BHP Billiton Diamonds Inc.

Operator of the EKATI Diamond Mine

March 26, 2009

Wek'èezhìi Land and Water Board
P.O. Box 2130
Yellowknife, NT
X1A 2P6
Attention: Ms. Violet Camsell-Blondin, Chair

Dear Ms. Camsell-Blondin:

Re. Undertaking #1 from the Sable, Pigeon and Beartooth water licence renewal public hearing (March 4-5, 2009)

BHP Billiton is pleased to provide the attached memo in response to Undertaking #1 as requested by the Wek'èezhìi Land and Water Board during the March 4th proceedings of the Sable, Pigeon and Beartooth water licence renewal public hearing held in Behchoko.

Please contact Eric Denholm, Superintendent – Traditional Knowledge and Permitting, at 669-6116 if you have any questions.

Sincerely,
BHP Billiton Diamonds Inc

For: Eric Denholm
Superintendent – Traditional Knowledge and Permitting
EKATI Diamond Mine

Memorandum

Rescan™

DATE: March 26, 2009
TO: Eric Denholm
FROM: Marc Wen
CC: Paul Greisman, Jennifer Foster
SUBJECT: Summary of Two Rock Water Quality Prediction Model Input Data

The following memo outlines the approach used to model predicted concentrations in Two Rock Sedimentation Pond and the data used for this modelling. This information is provided to answer specific questions asked by Dr. Racher from the Wek'eezhii Land and Water Board during proceedings (March 3 to 4, 2009) of the hearing for the renewal of the Sable, Pigeon and Beartooth water licence. For completeness, a short discussion is provided on the Horseshoe Lake modelling work, although this was not strictly requested by Dr. Racher.

Predictions of water quality in Two Rock Sedimentation Pond were based on water quality measurements over five years at the selected surrogate, Beartooth Pit, and precipitation measurements over the same period. Daily loadings from the Beartooth Pit were calculated by multiplying the measured daily concentration of each water quality parameter by the product of the measured rainfall and the catchment area (the daily volume). The loadings calculated for Beartooth Pit were then scaled upward by the ratio of the planned Sable Pit area to the Beartooth Pit area.

Daily concentrations of water quality parameters in Two Rock Sedimentation Pond were calculated using the daily loadings from Sable Pit as well as the predicted loadings from the waste rock piles, then diluted by the runoff from the entire catchment.

Two Rock Sedimentation Pond is assumed to be well mixed.

The model time step is one day. Each day the concentrations of water quality parameters originating in Sable Pit increase asymptotically to near equilibrium.

Calculation Procedure for Two Rock Sedimentation Pond Concentrations.

The procedure is outlined in "Review of Effluent Quality Criteria (EQC) for the Sable Site" of January 2009. In particular, the attachments to this document present the calculation procedure in some detail.

The first step was synthesis of a time series of water quality data for the Beartooth Pit surrogate: in fact ascribing a daily value for each water quality parameter. Next these values were multiplied by the daily flow from Beartooth Pit which was, in turn calculated as the product of the measured daily rainfall and the catchment area. To allow for snow fall, which was not measured, the precipitation values were doubled. The approximate 1:1 rainfall / snowfall ratio has been documented at other nearby sites.

Next, the predicted loadings for Sable Pit were obtained by multiplying the Beartooth Pit Loadings by the ratio of the area of Sable Pit to Beartooth Pit 2.16.

Next, precipitation on Two Rock Lake, The Two Rock Watershed and the Waste Rock Storage Area were directed to Two Rock Sedimentation Pond along with the flow and loadings calculated above from Sable Pit. A daily time step was used with full mixing in Two Rock Sedimentation Pond.

It should be noted that only the first three years of data from Beartooth Pit were used because data from the last two years of the five year record were considered to be sampled too infrequently to be representative of the yearly cycle. Data used in the model are summarized in Table 1. The final two years used the data from year three.

Table 1
Data Years

Model Year	Data used
1	2004
2	2005
3	2006
4	2006
5	2006

Finally, the water quality prediction for Two Rock Sedimentation Pond after five years was used as input to the Horseshoe Lake 3-D model.

Table 2 presents areas and runoff coefficients of the pits and catchment areas which are needed for the calculations.

Table 2
Summary of Watershed Areas and Runoff Coefficients

Location	Catchment Area (km^2)	Runoff Coefficient
Beartooth Pit Area	0.19	1
Beartooth Pit Catchment Area	0.219	0.5
Sable Pit Area	0.41	1
Sable Pit Catchment Area	0.19	0.5
Two Rock Lake Area	0.294	1
Two Rock Watershed Area	0.258	0.5
WRSA Watershed Area[1]	0.742	0.1

[1.] The WRSA is separated from Two Rock Watershed because of its lower estimated runoff coefficient..

Table 3 shows the water quality input data for iinflows to Two Rock Sedimentation Pond. It should be noted that the natural runoff, and particularly the runoff from the WRSA contains small but non-negligible concentrations of water quality parameters.

Table 3
Two Rock Inflow Water Quality

Parameter	Concentration (mg/L)		
	Two Rock Pond Background[1]	Watershed Area Runoff	WRSA Runoff[2]
Ammonia	0.008969	0.014	0.173
Nitrate-N	0.008938	0.006	4
Total Nickel	0.0003525	0.002	0.0068
Total Zinc	0.0004625	0.005	0.0107

[1]Median water quality data provided by SRK for the Sable Reference Area.
[2]Median seepage water quality data provided by SRK for the Panda/Koala/Beartooth Area

A sample calculation for the first month of the five year period modelled is shown below.

