

APPENDIX G, 2010 Annual Data Report for the Long-Term Permafrost and Groundwater Monitoring Program for the Red Dog Mine

**LONG-TERM PERMAFROST AND GROUNDWATER
MONITORING PROGRAM FOR THE TAILING
IMPOUNDMENT
2010 ANNUAL REPORT
Red Dog Mine, Alaska**

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LONG-TERM PERFROST AND GROUNDWATER MONITORING PROGRAM

2010 Annual Report Red Dog Mine

1.0 INTRODUCTION

This 2010 Annual Report for the Long-Term Permafrost and Groundwater Monitoring Program (Monitoring Program) for the Tailing Impoundment was prepared by AMEC Geomatrix, Inc. for Teck Alaska, Incorporated (Teck). This report represents the ongoing annual reporting of data collection activities associated with the Monitoring Program performed as part of the Groundwater Supplemental Environmental Project (SEP) for the Red Dog Mine. Activities associated with the Groundwater SEP are outlined in Appendix B (Groundwater Monitoring Statement of Work [SOW]) of the Consent Decree between Cominco Alaska Incorporated (now Teck) and the United States Environmental Protection Agency (EPA), entered on November 25, 1997 (U.S. v. Cominco Alaska Incorporated, Civil Action A97-267CV).

This Annual Report has been developed in accordance with the Long-Term Permafrost and Groundwater Monitoring Plan (Monitoring Plan) for the Tailing Impoundment (WMCI, 2001a), as approved by EPA on January 11, 2002. Minor modifications to the original Monitoring Plan were proposed in the Five-Year Permafrost and Groundwater Analysis Report (Geomatrix, 2007). The Monitoring Plan and the Analysis Report describe development of the Monitoring Program for the site. This Annual Report includes a summary of data collection and management activities for 2010, along with all data collected from site thermistors and piezometers associated with the Monitoring Program. Graphs showing long-term trends in subsurface temperatures and water levels are also provided.

1.1 SITE BACKGROUND

The Red Dog Mine is located in northwestern Alaska near the southwestern end of the DeLong Mountains of the Western Brooks Range. The Red Dog Mine consists of an open pit mine for the extraction of metal-bearing ore, an ore milling and concentration facility, and an approximately 300 acre tailing impoundment that receives mine drainage from the open pit area and other areas of mining activity, as well as natural surface runoff from precipitation, and process waters from the milling operation. The general location of the mine is shown on Figures 1.1 and 1.2. A general layout of site facilities is shown on Figure 1.3.

The tailing impoundment was recognized as having the potential to affect both permafrost and groundwater in one or more adjacent drainages. The Groundwater SEP was included as a

key component of the Consent Decree, and was intended to provide for development and installation of a system to monitor and predict certain specific potential effects of the tailing impoundment on permafrost and groundwater in the area of influence. Because of the important relationship between the presence of permafrost and the groundwater flow regime, the SEP included both permafrost and groundwater parameters.

1.2 GROUNDWATER SEP

The development of the groundwater monitoring system as part of the Groundwater SEP was accomplished through a three-phase iterative process (as set forth in Appendix B of the Consent Decree) that included the following:

- development and installation of a groundwater monitoring system that meets all performance standards set forth in Section III of Appendix B of the Consent Decree,
- development of a long-term groundwater monitoring plan that meets the requirements set forth in Section IV.C of Appendix B of the Consent Decree, and
- development of a long-term operation and maintenance plan that will assure the continued effectiveness of the groundwater monitoring system.

The groundwater SEP was performed in three phases, as follows:

Phase I - Preliminary hydrogeologic and permafrost characterization. This phase was completed between 1995 and 1997, and included installation of 26 thermistors and 17 shallow and deep piezometers. Results provided for a basic understanding of permafrost and groundwater flow conditions at the site (WMCI, 1997).

Phase II - Detailed assessment of permafrost conditions and the hydraulic integrity of the tailing impoundment. This Phase was completed between 1997 and 1999, and included installation of 8 additional thermistors and 27 additional piezometers. Results included a detailed thermal model of the permafrost and a general conceptualization of both shallow and subpermafrost groundwater flow (WMCI, 1999).

Phase III - Investigations to supplement Phase II results and to provide data for subsequent specification of a long-term permafrost and groundwater monitoring program for the tailing impoundment. This Phase was completed between 1999 and 2001, and included installation of one replacement piezometer and 6 temporary piezometers within the tailing material. Results included a detailed conceptual model of subpermafrost groundwater conditions, along with a detailed understanding of potential vertical flow from the impoundment (WMCI, 2001b).

Results of the SEP were used to develop a detailed understanding of permafrost and groundwater conditions in the vicinity of the tailing impoundment. A detailed discussion of these results can be found in the Phase I, II, and III Reports, and the Long-Term Permafrost and Groundwater Monitoring Plan (WMCI, 2001a).

In addition to the detailed findings of the original SEP Phase Reports, an analysis of the first five years of permafrost and groundwater data was completed in 2007 (Geomatrix, 2007). Results from the five-year analysis showed some minor changes to trends in subsurface temperatures and groundwater levels from those originally identified. As such minor modifications to the monitoring program were proposed in the Five-Year Analysis Report. These include:

- A change of focus in monitoring of the overburden stockpile in the vicinity of the newly installed back dam. Ongoing monitoring will focus on the influence of the back dam on the subsurface thermal and groundwater regime in the vicinity of the dam.
- Minor modifications to the list of thermistors monitored as part of the SEP program based on physical changes to the main dam and tailing pond areas.
- Testing of thermistor instrumentation to improve readings from the aging equipment and evaluating the need for instrumentation replacement.

1.2 KEY ELEMENTS OF THE MONITORING PROGRAM

The Monitoring Program has been developed and updated based on both original and ongoing SEP results, and consists of the following:

- quarterly monitoring of 15 key background and dam area thermistors to assess currently observed trends in temperature changes in the permafrost;
- quarterly monitoring of 8 key background and dam area piezometers to assess currently observed water levels and gradients;
- ongoing data handling and management;
- an annual data report to the EPA; and
- a detailed assessment of subsurface trends and conditions every five years, including an evaluation of the requirement to update the thermal and numerical flow model developed as part of the SEP.

The 2010 Annual Report represents ongoing annual data reporting required under the Monitoring Program, based on EPA's approval of the Long-Term Permafrost and Groundwater Monitoring Plan in January 2002. Section 2 of this Report presents the general data collection objectives of the Monitoring Program and a summary of data collection activities performed during 2010. A summary of data management activities is provided in Section 3, while a discussion of data Quality Assurance and Quality Control (QA/QC) and system operations and maintenance is provided in Section 4

2.0 2010 DATA COLLECTION

This section presents a summary of general data objectives and 2010 data collection activities. Objectives of the monitoring program have been discussed in detail in the Monitoring Plan (WMC, 2001a) and in the Five-Year Analysis Report (Geomatrix, 2007).

2.1 PERMAFROST AND SUBSURFACE TEMPERATURE MONITORING

Thermal modeling of the tailing impoundment performed during Phase II of the SEP indicated that both long-term climatic changes and thermal impacts from the tailing pond have an effect on observed subsurface temperatures. Specifically, temperatures at depth have been increasing significantly over the period of record, both within background permafrost and in the zone beneath the impoundment where permafrost is absent. However, ongoing assessments discussed in the Five-Year Analysis Report have shown some cooling of shallow subsurface temperatures both in background and facility-related thermistors. Therefore, long-term monitoring of subsurface temperatures is focused on collecting data sufficient to allow a continuing assessment of these observed trends.

2.1.1 General Data Objectives

Key findings from the SEP were used as a basis for identifying the general objectives associated with long-term monitoring of subsurface temperatures. These general data objectives can be summarized as follows:

Background areas

The original SEP analysis showed areas outside the thermal impact of the impoundment showed a strong warming trend at depth. However, more recent data assessed in the Five-Year Analysis report showed that while the warming trend is continuing in some areas, a slowing of the warming trend and a general cooling trend is evident in a few of the background borings. Both trends are evident throughout Alaska (Geomatrix, 2007). The general objective of long-term monitoring of background permafrost conditions is to continue to follow the observed trends, and to periodically assess whether any observed warming of the permafrost could have an impact on seepage from the tailing impoundment.

Tailing dam and absent permafrost zone

Areas directly beneath the dam, along the original stream course of the South Fork of Red Dog Creek, showed higher pre-mining permafrost temperatures as a result of the natural flow of the creek (Phase II Report, WMCI, 1999). However, subsurface temperatures in this area have also been impacted by the relatively warm waters within the impoundment. The waters

within the impoundment were found to average approximately 5 °C warmer than the background air temperature. Therefore, subsurface temperatures directly beneath the dam were measured as warming at a faster rate than those in background areas. This warming has resulted in a zone where permafrost is absent beneath the impoundment. However, recent monitoring has shown some evidence of cooling of subsurface temperatures similar to trends observed in background thermistors. The general objective of long-term monitoring of subsurface temperatures in the tailing dam area is to continue to follow the observed trends in temperature, and to periodically assess the extent of the zone of absent permafrost beneath the dam.

Overburden stockpile

Temperature data within the overburden stockpile show that permafrost has aggraded into the fill material, potentially resulting in a shallow flow divide between the impoundment and the Bons Creek drainage. As noted in the Five-Year Analysis Report, a dam (known as the back dam) is currently under construction at the toe of the overburden stockpile to prevent any flow from the impoundment into the Bons Creek drainage. Therefore, the general objective of long-term monitoring within the overburden stockpile and near the back dam is to monitor any changes in conditions in this area and to assess any impacts to the subsurface thermal regime from back dam construction and operation.

2.1.2 2010 Thermistor Data Collection

Table 2.1 presents a summary of data collection from the 12 original SEP and 3 replacement thermistors that are monitored quarterly as part of the Monitoring Program. Locations of the thermistors are shown on Figure 2.1. Three thermistors that were originally part of the monitoring program have been lost and have been replaced (as discussed in Geomatrix 2007). Thermistor T-95-004 was lost due to dam construction activities, and has been replaced with T-05-061. Thermistor T-95-007 has been flooded by the pond due to rising water levels, and has been replaced by T-95-009. Thermistor T-96-020 was lost during construction of a raise to the tailing dam in 2005, and has been replaced by T-97-028. Thermistor readings were collected by Teck personnel during February, May, August, and November, 2010.

All thermistor data were transmitted to AMEC Geomatrix for entry into the site database. All data collected from the site thermistors are provided in Appendix A. Thermistor data collected during 2010 have been uploaded to the site database as described in Section 3. Updated temperature trend graphs for each thermistor are provided in Appendix B.

No significant changes in observed subsurface temperature trends were noted in 2010. An assessment of ongoing trends in subsurface temperatures will be provided in the next five-year analysis report.

2.2 GROUNDWATER LEVEL MONITORING

Data and analyses developed as part of the SEP have demonstrated that virtually all shallow flow originating from the tailing impoundment is collected within the dam seepage collection system, and that no vertical flow is occurring between the impoundment and the subpermafrost system. Assessments made as part of the Five-Year Analysis indicated that this continues to be the case. Because ongoing analysis does not indicate that any seepage pathways exist from the tailing impoundment, groundwater monitoring is not based on seepage pathways, but rather on assessing any changes over time from observed conditions. The focus of monitoring of the groundwater system is therefore based on monitoring water level changes over time as a means to assess potential changes from current conditions.

2.2.1 General Data Objectives

Key findings from the SEP were used as a basis for identifying the general objectives associated with long-term monitoring of groundwater levels. These general data objectives can be summarized as follows:

Background active layer groundwater flow

Analyses presented in the Phase II report (WMCI, 1999) showed that no significant active layer flow is occurring in areas away from the impoundment. Therefore, no long-term monitoring has been proposed for the active layer away from the dam area.

Active layer groundwater flow within the dam area

Shallow groundwater flow in the dam area is dominated by the seepage collection system, including the dam underdrain, the seepage pond, and the seepage collection dam. Current groundwater elevations show that the dam underdrain is collecting all waters seeping from the impoundment. This is based on data that shows upward vertical gradients within the underdrain, the elevation of the collection wells versus the seepage pond elevation, and the elevation of shallow groundwater within the seepage dam fill. The general objective of long-term monitoring of shallow flow within the tailing dam area is to chart water level changes over time to assess whether any changes occur in the relative horizontal and vertical flow gradients within the system.

Background subpermafrost groundwater system

The subpermafrost groundwater system is basically a no-flow system, with groundwater held in a tightly confined condition within horizontally and vertically isolated fractures. The confined nature of the system shows the condition of high tidal efficiency, where any variation in surface loading is transmitted to the groundwater within the system, resulting in an instantaneous and complete water level response to the surface load.

This unique aquifer mechanism results in a condition where an isolated flow system that does not receive recharge still has relatively large water level fluctuations. These water level fluctuations can be correlated to specific surface loading changes, as described in the Phase III Report (WMCI, 2001b). The general objective of monitoring background water level conditions within the subpermafrost is to chart water level fluctuations over time to assess the correlation with surface loading conditions, or to note if there are any changes to this condition.

Subpermafrost groundwater beneath the dam area

Subpermafrost groundwater conditions beneath the dam are the same as those noted for background conditions, with isolated groundwater within a tidally efficient aquifer system. However, key vertical and horizontal gradients are noted in the dam area that provide confirmation that no vertical flow is occurring from the impoundment into deep groundwater, even though there is a zone where permafrost is absent. The general objective of monitoring subpermafrost groundwater levels beneath the dam is to chart water level fluctuations and horizontal and vertical gradients both within the subpermafrost system and between shallow and deep groundwater. These data will be used to assess correlations of water levels with surface loading conditions, continued hydraulic gradient directions, and to note any changes to conditions beneath the dam.

2.2.2 2010 Piezometer Data Collection

Table 2.2 presents a summary of data collection from 9 of the original 10 piezometers monitored quarterly as part of the Monitoring Program. Piezometer P-99-007R was covered by rising water levels in the tailing pond in late 2008. Subpermafrost groundwater levels near the tailing pond are collected in P-96-010 and P-97-020, and thus no changes to the monitoring program are considered warranted. Locations of the piezometers are shown on Figure 2.1. Piezometer readings were collected by Teck personnel during February, May, August, and November, 2010.

All piezometer data were transmitted to AMEC Geomatrix for entry into the site database. All data collected from the site piezometers are provided in Appendix A. Piezometer data

collected during 2010 have been uploaded to the site database as described in Section 3. Updated hydrographs for each piezometer are provided in Appendix C.

No significant changes in observed water level trends were noted in 2010. An assessment of ongoing trends in dam area and subpermafrost groundwater levels will be provided in the next five-year analysis report.

3.0 DATA MANAGEMENT

All thermistor and piezometer data collected at the mine by Teck personnel are transmitted to AMEC Geomatrix for entry into the site database. The site database was developed using Microsoft Access software and Visual Basic to provide for automatic generation of basic graphs. The database is available electronically upon request. The current version of the database is based on Access 2002.

Resistance measurements from site thermistors are provided to AMEC Geomatrix electronically via email as files directly downloaded using the T5KMUK Automated Thermistor String Reader provided by Dryden Instrumentation. These data are collected in accordance with the Data Management Plan and the Standard Operating Procedures outlined in the Monitoring Plan (WMCI, 2001a). Printouts of the data are provided in Appendix A. These data are reviewed for completeness, and then reformatted for upload to the Access database. Readings that are clearly not representative of true measurements (such as negative readings or erroneous large values) are deleted prior to uploading.

Vibrating wire readings from piezometers are provided to AMEC Geomatrix electronically via email as files developed during data collection. Readings of digits and conversion temperatures are included in the files. Printouts of these files are provided in Appendix A. Readings from the barometric transducer located within the dam are also provided. Data from vibrating wire transducers are reformatted for upload to the Access database. Any missing or potentially erroneous data are identified prior to upload. A complete discussion of vibrating wire data conversion is included in the Monitoring Plan.

Depth to water measurements from open boreholes were noted on field data sheets by Teck personnel. These datasheets were then faxed to AMEC Geomatrix, and these data were hand typed into the database. Field datasheets for 2010 data collection are included in Appendix A.

4.0 DATA QUALITY ASSURANCE/QUALITY CONTROL AND SYSTEM OPERATION AND MAINTENANCE

This section describes QA/QC measurements and system operation and maintenance for 2010.

4.1 DATA QA/QC

General QA/QC measurements for the Monitoring Program are described in the Section 3.0 of the Monitoring Plan (WMCI, 2001). In general, periodic duplicate measurements of thermistor resistances and piezometer readings are made to ensure that similar data are collected using different equipment (thermistors) or by different operators of the same equipment (piezometers and thermistors). Procedures have been developed to ensure appropriate collection of QA/QC measurements from thermistors and piezometers included in the Monitoring Program. To date, duplicate measurements have been made on both installations used for the Monitoring Program and for other installations monitored as part of mine operations.

4.1.1 Thermistor QA/QC Data

QA/QC measurements from thermistors consist of duplicate measurements using the T5KMUK datalogger system to ensure readings are repeatable, and by using the Dryden Switchbox/Fluke Multimeter system (single, hand measurements) to compare with the automated datalogger system. Thermistors QA/QC readings were generally collected quarterly, and are summarized on Table 4.1.

4.1.2 Piezometer QA/QC Data

QA/QC measurements from piezometers consist of duplicate measurements by different operators of vibrating wire transducer readings using the GEOKON readout box, and depth to water measurements using the manual water level indicator. Duplicate readings from the transducers are included both on field data sheets and in the electronic files provided to AMEC Geomatrix from the mine. Duplicate measurements collected during 2010 are summarized on Table 4.2. Duplicate measurements collected from both transducers and depth to water measurements were essentially the same as the original measurement in all instances. Note that SPP-97-002 is the only piezometer requiring depth to water measurement, and thus all duplicate depth to water measurements were taken from this piezometer.

In addition to duplicate readings, many of the dam area piezometers included in the Monitoring Program are also monitored monthly as part of mine operations. Monthly data provides for additional measurements over the required quarterly data. These data provide for additional QA/QC checks on equipment and measurements, and have been reviewed as part of ongoing data collection activities.

4.2 SYSTEM OPERATION AND MAINTENANCE

A key consideration in ongoing operation of the permafrost and groundwater monitoring system is the use of a consistent data collection methodology and periodic equipment checks. During 2010, all data were collected according to the procedures set forth in the Monitoring Plan (WMCI, 2001a).

4.2.1 Thermistor Maintenance

The current system used for reading thermistor resistances consists of the following:

- Juniper Systems Pro2000 handheld computer, including CA-2009 serial Pro2000 to PC cable, and PW-110T charger.
- Dryden Instrumentation T5KMUK analog to digital converter and multiplexor.
- Program diskette with executable and configuration files.

This equipment is checked for proper functioning prior to each use. During 2010, no significant equipment failures or malfunctions were noted with the data recording devices.

4.2.1 Piezometer Maintenance

Vibrating wire transducers are read using a GEOKON GK-403 Readout instrument. The instrument is checked prior to each use, and no functioning or maintenance issues were noted in 2010. All transducers set in piezometers appear to be functioning well, and no data deficiencies were noted.

5.0 REFERENCES

Water Management Consultants, Inc. (WMCI). 1997. Results of the Phase I Hydrologic Characterization of the Tailing Impoundment. March, 1997

Water Management Consultants, Inc. (WMCI). 1999. Results of the Phase II Hydrologic Characterization of the Tailing Impoundment. March, 1999

Water Management Consultants, Inc. (WMCI). 2001a. Red Dog Mine – Long-Term Permafrost and Groundwater Monitoring Plan for the Tailing Impoundment. March, 2001

Water Management Consultants, Inc. (WMCI). 2001b. Results of the Phase III Hydrologic Characterization of the Tailing Impoundment. March, 2001

Geomatrix Consultants, Inc. (Geomatrix), 2007, Five-Year Permafrost and Groundwater Data Analysis Report for the Long-Term Permafrost and Groundwater Monitoring Program, April, 2007.

TABLES

TABLE 2.1
SUMMARY OF THERMISTOR DATA COLLECTION DURING 2010

Thermistor	General Location	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
T-96-015	Red Dog Creek	2/20/2010	5/04/2010	8/15/2010	11/08/2010
T-05-061*	Dam area	2/09/2010	5/17/2010	8/14/2010	11/11/2010
T-95-005	Dam area	2/20/2010	5/03/2010	8/15/2010	NM
T-96-010	Dam area	2/09/2010	5/03/2010	8/15/2010	11/12/2010
T-97-028*	Dam area	2/20/2010	5/03/2010	8/14/2010	11/12/2010
T-97-029	Dam area	2/20/2010	5/03/2010	8/14/2010	11/12/2010
T-97-030	Dam area	2/20/2010	5/03/2010	8/14/2010	11/12/2010
T-95-009*	Tailing Impoundment	2/09/2010	5/12/2010	8/14/2010	11/11/2010
T-95-008	Overburden Stockpile	2/09/2010	5/03/2010	8/14/2010	11/08/2010
T-96-013	Overburden Stockpile	2/09/2010	5/03/2010	8/14/2010	11/08/2010
T-96-021	Overburden Stockpile	2/20/2010	5/03/2010	8/14/2010	11/08/2010
T-96-022	Overburden Stockpile	2/20/2010	5/03/2010	8/14/2010	11/08/2010
T-96-023	Overburden Stockpile	2/20/2010	5/03/2010	8/14/2010	11/08/2010
T-96-012	Bons Creek	2/19/2010	5/03/2010	8/14/2010	11/08/2010
T-96-012S	Bons Creek	2/19/2010	5/03/2010	8/14/2010	NM

NM = Not Measured – Thermistor not measured due to access issues

* = Alternative Monitoring Locations from Geomatrix, 2007

TABLE 2.2
SUMMARY OF PIEZOMETER DATA COLLECTION DURING 2010

Piezometer	General Location	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
P-96-015	Red Dog Creek	2/20/2010	5/12/2010	NM	11/08/2010
P-08A	Dam Area	2/09/2010	5/03/2010	8/14/2010	11/11/2010
P-08B	Dam Area	2/09/2010	5/16/2010	8/14/2010	11/11/2010
P-96-010	Dam Area	2/20/2010	5/03/2010	8/15/2010	11/12/2010
P-97-020	Dam Area	2/09/2010	5/03/2010	8/14/2010	11/12/2010
P-97-028	Dam Area	2/09/2010	5/03/2010	8/14/2010	11/08/2010
SPP-97-002	Dam Area	2/23/2010	5/13/2010	8/15/2010	11/11/2010
P-96-013	Overburden Stockpile	2/20/2010	5/03/2010	8/15/2010	11/08/2010
P-97-012	Bons Creek	2/20/2010	NM	8/14/2010	11/08/2010

NM = Not Measured due to access issues

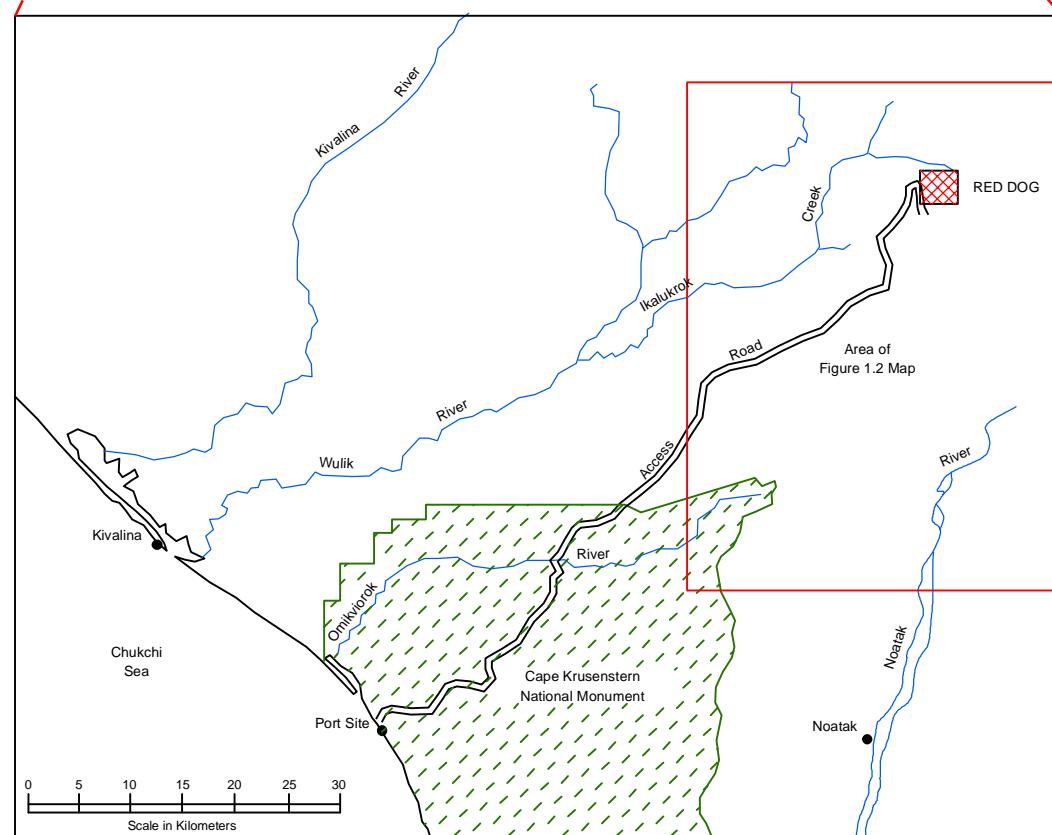
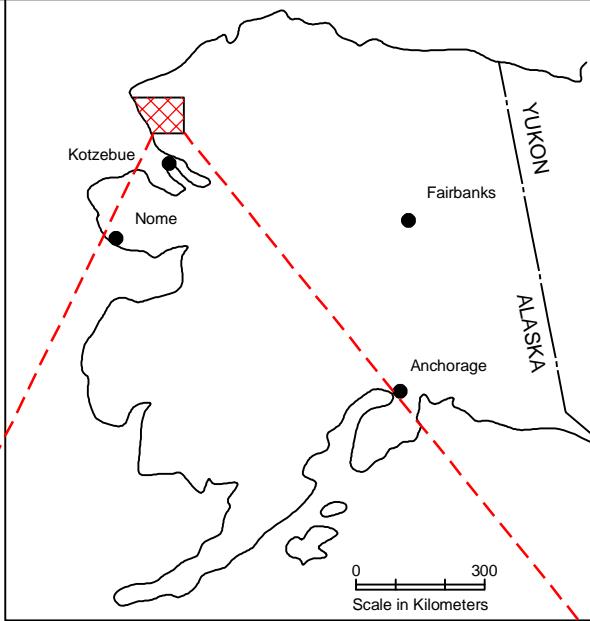
TABLE 4.1
SUMMARY OF THERMISTOR QA/QC DATA COLLECTION DURING 2010

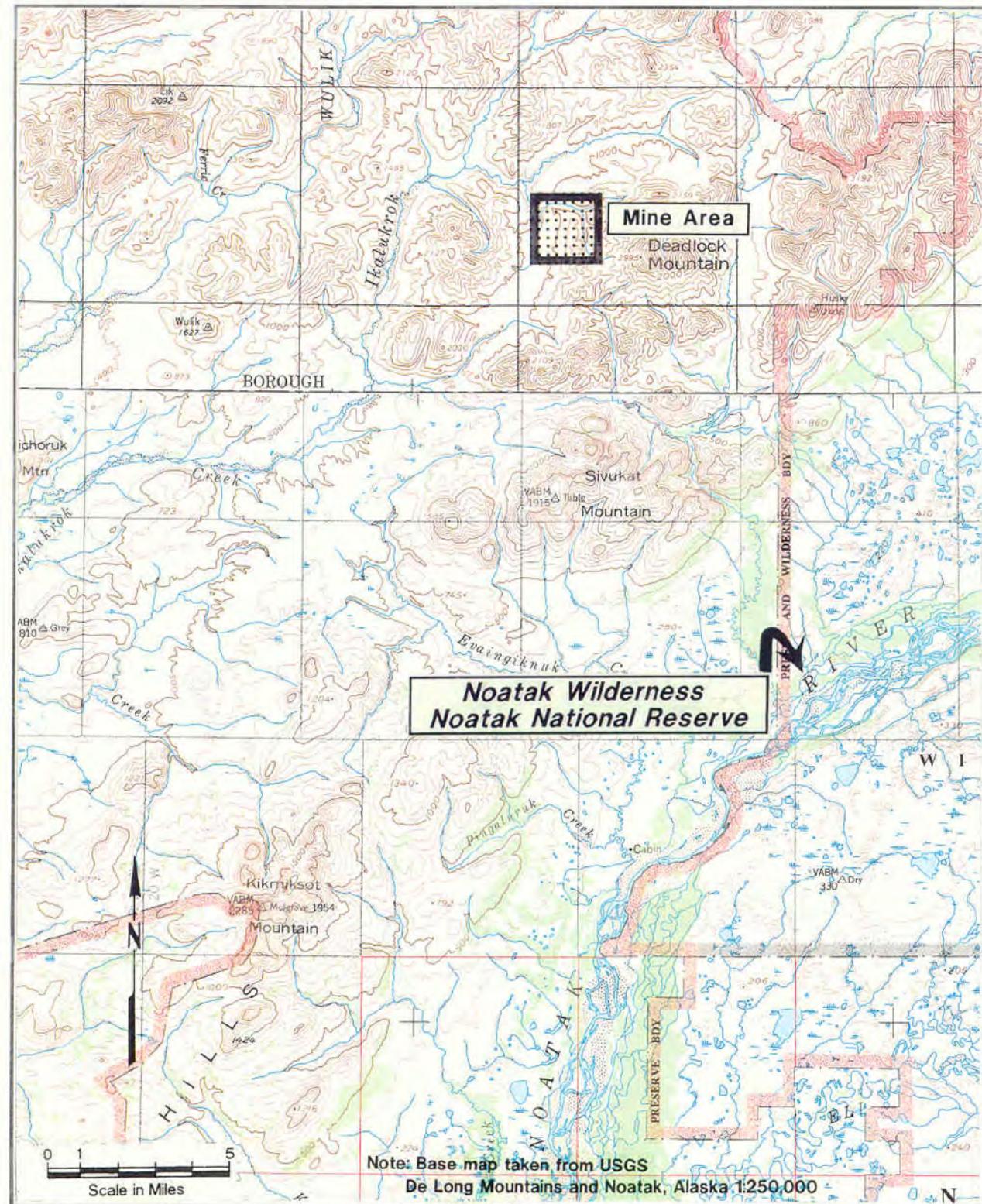
Thermistor	Date	QA/QC Reading Type
T-96-015	2/20/2010	Hand held reading
T-95-008	2/19/2010	Duplicate automatic reading
T-05-061	5/17/2010	Hand held reading
T-95-008	8/14/2010	Hand held reading
T-96-012	8/14/2010	Duplicate automatic reading

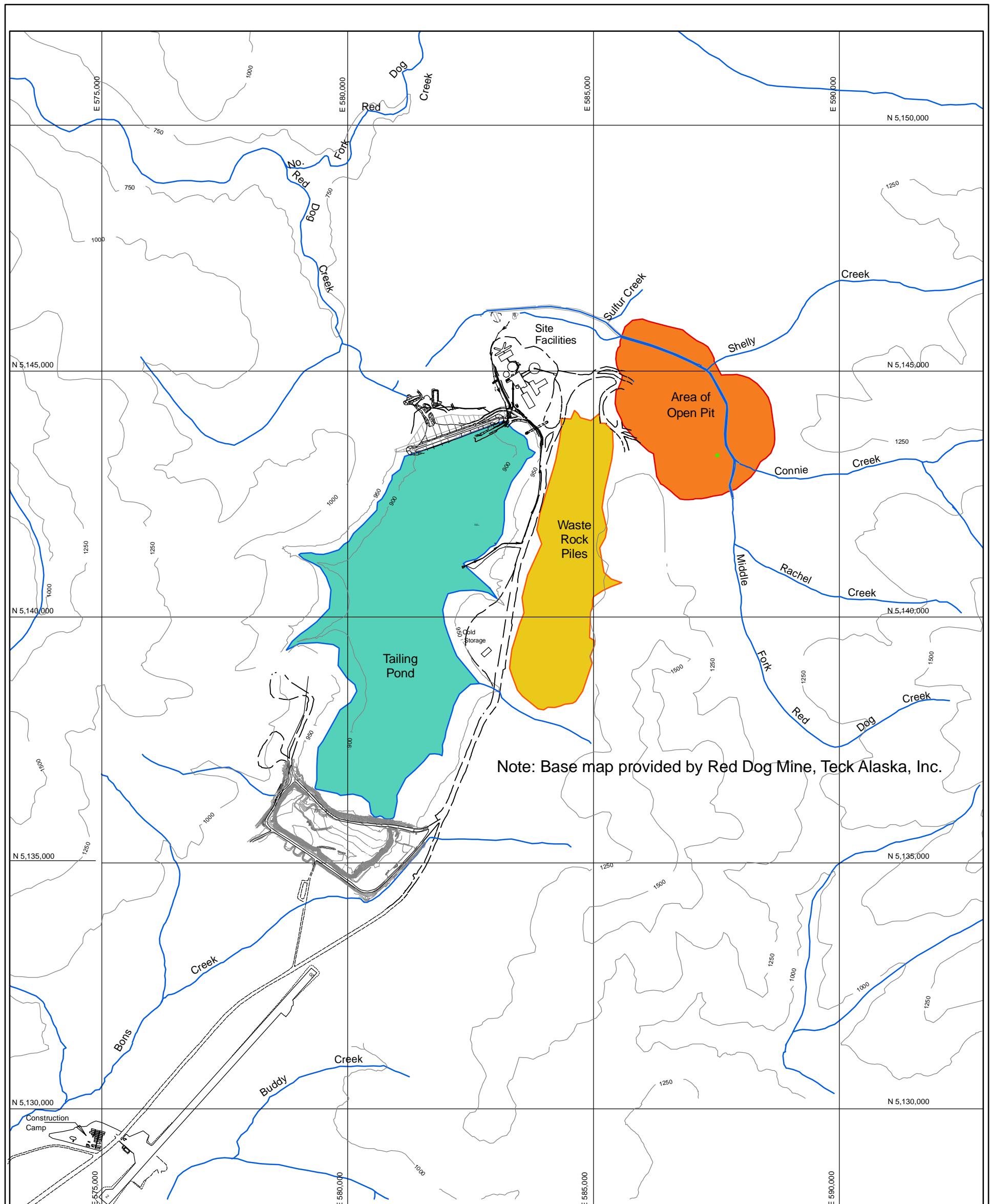
TABLE 4.2
SUMMARY OF PIEZOMETER QA/QC DATA COLLECTION DURING 2010

Piezometer	Date	QA/QC Reading Type
SPP-97-002	2/23/2010	Duplicate hand measurement
P-08B	5/16/2010	Duplicate automatic reading
SPP-97-002	5/13/2010	Duplicate hand measurement
SPP-97-002	8/15/2010	Duplicate hand measurement
SPP-97-002	11/11/2010	Duplicate hand measurement

FIGURES







LAYOUT OF SITE FACILITIES
Red Dog Mine
Alaska

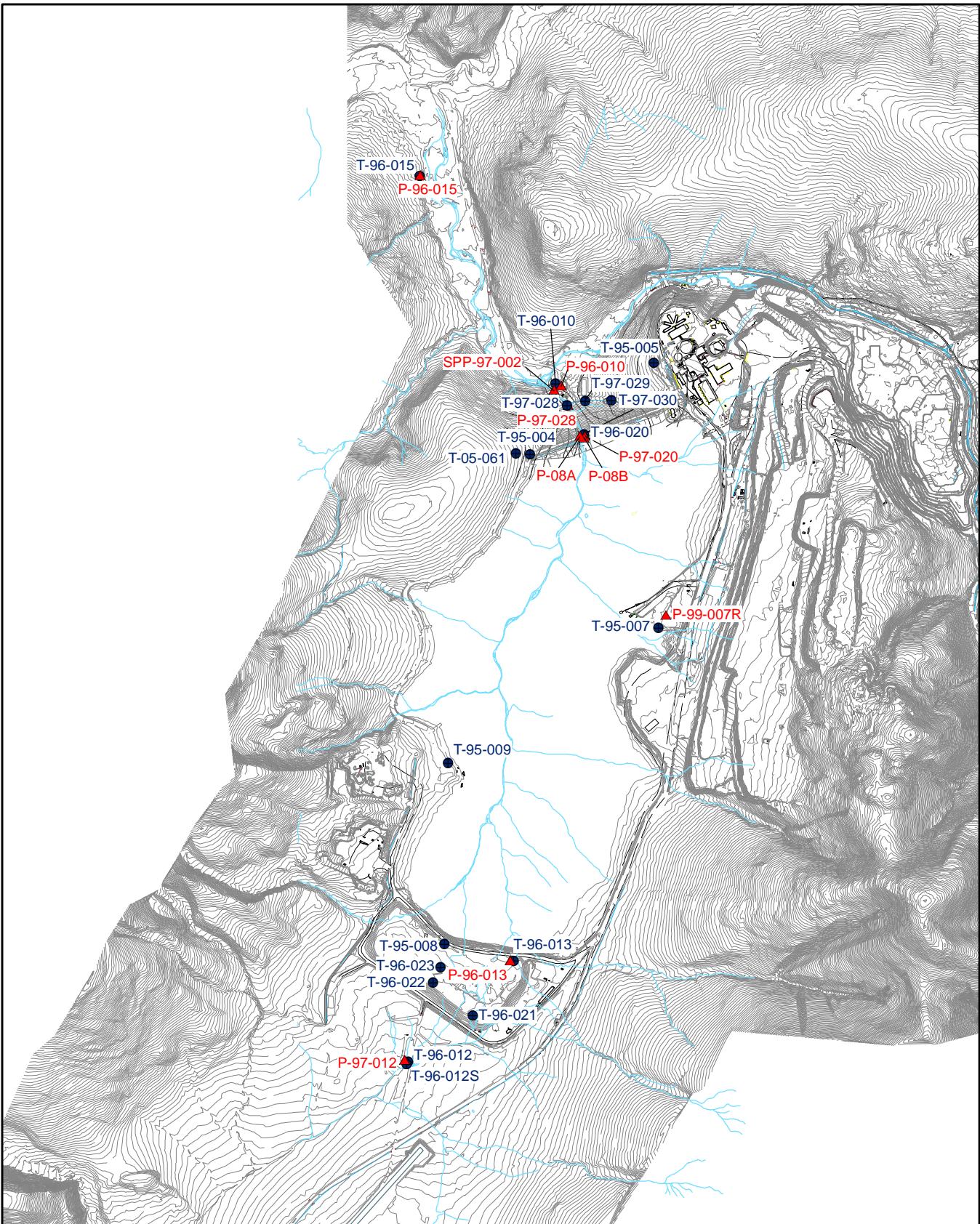


Project No.
7753

Figure
1.3

0 1000 2000
Scale in Feet

Note: Base map provided by Red Dog Mine, Teck Alaska, Inc.



Explanation

- T-95-004**
● Long-term thermistor monitoring location
- P-97-020**
▲ Long-term piezometer monitoring location



500 0 500 1,000 1,500 2,000
Feet

LONG-TERM THERMISTOR AND PIEZOMETER LOCATIONS

Red Dog Mine
Alaska



Project No.
7753

Figure
2.1

Note: Base map provided by Red Dog Mine, Teck Alaska, Inc.

APPENDIX A

2010 Thermistor and Piezometer Data

Quarterly Thermistor Readings

File Name (TM mm dd yy): 020326 20100208

Read By: DJS

Date: 2-9-10

Well	Location	# of nodes	Comments	Time
FWDAM - T1	Fresh Water Dam	12	Reread	11:45
FWDAM - T3	Fresh Water Dam	15		
FWDAM - T4	Fresh Water Dam	17		
FWDAM - T5	Fresh Water Dam	12		
FWDAM - T6	Fresh Water Dam	12		
FWDAM - T7	Fresh Water Dam	11		
* T95 - 9	Landfill Site	24		14:23
* T95-07	Landfill Site	24	reread 95-9S	14:24
* T-95-008	Overburden Dump	24	Reread 2/19	14:50
* T96 - 12	Overburden Dump	24	Reread 2/19	14:58
* T96 - 12s	Overburden Dump	24	Reread 2/19	14:57
* T-96-013	Overburden Dump	24	reread	14:11
T-96-013S	Overburden Dump	24	" "	14:09
* T-96-021	Overburden Dump	24	reread 2/20	15:47
* T-96-022	Overburden Dump	24	reread 2/20	15:49
* T-96-023	Overburden Dump	24	reread 2/20	15:51
T-96-024	Overburden Dump	24	reread 2/20	15:53
T 06 - 69	Back Dam	11	reread 2/20	16:00
T98 - 33	MM Laydown Yard	10	Reread	14:42
T98 - 34	MM Laydown Yard	7	Reread 2/19	14:38
T98 - 35	MM Laydown Yard	7	Reread 2/19	14:35

Well	Location	Depth to H20	Comments	Time
SPP97 - 1	Seepage Pond	19.00	2/23	10:15
* SPP97 - 2	Seepage Pond	21.5		15:44
SPP97 - 2	Seepage Pond	21.5		15:43

Measure to top of steel casing to 0.01' precision. Take QA/QC reading within 5 minutes of first reading with a different operator. QA/QC reading is only required once per year.
Do it in July.

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

teckcominco

Quarterly Thermistor Readings

File Name (TM mm dd yy): _____

Read By: _____ Date: _____

Well	Location	# of nodes	Comments	Time
TDAM - T1 (TT - 1)	Tailings Dam	12	Reread 2/19	15:32
TDAM - T2 (TT - 2)	Tailings Dam	18		
TDAM - T3 (TT - 3)	Tailings Dam	16		
TDAM - T4 (TT - 4)	Tailings Dam	14		
TDAM - T5 (TT - 5)	Tailings Dam	17	↓	↓
TDAM - T7 (TT - 7)	Seep Dam / Gray Box	15	good	15:39
TDAM - T8 (TT - 8)	Tailings Dam	17	Reread 2/19	15:33
TDAM - T14 (TT - 14)	Tailings Dam	14		
TDAM - T15 (TT - 15)	Tailings Dam	13		
* T-05-61	Tailings Dam	6	↓	↓
* T95 - 4	Tailings Dam	24	Reread	16:35
* T95 - 5	Tailings Dam	24	Reread 2/20	9:55
* T96 - 10	Tailings Dam	24	Reread	15:50
* T97 - 28	Tailings Dam	24	Reread 2/20	14:00
* T97 - 29	Tailings Dam	24	Reread 2/20	9:32
* T97 - 30	Tailings Dam	24	Reread 2/20	9:44
T05 - 61	Tailings Dam	6	Reread	14:55
T05 - 63	East of Pond	8	Reread 2/20	9:18
T05 - 64	East of Pond	7	Reread	16:44
T05 - 65	East of Pond	8	# reread 2/20	16:30
T05 - 66	East of Pond	8		16:48
T05 - 67	East of Pond	8	Reread 2/20	9:03
-T05 - 68	East of Pond	8	Removed 2/20	
T05 - 62	Bottom of Dam	10	Reread	16:33
RDDAM - T1	Red Dog Creek Dam	10	Reread	16:14
RDDAM - T2	Red Dog Creek Dam	11	" "	16:14
RDDAM - T3	Red Dog Creek Dam	11	" "	16:16
* T96 - 15	Lower Red Dog Creek	14	Reread 2/20	16:15

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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Quarterly Piezometer Readings

Box #: _____

Row #: 10

Read By: D S AW

Date: 2/20/10

Col.	Well	Location	Reading	Comments	Time
1	Barometric transducer	Box above Seep Dam	4711.3		15:58
30	P1	Red Dog Creek Dam	8794.4	Row 11	2/20 14:20
31	P2	Red Dog Creek Dam	9740.6		
32	P3	Red Dog Creek Dam	9306.6		
33	P4	Red Dog Creek Dam	9321.1		
34	P5	Red Dog Creek Dam	9547.4		
35	P6	Red Dog Creek Dam	9507.7		
36	P7	Red Dog Creek Dam	9156.4	↓	↓
5	* P - 08A	Box above Seep Dam	8723.9		14:40
6	* P - 08B	Box above Seep Dam	8553.1		14:41
7	P - 09A	Box above Seep Dam	8728.7		15:58
8	P - 09B	Box above Seep Dam	8398.5		
9	P - 10A	Box above Seep Dam	8868.3		
10	P - 10B	Box above Seep Dam	8395.3	No Reading	↓
17	* P97 - 28	Box above Seep Dam	7466.8		15:59
18	P97 - 29	Box above Seep Dam	8691.4		
19	P97 - 30	Box above Seep Dam	4999.9	No Reading	↓
20	P97 - 31	Box above Seep Dam	10777.4		
15	P - 14A	W. Tailings Dam	8579		15:03
71	P06 - 74	W. Tailings Dam	8563.1		14:59
59	P05 - 62	Bottom of Dam	8075.4		16:32
60	P05 - 63	East of Pond	8795.2	2/20	9:19
62	P05 - 65	East of Pond	8559.7	2/20 23	8:41
64	P05 - 67	East of Pond	8515.1	2/20	9:05
65	P05 - 68	East of Pond		Removed	
66	P05 - 69	East of Pond	8835.2	2/20	9:35
21	* P96 - 10	Tailings Dam	8470.8		15:43
22	* P97 - 20	Tailings Dam	7435.1		14:45
23	* P96 - 15	Lower Red Dog Creek	7559.7	2/20	16:05
24	* P97 - 12	Overburden Dump	6267.2		13:57
25	* P96 - 13	Overburden Dump	6883.7		14:02
26	* P99-7 R	Landfill Site		Buried	

Select one of the SEP (*) piezometers to do the duplicate reading. Do not enter into Geokon as that will overwrite the first reading. Record the reading above. Read the Barometric Transducer every day readings are taken.

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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Quarterly Thermistor QA / QC

Location: T96-15

Date: 2/20/2010

Technician: AW Start Time: 16:15 Stop Time: 16:18

Node	Ohms	Comments
Test		
1	16.34	
2	17.29	
3	17.07	
4	17.01	
5	16.99	
6	16.9	
7	16.81	
8	16.79	
9	16.68	
10	16.62	
11	16.60	
12	16.50	
13	16.44	
14	16.38	
15	16.31	
16	n/a	
17	n/a	
18	n/a	
19	n/a	
20	n/a	
21	n/a	
22	n/a	
23	n/a	
24	n/a	
Test	16.34	

Node	Temperature	Read these locations on noted month.
Test		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Test		

Month	Location
Nov-08	T 95-8
Dec-08	T 96-21
Jan-09	T 96-12
Feb-09	T 96-23
Mar-09	T 96-13
Apr-09	T 95-7
May-09	T 96-22
Jun-09	T 95-4
Jul-09	T 96-20
Aug-09	T 96-15
Sep-09	T 96-12S
Oct-09	T 95-5
Nov-09	T 96-10
Dec-09	T 97-29
Jan-10	T 97-30

Make a comment if reading jumps around and takes a long time to stabilize.
 QA / QC readings to be done on 5% of SEP required thermistors - see above schedule.

Record test readings before and after other readings.

HP200 & multimeter readings are to be taken within 5 minutes of each other.

Red Dog Environmental
 Y/Enviro/Intra/Tech/Thermistor_Piezos
 File: 6.30.50



Quarterly Thermistor Readings

File Name (TM mm dd yy): TM 050310

Read By: AW

Date: 5/3/2010

Well	Location	# of nodes	Comments	Time
FWDAM - T1	Fresh Water Dam	12	Re-read	8:45
FWDAM - T3	Fresh Water Dam	15		
FWDAM - T4	Fresh Water Dam	17		
FWDAM - T5	Fresh Water Dam	12		
FWDAM - T6	Fresh Water Dam	12		
FWDAM - T7	Fresh Water Dam	11	↓	↓
* T95 - 9	Landfill Site	24		14:50
* T95-07	Landfill Site	24	under water	14:50
* T-95-008	Overburden Dump	24	Re-read	10:20
* T96 - 12	Overburden Dump	24	Re-read	8:58
* T96 - 12s	Overburden Dump	24	↓	↓
* T-96-013	Overburden Dump	24	Re-read	9:45
T-96-013S	Overburden Dump	24	↓	
* T-96-021	Overburden Dump	24	Re-read	9:52
* T-96-022	Overburden Dump	24	Re-read	10:00
* T-96-023	Overburden Dump	24	Re-read	10:03
T-96-024	Overburden Dump	24	Re-read	10:09
T 06 - 69	Back Dam	11	OK	14:40
T98 - 33	MM Laydown Yard	10	Re-read	5/2 7:30
T98 - 34	MM Laydown Yard	7	Re-read	13:25
T98 - 35	MM Laydown Yard	7	Re-read	↓

Well	Location	Depth to H2O	Comments	Time
SPP97 - 1	Seepage Pond	16.90	5/12/10	13:55
* SPP97 - 2	Seepage Pond	21.90	↓	14:00
SPP97 - 2	Seepage Pond	21.90	↓	14:00

Measure to top of steel casing to 0.01' precision. Take QA/QC reading within 5 minutes of first reading with a different operator. QA/QC reading is only required once per year.
Do it in July.

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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Quarterly Thermistor Readings

File Name (TM mm dd yy): TM 050310

Read By: _____

Date: _____

Well	Location	# of nodes	Comments	Time
TDAM - T1 (TT - 1)	Tailings Dam	12	Reread	15:29
TDAM - T2 (TT - 2)	Tailings Dam	18		15:29
TDAM - T3 (TT - 3)	Tailings Dam	16		
TDAM - T4 (TT - 4)	Tailings Dam	14		
TDAM - T5 (TT - 5)	Tailings Dam	17	↓	↓
TDAM - T7 (TT - 7)	Seep Dam / Gray Box	15	Reread	16:29
TDAM - T8 (TT - 8)	Tailings Dam	17	Reread	15:29
TDAM - T14 (TT - 14)	Tailings Dam	14		
TDAM - T15 (TT - 15)	Tailings Dam	13	↓	↓
* T-05-61	Tailings Dam	6	Buried in snow	14:24 5/2/10
* T95 - 4	Tailings Dam	24	Reread	17:11
* T95 - 5	Tailings Dam	24	Reread	18:44
* T96 - 10	Tailings Dam	24	Reread	16:36
* T97 - 28	Tailings Dam	24	Reread	16:43
* T97 - 29	Tailings Dam	24	Reread	16:47
* T97 - 30	Tailings Dam	24	Good	15:33
T05 - 61	Tailings Dam	6	Good 5/17/10	8:42
T05 - 63	East of Pond	8	Good	15:49
T05 - 64	East of Pond	7	Good	15:51
T05 - 65	East of Pond	8	Reread	16:03
T05 - 66	East of Pond	8	Grey	15:53
T05 - 67	East of Pond	8	Good	15:55
T05 - 68	East of Pond	8	Good	—
T05 - 62	Bottom of Dam	10	Good	16:38
RDDAM - T1	Red Dog Creek Dam	10	Reread	16:20
RDDAM - T2	Red Dog Creek Dam	11	Reread	↓
RDDAM - T3	Red Dog Creek Dam	11	Reread	↓
* T96 - 15	Lower Red Dog Creek	14	Reread	14:05

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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Quarterly Piezometer Readings

Box #: 392

Row #: 6

Read By: Aw/DS

Date: 5/3/10

Col.	Well	Location	Reading	Comments	Time
1	Barometric transducer	Box above Seep Dam	5354.1		16:01
30	P1	Red Dog Creek Dam	9711.0	-13	16:09
31	P2	Red Dog Creek Dam	9732.3	0	
32	P3	Red Dog Creek Dam	9272.4	.6	
33	P4	Red Dog Creek Dam	9284.5	0	
34	P5	Red Dog Creek Dam	9539.5	-11	
35	P6	Red Dog Creek Dam	9473.2	.1	
36	P7	Red Dog Creek Dam	9124.2	-13	▼
5	* P - 08A	Box above Seep Dam	88415.8	3.1°C	17:03
6	* P - 08B	Box above Seep Dam	—	3.3°C	17:04
7	P - 09A	Box above Seep Dam	8593	3°C	15:01
8	P - 09B	Box above Seep Dam	8294.6	3.4°C	15:01
9	P - 10A	Box above Seep Dam	8774.4	3.3	15:01
10	P - 10B	Box above Seep Dam	8324.2	3.9	15:01
17	* P97 - 28	Box above Seep Dam	7178.2	4.1	15:01
18	P97 - 29	Box above Seep Dam	8492.3	0	15:01
19	P97 - 30	Box above Seep Dam	—	no reading	15:01
20	P97 - 31	Box above Seep Dam	10820.5	2.6	15:01
15	P - 14A	W. Tailings Dam	8624.2	0.0	16:50
71	P06 - 74	W. Tailings Dam	—		14:24
59	P05 - 62	Bottom of Dam	7994.3	3.6°	16:39
60	P05 - 63	East of Pond	8691.2	3.1°	15:49
62	P05 - 65	East of Pond	8347.4	1.6	16:03
64	P05 - 67	East of Pond	8632.2	—	15:55
65	P05 - 68	East of Pond	—	Gone	—
66	P05 - 69	East of Pond	8824.6	—	16:47
21	* P96 - 10	Tailings Dam	8456.1	—	16:36
22	* P97 - 20	Tailings Dam	7420.4	15 5/12/10	17:06
23	* P96 - 15	Lower Red Dog Creek	7564.9	Row 7 5/12/10	14:05
24	* P97 - 12	Overburden Dump	—	needs new terminal	—
25	* P96 - 13	Overburden Dump	6895.9	0.2°C	9:45
26	* P99-7 R	Landfill Site	—	under water	—

Select one of the SEP (*) piezometers to do the duplicate reading . Do not enter into Geokon as that will overwrite the first reading. Record the reading above. Read the Barometric Transducer every day readings are taken.

* = location to perform a QAQC

Red Dog Environmental

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File: 6.30.50

P-13 8806.4 3.2° 16:55

P-12A 16:57

P-12B 16:58

P-11 17:08

Quarterly Thermistor QA / QC

Location: T05G1

Date: 5/17/10

Technician: AW Start Time: 8:40 Stop Time: 8:42

Node	Ohms	Comments
Test	16.34	
1	19.77	
2	20.35	
3	18.97	
4	18.35	
5	18.14	
6	18.16	
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
Test	16.34	

Node	Temperature
Test	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
Test	

Read these locations on noted month.

Month	Location
Nov-08	T 95-8
Dec-08	T 96-21
Jan-09	T 96-12
Feb-09	T 96-23
Mar-09	T 96-13
Apr-09	T 95-7
May-09	T 96-22
Jun-09	T 95-4
Jul-09	T 96-20
Aug-09	T 96-15
Sep-09	T 96-12S
Oct-09	T 95-5
Nov-09	T 96-10
Dec-09	T 97-29
Jan-10	T 97-30

Make a comment if reading jumps around and takes a long time to stabilize.
QA / QC readings to be done on 5% of SEP required thermistors - see above schedule.

Record test readings before and after other readings.

HP200 & multimeter readings are to be taken within 5 minutes of each other.

Red Dog Environmental
Y/Enviro/Intra/Tech/Thermistor_Piezos
File: 6.30.50



Quarterly Thermistor Readings

File Name (TM mm dd yy): TM 081410

Read By: Darren Jone & Annabel Date: 8/14/2010

Well	Location	# of nodes	Comments	Time
FWDAM - T1	Fresh Water Dam	12	Re-read	10:45
FWDAM - T3	Fresh Water Dam	15	Re-read	10:45
FWDAM - T4	Fresh Water Dam	17	Okay	10:45
FWDAM - T5	Fresh Water Dam	12	Re-read	10:46
FWDAM - T6	Fresh Water Dam	12	Re-read	10:46
FWDAM - T7	Fresh Water Dam	11	No read	10:47
* T95 - 9	Landfill Site	24	Okay	15:14
* T95-07	Landfill Site	24	Re-read	15:14
* T-95-008	Overburden Dump	24	Re-read	15:03
* T96 - 12	Overburden Dump	24	Re-read	16:52
* T96 - 12s	Overburden Dump	24	Re-read	16:58
* T-96-013	Overburden Dump	24	Re-read	14:35
T-96-013S	Overburden Dump	24	Re-read	14:35
* T-96-021	Overburden Dump	24	Re-read	14:39
* T-96-022	Overburden Dump	24	Re-read	14:42
* T-96-023	Overburden Dump	24	Re-read	14:49
T-96-024	Overburden Dump	24	Re-read	14:55
T 06 - 69	Back Dam	11	Okay 8/15/10	10:02
T98 - 33	MM Laydown Yard	10	Okay	09:46
T98 - 34	MM Laydown Yard	7	re-read 8/15/10	09:45
T98 - 35	MM Laydown Yard	7	Okay 8/15/10	09:39

Well	Location	Depth to H2O	Comments	Time
SPP97 - 1	Seepage Pond	18.81		16:52
* SPP97 - 2	Seepage Pond	21.50	8-15-10	9:05
SPP97 - 2	Seepage Pond	21.50	*	↓

Measure to top of steel casing to 0.01' precision. Take QA/QC reading within 5 minutes of first reading with a different operator. QA/QC reading is only required once per year. Do it in July.

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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Quarterly Thermistor Readings

File Name (TM mm dd yy):

TM 08/14/10

Read By: Darren Jones

Date: 8/14/2010

Well	Location	# of nodes	Comments	Time
TDAM - T1 (TT - 1)	Tailings Dam	12	Re-read	17:11
TDAM - T2 (TT - 2)	Tailings Dam	18	Re-read	17:12
TDAM - T3 (TT - 3)	Tailings Dam	16	Re-read	17:12
TDAM - T4 (TT - 4)	Tailings Dam	14	Re-read	17:13
TDAM - T5 (TT - 5)	Tailings Dam	17	Re-read	17:13
TDAM - T7 (TT - 7)	Seep Dam / Gray Box	15	Okay 8/15/10	09:03
TDAM - T8 (TT - 8)	Tailings Dam	17	Re-read	17:14
TDAM - T14 (TT - 14)	Tailings Dam	14	Re-read	17:14
TDAM - T15 (TT - 15)	Tailings Dam	13	Re-read	17:15
* T-05-61	Tailings Dam	6	Re-read	
* T95 - 4	Tailings Dam	24	Okay 8/15/10	10:30
* T95 - 5	Tailings Dam	24	Re-read 8/15/10	8:45
* T96 - 10	Tailings Dam	24	Re-read 8/15/10	08:59
* T97 - 28	Tailings Dam	24	Re-read	16:59
* T97 - 29	Tailings Dam	24	Re-read	17:03
* T97 - 30	Tailings Dam	24	Okay	17:07
T05 - 61	Tailings Dam	6	Okay	15:24
T05 - 63	East of Pond	8	Okay	16:39
T05 - 64	East of Pond	7	Okay	16:05
T05 - 65	East of Pond	8	Re-read	16:14
T05 - 66	East of Pond	8	Re-read	16:17
T05 - 67	East of Pond	8	Okay	16:22
T05 - 68	East of Pond	8	N/A	—
T05 - 62	Bottom of Dam	10	Okay	16:56
RDDAM - T1	Red Dog Creek Dam	10	Re-read	17:21
RDDAM - T2	Red Dog Creek Dam	11	Re-read	17:22
RDDAM - T3	Red Dog Creek Dam	11	Okay	17:23
* T96 - 15	Lower Red Dog Creek	14	Okay 8/15/10	08:05

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

teckCONTINUED

Quarterly Piezometer Readings

Box #: 2012

Row #: 14

Row 15 → 8/15/10

Read By: J. Arrenius - A. Laikec

Date: 8/14/2010

Col.	Well	Location	Reading	Comments	Time
1	Barometric transducer	Box above Seep Dam	8739.5	3.4	16:44
30	P1	Red Dog Creek Dam	9713.4	-	17:20
31	P2	Red Dog Creek Dam	9747.7	-	
32	P3	Red Dog Creek Dam	9277.3	.3°C	
33	P4	Red Dog Creek Dam	9289.6	0.0	
34	P5	Red Dog Creek Dam	9518.6	-	
35	P6	Red Dog Creek Dam	9477.3	.1°C	
36	P7	Red Dog Creek Dam	9178.9	.4°C	
5	* P - 08A	Box above Seep Dam	8940.9	3.3°C	15:29
6	* P - 08B	Box above Seep Dam	8548.6	2.9°C	15:39
7	P - 09A	Box above Seep Dam	8738.9	3.4°C	16:46
8	P - 09B	Box above Seep Dam	84103.2	3.3°C	
9	P - 10A	Box above Seep Dam	8873.7	4.2°C	
10	P - 10B	Box above Seep Dam	8394.5	3.6°C	
17	* P97 - 28	Box above Seep Dam	7001.9	3.5°C	
18	P97 - 29	Box above Seep Dam	8645.2	1.4°C	
19	P97 - 30	Box above Seep Dam	- - - -	No reading	
20	P97 - 31	Box above Seep Dam	13288.8	2.3 °C	16:49
15	P - 14A	W. Tailings Dam	-	N/A	-
71	P06 - 74	W. Tailings Dam	8456.5	4.2°C	15:24
59	P05 - 62	Bottom of Dam	8078.8	4.2°C	16:57
60	P05 - 63	East of Pond	8624.8	5.8°C	16:39
62	P05 - 65	East of Pond	8526.4	17°C	16:15
64	P05 - 67	East of Pond	80009.5	-1°C	16:22
65	P05 - 68	East of Pond	-	N/A	-
66	P05 - 69	East of Pond	8833.5	3.0°C	17:05
21	* P96 - 10	Tailings Dam	8458.7	07°C	16:50
22	* P97 - 20	Tailings Dam	7433	17°C	15:54
23	* P96 - 15	Lower Red Dog Creek			8/15/10 08:05
24	* P97 - 12	Overburden Dump	10205.1	-	16:24
25	* P96 - 13	Overburden Dump	10911.4	.4°C	8/15/10 10:17
26	* P99-7 R	Landfill Site		underwater	

Select one of the SEP (*) piezometers to do the duplicate reading . Do not enter into

Geokon as that will overwrite the first reading. Record the reading above.

Read the Barometric Transducer every day readings are taken.

* = location to perform a QAQC

Red Dog Environmental

File: 6.30.50

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P11 T Dam 9741.4 3.6°C 15:20 N/A (15:20)

D12A T DAM 8624.8 +17°C 16:39

P12B T DAM 9010.1 -17°C 16:51

D13 T DAM N/A (15:20) 15:20

Quarterly Thermistor QA / QC

Location: T 95-8

Date: 8/14/2010

Technician: DW/CR Start Time: 15:04 Stop Time: 15:07

Node	Ohms	Comments
Test		
1	16.35	
2	13.26	
3	17.22	
4	217.03	
5	16.92	
6	16.97	
7	16.98	
8	16.97	
9	16.96	
10	17.07	
11	17.07	
12	17.09	
13	17.06	
14	17.08	
15	17.13	
16	17.13	
17	17.14	
18	17.14	
19	17.15	
20	17.18	
21	17.21	
22	17.20	
23	17.21	
24	17.27	
Test	16.34	

Node	Temperature
Test	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
Test	

Read these locations on noted month.

Month	Location
Nov-08	T 95-8
Dec-08	T 96-21
Jan-09	T 96-12
Feb-09	T 96-23
Mar-09	T 96-13
Apr-09	T 95-7
May-09	T 96-22
Jun-09	T 95-4
Jul-09	T 96-20
Aug-09	T 96-15
Sep-09	T 96-12S
Oct-09	T 95-5
Nov-09	T 96-10
Dec-09	T 97-29
Jan-10	T 97-30

Make a comment if reading jumps around and takes a long time to stabilize.
 QA / QC readings to be done on 5% of SEP required thermistors - see above schedule.

Record test readings before and after other readings.

HP200 & multimeter readings are to be taken within 5 minutes of each other.

Quarterly Thermistor Readings

File Name (TM mm dd yy): TM 110810

Read By: A. Willman

Date: 11-8-10

Well	Location	# of nodes	Comments	Time
FWDAM - T1	Fresh Water Dam	12	Reread	13:50
FWDAM - T3	Fresh Water Dam	15		
FWDAM - T4	Fresh Water Dam	17		
FWDAM - T5	Fresh Water Dam	12		
FWDAM - T6	Fresh Water Dam	12		
FWDAM - T7	Fresh Water Dam	11	↓	↓
* T95 - 9	Landfill Site	24	OK	11-11-10
* T95 - 07	Landfill Site	24	Read	11-11-10
* T-95-008	Overburden Dump	24	Reread	14:40
* T96 - 12	Overburden Dump	24	Reread	13:55
* T96 - 12s	Overburden Dump	24	No Terminal	
* T-96-013	Overburden Dump	24	Reread	14:17
T-96-013S	Overburden Dump	24	↓	14:17
* T-96-021	Overburden Dump	24	Reread	14:22
* T-96-022	Overburden Dump	24	Reread	14:25
* T-96-023	Overburden Dump	24	Reread	14:28
T-96-024	Overburden Dump	24	Reread	14:34
T 06 - 69	Back Dam	11	OK 11-11-10	14:
T98 - 33	MM Laydown Yard	10	Reread	14:50
T98 - 34	MM Laydown Yard	7	Reread	14:55
T98 - 35	MM Laydown Yard	7	Reread	15:00

Well	Location	Depth to H2O	Comments	Time
SPP97 - 1	Seepage Pond	18.39	11-11-10	15:00
* SPP97 - 2	Seepage Pond	21.78	↓	15:05
SPP97 - 2	Seepage Pond	21.78	↓	15:05

Measure to top of steel casing to 0.01' precision. Take QA/QC reading within 5 minutes of first reading with a different operator. QA/QC reading is only required once per year. Do it in July.

* = location to perform a QAQC

Red Dog Environmental

Teck

File: 6.30.50

Quarterly Thermistor Readings

File Name (TM mm dd yy): TM 110810

Read By: A.W.Human

Date: 11-8-10

Well	Location	# of nodes	Comments	Time
TDAM - T1 (TT - 1)	Tailings Dam	12	Reread	
TDAM - T2 (TT - 2)	Tailings Dam	18		
TDAM - T3 (TT - 3)	Tailings Dam	16		
TDAM - T4 (TT - 4)	Tailings Dam	14		
TDAM - T5 (TT - 5)	Tailings Dam	17		
TDAM - T7 (TT - 7)	Seep Dam / Gray Box	15		10:15
TDAM - T8 (TT - 8)	Tailings Dam	17		
TDAM - T14 (TT - 14)	Tailings Dam	14		
TDAM - T15 (TT - 15)	Tailings Dam	13		
* T-05-61	Tailings Dam	6		
* T95 - 4	Tailings Dam	24	Reread	10:29
* T95 - 5	Tailings Dam	24	Reread	10:59
* T96 - 10	Tailings Dam	24	Reread	09:05
* T97 - 28	Tailings Dam	24		9:20
* T97 - 29	Tailings Dam	24		9:23
* T97 - 30	Tailings Dam	24		9:30
T05 - 61	Tailings Dam	6	Reread	10:20
T05 - 63	East of Pond	8	OK	10:40
T05 - 64	East of Pond	7		10:31
T05 - 65	East of Pond	8		10:37
T05 - 66	East of Pond	8		10:29
T05 - 67	East of Pond	8		10:27
T05 - 68	East of Pond	8	Good	
T05 - 62	Bottom of Dam	10	OK	9:13
RDDAM - T1	Red Dog Creek Dam	10	Reread	17:15
RDDAM - T2	Red Dog Creek Dam	11		
RDDAM - T3	Red Dog Creek Dam	11		
* T96 - 15	Lower Red Dog Creek	14		16:35

* = location to perform a QAQC

Red Dog Environmental

Teck

File: 6.30.50

Quarterly Piezometer Readings

Box #: 392

Row #: 4

Read By: A. Willman

Date: 11-8-10

Row 5 11-12-10
4785.9
Row 6

11-11-10
4830.8 17:39

Col.	Well	Location	Reading	Comments	Time
1	Barometric transducer	Box above Seep Dam	4906.7	-5.6	16:50
30	P1	Red Dog Creek Dam	9734.1	0	17:02
31	P2	Red Dog Creek Dam	9743.3	1	17:04
32	P3	Red Dog Creek Dam	9296	1.2	17:06
33	P4	Red Dog Creek Dam	9310.2	1	17:03
34	P5	Red Dog Creek Dam	9550.8	-1.3	17:01
35	P6	Red Dog Creek Dam	9497.8	.1	17:02
36	P7	Red Dog Creek Dam	9147	0	17:01
5	* P - 08A	Box above Seep Dam	7006.5	4.0°	16:55
6	* P - 08B	Box above Seep Dam	8640.2		16:54
7	P - 09A	Box above Seep Dam	8797.6	3.5	16:50
8	P - 09B	Box above Seep Dam	8451.2	3.3	16:50
9	P - 10A	Box above Seep Dam	8917.8	4.3	16:50
10	P - 10B	Box above Seep Dam	8429.3	3.8	16:50
17	* P97 - 28	Box above Seep Dam	7592.4	3.7	16:50
18	P97 - 29	Box above Seep Dam	8757.9	-1	16:50
19	P97 - 30	Box above Seep Dam	8212.4	1.2	17:24
11	P-11	Tailings Dam	9247.6	5.4°	17:13
12	P-12A	Tailings Dam	8244.0	1.6°	16:44
13	P-12B	Tailings Dam	9098.1	-0.2°	16:45
14	P-13	Tailings Dam	8205.1	3.0°	16:41
20	P97 - 31	Box above Seep Dam	10352.0	1.5	16:50
15	P - 14A	W. Tailings Dam	8742.1	0.2°	16:39
71	P06 - 74	W. Tailings Dam	8604.3	4.1°	17:09
59	P05 - 62	Bottom of Dam	8125.0	4.3	9:10
60	P05 - 63	East of Pond	8700.3	3.8	10:18
62	P05 - 65	East of Pond	8563.7	2.9	10:12
64	P05 - 67	East of Pond	8453.2	0.8	10:02
65	P05 - 68	East of Pond	8401.5		
66	P05 - 69	East of Pond	8839.2	0.3	9:25
21	* P96 - 10	Tailings Dam	8482.4	0.7	3:55
22	* P97 - 20	Tailings Dam	7457.1	--	9:37
23	* P96 - 15	Lower Red Dog Creek	7549.8	.6	16:35
24	* P97 - 12	Overburden Dump	6279.4		14:04
25	* P96 - 13	Overburden Dump	6886.5		14:15
26	* P99-7 R	Landfill Site	Cinder water		

Select one of the SEP (*) piezometers to do the duplicate reading. Do not enter into Geokon as that will overwrite the first reading. Record the reading above. Read the Barometric Transducer every day readings are taken.

* = location to perform a QAQC

Red Dog Environmental

Teck

File: 6.30.50

SiteID	Num Therm	Date/Time	pt-01	pt-02	pt-03	pt-04	pt-05	pt-06	pt-07	pt-08	pt-09	pt-10	pt-11	pt-12	pt-13	pt-14	pt-15	pt-16	pt-17	pt-18	pt-19	pt-20	pt-21	pt-22	pt-23	pt-24			
T05-61	6	2/9/2010, 16:10	25.461	18.379	17.784	18.032	18.147	18.185																					
T05-61	6	5/17/2010, 8:56	19.755	20.335	18.968	18.359	18.128	18.166																					
T05-61	6	8/14/2010, 15:43	13.184	17.538	18.496	18.574	18.243	18.185																					
T05-61	6	11/11/2010, 17:46	16.18	16.647	17.588	18.179	18.256	18.217																					
T95-5	24	2/20/2010, 11:08	-55.53	-74.01	-46.86	-77.91	-45.06	-90.48	132515	-64.81	-2176	-155.3	-469.7	-29.17	16.987	16.951	16.896	16.804	132515	16.605	16.442	16.263	16.139	132515	15.804	15.612			
T95-5	24	5/3/2010, 15:59	-137.3	-333.7	-42.56	16.804	-30.69	17.209	22.753	-21.32	-90.36	-27.37	30.31	20.385	18.019	-19.01	16.896	17.432	132515	16.605	16.446	16.263	16.103	16.442	15.821	15.63			
T95-5	24	8/15/2010, 9:04	-56.14	140.12	-56.31	16.792	16.975	17.178	127.24	-66.87	-657.5	-170.1	-213.8	-33.2	-25.45	16.938	16.865	16.774	132419	16.574	16.448	16.269	16.127	15.95	16.216	15.74			
T95-8	24	2/9/2010, 15:31	23.533	16.853	16.853	16.908	16.944	17	132467	16.963	17.055	17.055	17.073	17.036	17.092	17.147	17.129	17.166	17.166	17.166	17.203	17.221	-24.59	17.314					
T95-8	24	2/19/2010, 16:04	23.915	16.908	17.482	17.221	16.926	17	132467	16.963	17.055	17.055	17.073	17.092	17.055	17.073	17.129	17.147	17.166	17.166	17.203	17.221	17.258	17.314					
T95-8	24	3/19/2010, 15:44	24.082	18.574	16.871	16.908	16.944	17.018	16.981	16.963	17.073	17.073	17.129	17.055	17.092	17.147	17.147	17.166	17.166	17.203	17.223	17.277	-21.77						
T95-8	24	4/4/2010, 14:51	23.93	17.664	16.865	16.902	19.83	17.03	16.975	16.957	17.067	19.121	17.233	17.049	17.141	17.141	17.159	14.684	-75.61	18.179	-2911	17.196	-23.19	18.314					
T95-8	24	4/20/2010, 15:16	23.137	-51.88	16.871	16.908	18.75	17.632	16.981	16.963	17.073	17.803	-53.52	17.055	17.073	17.129	17.166	17.166	-16530	-19.16	17.24	-2671	17.221	17.314	-21.4				
T95-8	24	5/3/2010, 10:35	21.028	18.179	16.902	16.957	17.012	16.975	16.957	17.049	17.104	17.085	17.122	17.141	17.159	-47.5	-27.13	17.233	17.27	17.178	17.27	17.326							
T95-8	24	5/16/2010, 9:24	18.744	18.063	16.883	17.122	16.957	17.03	17.03	17.834	17.049	17.122	17.141	17.22	17.141	17.159	66193	17.196	17.233	17.345	17.196	17.27	17.289						
T95-8	24	6/4/2010, 11:47	17.507	17.923	16.932	16.987	16.951	16.987	20.701	17.079	24.576	17.098	17.079	17.073	17.135	17.153	17.172	132515	-118	17.227	-19.98	17.203	17.283	17.32					
T95-8	24	7/4/2010, 10:16	14.917	21.114	16.957	16.993	16.957	-19.46	17.067	25.276	17.067	17.03	17.104	17.122	17.141	17.159	132419	-34.42	17.215	-19.64	17.196	17.252	17.308						
T95-8	24	8/14/2010, 15:21	13.262	-17.841	17	-36.69	16.944	17	16.963	16.963	17.073	17.86	17.092	17.055	17.073	17.147	17.129	17.147	17.147	-114.3	-38.01	17.203	-23.51	17.221	17.314				
T95-8	24	11/8/2010, 16:01	16.49	-52.1	17.036	-35.63	16.963	17	16.981	16.963	17.055	17.538	17.073	17.036	17.073	17.11	17.129	17.166	-20.65	17.576	17.221	17.295	17.203	17.258	17.295				
T95-9	24	2/9/2010, 15:37	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236	44236			
T95-9	24	2/9/2010, 15:38	16.4	16.526	16.725	16.835	16.853	16.89	132467	16.963	16.963	16.944	17	16.944	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467		
T95-9	24	5/12/2010, 15:05	16.412	16.538	16.719	16.829	16.847	16.902	16.957	16.938	16.975	17.036	17.049	17.104	17.122	17.141	17.159	132419	132419	132419	132419	132419	132419	132419	132419				
T95-9	24	8/14/2010, 15:32	16.222	16.562	16.762	16.853	16.908	16.963	16.981	16.963	16.981	132467	17	16.944	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467			
T95-9	24	11/11/2010, 15:52	16.08	16.526	16.725	16.835	16.853	16.89	16.963	16.944	17.018	16.944	16.981	16.926	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467	132467		
T96-10	24	2/9/2010, 17:04	19.936	19.308	-49.94	-23.3	-30.6	-34.6	3648.2	27.148	-91.13	-42	-23.74	42.935	-58.21	16.009	17.147	15.296	15.313	15.921	14.99	14.356	14.737	12.25	21.25	14.455			
T96-10	24	5/3/2010, 16:51	21.143	-132.2	-150.4	37.72	84.186	-216.7	19.92	19.028	86.806	-24.15	-37.24	25.335	-43.02	16.062	17.184	15.313	15.296	16.009	14.973	14.372	14.737	14.905	21.404	-17.82			
T96-10	24	8/15/2010, 9:18	-42.25	17.129	209.88	-24.73	-21.46	-25.56	-21.38	16.382	-113.4	16.257	16.78	-33.14	-52.75	16.097	17.221	15.313	15.279	16.062	14.939	14.356	14.737	14.905	21.535	-43.36			
T96-10	24	11/12/2010, 10:21	18.147	-181	-77.97	22050	-30.98	-31.81	-21.79	-69.41	-76.97	71.818	-30.68	-40.49	-58.52	16.115	17.295	15.33	15.279	16.097	14.973	14.389	14.754	14.905	21.645	18.672			
T96-12	24	2/19/2010, 16:42	19.443	19.954	-56.79	-28.81	17.326	17.513	132419	-28.84	-86.45	-21.13	-76.67	17.252	17.141	-25.8	25.502	16.829	-913.7	16.592	16.43	132419	16.198	-70.53	-286				
T96-12	24	5/3/2010, 9:13	-33.18	17.407	-84.59	17.314	-38.88	30.537	-322.8	23.021	32.045	-48.79	-31.38	33092	-33.37	7328.7	-424.1	-17.24	-61.62	-58.13	17.765	16.418	132467	-266.7	-86.37	-668.7			
T96-12	24	8/14/2010, 11:13	17.215	17.645	-112	-21.54	-48.23	-34.53	132419	-97.1	-1563	132419	17.401	9428.4	-3863	-45.48	-331.5	-88.62	18.489	-23.38	132419	16524	107.08	-109.6					
T96-12	24	8/14/2010, 11:13	17.215	17.626	-38.45	20.286	28.006	17.364	132419	-40.92	-105.4	-309	-36.6	132419	132419	17.178	24.825	-29.11	-48.42	-42.03	-3547	18.294	-21.85	132419	-8245	-78.5			
T96-12	24	11/8/2010, 15:15	16.659	-21	-66.77	-29.4	-40.22	24.381	-194.9	-153.5	-152.5	-11013	-112	11013	17.19	-362.1	-3984	-136.2	-199.7	2566.6	22.164	16.496	132515	-16.22	-23.05	-39.44			
T96-12s	24	2/19/2010, 16:11	15.103	20.036	-44.58	26.27	23.621	-43.78	132419	17.853	-189.1	-28.89	4698	-212.9	17.049	17.085	17.075	17.122	-25.47	19.666	-26.58	-26.97	-25.65	43.48	22.967				
T96-12s	24	5/3/2010, 9:14	-115.4	-400.5	-4873	-26.16	-82.83	26.374	-3198	26.27	-517.2	142.6	7326	22042	-64.76	17.42	17.326	19.912	17.27	-24.21	20.119	17.233	17.345	-47.16	22.967				
T96-12s	24	8/14/2010, 11:14	-120.3	-28.46	-35.81	-4108	-80.32	23.254	132467	-64.65	-235.3	-47.37	17.049	132467	-45.13	17.651	17.614	17.557	33.441	19.133	18.81	-44.33	-33.27	-60.24					
T96-13	24	2/9/2010, 15:26	19.735	12.174	16.454	-16.151	-20.73	16.816	16.944	-49.24	17.166	17.221	17.333	17.37	17.595	17.651	17.482	17.295	17.277	17.482	-31.07	16.835	17.501	16.835	16.599	18.418			
T96-13	24	11/8/2010, 15:38	15.886	16.062	16.204	16.671	16.816	16.963	17.018	-22.15	17.203	17.24	17.314	17.351	17.595	17.557	17.463	17.52	17.314	17.445	16.435	10.041	10.041	10.041	10.041	10.028			
T96-15	24	2/20/2010, 17:15	17.285	17.079	17.006	18.098	18.235	18.623	19.2515	16.659	16.623	16.605	16.514	16.424	16.415	16.514	16.596	16.574	16.701	17.426	21.317	20.864	16.707	-13246	17.436				
T96-1																													

T96-23	24	5/3/2010, 10:19	16.454	16.508	17.258	18.243	16.689	16.508	16.454	-18.71	-22.49	16.544	16.599	16.707	16.816	16.963	16.89	17.073	17	17.166	17.221	17.258	17.166	17.258	17.333	17.407
T96-23	24	6/4/2010, 14:07	-6.981	-22.88	11.715	-26.35	-14.63	-14.06	-21.51	-34.46	-23.13	-16.58	-22.26	-15.9	21.645	-13.72	-14.47	-14.72	-8.89	-13.88	-13.59	14.872	-14.38	-14.29	-14.15	14.11
T96-23	24	7/4/2010, 10:03	6.124	-34.94	-44.1	-37.46	16.204	22.066	-33.93	-35.88	-83.57	-17.87	16.707	16.798	16.926	16.944	17.055	17.073	17.092	26467	17.221	17.258	17.221	17.258	17.333	17.426
T96-23	24	8/14/2010, 15:10	6.437	6.358	9.21	-23.33	15.069	16.412	19.382	-18.56	16.556	-18.8	16.683	16.81	16.883	16.957	17.049	17.104	17.085	22042	17.215	17.233	17.215	17.233	17.308	17.401
T96-23	24	11/8/2010, 15:49	132419	132419	20.644	15.462	15.086	15.775	16.43	16.556	16.574	16.611	16.683	16.792	16.865	16.957	17.03	17.104	17.085	17.141	17.215	17.252	17.178	17.252	17.326	17.401
T97-28	24	2/20/2010, 15:14	19.592	14.488	-13.61	13.499	13.547	13.436	13.247	13.247	13.31	13.388	13.547	13.931	14.29	14.389	15.108	15.024	15.279	15.365	15.468	15.52	15.606	66217	15.52	15.554
T97-28	24	5/3/2010, 16:58	16.635	13.722	13.674	13.738	13.851	13.835	13.658	13.515	13.404	13.404	14.389	13.722	14.061	14.356	14.704	15.485	15.279	15.33	15.468	15.503	15.589	132467	15.52	15.503
T97-28	24	8/14/2010, 17:19	8.521	12.643	13.075	13.168	13.2	13.483	13.674	13.722	13.674	13.626	13.499	24.961	-17.55	14.339	14.687	16.168	15.451	15.33	15.468	15.503	15.589	44134	15.503	15.503
T97-28	24	11/12/2010, 10:39	28.237	14.788	13.059	13.137	13.168	13.231	13.294	13.404	13.515	13.579	-62.83	-19.16	-25.08	14.405	14.737	-17.4	15.245	15.33	15.451	15.572	15.589	132467	15.503	15.503
T97-29	24	2/20/2010, 10:58	23.192	17.376	16.353	16.299	16.335	16.406	132515	-21.78	16.478	16.496	16.496	16.713	16.496	16.804	-26.28	-46.44	-19.7	-36.24	16.786	-48.16	132515	-29.69	17.283	
T97-29	24	5/3/2010, 17:01	-23.17	17.326	17.401	16.574	16.412	16.43	16.466	16.394	16.466	16.484	16.466	16.502	17.215	16.52	16.792	-32.4	22.805	17.159	17.141	16.957	-94.89	15.968	14.883	18.43
T97-29	24	8/14/2010, 17:23	-14.25	14.422	16.562	16.472	16.115	16.062	16.382	18.829	16.472	16.472	16.472	16.49	-19.81	16.472	-19.4	21.165	16.472	16.329	17.221	42.383	-53.35	15.851	-25.81	15.868
T97-29	24	11/12/2010, 10:43	-30	15.886	-43.97	16.044	16.293	16.4	16.382	16.382	16.436	16.454	16.472	16.49	-19.81	16.526	-46.14	-29.62	21.079	-17.16	-21.33	-70.6	-117.5	16.544	32.89	16.097
T97-30	24	2/20/2010, 10:58	21.085	16.121	15.63	15.474	15.56	15.422	132515	15.474	15.508	15.56	15.734	15.769	16.174	16.086	15.944	15.944	15.856	15.874	15.804	15.769	15.734	15.682	15.543	15.336
T97-30	24	5/3/2010, 15:48	18.823	16.538	15.898	15.601	15.583	15.428	15.428	15.462	15.497	15.566	15.705	15.757	16.003	15.986	15.915	15.915	15.845	15.862	15.792	15.757	15.705	15.67	15.497	15.342
T97-30	24	8/14/2010, 17:27	12.41	16.394	16.145	15.827	15.74	15.497	15.462	15.445	15.48	15.549	15.723	15.74	19.646	15.968	15.845	15.915	15.827	15.845	15.775	15.705	15.653	15.497	15.342	
T97-30	24	11/12/2010, 10:51	16.263	15.439	15.56	15.682	15.769	15.577	15.526	15.491	15.491	15.56	15.699	15.717	20.68	15.962	15.909	15.874	15.839	15.856	15.786	15.751	15.717	15.664	15.526	15.353

Piezometer Monitoring Data:**2/25/2010**

Date of Reading	Site Name	Week #	Time	Temp (C)	Switch	Reading
2/9/2010						
	P-05-62		16:30	4	B	8075.4
	P-06-074		14:56	3.9	B	8563.1
	P-08A	4	14:38	3.8	B	8923.9
	P-08B	4	14:39	3.2	B	8553.1
	P-09A	4	15:55	3.6	B	8728.9
	P-09B	4	15:55	3.5	B	8398.5
	P-10A	4	15:55	3.9	B	8868.3
	P-10B	4	15:55	4	B	8395.3
	P-11	4	14:34	3.6	B	9251.5
	P-14A	4	14:59	0	B	8579
	P-96-010	4	15:44	0.7	B	8470.8
	P-96-013	2	14:02	0.3	B	6883.7
	P-97-012	2	13:53	0.1	B	6267.2
	P-97-020	4	14:41	1.6	B	7435.1
	P-97-028	4	15:55	3.9	B	7466.8
	P-97-029	4	15:55	0.1	B	8691.4
	P-97-030	4	15:55	99999	B	99999999
	P-97-031	4	15:56	2	B	10777.4
	T-DamBaro		15:54	-18.8	B	4711.3
2/15/2010						
	P-05-68		17:04	6.3	B	8506.2
	T-DamBaro		16:55	-2.5	B	4734.1

Piezometer Monitoring Data:**2/25/2010**

Date of Reading 2/20/2010	Site Name	Week #	Time	Temp (C)	Switch	Reading
	P-05-63		9:15	3.6	B	8795.2
	P-05-67		9:01	0.2	B	8515.1
	P-05-69		9:31	-1.4	B	8835.2
	P-96-015	3	16:04	0.6	B	7559.7
	RDC-P1	3	14:11	-0.2	B	9744.4
	RDC-P2	3	14:12	0.5	B	9740.6
	RDC-P3	3	14:12	-4.2	B	9306.6
	RDC-P4	3	14:13	0.3	B	9321.1
	RDC-P5	3	14:13	0	B	9547.4
	RDC-P6	3	14:13	0.2	B	9507.7
	RDC-P7	3	14:14	2.1	B	9156.4
	T-DamBaro		13:50	3.5	B	5011.6

Piezometer Monitoring Data:**5/16/2010**

Date of Reading 5/3/2010	Site Name	Week #	Time	Temp (C)	Switch	Reading
	P-05-62		15:31	3.6	B	7994.3
	P-05-63		14:41	3.1	B	8691.2
	P-05-65		14:53	1.6	B	8347.4
	P-05-67		14:48	0.1	B	8632.2
	P-05-69		15:38	-1.2	B	8824.6
	P-08A	4	15:54	3.1	B	8415.8
	P-08B	4	15:55	3.3	B	99999999
	P-09A	4	14:00	3	B	8593
	P-09B	4	14:00	3.4	B	8296.6
	P-10A	4	14:00	3.3	B	8774.6
	P-10B	4	14:01	3.9	B	8324.2
	P-11	4	15:59	3.6	B	9233.4
	P-12A	4	15:50	-9.5	B	8906.4
	P-12B	4	15:49	1.4	B	8626.7
	P-13	4	15:45	3.2	B	8806.4
	P-14A	4	15:43	0	B	8624.2
	P-96-010	4	15:26	0.7	B	8456.1
	P-96-013	2	8:36	0.2	B	6895.9
	P-97-020	4	15:57	1.7	B	7420.4
	P-97-028	4	14:01	4.1	B	7198.2
	P-97-029	4	14:01	0	B	8492.3
	P-97-030	4	14:01	99999	B	99999999
	P-97-031	4	14:01	2.6	B	10820.5
	RDC-P1	3	15:07	-0.3	B	9711
	RDC-P2	3	15:07	0	B	9732.3
	RDC-P3	3	15:08	0.6	B	9272.6
	RDC-P4	3	15:08	0	B	9284.5
	RDC-P5	3	15:08	-0.1	B	9539.5

Piezometer Monitoring Data:**5/16/2010**

Date of Reading	Site Name	Week #	Time	Temp (C)	Switch	Reading
5/12/2010	RDC-P6	3	15:09	0.1	B	9473.2
	RDC-P7	3	15:09	-0.3	B	9124.2
	T-DamBaro		13:59	2.7	B	5354.1
	P-06-074		13:08	3.6	B	8102.3
5/16/2010	P-96-015	3	12:58	0.5	B	7564.9
	T-DamBaro		12:41	19.3	B	4836.2
	P-06-074		2:27	3.5	B	8150.9
	P-08A	4	2:13	3.2	B	99999999
	P-08B	4	2:14	3.1	B	8441.6
	P-09A	4	4:37	3	B	8619.2
	P-09B	4	4:37	3.4	B	8315.8
	P-10A	4	4:37	3.2	B	8793.2
	P-10B	4	4:37	3.9	B	8342.2
	P-11	4	2:09	3.6	B	9246.6
	P-12A	4	2:18	-0.3	B	8921.7
	P-12B	4	2:19	1.8	B	8640.4
	P-13	4	2:22	3.1	B	8817.9
	P-14A	4	2:24	0	B	8643.7
	P-97-028	4	4:38	4.1	B	7264.2
	P-97-029	4	4:38	0	B	8460.4
	P-97-030	4	4:38	99999	B	99999999
	P-97-031	4	4:38	2.4	B	10788.2
	T-DamBaro		4:36	2	B	4904.7

Piezometer Monitoring Data:**10/6/2010**

Date of Reading 8/14/2010	Site Name	Week #	Time	Temp (C)	Switch	Reading
	P-05-62		15:43	4.2	B	8078.8
	P-05-63		15:12	5.8	B	8624.5
	P-05-65		15:00	1.7	B	8526.4
	P-05-67		15:05	-0.1	B	8609.5
	P-05-69		15:51	3	B	8833.5
	P-06-074		14:21	4.2	B	8456.5
	P-08A	4	14:24	3.7	B	8940.9
	P-08B	4	14:26	2.9	B	8568.6
	P-09A	4	15:31	3.4	B	8738.9
	P-09B	4	15:32	3.3	B	8403.2
	P-10A	4	15:32	4.2	B	8873.7
	P-10B	4	15:33	3.6	B	8394.5
	P-11	4	14:18	3.6	B	9241.4
	P-12A	4	14:34	1.7	B	8636.9
	P-12B	4	14:36	-0.2	B	9019.1
	P-13	4	13:17	0.3	B	6909.5
	P-97-012	2	13:08	0.1	B	6305.1
	P-97-020	4	14:38	1.7	B	7433
	P-97-028	4	15:33	3.5	B	7001.9
	P-97-029	4	15:34	1.4	B	8645.2
	P-97-030	4	15:34	99999	B	99999999
	P-97-031	4	15:34	2.3	B	13288.8
	RDC-P1	3	16:04	99999	B	9713.4
	RDC-P2	3	16:05	99999	B	9747.7
	RDC-P3	3	16:05	0.3	B	9277.3
	RDC-P4	3	16:05	0	B	9289.6
	RDC-P5	3	16:05	99999	B	9548.6
	RDC-P6	3	16:06	0.1	B	9477.3

Piezometer Monitoring Data:**10/6/2010**

Date of Reading	Site Name	Week #	Time	Temp (C)	Switch	Reading
	RDC-P7	3	16:06	0.4	B	9128.9
	T-DamBaro		15:31	3.4	B	8739.5

Piezometer Monitoring Data:**11/13/2010**

Date of Reading 11/8/2010	Site Name	Week #	Time	Temp (C)	Switch	Reading
	P-09A	4	17:49	3.5	B	8797.6
	P-09B	4	17:49	3.3	B	8451.2
	P-10A	4	17:49	4.3	B	8917.8
	P-10B	4	17:49	3.8	B	8429.3
	P-96-013	2	15:12	0.4	B	6886.5
	P-96-015	3	17:32	0.6	B	7549.8
	P-97-012	2	15:04	0.2	B	6279.4
	P-97-028	4	17:49	3.7	B	7592.4
	P-97-029	4	17:49	0.1	B	8757.9
	P-97-031	4	17:49	1.5	B	10352.8
	RDC-P1	3	18:02	0	B	9734.1
	RDC-P2	3	18:04	1	B	9743.3
	RDC-P3	3	18:06	1.2	B	9296
	RDC-P4	3	18:03	1	B	9310.2
	RDC-P5	3	18:01	-0.3	B	9550.8
	RDC-P6	3	18:02	0.1	B	9497.8
	RDC-P7	3	18:01	0	B	9147
	T-DamBaro		17:48	-5.6	B	4906.7

Piezometer Monitoring Data:**11/13/2010**

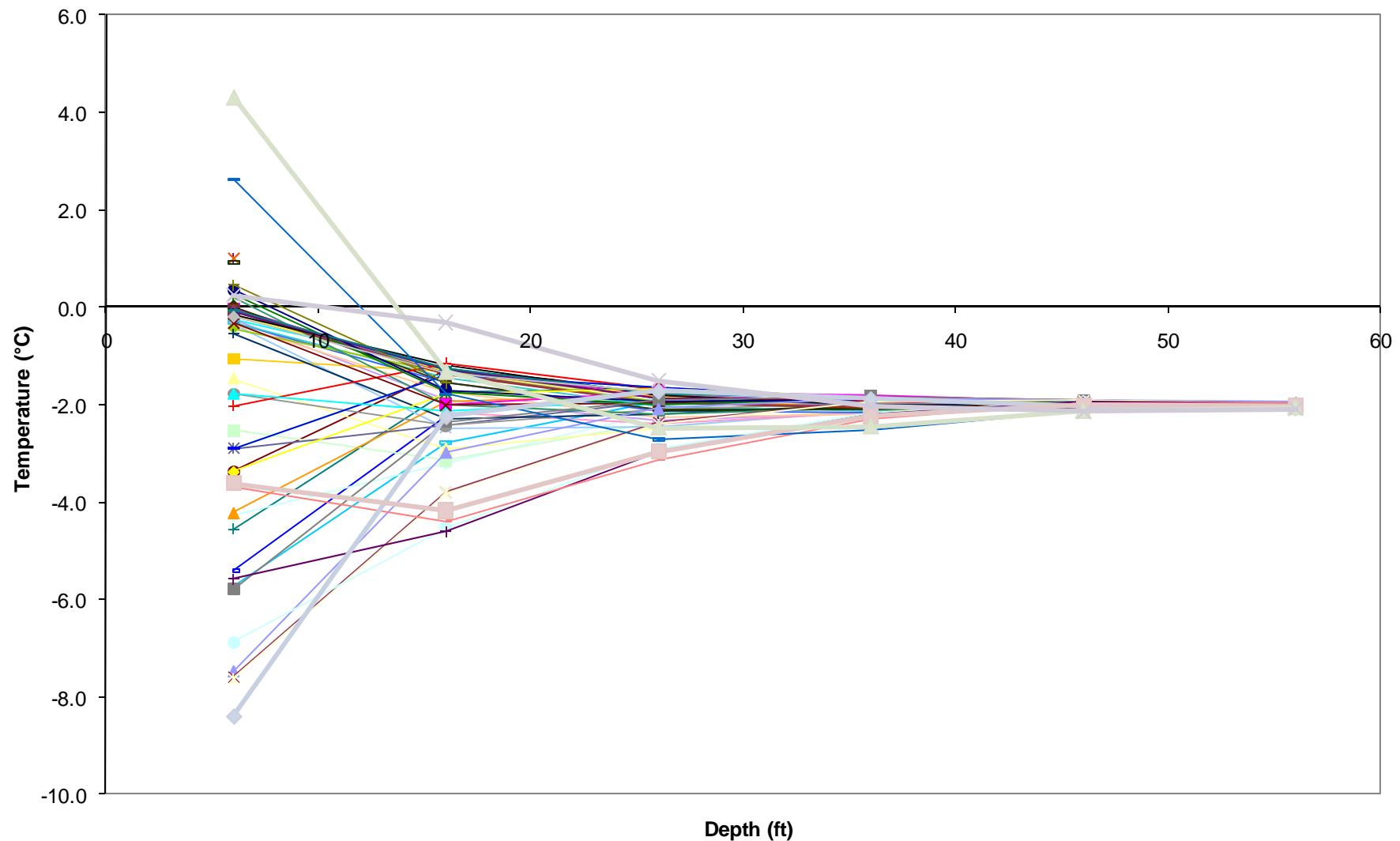
Date of Reading	Site Name	Week #	Time	Temp (C)	Switch	Reading
11/11/2010						
	P-06-074		17:09	4.6	B	8604.3
	P-08A	4	16:55	4	B	9006.5
	P-08B	4	16:54	3.1	B	8640.2
	P-11	4	17:13	5.4	B	9247.6
	P-12A	4	16:44	1.6	B	8644
	P-12B	4	16:45	-0.2	B	9098.1
	P-13	4	16:41	3	B	8805.1
	P-14A	4	16:39	0.2	B	8742.1
	P-97-020	4	17:04	1.7	B	99999999
	T-DamBaro		17:39	-13.5	B	4830.8
11/12/2010						
	P-05-62		10:10	4.3	B	8125
	P-05-63		11:18	3.8	B	8700.3
	P-05-65		11:12	2.9	B	8563.7
	P-05-67		11:03	0.8	B	8633.2
	P-05-69		10:25	0.3	B	8839.2
	P-96-010	4	9:55	0.7	B	8482.4
	P-97-020	4	10:37	99999	B	7457.1
	P-97-030	4	10:29	1.2	B	8212.4
	T-DamBaro		10:11	-12.7	B	4785.9

APPENDIX B

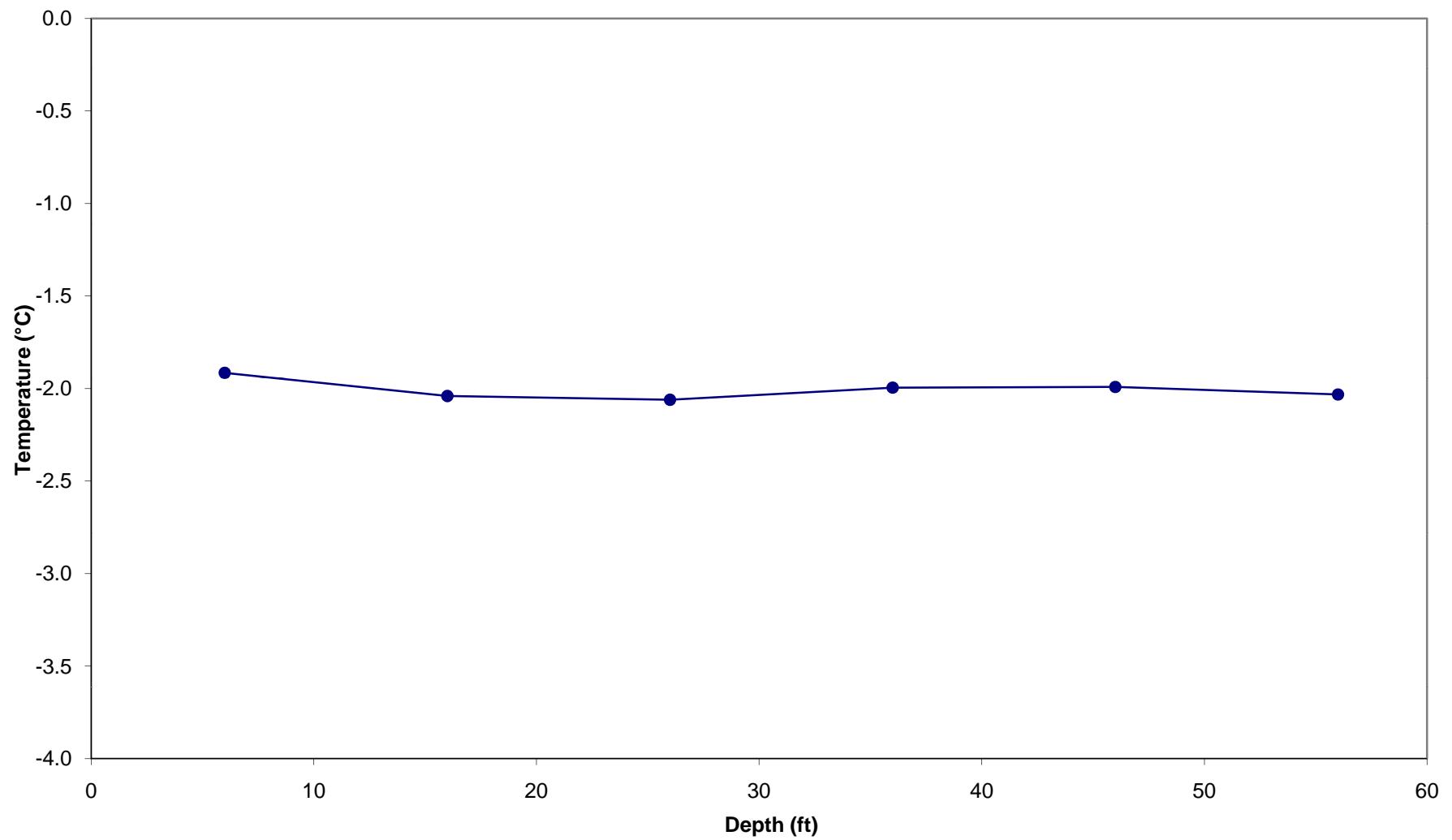
Temperature Data from Long-Term Monitoring Locations

T-05-061

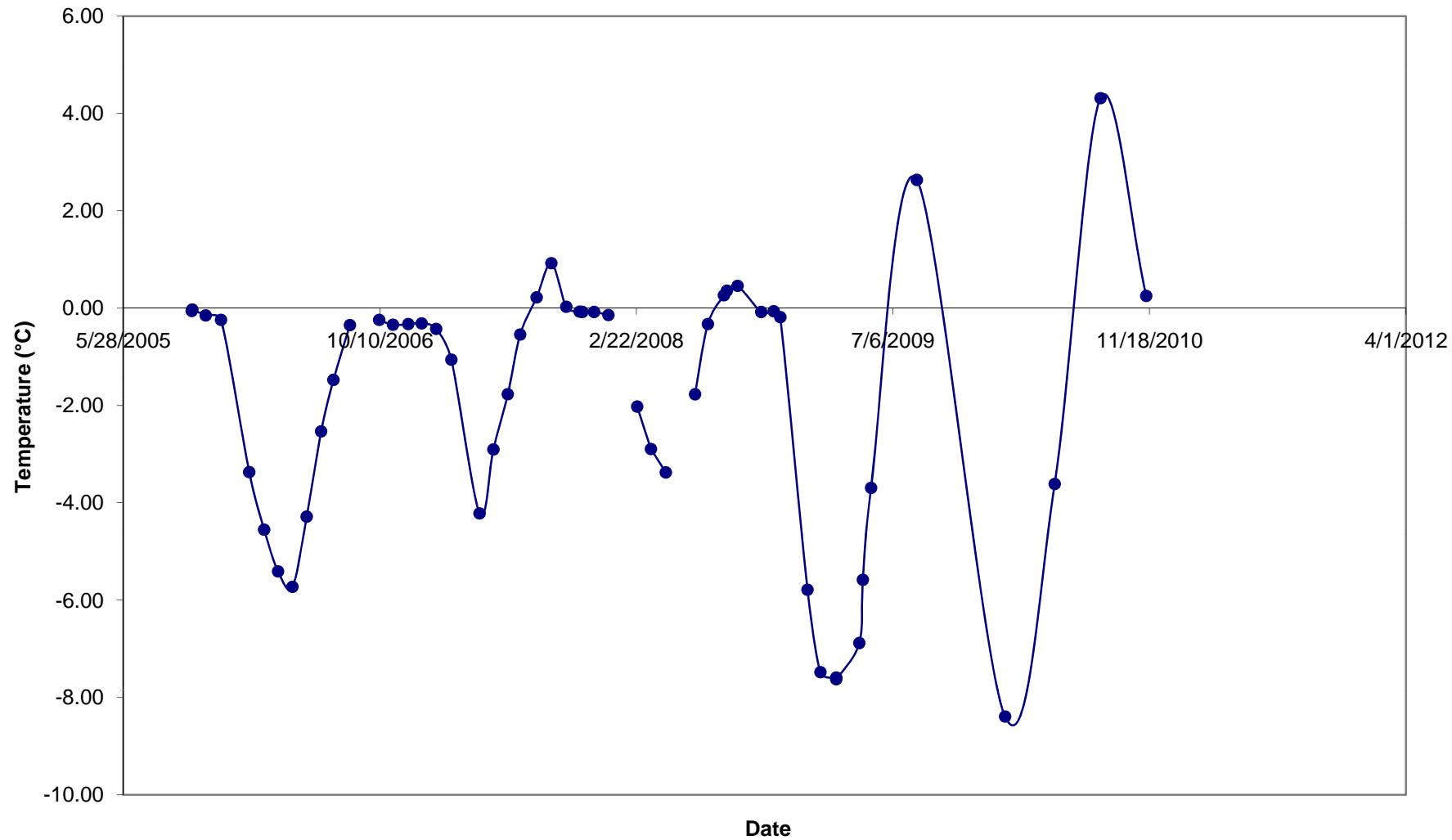
Temperature Depth Plot for T-05-061



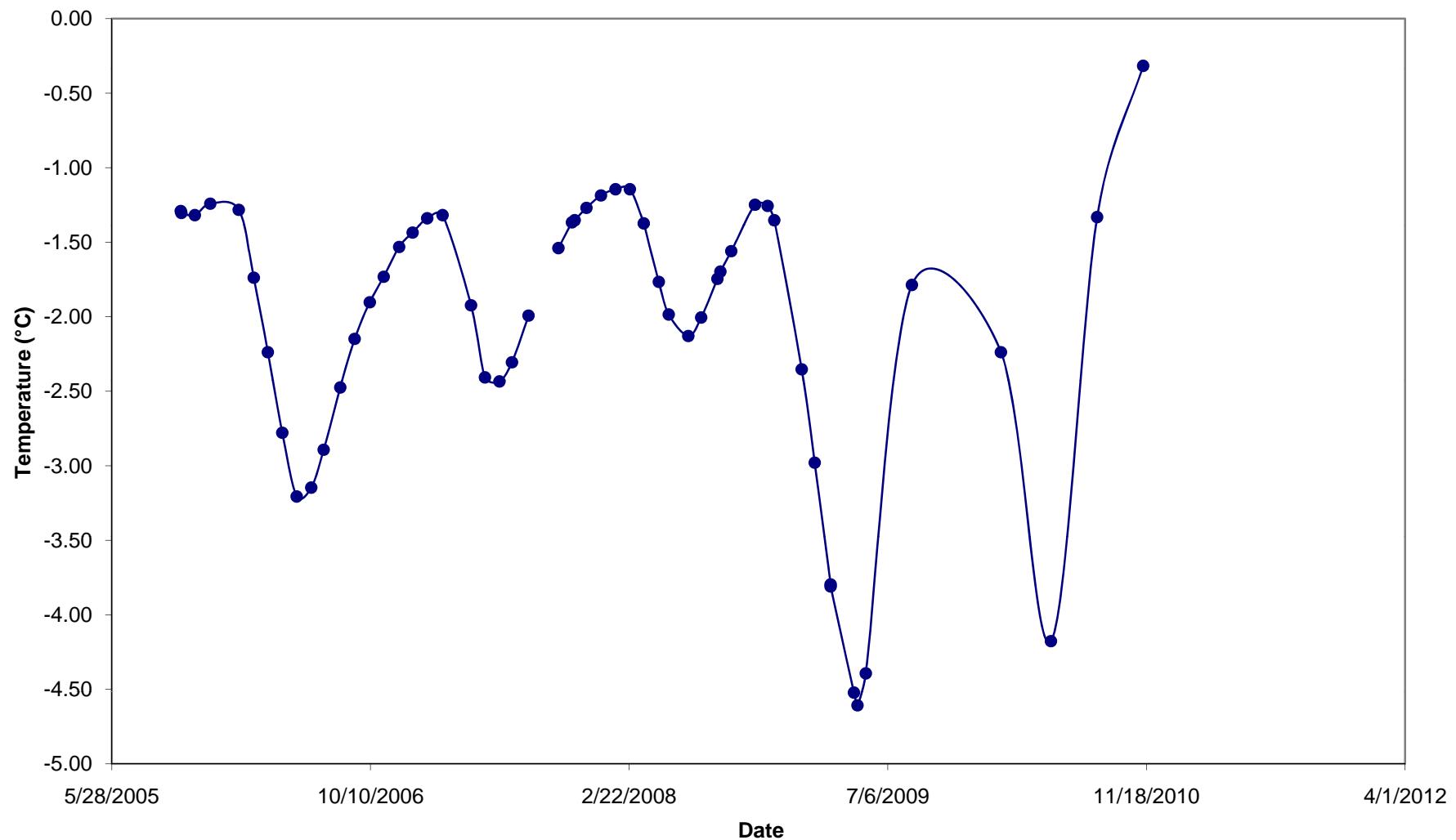
Average Temperature Depth Plot for T-05-061



