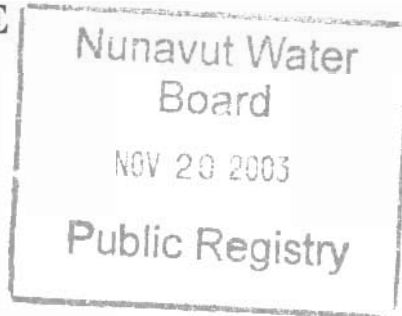


NANISIVIK MINE

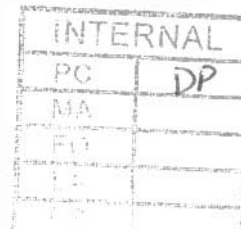
A division of CanZinco Ltd.

P.O. Box 225
Nanisivik, NU
X0A 0X0



Phone: (867) 436 - 7376

Fax: (867) 436 -7435



Nov. 12, 2003

Mr. Phillipe diPizzo
Executive Director – Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU
X0B 1J0



Re: Water Licence NWB1NAN0208

In accordance with Part H Item 30 please accept this report as Nanisivik Mine's 2003 3rd Quarter effluent monitoring submission.

During the period of July 8th to September 30th, effluent was released from the identified final deposition point 159-4. Monitoring of the effluent was conducted as per the guidelines set forth in the MMER. The following tables show the results of the testing conducted during the quarter.

If further information is required please do not hesitate to contact me.

Regards,

A handwritten signature in black ink, appearing to read "Murray Markle".

Murray Markle
Site Manager

Phone: 867-436-7376

email: mmarkle@nu.breakwater.ca

c.c. B. Heath
R. Carreau
File

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m³)
8-Jul	16.2	7.28	0.60	2.2	0.0001	0.003	0.000	0.005	<.005		<.005	0.48	833.8
9-Jul	15.4	7.28	0.67	1.6	<.0001	0.003	0.000	0.005	<.005		0.005	0.48	4777.9
10-Jul	15.0	7.23	0.7	0.8	0.0003	0.004					<.005	0.53	5270.4
11-Jul	15.8	7.52	0.78	1.4	0.0001	0.004					<.005	0.57	8907.8
12-Jul	14.1	6.60	0.84	2.0	0.0002	0.004					0.007	0.69	10372.3
13-Jul	14.9	6.29	0.85	2.8	0.0002	0.004	0.000	0.013	<.005	0.040	0.020	0.72	8532.0
14-Jul	14.4	6.33	0.91	1.2	0.0006	0.006	0.000	0.017	<.005	0.020	0.028	0.8	7490.9
15-Jul	12.80	7.05	0.92	1.2	0.0006	0.005	0.000	0.019	<.005	0.030	0.025	0.78	9923.0
16-Jul	12.8	7.66	0.95	0.8	0.0002	0.005	0.001	0.019	<.005	0.040	0.029	0.89	8134.6
17-Jul	12.2	7.55	1	0.4	0.0002	0.006	0.001	0.020	<.005	0.030	0.032	0.89	6553.4
18-Jul	11.5	7.06	1.11	2.4	0.0002	0.006	0.001	0.021	<.005	<0.01	0.031	1.05	7992.0
19-Jul	11.1	7.56	1.14	1.6	0.0002	0.007	0.001	0.022	<.005	0.050	0.037	1.08	7344.0
20-Jul	9.3	7.71	1.24	3.2	0.0002	0.008	0.001	0.019	<0.005	0.050	0.037	1.18	7318.1
21-Jul	8.8	7.84	1.37	1.6	0.0004	0.009	0.001	0.023	<0.005	0.090	0.045	1.35	6631.2
22-Jul	7.3	7.76	1.36	0.4	0.0004	0.008	0.001	0.022	<0.005	0.040	0.046	1.28	6099.8
23-Jul	8.1	7.86	1.52	0.8	0.0004	0.011	0.002	0.026	<0.005	0.060	0.064	1.35	5732.6
24-Jul	7.4	7.76	1.58	0.8	0.0003	0.009	0.002	0.028	<0.005	0.060	0.063	1.52	5313.6
25-Jul	7.2	7.76	1.69	2.0	0.0004	0.010	0.001	0.038	0.006	0.070	0.083	1.57	6177.6
26-Jul	8.3	7.69	1.59	2.8	0.0003	0.011	0.002	0.032	<0.005	0.080	0.079	1.69	4924.8
27-Jul	10.4	7.88	1.92	2.0	0.0003	0.012	0.002	0.042			0.094	1.78	5512.3
28-Jul	10.4	8.04	1.94	2.0	0.0002	0.012	0.002	0.042			0.092	1.64	5771.5
29-Jul	9.4	7.70	2.02	28.8	0.0004	0.027	0.003	0.042			0.118	1.69	5551.2
30-Jul	5.1	7.58	2.06	13.2	0.0004	0.015	0.002	0.036			0.097	1.81	5032.8
31-Jul	6.2	7.76	2.13	3.2	0.0003	0.012	0.002	0.031			0.094	1.83	4613.8