The Excel calculations can be time consuming without a program capable efficient data assimilation. Rescan used GoldSim for this purpose.

Prediction of Concentrations in Horseshoe Lake

Water from Two Rock Sedimentation Pond will be discharged to Horseshoe Lake by pumping to simulate the natural seasonal cycle of discharge. Mixing and transport of this discharge was simulated using "Mike 3", a 3-D numerical model which solves the Navier Stokes equations in each model cell. The model includes all inflows and outflows to Horseshoe Lake and calculates the currents in the lake that arise from wind stress as well as the inflows and outflows.

It is important to note that the results are time dependent, that is the plume of Two Rock Sedimentation Pond water flows in various directions with varying speeds and varying intensity of mixing for each time step. This is the nature of turbulent flow and descriptions need to be based on flow statistics. For example, the concentration profile in a turbulent jet is usually characterized by a Gaussian distribution in which concentration is highest at the centre. Discharge to a dynamic wind-driven ambient adds another level of turbulent variation.

The model yields the predicted concentration (or dilution) of Two Rock Sedimentation Pond water in Horseshoe Lake. This is a factor that can be applied to the concentration of any water quality parameter from Two Rock Sedimentation Pond.

The concentrations of water quality parameters predicted in year five in Two Rock Sedimentation Pond, that is after five years of flow from Sable Pit to Two Rock Sedimentation Pond were used in conjunction with predicted dilutions to calculate the concentrations as a function of time and space in Horseshoe Lake. It should be noted that this is a conservative assumption because the Two Rock Sedimentation Pond concentrations will build slowly over several years.

Sample Calculation of Water Quality in Two Rock Sedimentation Pond
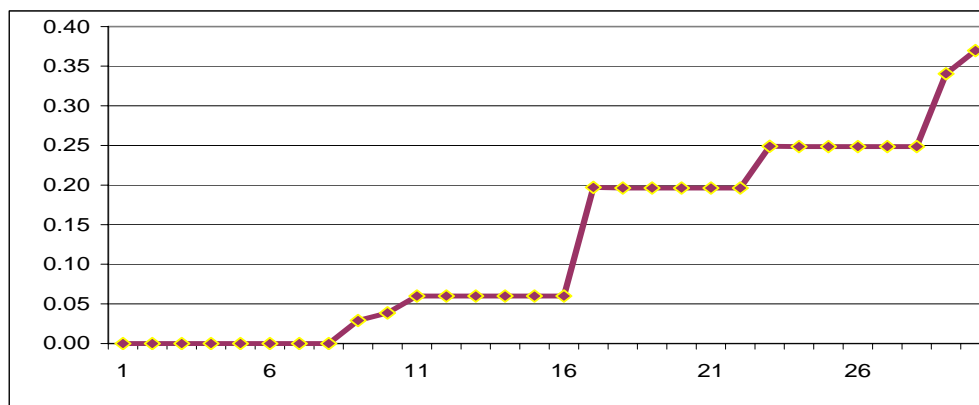**For simplicity, loadings from waersheds and waste rock dumps are ignored**

Beartooth Catchment		219,000	m^2
Ratio of Sable Pit Area to Beartooth Pit Area		2.16	

	Area	Runoof Coef	Product	
Two Rock Sed Pond	294000	1		294000
Two Rock Wateshed	258000	0.5		129000
Waste Rock Storage Area	742000	0.1		74200
Total Two Rock Catchment * Runof Coef				**497200**

Two Rock Pond Volume	1,058,830 m^3

$$(TR\ Conc)_i = (TR\ Conc)_{i-1} + [(Sable\ Loading)_i - (Fresh\ to\ TR)_i * (TR\ Conc)_{i-1}] / [TR\ Vol]$$

	=ppt*catch		=Flow*[Ni]	=2.16*Beartooth	=ppt*Total TR catch	
July 2004 Day	**Twice Precip (mm)**	**Beartooth Flow (m^3)**	**Beartooth [Ni] (mg/L)**	**Beartooth Loading [Ni] (g)**	**Sable Loading [Ni] (g)**	**"Fresh" Water to Two Rock Pond (m^3)**	**Concentration Two Rock Pond (µg/L)**
---	---	---	---	---	---	---	---
1	0.0	0	0.04965	0.0	0	0.0	0.000
2	0.0	0	0.04965	0.0	0	0.0	0.000
3	0.0	0	0.04880	0.0	0	0	0.000
4	0.0	0	0.04325	0.0	0	0	0.000
5	0.0	0	0.04325	0.0	0	0	0.000
6	0.0	0	0.04325	0.0	0	0	0.000
7	0.0	0	0.04325	0.0	0	0	0.000
8	0.0	0	0.04325	0.0	0	0	0.000
9	1.5	329	0.04325	14.2	31	746	0.029
10	0.5	110	0.04325	4.7	10	249	0.039
11	1.1	241	0.04325	10.4	23	547	0.060
12	0.0	0	0.03770	0.0	0	0	0.060
13	0.0	0	0.03375	0.0	0	0	0.060
14	0.0	0	0.03375	0.0	0	0	0.060
15	0.0	0	0.03375	0.0	0	0	0.060
16	0.0	0	0.03375	0.0	0	0	0.060
17	9.1	1993	0.03375	67.3	145	4525	0.197
18	0.0	0	0.03375	0.0	0	0	0.196
19	0.0	0	0.03375	0.0	0	0	0.196
20	0.0	0	0.03375	0.0	0	0	0.196
21	0.0	0	0.03375	0.0	0	0	0.196
22	0.0	0	0.03375	0.0	0	0	0.196
23	3.5	767	0.03375	25.9	56	1740	0.249
24	0.0	0	0.03375	0.0	0	0	0.249
25	0.0	0	0.03375	0.0	0	0	0.249
26	0.0	0	0.03375	0.0	0	0	0.249
27	0.0	0	0.03375	0.0	0	0	0.249
28	0.0	0	0.03375	0.0	0	0	0.249
29	6.1	1336	0.03375	45.1	97	3033	0.341
30	2.0	438	0.03375	14.8	32	994	0.370

