Bruce J. Donald
Reclamation Manager

December 19, 2003

Department of Indian Affairs and Northern Development
Box 100
Iqaluit, NU X0A 0H0

Attention: Carl McLean, Manager, Land Administration

Nunavut Water Board
Box 119
Gjoa Haven, NU X0B 0H0

Attention: Phyllis Beaulieu, Licensing Administrator

Dear Carl and Phyllis;

Re: Polaris Decommissioning and Reclamation Plan – Request To Place Metals Contaminated Soils in LRD Quarry Landfill and to Increase the Volume of Hydrocarbon Contaminated Soils Disposal in the Underground Mine Workings

Remedial work at Polaris is progressing well considering the normal construction issues and complexities that one would expect of a project of this size. As indicated in our previous submission for approval to store additional volumes of hydrocarbon contaminated soils underground (dated September 16, 2003), the volumes of contaminated soils have increased over the original quantities identified in the Decommissioning and Closure Plan (DRP). Remedial work has continued at a high level of activity until recently and has now been reduced due to winter conditions and the Christmas season. The high level of activity has continued later into the winter season than originally anticipated to ensure that the project remains on schedule. As work has progressed, our estimates for the volumes of contaminated materials remaining to be remediated have increased.

We have now completed remediation contaminated soils in a number of areas at the site. In addition we have excavated to the limits of contamination in a number of other areas. As remedial activities progress, comparisons between forecast and actual volumes are being reviewed. To further refine the estimates of remaining quantities of contaminated soils, we have expended considerable effort through additional drilling, sampling and a detailed review of analytical data during October through to December. It is essential for us to have accurate information to be able to plan for project activities in 2004 and to ensure that we have adequate plans for disposal of contaminated soils.

We have just completed these reviews and now conclude that there is insufficient capacity in the mine to store all of the remaining contaminated soils. As a result, we are requesting the following approvals:

1. To deposit the remaining metals contaminated soils in the Little Red Dog Quarry Landfill ('LRDQL') and,
2. To utilize the remaining accessible areas of the mine to dispose of the hydrocarbon contaminated soils.

It is critical that we obtain these approvals as soon as possible. It is essential to direct all future haulage of metals contaminated soils to the LRDQL as every ton of metal contaminated soils placed underground reduces the volume available for disposal of hydrocarbon contaminated soils. The construction schedule in 2004 is extremely tight because of the increasing volumes so that timing of these approvals is critical. If there is a delay in the continuation of handling contaminated soils, it is almost certain that the site work will not be completed in 2004 which would result in increased project costs in the order of millions of dollars.

The following information is contained in this letter for your consideration:

a) The forecast volumes of contaminated soils and remaining storage capacity underground
b) Options considered for managing the additional contaminated soils volumes
c) Proposed solution, its implementation and additional monitoring requirements

Remaining Storage Capacity Underground

At the end of November, we requested that the surveyors onsite review the remaining areas of the underground mine workings that are suitable for disposal of hydrocarbon contaminated soils and to calculate the volume. This review was based on the detailed mine drawings which show the dimensions and lengths of the mine openings so that the remaining volume can be reliably calculated.

During the past construction season, regular observations by Teck Cominco staff of the areas being filled with contaminated soils gives confidence that the contractor is doing an excellent job of making effective use of the available volumes in the mine workings. Mine personnel are packing the contaminated fill into the openings as completely as practical so as not to waste any space underground.

Based on the surveyors review (as of November 30, 2003) there is 168,000 cubic meters of space available in the mine for storage of hydrocarbon contaminated soils. Assuming that 75% of the actual volume of the mine openings can be utilized, then 126,000 cubic meters of hydrocarbon soils can be disposed of in the mine. As indicated above, experience to date makes us confident that the 75% effective filling ratio will be achieved.

All of the remaining areas of the mine being considered for filling have rock temperatures that are at least -4 degrees centigrade or colder so that the contaminated soils will be stored in suitable areas of the mine.

Forecast of Remaining Contaminated Soil Volumes

As discussed previously, there is now additional information on which to reliably forecast the remaining volumes of contaminated soils. The additional information available is due to:

a) Excavation of contaminated soils has progressed substantially this fall reducing the number of areas remaining to be remediated. As soil remediation is completed in each area, confirmatory samples are taken and the results tabulated and included in a technical memorandum prepared by Gartner Lee Ltd. documenting the remedial results to form what is being referred to as a 'Close Out' report for the area. The 4th Quarter DRP and Water Licence report will include the Close Out reports for a number of areas at the site. As each of these areas is Closed Out, it reduces the number of areas remaining to undergo remediation and thus reduces potential for changes in forecast soil volumes.

b) Contaminated soils in the barge area are the most significant areas remaining to be remediated. Excavation work has been underway for several months in this general area. On several sides of the general area, excavations have reached the limits of contamination both laterally and vertically. This reduces the level of uncertainty of the boundaries of contamination and thus the uncertainty of the remaining volumes.
c) In areas where excavation activities have not been initiated, GLL staff have utilized a drill to conduct additional assessments to better define the limits of contamination in those areas.

The above information has been utilized by Gartner Lee staff to update their estimates of quantities of remaining contaminated soils. This week Teck Cominco staff reviewed the estimates in detail with GLL to ensure that project members are in agreement with the current estimates. All estimates have some uncertainty associated with them. To ensure that the current estimates are conservative, a worst case view of the potential for increased volumes has been developed and are referred to as the 'Maximum Volumes' in the table below. To convert from in-place volumes (often referred to as 'Bank' volumes) to excavated volumes (or 'swelled' volumes which are the volumes that must be disposed of), a 20% swell factor has been added. The contaminated soils being excavated are fill materials (i.e. during construction they were excavated from another location and placed in the barge area) and not solid rock which is why a 20% swell factor is a conservative value. Additionally, a 10% contingency has been added to the total quantities to account for any contamination that may have been missed to ensure that the estimated volumes are not understated. At this stage of the project, it is essential that no further unanticipated increases in the volumes of contaminated soils occur due to schedule limitations and storage capacity limitations for the soils. We are confident that the actual volumes excavated and disposed of will be less than the quantities identified below, but it is important to be conservative for planning purposes.

MAXIMUM VOLUMES OF CONTAMINATED SOILS
TO BE EXCAVATED AND/OR CURRENTLY STOCKPILED FOR DISPOSAL
(Cubic Metres)

AREA OF CONTAMINATION	METALS CONTAMINATED	HYDROCARBON CONTAMINATED	TOTAL VOLUME
Accommodation Complex	0	2,400	2,400
South of Concentrate Shed	5,000	0	5,000
North of Concentrate Shed	12,000	0	12,000
East of Concentrate Shed	5,000	0	5,000
Foldaways and Lube Storage Pad	2,000	25,000	27,000
Loon Lake Snow Dump Area	10,000	0	10,000
Firehall Area	5,000	5,000	10,000
Dock Cell 3	0	200	200
North Shore and Barge Area	5,000	45,000	50,000
Subtotals (In Place Volume)	**44,000**	**77,600**	**121,600**
Add 20% For Swell When Excavated	8,800	15,500	24,300
Existing Stockpile of Excavated Metals Contaminated soil (swelled volume)	30,000	0	30,000
Subtotal Before Contingency	**82,800**	**93,100**	**175,900**
Add 10% Contingency for Unexpected	8,300	9,300	17,600
Total Maximum Volume for Disposal	**91,100**	**102,400**	**193,500**

Teck Cominco Limited / Environment and Corporate Affairs
Bag 2000/Kimberley, British Columbia, Canada V1A 3E1 · Tel: 250-427-8405 · Fax: 250-427-8451 · Email: bruce.donald@teckcominco.com

REMEDIAL OPTIONS CONSIDERED

It is evident from the above calculations that there is insufficient space available in the underground mine workings to dispose of all the remaining contaminated soils. It is critical that the hydrocarbon contaminated soils be allocated first priority for the remaining disposal space underground. Consequently, options to either reduce the volume of contaminated soils or to identify alternate storage locations must be considered.

