60E-02	7.71E-02	3.25E-06	2.70E-06	7.71E-02	6.74E-02	7.19E-02	8.16E-02	3.77E+00	2.16E-02	8.16E-02	6.98E-07	5.79E-07	8.16E-02	7.19E-02
Barium	4.38E+00	5.01E+00	3.53E+01	1.42E-01	5.01E+00	1.95E-05	1.62E-05	5.01E+00	4.38E+00	2.19E+00	2.49E+00	1.64E+02	1.52E-02	2.49E+00	4.19E-06	3.47E-06	2.49E+00	2.19E+00
Beryllium	3.80E-03	4.35E-03	1.00E-01	4.35E-02	4.36E-03	2.15E-06	1.78E-06	4.36E-03	3.81E-03	3.60E-03	4.09E-03	7.90E-01	5.17E-03	4.09E-03	4.60E-07	3.82E-07	4.09E-03	3.60E-03
Bismuth	2.50E-03	2.86E-03	1.00E-01	2.86E-02	2.86E-03	6.50E-07	5.40E-07	2.86E-03	2.50E-03	3.70E-03	4.20E-03	2.30E-01	1.83E-02	4.20E-03	1.40E-07	1.16E-07	4.20E-03	3.70E-03
Cadmium	5.41E-02	6.19E-02	2.51E-02	2.48E+00	6.21E-02	6.50E-07	5.40E-07	6.21E-02	5.43E-02	6.31E-02	7.16E-02	2.50E-02	2.86E+00	7.17E-02	1.40E-07	1.16E-07	7.17E-02	6.31E-02
Calcium	1.14E+04	1.30E+04	3.50E+03	3.76E+00	1.31E+04	2.08E-01	1.73E-01	1.31E+04	1.15E+04	1.18E+04	1.34E+04	6.80E+03	1.97E+00	1.34E+04	4.46E-02	3.71E-02	1.34E+04	1.18E+04
Chromium	5.08E-01	5.81E-01	4.10E+01	1.42E-02	5.83E-01	9.75E-04	8.10E-04	5.84E-01	5.10E-01	7.51E-01	8.52E-01	7.78E+01	1.10E-02	8.53E-01	2.09E-04	1.74E-04	8.53E-01	7.51E-01
Cobalt	1.24E-01	1.42E-01	9.95E+00	1.43E-02	1.42E-01	2.28E-04	1.89E-04	1.42E-01	1.25E-01	1.93E-01	2.19E-01	1.59E+01	1.38E-02	2.19E-01	4.88E-05	4.05E-05	2.19E-01	1.93E-01
Copper	1.13E+00	1.29E+00	2.36E+01	5.50E-02	1.30E+00	7.15E-04	5.94E-04	1.30E+00	1.14E+00	1.39E+00	1.58E+00	4.12E+01	3.83E-02	1.58E+00	1.53E-04	1.27E-04	1.58E+00	1.39E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	2.87E-01	3.28E-01	2.43E+00	1.35E-01	3.28E-01	3.90E-06	3.24E-06	3.28E-01	2.87E-01	4.60E-01	5.22E-01	9.46E+00	5.52E-02	5.22E-01	8.37E-07	6.95E-07	5.22E-01	4.60E-01
Magnesium	1.13E+03	1.29E+03	6.68E+03	1.94E-01	1.30E+03	1.50E-01	1.24E-01	1.30E+03	1.13E+03	8.21E+02	9.32E+02	1.79E+04	5.21E-02	9.32E+02	3.21E-02	2.66E-02	9.32E+02	8.21E+02
Manganese	2.19E+01	2.51E+01	2.84E+02	8.85E-02	2.51E+01	6.05E-03	5.02E-03	2.51E+01	2.20E+01	2.04E+01	2.32E+01	4.13E+02	5.61E-02	2.32E+01	1.30E-03	1.08E-03	2.32E+01	2.04E+01
Mercury	5.95E-02	6.81E-02	8.41E-03	8.10E+00	6.81E-02	6.50E-08	5.40E-08	6.81E-02	5.96E-02	5.95E-02	6.75E-02	7.30E-03	9.25E+00	6.76E-02	1.40E-08	1.16E-08	6.76E-02	5.95E-02
Molybdenum	5.56E-02	6.36E-02	2.50E-01	2.54E-01	6.37E-02	3.25E-06	2.70E-06	6.37E-02	5.57E-02	2.97E-02	3.37E-02	2.50E-01	1.35E-01	3.37E-02	6.98E-07	5.79E-07	3.37E-02	2.97E-02
Nickel	3.83E-01	4.38E-01	2.73E+01	1.61E-02	4.39E-01	4.68E-04	3.89E-04	4.40E-01	3.84E-01	4.39E-01	4.98E-01	3.99E+01	1.25E-02	4.98E-01	1.00E-04	8.34E-05	4.99E-01	4.39E-01
Phosphorus	3.54E+02	4.05E+02	2.42E+02	1.67E+00	4.05E+02	1.43E-03	1.19E-03	4.05E+02	3.54E+02	3.04E+02	3.45E+02	3.63E+02	9.51E-01	3.45E+02	3.07E-04	2.55E-04	3.45E+02	3.04E+02
Potassium	1.24E+03	1.42E+03	1.05E+03	1.35E+00	1.42E+03	6.50E-04	5.40E-04	1.42E+03	1.24E+03	1.10E+03	1.25E+03	7.79E+03	1.60E-01	1.25E+03	1.40E-04	1.16E-04	1.25E+03	1.10E+03
Selenium	6.20E-02	7.09E-02	1.00E-01	7.09E-01	7.12E-02	3.25E-06	2.70E-06	7.12E-02	6.23E-02	1.09E-01	1.24E-01	1.00E-01	1.24E+00	1.24E-01	6.98E-07	5.79E-07	1.24E-01	1.09E-01
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.41E+02	3.90E+02	2.40E+02	1.63E+00	3.91E+02	1.63E-03	1.35E-03	3.91E+02	3.41E+02	3.38E+02	3.84E+02	1.07E+03	3.59E-01	3.84E+02	3.49E-04	2.90E-04	3.84E+02	3.38E+02
Strontium	2.51E+01	2.87E+01	1.49E+01	1.93E+00	2.87E+01	9.10E-05	7.56E-05	2.87E+01	2.51E+01	1.23E+01	1.40E+01	3.23E+01	4.32E-01	1.40E+01	1.95E-05	1.62E-05	1.40E+01	1.23E+01
Thallium	2.44E-03	2.79E-03	5.61E-02	4.99E-02	2.80E-03	6.50E-07	5.40E-07	2.80E-03	2.44E-03	2.80E-03	3.18E-03	3.56E-01	8.93E-03	3.18E-03	1.40E-07	1.16E-07	3.18E-03	2.80E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.15E-02	1.30E-05	1.08E-05	1.15E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	2.79E-06	2.32E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.04E-02	1.19E-02	4.76E-01	2.50E-02	1.19E-02	6.50E-07	5.40E-07	1.19E-02	1.04E-02	5.81E-03	6.59E-03	8.63E-01	7.64E-03	6.59E-03	1.40E-07	1.16E-07	6.60E-03	5.81E-03
Vanadium	5.20E-01	5.95E-01	3.87E+01	1.54E-02	5.96E-01	6.50E-04	5.40E-04	5.97E-01	5.22E-01	6.85E-01	7.78E-01	8.20E+01	9.48E-03	7.78E-01	1.40E-04	1.16E-04	7.78E-01	6.85E-01
Zinc	1.55E+01	1.77E+01	3.44E+01	5.17E-01	1.78E+01	3.84E-04	3.19E-04	1.78E+01	1.55E+01	1.03E+01	1.17E+01	8.05E+01	1.45E-01	1.17E+01	8.23E-05	6.83E-05	1.17E+01	1.03E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-03									LSA-04								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.13E+02	2.45E+02	5.60E+03	4.38E-02	2.45E+02	4.33E-02	3.59E-02	2.45E+02	2.13E+02	2.40E+02	2.73E+02	1.23E+04	2.22E-02	2.73E+02	1.14E-01	9.50E-02	2.73E+02	2.40E+02
Antimony	4.50E-03	5.18E-03	5.00E-02	1.04E-01	5.18E-03	1.49E-07	1.24E-07	5.18E-03	4.50E-03	3.40E-03	3.87E-03	5.01E-02	7.74E-02	3.87E-03	3.95E-07	3.28E-07	3.87E-03	3.40E-03
Arsenic	7.13E-02	8.20E-02	7.26E-01	1.13E-01	8.21E-02	7.46E-07	6.19E-07	8.21E-02	7.13E-02	8.87E-02	1.01E-01	2.35E+00	4.29E-02	1.01E-01	1.97E-06	1.64E-06	1.01E-01	8.87E-02
Barium	1.49E+01	1.71E+01	2.18E+01	7.87E-01	1.71E+01	4.48E-06	3.72E-06	1.71E+01	1.49E+01	3.55E+00	4.04E+00	5.42E+01	7.45E-02	4.04E+00	1.18E-05	9.83E-06	4.04E+00	3.55E+00
Beryllium	4.70E-03	5.41E-03	1.00E-01	5.41E-02	5.41E-03	4.92E-07	4.09E-07	5.41E-03	4.70E-03	5.10E-03	5.80E-03	2.30E-01	2.52E-02	5.81E-03	1.30E-06	1.08E-06	5.81E-03	5.10E-03
Bismuth	3.70E-03	4.26E-03	1.00E-01	4.26E-02	4.26E-03	1.49E-07	1.24E-07	4.26E-03	3.70E-03	4.90E-03	5.57E-03	1.00E-01	5.57E-02	5.58E-03	3.95E-07	3.28E-07	5.58E-03	4.90E-03
Cadmium	8.85E-02	1.02E-01	2.50E-02	4.07E+00	1.02E-01	1.49E-07	1.24E-07	1.02E-01	8.86E-02	9.60E-02	1.09E-01	2.51E-02	4.37E+00	1.09E-01	3.95E-07	3.28E-07	1.09E-01	9.62E-02
Calcium	6.35E+03	7.31E+03	1.87E+03	3.93E+00	7.33E+03	4.77E-02	3.96E-02	7.33E+03	6.37E+03	1.44E+04	1.64E+04	4.74E+03	3.47E+00	1.64E+04	1.26E-01	1.05E-01	1.64E+04	1.45E+04
Chromium	7.52E-01	8.65E-01	1.43E+01	6.05E-02	8.67E-01	2.24E-04	1.86E-04	8.67E-01	7.54E-01	1.14E+00	1.30E+00	3.98E+01	3.27E-02	1.30E+00	5.92E-04	4.91E-04	1.30E+00	1.14E+00
Cobalt	2.86E-01	3.29E-01	4.72E+00	6.99E-02	3.30E-01	5.22E-05	4.33E-05	3.30E-01	2.86E-01	3.41E-01	3.88E-01	1.11E+01	3.49E-02	3.89E-01	1.38E-04	1.15E-04	3.89E-01	3.42E-01
Copper	1.17E+00	1.35E+00	6.49E+00	2.08E-01	1.35E+00	1.64E-04	1.36E-04	1.35E+00	1.17E+00	2.13E+00	2.42E+00	2.39E+01	1.02E-01	2.43E+00	4.34E-04	3.60E-04	2.43E+00	2.14E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.06E-01	6.97E-01	1.78E+00	3.92E-01	6.97E-01	8.95E-07	7.43E-07	6.97E-01	6.06E-01	6.52E-01	7.42E-01	3.32E+00	2.23E-01	7.42E-01	2.37E-06	1.97E-06	7.42E-01	6.52E-01
Magnesium	1.37E+03	1.58E+03	3.64E+03	4.33E-01	1.58E+03	3.43E-02	2.85E-02	1.58E+03	1.37E+03	6.53E+02	7.43E+02	7.50E+03	9.92E-02	7.44E+02	9.08E-02	7.54E-02	7.44E+02	6.54E+02
Manganese	1.08E+02	1.24E+02	1.23E+02	1.01E+00	1.24E+02	1.39E-03	1.15E-03	1.24E+02	1.08E+02	2.31E+01	2.63E+01	3.27E+02	8.04E-02	2.63E+01	3.67E-03	3.05E-03	2.63E+01	2.31E+01
Mercury	6.18E-02	7.11E-02	7.40E-03	9.61E+00	7.11E-02	1.49E-08	1.24E-08	7.11E-02	6.18E-02	5.45E-02	6.20E-02	8.81E-03	7.05E+00	6.20E-02	3.95E-08	3.28E-08	6.20E-02	5.45E-02
Molybdenum	3.14E-02	3.61E-02	2.50E-01	1.45E-01	3.61E-02	7.46E-07	6.19E-07	3.61E-02	3.14E-02	3.68E-02	4.19E-02	2.50E-01	1.67E-01	4.19E-02	1.97E-06	1.64E-06	4.19E-02	3.68E-02
Nickel	5.36E-01	6.17E-01	8.26E+00	7.48E-02	6.18E-01	1.07E-04	8.92E-05	6.18E-01	5.37E-01	9.96E-01	1.13E+00	2.40E+01	4.72E-02	1.13E+00	2.84E-04	2.36E-04	1.14E+00	9.98E-01
Phosphorus	5.64E+02	6.49E+02	2.27E+02	2.86E+00	6.49E+02	3.28E-04	2.72E-04	6.49E+02	5.64E+02	3.08E+02	3.50E+02	1.70E+02	2.06E+00	3.51E+02	8.68E-04	7.21E-04	3.51E+02	3.08E+02