INPUTS FROM COLLECTED DATA

Input Data

The input data to the Two Rock Modelling are provided for ammonia, nitrate, nickel and zinc.

Excel File: Beartooth Daily Loadings updated Dec19 2008.xls

In the tab labelled 'Daily First-Last', the columns are explained below:

- Column A shows the date over the sampling period
- Column B contains the daily precipitation data
- Columns C to E calculate the daily volume of water entering Beartooth Pit.
- Columns F to I show the interpolated water quality data for Beartooth Pit
- Columns J to M show the calculated loadings leaving Beartooth Pit

The tab labelled 'Model Years' provides a summary of the data used to represent each modelled year.

*Note: The predicted loadings for Sable were obtained by multiplying the Beartooth Loadings by the ratio of the area of Sable Pit to Beartooth Pit, 2.16.

Two Rock Sedimentation Pond Modelling - Input Data

					Concentration (mg/L)				Loading (mg)			
	Pit Area (km^2)		Beartooth 0.19									
	Runoff to Pit Area (km^2)		0.219									
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
3-Jun-04	0	0	0	0	10.0345	0.03945	0.0137	26.505	0	0	0	0
4-Jun-04	10.16	1930.4	1112.52	3042.92	12	0.0429	0.0137	28.8	36515040	130541.3	41688	87636096
5-Jun-04	0	0	0	0	5.58	0.055	0.0146	15.7	0	0	0	0
6-Jun-04	0	0	0	0	11.9	0.0389	0.0079	34.7	0	0	0	0
7-Jun-04	0.254	48.26	27.813	76.073	5.28	0.0513	0.0137	15.4	401665.4	3902.545	1042.2	1171524.2
8-Jun-04	0.254	48.26	27.813	76.073	5.53	0.0545	0.0166	15	420683.7	4145.979	1262.812	1141095
9-Jun-04	0	0	0	0	5.78	0.0577	0.0195	14.6	0	0	0	0
10-Jun-04	0	0	0	0	5.455	0.05755	0.0201	13.9	0	0	0	0
11-Jun-04	0	0	0	0	5.13	0.0574	0.0207	13.2	0	0	0	0
12-Jun-04	0	0	0	0	10.5	0.0469	0.008	19.6	0	0	0	0
13-Jun-04	0	0	0	0	8.62	0.0482	0.0075	15.6	0	0	0	0
14-Jun-04	0	0	0	0	7.38	0.0588	0.0144	14.4	0	0	0	0
15-Jun-04	0	0	0	0	6.42	0.05465	0.01245	14.4	0	0	0	0
16-Jun-04	0	0	0	0	6.42	0.05465	0.01245	14.4	0	0	0	0
17-Jun-04	0	0	0	0	6.42	0.05465	0.01245	14.4	0	0	0	0
18-Jun-04	1.27	241.3	139.065	380.365	6.42	0.05465	0.01245	14.4	2441943	20786.95	4735.544	5477256
19-Jun-04	10.67	2027.3	1168.365	3195.665	6.42	0.05465	0.01245	14.4	20516169	174643.1	39786.03	46017576
20-Jun-04	0.254	48.26	27.813	76.073	5.46	0.0505	0.0105	14.4	415358.6	3841.687	798.7665	1095451.2
21-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
22-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
23-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
24-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
25-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
26-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
27-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
28-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
29-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
30-Jun-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
1-Jul-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
2-Jul-04	0	0	0	0	6.245	0.04965	0.0075	25.7	0	0	0	0
3-Jul-04	0	0	0	0	7.03	0.0488	0.0045	25.7	0	0	0	0
4-Jul-04	0	0	0	0	9.665	0.04325	0.0033	35.55	0	0	0	0
5-Jul-04	0	0	0	0	9.665	0.04325	0.0033	35.55	0	0	0	0
6-Jul-04	0	0	0	0	9.665	0.04325	0.0033	35.55	0	0	0	0
7-Jul-04	0	0	0	0	9.665	0.04325	0.0033	35.55	0	0	0	0
8-Jul-04	0	0	0	0	9.665	0.04325	0.0033	35.55	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219				Concentration (mg/L)				Loading (mg)		
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
9-Jul-04	0.762	144.78	83.439	228.219	9.665	0.04325	0.0033	35.55	2205737	9870.472	753.1227	8113185.45
10-Jul-04	0.254	48.26	27.813	76.073	9.665	0.04325	0.0033	35.55	735245.5	3290.157	251.0409	2704395.15
11-Jul-04	0.508	96.52	55.626	152.146	9.665	0.04325	0.0033	35.55	1470491	6580.315	502.0818	5408790.3
12-Jul-04	0	0	0	0	12.3	0.0377	0.0021	45.4	0	0	0	0
13-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
14-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
15-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
16-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
17-Jul-04	4.572	868.68	500.634	1369.314	15.9	0.03375	0.00725	64.5	21772093	46214.35	9927.527	88320753
18-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
19-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
20-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
21-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
22-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
23-Jul-04	1.778	337.82	194.691	532.511	15.9	0.03375	0.00725	64.5	8466925	17972.25	3860.705	34346959.5
24-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
25-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
26-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
27-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
28-Jul-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
29-Jul-04	3.048	579.12	333.756	912.876	15.9	0.03375	0.00725	64.5	14514728	30809.57	6618.351	58880502
30-Jul-04	1.016	193.04	111.252	304.292	15.9	0.03375	0.00725	64.5	4838243	10269.86	2206.117	19626834
31-Jul-04	0.254	48.26	27.813	76.073	15.9	0.03375	0.00725	64.5	1209561	2567.464	551.5293	4906708.5
1-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
2-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
3-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
4-Aug-04	11.94	2268.6	1307.43	3576.03	15.9	0.03375	0.00725	64.5	56858877	120691	25926.22	230653935
5-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
6-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
7-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
8-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
9-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
10-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
11-Aug-04	3.556	675.64	389.382	1065.022	15.9	0.03375	0.00725	64.5	16933850	35944.49	7721.41	68693919
12-Aug-04	1.27	241.3	139.065	380.365	15.9	0.03375	0.00725	64.5	6047804	12837.32	2757.646	24533542.5
13-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
14-Aug-04	0.508	96.52	55.626	152.146	15.9	0.03375	0.00725	64.5	2419121	5134.928	1103.059	9813417