The following options were considered:

a) Increase the Remedial Targets to reduce the volume of metals contaminated soils to be disposed of in the underground mine workings.
   - The risk assessment conducted as part of the DRP is based on conservative assumptions that could be refined to potentially increase the remedial target concentrations. (i.e. higher concentrations of contaminated soils would be left in place reducing the volumes of materials to be remediated).
   - The results of the further assessment of metals contaminated remedial targets could potentially result in obtaining objectives that are less conservative than the currently approved plans. The assessments could also conclude that the current remedial targets should not be increased and so time and effort could be lost without resolving the current volume problem.
   - Time is of the essence for the project and refining the risk assessment would take time to complete. There would then need to be a significant period of time to review the revised assessment due to the technical nature of the report. Subsequently, the risk assessment report would then need to go through the remainder of the approval process. The overall process would not be quick enough to meet project schedule requirements.
   - Even if the remedial targets are increased substantially, if may not result in sufficient reduction in the volumes of contaminated soils to be remediated.
   - Teck Cominco does not recommend this option.

b) Dispose of the metals contaminated soils in Garrow Lake
   - Previous water licenses permitted the disposal of metals containing tailings to be placed at the bottom of Garrow Lake. The meromictic properties of the lake have minimized the release of metals into the water column so that the water quality of the discharge from the lake has remained within licence conditions.
   - Now that the mine has ceased production, the current Water Licence does not allow for disposal of tailings or other materials into the lake.
   - Garrow Lake has been lowered in preparation for the removal of the dam. If disposal of additional material into Garrow Lake were to cause contamination of the upper layers of the lake, then Garrow Dam could not be removed. There in not enough time available to complete the disposal of contaminated soils before the dam is decommissioned.
   - The concentrations of metals in the contaminated soils are higher than the concentrations of metals in the tailings that were previously placed into the lake. Additional assessment on the potential impact to the lake would be necessary before implementing this option.
   - A method for transporting the contaminated soils into the bottom of the lake without contaminating the surface layers would be essential. Potentially the material would need to be mixed with water ('slurried') to accomplish this. This would add another level of complexity to the project work.
   - Teck Cominco does not recommend this option.

c) Leave the contaminated soils in place with a cover cap
   - Leaving the contaminated soils in place with a cover cap would isolate them and prevent exposure to people and animals utilizing the area in the future. If the cap were 1.8 metres thick, the underlying contaminated soils would remain in a frozen state.
   - Some of the remaining contaminated soils must be removed in any event as they are located in the areas being reclaimed to restore the foreshore area. It is not acceptable to leave contaminated soils in these areas.

- One of the objectives of the DRP is to minimize the number of locations where building debris and contaminated soils are disposed of. Leaving soils in place does not accomplish this goal.
- This would be the easiest and most economical solution to implement but is not advocated by Teck Cominco as it is not consistent with our reclamation objectives.

d) Develop a new landfill area for disposal for the metal contaminated soils
   - A new landfill area could be developed specifically for the disposal of the metals contaminated soils. Placing the metals contaminated soils in a new landfill would leave adequate space in the mine to dispose of the remaining hydrocarbon contaminated soils.
   - This would be a safe method of disposal so long as the 1.8 metre thick cover cap design approved for the site were to be utilized to ensure the soils remain frozen in the long term.
   - This would create another landfill area which is not desirable.
   - This option does not provide any better environmental protection than placing metals contaminated soils in an existing landfill that will be closed with an approved cover cap design.
   - This option is not recommended by Teck Cominco.

e) Place the metals contaminated soils in LRD Quarry Landfill
   - The metals contaminated soils could be placed in LRDQL.
   - The soils would be used as infill material to bury the building debris being disposed of in LRDQL.
   - The metals contaminated soils along with the building demolition debris would be capped with the approved landfill cover system that would ensure that the material remains encapsulated in permafrost for the long term. The final detailed construction drawings for the cover for LRD remain to be provided for review and approval. The final elevation of the landfill in LRD must be known before this can be done to ensure the construction drawings are representative of the final conditions.
   - Placing metals contaminated soils in LRDQL would save sufficient storage capacity in the mine for the all of the hydrocarbon contaminated soils to be placed with a surplus of storage capacity in the mine remaining. The forecast is for a maximum of 102,400 cu.m. of hydrocarbon contaminated soils requiring disposal relative to the 126,000 cu.m. of space available in the mine as of November 30, 2003. This is a surplus capacity of 23%. This is a conservative approach with excess mine capacity available in the highly unlikely event that the final hydrocarbon contaminated soils volumes exceed the current estimates.
   - As the metals containing soils would remain solidly frozen in the landfill there would be no environmental concern relating to leaching of metals into groundwater (as there would be no liquid phase water in the landfill materials). This is the primary purpose of the 1.8 metre cap which has been approved as the cover for the landfill.

     Note:

     Recent submissions to the Water Board and INAC have suggested the need for ABA testing and leach tests for fill we have proposed to place in other areas of the site. These suggestions are not relevant to this situation as the primary purpose is of the approved cap is to prevent the underlying materials from being in contact with groundwater.
   - LRDQL is available for immediate use which would minimize scheduling issues for the project.
   - LRDQL has capacity that far exceeds the remaining volumes of metals contaminated soils and building debris that would be placed there. There is no risk of running out of capacity in LRDQL.
   - The bottom portion of LRDQL where all of the building debris and metals contaminated soils would be placed is a pit (i.e. a depression or hole) carved out of limestone. This surrounds the landfill on all sides by solid limestone so that the landfill material is contained by rock. There is no risk of the landfill material being exposed to erosion.
   - The use of the pit is cost effective due to its location near to the metal contaminated soil excavation sites.
   - This option is the one being recommended by Teck Cominco.

It is Teck Cominco's view that disposal of the metals contaminated soils in LRD Quarry Landfill is the preferred option to ensure there is sufficient underground storage capacity for the remaining hydrocarbon contaminated soils. This option has essentially no environmental risk, is a simple and an economic plan to implement, and it can be done in a timely manner. This proposal also minimizes the number of landfill areas by preventing the creation of an additional one.

Proposed Materials Placement Procedures, Monitoring and Reporting

It is proposed that the following procedures, monitoring and reporting requirements would be part of the approvals granted:

a) Underground Placement of hydrocarbon contaminated soils
   - The quantities and locations of hydrocarbon materials disposed of in the mine is now and will continue to be documented. Quarterly reports include mine plans indicating the locations of the hydrocarbons stored.
   - All hydrocarbon contaminated soils must be placed in areas of the mine where the rock temperatures are colder than -4 degrees centigrade and are not influenced by seasonal temperature fluctuations. All areas of the mine are located well below the active layer and so will not be affected by annual seasonal temperature fluctuations in the long term.
   - The mine floors would be wetted to seal potential rock fractures as has been previously required in our hydrocarbon contaminated soil disposal approvals.
   - As previously required in the approvals to dispose of hydrocarbon contaminated soils, no free phase hydrocarbons would be disposed of in the mine.
   - Areas of the mine where the hydrocarbon contaminated soil storage areas are connected to other areas of the mine would be plugged with wetted muck as required in current approvals.
   - No additional metals contaminated soils would be placed in the mine to maximize the volume of the mine available for hydrocarbon storage.

b) Disposal of Metals Contaminated Soils in LRD Quarry Landfill
   - It is proposed to use the metals contaminated soils to provide infill material for burying the remaining debris in LRDQL and as general fill in LRDQL.
   - No hydrocarbon contaminated soils would be placed in LRDQL. All hydrocarbon contaminated soils would continue to be disposed of in the underground mine workings as described in (a) above.
   - Contaminated soils destined for disposal in LRDQL would be mechanically excavated, loaded into trucks, hauled to LRDQL and then dumped. Hoes and/or bulldozers spread the material as required. This is no different than is currently occurring with the fill that is used in burying the building debris. If oversized fill were to be encountered, it will be mechanically broken up by the equipment working in LRD. The currently approved protocols for the operation of the landfill require that void spaces must be minimized and this condition would continue to be applied. The methodology of placing fill in LRDQL would remain unchanged.
   - The quantities and locations of metals contaminated fill will be recorded in the daily work sheets of the contractor (as is currently done) and recorded on the drawings used to record the placement of debris in LRDQL. These records are submitted in the regular reports required by the DRP approvals and under the Water Licence.
   - The maximum thicknesses of the soil/debris lifts in LRDQL are already defined in the LRD Operating Protocol procedures which has been reviewed and approved by the NWB and INAC.
   - LRDQL currently has four thermistors that are partially installed (the pipes for the thermistors have been installed and fill is being placed around them as the landfill is placed in LRDQL). Once filling of LRDQL is complete, thermistors strings will be placed in the protective pipes and monitoring of the freezing conditions of the landfill debris and cover cap will be initiated and monitored on an

ongoing basis until 2011 to demonstrate the landfill frozen and is remaining in a frozen state over time. Attached to this letter are the thermistor results from the Operational Landfill which is being monitored in a similar fashion. These thermistors confirm that freeze back does occur and the temperatures in the landfill are well below freezing. Thermistor monitoring data from Garrow Lake dam is recorded and is similar to a landfill in that it consists of fill material that has been built up. Regular monitoring of the dam demonstrates that it is thoroughly frozen. While the dam monitoring results are not included in this letter, they are submitted to the Water Board on a regular basis in our Water Licence reports and are available for review. DRP approvals and the Water Licence require regular monitoring and reporting of the thermistor temperatures through until 2011.

- As previously approved by the NWB and INAC, the LRD Quarry Landfill cover cap will be 1.8 metres thick which is sufficient to maintain the landfill in a frozen state. Conservative global warming considerations were incorporated into the approved design.