Potassium	1.46E+03	1.68E+03	8.60E+02	1.95E+00	1.68E+03	1.49E-04	1.24E-04	1.68E+03	1.46E+03	1.09E+03	1.24E+03	2.16E+03	5.74E-01	1.24E+03	3.95E-04	3.28E-04	1.24E+03	1.09E+03
Selenium	7.00E-02	8.06E-02	1.00E-01	8.06E-01	8.06E-02	7.46E-07	6.19E-07	8.06E-02	7.01E-02	7.70E-02	8.76E-02	1.00E-01	8.76E-01	8.78E-02	1.97E-06	1.64E-06	8.78E-02	7.72E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	5.32E+02	6.12E+02	1.80E+02	3.40E+00	6.12E+02	3.73E-04	3.10E-04	6.12E+02	5.32E+02	3.64E+02	4.14E+02	4.60E+02	9.00E-01	4.14E+02	9.87E-04	8.19E-04	4.14E+02	3.64E+02
Strontium	1.95E+01	2.24E+01	9.66E+00	2.32E+00	2.24E+01	2.09E-05	1.73E-05	2.24E+01	1.95E+01	1.30E+01	1.48E+01	2.15E+01	6.88E-01	1.48E+01	5.52E-05	4.59E-05	1.48E+01	1.30E+01
Thallium	3.34E-03	3.84E-03	2.50E-02	1.54E-01	3.85E-03	1.49E-07	1.24E-07	3.85E-03	3.34E-03	4.21E-03	4.79E-03	1.14E-01	4.20E-02	4.79E-03	3.95E-07	3.28E-07	4.79E-03	4.21E-03
Tin	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	2.98E-06	2.48E-06	1.15E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	7.89E-06	6.55E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.21E-02	2.54E-02	3.92E-01	6.49E-02	2.54E-02	1.49E-07	1.24E-07	2.54E-02	2.21E-02	1.09E-02	1.24E-02	3.69E-01	3.36E-02	1.24E-02	3.95E-07	3.28E-07	1.24E-02	1.09E-02
Vanadium	8.40E-01	9.67E-01	2.31E+01	4.18E-02	9.67E-01	1.49E-04	1.24E-04	9.68E-01	8.41E-01	9.02E-01	1.03E+00	4.70E+01	2.19E-02	1.03E+00	3.95E-04	3.28E-04	1.03E+00	9.03E-01
Zinc	2.48E+01	2.85E+01	1.64E+01	1.74E+00	2.86E+01	8.80E-05	7.31E-05	2.86E+01	2.48E+01	1.33E+01	1.51E+01	3.42E+01	4.42E-01	1.51E+01	2.33E-04	1.93E-04	1.51E+01	1.33E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-05									LSA-06								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.27E+02	2.61E+02	5.55E+03	4.70E-02	2.61E+02	2.30E-02	1.91E-02	2.61E+02	2.27E+02	9.23E+01	1.06E+02	4.80E+03	2.22E-02	1.07E+02	2.46E-02	2.04E-02	1.07E+02	9.24E+01
Antimony	4.10E-03	4.71E-03	5.00E-02	9.41E-02	4.71E-03	7.95E-08	6.60E-08	4.71E-03	4.10E-03	3.50E-03	4.04E-03	5.00E-02	8.07E-02	4.04E-03	8.48E-08	7.04E-08	4.04E-03	3.50E-03
Arsenic	2.05E-01	2.35E-01	3.92E+00	6.00E-02	2.35E-01	3.97E-07	3.30E-07	2.35E-01	2.05E-01	6.10E-02	7.04E-02	8.55E-01	8.23E-02	7.04E-02	4.24E-07	3.52E-07	7.04E-02	6.10E-02
Barium	3.23E+00	3.71E+00	6.85E+00	5.41E-01	3.71E+00	2.38E-06	1.98E-06	3.71E+00	3.23E+00	2.78E+00	3.21E+00	1.19E+01	2.69E-01	3.21E+00	2.54E-06	2.11E-06	3.21E+00	2.78E+00
Beryllium	6.50E-03	7.46E-03	1.00E-01	7.46E-02	7.47E-03	2.62E-07	2.18E-07	7.47E-03	6.50E-03	4.90E-03	5.65E-03	1.00E-01	5.65E-02	5.65E-03	2.80E-07	2.32E-07	5.65E-03	4.90E-03
Bismuth	5.30E-03	6.08E-03	1.00E-01	6.08E-02	6.09E-03	7.95E-08	6.60E-08	6.09E-03	5.30E-03	4.50E-03	5.19E-03	1.00E-01	5.19E-02	5.19E-03	8.48E-08	7.04E-08	5.19E-03	4.50E-03
Cadmium	8.57E-02	9.84E-02	2.50E-02	3.94E+00	9.84E-02	7.95E-08	6.60E-08	9.84E-02	8.57E-02	6.30E-02	7.27E-02	2.50E-02	2.91E+00	7.27E-02	8.48E-08	7.04E-08	7.27E-02	6.30E-02
Calcium	9.09E+03	1.04E+04	1.74E+03	6.00E+00	1.05E+04	2.54E-02	2.11E-02	1.05E+04	9.11E+03	2.02E+03	2.33E+03	1.53E+03	1.52E+00	2.34E+03	2.71E-02	2.25E-02	2.34E+03	2.02E+03
Chromium	5.85E-01	6.72E-01	1.50E+01	4.48E-02	6.72E-01	1.19E-04	9.90E-05	6.72E-01	5.86E-01	1.54E-01	1.78E-01	1.30E+01	1.37E-02	1.78E-01	1.27E-04	1.06E-04	1.78E-01	1.54E-01
Cobalt	3.10E-01	3.56E-01	5.72E+00	6.22E-02	3.56E-01	2.78E-05	2.31E-05	3.56E-01	3.10E-01	6.08E-02	7.01E-02	5.11E+00	1.37E-02	7.02E-02	2.97E-05	2.47E-05	7.02E-02	6.09E-02
Copper	1.97E+00	2.26E+00	2.71E+01	8.35E-02	2.26E+00	8.74E-05	7.26E-05	2.26E+00	1.97E+00	5.97E-01	6.89E-01	1.22E+01	5.64E-02	6.89E-01	9.33E-05	7.75E-05	6.89E-01	5.98E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	7.87E-01	9.04E-01	1.75E+00	5.16E-01	9.04E-01	4.77E-07	3.96E-07	9.04E-01	7.87E-01	7.36E-01	8.49E-01	1.42E+00	5.98E-01	8.49E-01	5.09E-07	4.23E-07	8.49E-01	7.36E-01
Magnesium	5.73E+02	6.58E+02	3.08E+03	2.14E-01	6.58E+02	1.83E-02	1.52E-02	6.58E+02	5.73E+02	6.13E+02	7.07E+02	2.87E+03	2.46E-01	7.08E+02	1.95E-02	1.62E-02	7.08E+02	6.14E+02
Manganese	2.96E+01	3.40E+01	1.45E+02	2.34E-01	3.40E+01	7.39E-04	6.14E-04	3.40E+01	2.96E+01	2.24E+01	2.58E+01	1.32E+02	1.96E-01	2.59E+01	7.89E-04	6.55E-04	2.59E+01	2.24E+01
Mercury	1.06E-01	1.22E-01	2.50E-03	4.87E+01	1.22E-01	7.95E-09	6.60E-09	1.22E-01	1.06E-01	1.06E-01	1.22E-01	2.50E-03	4.89E+01	1.22E-01	8.48E-09	7.04E-09	1.22E-01	1.06E-01
Molybdenum	3.97E-02	4.56E-02	2.50E-01	1.82E-01	4.56E-02	3.97E-07	3.30E-07	4.56E-02	3.97E-02	3.21E-02	3.70E-02	2.50E-01	1.48E-01	3.70E-02	4.24E-07	3.52E-07	3.70E-02	3.21E-02
Nickel	5.75E-01	6.60E-01	9.87E+00	6.70E-02	6.61E-01	5.72E-05	4.75E-05	6.61E-01	5.75E-01	2.20E-01	2.54E-01	8.67E+00	2.93E-02	2.54E-01	6.11E-05	5.07E-05	2.54E-01	2.20E-01
Phosphorus	3.55E+02	4.08E+02	1.13E+02	3.61E+00	4.08E+02	1.75E-04	1.45E-04	4.08E+02	3.55E+02	5.25E+02	6.06E+02	1.61E+02	3.76E+00	6.06E+02	1.87E-04	1.55E-04	6.06E+02	5.25E+02
Potassium	9.85E+02	1.13E+03	1.60E+02	7.07E+00	1.13E+03	7.95E-05	6.60E-05	1.13E+03	9.85E+02	1.14E+03	1.31E+03	2.60E+02	5.06E+00	1.31E+03	8.48E-05	7.04E-05	1.31E+03	1.14E+03
Selenium	9.70E-02	1.11E-01	1.00E-01	1.11E+00	1.11E-01	3.97E-07	3.30E-07	1.11E-01	9.71E-02	5.90E-02	6.81E-02	1.00E-01	6.81E-01	6.81E-02	4.24E-07	3.52E-07	6.81E-02	5.90E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.81E+02	4.37E+02	5.00E+01	8.75E+00	4.38E+02	1.99E-04	1.65E-04	4.38E+02	3.81E+02	5.09E+02	5.87E+02	1.20E+02	4.89E+00	5.87E+02	2.12E-04	1.76E-04	5.87E+02	5.09E+02
Strontium	7.46E+00	8.56E+00	7.52E+00	1.14E+00	8.57E+00	1.11E-05	9.24E-06	8.57E+00	7.46E+00	5.46E+00	6.30E+00	7.71E+00	8.17E-01	6.30E+00	1.19E-05	9.86E-06	6.30E+00	5.46E+00
Thallium	4.12E-03	4.73E-03	2.50E-02	1.89E-01	4.73E-03	7.95E-08	6.60E-08	4.73E-03	4.12E-03	3.99E-03	4.60E-03	2.50E-02	1.84E-01	4.60E-03	8.48E-08	7.04E-08	4.60E-03	3.99E-03
Tin	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.59E-06	1.32E-06	1.15E-02	1.00E-02	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.70E-06	1.41E-06	1.15E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	7.37E-03	8.46E-03	4.05E-01	2.09E-02	8.46E-03	7.95E-08	6.60E-08	8.46E-03	7.37E-03	9.91E-03	1.14E-02	3.10E-01	3.69E-02	1.14E-02	8.48E-08	7.04E-08	1.14E-02	9.91E-03
Vanadium	8.87E-01	1.02E+00	2.79E+01	3.65E-02	1.02E+00	7.95E-05	6.60E-05	1.02E+00	8.87E-01	1.97E-01	2.27E-01	2.47E+01	9.20E-03	2.27E-01	8.48E-05	7.04E-05	2.27E-01	1.97E-01
Zinc	1.36E+01	1.56E+01	1.34E+01	1.17E+00	1.56E+01	4.69E-05	3.89E-05	1.56E+01	1.36E+01	1.36E+01	1.57E+01	1.43E+01	1.10E+00	1.57E+01	5.01E-05	4.16E-05	1.57E+01	1.36E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-07A									LSA-07B								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.05E+02	3.42E+02	6.96E+03	4.92E-02	3.42E+02	2.28E-02	1.89E-02	3.42E+02	3.05E+02	1.50E+02	1.72E+02	5.92E+03	2.91E-02	1.72E+02	2.28E-02	1.89E-02	1.72E+02	1.50E+02
Antimony	1.17E-02	1.31E-02	5.00E-02	2.63E-01	1.31E-02	7.86E-08	6.52E-08	1.31E-02	1.17E-02	6.40E-03	7.35E-03	5.00E-02	1.47E-01	7.35E-03	7.86E-08	6.52E-08	7.35E-03	6.40E-03
Arsenic	1.62E-01	1.82E-01	3.03E+00	6.00E-02	1.82E-01	3.93E-07	3.26E-07	1.82E-01	1.62E-01	9.27E-02	1.06E-01	2.37E+00	4.49E-02	1.06E-01	3.93E-07	3.26E-07	1.06E-01	9.27E-02
Barium	1.00E+01	1.12E+01	2.50E+01	4.49E-01	1.12E+01	2.36E-06	1.96E-06	1.12E+01	1.00E+01	8.14E+00	9.35E+00	2.06E+01	4.54E-01	9.35E+00	2.36E-06	1.96E-06	9.35E+00	8.14E+00
Beryllium	1.11E-02	1.25E-02	1.00E-01	1.25E-01	1.25E-02	2.59E-07	2.15E-07	1.25E-02	1.11E-02	6.50E-03	7.46E-03	1.00E-01	7.46E-02	7.47E-03	2.59E-07	2.15E-07	7.47E-03	6.50E-03
Bismuth	5.80E-03	6.51E-03	1.00E-01	6.51E-02	6.51E-03	7.86E-08	6.52E-08	6.51E-03	5.80E-03	3.10E-03	3.56E-03	1.00E-01	3.56E-02	3.56E-03	7.86E-08	6.52E-08	3.56E-03	3.10E-03