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
15-Aug-04	0.762	144.78	83.439	228.219	15.9	0.03375	0.00725	64.5	3628682	7702.391	1654.588	14720125.5
16-Aug-04	4.318	820.42	472.821	1293.241	15.9	0.03375	0.00725	64.5	20562532	43646.88	9375.997	83414044.5
17-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
18-Aug-04	0.508	96.52	55.626	152.146	15.9	0.03375	0.00725	64.5	2419121	5134.928	1103.059	9813417
19-Aug-04	2.54	482.6	278.13	760.73	15.9	0.03375	0.00725	64.5	12095607	25674.64	5515.293	49067085
20-Aug-04	3.302	627.38	361.569	988.949	15.9	0.03375	0.00725	64.5	15724289	33377.03	7169.88	63787210.5
21-Aug-04	0.254	48.26	27.813	76.073	15.9	0.03375	0.00725	64.5	1209561	2567.464	551.5293	4906708.5
22-Aug-04	0.254	48.26	27.813	76.073	15.9	0.03375	0.00725	64.5	1209561	2567.464	551.5293	4906708.5
23-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
24-Aug-04	0	0	0	0	15.9	0.03375	0.00725	64.5	0	0	0	0
25-Aug-04	1.524	289.56	166.878	456.438	15.9	0.03375	0.00725	64.5	7257364	15404.78	3309.176	29440251
26-Aug-04	10.92	2074.8	1195.74	3270.54	15.9	0.03375	0.00725	64.5	52001586	110380.7	23711.42	210949830
27-Aug-04	0.508	96.52	55.626	152.146	15.9	0.03375	0.00725	64.5	2419121	5134.928	1103.059	9813417
28-Aug-04	0	0	0	0	19.5	0.0298	0.0124	83.6	0	0	0	0
29-Aug-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
30-Aug-04	0.508	96.52	55.626	152.146	42.2	0.0829	0.0103	120.8	6420561	12612.9	1567.104	18379236.8
31-Aug-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
1-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
2-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
3-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
4-Sep-04	7.37	1400.3	807.015	2207.315	42.2	0.0829	0.0103	120.8	93148693	182986.4	22735.34	266643652
5-Sep-04	7.62	1447.8	834.39	2282.19	42.2	0.0829	0.0103	120.8	96308418	189193.6	23506.56	275688552
6-Sep-04	1.778	337.82	194.691	532.511	42.2	0.0829	0.0103	120.8	22471964	44145.16	5484.863	64327328.8
7-Sep-04	0.508	96.52	55.626	152.146	42.2	0.0829	0.0103	120.8	6420561	12612.9	1567.104	18379236.8
8-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
9-Sep-04	0.254	48.26	27.813	76.073	42.2	0.0829	0.0103	120.8	3210281	6306.452	783.5519	9189618.4
10-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
11-Sep-04	0.254	48.26	27.813	76.073	42.2	0.0829	0.0103	120.8	3210281	6306.452	783.5519	9189618.4
12-Sep-04	7.11	1350.9	778.545	2129.445	42.2	0.0829	0.0103	120.8	89862579	176531	21933.28	257236956
13-Sep-04	3.81	723.9	417.195	1141.095	42.2	0.0829	0.0103	120.8	48154209	94596.78	11753.28	137844276
14-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
15-Sep-04	21.34	4054.6	2336.73	6391.33	42.2	0.0829	0.0103	120.8	2.7E+08	529841.3	65830.7	772072664
16-Sep-04	2.032	386.08	222.504	608.584	42.2	0.0829	0.0103	120.8	25682245	50451.61	6268.415	73516947.2
17-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
18-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
19-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
20-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
21-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
22-Sep-04	0	0	0	0	42.2	0.0829	0.0103	120.8	0	0	0	0
23-Sep-04	0.508	96.52	55.626	152.146	42.2	0.0829	0.0103	120.8	6420561	12612.9	1567.104	18379236.8
24-Sep-04	6.858	1303.02	750.951	2053.971	42.2	0.0829	0.0103	120.8	86677576	170274.2	21155.9	248119697
25-Sep-04	3.302	627.38	361.569	988.949	7.2	0.00634	0.003	37.8	7120433	6269.937	2966.847	37382272.2
26-Sep-04	0.254	48.26	27.813	76.073	64.9	0.136	0.0082	158	4937138	10345.93	623.7986	12019534
27-Sep-04	0	0	0	0	62.6	0.118	0.0064	179	0	0	0	0
28-Sep-04	0	0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
29-Sep-04	0	0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
30-Sep-04	0	0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
1-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
2-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
3-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
4-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
5-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
6-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
7-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
8-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
9-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
10-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
11-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
12-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
13-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
14-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
15-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
16-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
17-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
18-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
19-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
20-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
21-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
22-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
23-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
24-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
25-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
26-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
27-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
28-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
29-Oct-04		0	0	0	74.45	0.08675	0.00745	173.5	0	0	0	0
30-Oct-04		0	0	0	86.3	0.0555	0.0085	168	0	0	0	0
31-May-05	0	0	0	0	17	0.0517	0.0165	28.3	0	0	0	0
1-Jun-05	0	0	0	0	14.625	0.04975	0.014175	25.1	0	0	0	0
2-Jun-05	0	0	0	0	14.625	0.04975	0.014175	25.1	0	0	0	0
3-Jun-05	0	0	0	0	12.25	0.0478	0.01185	21.9	0	0	0	0
4-Jun-05	0	0	0	0	12.525	0.0408	0.0097	23.1	0	0	0	0
5-Jun-05	0	0	0	0	12.525	0.0408	0.0097	23.1	0	0	0	0
6-Jun-05	0	0	0	0	12.8	0.0338	0.00755	24.3	0	0	0	0
7-Jun-05	2.286	434.34	250.317	684.657	18.6	0.028	0.0036	38.6	12734620	19170.4	2464.765	26427760.2
8-Jun-05	0.254	48.26	27.813	76.073	19.5	0.148	0.0918	41.8	1483424	11258.8	6983.501	3179851.4
9-Jun-05	0	0	0	0	20.4	0.268	0.18	45	0	0	0	0
10-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
11-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
12-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
13-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
14-Jun-05	2.54	482.6	278.13	760.73	29.6	0.1579	0.0928	68.15	22517608	120119.3	70595.74	51843749.5
15-Jun-05	2.032	386.08	222.504	608.584	29.6	0.1579	0.0928	68.15	18014086	96095.41	56476.6	41474999.6
16-Jun-05	0.254	48.26	27.813	76.073	29.6	0.1579	0.0928	68.15	2251761	12011.93	7059.574	5184374.95
17-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
18-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
19-Jun-05	6.858	1303.02	750.951	2053.971	29.6	0.1579	0.0928	68.15	60797542	324322	190608.5	139978124
20-Jun-05	1.016	193.04	111.252	304.292	29.6	0.1579	0.0928	68.15	9007043	48047.71	28238.3	20737499.8
21-Jun-05	3.302	627.38	361.569	988.949	29.6	0.1579	0.0928	68.15	29272890	156155	91774.47	67396874.4
22-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
23-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
24-Jun-05	0.762	144.78	83.439	228.219	29.6	0.1579	0.0928	68.15	6755282	36035.78	21178.72	15553124.9
25-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
26-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
27-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
28-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
29-Jun-05	0	0	0	0	29.6	0.1579	0.0928	68.15	0	0	0	0
30-Jun-05	0	0	0	0	38.8	0.0478	0.0056	91.3	0	0	0	0
1-Jul-05	3.556	675.64	389.382	1065.022	43.525	0.053975	0.0122	96.65	46355083	57484.56	12993.27	102934376
2-Jul-05	0	0	0	0	43.525	0.053975	0.0122	96.65	0	0	0	0
3-Jul-05	1.524	289.56	166.878	456.438	43.525	0.053975	0.0122	96.65	19866464	24636.24	5568.544	44114732.7