Average

3.3

0.0003

0.008

0.001

0.025

 <0.001

0.04

0.05

1.1

7

Total Effluent Deposited in July 154,812 m3

Mass Loading (July)

TSS	466.85	Kg
-----	--------	----

Cadmium	0.05	Kg
---------	------	----

Lead	1.23	Kg
------	------	----

Arsenic	0.17	Kg
---------	------	----

Copper	3.68	Kg
--------	------	----

Nickel	0.59	Kg
--------	------	----

Radium 226	6.62	MBq
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Zinc	9.82	Kg
------	------	----

NH ₃	172.44	Kg
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123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

Note: One Half of the Lab Detection Limits were used for the calculations when the lab limit was above 1 tenth of the Method Detection Limits as set out in Column 4 of Schedule 3 (MMER)

A Member of the Breakwater Resources Ltd. Group of Companies

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m³)
1-Aug	4.6	7.77	2.10	0.8	0.0005	0.010	0.002	0.026			0.087	1.74	3693.6
2-Aug	5.5	7.80	2.27	3.2	0.0003	0.010	0.002	0.027	<0.005	0.060	0.091	1.88	3365.3
3-Aug	6.2	7.79	2.23	2.0	0.0006	0.009	0.001	0.026	0.006		0.111	1.8	1805.8
4-Aug	6.2	7.48	2.06	65.2	0.0006	0.014	0.002	0.025	0.007		0.113	1.7	5456.2
5-Aug	7.7	7.75	2.30	3.6	0.0009	0.010	0.001	0.037	0.007		0.136	1.92	6842.9
6-Aug	8.2	7.72	2.31	0.0	0.0022	0.012	0.001	0.045	0.007		0.230	2.14	7041.6
7-Aug	8.2	7.84	2.48	5.2	0.0008	0.015	0.001	0.051	0.008		0.163	2.11	7050.2
8-Aug	7.30	7.40	2.48	4.0	0.0007	0.015	0.001	0.052	0.008		0.197	2.18	6609.6
9-Aug	6.3	7.58	2.5	2.4	0.0006	0.014	0.001	0.053	0.008		0.219	2.13	8298.7
10-Aug	7.8	7.47	2.6	1.2	0.0008	0.016	0.001	0.058	0.007	0.080	0.155	2.46	6644.2
11-Aug	7.0	7.45	2.72	0.0	0.0005	0.016	0.001	0.059	0.007	0.100	0.167	2.32	6812.6
12-Aug	5.6	7.36	2.7	1.6	0.0005	0.018	0.001	0.061	0.007	0.120	0.165	2.7	7884.0
13-Aug	2.5	7.40	2.79	29.2	0.0006	0.022	0.002	0.063	0.008	0.130	0.189	2.7	7236.0
14-Aug	3.0	7.30	2.92	9.2	0.0006	0.015	0.002	0.065	0.007	0.100	0.171	2.89	7564.3
15-Aug	2.9	7.21	2.98	5.2	0.0006	0.016	0.002	0.067	0.008	0.140	0.188	2.83	7443.4
16-Aug	2.3	7.58	2.9	4.8	0.0005	0.016	0.002	0.067	0.008	0.070	0.184	2.86	6769.4
17-Aug	3.1	7.78	2.96	0.4	0.0005	0.015	0.002	0.073			0.195	2.83	6566.4
18-Aug	3.6	7.32	3.09	8.0	0.0006	0.017	0.002	0.072			0.182	2.89	4600.8
19-Aug	3.0	7.58	2.56	0.4	0.0005	0.017	0.002	0.073			0.184	2.83	3801.6
20-Aug	2.1	7.78	2.9	1.2	0.0005	0.018	0.002	0.077			0.189	2.94	4384.8
21-Aug	3.6	7.30	3.14	2.8	0.0006	0.021	0.002	0.077			0.179	3.1	3931.2
22-Aug	2.5	7.16	2.98	0.8	0.0006	0.019	0.002	0.079			0.180	3.05	4272.5
23-Aug	3.5	7.20	3.09	1.6	0.0006	0.019	0.002	0.079	0.010	0.090	0.181	3.13	4462.6
24-Aug	4.9	7.38	3.24	0.8	0.0007	0.020	0.002	0.083			0.230	2.89	4929.1
25-Aug	4.9	7.30	3	0.0	0.0007	0.020	0.002	0.080			0.220	2.82	4181.8
26-Aug	4.9	7.28	3.14	0.4	0.0007	0.019	0.002	0.082			0.220	3.01	2885.8
27-Aug	10.4	7.59	2.48	0.4	0.0007	0.018	0.002	0.079			0.220	2.92	2903.0
28-Aug	7.2	7.80	2.5	1.6	0.0007	0.019	0.002	0.082			0.230	2.94	2579.0
29-Aug	6.3	7.77	2.97	0.4	0.0006	0.019	0.002	0.084			0.210	2.94	2021.8
30-Aug	6.6	7.33	2.82	0.4	0.0007	0.021	0.002	0.077	0.011	0.110	0.220	2.92	1417.0
31-Aug	9.7	7.90	3.09	0.0	0.0007	0.019	0.002	0.077			0.230	2.94	1201.0