Cadmium	1.00E-01	1.12E-01	2.50E-02	4.49E+00	1.12E-01	7.86E-08	6.52E-08	1.12E-01	1.00E-01	7.84E-02	9.00E-02	2.50E-02	3.60E+00	9.00E-02	7.86E-08	6.52E-08	9.00E-02	7.84E-02
Calcium	9.56E+03	1.07E+04	2.31E+03	4.64E+00	1.07E+04	2.51E-02	2.09E-02	1.07E+04	9.57E+03	7.16E+03	8.22E+03	2.06E+03	3.99E+00	8.23E+03	2.51E-02	2.09E-02	8.23E+03	7.17E+03
Chromium	5.98E-01	6.71E-01	1.82E+01	3.69E-02	6.72E-01	1.18E-04	9.78E-05	6.72E-01	5.99E-01	2.95E-01	3.39E-01	2.07E+01	1.64E-02	3.39E-01	1.18E-04	9.78E-05	3.39E-01	2.95E-01
Cobalt	2.78E-01	3.12E-01	7.28E+00	4.29E-02	3.12E-01	2.75E-05	2.28E-05	3.12E-01	2.78E-01	2.17E-01	2.49E-01	5.87E+00	4.24E-02	2.49E-01	2.75E-05	2.28E-05	2.49E-01	2.17E-01
Copper	1.87E+00	2.10E+00	1.65E+01	1.27E-01	2.10E+00	8.64E-05	7.18E-05	2.10E+00	1.87E+00	9.44E-01	1.08E+00	1.29E+01	8.40E-02	1.08E+00	8.64E-05	7.18E-05	1.08E+00	9.45E-01
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	7.29E-01	8.18E-01	3.08E+00	2.66E-01	8.18E-01	4.71E-07	3.91E-07	8.18E-01	7.29E-01	5.04E-01	5.79E-01	2.37E+00	2.44E-01	5.79E-01	4.71E-07	3.91E-07	5.79E-01	5.04E-01
Magnesium	7.54E+02	8.46E+02	4.61E+03	1.84E-01	8.47E+02	1.81E-02	1.50E-02	8.47E+02	7.54E+02	7.85E+02	9.01E+02	3.91E+03	2.31E-01	9.02E+02	1.81E-02	1.50E-02	9.02E+02	7.85E+02
Manganese	4.82E+01	5.41E+01	1.75E+02	3.09E-01	5.41E+01	7.31E-04	6.07E-04	5.41E+01	4.82E+01	4.14E+01	4.75E+01	1.27E+02	3.74E-01	4.76E+01	7.31E-04	6.07E-04	4.76E+01	4.14E+01
Mercury	7.49E-02	8.41E-02	1.48E-02	5.68E+00	8.41E-02	7.86E-09	6.52E-09	8.41E-02	7.49E-02	7.37E-02	8.46E-02	1.03E-02	8.22E+00	8.46E-02	7.86E-09	6.52E-09	8.46E-02	7.37E-02
Molybdenum	7.05E-02	7.91E-02	2.50E-01	3.16E-01	7.91E-02	3.93E-07	3.26E-07	7.91E-02	7.05E-02	3.17E-02	3.64E-02	2.50E-01	1.46E-01	3.64E-02	3.93E-07	3.26E-07	3.64E-02	3.17E-02
Nickel	6.22E-01	6.98E-01	1.39E+01	5.02E-02	6.98E-01	5.66E-05	4.70E-05	6.99E-01	6.22E-01	3.82E-01	4.39E-01	1.30E+01	3.37E-02	4.39E-01	5.66E-05	4.70E-05	4.39E-01	3.82E-01
Phosphorus	4.19E+02	4.70E+02	3.51E+02	1.34E+00	4.70E+02	1.73E-04	1.44E-04	4.70E+02	4.19E+02	3.53E+02	4.05E+02	2.77E+02	1.46E+00	4.05E+02	1.73E-04	1.44E-04	4.05E+02	3.53E+02
Potassium	1.17E+03	1.31E+03	6.40E+02	2.05E+00	1.31E+03	7.86E-05	6.52E-05	1.31E+03	1.17E+03	1.15E+03	1.32E+03	6.40E+02	2.06E+00	1.32E+03	7.86E-05	6.52E-05	1.32E+03	1.15E+03
Selenium	8.00E-02	8.98E-02	1.00E-01	8.98E-01	8.98E-02	3.93E-07	3.26E-07	8.98E-02	8.00E-02	6.90E-02	7.92E-02	1.00E-01	7.92E-01	7.93E-02	3.93E-07	3.26E-07	7.93E-02	6.90E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	2.80E+02	3.14E+02	5.00E+01	6.29E+00	3.14E+02	1.96E-04	1.63E-04	3.14E+02	2.80E+02	3.12E+02	3.58E+02	1.00E+02	3.58E+00	3.58E+02	1.96E-04	1.63E-04	3.58E+02	3.12E+02
Strontium	1.87E+01	2.10E+01	1.01E+01	2.08E+00	2.10E+01	1.10E-05	9.13E-06	2.10E+01	1.87E+01	1.51E+01	1.73E+01	8.33E+00	2.08E+00	1.73E+01	1.10E-05	9.13E-06	1.73E+01	1.51E+01
Thallium	5.54E-03	6.22E-03	2.50E-02	2.49E-01	6.22E-03	7.86E-08	6.52E-08	6.22E-03	5.54E-03	4.13E-03	4.74E-03	2.50E-02	1.90E-01	4.74E-03	7.86E-08	6.52E-08	4.74E-03	4.13E-03
Tin	1.00E-02	1.12E-02	1.00E+00	1.12E-02	1.12E-02	1.57E-06	1.30E-06	1.12E-02	1.00E-02	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.57E-06	1.30E-06	1.15E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.30E-02	2.58E-02	5.41E-01	4.77E-02	2.58E-02	7.86E-08	6.52E-08	2.58E-02	2.30E-02	2.70E-02	3.10E-02	1.07E+00	2.90E-02	3.10E-02	7.86E-08	6.52E-08	3.10E-02	2.70E-02
Vanadium	7.29E-01	8.18E-01	2.45E+01	3.34E-02	8.19E-01	7.86E-05	6.52E-05	8.19E-01	7.29E-01	3.70E-01	4.25E-01	2.37E+01	1.79E-02	4.25E-01	7.86E-05	6.52E-05	4.25E-01	3.70E-01
Zinc	2.02E+01	2.27E+01	2.17E+01	1.04E+00	2.27E+01	4.64E-05	3.85E-05	2.27E+01	2.02E+01	1.77E+01	2.03E+01	1.94E+01	1.05E+00	2.03E+01	4.64E-05	3.85E-05	2.03E+01	1.77E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-08									LSA-09A								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.42E+02	1.60E+02	7.07E+03	2.27E-02	1.61E+02	2.27E-02	1.89E-02	1.61E+02	1.42E+02	5.31E+02	6.01E+02	3.49E+03	1.73E-01	6.03E+02	5.55E-02	4.61E-02	6.03E+02	5.32E+02
Antimony	2.30E-03	2.60E-03	5.00E-02	5.20E-02	2.60E-03	7.84E-08	6.51E-08	2.60E-03	2.30E-03	3.80E-03	4.30E-03	5.00E-02	8.61E-02	4.31E-03	1.91E-07	1.59E-07	4.31E-03	3.80E-03
Arsenic	5.48E-02	6.19E-02	1.31E+00	4.73E-02	6.19E-02	3.92E-07	3.25E-07	6.19E-02	5.48E-02	2.92E-01	3.31E-01	9.99E-01	3.31E-01	3.31E-01	9.57E-07	7.95E-07	3.31E-01	2.92E-01
Barium	1.14E+01	1.29E+01	1.86E+01	6.93E-01	1.29E+01	2.35E-06	1.95E-06	1.29E+01	1.14E+01	1.18E+01	1.34E+01	1.46E+01	9.15E-01	1.34E+01	5.74E-06	4.77E-06	1.34E+01	1.18E+01
Beryllium	4.30E-03	4.86E-03	1.00E-01	4.86E-02	4.86E-03	2.59E-07	2.15E-07	4.86E-03	4.30E-03	9.60E-03	1.09E-02	1.00E-01	1.09E-01	1.09E-02	6.32E-07	5.25E-07	1.09E-02	9.61E-03
Bismuth	3.10E-03	3.50E-03	1.00E-01	3.50E-02	3.50E-03	7.84E-08	6.51E-08	3.50E-03	3.10E-03	4.60E-03	5.21E-03	1.00E-01	5.21E-02	5.21E-03	1.91E-07	1.59E-07	5.21E-03	4.60E-03
Cadmium	2.26E-01	2.55E-01	2.50E-02	1.02E+01	2.55E-01	7.84E-08	6.51E-08	2.55E-01	2.26E-01	1.15E-01	1.30E-01	2.50E-02	5.21E+00	1.30E-01	1.91E-07	1.59E-07	1.30E-01	1.15E-01
Calcium	5.68E+03	6.42E+03	2.26E+03	2.84E+00	6.43E+03	2.51E-02	2.08E-02	6.43E+03	5.69E+03	1.29E+04	1.46E+04	2.57E+03	5.71E+00	1.47E+04	6.13E-02	5.09E-02	1.47E+04	1.29E+04
Chromium	2.21E-01	2.50E-01	1.64E+01	1.52E-02	2.50E-01	1.18E-04	9.76E-05	2.50E-01	2.21E-01	2.66E+00	3.01E+00	1.22E+01	2.47E-01	3.02E+00	2.87E-04	2.38E-04	3.02E+00	2.67E+00
Cobalt	2.98E-01	3.37E-01	6.87E+00	4.90E-02	3.37E-01	2.74E-05	2.28E-05	3.37E-01	2.98E-01	8.41E-01	9.52E-01	2.85E+00	3.35E-01	9.55E-01	6.70E-05	5.56E-05	9.55E-01	8.44E-01
Copper	1.53E+00	1.73E+00	3.34E+01	5.18E-02	1.73E+00	8.62E-05	7.16E-05	1.73E+00	1.53E+00	2.80E+00	3.17E+00	4.09E+00	7.81E-01	3.19E+00	2.11E-04	1.75E-04	3.19E+00	2.82E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	4.62E-01	5.22E-01	2.55E+00	2.05E-01	5.22E-01	4.70E-07	3.91E-07	5.22E-01	4.62E-01	5.12E-01	5.80E-01	2.17E+00	2.67E-01	5.80E-01	1.15E-06	9.54E-07	5.80E-01	5.12E-01
Magnesium	8.76E+02	9.90E+02	3.40E+03	2.91E-01	9.91E+02	1.80E-02	1.50E-02	9.91E+02	8.77E+02	7.83E+02	8.87E+02	1.95E+03	4.57E-01	8.89E+02	4.40E-02	3.66E-02	8.89E+02	7.85E+02
Manganese	6.20E+01	7.01E+01	1.12E+02	6.26E-01	7.01E+01	7.29E-04	6.05E-04	7.01E+01	6.21E+01	4.23E+01	4.79E+01	9.18E+01	5.23E-01	4.80E+01	1.78E-03	1.48E-03	4.80E+01	4.24E+01
Mercury	4.31E-02	4.87E-02	7.90E-03	6.16E+00	4.87E-02	7.84E-09	6.51E-09	4.87E-02	4.31E-02	4.95E-02	5.61E-02	2.50E-03	2.24E+01	5.61E-02	1.91E-08	1.59E-08	5.61E-02	4.96E-02
Molybdenum	3.43E-02	3.88E-02	2.50E-01	1.55E-01	3.88E-02	3.92E-07	3.25E-07	3.88E-02	3.43E-02	5.01E-02	5.67E-02	2.50E-01	2.27E-01	5.68E-02	9.57E-07	7.95E-07	5.68E-02	5.01E-02
Nickel	4.31E-01	4.87E-01	1.32E+01	3.69E-02	4.87E-01	5.64E-05	4.69E-05	4.87E-01	4.31E-01	1.45E+00	1.64E+00	5.45E+00	3.02E-01	1.65E+00	1.38E-04	1.14E-04	1.65E+00	1.46E+00
Phosphorus	5.14E+02	5.81E+02	1.31E+02	4.43E+00	5.81E+02	1.72E-04	1.43E-04	5.81E+02	5.14E+02	3.92E+02	4.44E+02	4.29E+02	1.03E+00	4.44E+02	4.21E-04	3.50E-04	4.44E+02	3.92E+02
Potassium	1.52E+03	1.72E+03	3.70E+02	4.64E+00	1.72E+03	7.84E-05	6.51E-05	1.72E+03	1.52E+03	1.21E+03	1.37E+03	6.10E+02	2.25E+00	1.37E+03	1.91E-04	1.59E-04	1.37E+03	1.21E+03
Selenium	5.40E-02	6.10E-02	1.00E-01	6.10E-01	6.10E-02	3.92E-07	3.25E-07	6.10E-02	5.40E-02	7.90E-02	8.95E-02	1.00E-01	8.95E-01	8.96E-02	9.57E-07	7.95E-07	8.96E-02	7.91E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	5.24E+02	5.92E+02	2.30E+02	2.57E+00	5.92E+02	1.96E-04	1.63E-04	5.92E+02	5.24E+02	3.04E+02	3.44E+02	2.20E+02	1.56E+00	3.44E+02	4.79E-04	3.97E-04	3.44E+02	3.04E+02