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km²)		0.19										
Runoff to Pit Area (km²)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m³)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
4-Jul-05	6.858	1303.02	750.951	2053.971	48.25	0.06015	0.0188	102	99104101	123546.4	38614.65	209505042
5-Jul-05	0	0	0	0	38.375	0.093575	0.012	95.6	0	0	0	0
6-Jul-05	0	0	0	0	38.375	0.093575	0.012	95.6	0	0	0	0
7-Jul-05	1.27	241.3	139.065	380.365	38.375	0.093575	0.012	95.6	14596507	35592.65	4564.38	36362894
8-Jul-05	0.508	96.52	55.626	152.146	38.375	0.093575	0.012	95.6	5838603	14237.06	1825.752	14545157.6
9-Jul-05	0	0	0	0	38.375	0.093575	0.012	95.6	0	0	0	0
10-Jul-05	0	0	0	0	38.375	0.093575	0.012	95.6	0	0	0	0
11-Jul-05	0.762	144.78	83.439	228.219	38.375	0.093575	0.012	95.6	8757904	21355.59	2738.628	21817736.4
12-Jul-05	0.254	48.26	27.813	76.073	38.375	0.093575	0.012	95.6	2919301	7118.531	912.876	7272578.8
13-Jul-05	0	0	0	0	28.5	0.127	0.0052	89.2	0	0	0	0
14-Jul-05	0	0	0	0	28.8	0.482	0.264	82.1	0	0	0	0
15-Jul-05	0	0	0	0	33.25	0.28745	0.13375	89.4	0	0	0	0
16-Jul-05	0	0	0	0	33.25	0.28745	0.13375	89.4	0	0	0	0
17-Jul-05	12.19	2316.1	1334.805	3650.905	33.25	0.28745	0.13375	89.4	1.21E+08	1049453	488308.5	326390907
18-Jul-05	0	0	0	0	33.25	0.28745	0.13375	89.4	0	0	0	0
19-Jul-05	0	0	0	0	37.7	0.0929	0.0035	96.7	0	0	0	0
20-Jul-05	0.762	144.78	83.439	228.219	36.4	0.13345	0.031	90.1	8307172	30455.83	7074.789	20562531.9
21-Jul-05	0	0	0	0	35.1	0.174	0.0585	83.5	0	0	0	0
22-Jul-05	0.508	96.52	55.626	152.146	33.925	0.137225	0.031625	94.75	5161553	20878.23	4811.617	14415833.5
23-Jul-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
24-Jul-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
25-Jul-05	1.016	193.04	111.252	304.292	33.925	0.137225	0.031625	94.75	10323106	41756.47	9623.235	28831667
26-Jul-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
27-Jul-05	2.286	434.34	250.317	684.657	33.925	0.137225	0.031625	94.75	23226989	93952.06	21652.28	64871250.8
28-Jul-05	0.508	96.52	55.626	152.146	33.925	0.137225	0.031625	94.75	5161553	20878.23	4811.617	14415833.5
29-Jul-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
30-Jul-05	0.254	48.26	27.813	76.073	33.925	0.137225	0.031625	94.75	2580777	10439.12	2405.809	7207916.75
31-Jul-05	1.27	241.3	139.065	380.365	33.925	0.137225	0.031625	94.75	12903883	52195.59	12029.04	36039583.8
1-Aug-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
2-Aug-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
3-Aug-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
4-Aug-05	1.778	337.82	194.691	532.511	33.925	0.137225	0.031625	94.75	18065436	73073.82	16840.66	50455417.3
5-Aug-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
6-Aug-05	0	0	0	0	33.925	0.137225	0.031625	94.75	0	0	0	0
7-Aug-05	7.87	1495.3	861.765	2357.065	33.925	0.137225	0.031625	94.75	79963430	323448.2	74542.18	223331909
8-Aug-05	10.16	1930.4	1112.52	3042.92	33.925	0.137225	0.031625	94.75	1.03E+08	417564.7	96232.35	288316670
9-Aug-05	0	0	0	0	32.75	0.10045	0.00475	106	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			

Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
10-Aug-05	7.11	1350.9	778.545	2129.445	23.25	8.475225	0.564875	90.875	49509596	18047526	1202870	193513314
11-Aug-05	1.016	193.04	111.252	304.292	23.25	8.475225	0.564875	90.875	7074789	2578943	171886.9	27652535.5
12-Aug-05	9.65	1833.5	1056.675	2890.175	23.25	8.475225	0.564875	90.875	67196569	24494883	1632588	262644653
13-Aug-05	7.87	1495.3	861.765	2357.065	23.25	8.475225	0.564875	90.875	54801761	19976656	1331447	214198282
14-Aug-05	5.08	965.2	556.26	1521.46	13.75	16.85	1.125	75.75	20920075	25636601	1711643	115250595
15-Aug-05	0.508	96.52	55.626	152.146	10.9	0.0343	0.0025	82.1	1658391	5218.608	380.365	12491186.6
16-Aug-05	0	0	0	0	17.6	0.213	0.011	88.3	0	0	0	0
17-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
18-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
19-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
20-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
21-Aug-05	13.21	2509.9	1446.495	3956.395	18.275	0.2165	0.008	88.35	72303119	856559.5	31651.16	349547498
22-Aug-05	0.254	48.26	27.813	76.073	18.275	0.2165	0.008	88.35	1390234	16469.8	608.584	6721049.55
23-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
24-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
25-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
26-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
27-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
28-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
29-Aug-05	13.21	2509.9	1446.495	3956.395	18.275	0.2165	0.008	88.35	72303119	856559.5	31651.16	349547498
30-Aug-05	1.27	241.3	139.065	380.365	18.275	0.2165	0.008	88.35	6951170	82349.02	3042.92	33605247.8
31-Aug-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
1-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
2-Sep-05	0.762	144.78	83.439	228.219	18.275	0.2165	0.008	88.35	4170702	49409.41	1825.752	20163148.7
3-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
4-Sep-05	0.508	96.52	55.626	152.146	18.275	0.2165	0.008	88.35	2780468	32939.61	1217.168	13442099.1
5-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
6-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
7-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
8-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
9-Sep-05	0.254	48.26	27.813	76.073	18.275	0.2165	0.008	88.35	1390234	16469.8	608.584	6721049.55
10-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
11-Sep-05	7.62	1447.8	834.39	2282.19	18.275	0.2165	0.008	88.35	41707022	494094.1	18257.52	201631487
12-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
13-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
14-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0
15-Sep-05	0	0	0	0	18.275	0.2165	0.008	88.35	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
16-Sep-05	0	0	0	0	18.95	0.22	0.005	88.4	0	0	0	0
17-Sep-05	3.302	627.38	361.569	988.949	18.025	0.815	0.0735	92.9	17825806	805993.4	72687.75	91873362.1
18-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
19-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
20-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
21-Sep-05	2.54	482.6	278.13	760.73	18.025	0.815	0.0735	92.9	13712158	619995	55913.66	70671817
22-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
23-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
24-Sep-05	0.254	48.26	27.813	76.073	18.025	0.815	0.0735	92.9	1371216	61999.5	5591.366	7067181.7
25-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
26-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
27-Sep-05	0.254	48.26	27.813	76.073	18.025	0.815	0.0735	92.9	1371216	61999.5	5591.366	7067181.7
28-Sep-05	0	0	0	0	18.025	0.815	0.0735	92.9	0	0	0	0
29-Sep-05	0	0	0	0	17.1	1.41	0.142	97.4	0	0	0	0
14-May-06	0	0	0	0	0.67	0.0151	0.0232	2.33	0	0	0	0
15-May-06	0	0	0	0	0.4	0.012	0.0185	1.44	0	0	0	0
16-May-06	0	0	0	0	0.31	0.0082	0.0135	1.55	0	0	0	0
17-May-06	0	0	0	0	0.202	0.009	0.015	1.6	0	0	0	0
18-May-06	0	0	0	0	0.306	0.0069	0.0124	1.57	0	0	0	0
19-May-06	0	0	0	0	3.113	0.0487	0.0146	9.735	0	0	0	0
20-May-06	0	0	0	0	5.92	0.0905	0.0168	17.9	0	0	0	0
21-May-06	0	0	0	0	5.22	0.0833	0.0163	16.35	0	0	0	0
22-May-06	0	0	0	0	5.22	0.0805	0.0165	17.1	0	0	0	0
23-May-06	0	0	0	0	9.29	0.0709	0.0078	19.2	0	0	0	0
24-May-06	0	0	0	0	9.325	0.08595	0.0108	20.95	0	0	0	0
25-May-06	1.8	342	197.1	539.1	9.36	0.101	0.0138	22.7	5045976	54449.1	7439.58	12237570
26-May-06	2.2	418	240.9	658.9	10.9	0.0988	0.0113	5.34	7182010	65099.32	7445.57	3518526
27-May-06	1.9	361	208.05	569.05	8.67	0.08955	0.0132	10.67	4933664	50958.43	7511.46	6071763.5
28-May-06	0.1	19	10.95	29.95	6.44	0.0803	0.0151	16	192878	2404.985	452.245	479200
29-May-06	0.9	171	98.55	269.55	7.91	0.0904	0.0132	22.6	2132141	24367.32	3558.06	6091830
30-May-06	0	0	0	0	9.04	0.129	0.0089	23.5	0	0	0	0
31-May-06	0.3	57	32.85	89.85	9.745	0.1285	0.00895	27.6	875588.3	11545.73	804.1575	2479860
1-Jun-06	5.1	969	558.45	1527.45	4.23	0.0628	0.0685	11.6	6461114	95923.86	104630.3	17718420
2-Jun-06	0	0	0	0	6.74	0.0954	0.042725	18.95	0	0	0	0
3-Jun-06	0	0	0	0	9.25	0.128	0.01695	26.3	0	0	0	0
4-Jun-06	14.478	2750.82	1585.341	4336.161	9.42	0.129	0.0153	26.2	40846637	559364.8	66343.26	113607418
5-Jun-06	6.35	1206.5	695.325	1901.825	10.21	0.10335	0.0112	33.95	19417633	196553.6	21300.44	64566958.8