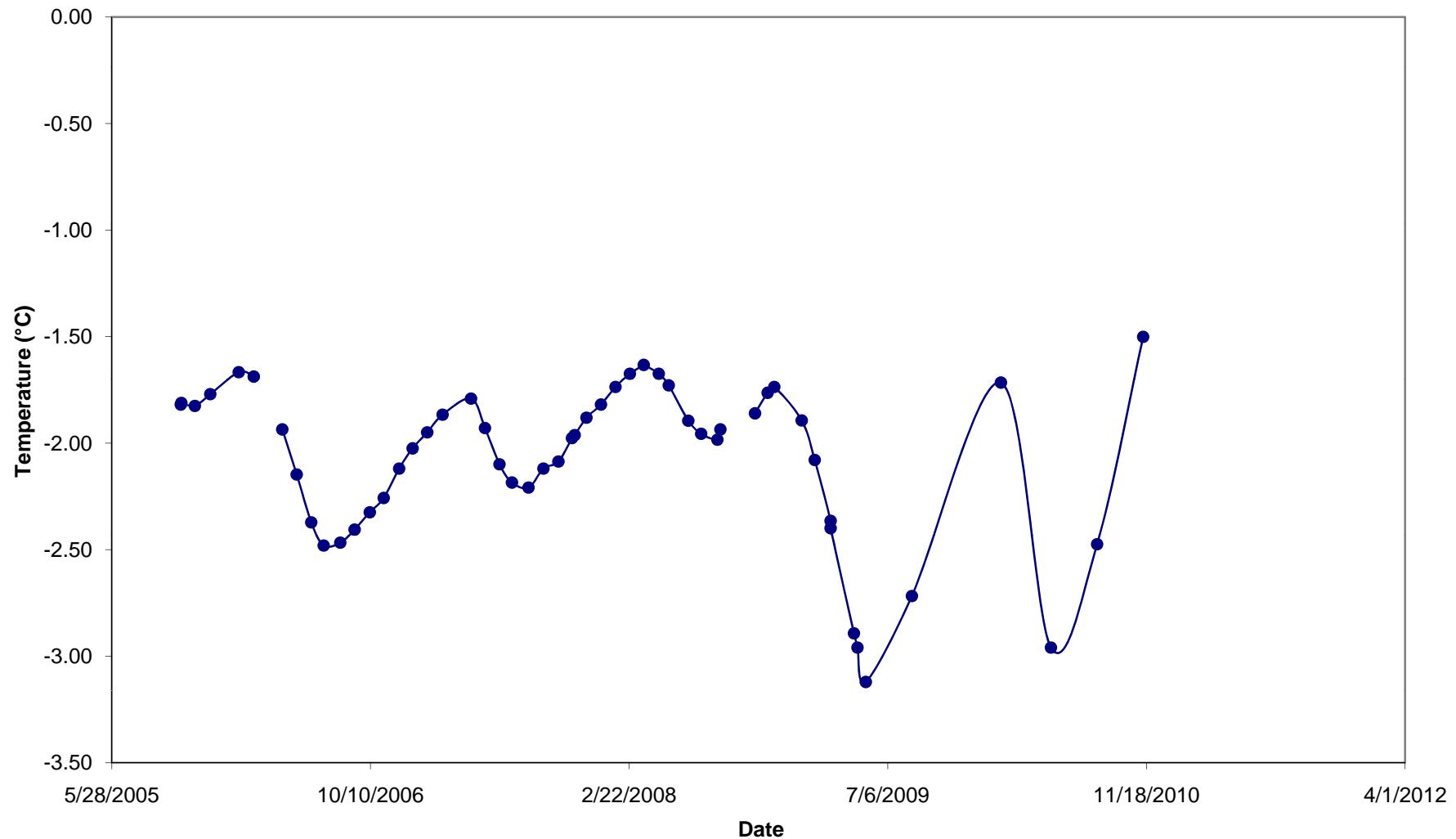
T-05-061 Temperature at 6 feet



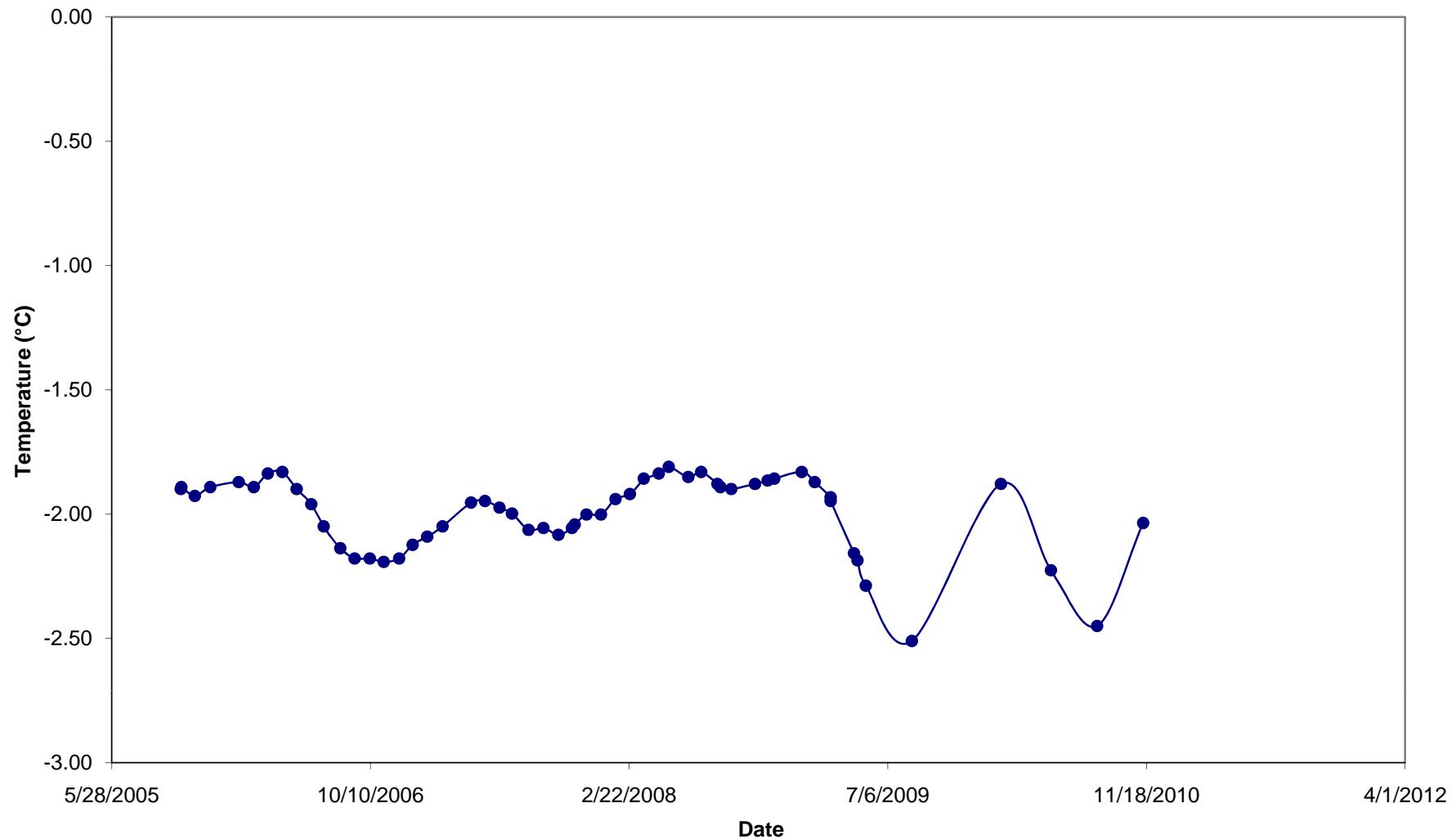
T-05-061 Temperature at 16 feet



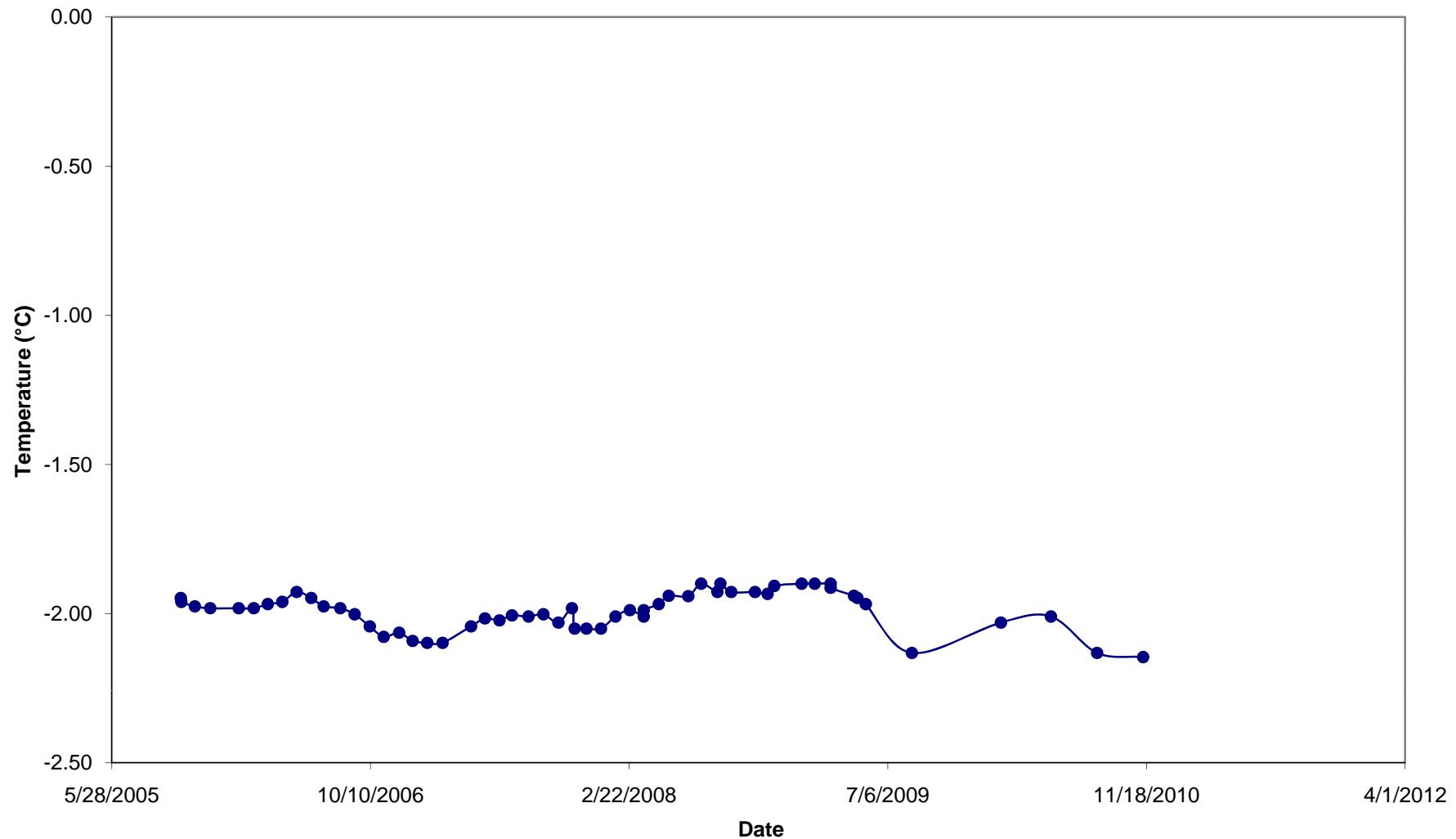
T-05-061 Temperature at 26 feet



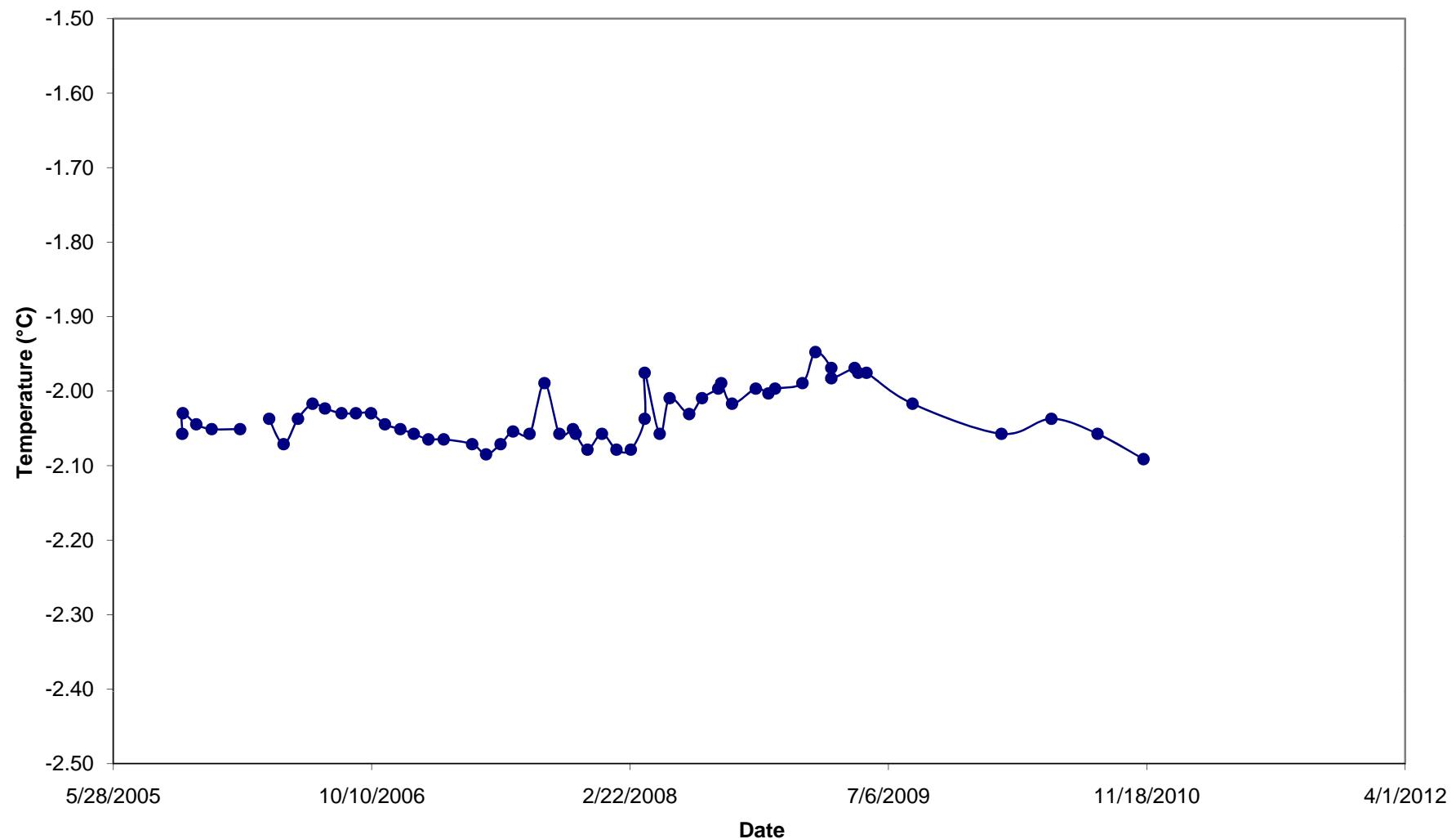
T-05-061 Temperature at 36 feet



T-05-061 Temperature at 46 feet

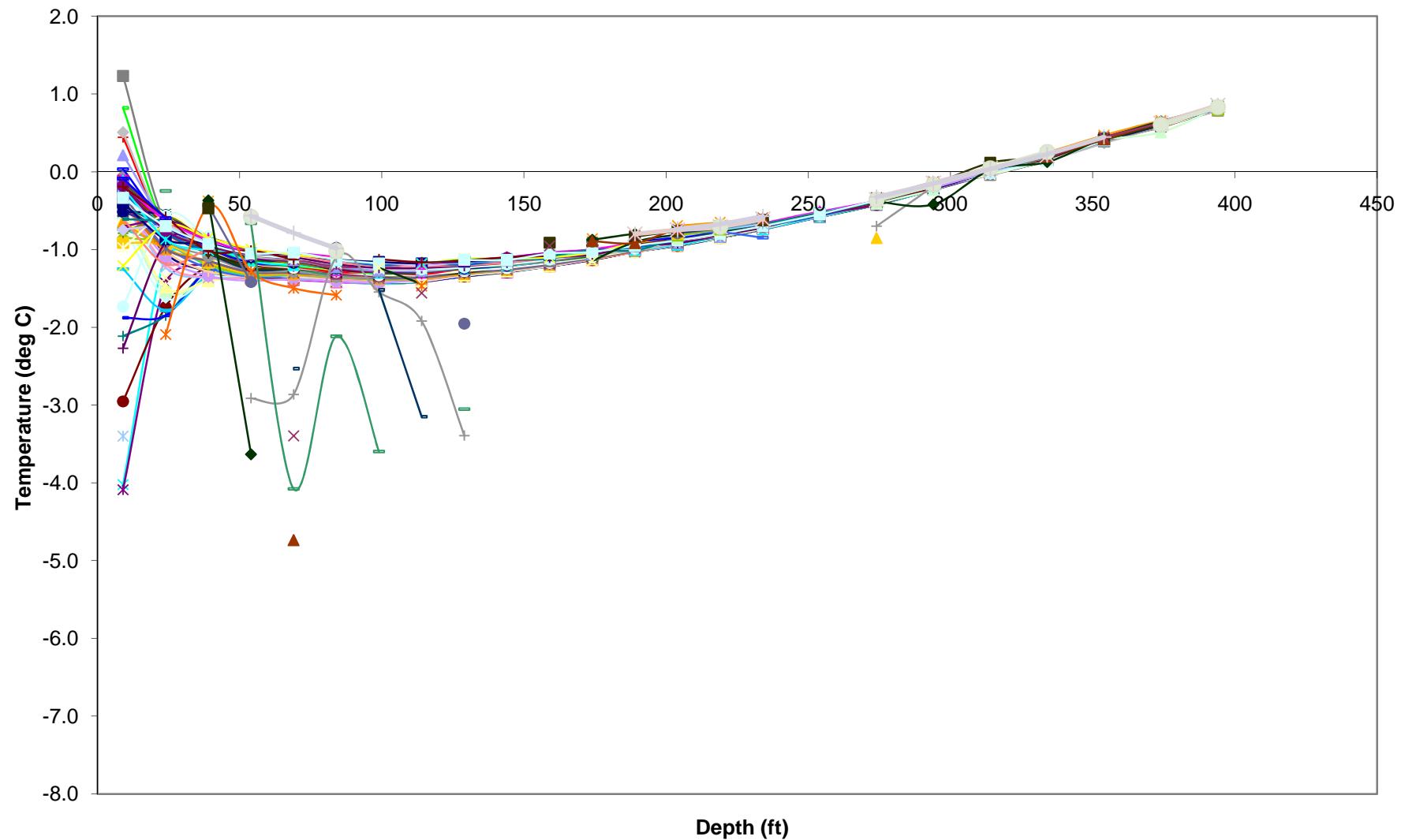


T-05-061 Temperature at 56 feet

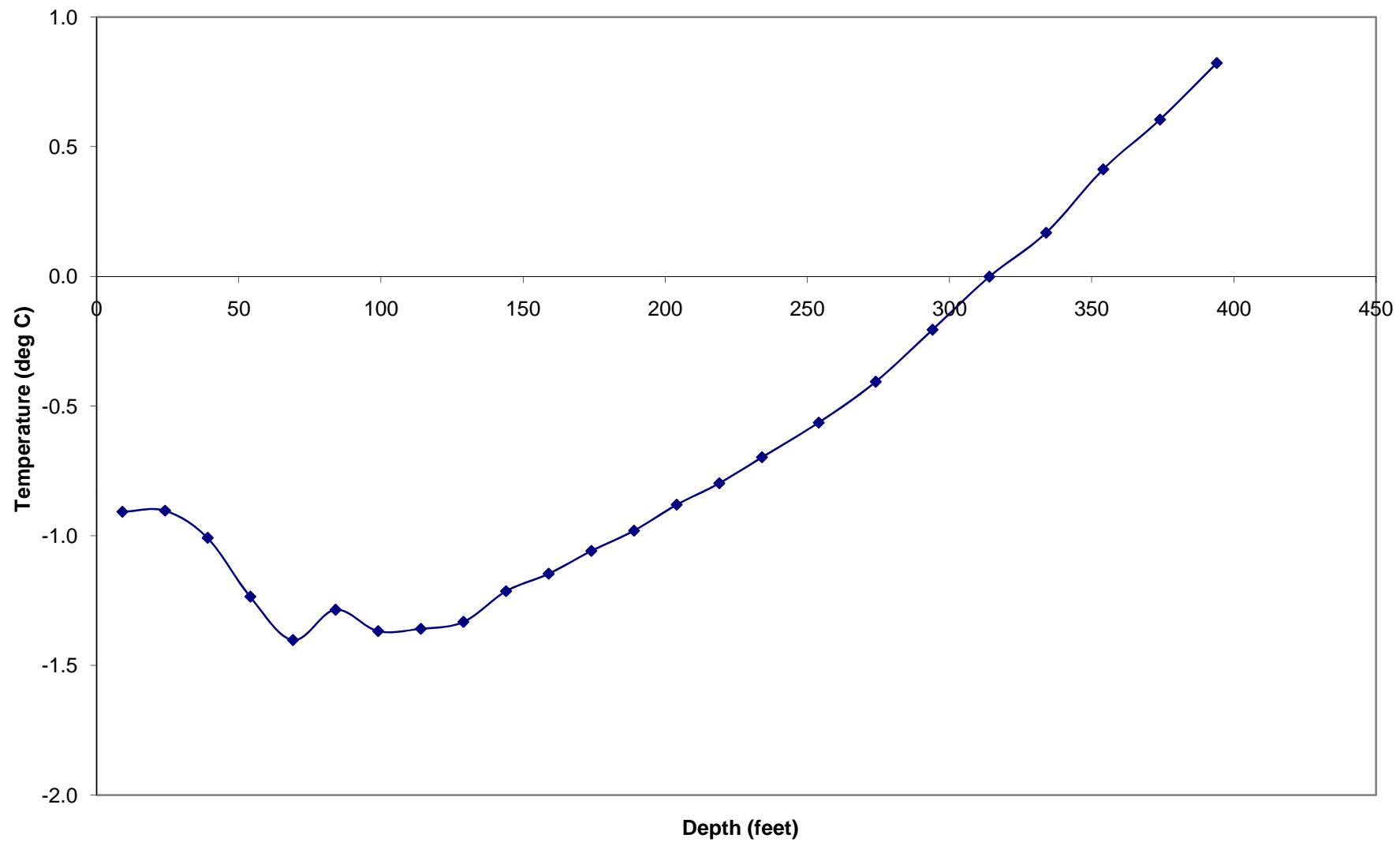


T-95-005

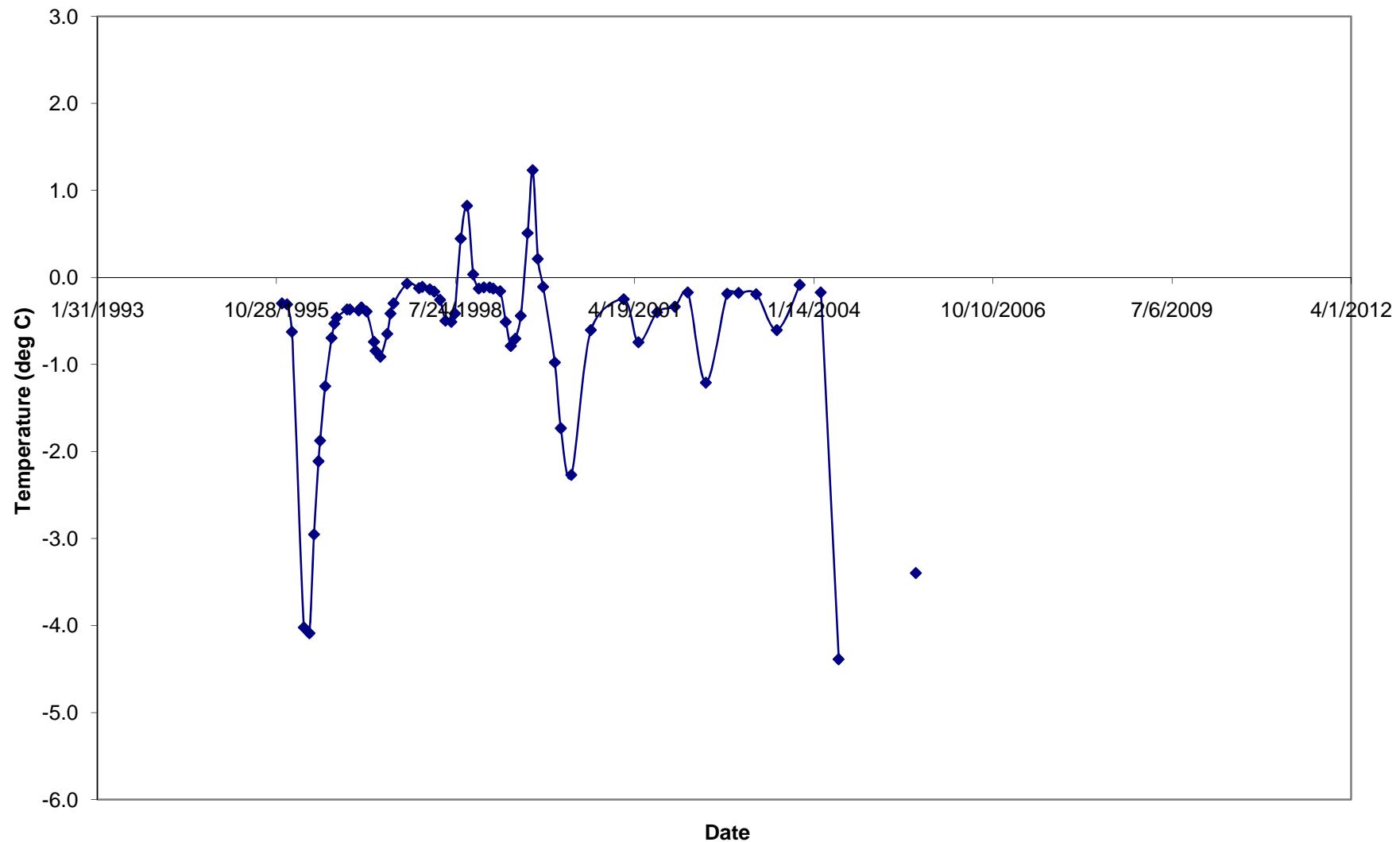
Temperature depth plot - T-95-005



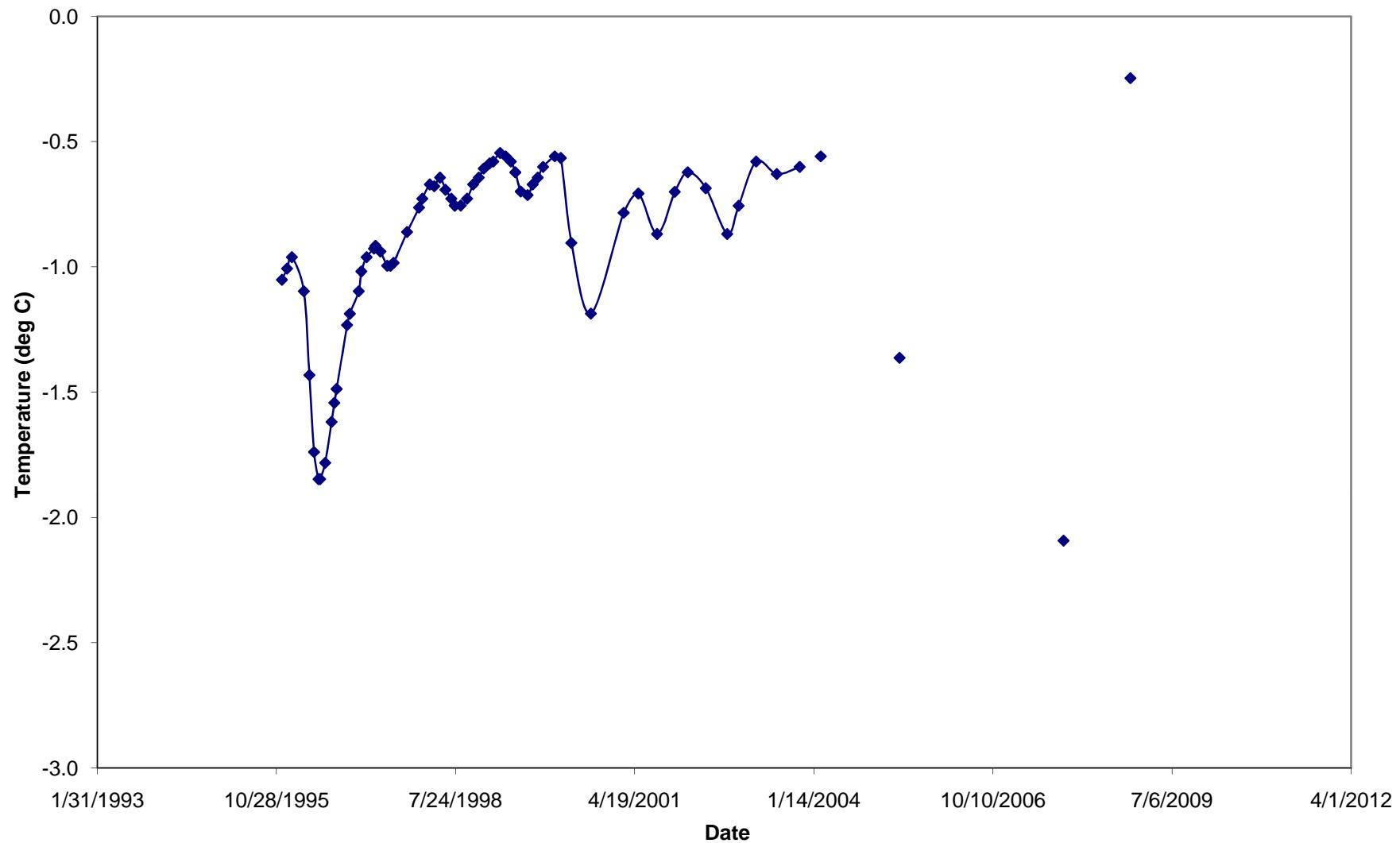
T-95-005 - Average temperature profile



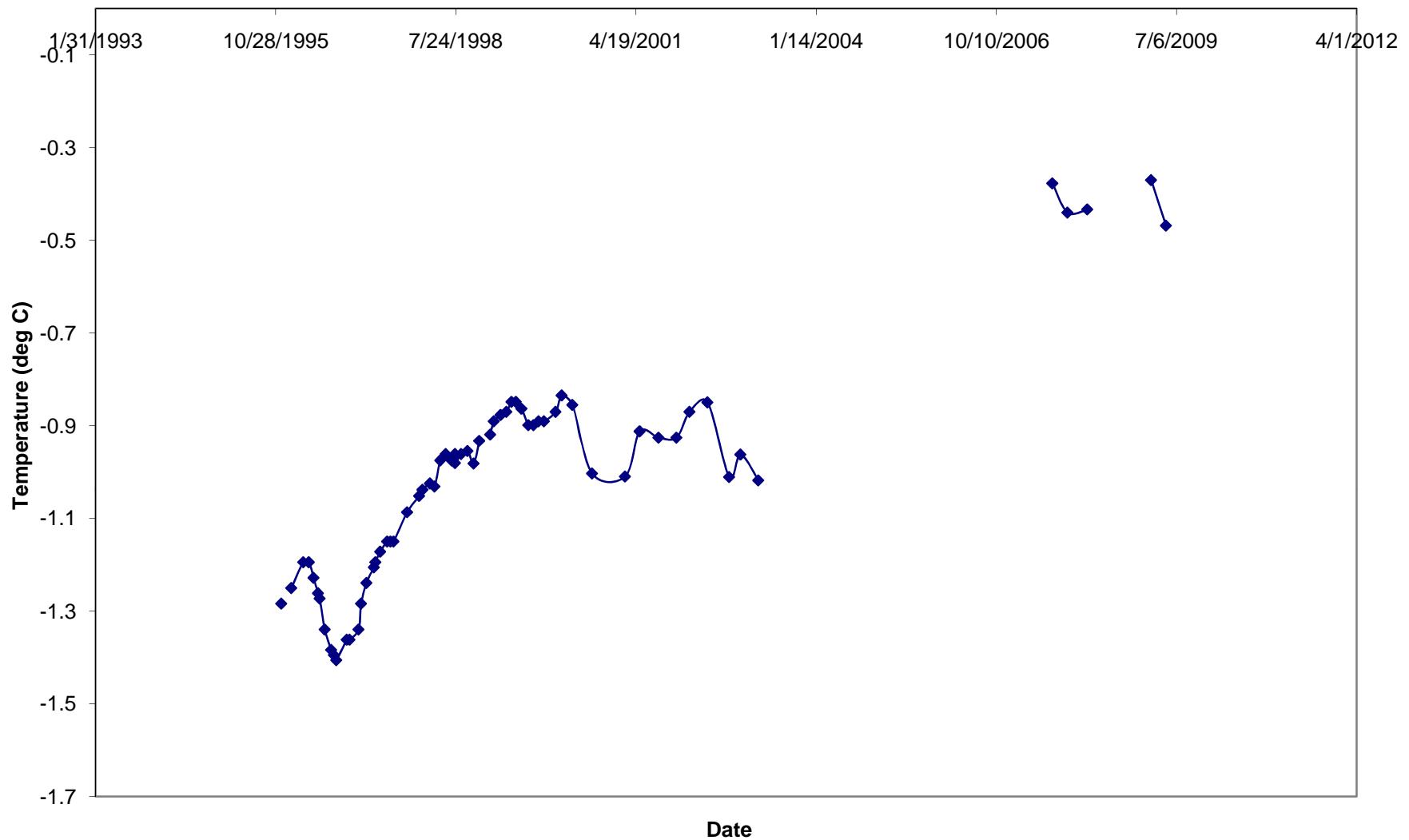
T-95-005 - Temperature at 9 feet



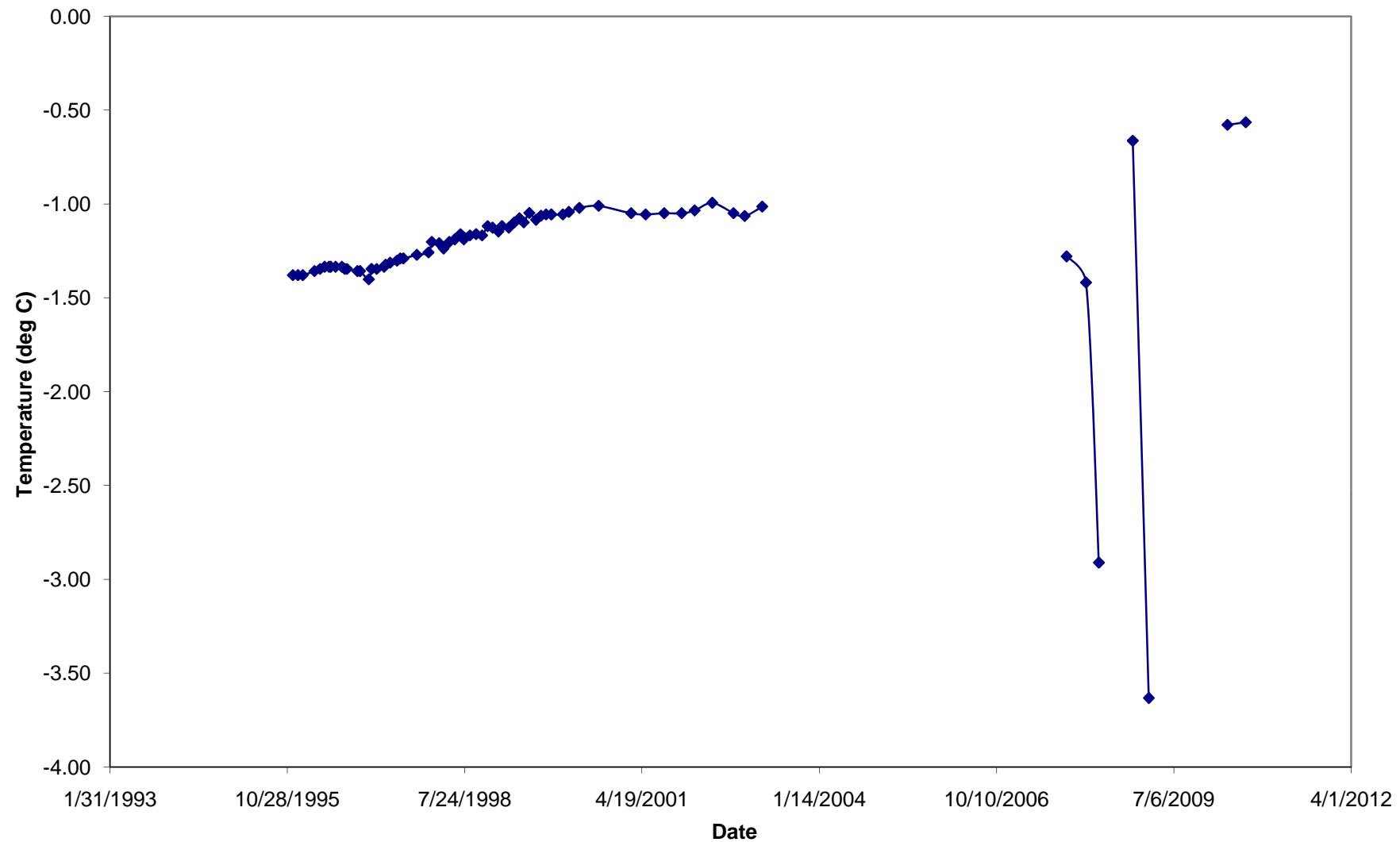
T-95-005 - Temperature at 24 feet



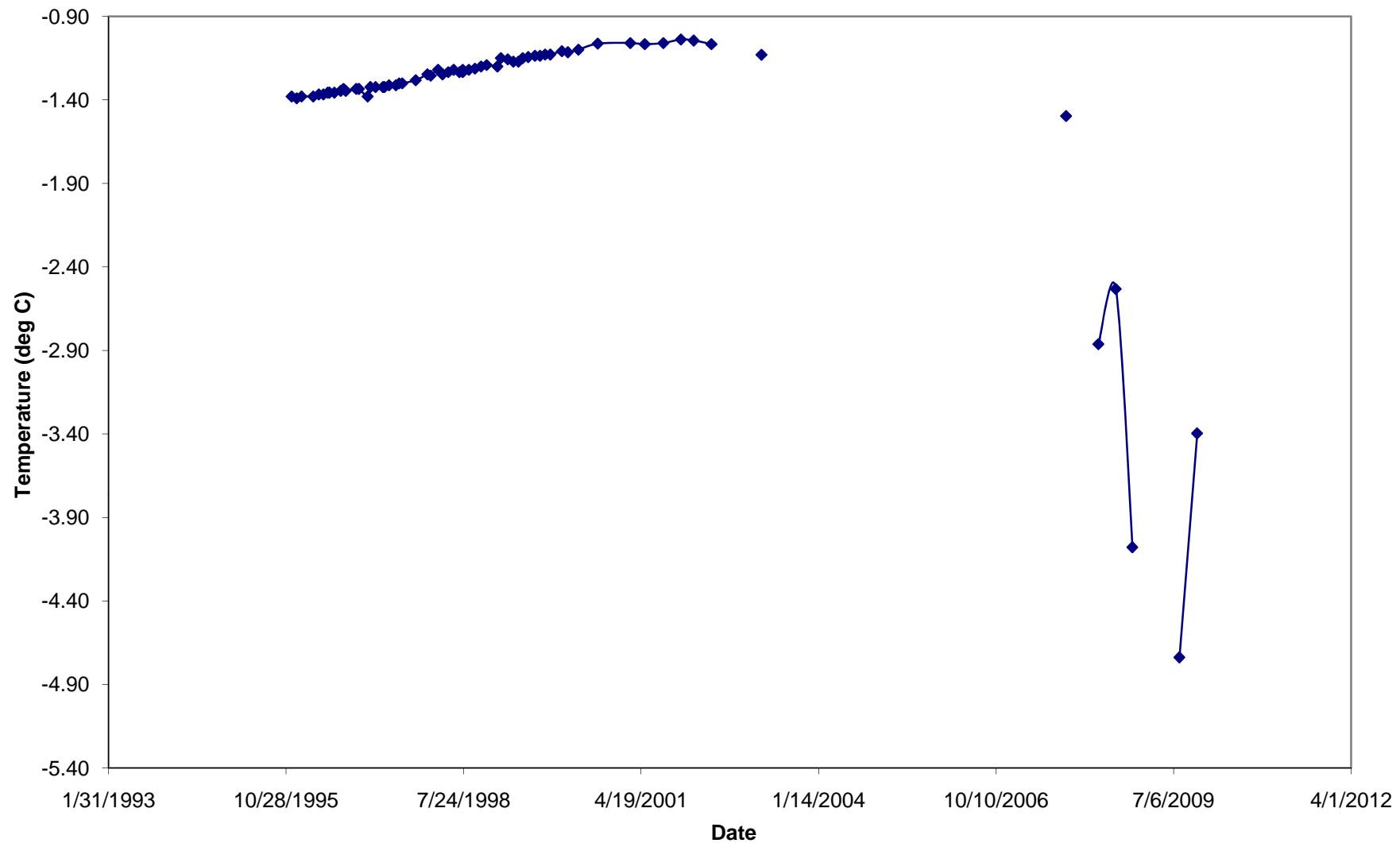
T-95-005 - Temperature at 39 feet



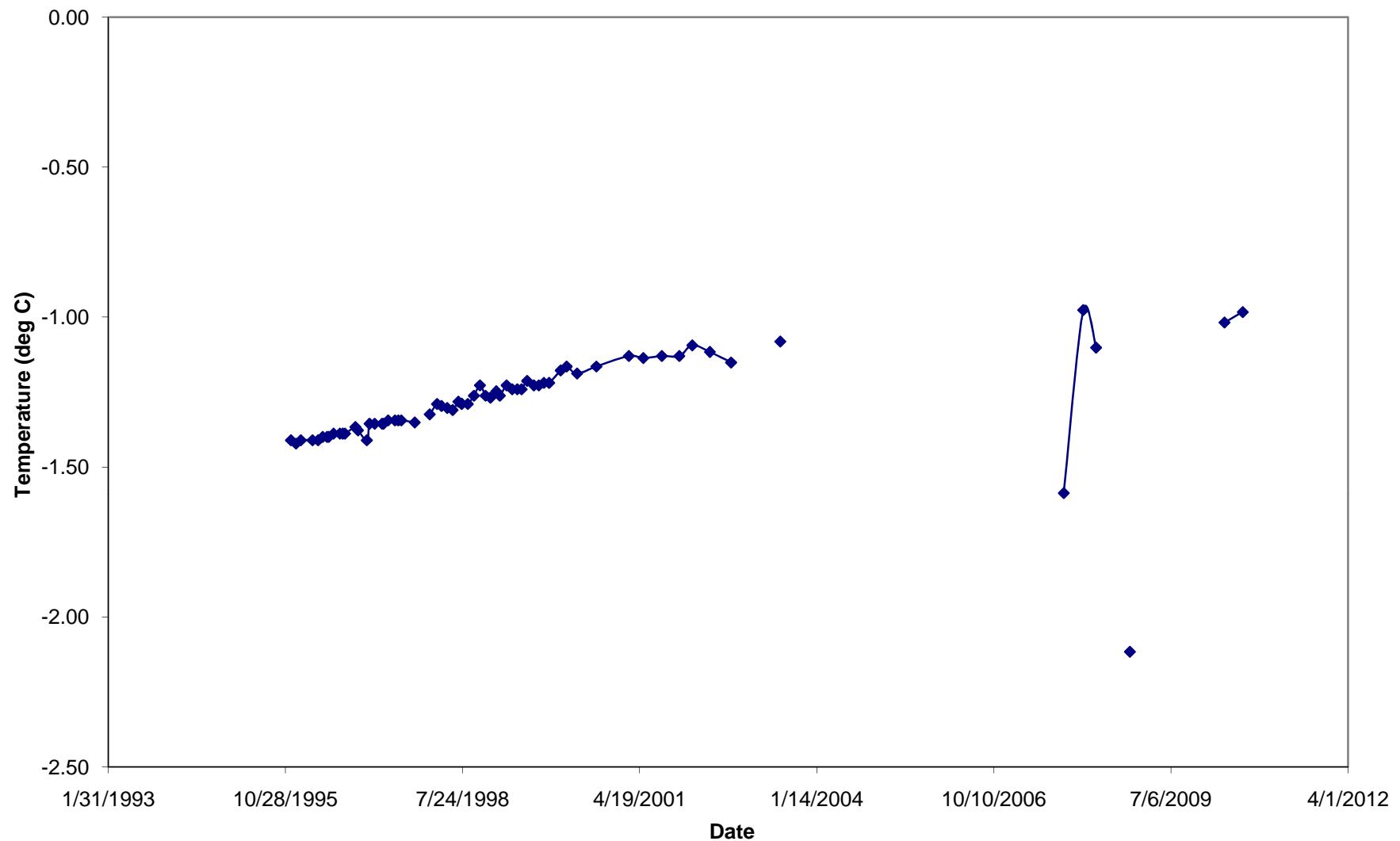
T-95-005 - Temperature at 54 feet



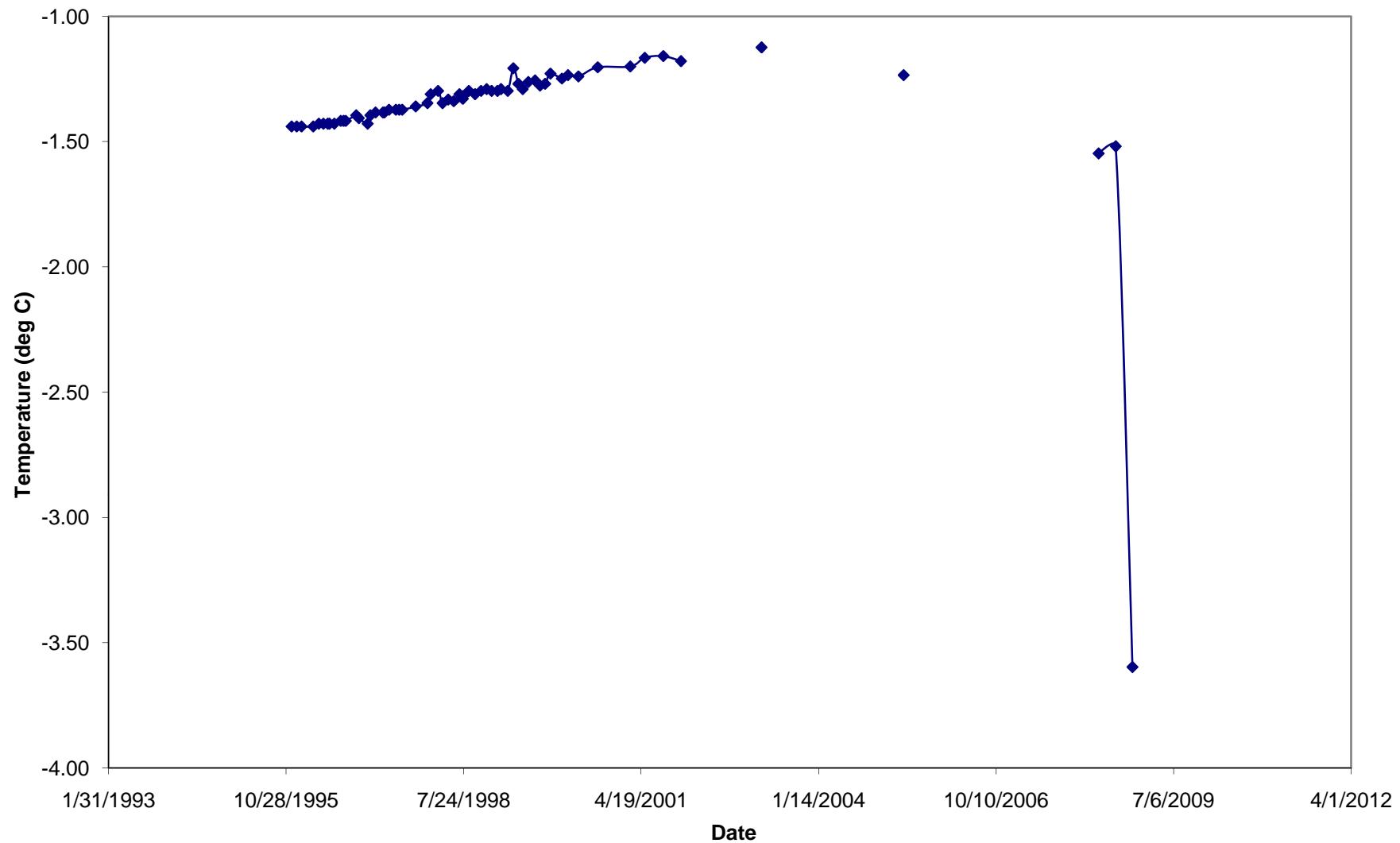
T-95-005 - Temperature at 69 feet



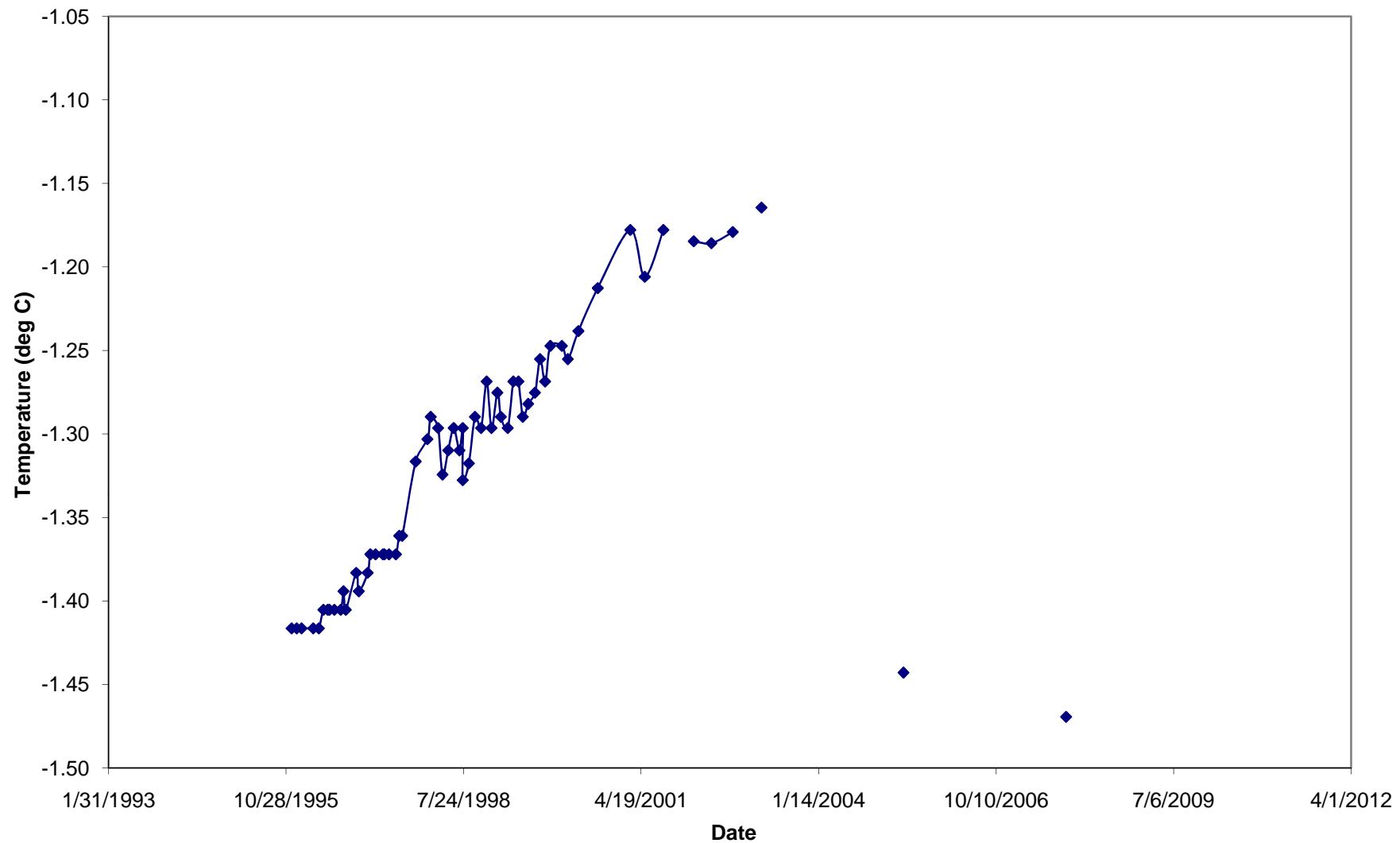
T-95-005 - Temperature at 84 feet



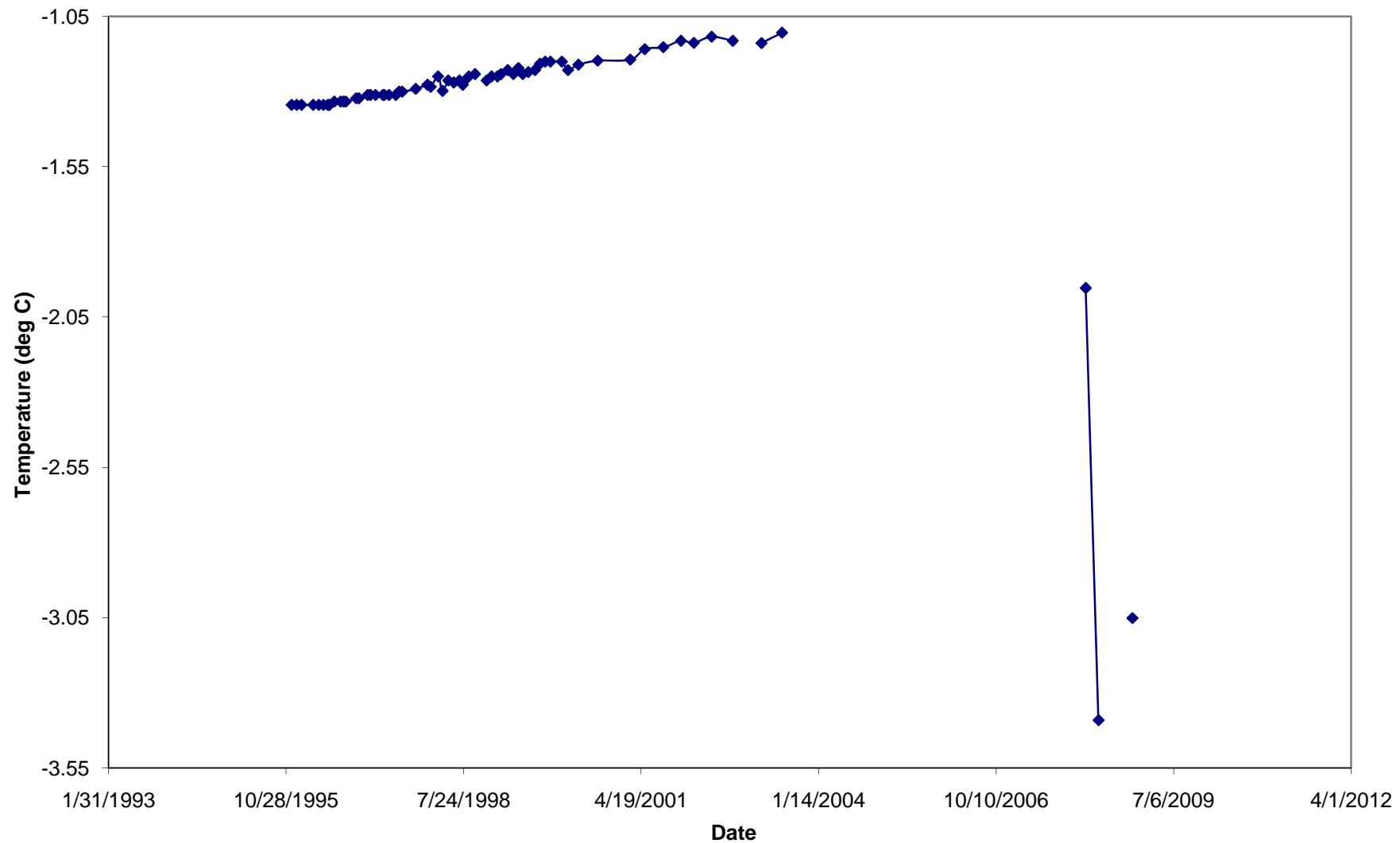
T-95-005 - Temperature at 99 feet



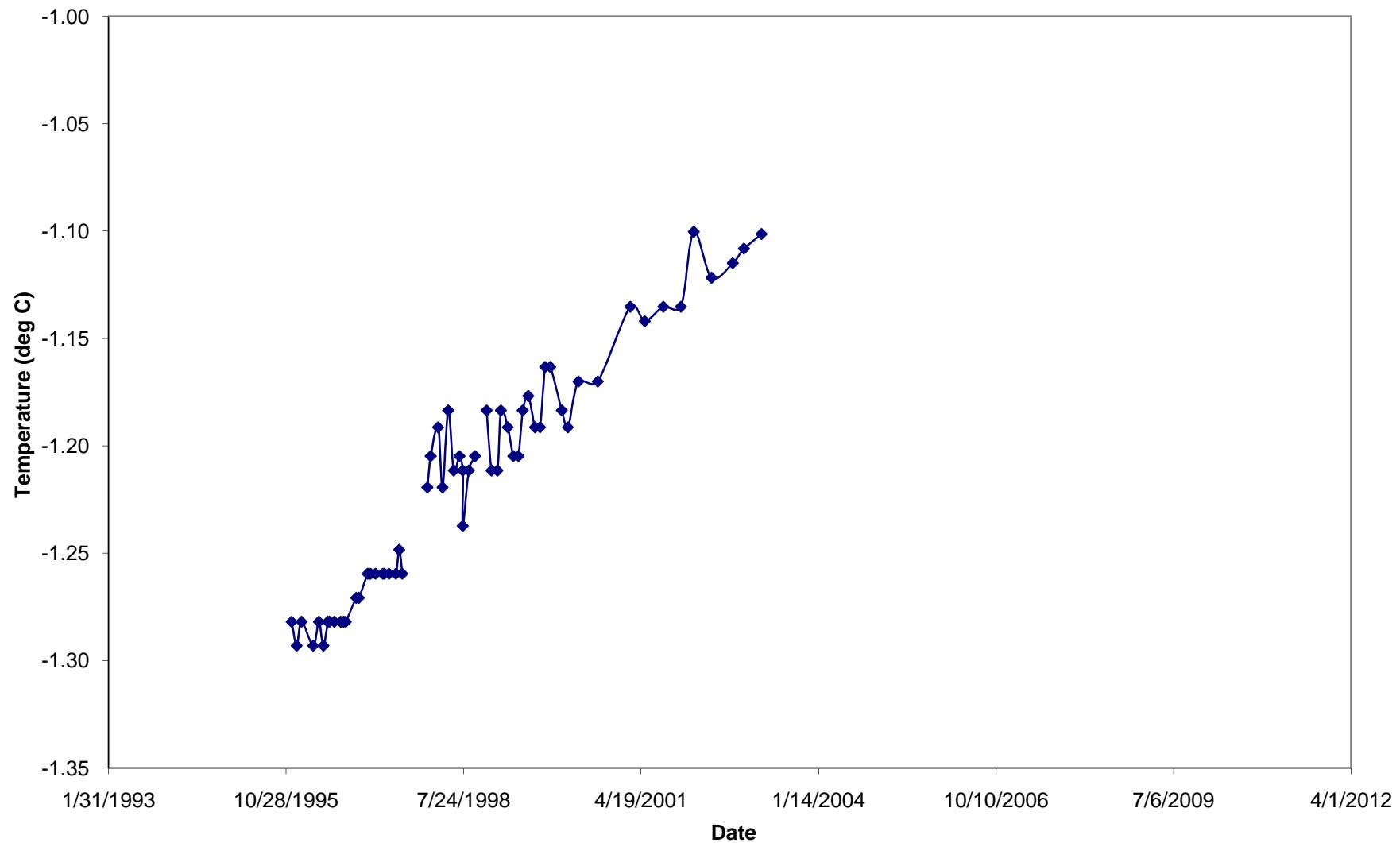
T-95-005 - Temperature at 114 feet



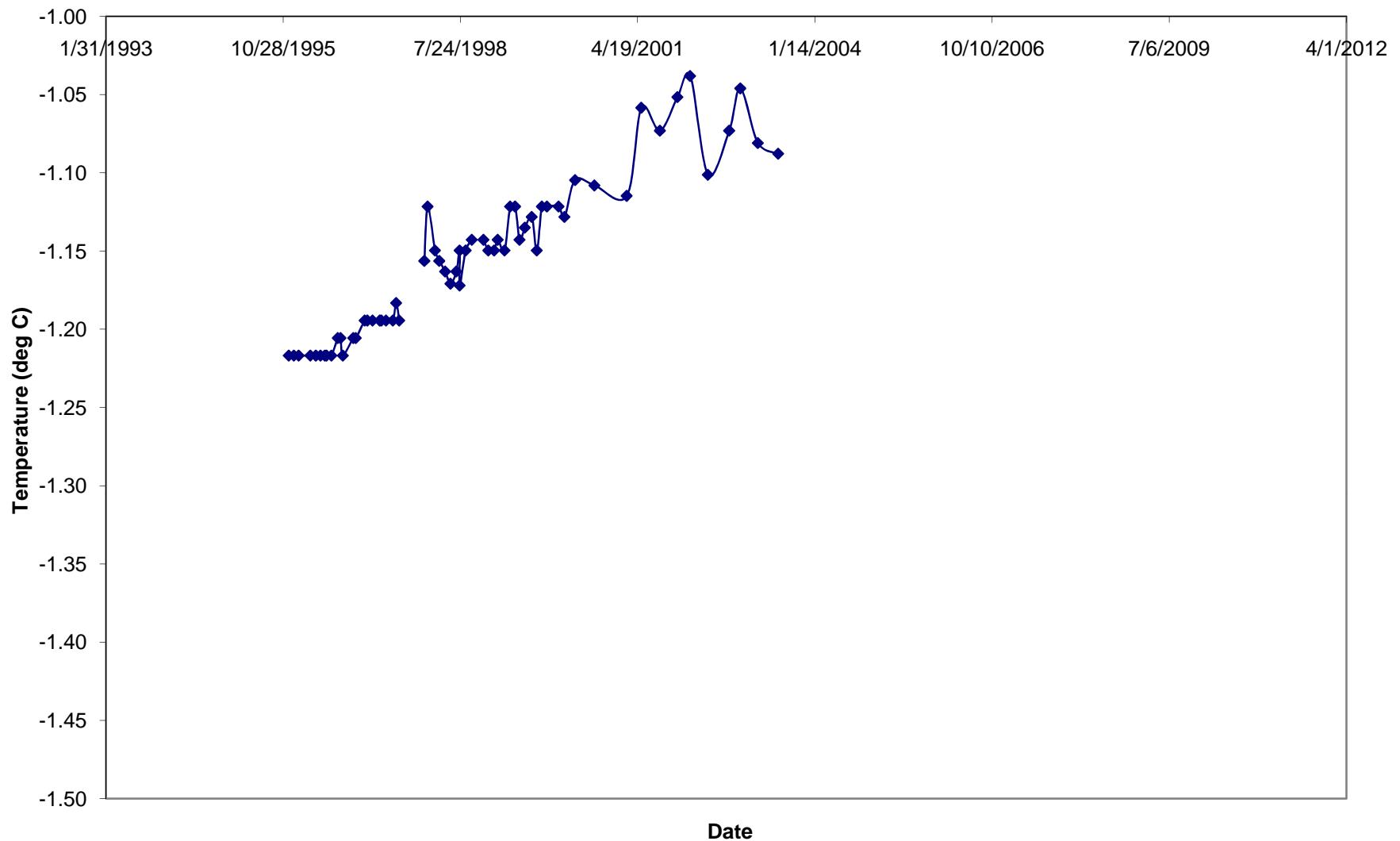
T-95-005 - Temperature at 129 feet



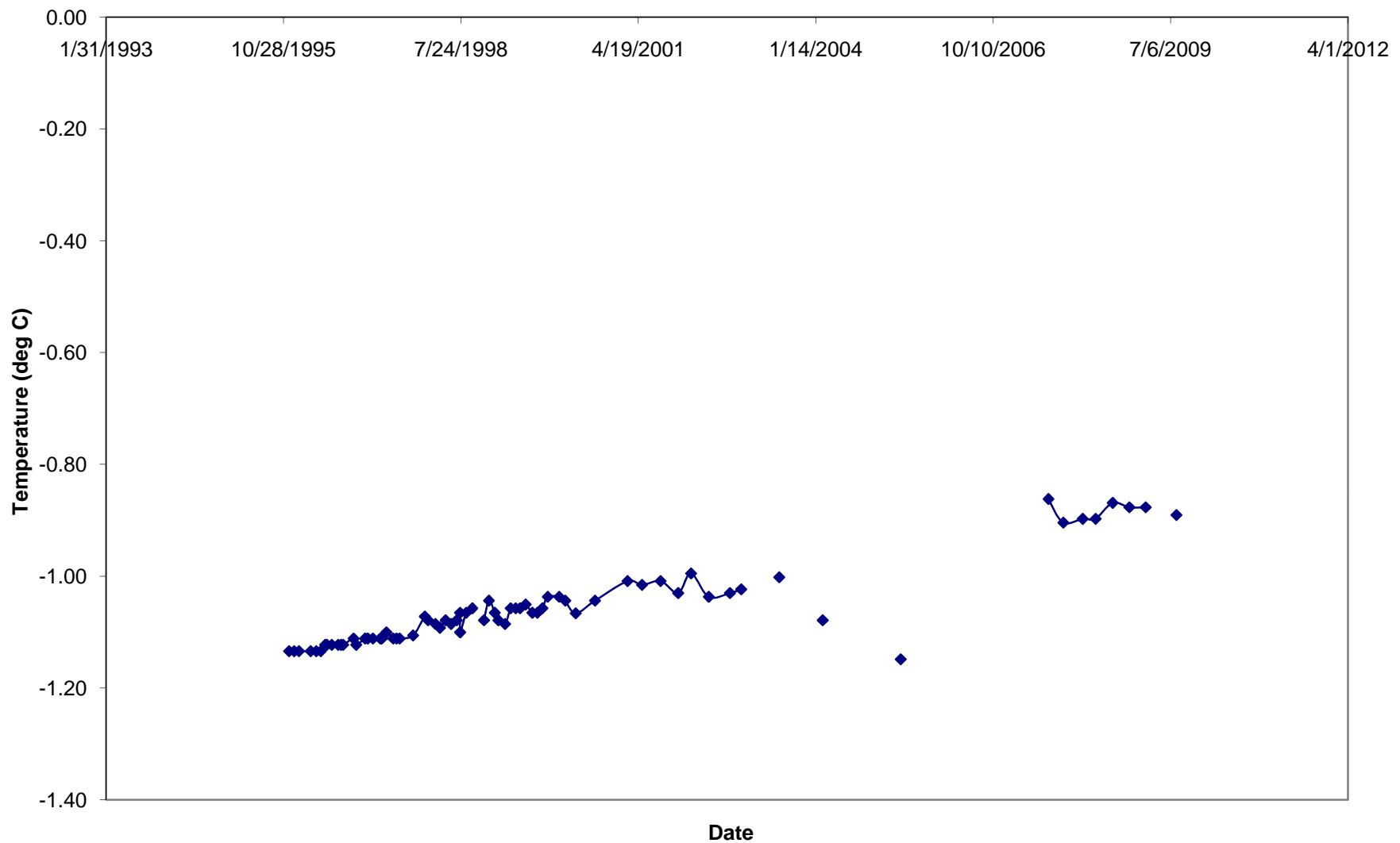
T-95-005 - Temperature at 144 feet



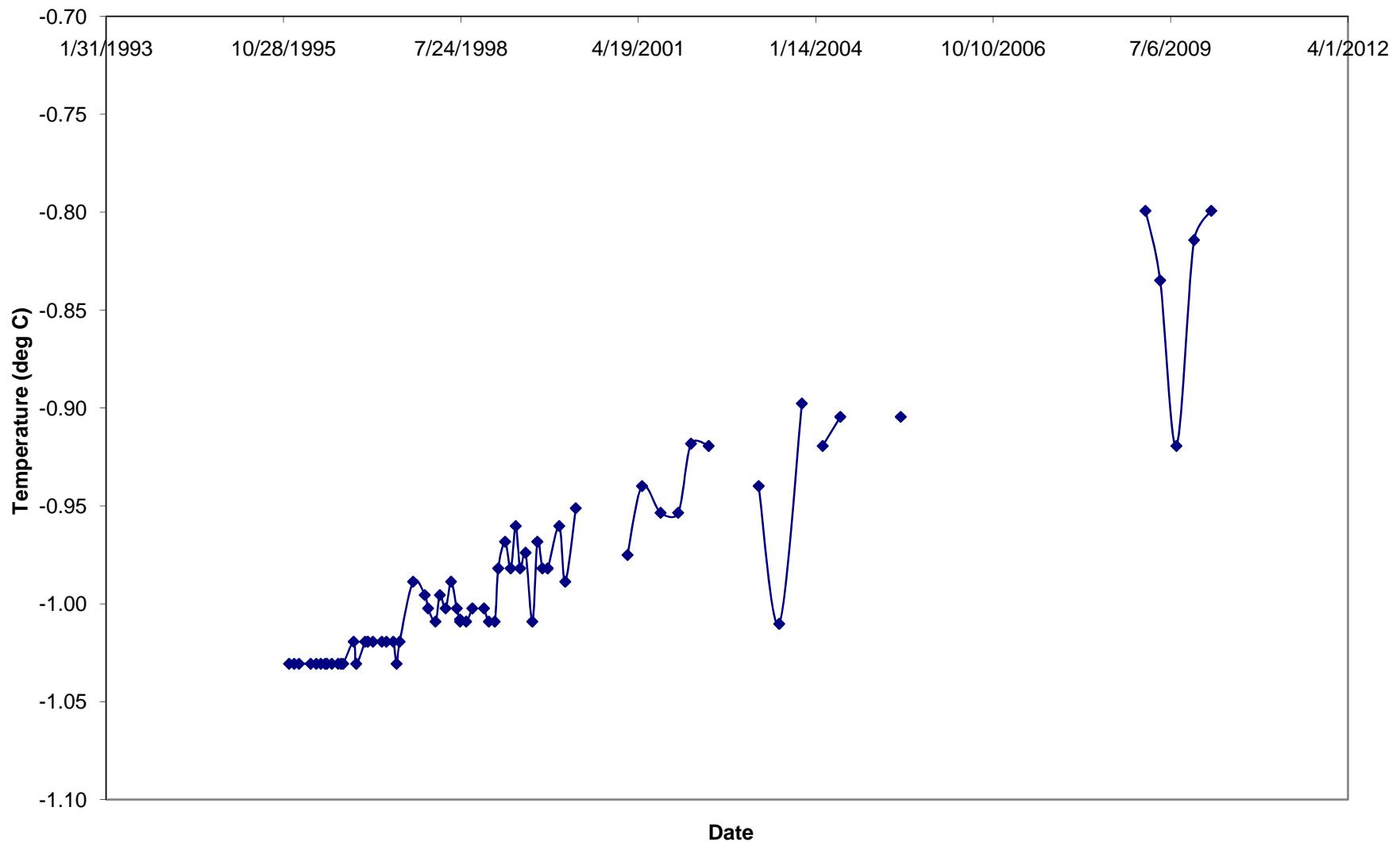
T-95-005 - Temperature at 159 feet



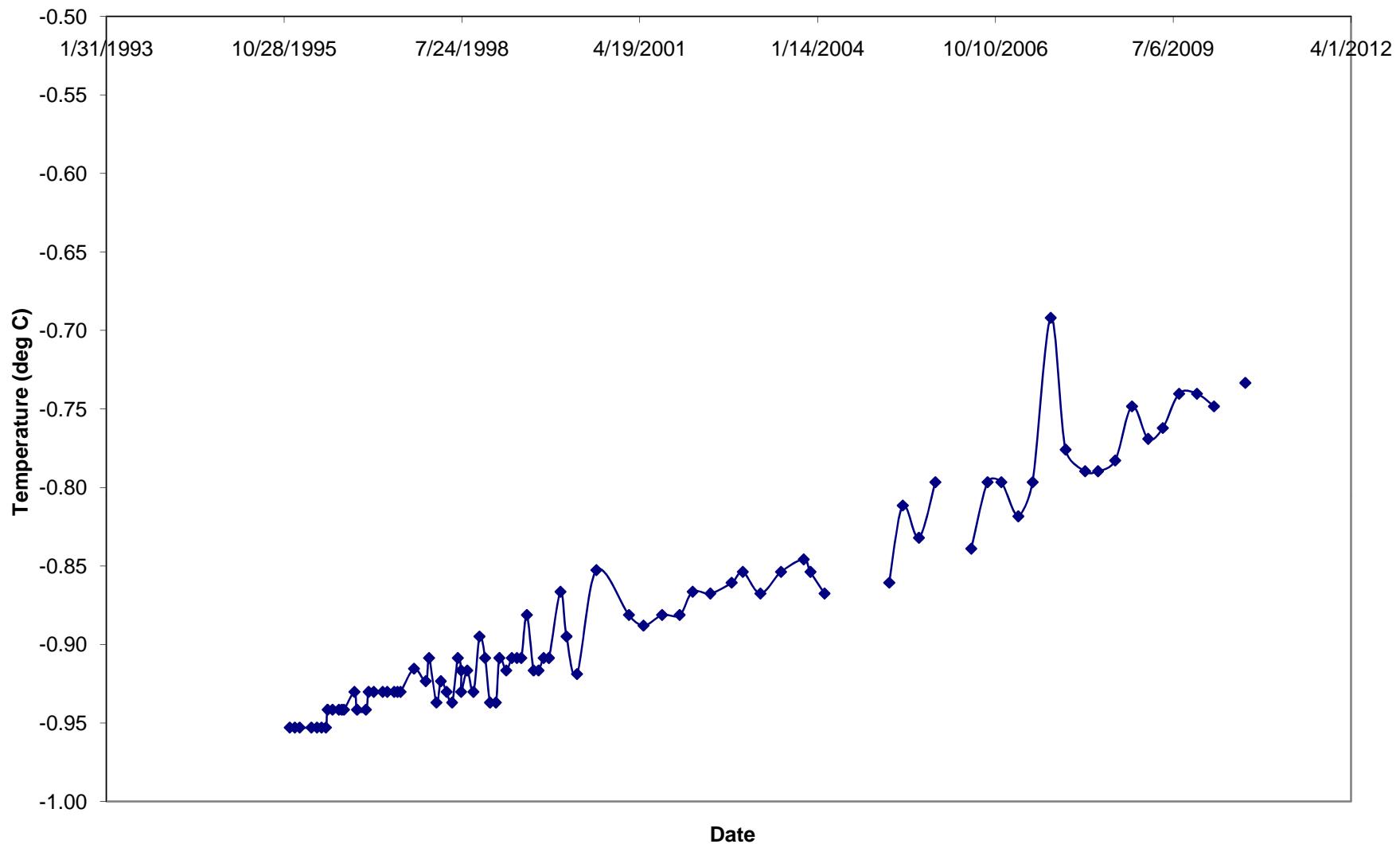
T-95-005 - Temperature at 174 feet



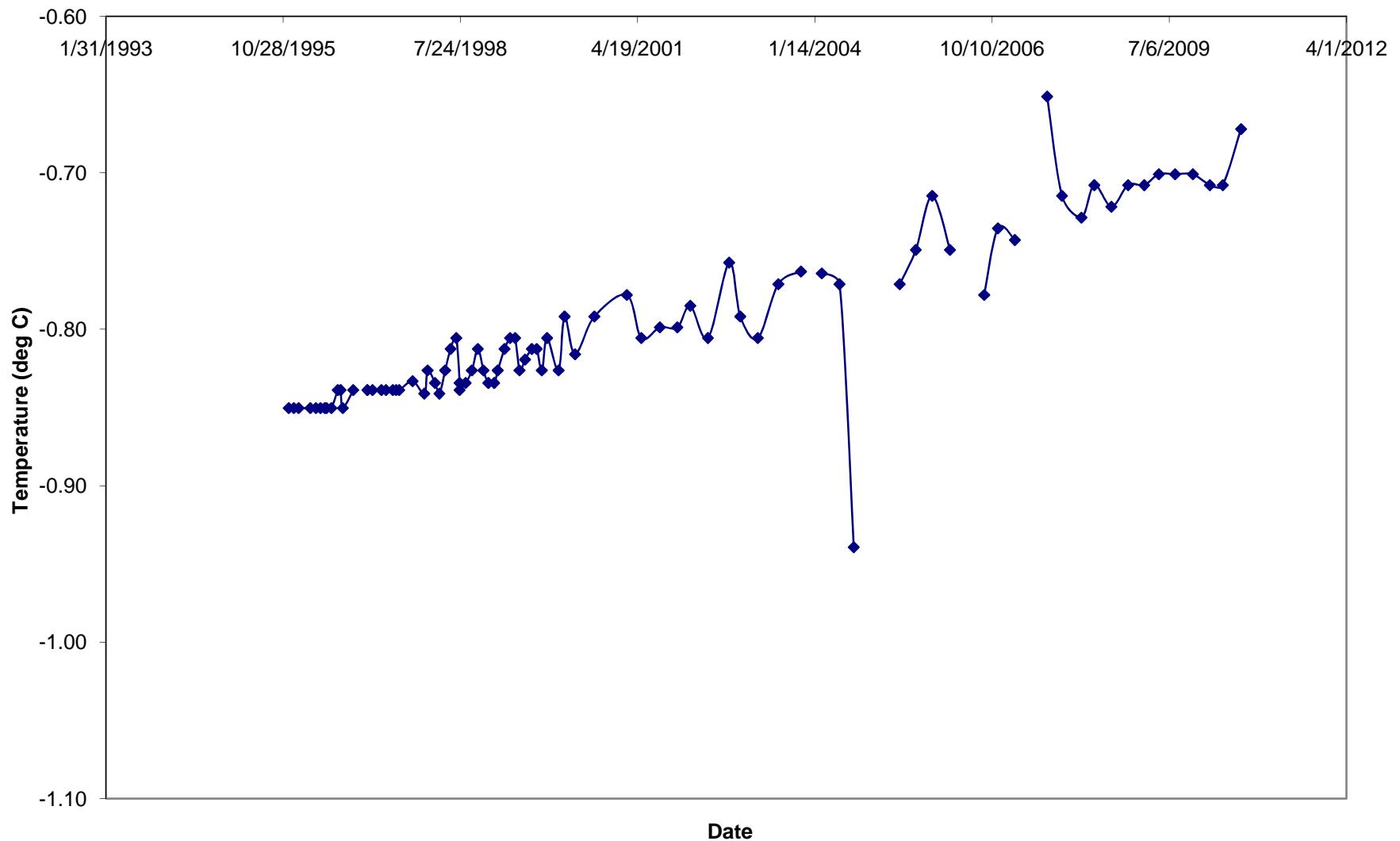
T-95-005 - Temperature at 189 feet



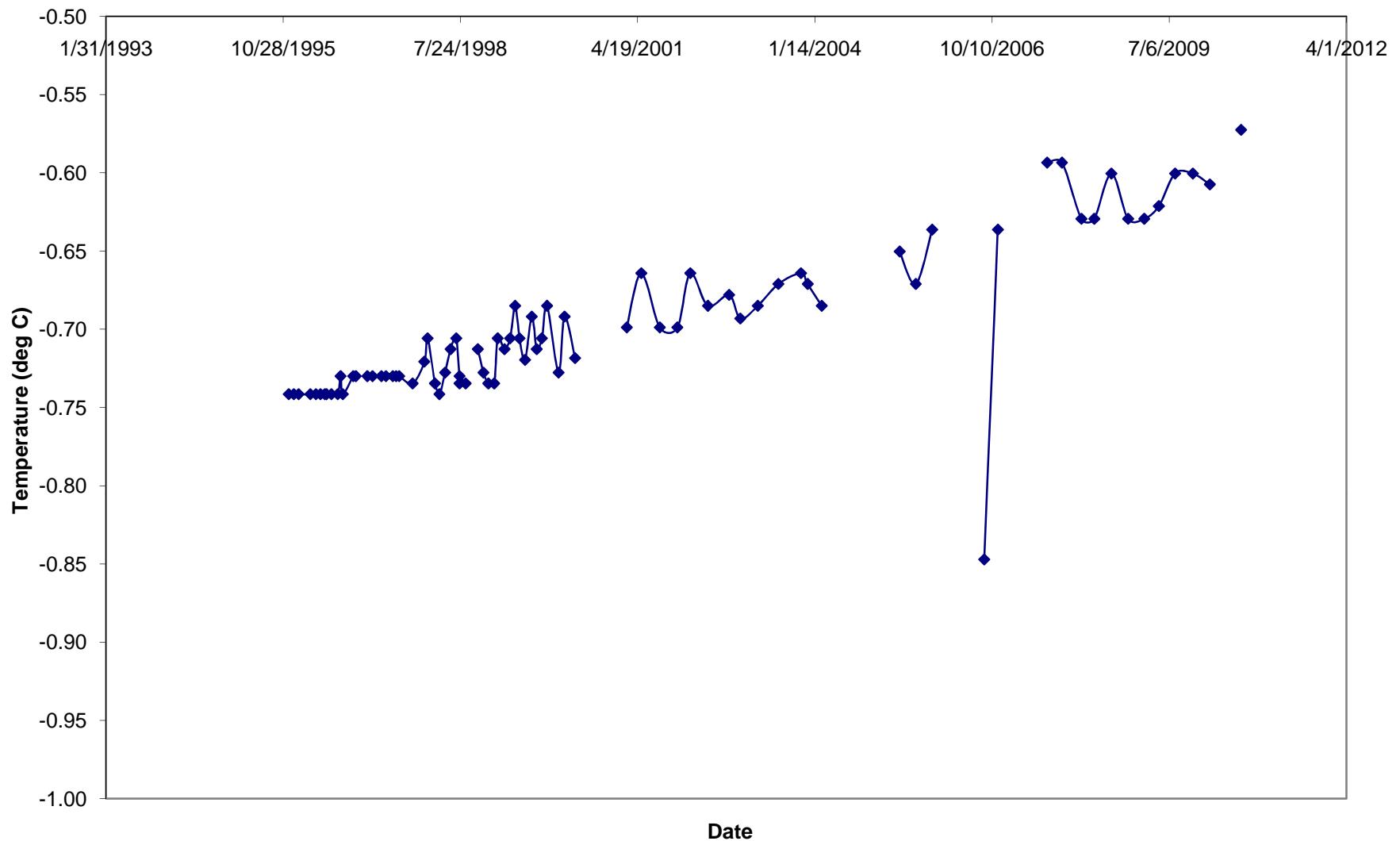
T-95-005 - Temperature at 204 feet



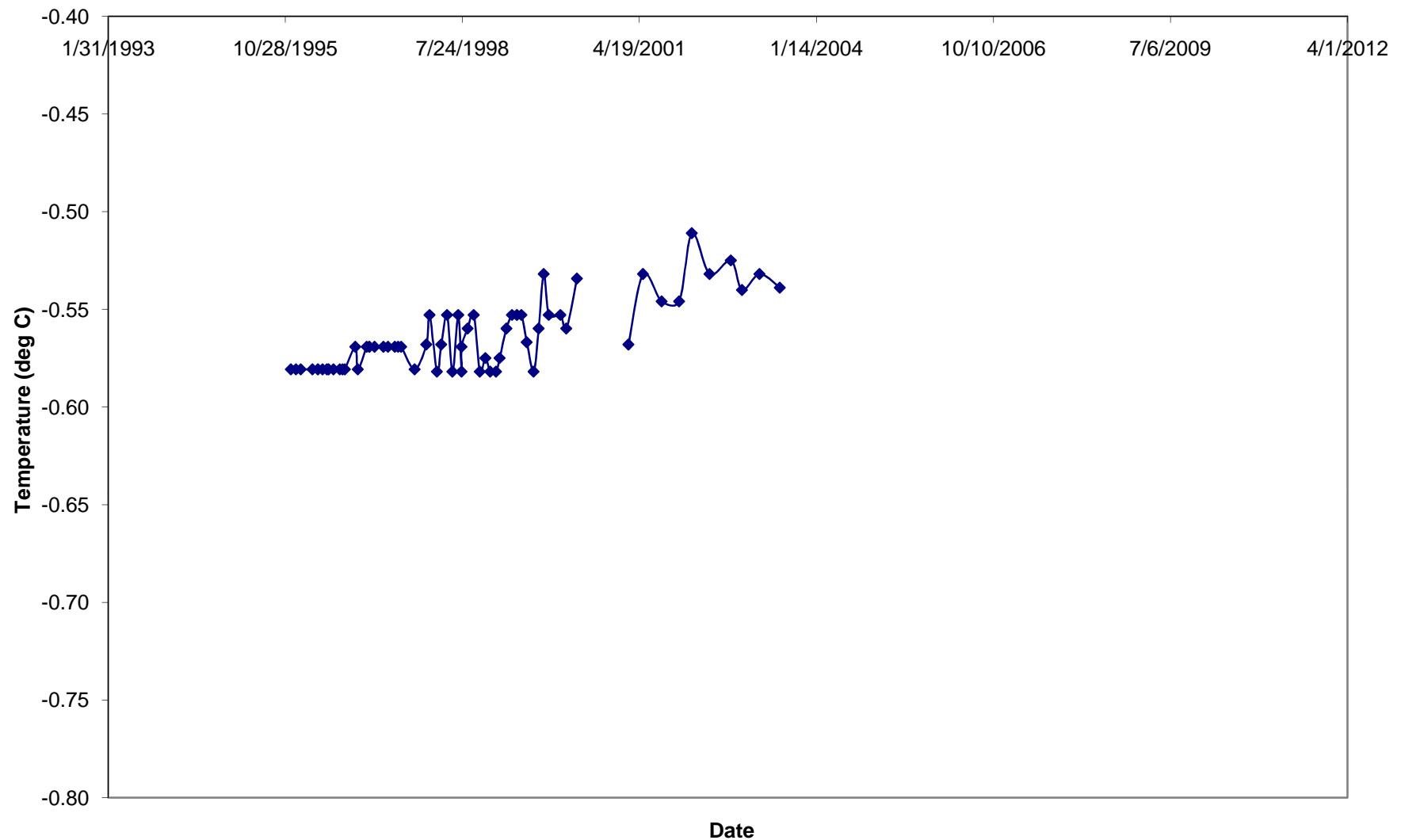
T-95-005 - Temperature at 219 feet



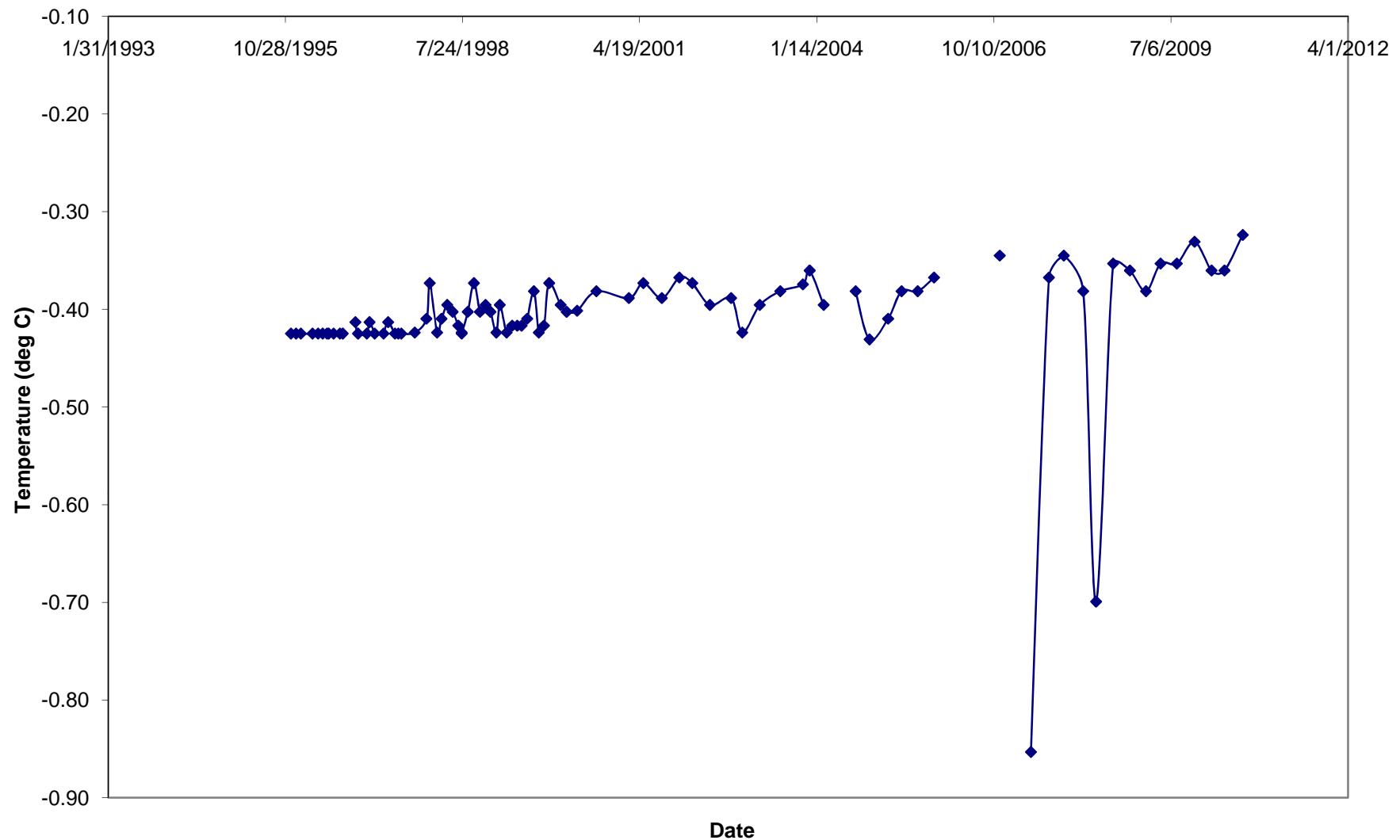
T-95-005 - Temperature at 234 feet



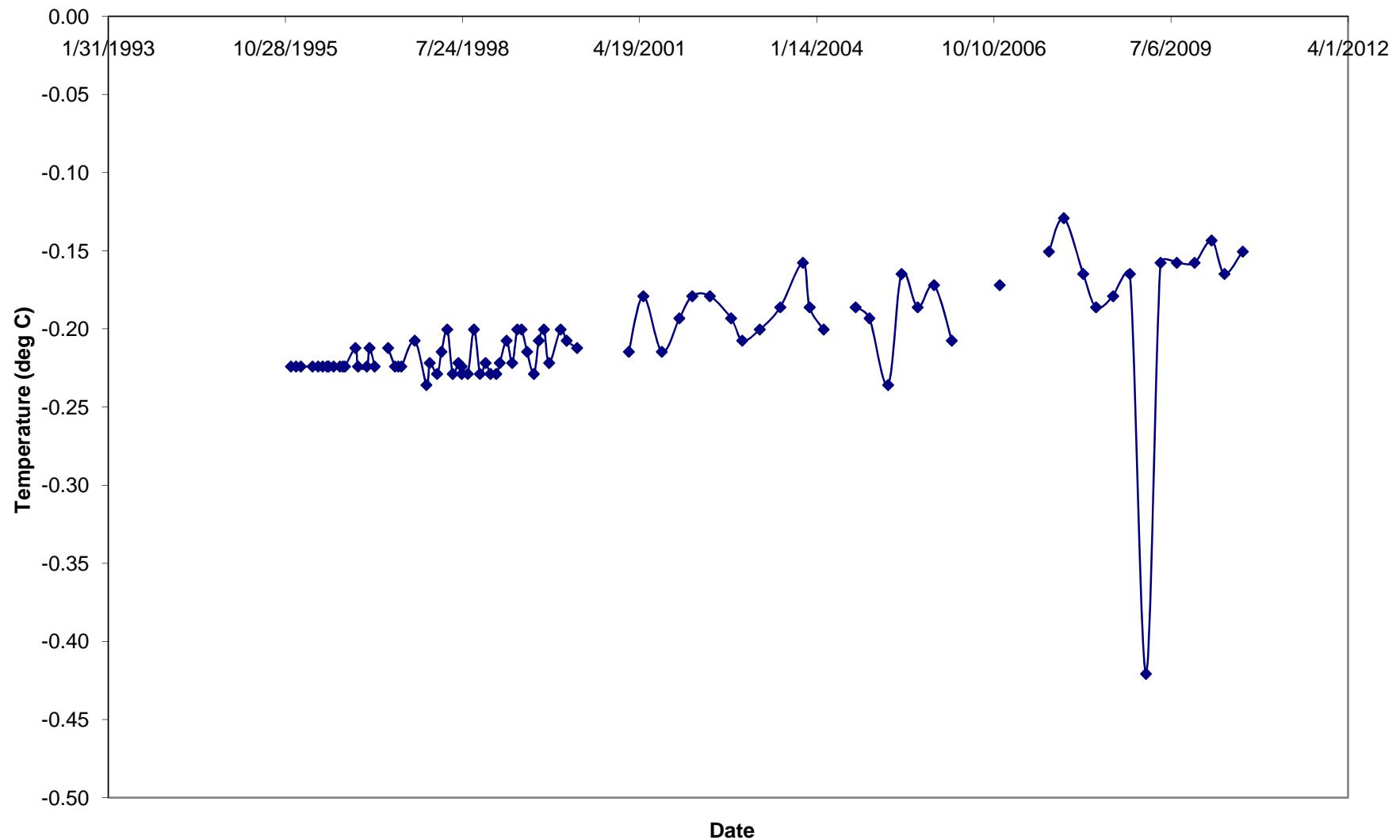
T-95-005 - Temperature at 254 feet



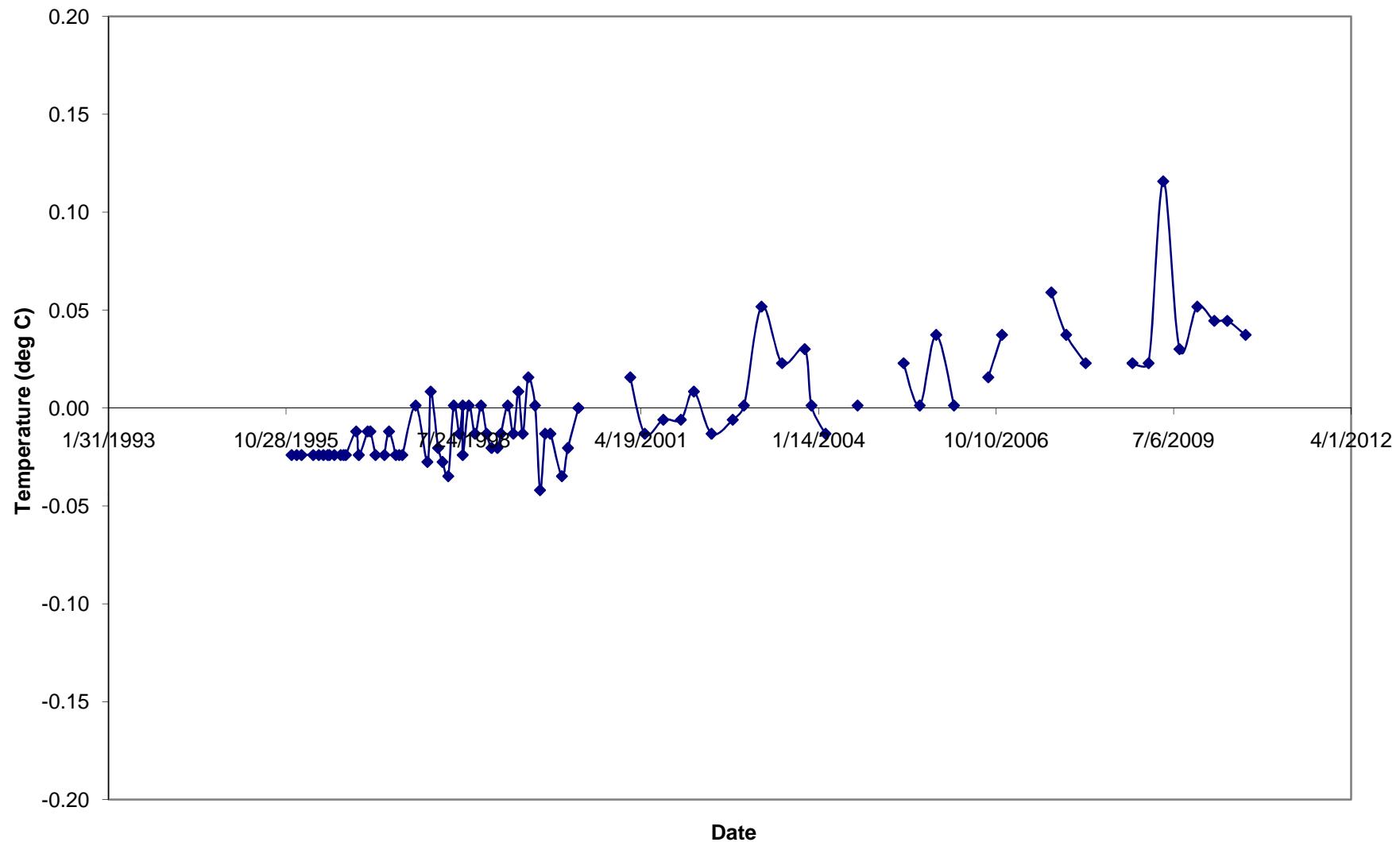
T-95-005 - Temperature at 274 feet



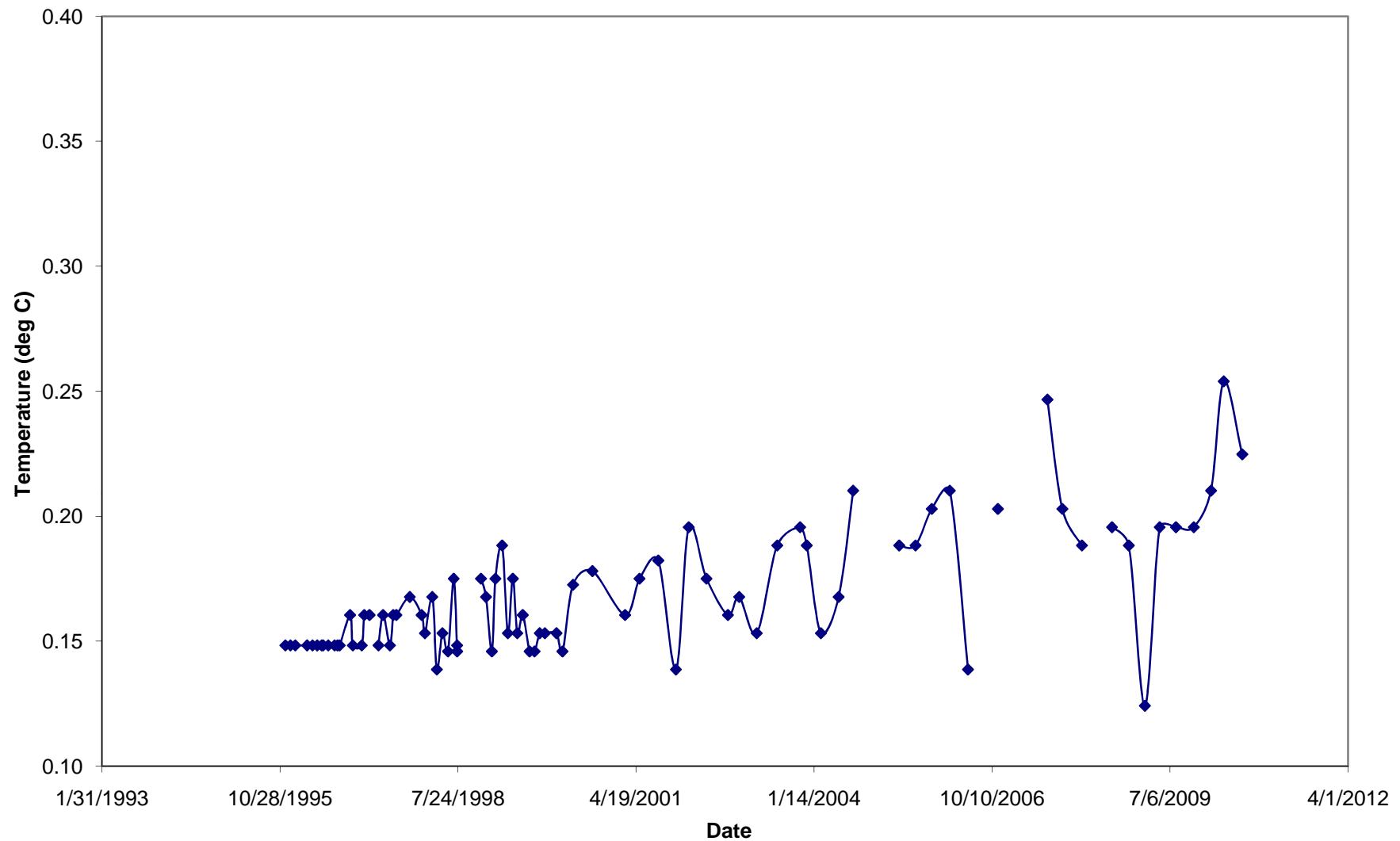
T-95-005 - Temperature at 294 feet



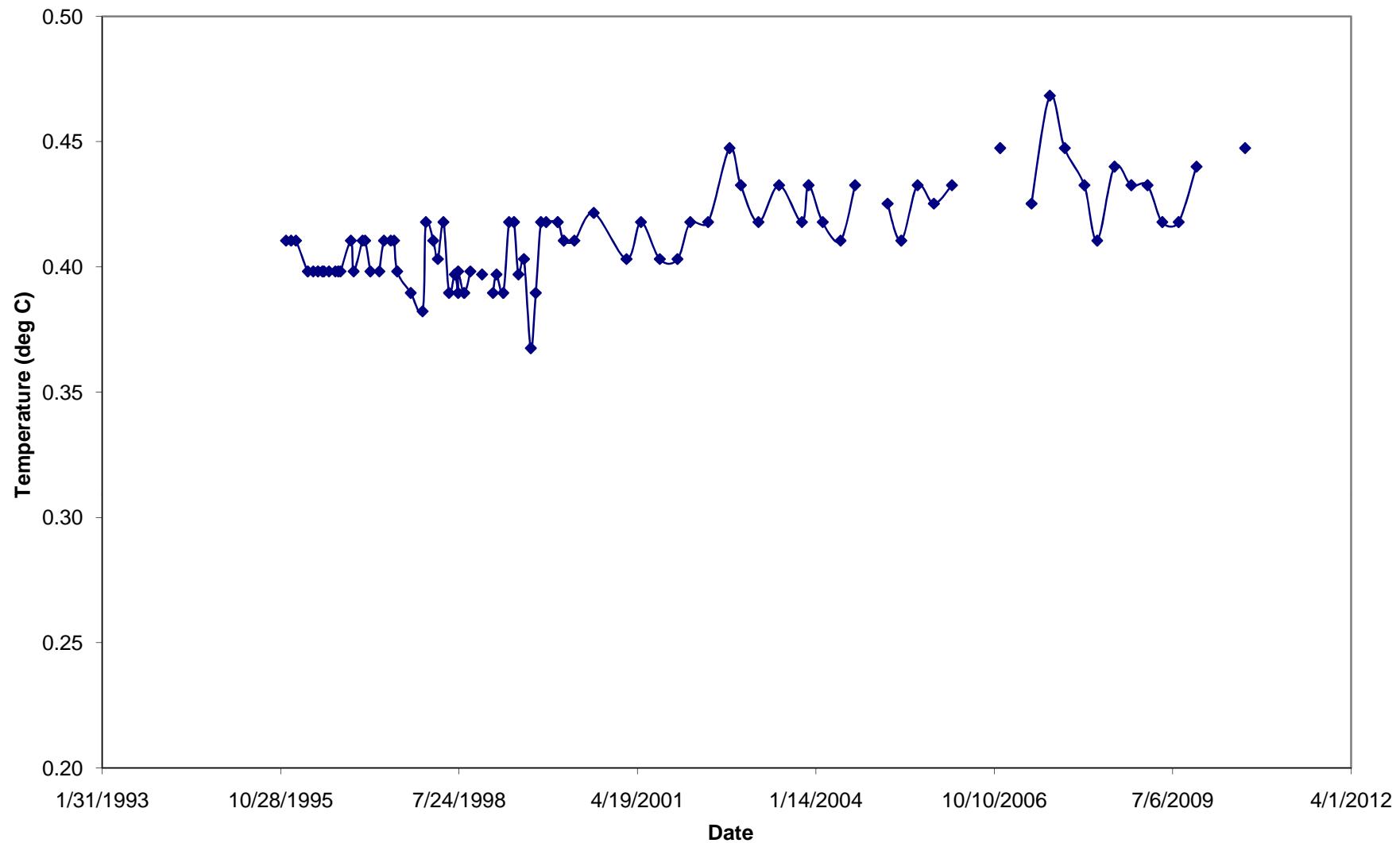
T-95-005 - Temperature at 314 feet



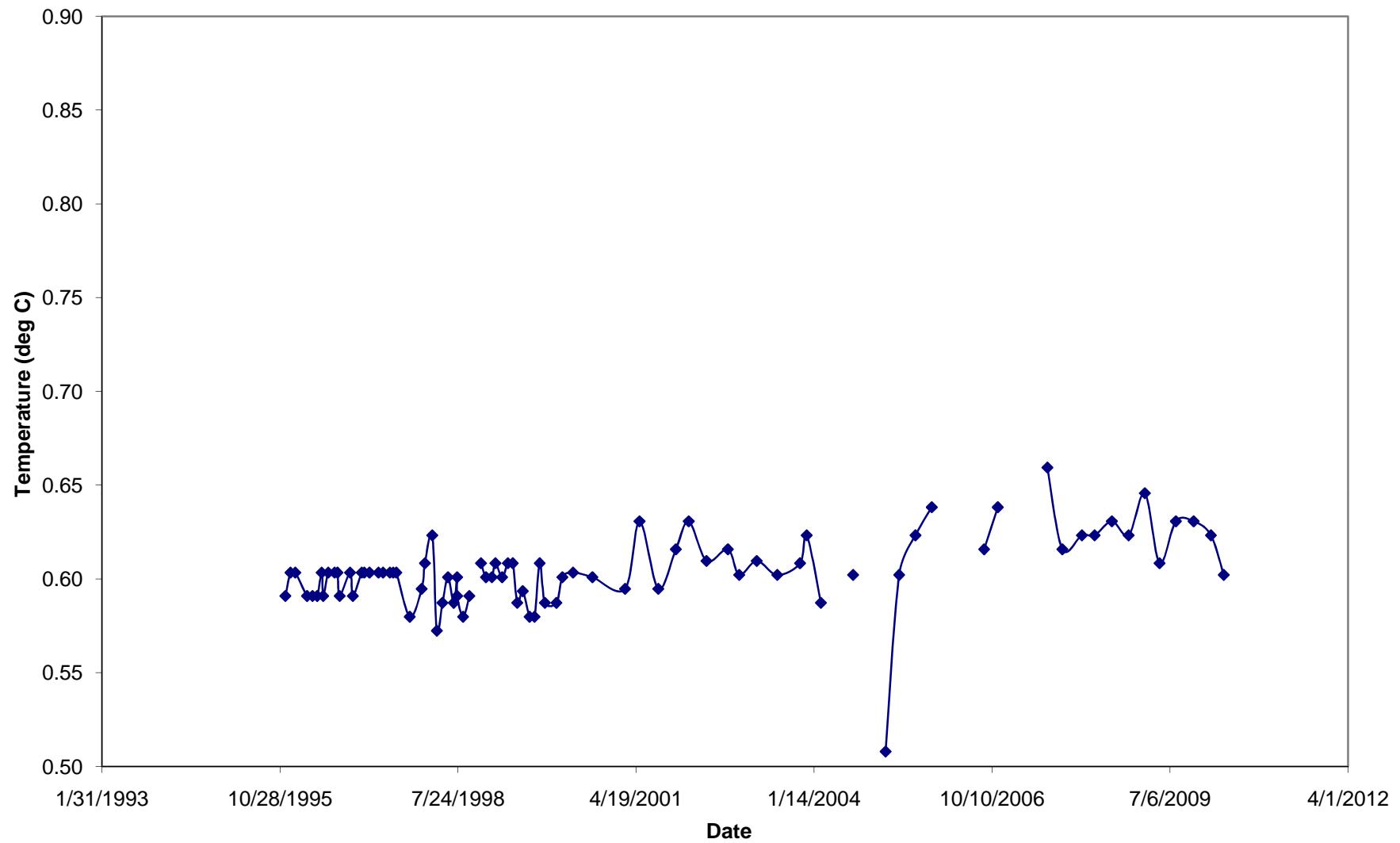
T-95-005 - Temperature at 334 feet



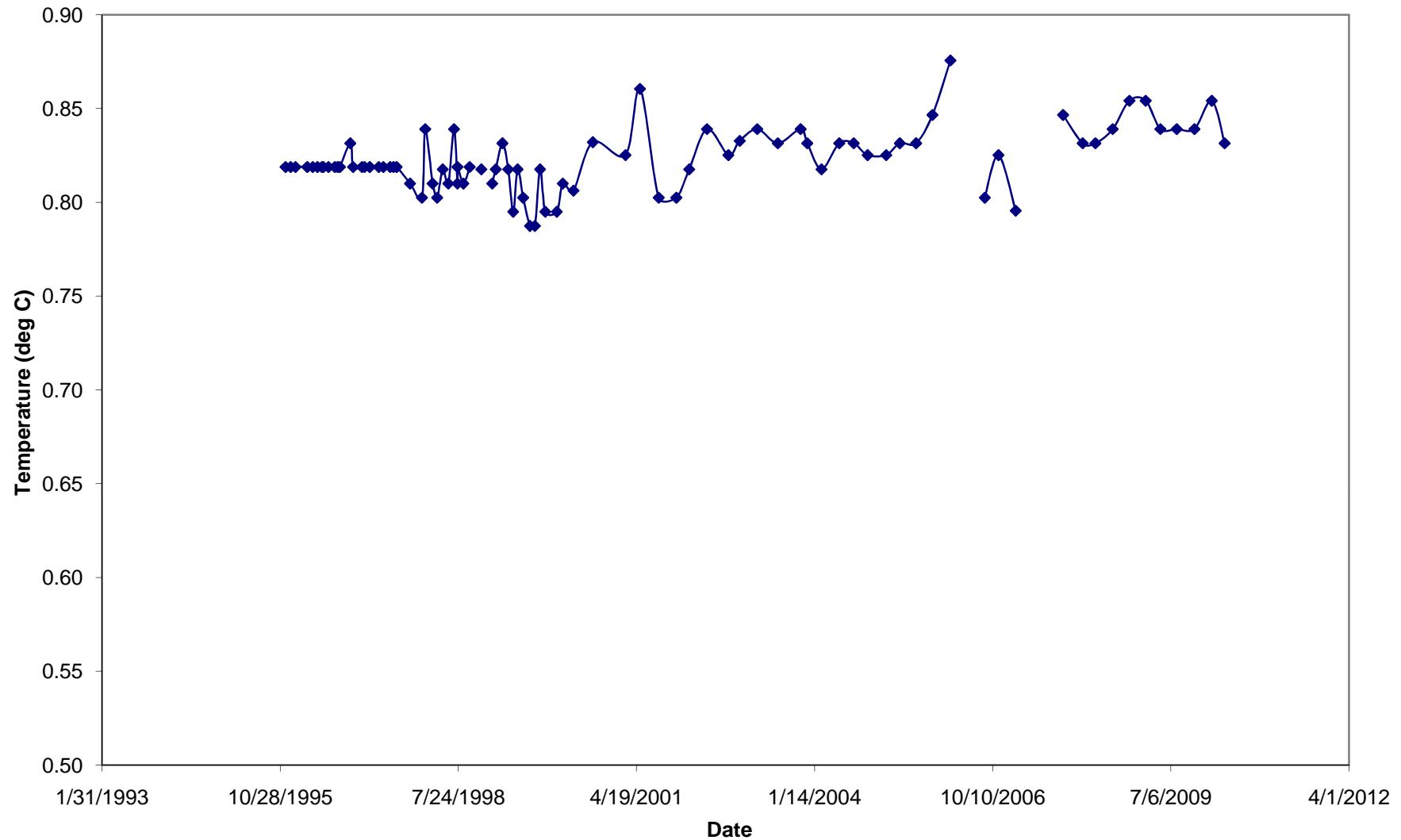
T-95-005 - Temperature at 354 feet



T-95-005 - Temperature at 374 feet

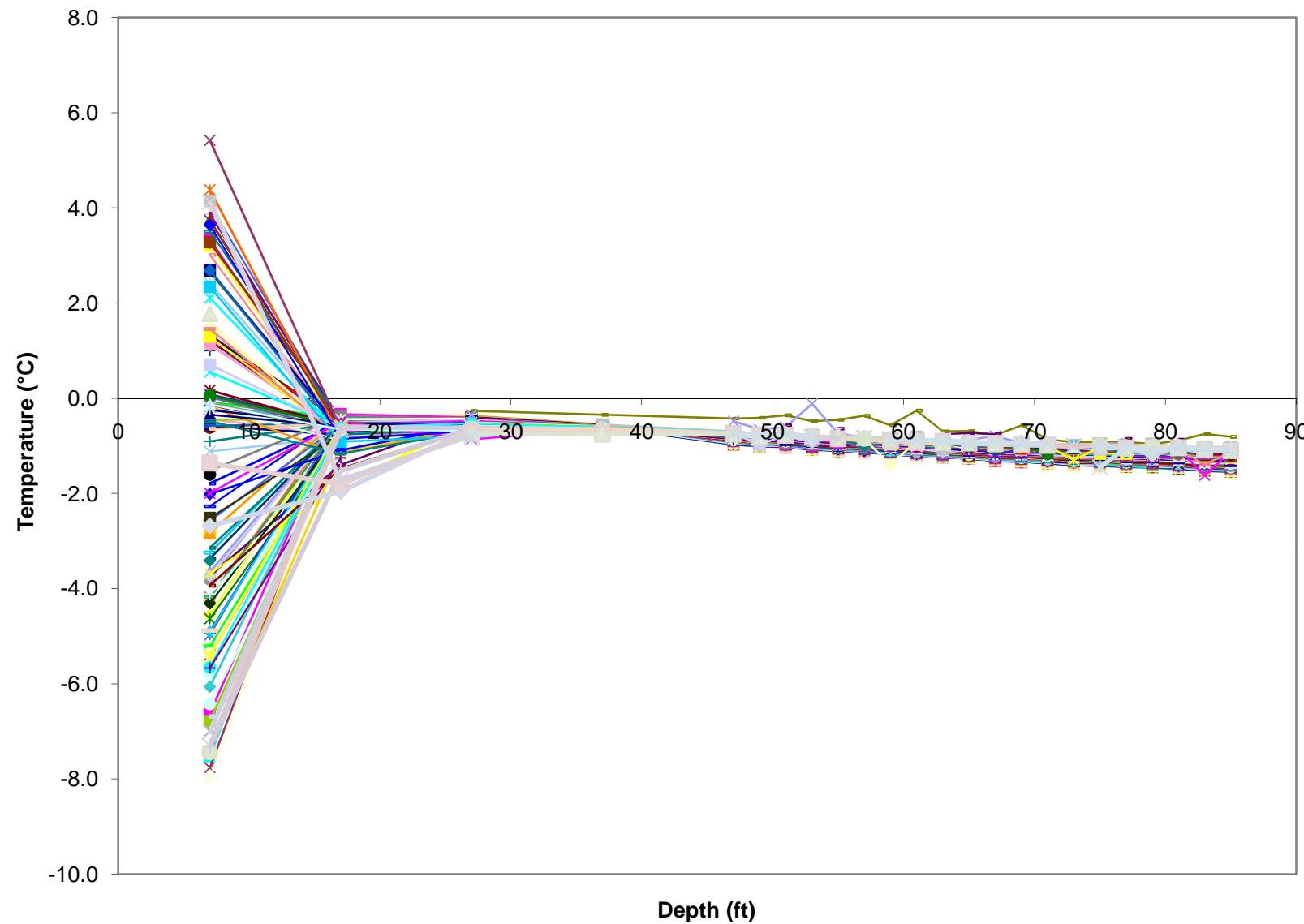


T-95-005 - Temperature at 394 feet

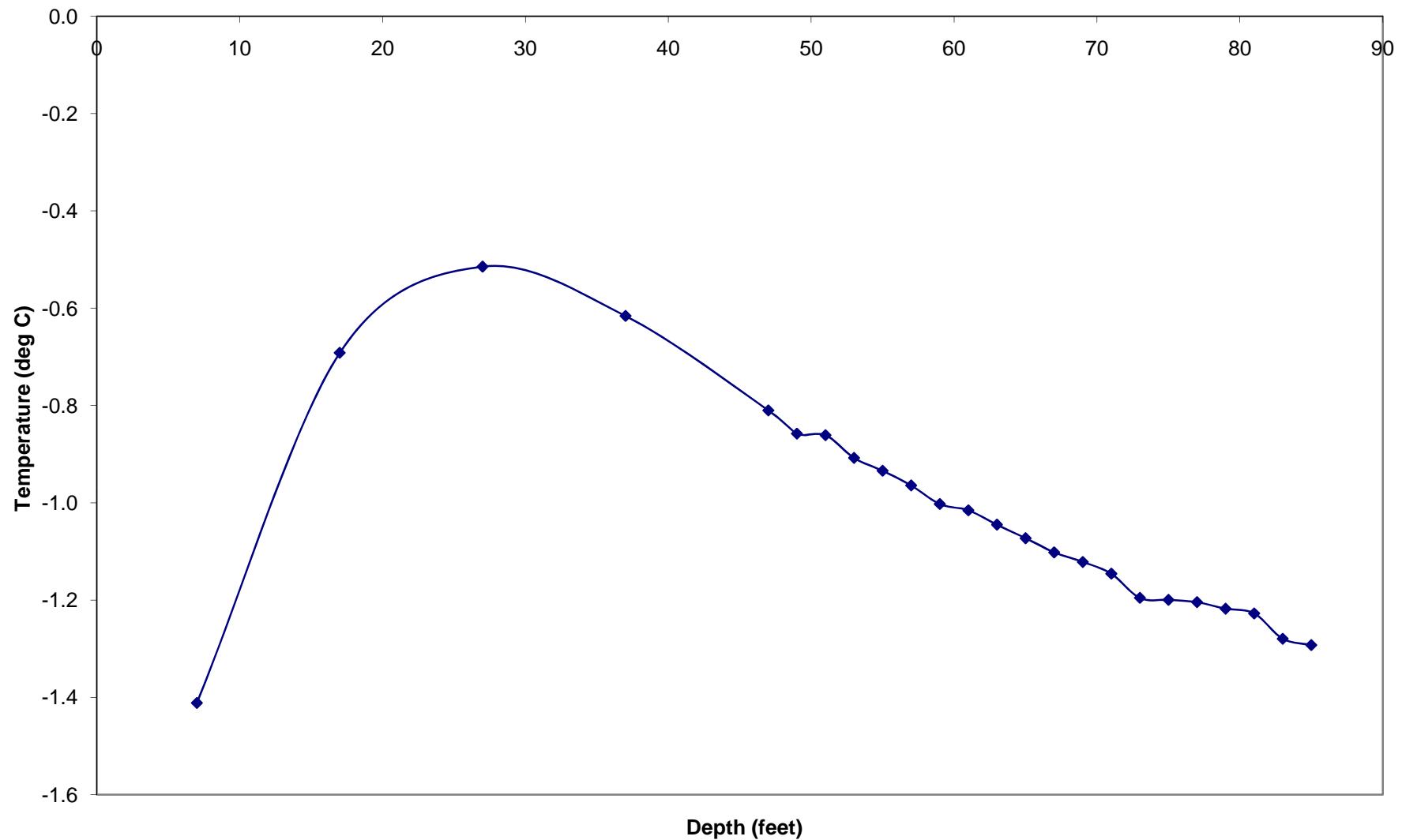


T-95-008 #2

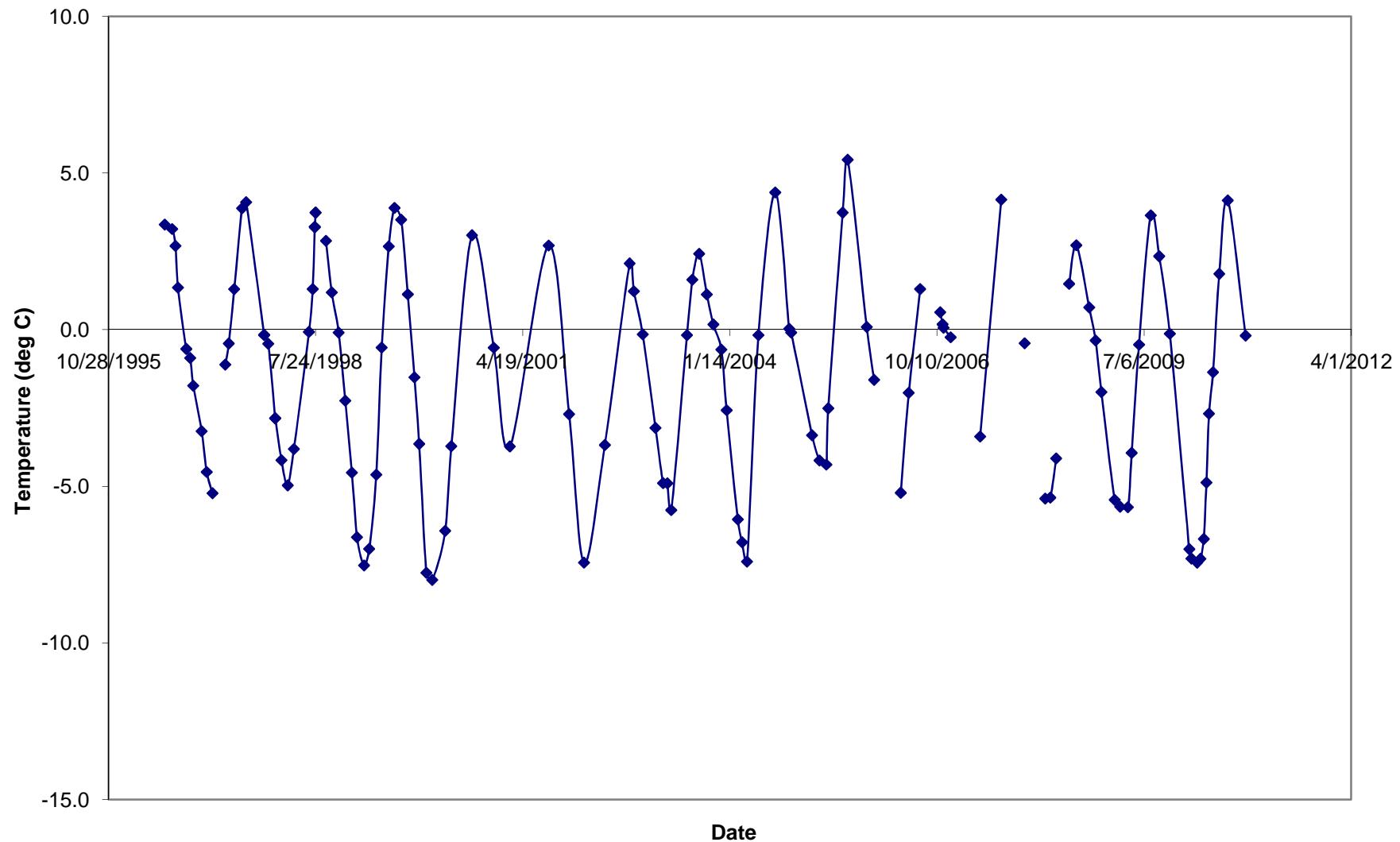
Temperature Depth Plot for T-95-008 #2



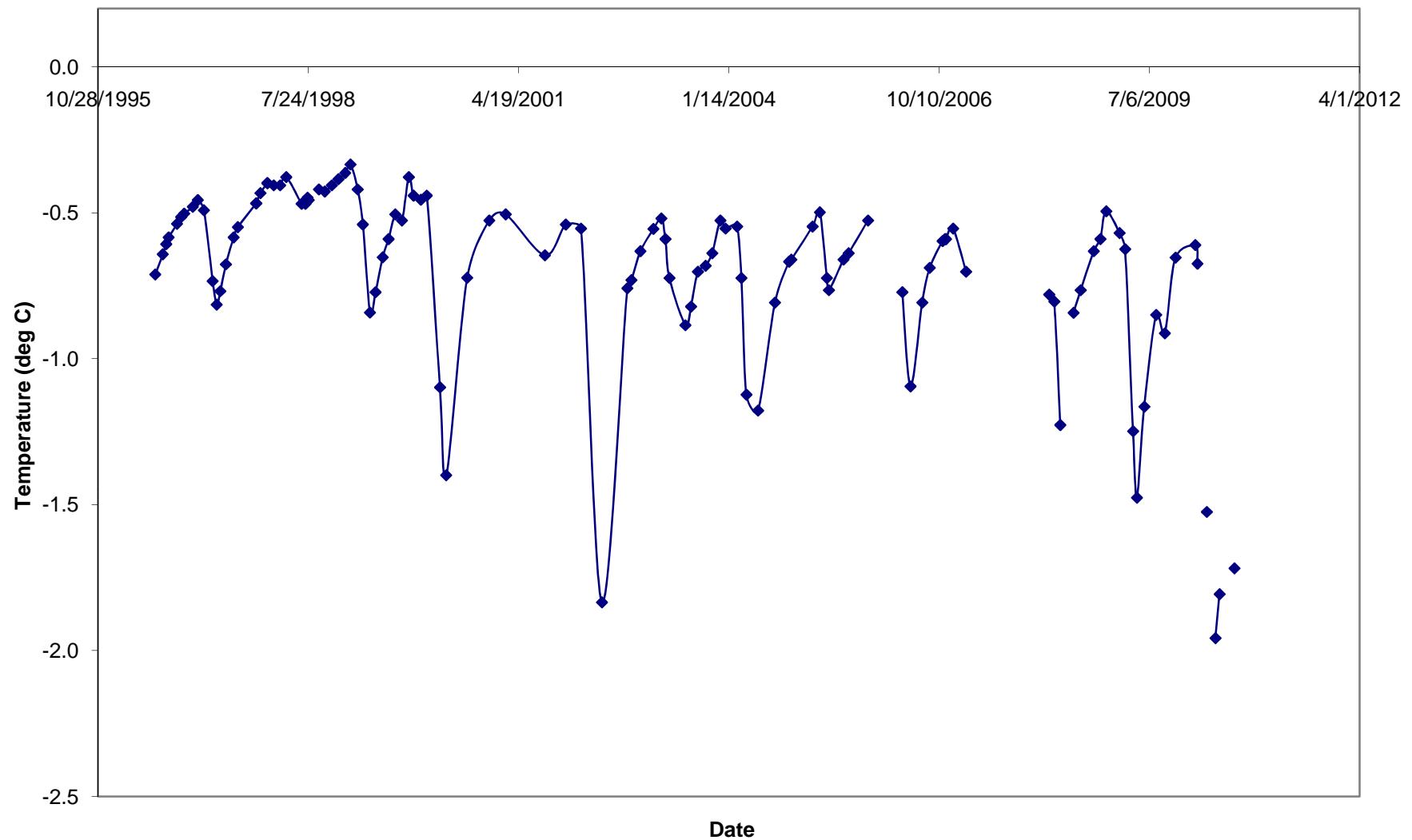
T-95-008 - Replacement string - average temperature versus depth



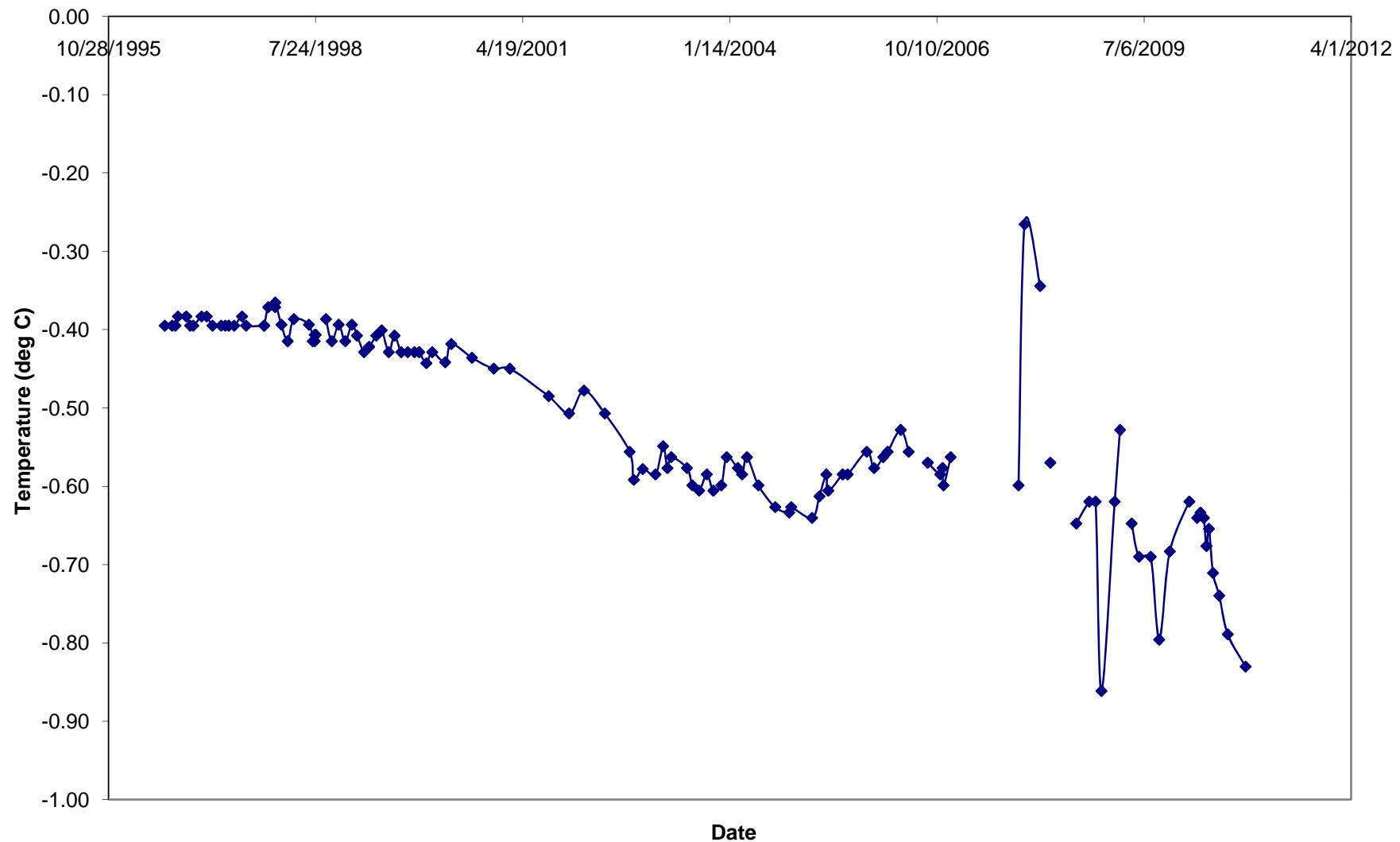
T-95-008 - Replacement string - Temperatures at 7 feet



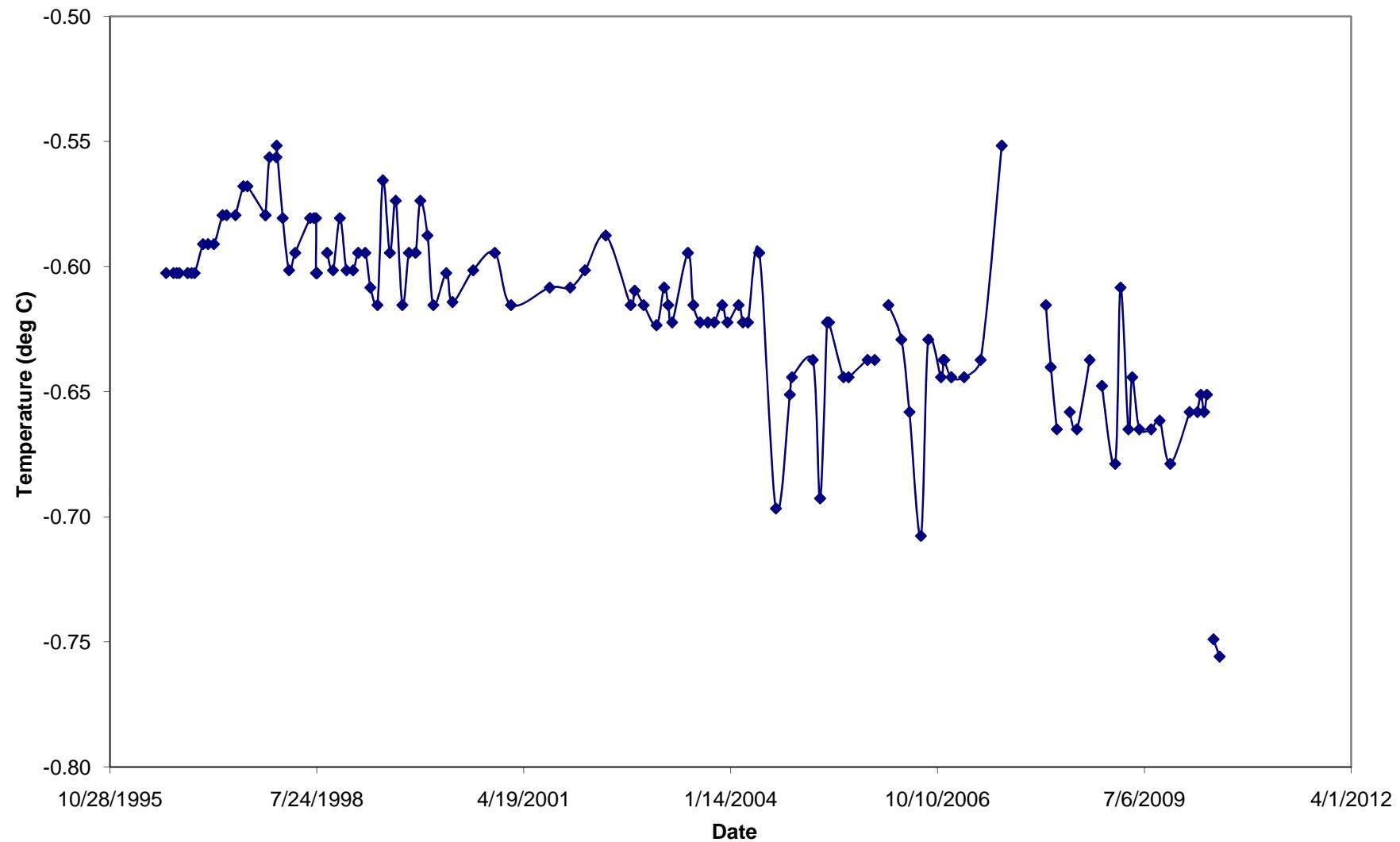
T-95-008 - Replacement string - Temperatures at 17 feet



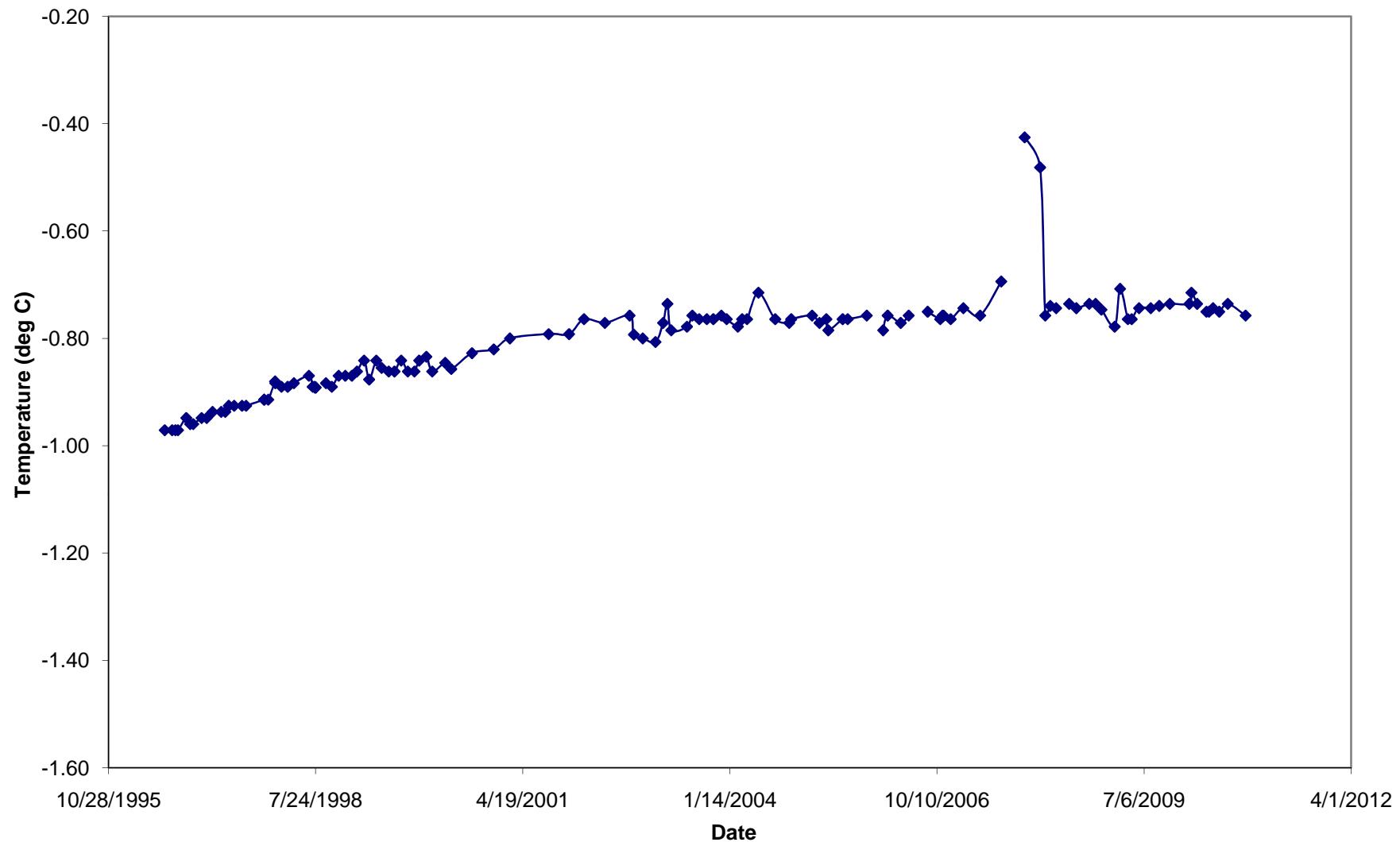
T-95-008 - Replacement string - Temperatures at 27 feet



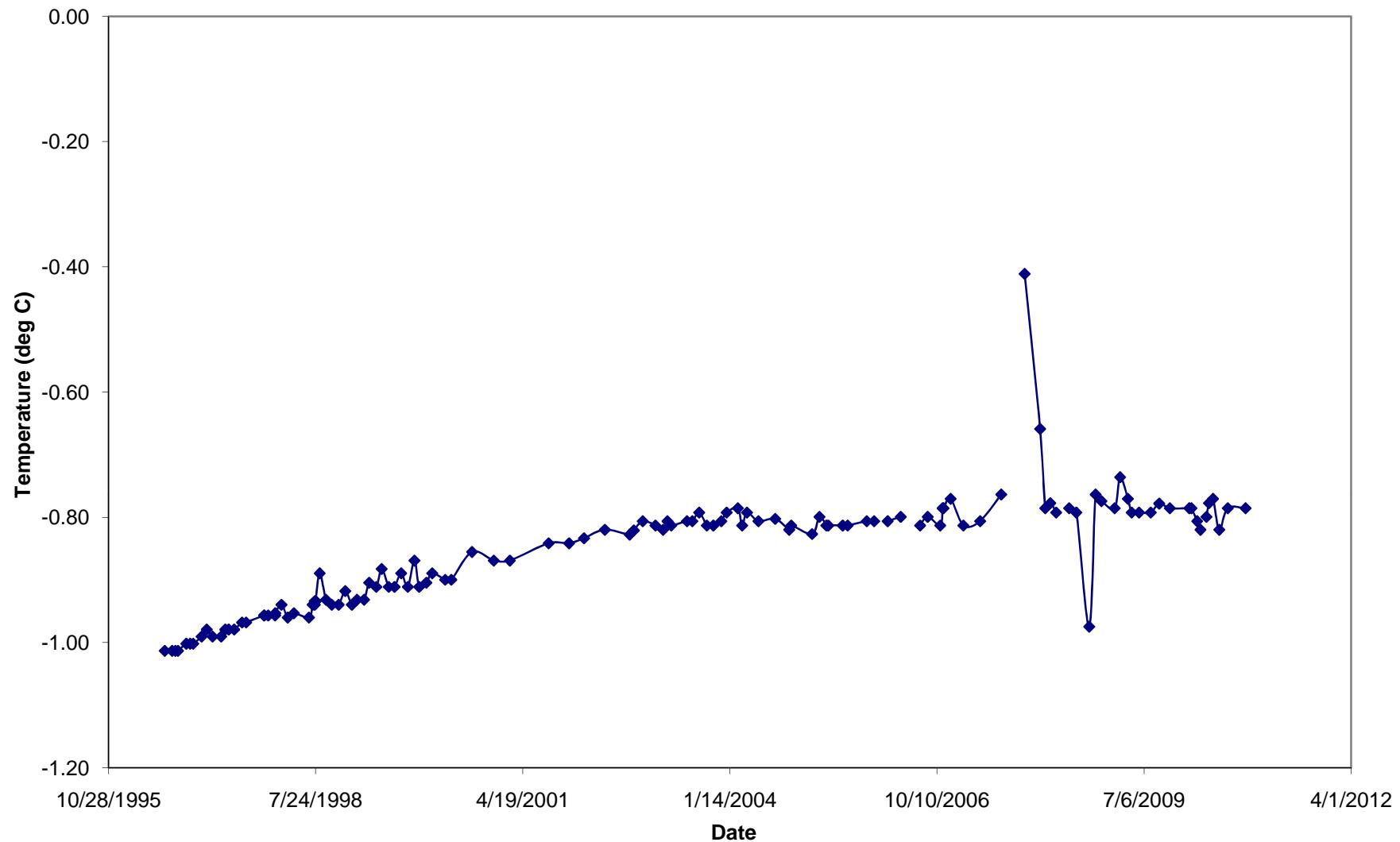
T-95-008 - Replacement string - Temperatures at 37 feet



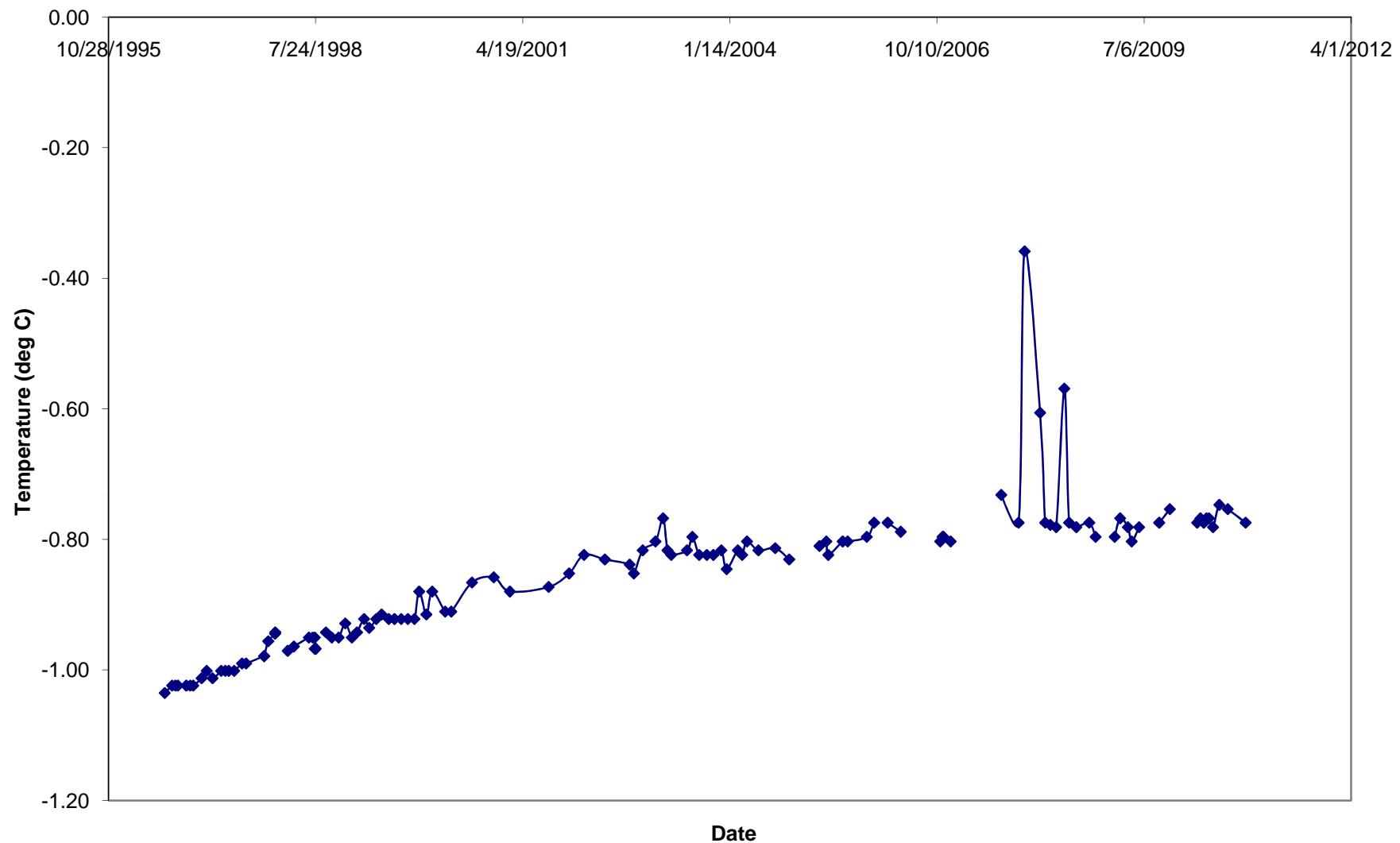
T-95-008 - Replacement string - Temperatures at 47 feet



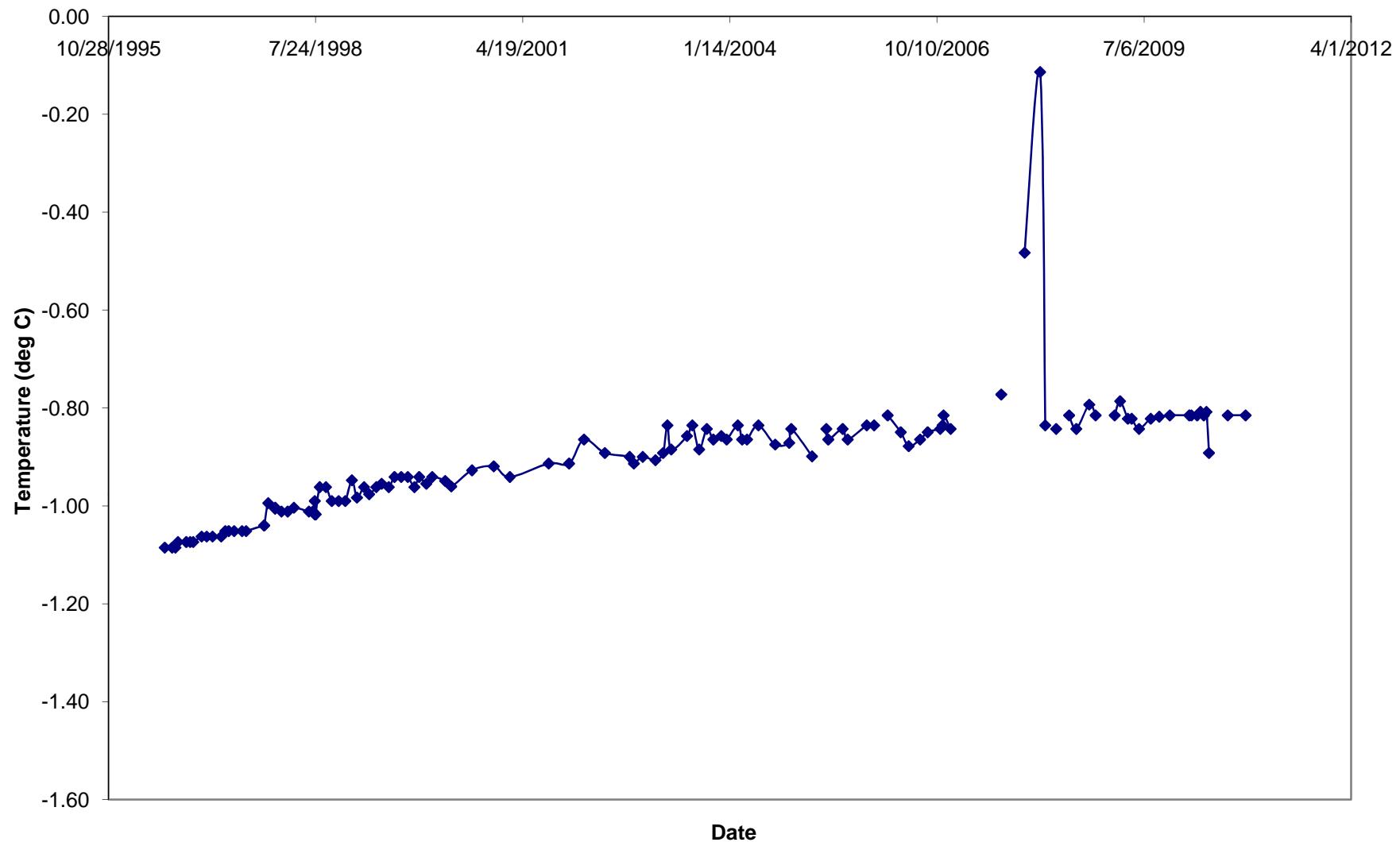
T-95-008 - Replacement string - Temperatures at 49 feet



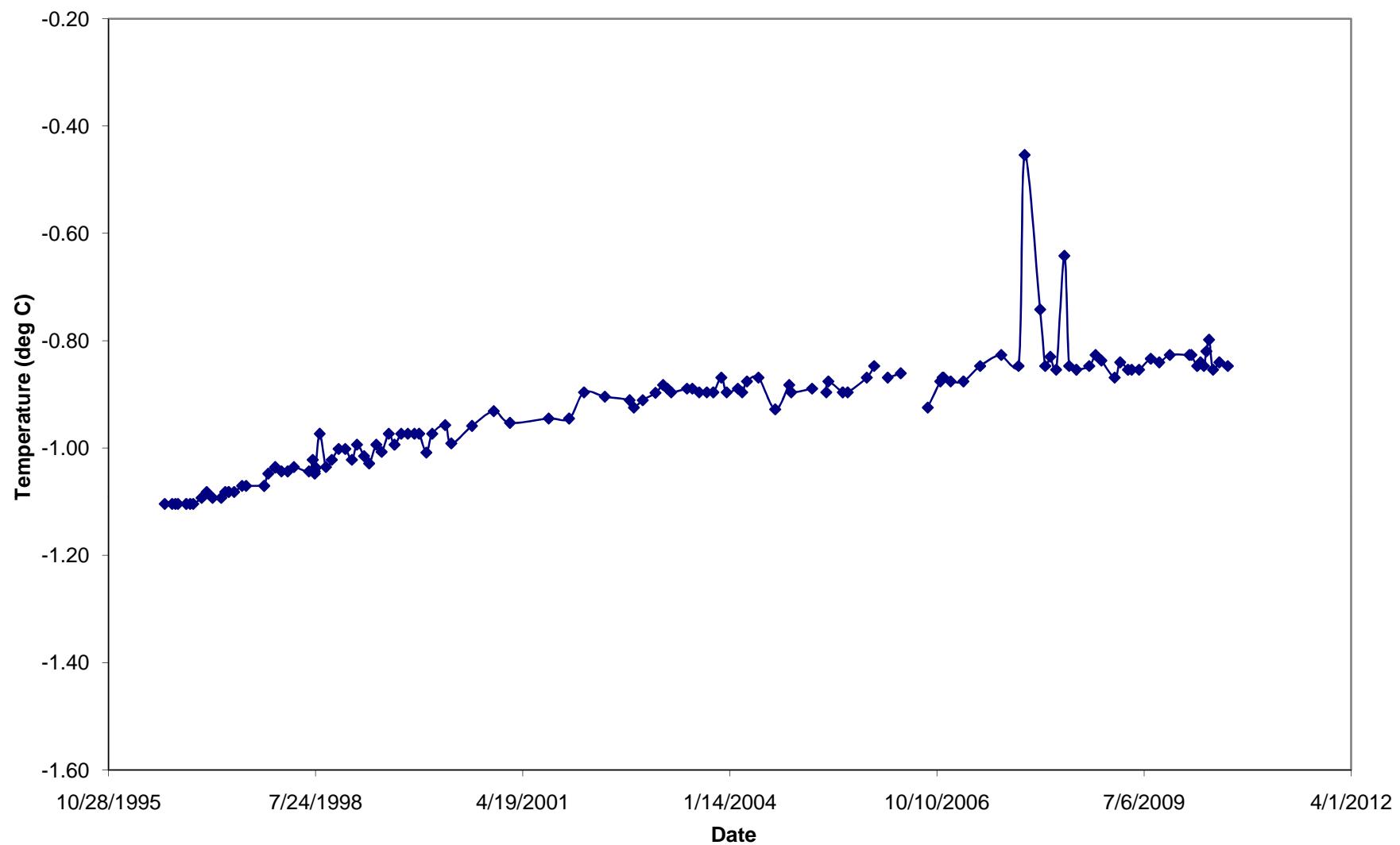
T-95-008 - Replacement string - Temperatures at 51 feet



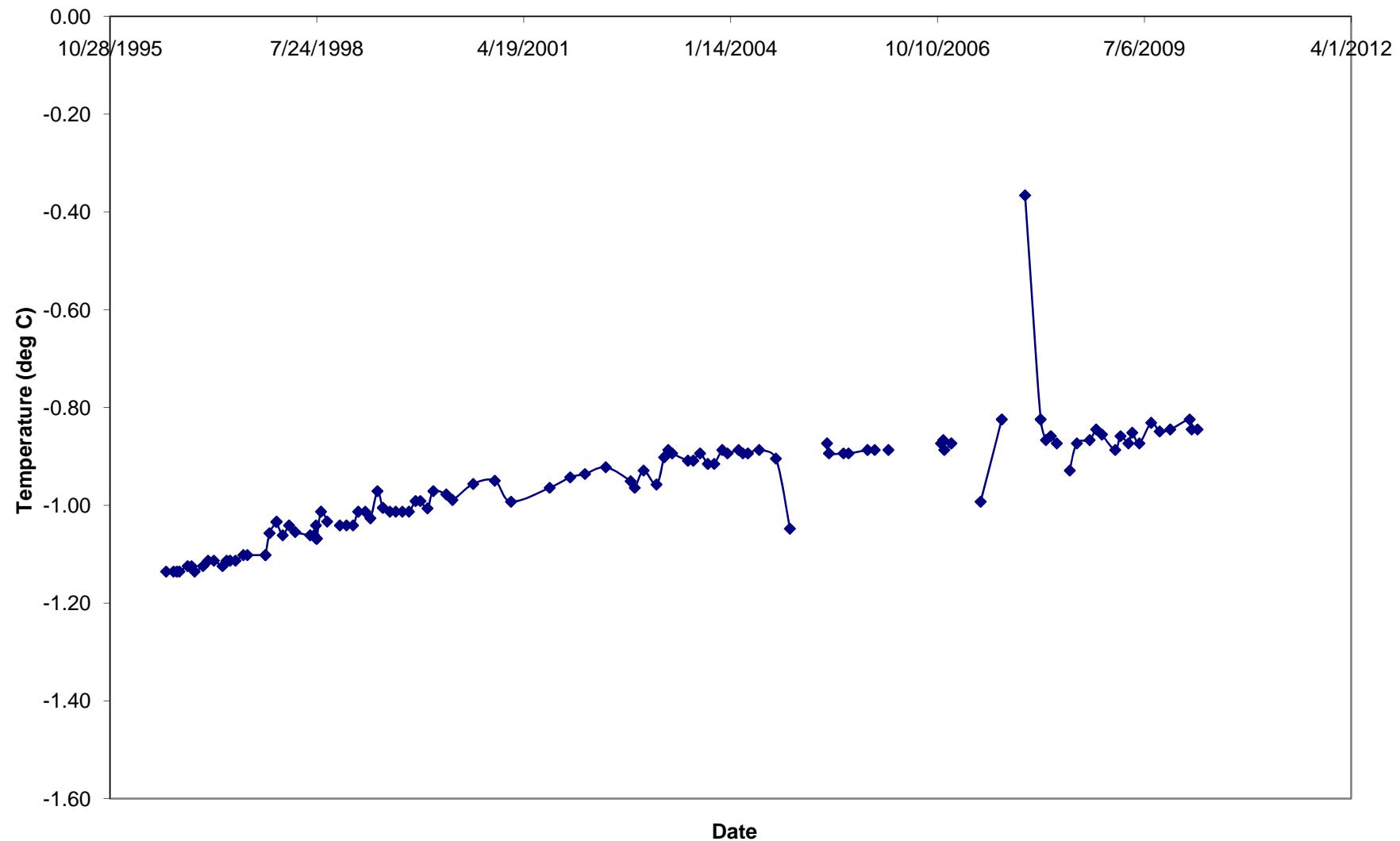
T-95-008 - Replacement string - Temperatures at 53 feet



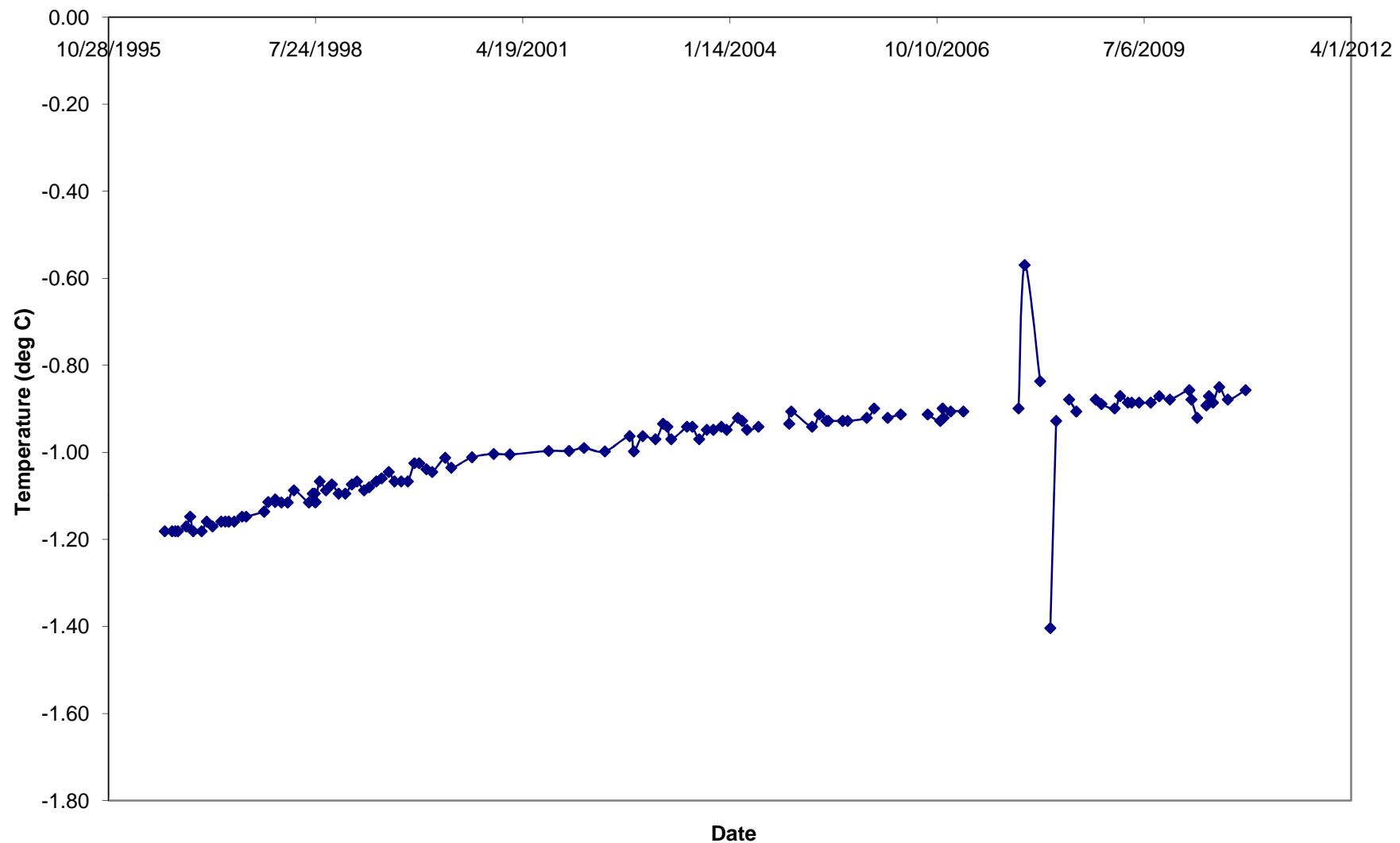
T-95-008 - Replacement string - Temperatures at 55 feet



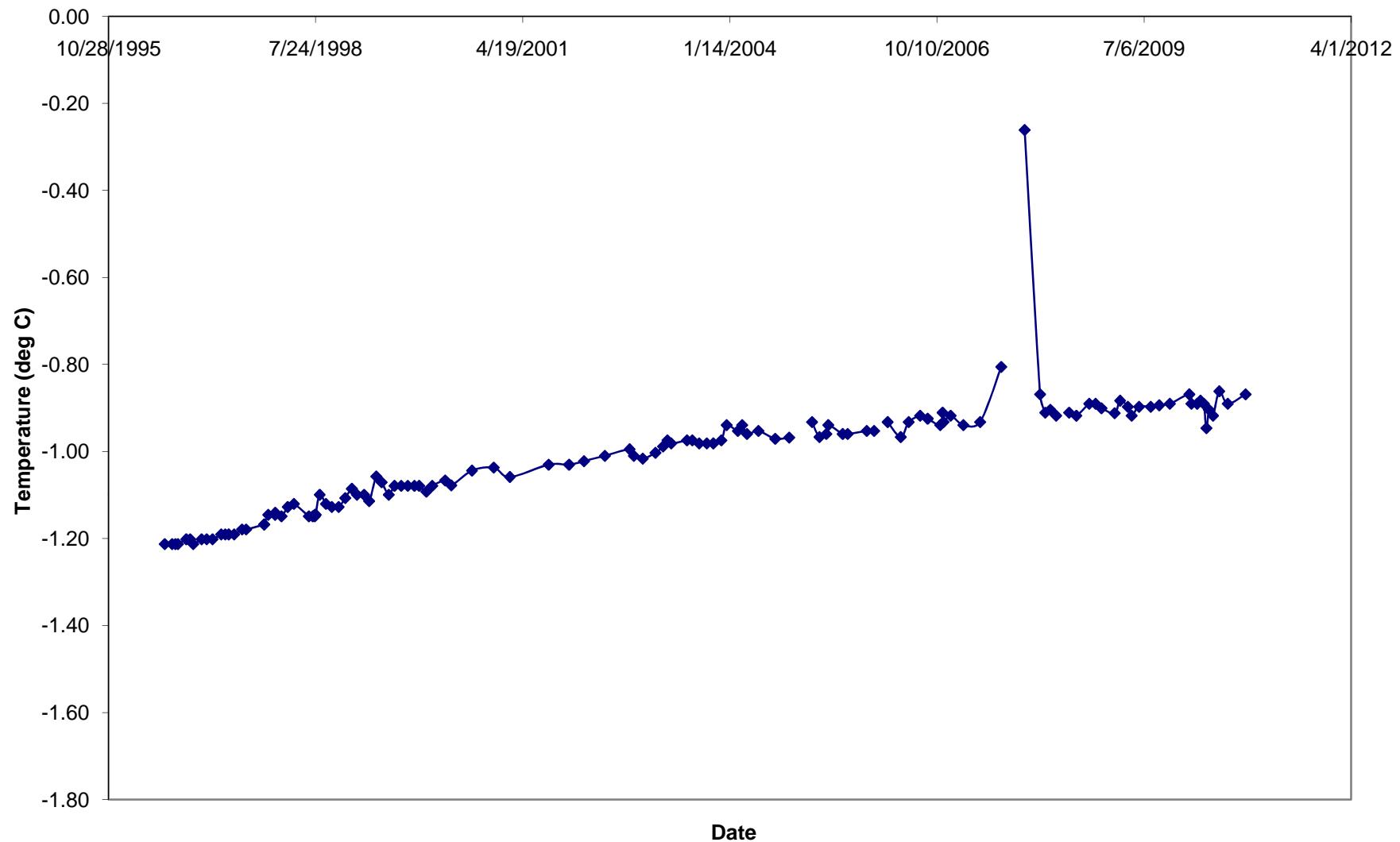
T-95-008 - Replacement string - Temperatures at 57 feet



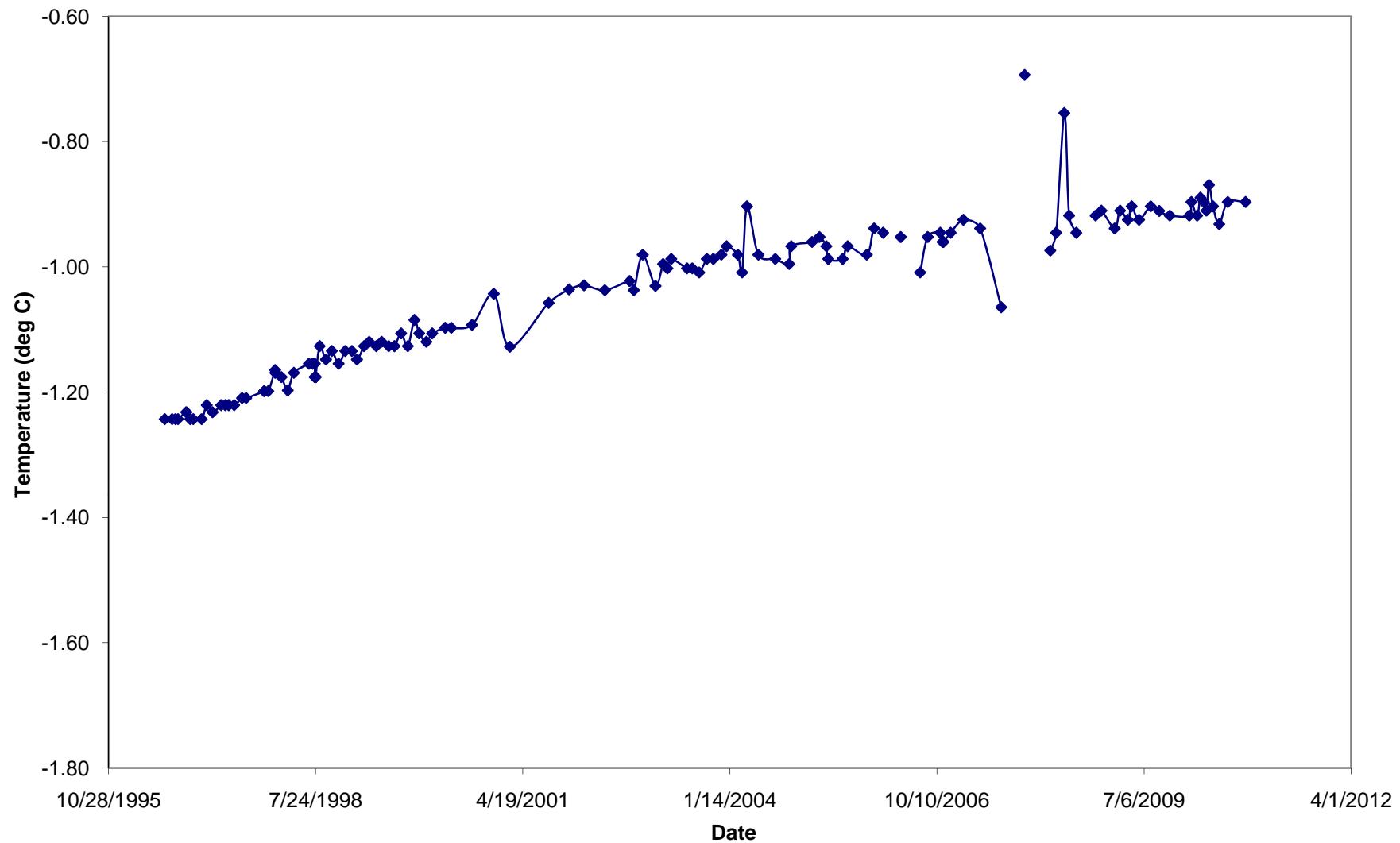
T-95-008 - Replacement string - Temperatures at 59 feet



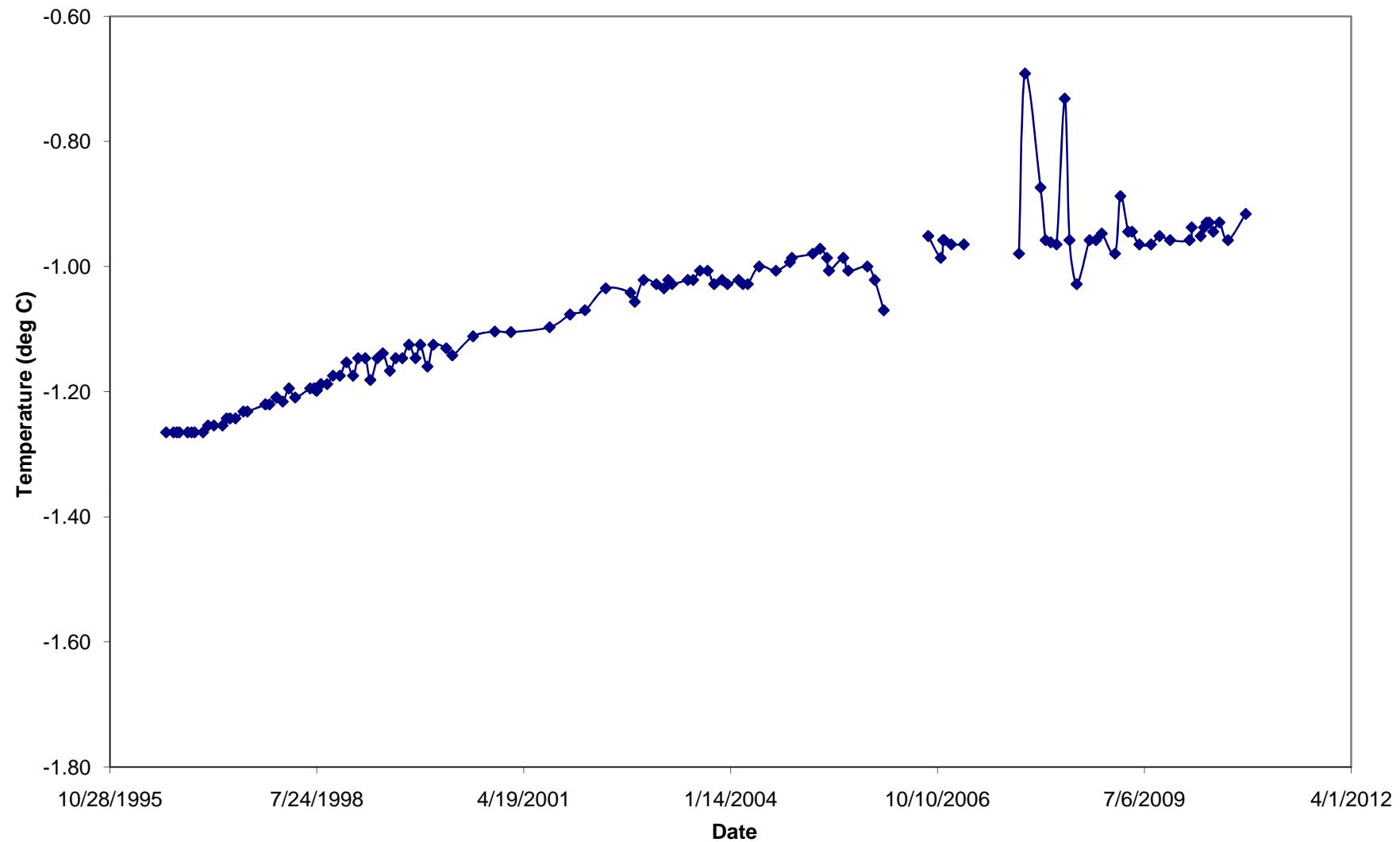
T-95-008 - Replacement string - Temperatures at 61 feet