Average 5.1 0.0007 0.016 0.002 0.063 0.008 0.100 0.182 2.59

Total Effluent Deposited in August **154,656 m³**

Mass Loading (August)

TSS	466.85	Kg	Arsenic	0.24	Kg	Radium 226	15.46	MBq
Cadmium	0.10	Kg	Copper	9.37	Kg	Zinc	26.78	Kg
Lead	2.46	Kg	Nickel	1.39	Kg	NH ₃	394.82	Kg

Final Discharge Point 159-4 (Effluent from W T D A at Decant Structure)

Date	Temp (°C)	pH	Cond (mS)	T.S.S. (mg/L)	Cd (mg/L)	Pb (mg/L)	As (mg/L)	Cu (mg/L)	Ni (mg/L)	Rad 226 (Bq/L)	Zn (mg/L)	NH3 (mg/L)	24 Hour Flow (m³)
1-Sep	6.7	7.70	2.80	1.2	0.0006	0.018	0.002	0.077			0.210	2.97	1183.7
2-Sep	4.3	7.46	2.7	6.0	0.0006	0.022	0.002	0.073			0.230	2.97	2060.6
3-Sep	3.7	7.60	2.71	1.6	0.0007	0.018	0.002	0.073			0.210	2.94	2553.1
4-Sep	3.5	7.35	2.74	0.8	0.0006	0.019	0.002	0.077			0.200	2.92	2065
5-Sep	6.6	7.72	2.78	1.2	0.0006	0.020	0.002	0.075			0.220	3.06	1512
6-Sep	3.7	7.19	2.8	2.0	0.0006	0.017	0.002	0.079			0.210	2.85	1568.2
7-Sep	4.0	7.22	2.78	0.0	0.0006	0.017	0.002	0.077			0.200	2.9	1702.1
8-Sep	3.10	6.93	2.81	0.2	0.0006	0.016	0.002	0.073			0.200	2.92	1339.2
9-Sep	3.0	6.85	2.82	0.8	0.0006	0.017	0.002	0.078			0.220	2.99	1019.5
10-Sep	3.6	7.24	2.65	6.4	0.0007	0.021	0.002	0.069	0.009	0.090	0.210	2.83	1088.6
11-Sep	3.1	7.22	2.73	1.8	0.0004	0.022	0.002	0.061			0.220	2.78	1520.6
12-Sep	3.9	6.85	2.8	1.8	0.0004	0.012	0.002	0.060			0.210	2.78	2039
13-Sep	3.2	7.25	2.82	1.4	0.0004	0.012	0.002	0.061			0.210	2.81	2531.5
14-Sep	2.0	7.02	2.8	10.4	0.0004	0.019	0.002	0.065			0.220	2.84	3417.1
15-Sep	3.0	6.87	3	4.8	0.0005	0.015	0.002	0.087			0.230	2.87	3283.2
16-Sep	1.6	7.19	2.79	3.4	0.0006	0.014	0.002	0.079			0.240	2.96	2384.6
17-Sep	1.7	7.17	2.86	1.2	0.0005	0.014	0.002	0.074	0.013	0.100	0.230	3.04	2514.2
18-Sep	1.7	6.75	2.95	1.8	0.0007	0.017	0.002	0.080			0.260	3.05	2056.3
19-Sep	1.9	7.07	3	3.2	0.0007	0.017	0.003	0.083			0.260	3.07	972
20-Sep	2.5	6.86	3.3	2.4	0.0006	0.017	0.003	0.081			0.340	3.12	1741