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km²)		0.19										
Runoff to Pit Area (km²)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m³)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
6-Jun-06	0	0	0	0	11	0.0777	0.0071	41.7	0	0	0	0
7-Jun-06	0	0	0	0	0.705	0.029	0.0481	4.1	0	0	0	0
8-Jun-06	0	0	0	0	0.679	0.0279	0.0424	3.6	0	0	0	0
9-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
10-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
11-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
12-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
13-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
14-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
15-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
16-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
17-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
18-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
19-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
20-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
21-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
22-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
23-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
24-Jun-06	1.27	241.3	139.065	380.365	0.754	0.024	0.037375	5.7375	286795.2	9128.76	14216.14	2182344.19
25-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
26-Jun-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
27-Jun-06	3.556	675.64	389.382	1065.022	0.754	0.024	0.037375	5.7375	803026.6	25560.53	39805.2	6110563.73
28-Jun-06	5.842	1109.98	639.699	1749.679	0.754	0.024	0.037375	5.7375	1319258	41992.3	65394.25	10038783.3
29-Jun-06	42.922	8155.18	4699.959	12855.139	0.754	0.024	0.037375	5.7375	9692775	308523.3	480460.8	73756360
30-Jun-06	34.282	6513.58	3753.879	10267.459	0.754	0.024	0.037375	5.7375	7741664	246419	383746.3	58909546
1-Jul-06	0	0	0	0	0.754	0.024	0.037375	5.7375	0	0	0	0
2-Jul-06	0	0	0	0	0.829	0.0201	0.03235	7.875	0	0	0	0
3-Jul-06	1.27	241.3	139.065	380.365	13.5145	1.05655	0.168225	52.3375	5140443	401874.6	63986.9	19907353.2
4-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
5-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
6-Jul-06	10.668	2026.92	1168.146	3195.066	13.5145	1.05655	0.168225	52.3375	43179719	3375747	537490	167221767
7-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
8-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
9-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
10-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
11-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
12-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