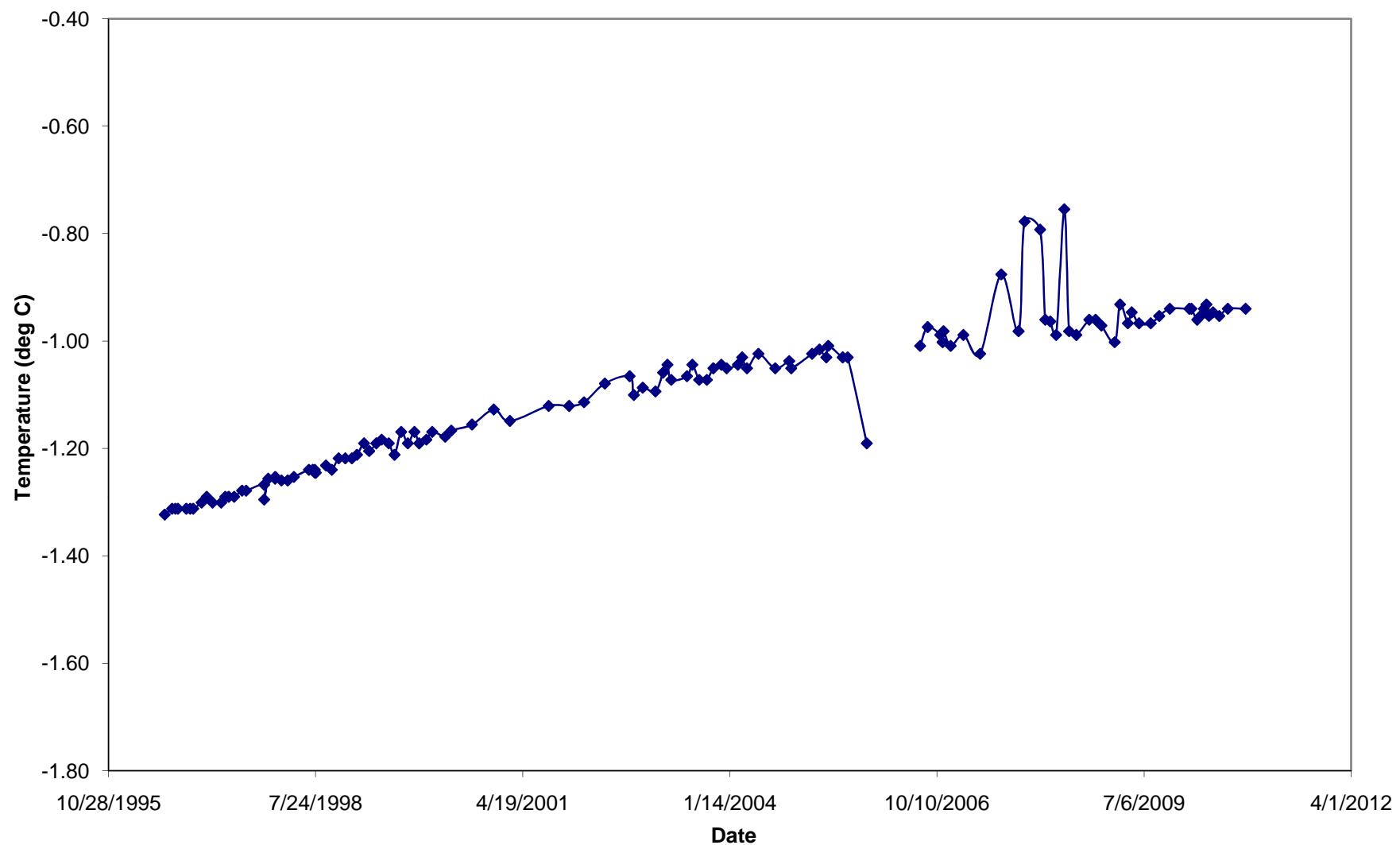
T-95-008 - Replacement string - Temperatures at 63 feet



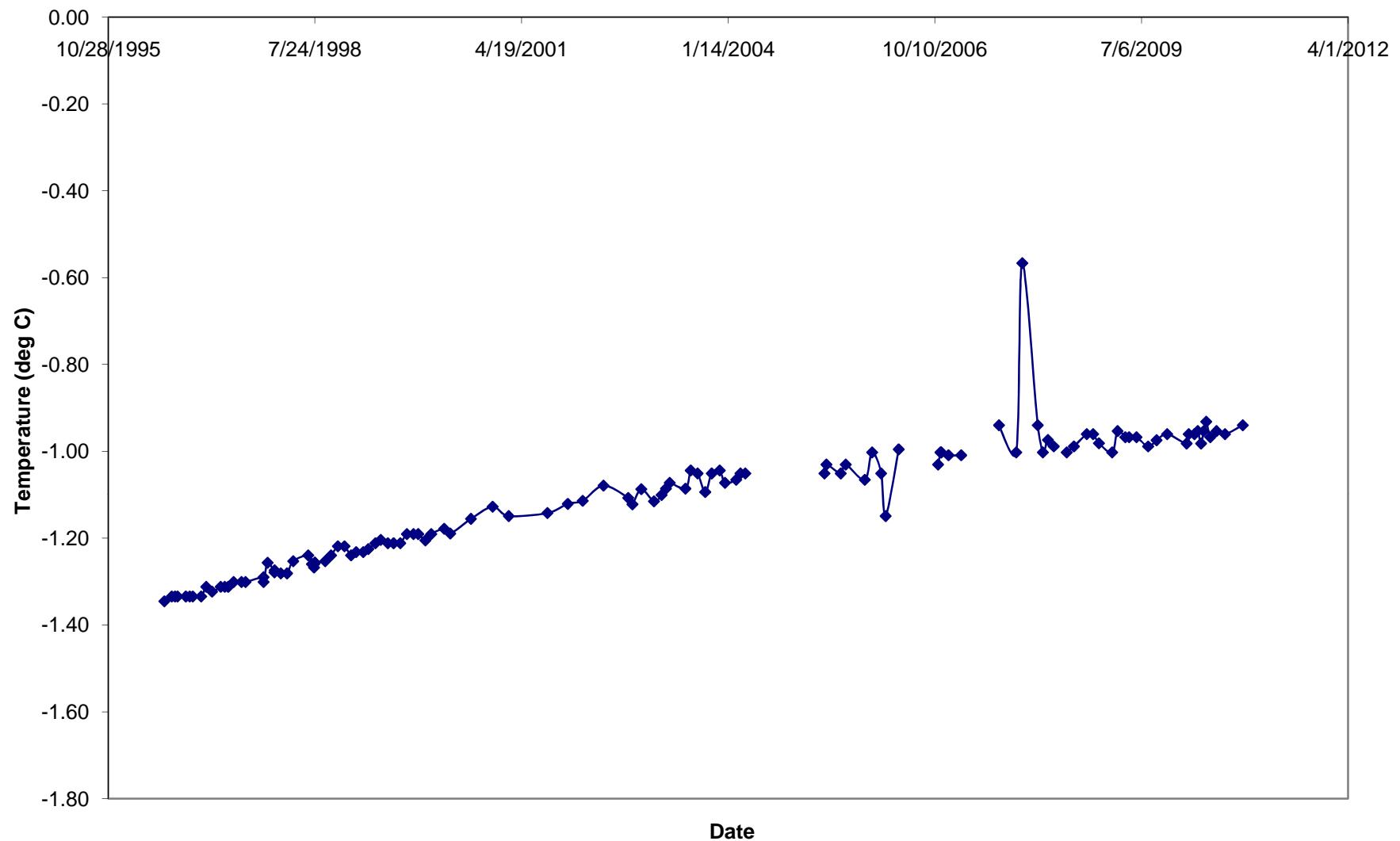
T-95-008 - Replacement string - Temperatures at 65 feet



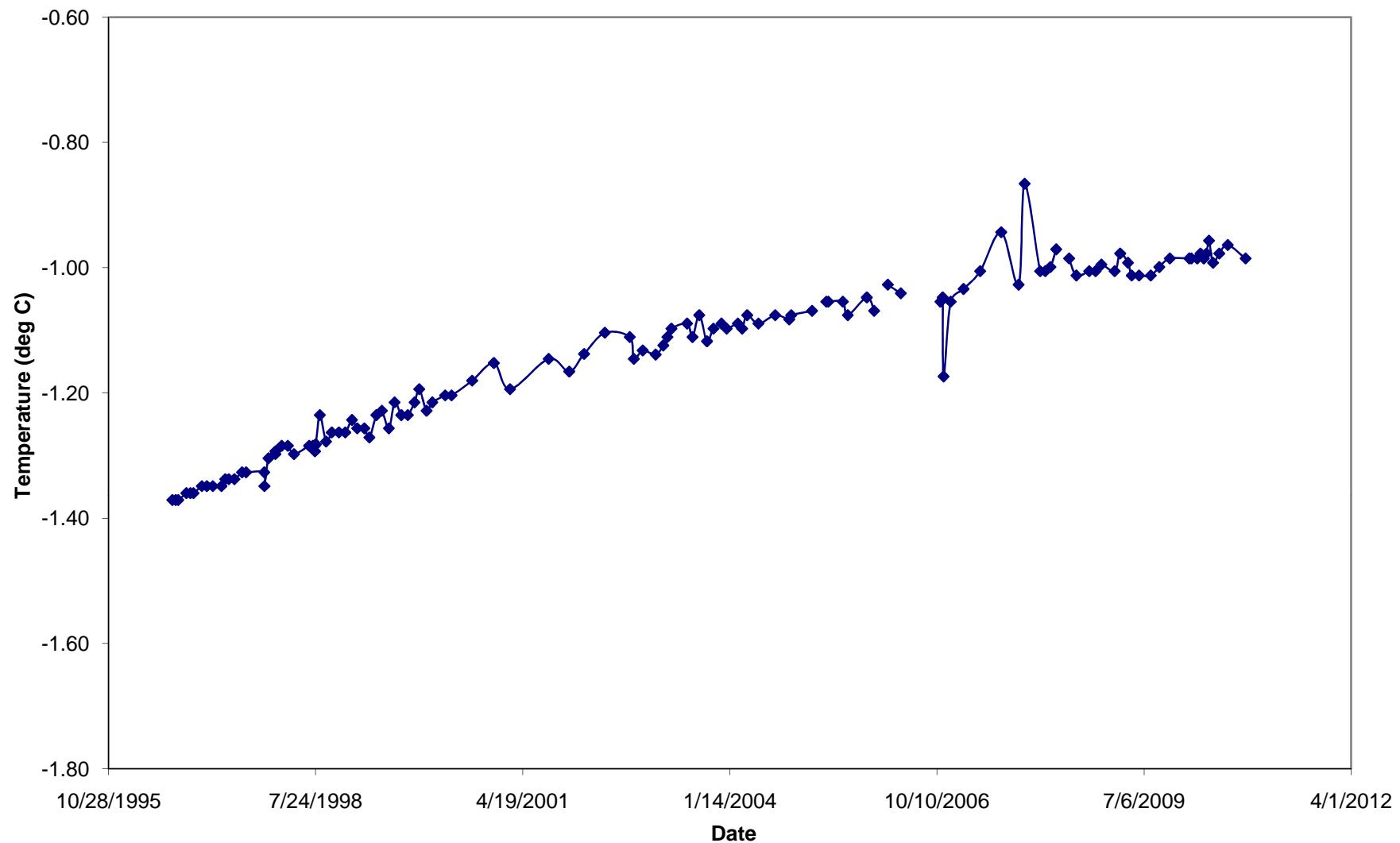
T-95-008 - Replacement string - Temperatures at 67 feet



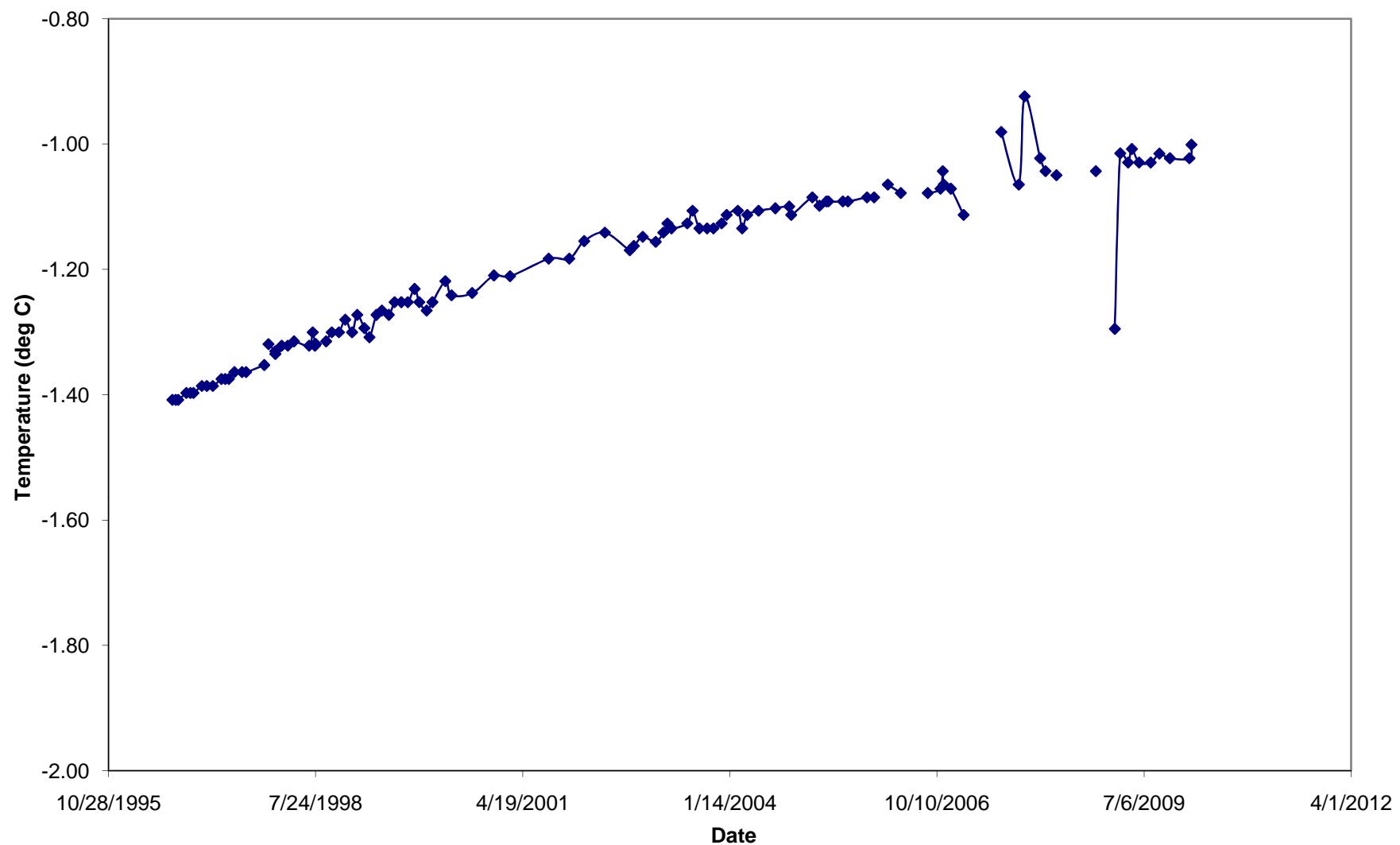
T-95-008 - Replacement string - Temperatures at 69 feet



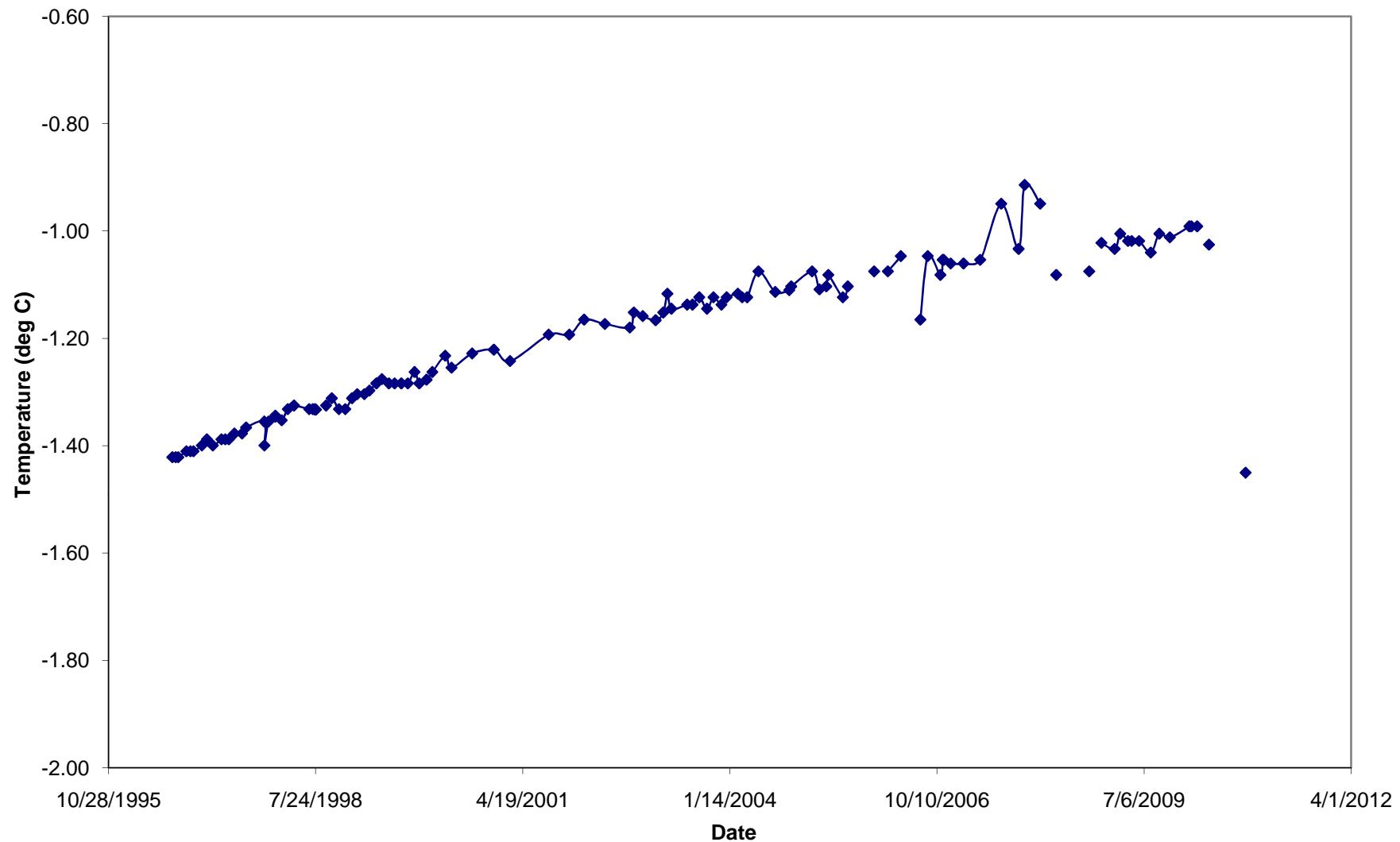
T-95-008 - Replacement string - Temperatures at 71 feet



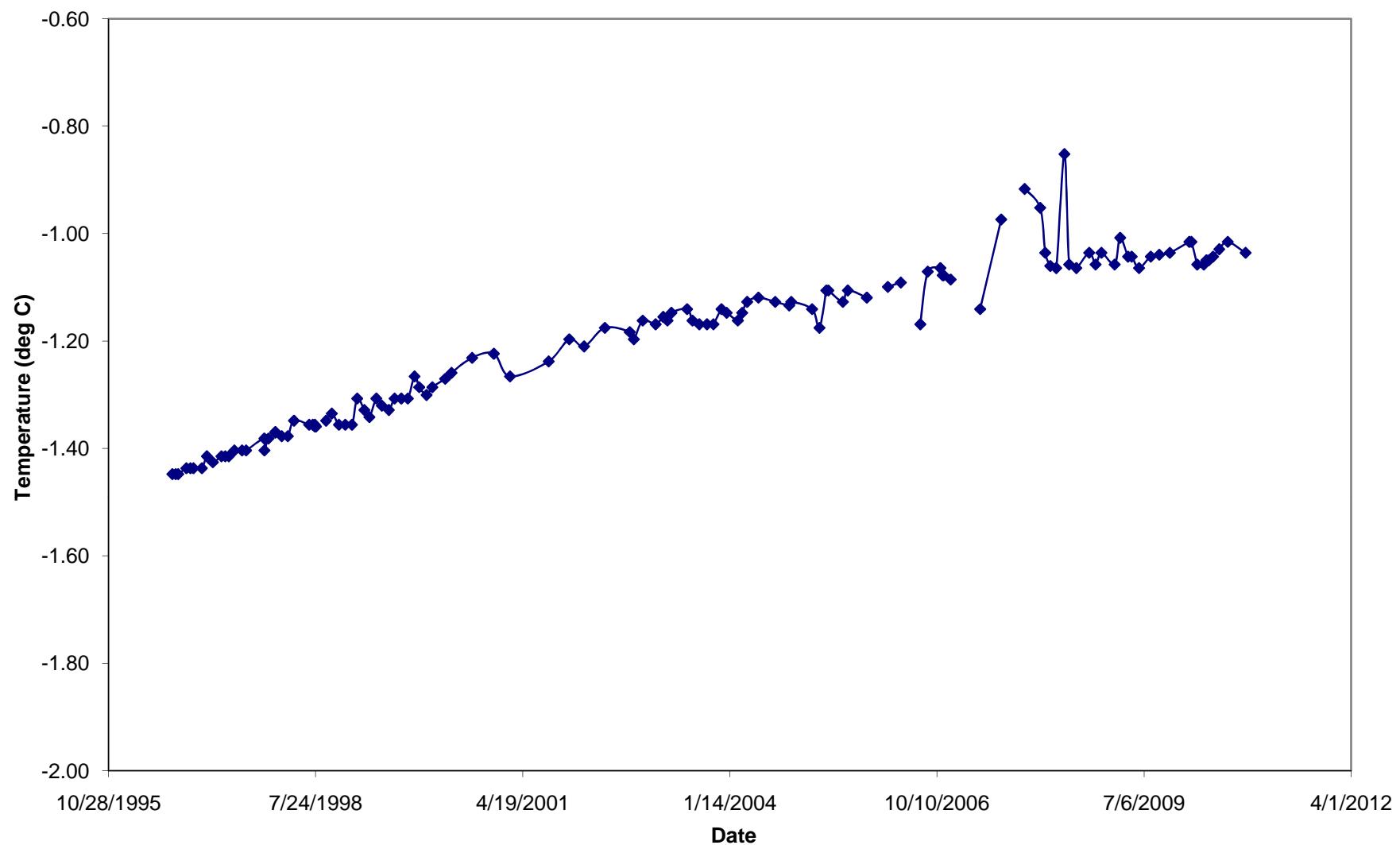
T-95-008 - Replacement string - Temperatures at 73 feet



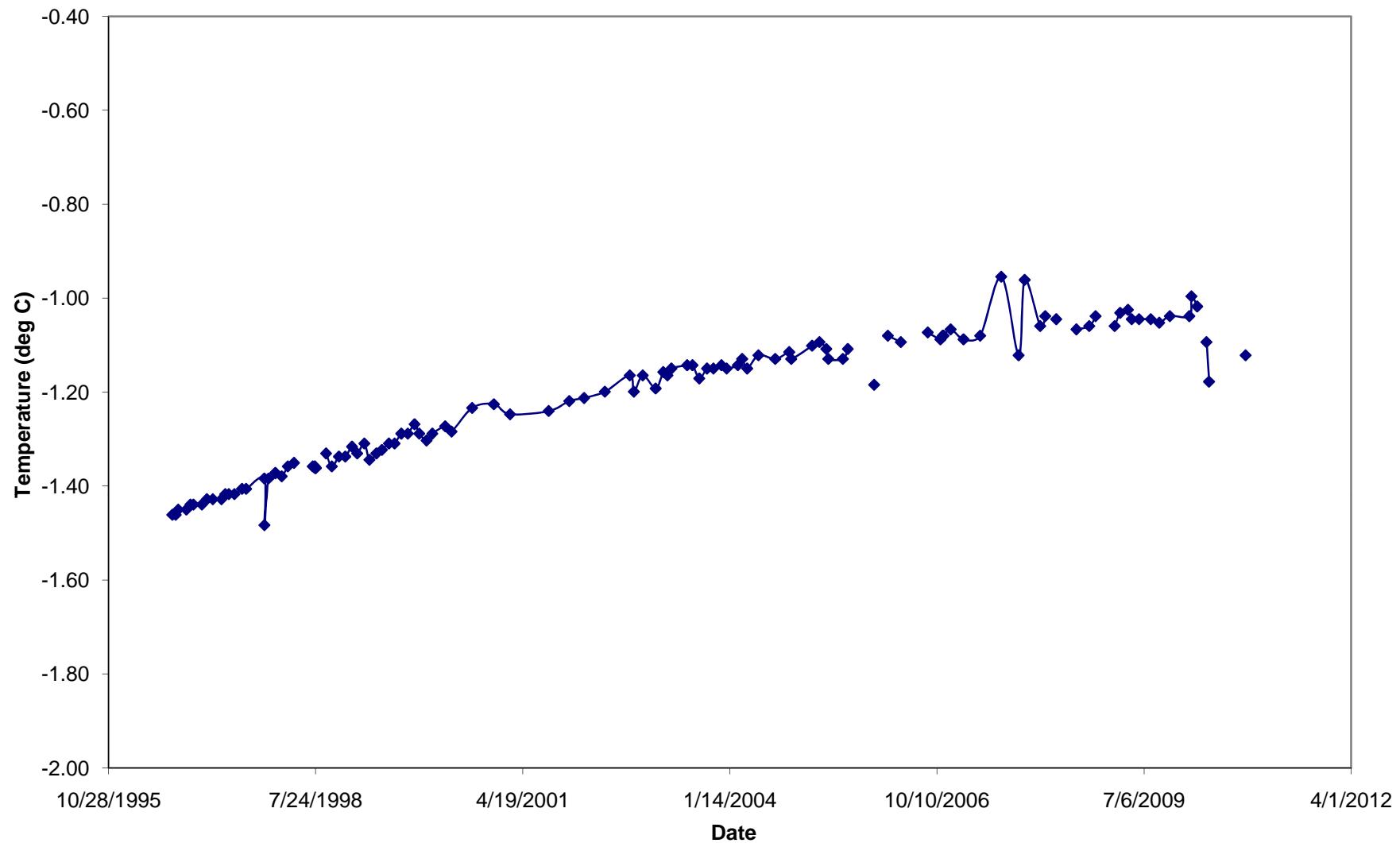
T-95-008 - Replacement string - Temperatures at 75 feet



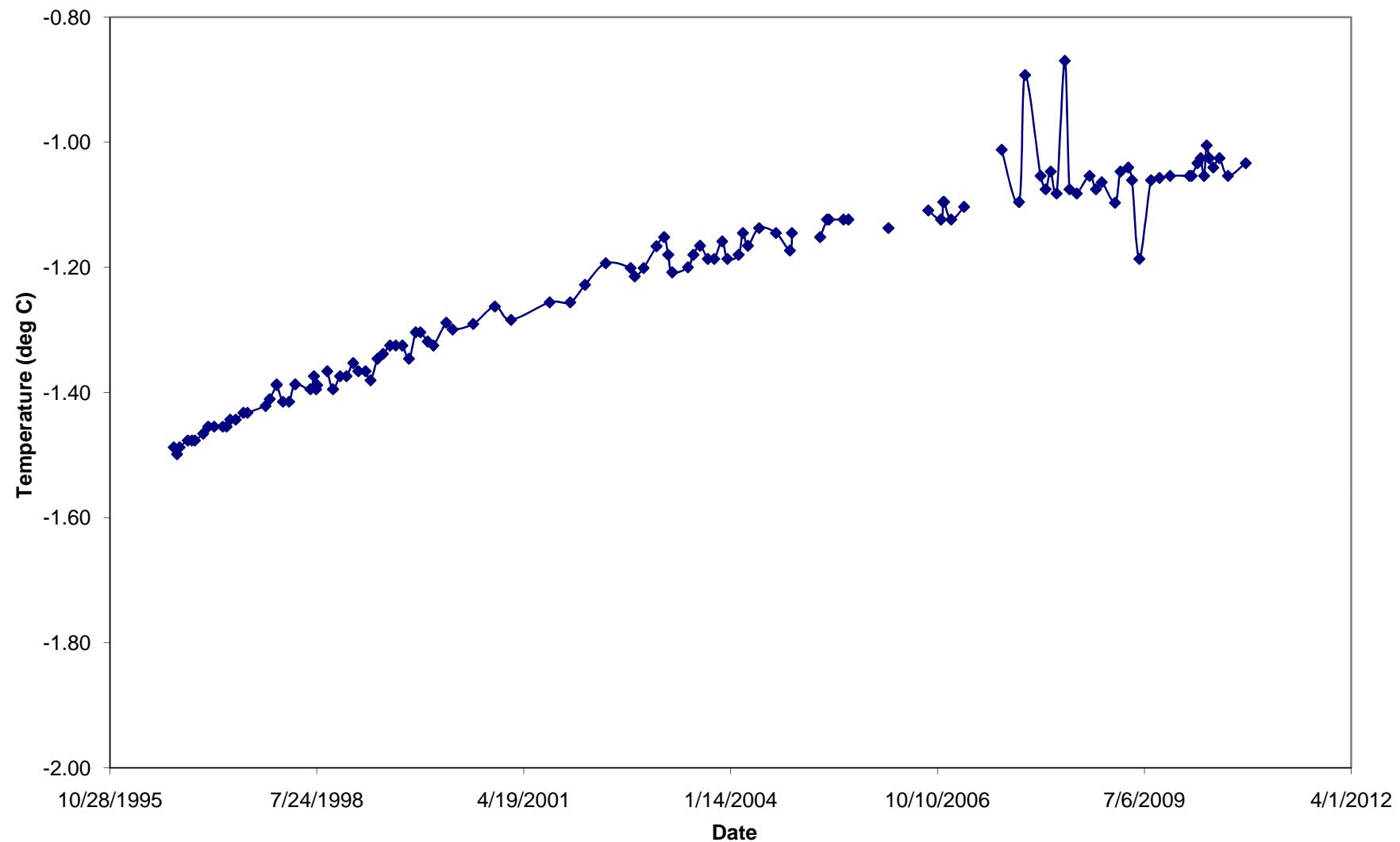
T-95-008 - Replacement string - Temperatures at 77 feet



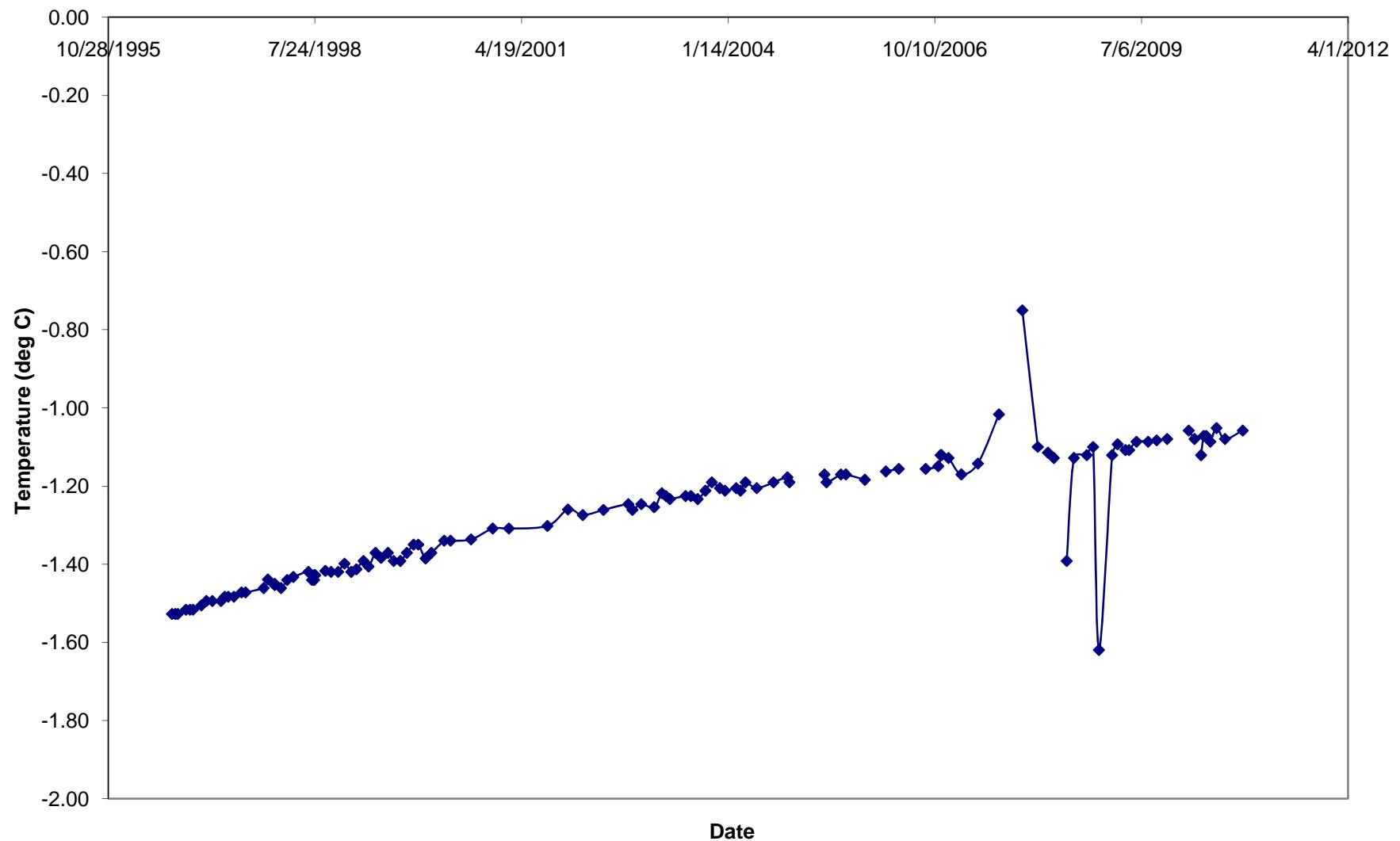
T-95-008 - Replacement string - Temperatures at 79 feet



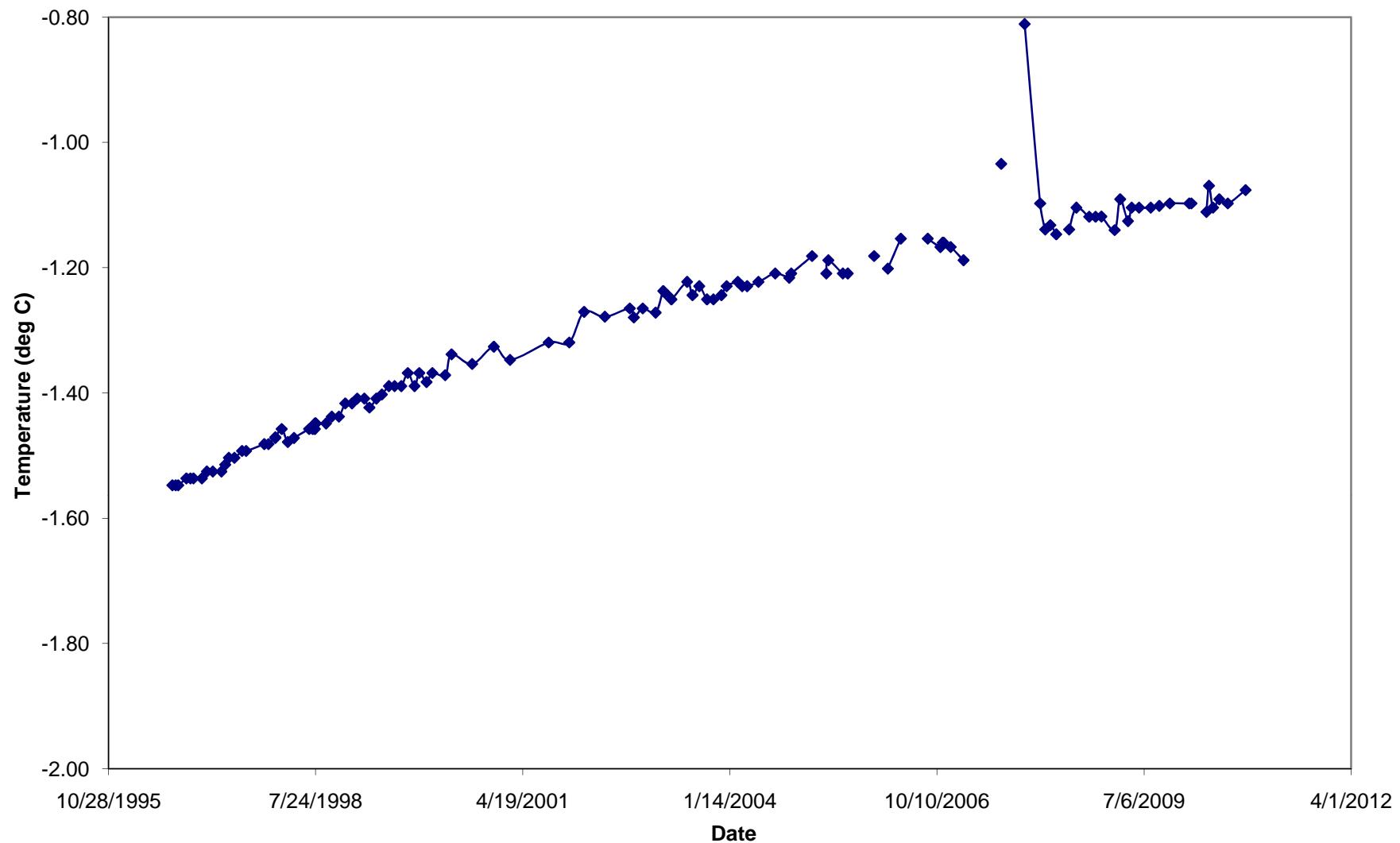
T-95-008 - Replacement string - Temperatures at 81 feet



T-95-008 - Replacement string - Temperatures at 83 feet

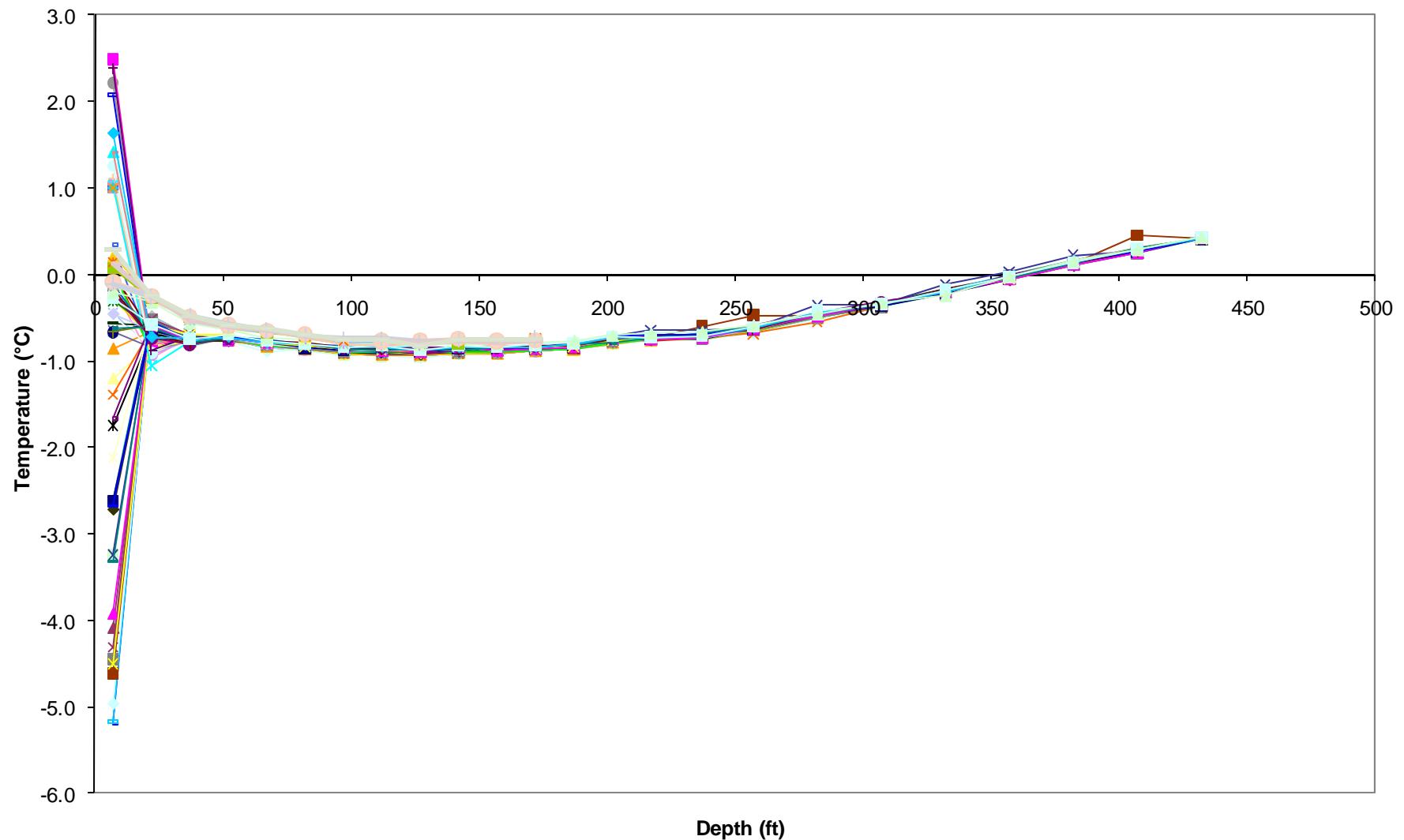


T-95-008 - Replacement string - Temperatures at 85 feet

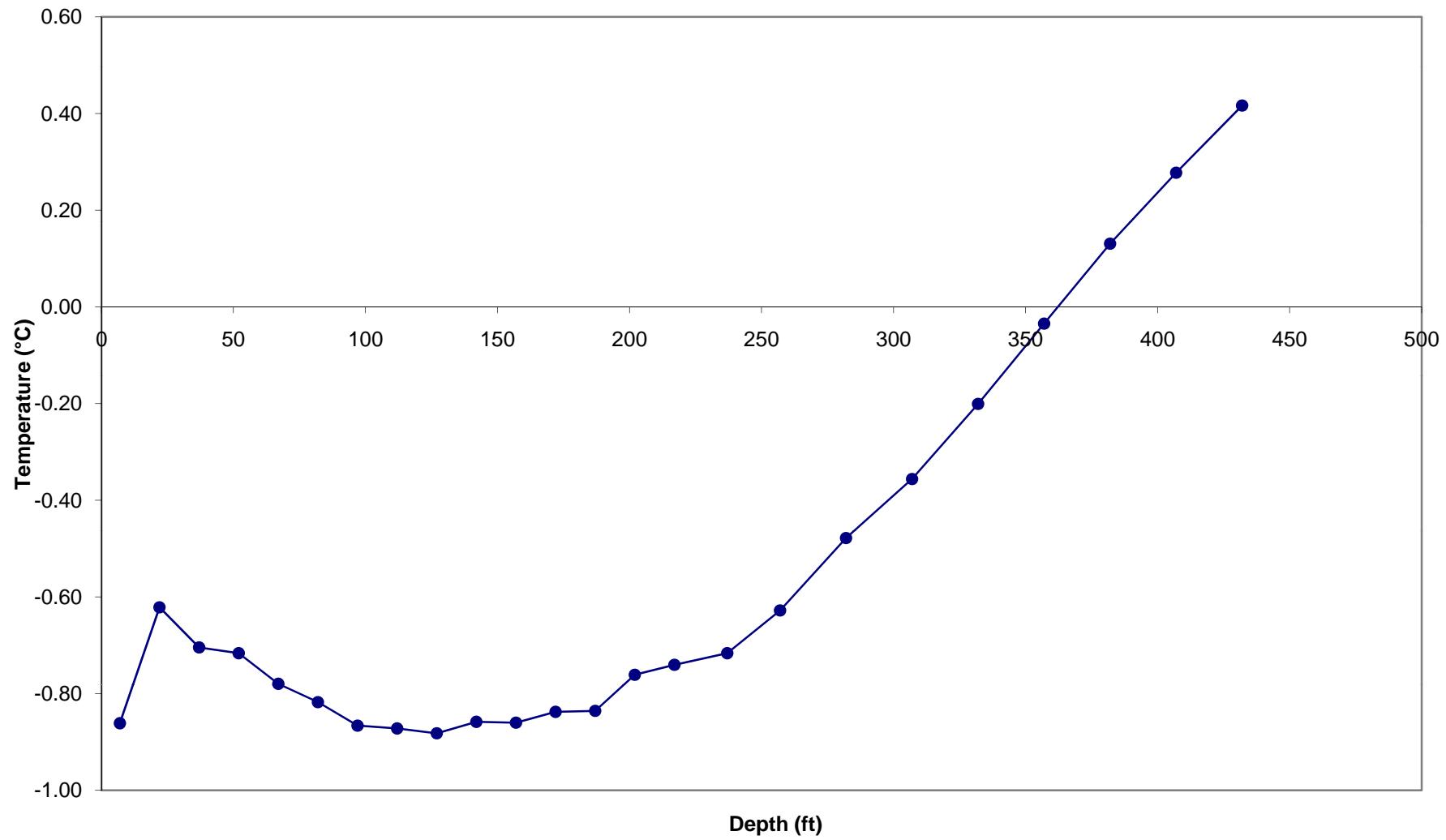


T-95-009

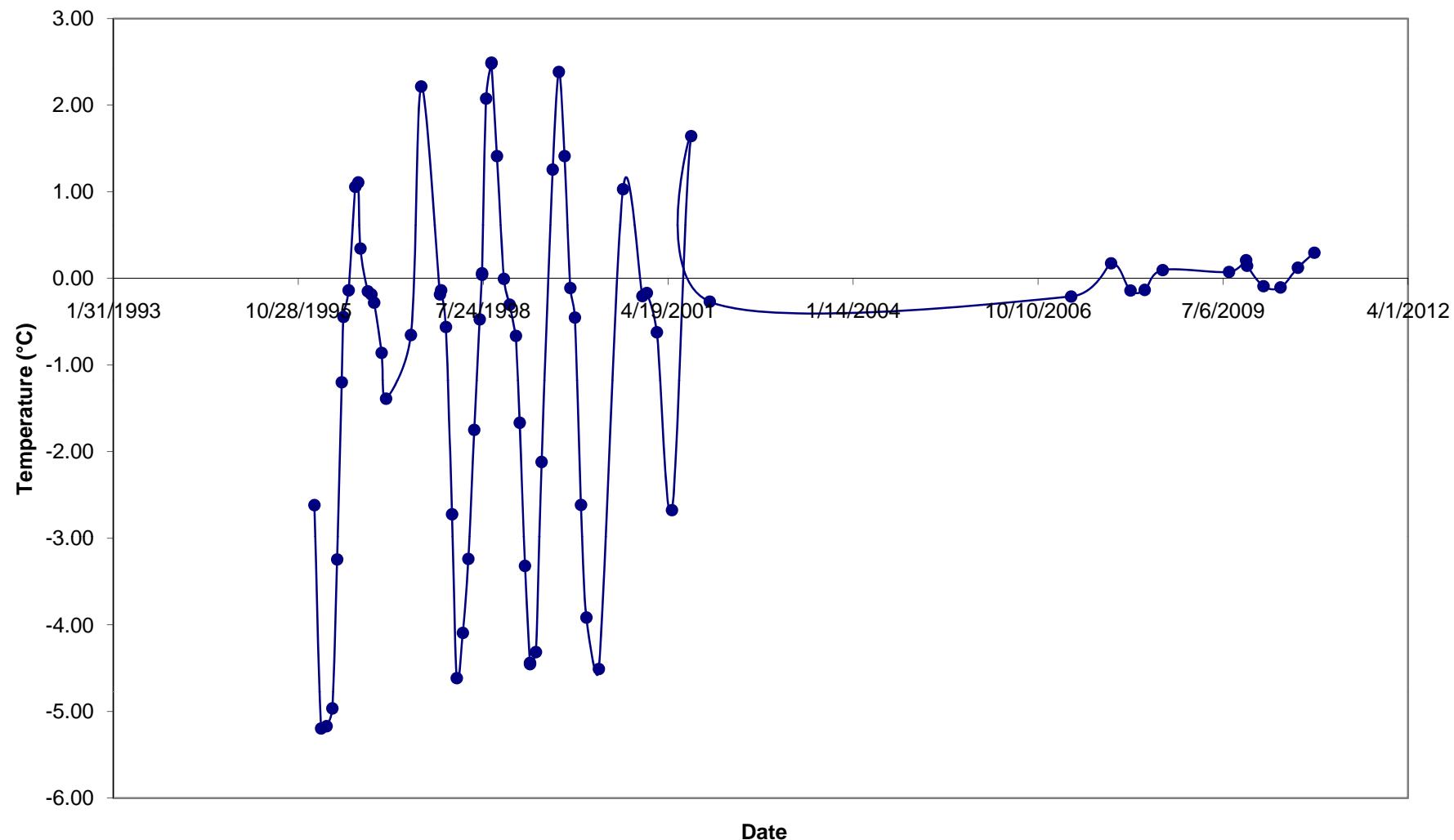
Temperature Depth Plot for T-95-009



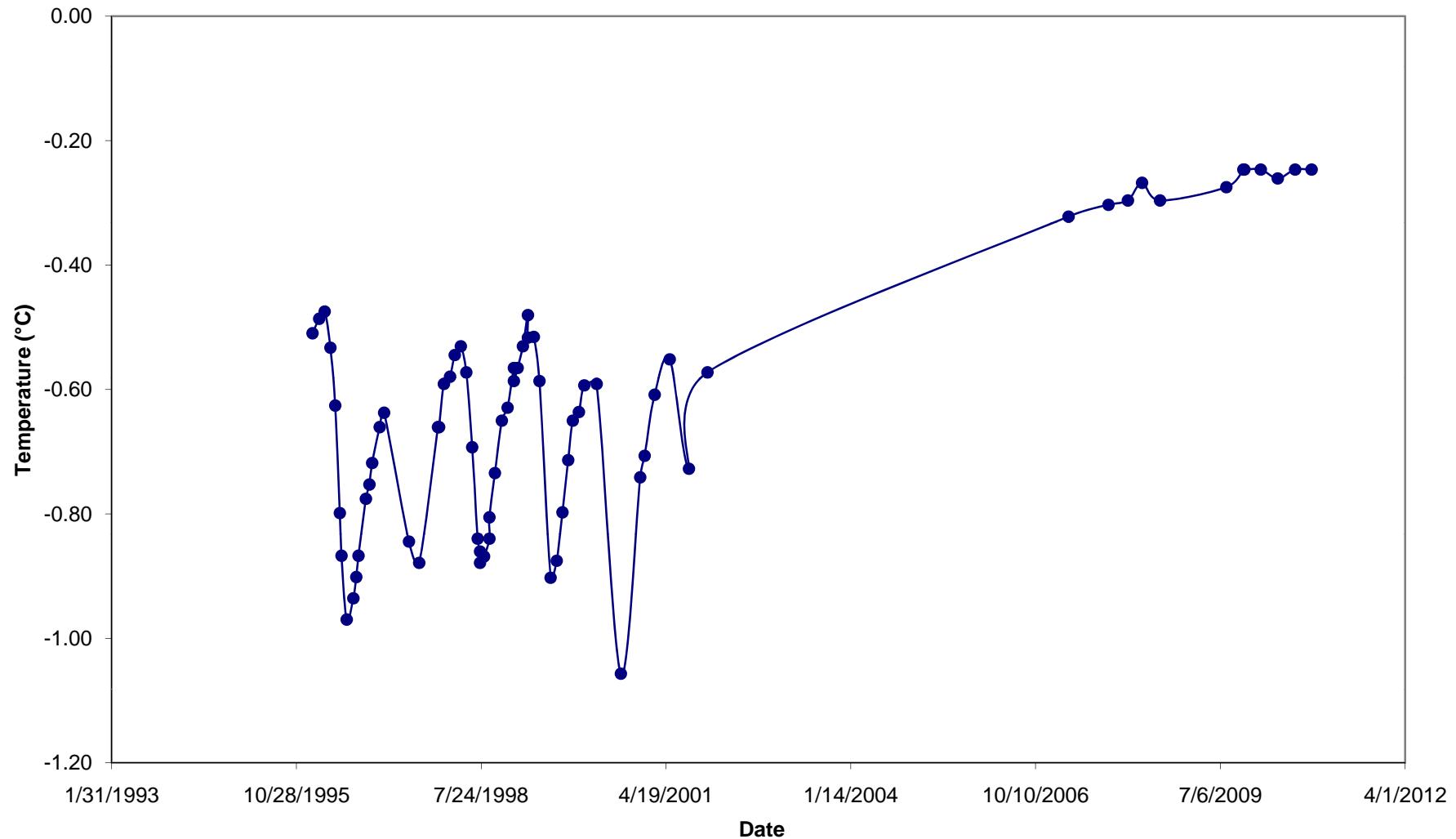
Average Temperature Depth Plot for T-95-009



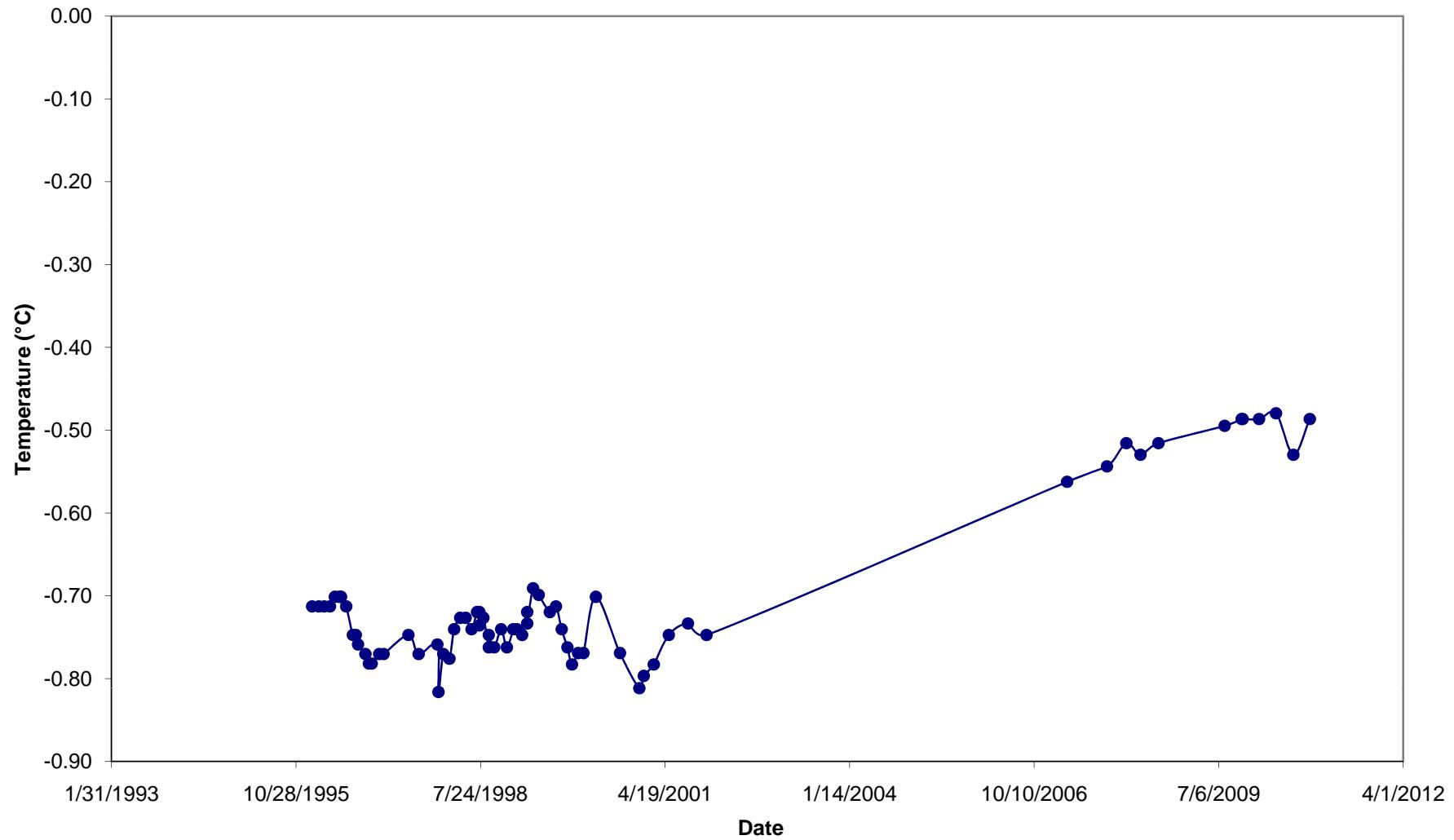
T-95-009 Temperature at 7 feet



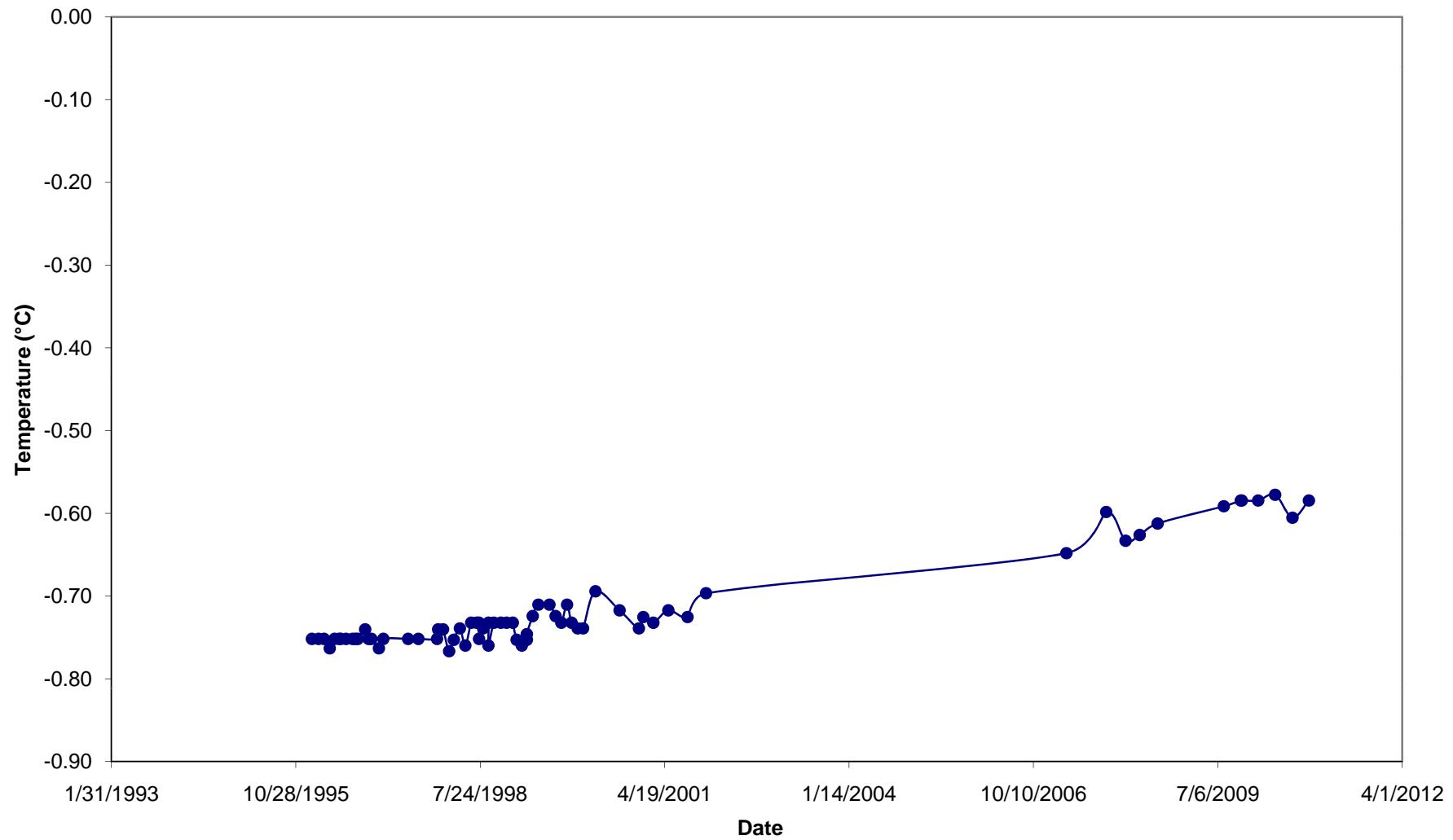
T-95-009 Temperature at 22 feet



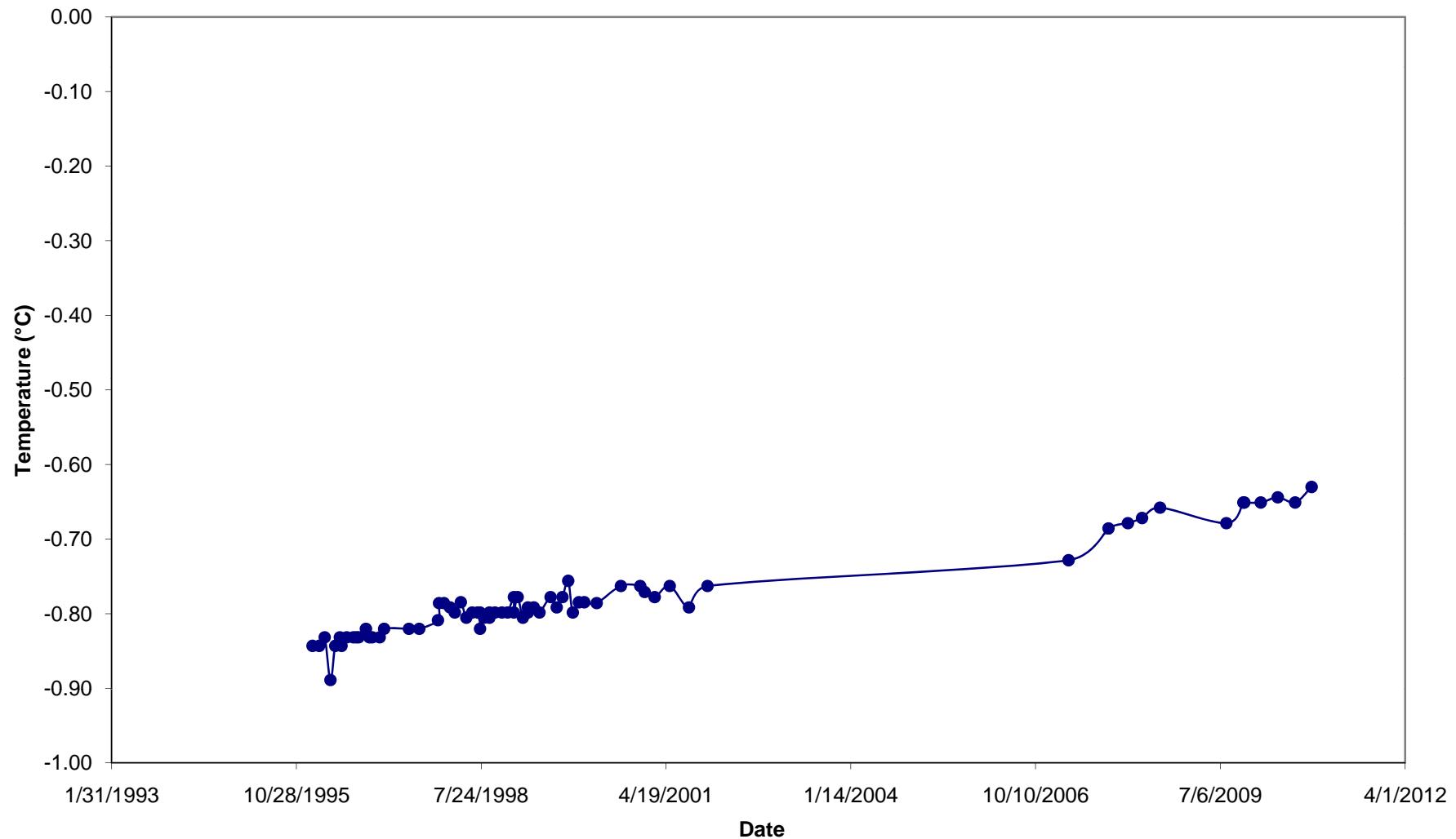
T-95-009 Temperature at 37 feet



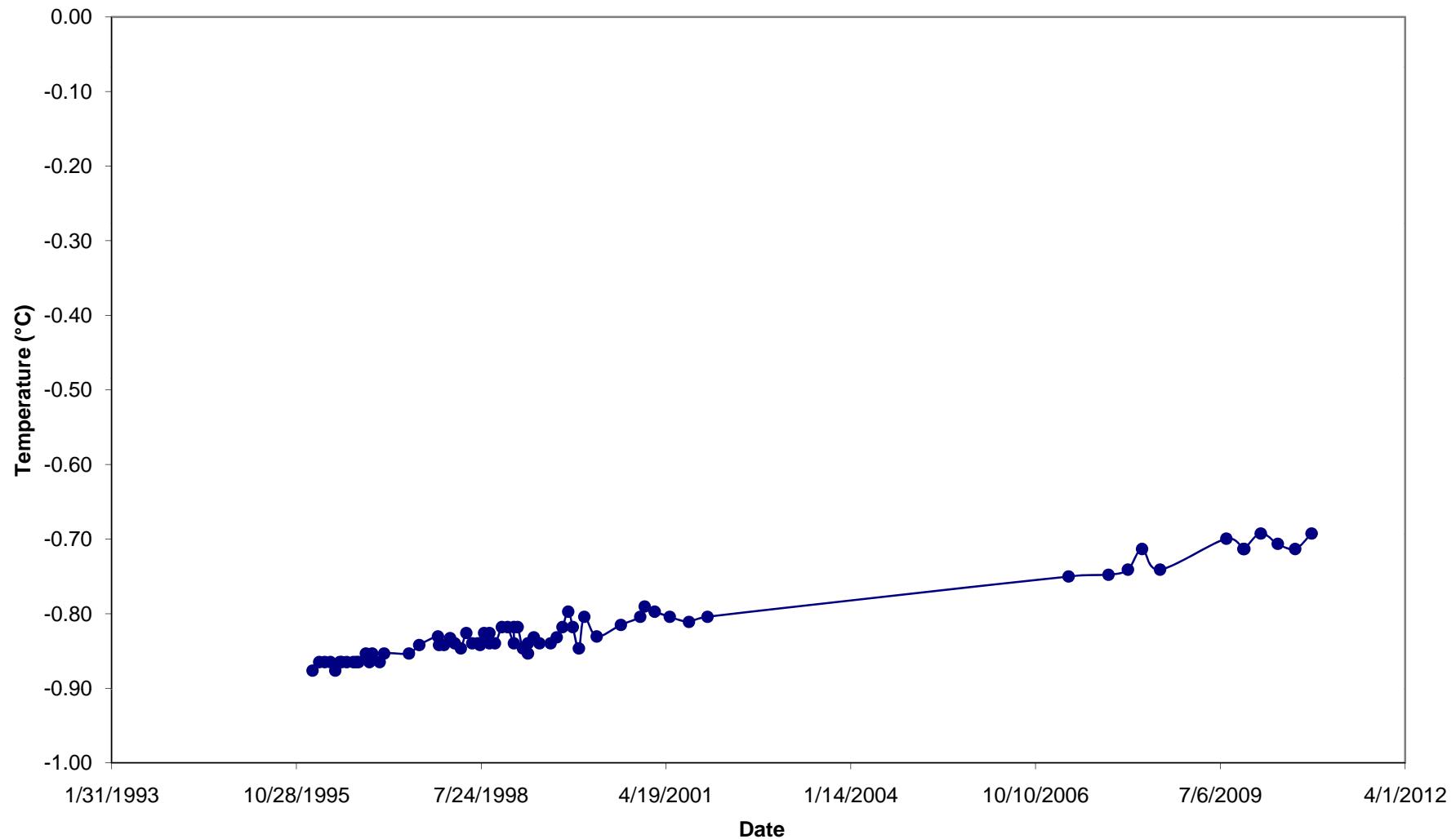
T-95-009 Temperature at 52 feet



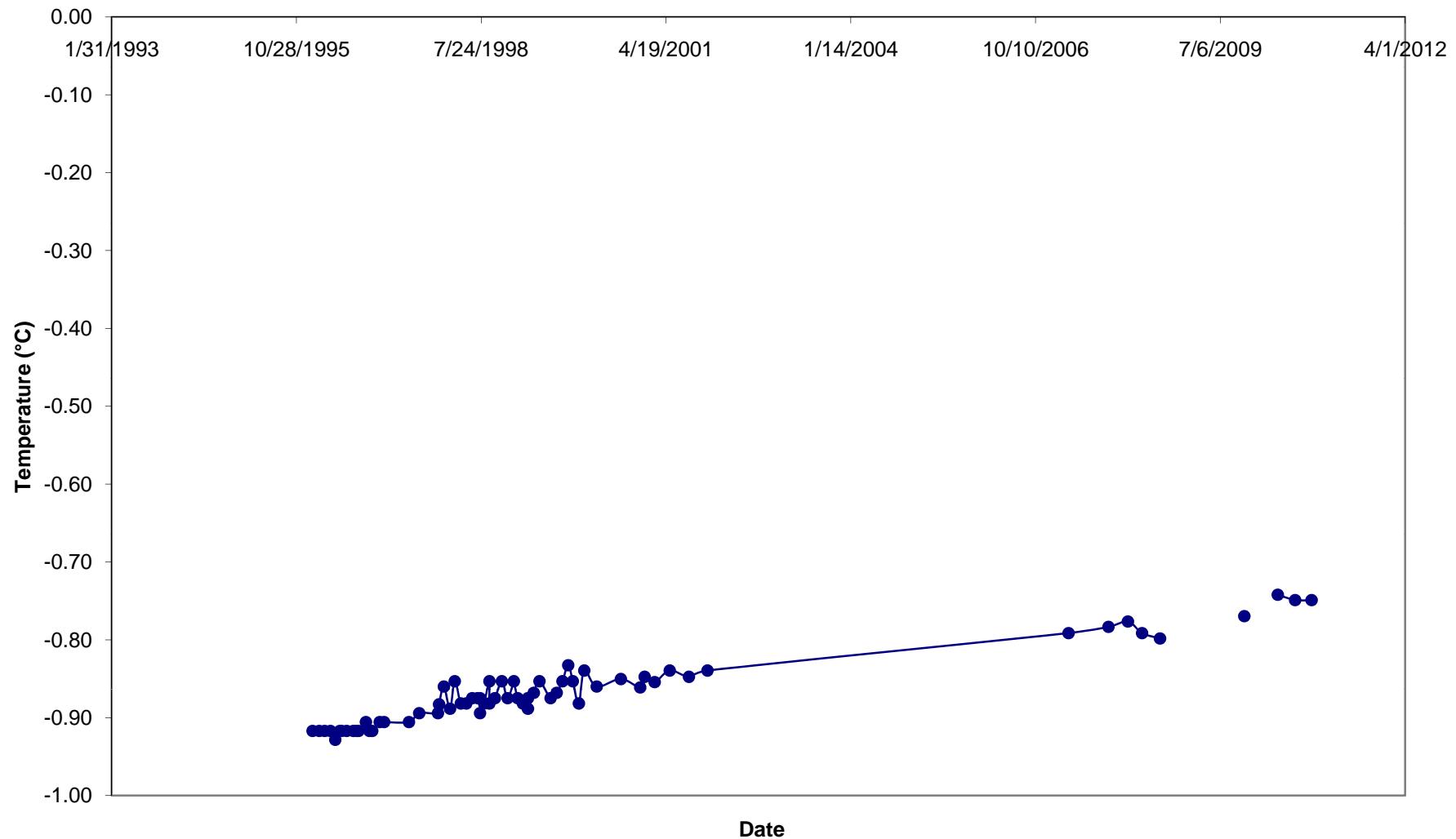
T-95-009 Temperature at 67 feet



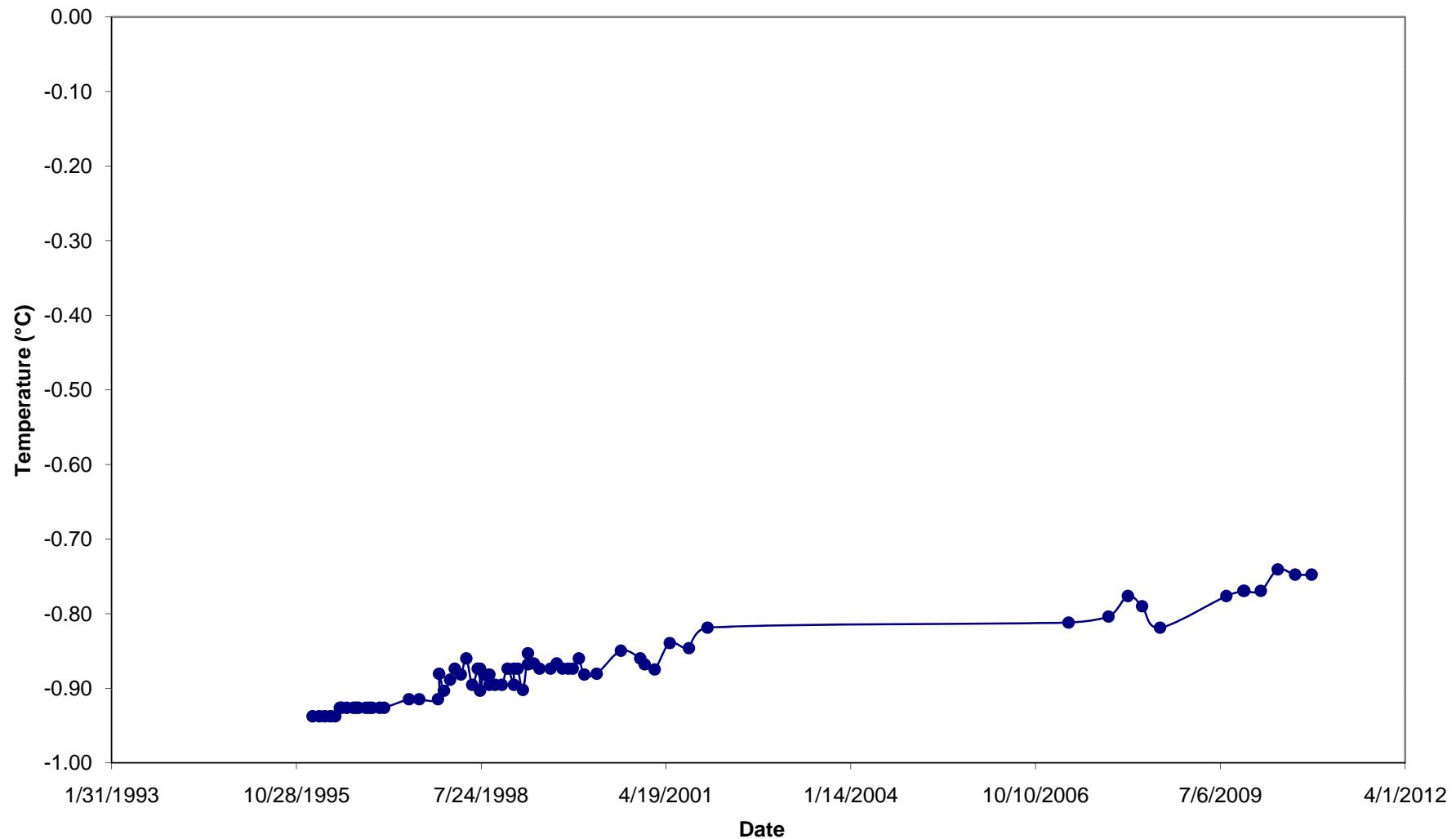
T-95-009 Temperature at 82 feet



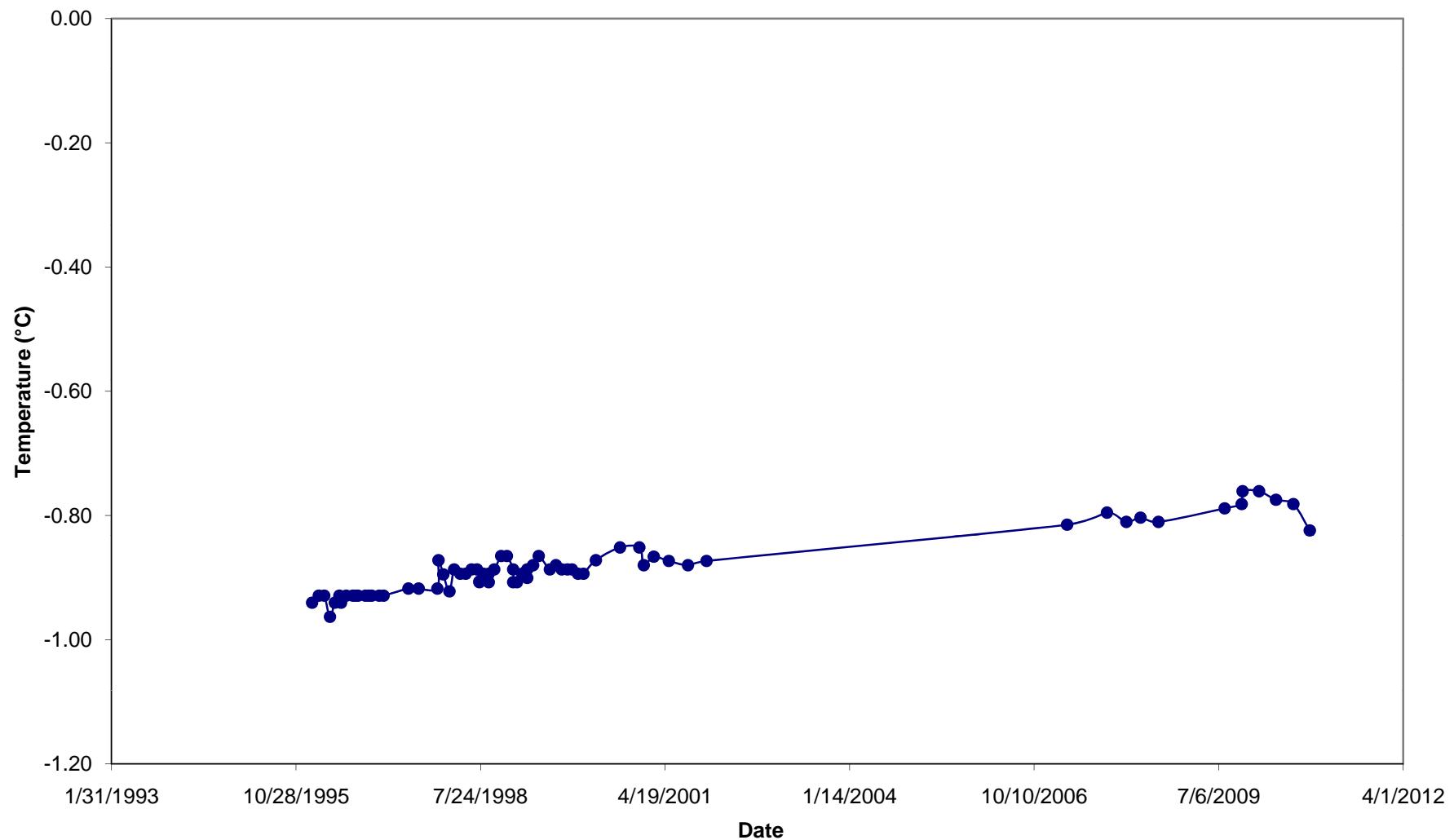
T-95-009 Temperature at 97 feet



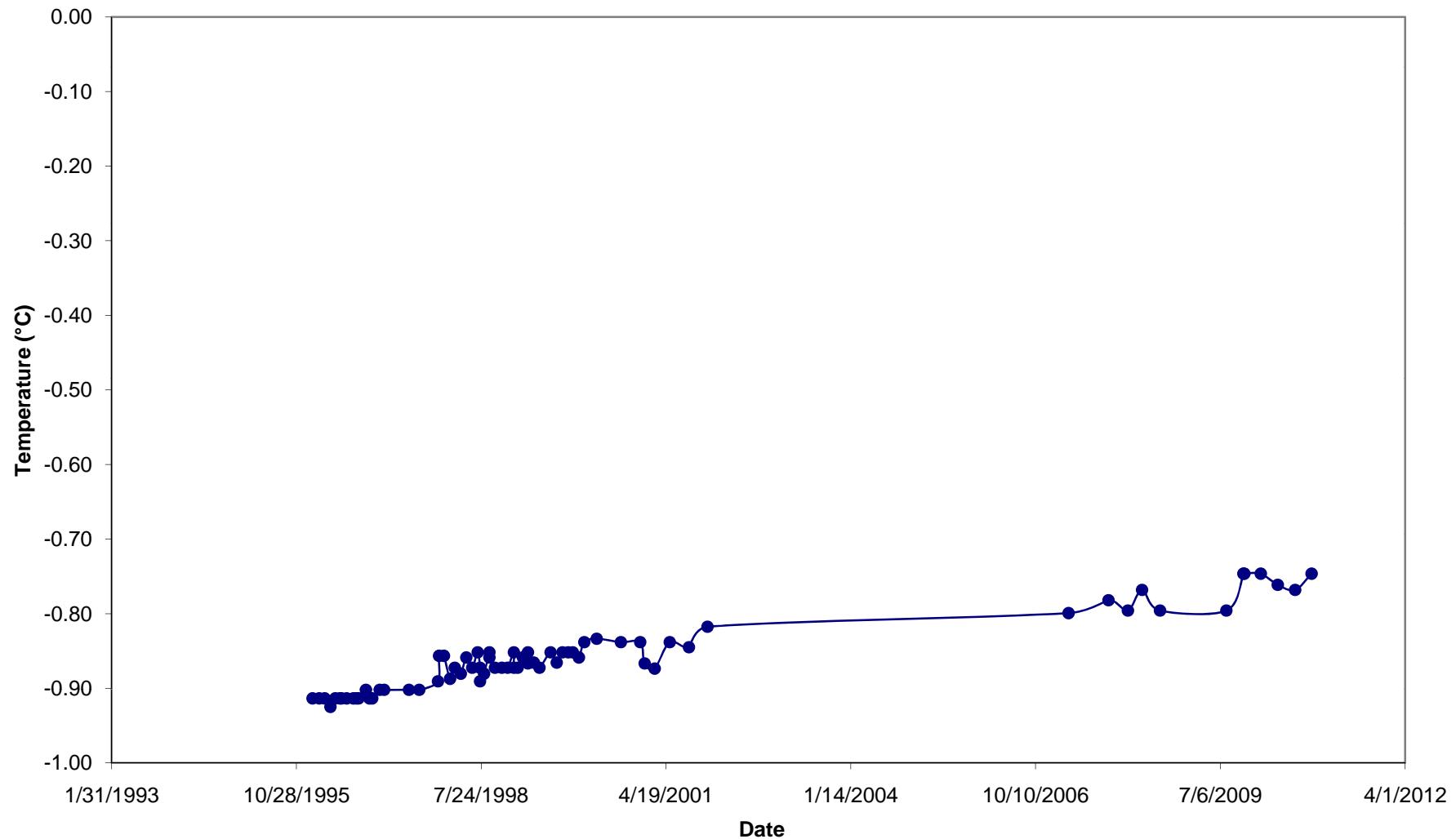
T-95-009 Temperature at 112 feet



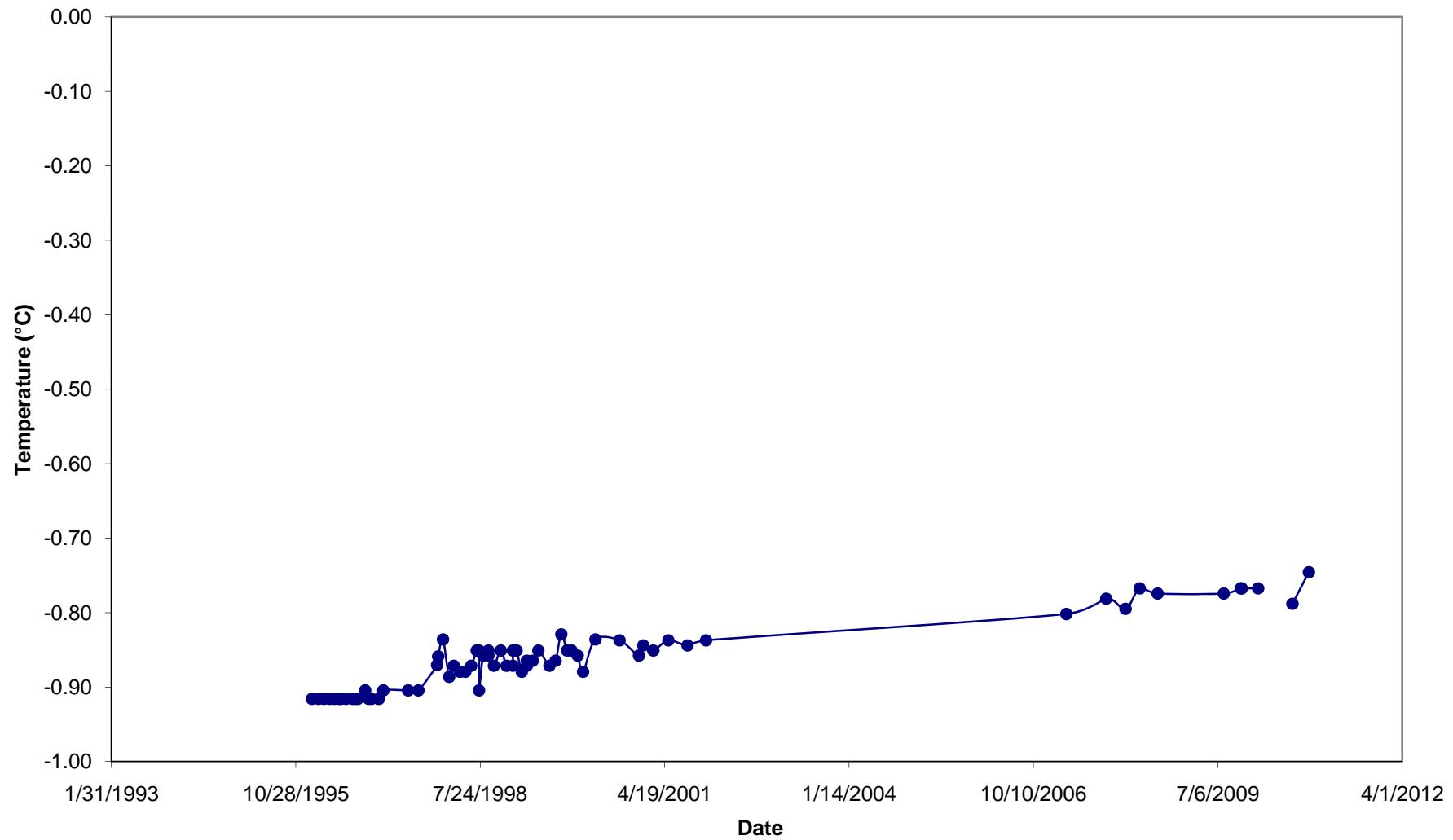
T-95-009 Temperature at 127 feet



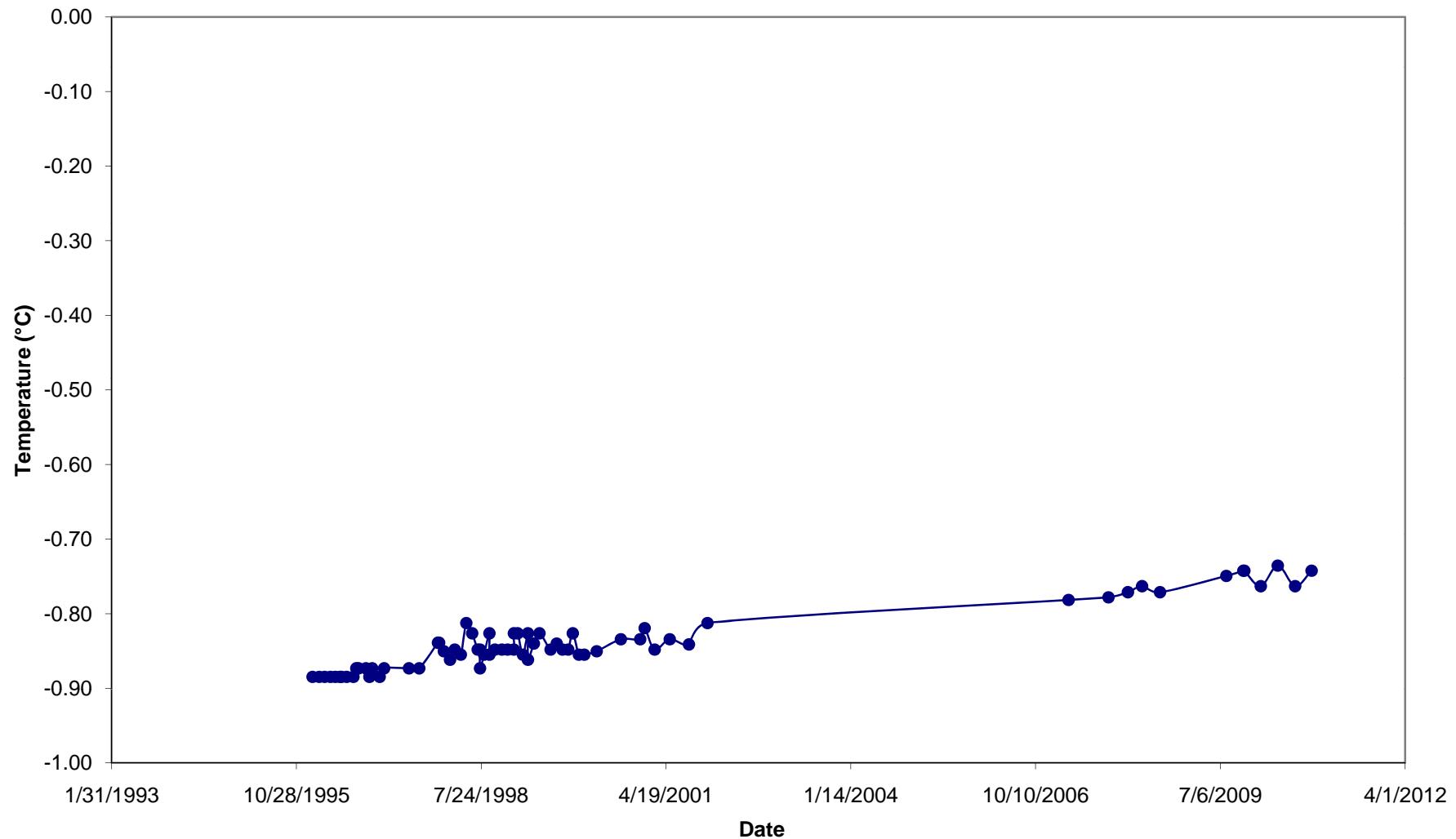
T-95-009 Temperature at 142 feet



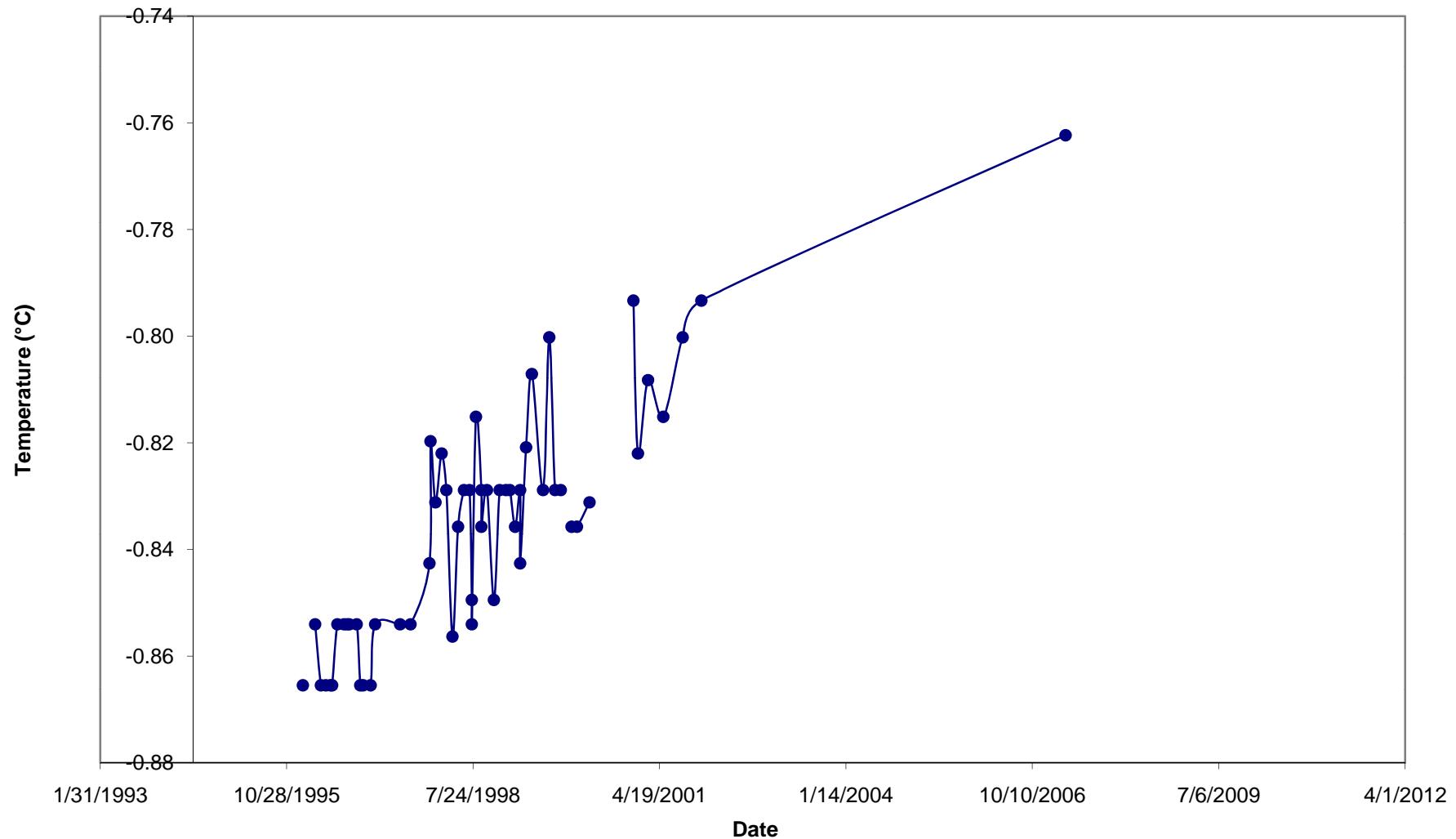
T-95-009 Temperature at 157 feet



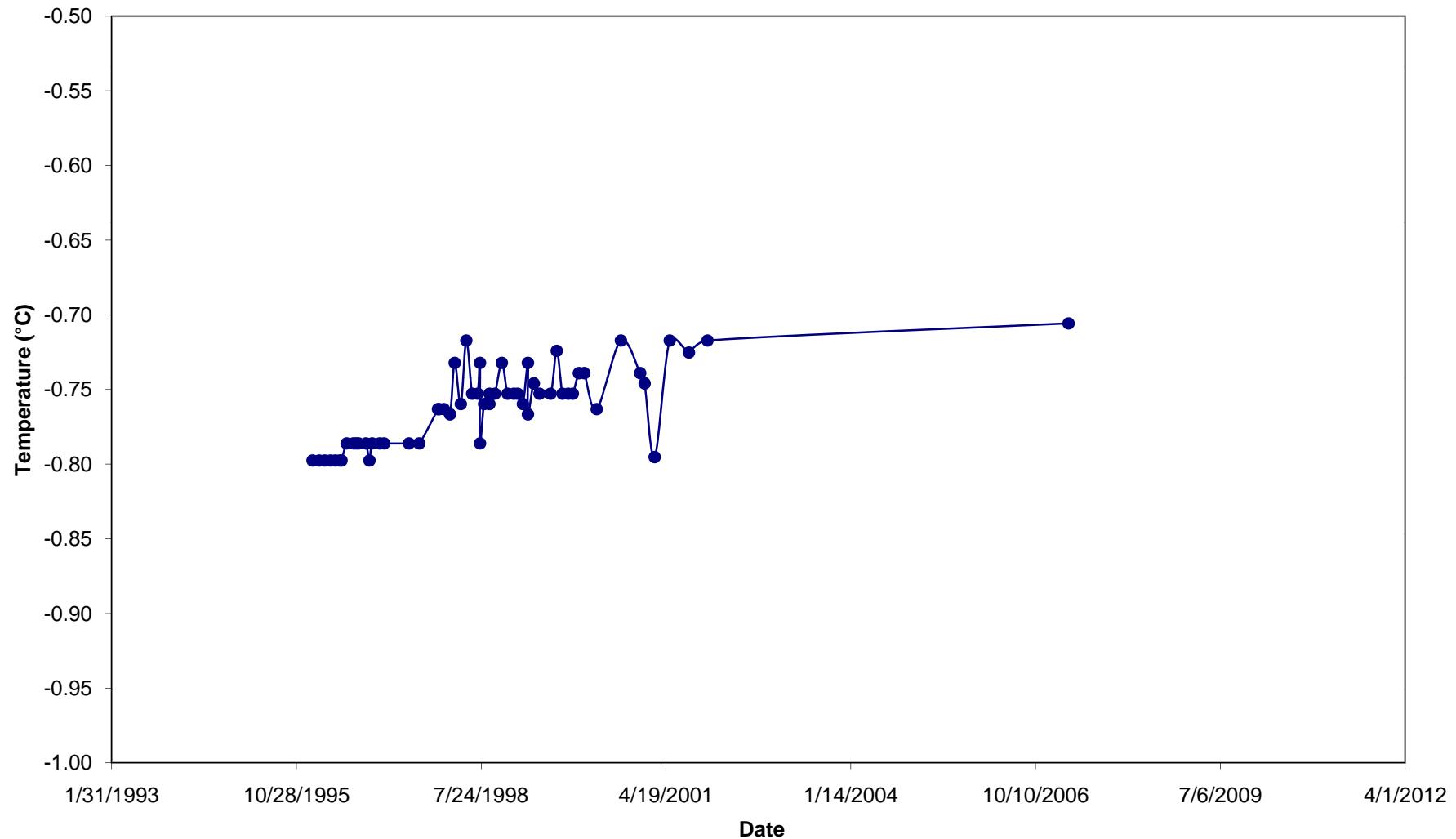
T-95-009 Temperature at 172 feet



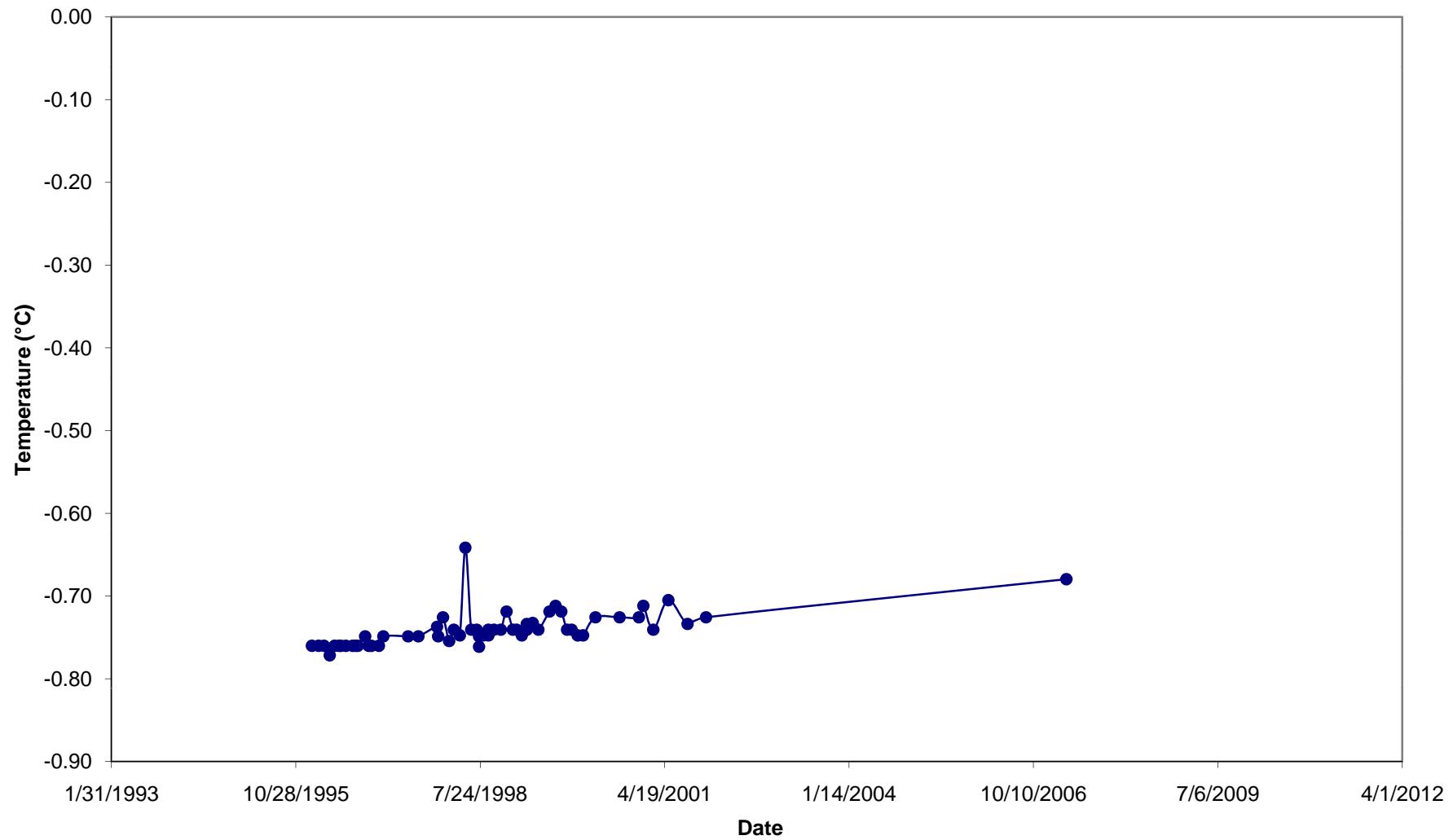
T-95-009 Temperature at 187 feet



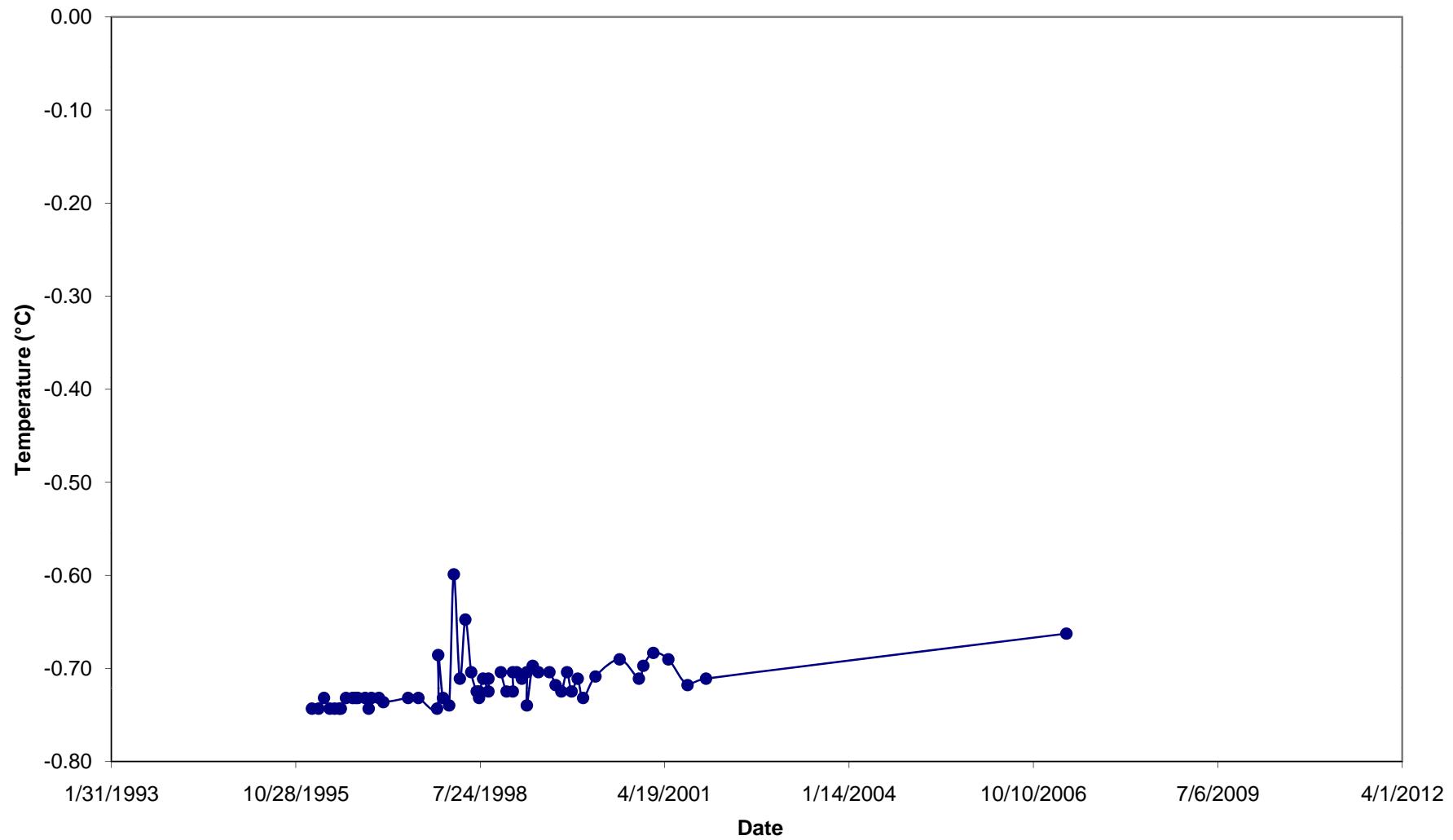
T-95-009 Temperature at 202 feet



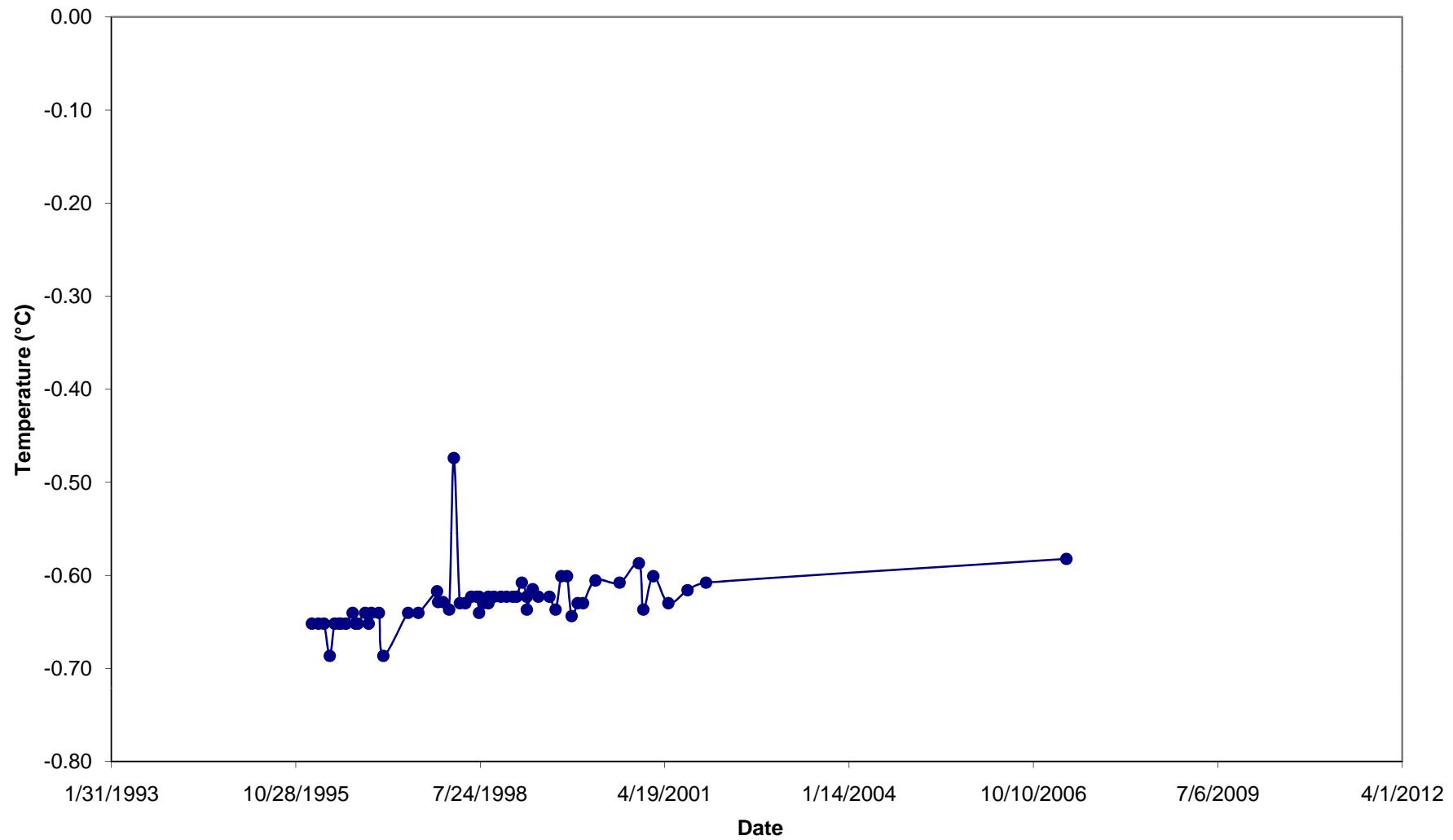
T-95-009 Temperature at 217 feet



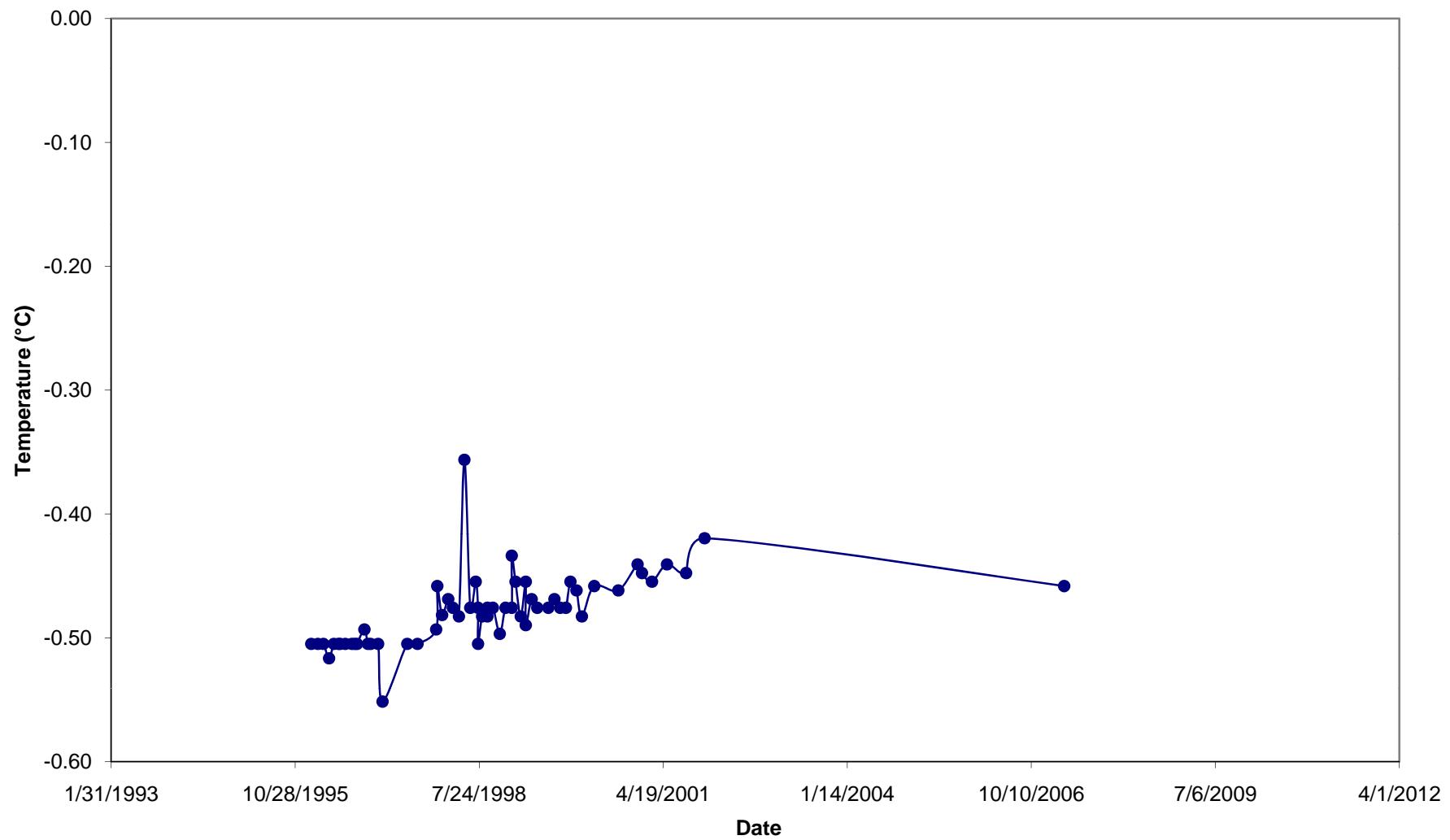
T-95-009 Temperature at 237 feet



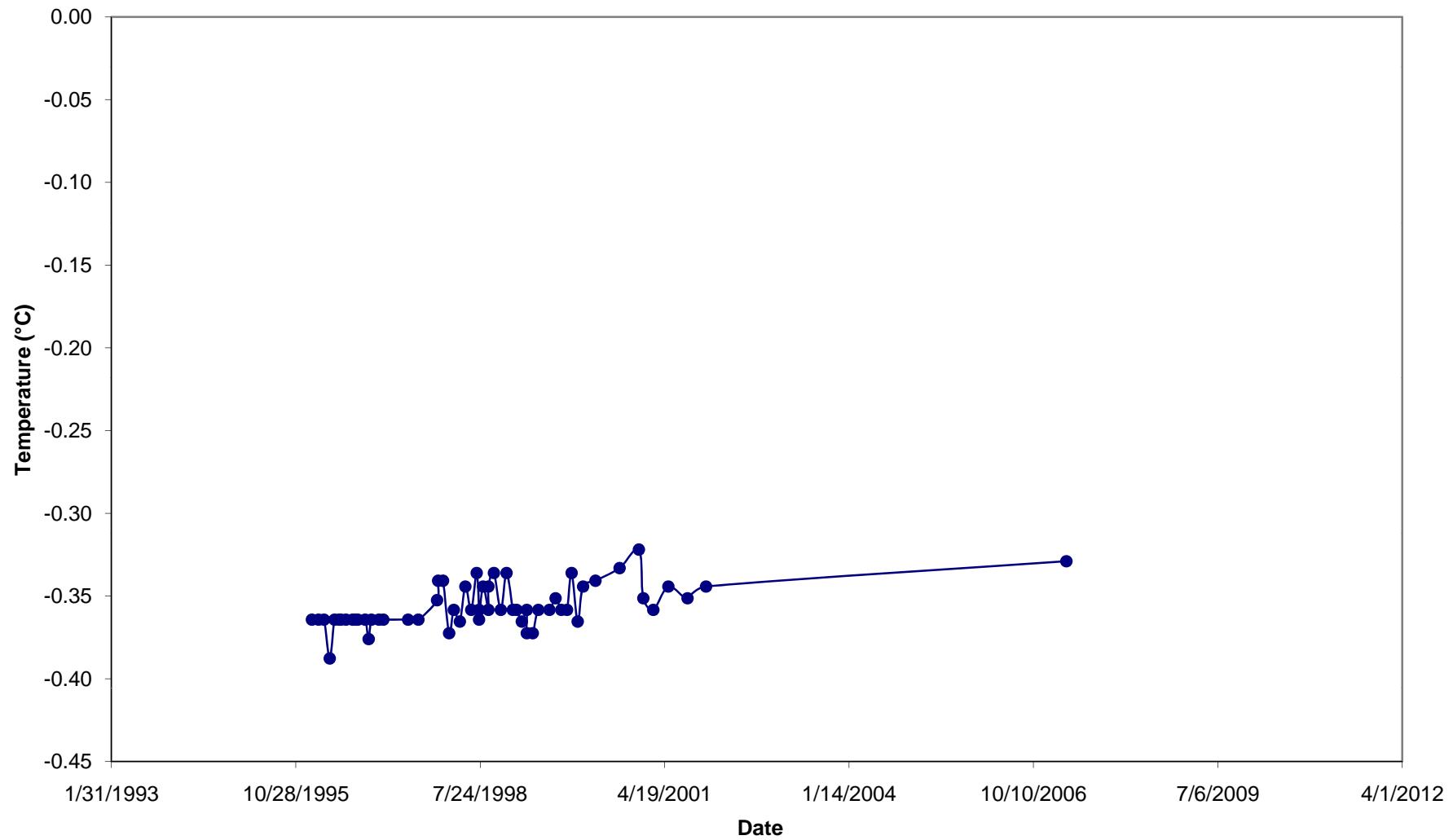
T-95-009 Temperature at 257 feet



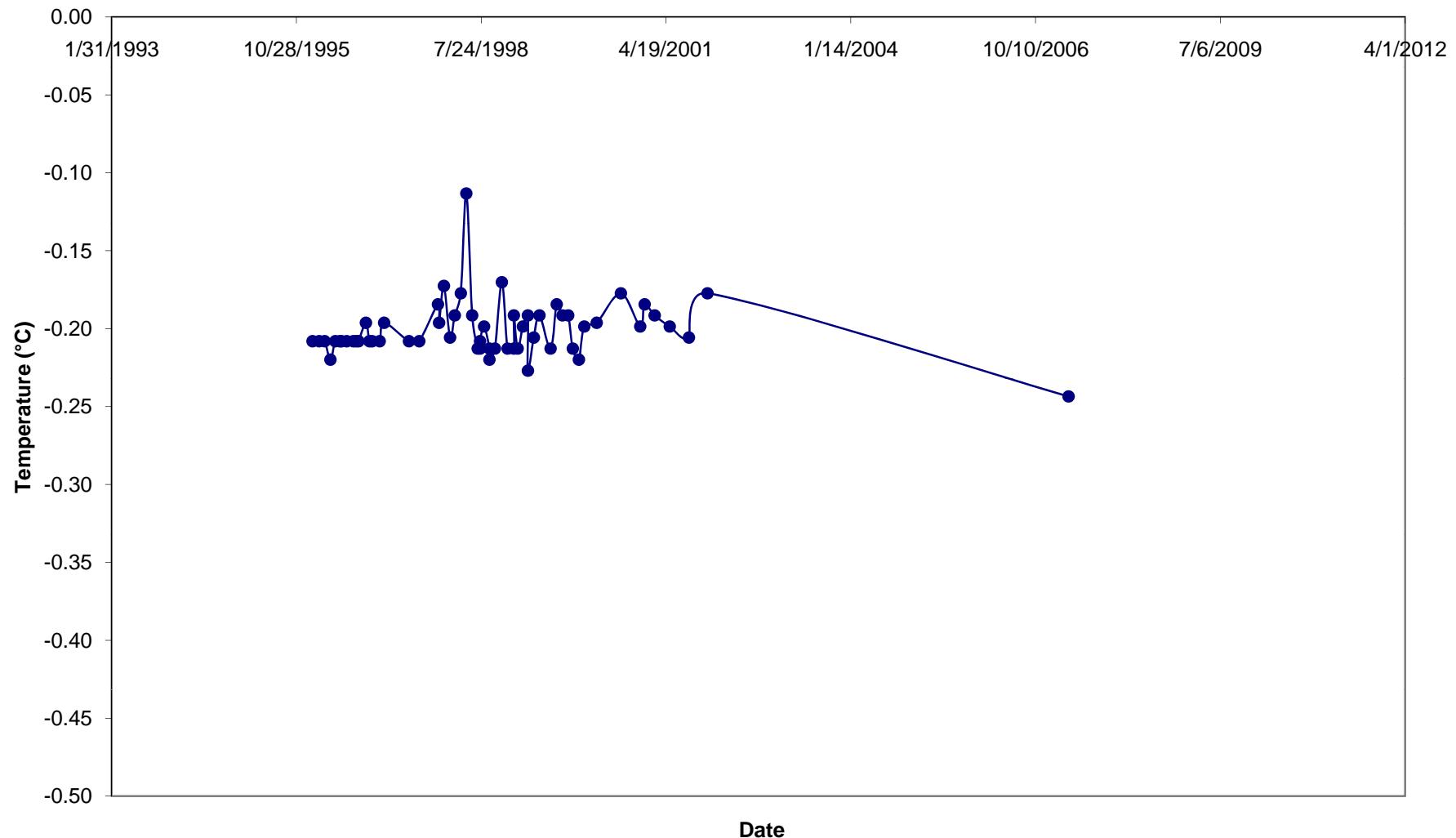
T-95-009 Temperature at 282 feet



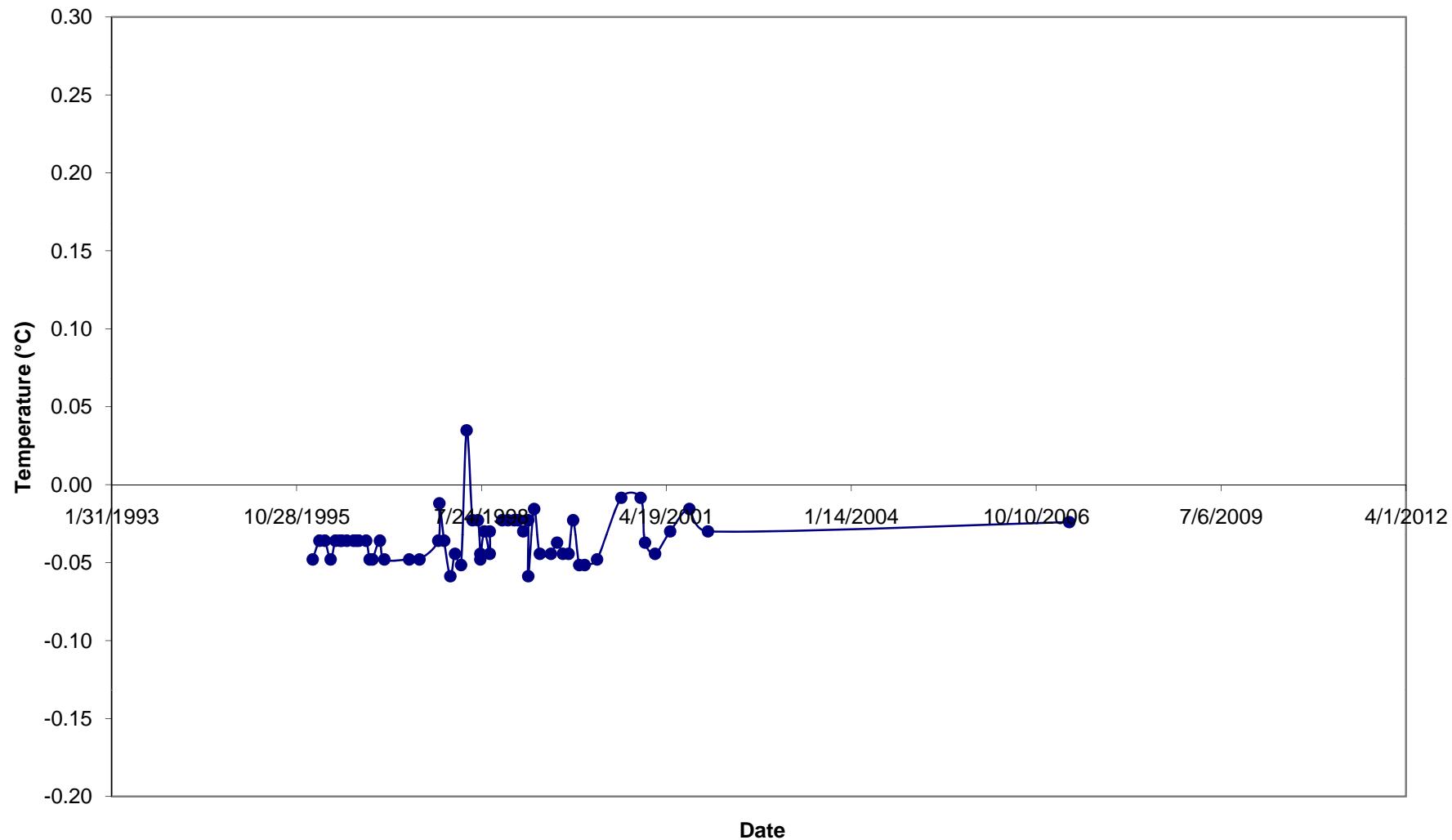
T-95-009 Temperature at 307 feet



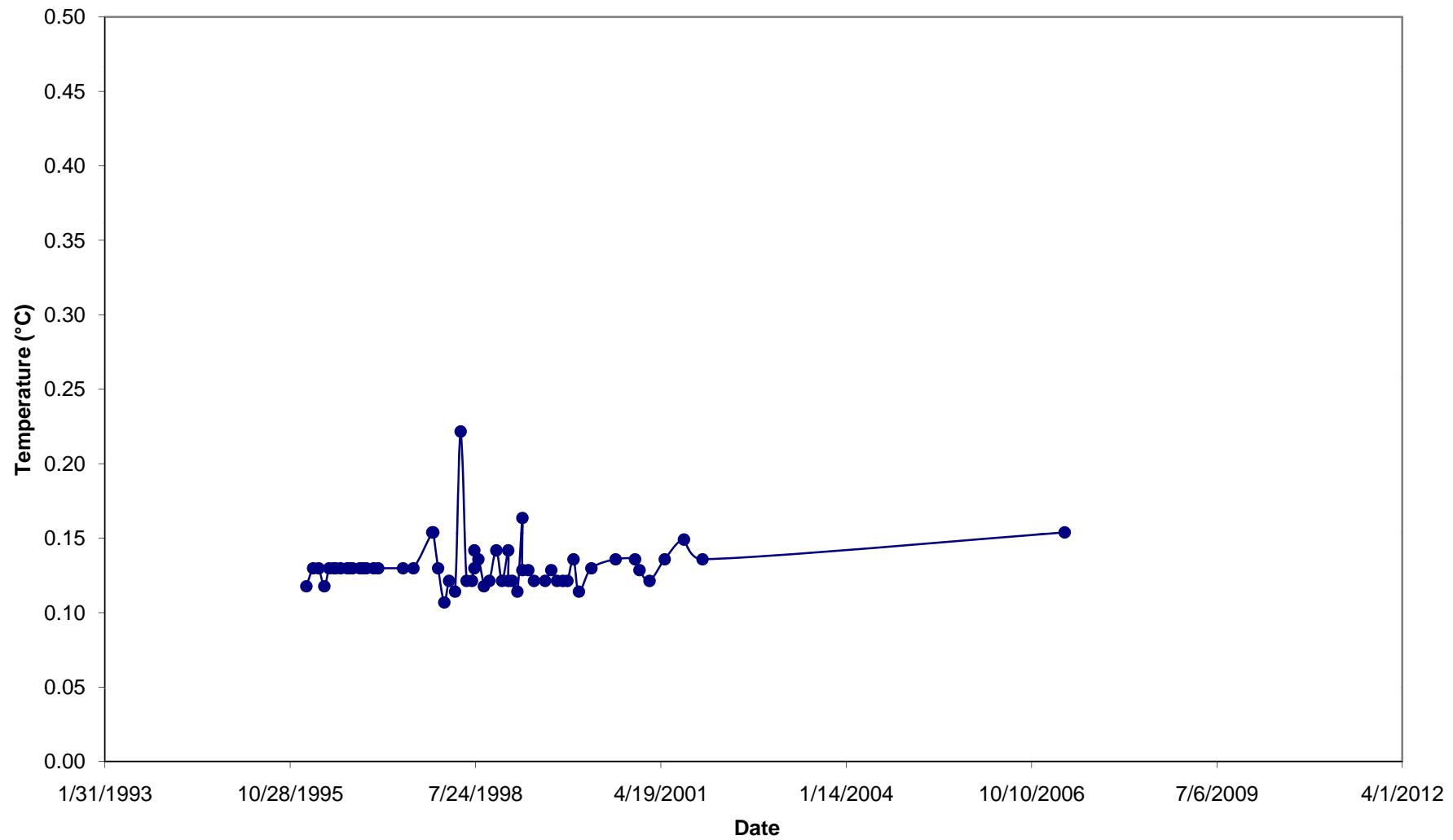
T-95-009 Temperature at 332 feet



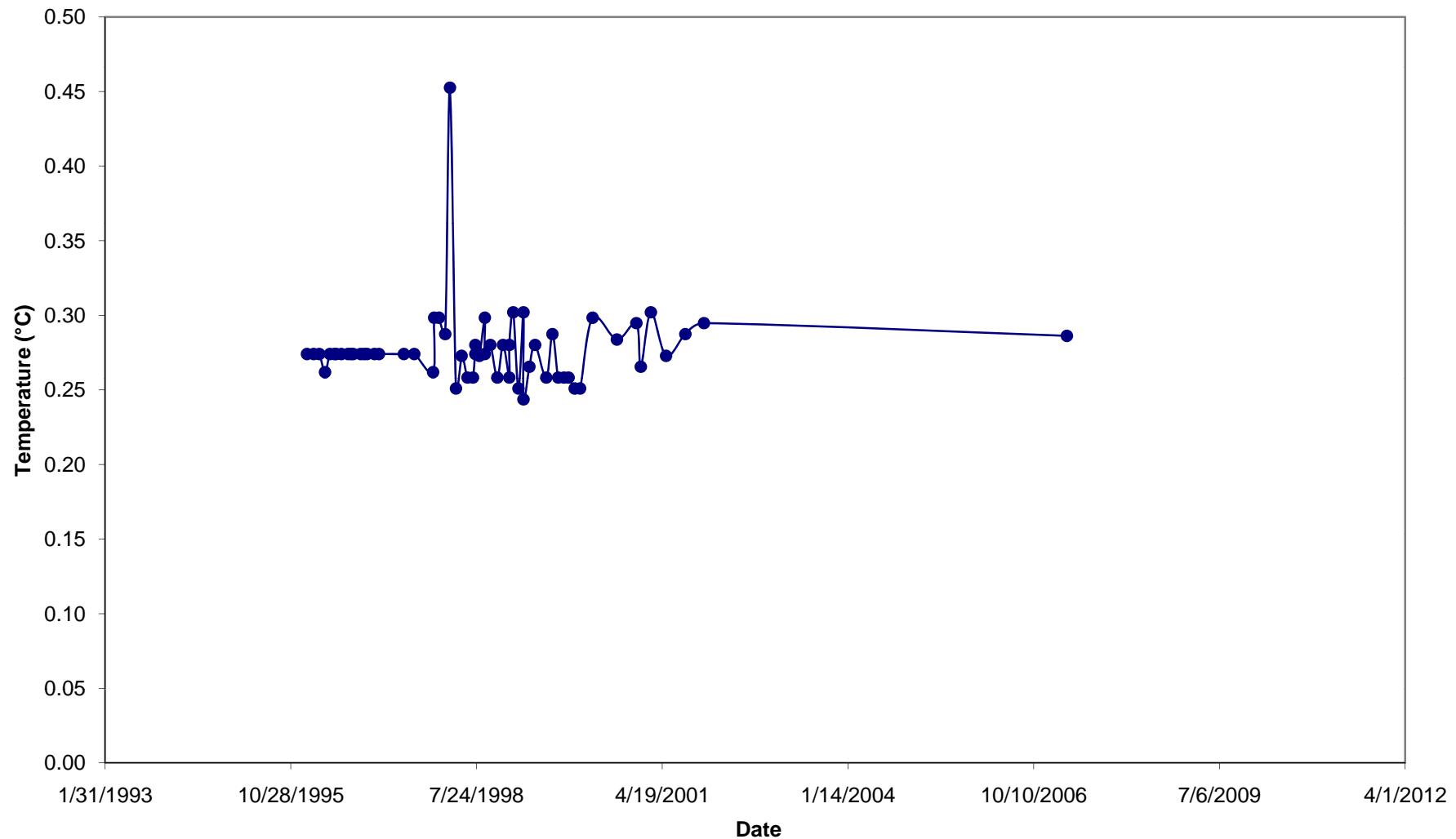
T-95-009 Temperature at 357 feet



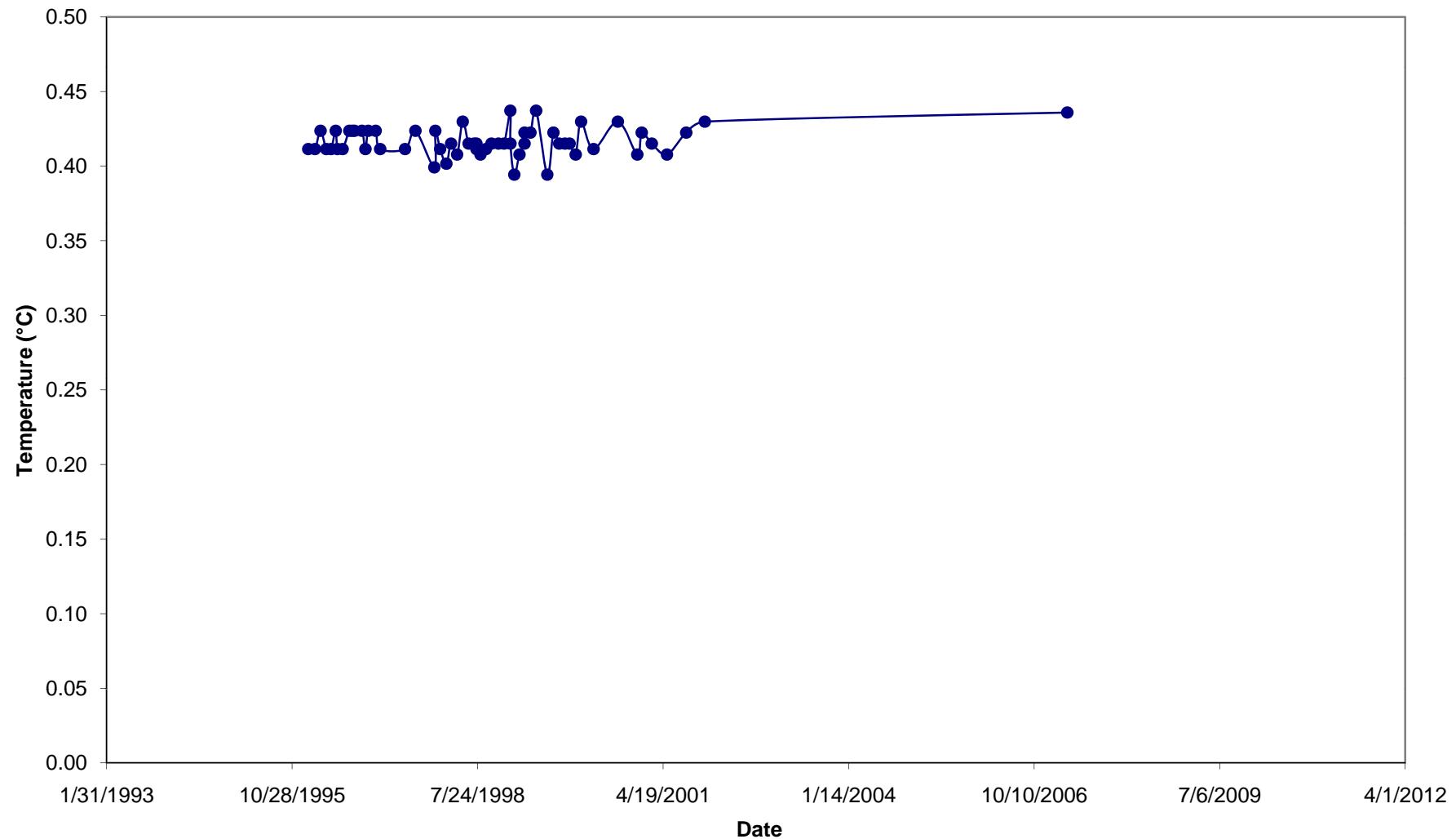
T-95-009 Temperature at 382 feet



T-95-009 Temperature at 407 feet

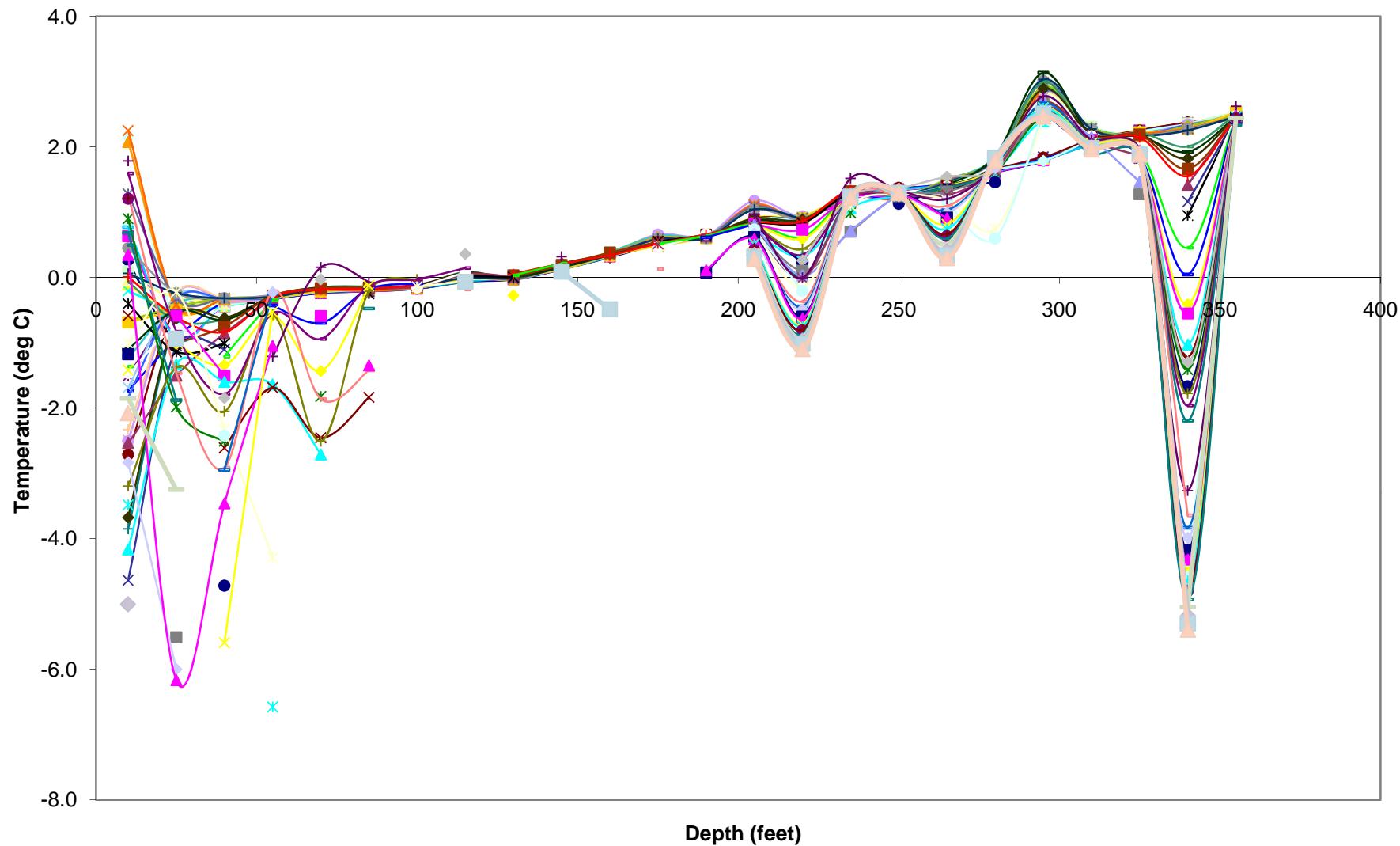


T-95-009 Temperature at 432 feet

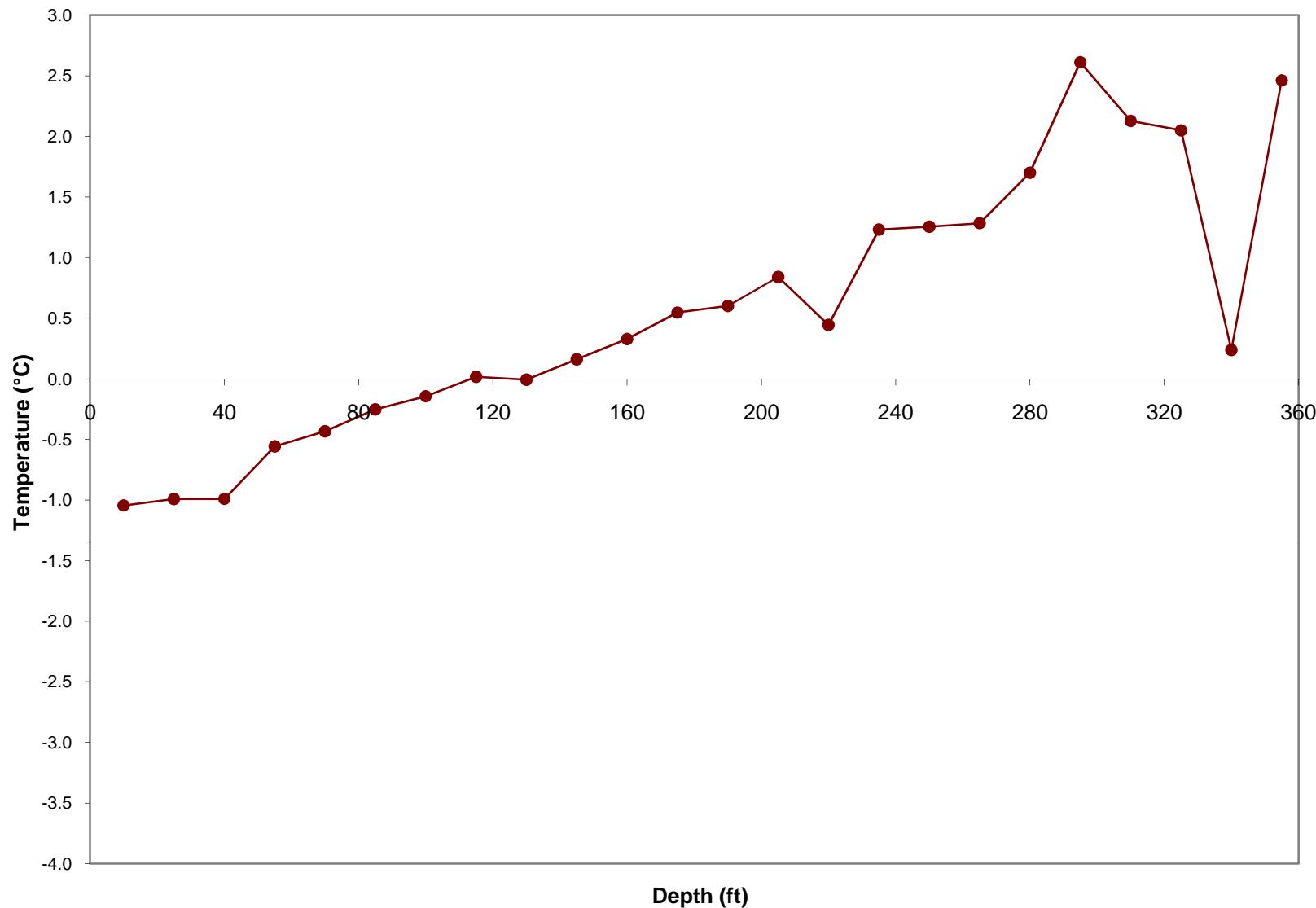


T-96-010

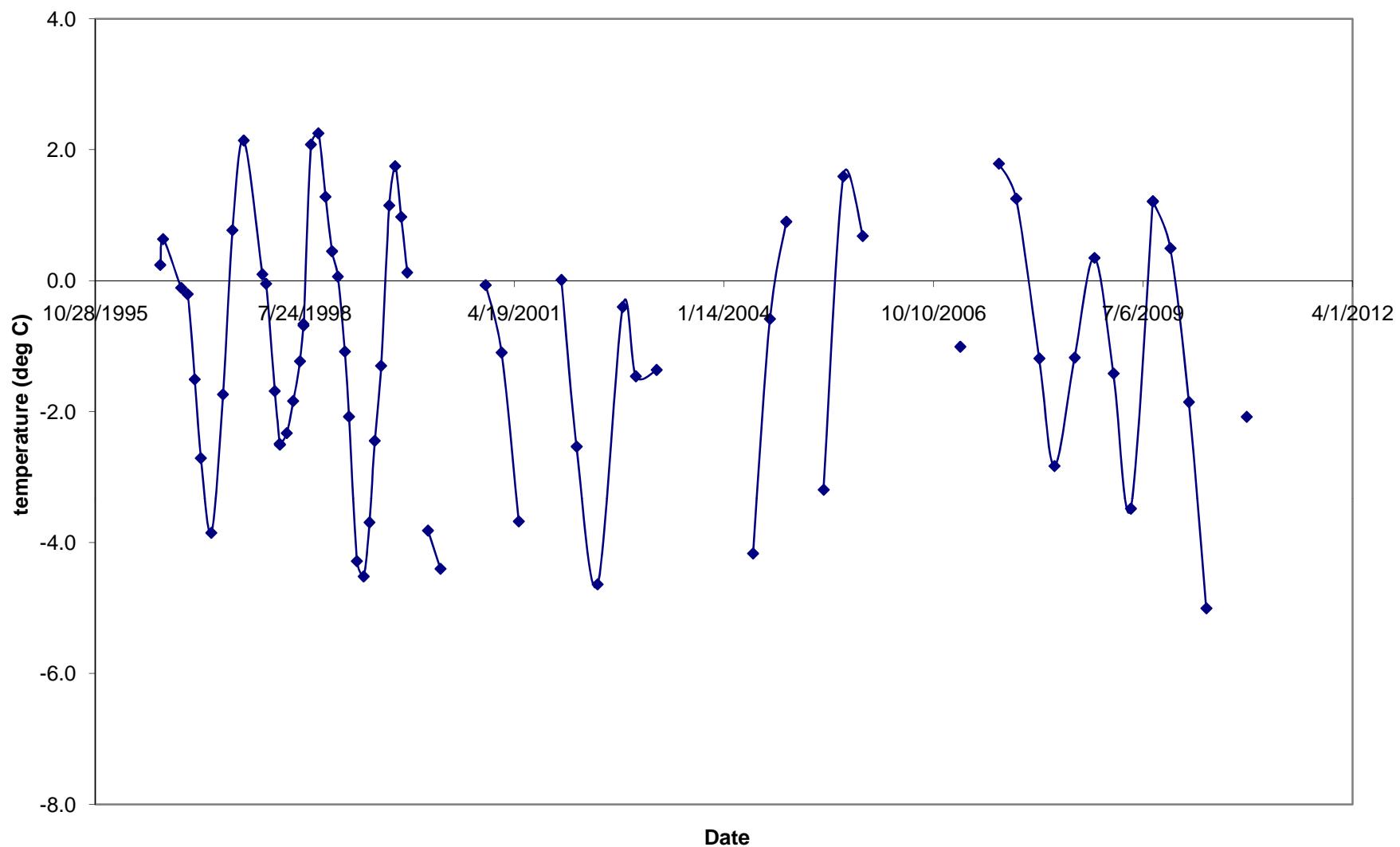
Temperature Depth Plot - T-96-010



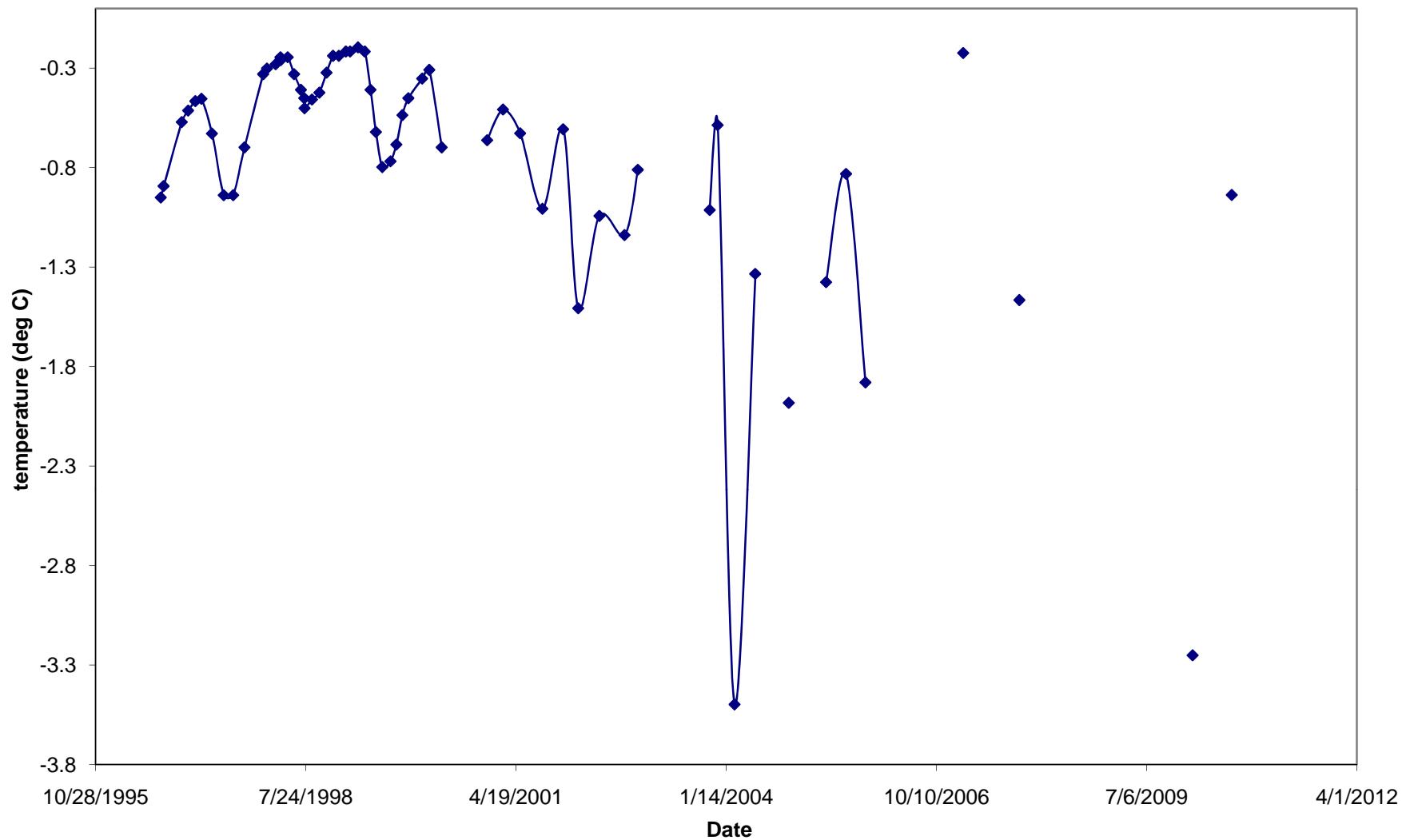
Average Temperature Depth Plot for T-96-010