Strontium	8.69E+00	9.82E+00	1.26E+01	7.79E-01	9.82E+00	1.10E-05	9.11E-06	9.82E+00	8.69E+00	1.52E+01	1.72E+01	1.24E+01	1.39E+00	1.72E+01	2.68E-05	2.23E-05	1.72E+01	1.52E+01
Thallium	4.55E-03	5.14E-03	2.50E-02	2.06E-01	5.14E-03	7.84E-08	6.51E-08	5.14E-03	4.55E-03	4.84E-03	5.48E-03	2.50E-02	2.19E-01	5.49E-03	1.91E-07	1.59E-07	5.49E-03	4.85E-03
Tin	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	1.57E-06	1.30E-06	1.13E-02	1.00E-02	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	3.83E-06	3.18E-06	1.13E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	7.06E-03	7.98E-03	4.08E-01	1.96E-02	7.98E-03	7.84E-08	6.51E-08	7.98E-03	7.06E-03	2.24E-02	2.54E-02	6.78E-01	3.74E-02	2.54E-02	1.91E-07	1.59E-07	2.54E-02	2.24E-02
Vanadium	3.65E-01	4.12E-01	3.00E+01	1.37E-02	4.13E-01	7.84E-05	6.51E-05	4.13E-01	3.65E-01	2.49E+00	2.82E+00	1.90E+01	1.48E-01	2.82E+00	1.91E-04	1.59E-04	2.82E+00	2.49E+00
Zinc	2.83E+01	3.20E+01	1.65E+01	1.94E+00	3.20E+01	4.63E-05	3.84E-05	3.20E+01	2.83E+01	2.04E+01	2.31E+01	8.92E+00	2.60E+00	2.31E+01	1.13E-04	9.38E-05	2.31E+01	2.04E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-09B									LSA-10								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.16E+02	2.46E+02	3.93E+03	6.28E-02	2.47E+02	5.55E-02	4.61E-02	2.47E+02	2.16E+02	1.75E+02	1.98E+02	6.59E+03	3.01E-02	1.98E+02	2.38E-02	1.98E-02	1.98E+02	1.75E+02
Antimony	5.30E-03	6.04E-03	5.00E-02	1.21E-01	6.05E-03	1.91E-07	1.59E-07	6.05E-03	5.30E-03	3.10E-03	3.51E-03	5.00E-02	7.02E-02	3.51E-03	8.20E-08	6.81E-08	3.51E-03	3.10E-03
Arsenic	1.45E-01	1.65E-01	1.01E+00	1.64E-01	1.65E-01	9.57E-07	7.95E-07	1.65E-01	1.45E-01	7.03E-02	7.96E-02	1.11E+00	7.17E-02	7.96E-02	4.10E-07	3.41E-07	7.96E-02	7.03E-02
Barium	1.29E+01	1.47E+01	1.82E+01	8.08E-01	1.47E+01	5.74E-06	4.77E-06	1.47E+01	1.29E+01	7.27E+00	8.23E+00	1.72E+01	4.79E-01	8.23E+00	2.46E-06	2.04E-06	8.23E+00	7.27E+00
Beryllium	9.20E-03	1.05E-02	1.00E-01	1.05E-01	1.05E-02	6.32E-07	5.25E-07	1.05E-02	9.21E-03	8.70E-03	9.85E-03	1.00E-01	9.85E-02	9.86E-03	2.71E-07	2.25E-07	9.86E-03	8.70E-03
Bismuth	3.40E-03	3.88E-03	1.00E-01	3.88E-02	3.88E-03	1.91E-07	1.59E-07	3.88E-03	3.40E-03	3.20E-03	3.62E-03	1.00E-01	3.62E-02	3.62E-03	8.20E-08	6.81E-08	3.62E-03	3.20E-03
Cadmium	1.29E-01	1.47E-01	2.50E-02	5.88E+00	1.47E-01	1.91E-07	1.59E-07	1.47E-01	1.29E-01	7.48E-02	8.47E-02	2.50E-02	3.39E+00	8.47E-02	8.20E-08	6.81E-08	8.47E-02	7.48E-02
Calcium	1.03E+04	1.17E+04	2.55E+03	4.62E+00	1.18E+04	6.13E-02	5.09E-02	1.18E+04	1.03E+04	1.13E+04	1.28E+04	1.73E+03	7.40E+00	1.28E+04	2.63E-02	2.18E-02	1.28E+04	1.13E+04
Chromium	4.87E-01	5.55E-01	1.31E+01	4.24E-02	5.57E-01	2.87E-04	2.38E-04	5.57E-01	4.89E-01	4.53E-01	5.13E-01	2.46E+01	2.09E-02	5.13E-01	1.23E-04	1.02E-04	5.13E-01	4.53E-01
Cobalt	3.89E-01	4.44E-01	3.11E+00	1.43E-01	4.45E-01	6.70E-05	5.56E-05	4.45E-01	3.90E-01	1.82E-01	2.06E-01	6.40E+00	3.22E-02	2.06E-01	2.87E-05	2.38E-05	2.06E-01	1.82E-01
Copper	1.91E+00	2.18E+00	4.89E+00	4.48E-01	2.19E+00	2.11E-04	1.75E-04	2.19E+00	1.92E+00	1.55E+00	1.76E+00	1.14E+01	1.54E-01	1.76E+00	9.02E-05	7.49E-05	1.76E+00	1.55E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.11E-01	6.97E-01	2.19E+00	3.18E-01	6.97E-01	1.15E-06	9.54E-07	6.97E-01	6.11E-01	4.05E-01	4.59E-01	2.15E+00	2.13E-01	4.59E-01	4.92E-07	4.09E-07	4.59E-01	4.05E-01
Magnesium	6.79E+02	7.74E+02	2.17E+03	3.58E-01	7.76E+02	4.40E-02	3.66E-02	7.76E+02	6.81E+02	5.61E+02	6.35E+02	4.15E+03	1.53E-01	6.36E+02	1.89E-02	1.57E-02	6.36E+02	5.61E+02
Manganese	3.93E+01	4.48E+01	9.24E+01	4.86E-01	4.49E+01	1.78E-03	1.48E-03	4.49E+01	3.94E+01	3.54E+01	4.01E+01	1.49E+02	2.69E-01	4.01E+01	7.63E-04	6.33E-04	4.01E+01	3.54E+01
Mercury	5.32E-02	6.07E-02	2.50E-03	2.43E+01	6.07E-02	1.91E-08	1.59E-08	6.07E-02	5.33E-02	5.66E-02	6.41E-02	6.80E-03	9.43E+00	6.41E-02	8.20E-09	6.81E-09	6.41E-02	5.66E-02
Molybdenum	6.57E-02	7.49E-02	2.50E-01	3.00E-01	7.50E-02	9.57E-07	7.95E-07	7.50E-02	6.57E-02	3.51E-02	3.98E-02	2.50E-01	1.59E-01	3.98E-02	4.10E-07	3.41E-07	3.98E-02	3.51E-02
Nickel	5.98E-01	6.82E-01	5.88E+00	1.16E-01	6.84E-01	1.38E-04	1.14E-04	6.84E-01	6.00E-01	4.31E-01	4.88E-01	1.35E+01	3.62E-02	4.88E-01	5.91E-05	4.90E-05	4.88E-01	4.31E-01
Phosphorus	3.99E+02	4.55E+02	3.64E+02	1.25E+00	4.55E+02	4.21E-04	3.50E-04	4.55E+02	3.99E+02	3.35E+02	3.79E+02	1.60E+02	2.37E+00	3.79E+02	1.80E-04	1.50E-04	3.79E+02	3.35E+02
Potassium	1.22E+03	1.39E+03	7.90E+02	1.76E+00	1.39E+03	1.91E-04	1.59E-04	1.39E+03	1.22E+03	1.09E+03	1.23E+03	3.10E+02	3.98E+00	1.23E+03	8.20E-05	6.81E-05	1.23E+03	1.09E+03
Selenium	6.50E-02	7.41E-02	1.00E-01	7.41E-01	7.42E-02	9.57E-07	7.95E-07	7.42E-02	6.51E-02	6.50E-02	7.36E-02	1.00E-01	7.36E-01	7.37E-02	4.10E-07	3.41E-07	7.37E-02	6.50E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.27E+02	3.73E+02	2.30E+02	1.62E+00	3.73E+02	4.79E-04	3.97E-04	3.73E+02	3.27E+02	2.56E+02	2.90E+02	1.40E+02	2.07E+00	2.90E+02	2.05E-04	1.70E-04	2.90E+02	2.56E+02
Strontium	1.53E+01	1.74E+01	1.33E+01	1.31E+00	1.75E+01	2.68E-05	2.23E-05	1.75E+01	1.53E+01	1.01E+01	1.14E+01	9.07E+00	1.26E+00	1.14E+01	1.15E-05	9.54E-06	1.14E+01	1.01E+01
Thallium	4.07E-03	4.64E-03	2.50E-02	1.86E-01	4.65E-03	1.91E-07	1.59E-07	4.65E-03	4.07E-03	4.10E-03	4.64E-03	2.50E-02	1.86E-01	4.65E-03	8.20E-08	6.81E-08	4.65E-03	4.10E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	3.83E-06	3.18E-06	1.14E-02	1.00E-02	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	1.64E-06	1.36E-06	1.13E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	2.00E-02	2.28E-02	6.41E-01	3.56E-02	2.28E-02	1.91E-07	1.59E-07	2.28E-02	2.00E-02	1.26E-02	1.43E-02	3.49E-01	4.09E-02	1.43E-02	8.20E-08	6.81E-08	1.43E-02	1.26E-02
Vanadium	7.70E-01	8.78E-01	2.00E+01	4.39E-02	8.79E-01	1.91E-04	1.59E-04	8.79E-01	7.71E-01	5.05E-01	5.72E-01	2.87E+01	1.99E-02	5.72E-01	8.20E-05	6.81E-05	5.72E-01	5.05E-01
Zinc	2.33E+01	2.66E+01	1.03E+01	2.58E+00	2.66E+01	1.13E-04	9.38E-05	2.66E+01	2.33E+01	1.50E+01	1.70E+01	1.55E+01	1.10E+00	1.70E+01	4.84E-05	4.02E-05	1.70E+01	1.50E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-11									LSA-12								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	9.25E+01	1.06E+02	1.86E+04	5.72E-03	1.06E+02	2.34E-02	1.95E-02	1.06E+02	9.25E+01	2.50E+02	2.86E+02	1.12E+04	2.55E-02	2.86E+02	2.59E-02	2.15E-02	2.86E+02	2.50E+02
Antimony	2.50E-03	2.88E-03	5.00E-02	5.75E-02	2.88E-03	8.08E-08	6.71E-08	2.88E-03	2.50E-03	4.70E-03	5.37E-03	5.00E-02	1.07E-01	5.37E-03	8.94E-08	7.42E-08	5.37E-03	4.70E-03
Arsenic	4.70E-02	5.41E-02	3.92E+00	1.38E-02	5.41E-02	4.04E-07	3.35E-07	5.41E-02	4.70E-02	7.22E-02	8.25E-02	1.74E+00	4.74E-02	8.25E-02	4.47E-07	3.71E-07	8.25E-02	7.22E-02
Barium	9.31E+00	1.07E+01	1.02E+02	1.05E-01	1.07E+01	2.42E-06	2.01E-06	1.07E+01	9.31E+00	6.69E+00	7.65E+00	7.12E+01	1.07E-01	7.65E+00	2.68E-06	2.23E-06	7.65E+00	6.69E+00
Beryllium	4.70E-03	5.41E-03	6.80E-01	7.95E-03	5.41E-03	2.67E-07	2.21E-07	5.41E-03	4.70E-03	6.00E-03	6.86E-03	3.30E-01	2.08E-02	6.86E-03	2.95E-07	2.45E-07	6.86E-03	6.00E-03
Bismuth	1.00E-03	1.15E-03	1.00E-01	1.15E-02	1.15E-03	8.08E-08	6.71E-08	1.15E-03	1.00E-03	5.20E-03	5.94E-03	1.00E-01	5.94E-02	5.94E-03	8.94E-08	7.42E-08	5.94E-03	5.20E-03
Cadmium	6.66E-02	7.66E-02	2.50E-02	3.07E+00	7.67E-02	8.08E-08	6.71E-08	7.67E-02	6.66E-02	9.92E-02	1.13E-01	2.50E-02	4.53E+00	1.13E-01	8.94E-08	7.42E-08	1.13E-01	9.92E-02
Calcium	3.04E+03	3.50E+03	5.23E+03	6.69E-01	3.50E+03	2.59E-02	2.15E-02	3.50E+03	3.04E+03	4.12E+03	4.71E+03	4.21E+03	1.12E+00	4.71E+03	2.86E-02	2.38E-02	4.71E+03	4.12E+03
Chromium	1.70E-01	1.96E-01	4.92E+01	3.98E-03	1.96E-01	1.21E-04	1.01E-04	1.96E-01	1.70E-01	3.19E-01	3.65E-01	3.08E+01	1.18E-02	3.65E-01	1.34E-04	1.11E-04	3.65E-01	3.19E-01