  Note:

  Recent reviews by BGC engineering of the detailed construction drawings submitted for approval of the landfill cover designs included comments that moisture content of the landfill cap materials and the sizing of the materials needed to be sampled during construction to ensure the specifications included in the thermal design of the cap were being achieved. Without responding to this in detail at this time, it should be noted that the original design of the cover cap proposed in our 1999 draft of the DRP had materials specifications that were sensitive to both material sizing and moisture content. Preliminary designs with very controlled size specifications and moisture content resulted in being able to minimize the thickness of the cap required. This allowed for a cover thickness of only 1.35 m (including conservative assumptions for global warming). Teck Cominco recognized the difficulty in controlling these factors during construction and as a result had the thermal design revised to minimize sensitivity to these factors. The design of the cover cap presented in the final approved DRP did not rely on carefully controlled materials specifications but compensated for the simpler design by increasing the cap thickness from 1.35 m to 1.8 m. Despite the above comments, Teck Cominco has sampled the operational cap materials for moisture content and will do so for the LRDQL cap.
- Once the LRDQL is nearing completion it will be necessary to submit the final detailed construction drawings for the cover cap for review. Until the final elevation of the landfill is determined, the final construction drawings can not be completed as the pit dimensions and shape change with elevation.

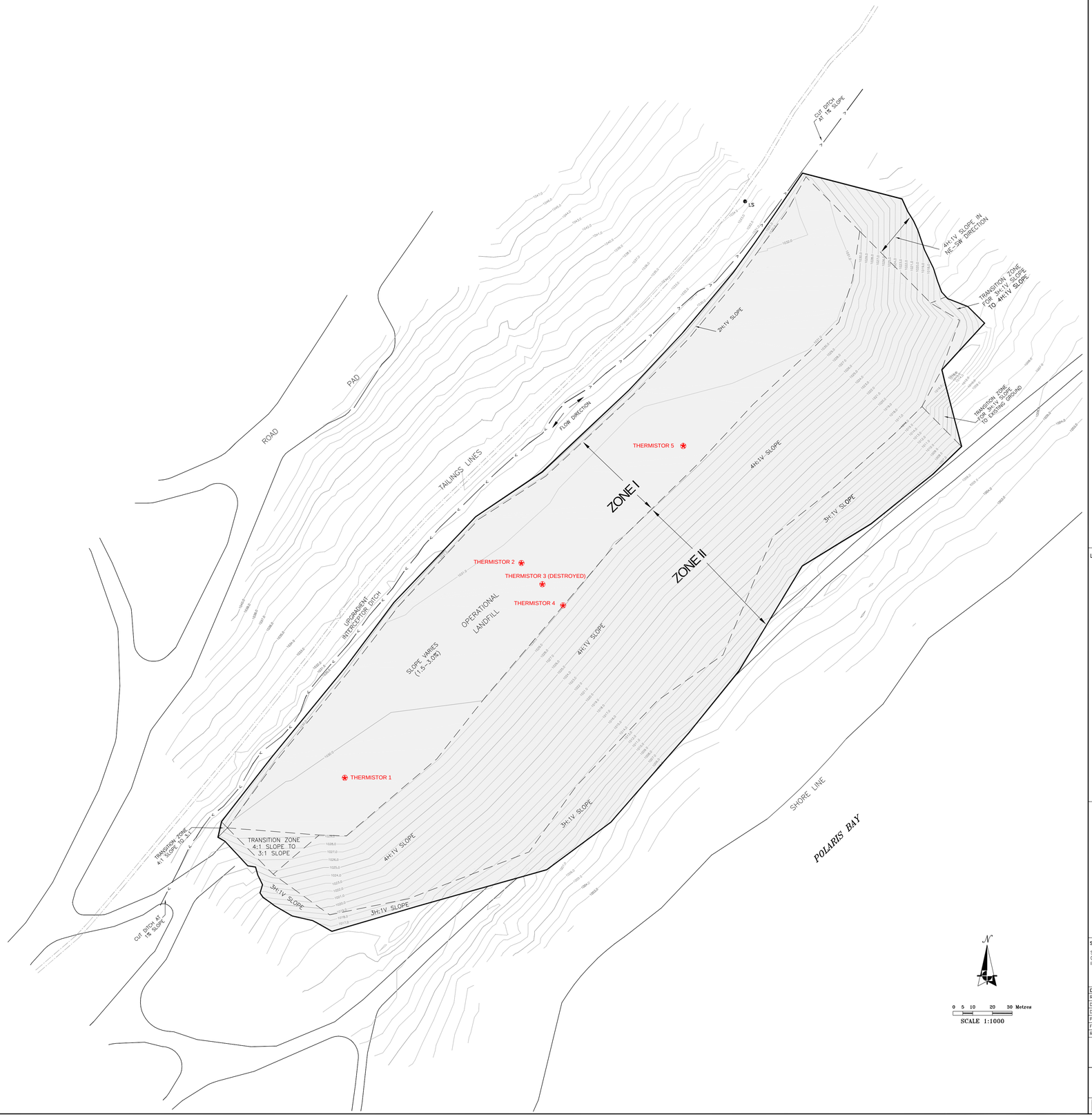
Thank you in advance for your consideration of the above request to alter our approved contaminated soil disposal plans. As you can appreciate from the tight schedule we are working with, it is important to us that an expedited review and approval of this request is required for us to remain on schedule. If you have any questions or concerns regarding this submission, I would be pleased to respond to them in a timely fashion.

Yours truly,

Original signed by B. Donald

Bruce Donald,
Reclamation Manager,
Environment and Corporate Affairs
Teck Cominco Limited

Enclosure: Operational Landfill Thermistor Data



LEGEND:

- ROAD
- TAILINGS LINE
- SHORE LINE
- TOP OF FINAL COVER SURFACE CONTOUR (MAJOR INTERVAL 5m) (MINOR INTERVAL 1m)
- BOUNDARY OF FINAL COVER
- BREAK OF SLOPE
- THERMISTOR STRING LOCATION
- DITCH 1% SLOPE (MINIMUM)
- WASTE SURFACE CONTOUR SURVEYED IN APRIL 2003 (MAJOR CONTOUR INTERVAL 5m) (MINOR CONTOUR INTERVAL 1m)

SOURCE OF DRAWING:

SURVEY INFORMATION OF GROUND SURFACE AS OF APRIL, 2003 SUPPLIED BY RBM OPTICOM INC. DATE OF SURVEY 21 APRIL, 2003

DRAWING INFORMATION:	
REVIEWED BY:	BD
DRAWN BY:	CPW
DATE ISSUED:	NOVEMBER, 2003
PROJECT NUMBER:	23-306
FILE NAME:	23306-2M-01.DWG
REVISION:	0

OPERATIONAL LANDFILL
POLARIS MINE, NUNAVUT

teckcominco

THERMISTOR LOCATIONS

Gartner Lee

Drawing No. 1

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #1
TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-3.0	-4.0	-4.5	-5.0	-5.5	-6.0
Calibration Factors	-0.01	0.12	-0.02	-0.02	-0.18	-0.03	-0.01	-0.1	-0.03	-0.07