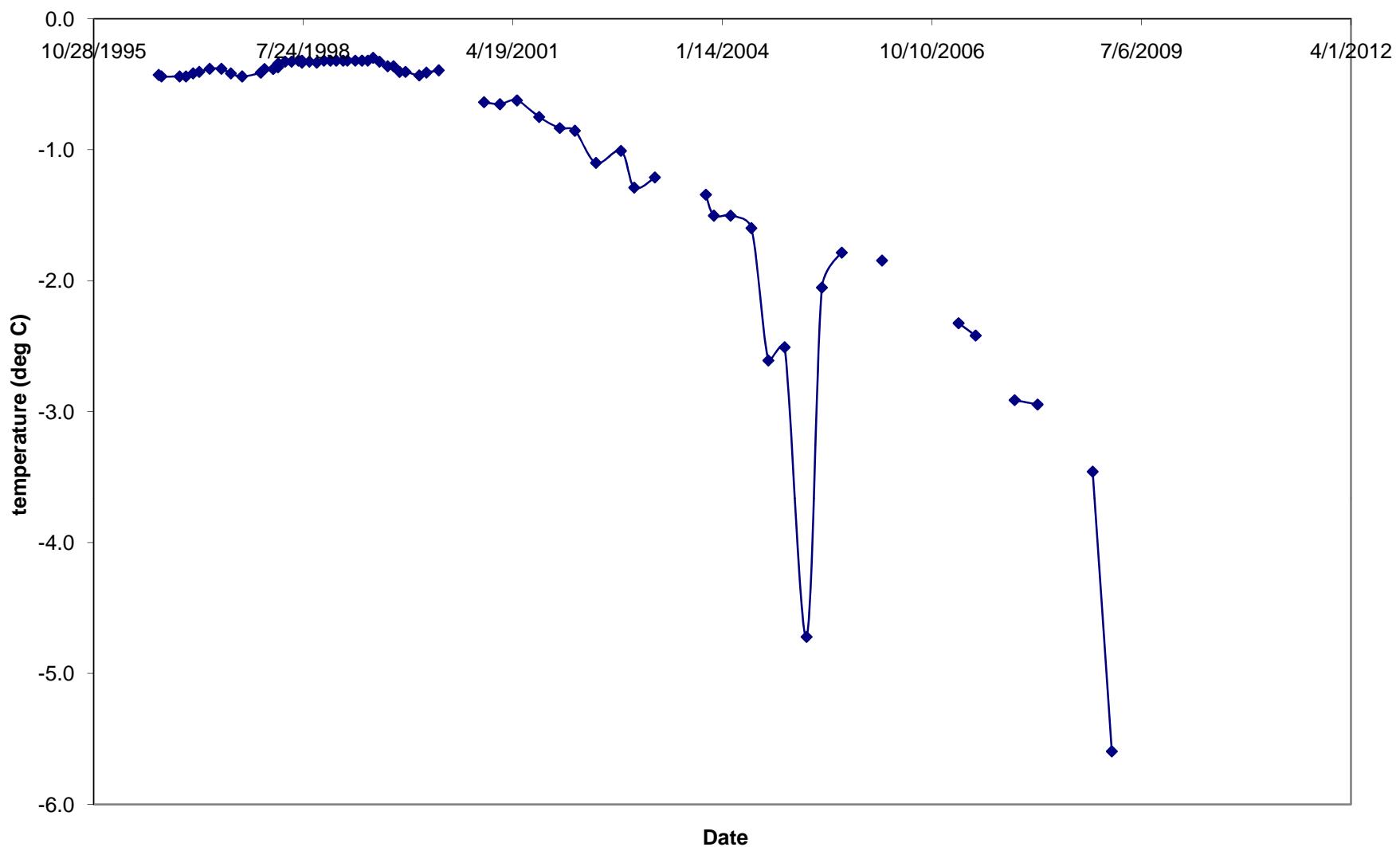
T-96-010 Temperature at 10 feet



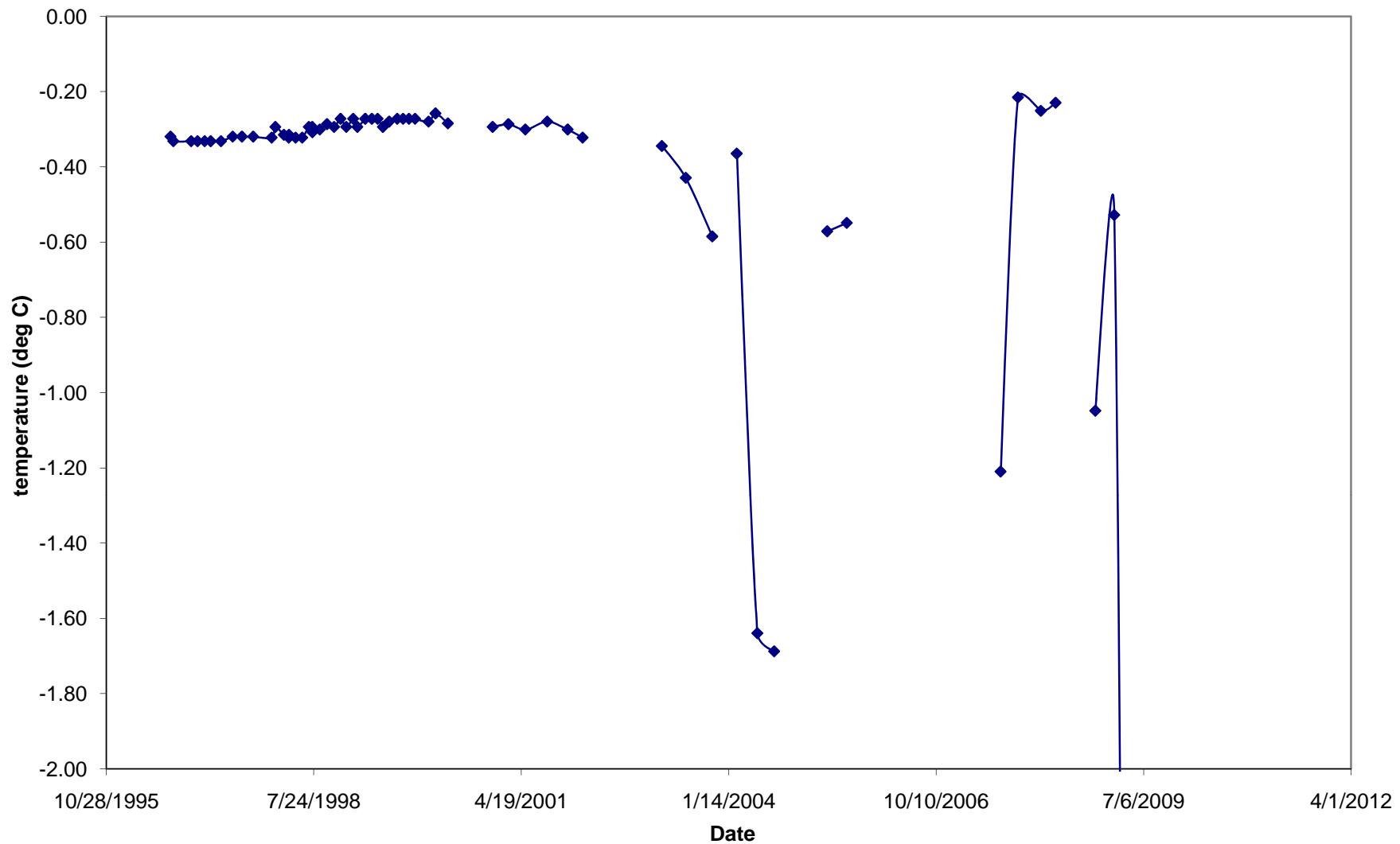
T-96-010 Temperature at 25 feet



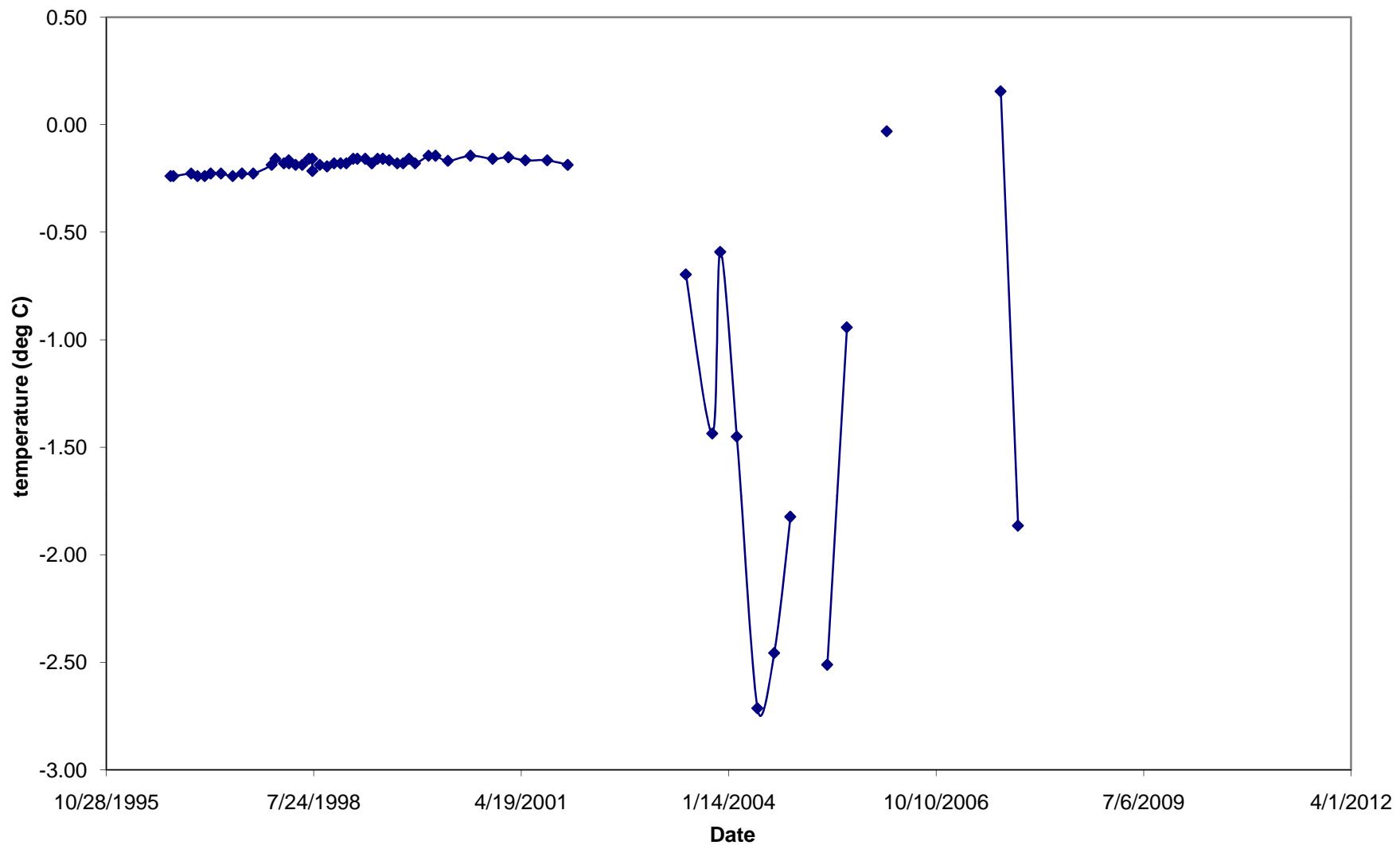
T-96-010 Temperature at 40 feet



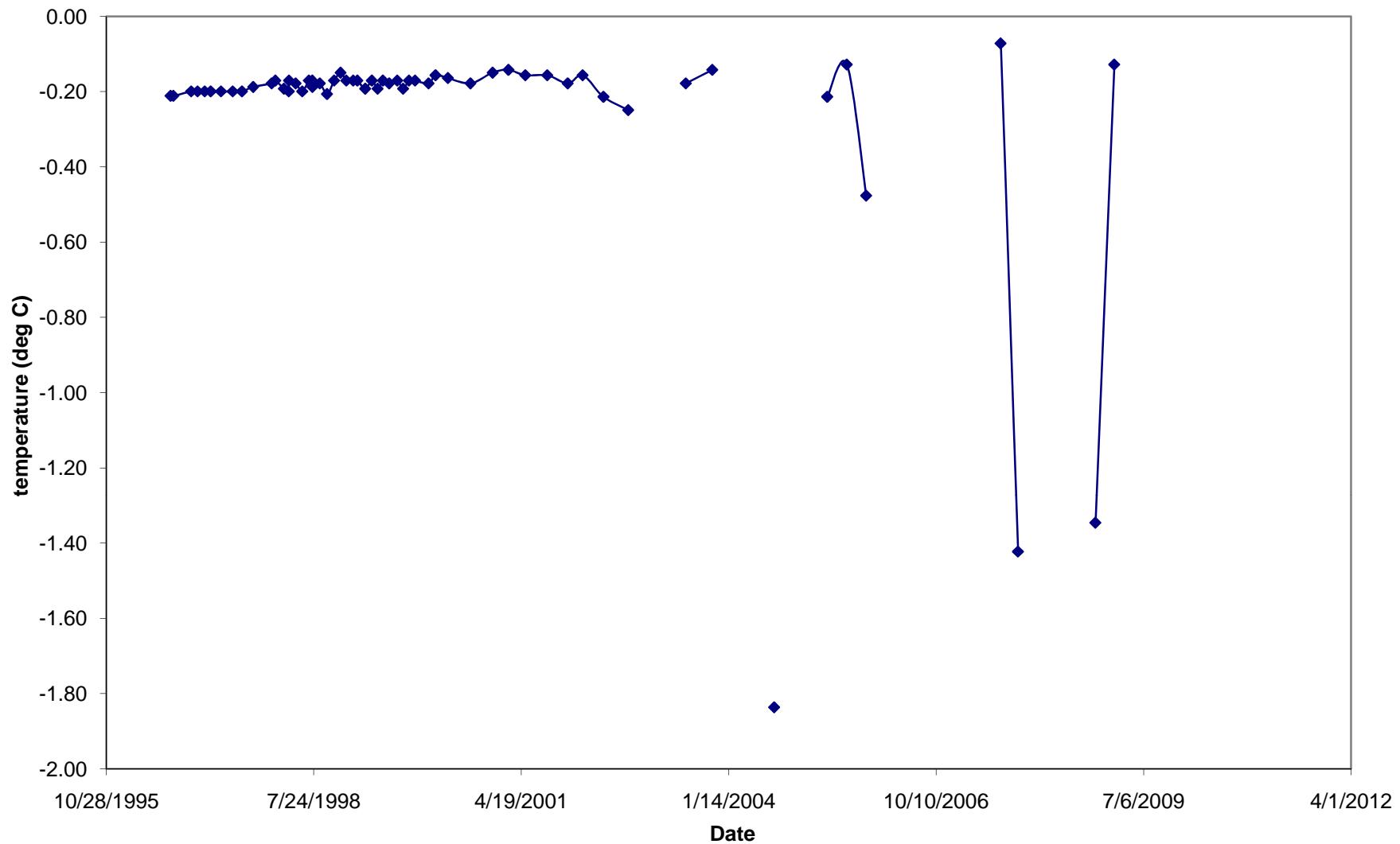
T-96-010 Temperature at 55 feet



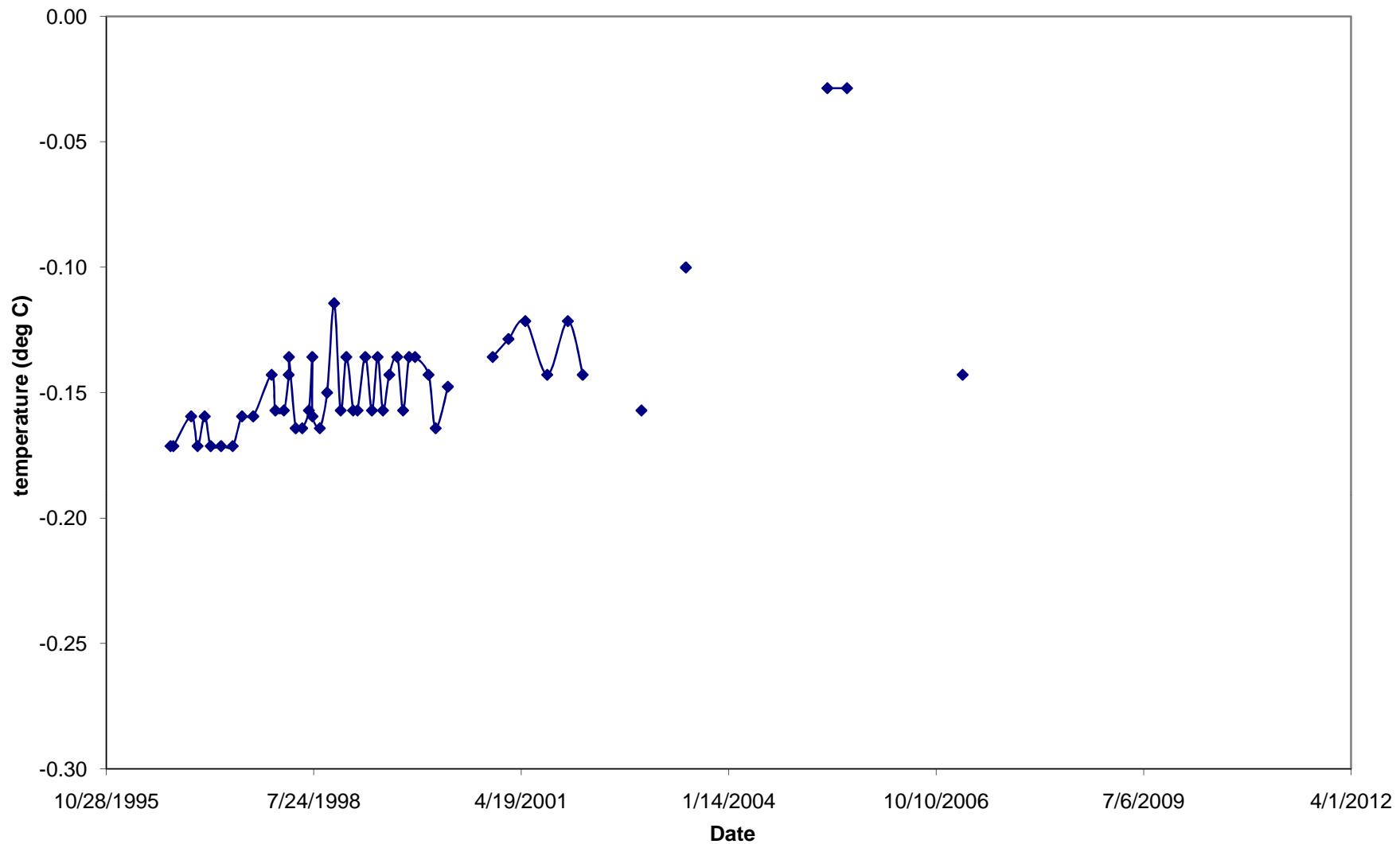
T-96-010 Temperature at 70 feet



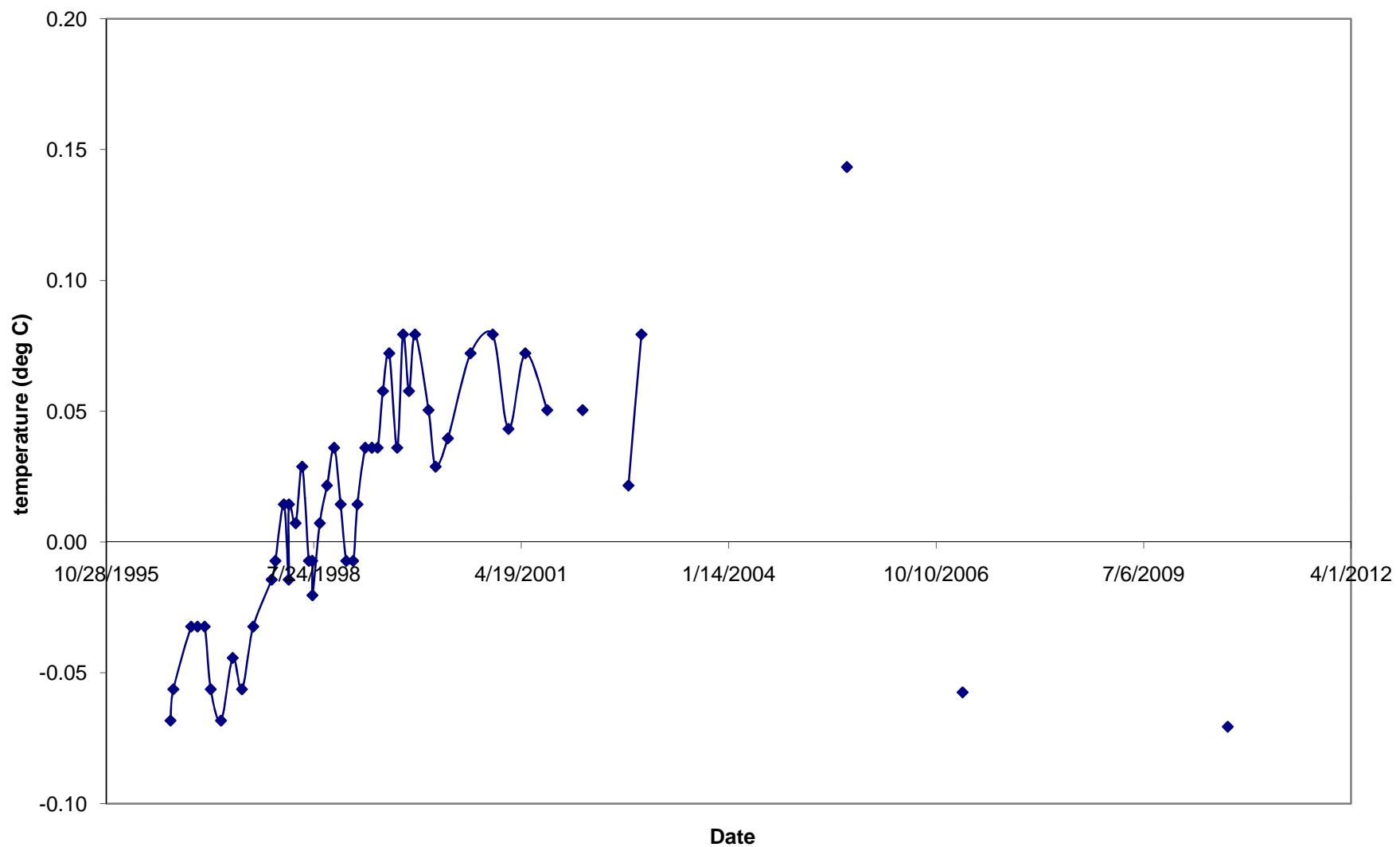
T-96-010 Temperature at 85 feet



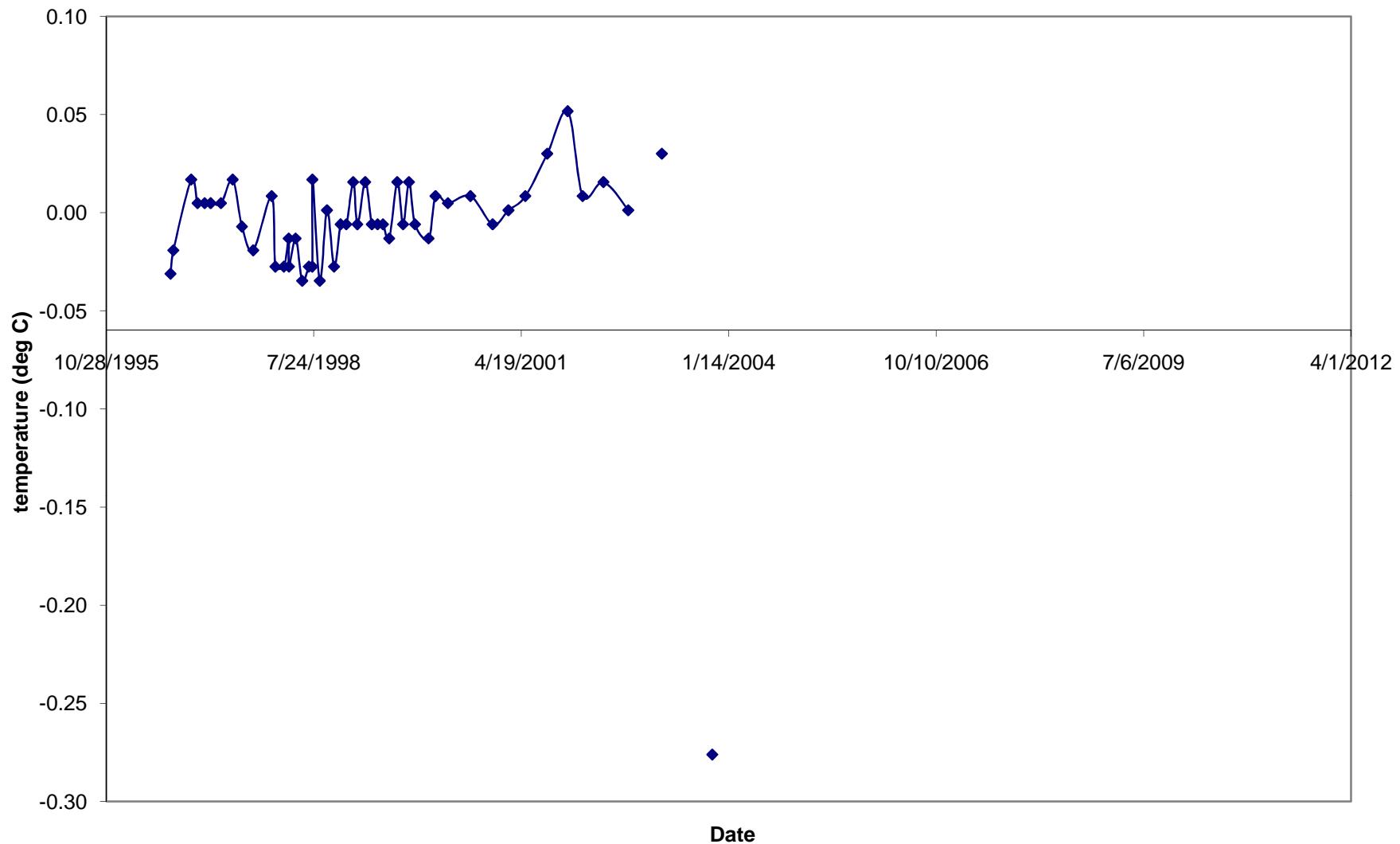
T-96-010 Temperature at 100 feet



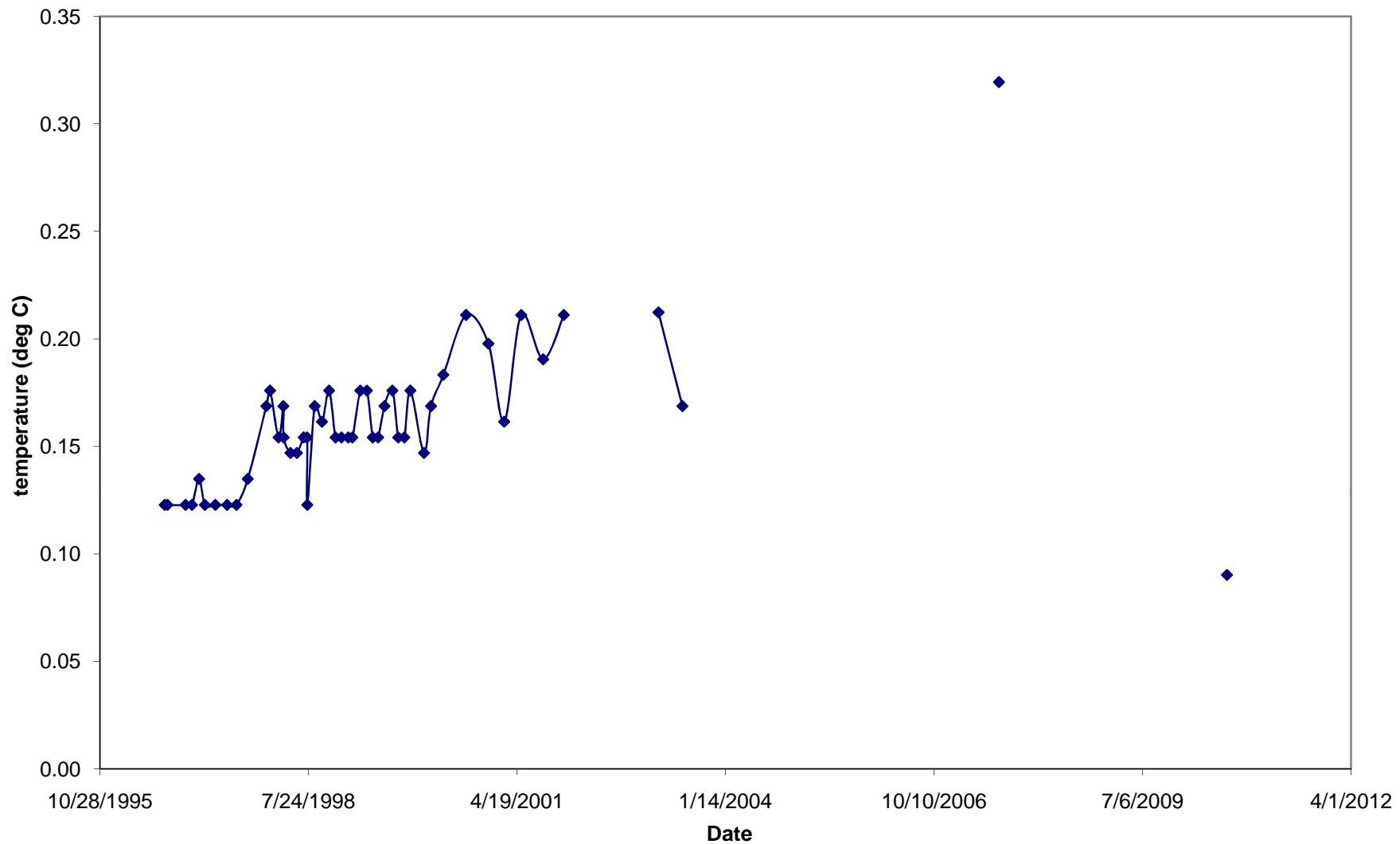
T-96-010 Temperature at 115 feet



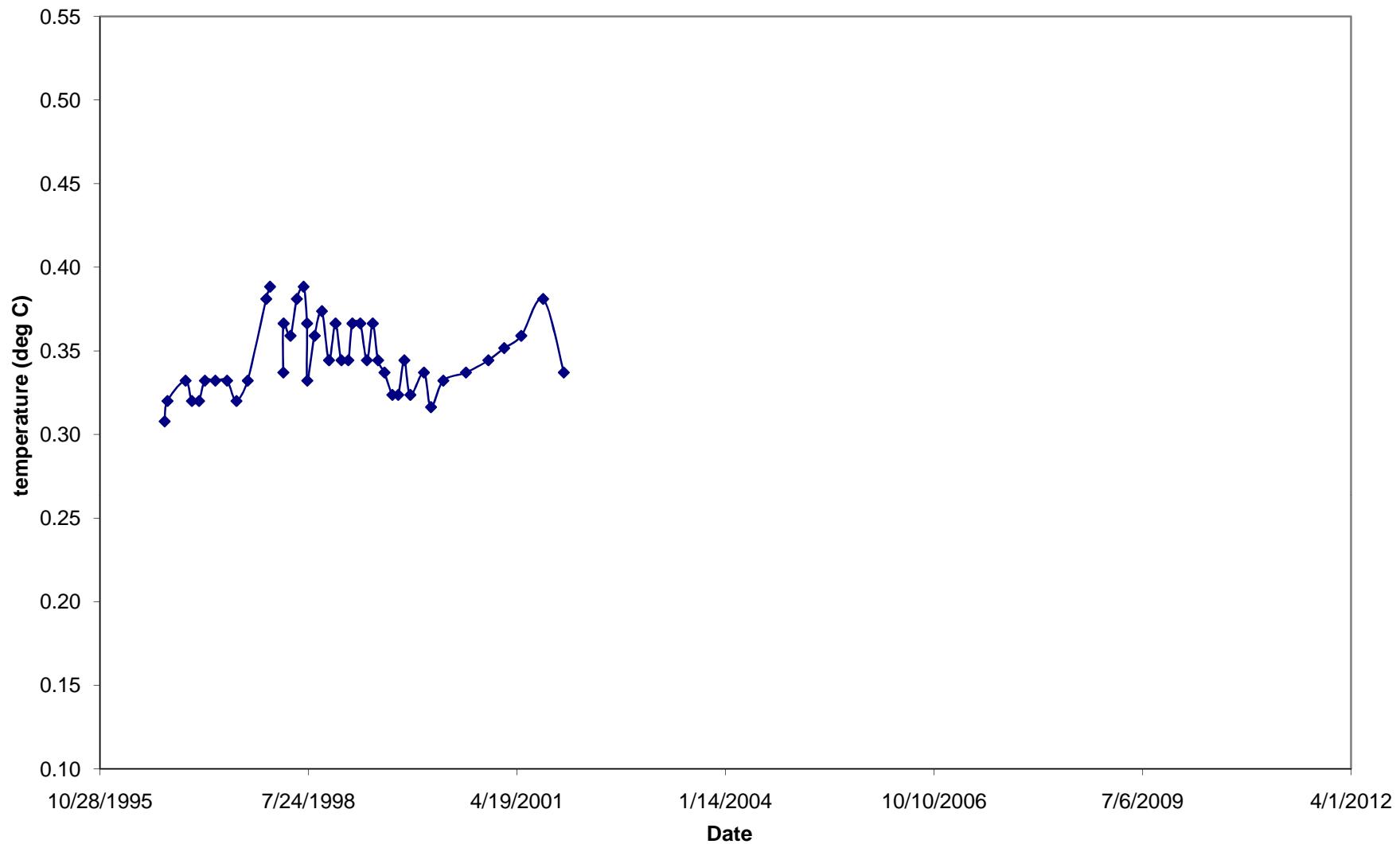
T-96-010 Temperature at 130 feet



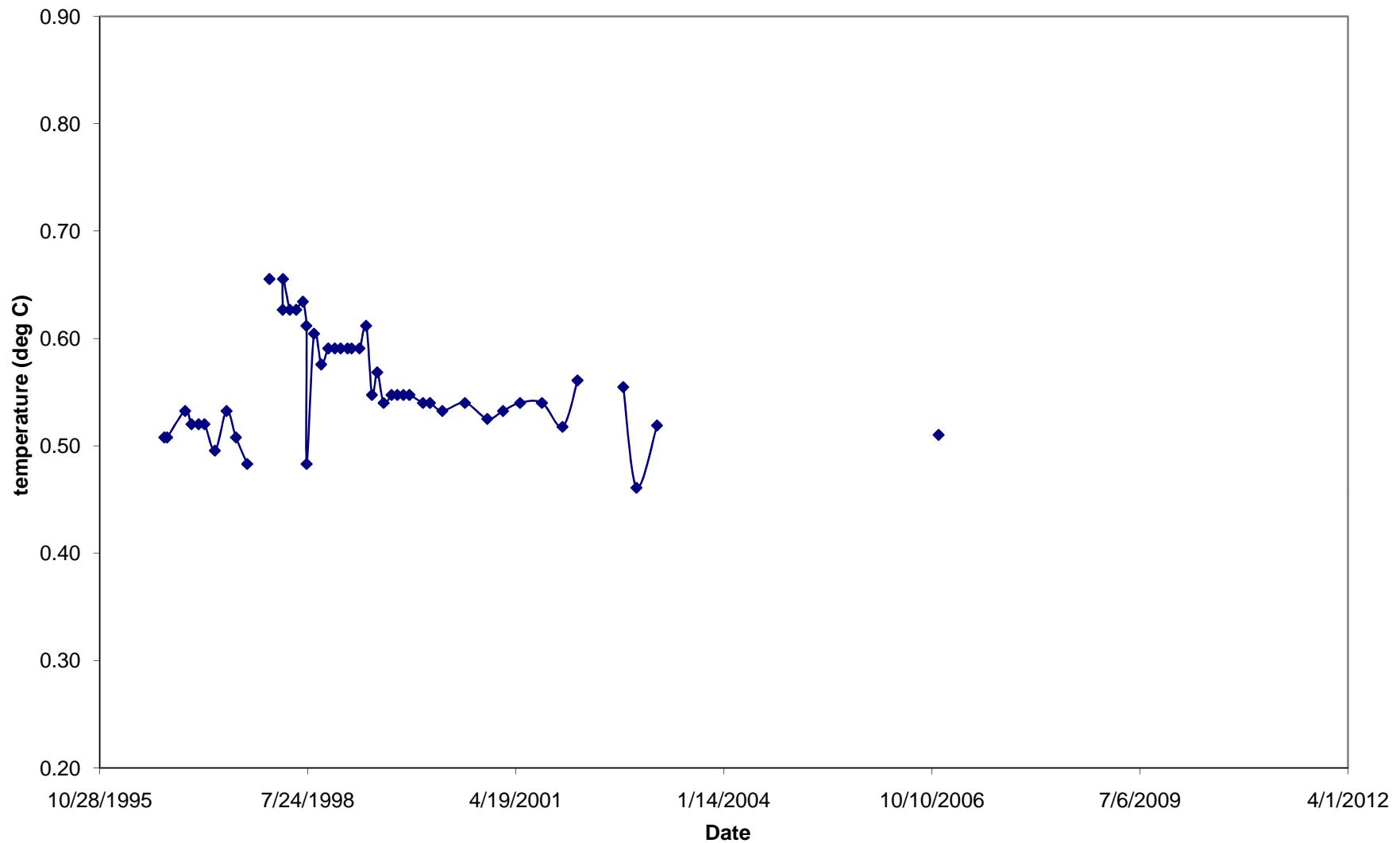
T-96-010 Temperature at 145 feet



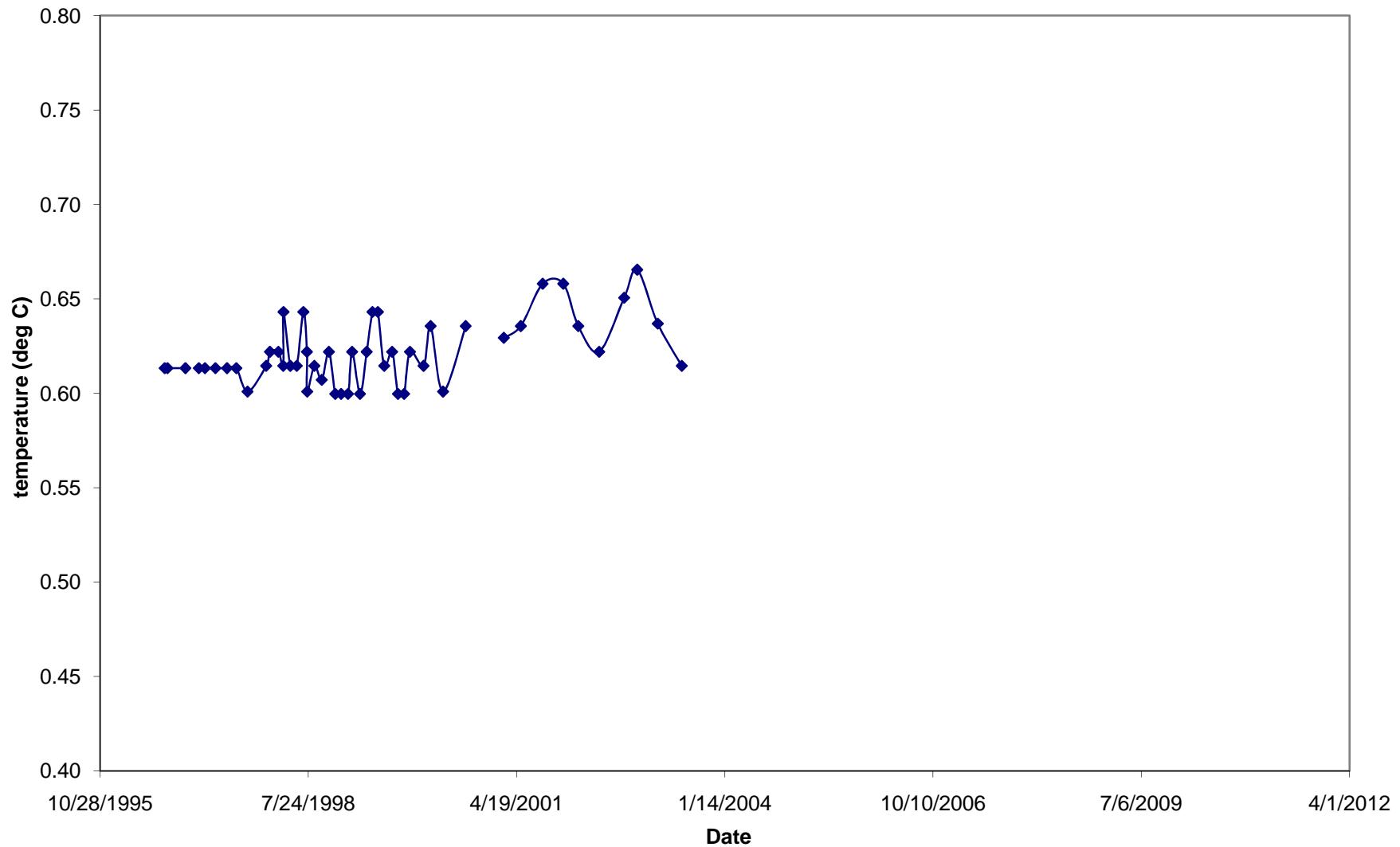
T-96-010 Temperature at 160 feet



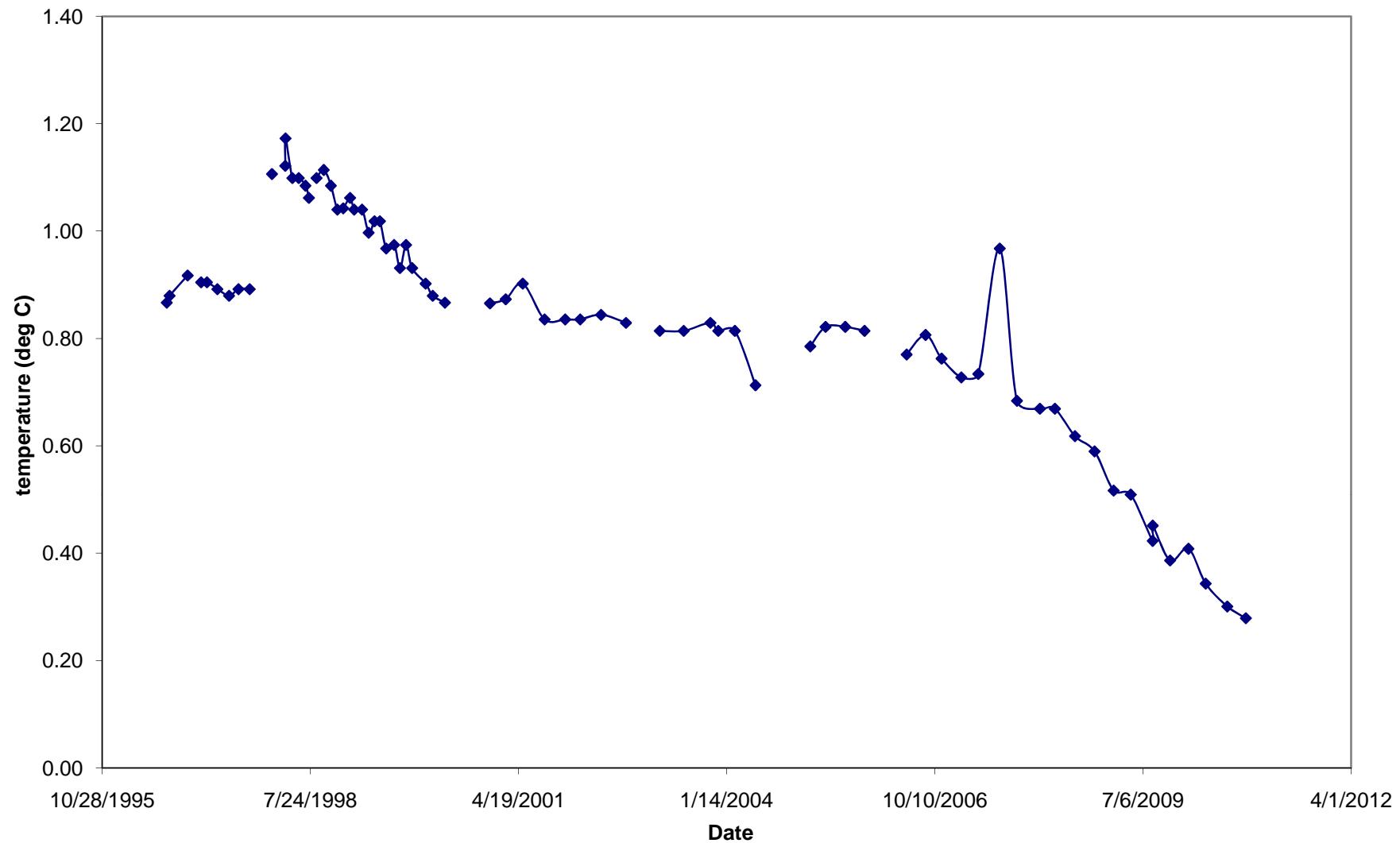
T-96-010 Temperature at 175 feet



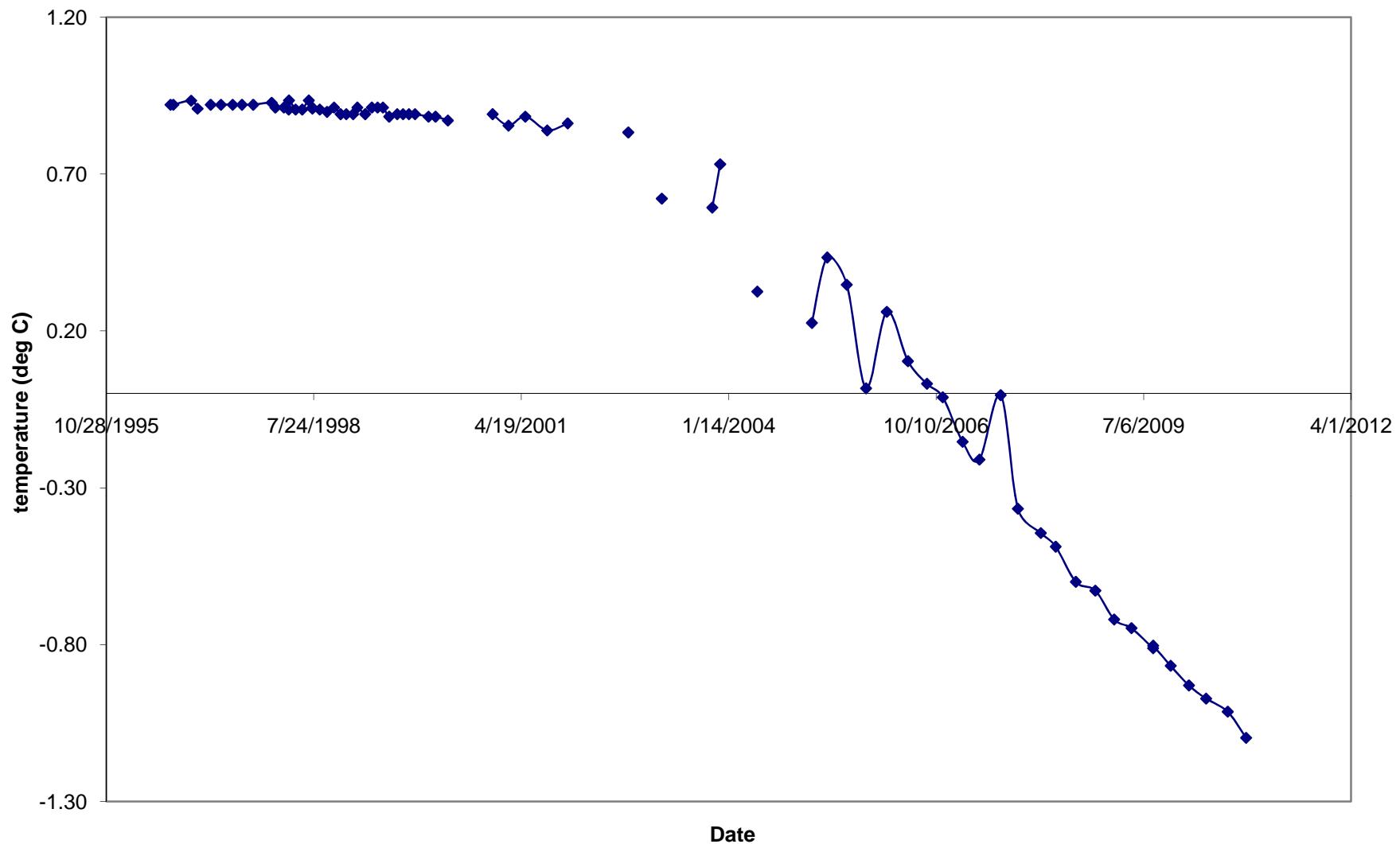
T-96-010 Temperature at 190 feet



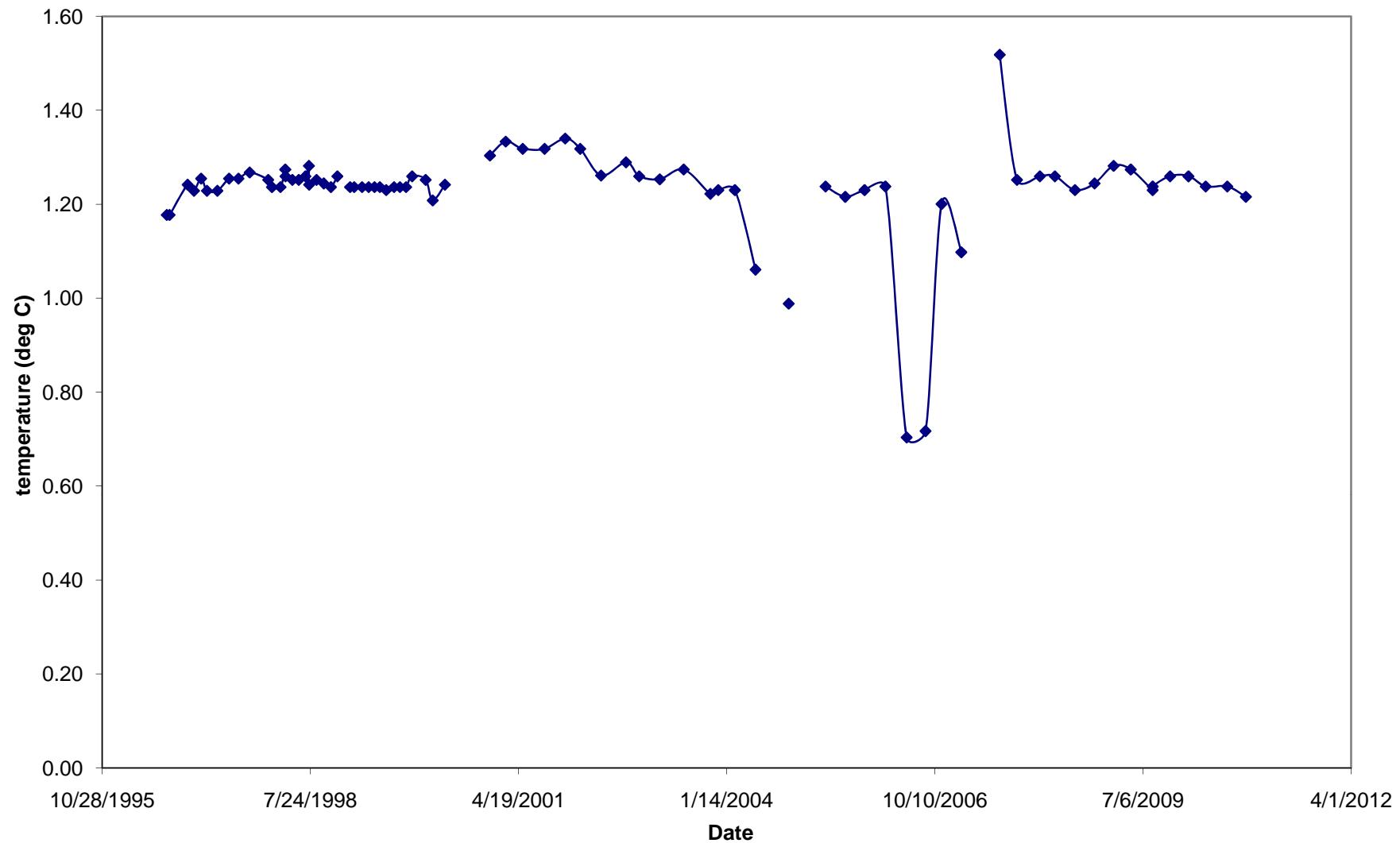
T-96-010 Temperature at 205 feet



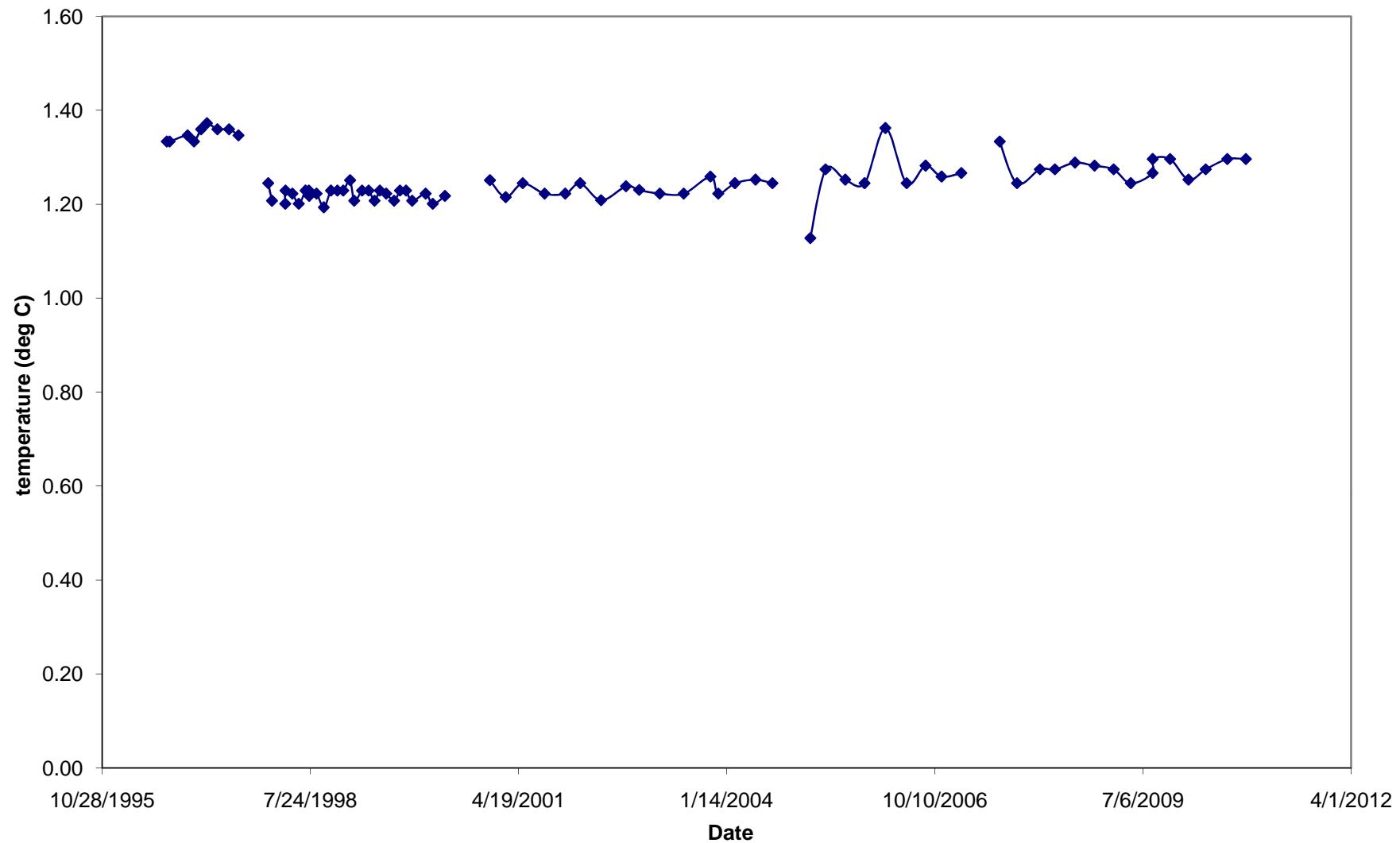
T-96-010 Temperature at 220 feet



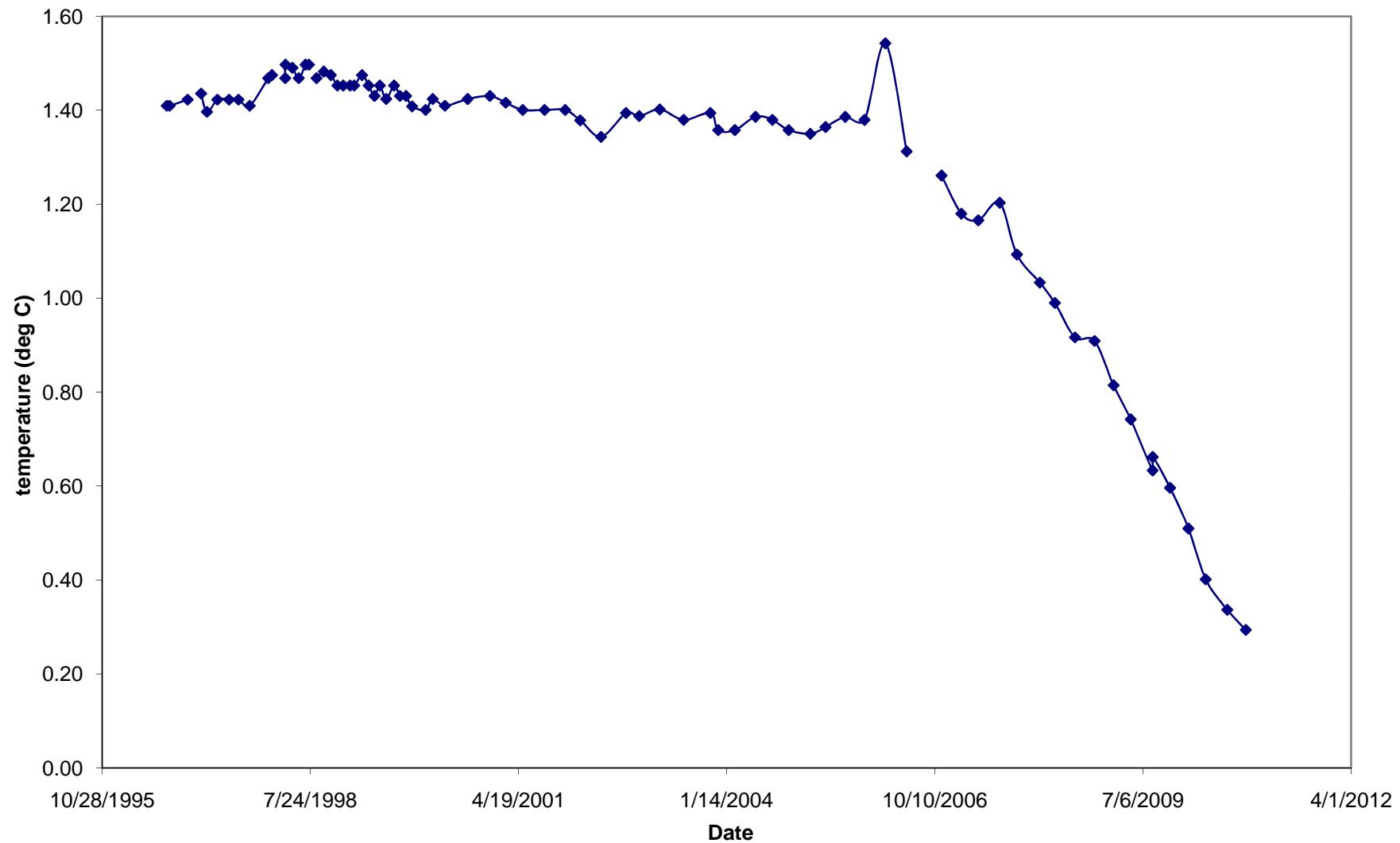
T-96-010 Temperature at 235 feet



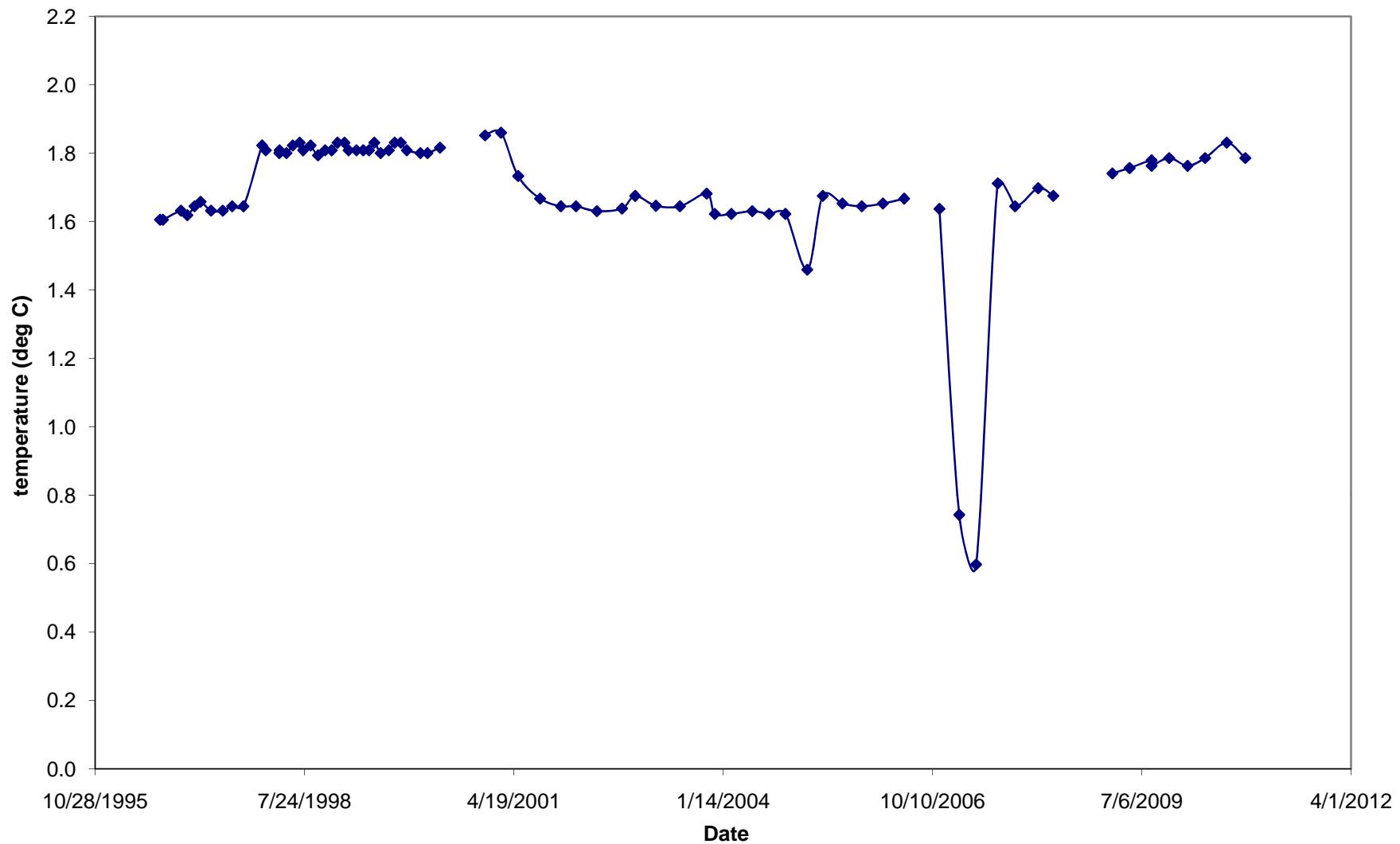
T-96-010 Temperature at 250 feet



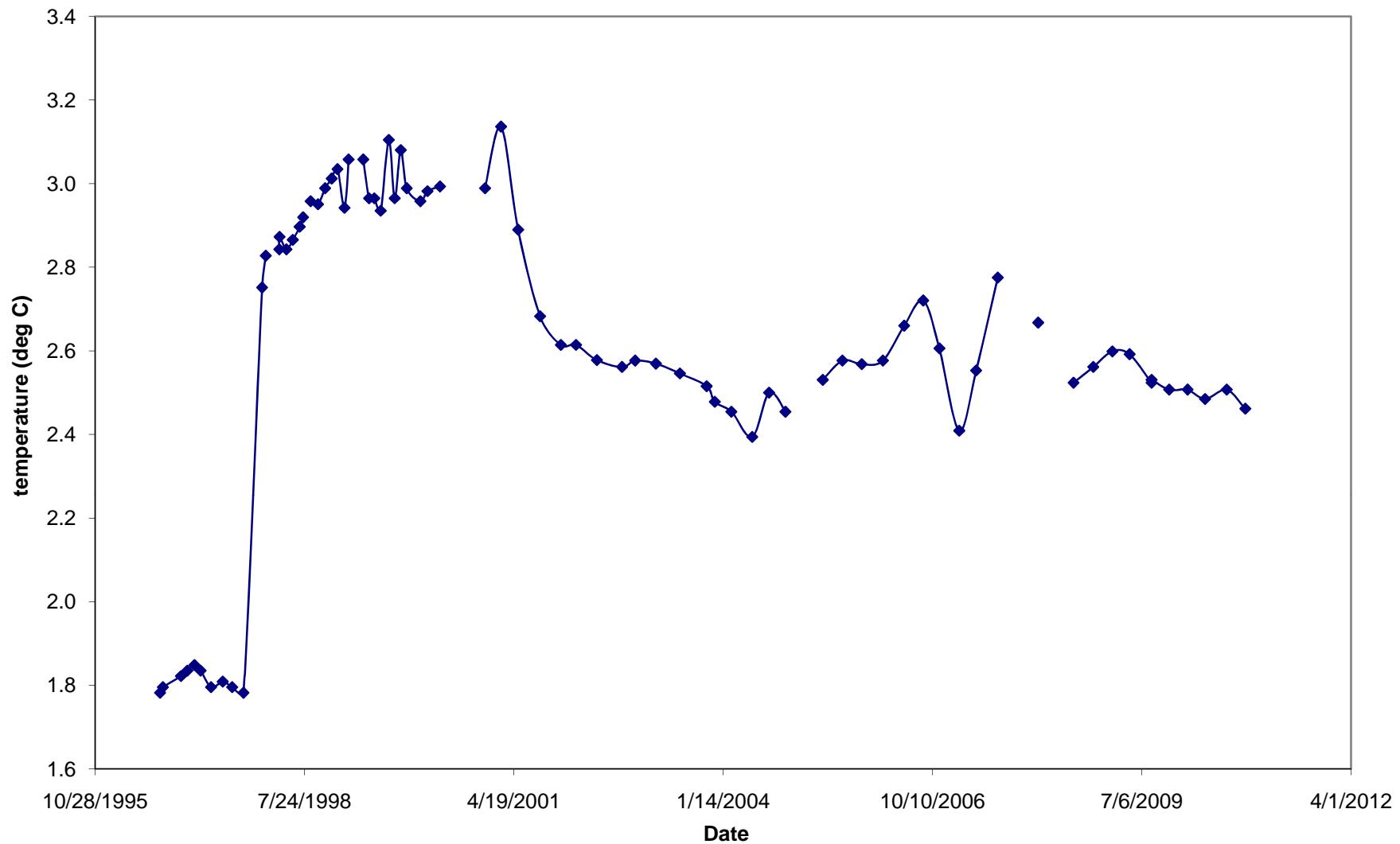
T-96-010 Temperature at 265 feet



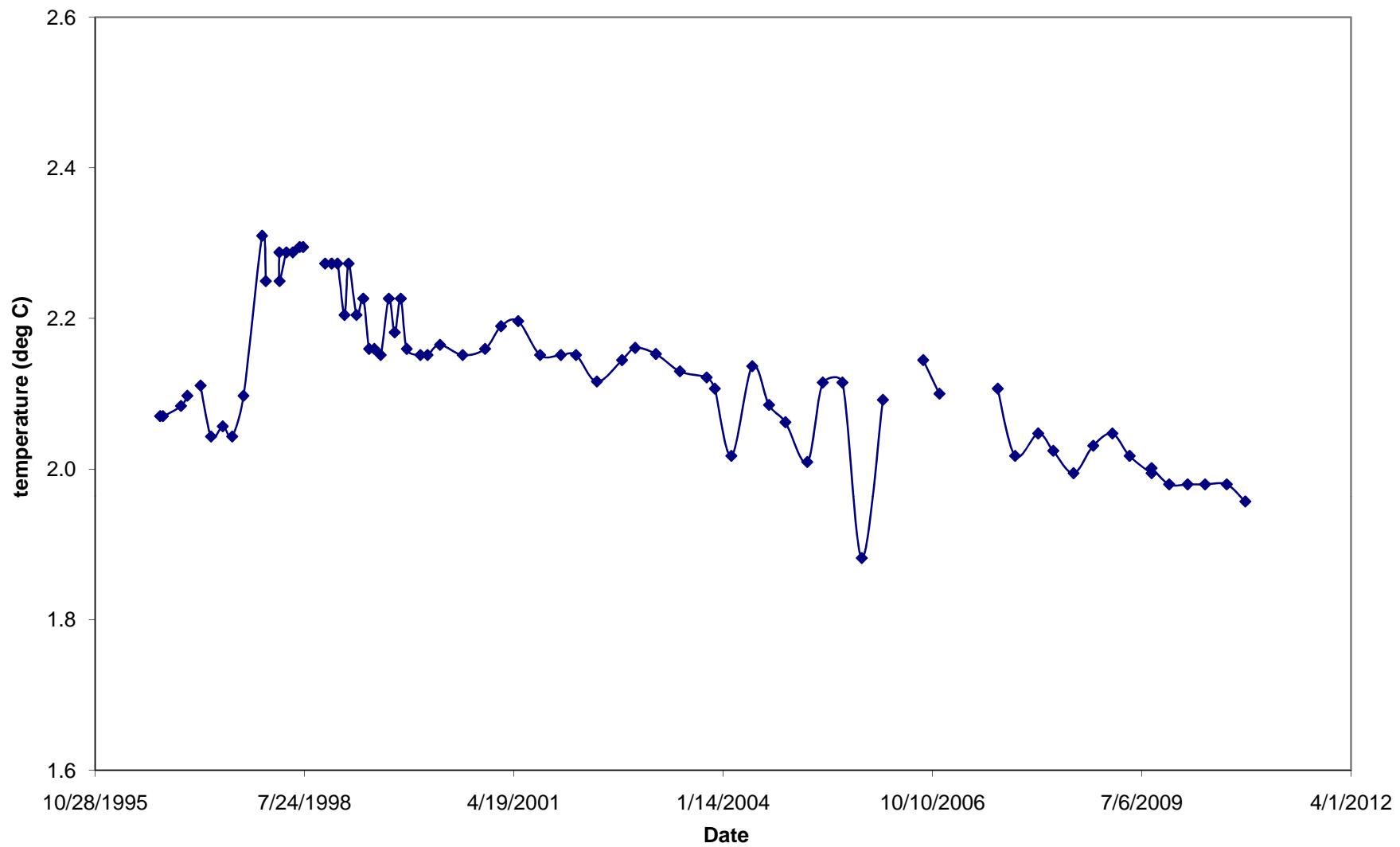
T-96-010 Temperature at 280 feet



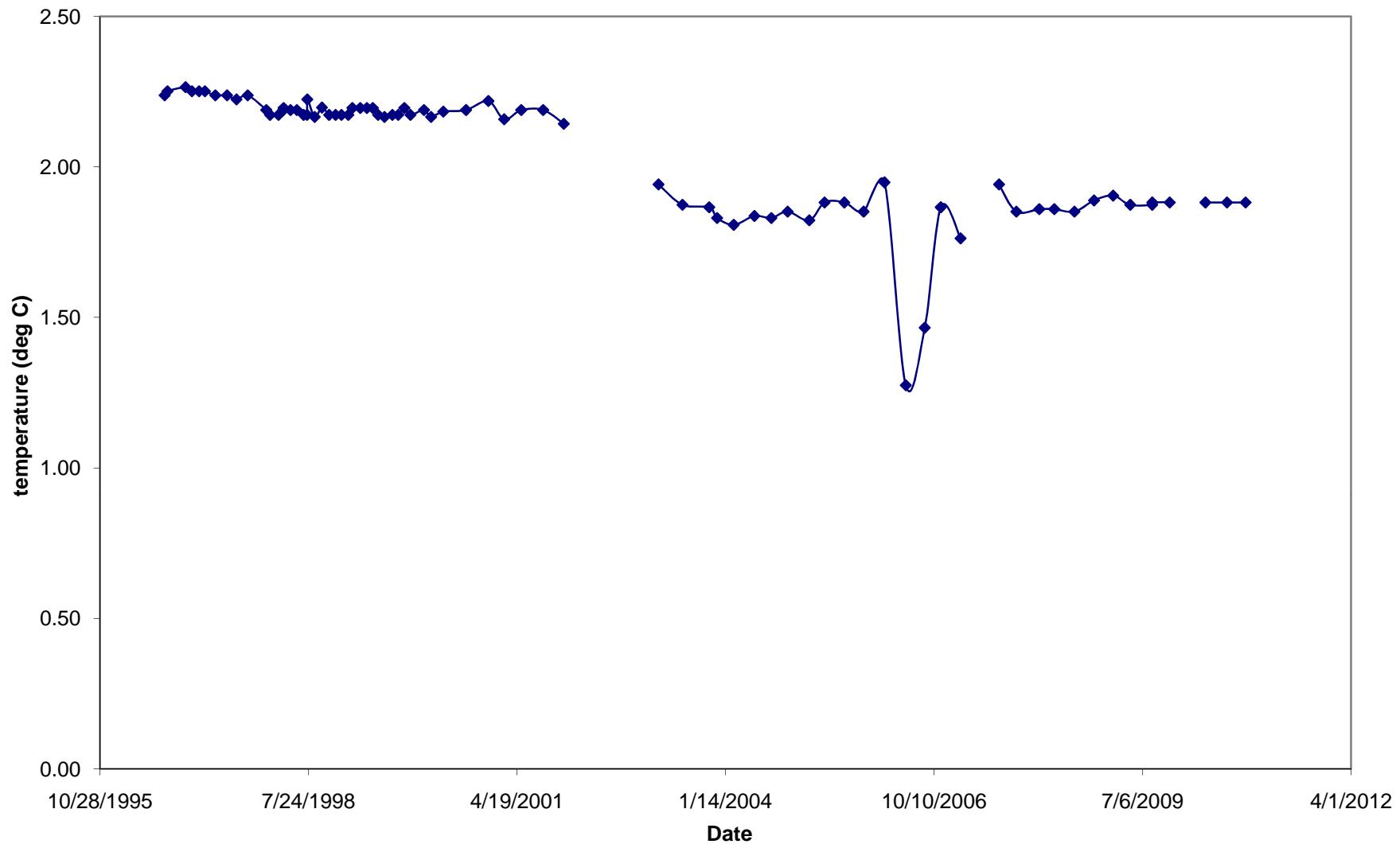
T-96-010 Temperature at 295 feet



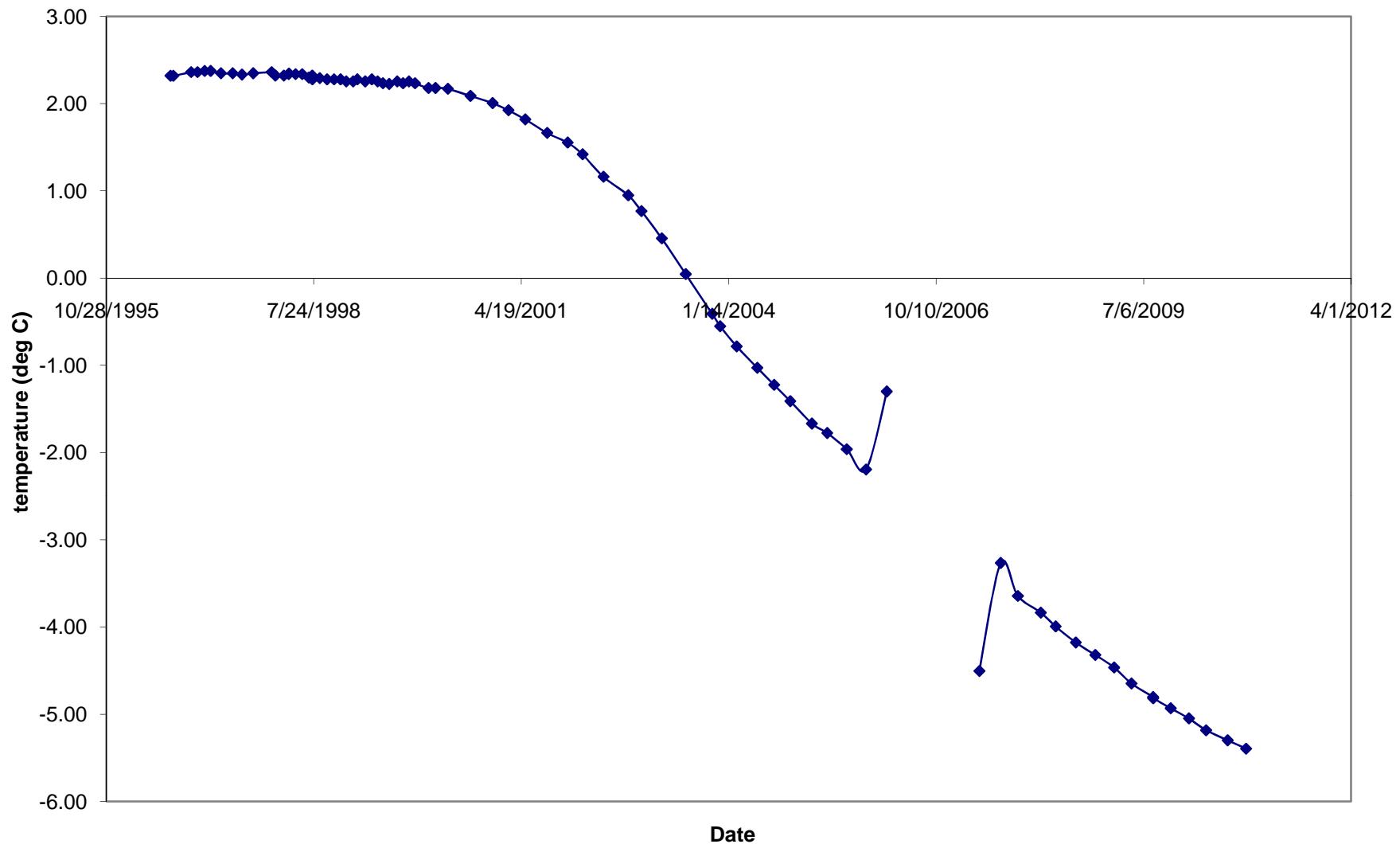
T-96-010 Temperature at 310 feet



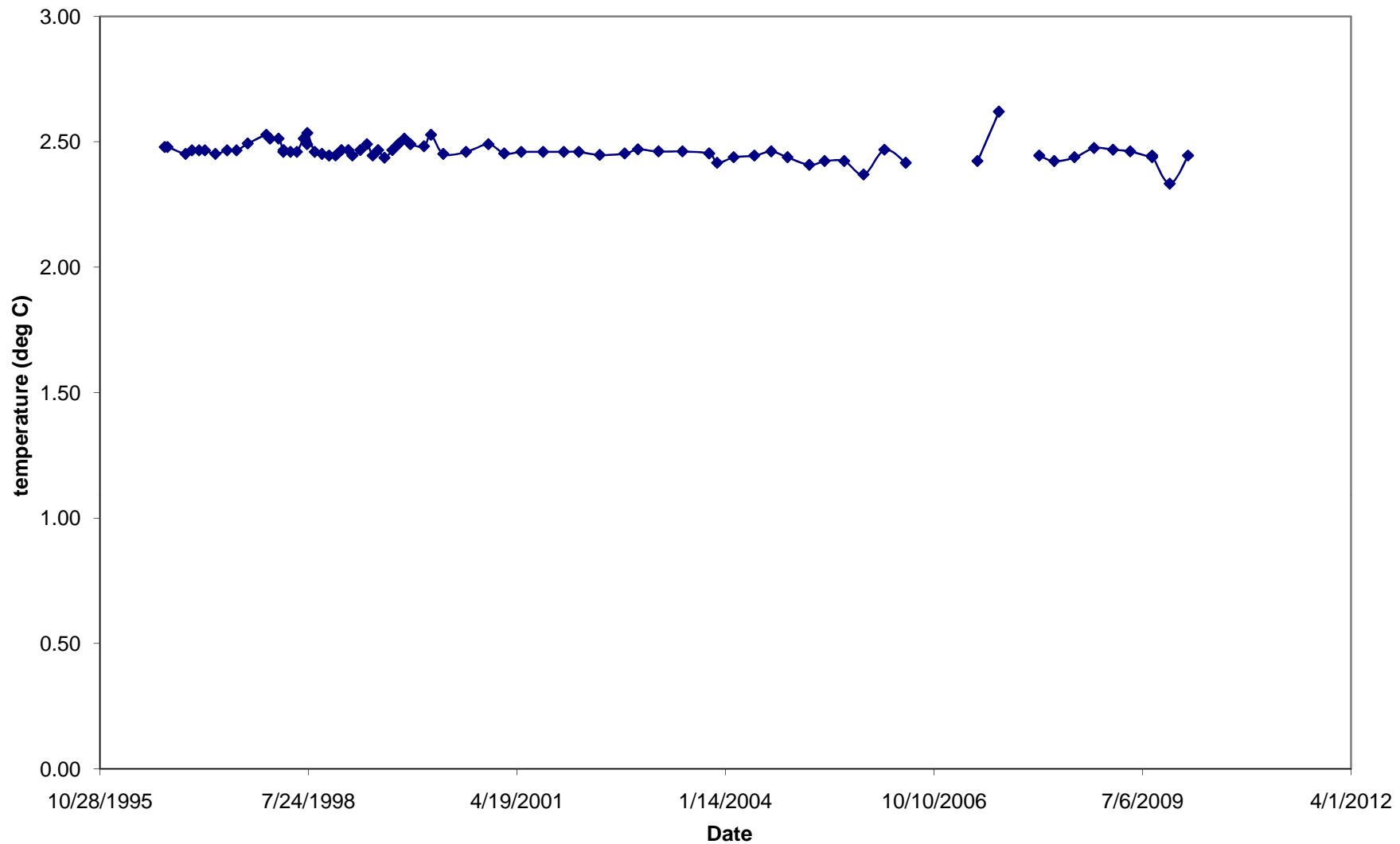
T-96-010 Temperature at 325 feet



T-96-010 Temperature at 340 feet

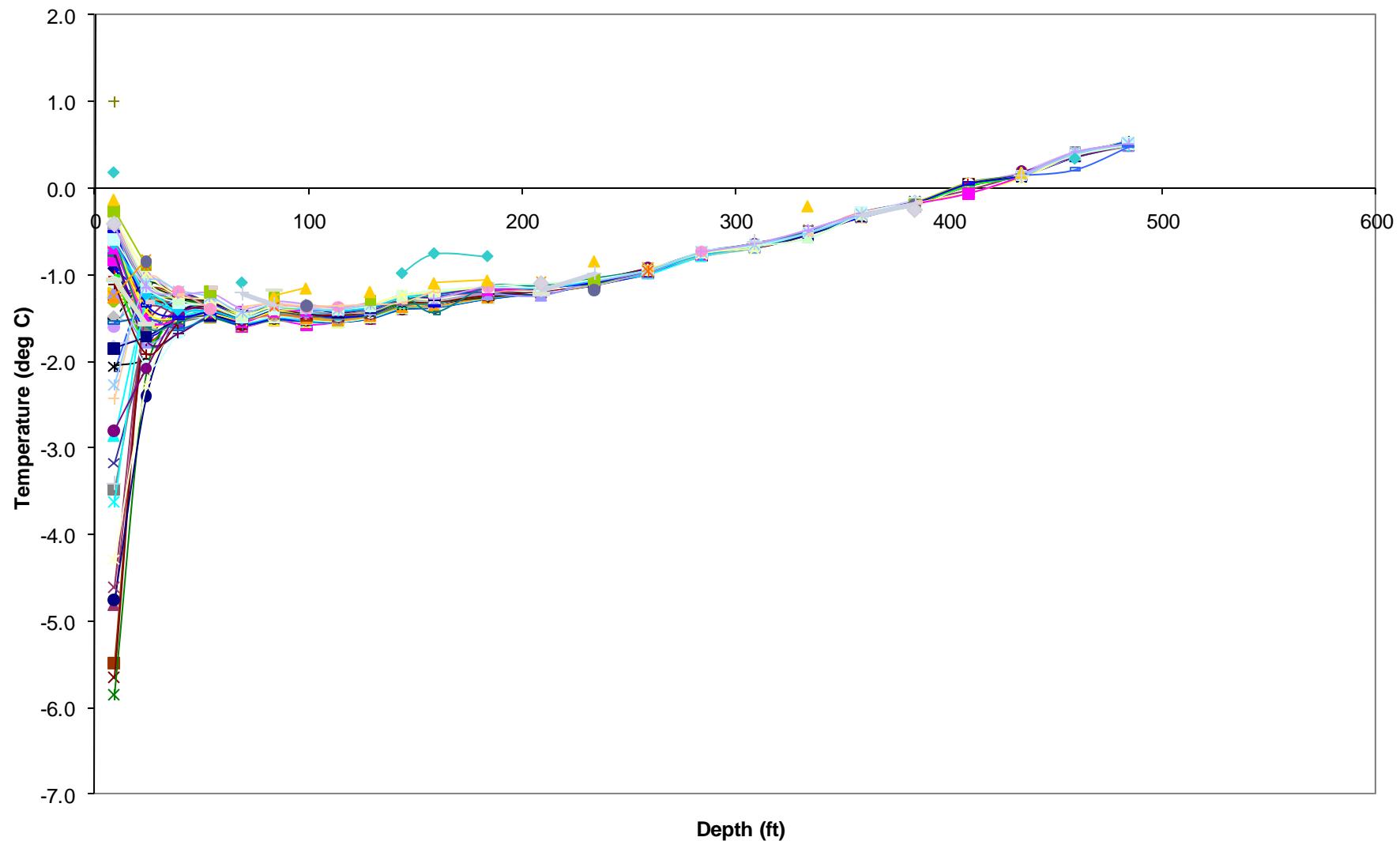


T-96-010 Temperature at 355 feet

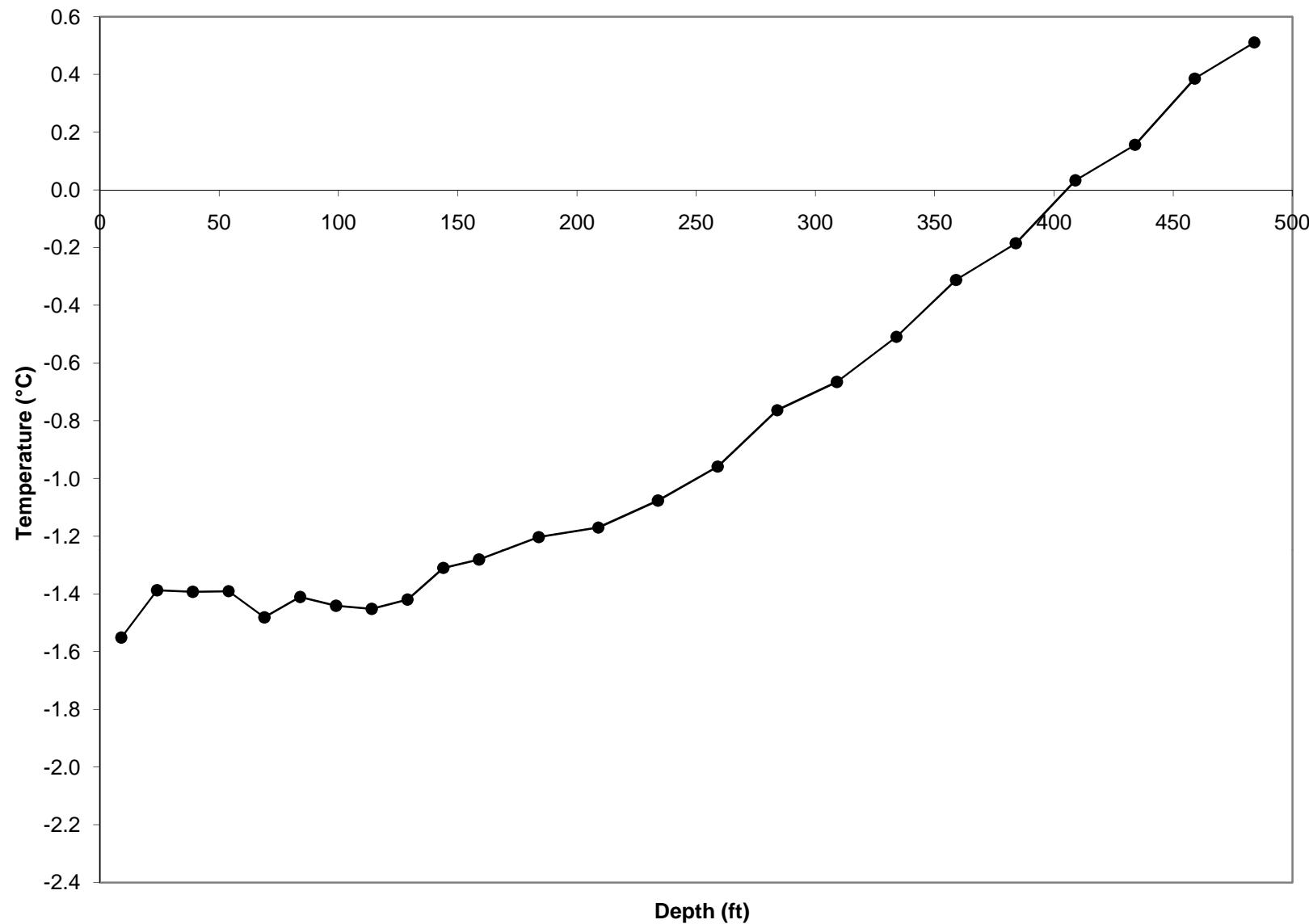


T-96-012

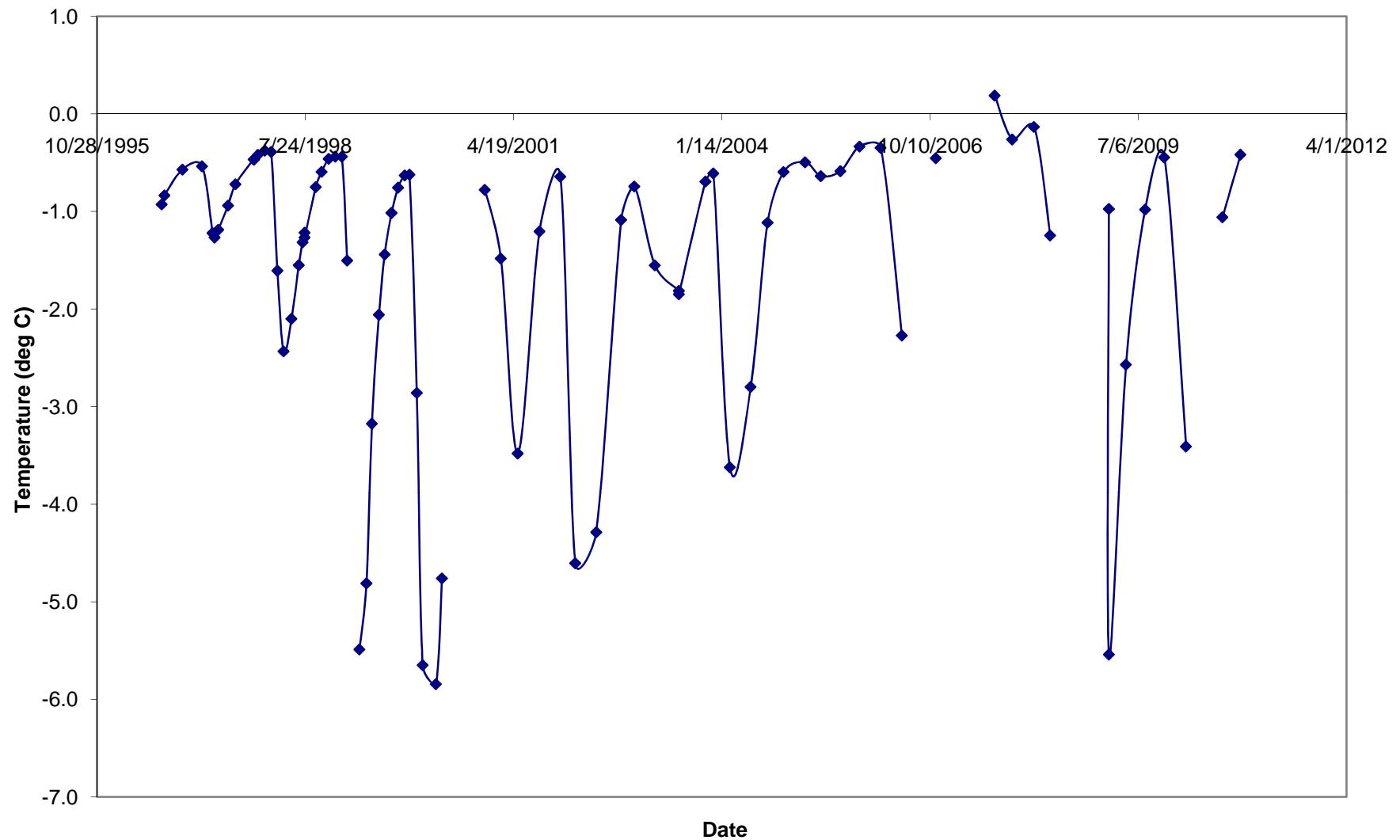
Temperature depth plot - T-96-012



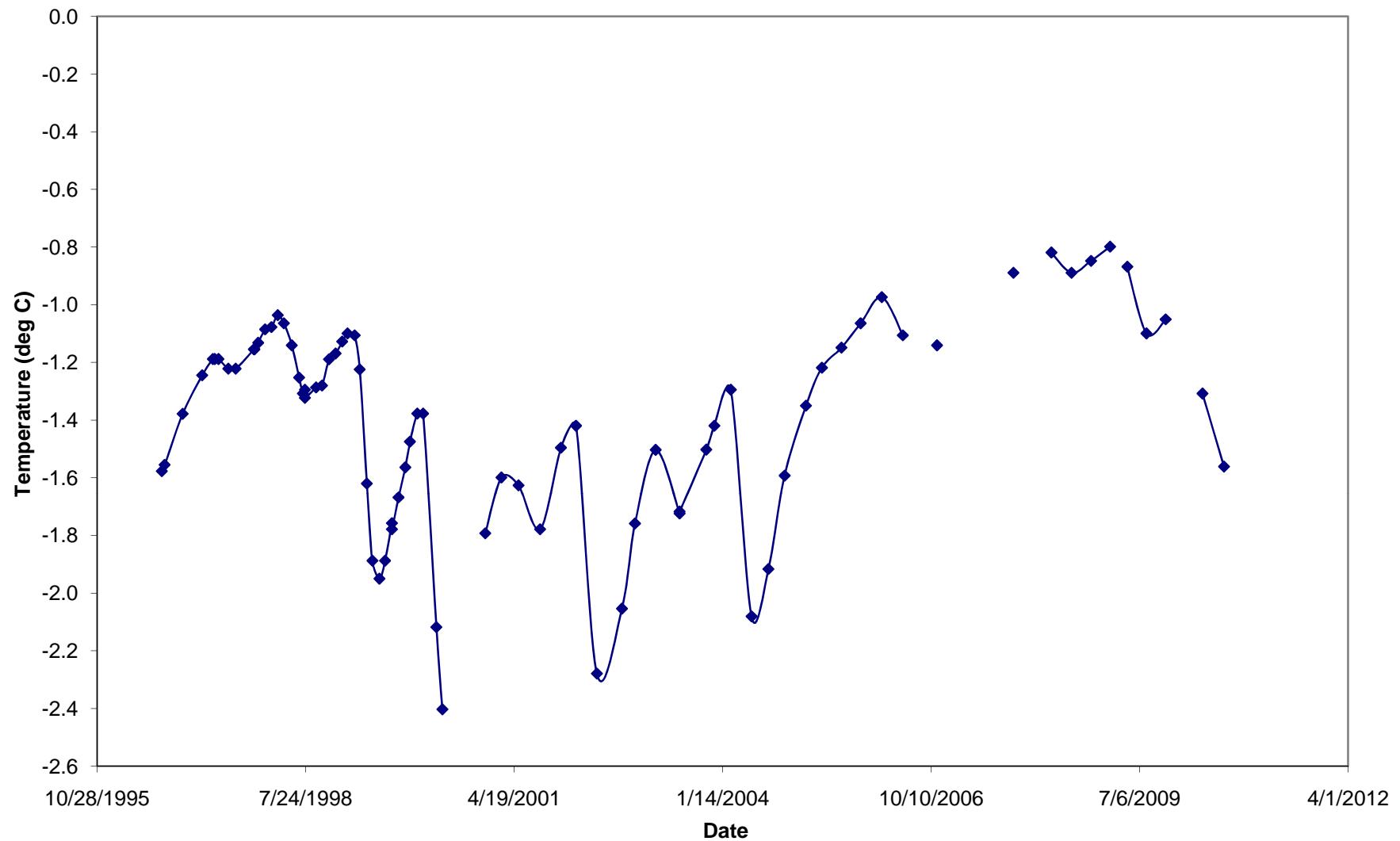
Average Temperature Depth Plot for T-96-012