Cobalt	1.82E-01	2.09E-01	9.20E+00	2.28E-02	2.10E-01	2.83E-05	2.35E-05	2.10E-01	1.82E-01	4.31E-01	4.93E-01	7.65E+00	6.44E-02	4.93E-01	3.13E-05	2.60E-05	4.93E-01	4.31E-01
Copper	9.42E-01	1.08E+00	2.13E+01	5.09E-02	1.08E+00	8.89E-05	7.38E-05	1.08E+00	9.43E-01	2.82E+00	3.22E+00	1.90E+01	1.70E-01	3.23E+00	9.83E-05	8.17E-05	3.23E+00	2.82E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	3.89E-01	4.48E-01	7.50E+00	5.97E-02	4.48E-01	4.85E-07	4.03E-07	4.48E-01	3.89E-01	9.90E-01	1.13E+00	4.79E+00	2.36E-01	1.13E+00	5.36E-07	4.45E-07	1.13E+00	9.90E-01
Magnesium	9.09E+02	1.05E+03	9.02E+03	1.16E-01	1.05E+03	1.86E-02	1.54E-02	1.05E+03	9.09E+02	7.60E+02	8.69E+02	5.50E+03	1.58E-01	8.69E+02	2.06E-02	1.71E-02	8.69E+02	7.60E+02
Manganese	4.54E+01	5.22E+01	1.99E+02	2.63E-01	5.23E+01	7.52E-04	6.24E-04	5.23E+01	4.54E+01	4.04E+01	4.62E+01	2.10E+02	2.20E-01	4.62E+01	8.31E-04	6.90E-04	4.62E+01	4.04E+01
Mercury	6.40E-02	7.36E-02	1.73E-02	4.26E+00	7.37E-02	8.08E-09	6.71E-09	7.37E-02	6.40E-02	8.23E-02	9.41E-02	5.40E-03	1.74E+01	9.41E-02	8.94E-09	7.42E-09	9.41E-02	8.23E-02
Molybdenum	3.48E-02	4.00E-02	2.50E-01	1.60E-01	4.01E-02	4.04E-07	3.35E-07	4.01E-02	3.48E-02	3.02E-02	3.45E-02	2.50E-01	1.38E-01	3.45E-02	4.47E-07	3.71E-07	3.45E-02	3.02E-02
Nickel	3.83E-01	4.41E-01	2.67E+01	1.65E-02	4.41E-01	5.82E-05	4.83E-05	4.41E-01	3.83E-01	4.71E-01	5.38E-01	1.59E+01	3.39E-02	5.39E-01	6.44E-05	5.34E-05	5.39E-01	4.71E-01
Phosphorus	3.68E+02	4.23E+02	3.91E+02	1.08E+00	4.24E+02	1.78E-04	1.48E-04	4.24E+02	3.68E+02	3.26E+02	3.73E+02	2.89E+02	1.29E+00	3.73E+02	1.97E-04	1.63E-04	3.73E+02	3.26E+02
Potassium	1.20E+03	1.38E+03	3.84E+03	3.60E-01	1.38E+03	8.08E-05	6.71E-05	1.38E+03	1.20E+03	1.13E+03	1.29E+03	1.99E+03	6.49E-01	1.29E+03	8.94E-05	7.42E-05	1.29E+03	1.13E+03
Selenium	6.80E-02	7.83E-02	1.00E-01	7.83E-01	7.83E-02	4.04E-07	3.35E-07	7.83E-02	6.80E-02	7.70E-02	8.80E-02	1.00E-01	8.80E-01	8.81E-02	4.47E-07	3.71E-07	8.81E-02	7.70E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.91E+02	4.50E+02	5.80E+02	7.76E-01	4.50E+02	2.02E-04	1.68E-04	4.50E+02	3.91E+02	3.89E+02	4.45E+02	4.10E+02	1.08E+00	4.45E+02	2.24E-04	1.86E-04	4.45E+02	3.89E+02
Strontium	9.29E+00	1.07E+01	5.17E+01	2.07E-01	1.07E+01	1.13E-05	9.39E-06	1.07E+01	9.29E+00	7.74E+00	8.85E+00	2.16E+01	4.10E-01	8.85E+00	1.25E-05	1.04E-05	8.85E+00	7.74E+00
Thallium	3.53E-03	4.06E-03	1.81E-01	2.24E-02	4.06E-03	8.08E-08	6.71E-08	4.06E-03	3.53E-03	4.47E-03	5.11E-03	1.27E-01	4.02E-02	5.11E-03	8.94E-08	7.42E-08	5.11E-03	4.47E-03
Tin	1.00E-02	1.15E-02	1.00E+00	1.15E-02	1.15E-02	1.62E-06	1.34E-06	1.15E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.79E-06	1.48E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	9.02E-03	1.04E-02	1.06E+00	9.79E-03	1.04E-02	8.08E-08	6.71E-08	1.04E-02	9.02E-03	1.94E-02	2.22E-02	7.82E-01	2.84E-02	2.22E-02	8.94E-08	7.42E-08	2.22E-02	1.94E-02
Vanadium	2.11E-01	2.43E-01	4.86E+01	5.00E-03	2.43E-01	8.08E-05	6.71E-05	2.43E-01	2.11E-01	1.96E+00	2.24E+00	3.72E+01	6.02E-02	2.24E+00	8.94E-05	7.42E-05	2.24E+00	1.96E+00
Zinc	1.80E+01	2.07E+01	4.00E+01	5.18E-01	2.07E+01	4.77E-05	3.96E-05	2.07E+01	1.80E+01	1.87E+01	2.14E+01	2.87E+01	7.45E-01	2.14E+01	5.27E-05	4.38E-05	2.14E+01	1.87E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-13A									LSA-13B								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	4.05E+02	4.62E+02	2.01E+04	2.30E-02	4.63E+02	1.36E-01	1.13E-01	4.63E+02	4.05E+02	1.51E+02	1.66E+02	1.73E+04	9.61E-03	1.66E+02	1.36E-01	1.13E-01	1.67E+02	1.51E+02
Antimony	6.60E-03	7.53E-03	5.01E-02	1.51E-01	7.54E-03	4.68E-07	3.89E-07	7.54E-03	6.61E-03	3.60E-03	3.96E-03	5.01E-02	7.93E-02	3.97E-03	4.68E-07	3.89E-07	3.97E-03	3.60E-03
Arsenic	1.37E-01	1.56E-01	3.04E+00	5.14E-02	1.56E-01	2.34E-06	1.94E-06	1.56E-01	1.37E-01	1.00E-01	1.10E-01	2.96E+00	3.72E-02	1.10E-01	2.34E-06	1.94E-06	1.10E-01	1.00E-01
Barium	5.01E+00	5.72E+00	1.08E+02	5.30E-02	5.72E+00	1.41E-05	1.17E-05	5.72E+00	5.01E+00	2.71E+00	2.98E+00	8.90E+01	3.35E-02	2.98E+00	1.41E-05	1.17E-05	2.98E+00	2.71E+00
Beryllium	1.03E-02	1.18E-02	5.60E-01	2.10E-02	1.18E-02	1.55E-06	1.28E-06	1.18E-02	1.03E-02	4.70E-03	5.17E-03	5.20E-01	9.95E-03	5.18E-03	1.55E-06	1.28E-06	5.18E-03	4.70E-03
Bismuth	6.90E-03	7.88E-03	1.00E-01	7.88E-02	7.88E-03	4.68E-07	3.89E-07	7.88E-03	6.90E-03	3.50E-03	3.85E-03	1.00E-01	3.85E-02	3.86E-03	4.68E-07	3.89E-07	3.86E-03	3.50E-03
Cadmium	8.64E-02	9.86E-02	2.51E-02	3.95E+00	9.89E-02	4.68E-07	3.89E-07	9.89E-02	8.66E-02	7.39E-02	8.14E-02	2.51E-02	3.25E+00	8.16E-02	4.68E-07	3.89E-07	8.16E-02	7.41E-02
Calcium	1.08E+04	1.23E+04	4.18E+03	2.96E+00	1.24E+04	1.50E-01	1.24E-01	1.24E+04	1.09E+04	9.30E+03	1.02E+04	3.92E+03	2.63E+00	1.03E+04	1.50E-01	1.24E-01	1.03E+04	9.35E+03
Chromium	1.17E+00	1.34E+00	6.35E+01	2.11E-02	1.34E+00	7.03E-04	5.83E-04	1.34E+00	1.17E+00	4.82E-01	5.31E-01	5.45E+01	9.75E-03	5.32E-01	7.03E-04	5.83E-04	5.32E-01	4.83E-01
Cobalt	6.01E-01	6.86E-01	1.20E+01	5.72E-02	6.87E-01	1.64E-04	1.36E-04	6.87E-01	6.02E-01	2.25E-01	2.48E-01	1.03E+01	2.40E-02	2.48E-01	1.64E-04	1.36E-04	2.48E-01	2.26E-01
Copper	2.54E+00	2.90E+00	2.66E+01	1.09E-01	2.91E+00	5.15E-04	4.28E-04	2.91E+00	2.55E+00	1.17E+00	1.29E+00	2.39E+01	5.41E-02	1.29E+00	5.15E-04	4.28E-04	1.29E+00	1.17E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	1.03E+00	1.18E+00	7.88E+00	1.49E-01	1.18E+00	2.81E-06	2.33E-06	1.18E+00	1.03E+00	6.76E-01	7.44E-01	7.25E+00	1.03E-01	7.44E-01	2.81E-06	2.33E-06	7.44E-01	6.76E-01
Magnesium	8.65E+02	9.87E+02	1.07E+04	9.23E-02	9.89E+02	1.08E-01	8.94E-02	9.89E+02	8.66E+02	6.39E+02	7.03E+02	9.56E+03	7.37E-02	7.04E+02	1.08E-01	8.94E-02	7.05E+02	6.40E+02
Manganese	3.79E+01	4.33E+01	2.51E+02	1.73E-01	4.34E+01	4.36E-03	3.62E-03	4.34E+01	3.80E+01	2.79E+01	3.07E+01	2.19E+02	1.41E-01	3.08E+01	4.36E-03	3.62E-03	3.08E+01	2.80E+01
Mercury	8.60E-02	9.82E-02	1.16E-02	8.46E+00	9.82E-02	4.68E-08	3.89E-08	9.82E-02	8.60E-02	7.02E-02	7.73E-02	1.03E-02	7.50E+00	7.73E-02	4.68E-08	3.89E-08	7.73E-02	7.02E-02
Molybdenum	3.43E-02	3.92E-02	2.50E-01	1.57E-01	3.92E-02	2.34E-06	1.94E-06	3.92E-02	3.43E-02	2.33E-02	2.56E-02	2.50E-01	1.03E-01	2.57E-02	2.34E-06	1.94E-06	2.57E-02	2.33E-02
Nickel	1.27E+00	1.45E+00	3.29E+01	4.41E-02	1.45E+00	3.37E-04	2.80E-04	1.45E+00	1.27E+00	4.84E-01	5.33E-01	2.79E+01	1.91E-02	5.34E-01	3.37E-04	2.80E-04	5.34E-01	4.85E-01
Phosphorus	2.87E+02	3.28E+02	3.92E+02	8.36E-01	3.28E+02	1.03E-03	8.56E-04	3.28E+02	2.87E+02	2.54E+02	2.80E+02	3.90E+02	7.17E-01	2.80E+02	1.03E-03	8.56E-04	2.80E+02	2.54E+02
Potassium	1.08E+03	1.23E+03	3.95E+03	3.12E-01	1.23E+03	4.68E-04	3.89E-04	1.23E+03	1.08E+03	1.02E+03	1.12E+03	3.19E+03	3.52E-01	1.12E+03	4.68E-04	3.89E-04	1.12E+03	1.02E+03
Selenium	9.70E-02	1.11E-01	1.00E-01	1.11E+00	1.11E-01	2.34E-06	1.94E-06	1.11E-01	9.73E-02	8.90E-02	9.80E-02	1.00E-01	9.80E-01	9.83E-02	2.34E-06	1.94E-06	9.83E-02	8.93E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.67E+02	4.19E+02	5.50E+02	7.62E-01	4.19E+02	1.17E-03	9.72E-04	4.19E+02	3.67E+02	3.26E+02	3.59E+02	4.30E+02	8.35E-01	3.59E+02	1.17E-03	9.72E-04	3.59E+02	3.26E+02
Strontium	1.20E+01	1.37E+01	2.41E+01	5.68E-01	1.37E+01	6.56E-05	5.44E-05	1.37E+01	1.20E+01	8.89E+00	9.79E+00	2.20E+01	4.45E-01	9.79E+00	6.56E-05	5.44E-05	9.79E+00	8.89E+00
Thallium	5.84E-03	6.67E-03	2.08E-01	3.21E-02	6.67E-03	4.68E-07	3.89E-07	6.67E-03	5.84E-03	3.48E-03	3.83E-03	2.14E-01	1.79E-02	3.83E-03	4.68E-07	3.89E-07	3.83E-03	3.48E-03
Tin	2.40E-02	2.74E-02	1.00E+00	2.74E-02	2.74E-02	9.37E-06	7.78E-06	2.74E-02	2.40E-02	1.00E-02	1.10E-02	1.00E+00	1.10E-02	1.10E-02	9.37E-06	7.78E-06	1.10E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.82E-02	2.08E-02	1.75E+00	1.19E-02	2.08E-02	4.68E-07	3.89E-07	2.08E-02	1.82E-02	6.49E-03	7.14E-03	1.60E+00	4.47E-03	7.14E-03	4.68E-07	3.89E-07	7.15E-03	6.49E-03