Temperatures

20-Mar-99	-22.9	-23.9	-24.0	-23.7	-21.7	-17.0	-15.9	-15.0	-14.2	-13.5
22-Mar-99	-22.7	-23.3	-23.5	-23.3	-21.6	-17.1	-16.0	-15.2	-14.3	-13.6
23-Mar-99	-22.5	-23.2	-23.3	-23.1	-21.5	-17.2	-16.0	-15.2	-14.4	-13.6
24-Mar-99	-22.4	-23.0	-23.2	-22.9	-21.4	-17.2	-16.1	-15.3	-14.4	-13.7
25-Mar-99	-22.4	-22.9	-23.0	-22.8	-21.4	-17.2	-16.2	-15.4	-14.5	-13.8
26-Mar-99	-23.1	-22.8	-22.9	-22.6	-21.3	-17.3	-16.2	-15.4	-14.5	-13.8
27-Mar-99	-23.7	-23.0	-22.8	-22.5	-21.2	-17.3	-16.3	-15.5	-14.6	-13.9
29-Mar-99	-24.7	-23.4	-22.8	-22.4	-21.0	-17.4	-16.4	-15.6	-14.7	-14.0
30-Mar-99	-25.9	-23.9	-23.0	-22.3	-21.0	-17.4	-16.4	-15.6	-14.7	-14.0
06-Apr-99	-24.1	-24.1	-23.5	-22.7	-20.9	-17.5	-16.6	-15.9	-15.0	-14.3
13-Apr-99	-22.7	-22.8	-22.6	-22.2	-20.8	-17.6	-16.8	-16.0	-15.3	-14.5
20-Apr-99	-19.9	-20.6	-21.2	-21.3	-20.6	-17.7	-16.9	-16.2	-15.5	-14.7
26-Apr-99	-18.4	-19.8	-20.5	-20.6	-20.0	-17.7	-17.0	-16.4	-15.6	-14.9
04-May-99	-16.2	-18.0	-19.0	-19.5	-19.4	-17.6	-17.0	-16.4	-15.7	-15.1
11-May-99	-14.1	-16.2	-17.4	-18.2	-18.7	-17.4	-16.9	-16.4	-15.8	-15.2
18-May-99	-9.6	-12.8	-15.0	-16.5	-17.7	-17.2	-16.8	-16.4	-15.8	-15.3
25-May-99	-6.7	-10.1	-12.6	-14.5	-16.5	-16.8	-16.6	-16.3	-15.8	-15.3
01-Jun-99	-5.0	-8.4	-10.7	-12.7	-15.1	-16.3	-16.2	-16.0	-15.7	-15.3
08-Jun-99	-0.5	-2.9	-7.0	-10.2	-13.6	-15.7	-15.8	-15.8	-15.5	-15.2
15-Jun-99	-0.7	-2.7	-5.6	-8.3	-12.0	-15.0	-15.3	-15.4	-15.3	-15.1
22-Jun-99	0.2	-1.8	-4.5	-7.1	-10.7	-14.2	-14.7	-14.9	-15.0	-14.9
29-Jun-99	1.3	-1.3	-3.5	-5.9	-9.4	-13.2	-14.0	-14.3	-14.5	-14.6
05-Jul-99	4.3	-0.5	-2.3	-4.7	-8.8	-12.8	-13.5	-13.9	-14.2	-14.4
13-Jul-99	3.9	2.9	-1.6	-4.3	-8.0	-12.2	-13.0	-13.5	-13.8	-14.1
20-Jul-99	3.3	1.3	-1.3	-3.8	-7.4	-11.6	-12.5	-13.0	-13.4	-13.8
27-Jul-99	3.9	1.7	-1.1	-3.4	-6.8	-11.1	-12.0	-12.5	-13.1	-13.4
03-Aug-99	4.8	2.0	-0.8	-3.0	-6.4	-10.6	-11.5	-12.1	-12.7	-13.2
10-Aug-99	4.8	2.4	-0.8	-2.8	-6.0	-10.3	-11.1	-11.8	-12.3	-12.8
17-Aug-99	3.9	2.0	-0.7	-2.6	-5.7	-9.9	-10.7	-11.4	-12.0	-12.5
24-Aug-99	1.4	0.7	-0.7	-2.5	-5.4	-9.6	-10.4	-11.1	-11.7	-12.3
31-Aug-99	0.0	0.1	-0.7	-2.4	-5.2	-9.3	-10.2	-10.8	-11.4	-12.0
07-Sep-99	-0.2	-0.1	-0.2	-1.5	-4.3	-8.2	-9.5	-10.2	-10.8	-11.5
14-Sep-99	-0.4	-0.1	-0.3	-1.6	-4.1	-8.0	-9.3	-10.0	-10.6	-11.2
22-Sep-99	-1.3	-0.4	-0.4	-1.6	-4.0	-7.8	-9.1	-9.7	-10.4	-11.1
28-Sep-99	-1.0	-0.5	-0.5	-1.6	-3.9	-7.6	-8.8	-9.5	-10.2	-10.9
05-Oct-99	-5.9	-3.0	-1.4	-1.8	-3.9	-7.4	-8.6	-9.3	-10.0	-10.7
12-Oct-99	-8.1	-5.4	-3.7	-2.8	-3.9	-7.3	-8.5	-9.1	-9.8	-10.5
19-Oct-99	-12.9	-9.4	-6.3	-4.5	-4.3	-7.2	-8.3	-9.0	-9.6	-10.3
26-Oct-99	-14.3	-11.3	-8.4	-6.4	-5.2	-7.2	-8.2	-8.8	-9.5	-10.1
02-Nov-99	-15.8	-13.7	-10.8	-8.3	-6.3	-7.3	-8.2	-8.7	-9.3	-10.0
09-Nov-99	-21.1	-16.7	-12.7	-10.0	-7.6	-7.6	-8.2	-8.7	-9.3	-9.9
16-Nov-99	-20.7	-17.0	-13.7	-11.5	-9.0	-8.1	-8.4	-8.8	-9.3	-9.8
23-Nov-99	-18.6	-17.8	-15.7	-13.3	-10.3	-8.7	-8.8	-9.0	-9.4	-9.8
30-Nov-99	-19.3	-16.7	-15.1	-13.6	-11.4	-9.4	-9.2	-9.3	-9.5	-9.9
07-Dec-99	-24.9	-21.4	-17.8	-15.2	-12.3	-10.0	-9.6	-9.6	-9.8	-10.0
13-Dec-99	-26.8	-23.8	-20.3	-17.3	-13.6	-10.6	-10.1	-10.0	-10.0	-10.2
22-May-00	-12.3	-14.1	-15.7	-16.9	-18.2	-18.1	-17.8	-17.4	-16.9	-16.4
29-May-00	-10.3	-13.2	-14.7	-15.9	-17.2	-17.6	-17.4	-17.2	-16.8	-16.4
06-Jun-00	-0.3	-0.1	-1.0	-2.3	-10.8	-12.2	-13.0	-15.6	-16.6	-16.2
16-Jun-00	1.0	-2.0	-5.7	-9.6	-13.9	-16.2	-16.4	-16.4	-16.2	-16.0
26-Jun-00	5.3	1.2	-1.8	-5.6	-10.9	-14.8	-15.5	-15.8	-15.8	-15.7
04-Jul-00	2.1	0.7	-1.3	-4.4	-9.3	-13.7	-14.7	-15.1	-15.3	-15.4
11-Jul-00	2.8	1.0	-1.2	-3.9	-8.2	-12.8	-14.0	-14.5	-14.8	-15.0
18-Jul-00	2.5	1.2	-1.1	-3.5	-7.5	-12.1	-13.3	-13.9	-14.3	-14.6
19-Sep-00	-3.9	-0.4	-1.0	-2.1	-4.6	-8.4	-9.6	-10.3	-11.0	-11.6
26-Sep-00	-6.3	-3.7	-2.4	-2.6	-4.5	-8.2	-9.4	-10.1	-10.8	-11.4
10-Oct-00	-9.9	-7.4	-5.6	-4.9	-5.2	-7.9	-9.0	-9.7	-10.3	-10.9
10-Nov-00	-18.7	-16.8	-14.2	-12.0	-9.5	-8.8	-9.2	-9.5	-9.9	-10.4
27-Apr-01	-19.8	-21.5	-23.0	-23.7	-23.5	-21.0	-19.8	-19.1	-18.2	-17.3
22-May-01	-9.9	-12.8	-15.5	-17.6	-19.7	-19.6	-19.1	-18.7	-18.2	-17.5
18-Jun-01	1.9	-0.7	-3.9	-7.3	-12.1	-16.0	-16.8	-17.0	-17.0	-16.9
19-Jul-01	8.5	2.4	-1.1	-3.4	-7.3	-12.0	-13.4	-14.1	-14.6	-15.0
21-Aug-01	0.0	0.0	-0.1	-2.0	-5.3	-9.8	-11.2	-11.9	-12.6	-13.2
21-Aug-01	0.0	0.0	-0.1	-2.0	-5.3	-9.8	-11.2	-11.9	-12.6	-13.2
16-Nov-02	-14.3	-13.3	-11.4	-9.7	-8.1	-8.5	-9.1	-9.5	-10.0	-10.6
18-Dec-02	-18.6	-17.6	-16.8	-15.8	-13.7	-11.0	-10.6	-10.5	-10.5	-10.7
10-Feb-03	-27.6	-25.3	-23.4	-21.6	-18.6	-14.8	-13.8	-13.3	-12.9	-12.5
11-Mar-03	-28.3	-26.2	-24.9	-23.8	-21.4	-17.0	-15.7	-15.0	-14.3	-13.8
17-Apr-03	-24.7	-24.5	-24.0	-23.3	-21.9	-18.6	-17.4	-16.7	-16.0	-15.2
15-May-03	-15.2	-17.1	-18.1	-18.8	-19.4	-18.3	-17.6	-17.1	-16.6	-15.9
17-Jun-03	-28.3	-26.2	-24.9	-23.8	-21.4	-17.0	-15.7	-15.0	-14.3	-13.8
18-Jul-03	-0.1	-0.1	-2.6	-3.7	-8.2	-10.5	-13.3	-13.8	-14.1	-14.6
25-Aug-03	-0.1	-0.2	-1.0	-2.5	-5.3	-9.5	-10.8	-11.5	-12.2	-13.0
16-Sep-03	-0.1	-0.3	-1.2	-2.5	-4.9	-8.7	-9.8	-10.5	-11.2	-11.8

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #2

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-3.5	-4.0	-4.5	-5.0
Calibration Factors	-0.02	-0.04	-0.08	-0.06	-0.03	0.04	-0.03	-0.14	-0.12	-0.01