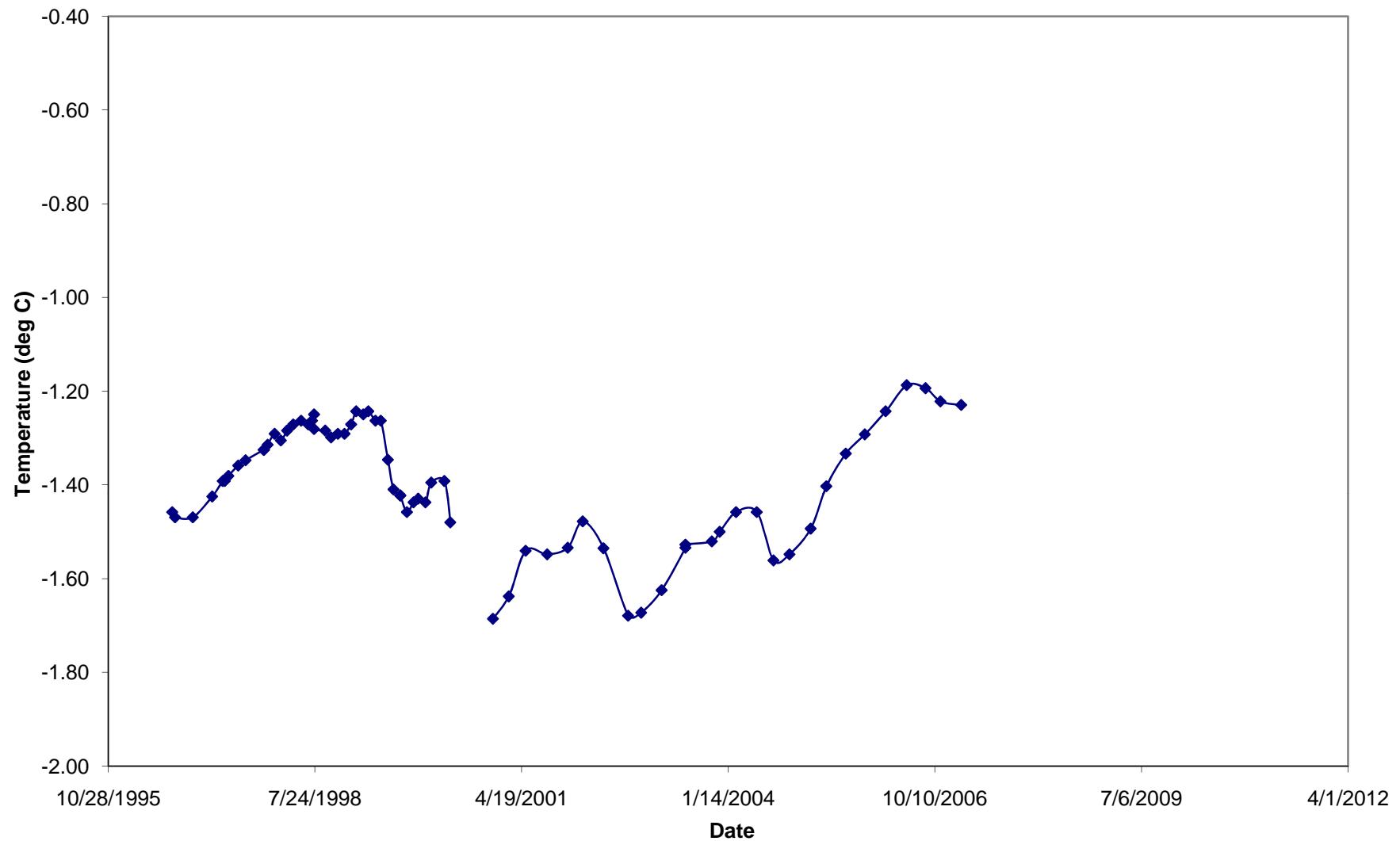
T-96-012 Temperature at 9 feet



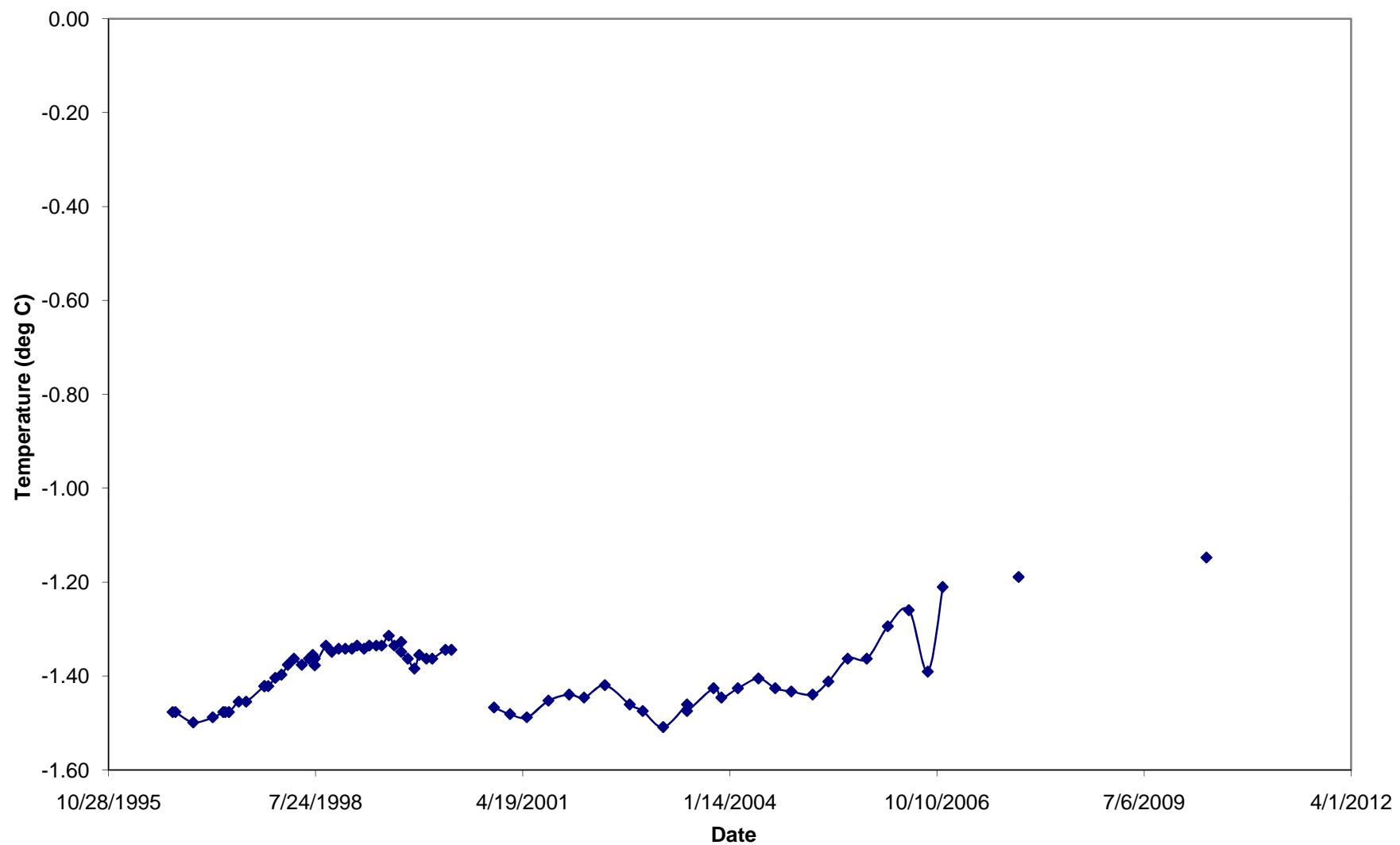
T-96-012 Temperature at 24 feet



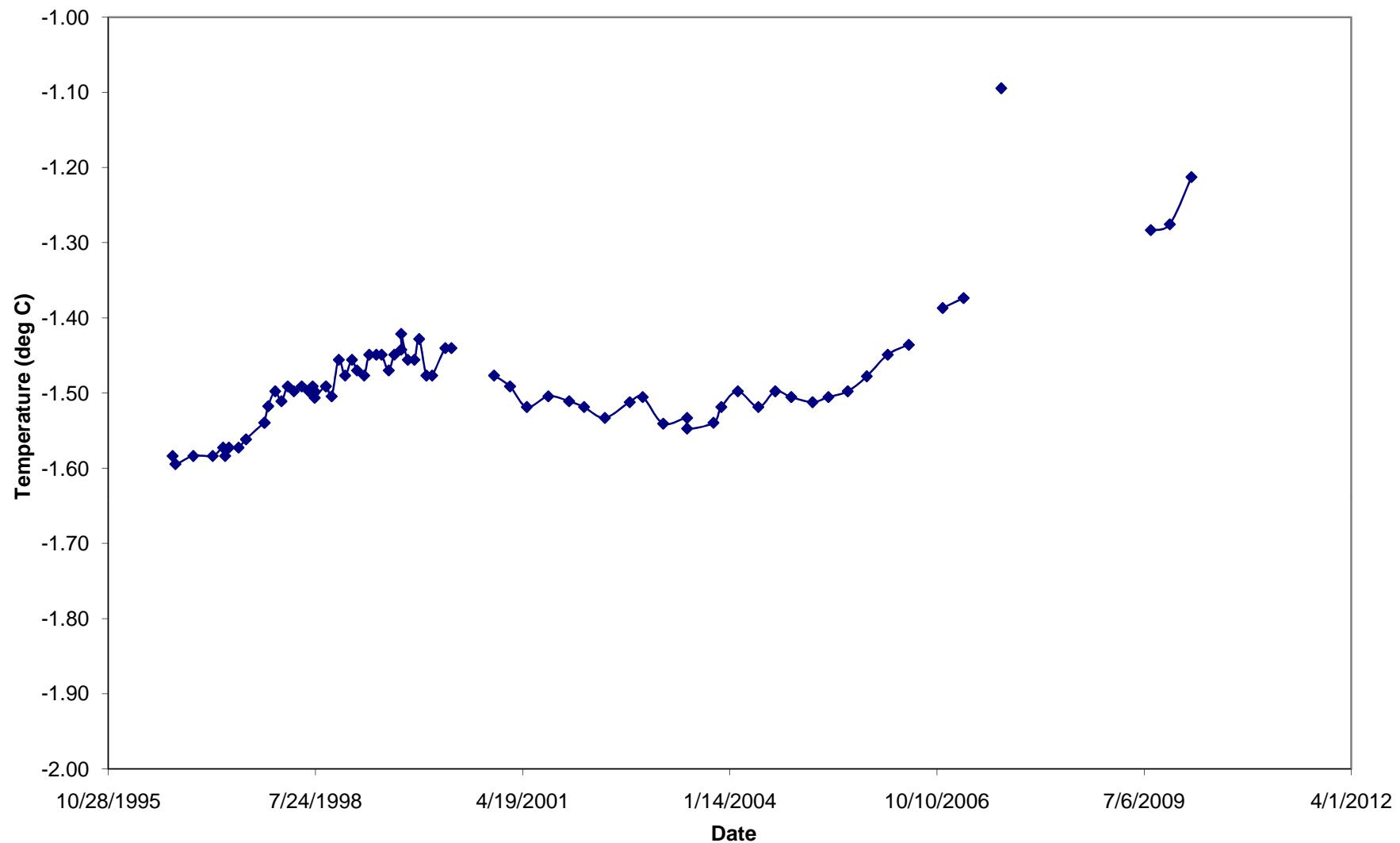
T-96-012 Temperature at 39 feet



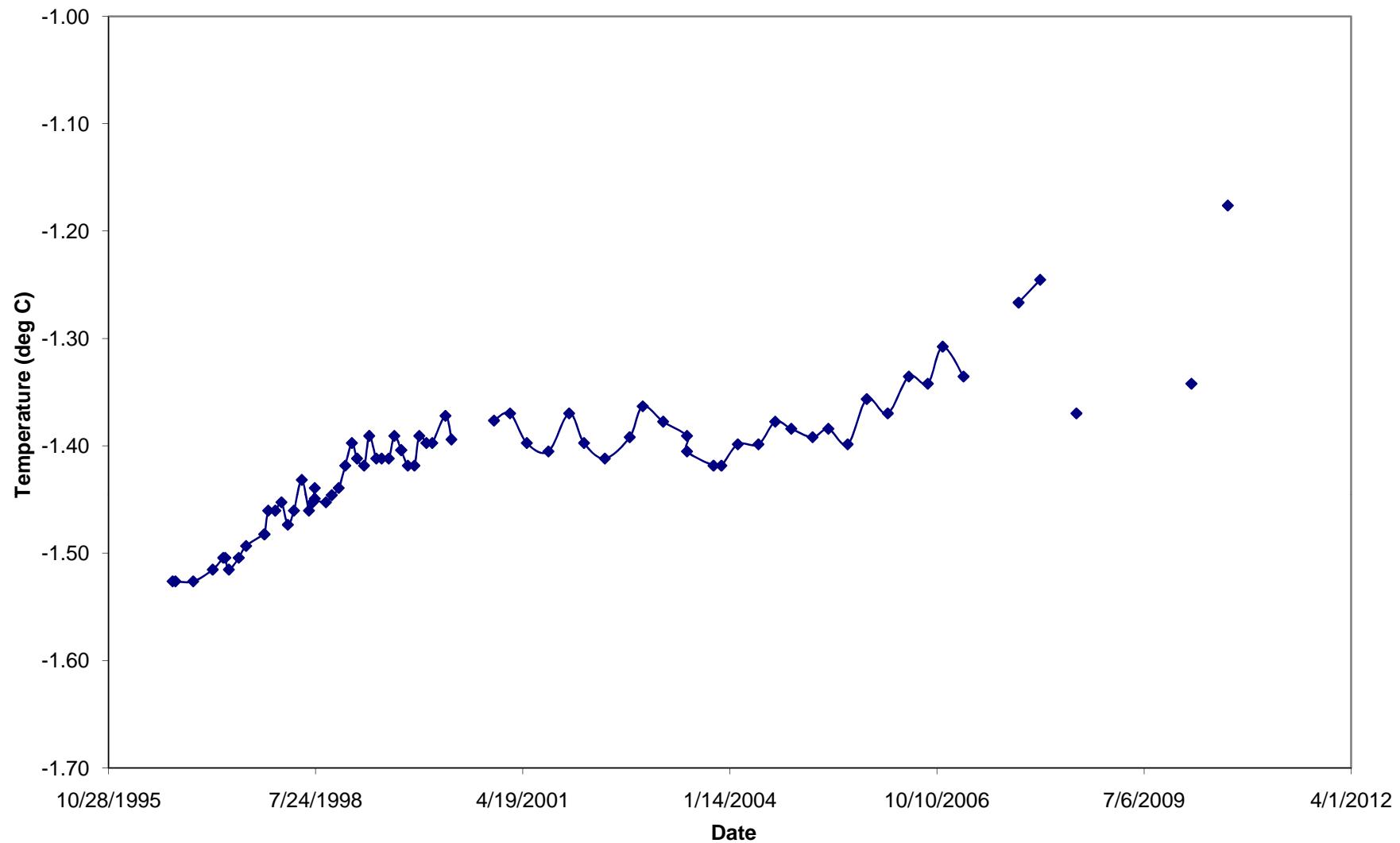
T-96-012 Temperature at 54 feet



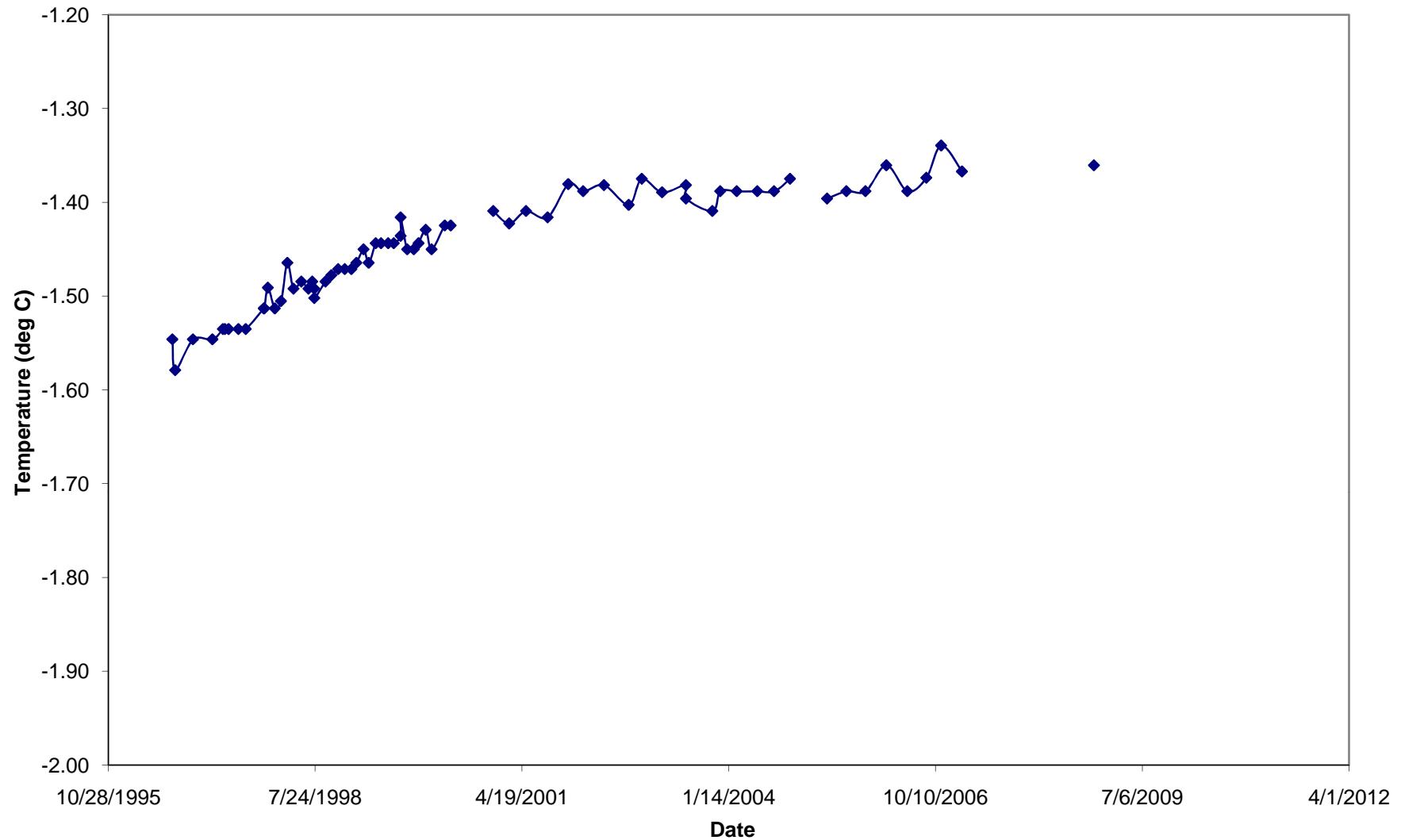
T-96-012 Temperature at 69 feet



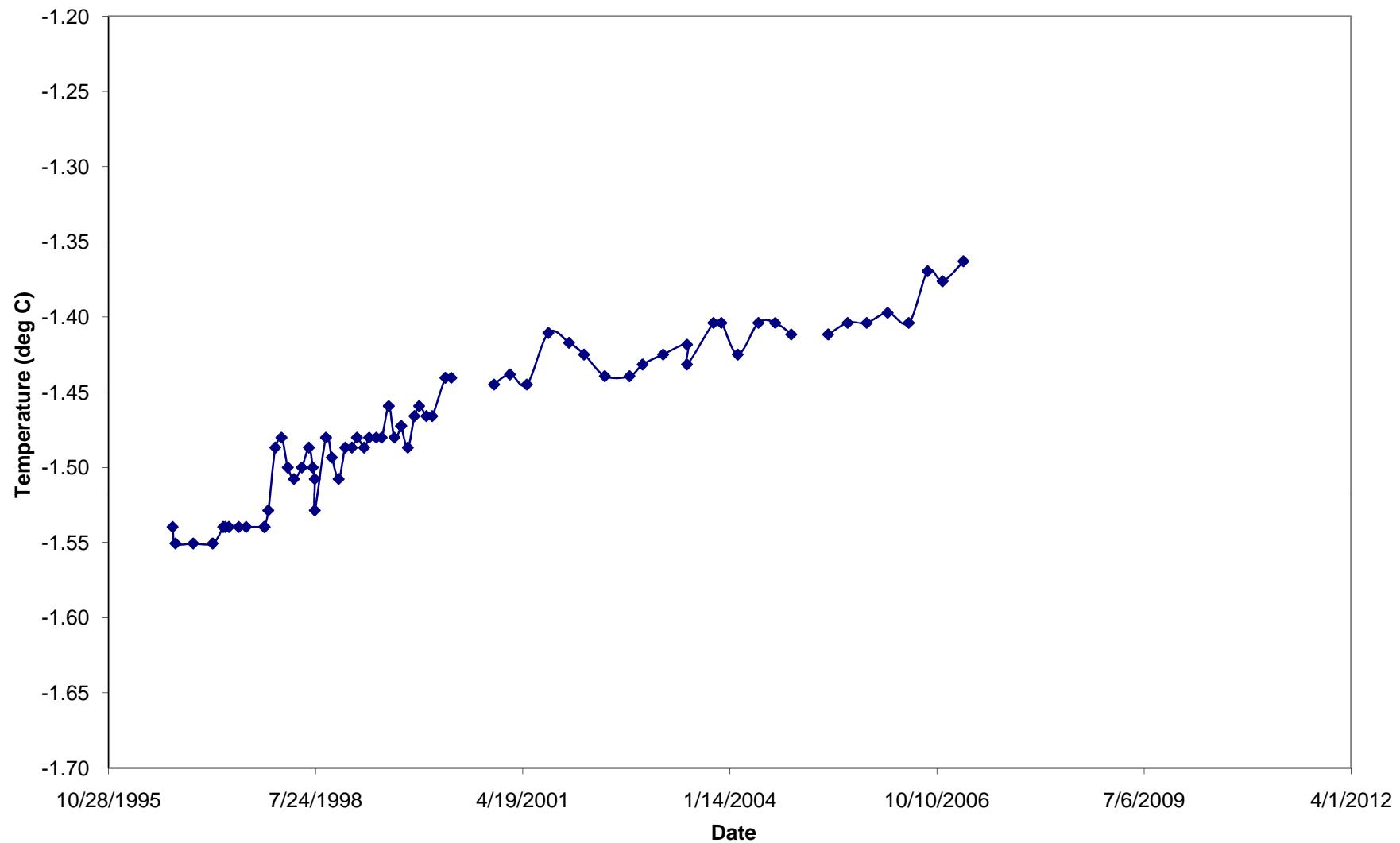
T-96-012 Temperature at 84 feet



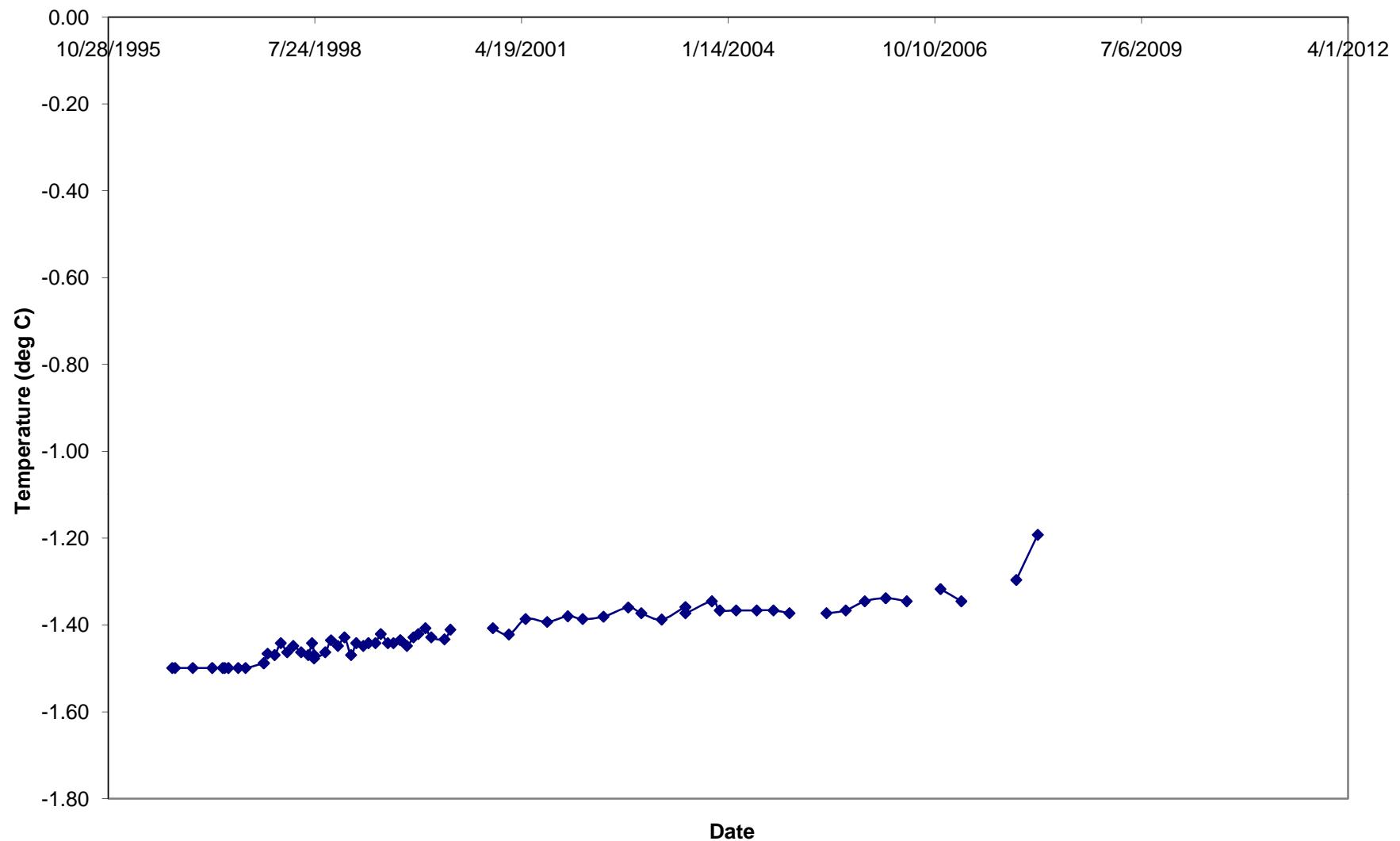
T-96-012 Temperature at 99 feet



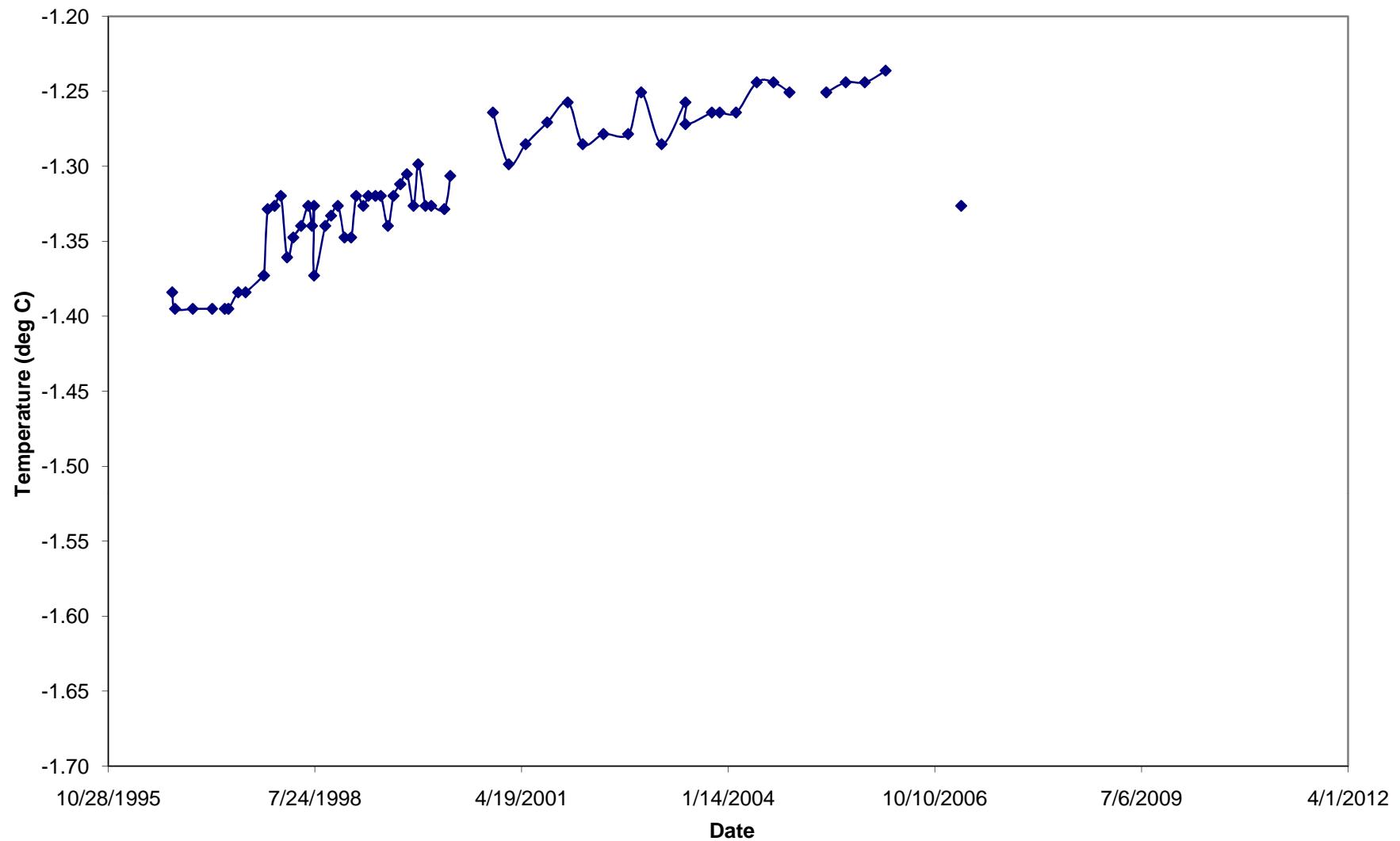
T-96-012 Temperature at 114 feet



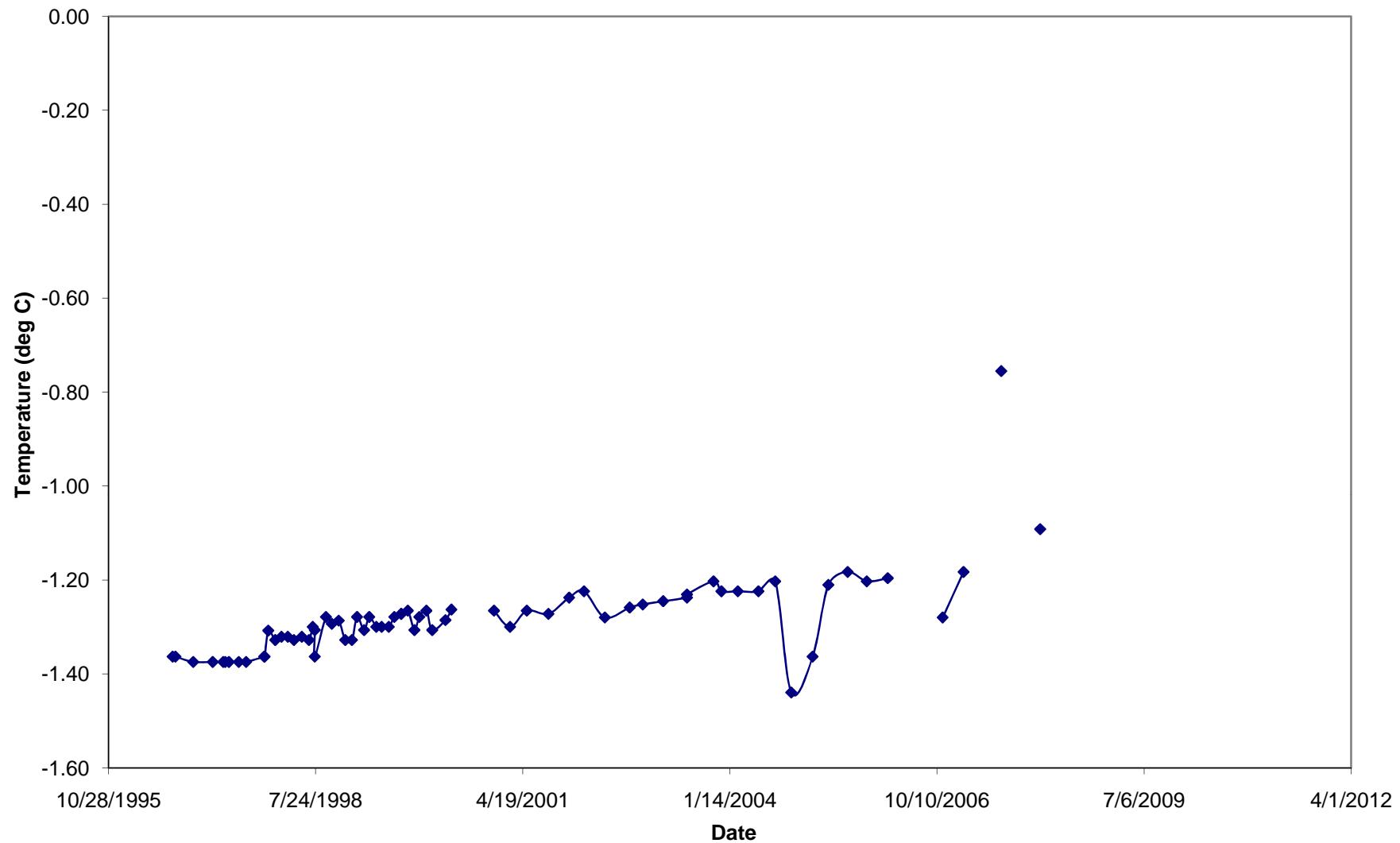
T-96-012 Temperature at 129 feet



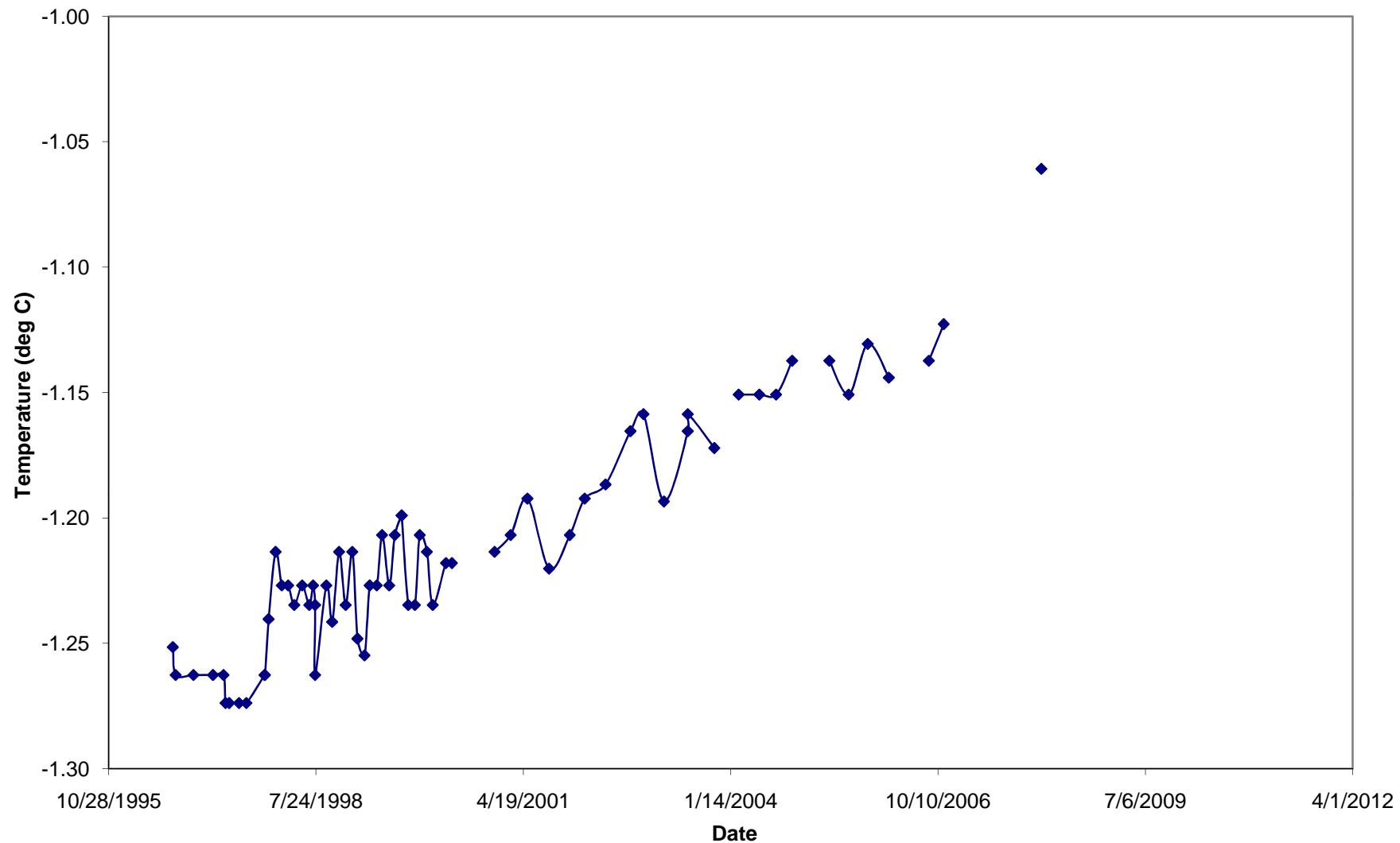
T-96-012 Temperature at 144 feet



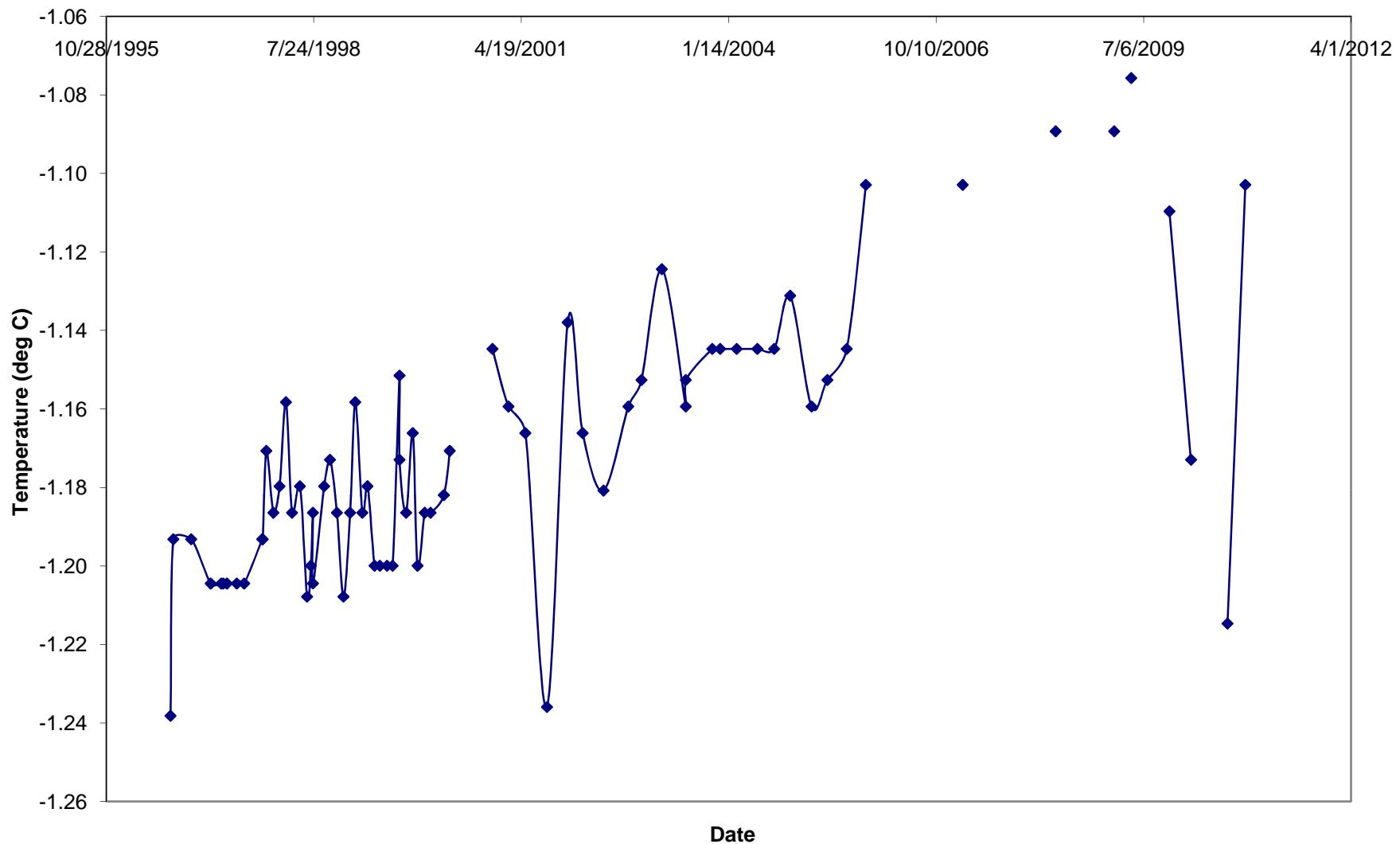
T-96-012 Temperature at 159 feet



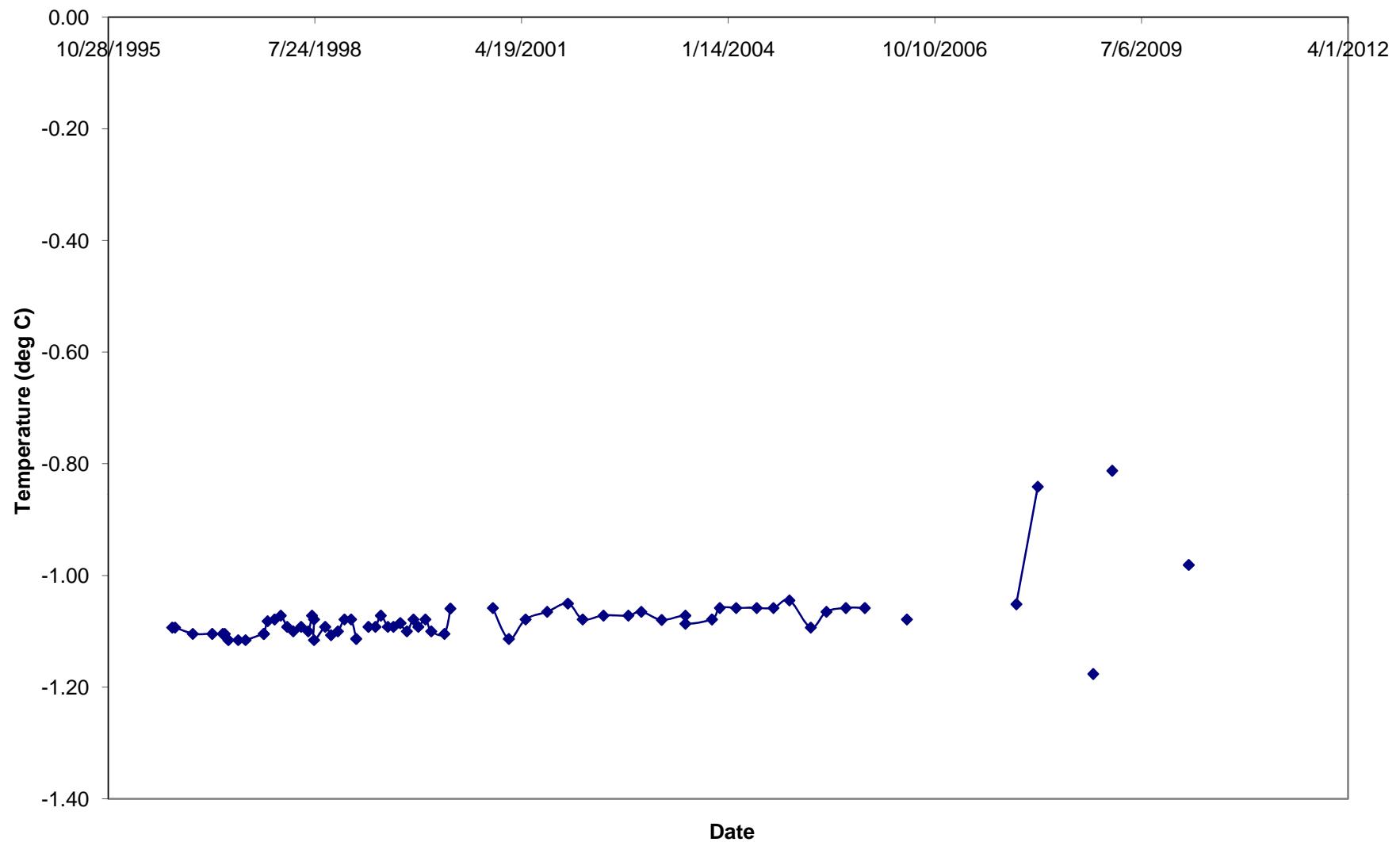
T-96-012 Temperature at 184 feet



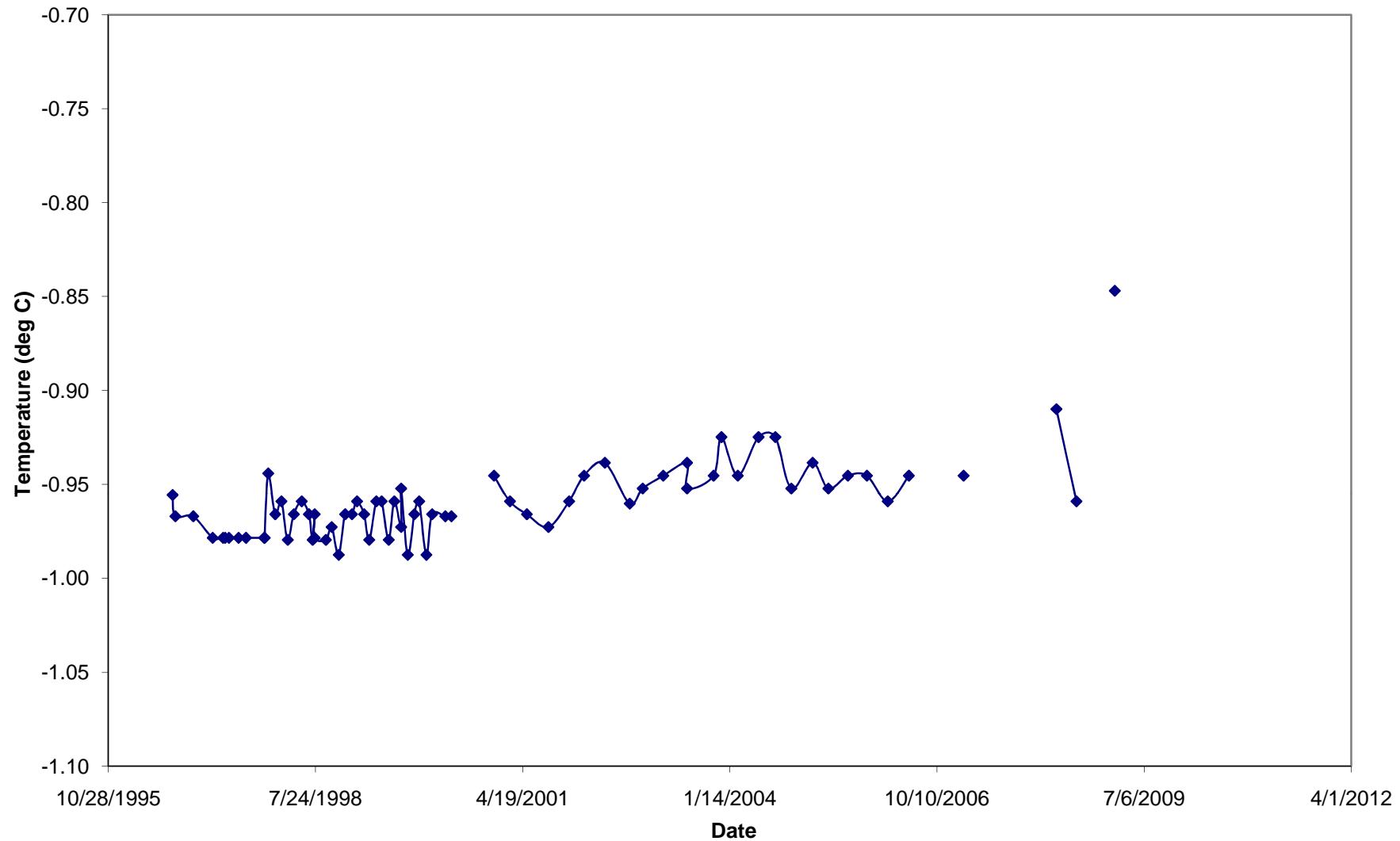
T-96-012 Temperature at 209 feet



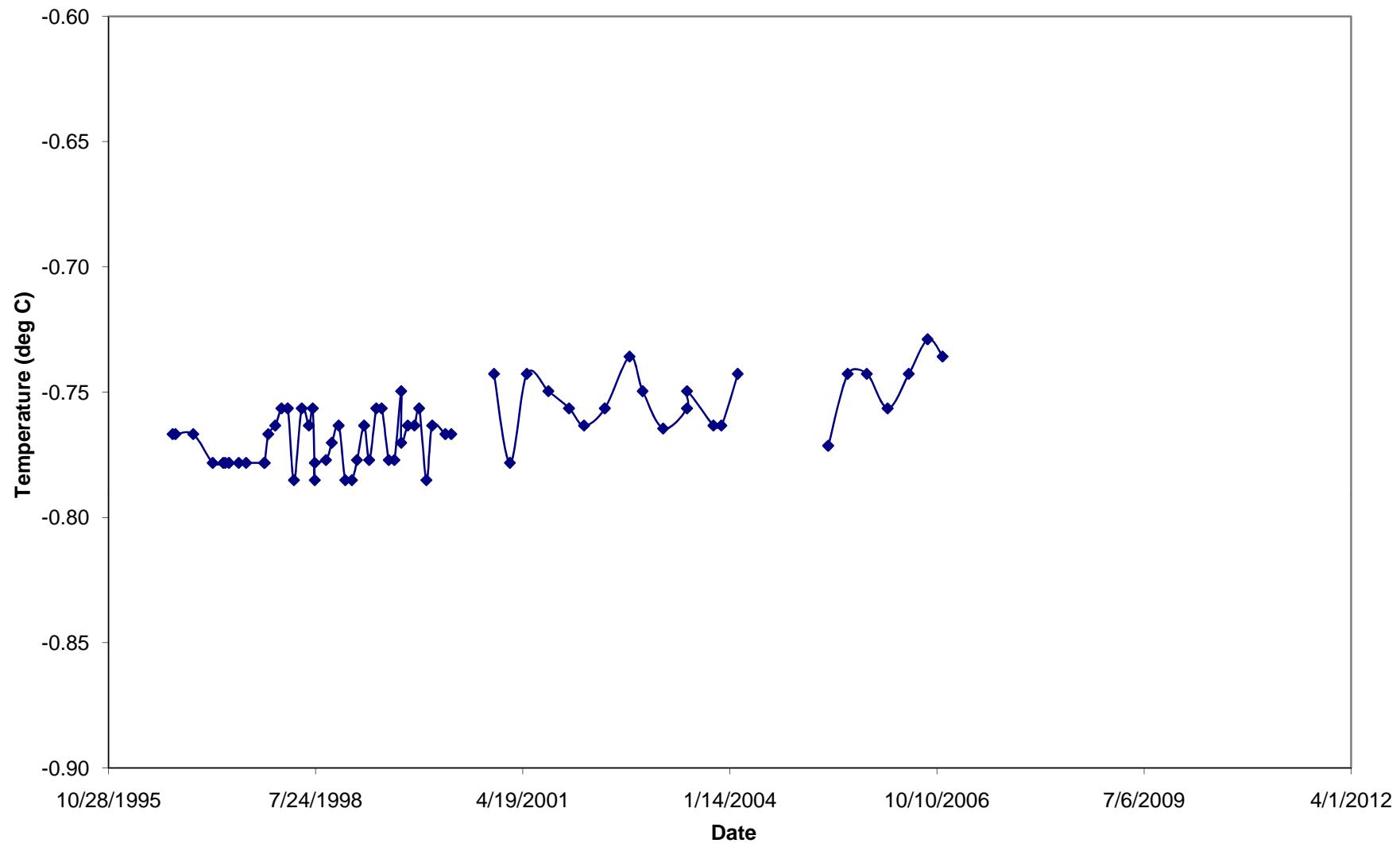
T-96-012 Temperature at 234 feet



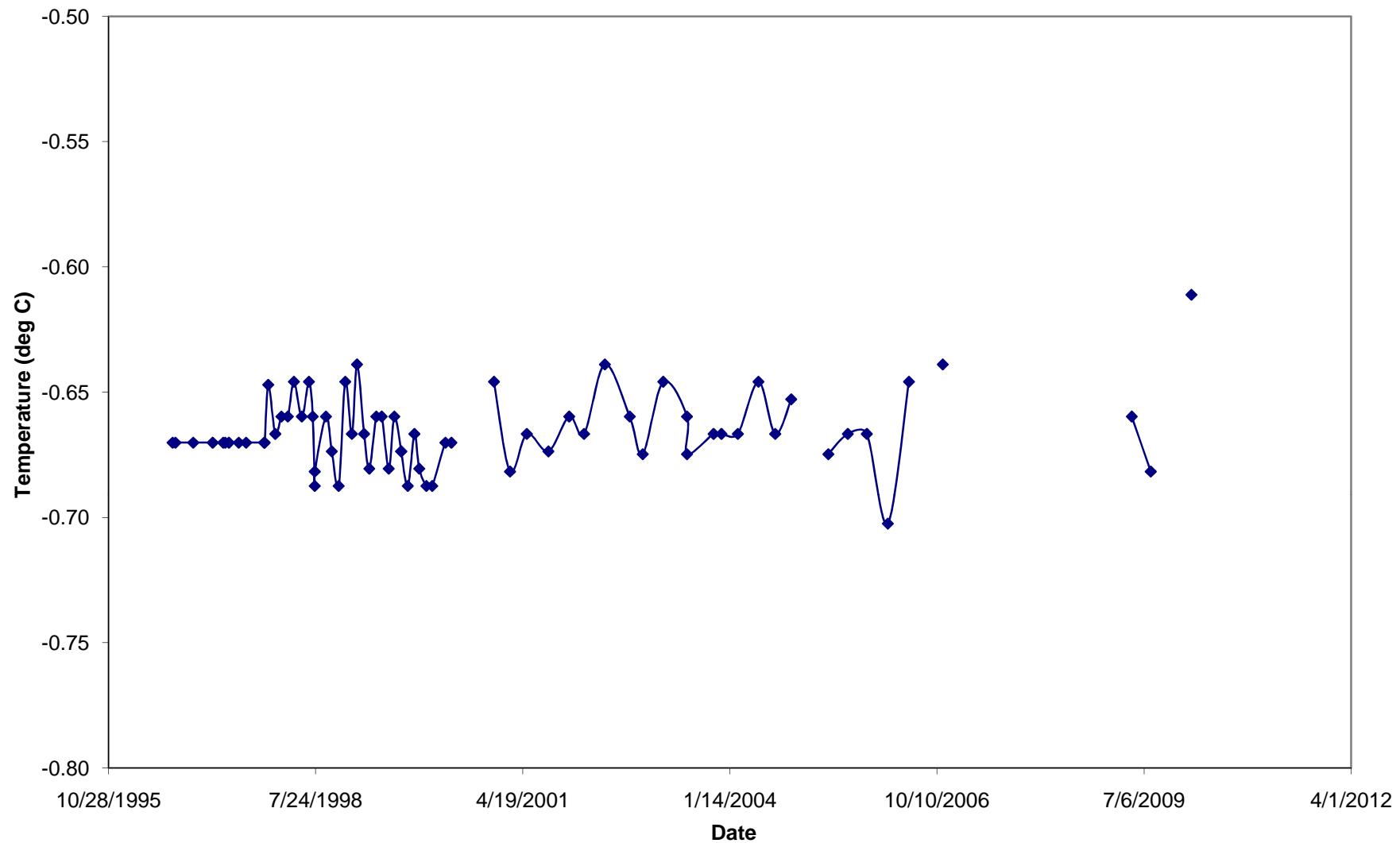
T-96-012 Temperature at 259 feet



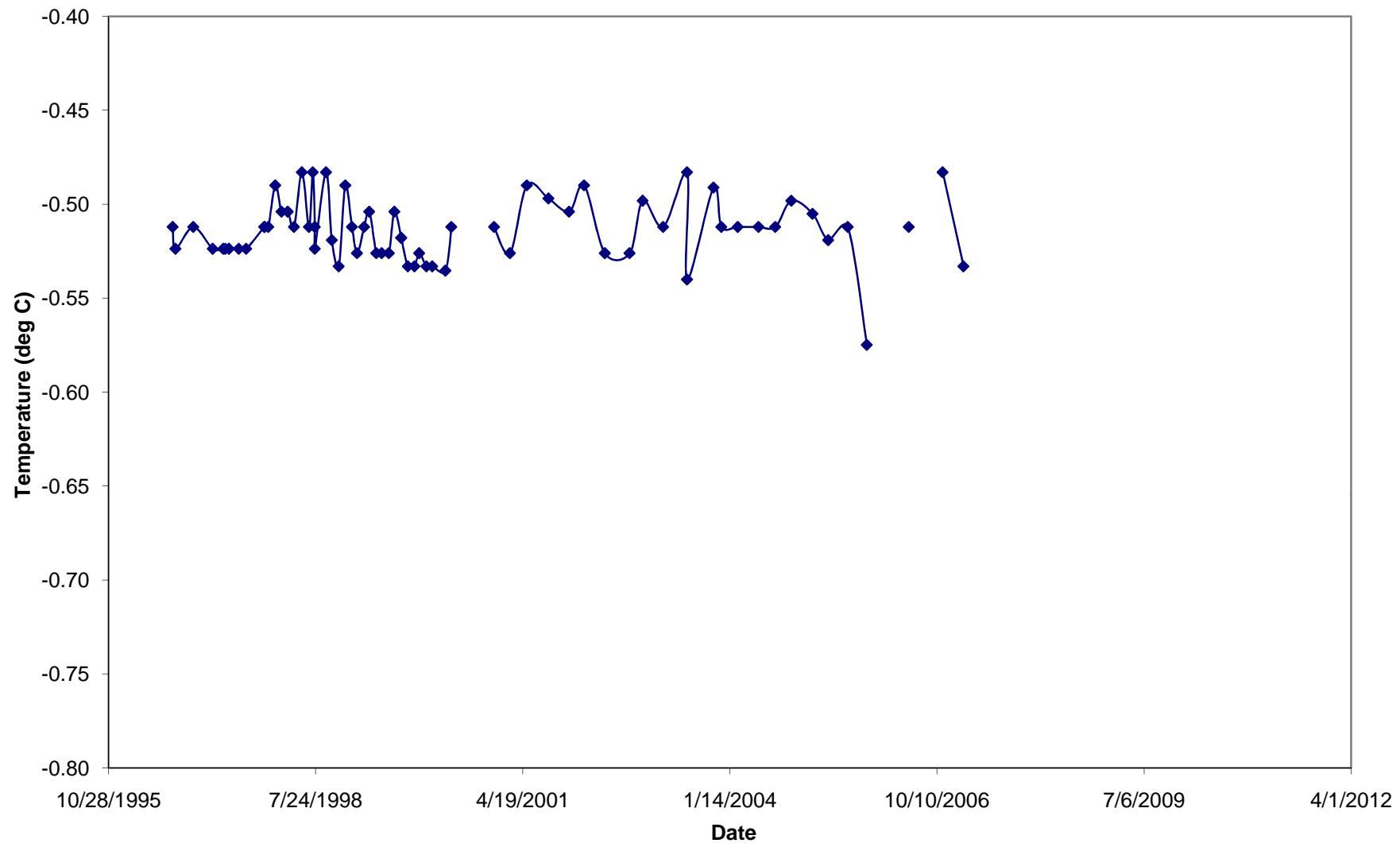
T-96-012 Temperature at 284 feet



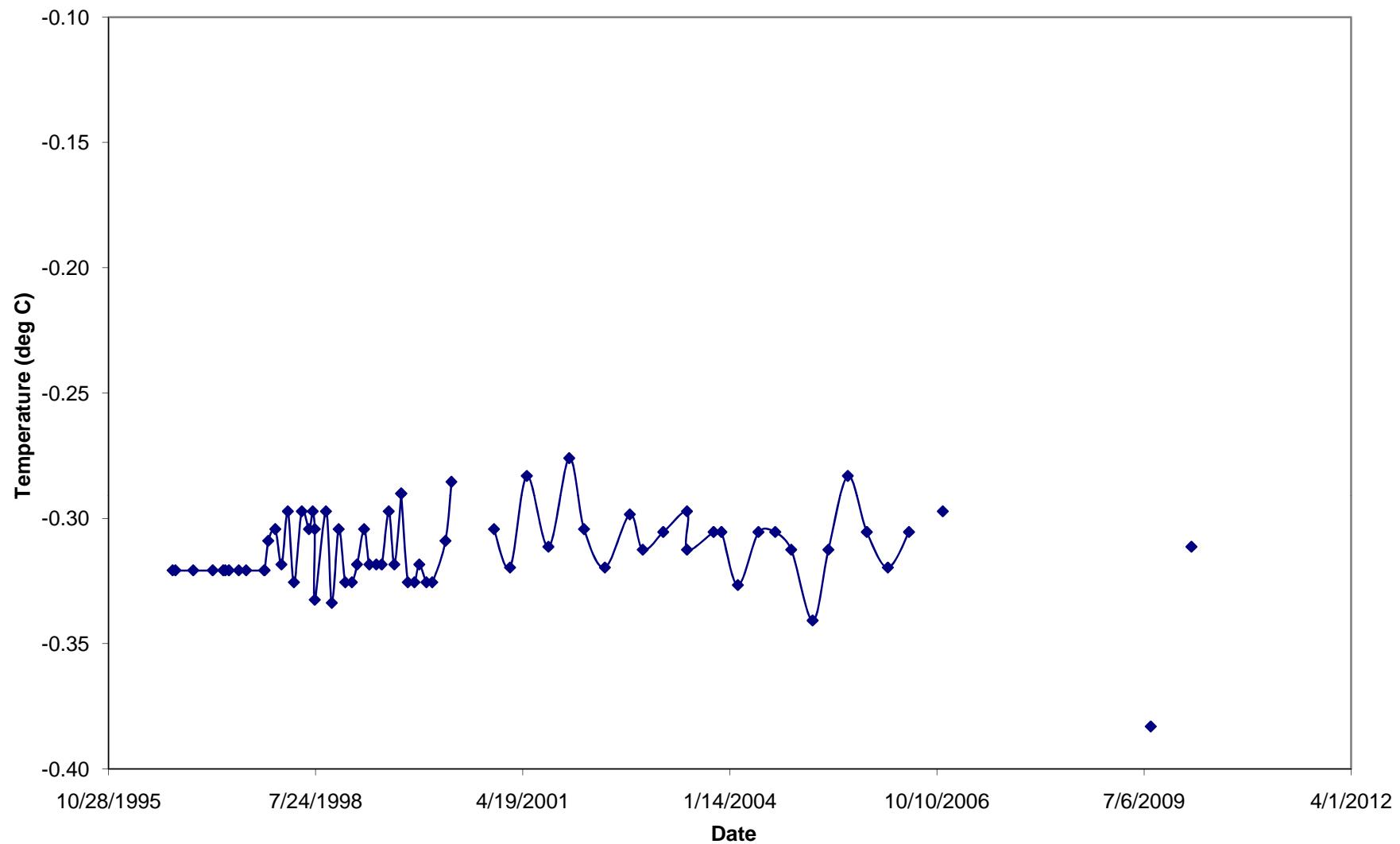
T-96-012 Temperature at 309 feet



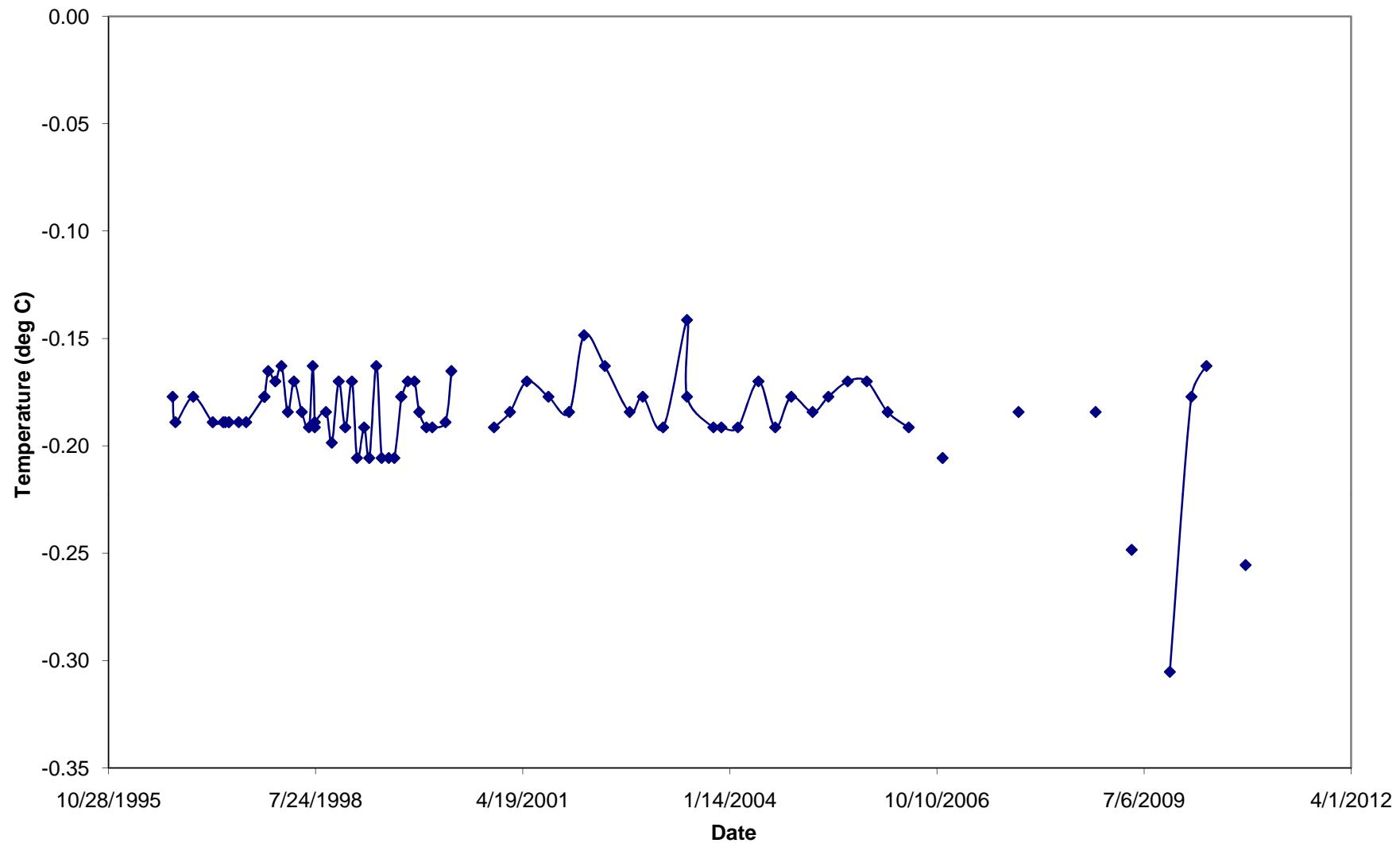
T-96-012 Temperature at 334 feet



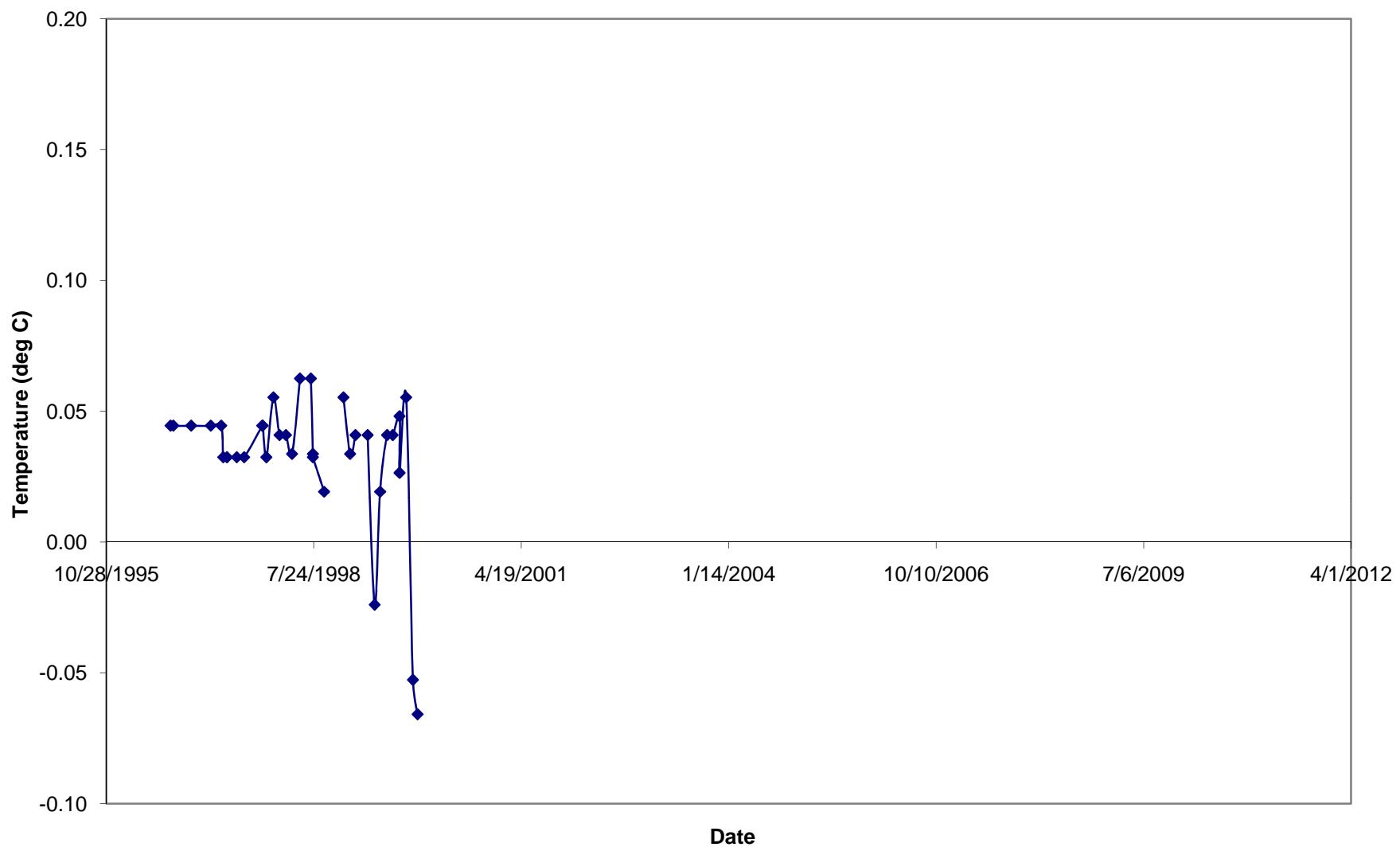
T-96-012 Temperature at 359 feet



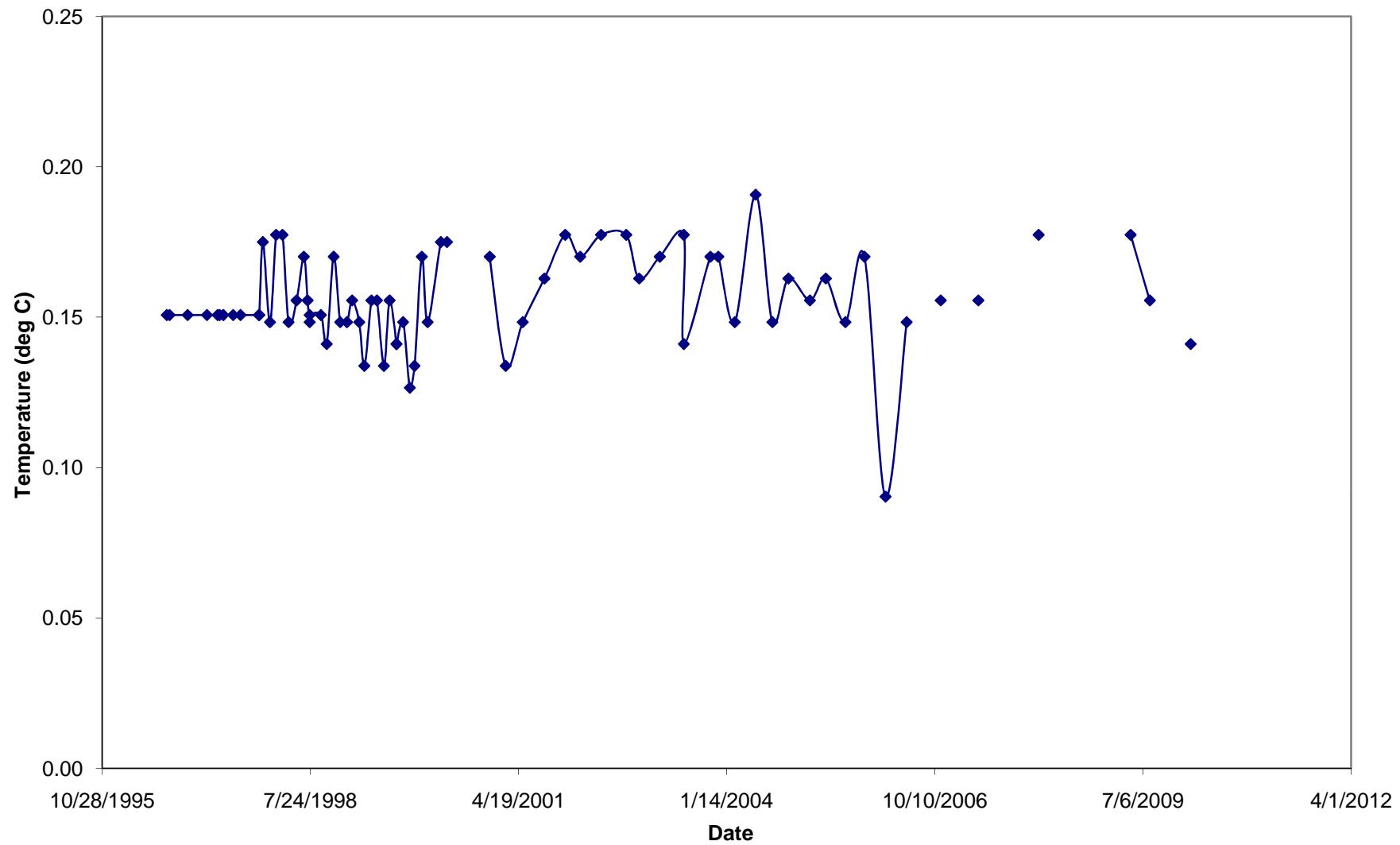
T-96-012 Temperature at 384 feet



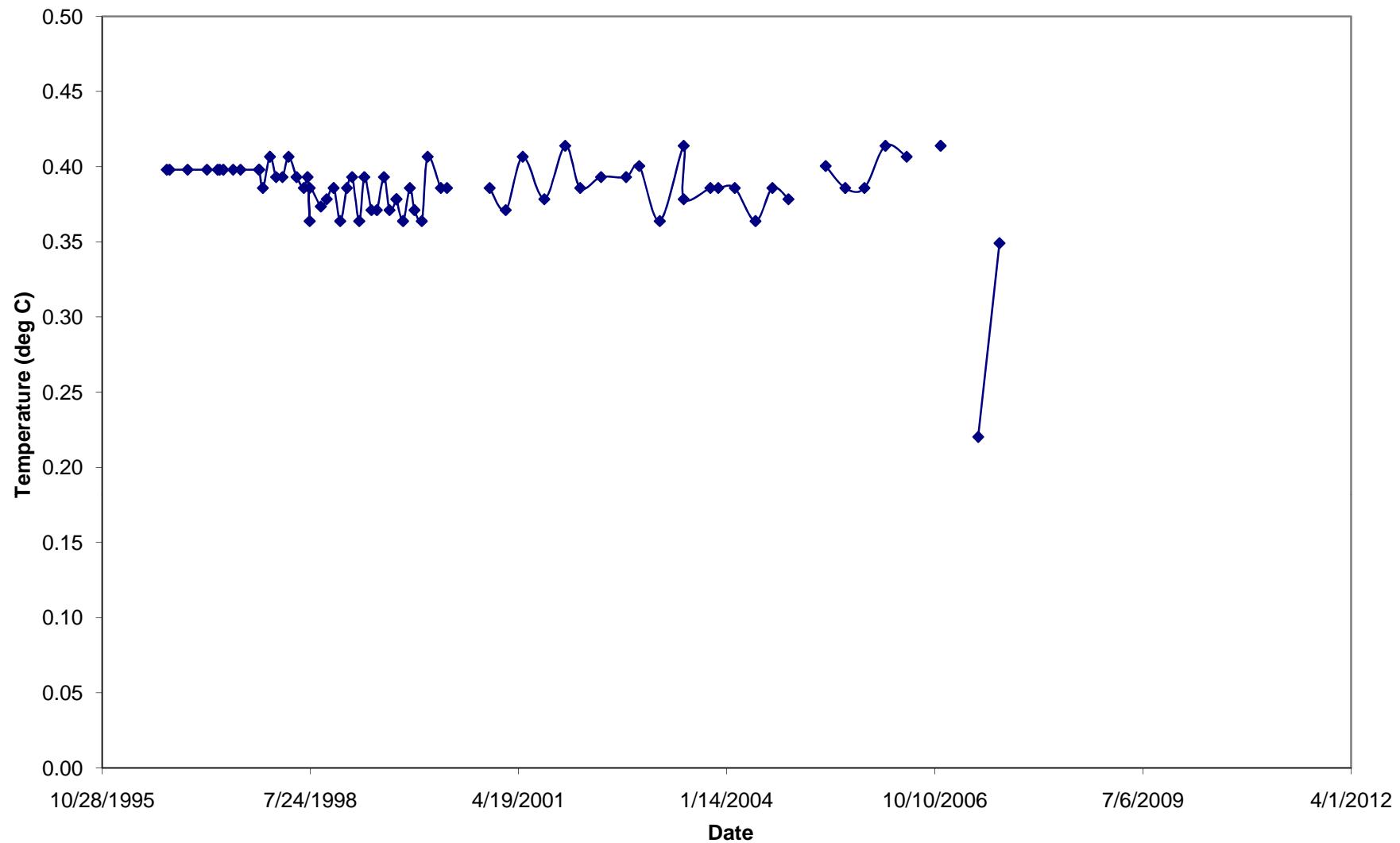
T-96-012 Temperature at 409 feet



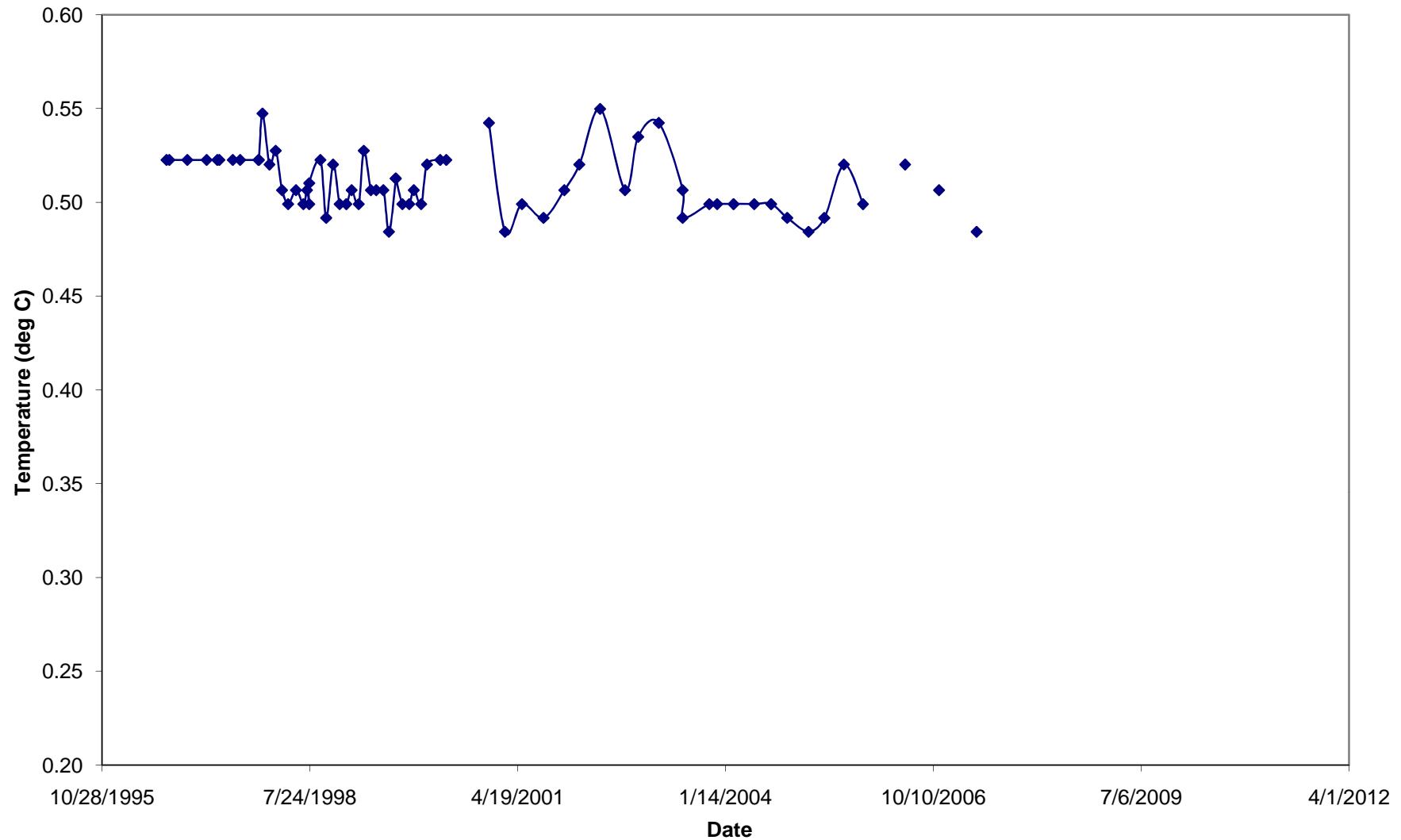
T-96-012 Temperature at 434 feet



T-96-012 Temperature at 459 feet

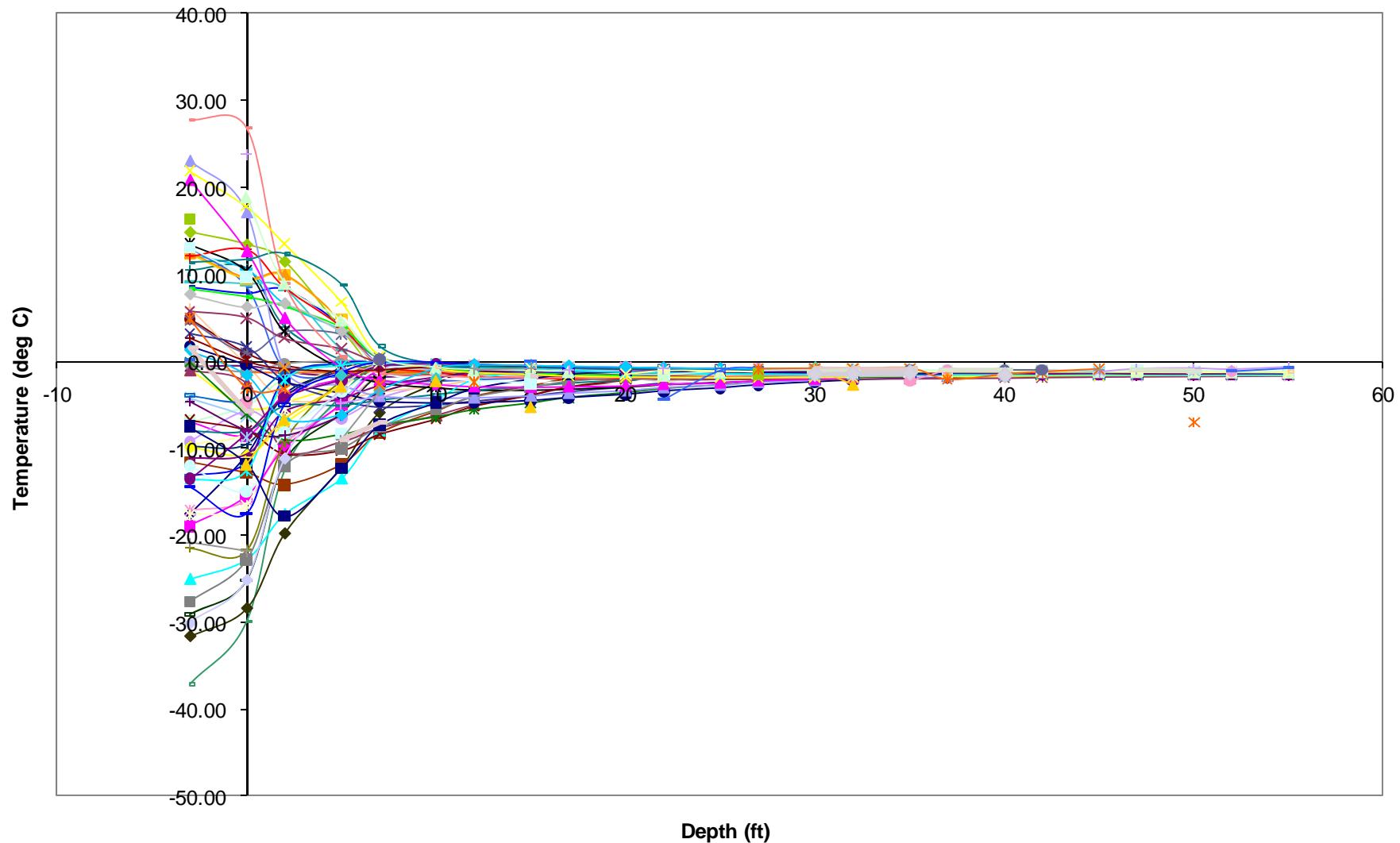


T-96-012 Temperature at 484 feet

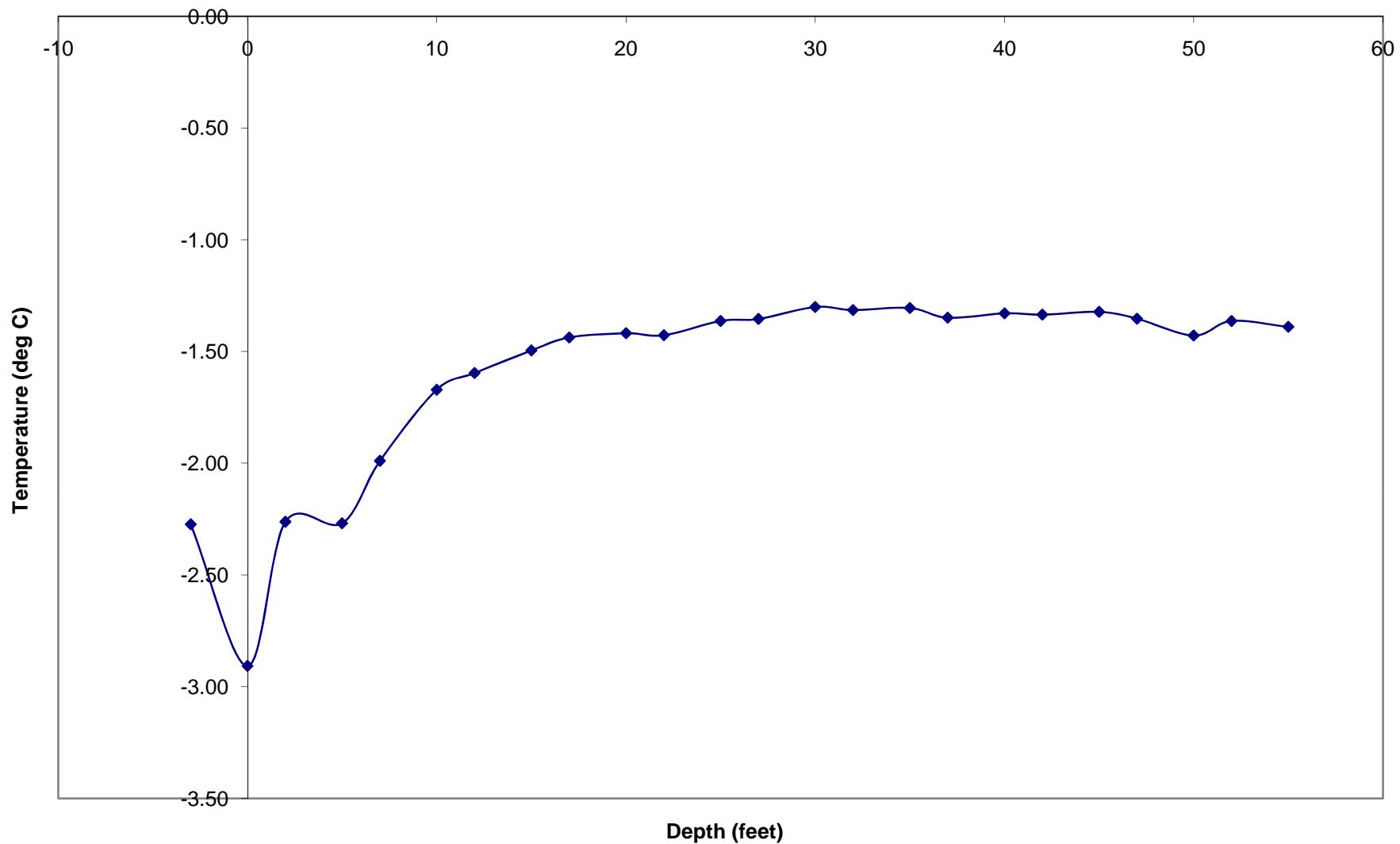


T-96-012S

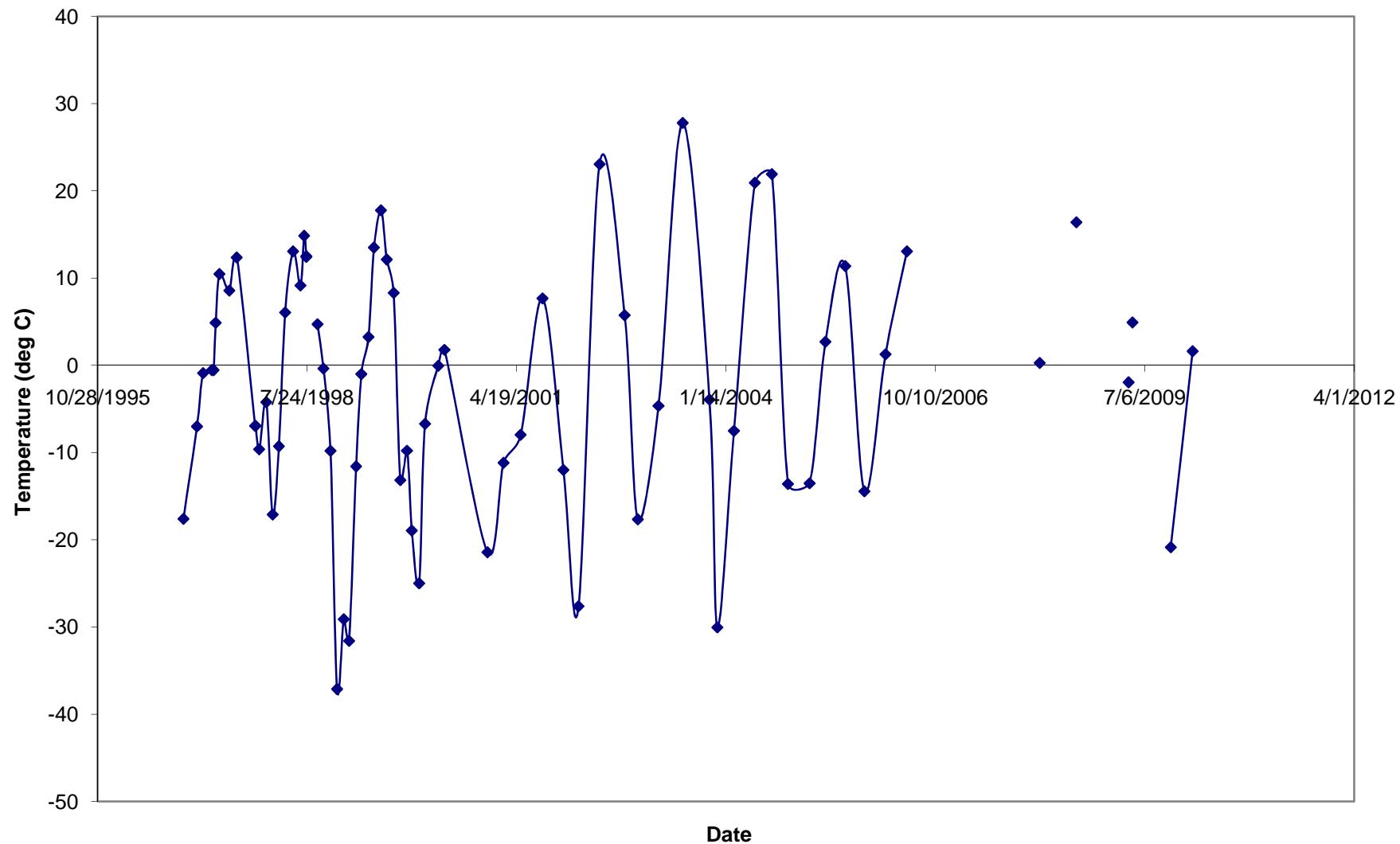
Temperature depth plot - T-96-012S



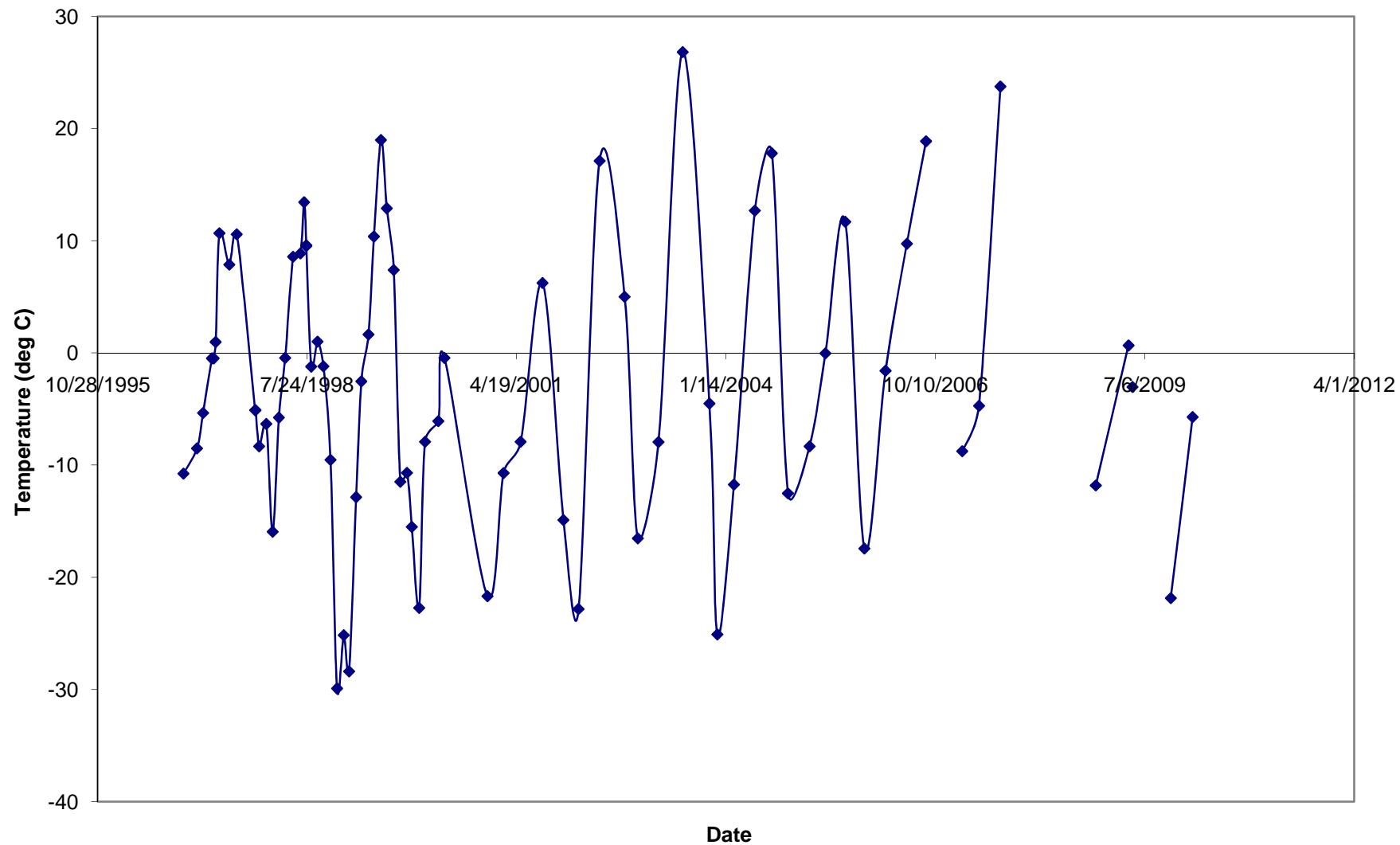
T-96-012S - Average temperatures with depth