21-Sep	2.9	6.68	3.11	0.4	0.0006	0.017	0.003	0.084			0.260	3.21	1339.2
22-Sep	1.5	7.00	3.14	3.4	0.0008	0.017	0.003	0.087			0.280	3.3	1365.1
23-Sep	1.1	7.02	3.31	3.2	0.0007	0.017	0.003	0.087			0.280	3.37	1010.9
24-Sep	0.8	7.00	3.17	3.0	0.0008	0.024	0.003	0.105	0.016	0.080	0.320	3.46	6428.2
25-Sep	1.7	6.69	3.19	3.0	0.0006	0.027	0.002	0.109			0.330	3.53	7128
26-Sep	1.1	7.12	3.14	1.6	0.0007	0.026	0.003	0.114			0.340	3.58	2432.2
27-Sep	0.3	6.73	3.1	2.2	0.0016	0.026	0.002	0.122			0.370	3.58	1965.6
28-Sep	0.7	6.72	3.31	1.8	0.0036	0.026	0.003	0.122			0.350	3.6	1408.3
29-Sep	0.7	6.72	3.31	1.8	0.0009	0.024	0.003	0.117			0.350	3.64	1183.7
30-Sep	2.3	6.41	3.43	1.8	0.001	0.023	0.003	0.111			0.340	3.73	846.72
Average				2.5	0.0008	0.019	0.002	0.085	0.013	0.090	0.258	3.12	

Total Effluent Deposited in September **63,660 m³**

Mass Loading (September)

TSS	179.37	Kg	Arsenic	0.15	Kg	Radium 226	6.48	MBq
Cadmium	0.05	Kg	Copper	5.54	Kg	Zinc	16.90	Kg
Lead	1.26	Kg	Nickel	1.09	Kg	NH ₃	200.66	Kg

Effluent Characterization and Water Quality Monitoring Parameters

Date	Location	Aluminum	Cadmium	Iron	Mercury	Molybdenum	Ammonia	Nitrate	Alkalinity	Total Hardness	Dissolved Oxygen
12-Jul	159-4	0.02	0.0002	0.22	<.0001	0.011	0.69	1.16	22	363	
9-Aug	159-4	0.03	0.0006	0.10	<.0001	0.045	2.13	0.03		1210	
9-Aug	159-4A	0.30	0.0003	0.32	<.0001	0.009	0.51	0.30		317	9.05
9-Aug	159-4B	0.16	0.0002	0.11	<.0001	<.005	<.02	0.16		55	9.32
10-Sep	159-4	0.12	0.0007	0.40	<.0001	0.045	2.83	6.55	46	1580	
10-Sep	159-4A	0.38	0.0003	0.52	<.0001	0.016	1.16	2.45	32	727	9.81
10-Sep	159-4B	0.11	0.0001	0.12	<.0001	<.005	<.02	0.11	30	38	9.06
Date	Location	Temperature	pH	Conductivity							
12-Jul	159-4	14.1	6.6	0.84							
9-Aug	159-4	6.3	7.58	2.50							
9-Aug	159-4A	5.9	7.6	0.77							
9-Aug	159-4B	4.8	7.95	0.10							
10-Sep	159-4	3.6	7.24	2.65							
10-Sep	159-4A	4.1	7.3	1.26							
10-Sep	159-4B	4.1	6.9	0.09							