Temperatures

20-Mar-99	-24.2	-24.8	-24.9	-24.5	-23.8	-22.7	-21.5	-20.0	-18.6	-17.4
22-Mar-99	-24.0	-24.2	-24.5	-24.2	-23.5	-22.5	-21.5	-20.1	-18.7	-17.5
23-Mar-99	-23.7	-24.2	-24.3	-24.0	-23.4	-22.5	-21.4	-20.1	-18.8	-17.6
24-Mar-99	-23.5	-24.0	-24.1	-23.9	-23.3	-22.4	-21.4	-20.1	-18.8	-17.6
25-Mar-99	-23.5	-23.8	-23.9	-23.7	-23.1	-22.3	-21.3	-20.1	-18.8	-17.6
26-Mar-99	-24.0	-23.8	-23.8	-23.6	-23.0	-22.2	-21.3	-20.1	-18.9	-17.7
27-Mar-99	-24.3	-24.0	-23.7	-23.5	-22.9	-22.2	-21.3	-20.1	-18.9	-17.7
29-Mar-99	-25.2	-24.4	-23.8	-23.3	-22.8	-22.0	-21.2	-20.1	-18.9	-17.8
30-Mar-99	-26.1	-25.0	-23.9	-23.3	-22.7	-21.9	-21.2	-20.0	-18.9	-17.8
06-Apr-99	-24.7	-24.8	-24.3	-23.6	-22.8	-21.9	-21.0	-20.0	-19.0	-18.0
13-Apr-99	-23.5	-23.6	-23.4	-23.0	-22.5	-21.8	-21.0	-20.0	-19.0	-18.1
20-Apr-99	-20.9	-21.5	-22.0	-22.2	-21.9	-21.4	-20.8	-20.0	-19.1	-18.2
26-Apr-99	-19.9	-20.7	-21.4	-21.5	-21.3	-20.9	-20.5	-19.8	-19.0	-18.3
04-May-99	-18.1	-19.3	-20.1	-20.4	-20.5	-20.4	-20.1	-19.6	-18.9	-18.2
11-May-99	-16.1	-17.6	-18.8	-19.4	-19.7	-19.7	-19.5	-19.2	-18.7	-18.2
18-May-99	-12.5	-14.6	-16.6	-17.8	-18.5	-18.8	-18.9	-18.8	-18.5	-18.0
25-May-99	-10.2	-12.3	-14.5	-15.9	-17.0	-17.7	-18.1	-18.2	-18.1	-17.8
01-Jun-99	-7.6	-10.4	-12.7	-14.3	-15.6	-16.5	-17.1	-17.5	-17.5	-17.4
08-Jun-99	-3.3	-6.2	-9.6	-11.9	-13.8	-15.2	-16.0	-16.7	-16.9	-17.0
15-Jun-99	-1.4	-4.1	-7.4	-9.8	-11.9	-13.6	-14.7	-15.7	-16.2	-16.5
22-Jun-99	-0.4	-2.1	-5.0	-7.7	-10.2	-12.1	-13.4	-14.7	-15.5	-15.9
29-Jun-99	1.6	-1.0	-3.6	-6.1	-8.4	-10.4	-11.9	-13.3	-14.4	-15.1
05-Jul-99	4.2	0.0	-2.7	-5.3	-7.6	-9.6	-11.2	-12.7	-13.8	-14.6
13-Jul-99	3.9	1.1	-1.9	-4.4	-6.7	-8.7	-10.3	-11.9	-13.1	-13.9
20-Jul-99	3.1	1.0	-1.5	-3.8	-6.0	-7.9	-9.5	-11.1	-12.4	-13.3
27-Jul-99	4.0	1.2	-1.3	-3.4	-5.4	-7.3	-8.8	-10.4	-11.7	-12.7
03-Aug-99	4.3	1.6	-1.1	-3.1	-5.0	-6.8	-8.3	-9.9	-11.1	-12.1
10-Aug-99	4.2	1.7	-1.0	-2.8	-4.7	-6.4	-7.8	-9.4	-10.6	-11.7
17-Aug-99	3.3	1.7	-0.8	-2.6	-4.4	-6.0	-7.4	-8.9	-10.2	-11.2
24-Aug-99	1.0	0.5	-0.7	-2.4	-4.2	-5.7	-7.1	-8.6	-9.8	-10.8
31-Aug-99	0.0	0.0	-0.9	-2.4	-4.0	-5.5	-6.7	-8.2	-9.4	-10.4
07-Sep-99	-0.1	-0.2	-1.0	-2.4	-3.9	-5.3	-6.5	-7.9	-9.1	-10.1
14-Sep-99	-0.2	-0.3	-1.2	-2.3	-3.7	-5.1	-6.3	-7.6	-8.8	-9.8
21-Sep-99	-0.8	-0.5	-1.4	-2.5	-3.7	-5.0	-6.1	-7.4	-8.6	-9.5
28-Sep-99	-1.1	-1.2	-1.8	-2.6	-3.7	-4.9	-6.0	-7.2	-8.3	-9.3
05-Oct-99	-4.7	-3.2	-2.7	-3.0	-3.9	-4.9	-5.9	-7.1	-8.1	-9.1
12-Oct-99	-6.8	-5.2	-4.3	-4.0	-4.3	-5.0	-5.8	-6.9	-7.9	-8.8
19-Oct-99	-11.7	-9.0	-6.7	-5.6	-5.2	-5.4	-6.1	-7.0	-7.9	-8.7
26-Oct-99	-13.9	-11.3	-9.0	-7.6	-6.7	-6.4	-6.6	-7.2	-7.9	-8.6
02-Nov-99	-15.9	-14.0	-11.5	-9.7	-8.3	-7.6	-7.5	-7.7	-8.1	-8.7
09-Nov-99	-19.7	-16.3	-13.2	-11.3	-9.9	-8.9	-8.5	-8.3	-8.5	-8.9
16-Nov-99	-20.3	-17.0	-14.3	-12.7	-11.3	-10.2	-9.6	-9.1	-9.0	-9.2
23-Nov-99	-19.1	-18.1	-16.1	-14.4	-12.7	-11.4	-10.6	-9.9	-9.6	-9.6
30-Nov-99	-18.7	-17.0	-15.6	-14.6	-13.4	-12.3	-11.5	-10.8	-10.3	-10.1
07-Dec-99	-24.2	-21.2	-18.1	-16.0	-14.4	-13.1	-12.2	-11.4	-10.8	-9.9
13-Dec-99	-26.6	-23.8	-20.7	-18.3	-16.1	-14.4	-13.2	-12.1	-11.4	-11.0
22-May-00	-11.9	-13.3	-15.0	-16.3	-17.3	-18.1	-18.5	-18.8	-18.9	-18.6
29-May-00	-11.0	-12.7	-14.2	-15.3	-16.3	-17.1	-17.7	-18.1	-18.3	-18.2
06-Jun-00	-7.2	-10.0	-12.3	-13.9	-15.2	-16.2	-16.8	-17.4	-17.6	-17.7
16-Jun-00	0.0	-2.3	-6.7	-10.2	-12.6	-14.3	-15.4	-16.3	-16.8	-17.1
26-Jun-00	2.4	-1.0	-4.3	-7.1	-9.7	-11.9	-13.3	-14.8	-15.7	-16.2
04-Jul-00	1.4	-0.4	-3.2	-5.8	-8.2	-10.3	-11.9	-13.6	-14.7	-15.4
11-Jul-00	1.7	-0.2	-2.8	-5.0	-7.3	-9.3	-10.9	-12.6	-13.9	-14.7
18-Jul-00	1.8	-0.2	-2.4	-4.5	-6.6	-8.6	-10.1	-11.8	-13.0	-14.1
19-Sep-00	-3.8	-2.4	-2.5	-3.2	-4.3	-5.4	-6.5	-7.9	-9.0	-10.0
26-Sep-00	-5.7	-4.1	-3.7	-3.9	-4.6	-5.6	-6.5	-7.8	-8.9	-9.8
10-Oct-00	-9.5	-7.7	-6.6	-6.1	-6.1	-6.4	-7.0	-7.8	-8.7	-9.5
10-Nov-00	-18.6	-16.8	-14.7	-13.0	-11.6	-10.6	-10.1	-9.8	-9.8	-10.0
27-Apr-01	-20.5	-22.2	-23.3	-23.9	-23.9	-23.6	-23.1	-22.3	-21.3	-20.4
22-May-01	-15.1	-17.4	-18.9	-20.0	-20.6	-21.0	-21.0	-20.8	-20.5	-20.0
18-Jun-01	-0.3	-3.2	-6.6	-9.4	-12.1	-14.2	-15.6	-17.0	-17.7	-18.2
19-Jul-01	4.3	-0.1	-2.4	-4.7	-7.0	-9.0	-10.5	-12.3	-13.6	-14.7
21-Aug-01	-0.1	-0.1	-1.3	-3.0	-4.9	-6.5	-8.0	-9.6	-11.0	-12.1
14-Sep-02	-0.1	-0.4	-1.6	-3.0	-4.5	-5.9	-7.2	-8.6	-9.8	-10.9
23-Oct-02	-6.9	-6.9	-6.8	-6.8	-6.8	-7.0	-7.5	-8.1	-8.9	-9.6
16-Nov-02	-14.8	-13.1	-11.7	-10.5	-9.6	-9.2	-9.1	-9.2	-9.5	-9.9
18-Dec-02	-18.4	-17.7	-17.0	-16.1	-15.1	-14.0	-13.1	-12.3	-11.7	-11.4
10-Feb-03	-27.0	-25.2	-23.5	-21.9	-20.2	-18.8	-17.7	-16.4	-15.4	-14.6
11-Mar-03	-28.0	-26.4	-25.3	-24.2	-22.9	-21.6	-20.3	-18.9	-17.6	-16.5
17-Apr-03	-24.9	-24.9	-24.4	-23.7	-15.8	-22.2	-21.4	-20.4	-19.3	-18.4
15-May-03	-16.0	-17.3	-18.1	-18.9	-19.4	-19.7	-19.7	-19.5	-19.1	-18.6
17-Jun-03	-1.5	-4.0	-6.6	-8.9	-11.0	-12.8	-14.0	-15.2	-16.1	-16.5
18-Jul-03	-0.1	-0.5	-2.6	-3.7	-8.0	-10.4	-13.3	-13.9	-14.2	-14.6
25-Aug-03	-0.1	-0.7	-2.1	-3.5	-5.0	-6.4	-7.6	-8.9	-10.1	-11.1
16-Sep-03	-0.2	-1.1	-2.2	-3.3	-4.6	-5.8	-6.8	-8.1	-9.2	-9.8