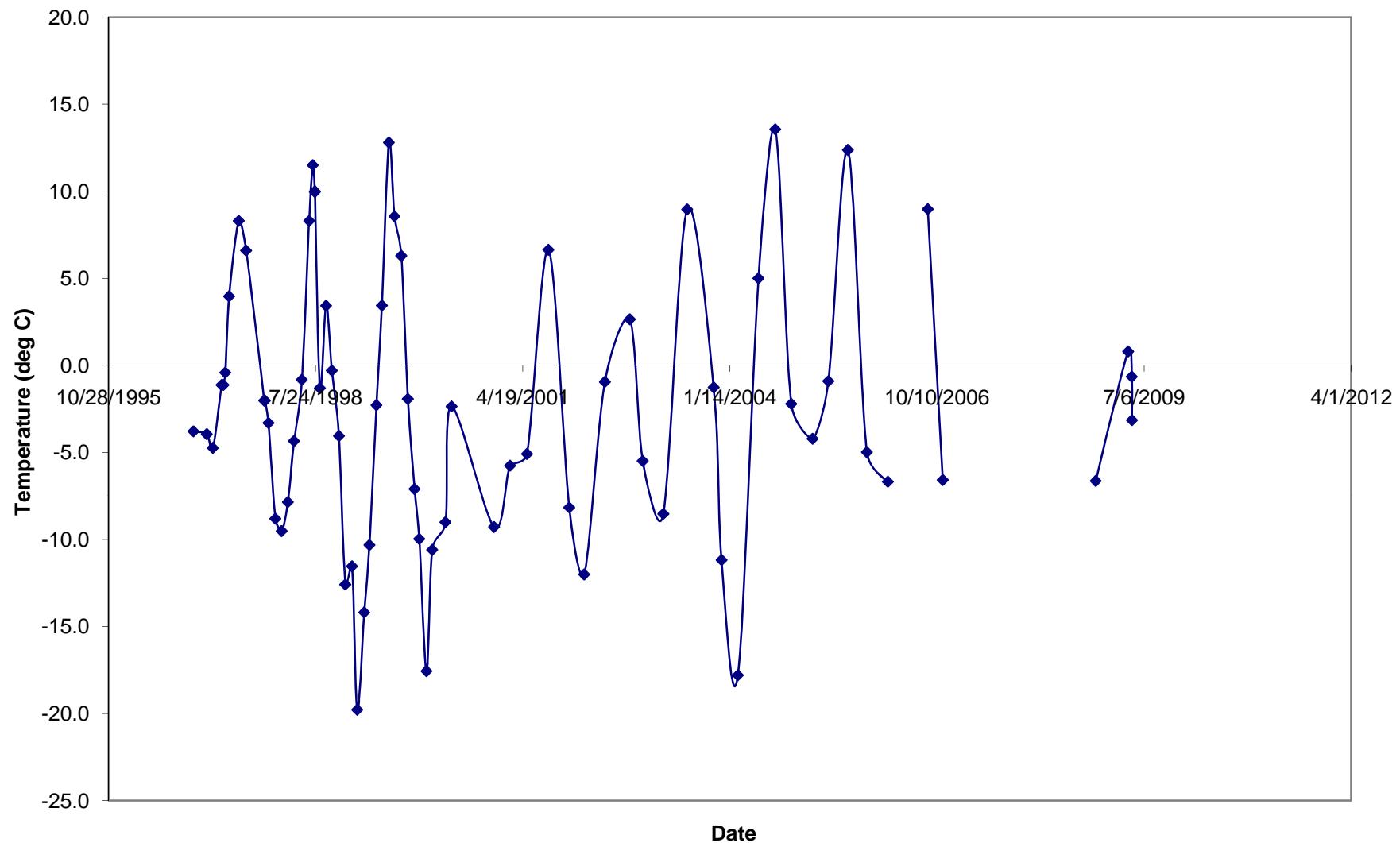
T-96-012S - Temperature at -3 feet



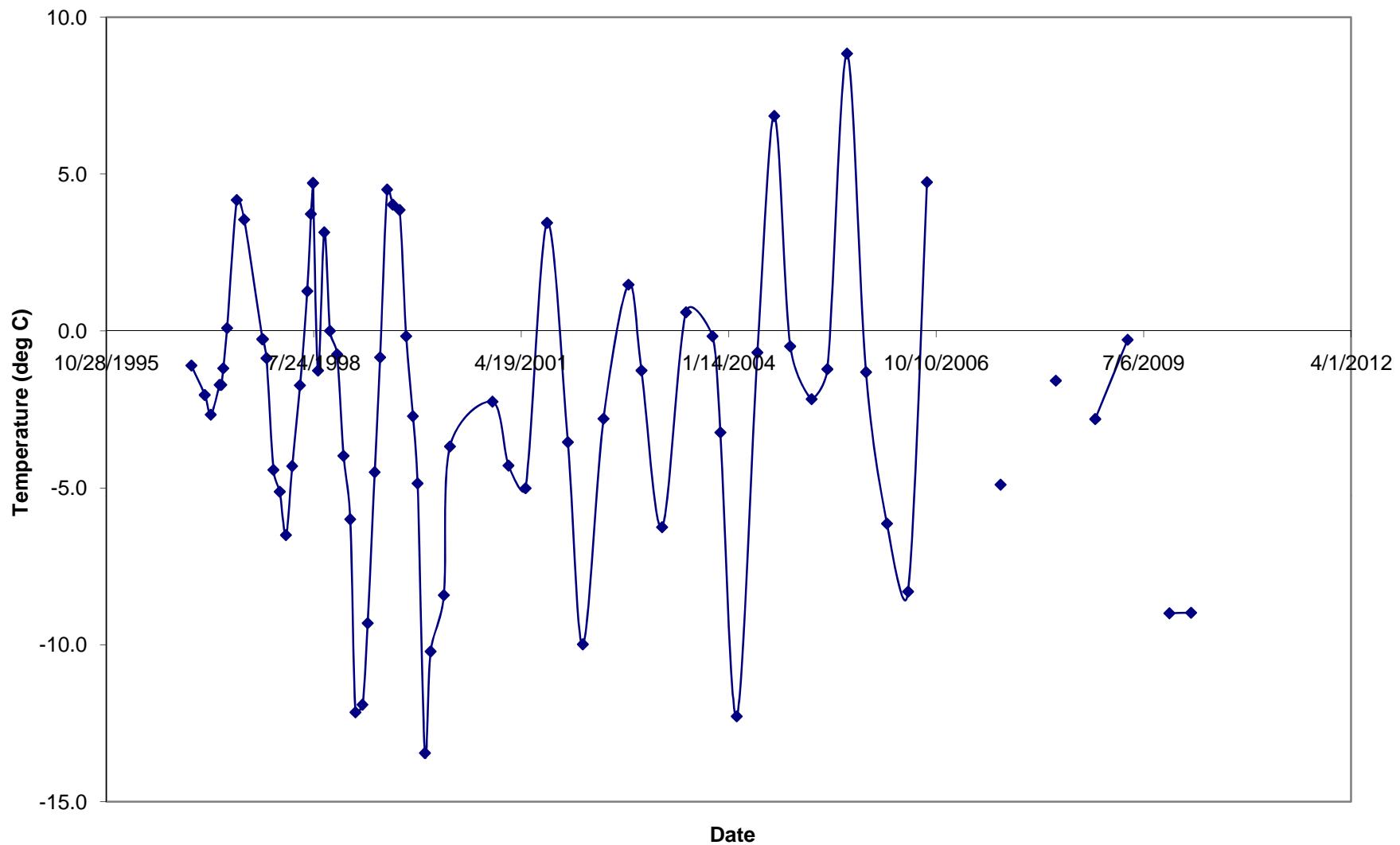
T-96-012S - Temperature at 0 feet



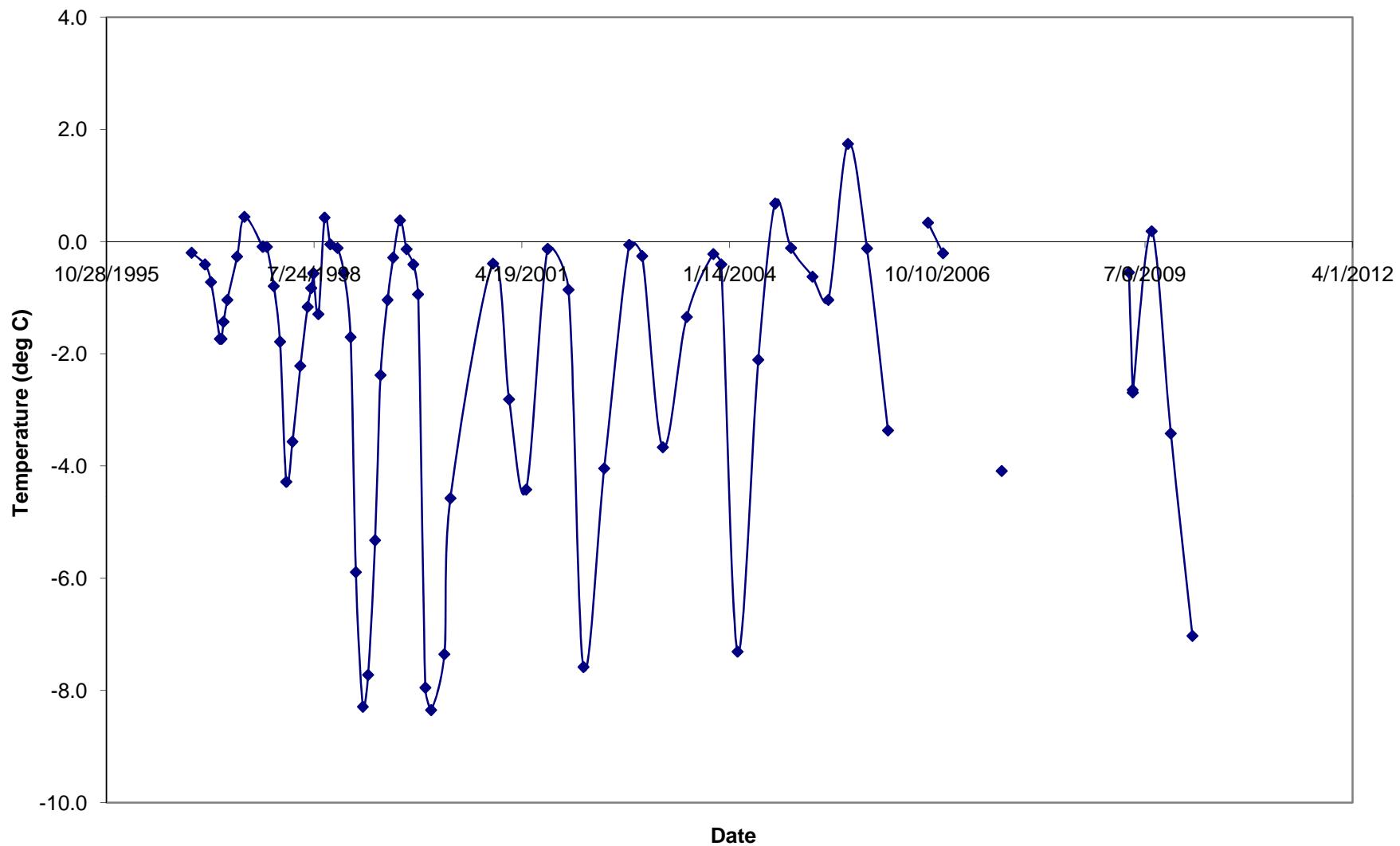
T-96-012S - Temperature at 2 feet



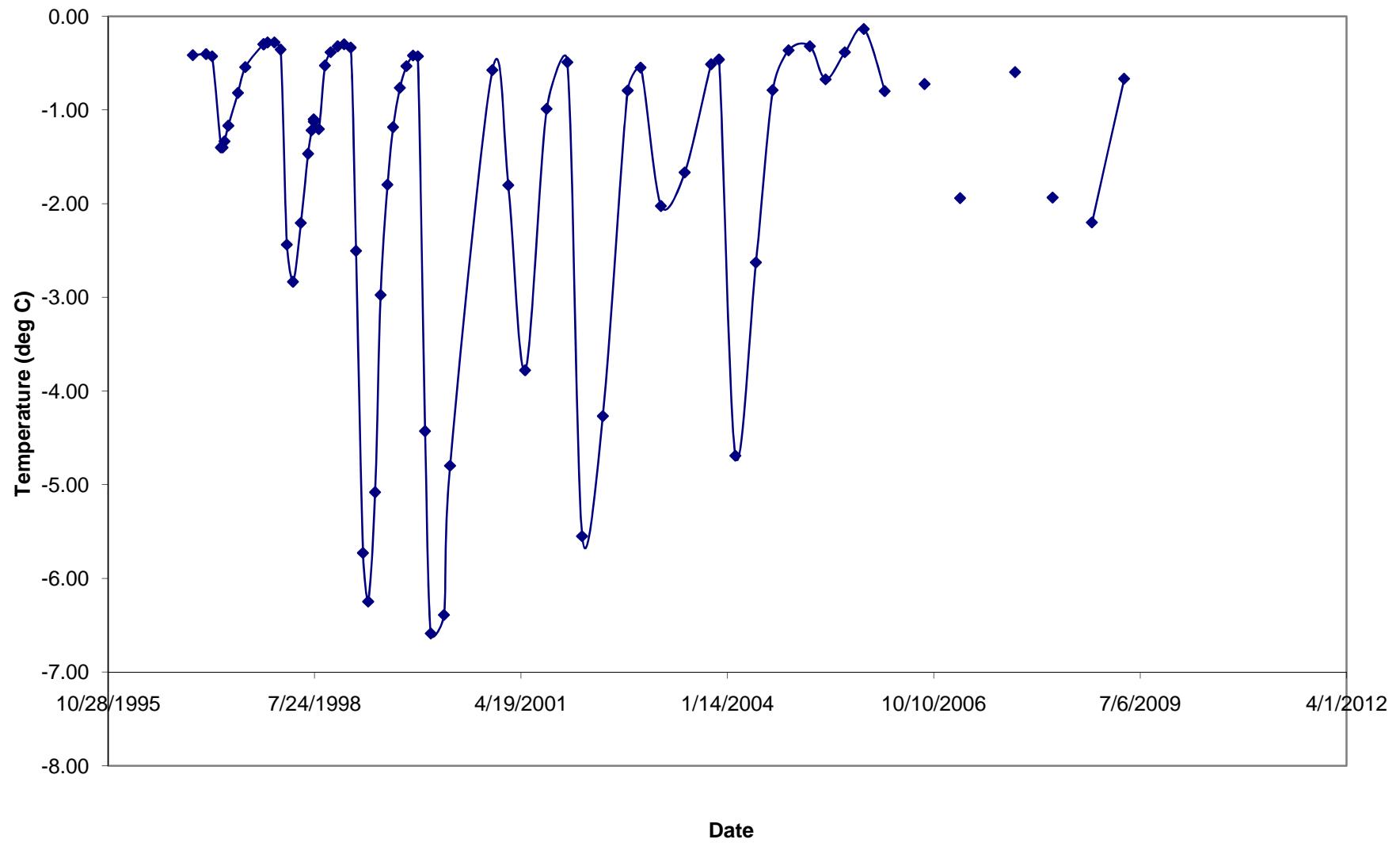
T-96-012S - Temperature at 5 feet



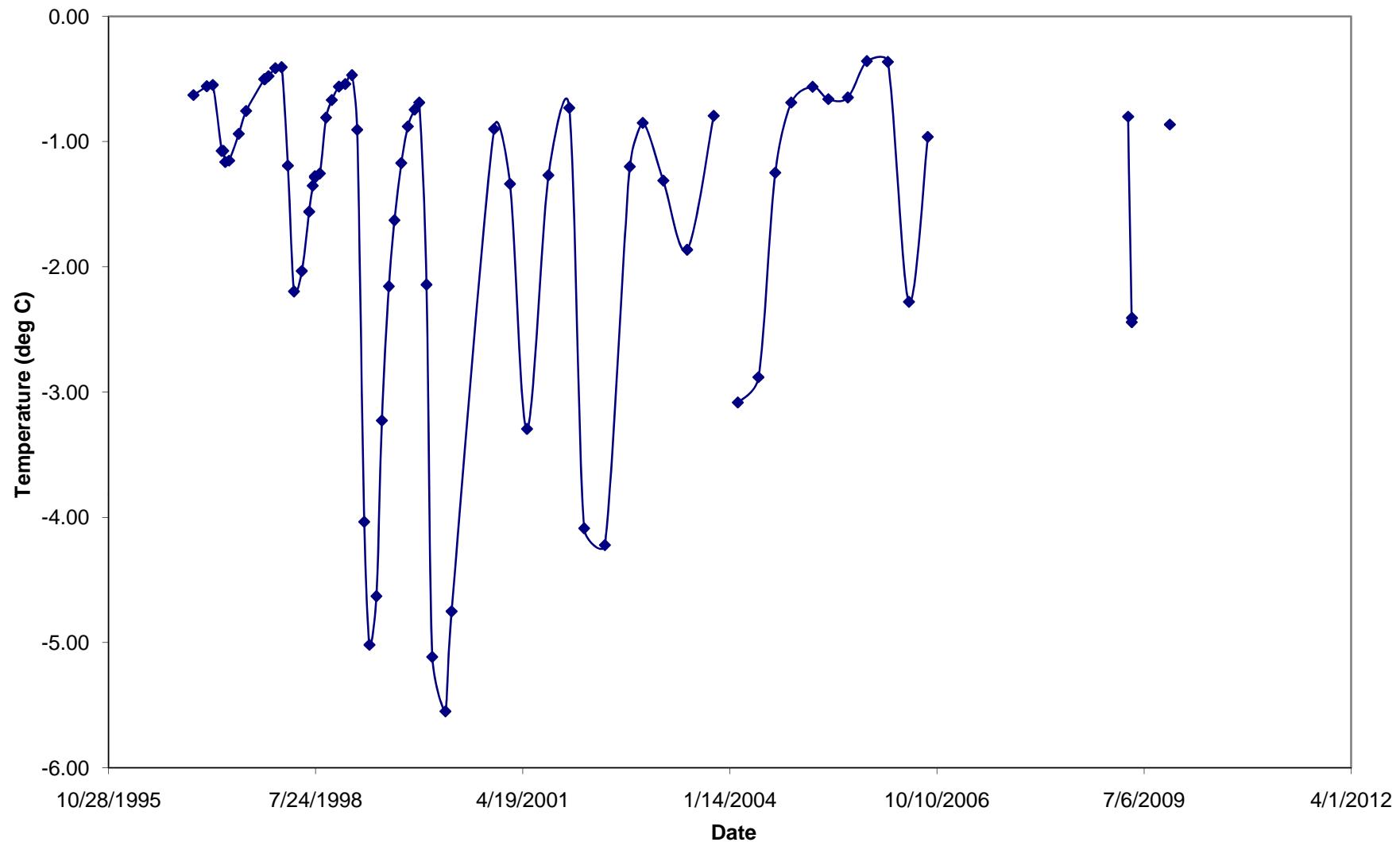
T-96-012S - Temperature at 7 feet



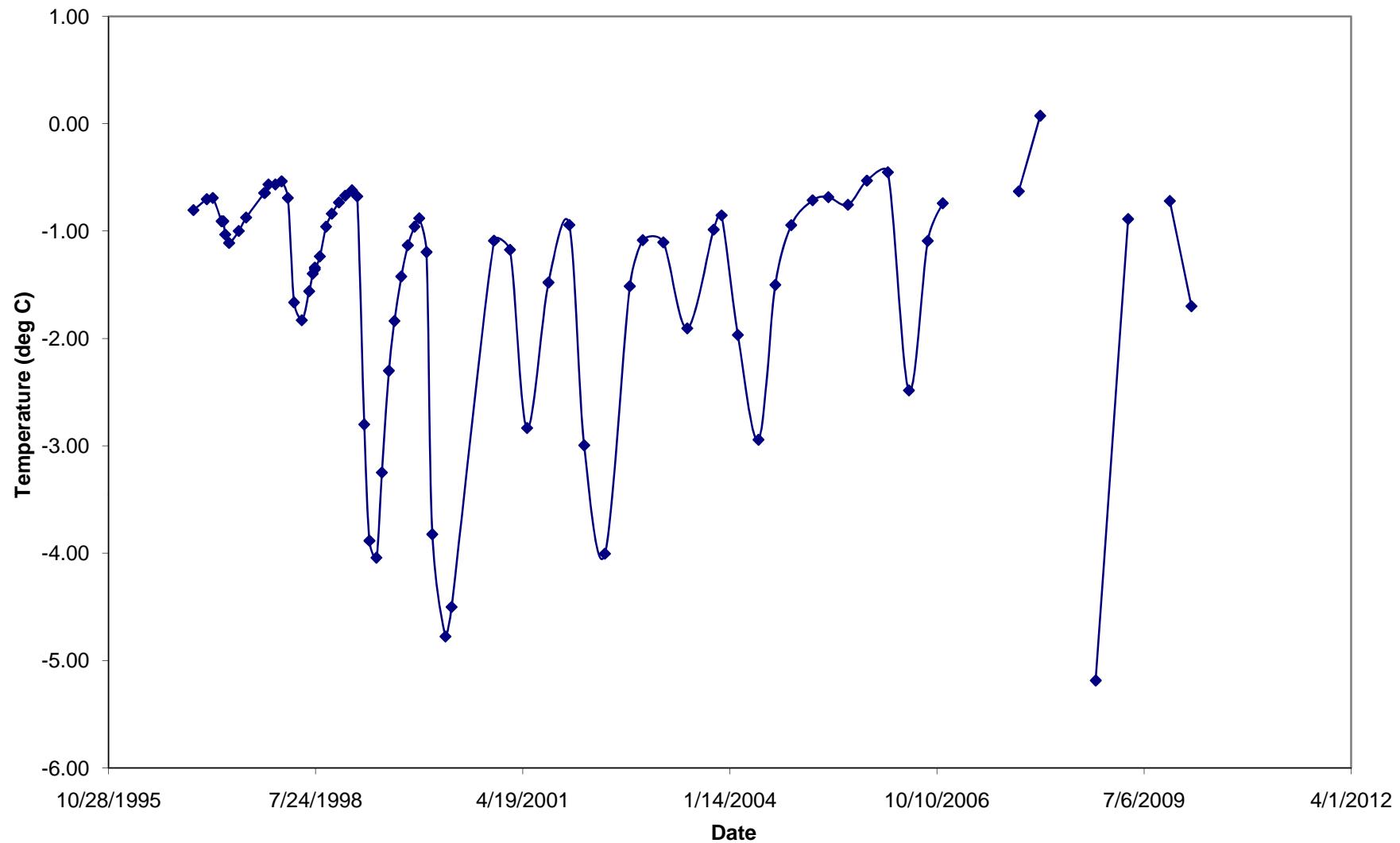
T-96-012S - Temperature at 10 feet



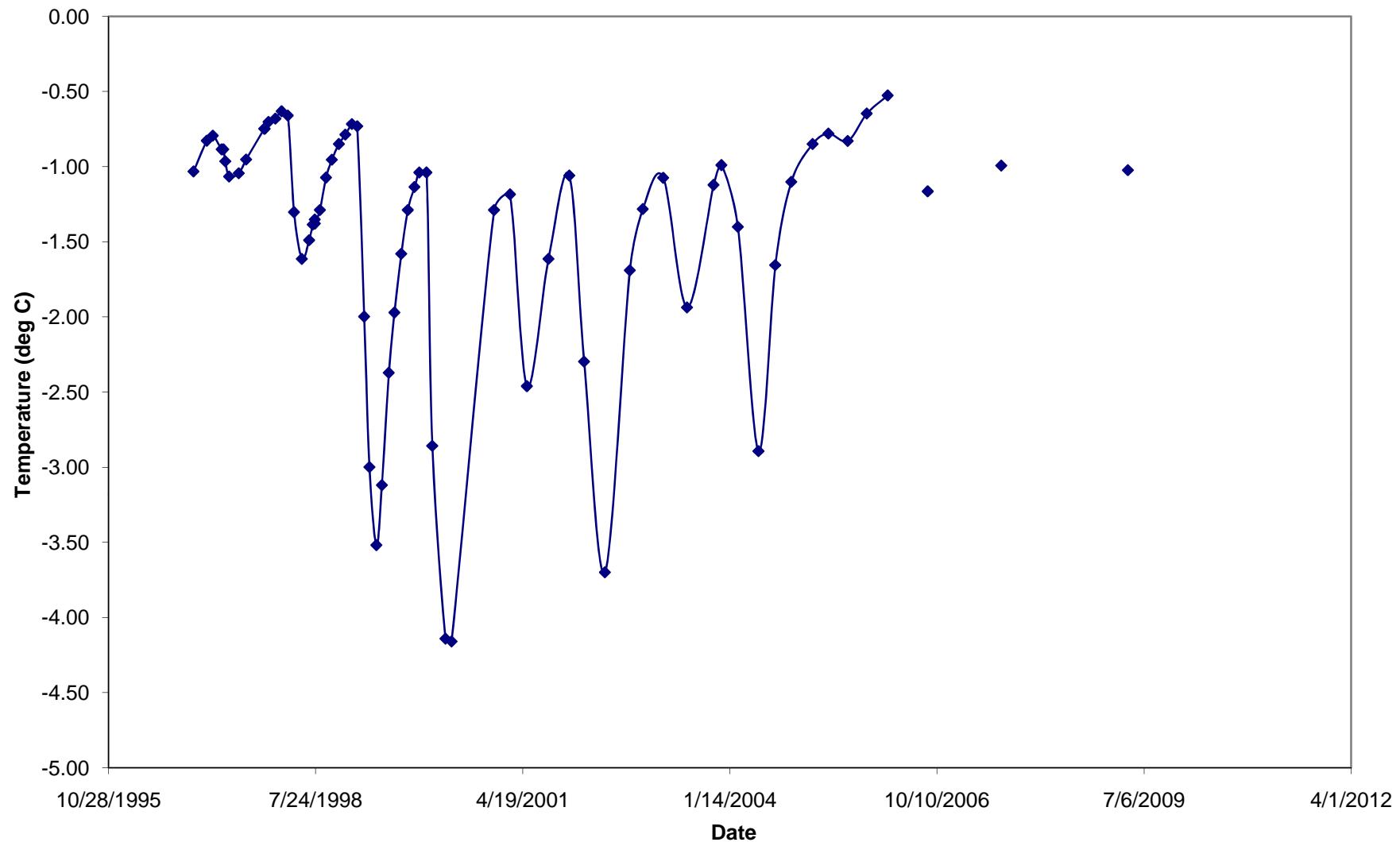
T-96-012S - Temperature at 12 feet



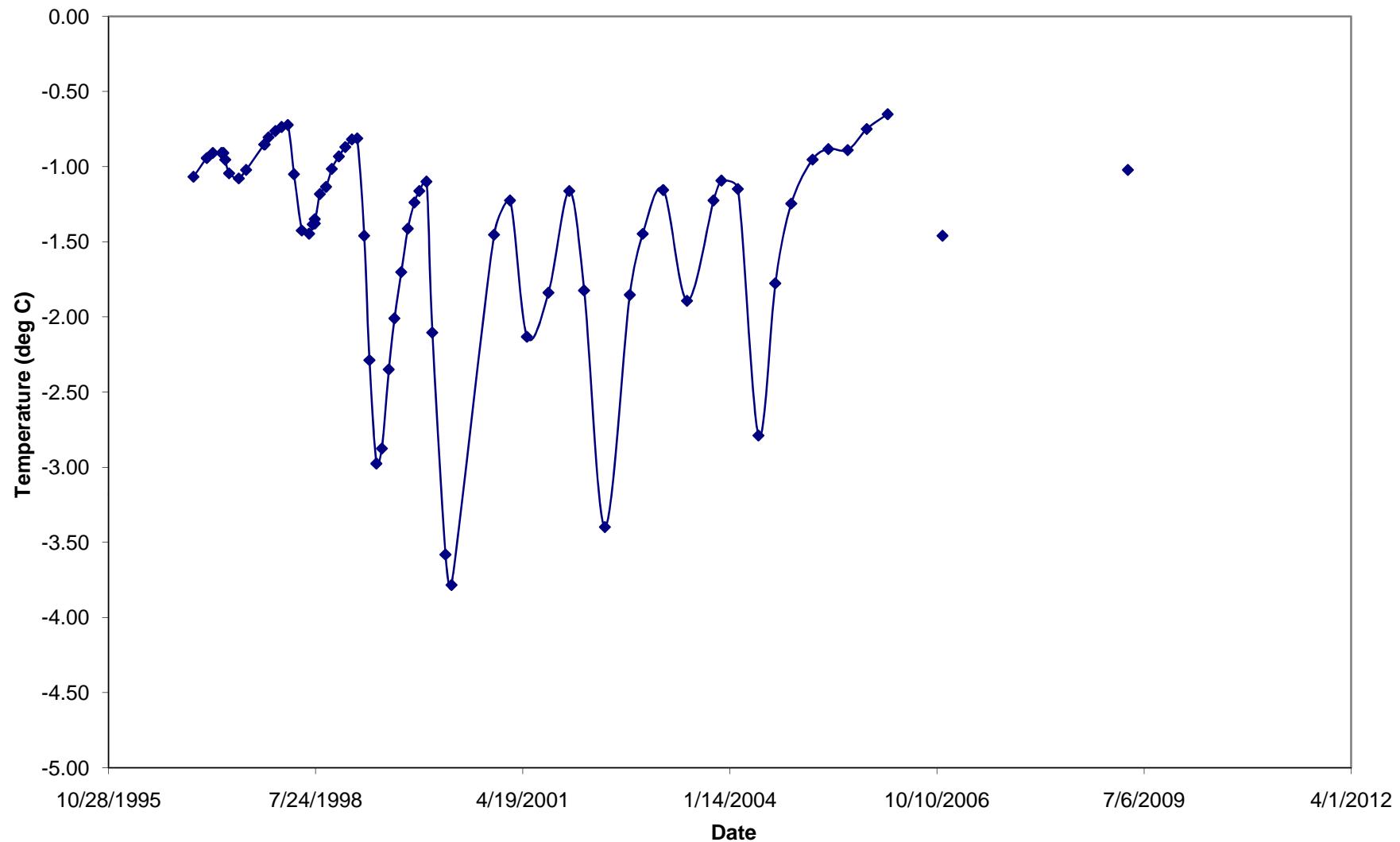
T-96-012S - Temperature at 15 feet



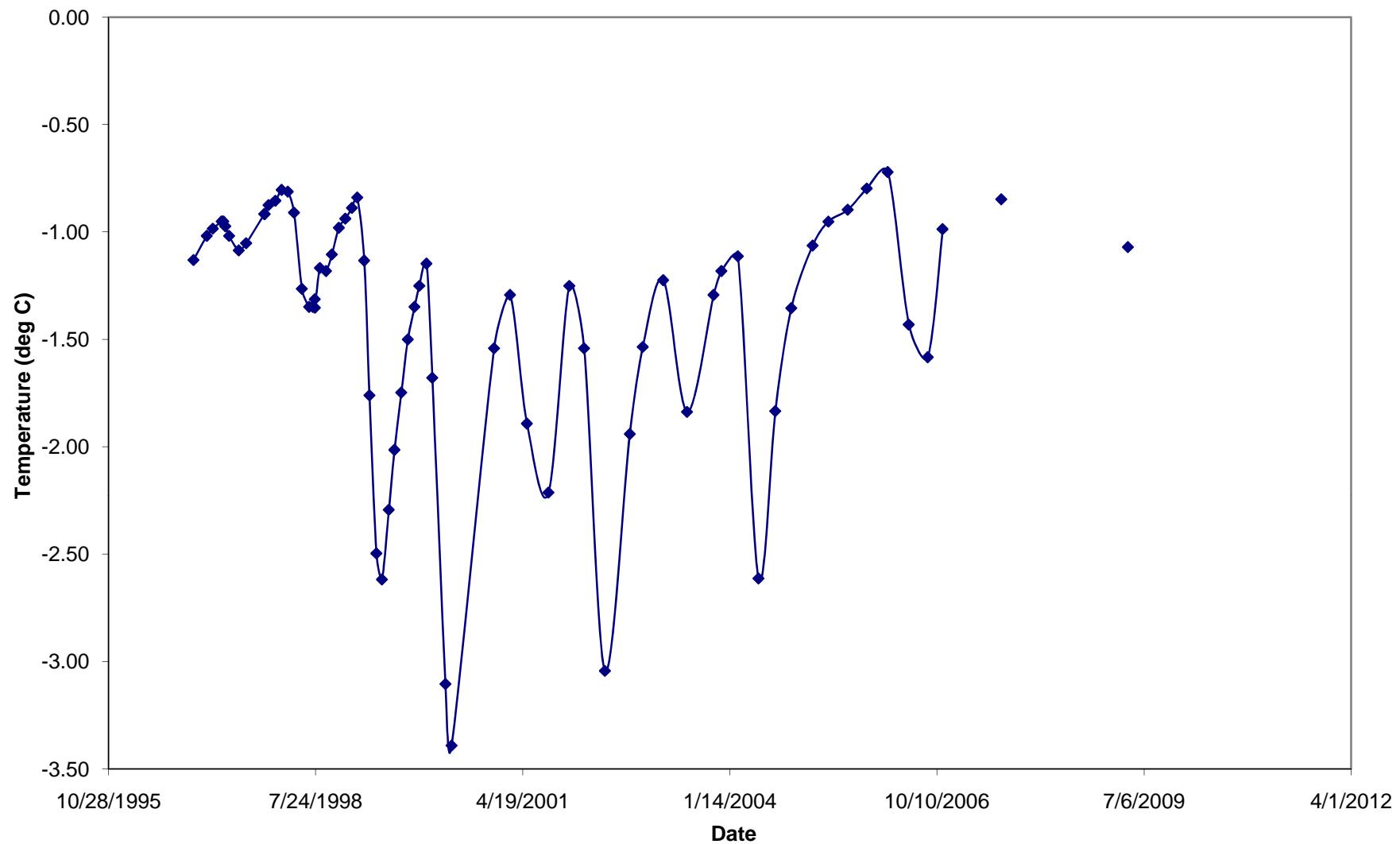
T-96-012S - Temperature at 17 feet



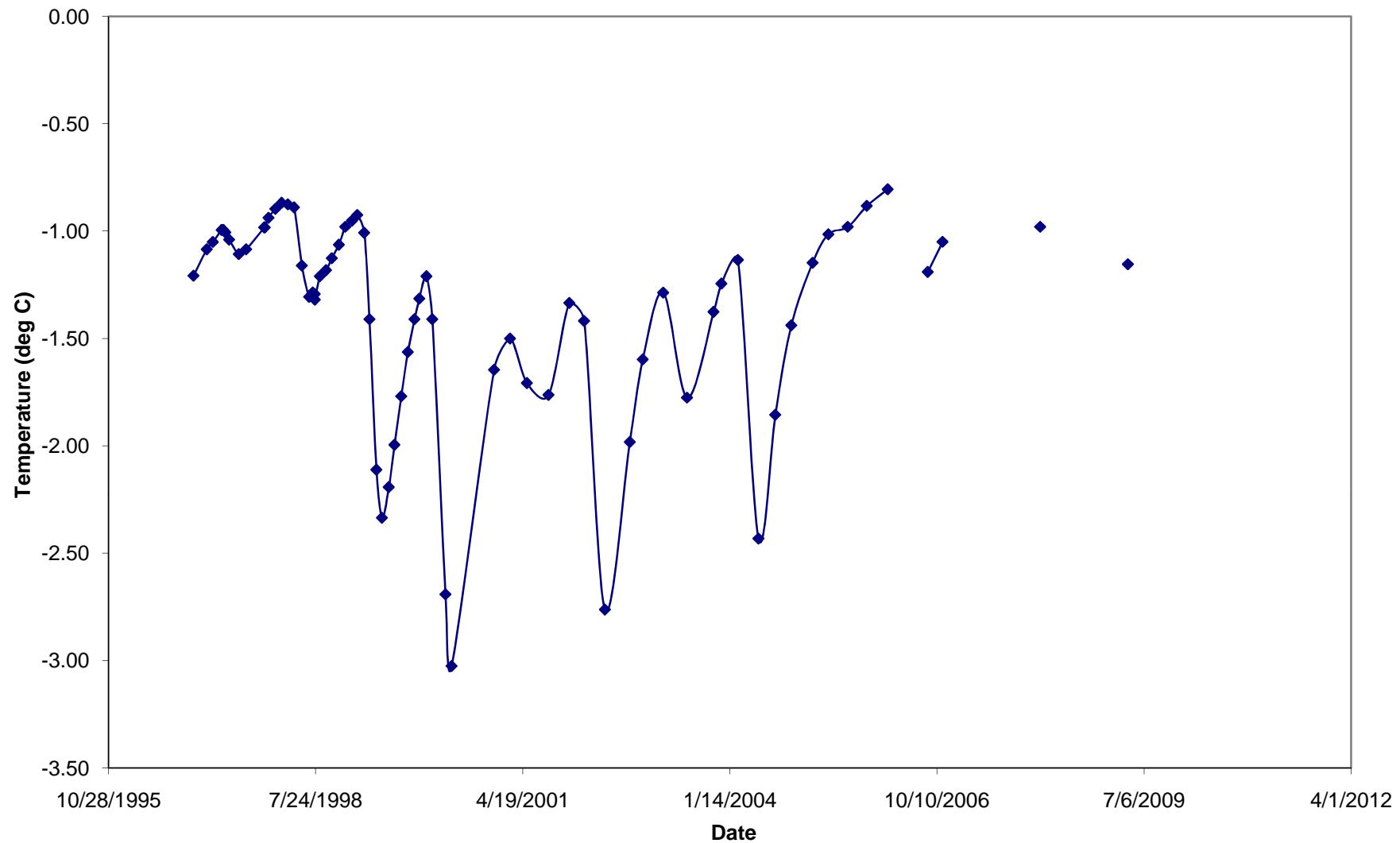
T-96-012S - Temperature at 20 feet



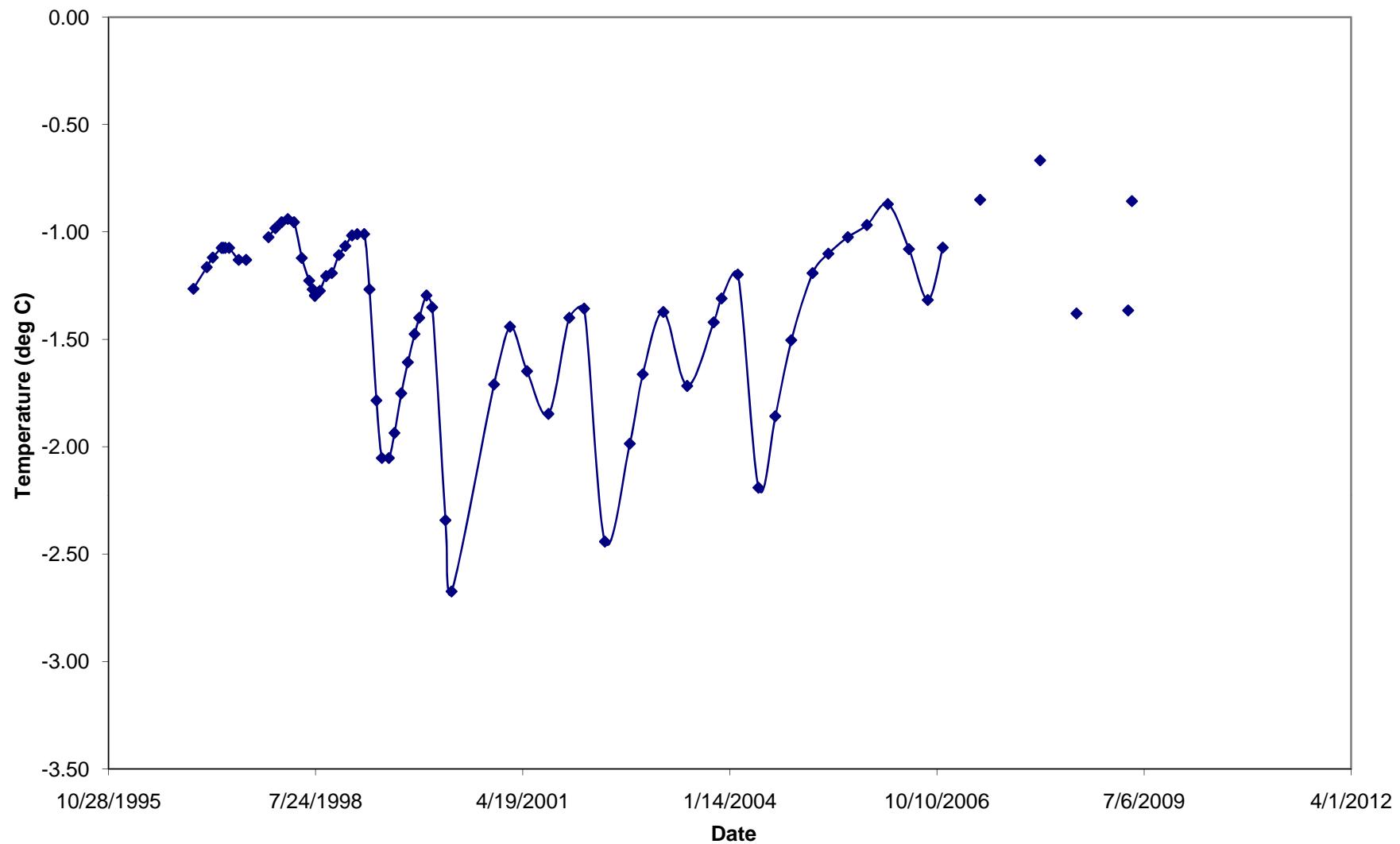
T-96-012S - Temperature at 22 feet



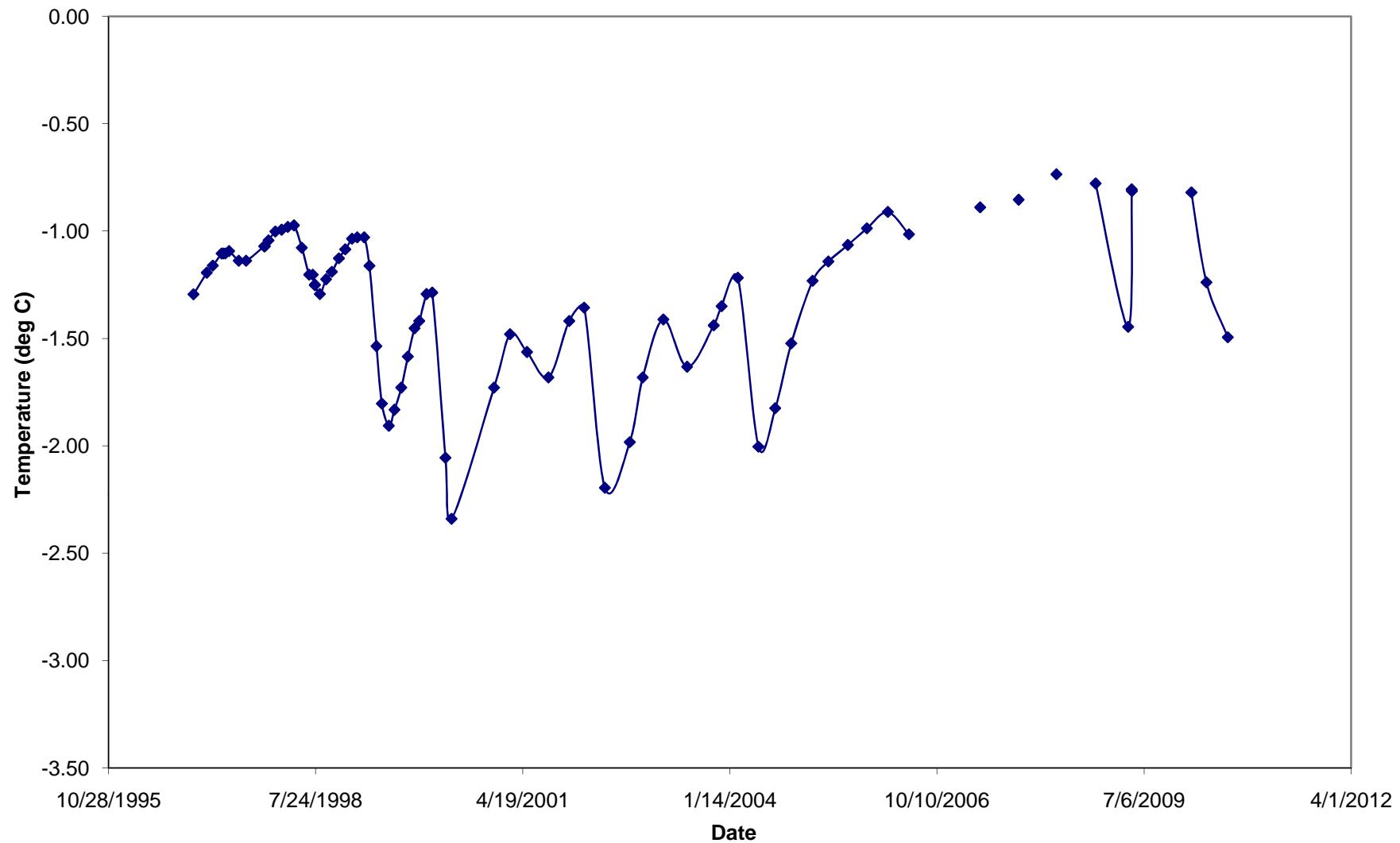
T-96-012S - Temperature at 25 feet



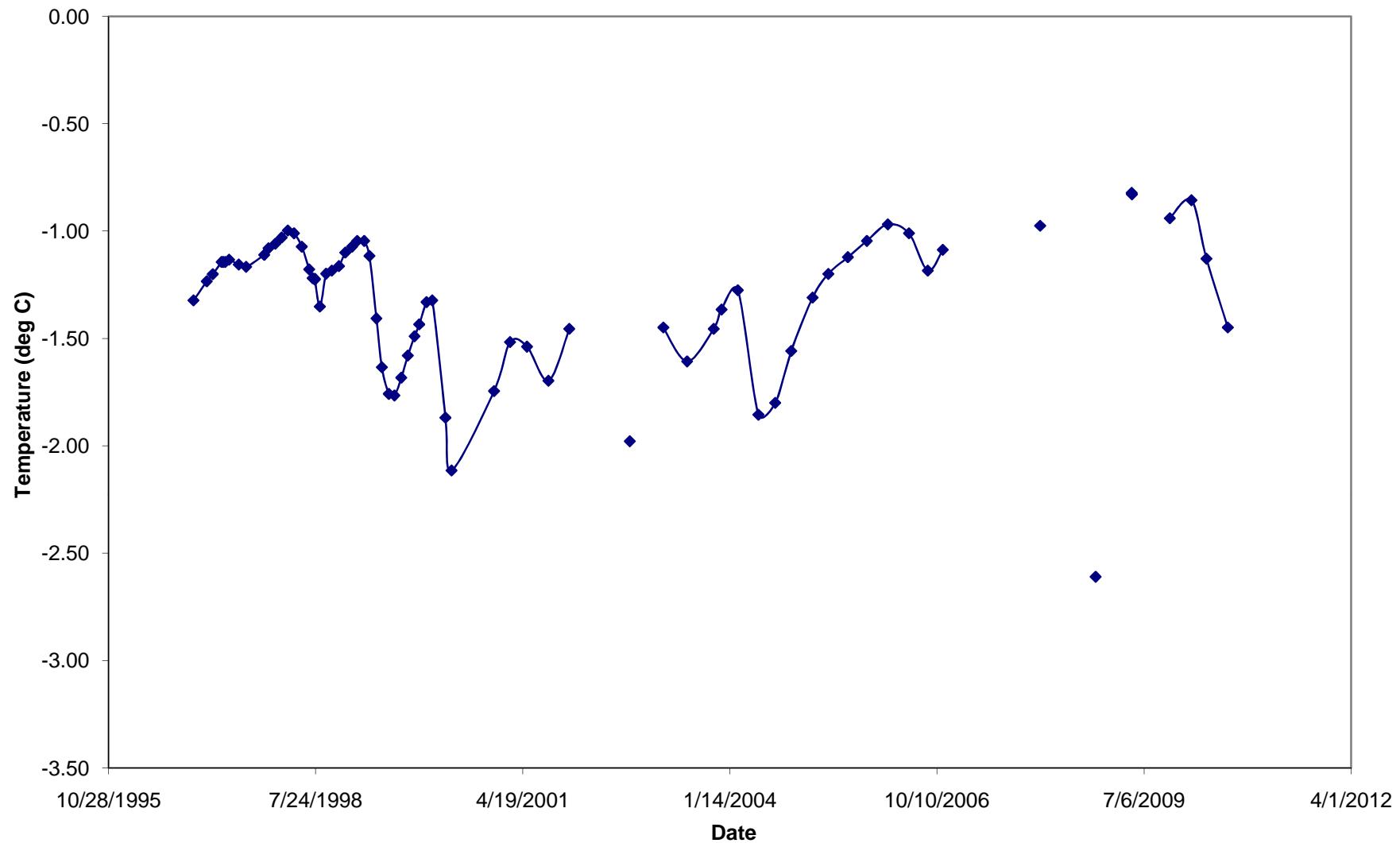
T-96-012S - Temperature at 27 feet



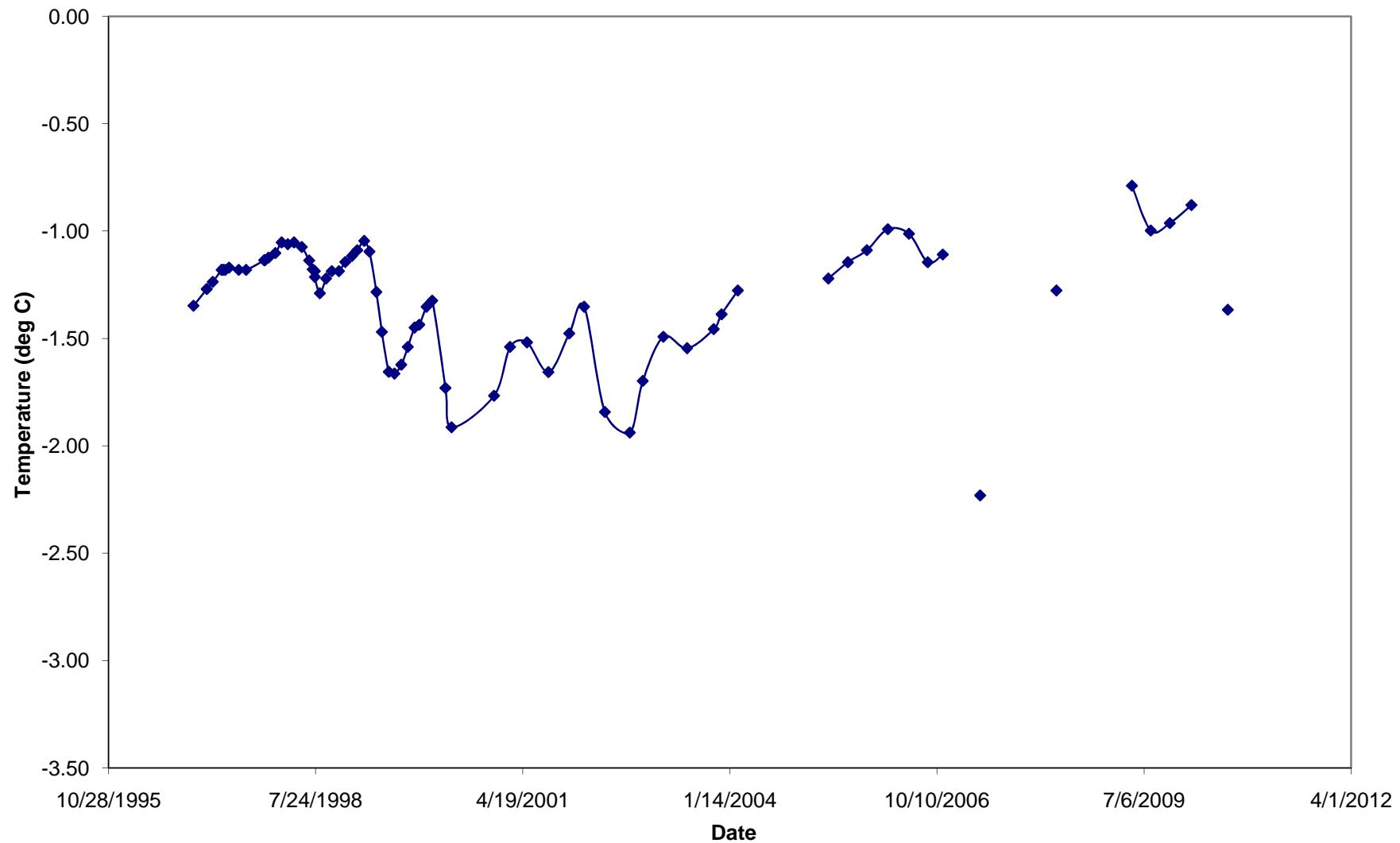
T-96-012S - Temperature at 30 feet



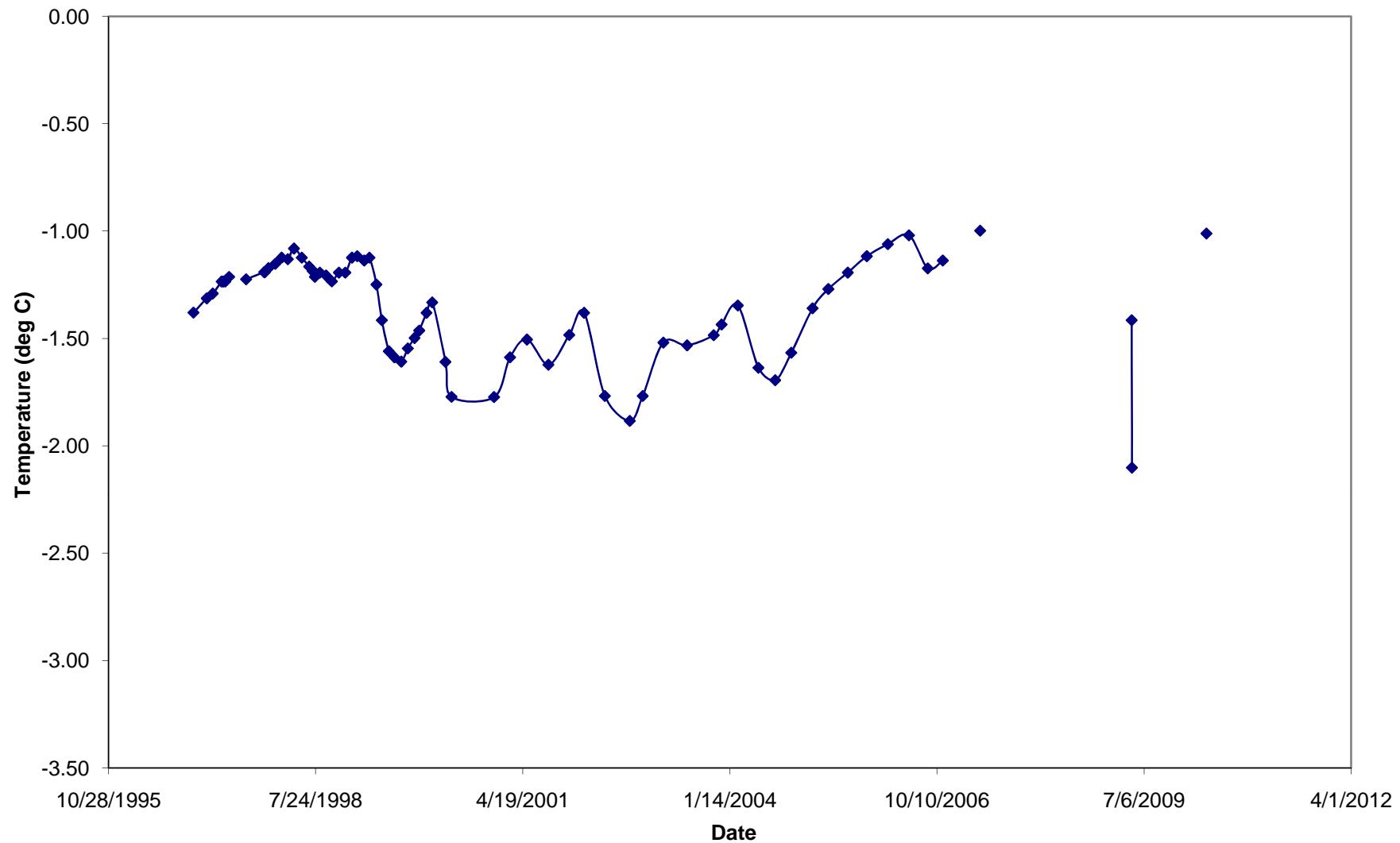
T-96-012S - Temperature at 32 feet



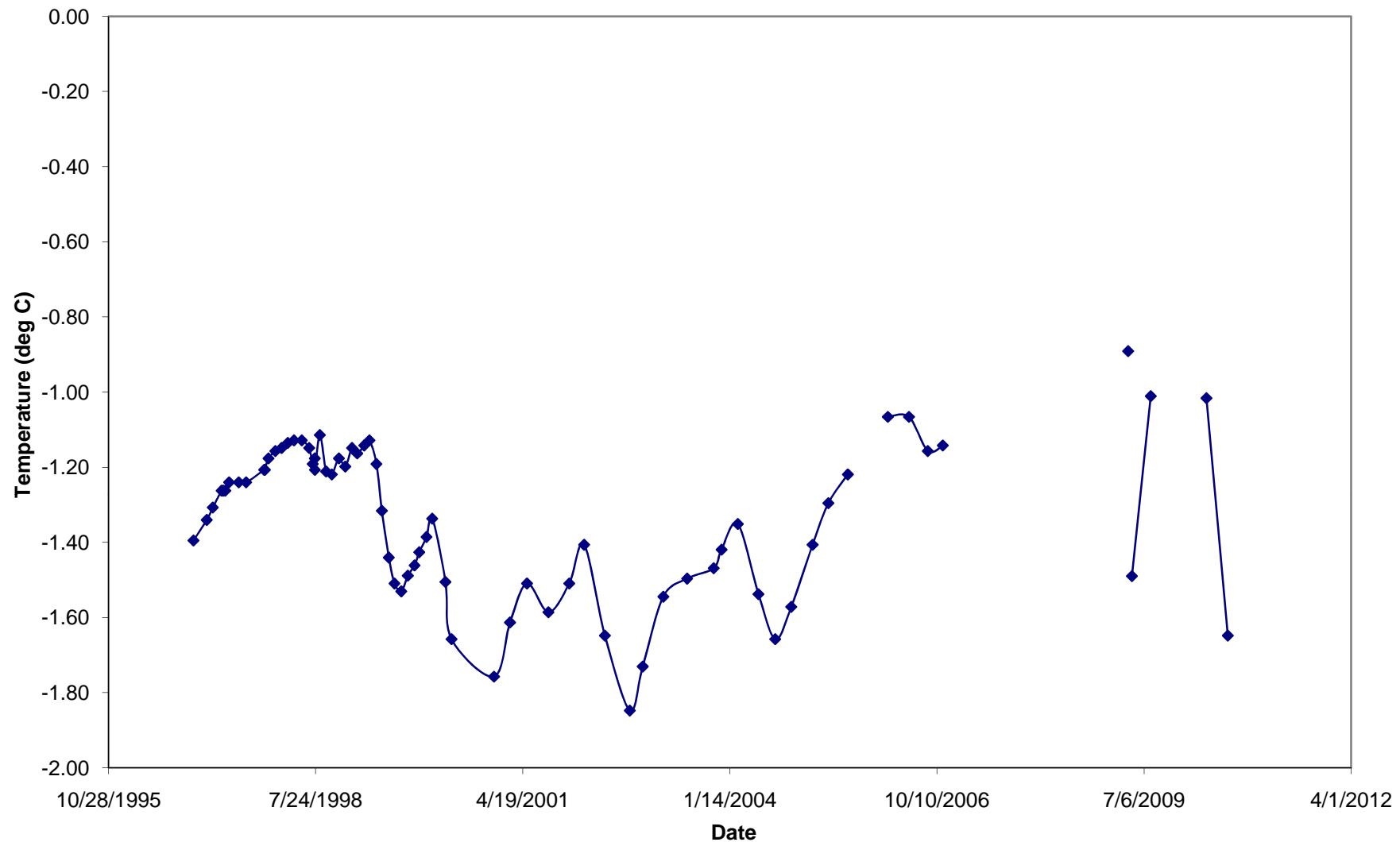
T-96-012S - Temperature at 35 feet



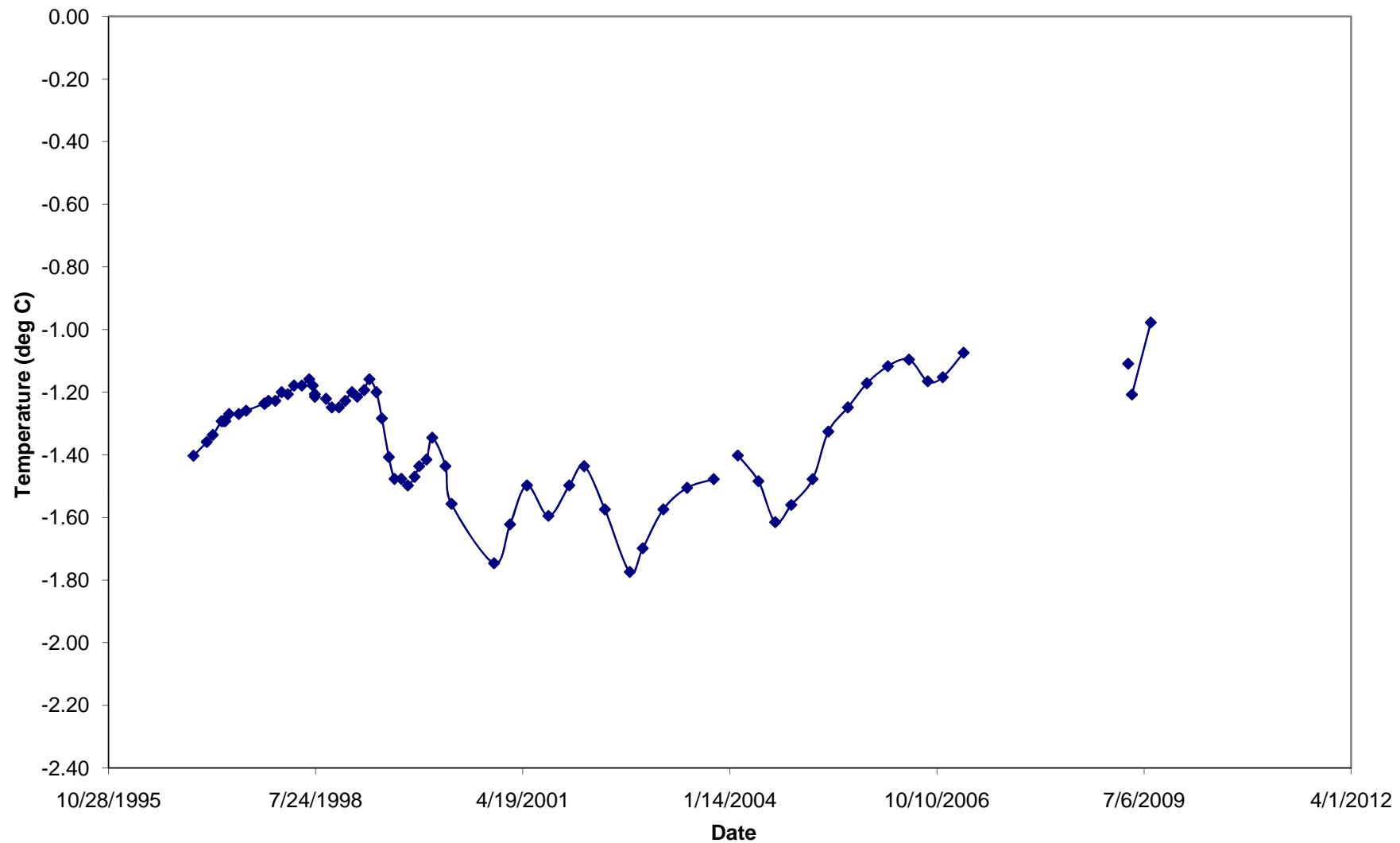
T-96-012S - Temperature at 37 feet



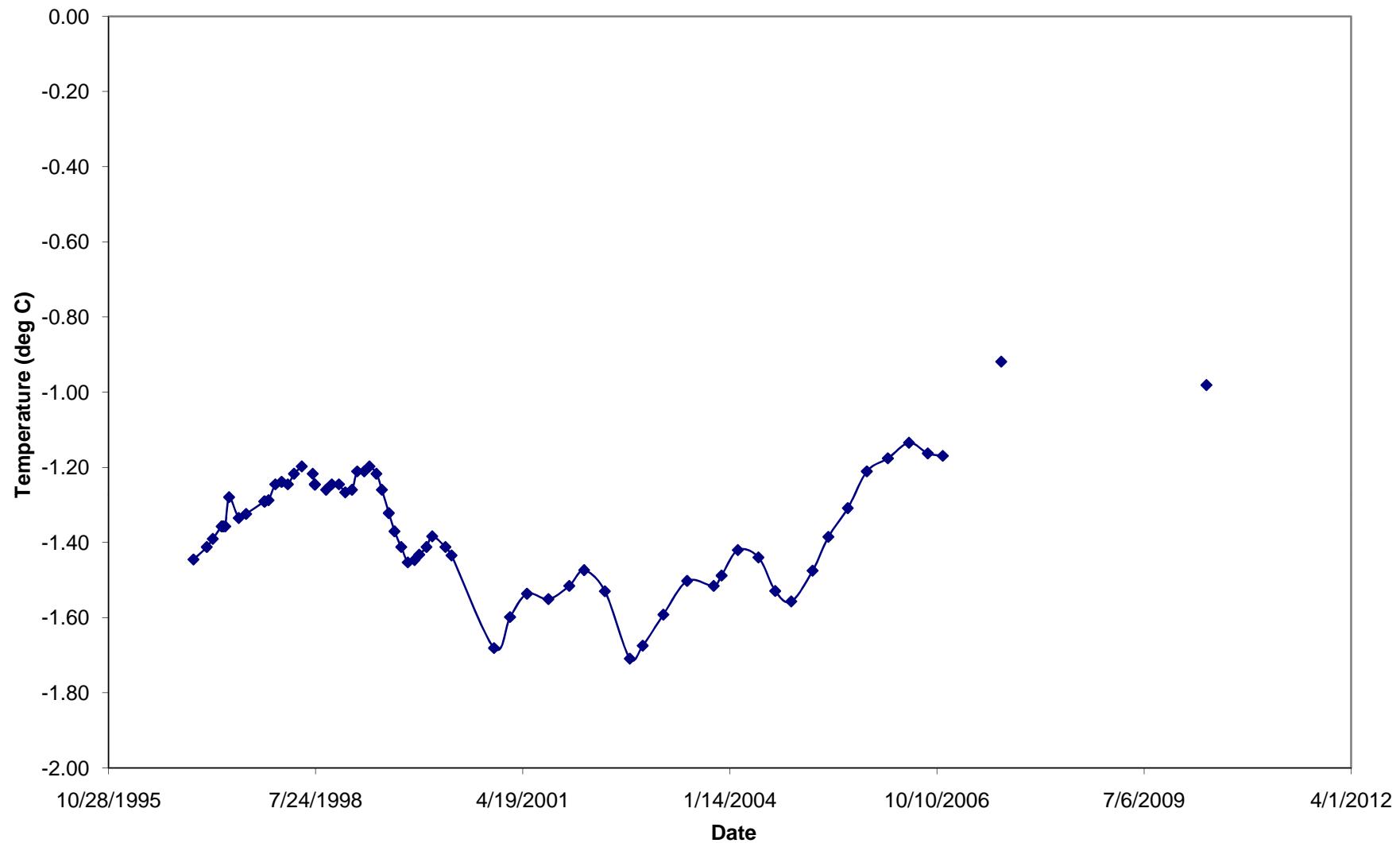
T-96-012S - Temperature at 40 feet



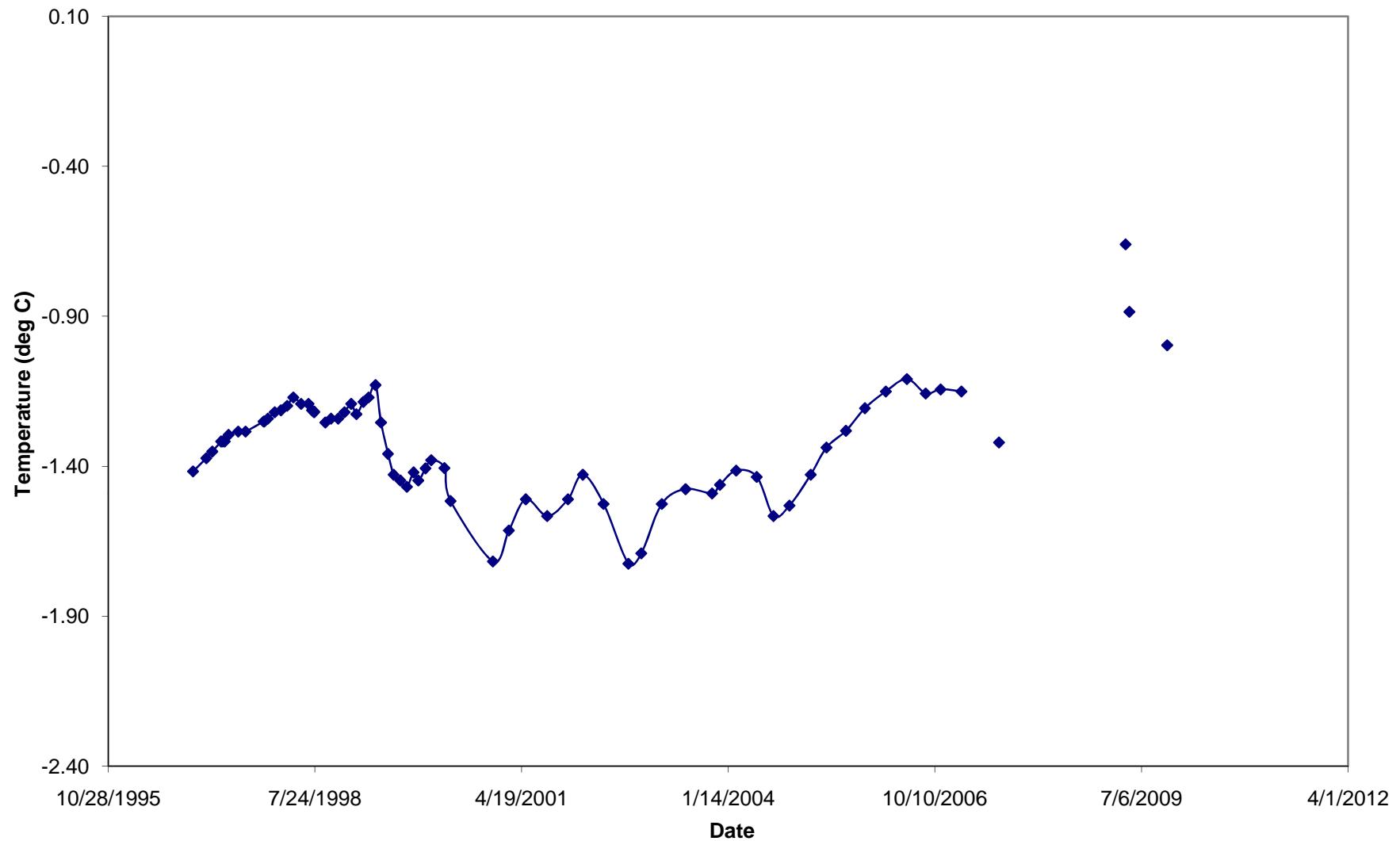
T-96-012S - Temperature at 42 feet



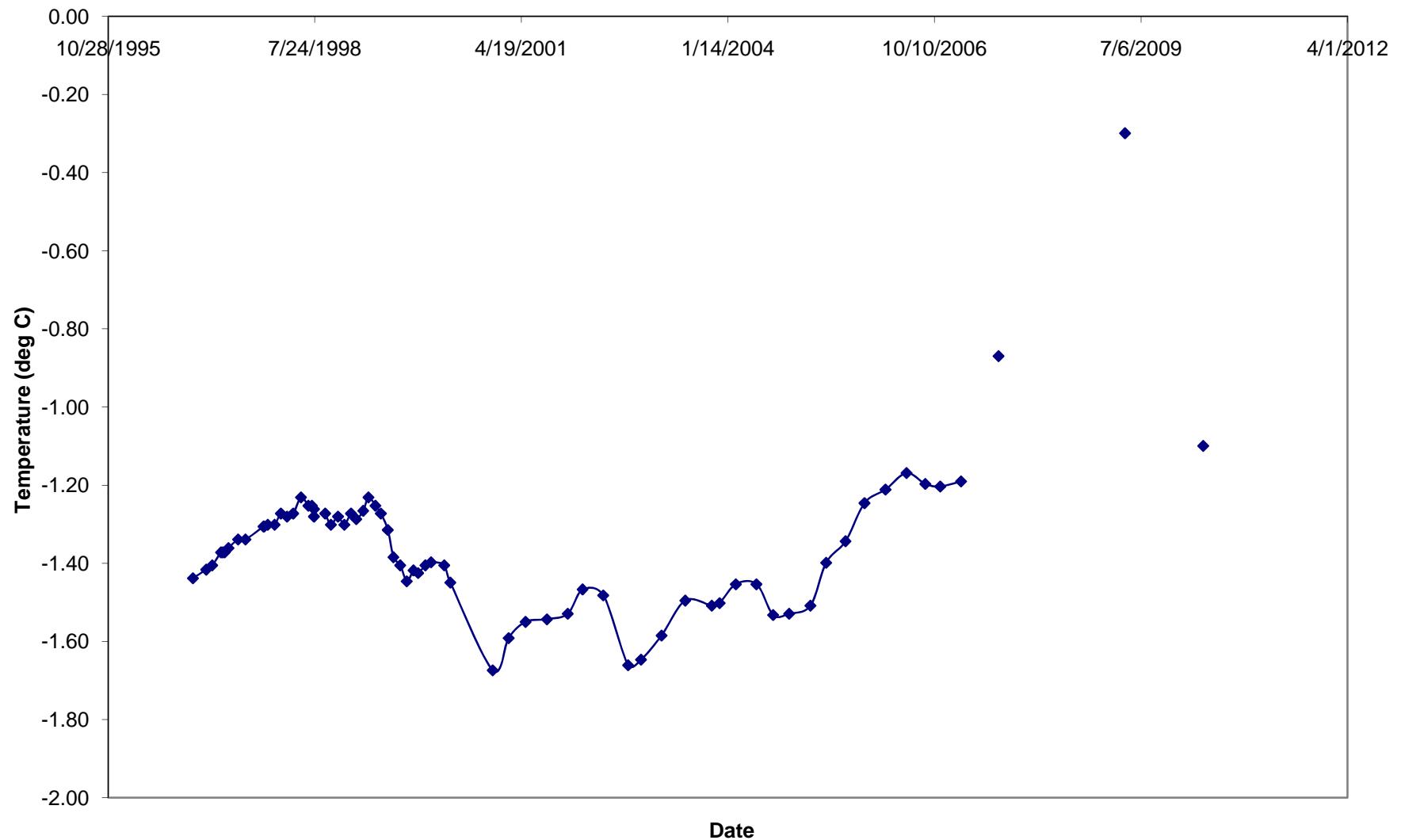
T-96-012S - Temperature at 45 feet



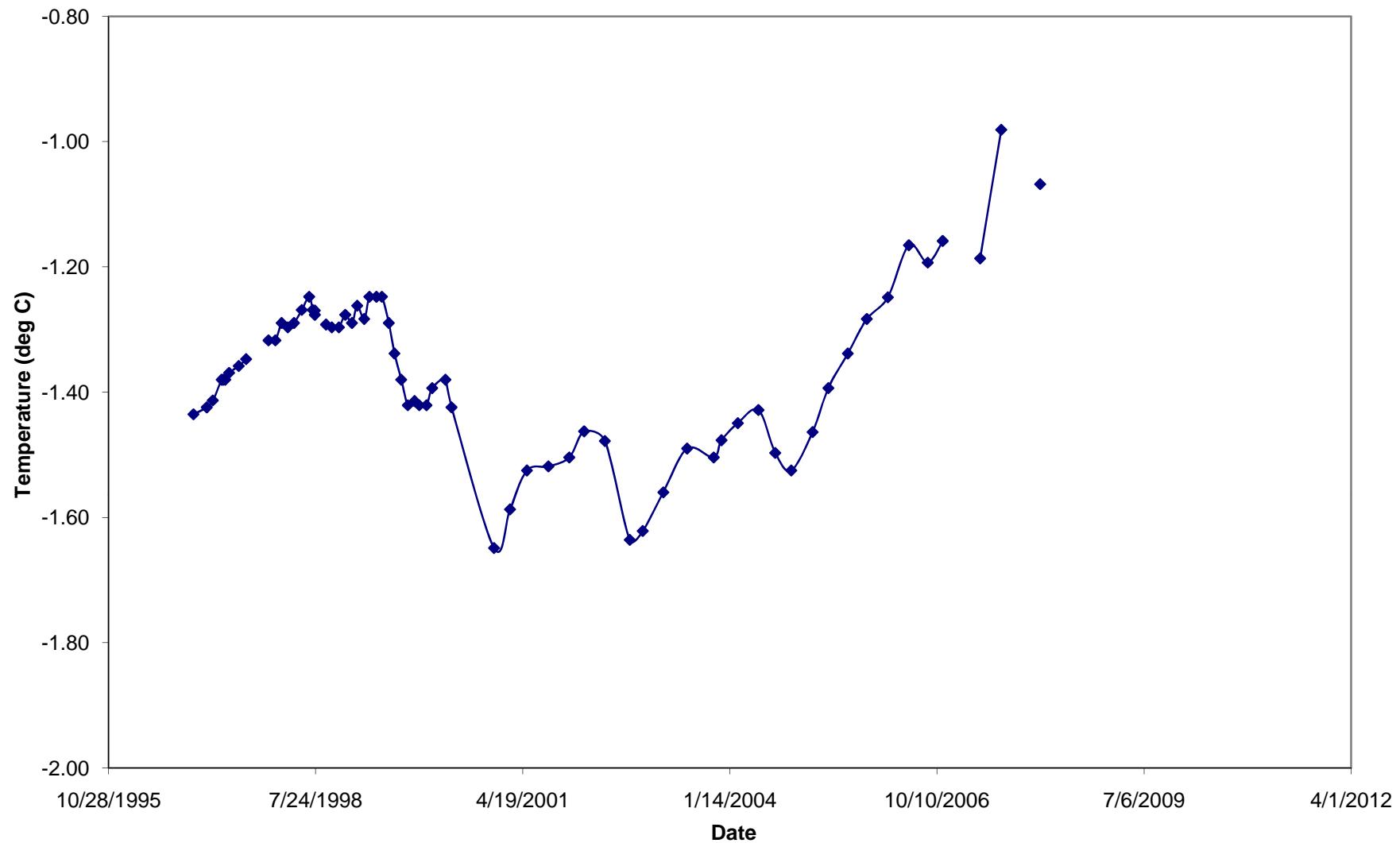
T-96-012S - Temperature at 47 feet



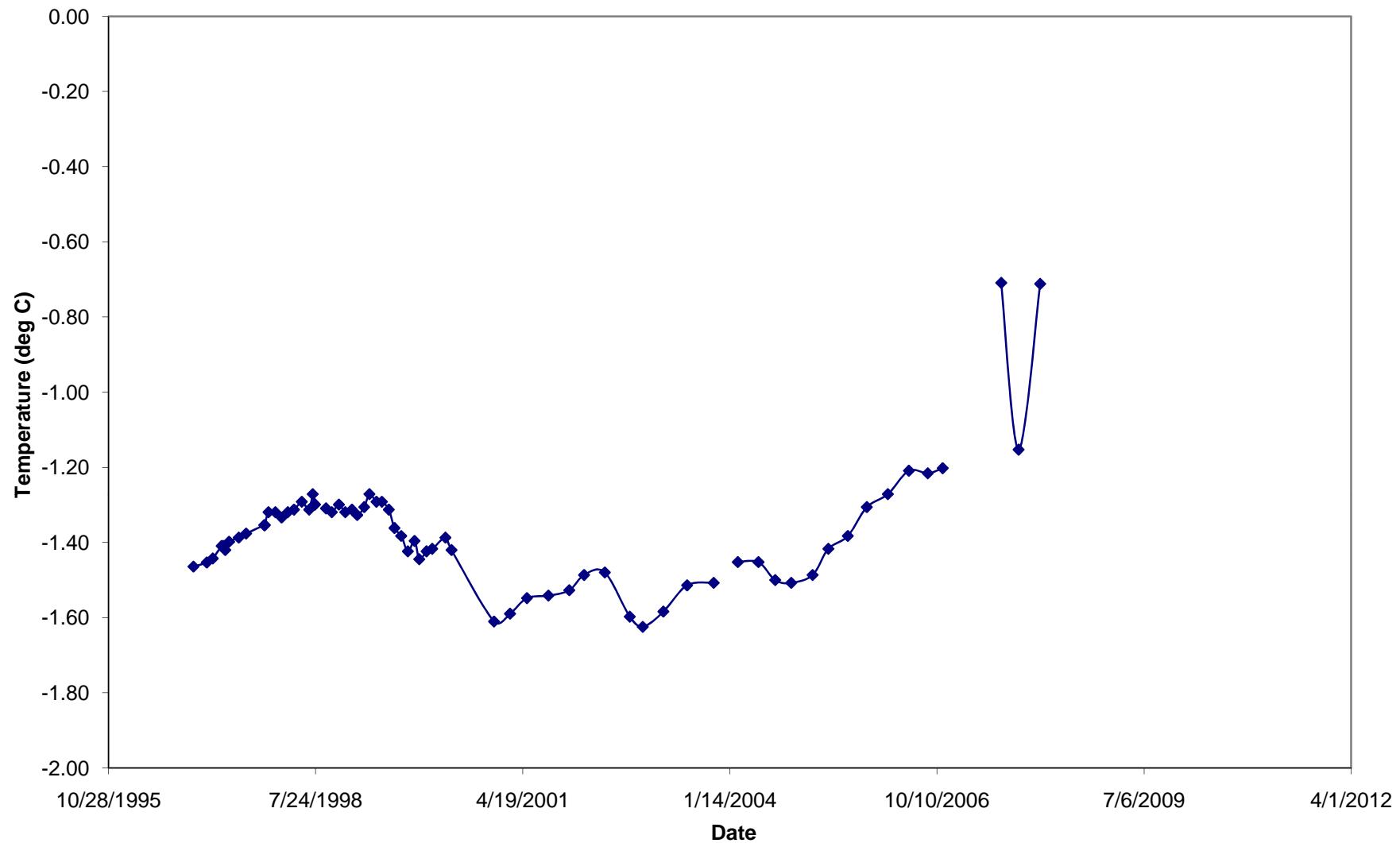
T-96-012S - Temperature at 50 feet



T-96-012S - Temperature at 52 feet

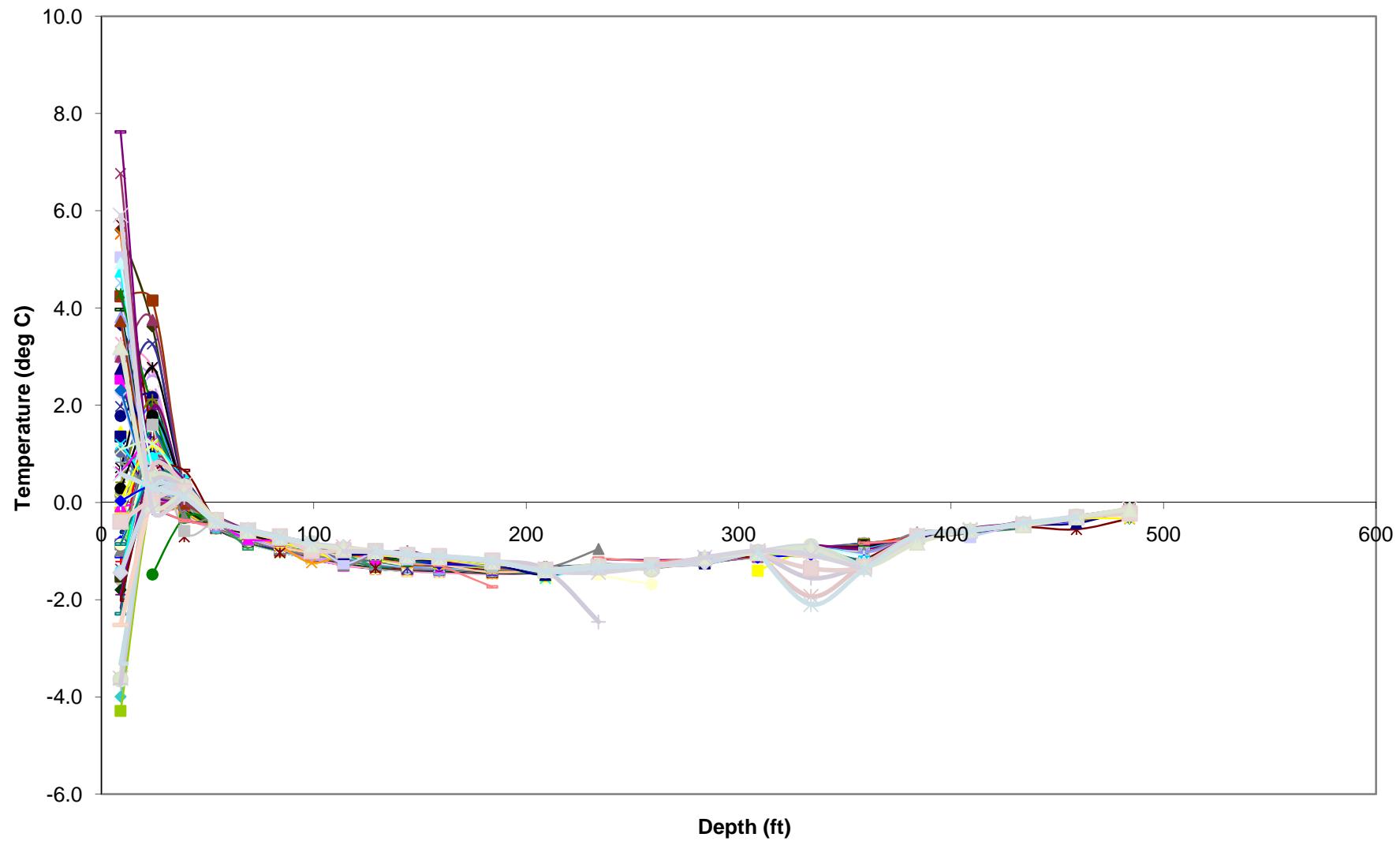


T-96-012S - Temperature at 55 feet

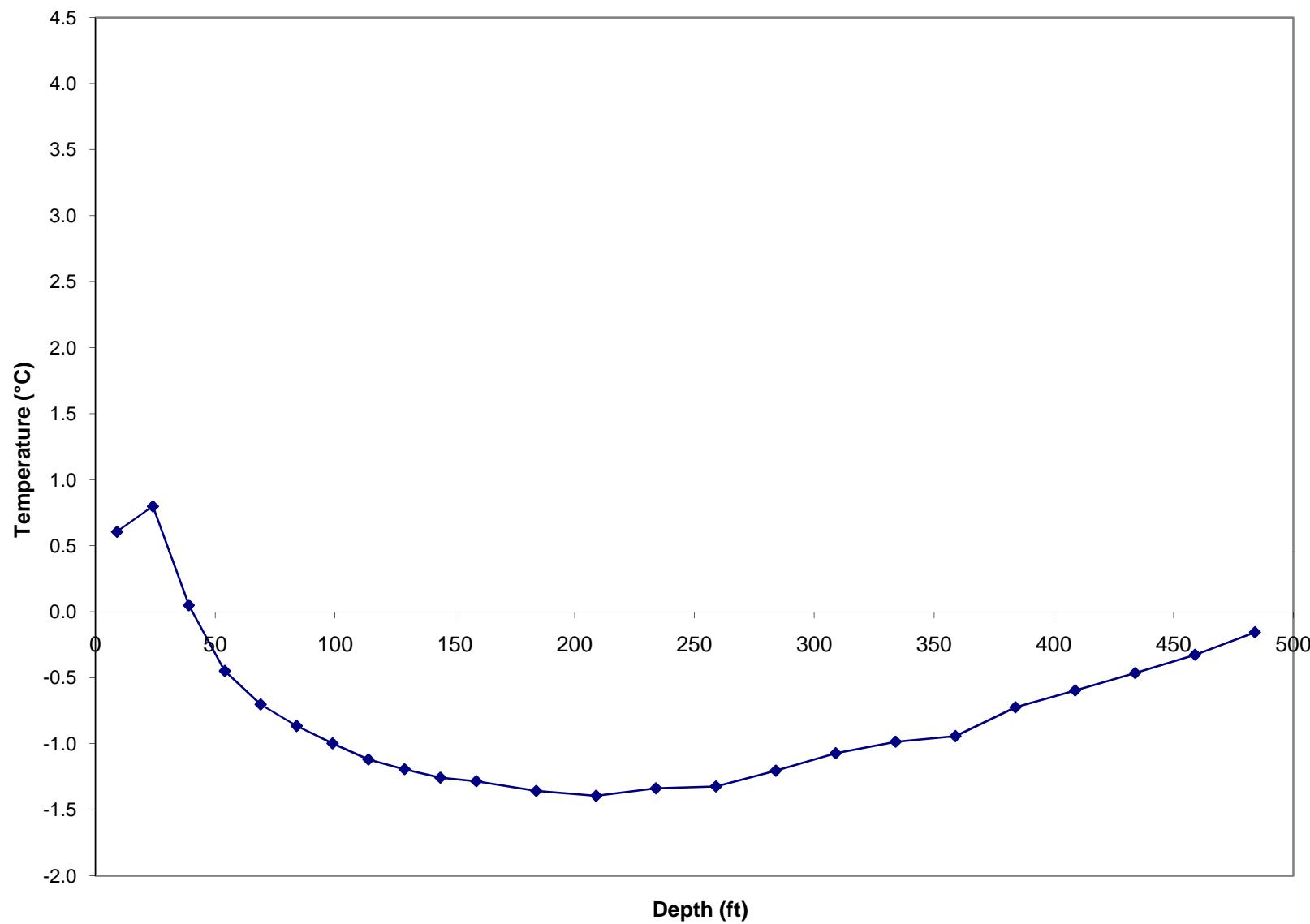


T-96-013

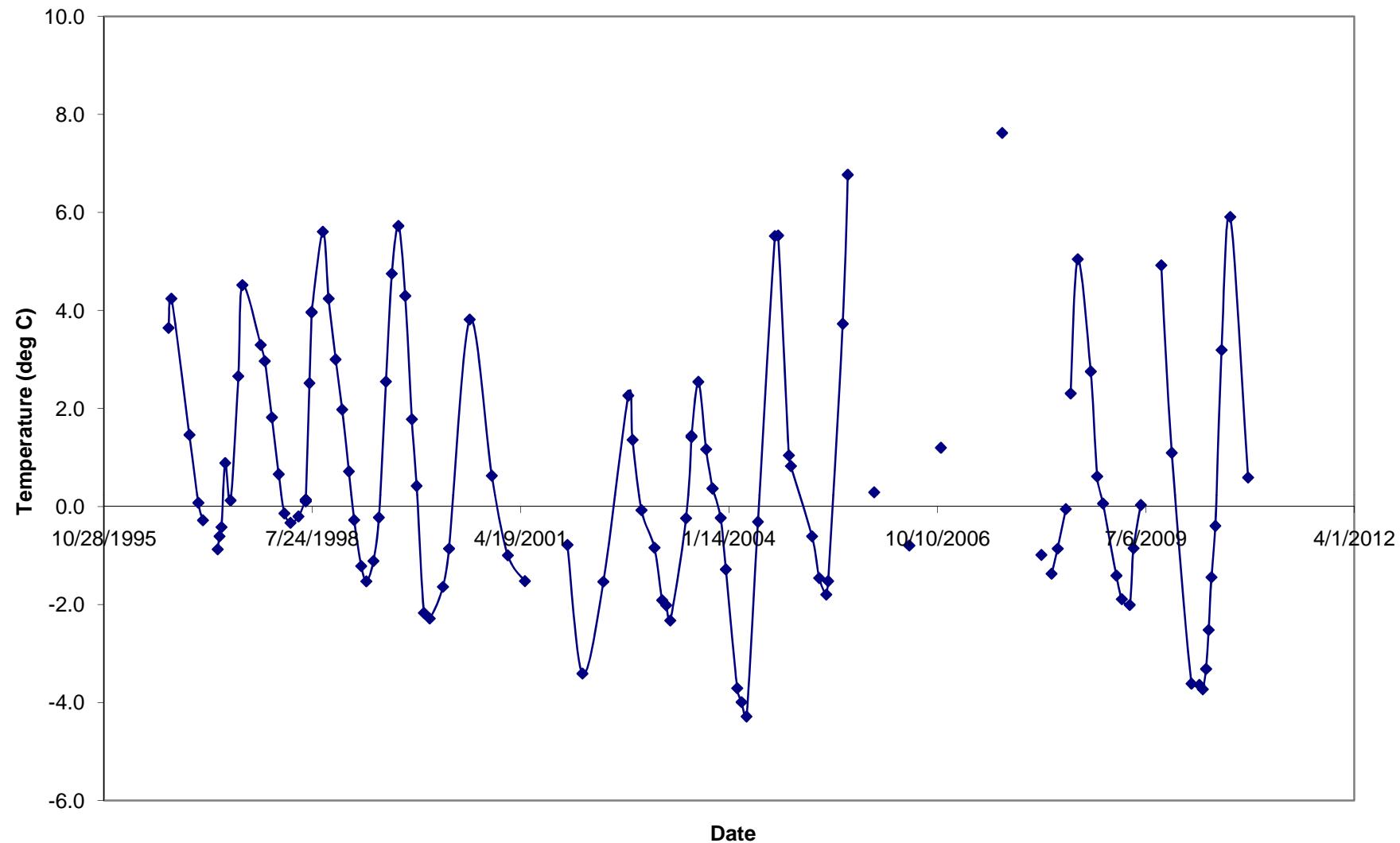
Temperature Depth Plot - T-96-013



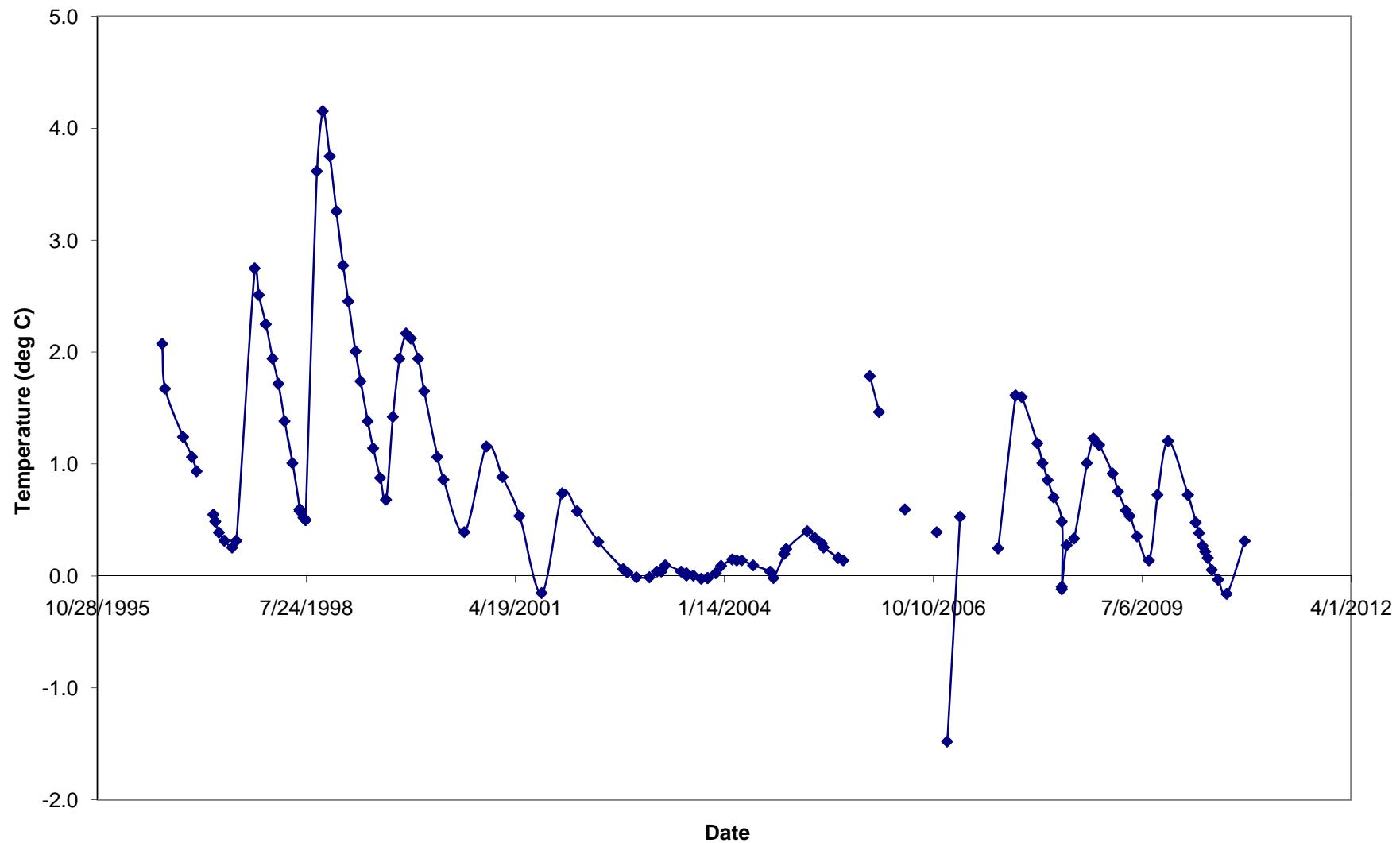
Average Temperature Depth Plot for T-96-013



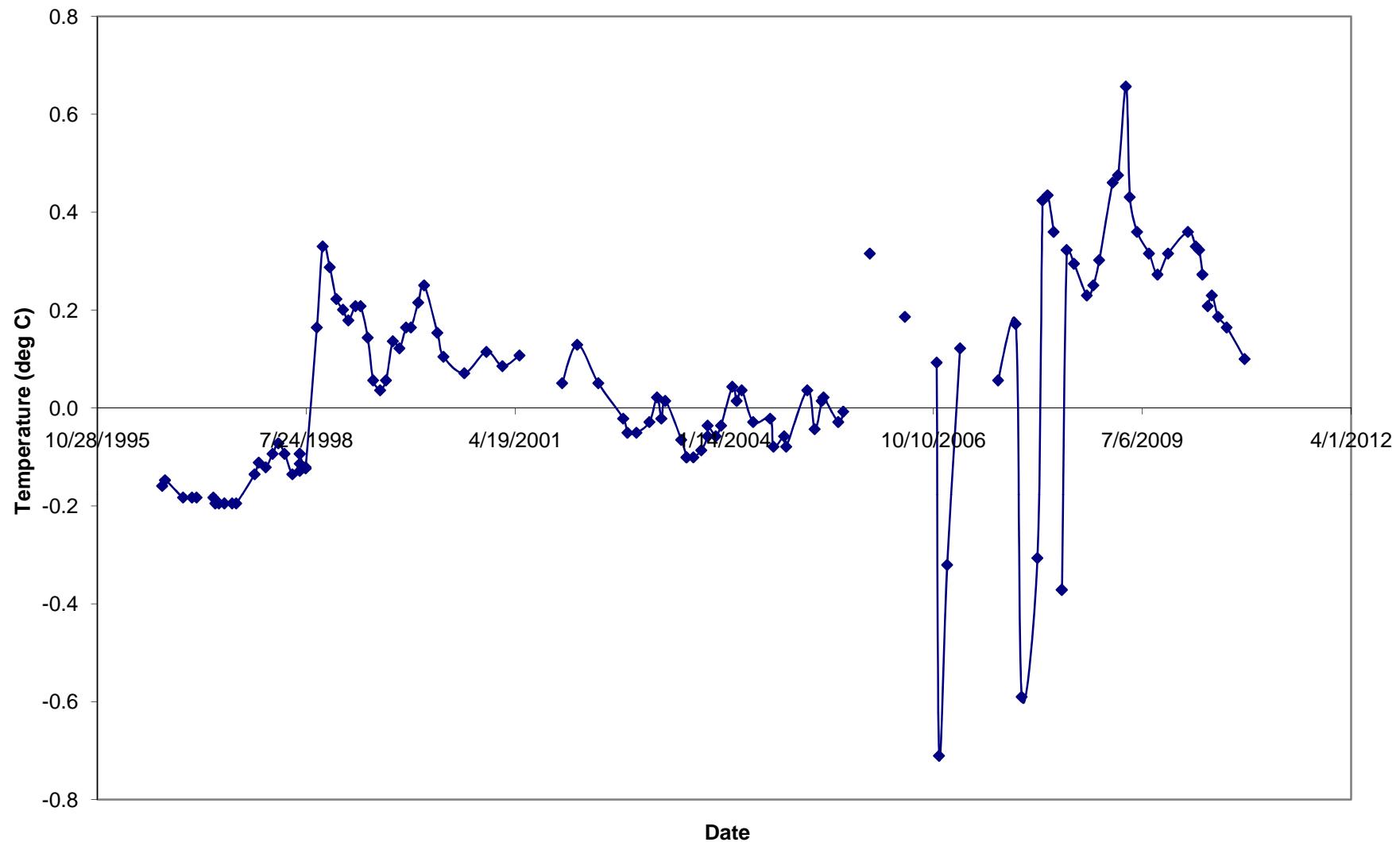
T-96-013 Temperature at 9 feet



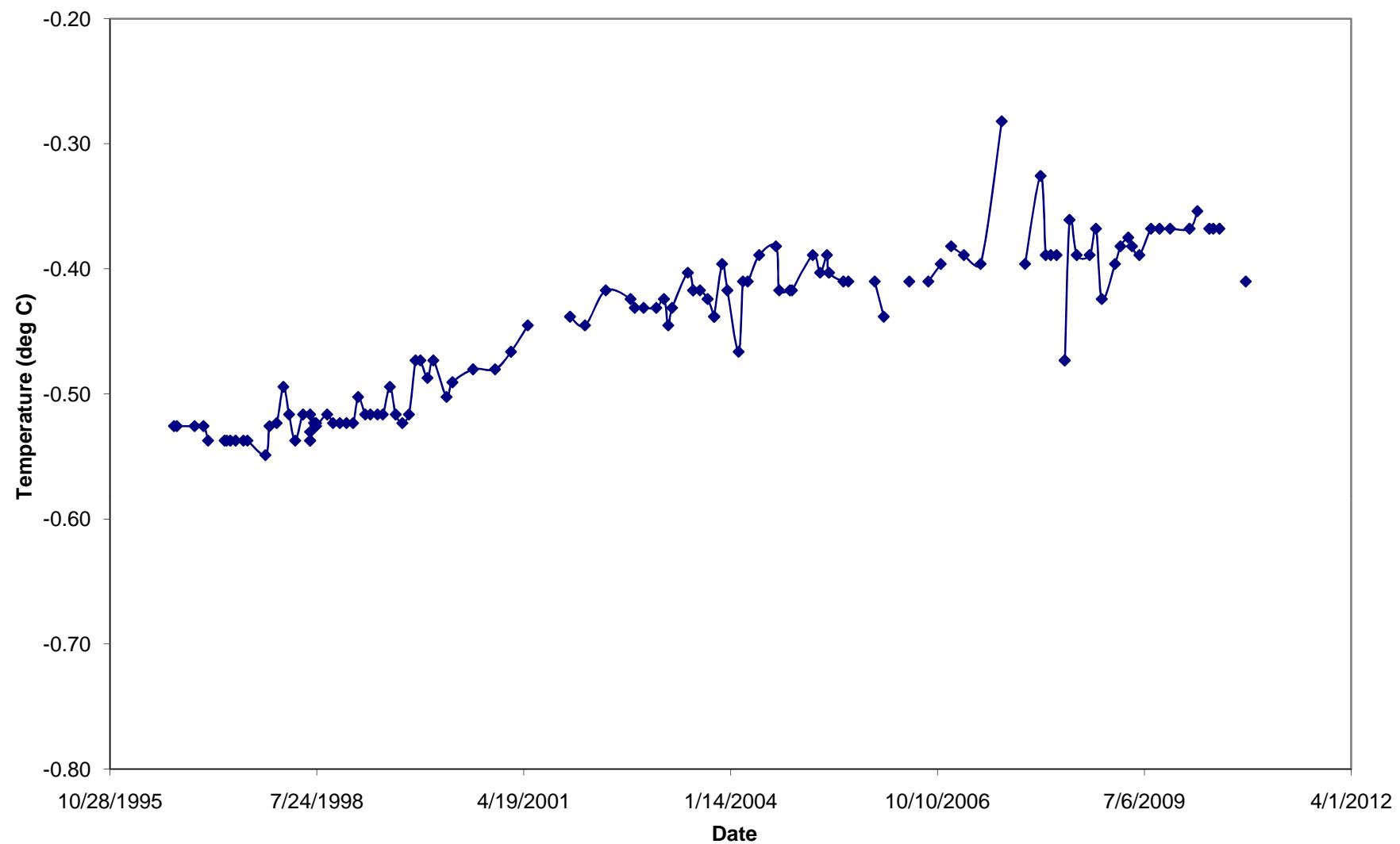
T-96-013 Temperature at 24 feet



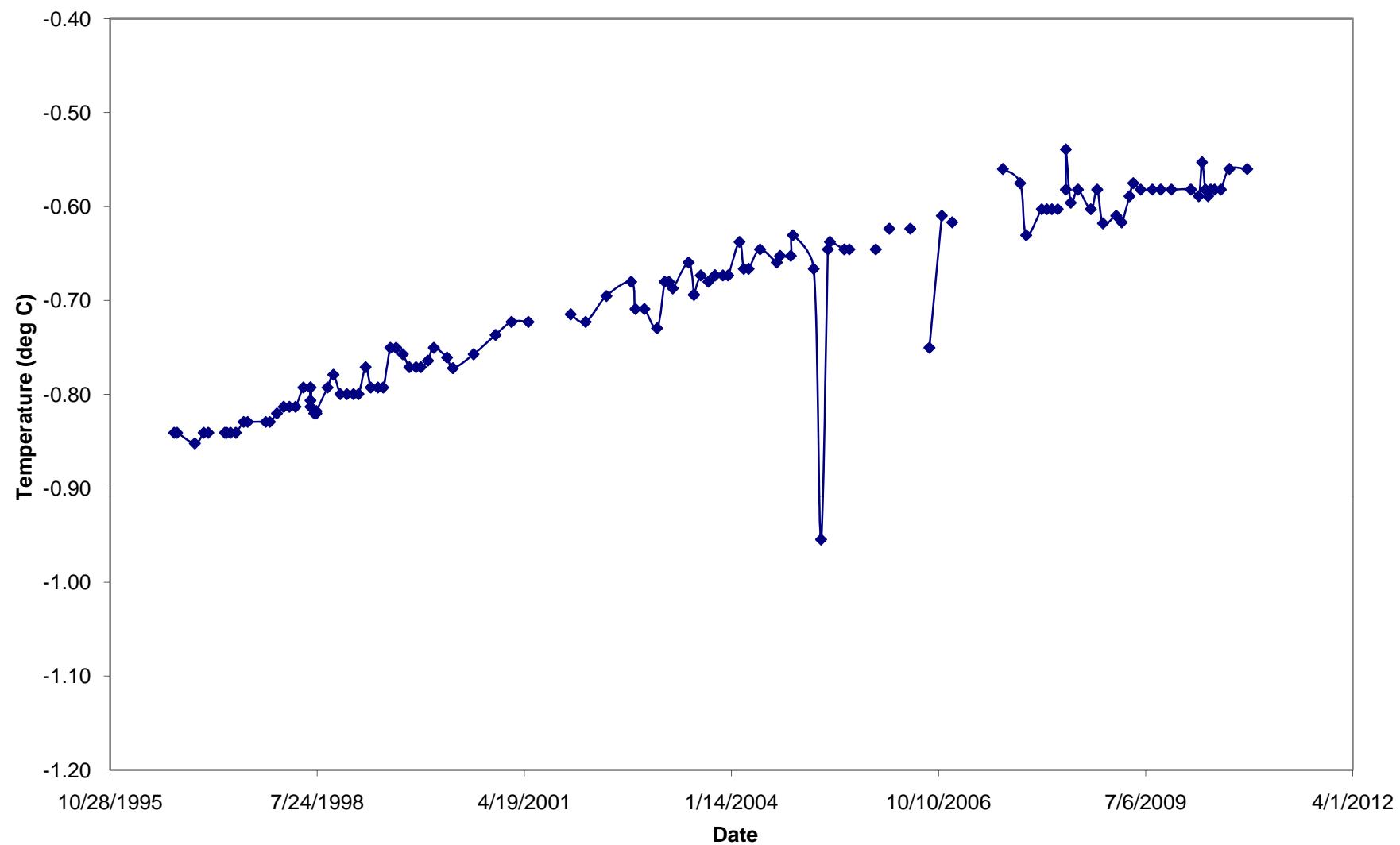
T-96-013 Temperature at 39 feet



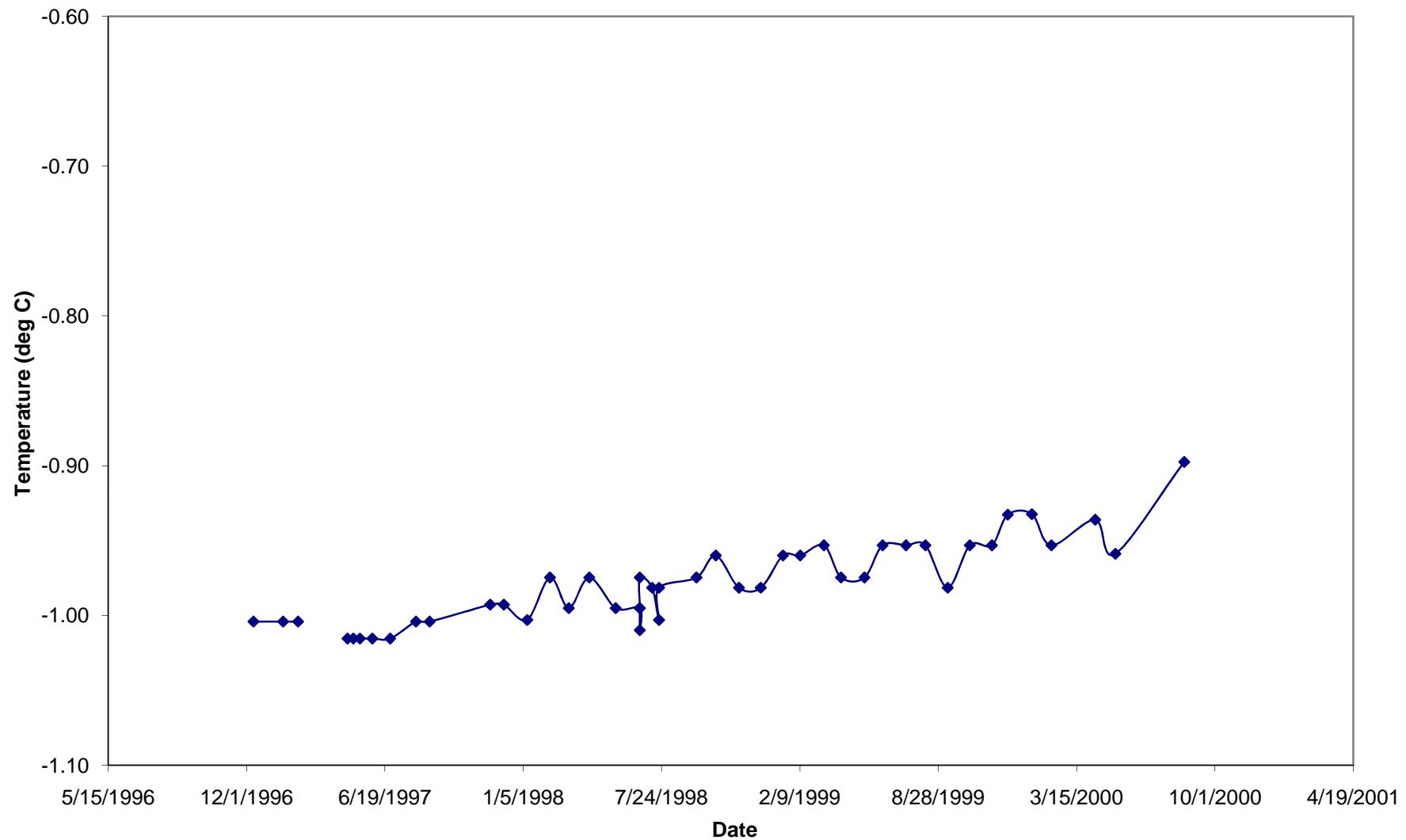
T-96-013 Temperature at 54 feet



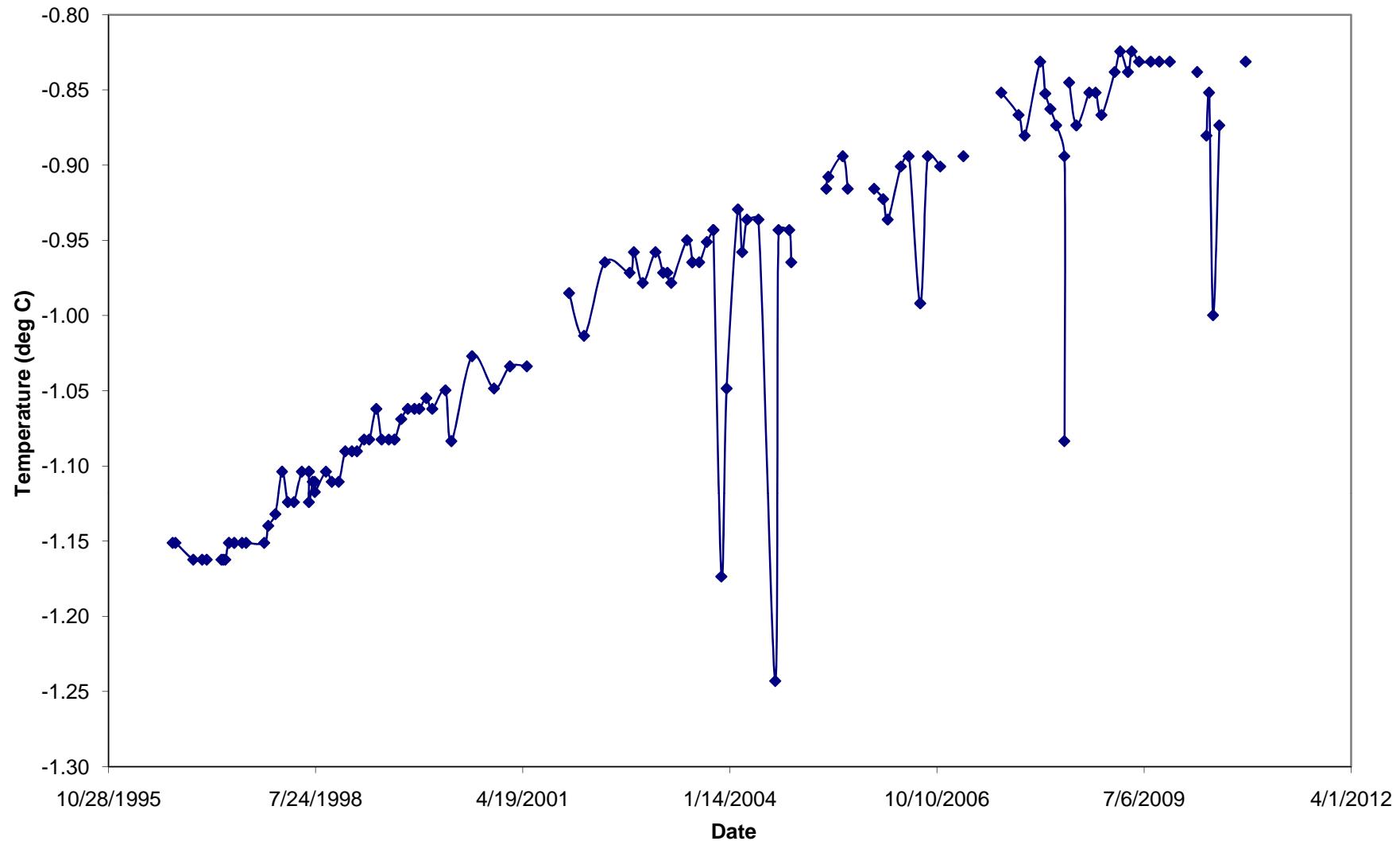
T-96-013 Temperature at 69 feet



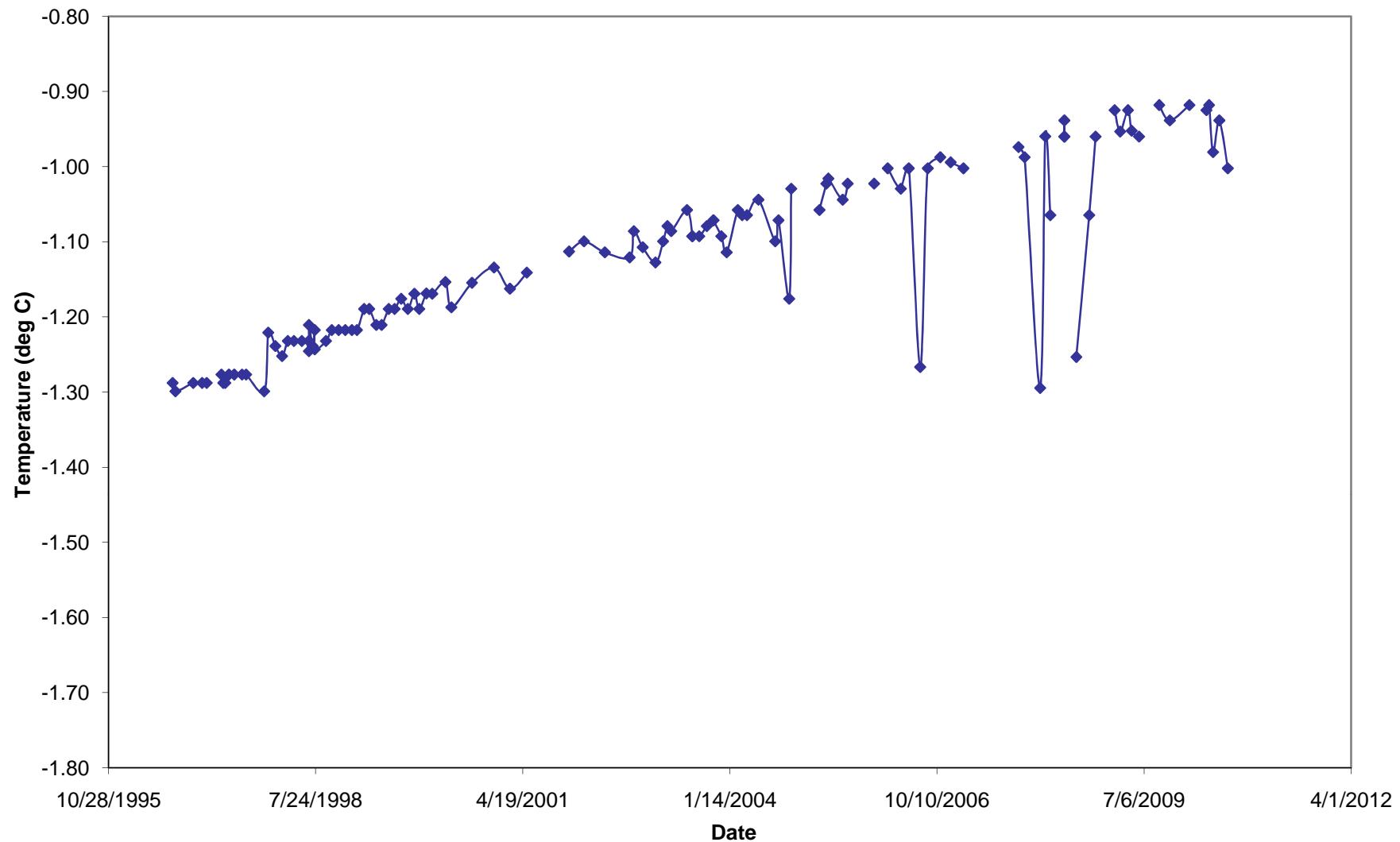
T-96-013 Temperature at 84 feet



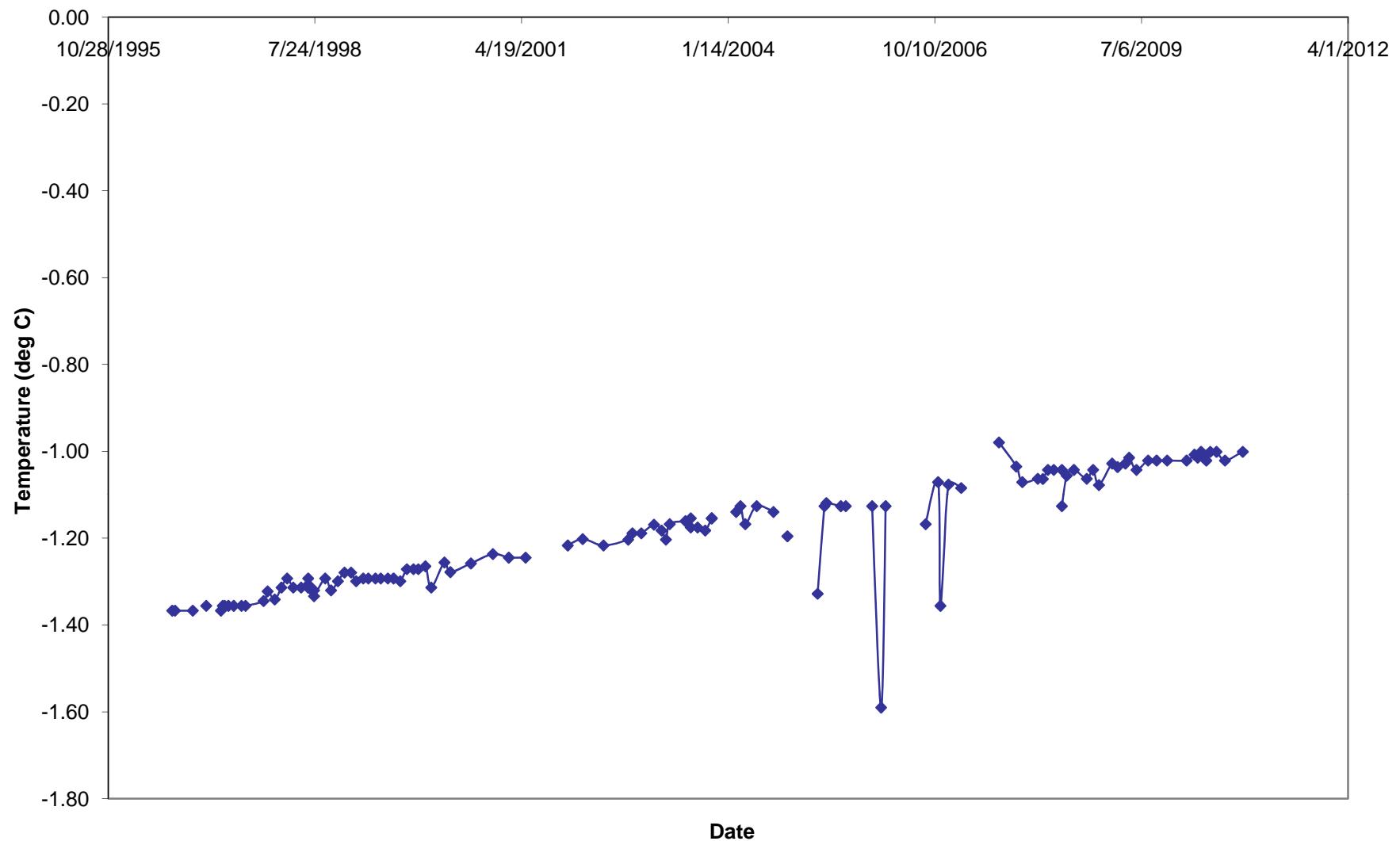
T-96-013 Temperature at 99 feet



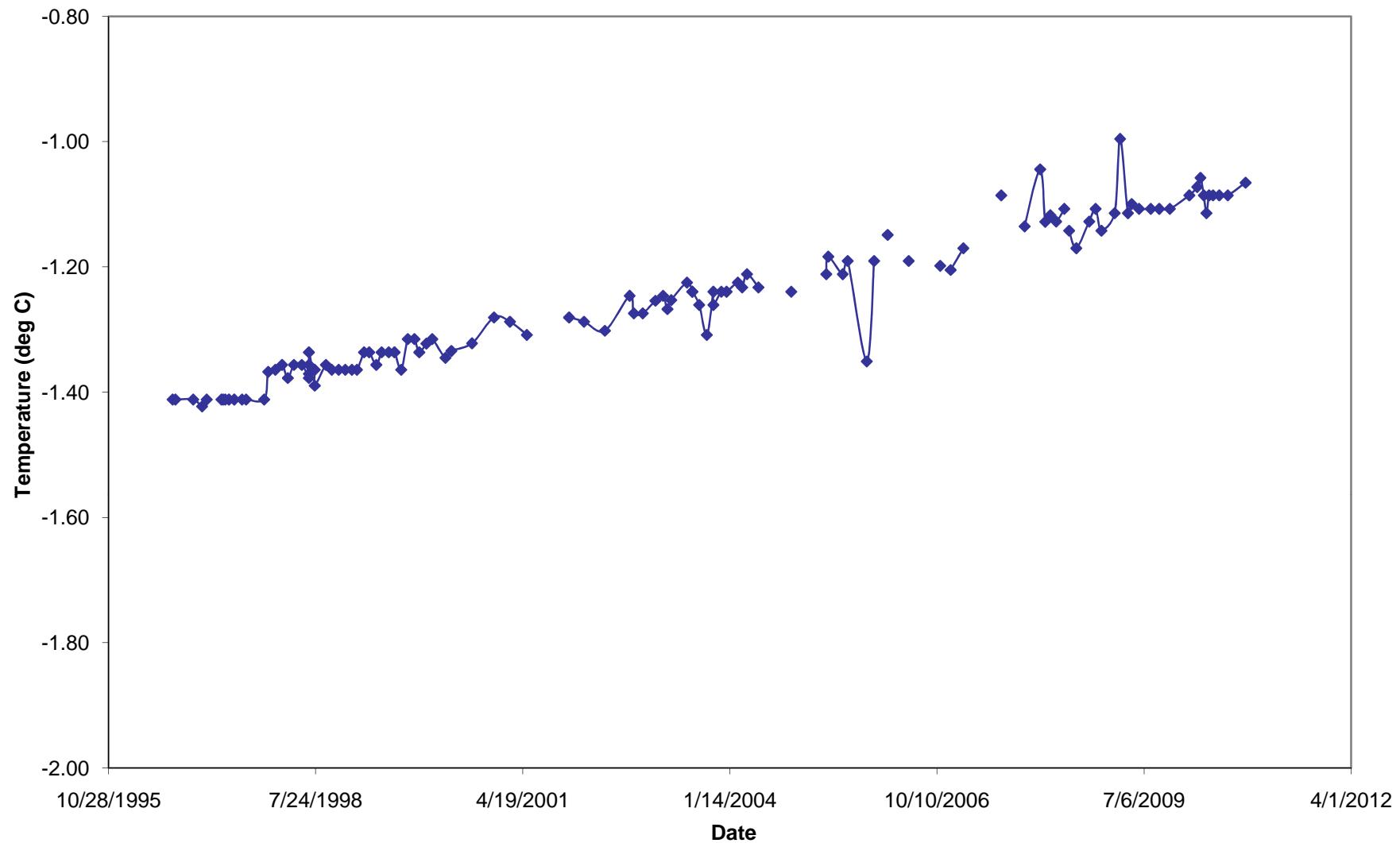
T-96-013 Temperature at 114 feet



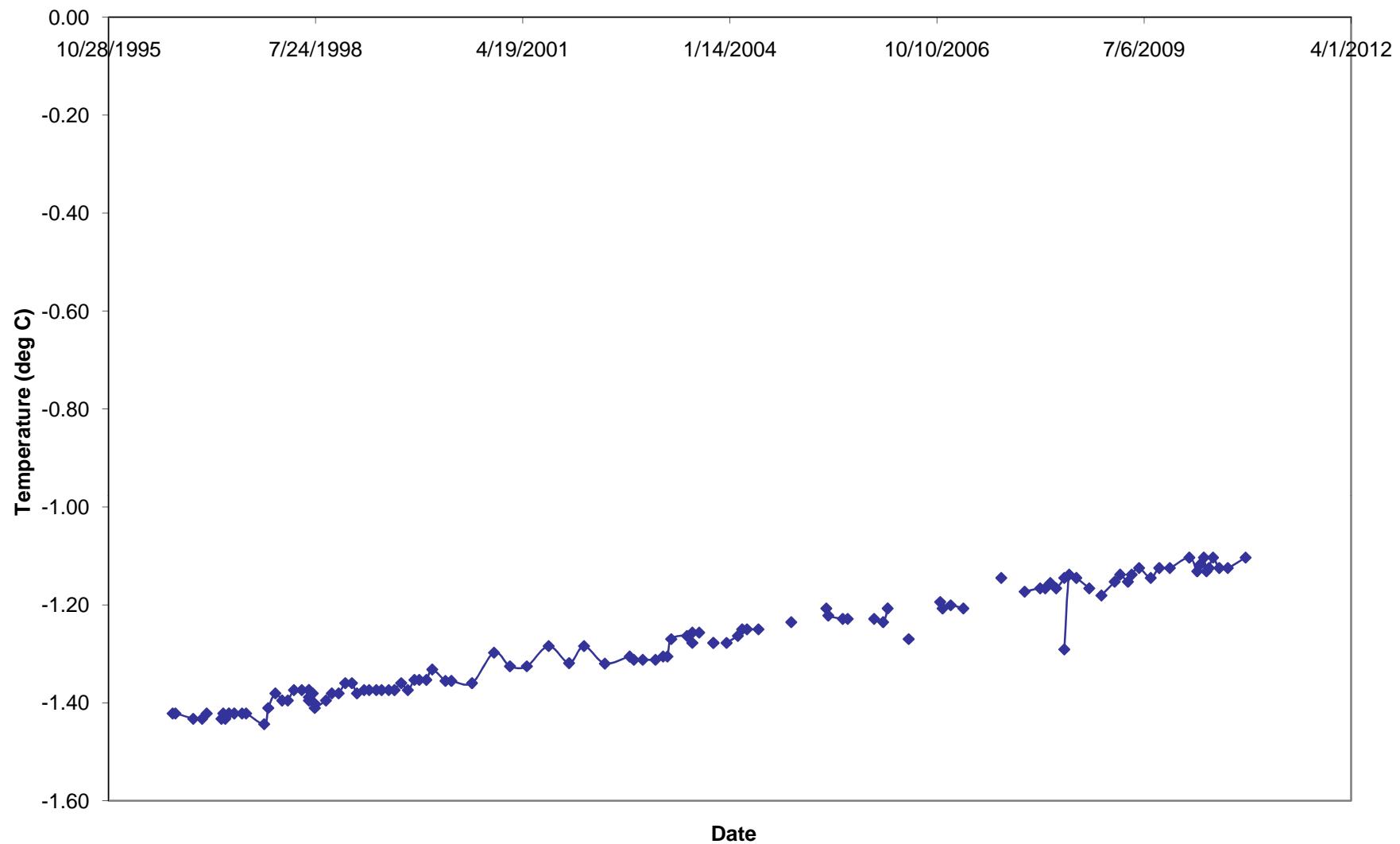
T-96-013 Temperature at 129 feet



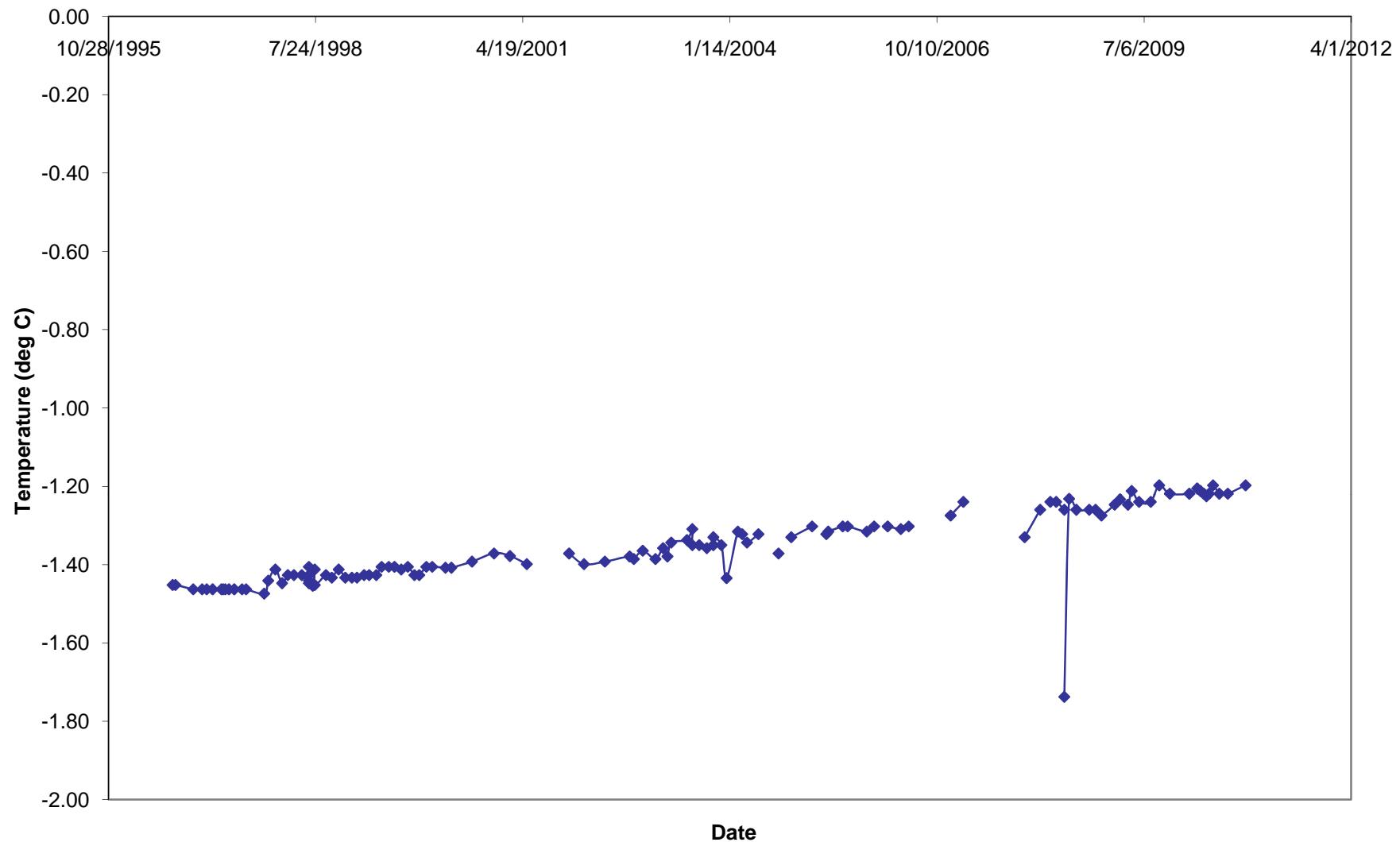
T-96-013 Temperature at 144 feet



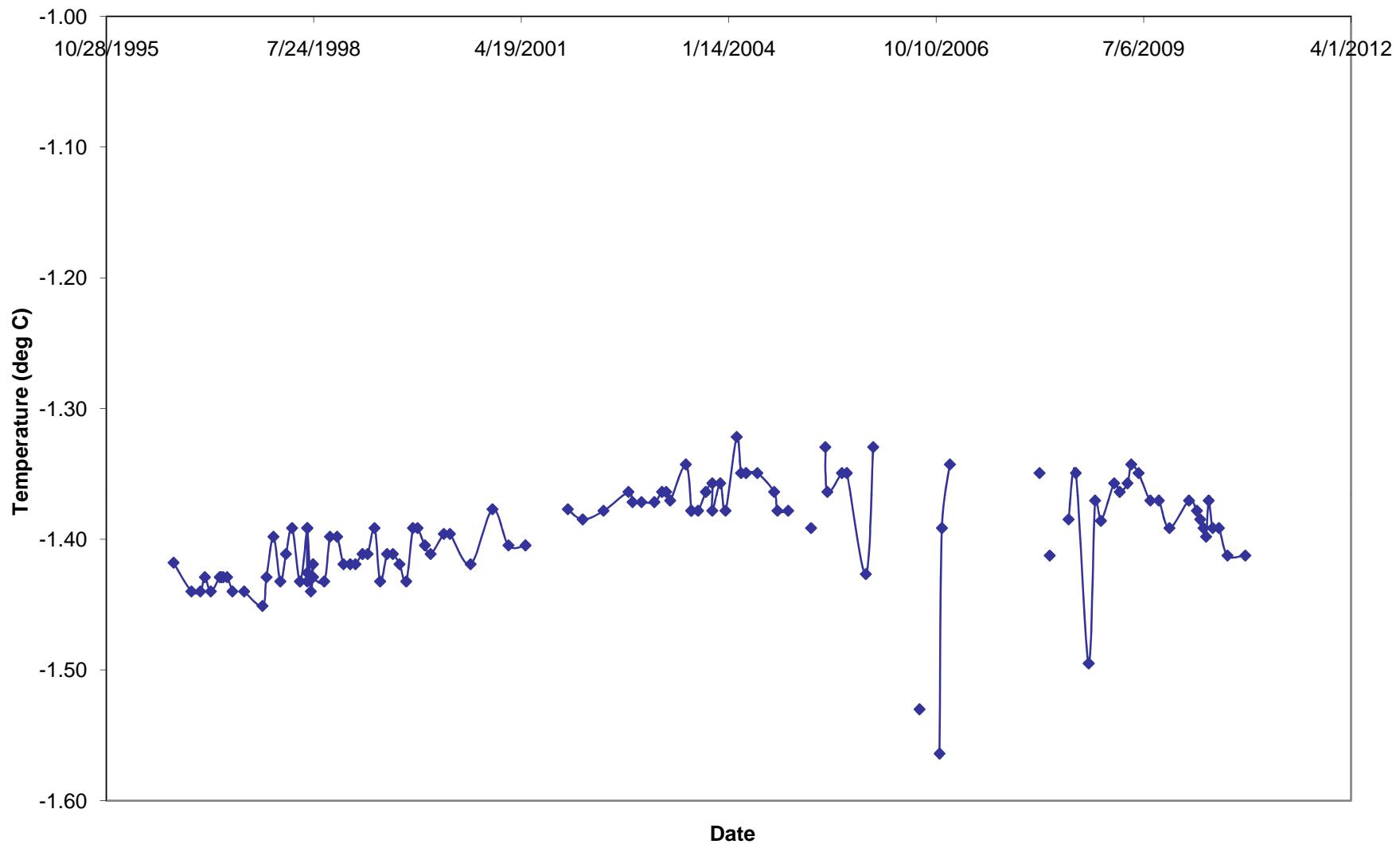
T-96-013 Temperature at 159 feet



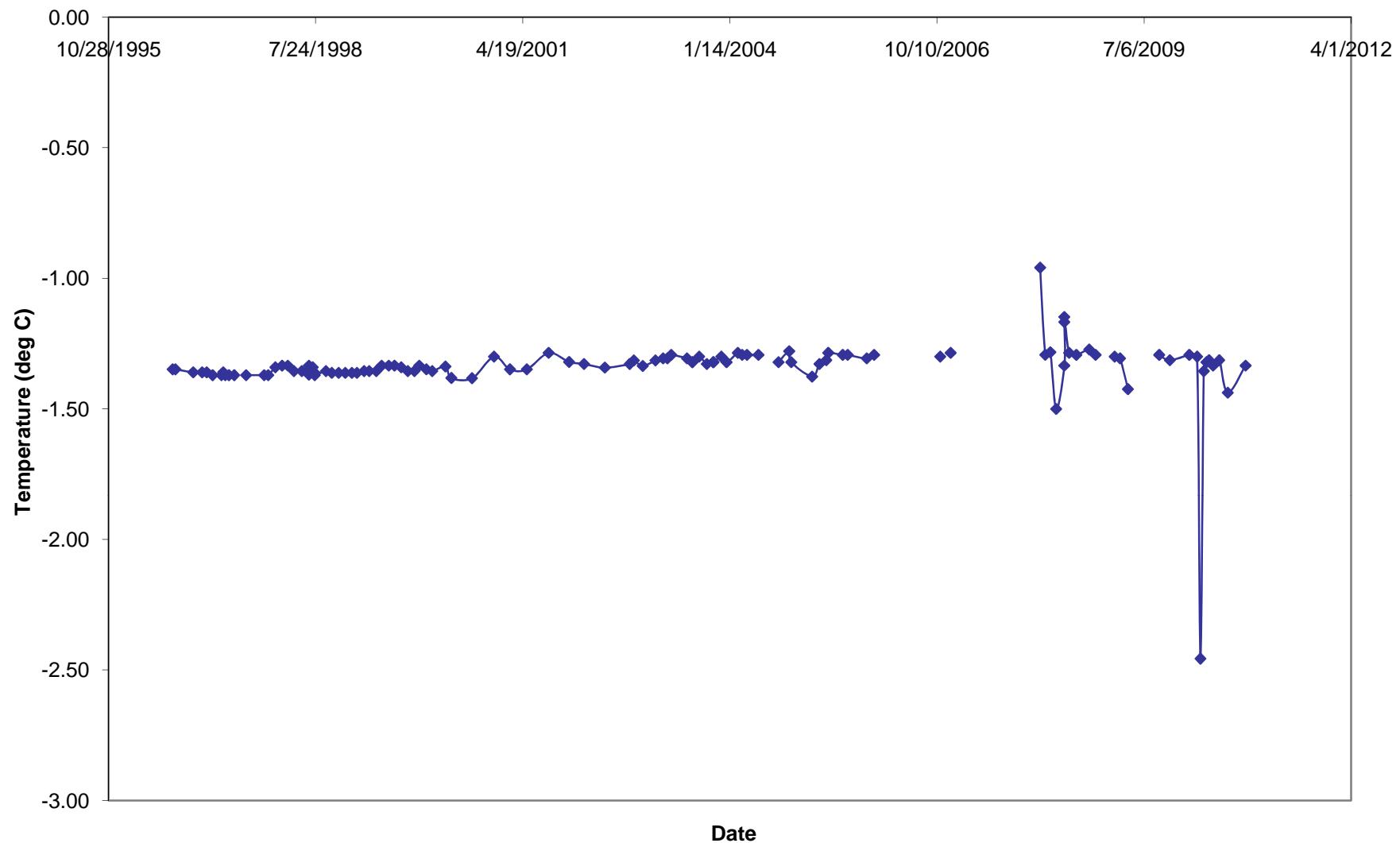
T-96-013 Temperature at 184 feet



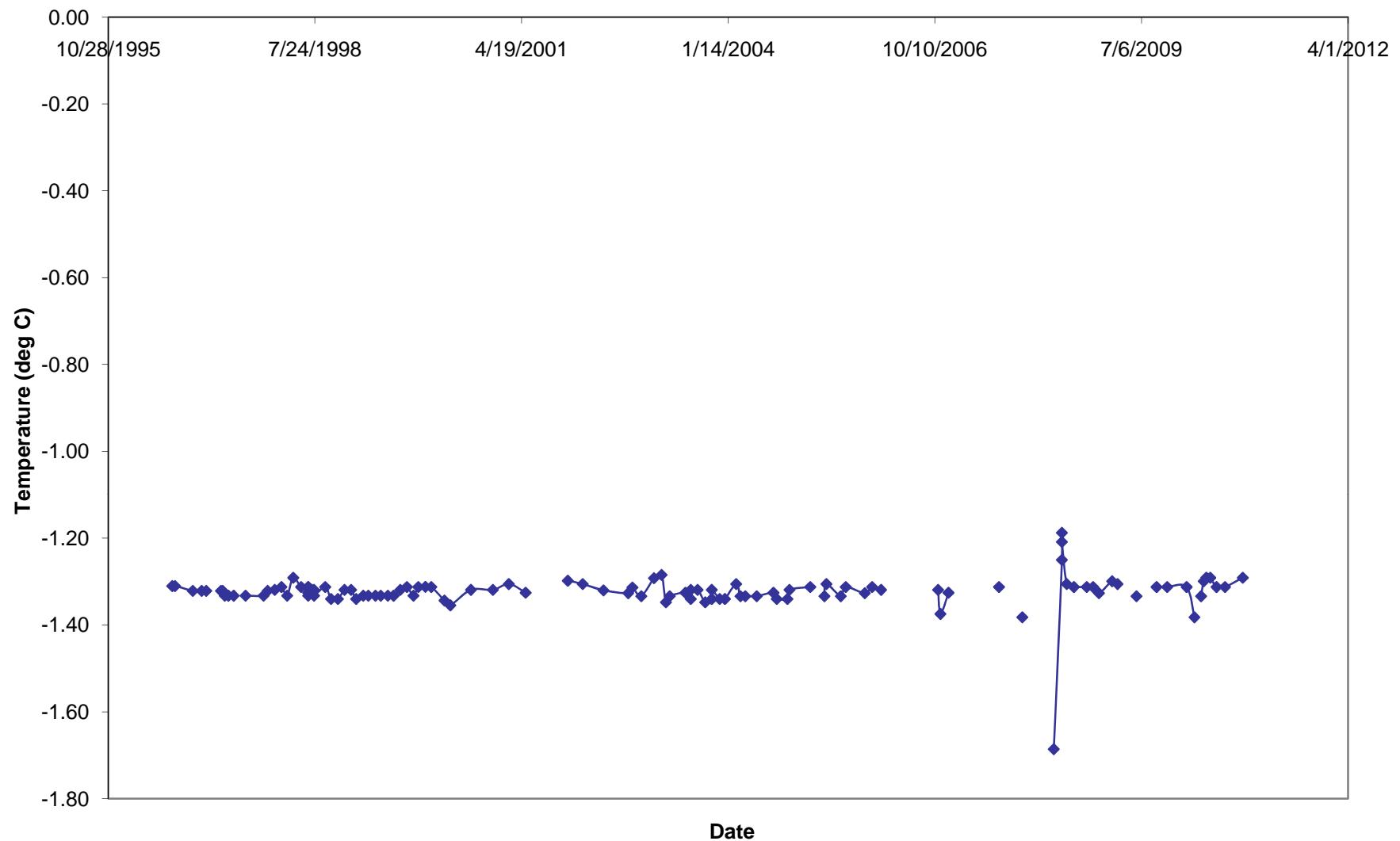
T-96-013 Temperature at 209 feet



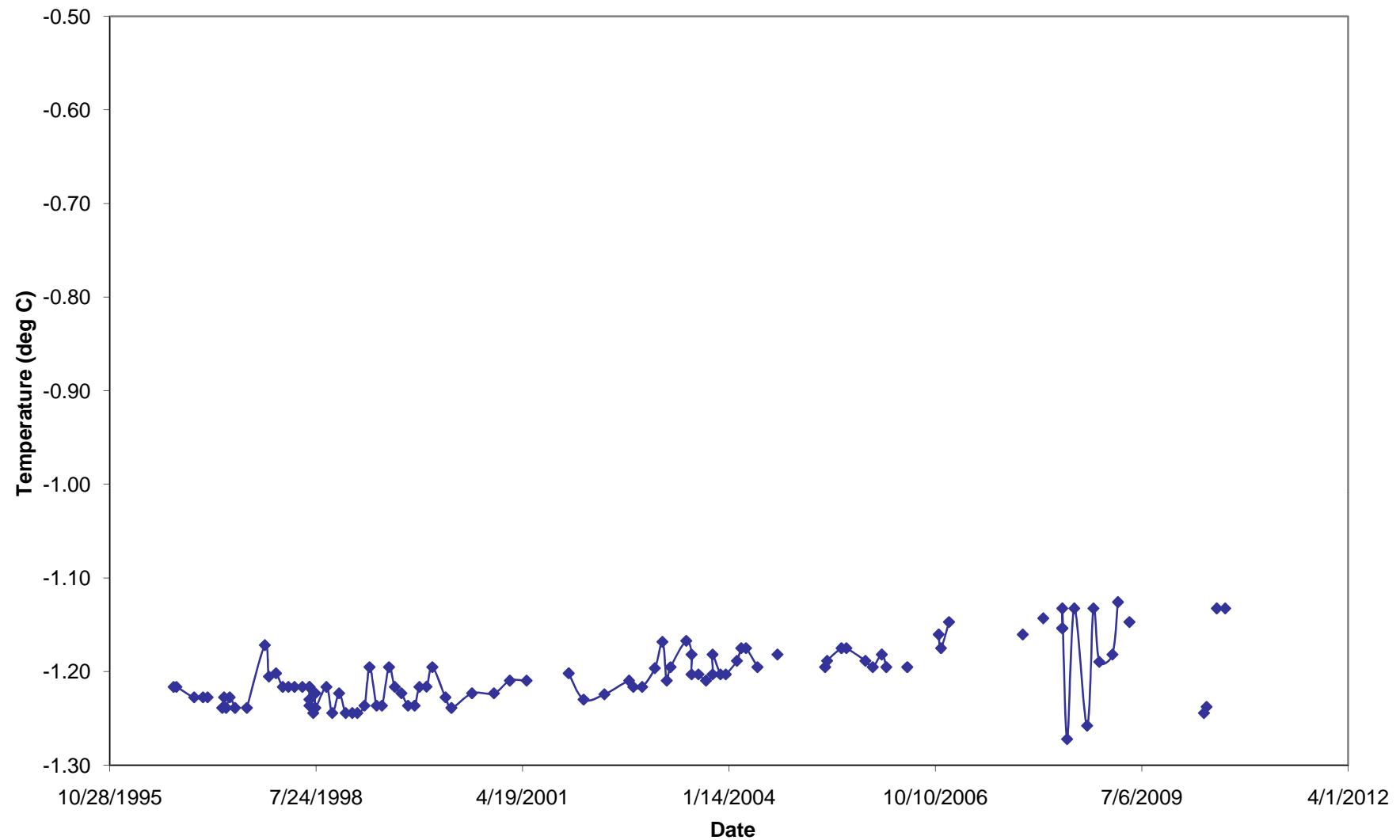
T-96-013 Temperature at 234 feet



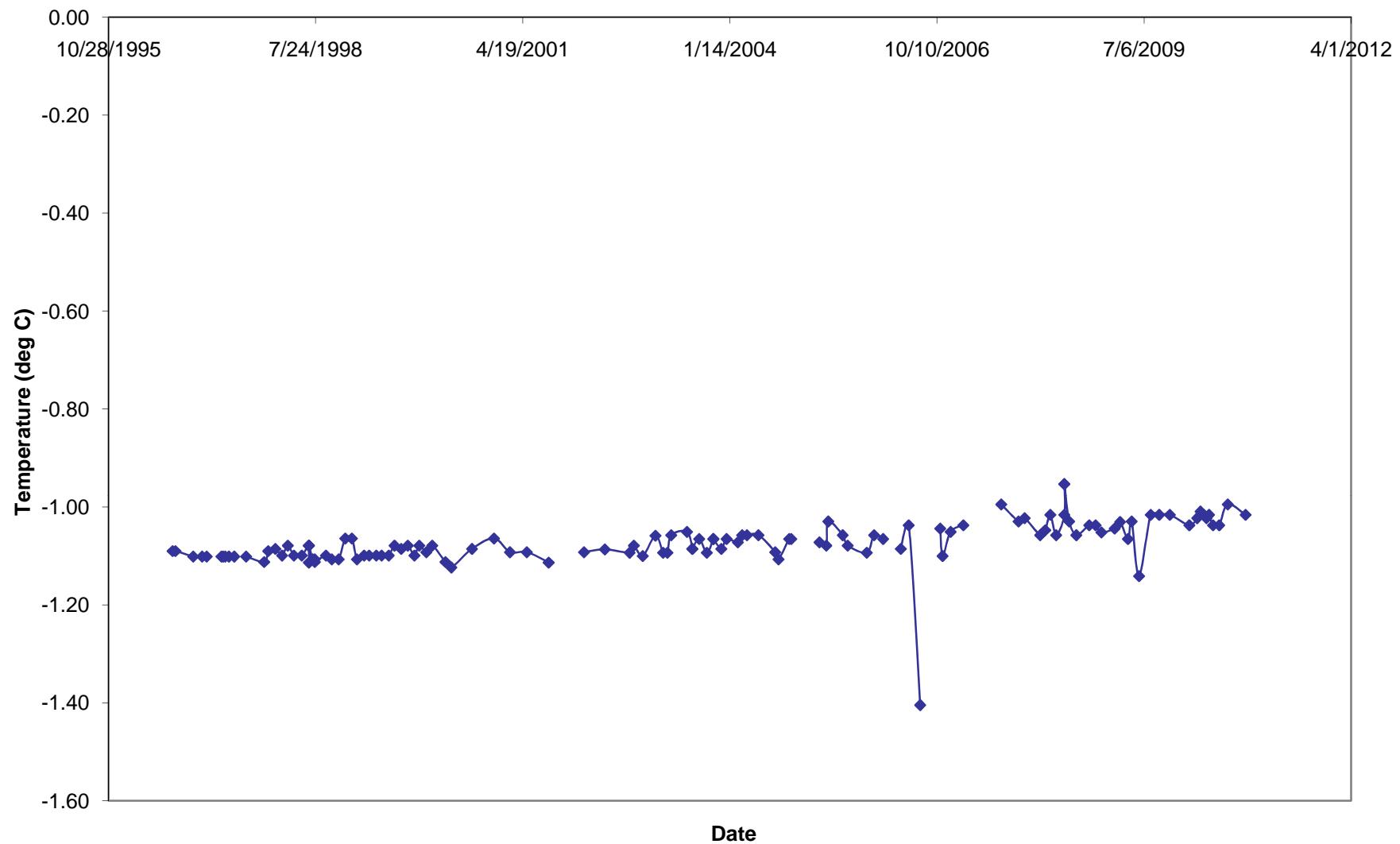
T-96-013 Temperature at 259 feet



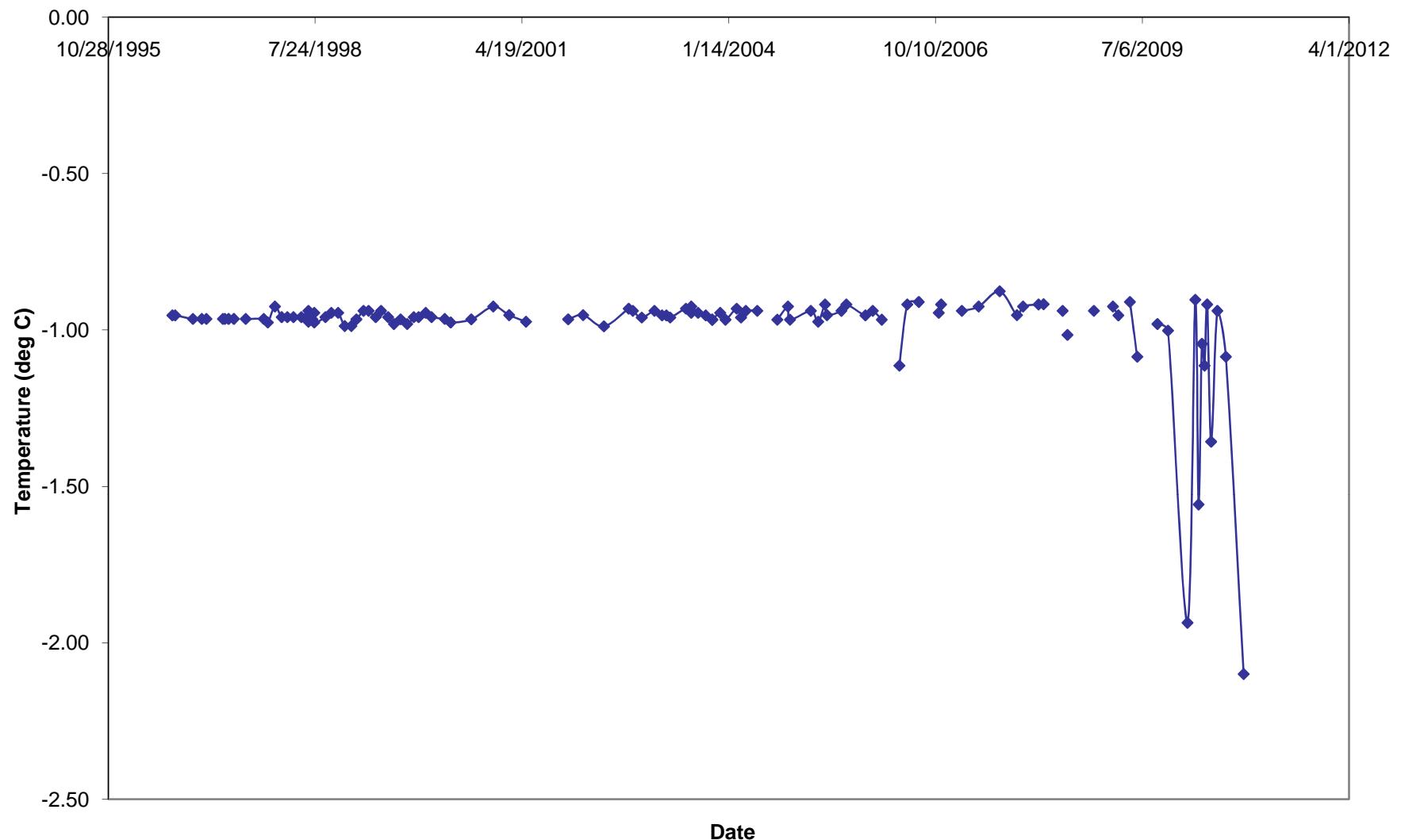
T-96-013 Temperature at 284 feet



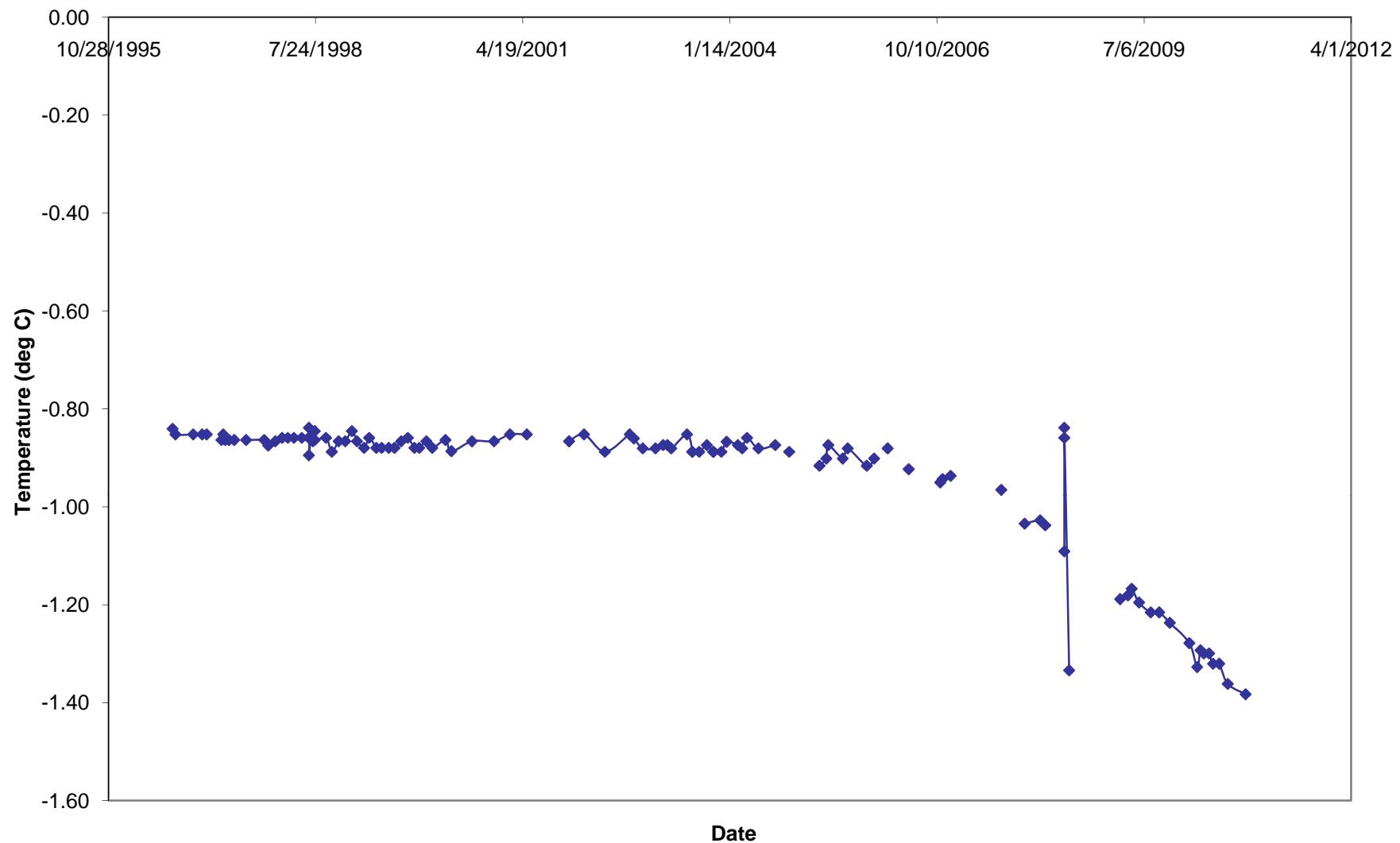
T-96-013 Temperature at 309 feet



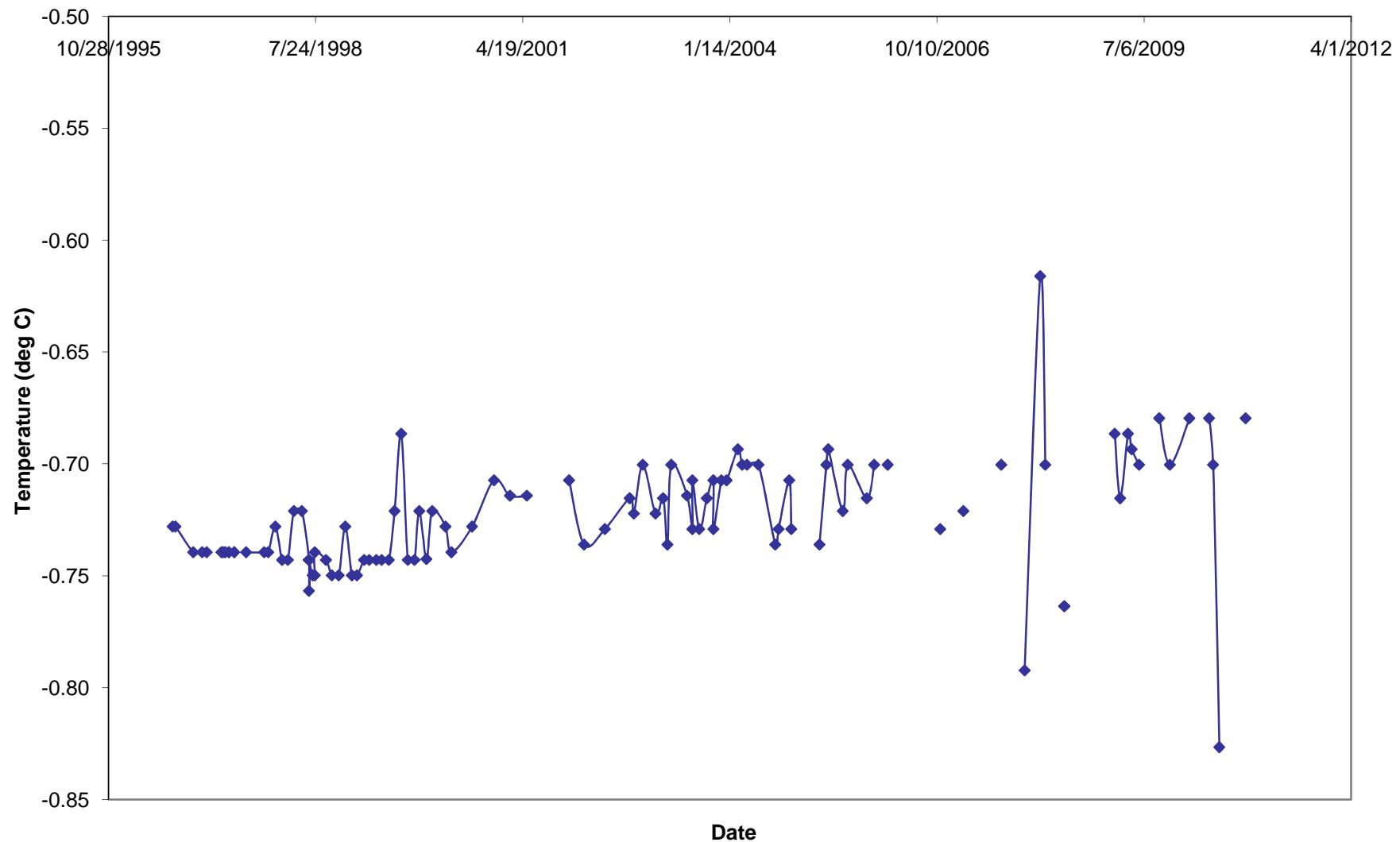
T-96-013 Temperature at 334 feet



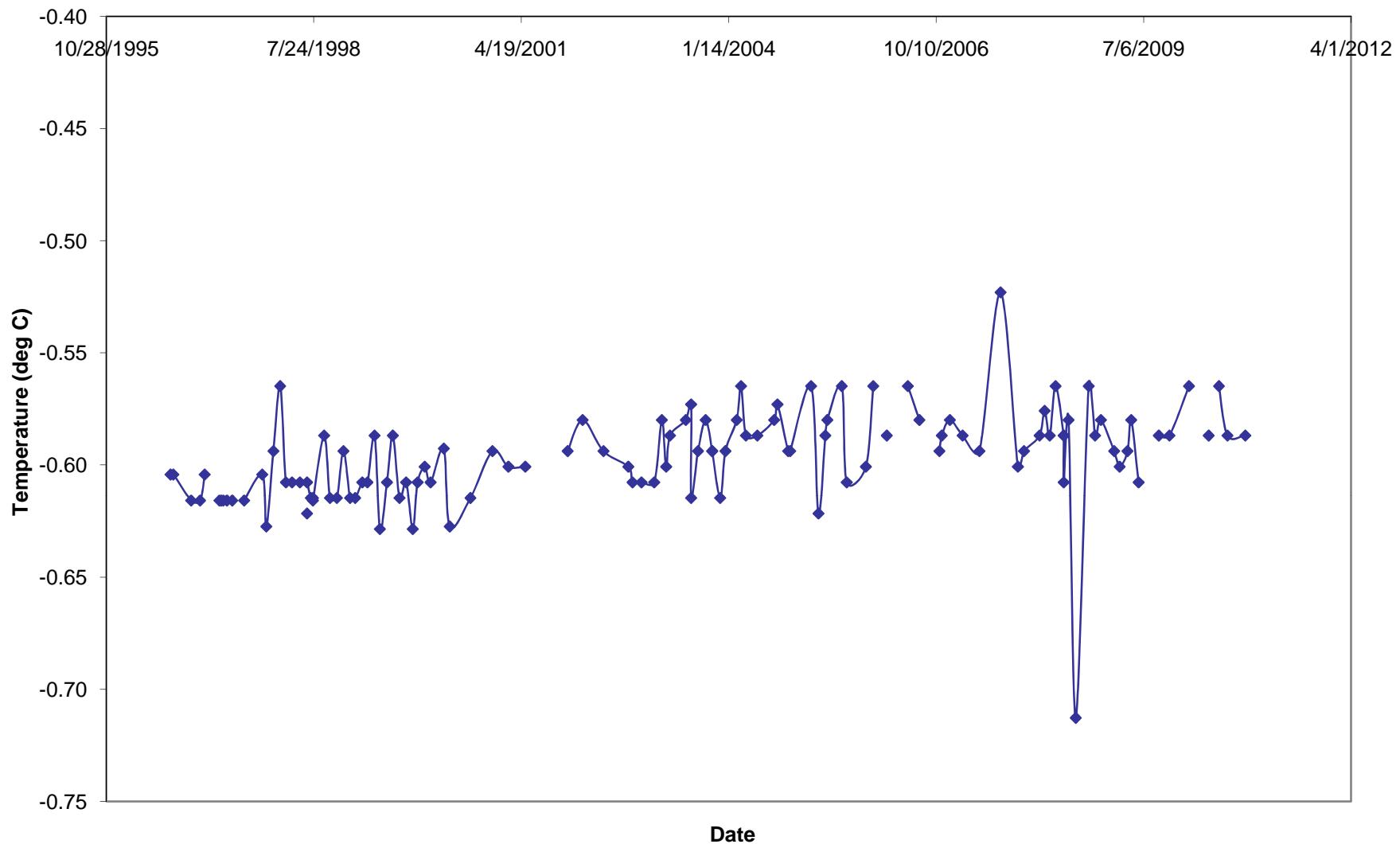
T-96-013 Temperature at 359 feet



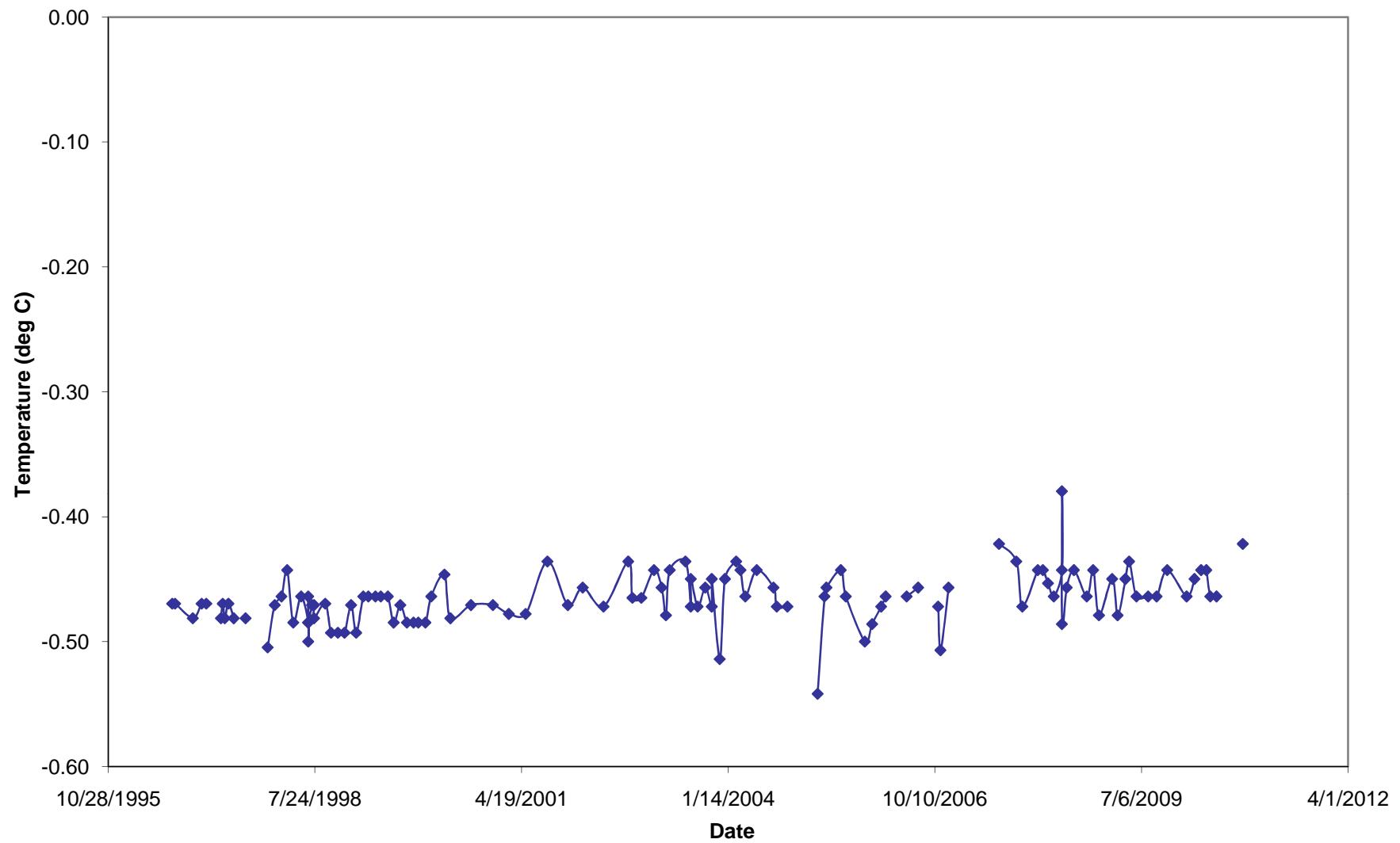
T-96-013 Temperature at 384 feet



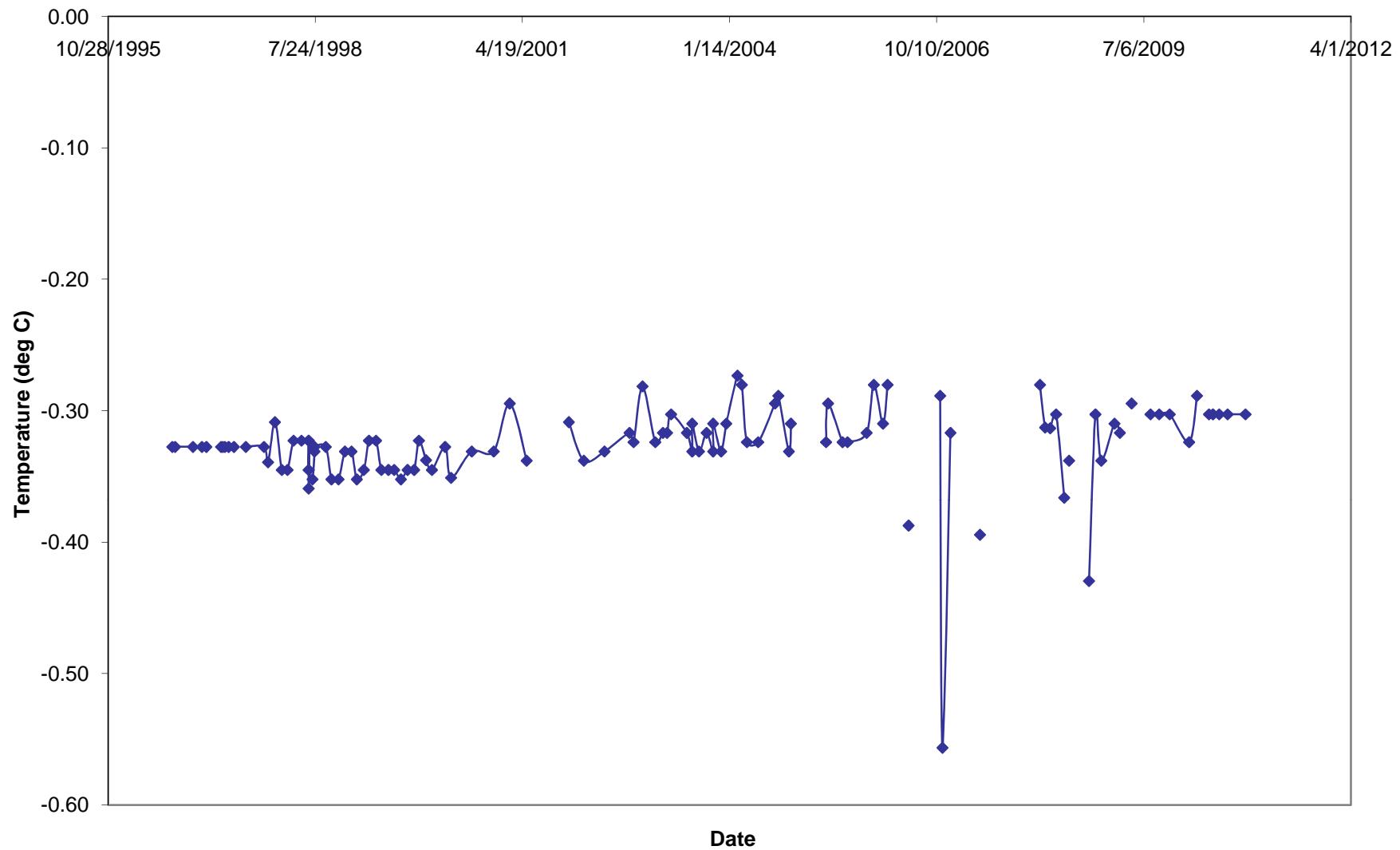
T-96-013 Temperature at 409 feet



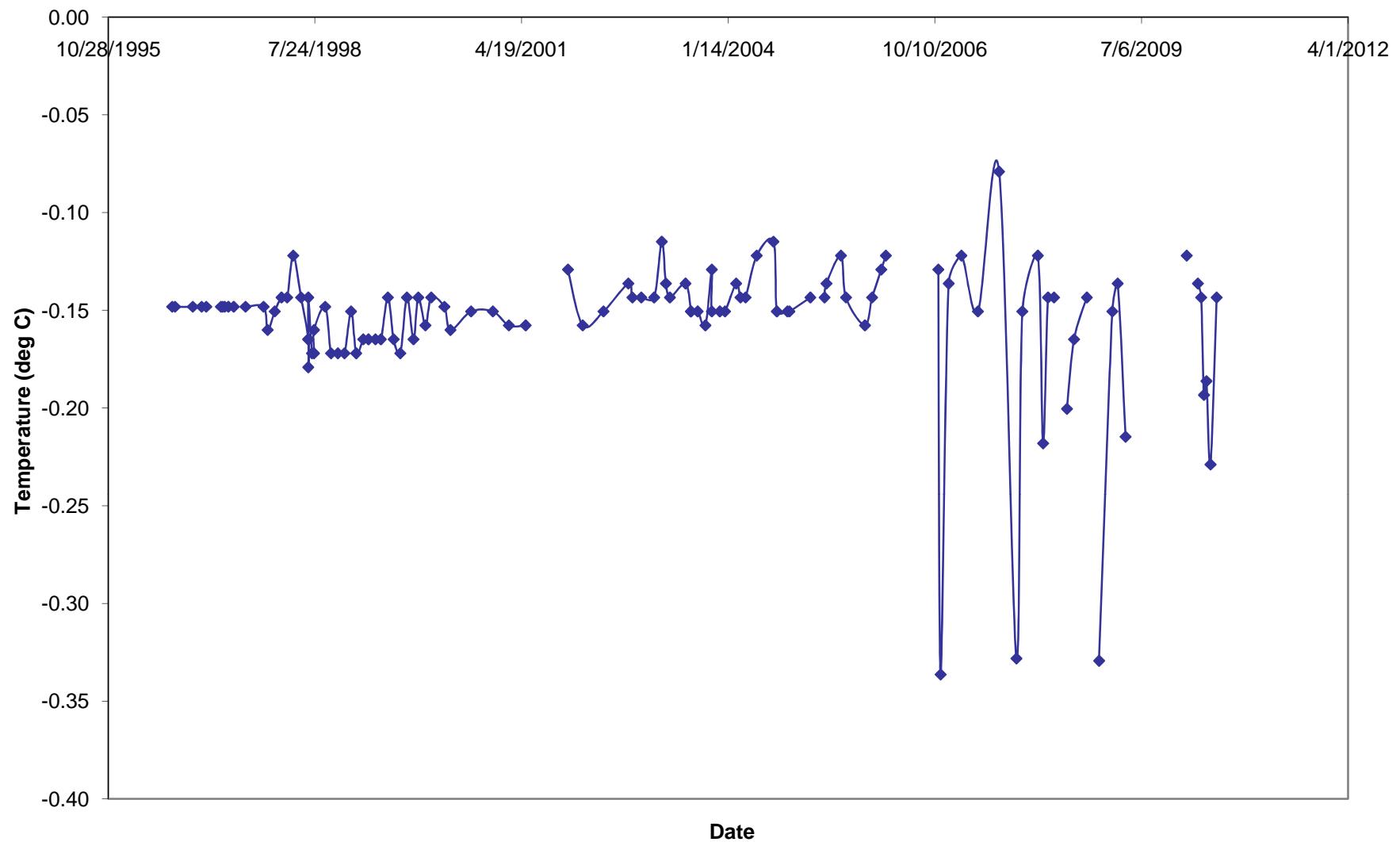
T-96-013 Temperature at 434 feet



T-96-013 Temperature at 459 feet

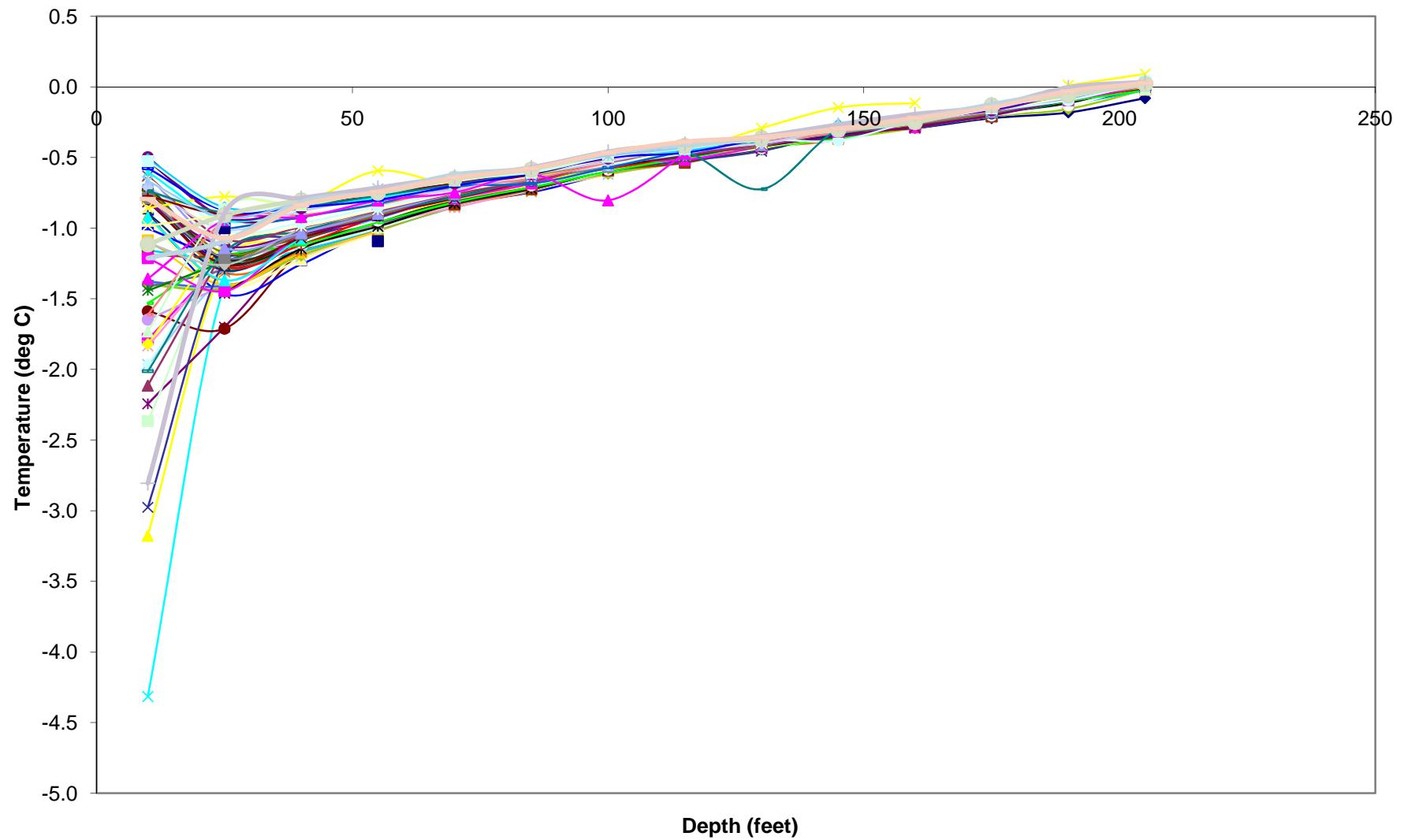


T-96-013 Temperature at 484 feet

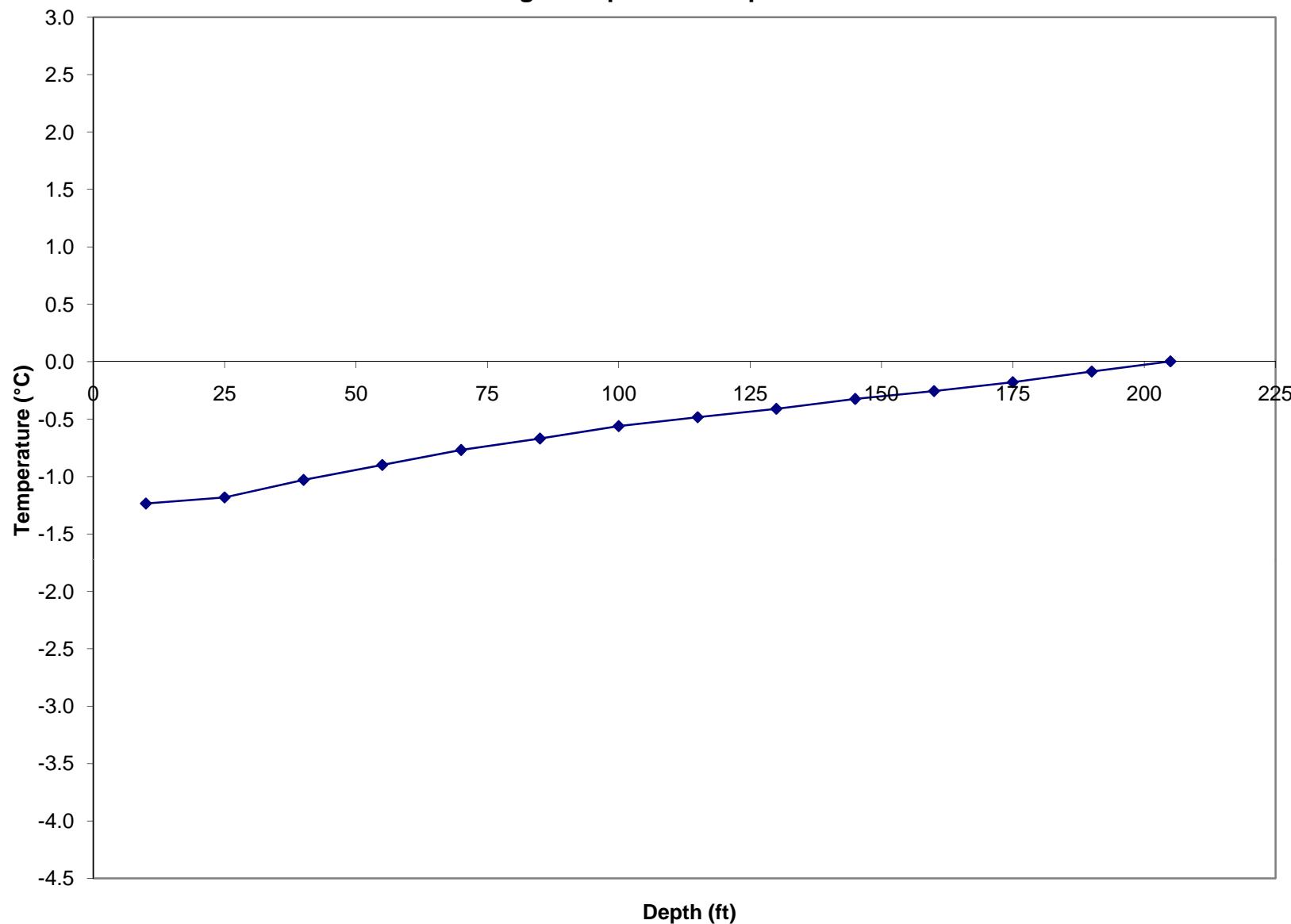


T-96-015

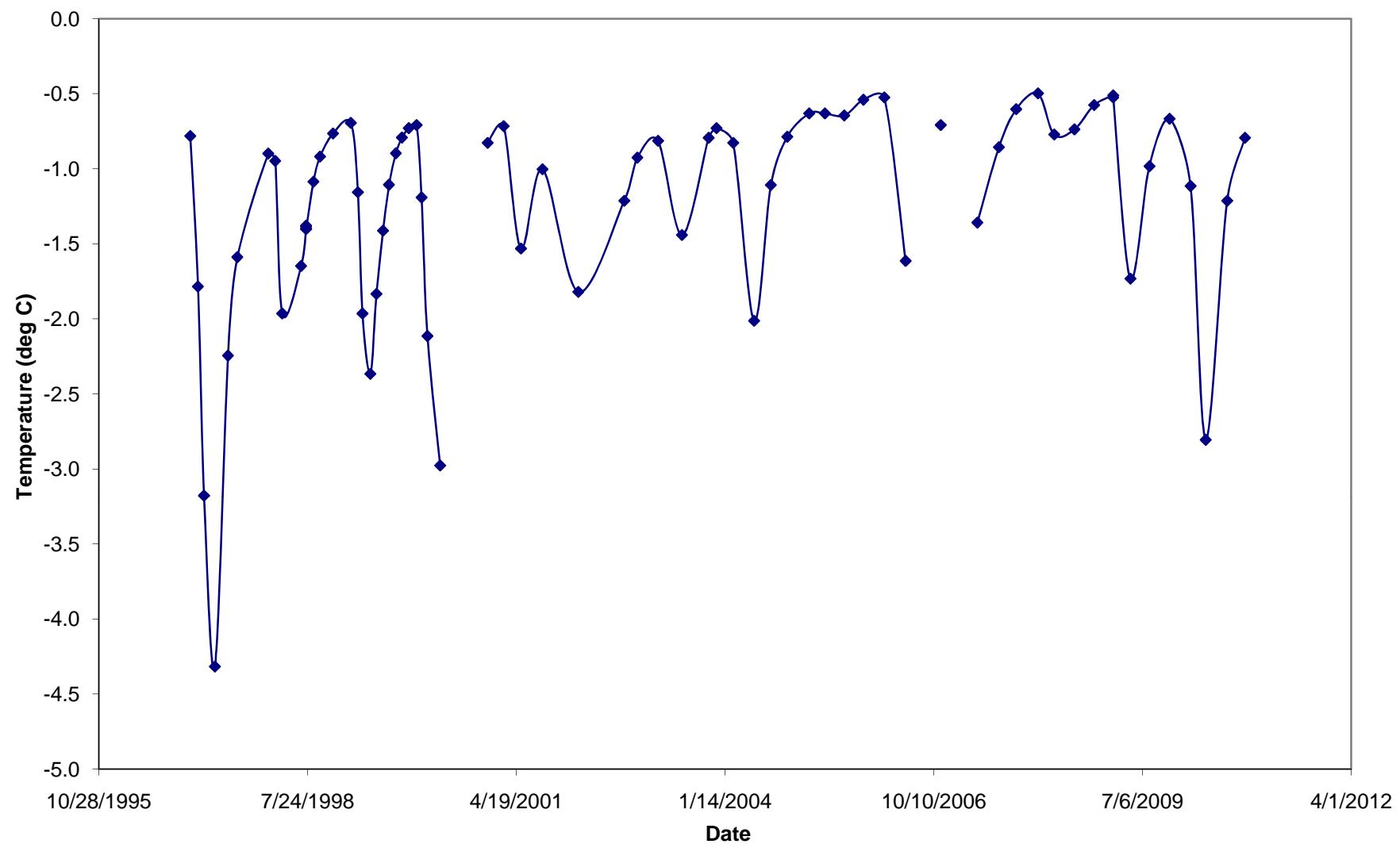
Temperature depth plot - T-96-015



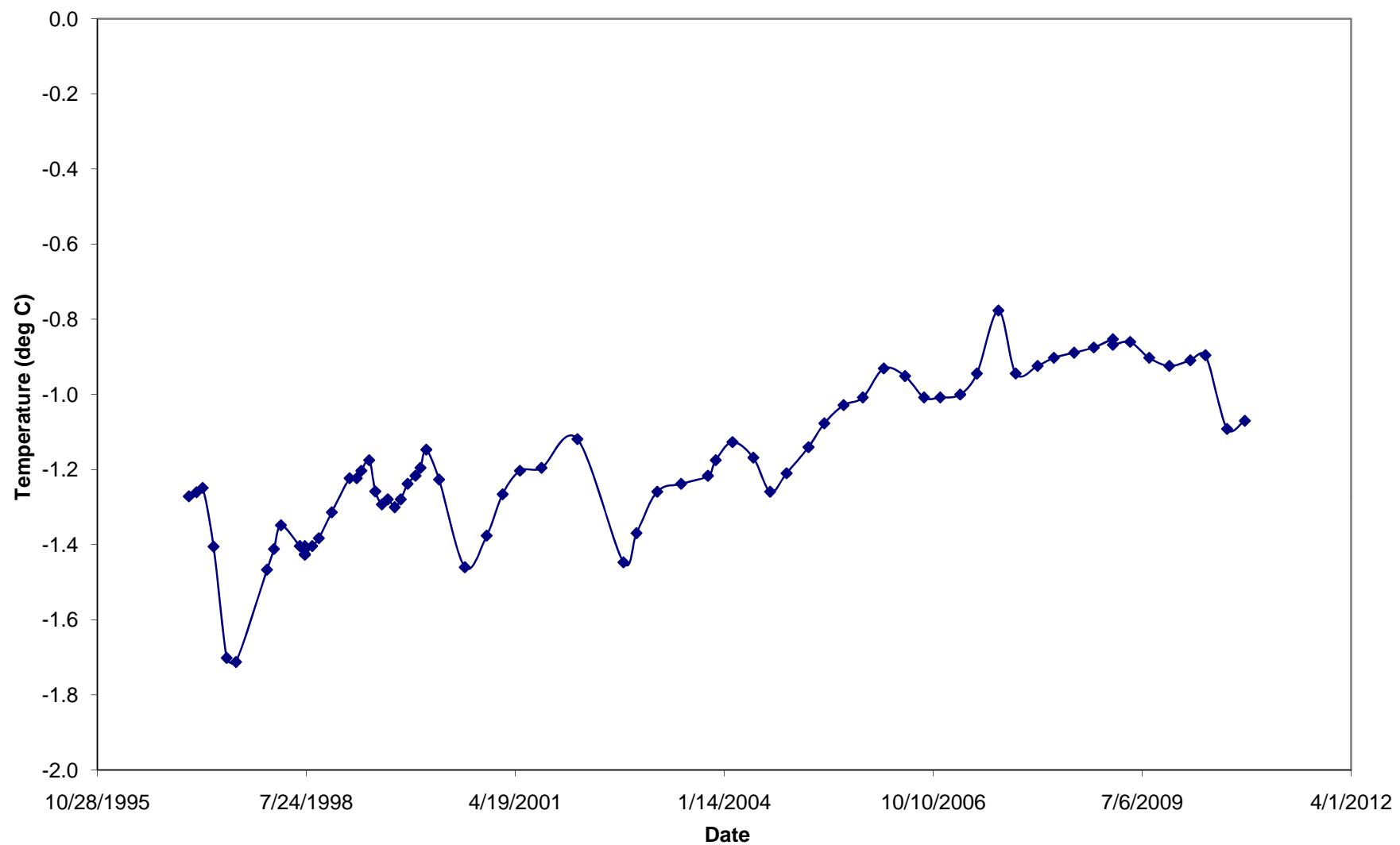
Average Temperature Depth Plot for T-96-015