Vanadium	1.35E+00	1.54E+00	6.53E+01	2.36E-02	1.54E+00	4.68E-04	3.89E-04	1.54E+00	1.35E+00	5.18E-01	5.70E-01	5.78E+01	9.88E-03	5.71E-01	4.68E-04	3.89E-04	5.71E-01	5.19E-01
Zinc	1.37E+01	1.56E+01	5.64E+01	2.77E-01	1.56E+01	2.76E-04	2.29E-04	1.56E+01	1.37E+01	1.01E+01	1.11E+01	5.03E+01	2.21E-01	1.11E+01	2.76E-04	2.29E-04	1.11E+01	1.01E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-14									LSA-15								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	2.57E+02	2.90E+02	8.11E+03	3.58E-02	2.90E+02	6.44E-02	5.35E-02	2.90E+02	2.57E+02	1.30E+03	1.46E+03	1.39E+04	1.05E-01	1.46E+03	3.27E-02	2.71E-02	1.46E+03	1.30E+03
Antimony	4.80E-03	5.42E-03	5.00E-02	1.08E-01	5.42E-03	2.22E-07	1.84E-07	5.42E-03	4.80E-03	1.52E-02	1.70E-02	5.00E-02	3.41E-01	1.70E-02	1.13E-07	9.35E-08	1.70E-02	1.52E-02
Arsenic	9.37E-02	1.06E-01	1.87E+00	5.66E-02	1.06E-01	1.11E-06	9.22E-07	1.06E-01	9.37E-02	1.09E+00	1.22E+00	2.78E+00	4.40E-01	1.22E+00	5.63E-07	4.67E-07	1.22E+00	1.09E+00
Barium	5.46E+00	6.16E+00	1.98E+01	3.11E-01	6.16E+00	6.66E-06	5.53E-06	6.16E+00	5.46E+00	5.47E+00	6.13E+00	7.10E+01	8.64E-02	6.13E+00	3.38E-06	2.80E-06	6.13E+00	5.47E+00
Beryllium	7.40E-03	8.35E-03	1.00E-01	8.35E-02	8.36E-03	7.33E-07	6.09E-07	8.36E-03	7.41E-03	1.71E-02	1.92E-02	4.10E-01	4.68E-02	1.92E-02	3.72E-07	3.09E-07	1.92E-02	1.71E-02
Bismuth	5.00E-03	5.64E-03	1.00E-01	5.64E-02	5.65E-03	2.22E-07	1.84E-07	5.65E-03	5.00E-03	1.02E-02	1.14E-02	1.00E-01	1.14E-01	1.14E-02	1.13E-07	9.35E-08	1.14E-02	1.02E-02
Cadmium	1.50E-01	1.69E-01	2.50E-02	6.77E+00	1.70E-01	2.22E-07	1.84E-07	1.70E-01	1.50E-01	2.02E-01	2.26E-01	2.50E-02	9.06E+00	2.27E-01	1.13E-07	9.35E-08	2.27E-01	2.02E-01
Calcium	9.50E+03	1.07E+04	2.38E+03	4.52E+00	1.08E+04	7.11E-02	5.90E-02	1.08E+04	9.54E+03	1.59E+04	1.78E+04	3.55E+03	5.02E+00	1.78E+04	3.60E-02	2.99E-02	1.78E+04	1.59E+04
Chromium	7.82E-01	8.83E-01	3.69E+01	2.39E-02	8.84E-01	3.33E-04	2.77E-04	8.84E-01	7.83E-01	1.64E+01	1.84E+01	4.41E+01	4.17E-01	1.84E+01	1.69E-04	1.40E-04	1.84E+01	1.64E+01
Cobalt	4.40E-01	4.97E-01	8.57E+00	5.80E-02	4.97E-01	7.77E-05	6.45E-05	4.97E-01	4.41E-01	2.58E+00	2.89E+00	8.87E+00	3.26E-01	2.89E+00	3.94E-05	3.27E-05	2.89E+00	2.58E+00
Copper	2.74E+00	3.09E+00	2.01E+01	1.54E-01	3.10E+00	2.44E-04	2.03E-04	3.10E+00	2.74E+00	5.06E+00	5.67E+00	1.68E+01	3.38E-01	5.68E+00	1.24E-04	1.03E-04	5.68E+00	5.07E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.07E-01	6.85E-01	2.02E+00	3.39E-01	6.85E-01	1.33E-06	1.11E-06	6.85E-01	6.07E-01	1.19E+00	1.33E+00	5.51E+00	2.42E-01	1.33E+00	6.76E-07	5.61E-07	1.33E+00	1.19E+00
Magnesium	9.00E+02	1.02E+03	5.53E+03	1.84E-01	1.02E+03	5.11E-02	4.24E-02	1.02E+03	9.01E+02	1.59E+03	1.78E+03	7.18E+03	2.48E-01	1.78E+03	2.59E-02	2.15E-02	1.78E+03	1.59E+03
Manganese	2.97E+01	3.35E+01	2.13E+02	1.57E-01	3.36E+01	2.07E-03	1.71E-03	3.36E+01	2.97E+01	1.01E+02	1.13E+02	2.07E+02	5.47E-01	1.13E+02	1.05E-03	8.70E-04	1.13E+02	1.01E+02
Mercury	7.95E-02	8.97E-02	2.50E-03	3.59E+01	8.98E-02	2.22E-08	1.84E-08	8.98E-02	7.96E-02	9.40E-02	1.05E-01	1.20E-02	8.78E+00	1.05E-01	1.13E-08	9.35E-09	1.05E-01	9.40E-02
Molybdenum	5.41E-02	6.11E-02	2.50E-01	2.44E-01	6.11E-02	1.11E-06	9.22E-07	6.11E-02	5.41E-02	5.61E-02	6.29E-02	2.50E-01	2.52E-01	6.29E-02	5.63E-07	4.67E-07	6.29E-02	5.61E-02
Nickel	1.01E+00	1.14E+00	2.41E+01	4.73E-02	1.14E+00	1.60E-04	1.33E-04	1.14E+00	1.01E+00	6.84E+00	7.67E+00	2.47E+01	3.10E-01	7.67E+00	8.11E-05	6.73E-05	7.67E+00	6.84E+00
Phosphorus	4.24E+02	4.79E+02	1.37E+02	3.49E+00	4.79E+02	4.89E-04	4.06E-04	4.79E+02	4.24E+02	3.74E+02	4.19E+02	1.82E+02	2.30E+00	4.19E+02	2.48E-04	2.06E-04	4.19E+02	3.74E+02
Potassium	1.31E+03	1.48E+03	3.80E+02	3.89E+00	1.48E+03	2.22E-04	1.84E-04	1.48E+03	1.31E+03	1.11E+03	1.24E+03	2.18E+03	5.71E-01	1.24E+03	1.13E-04	9.35E-05	1.24E+03	1.11E+03
Selenium	9.70E-02	1.09E-01	1.00E-01	1.09E+00	1.10E-01	1.11E-06	9.22E-07	1.10E-01	9.71E-02	1.60E-01	1.79E-01	1.00E-01	1.79E+00	1.80E-01	5.63E-07	4.67E-07	1.80E-01	1.60E-01
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	4.03E+02	4.55E+02	3.00E+02	1.52E+00	4.55E+02	5.55E-04	4.61E-04	4.55E+02	4.03E+02	2.67E+02	2.99E+02	4.50E+02	6.65E-01	2.99E+02	2.82E-04	2.34E-04	2.99E+02	2.67E+02
Strontium	1.11E+01	1.25E+01	1.01E+01	1.24E+00	1.25E+01	3.11E-05	2.58E-05	1.25E+01	1.11E+01	1.18E+01	1.32E+01	1.97E+01	6.72E-01	1.32E+01	1.58E-05	1.31E-05	1.32E+01	1.18E+01
Thallium	5.99E-03	6.76E-03	2.50E-02	2.70E-01	6.77E-03	2.22E-07	1.84E-07	6.77E-03	6.00E-03	7.36E-03	8.25E-03	1.47E-01	5.61E-02	8.25E-03	1.13E-07	9.35E-08	8.25E-03	7.36E-03
Tin	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	4.44E-06	3.69E-06	1.13E-02	1.00E-02	3.10E-02	3.48E-02	1.00E+00	3.48E-02	3.48E-02	2.25E-06	1.87E-06	3.48E-02	3.10E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.36E-02	1.53E-02	3.02E-01	5.08E-02	1.54E-02	2.22E-07	1.84E-07	1.54E-02	1.36E-02	2.99E-02	3.35E-02	1.06E+00	3.16E-02	3.35E-02	1.13E-07	9.35E-08	3.35E-02	2.99E-02
Vanadium	8.12E-01	9.16E-01	3.53E+01	2.60E-02	9.17E-01	2.22E-04	1.84E-04	9.17E-01	8.13E-01	4.36E+00	4.89E+00	4.62E+01	1.06E-01	4.89E+00	1.13E-04	9.35E-05	4.89E+00	4.36E+00
Zinc	2.23E+01	2.52E+01	2.25E+01	1.12E+00	2.52E+01	1.31E-04	1.09E-04	2.52E+01	2.23E+01	3.27E+01	3.67E+01	3.29E+01	1.11E+00	3.67E+01	6.64E-05	5.52E-05	3.67E+01	3.27E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-16									LSA-17								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.12E+02	3.56E+02	1.33E+04	2.68E-02	3.56E+02	8.39E-02	6.96E-02	3.57E+02	3.12E+02	1.33E+02	1.50E+02	3.25E+03	4.66E-02	1.51E+02	1.89E-01	1.57E-01	1.51E+02	1.34E+02
Antimony	1.57E-02	1.79E-02	5.00E-02	3.58E-01	1.79E-02	2.89E-07	2.40E-07	1.79E-02	1.57E-02	4.20E-03	4.74E-03	5.01E-02	9.48E-02	4.75E-03	6.50E-07	5.40E-07	4.75E-03	4.21E-03
Arsenic	2.28E-01	2.60E-01	7.17E+00	3.63E-02	2.60E-01	1.45E-06	1.20E-06	2.60E-01	2.28E-01	7.36E-02	8.31E-02	7.56E-01	1.10E-01	8.31E-02	3.25E-06	2.70E-06	8.31E-02	7.36E-02
Barium	2.56E+00	2.92E+00	4.79E+01	6.10E-02	2.92E+00	8.68E-06	7.20E-06	2.92E+00	2.56E+00	1.89E+01	2.13E+01	1.91E+01	1.12E+00	2.13E+01	1.95E-05	1.62E-05	2.13E+01	1.89E+01
Beryllium	6.50E-03	7.42E-03	2.40E-01	3.09E-02	7.42E-03	9.54E-07	7.92E-07	7.42E-03	6.50E-03	1.07E-02	1.21E-02	1.00E-01	1.21E-01	1.21E-02	2.15E-06	1.78E-06	1.21E-02	1.07E-02
Bismuth	6.80E-03	7.76E-03	1.00E-01	7.76E-02	7.77E-03	2.89E-07	2.40E-07	7.77E-03	6.80E-03	4.00E-03	4.51E-03	1.00E-01	4.51E-02	4.52E-03	6.50E-07	5.40E-07	4.52E-03	4.00E-03
Cadmium	6.97E-02	7.96E-02	2.50E-02	3.18E+00	7.97E-02	2.89E-07	2.40E-07	7.97E-02	6.98E-02	9.47E-02	1.07E-01	2.51E-02	4.28E+00	1.07E-01	6.50E-07	5.40E-07	1.07E-01	9.50E-02
Calcium	8.12E+03	9.27E+03	4.12E+03	2.26E+00	9.30E+03	9.25E-02	7.68E-02	9.30E+03	8.14E+03	6.24E+03	7.04E+03	1.88E+03	3.81E+00	7.15E+03	2.08E-01	1.73E-01	7.15E+03	6.33E+03
Chromium	1.64E+00	1.87E+00	4.50E+01	4.17E-02	1.87E+00	4.34E-04	3.60E-04	1.87E+00	1.64E+00	2.73E-01	3.08E-01	1.10E+01	2.83E-02	3.12E-01	9.75E-04	8.10E-04	3.13E-01	2.77E-01
Cobalt	5.29E-01	6.04E-01	1.49E+01	4.05E-02	6.04E-01	1.01E-04	8.40E-05	6.05E-01	5.30E-01	2.78E-01	3.14E-01	2.90E+00	1.09E-01	3.17E-01	2.28E-04	1.89E-04	3.17E-01	2.81E-01
Copper	2.93E+00	3.34E+00	4.06E+01	8.24E-02	3.35E+00	3.18E-04	2.64E-04	3.35E+00	2.93E+00	1.28E+00	1.44E+00	6.23E+00	2.36E-01	1.47E+00	7.15E-04	5.94E-04	1.47E+00	1.30E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	9.98E-01	1.14E+00	2.97E+00	3.84E-01	1.14E+00	1.74E-06	1.44E-06	1.14E+00	9.98E-01	6.74E-01	7.61E-01	1.91E+00	3.98E-01	7.61E-01	3.90E-06	3.24E-06	7.61E-01	6.74E-01