159-4A is located approximately 50 metres downstream from the decant structure at station 159-4

159-4B is located approximately 50 metres upstream from the decant structure at station 159-4

All Samples collected during the Quarter were Grab samples except for 159-4A (Aug 9 and Sept 10), which were composite samples.

No water was pumped from East Twin Lake for industrial purposes during the third quarter.

Toxicity Test Report – *Rainbow Trout*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-08-09
Substance:	159-4 August 8, 2003	Date Received:	2003-08-13
Sampling Method:	Grab	Date Tested:	2003-08-13
Sampled By:	M. Markle	Temp. on arrival:	22.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

0% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Phenol Reference Toxicant Data

Trout Batch #:	T03-07		
Date Tested (y/m/d):	2003-08-06	Historical Mean LC50:	10.1mg/L
LC50 (95% confidence limits):	11.2 mg/L (10.0 – 12.5)	Warning Limits ($\pm 2SD$):	7.9 – 12.8 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	R. Colgan/T. Boudreau

Test Fish

Control Fish Sample Size:	10	Cumulative prev. 7D stock tank mortality:	0%
Mean fish Weight (g) ($\pm 2SD$):	0.77 $\pm$ 0.28)	Mean Fish Fork Length (mm) ($\pm 2 SD$)	42.6 (± 5.1)
Range of Weights (g):	0.58 – 1.01	Range of Fork Lengths (mm):	39 – 48
Fish Loading Rate (g/L):	0.38		

Test Conditions

Sample Treatment:	None	Volume Tested (L) :	20
pH Adjustment:	None	# Replicates:	1
Test Aeration	Yes	# Animals Per Replicate:	10
Aeration Rate 9mL/min/L	6.5 $\pm$ 1	Total # Animals Per Test Level	10
Trout Batch #	T03-07		

Noted Deviation(s): A power failure occurred, which resulted in loss of lighting for this test for approximately 5 hours on 2003-08-14

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration	
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L	
Initial Water Chemistry	16.0	7.7	9.5	-	2301		
Chemistry after 30 min air:	16.0	7.7	9.4	98	2303	0:30	
0 Hours							
Date & Time	2003-09-13 13:50						
Technician	RC/TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O2 Sat. (%)*
100	0	0	7.7	9.4	2303	16.0	98
Control	0	0	8.4	9.7	550	16.0	101
24 Hours							
Date & Time	2003-08-14 13:50						
Technician	RF/TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
48 Hours							
Date & Time	2003-08-15 13:50						
Technician	TG						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
72 Hours							
Date & Time	2003-08-16 13:50						
Technician	DR						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
96 Hours							
Date & Time	2003-08-17 13:50						
Technician	DR						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	8.5	8.0	2295	16.0	
Control	0	0	8.2	8.4	545	16.0	

Notes: # of control organisms showing stress: 0

Trout Batch # T03-07

Toxicity Test Report – *Daphnia Magna*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-08-09
Substance:	159-4 August 8, 2003	Date Received:	2003-08-13
Sampling Method:	Grab	Date Tested:	2003-08-13
Sampled By:	M. Markle	Temp. on arrival:	22.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	<i>Daphnia magna</i> Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

83.3% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Sodium Chloride Reference Toxicant Data

<i>Daphnia</i> Batch #:	Dm03-15	Historical Mean LC50:	6.0 mg/L
Date Tested (y/m/d):	2003-08-05	Warning Limits ($\pm 2SD$):	5.5 – 6.4 mg/L
LC50 (95% confidence limits):	5.9 mg/L (5.2 – 7.2)	Technician(s) Performing Test:	J. Picket/J. Lauinger
Statistical Method:	Non-linear Interpolation		