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #4

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10	Bead # 11	Bead # 12
Installation Depth Below Collar (M)	-0.5	-1.0	-1.5	-2.0	-2.5	-3.0	-4.0	-5.0	-5.5	-6.0	-6.5	-7.0
Calibration Factors	-0.06	-0.01	-0.04	-0.02	-0.01	0.03	-0.03	-0.04	-0.04	-0.15	-0.06	-0.09

Temperatures

20-Mar-99	-23.1	-23.8	-23.7	-23.3	-22.5	-21.2	-18.1	-15.3	-14.2	-13.3	-12.5	
22-Mar-99	-22.7	-23.2	-23.3	-22.9	-22.2	-21.1	-18.2	-15.4	-14.3	-13.4	-12.6	
23-Mar-99	-22.7	-23.1	-23.1	-22.7	-22.1	-21.0	-18.2	-15.5	-14.3	-13.5	-12.7	
24-Mar-99	-22.4	-22.9	-22.9	-22.6	-22.0	-20.9	-18.2	-15.5	-14.4	-13.5	-12.7	
25-Mar-99	-22.3	-22.7	-22.7	-22.4	-21.8	-20.8	-18.2	-15.6	-14.4	-13.6	-12.8	
26-Mar-99	-22.7	-22.6	-22.5	-22.3	-21.7	-20.7	-18.2	-15.6	-14.5	-13.6	-12.8	
27-Mar-99	-23.2	-22.6	-22.4	-22.2	-21.6	-20.6	-18.2	-15.6	-14.5	-13.7	-12.8	
29-Mar-99	-24.3	-23.0	-22.4	-22.0	-21.4	-20.5	-18.2	-15.7	-14.6	-13.7	-12.9	
30-Mar-99	-25.4	-23.4	-22.6	-21.9	-21.3	-20.4	-18.1	-15.7	-14.6	-13.8	-13.0	
06-Apr-99	-23.9	-23.6	-23.0	-22.3	-21.4	-20.3	-18.1	-15.8	-14.8	-14.0	-13.2	
13-Apr-99	-22.4	-22.3	-22.0	-21.7	-21.1	-20.2	-18.1	-15.9	-15.0	-14.2	-13.4	
20-Apr-99	-20.3	-20.8	-21.0	-20.9	-20.6	-19.8	-18.0	-16.0	-15.1	-14.4	-13.6	
26-Apr-99	-18.8	-20.0	-20.3	-20.2	-19.9	-19.3	-17.8	-16.0	-15.2	-14.5	-13.8	-13.2
04-May-99	-17.6	-18.7	-19.0	-19.2	-19.1	-18.8	-17.6	-16.0	-15.3	-14.6	-13.9	-13.3
11-May-99	-15.3	-17.0	-17.7	-18.1	-18.3	-18.1	-17.3	-15.9	-15.2	-14.6	-14.0	-13.5
18-May-99	-10.5	-13.7	-15.3	-16.4	-17.0	-17.2	-16.9	-15.7	-15.2	-14.6	-14.1	-13.6
25-May-99	-8.0	-11.2	-13.0	-14.4	-15.4	-16.0	-16.2	-15.5	-15.1	-14.6	-14.1	-13.6
01-Jun-99	-6.2	-9.5	-11.2	-12.7	-13.8	-14.7	-15.5	-15.2	-14.8	-14.5	-14.0	-13.6
08-Jun-99	-1.9	-4.7	-7.7	-10.1	-11.9	-13.3	-14.6	-14.7	-14.5	-14.2	-13.9	-13.6
15-Jun-99	-1.3	-3.5	-5.9	-8.1	-9.9	-11.5	-13.6	-14.2	-14.2	-14.0	-13.7	-13.5
22-Jun-99	-0.4	-2.5	-4.7	-6.7	-8.4	-10.1	-12.4	-13.6	-13.7	-13.7	-13.5	-13.3
29-Jun-99	0.3	-1.8	-3.7	-5.5	-7.1	-8.7	-11.1	-12.6	-13.0	-13.1	-13.2	-13.1
05-Jul-99	2.1	-1.4	-3.2	-4.9	-6.5	-8.0	-10.6	-12.2	-12.6	-12.8	-13.0	-12.9
13-Jul-99	3.1	-0.8	-2.6	-4.3	-5.8	-7.3	-9.9	-11.5	-12.1	-12.4	-12.6	-12.7
20-Jul-99	2.4	-0.6	-2.2	-3.7	-5.2	-6.7	-9.2	-11.0	-11.6	-11.9	-12.2	-12.4
27-Jul-99	3.1	-0.4	-1.9	-3.3	-4.7	-6.1	-8.6	-10.4	-11.0	-11.4	-11.8	-12.0
03-Aug-99	3.5	-0.2	-1.7	-3.0	-4.3	-5.7	-8.1	-10.0	-10.6	-11.1	-11.5	-11.7
10-Aug-99	3.6	0.0	-1.5	-2.8	-4.0	-5.3	-7.7	-9.6	-10.2	-10.7	-11.2	-11.5
17-Aug-99	3.2	0.2	-1.3	-2.5	-3.7	-5.0	-7.3	-9.2	-9.9	-10.4	-10.9	-11.1
24-Aug-99	1.1	0.0	-1.2	-2.3	-3.4	-4.7	-7.0	-8.8	-9.5	-10.1	-10.5	-10.9
07-Sep-99	0.0	-0.3	-0.1	-0.6	-1.5	-2.4	-4.6	-6.6	-7.5	-8.4	-9.1	-9.6
14-Sep-99	-0.6	-0.6	-0.2	-0.9	-1.6	-2.4	-4.4	-6.3	-7.3	-8.1	-8.8	-9.3
21-Sep-99	-1.3	-1.8	-1.5	-1.4	-1.9	-2.5	-4.3	-6.1	-7.0	-7.9	-8.6	-9.1
28-Sep-99	-2.4	-1.6	-1.7	-2.0	-2.3	-2.8	-4.3	-5.9	-6.8	-7.6	-8.3	-8.8
05-Oct-99	-10.1	-6.9	-4.3	-3.1	-3.0	-3.1	-4.3	-5.8	-6.7	-7.4	-8.1	-8.7
12-Oct-99	-14.6	-8.7	-6.2	-4.8	-4.2	-4.0	-4.5	-5.8	-6.6	-7.3	-7.9	-8.4
19-Oct-99	-15.7	-14.1	-10.2	-7.0	-5.7	-5.0	-4.9	-5.8	-6.4	-7.1	-7.7	-8.2
26-Oct-99	-16.5	-15.6	-12.1	-9.1	-7.6	-6.6	-5.7	-6.0	-6.6	-7.1	-7.7	-8.1
02-Nov-99	-18.9	-16.9	-14.6	-11.4	-9.5	-8.1	-6.5	-6.4	-6.7	-7.2	-7.7	-8.1
09-Nov-99	-25.9	-22.1	-16.9	-12.7	-10.8	-9.4	-7.5	-6.9	-7.0	-7.4	-7.7	-8.1
16-Nov-99	-24.7	-21.6	-17.0	-13.5	-11.8	-10.6	-8.4	-7.4	-7.4	-7.6	-7.9	-8.2
23-Nov-99	-17.4	-19.1	-17.6	-15.2	-13.4	-11.8	-9.3	-8.1	-7.9	-7.9	-8.1	-8.3
30-Nov-99	-25.6	-19.3	-16.4	-14.7	-13.5	-12.4	-10.2	-8.7	-8.4	-8.2	-8.3	-8.4
07-Dec-99	-28.8	-25.7	-21.0	-17.0	-14.9	-13.3	-10.8	-9.3	-8.9	-8.6	-8.6	-8.6
13-Dec-99	-30.5	-27.3	-23.4	-19.5	-17.1	-15.0	-11.7	-9.9	-9.3	-9.0	-8.9	-8.8
22-May-00	-3.3	-10.4	-11.9	-13.8	-14.9	-15.7	-16.7	-16.7	-16.4	-16.0	-15.5	-15.0
29-May-00	3.3	-9.5	-11.7	-13.2	-14.1	-14.9	-15.9	-16.1	-16.0	-15.7	-15.3	-14.9
06-Jun-00	4.3	-5.8	-9.3	-11.7	-13.0	-13.9	-15.2	-15.5	-15.5	-15.3	-15.1	-14.7
16-Jun-00	16.3	6.8	2.5	-1.8	-5.7	-8.8	-13.1	-14.6	-14.8	-14.9	-14.7	-14.5
26-Jun-00	15.8	5.5	2.0	-1.1	-3.5	-5.8	-10.2	-12.8	-13.6	-14.0	-14.1	-14.1
04-Jul-00	7.5	2.9	1.6	-0.8	-2.9	-4.8	-8.8	-11.5	-12.5	-13.1	-13.5	-13.6
11-Jul-00	7.1	3.2	-1.7	-6.6	-10.9	-13.5	-15.0	-15.3	-15.5	-15.6	-15.3	-15.1
18-Jul-00	4.8	3.0	-1.5	-5.9	-10.0	-12.5	-14.4	-14.8	-15.1	-15.3	-15.1	-15.0
19-Sep-00	-6.1	-3.8	-1.5	-1.4	-1.9	-2.6	-4.6	-6.5	-7.4	-8.3	-9.0	-9.5
26-Sep-00	-10.4	-5.6	-3.5	-2.6	-2.6	-3.0	-4.6	-6.3	-7.2	-8.1	-8.7	-9.3
10-Oct-00	-9.4	-10.0	-7.3	-5.5	-5.0	-4.7	-5.1	-6.3	-7.0	-7.7	-8.4	-8.9
10-Nov-00	-19.4	-19.0	-16.4	-13.1	-11.4	-10.1	-8.2	-7.6	-7.7	-8.0	-8.3	-8.6
27-Apr-01	-17.5	-18.2	-20.1	-21.9	-22.4	-22.4	-21.3	-19.5	-18.5	-17.4	-16.5	-15.8
22-May-01	-0.2	-8.9	-12.0	-15.1	-16.7	-17.8	-18.7	-18.3	-17.8	-17.2	-16.6	-16.1
18-Jun-01	6.4	1.7	-0.8	-3.6	-6.3	-8.6	-12.6	-14.9	-15.4	-15.7	-15.6	-15.5
19-Jul-01	18.4	5.9	0.0	-1.8	-3.5	-5.1	-8.4	-10.8	-11.9	-12.7	-13.2	-13.5
21-Aug-01	2.3	0.0	0.0	-1.0	-2.3	-3.5	-6.3	-8.6	-9.6	-10.5	-11.2	-11.7
14-Sep-02	3.5	-0.1	-0.6	-1.5	-2.5	-3.5	-6.0	-8.1	-9.1	-10.0		
23-Oct-02	-6.8	-6.7	-6.7	-6.6	-6.6	-6.5	-6.8	-7.6	-8.2	-8.9	-9.5	-10.0
16-Nov-02	-19.4	-17.0	-14.8	-13.1	-11.6	-10.3	-8.8	-8.5	-8.8	-9.1	-9.5	-9.8
18-Dec-02	-22.1	-19.3	-18.7	-18.2	-17.5	-16.6	-14.0	-11.9	-11.2	-10.8	-10.5	-10.5
10-Feb-03	-31.7	-29.2	-27.1	-25.4	-23.8	-22.1	-18.8	-16.1	-15.0	-14.1	-13.5	-13.0
11-Mar-03	-25.5	-29.6	-27.6	-26.6	-25.7	-24.7	-21.7	-18.7	-17.3	-16.2	-15.2	-14.5
17-Apr-03	-21.6	-24.8	-25.1	-24.9	-24.5	-23.9	-22.3	-20.2	-19.1	-18.0	-17.1	-16.3
15-May-03	-6.1	-13.6	-15.6	-16.9	-18.0	-18.8	-19.7	-19.3	-18.8	-18.2	-17.6	-17.0
17-Jun-03	8.2	-0.3	-2.9	-5.8	-8.3	-10.5	-13.8	-15.5	-15.4	-15.9	-16.2	-16.2
18-Jul-03	7.1	3.2	-1.7	-6.6	-10.9	-13.5	-15.0	-15.3	-15.5	-15.6	-15.3	-15.1
25-Aug-03	0.7	-0.1	-0.9	-2.1	-3.3	-4.4	-7.0	-9.2	-10.1	-11.0	-11.8	-12.3
16-Sep-03	0.0	-0.3	-1.1	-2.0	-3.1	-4.0	-6.3	-8.3	-9.2	-10.1	-10.8	-11.3