Magnesium	6.90E+02	7.88E+02	9.13E+03	8.64E-02	7.88E+02	6.65E-02	5.52E-02	7.88E+02	6.91E+02	9.09E+02	1.03E+03	1.72E+03	6.04E-01	1.04E+03	1.50E-01	1.24E-01	1.04E+03	9.20E+02
Manganese	3.58E+01	4.09E+01	3.94E+02	1.04E-01	4.09E+01	2.69E-03	2.23E-03	4.09E+01	3.58E+01	8.79E+01	9.92E+01	6.78E+01	1.48E+00	1.00E+02	6.05E-03	5.02E-03	1.00E+02	8.90E+01
Mercury	1.42E-01	1.62E-01	6.00E-03	2.70E+01	1.62E-01	2.89E-08	2.40E-08	1.62E-01	1.42E-01	6.47E-02	7.30E-02	2.51E-03	2.92E+01	7.33E-02	6.50E-08	5.40E-08	7.33E-02	6.49E-02
Molybdenum	3.97E-02	4.53E-02	2.50E-01	1.81E-01	4.54E-02	1.45E-06	1.20E-06	4.54E-02	3.97E-02	3.24E-02	3.66E-02	2.50E-01	1.46E-01	3.66E-02	3.25E-06	2.70E-06	3.66E-02	3.25E-02
Nickel	1.23E+00	1.40E+00	3.36E+01	4.18E-02	1.41E+00	2.08E-04	1.73E-04	1.41E+00	1.23E+00	4.48E-01	5.06E-01	5.00E+00	1.02E-01	5.12E-01	4.68E-04	3.89E-04	5.12E-01	4.54E-01
Phosphorus	3.79E+02	4.33E+02	3.57E+02	1.21E+00	4.33E+02	6.36E-04	5.28E-04	4.33E+02	3.79E+02	5.29E+02	5.97E+02	2.89E+02	2.07E+00	5.97E+02	1.43E-03	1.19E-03	5.97E+02	5.29E+02
Potassium	1.03E+03	1.18E+03	1.40E+03	8.40E-01	1.18E+03	2.89E-04	2.40E-04	1.18E+03	1.03E+03	1.46E+03	1.65E+03	6.00E+02	2.75E+00	1.65E+03	6.50E-04	5.40E-04	1.65E+03	1.46E+03
Selenium	1.07E-01	1.22E-01	1.00E-01	1.22E+00	1.22E-01	1.45E-06	1.20E-06	1.22E-01	1.07E-01	6.90E-02	7.79E-02	1.00E-01	7.79E-01	7.82E-02	3.25E-06	2.70E-06	7.82E-02	6.93E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	4.60E+02	5.25E+02	3.20E+02	1.64E+00	5.25E+02	7.23E-04	6.00E-04	5.25E+02	4.60E+02	4.05E+02	4.57E+02	1.50E+02	3.05E+00	4.58E+02	1.63E-03	1.35E-03	4.58E+02	4.06E+02
Strontium	6.94E+00	7.92E+00	1.35E+01	5.87E-01	7.93E+00	4.05E-05	3.36E-05	7.93E+00	6.94E+00	1.75E+01	1.98E+01	9.00E+00	2.20E+00	1.98E+01	9.10E-05	7.56E-05	1.98E+01	1.75E+01
Thallium	4.82E-03	5.50E-03	9.30E-02	5.92E-02	5.50E-03	2.89E-07	2.40E-07	5.50E-03	4.82E-03	8.20E-03	9.26E-03	2.51E-02	3.70E-01	9.29E-03	6.50E-07	5.40E-07	9.29E-03	8.23E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	5.78E-06	4.80E-06	1.14E-02	1.00E-02	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	1.30E-05	1.08E-05	1.13E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.13E-02	1.29E-02	4.85E-01	2.66E-02	1.29E-02	2.89E-07	2.40E-07	1.29E-02	1.13E-02	1.44E-02	1.63E-02	5.17E-01	3.14E-02	1.63E-02	6.50E-07	5.40E-07	1.63E-02	1.44E-02
Vanadium	1.22E+00	1.39E+00	5.60E+01	2.49E-02	1.39E+00	2.89E-04	2.40E-04	1.39E+00	1.22E+00	3.92E-01	4.42E-01	1.72E+01	2.59E-02	4.45E-01	6.50E-04	5.40E-04	4.45E-01	3.94E-01
Zinc	1.50E+01	1.71E+01	4.14E+01	4.14E-01	1.71E+01	1.71E-04	1.42E-04	1.71E+01	1.50E+01	2.66E+01	3.00E+01	9.15E+00	3.30E+00	3.02E+01	3.84E-04	3.19E-04	3.02E+01	2.67E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-18									LSA-19								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	1.31E+02	1.50E+02	2.57E+03	5.83E-02	1.50E+02	2.72E-02	2.26E-02	1.50E+02	1.31E+02	9.51E+02	1.09E+03	6.59E+03	1.65E-01	1.09E+03	3.60E-02	2.99E-02	1.09E+03	9.52E+02
Antimony	4.10E-03	4.69E-03	5.00E-02	9.38E-02	4.69E-03	9.38E-08	7.79E-08	4.69E-03	4.10E-03	4.90E-03	5.61E-03	5.00E-02	1.12E-01	5.61E-03	1.24E-07	1.03E-07	5.61E-03	4.90E-03
Arsenic	6.34E-02	7.25E-02	6.45E-01	1.12E-01	7.25E-02	4.69E-07	3.89E-07	7.25E-02	6.34E-02	2.23E-01	2.55E-01	1.83E+00	1.39E-01	2.55E-01	6.21E-07	5.15E-07	2.55E-01	2.23E-01
Barium	9.19E+00	1.05E+01	1.41E+01	7.46E-01	1.05E+01	2.81E-06	2.34E-06	1.05E+01	9.19E+00	5.21E+00	5.96E+00	1.94E+01	3.07E-01	5.96E+00	3.72E-06	3.09E-06	5.96E+00	5.21E+00
Beryllium	3.70E-03	4.23E-03	1.00E-01	4.23E-02	4.24E-03	3.10E-07	2.57E-07	4.24E-03	3.70E-03	5.10E-03	5.84E-03	1.00E-01	5.84E-02	5.84E-03	4.10E-07	3.40E-07	5.84E-03	5.10E-03
Bismuth	5.10E-03	5.84E-03	1.00E-01	5.84E-02	5.84E-03	9.38E-08	7.79E-08	5.84E-03	5.10E-03	3.80E-03	4.35E-03	1.00E-01	4.35E-02	4.35E-03	1.24E-07	1.03E-07	4.35E-03	3.80E-03
Cadmium	1.20E-01	1.37E-01	2.50E-02	5.49E+00	1.37E-01	9.38E-08	7.79E-08	1.37E-01	1.20E-01	7.53E-02	8.62E-02	2.50E-02	3.45E+00	8.62E-02	1.24E-07	1.03E-07	8.62E-02	7.53E-02
Calcium	7.22E+03	8.26E+03	1.90E+03	4.35E+00	8.28E+03	3.00E-02	2.49E-02	8.28E+03	7.24E+03	1.00E+04	1.14E+04	1.84E+03	6.25E+00	1.15E+04	3.97E-02	3.30E-02	1.15E+04	1.00E+04
Chromium	2.89E-01	3.31E-01	9.11E+00	3.64E-02	3.31E-01	1.41E-04	1.17E-04	3.31E-01	2.90E-01	4.93E+00	5.64E+00	1.96E+01	2.88E-01	5.65E+00	1.86E-04	1.55E-04	5.65E+00	4.94E+00
Cobalt	4.47E-01	5.11E-01	2.25E+00	2.27E-01	5.12E-01	3.28E-05	2.73E-05	5.12E-01	4.48E-01	1.20E+00	1.37E+00	9.84E+00	1.40E-01	1.37E+00	4.34E-05	3.61E-05	1.37E+00	1.20E+00
Copper	1.76E+00	2.01E+00	8.16E+00	2.47E-01	2.02E+00	1.03E-04	8.57E-05	2.02E+00	1.76E+00	1.99E+00	2.28E+00	4.17E+01	5.46E-02	2.28E+00	1.37E-04	1.13E-04	2.28E+00	1.99E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	6.04E-01	6.91E-01	1.59E+00	4.35E-01	6.91E-01	5.63E-07	4.67E-07	6.91E-01	6.04E-01	4.89E-01	5.59E-01	2.40E+00	2.33E-01	5.60E-01	7.45E-07	6.18E-07	5.60E-01	4.89E-01
Magnesium	7.33E+02	8.39E+02	1.26E+03	6.66E-01	8.41E+02	2.16E-02	1.79E-02	8.41E+02	7.35E+02	1.11E+03	1.27E+03	3.81E+03	3.33E-01	1.27E+03	2.85E-02	2.37E-02	1.27E+03	1.11E+03
Manganese	5.65E+01	6.46E+01	4.97E+01	1.30E+00	6.48E+01	8.73E-04	7.24E-04	6.48E+01	5.66E+01	6.72E+01	7.69E+01	1.90E+02	4.05E-01	7.70E+01	1.15E-03	9.58E-04	7.70E+01	6.73E+01
Mercury	7.06E-02	8.08E-02	2.50E-03	3.23E+01	8.08E-02	9.38E-09	7.79E-09	8.08E-02	7.06E-02	8.89E-02	1.02E-01	6.10E-03	1.67E+01	1.02E-01	1.24E-08	1.03E-08	1.02E-01	8.89E-02
Molybdenum	2.73E-02	3.12E-02	2.50E-01	1.25E-01	3.12E-02	4.69E-07	3.89E-07	3.12E-02	2.73E-02	3.47E-02	3.97E-02	2.50E-01	1.59E-01	3.97E-02	6.21E-07	5.15E-07	3.97E-02	3.47E-02
Nickel	7.96E-01	9.11E-01	3.82E+00	2.39E-01	9.13E-01	6.76E-05	5.61E-05	9.13E-01	7.98E-01	2.83E+00	3.24E+00	1.28E+01	2.53E-01	3.24E+00	8.94E-05	7.42E-05	3.24E+00	2.83E+00
Phosphorus	3.96E+02	4.53E+02	3.25E+02	1.39E+00	4.53E+02	2.06E-04	1.71E-04	4.53E+02	3.96E+02	3.95E+02	4.52E+02	1.28E+02	3.53E+00	4.52E+02	2.73E-04	2.27E-04	4.52E+02	3.95E+02
Potassium	1.32E+03	1.51E+03	2.80E+02	5.39E+00	1.51E+03	9.38E-05	7.79E-05	1.51E+03	1.32E+03	1.14E+03	1.30E+03	3.50E+02	3.73E+00	1.30E+03	1.24E-04	1.03E-04	1.30E+03	1.14E+03
Selenium	8.30E-02	9.50E-02	1.00E-01	9.50E-01	9.50E-02	4.69E-07	3.89E-07	9.50E-02	8.31E-02	7.80E-02	8.92E-02	1.00E-01	8.92E-01	8.93E-02	6.21E-07	5.15E-07	8.93E-02	7.81E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.33E+02	3.81E+02	1.40E+02	2.72E+00	3.81E+02	2.35E-04	1.95E-04	3.81E+02	3.33E+02	3.38E+02	3.87E+02	1.80E+02	2.15E+00	3.87E+02	3.10E-04	2.58E-04	3.87E+02	3.38E+02
Strontium	1.03E+01	1.18E+01	7.88E+00	1.50E+00	1.18E+01	1.31E-05	1.09E-05	1.18E+01	1.03E+01	8.00E+00	9.15E+00	8.40E+00	1.09E+00	9.16E+00	1.74E-05	1.44E-05	9.16E+00	8.00E+00
Thallium	4.93E-03	5.64E-03	2.50E-02	2.26E-01	5.64E-03	9.38E-08	7.79E-08	5.64E-03	4.93E-03	3.28E-03	3.75E-03	2.50E-02	1.50E-01	3.76E-03	1.24E-07	1.03E-07	3.76E-03	3.28E-03
Tin	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	1.88E-06	1.56E-06	1.14E-02	1.00E-02	1.00E-02	1.14E-02	1.00E+00	1.14E-02	1.14E-02	2.48E-06	2.06E-06	1.14E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	5.79E-03	6.62E-03	4.56E-01	1.45E-02	6.62E-03	9.38E-08	7.79E-08	6.62E-03	5.79E-03	8.45E-03	9.67E-03	3.99E-01	2.42E-02	9.67E-03	1.24E-07	1.03E-07	9.67E-03	8.45E-03
Vanadium	3.60E-01	4.12E-01	1.72E+01	2.39E-02	4.12E-01	9.38E-05	7.79E-05	4.12E-01	3.60E-01	3.93E+00	4.50E+00	2.78E+01	1.62E-01	4.50E+00	1.24E-04	1.03E-04	4.50E+00	3.93E+00
Zinc	2.03E+01	2.32E+01	6.41E+00	3.63E+00	2.33E+01	5.54E-05	4.60E-05	2.33E+01	2.03E+01	1.66E+01	1.90E+01	1.75E+01	1.09E+00	1.90E+01	7.32E-05	6.08E-05	1.90E+01	1.66E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.