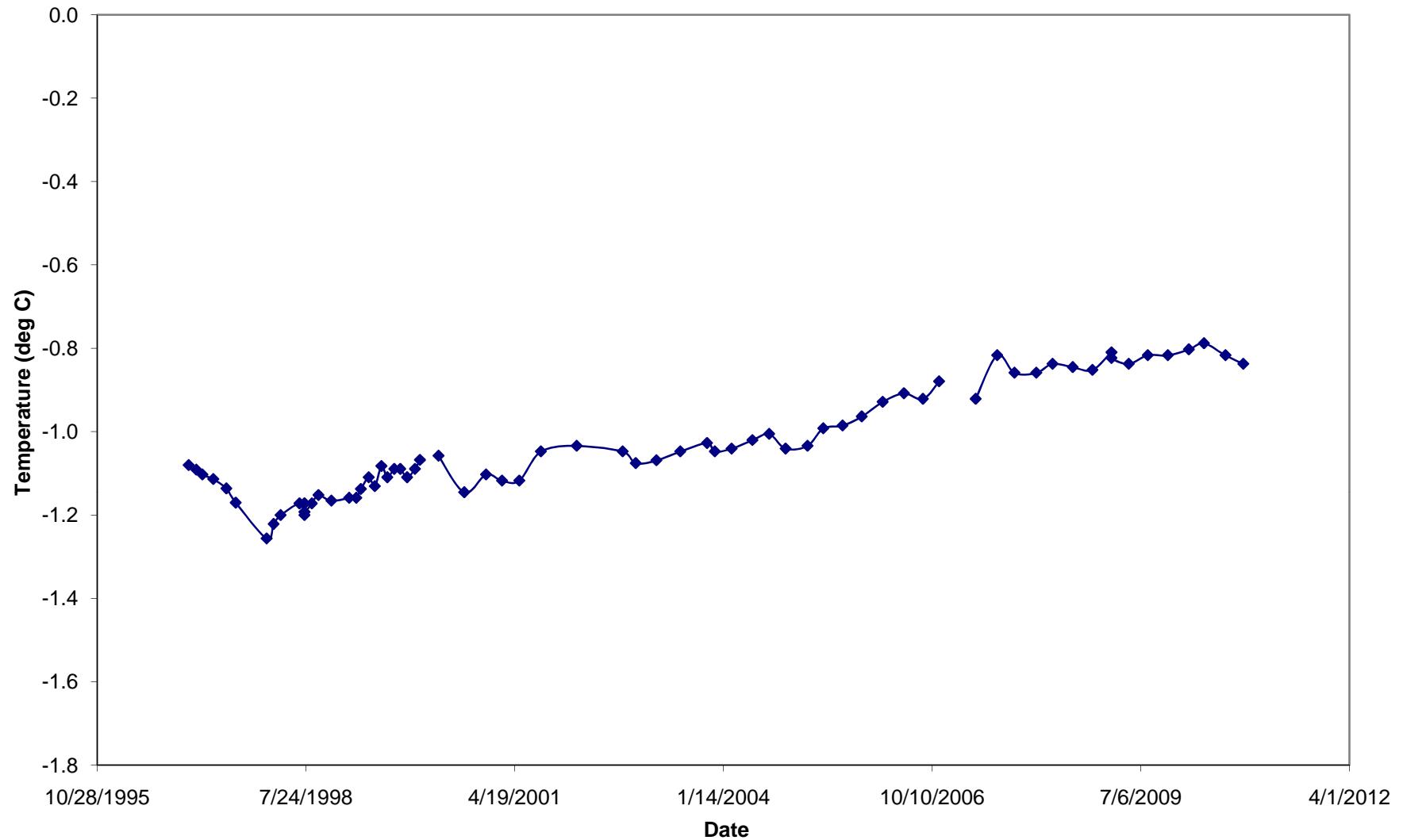
T-96-015 Temperature at 10 feet



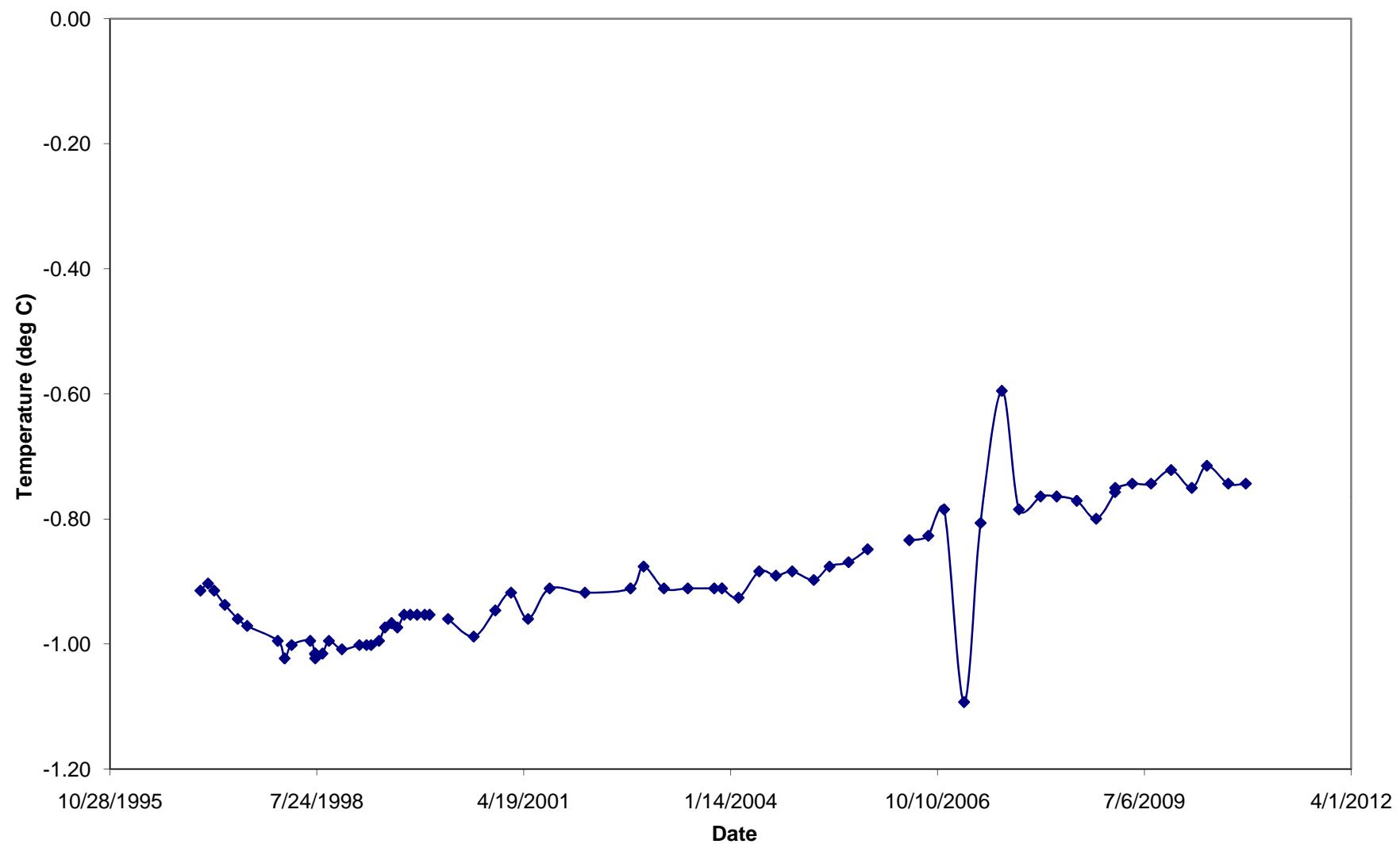
T-96-015 Temperature at 25 feet



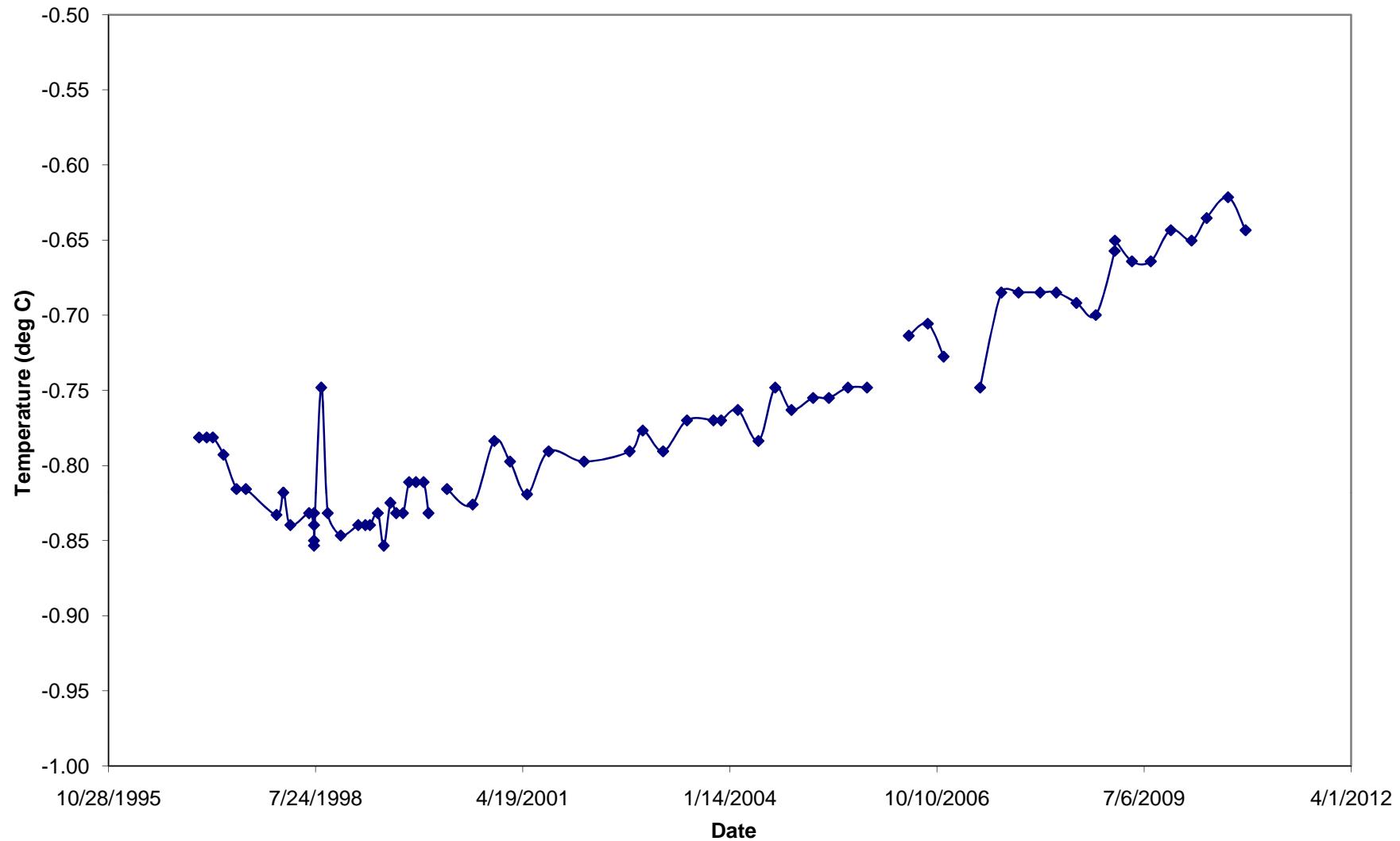
T-96-015 Temperature at 40 feet



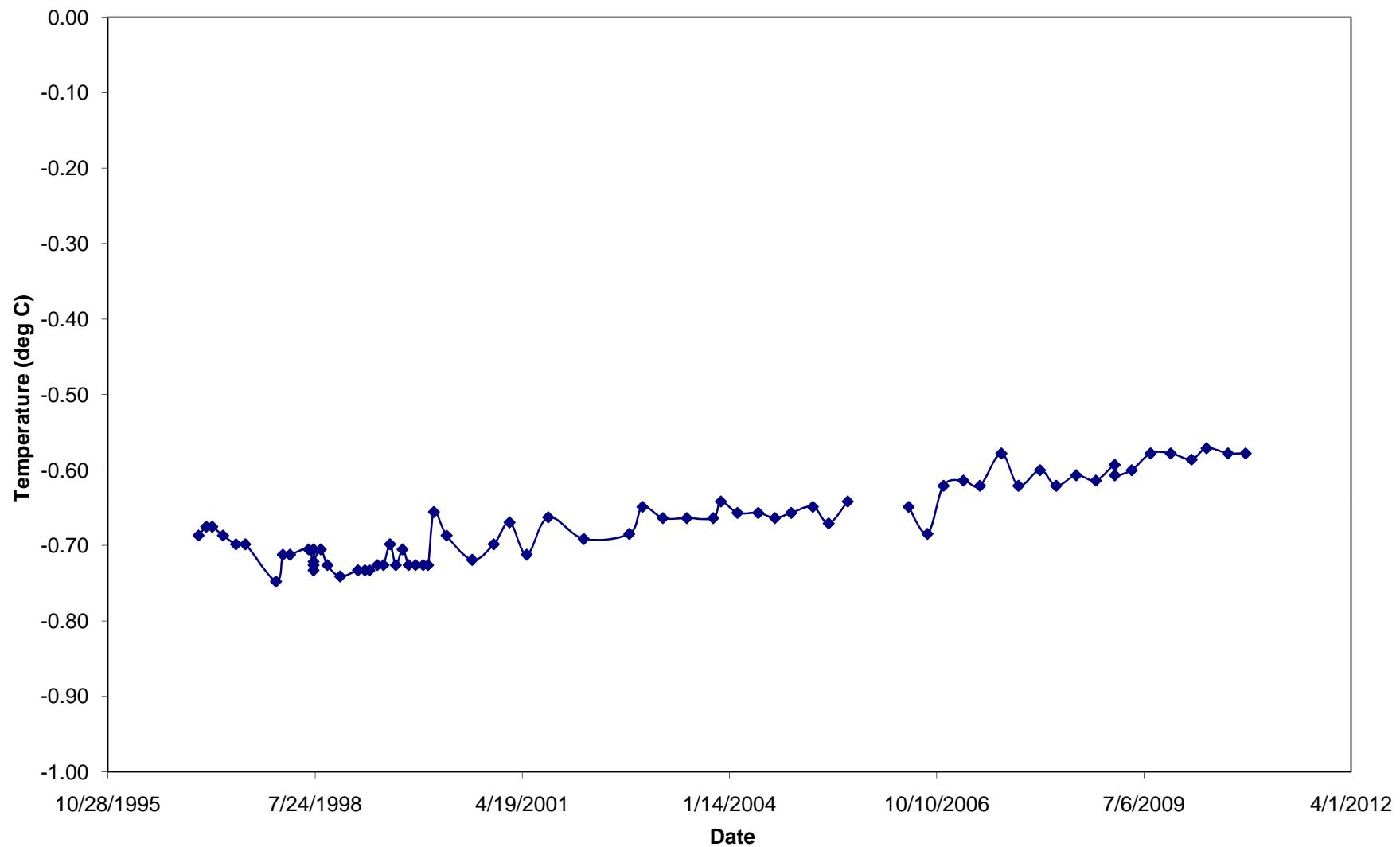
T-96-015 Temperature at 55 feet



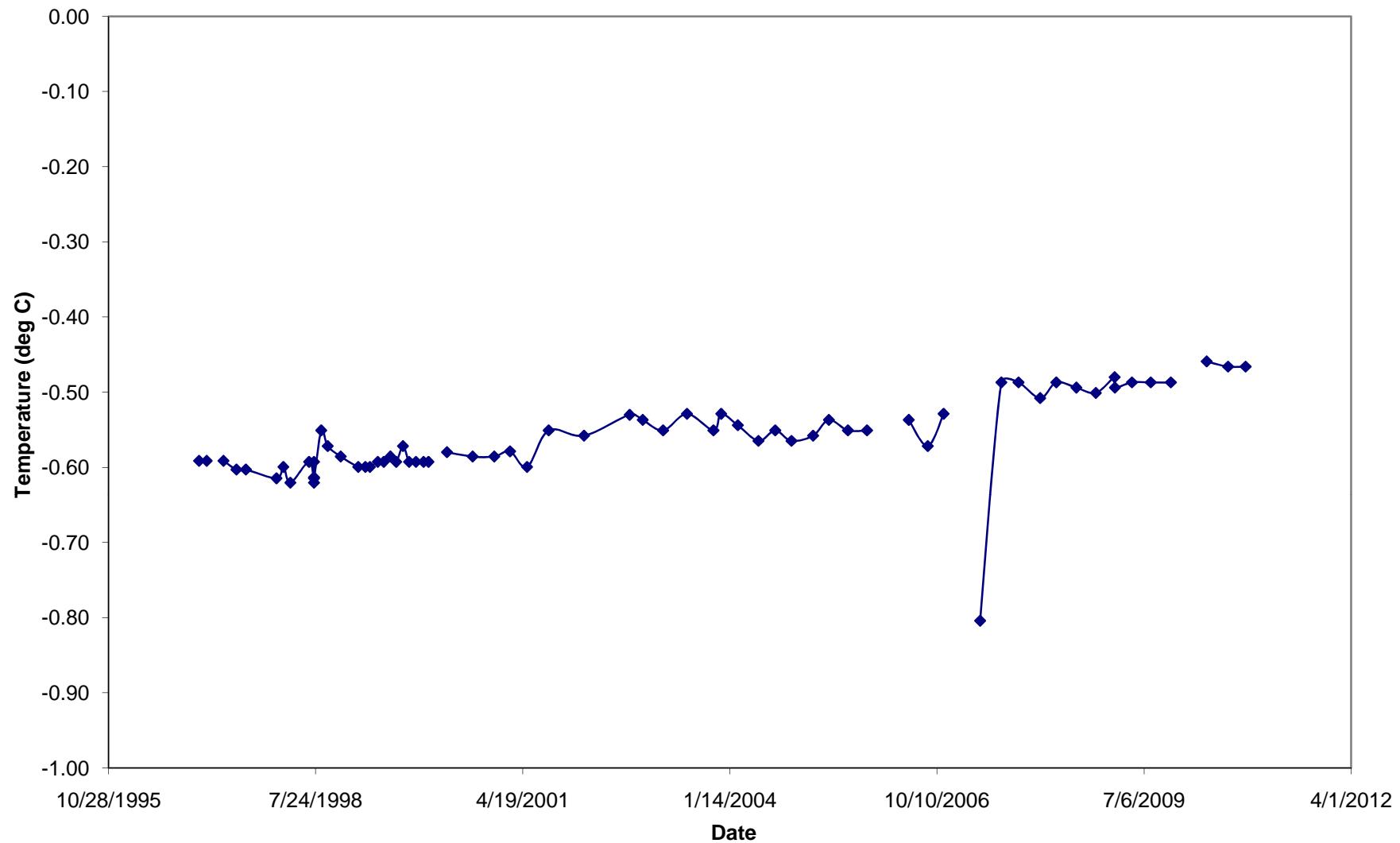
T-96-015 Temperature at 70 feet



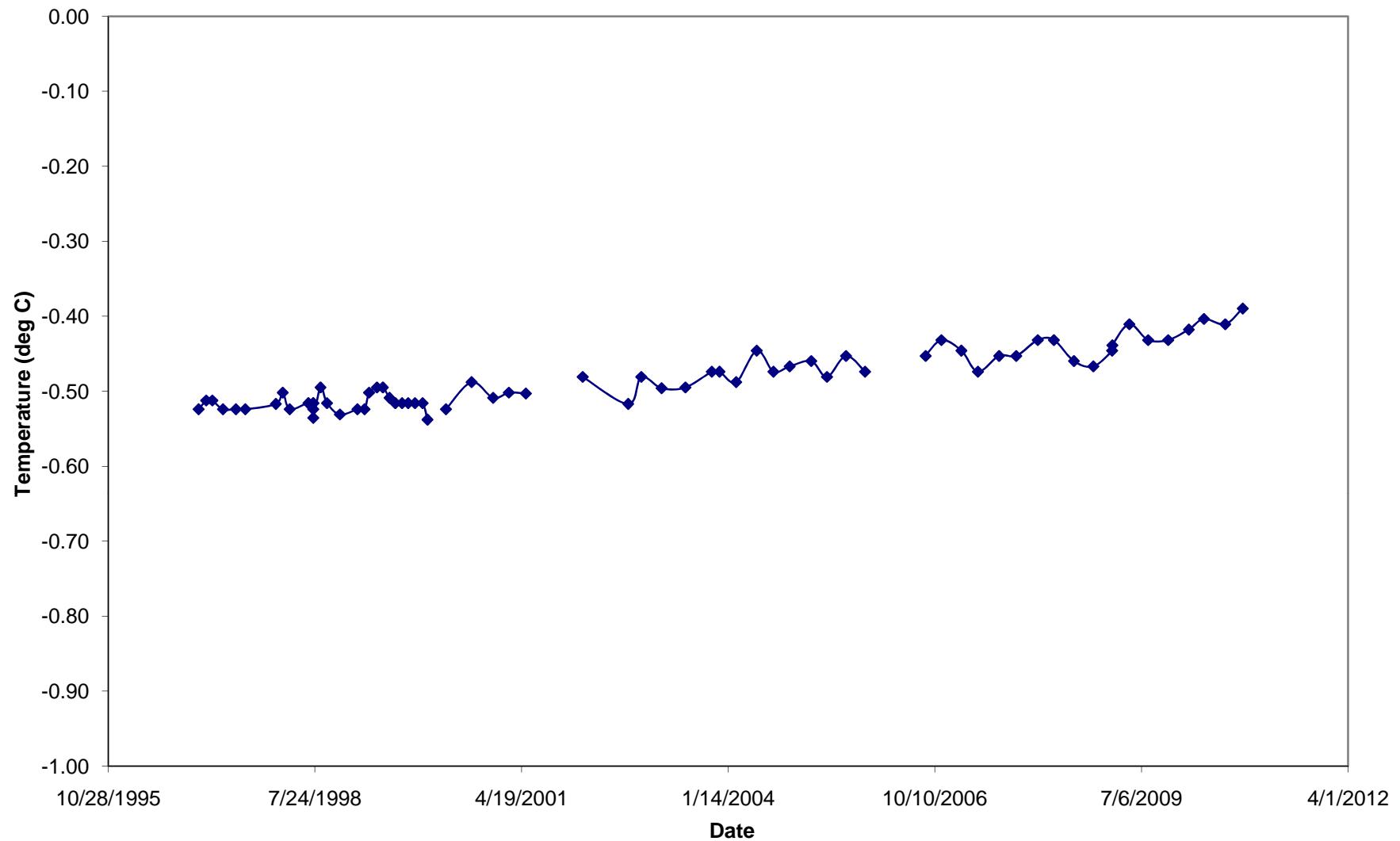
T-96-015 Temperature at 85 feet



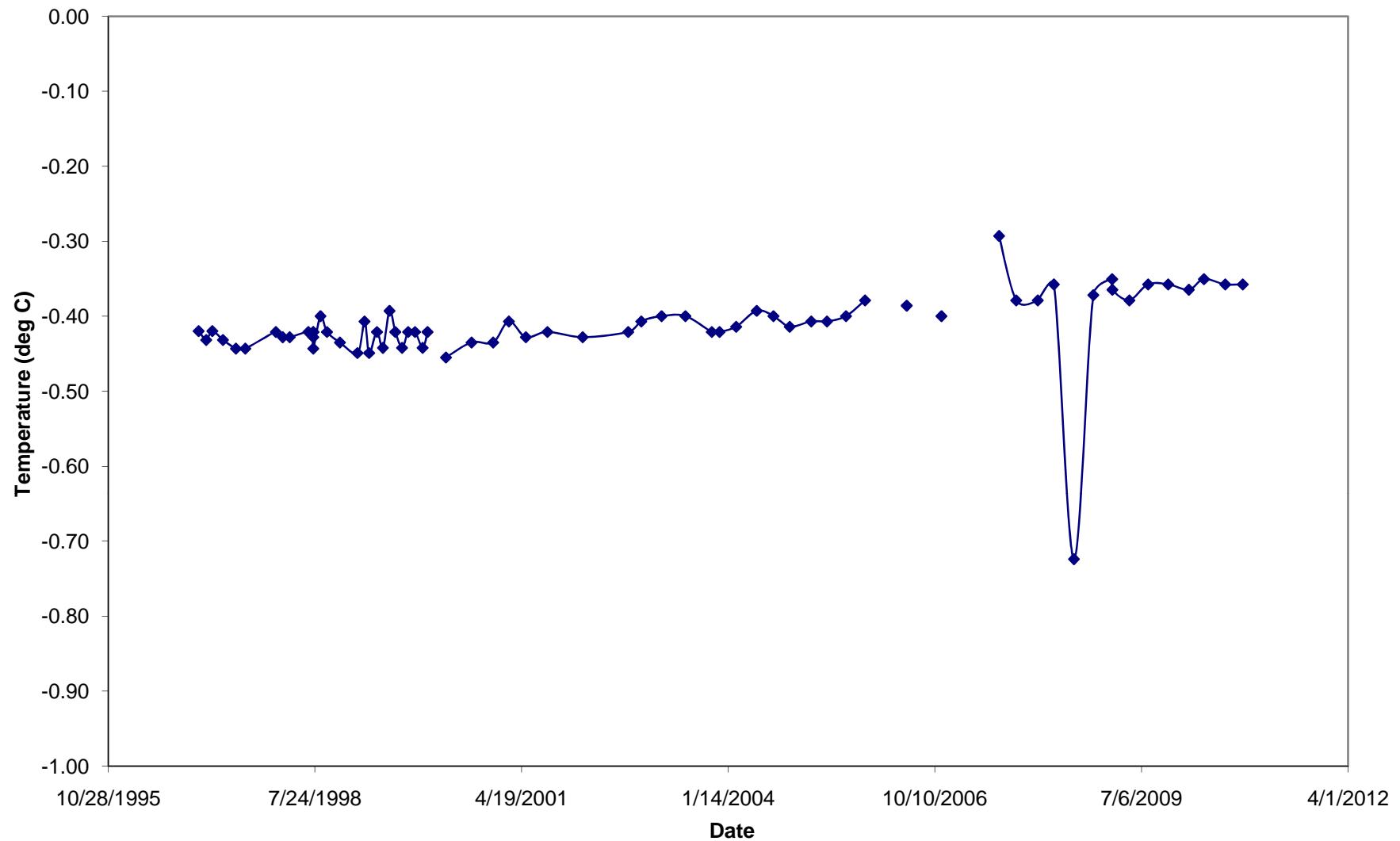
T-96-015 Temperature at 100 feet



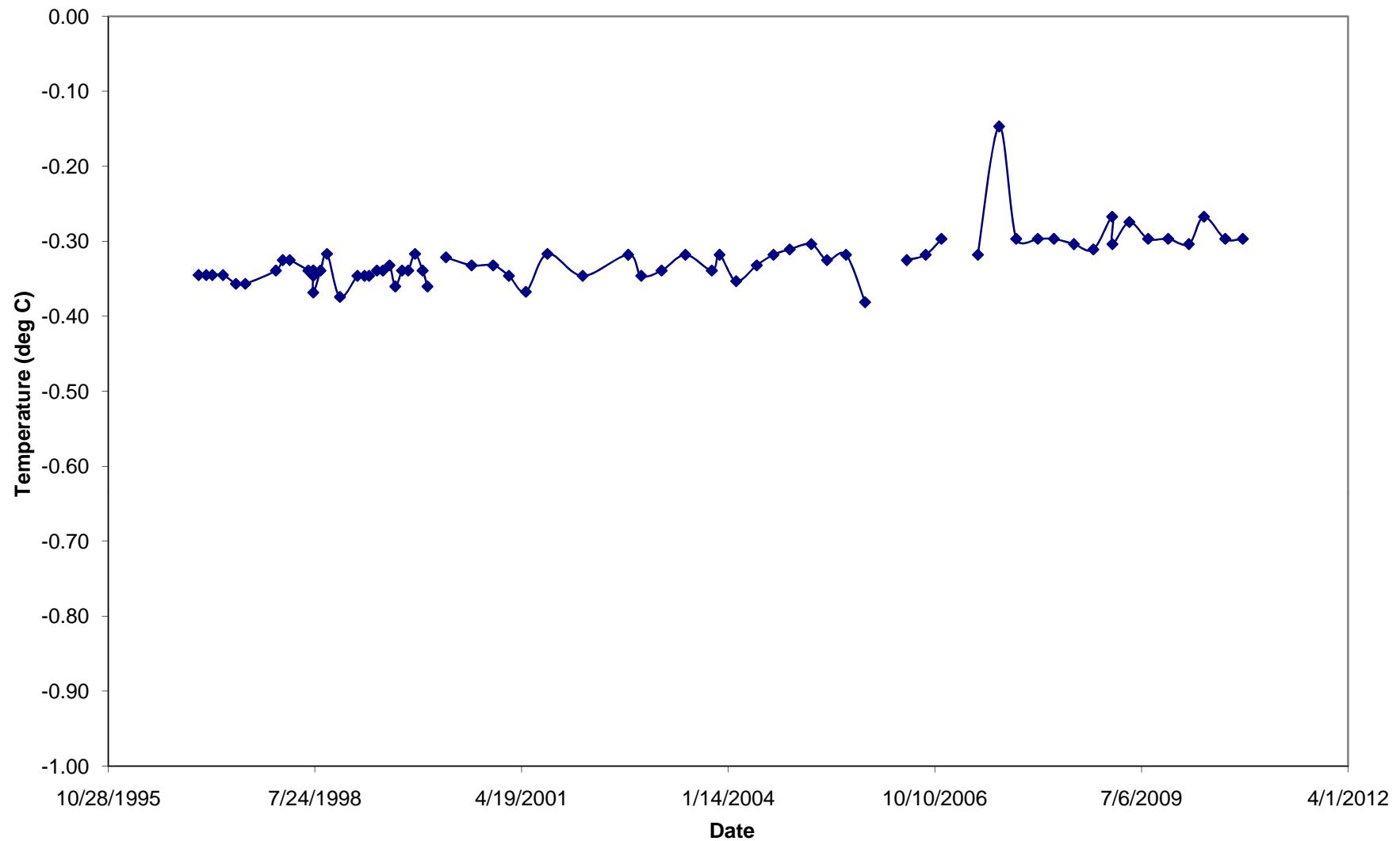
T-96-015 Temperature at 115 feet



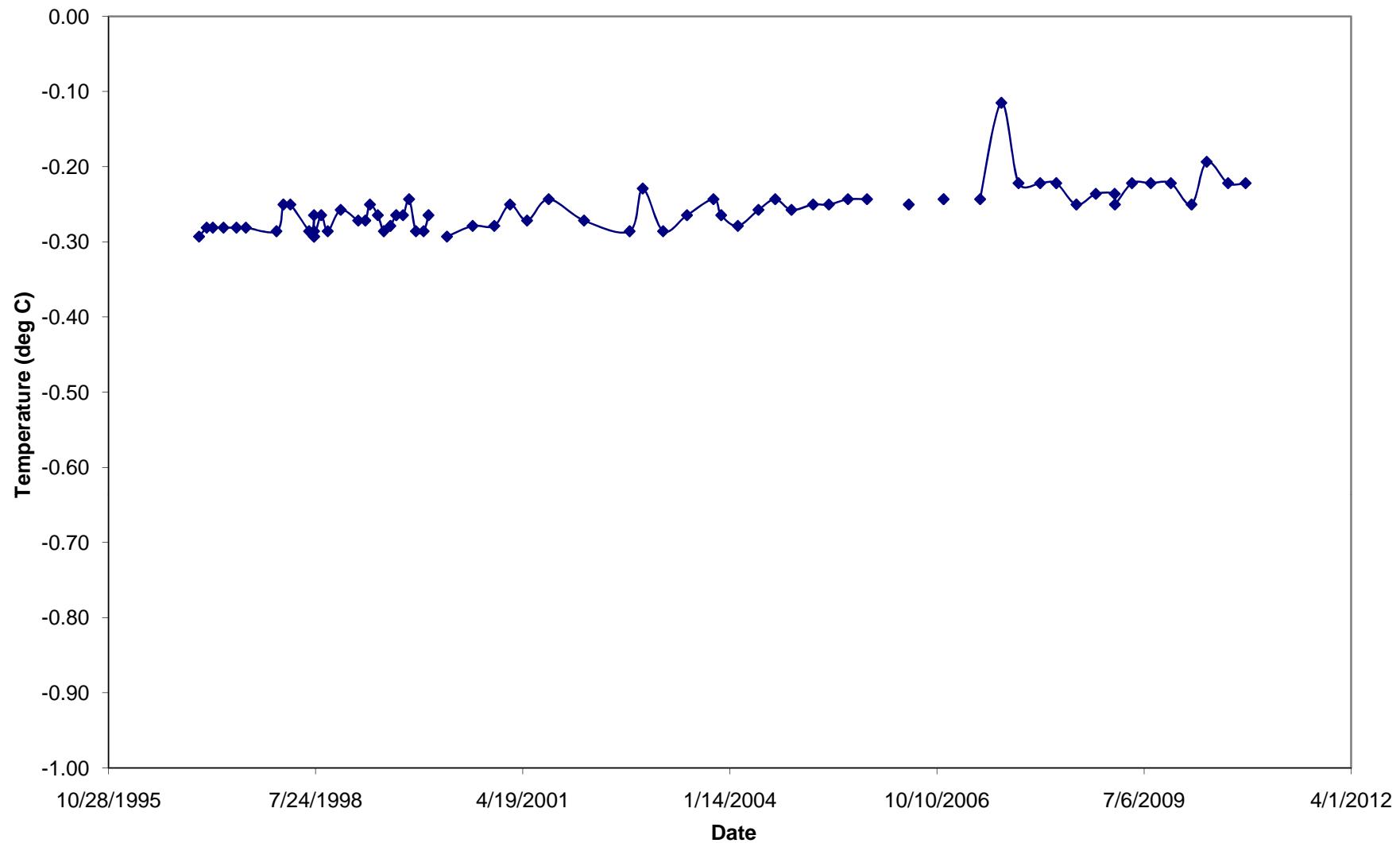
T-96-015 Temperature at 130 feet



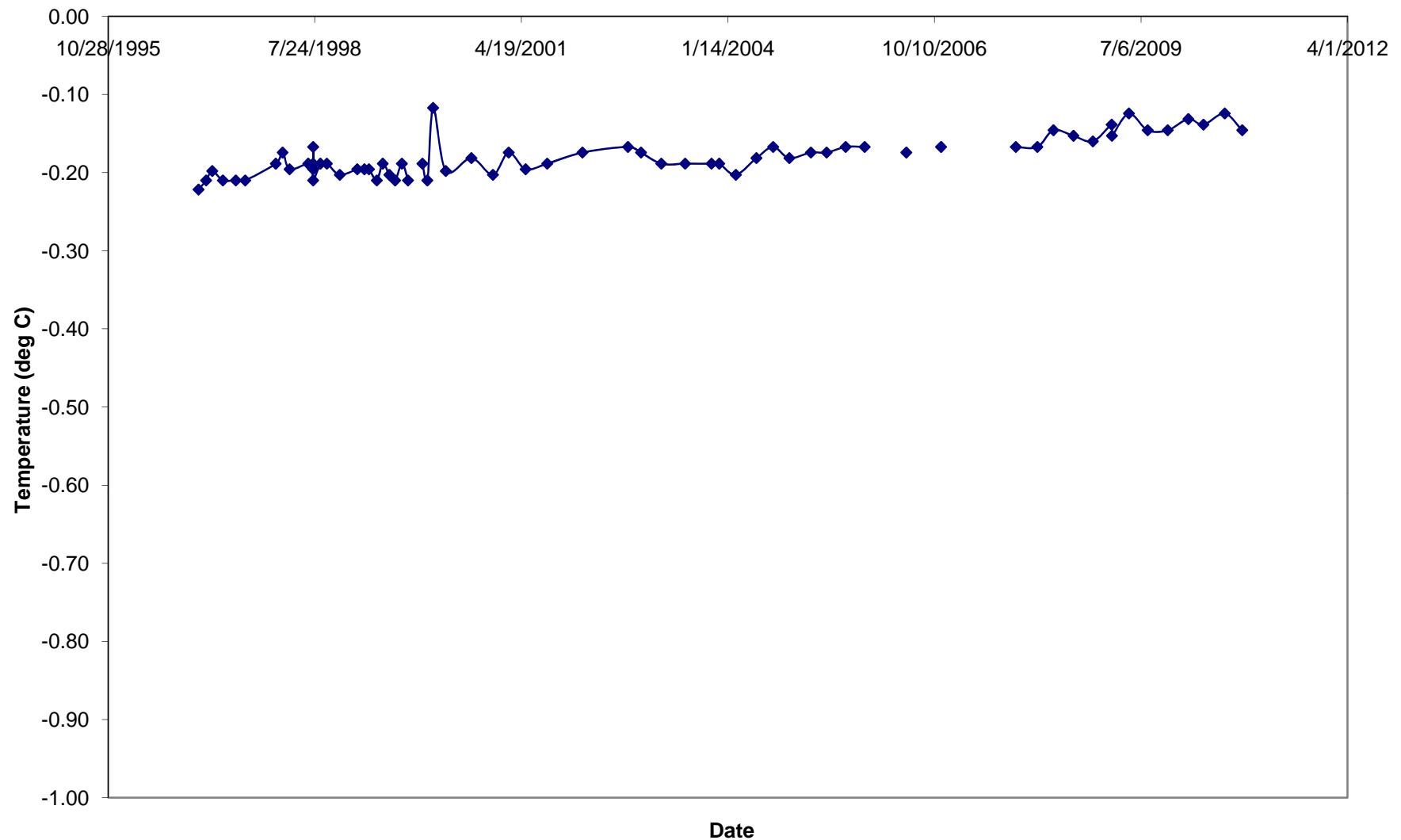
T-96-015 Temperature at 145 feet



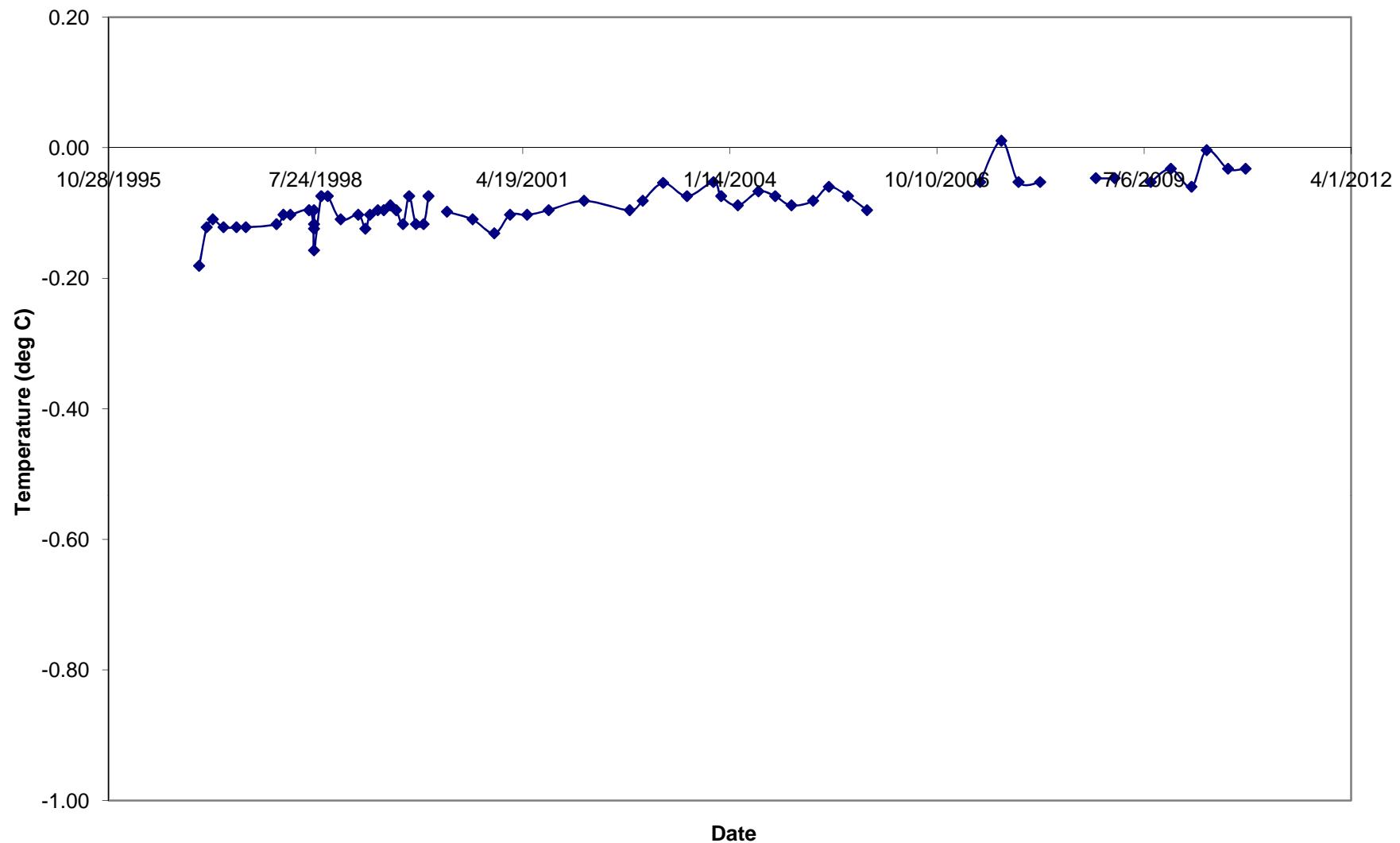
T-96-015 Temperature at 160 feet



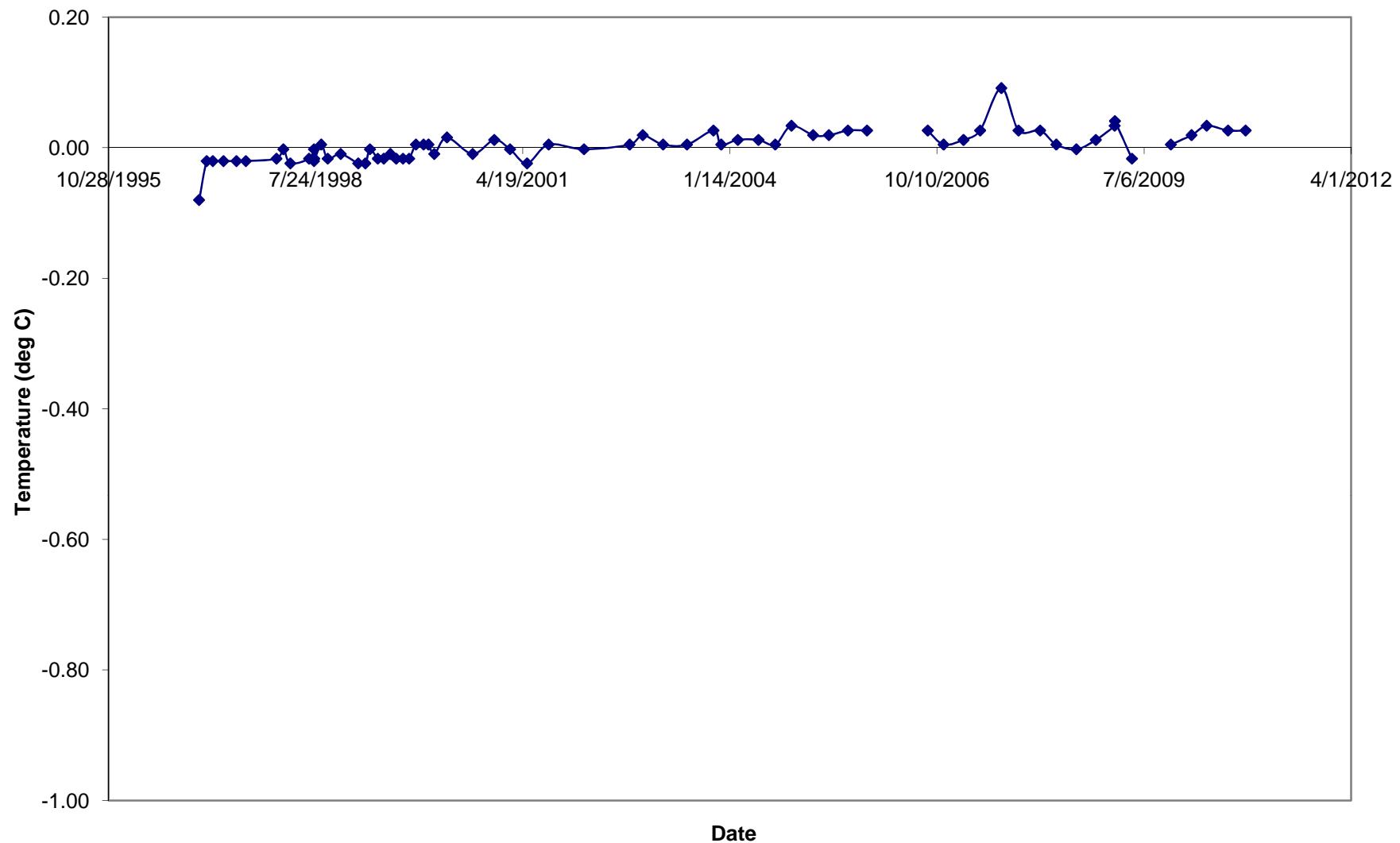
T-96-015 Temperature at 175 feet



T-96-015 Temperature at 190 feet

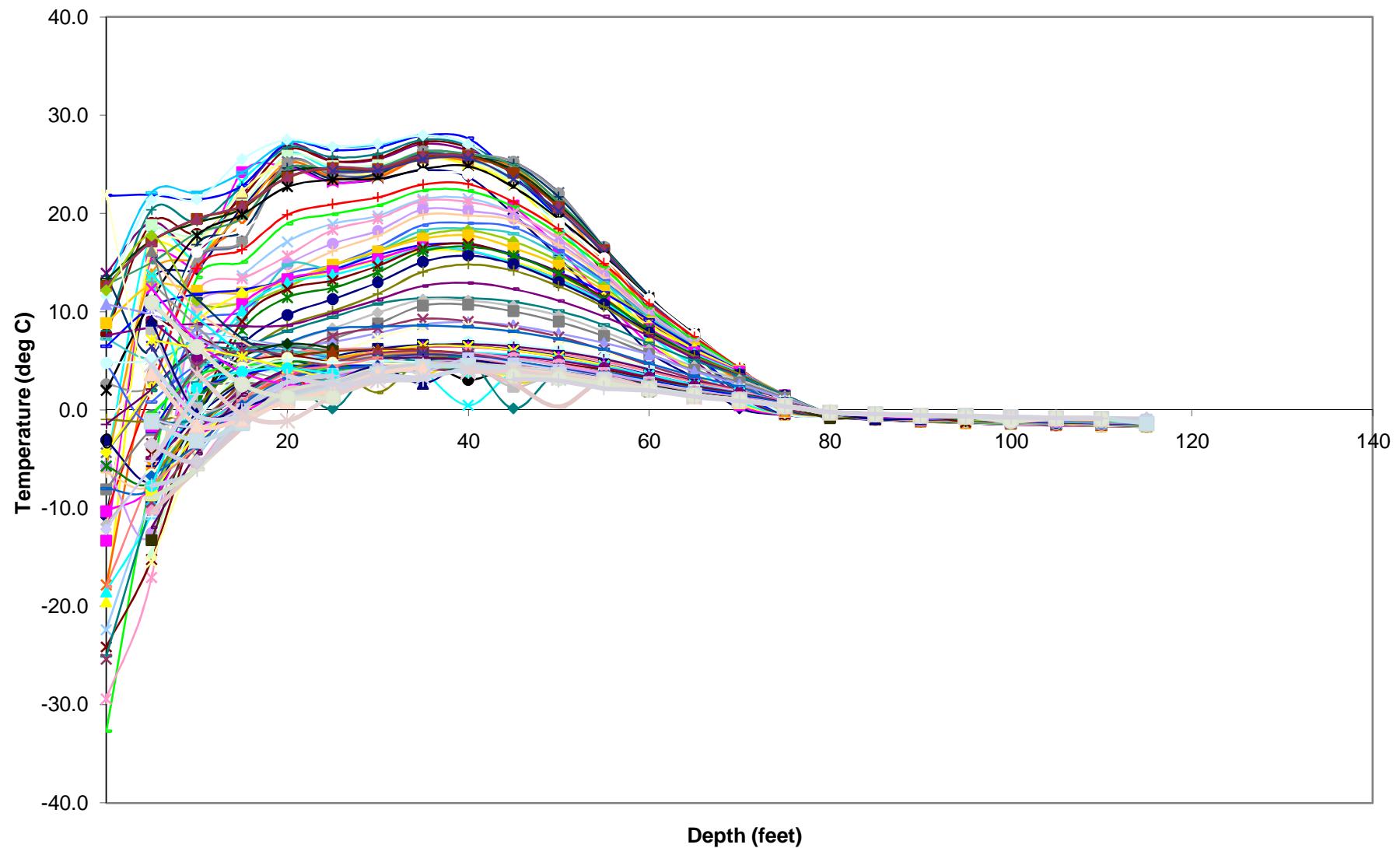


T-96-015 Temperature at 205 feet

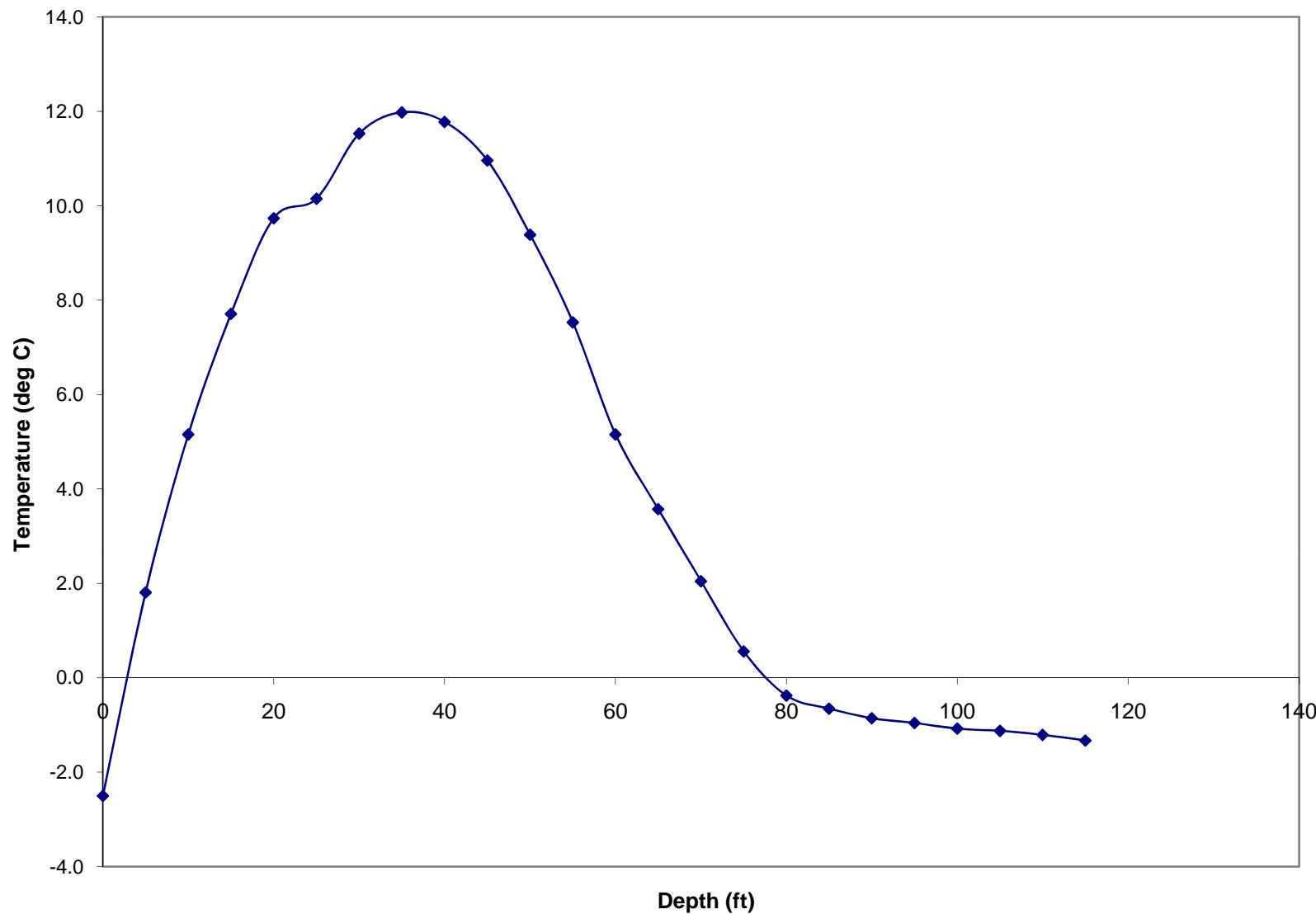


T-96-021

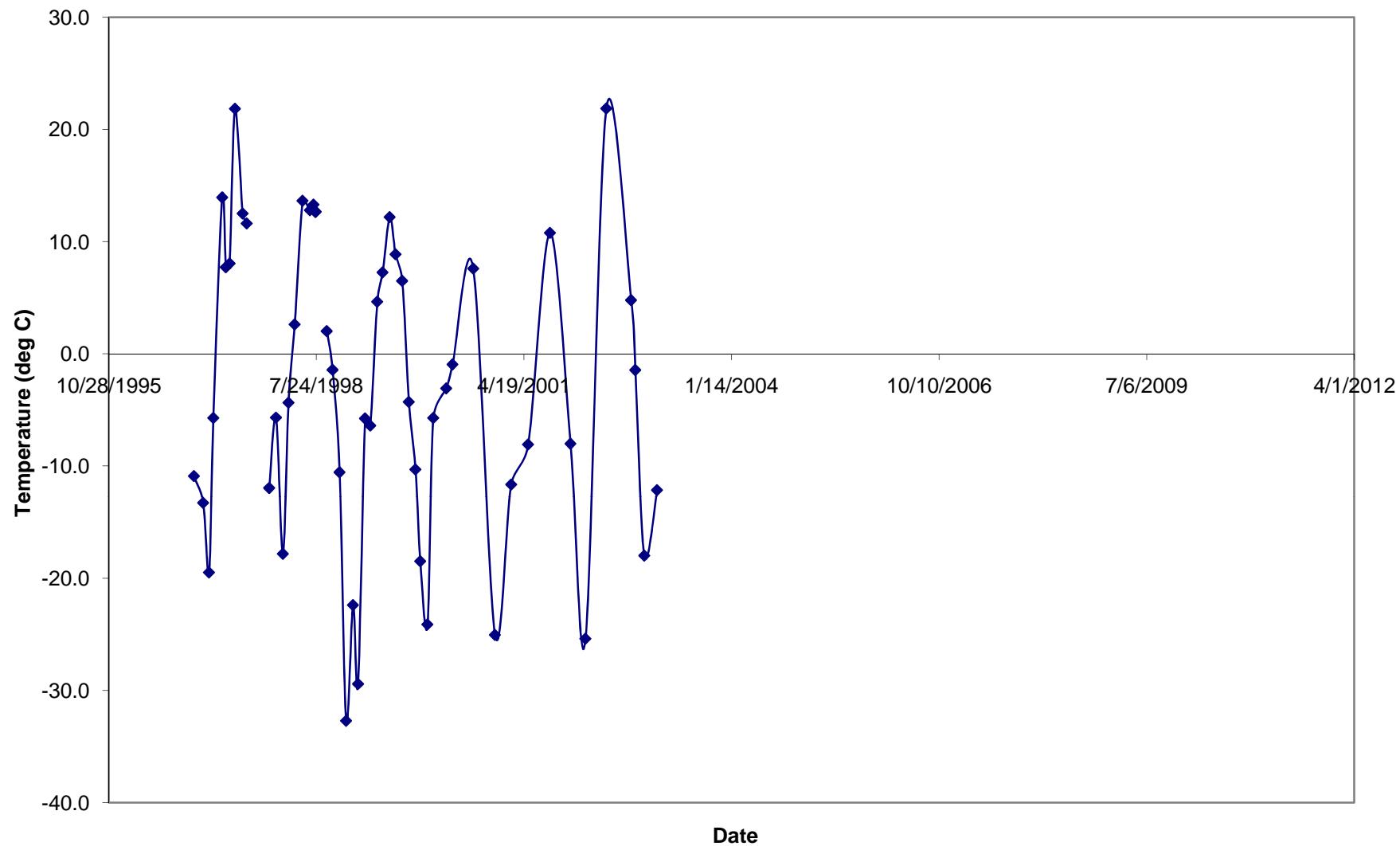
Temperature depth plot - T-96-021



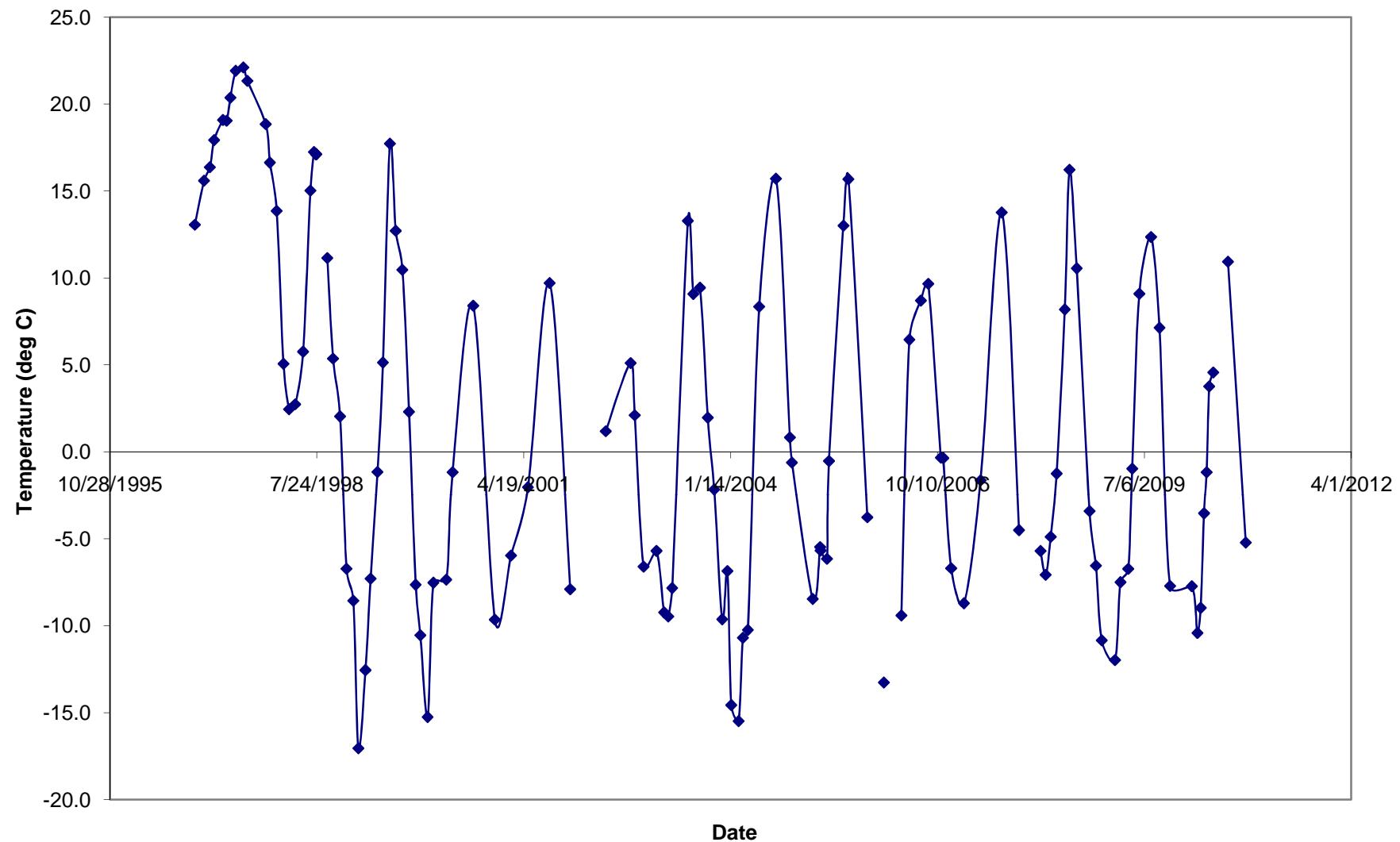
Average Temperature Depth Plot for T-96-021



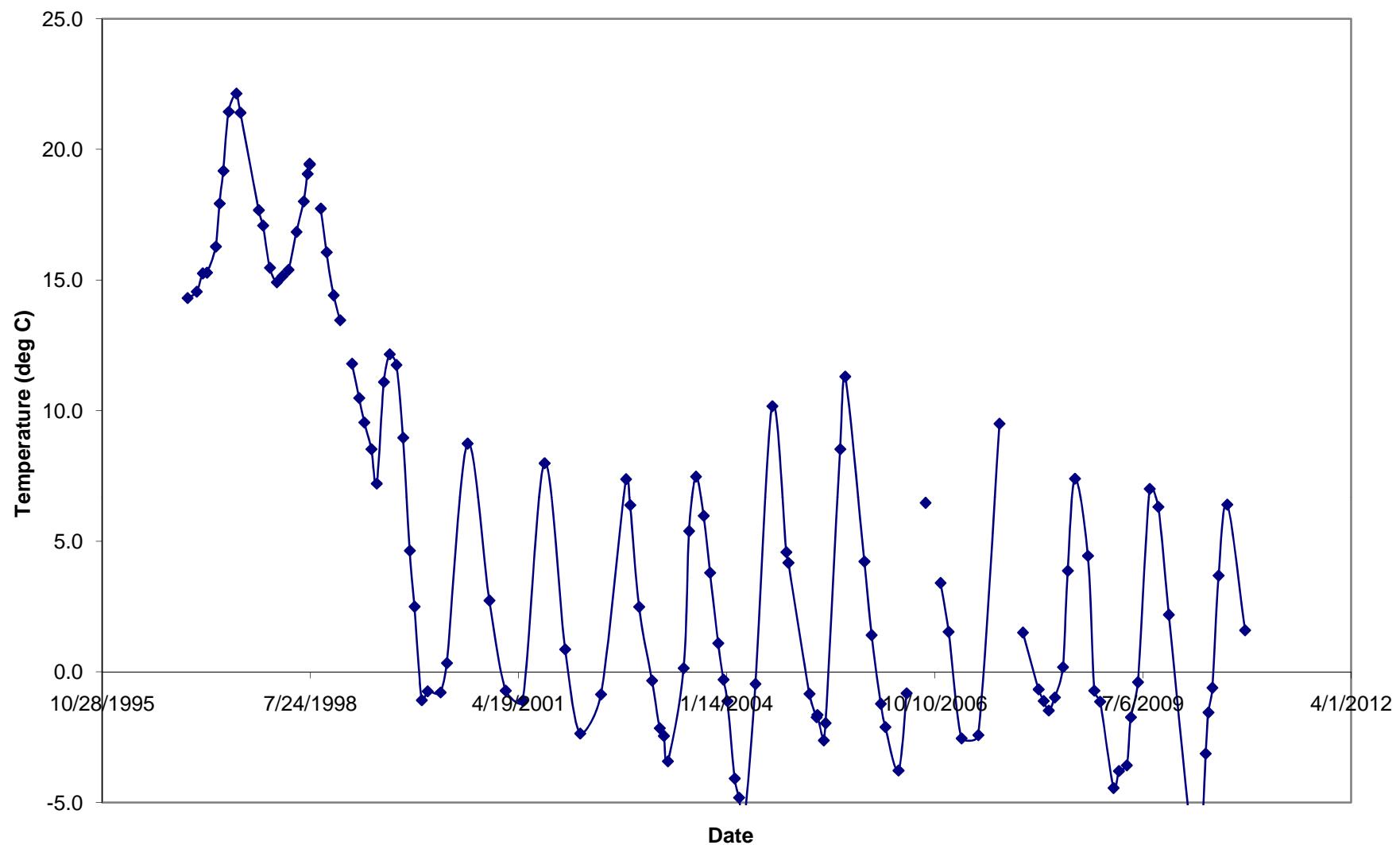
T-96-021 Temperature at 0 feet



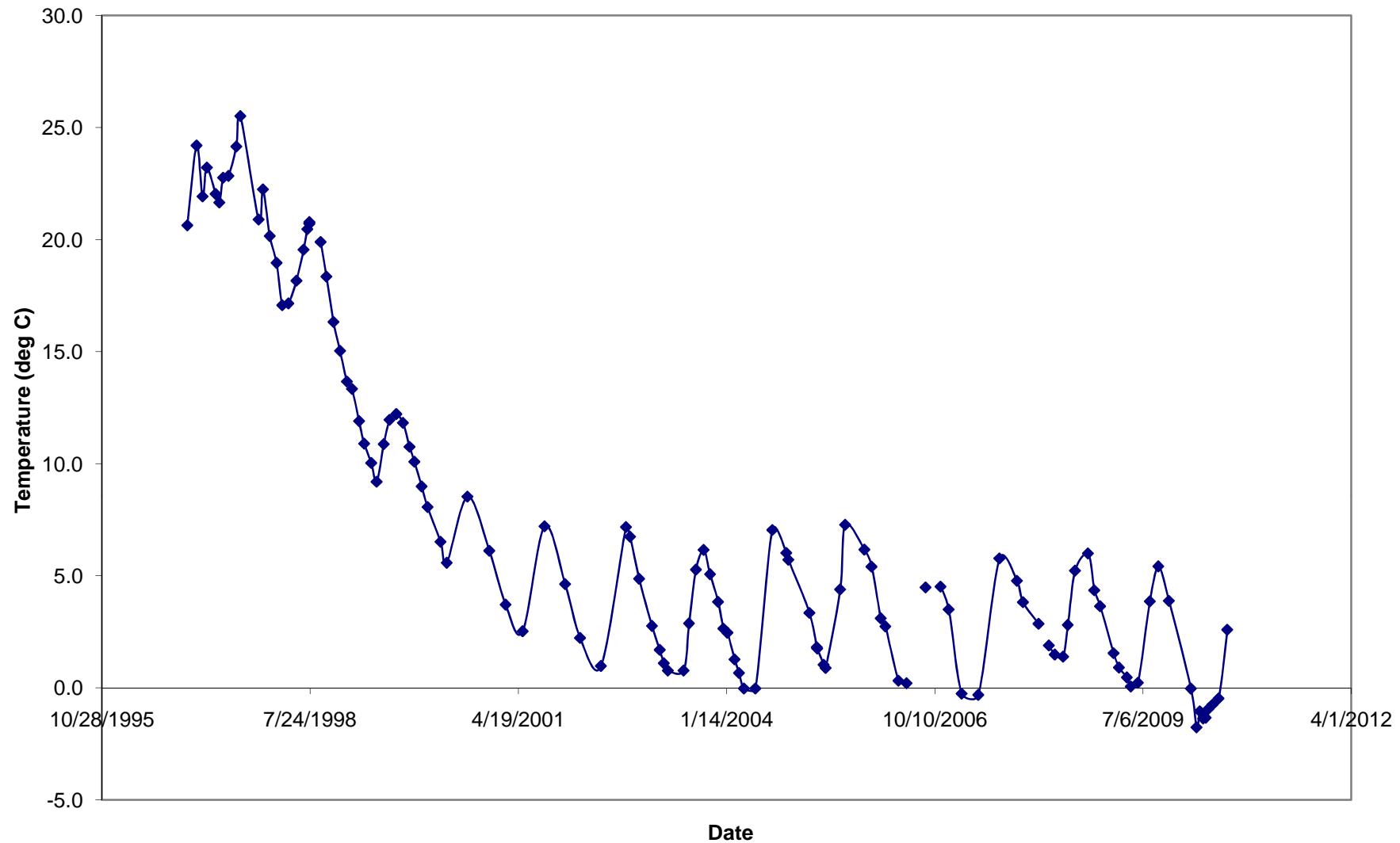
T-96-021 Temperature at 5 feet



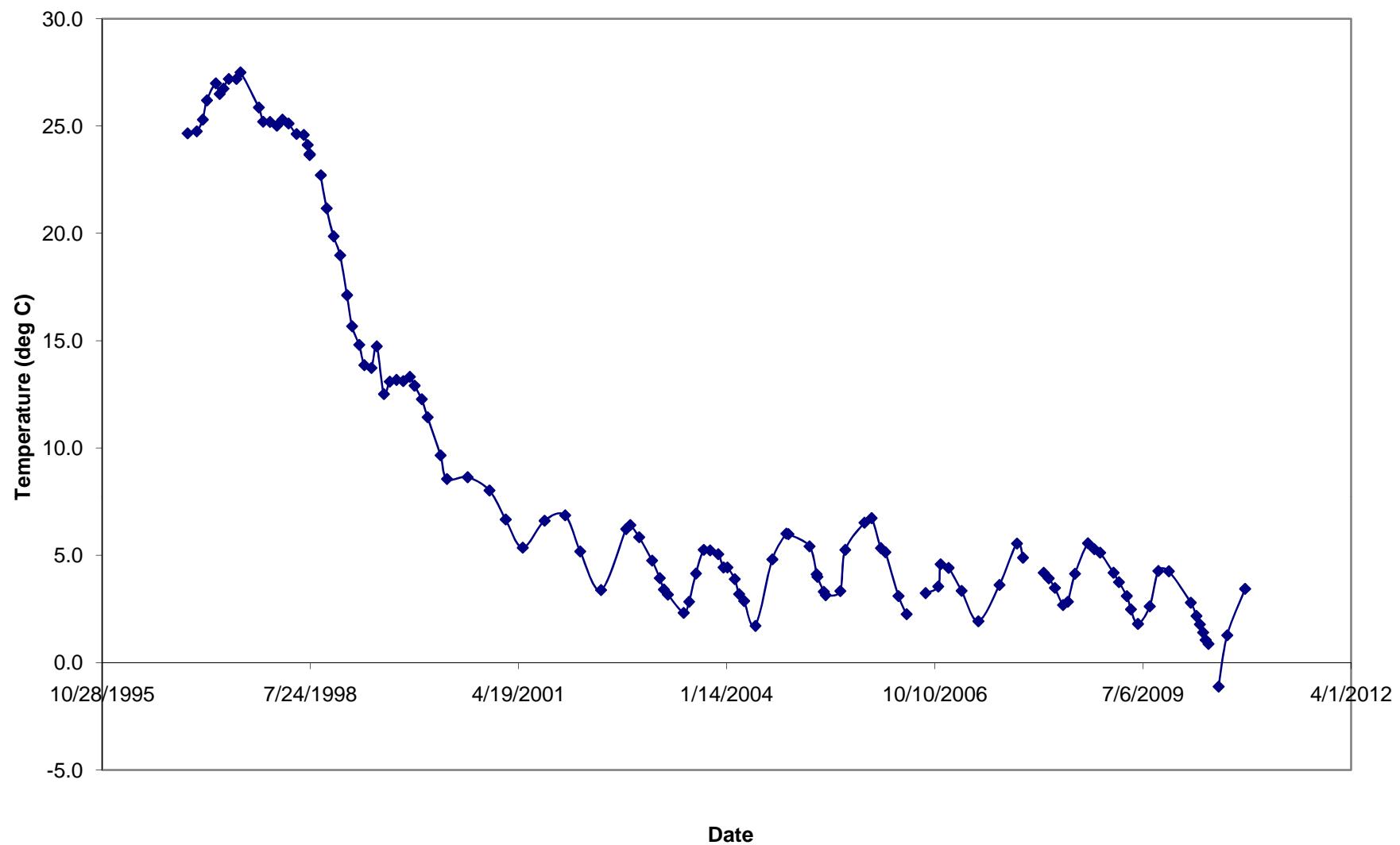
T-96-021 Temperature at 10 feet



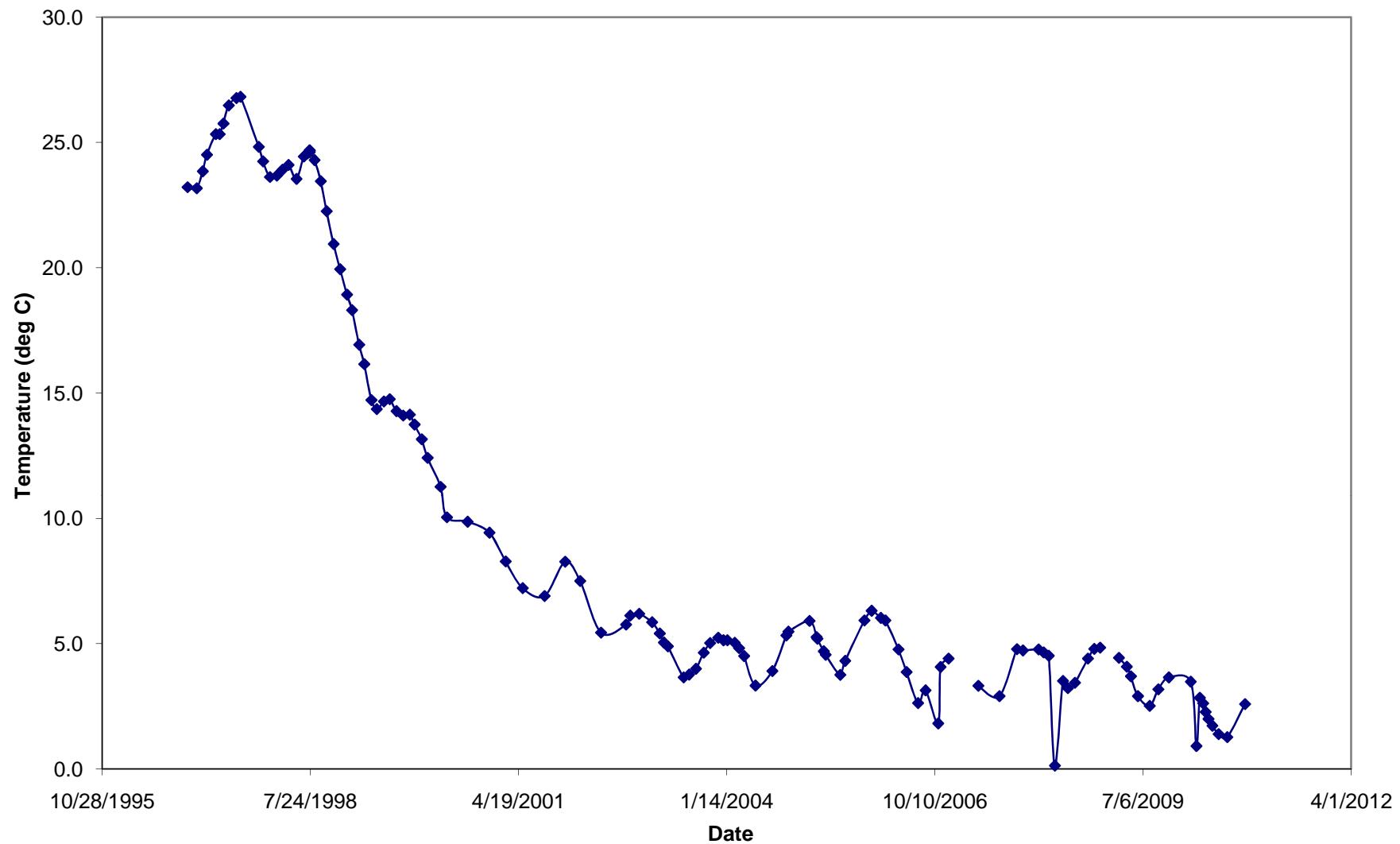
T-96-021 Temperature at 15 feet



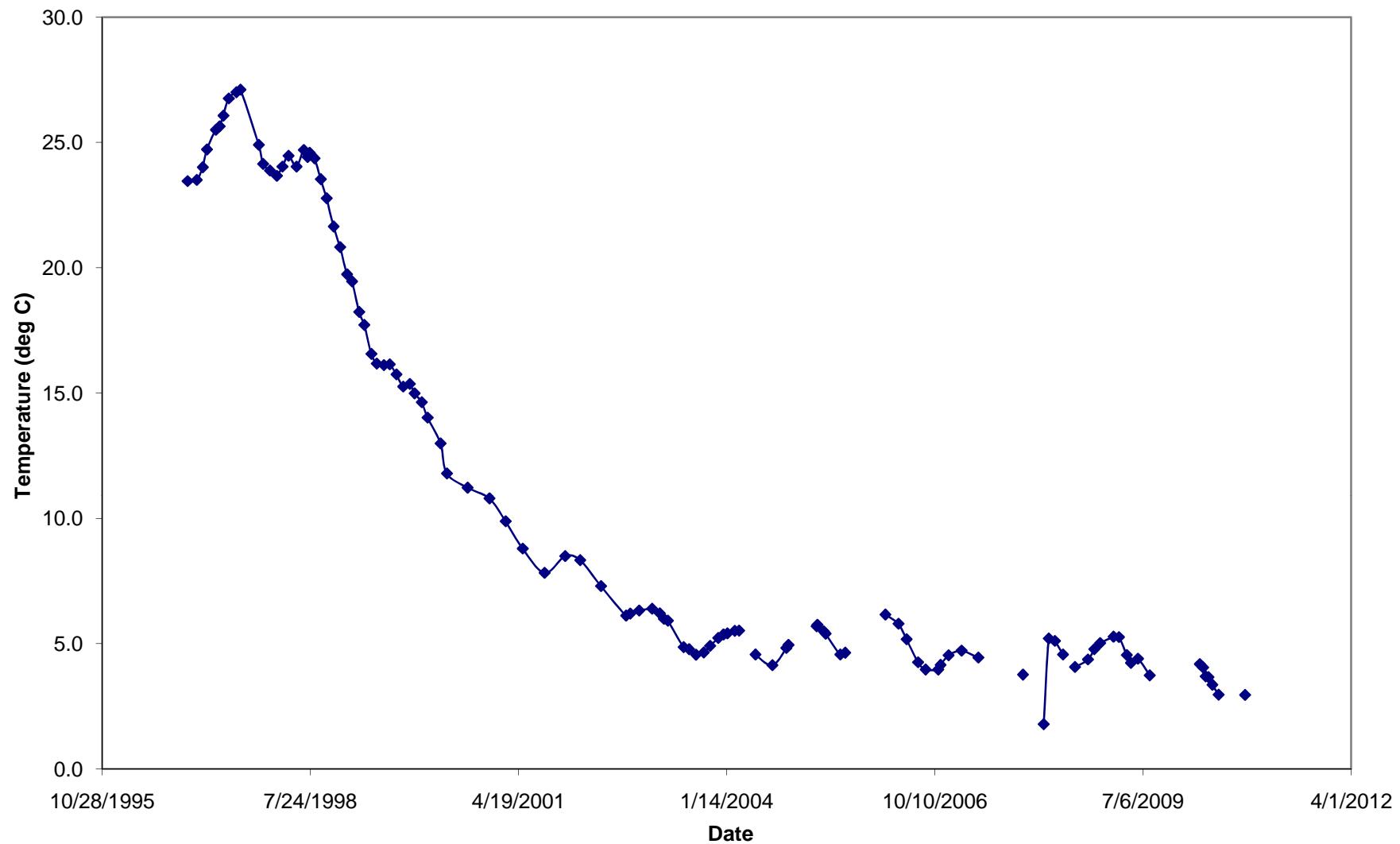
T-96-021 Temperature at 20 feet



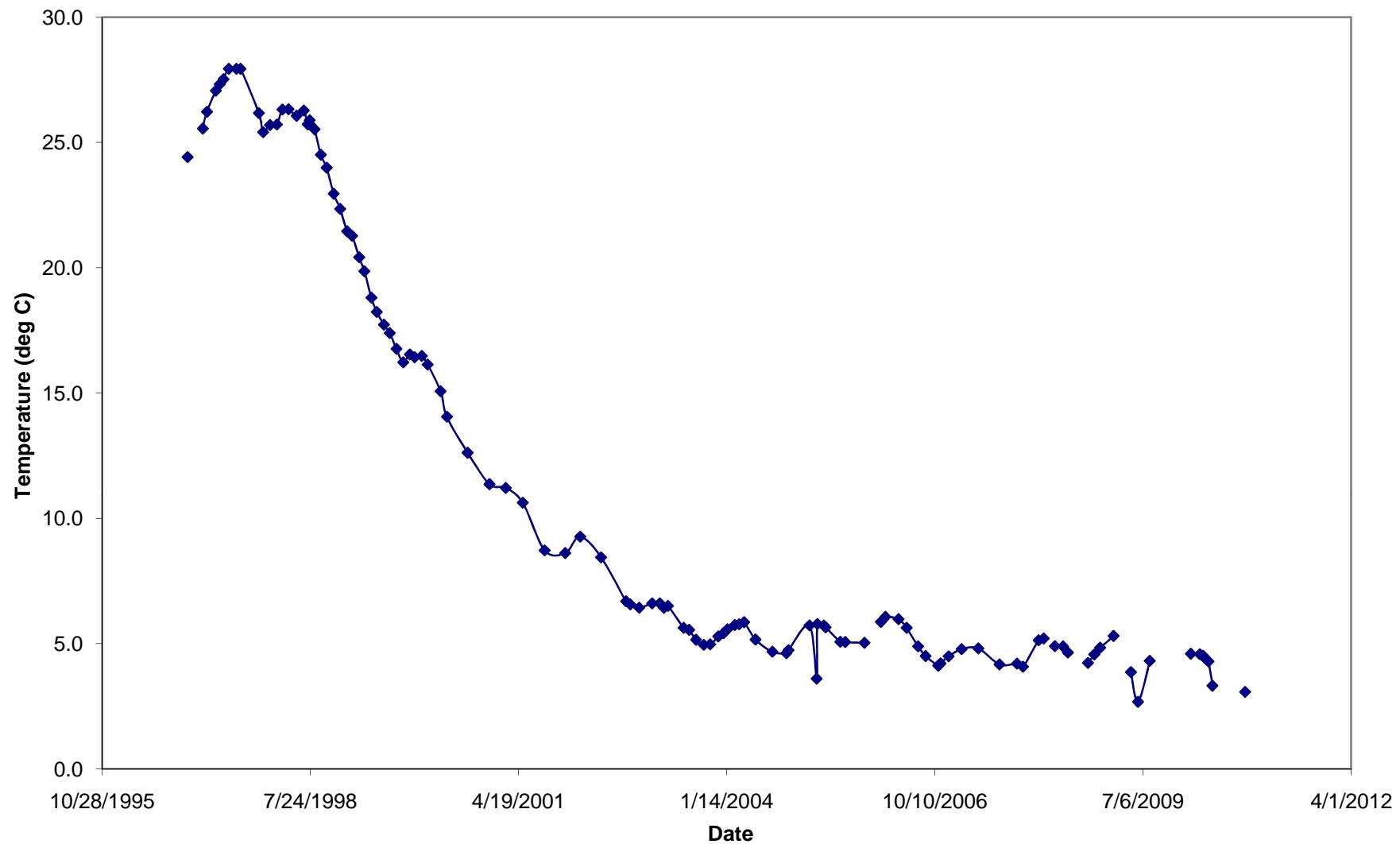
T-96-021 Temperature at 25 feet



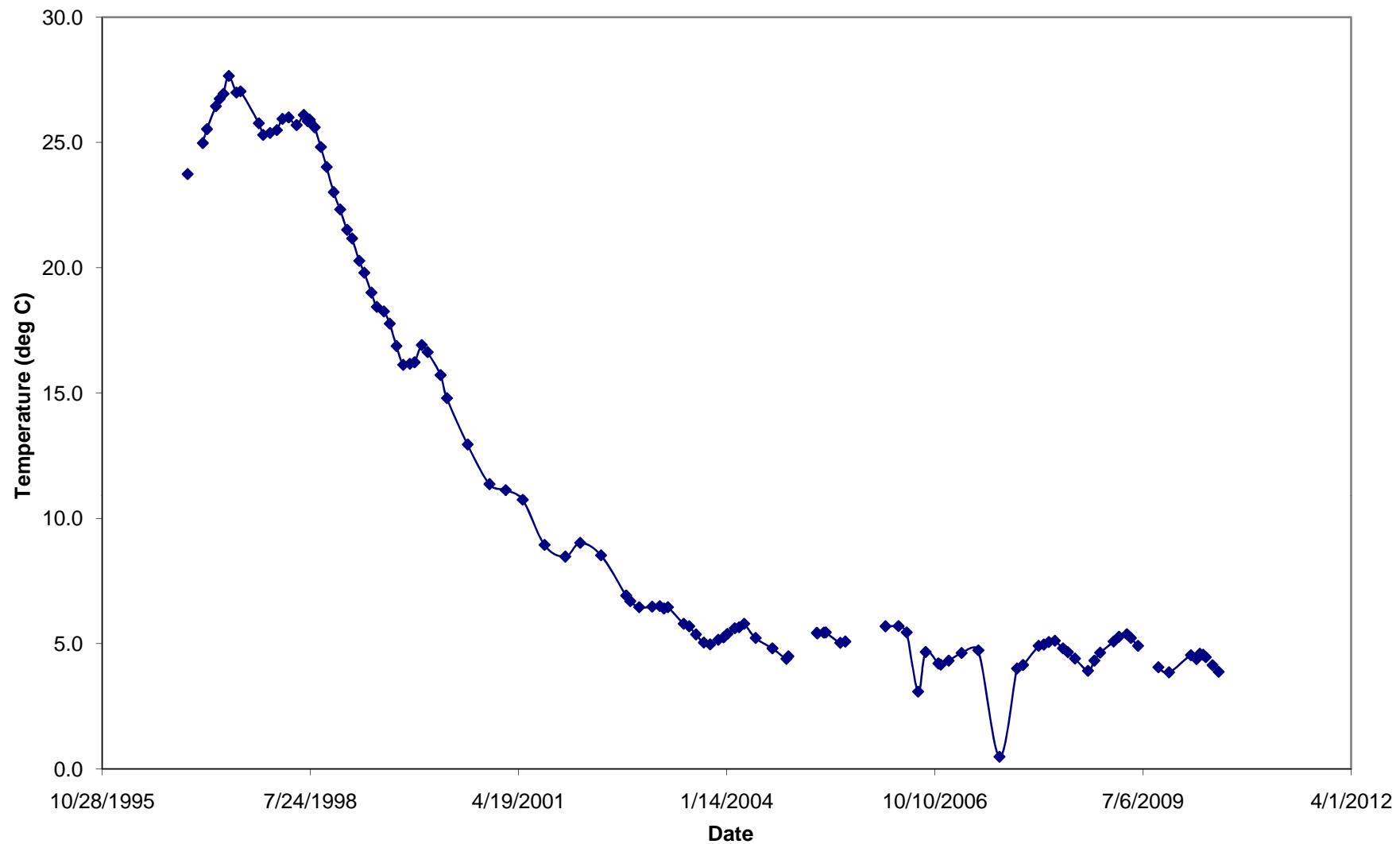
T-96-021 Temperature at 30 feet



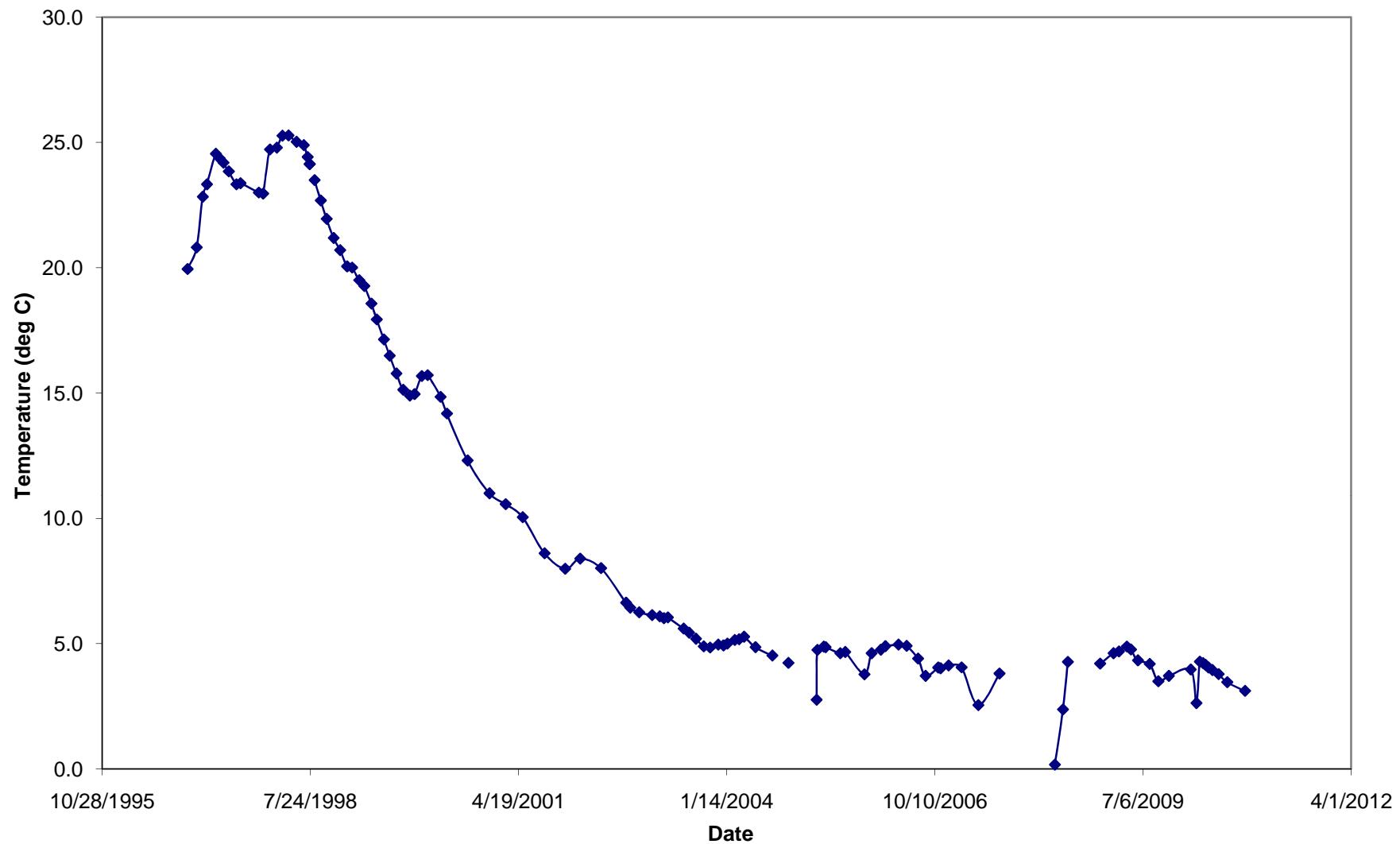
T-96-021 Temperature at 35 feet



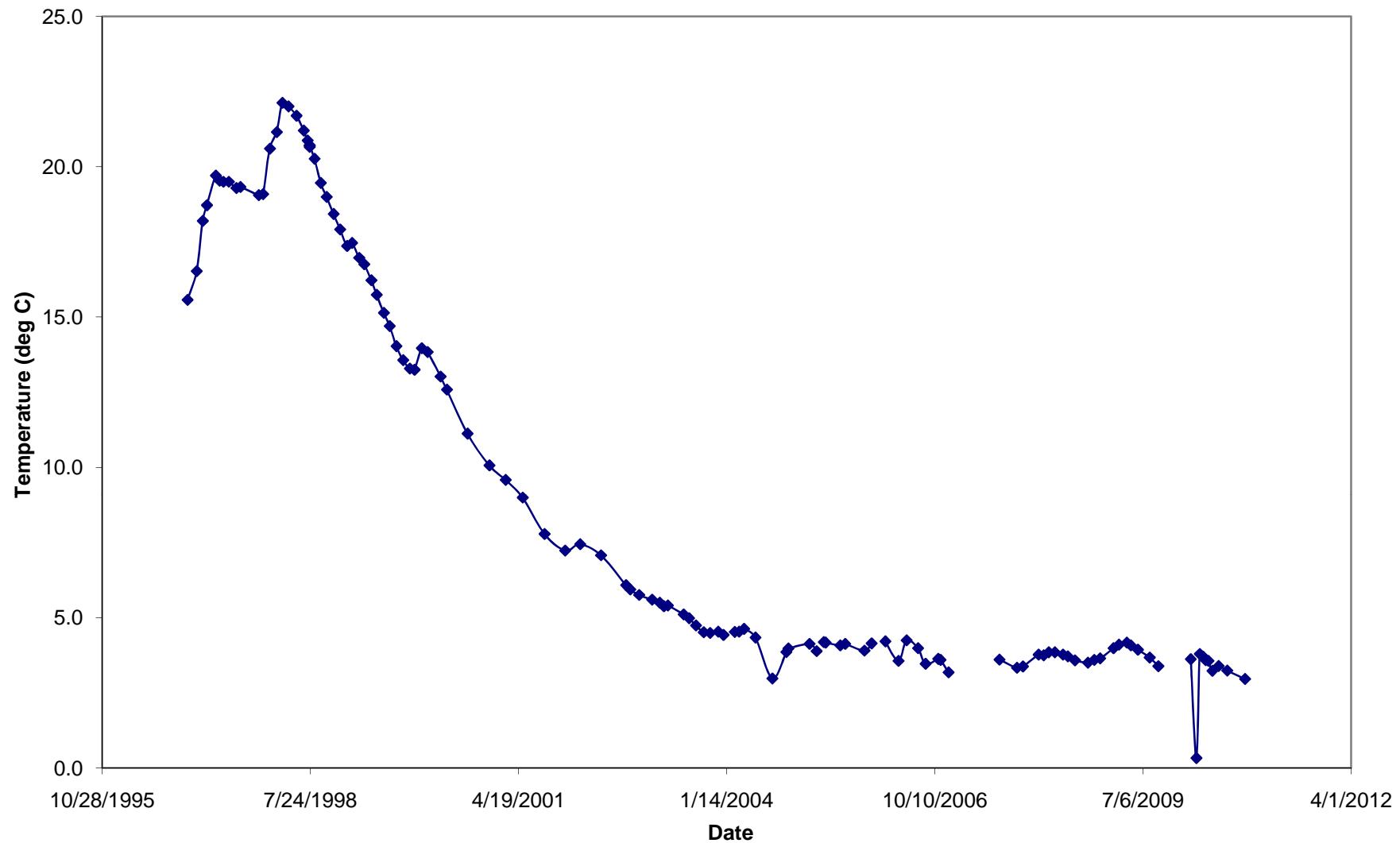
T-96-021 Temperature at 40 feet



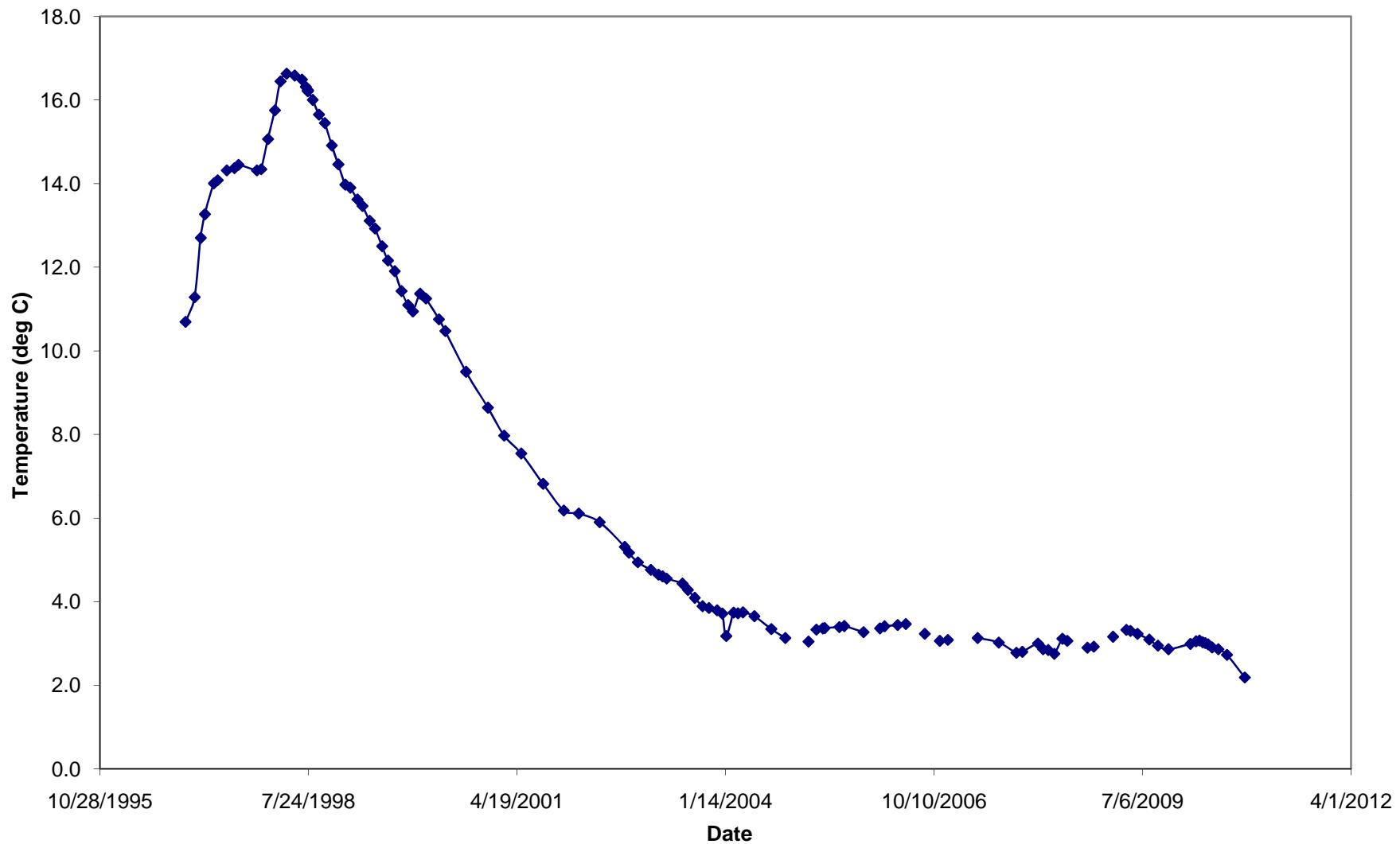
T-96-021 Temperature at 45 feet



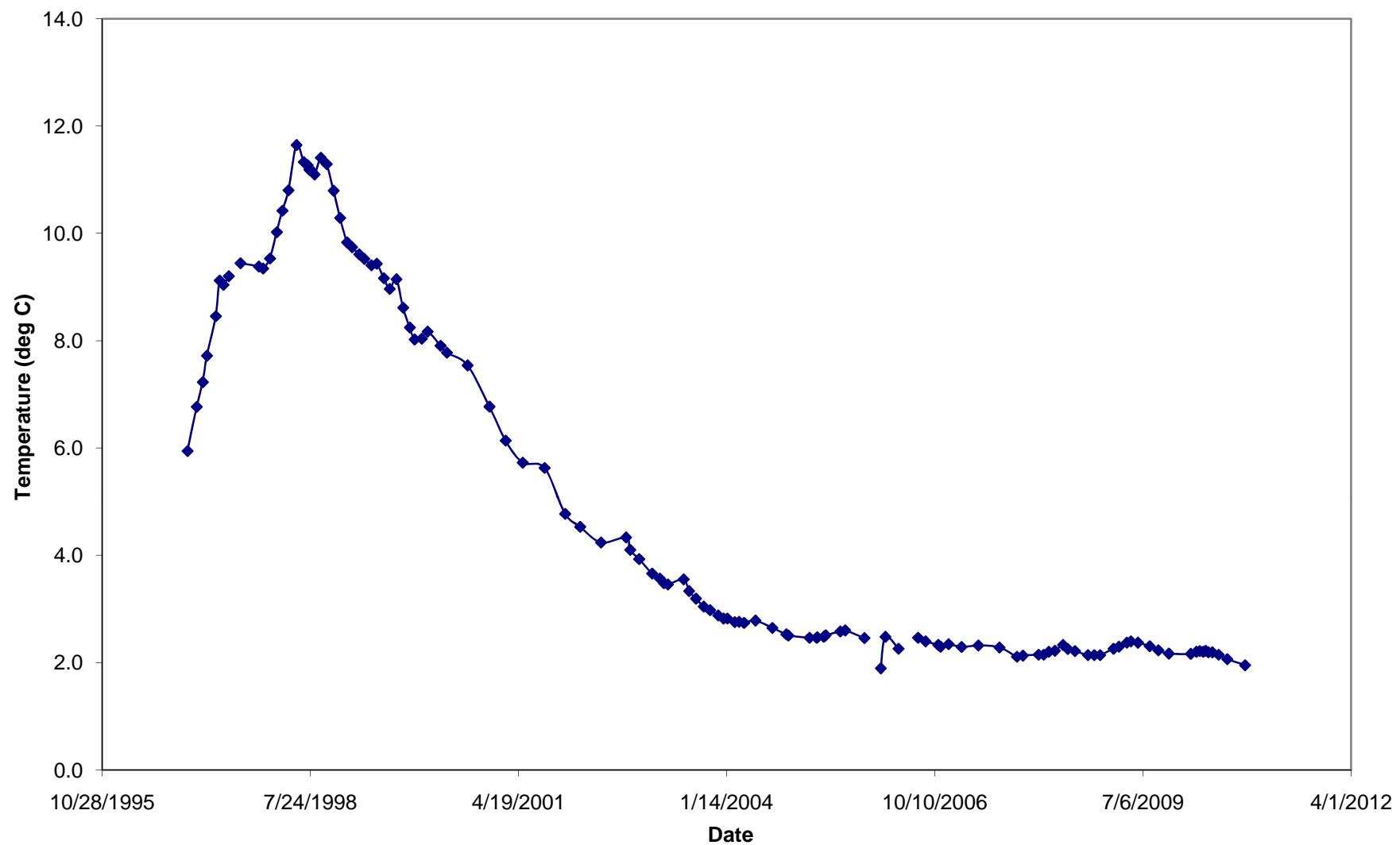
T-96-021 Temperature at 50 feet



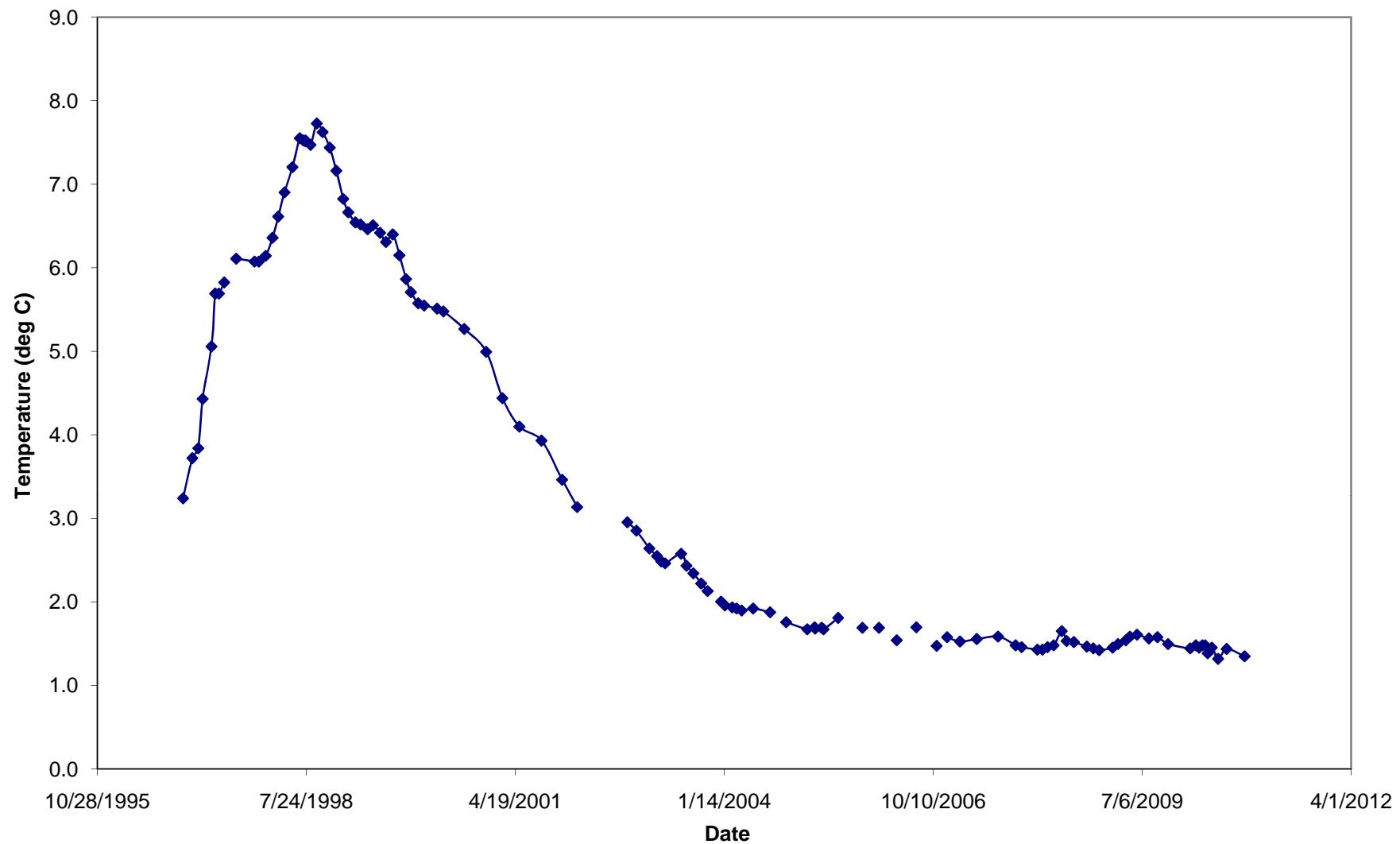
T-96-021 Temperature at 55 feet



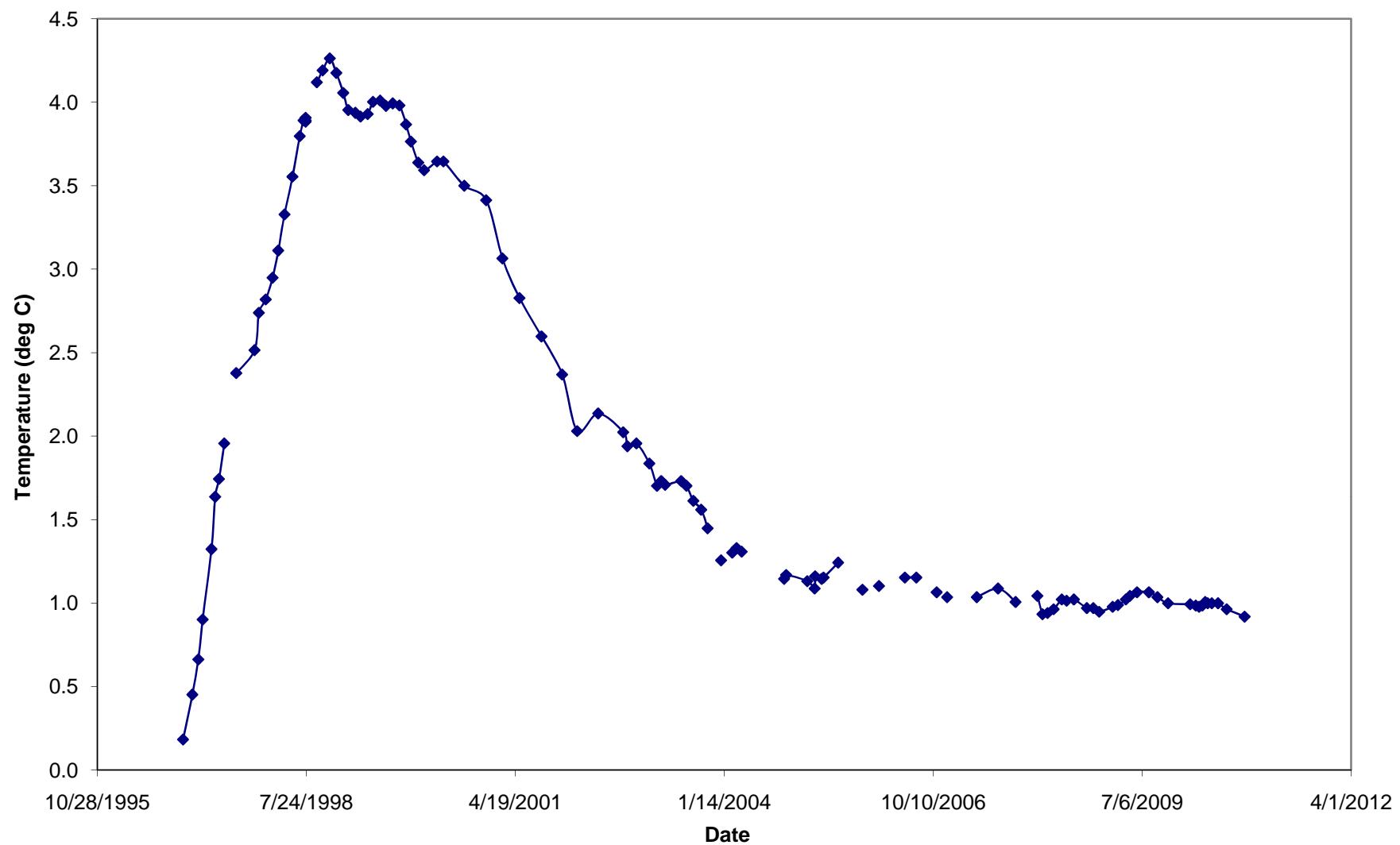
T-96-021 Temperature at 60 feet



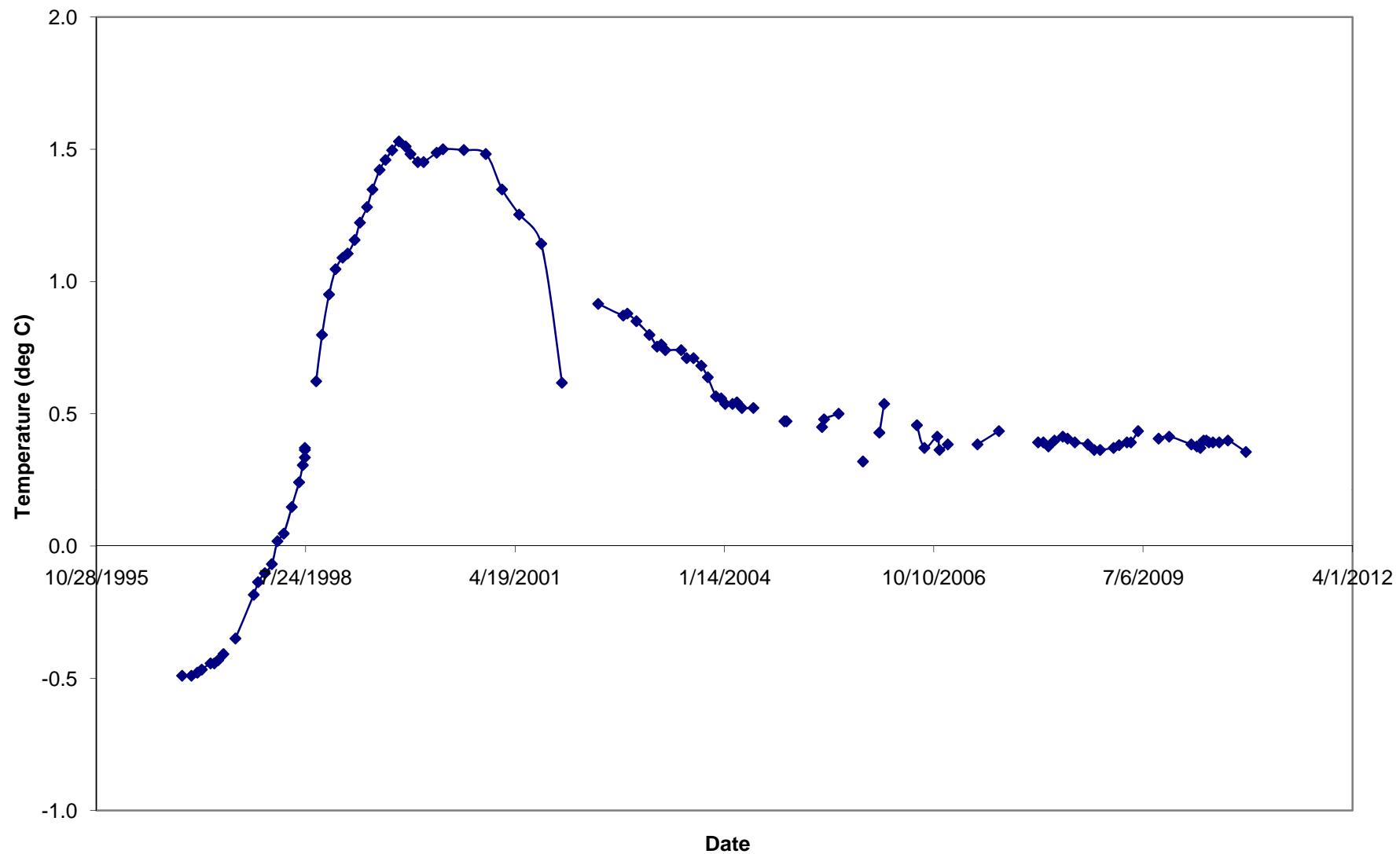
T-96-021 Temperature at 65 feet



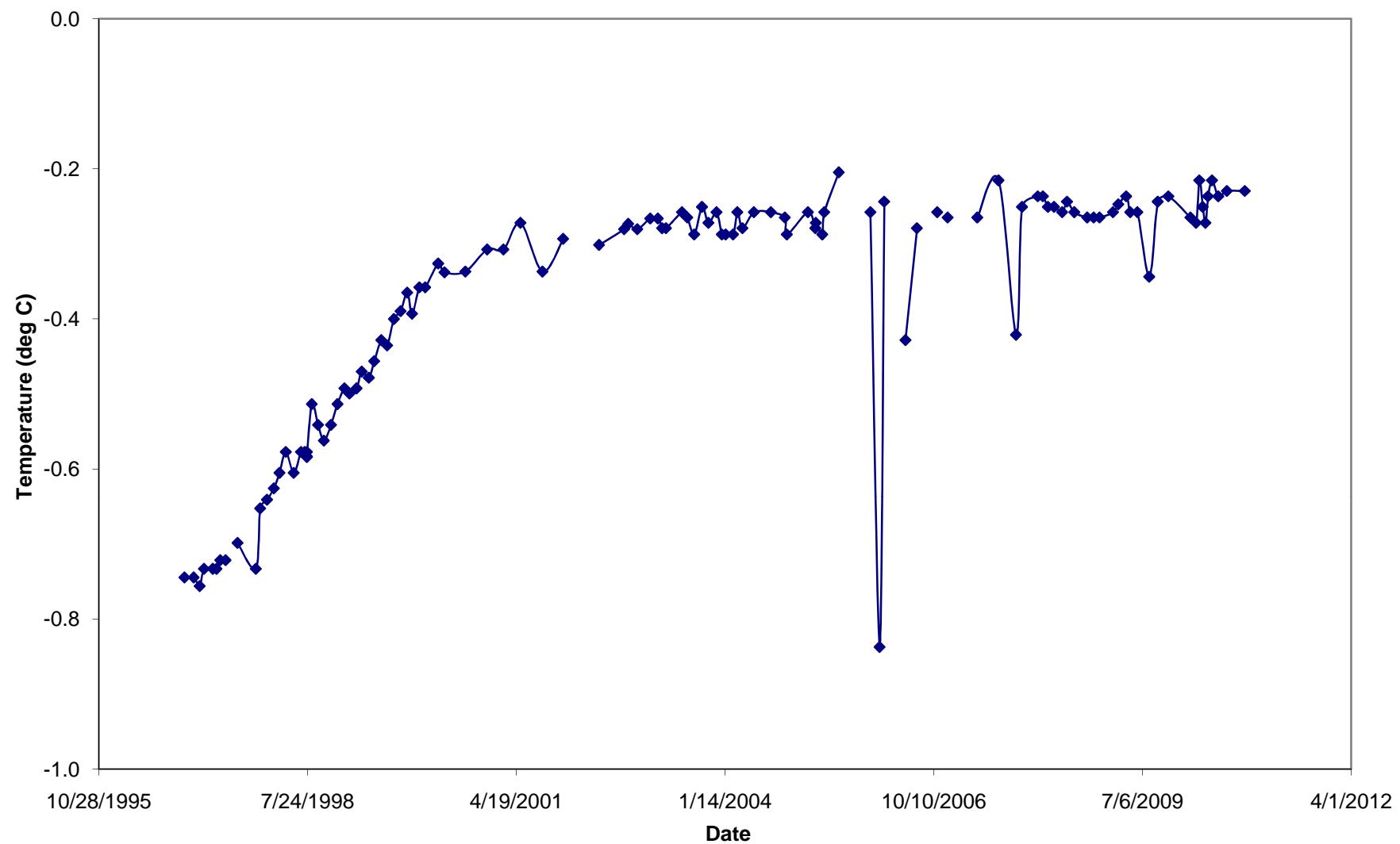
T-96-021 Temperature at 70 feet



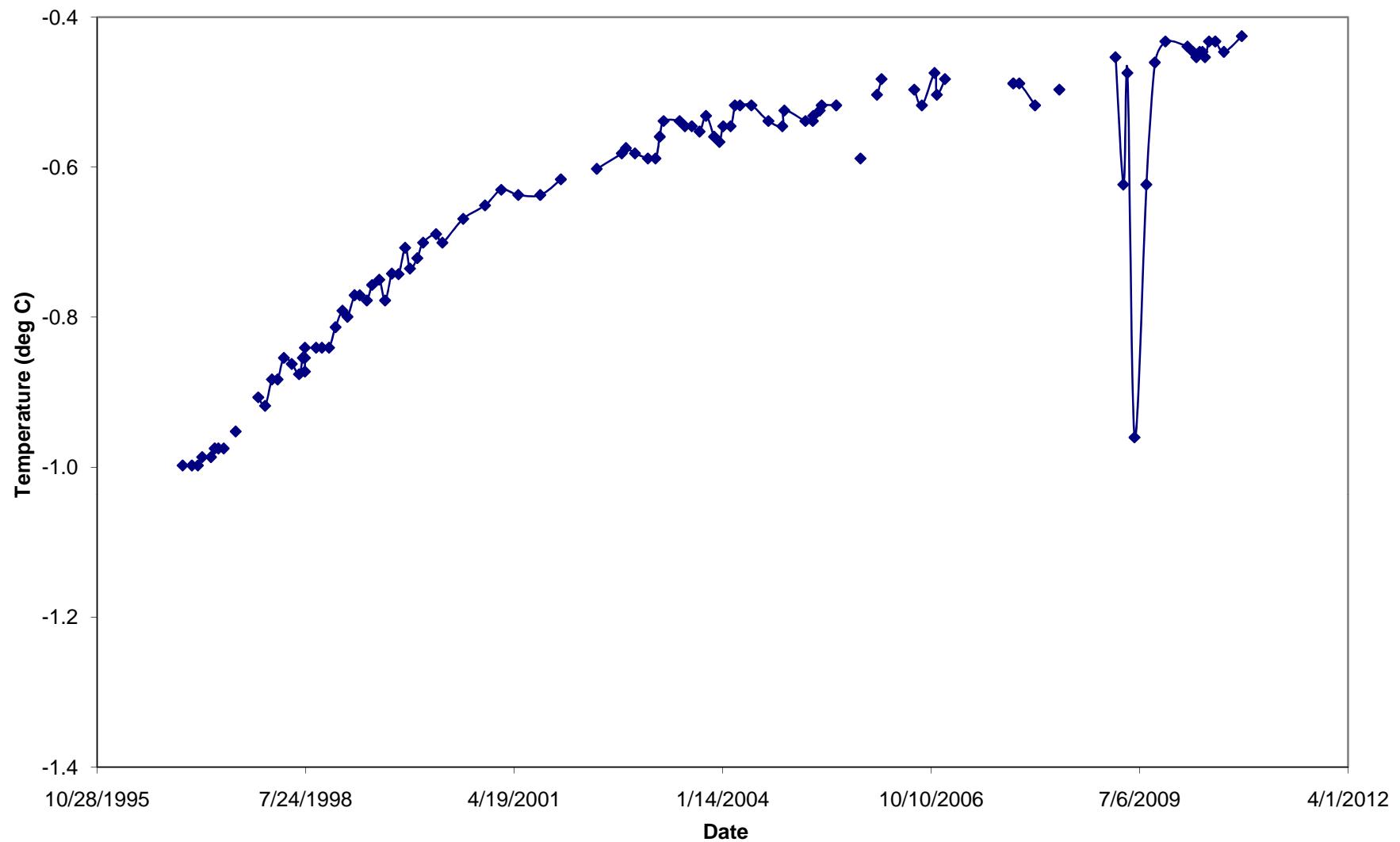
T-96-021 Temperature at 75 feet



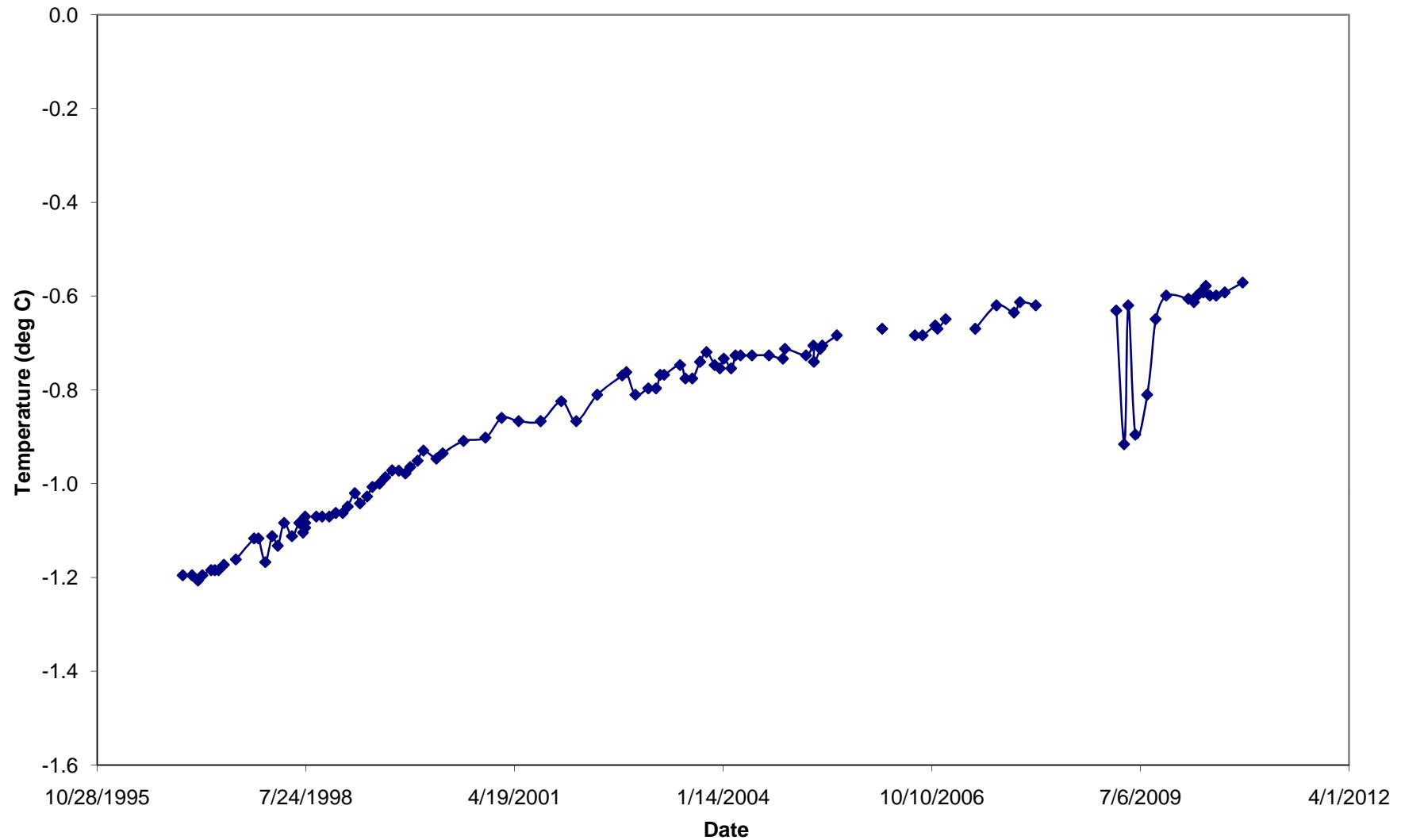
T-96-021 Temperature at 80 feet



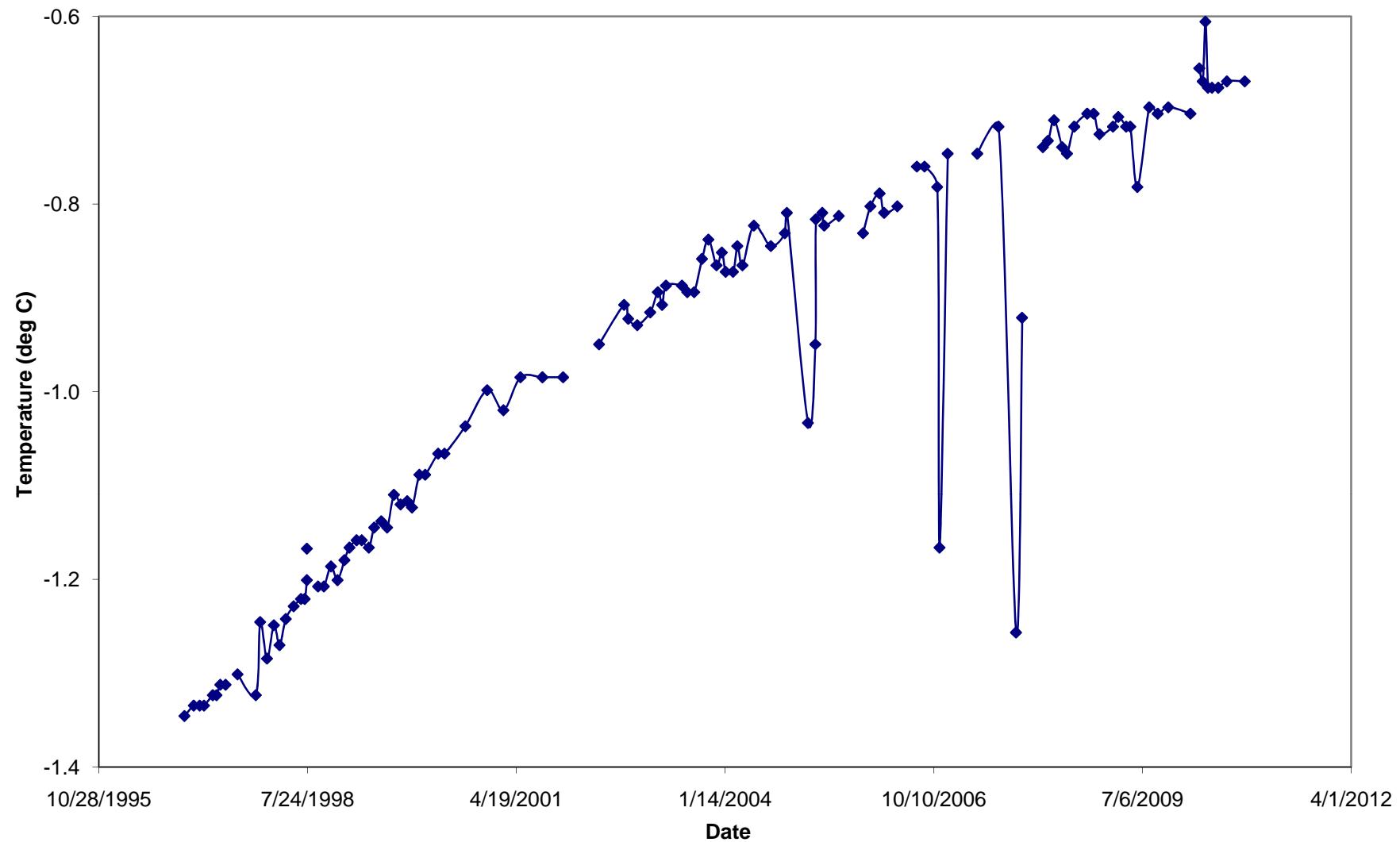
T-96-021 Temperature at 85 feet



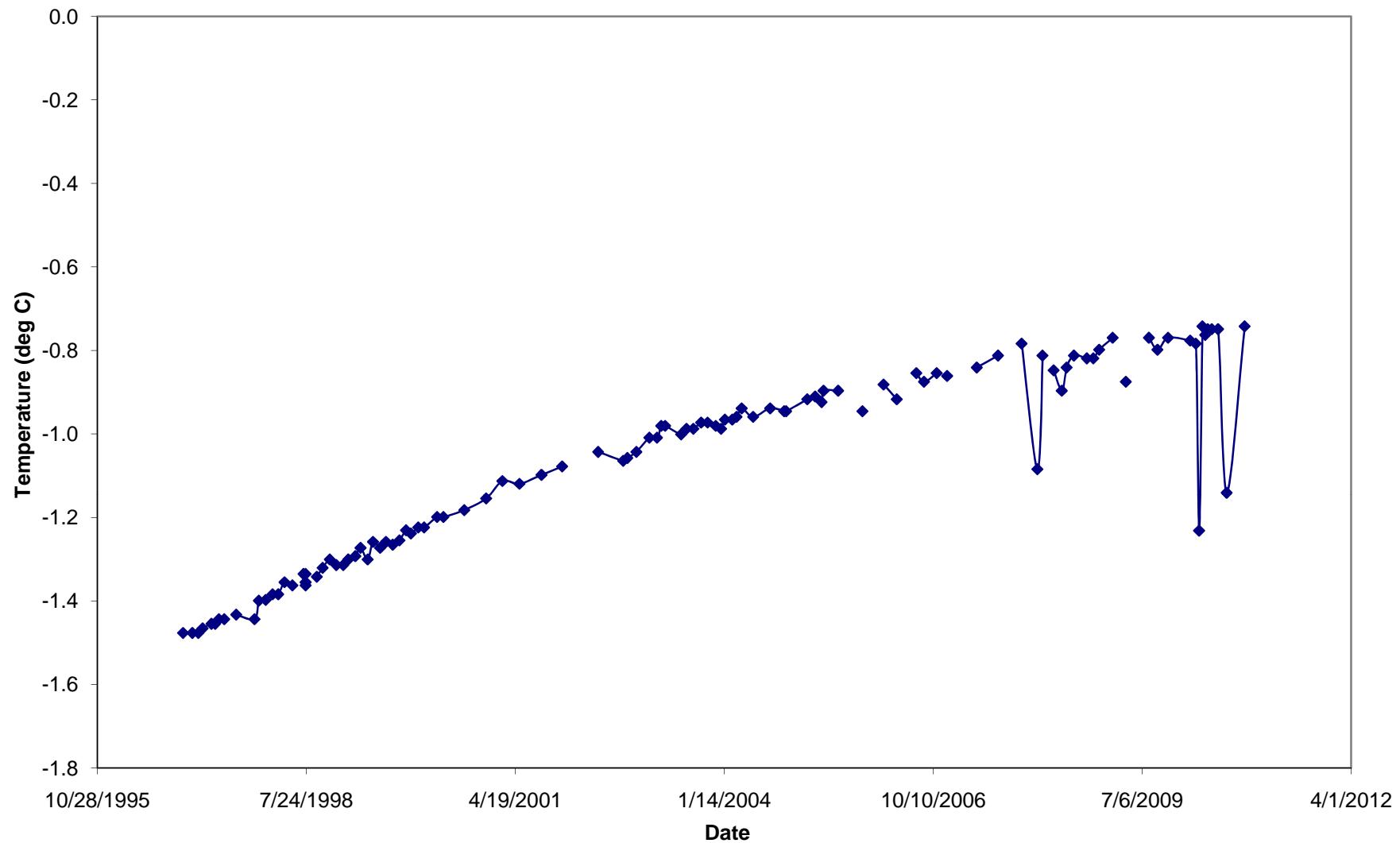
T-96-021 Temperature at 90 feet



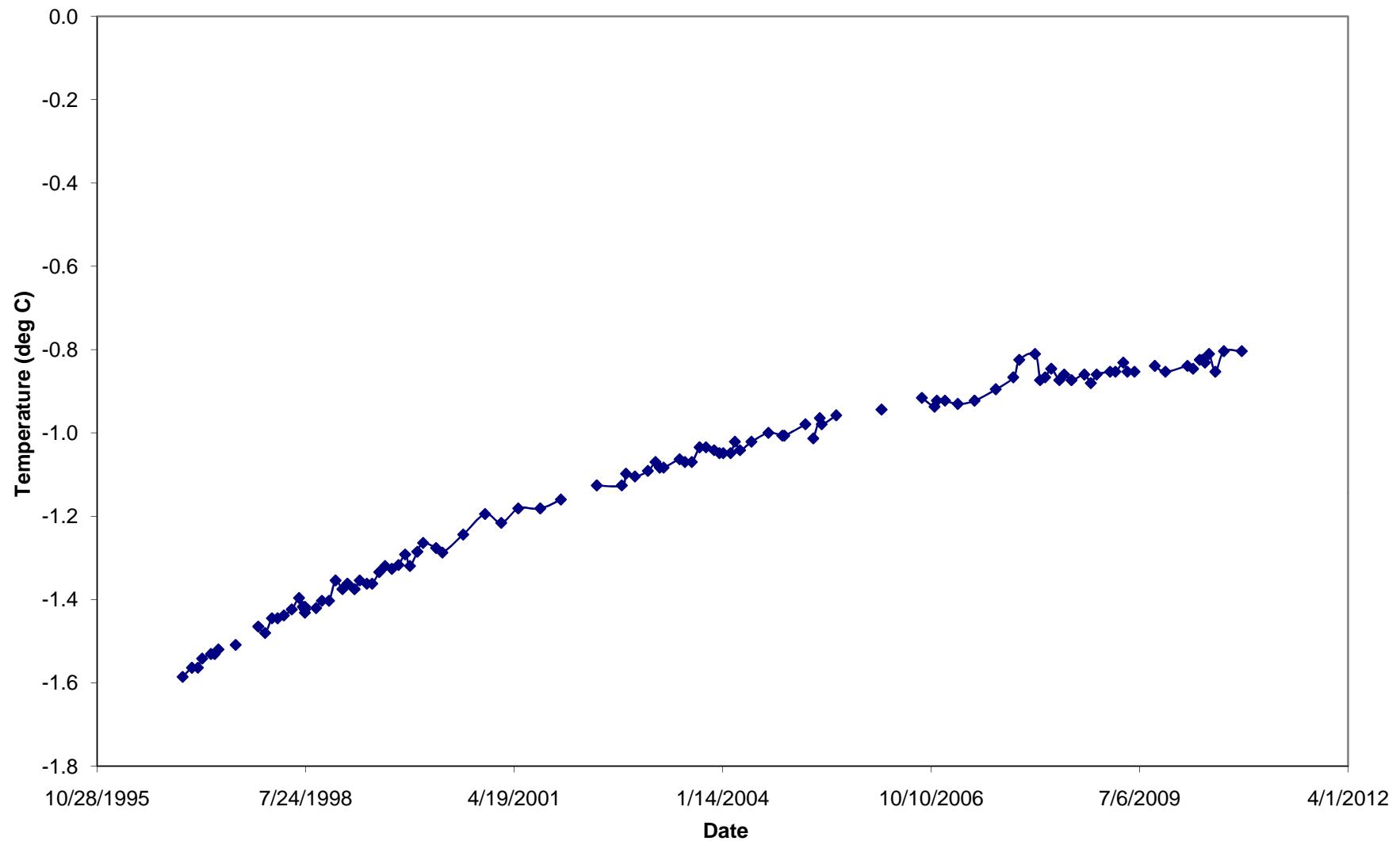
T-96-021 Temperature at 95 feet



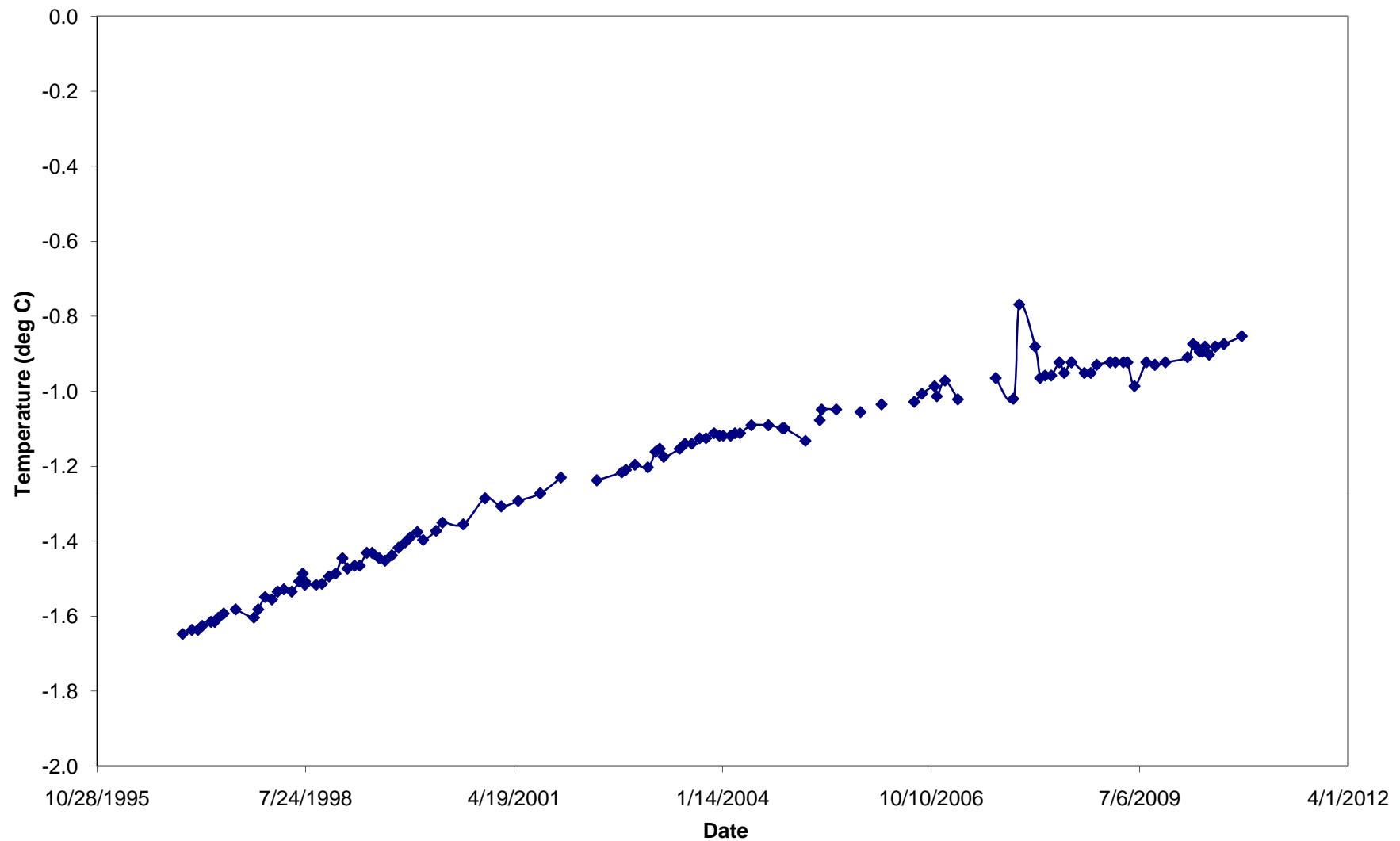
T-96-021 Temperature at 100 feet



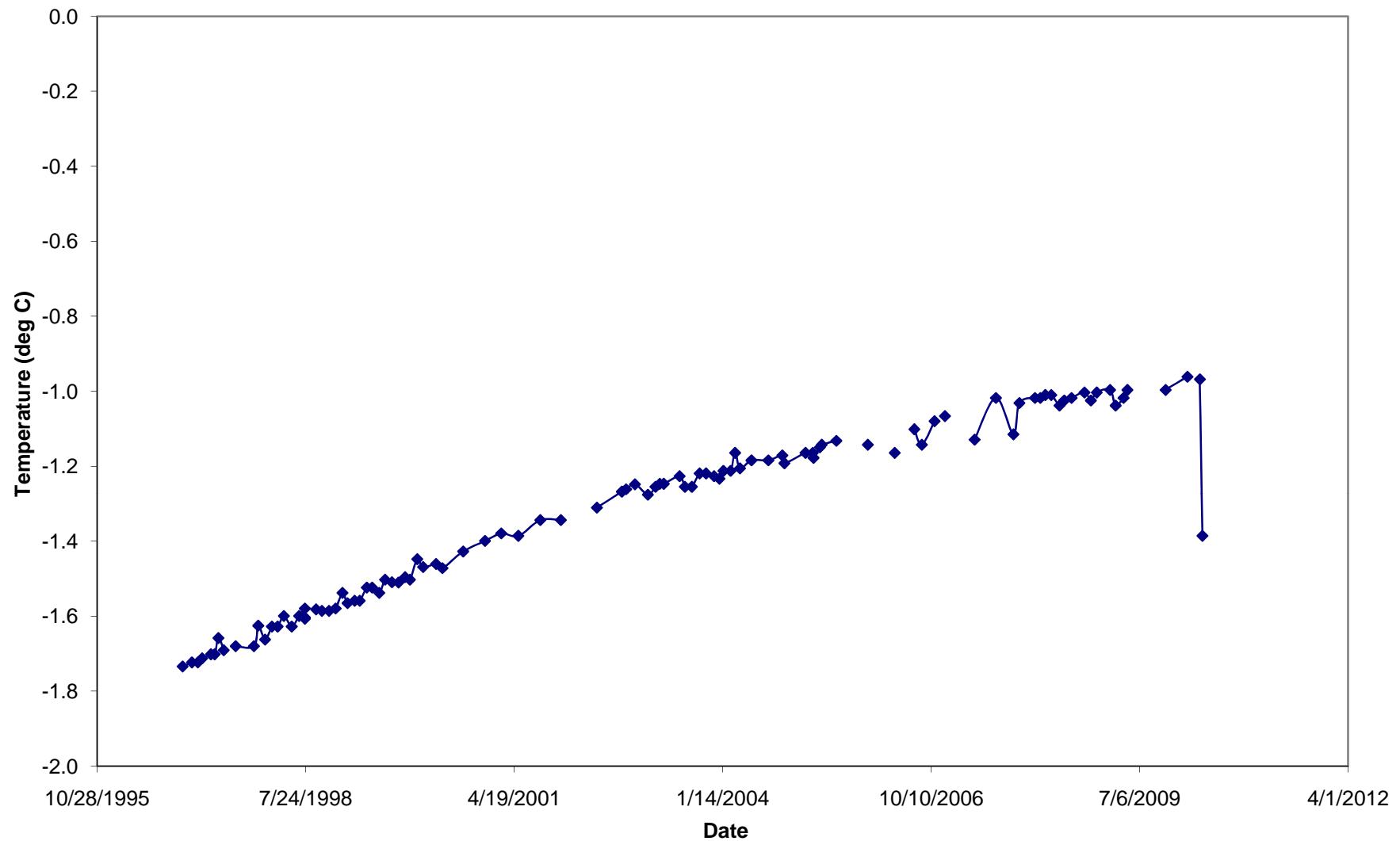
T-96-021 Temperature at 105 feet



T-96-021 Temperature at 110 feet

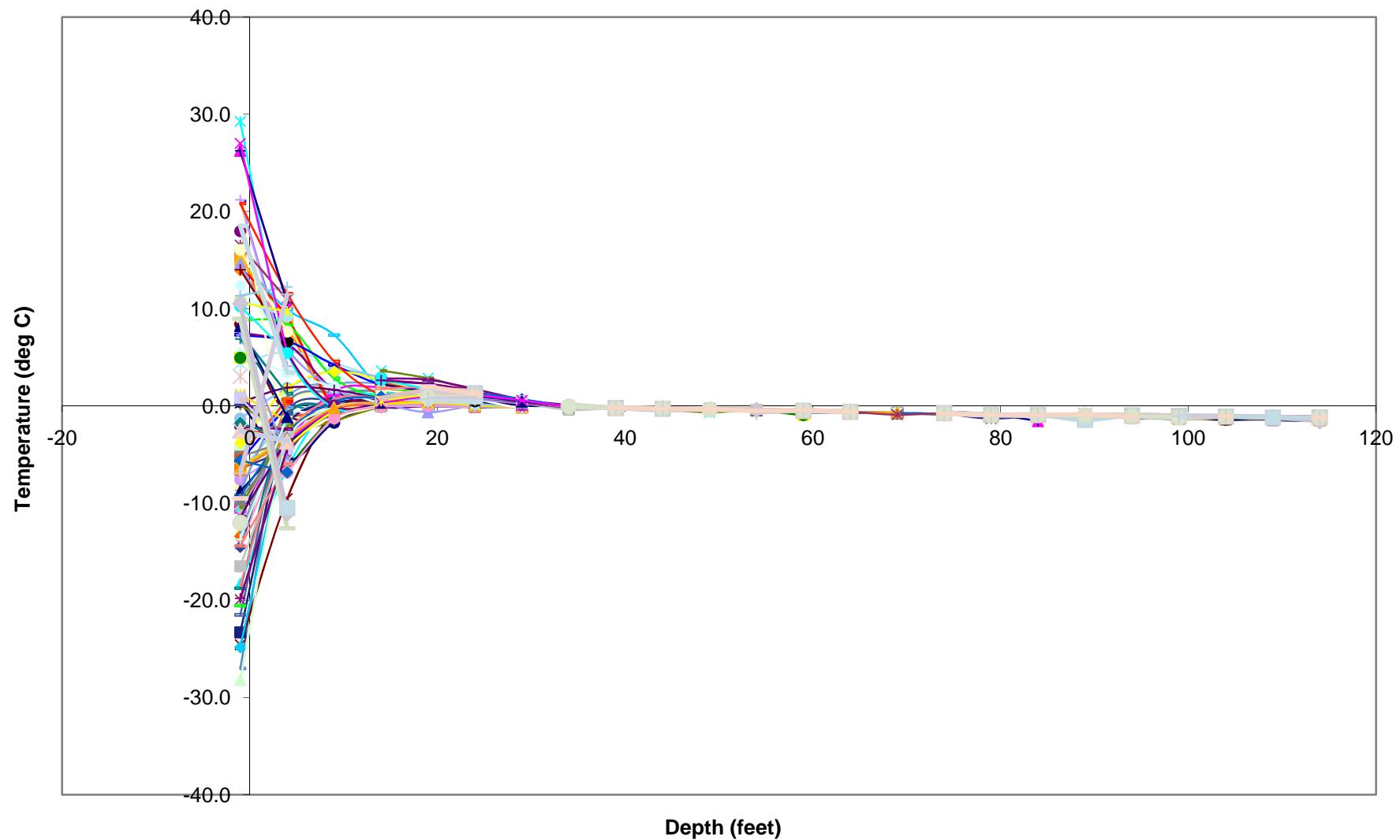


T-96-021 Temperature at 115 feet

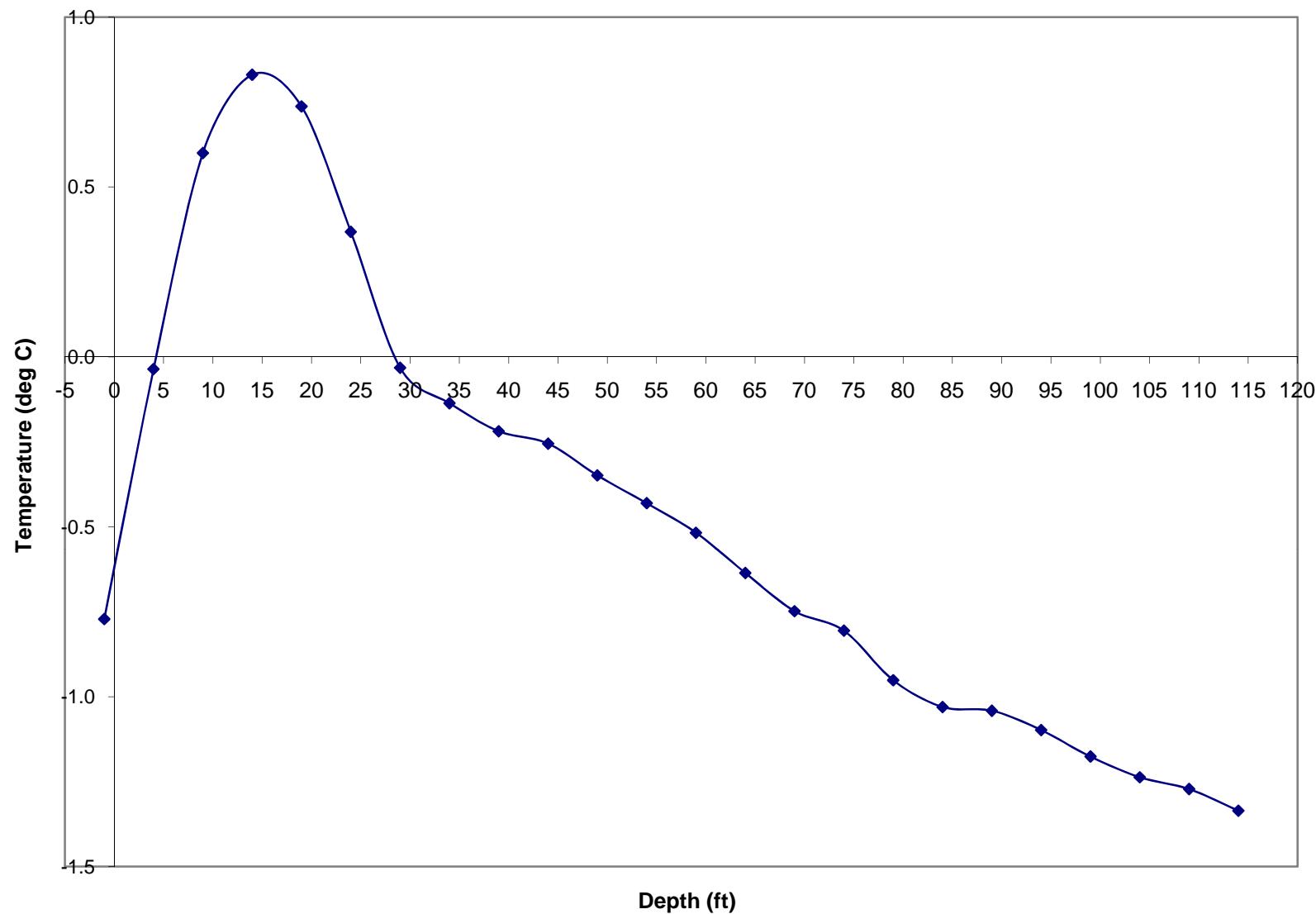


T-96-022

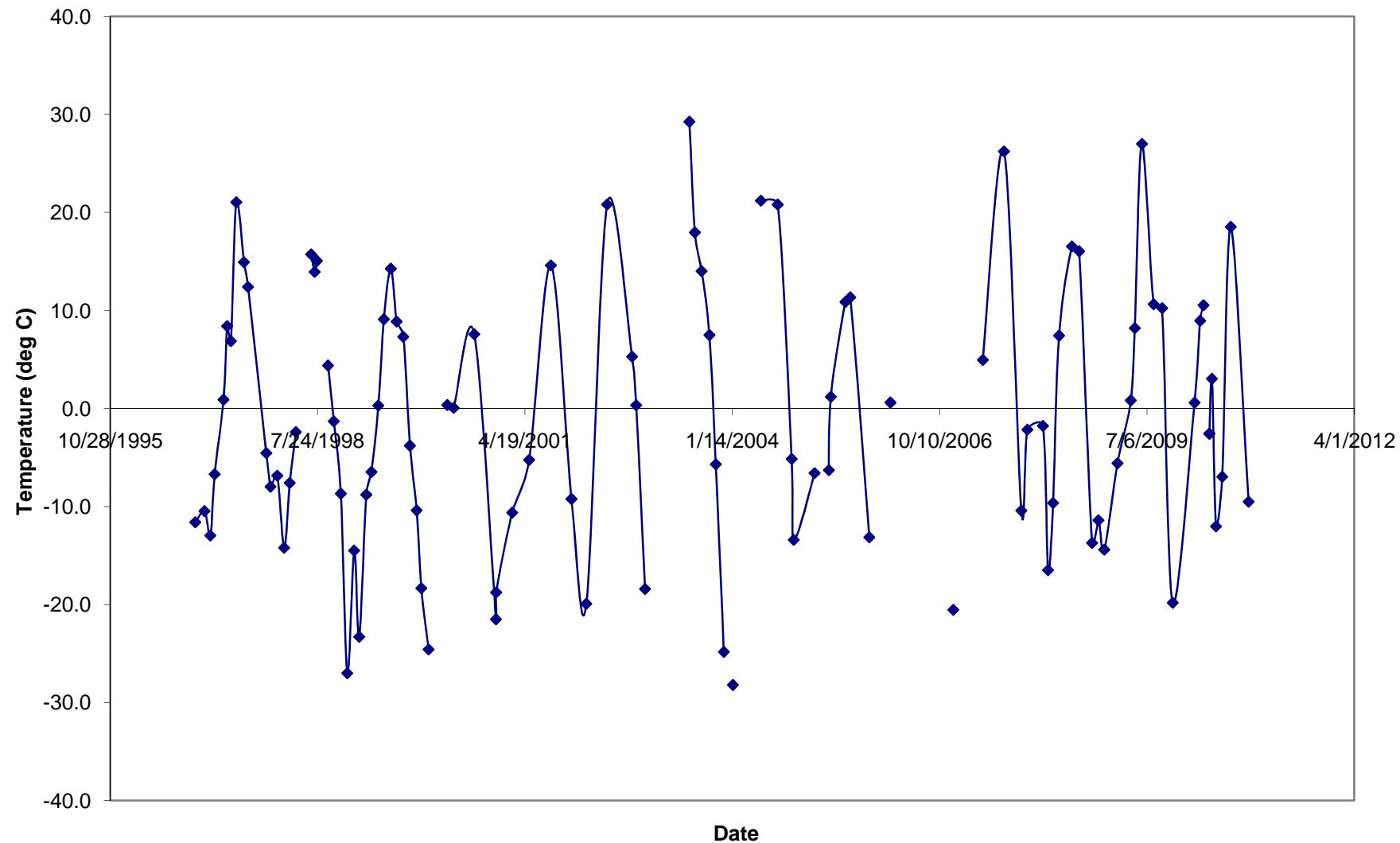
Temperature depth plot - T-96-022



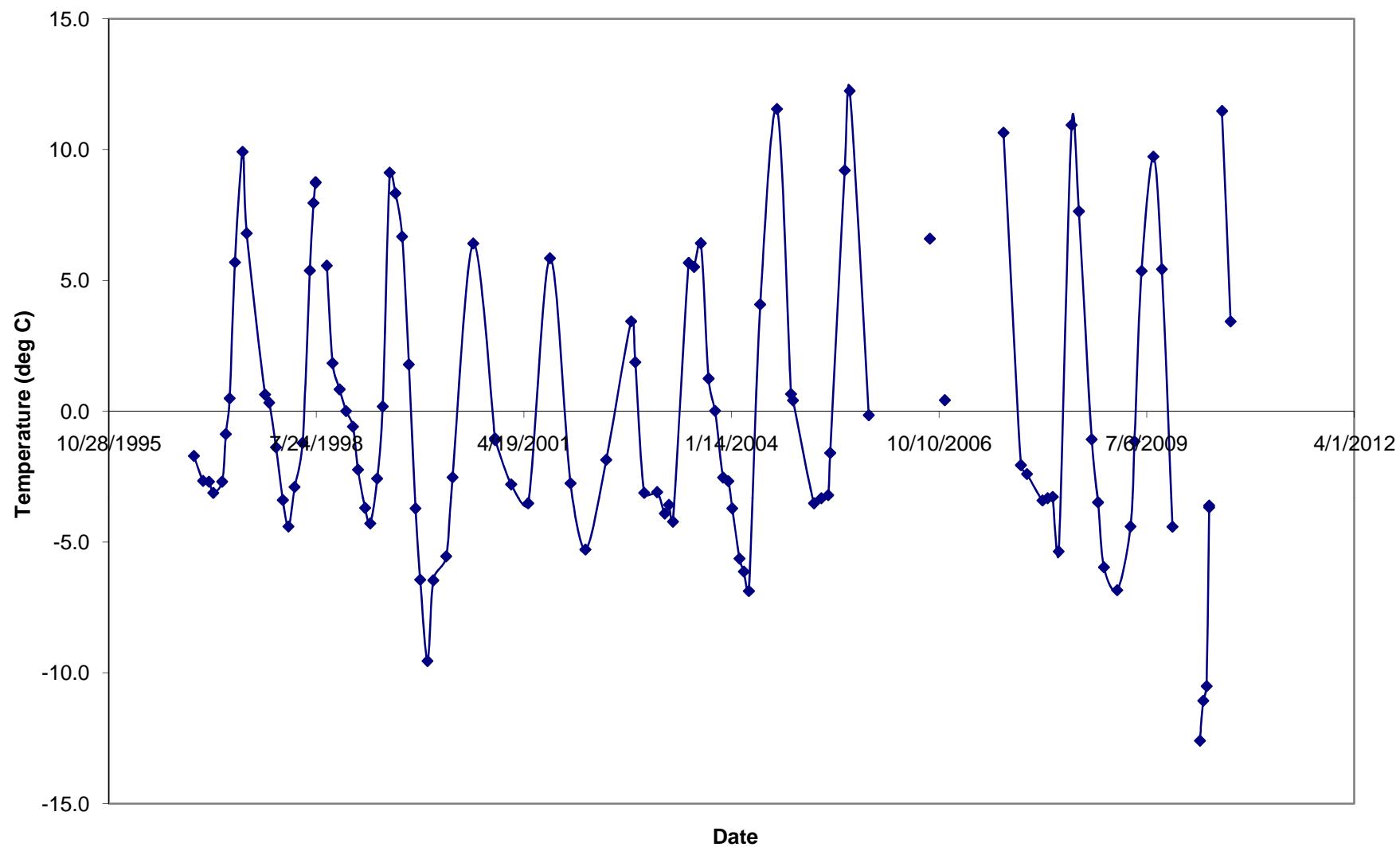
Average Temperature Depth Plot for T-96-022