POLARIS MINE - OPERATIONAL LANDFILL - THERMISTOR STRING #5

TEMPERATURES IN DEGREES C

	Bead # 1	Bead # 2	Bead # 3	Bead # 4	Bead # 5	Bead # 6	Bead # 7	Bead # 8	Bead # 9	Bead # 10	Bead # 11	Bead # 12
Installation Depth Below Collar (M)	0.2	-0.3	-1.3	-2.3	-3.3	-4.3	-5.3	-5.8	-6.3	-6.8	-7.3	-7.8
Calibration Factors	-0.01	-0.07	-0.01	-0.12	0.03	0.03	-0.02	-0.06	0.02	-0.02	-0.12	0.02

Temperatures

20-Mar-99	-19.9	-23.6	-25.1	-23.9	-21.4	-18.5	-15.5	-14.6	-13.9	-13.1	-12.4	
22-Mar-99	-19.0	-23.5	-24.5	-23.6	-21.4	-18.6	-15.7	-14.8	-14.1	-13.2	-12.5	
23-Mar-99	-19.1	-23.3	-24.3	-23.4	-21.3	-18.6	-15.8	-14.9	-14.1	-13.2	-12.6	
24-Mar-99	-20.5	-23.1	-24.1	-23.3	-21.3	-18.7	-15.8	-14.9	-14.2	-13.3	-12.7	
25-Mar-99	-21.6	-23.0	-23.9	-23.1	-21.2	-18.7	-15.9	-15.0	-14.3	-13.3	-12.7	
26-Mar-99	-22.6	-23.5	-23.7	-23.0	-21.2	-18.7	-16.0	-15.1	-14.3	-13.4	-12.7	
27-Mar-99	-24.9	-23.9	-23.6	-22.9	-21.1	-18.7	-16.0	-15.1	-14.3	-13.4	-12.8	
29-Mar-99	-29.1	-25.0	-23.6	-22.7	-21.0	-18.7	-16.1	-15.2	-14.5	-13.5	-12.8	
30-Mar-99	-25.6	-26.2	-23.8	-22.6	-21.0	-18.8	-16.2	-15.3	-14.5	-13.6	-12.9	
06-Apr-99	-18.8	-24.6	-24.4	-22.7	-20.8	-18.8	-16.5	-15.6	-14.9	-14.0	-13.2	
13-Apr-99	-20.1	-23.1	-23.3	-22.3	-20.8	-18.9	-16.7	-15.9	-15.2	-14.3	-13.5	
20-Apr-99	-16.6	-20.7	-21.9	-21.8	-20.6	-18.9	-16.8	-16.1	-15.5	-14.5	-13.7	
26-Apr-99	-16.4	-19.8	-21.2	-21.0	-20.2	-18.8	-17.0	-16.3	-15.6	-14.8	-14.0	-13.3
04-May-99	-14.4	-18.1	-19.9	-20.3	-19.8	-18.7	-17.1	-16.4	-15.8	-15.0	-14.2	-13.6
11-May-99	-8.9	-16.1	-18.6	-19.5	-19.3	-18.5	-17.1	-16.5	-16.0	-15.1	-14.4	-13.8
18-May-99	-6.0	-11.8	-16.1	-18.2	-18.7	-18.2	-17.0	-16.5	-16.0	-15.3	-14.6	-13.9
25-May-99	-5.0	-9.2	-13.6	-16.5	-17.8	-17.7	-16.9	-16.5	-16.1	-15.4	-14.7	-14.1
01-Jun-99	2.4	-6.3	-11.5	-14.9	-16.8	-17.1	-16.7	-16.4	-16.0	-15.4	-14.8	-14.2
08-Jun-99	3.3	-3.3	-9.0	-13.2	-15.6	-16.4	-16.4	-16.2	-15.9	-15.4	-14.8	-14.2
15-Jun-99	7.1	-2.0	-7.2	-11.5	-14.5	-15.7	-16.0	-16.0	-15.7	-15.3	-14.8	-14.3
22-Jun-99	2.4	-0.8	-5.4	-10.1	-13.3	-14.9	-15.6	-15.6	-15.5	-15.2	-14.8	-14.3
29-Jun-99	6.7	1.7	-3.8	-8.3	-11.9	-13.8	-15.0	-15.1	-15.1	-14.9	-14.7	-14.3
05-Jul-99	8.2	4.9	-1.1	-7.3	-11.2	-13.2	-14.6	-14.8	-14.9	-14.8	-14.6	-14.2
13-Jul-99	7.5	5.0	-1.5	-6.4	-10.2	-12.5	-14.0	-12.2	-14.5	-14.5	-14.4	-14.1
20-Jul-99	6.4	3.6	-1.0	-5.6	-9.4	-11.7	-13.5	-13.9	-14.1	-14.2	-14.2	-14.0
27-Jul-99	9.8	4.3	-0.8	-5.0	-8.7	-11.0	-12.9	-13.4	-13.7	-13.9	-14.0	-13.9
03-Aug-99	10.0	5.0	-0.5	-4.6	-8.1	-10.5	-12.4	-12.9	-13.2	-13.6	-13.7	-13.7
10-Aug-99	10.3	4.8	-0.4	-4.2	-7.6	-9.9	-11.9	-12.5	-12.9	-13.3	-13.5	-13.5
17-Aug-99	6.2	4.0	-0.2	-3.9	-7.2	-9.5	-11.5	-12.1	-12.5	-12.9	-13.2	-13.3
24-Aug-99	1.5	1.6	-0.2	-3.6	-6.8	-9.1	-11.1	-11.7	-12.1	-12.6	-12.9	-13.1
31-Aug-99	-0.3	0.2	-0.3	-3.4	-6.5	-8.7	-10.7	-11.4	-11.8	-12.3	-12.7	-12.9
07-Sep-99	0.0	-0.2	-0.4	-3.3	-6.2	-8.4	-10.4	-11.0	-11.5	-12.0	-12.4	-12.7
15-Sep-99	-0.7	-0.3	-0.5	-3.2	-5.9	-8.1	-10.1	-10.7	-11.1	-11.7	-12.2	-12.5
21-Sep-99	-1.3	-0.8	-0.7	-3.1	-5.7	-7.8	-9.8	-10.4	-10.9	-11.5	-12.0	-12.3
28-Sep-99	-1.9	-0.7	-0.9	-3.1	-5.5	-7.6	-9.5	-10.1	-10.6	-11.2	-11.8	-12.1