Daphnia magna Culture Health Data

Time to First brood (days):	7.4	Average # Young Per Brood:	0	48.3
Culture Mortality (prev. 7d)(%)	6.3			

Test Conditions

Sample Treatment:	None	# Replicates:	3
pH Adjustment:	None	# Animals Per Replicate:	10
Test Aeration	None	Total # Animals Per Test Level	30
<i>Daphnia</i> Batch #	Dm03-15	<i>Daphnia</i> Loading Rate:	15.0 mL/organism

Noted Deviation(s): A power failure occurred, which resulted in loss of lighting for this test for approximately 5 hours on 2003-08-14

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O ₂ Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as CaCO ₃	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	19.5	7.6	9.3	104	2341	>1000	None	0:30
0 Hours								
Date & Time	2003-08-13 13:50							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O₂ Sat. (%)*	Hardness
100A	0	0	7.6	9.0	2341	19.5	102	>1000
100B	0	0	7.6	9.0	2341	19.5		
100C	0	0	7.6	9.0	2341	19.5		
Control A	0	0	8.5	8.8	399	20.0		
Control B	0	0	8.5	8.8	399	20.0		
Control C	0	0	8.5	8.8	399	20.0	101	200
24 Hours								
Date & Time	2003-08-14 13:50							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	0	4	-	-	-	21.0		
100B	0	4	-	-	-	21.0		
100C	0	6	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		
48Hours								
Date & Time	2003-08-15 13:50							
Technician	DH/JL							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	8	2	7.7	7.7	2344	21.0		
100B	10	0	7.6	7.7	2321	21.0		
100C	7	3	7.6	7.9	2300	21.0		
Control A	0	0	8.5	8.6	401	21.0		
Control B	0	0	8.5	8.6	401	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes:

of control organisms showing stress: 0

Daphnia Batch # Dm03-15

Number immobile does not include number of mortalities.

Toxicity Test Report – *Rainbow Trout*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-09-13
Substance:	159-4	Date Received:	2003-09-16
Sampling Method:	Grab	Date Tested:	2003-09-16
Sampled By:	M. Markle	Temp. on arrival:	18.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	Acute Lethality of Liquid Effluents to Fish EPS 1/RM/13, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

0% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Phenol Reference Toxicant Data

Trout Batch #:	T03-09		
Date Tested (y/m/d):	2003-09-06	Historical Mean LC50:	10.1mg/L
LC50 (95% confidence limits):	11.2 mg/L (10.0 – 12.5)	Warning Limits ($\pm 2SD$):	8.0 – 12.8 mg/L
Statistical Method:	Non-linear Interpolation	Technician(s) Performing Test:	T. Boudreau

Test Fish

Control Fish Sample Size:	10	Cumulative prev. 7D stock tank mortality:	0.2%
Mean fish Weight (g) ($\pm 2SD$):	0.49 $\pm$ 0.29	Mean Fish Fork Length (mm) ($\pm 2 SD$)	37.7 (± 6.9)
Range of Weights (g):	0.26 – 0.75	Range of Fork Lengths (mm):	32 – 42
Fish Loading Rate (g/L):	0.24		

Test Conditions

Sample Treatment:	None	Volume Tested (L) :	20
pH Adjustment:	None	# Replicates:	1
Test Aeration	Yes	# Animals Per Replicate:	10
Trout Batch #	T03-09	Total # Animals Per Test Level	10

Rainbow Trout Toxicity Test Report

	Temp	pH	D.O.	O2 Sat.	Cond.	Total Pre-Aeration	
	(°C)		(mg/L)	(%)*	(umhos)	Time(h) @ 6.5 mL/min/L	
Initial Water Chemistry	14.5	7.6	9.7	-	2741		
Chemistry after 30 min air:	15.0	7.7	9.6	100	2742	0:30	
0 Hours							
Date & Time	2003-09-16 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O2 Sat. (%)*
100	0	0	7.7	9.6	2742	15	100
Control	0	0	8.4	9.2	534	16	97
24 Hours							
Date & Time	2003-09-17 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	16.0	
Control	0	0	-	-	-	16.0	
48 Hours							
Date & Time	2003-09-18 12:30						
Technician	TB						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
72 Hours							
Date & Time	2003-09-19 12:30						
Technician	JP						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	-	-	-	15.5	
Control	0	0	-	-	-	15.5	
96 Hours							
Date & Time	2003-09-20 12:30						
Technician	JL						
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	
100	0	0	7.3	8.4	2712	15.0	
Control	0	0	8.3	9.6	486	15.0	

