Appendix A2 Impact of Tailings on Birds (Non-Radiological)

The values in the following tables are calculated Hazard Quotients (HQ) or Screening Index (SI) which is the ratio of total intake of a chemical and the toxicity reference value (TRV) for that chemical.

SI Values - Non-Radiological Aquatic

37101-3 NonRad Total T1

Contaminant	Mallard
Al	8.07E+02
As	1.99E+03
B	6.27E-03
Ba	1.24E-04
Cd	2.02E+02
Cr	2.49E+03
Cu	7.28E+02
F	3.71E+03
Fe	
Mn	5.34E+02
Mo	
Ni	7.54E+01
Pb	3.08E+01
Se	7.57E+02
U	6.68E+02
V	2.67E+04

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	As	
WaterConc (mg/L)	1.46E+02	Max, Cell 1(a)
SedConc (mg/lgDW)	1.46E+03	Kd:CSA N288.1(2008)
BenthosTF (L/kgFW)	3.00E+02	US DOE (2003)
BenthosConc (mg/kgFW)	4.38E+04	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	3.00E+02	US DOE (2003)
AqVegConc (mg/kgFW)	4.38E+04	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	8.76E+00	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	8.21E+03	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	8.21E+03	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	2.74E+03	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	1.10E+04	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	1.01E+04	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	5.10E+00	Eco-SSL for Arsenic (U.S. EPA 2005)
SI(-)	**1.99E+03**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Cd	
WaterConc (mg/L)	4.72E+00	Max, Cell 1(f)
SedConc (mg/lgDW)	0.00E+00	Kd:
BenthosTF (L/kgFW)	1.36E+02	Bird & Schwartz (1996)
BenthosConc (mg/kgFW)	6.42E+02	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.86E+04	Bird & Schwartz (1996)
AqVegConc (mg/kgFW)	8.78E+04	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	2.83E-01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	1.20E+02	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	1.20E+02	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	5.49E+03	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	5.61E+03	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	5.18E+03	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	2.56E+01	Eco-SSL (2005)
SI(-)	**2.02E+02**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Cr	
WaterConc (mg/L)	7.17E+00	Max, Cell 1(e)
SedConc (mg/lgDW)	4.80E+03	Kd:CSA N288.1(2008)
BenthosTF (L/kgFW)	2.00E+03	US DOE (2003)
BenthosConc (mg/kgFW)	1.43E+04	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.20E-01	Bird & Schwartz (1996)
AqVegConc (mg/kgFW)	8.60E-01	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	4.30E-01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	2.69E+03	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	2.69E+03	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	5.38E-02	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	2.70E+03	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	2.49E+03	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	1.00E+00	Sample et al. 1996
SI(-)	**2.49E+03**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Cu	
WaterConc (mg/L)	2.37E+02	Max, Cell 1(e)
SedConc (mg/lgDW)	0.00E+00	Kd:
BenthosTF (L/kgFW)	1.00E+03	NRCC (1983)
BenthosConc (mg/kgFW)	2.37E+05	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.00E+03	NRCC (1983)
AqVegConc (mg/kgFW)	2.37E+05	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	1.42E+01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	4.44E+04	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	4.44E+04	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	1.48E+04	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	5.93E+04	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	5.48E+04	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	7.52E+01	Eco-SSL (2006)
SI(-)	**7.28E+02**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Mo	
WaterConc (mg/L)	5.92E+01	Max, Cell 1(e)
SedConc (mg/lgDW)	5.92E+03	Kd:CSA N288.1(2008)
BenthosTF (L/kgFW)	4.00E+03	US EPA (1979)
BenthosConc (mg/kgFW)	2.37E+05	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.00E+02	US DOE (2003)
AqVegConc (mg/kgFW)	5.92E+03	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	3.55E+00	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	4.44E+04	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	4.44E+04	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	3.70E+02	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	4.48E+04	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	4.14E+04	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)		no data
SI(-)		=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Pb	
WaterConc (mg/L)	3.81E+00	Max, Cell 1(f)
SedConc (mg/lgDW)	1.03E+03	Kd:Bechtel Jacobs 1998
BenthosTF (L/kgFW)	5.00E+02	US DOE (2003)
BenthosConc (mg/kgFW)	1.91E+03	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.50E+02	Bird & Schwartz (1996)
AqVegConc (mg/kgFW)	5.72E+02	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	2.29E-01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	3.57E+02	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	3.57E+02	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	3.57E+01	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	3.95E+02	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	3.65E+02	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	1.18E+01	Eco-SSL (2005)
SI(-)	**3.09E+01**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	Se	
WaterConc (mg/L)	2.24E+00	Max, Cell 1(a)
SedConc (mg/lgDW)	3.36E+03	Kd:CSA N288.1(2008)
BenthosTF (L/kgFW)	2.00E+03	US DOE (2003)
BenthosConc (mg/kgFW)	4.48E+03	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	1.55E+03	Bird & Schwartz (1996)
AqVegConc (mg/kgFW)	3.46E+03	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	1.34E-01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	8.40E+02	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	8.40E+02	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	2.16E+02	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	1.06E+03	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	9.82E+02	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	1.29E+00	Eco-SSL (2007)
SI(-)	**7.61E+02**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	U	
WaterConc (mg/L)	1.54E+02	Max, Cell 1(a)
SedConc (mg/lgDW)	5.08E+04	Kd:CSA N288.1(2008)
BenthosTF (L/kgFW)	1.00E+02	US DOE (2003)
BenthosConc (mg/kgFW)	1.54E+04	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	9.00E+02	
AqVegConc (mg/kgFW)	1.39E+05	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	9.24E+00	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	2.89E+03	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	2.89E+03	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	8.66E+03	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	1.16E+04	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	1.08E+04	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	1.60E+01	Sample et al. (1996)
SI(-)	**6.73E+02**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)

Mallard

CaseName	37101-3 NonRad Total T1	
ContName	V	
WaterConc (mg/L)	3.93E+02	Max, Cell 1(a)
SedConc (mg/lgDW)	0.00E+00	Kd:
BenthosTF (L/kgFW)	0.00E+00	
BenthosConc (mg/kgFW)	0.00E+00	=SWConc(mg/L) * BenthosTF(L/kgFW)
AqVegTF (L/kgFW)	2.00E+03	US NRC (1977)
AqVegConc (mg/kgFW)	7.86E+05	=SWConc(mg/L) * AqVegsTF(L/kgFW
IfromWater(mg/d)	2.36E+01	=SWConc(mg/L) * WaterI(L/d)
IfromSed(mg/d)	0.00E+00	=SedConc(mg/kgDW) * SedI(kgDW/d)
IfromBenthos(mg/d)	0.00E+00	=BenthosConc(mg/kgFW) * FoodI(gFW/d)*frBentho/1000(g/kg)
IfromAqVeg(mg/d)	4.91E+04	=AqVegConc(mg/kgFW) * FoodI(gFW/d)*frAqVeg/1000(g/kg)
TotalI(mg/d)	4.91E+04	=IWater(mg/d)+ISed(mg/d)+IBenthos(mg/d)+(IAqVeg(mg/d)
TotalIBW(mg/d/kg)	4.54E+04	=TotalI(mg/d)/Body wt(kg)
TRV(mg/d/kg)	1.70E+00	LOAEL from Eco-SSL for Vanadium, 2005
SI(-)	**2.67E+04**	=TotalIBW(mg/d/kg)/TRV(mg/d/kg)