05-Oct-99	-8.8	-4.1	-1.5	-3.1	-5.4	-7.4	-9.2	-9.9	-10.3	-11.0	-11.5	-11.9
12-Oct-99	-13.0	-6.3	-3.2	-3.5	-5.3	-7.2	-9.0	-9.6	-10.1	-10.8	-11.3	-11.6
19-Oct-99	-15.4	-12.1	-5.8	-4.4	-5.4	-6.9	-8.7	-9.4	-9.9	-10.5	-11.1	-11.5
26-Oct-99	-16.5	-14.2	-8.6	-6.2	-5.8	-7.0	-8.6	-9.2	-9.7	-10.3	-10.9	-11.3
02-Nov-99	-18.4	-16.4	-11.4	-7.8	-6.6	-7.2	-8.5	-9.1	-9.5	-10.2	-10.7	-11.2
09-Nov-99	-25.5	-20.7	-13.2	-9.4	-7.6	-7.5	-8.5	-9.0	-9.4	-10.0	-10.5	-11.0
16-Nov-99	-24.3	-20.6	-14.4	-10.9	-8.7	-8.1	-8.6	-9.4	-9.4	-9.9	-10.5	-10.9
23-Nov-99	-18.2	-19.8	-16.5	-12.3	-9.8	-8.7	-8.8	-9.1	-9.4	-9.9	-10.4	-10.7
30-Nov-99	-24.7	-18.8	-16.0	-13.2	-10.8	-9.4	-9.1	-9.3	-9.5	-9.9	-10.3	-10.7
07-Dec-99	-28.4	-25.4	-18.5	-14.1	-11.5	-10.1	-9.5	-9.5	-9.6	-10.0	-10.3	-10.6
13-Dec-99	-30.3	-27.5	-21.4	-15.9	-12.6	-10.7	-9.9	-9.8	-9.9	-10.1	-10.4	-10.6
22-May-00	-5.2	-11.4	-14.4	-16.8	-18.3	-18.5	-18.0	-17.7	-17.3	-16.5	-15.8	-15.2
29-May-00	1.0	-10.7	-13.6	-15.9	-17.4	-18.0	-17.7	-17.5	-17.1	-16.5	-15.9	-15.2
06-Jun-00	2.7	-7.0	-12.0	-14.9	-16.6	-17.3	-17.4	-17.2	-16.9	-16.4	-15.9	-15.3
16-Jun-00	13.3	-1.0	-7.8	-12.5	-15.3	-16.4	-16.8	-16.8	-16.6	-16.2	-15.8	-15.3
26-Jun-00	13.9	3.3	-3.8	-9.5	-13.4	-15.3	-16.2	-16.3	-16.2	-16.0	-15.7	-15.2
04-Jul-00	7.5	2.3	-2.1	-7.8	-12.0	-14.3	-15.6	-15.9	-15.9	-15.8	-15.5	-15.2
11-Jul-00	7.6	3.5	1.8	-0.9	-2.5	-4.3	-7.8	-10.6	-11.6	-12.3	-13.0	-13.0
18-Jul-00	5.2	3.2	1.6	-0.8	-2.3	-3.9	-7.2	-9.9	-10.9	-11.6	-12.4	-12.5
19-Sep-00	-5.8	-2.2	-1.4	-3.6	-6.2	-8.3	-10.4	-11.0	-11.5	-12.1	-12.6	-12.9
26-Sep-00	-9.7	-4.3	-2.3	-3.8	-6.0	-8.1	-10.1	-10.7	-11.2	-11.9	-12.4	-12.7
10-Oct-00	-9.1	-8.6	-5.4	-5.1	-6.1	-7.8	-9.6	-10.2	-10.7	-11.3	-11.9	-12.3
10-Nov-00	-19.2	-18.2	-13.8	-10.6	-8.9	-8.6	-9.3	-9.7	-10.0	-10.6	-11.1	-11.5
27-Apr-01	-17.9	-20.2	-23.2	-23.8	-22.9	-21.4	-19.3	-18.5	-17.8	-16.8	-15.8	-15.1
22-May-01	-1.9	-11.5	-16.4	-19.3	-20.4	-20.2	-19.2	-18.7	-18.1	-17.3	-16.5	-15.7
18-Jun-01	4.7	-0.5	-6.4	-11.6	-15.3	-17.0	-17.7	-17.7	-17.5	-17.1	-16.6	-16.0
19-Jul-01	17.4	4.8	-1.8	-6.4	-10.3	-12.9	-14.9	-15.4	-15.6	-15.8	-15.8	-15.5
21-Aug-01	2.5	0.0	-0.7	-4.3	-7.7	-10.2	-12.4	-13.0	-13.5	-14.0	-14.4	-14.5
14-Sep-02	2.6	-0.1	-1.2	-4.0	-6.8	-9.1	-11.1	-11.8	-12.3	-13.0	-13.5	-13.8
23-Oct-02	-6.7	-6.6	-6.3	-6.2	-6.7	-8.0	-9.7	-10.3	-10.8	-11.5	-12.1	-12.5
16-Nov-02	-18.7	-16.1	-12.6	-9.8	-8.5	-8.6	-9.6	-10.0	-10.4	-10.9	-11.6	-11.9
18-Dec-02	-21.5	-19.5	-18.6	-16.3	-13.6	-11.7	-10.8	-10.7	-10.8	-10.9	-11.3	-11.6
10-Feb-03	-30.9	-28.8	-25.6	-21.9	-18.5	-16.1	-14.2	-13.6	-13.2	-12.8	-12.5	-12.4
11-Mar-03	-27.7	-29.1	-27.1	-24.7	-21.6	-18.7	-16.2	-15.5	-14.9	-14.1	-13.6	-13.2
17-Apr-03	-22.8	-25.5	-25.4	-24.2	-22.5	-20.6	-18.4	-18.4	-16.8	-15.9	-15.1	-14.5
15-May-03	-8.9	-15.5	-18.0	-19.8	-20.5	-20.0	-18.8	-18.2	-17.6	-16.8	-16.0	-15.3
17-Jun-03	5.3	-2.1	-7.4	-11.8	-15.0	-16.6	-17.3	-17.3	-17.1	-16.8	-16.3	-15.8
18-Jul-03	2.5	0.0	-0.7	-4.3	-7.7	-10.2	-12.4	-13.0	-13.5	-14.0	-14.4	-14.5
25-Aug-03	0.0	-0.2	-1.8	-4.9	-7.9	-10.2	-12.2	-12.9	-13.3	-13.9	-14.2	-14.3
16-Sep-03	0.0	-0.2	-1.9	-4.4	-7.0	-9.1	-11.1	-11.7	-12.2	-12.8	-13.5	-13.6