Notes: # of control organisms showing stress: 0

Trout Batch # T03-09

Toxicity Test Report – *Daphnia Magna*

Tests conducted by Stantec Consulting Ltd.
11B Nicholas Beaver Road RR3
Guelph, Ontario N1H 6H9
519-763-4412

Sample Identification:

Company:	Nanisivik Mine	Time Collected:	13:00
Location:	Nanisivik, NU	Date Collected:	2003-09-13
Substance:	159-4	Date Received:	2003-09-16
Sampling Method:	Grab	Date Tested:	2003-09-16
Sampled By:	M. Markle	Temp. on arrival:	18.0°
Sample Description:	Clear, Colourless, odourless.		
Test Method:	<i>Daphnia magna</i> Acute Lethality Toxicity Test Protocol EPS 1/RM/14, Environment Canada, 1990 (including December, 2000 amendments).		

Test Results:

100% mortality at 100% effluent concentration
The results reported relate only to the sample tested.

Sodium Chloride Reference Toxicant Data

<i>Daphnia</i> Batch #:	Dm03-18	Historical Mean LC50:	5.9 mg/L
Date Tested (y/m/d):	2003-09-15	Warning Limits ($\pm 2SD$):	5.5 – 6.4 mg/L
LC50 (95% confidence limits):	6.1 mg/L (5.2 – 7.2)	Technician(s) Performing Test:	J. Picket
Statistical Method:	Non-linear Interpolation		

Daphnia magna Culture Health Data

Time to First brood (days):	7.4	Average # Young Per Brood:	0	40.6
Culture Mortality (prev. 7d)(%)	0.6			

Test Conditions

Sample Treatment:	None	# Replicates:	3
pH Adjustment:	None	# Animals Per Replicate:	10
Test Aeration	None	Total # Animals Per Test Level	10
<i>Daphnia</i> Batch #	Dm03-18	<i>Daphnia</i> Loading Rate:	15.0 mL/organism

Daphnia magna Toxicity Test Report

	Temp	pH	D.O.	O ₂ Sat.	Cond.	Hardness	Hardness	Total Pre-Aeration
	(°C)		(mg/L)	(%)*	(umhos)	Mg/L as CaCO ₃	Adjustment	Time (h) @ 30 mL/min/L
Initial Water Chemistry	20.5	7.7	9.7	112	2732	>1000	None	0:30
0 Hours								
Date & Time	2003-09-16 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.	O₂ Sat. (%)*	Hardness
100A	0	0	7.7	9.1	2729	20.5	105	>1000
100B	0	0	7.7	9.1	2729	20.5		
100C	0	0	7.7	9.1	2729	20.5		
Control A	0	0	8.5	8.9	394	19.5		
Control B	0	0	8.5	8.9	394	19.5		
Control C	0	0	8.5	8.9	394	19.5	101	200
24 Hours								
Date & Time	2003-09-17 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	0	8	-	-	-	21.0		
100B	0	10	-	-	-	21.0		
100C	0	8	-	-	-	21.0		
Control A	0	0	-	-	-	21.0		
Control B	0	0	-	-	-	21.0		
Control C	0	0	-	-	-	21.0		
48Hours								
Date & Time	2003-09-18 11:10							
Technician	JP							
Test Conc. (%)	Mortality	Immobility	pH	D.O.	Cond.	Temp.		
100A	10	0	7.8	8.4	2741	21.0		
100B	10	0	7.9	8.5	2753	21.0		
100C	10	0	7.8	8.4	2716	21.0		
Control A	0	0	8.6	8.6	403	21.0		
Control B	0	0	8.6	8.7	398	21.0		
Control C	0	0	8.5	8.6	398	21.0		

Notes: # of control organisms showing stress: 0
 Number immobile does not include number of mortalities.

Daphnia Batch # Dm03-18