	Beartooth
Pit Area (km^2)	0.19
Runoff to Pit Area (km^2)	0.219

Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	Concentration (mg/L)				Loading (mg)			
					am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
13-Jul-06	5.08	965.2	556.26	1521.46	13.5145	1.05655	0.168225	52.3375	20561771	1607499	255947.6	79629412.8
14-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
15-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
16-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
17-Jul-06	0.1	19	10.95	29.95	13.5145	1.05655	0.168225	52.3375	404759.3	31643.67	5038.339	1567508.13
18-Jul-06	2.6	494	284.7	778.7	13.5145	1.05655	0.168225	52.3375	10523741	822735.5	130996.8	40755211.3
19-Jul-06	0.5	95	54.75	149.75	13.5145	1.05655	0.168225	52.3375	2023796	158218.4	25191.69	7837540.63
20-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
21-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
22-Jul-06	0.3	57	32.85	89.85	13.5145	1.05655	0.168225	52.3375	1214278	94931.02	15115.02	4702524.38
23-Jul-06	5	950	547.5	1497.5	13.5145	1.05655	0.168225	52.3375	20237964	1582184	251916.9	78375406.3
24-Jul-06	2.1	399	229.95	628.95	13.5145	1.05655	0.168225	52.3375	8499945	664517.1	105805.1	32917670.6
25-Jul-06	2.4	456	262.8	718.8	13.5145	1.05655	0.168225	52.3375	9714223	759448.1	120920.1	37620195
26-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
27-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
28-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
29-Jul-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
30-Jul-06	0.508	96.52	55.626	152.146	13.5145	1.05655	0.168225	52.3375	2056177	160749.9	25594.76	7962941.28
31-Jul-06	0.508	96.52	55.626	152.146	13.5145	1.05655	0.168225	52.3375	2056177	160749.9	25594.76	7962941.28
1-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
2-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
3-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
4-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
5-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
6-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
7-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
8-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
9-Aug-06	6.858	1303.02	750.951	2053.971	13.5145	1.05655	0.168225	52.3375	27758391	2170123	345529.3	107499707
10-Aug-06	12.446	2364.74	1362.837	3727.577	13.5145	1.05655	0.168225	52.3375	50376339	3938371	627071.6	195092061
11-Aug-06	0.254	48.26	27.813	76.073	13.5145	1.05655	0.168225	52.3375	1028089	80374.93	12797.38	3981470.64
12-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
13-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
14-Aug-06	0.254	48.26	27.813	76.073	13.5145	1.05655	0.168225	52.3375	1028089	80374.93	12797.38	3981470.64
15-Aug-06	0.762	144.78	83.439	228.219	13.5145	1.05655	0.168225	52.3375	3084266	241124.8	38392.14	11944411.9
16-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
17-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
18-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0

Two Rock Sedimentation Pond Modelling - Input Data

		Beartooth										
Pit Area (km^2)		0.19										
Runoff to Pit Area (km^2)		0.219			Concentration (mg/L)				Loading (mg)			
Date	Precipitation (mm)	Volume in Pit	Volume in Catchment	Total Volume (m^3)	am	Ni.T	Zn.T	NO3	am	Ni.T	Zn.T	NO3
19-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
20-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
21-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
22-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
23-Aug-06	35.56	6756.4	3893.82	10650.22	13.5145	1.05655	0.168225	52.3375	1.44E+08	11252490	1791633	557405889
24-Aug-06	0.254	48.26	27.813	76.073	13.5145	1.05655	0.168225	52.3375	1028089	80374.93	12797.38	3981470.64
25-Aug-06	17.526	3329.94	1919.097	5249.037	13.5145	1.05655	0.168225	52.3375	70938111	5545870	883019.2	274721474
26-Aug-06	0.254	48.26	27.813	76.073	13.5145	1.05655	0.168225	52.3375	1028089	80374.93	12797.38	3981470.64
27-Aug-06	0.508	96.52	55.626	152.146	13.5145	1.05655	0.168225	52.3375	2056177	160749.9	25594.76	7962941.28
28-Aug-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
29-Aug-06	1.016	193.04	111.252	304.292	13.5145	1.05655	0.168225	52.3375	4112354	321499.7	51189.52	15925882.6
30-Aug-06	0.762	144.78	83.439	228.219	13.5145	1.05655	0.168225	52.3375	3084266	241124.8	38392.14	11944411.9
31-Aug-06	9.398	1785.62	1029.081	2814.701	13.5145	1.05655	0.168225	52.3375	38039277	2973872	473503.1	147314414
1-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
2-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
3-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
4-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
5-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
6-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
7-Sep-06	0	0	0	0	13.5145	1.05655	0.168225	52.3375	0	0	0	0
8-Sep-06	0	0	0	0	26.2	2.093	0.3041	96.8	0	0	0	0