Appendix V6-5L. Predicted Metal Concentrations in Berry and Lichen Samples from Dust Deposition and Root Uptake during the Construction Phase

Species	Lichen (Flavocetraria nivalis)									Lichen (Flavocetraria nivalis)								
Sample ID	LSA-20									LSA-21								
Parameter	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg ww)	Baseline Metal Concentration in Vegetation (mg/kg dw)	Predicted Soil Concentration (mg/kg dw)	Biotransfer Factor (unitless)	Predicted Concentration from Uptake from Soil [a] (mg/kg dw)	Predicted Concentration of Metal in Dust (g/m^2/year dw)	Predicted Concentration of Metal in Project-related Dust [b] (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg dw)	Total Predicted Metal Concentration in Vegetation (mg/kg ww)
Metals																		
Aluminum	3.51E+02	3.97E+02	1.21E+04	3.28E-02	3.97E+02	2.35E-02	1.95E-02	3.97E+02	3.51E+02	2.24E+02	2.51E+02	4.78E+03	5.28E-02	2.52E+02	1.39E-01	1.15E-01	2.52E+02	2.25E+02
Antimony	4.40E-03	4.98E-03	5.00E-02	9.95E-02	4.98E-03	8.09E-08	6.71E-08	4.98E-03	4.40E-03	3.80E-03	4.26E-03	5.01E-02	8.53E-02	4.27E-03	4.78E-07	3.97E-07	4.27E-03	3.81E-03
Arsenic	6.57E-02	7.43E-02	1.37E+00	5.42E-02	7.43E-02	4.04E-07	3.36E-07	7.43E-02	6.57E-02	1.42E-01	1.59E-01	9.63E-01	1.65E-01	1.59E-01	2.39E-06	1.99E-06	1.59E-01	1.42E-01
Barium	7.77E+00	8.79E+00	6.18E+01	1.42E-01	8.79E+00	2.43E-06	2.01E-06	8.79E+00	7.77E+00	6.95E+00	7.80E+00	1.60E+01	4.88E-01	7.80E+00	1.44E-05	1.19E-05	7.80E+00	6.95E+00
Beryllium	7.90E-03	8.94E-03	3.00E-01	2.98E-02	8.94E-03	2.67E-07	2.22E-07	8.94E-03	7.90E-03	4.20E-03	4.71E-03	1.00E-01	4.71E-02	4.72E-03	1.58E-06	1.31E-06	4.73E-03	4.21E-03
Bismuth	4.70E-03	5.32E-03	1.00E-01	5.32E-02	5.32E-03	8.09E-08	6.71E-08	5.32E-03	4.70E-03	3.00E-03	3.37E-03	1.00E-01	3.37E-02	3.37E-03	4.78E-07	3.97E-07	3.37E-03	3.00E-03
Cadmium	7.67E-02	8.68E-02	2.50E-02	3.47E+00	8.69E-02	8.09E-08	6.71E-08	8.69E-02	7.68E-02	1.08E-01	1.21E-01	2.51E-02	4.85E+00	1.22E-01	4.78E-07	3.97E-07	1.22E-01	1.08E-01
Calcium	1.20E+04	1.36E+04	5.74E+03	2.37E+00	1.36E+04	2.59E-02	2.15E-02	1.36E+04	1.20E+04	1.22E+04	1.37E+04	2.24E+03	6.17E+00	1.38E+04	1.53E-01	1.27E-01	1.38E+04	1.23E+04
Chromium	9.19E-01	1.04E+00	3.19E+01	3.27E-02	1.04E+00	1.21E-04	1.01E-04	1.04E+00	9.21E-01	1.64E+00	1.84E+00	2.74E+01	6.74E-02	1.85E+00	7.18E-04	5.96E-04	1.85E+00	1.65E+00
Cobalt	3.54E-01	4.00E-01	8.00E+00	5.01E-02	4.01E-01	2.83E-05	2.35E-05	4.01E-01	3.55E-01	4.60E-01	5.16E-01	5.85E+00	8.86E-02	5.18E-01	1.67E-04	1.39E-04	5.18E-01	4.62E-01
Copper	2.29E+00	2.59E+00	1.32E+01	1.96E-01	2.60E+00	8.90E-05	7.39E-05	2.60E+00	2.30E+00	2.97E+00	3.33E+00	6.47E+00	5.21E-01	3.37E+00	5.26E-04	4.37E-04	3.37E+00	3.00E+00
Iron	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	4.68E-01	5.29E-01	3.77E+00	1.40E-01	5.29E-01	4.85E-07	4.03E-07	5.29E-01	4.68E-01	4.50E-01	5.05E-01	1.53E+00	3.30E-01	5.05E-01	2.87E-06	2.38E-06	5.05E-01	4.50E-01
Magnesium	8.95E+02	1.01E+03	7.02E+03	1.44E-01	1.01E+03	1.86E-02	1.54E-02	1.01E+03	8.96E+02	7.35E+02	8.25E+02	3.29E+03	2.51E-01	8.29E+02	1.10E-01	9.13E-02	8.29E+02	7.38E+02
Manganese	3.58E+01	4.05E+01	2.24E+02	1.81E-01	4.06E+01	7.52E-04	6.24E-04	4.06E+01	3.59E+01	7.17E+01	8.05E+01	1.50E+02	5.40E-01	8.08E+01	4.45E-03	3.69E-03	8.08E+01	7.20E+01
Mercury	5.45E-02	6.17E-02	9.10E-03	6.77E+00	6.17E-02	8.09E-09	6.71E-09	6.17E-02	5.45E-02	5.29E-02	5.94E-02	8.81E-03	6.75E+00	5.94E-02	4.78E-08	3.97E-08	5.94E-02	5.29E-02
Molybdenum	3.92E-02	4.43E-02	2.50E-01	1.77E-01	4.44E-02	4.04E-07	3.36E-07	4.44E-02	3.92E-02	5.00E-02	5.61E-02	2.50E-01	2.24E-01	5.62E-02	2.39E-06	1.99E-06	5.62E-02	5.01E-02
Nickel	7.70E-01	8.71E-01	1.76E+01	4.95E-02	8.72E-01	5.82E-05	4.83E-05	8.73E-01	7.71E-01	1.27E+00	1.43E+00	1.30E+01	1.10E-01	1.43E+00	3.44E-04	2.86E-04	1.43E+00	1.27E+00
Phosphorus	3.20E+02	3.62E+02	2.79E+02	1.30E+00	3.62E+02	1.78E-04	1.48E-04	3.62E+02	3.20E+02	4.29E+02	4.81E+02	1.92E+02	2.51E+00	4.82E+02	1.05E-03	8.74E-04	4.82E+02	4.29E+02
Potassium	1.10E+03	1.24E+03	2.09E+03	5.95E-01	1.24E+03	8.09E-05	6.71E-05	1.24E+03	1.10E+03	1.28E+03	1.44E+03	3.10E+02	4.63E+00	1.44E+03	4.78E-04	3.97E-04	1.44E+03	1.28E+03
Selenium	8.60E-02	9.73E-02	1.00E-01	9.73E-01	9.75E-02	4.04E-07	3.36E-07	9.75E-02	8.62E-02	7.40E-02	8.31E-02	1.00E-01	8.31E-01	8.33E-02	2.39E-06	1.99E-06	8.33E-02	7.42E-02
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	3.22E+02	3.64E+02	3.90E+02	9.34E-01	3.64E+02	2.02E-04	1.68E-04	3.64E+02	3.22E+02	4.19E+02	4.70E+02	1.10E+02	4.28E+00	4.71E+02	1.20E-03	9.93E-04	4.71E+02	4.20E+02
Strontium	1.55E+01	1.75E+01	3.05E+01	5.75E-01	1.75E+01	1.13E-05	9.40E-06	1.75E+01	1.55E+01	1.17E+01	1.31E+01	7.87E+00	1.67E+00	1.31E+01	6.70E-05	5.56E-05	1.31E+01	1.17E+01
Thallium	3.93E-03	4.45E-03	1.20E-01	3.70E-02	4.45E-03	8.09E-08	6.71E-08	4.45E-03	3.93E-03	4.11E-03	4.61E-03	2.51E-02	1.85E-01	4.62E-03	4.78E-07	3.97E-07	4.62E-03	4.12E-03
Tin	1.00E-02	1.13E-02	1.00E+00	1.13E-02	1.13E-02	1.62E-06	1.34E-06	1.13E-02	1.00E-02	1.00E-02	1.12E-02	1.00E+00	1.12E-02	1.12E-02	9.57E-06	7.94E-06	1.12E-02	1.00E-02
Titanium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	1.97E-02	2.23E-02	4.49E-01	4.96E-02	2.23E-02	8.09E-08	6.71E-08	2.23E-02	1.97E-02	1.10E-02	1.23E-02	3.14E-01	3.93E-02	1.23E-02	4.78E-07	3.97E-07	1.23E-02	1.10E-02
Vanadium	1.30E+00	1.47E+00	3.96E+01	3.71E-02	1.47E+00	8.09E-05	6.71E-05	1.47E+00	1.30E+00	8.50E-01	9.54E-01	2.65E+01	3.61E-02	9.56E-01	4.78E-04	3.97E-04	9.57E-01	8.52E-01
Zinc	1.58E+01	1.79E+01	3.76E+01	4.75E-01	1.79E+01	4.77E-05	3.96E-05	1.79E+01	1.58E+01	2.39E+01	2.68E+01	1.58E+01	1.70E+00	2.69E+01	2.82E-04	2.34E-04	2.69E+01	2.40E+01

Notes:

Sample CFW2-B-ARCTRUB was mislabelled and is actually Arctostaphylos alpina, and is the duplicate to CFW2 collected on the same date.

Berry sample CWF1 was mislabelled and is actually CFW1-B (thus a duplicate to CFW1-A).

(-) = not available

ww = wet weight

dw = dry weight

[a] *Predicted vegetation concentration due to root uptake is calculated by multiplying the predicted total soil concentration from Appendix V6-5I with the biotransfer factor for co-collected vegetation and soil samples.*

[b] *Predicted vegetation concentration due to dustfall deposition is calculated with the US EPA (2005) equation: Pd = 1000*predicted metal concenration in dustfall*Rp*(1-EXP(-kp*Tp))/(Yp*kp), where Pd = plant concentration due to deposition, Rp = Interception fraction of the edible portion of plant (unitless; equal to 0.0324 for berries which is what the US EPA 2005 recommends for exposed produce; equal to 0.0846 for all other species which is what the US EPA recommends for leafy vegetables), kp = Plant surface loss coefficient (18 year-1 as recommended by the US EPA 2005), Tp = Length of plant exposure to deposition per harvest of the edible portion of the ith plant group (0.5 years as the snow-free season is six months long), and Yp = Yield or standing crop biomass of the edible portion of the plant (0.25 for berries which is what the US EPA recommends for fruits; 5.66 kg DW/m² for all other species as recommended by the US EPA 2005 for exposed vegetables).*

Vegetation samples collected prior to 2014 were not co-collected with soil (no soil match), thus it was assumed the soil concentration was the same as baseline and additional metals are only from dust depostion to the plant.