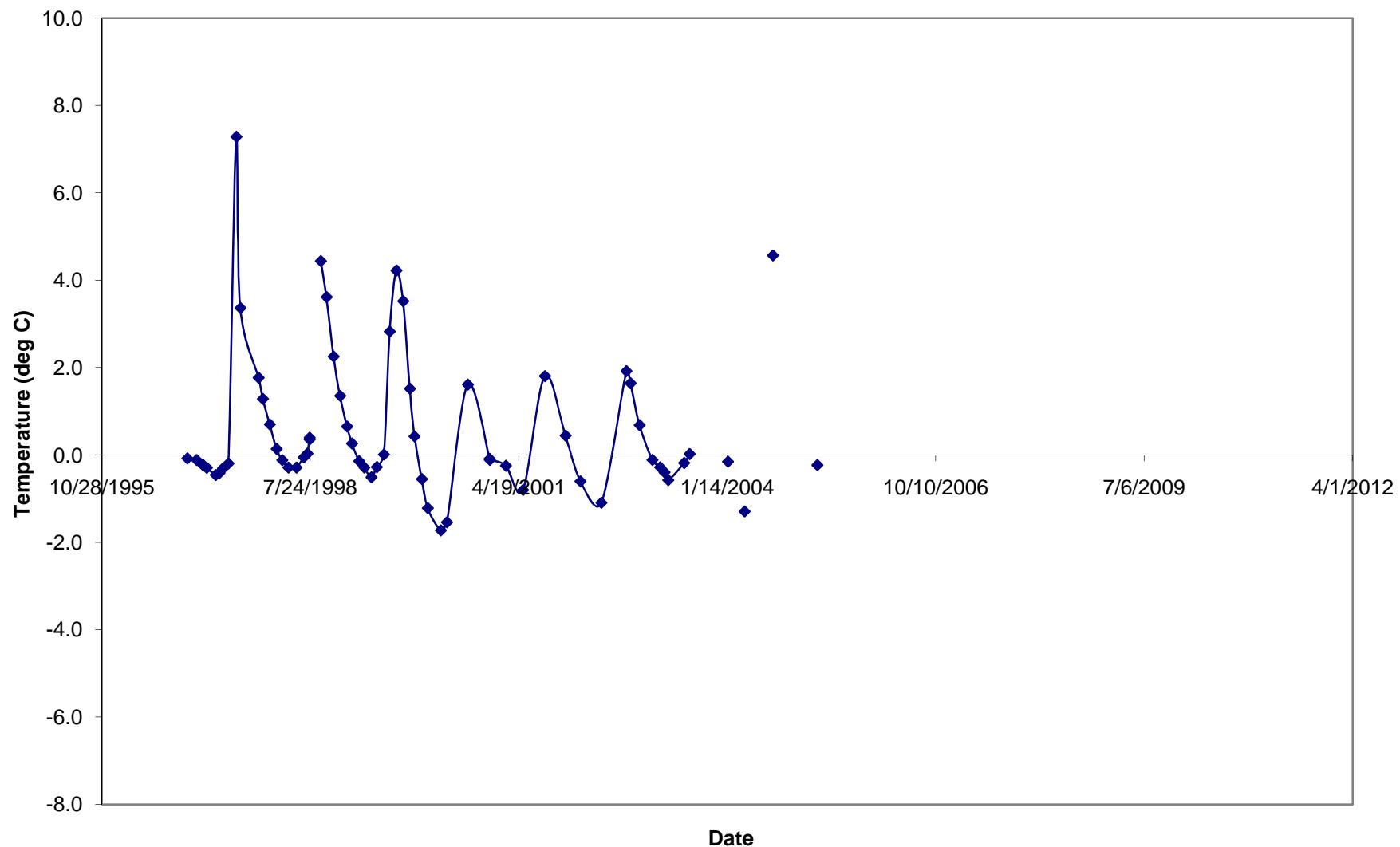
T-96-022 Temperature at -1 feet



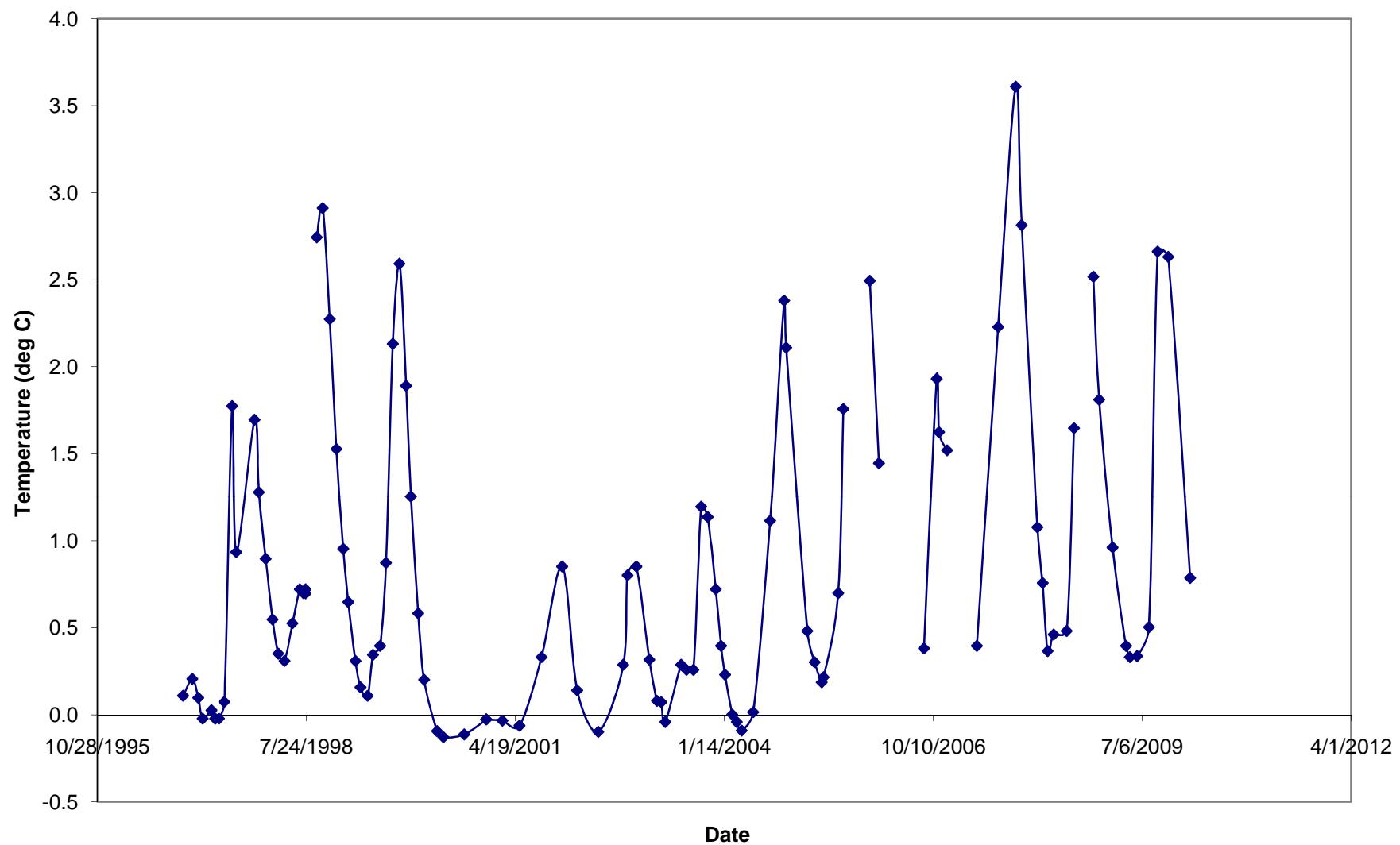
T-96-022 Temperature at 4 feet



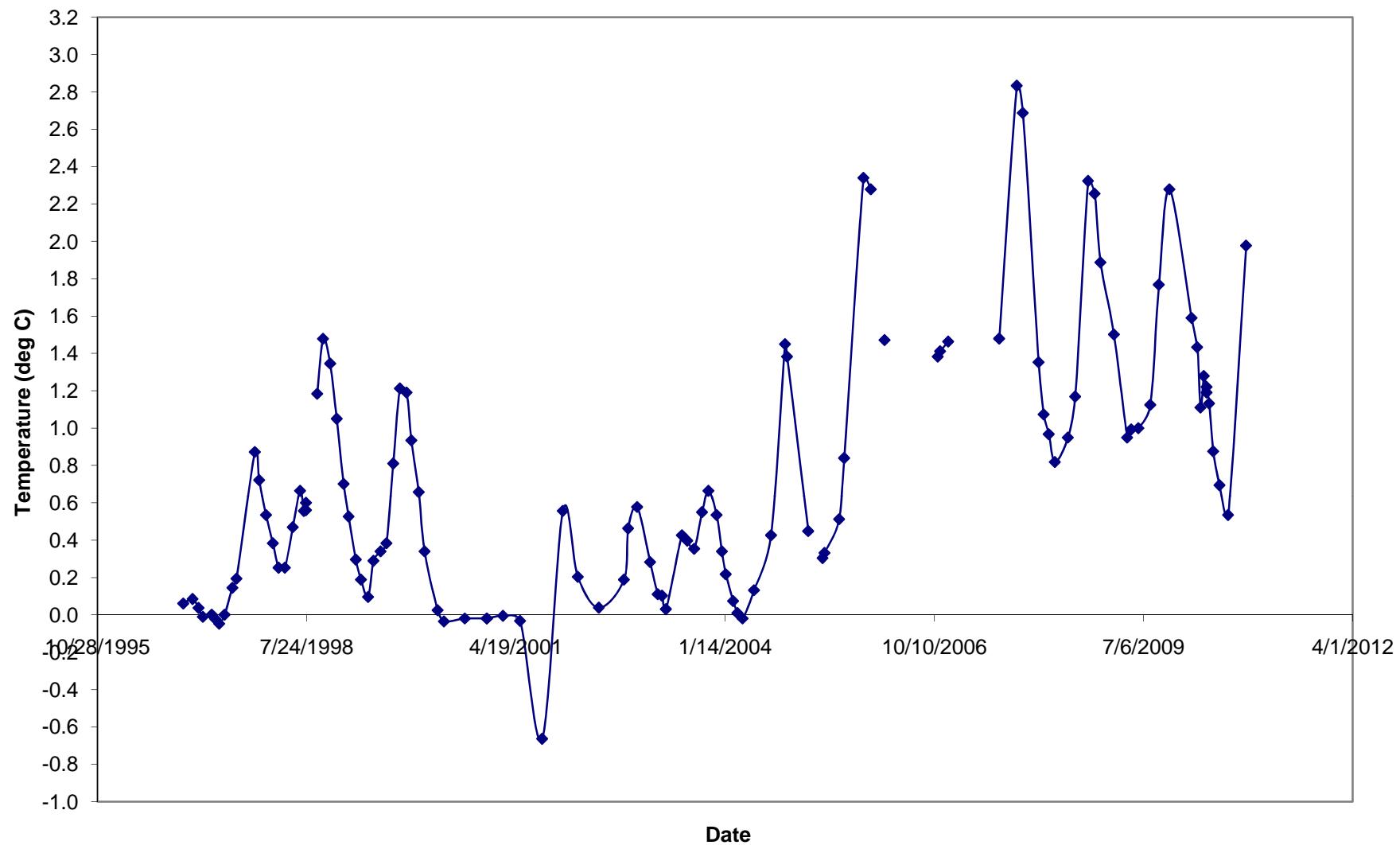
T-96-022 Temperature at 9 feet



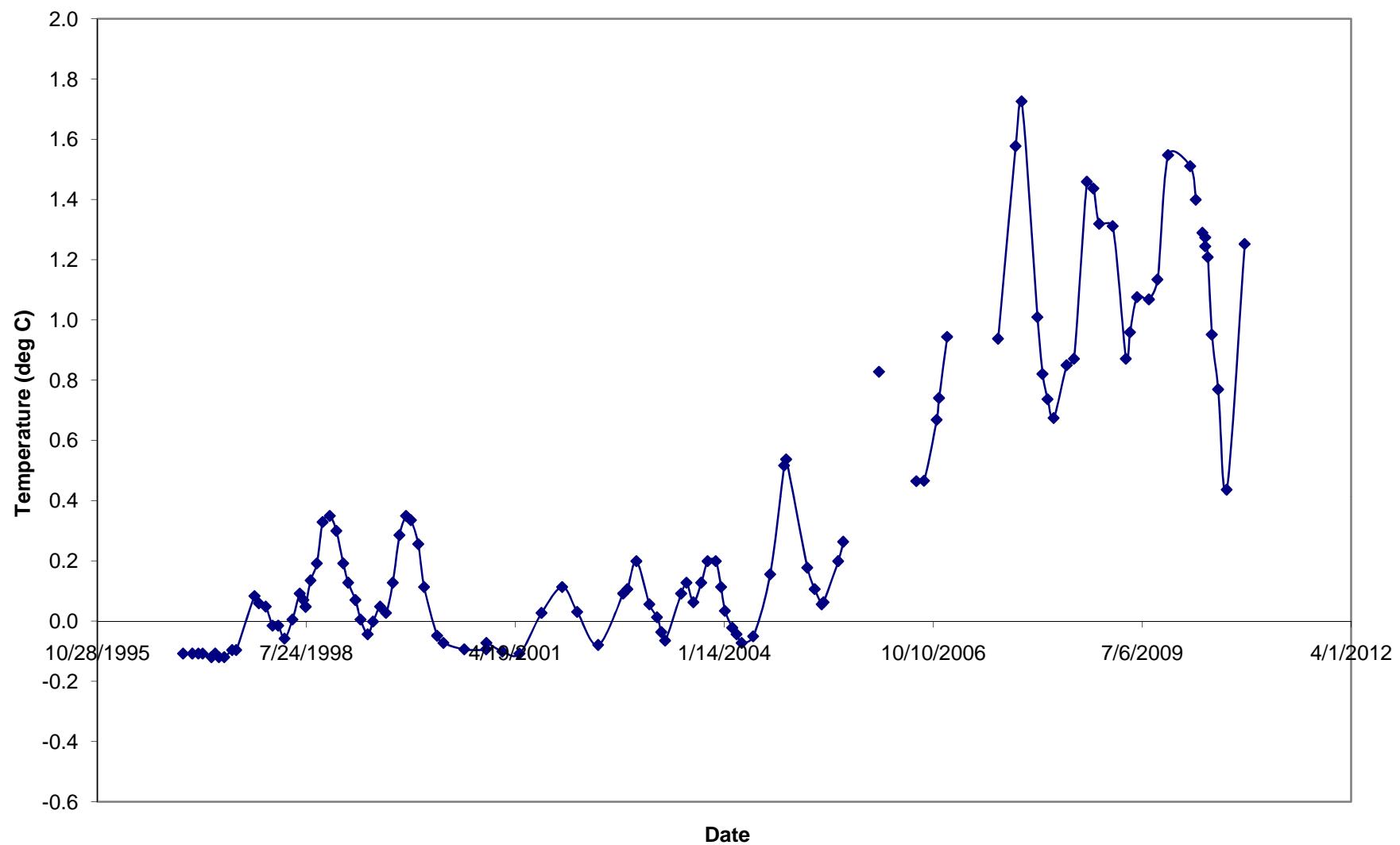
T-96-022 Temperature at 14 feet



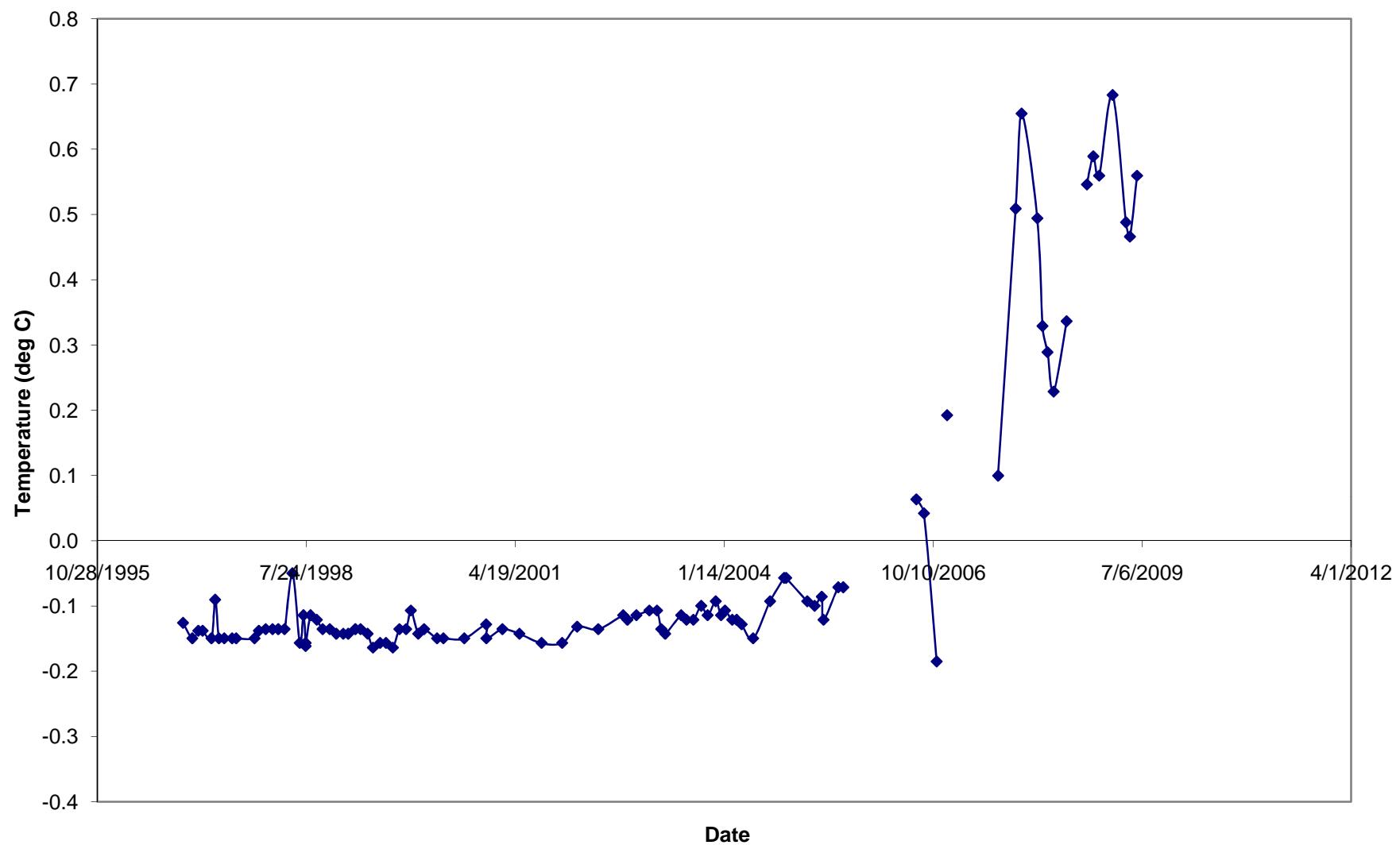
T-96-022 Temperature at 19 feet



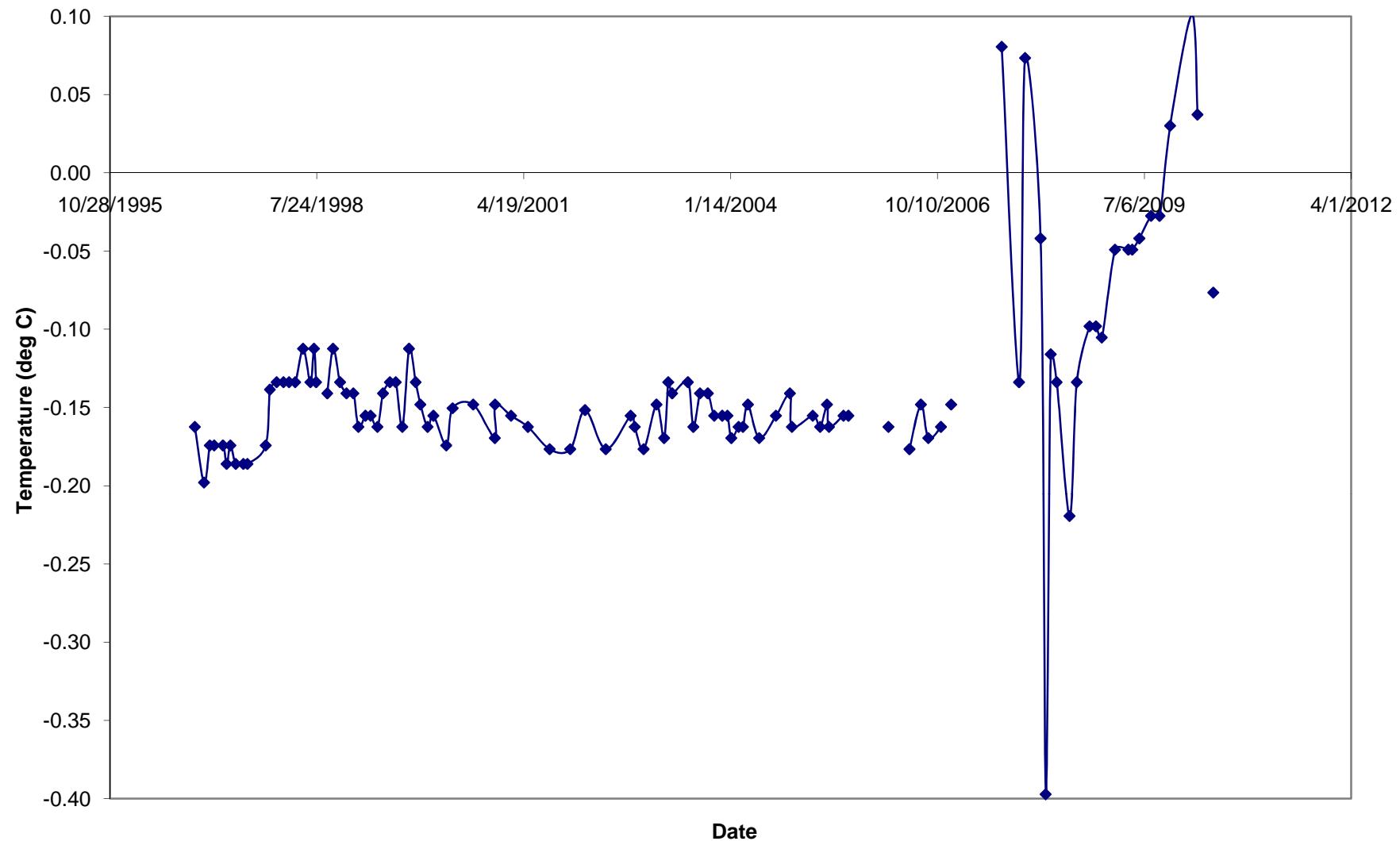
T-96-022 Temperature at 24 feet



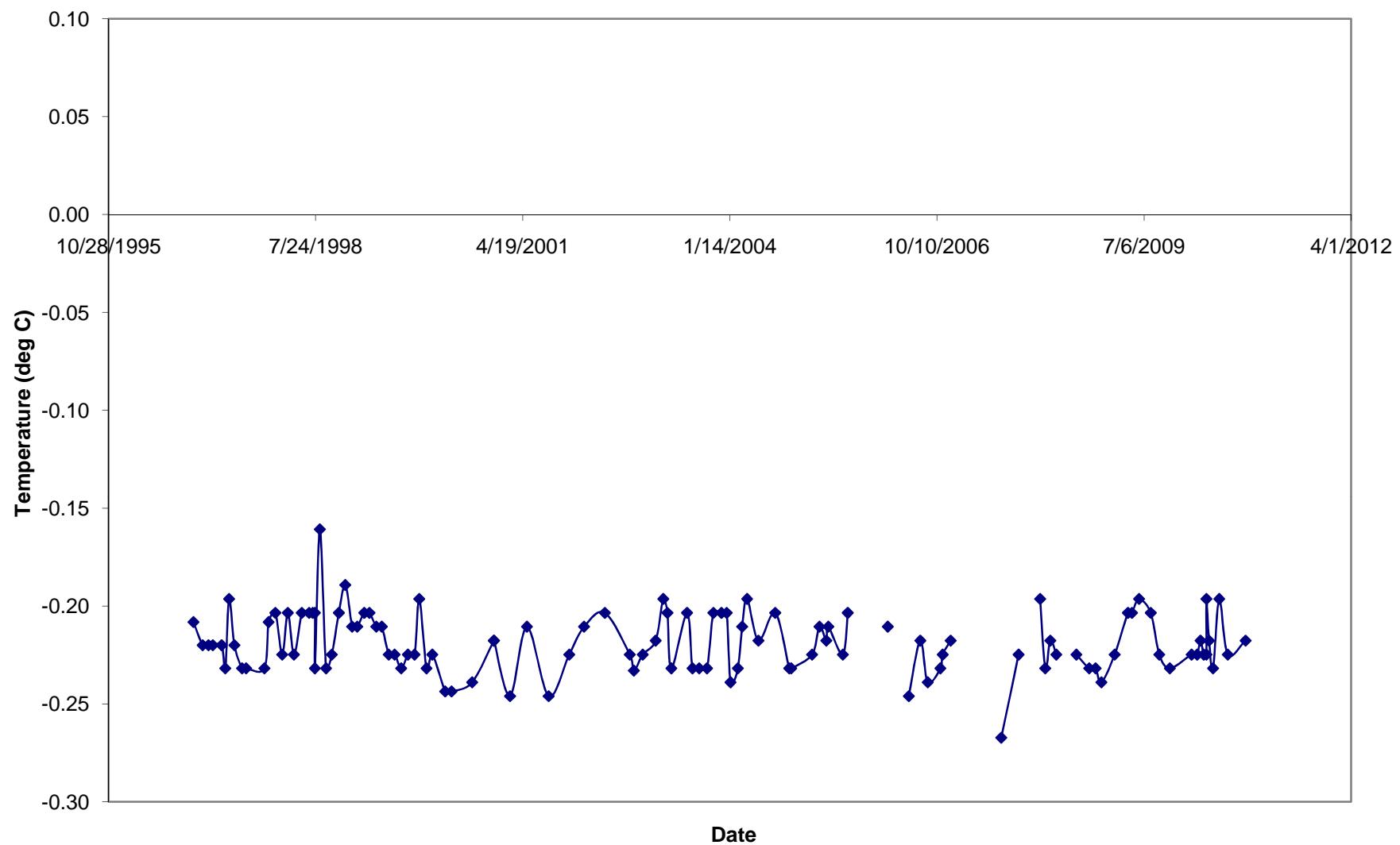
T-96-022 Temperature at 29 feet



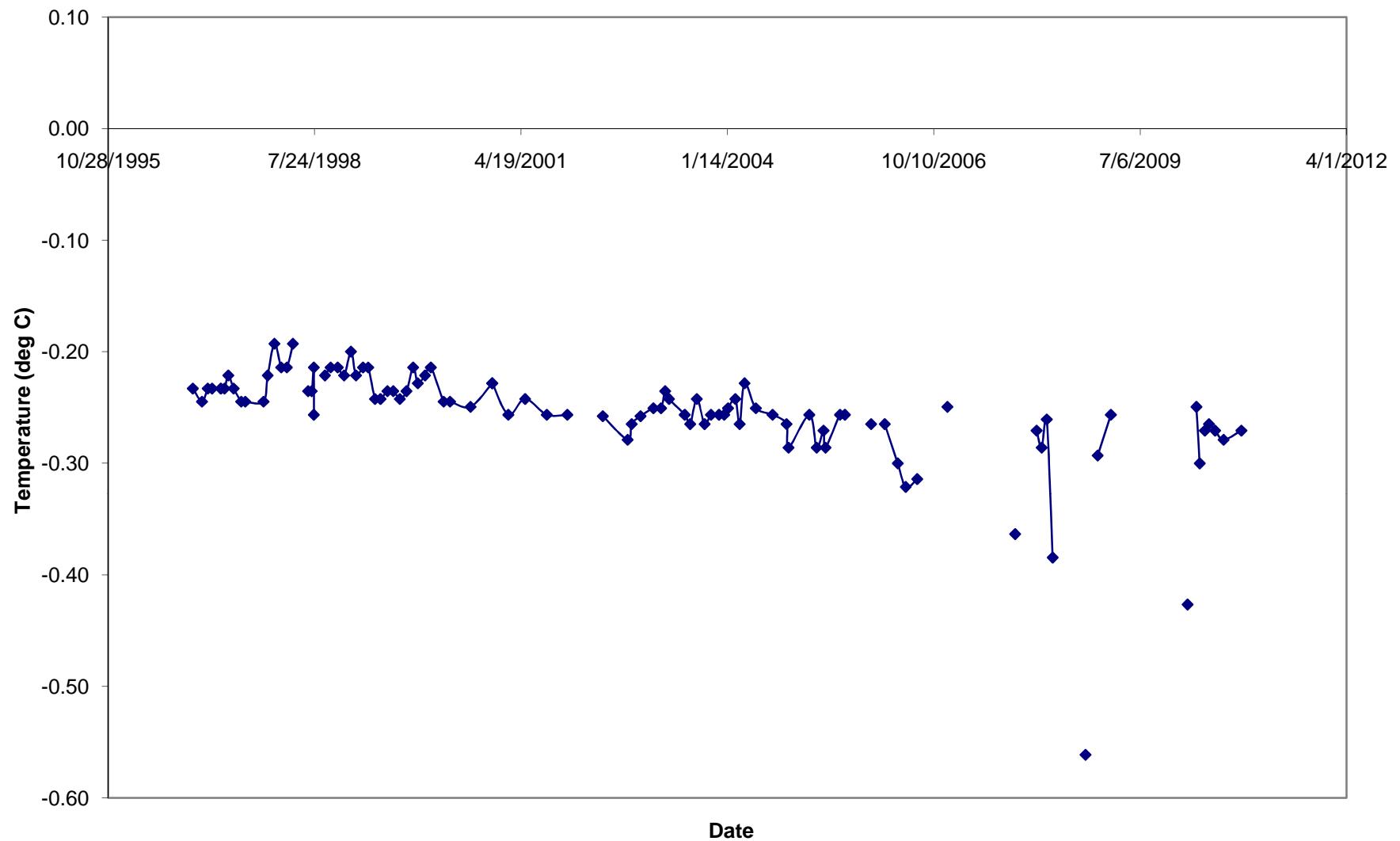
T-96-022 Temperature at 34 feet



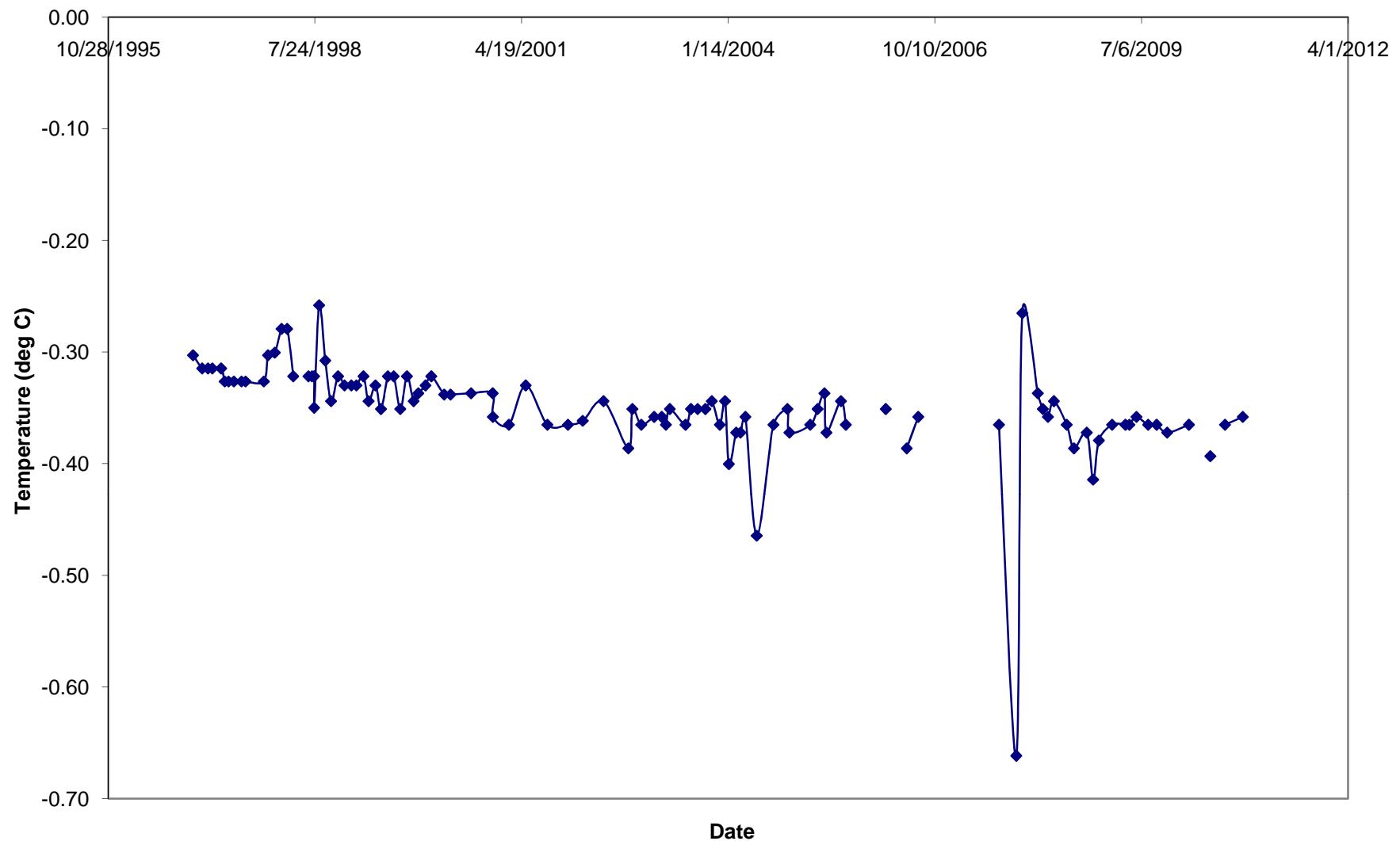
T-96-022 Temperature at 39 feet



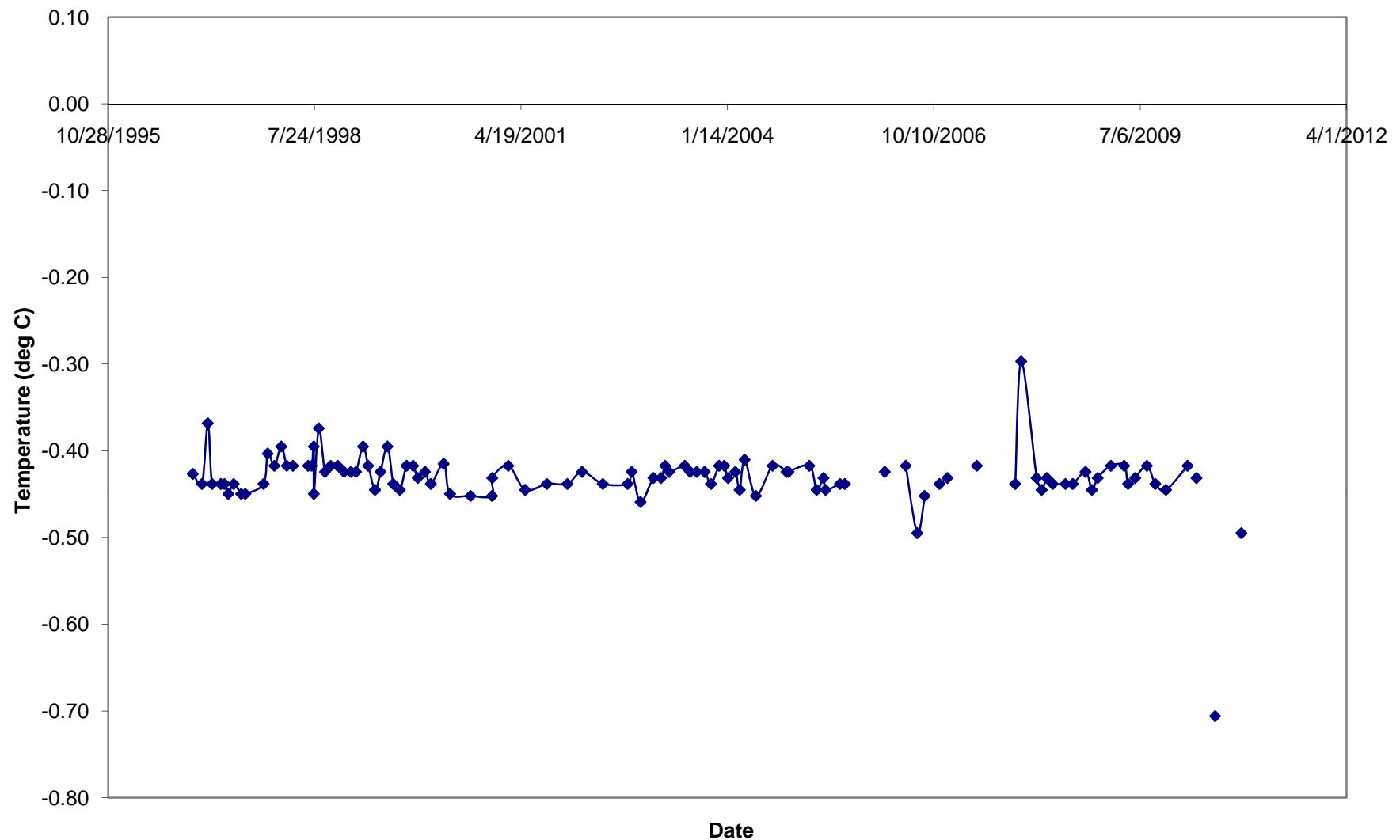
T-96-022 Temperature at 44 feet



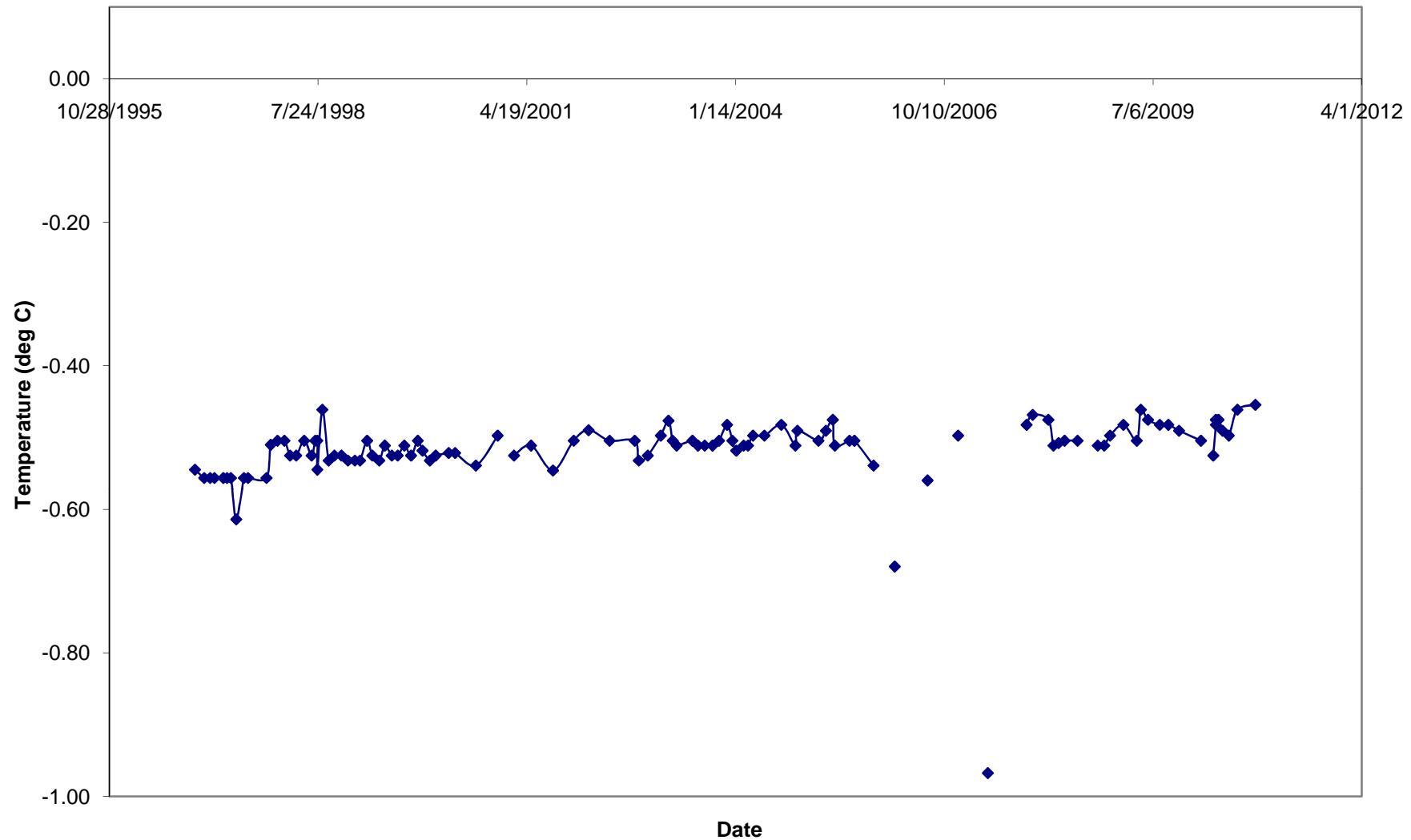
T-96-022 Temperature at 49 feet



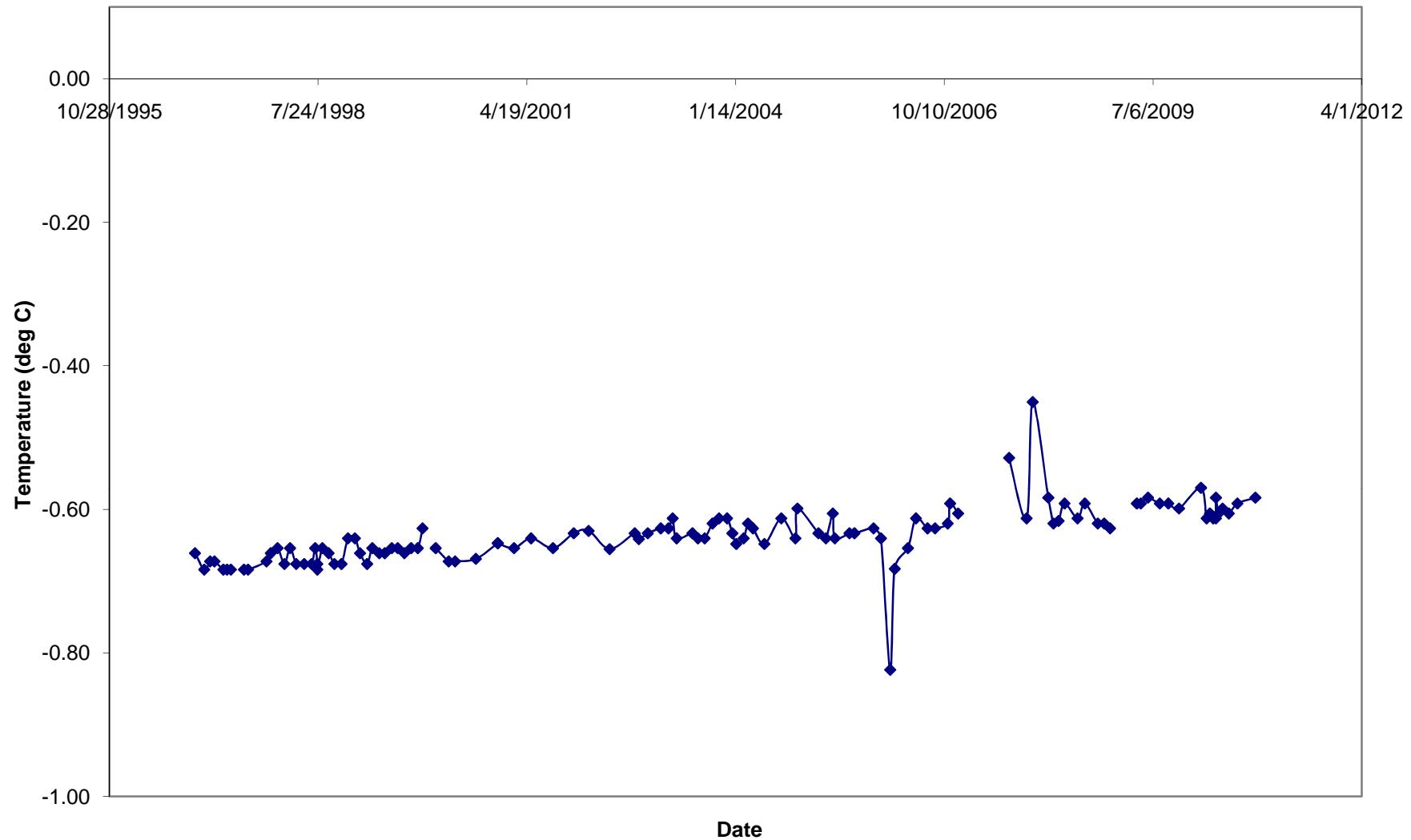
T-96-022 Temperature at 54 feet



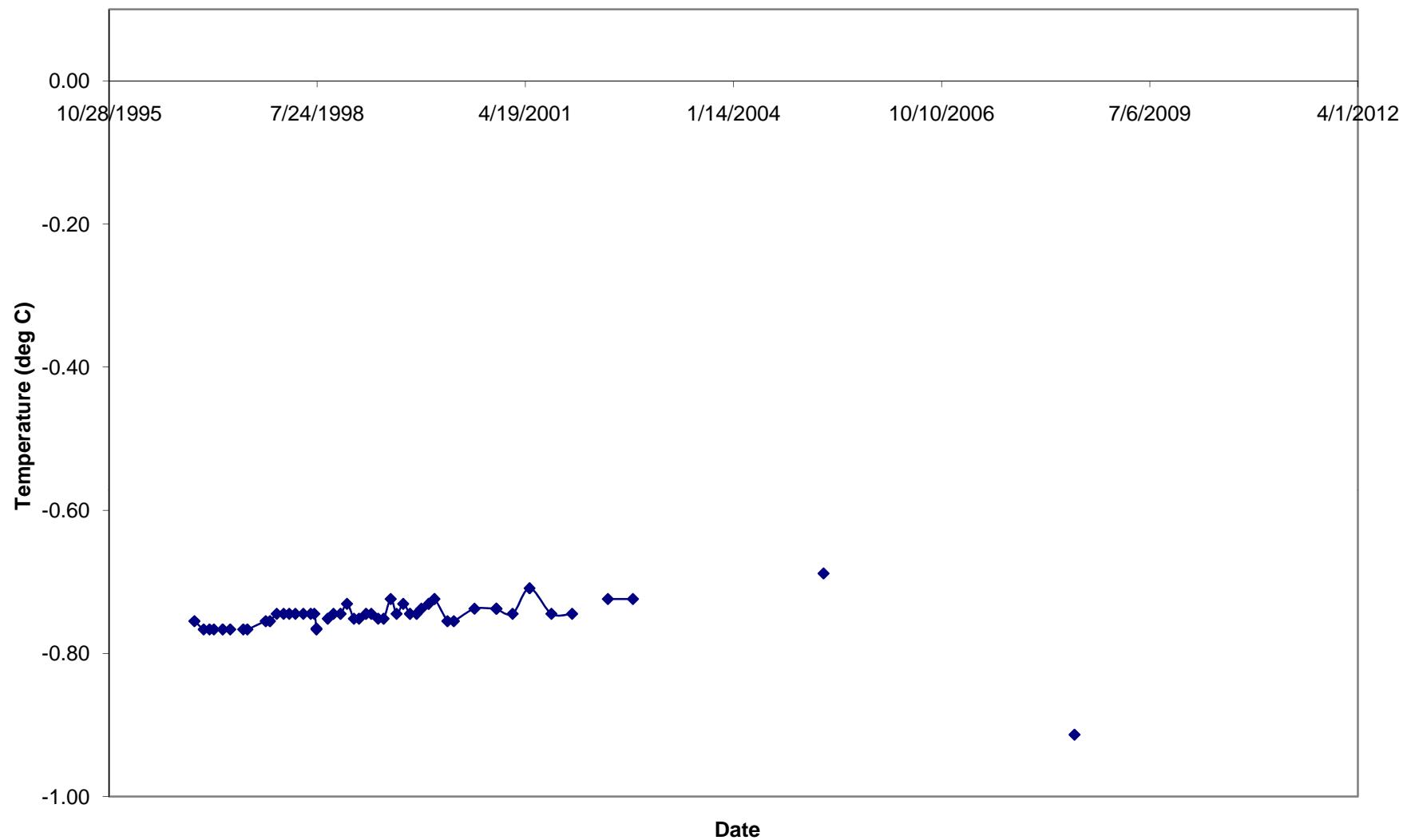
T-96-022 Temperature at 59 feet



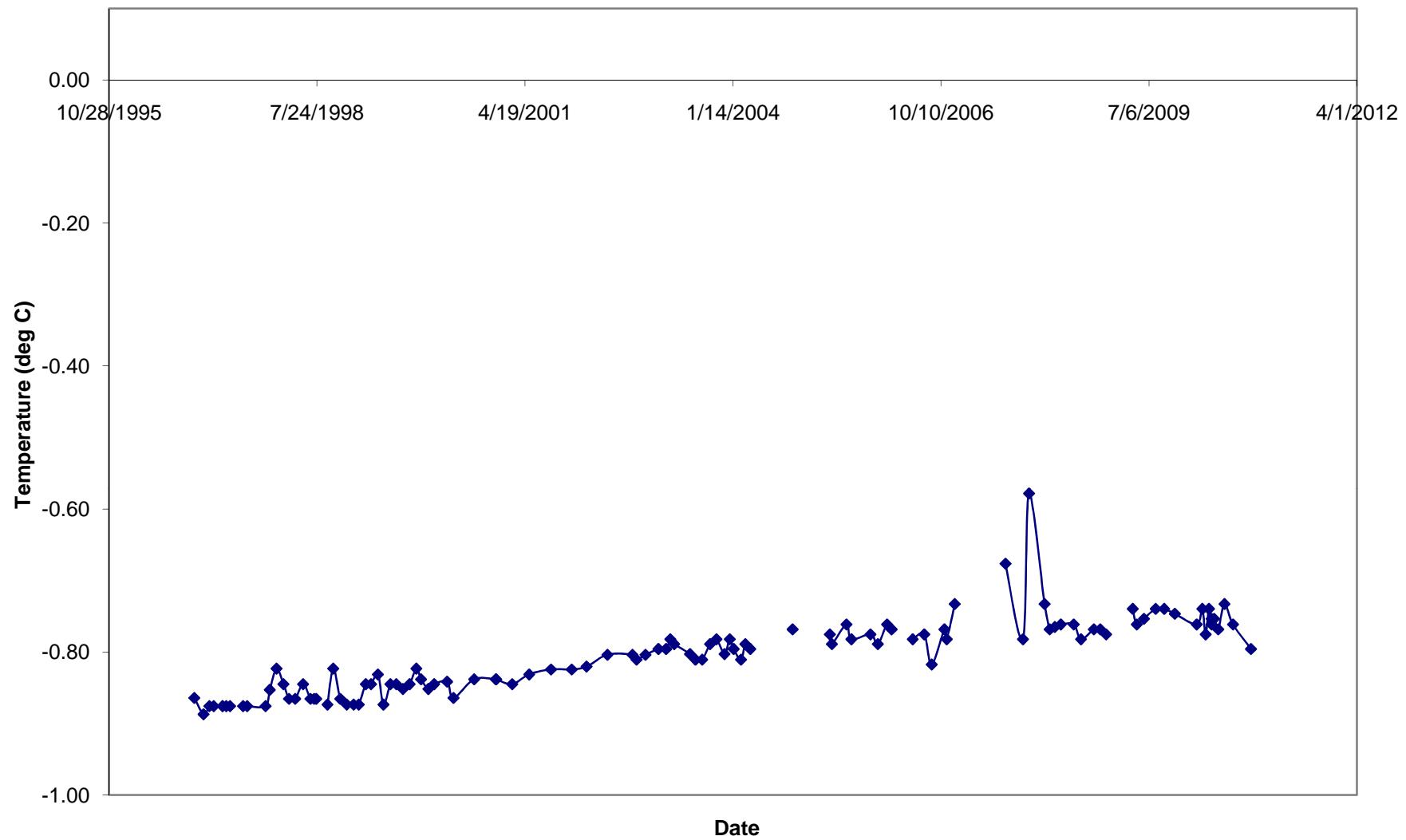
T-96-022 Temperature at 64 feet



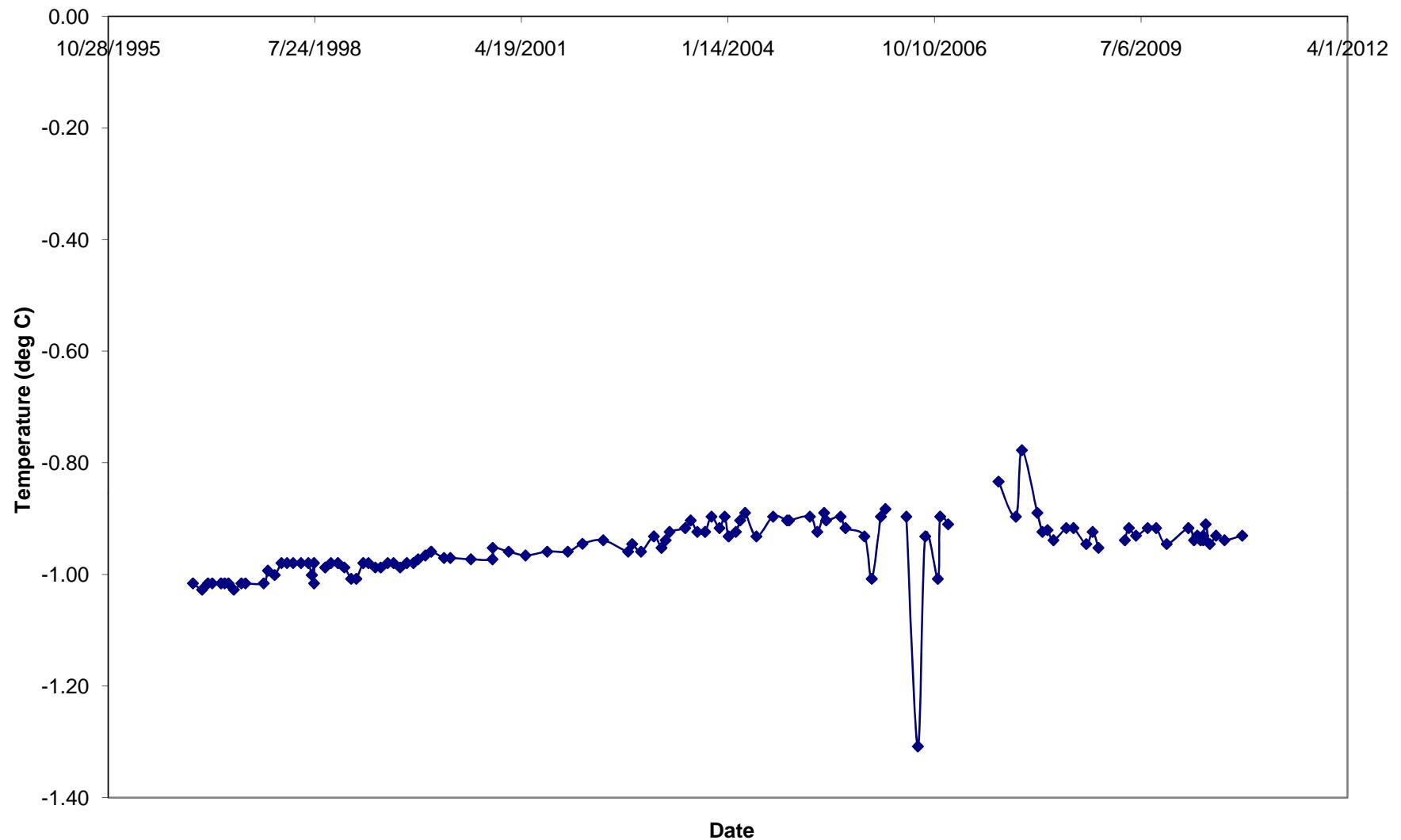
T-96-022 Temperature at 69 feet



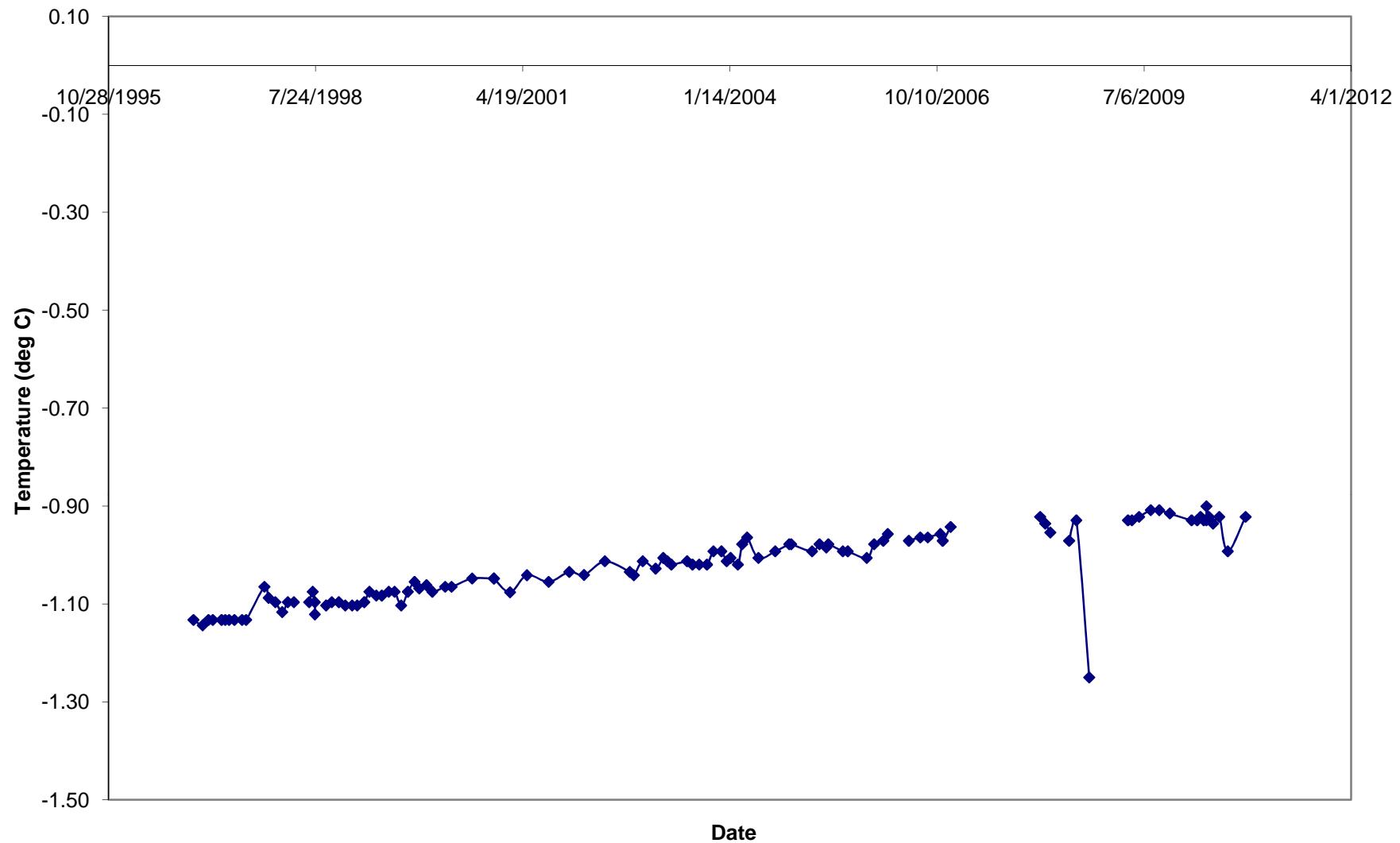
T-96-022 Temperature at 74 feet



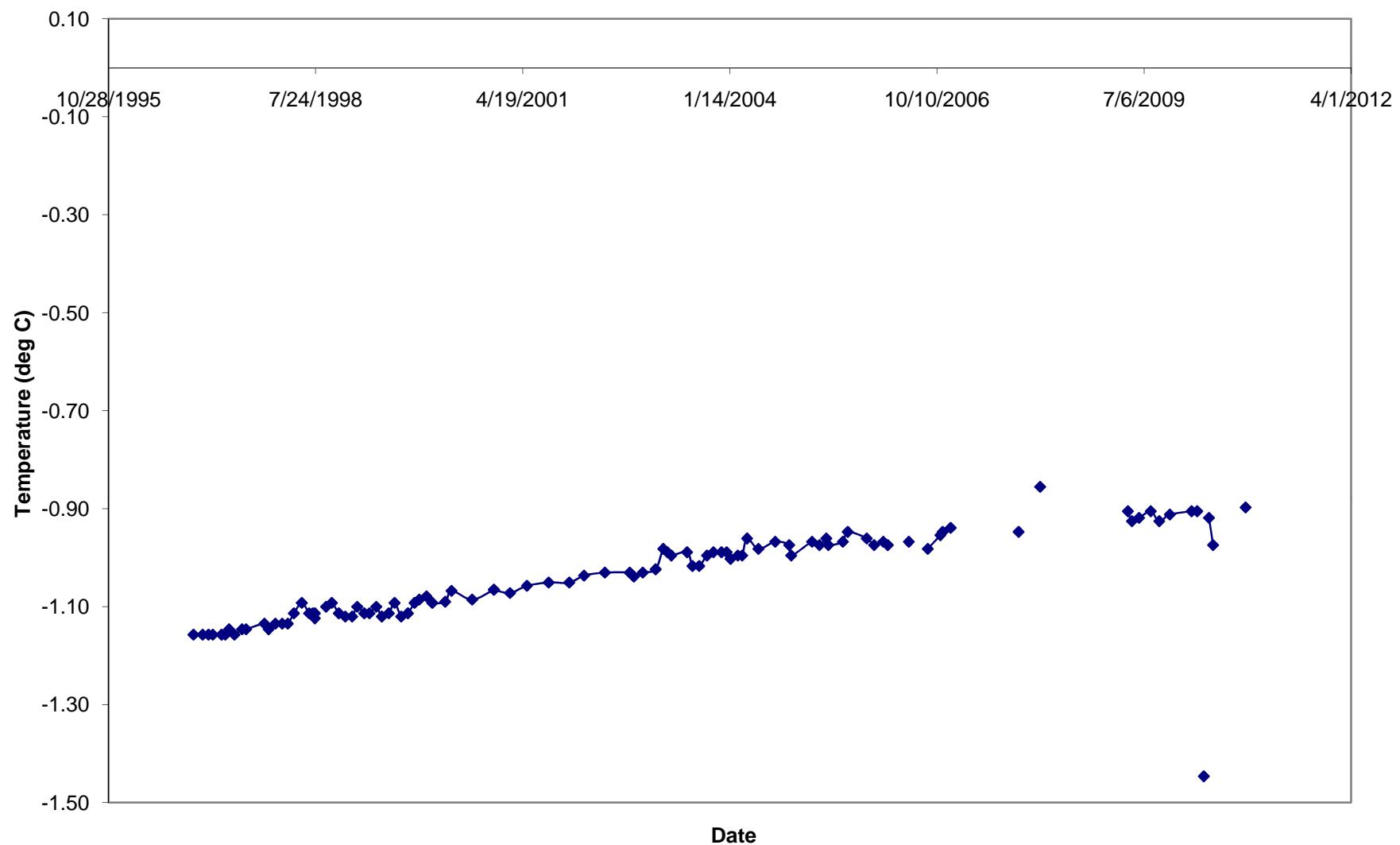
T-96-022 Temperature at 79 feet



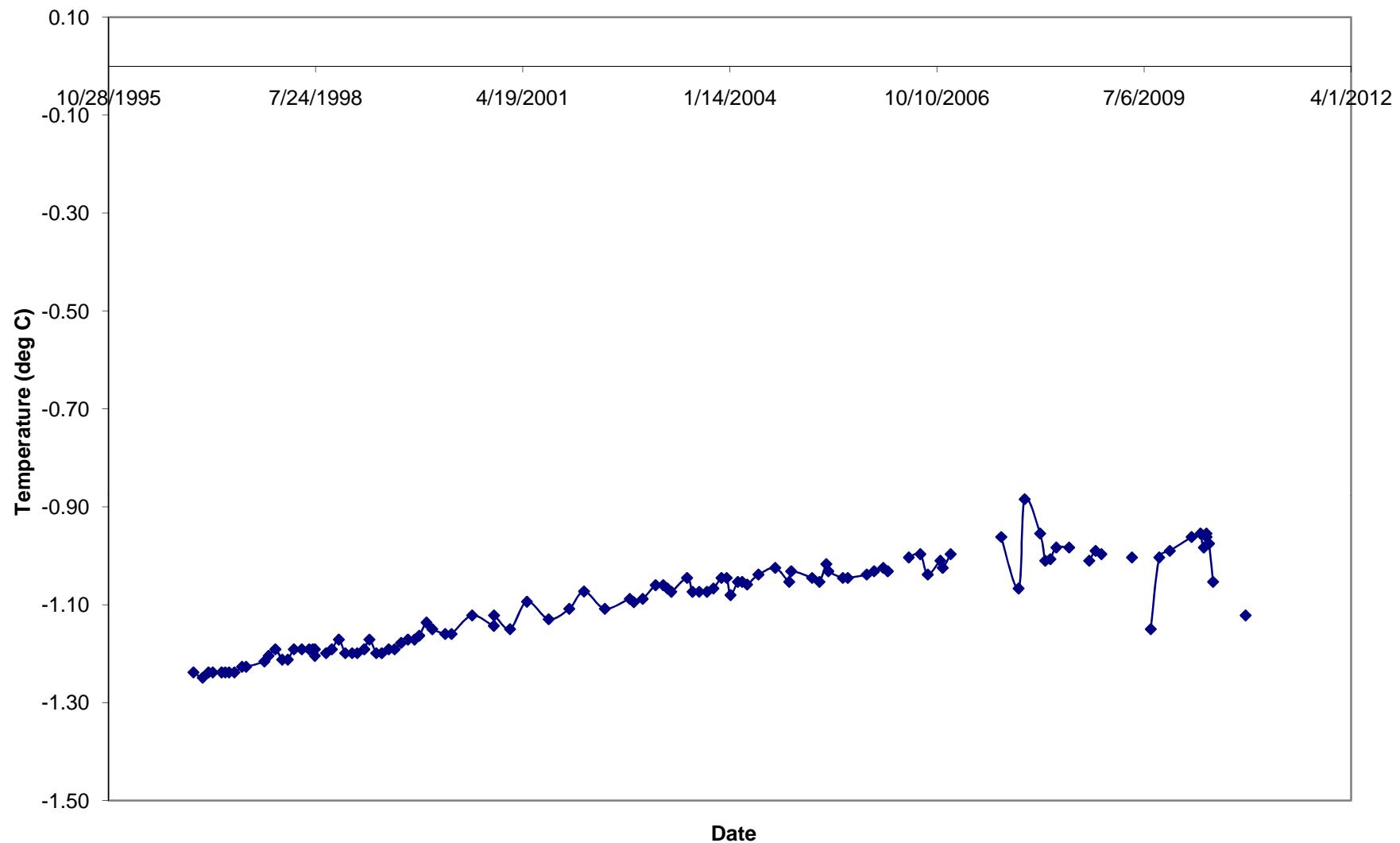
T-96-022 Temperature at 84 feet



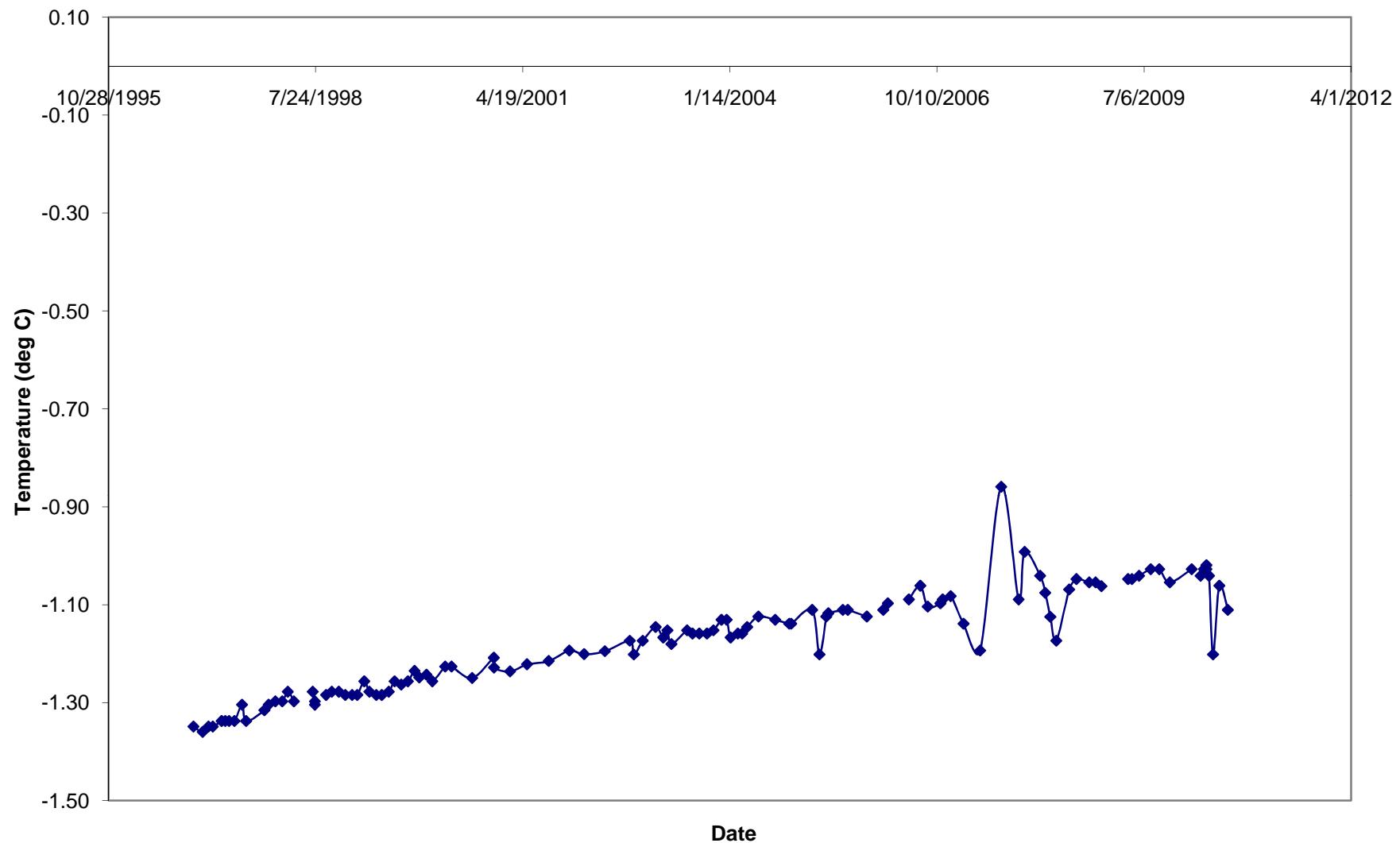
T-96-022 Temperature at 89 feet



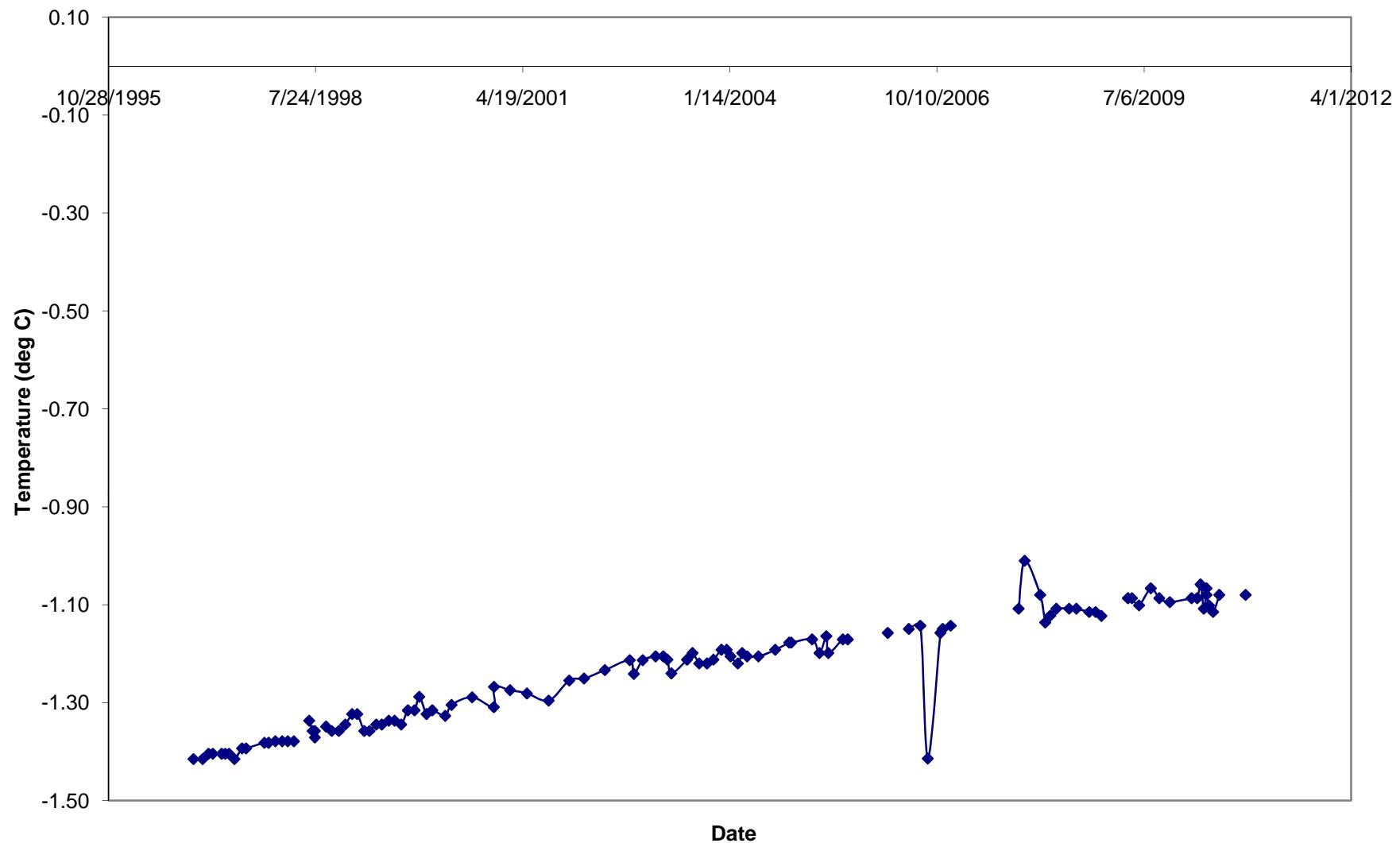
T-96-022 Temperature at 94 feet



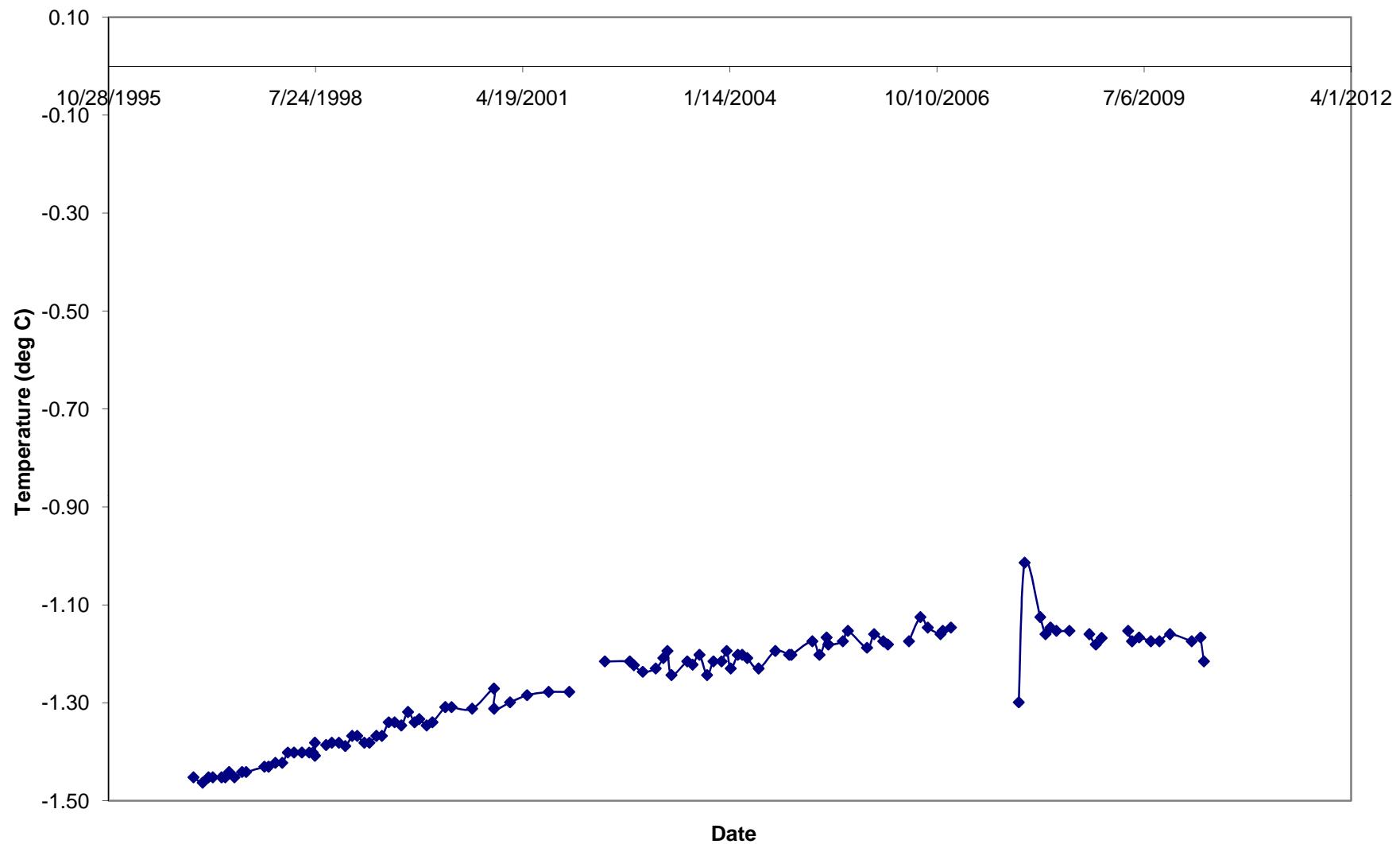
T-96-022 Temperature at 99 feet



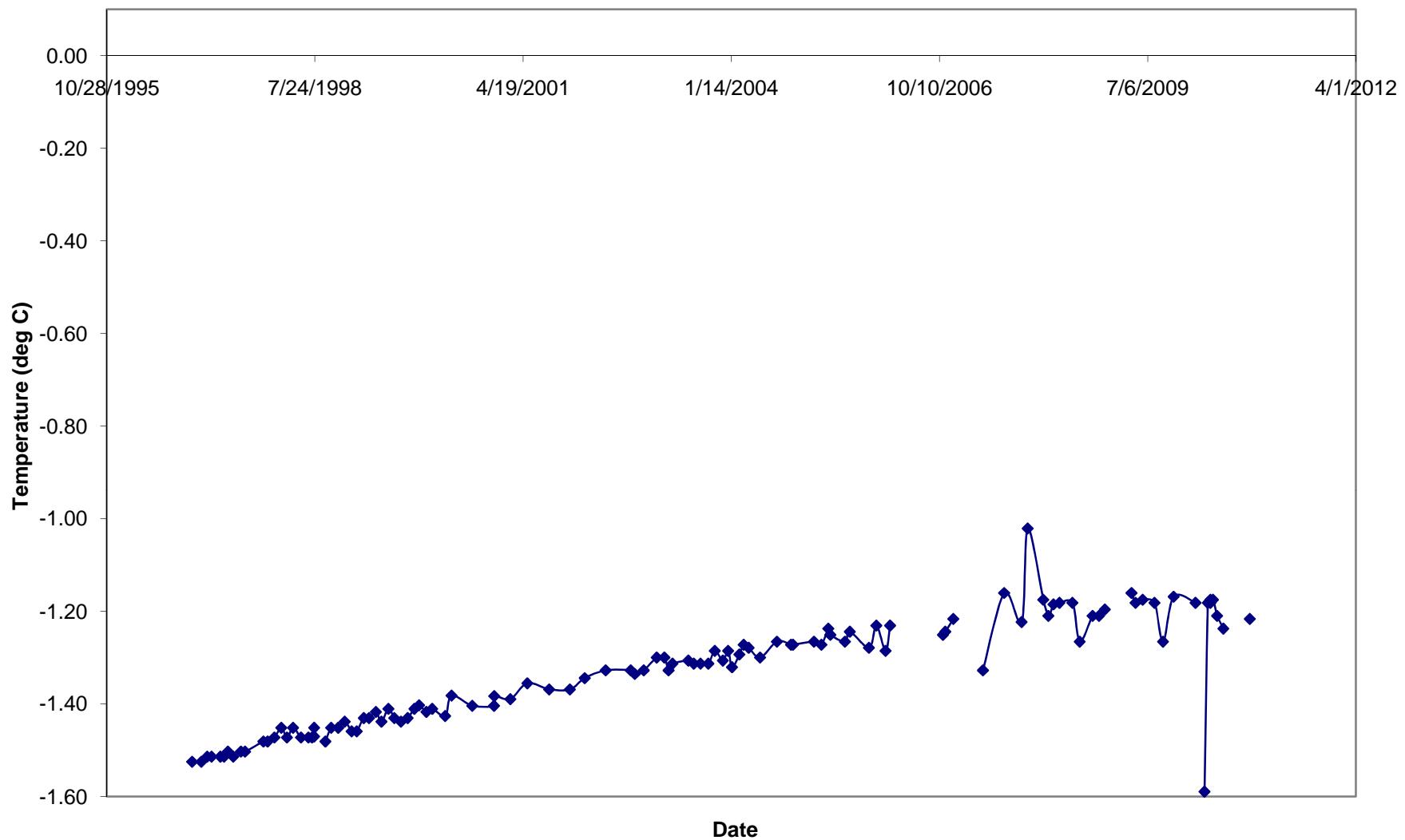
T-96-022 Temperature at 104 feet



T-96-022 Temperature at 109 feet

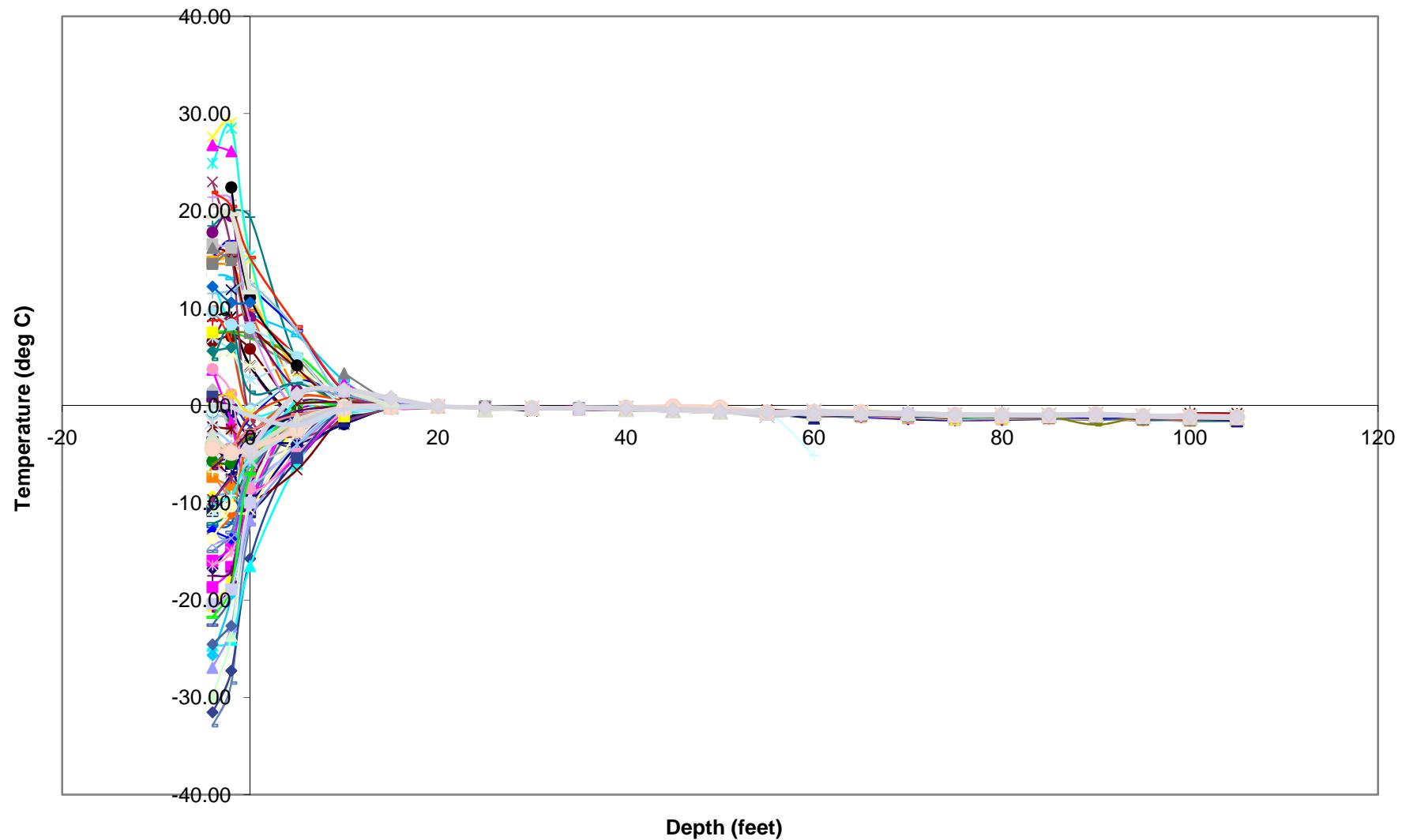


T-96-022 Temperature at 114 feet

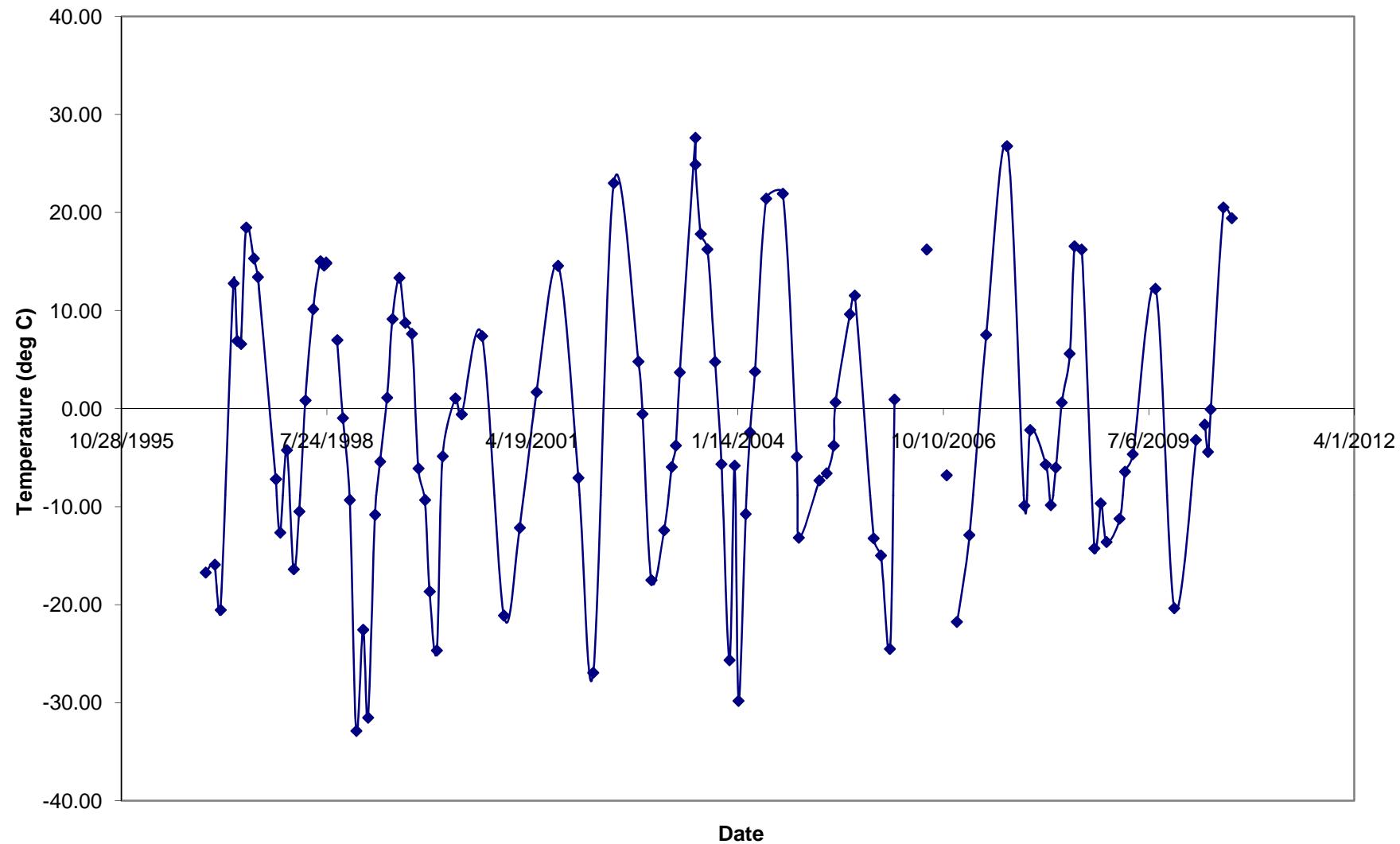


T-96-023

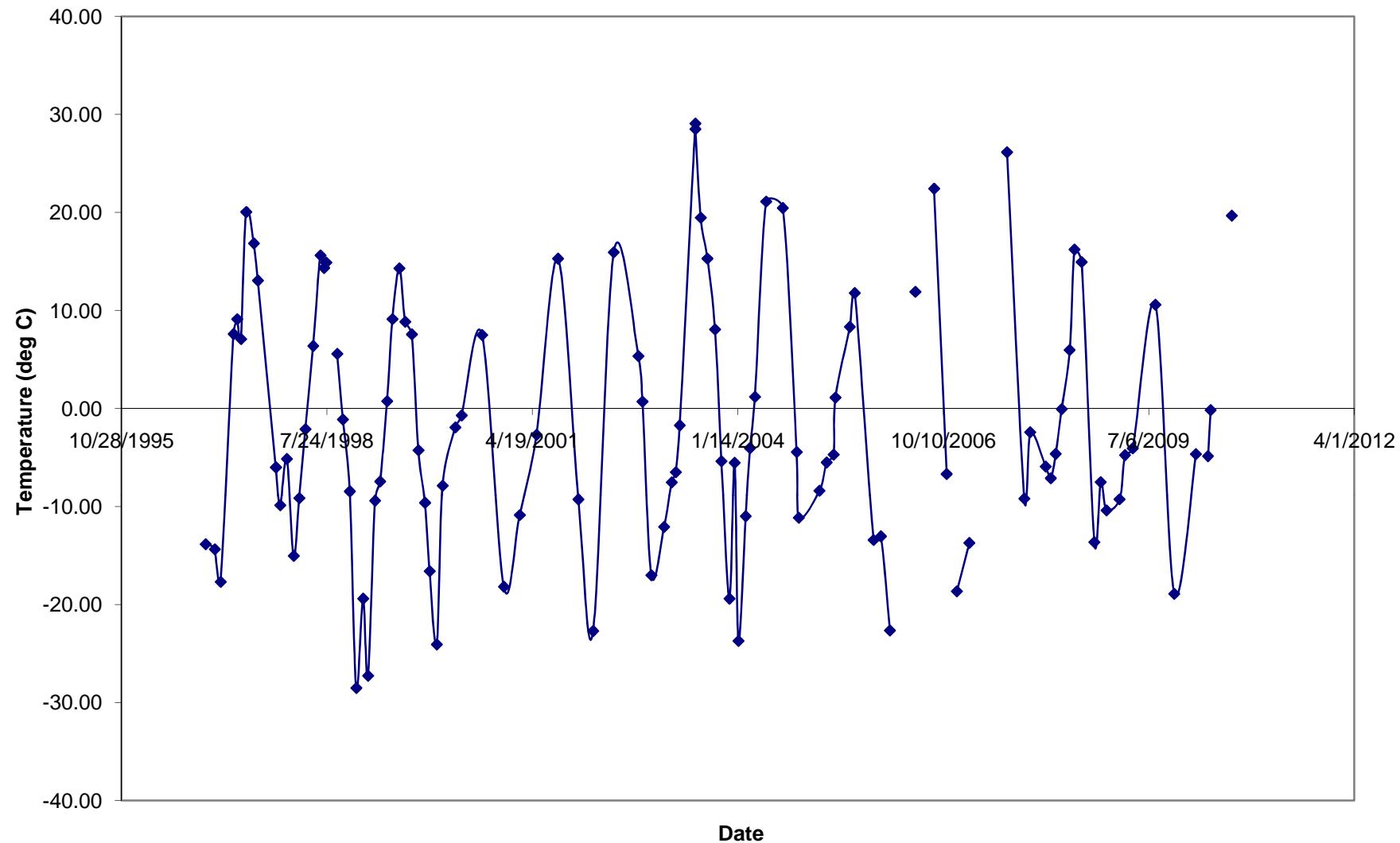
Temperature depth plot - T-96-023



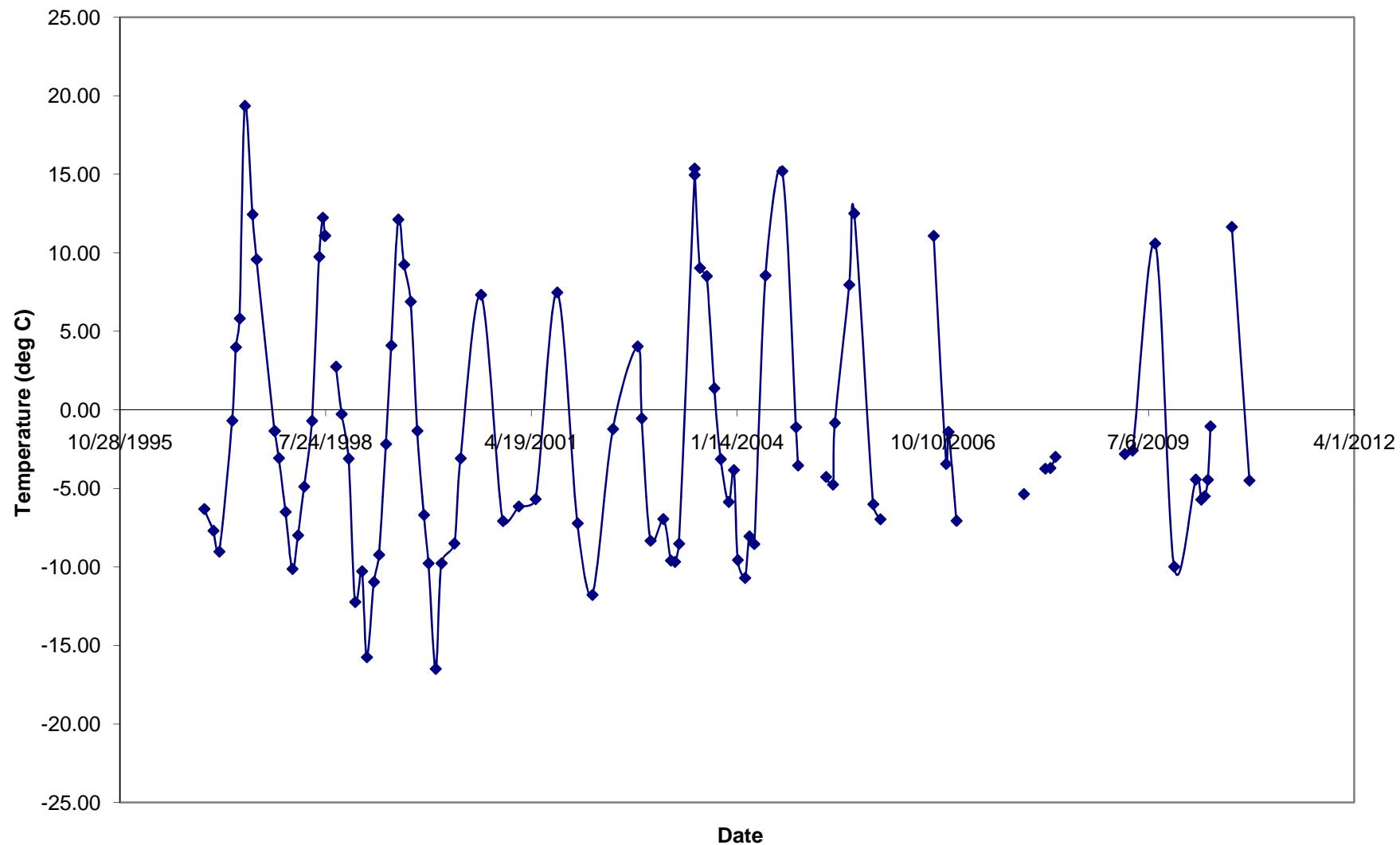
T-96-023 Temperature at -4 feet



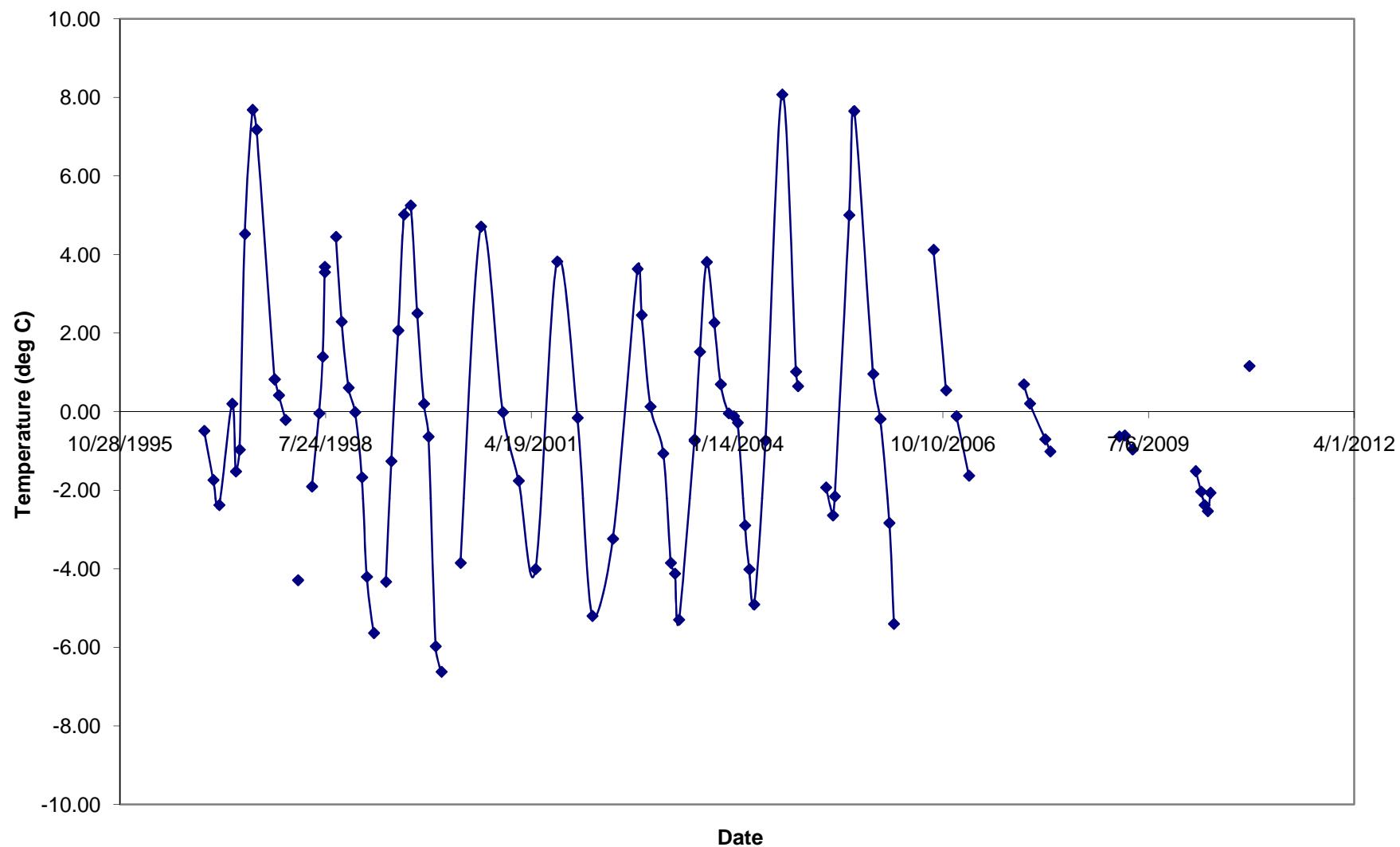
T-96-023 Temperature at -2 feet



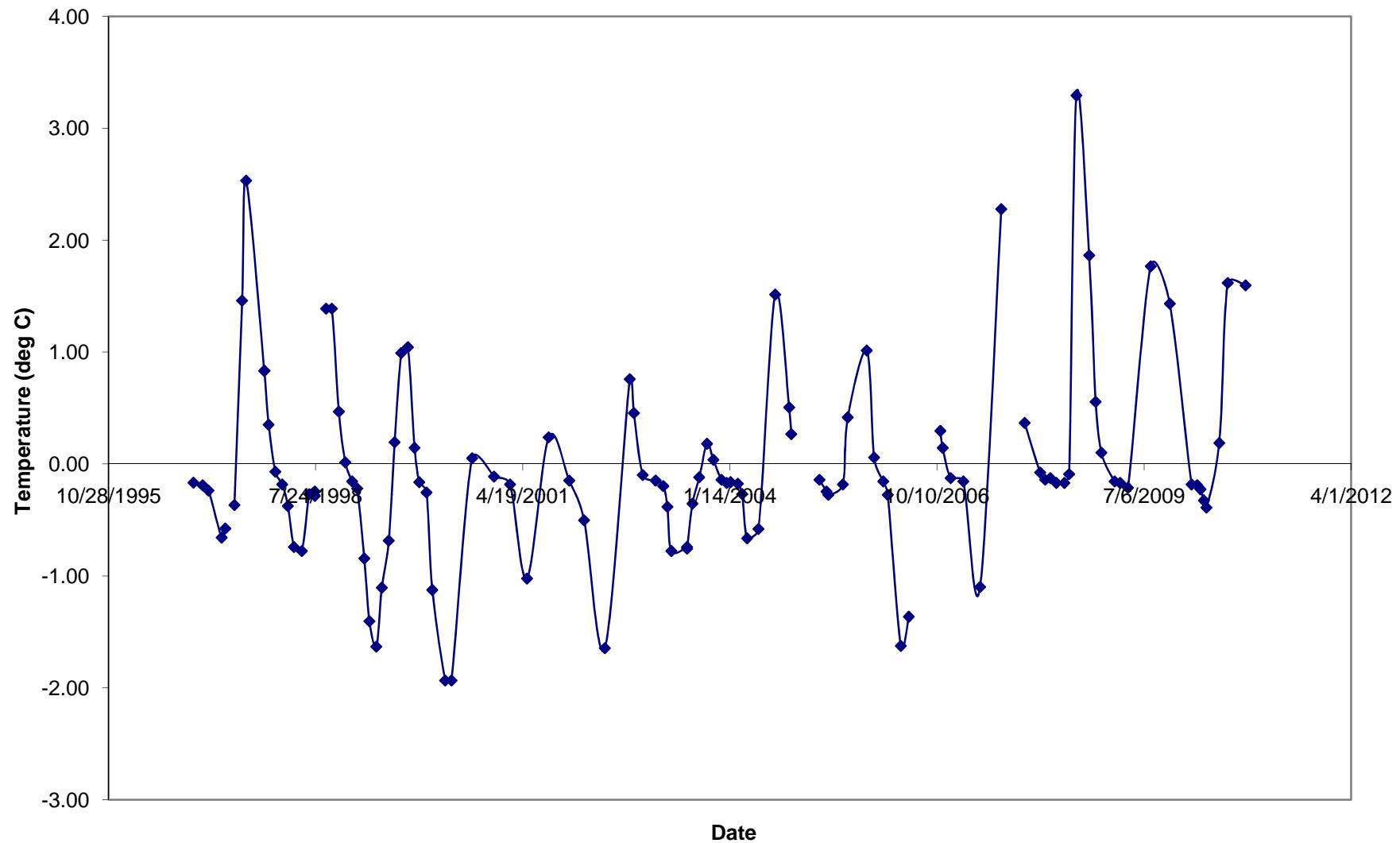
T-96-023 Temperature at 0 feet



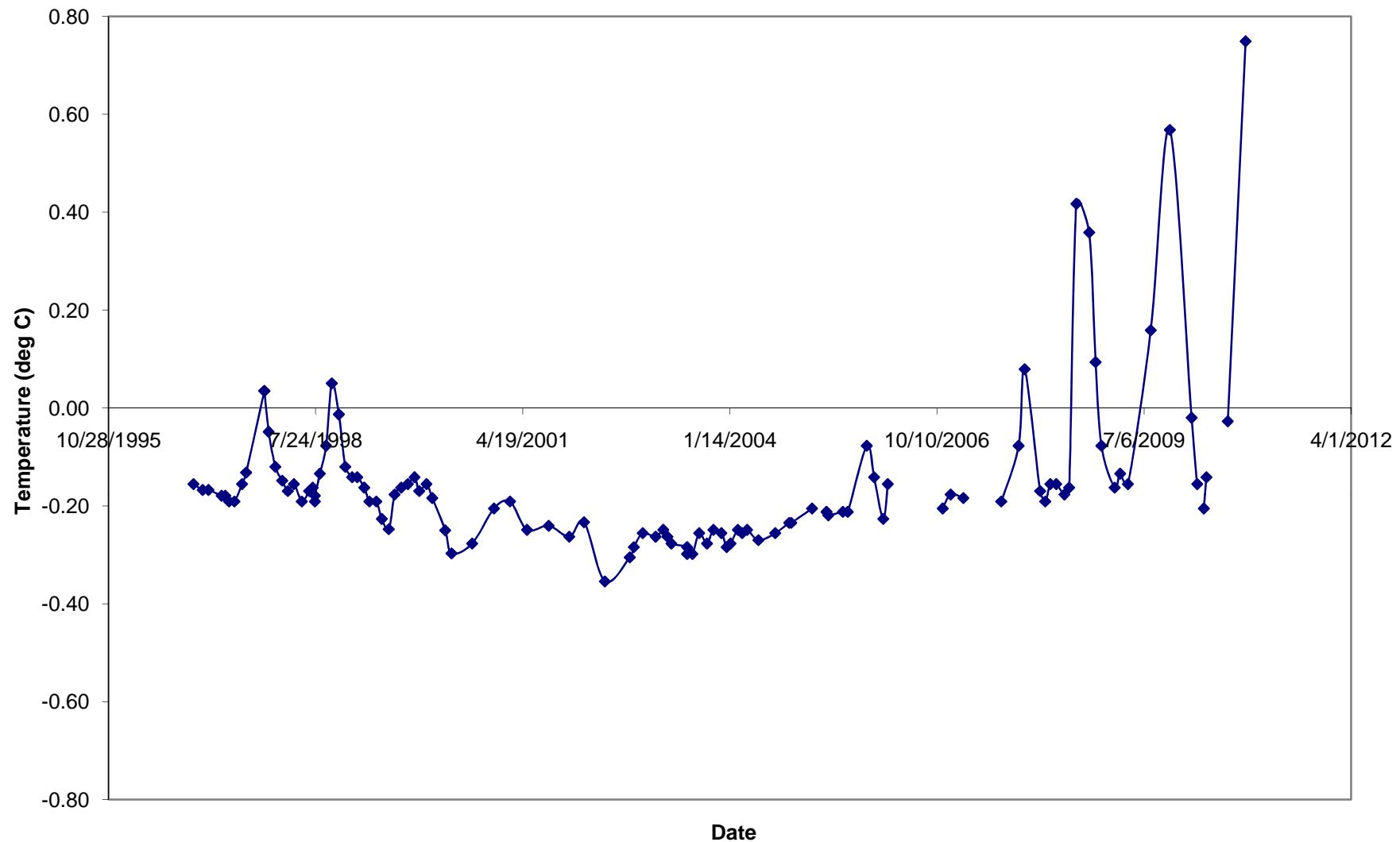
T-96-023 Temperature at 5 feet



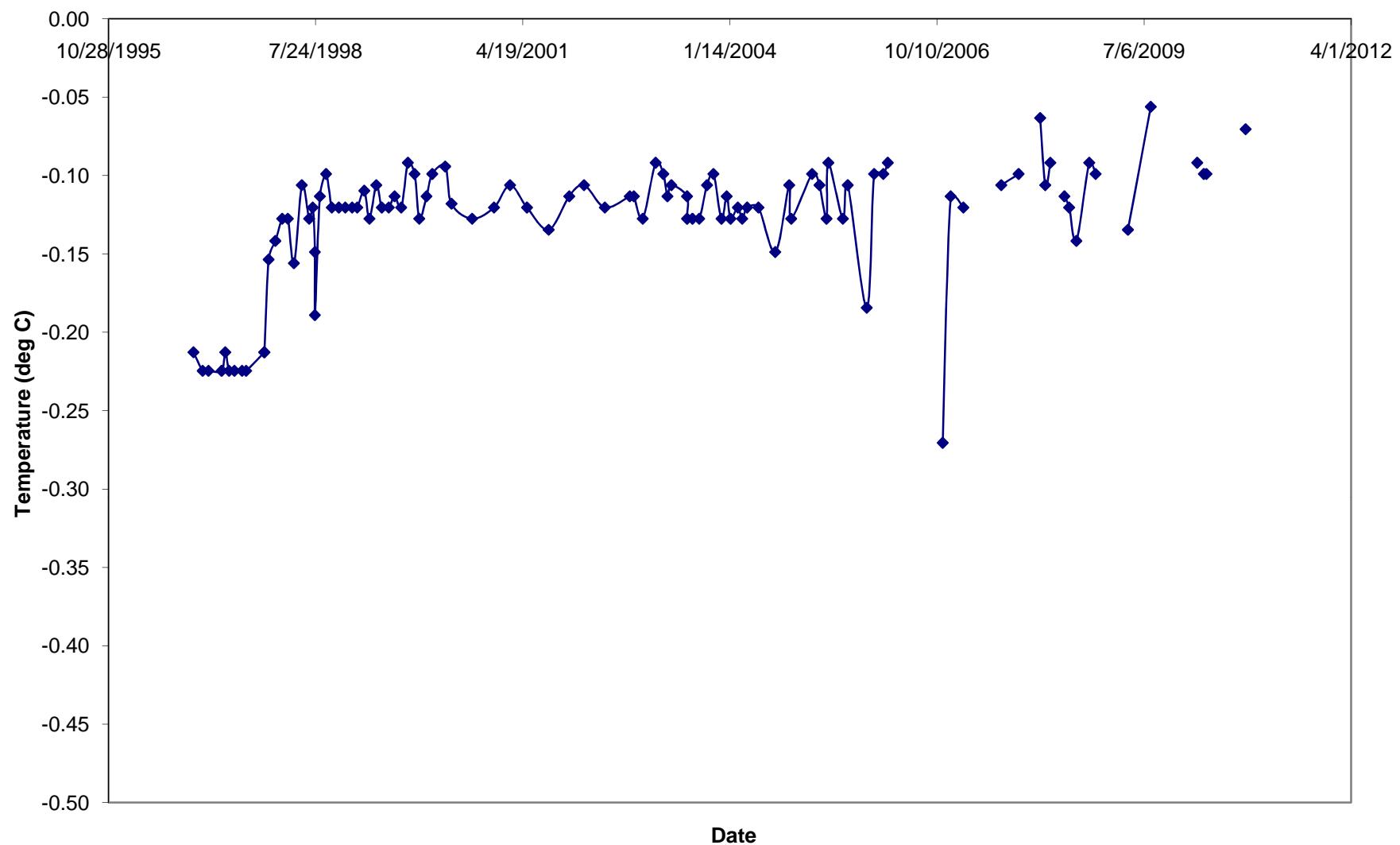
T-96-023 Temperature at 10 feet



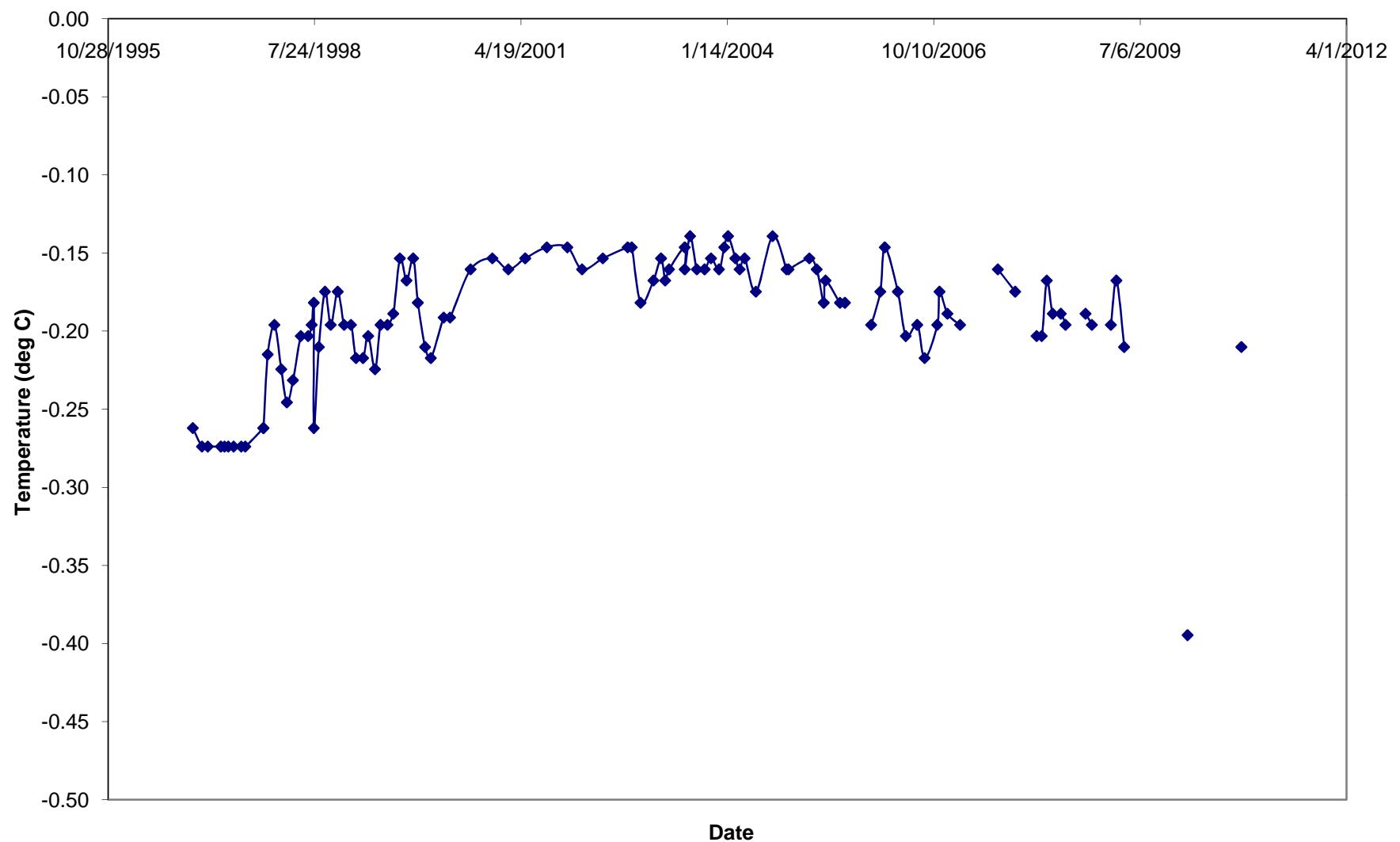
T-96-023 Temperature at 15 feet



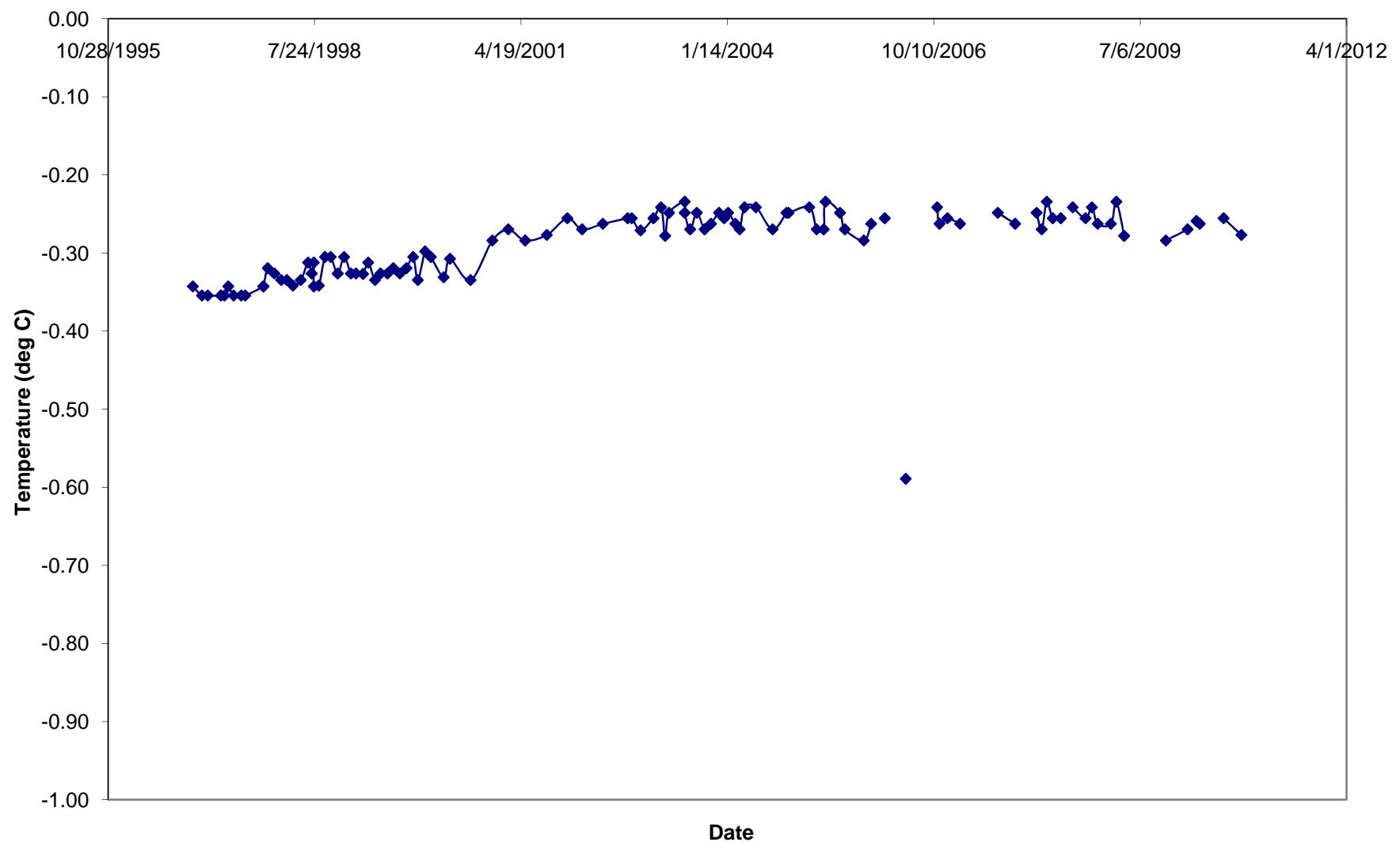
T-96-023 Temperature at 20 feet



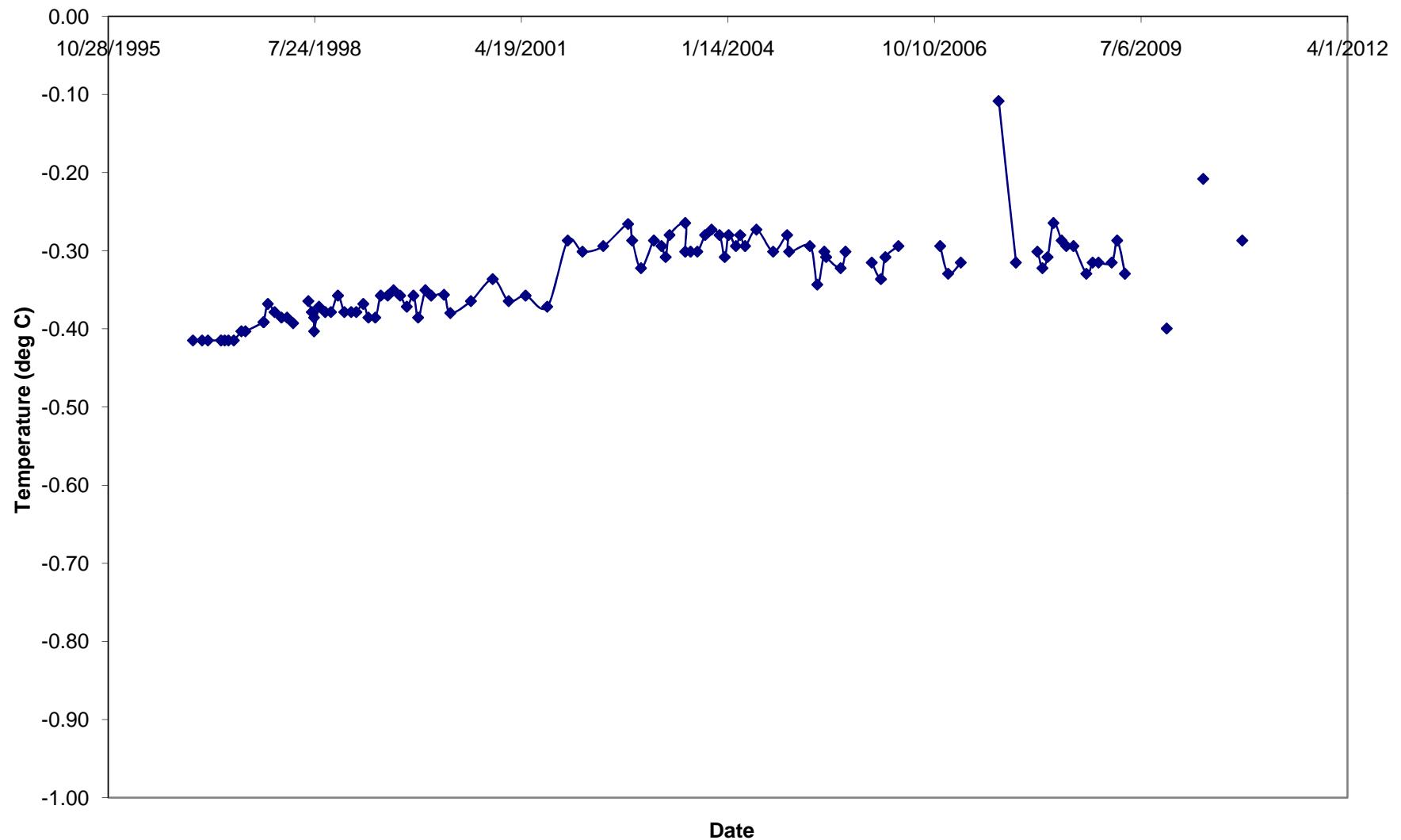
T-96-023 Temperature at 25 feet



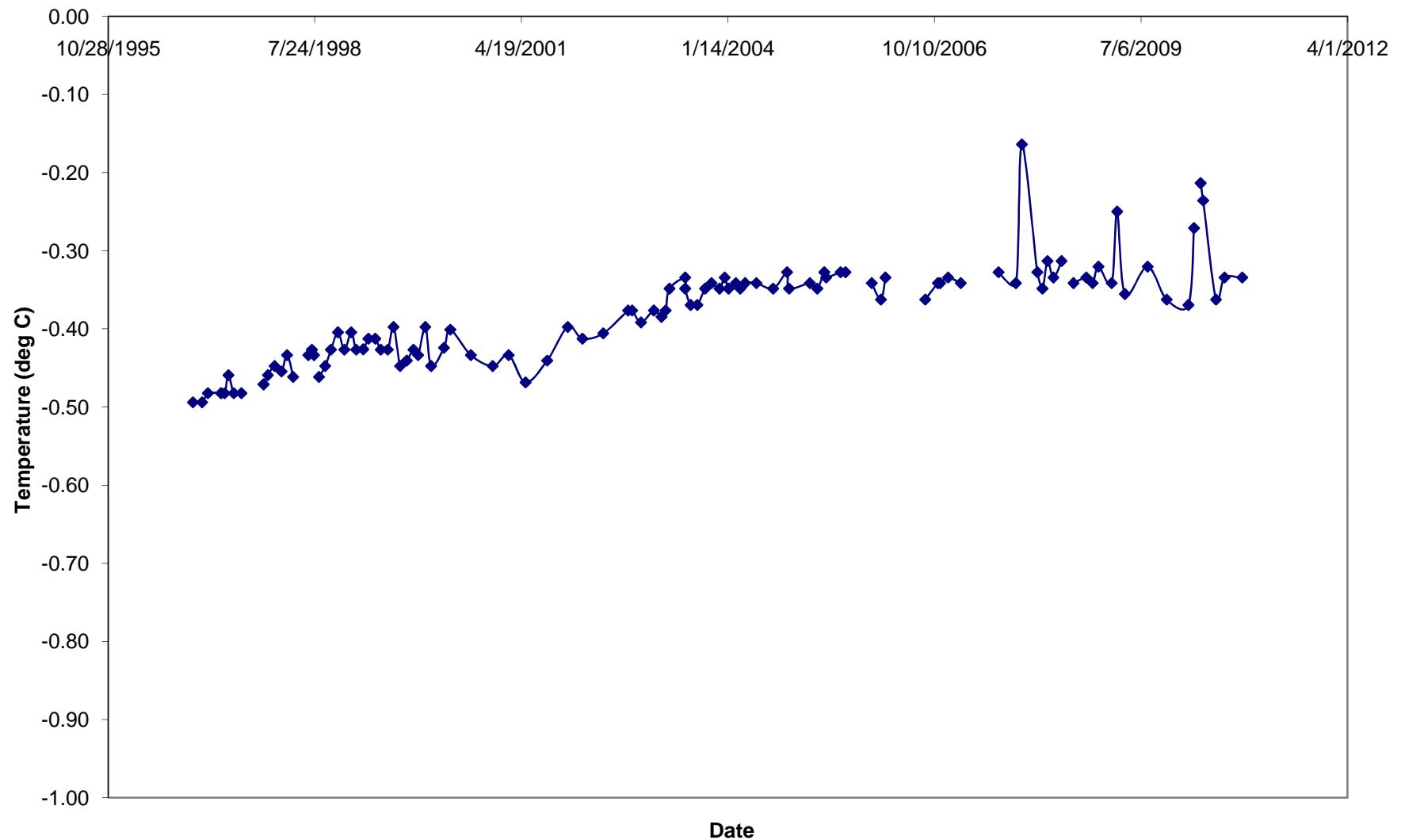
T-96-023 Temperature at 30 feet



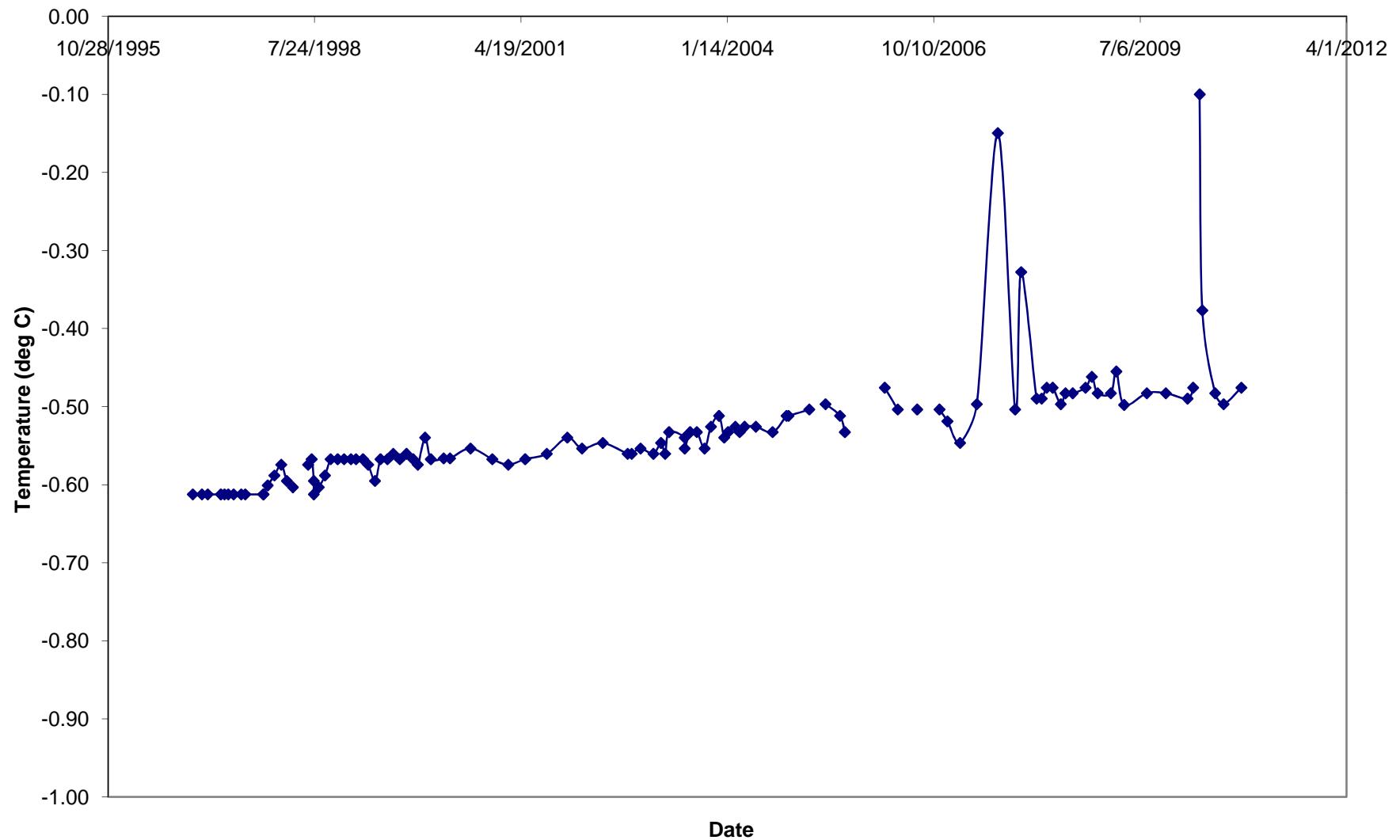
T-96-023 Temperature at 35 feet



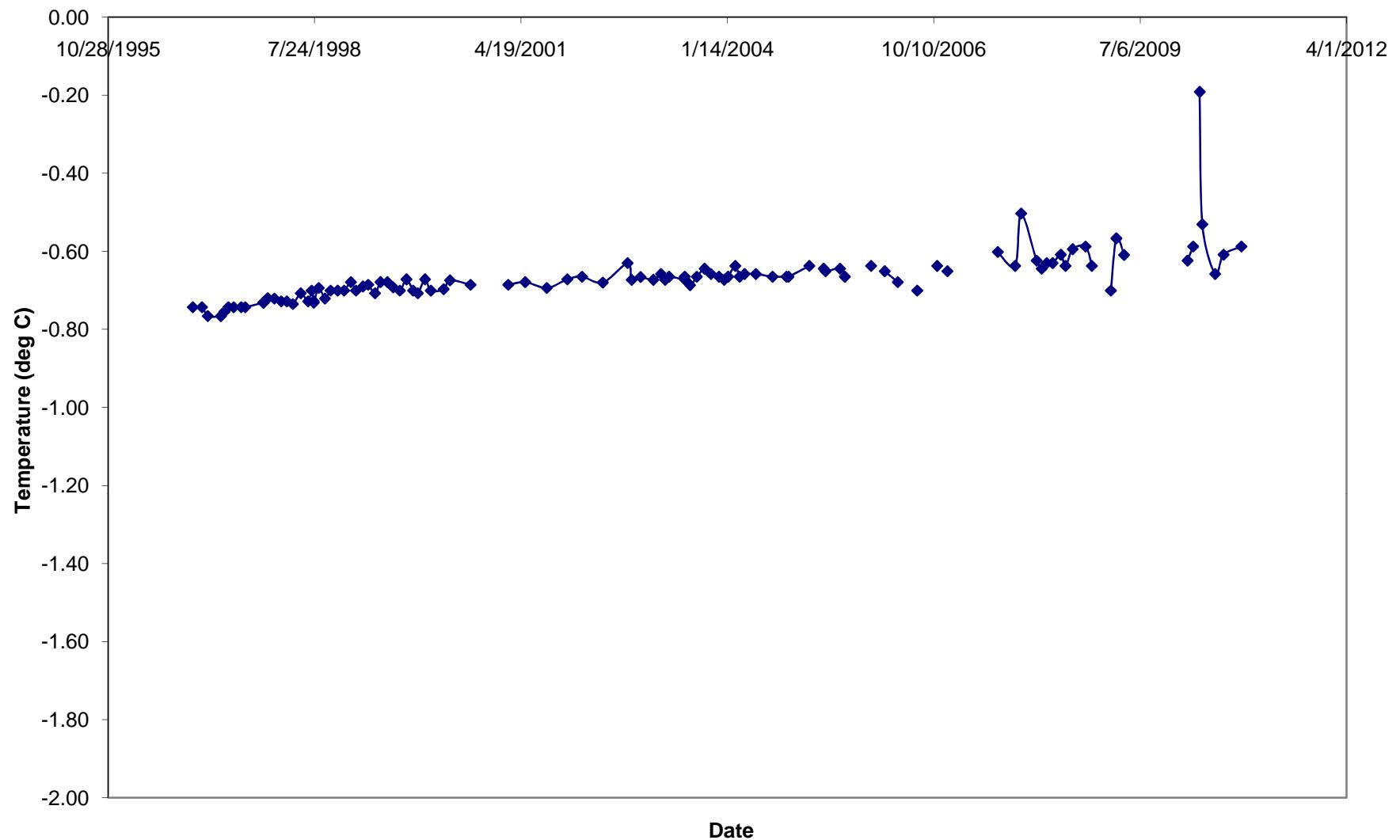
T-96-023 Temperature at 40 feet



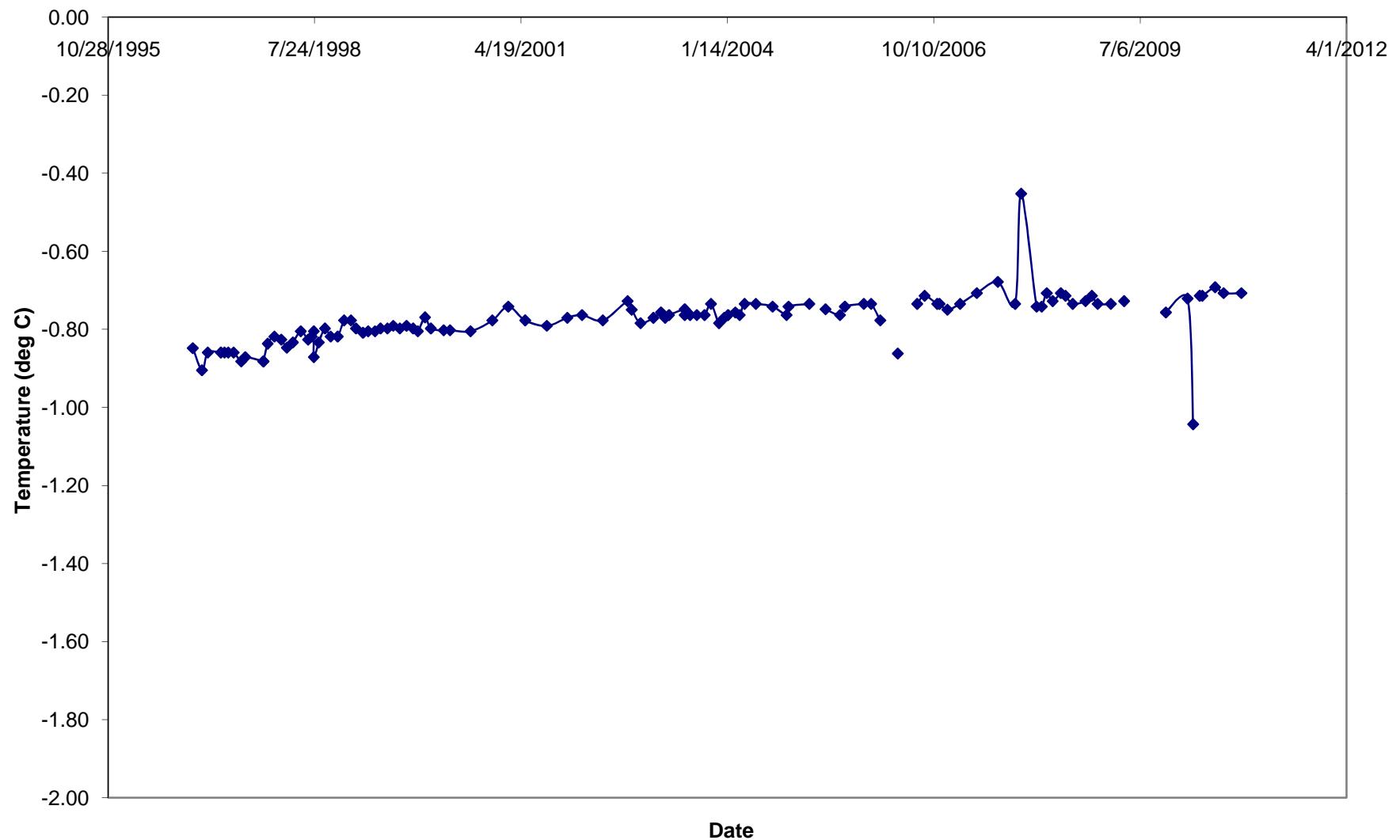
T-96-023 Temperature at 45 feet



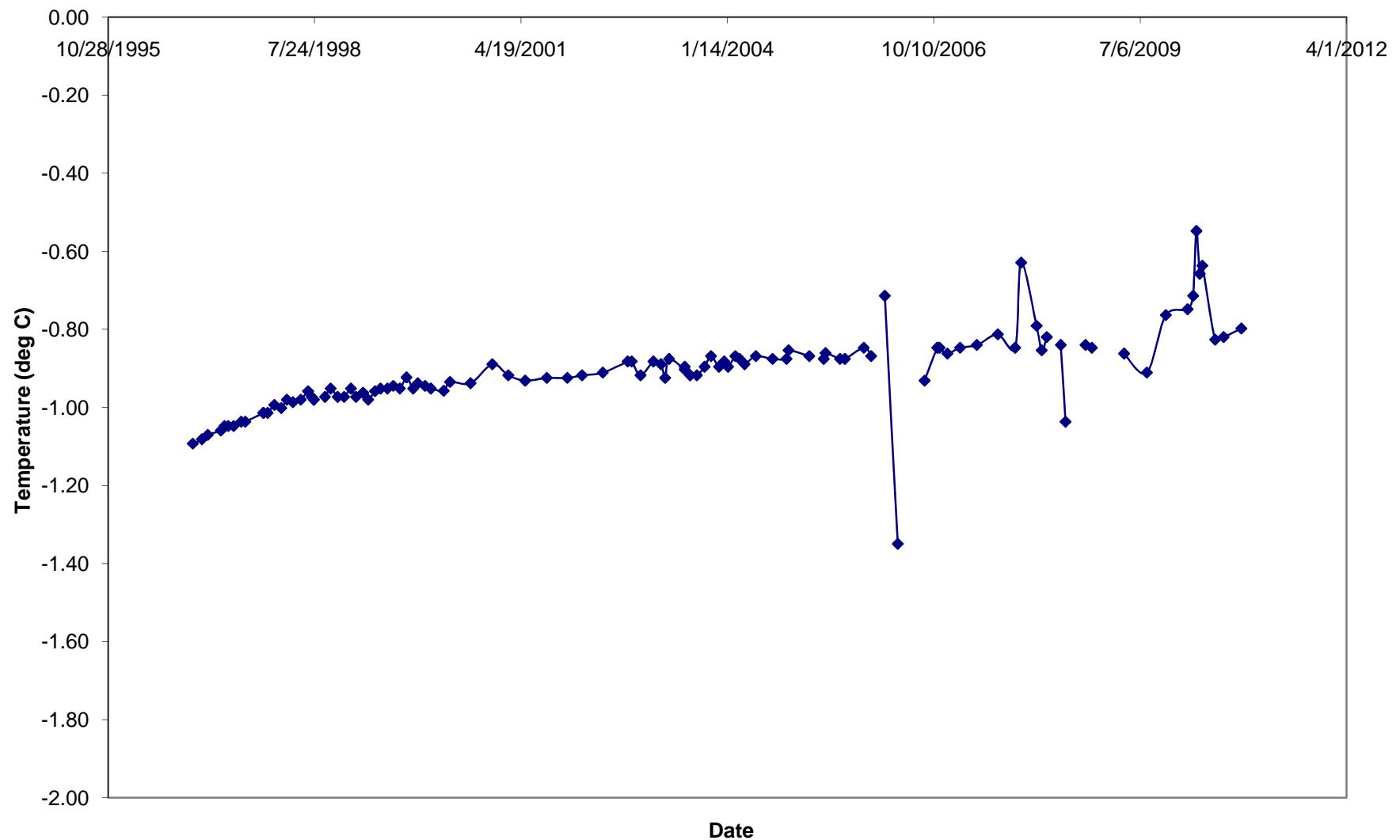
T-96-023 Temperature at 50 feet



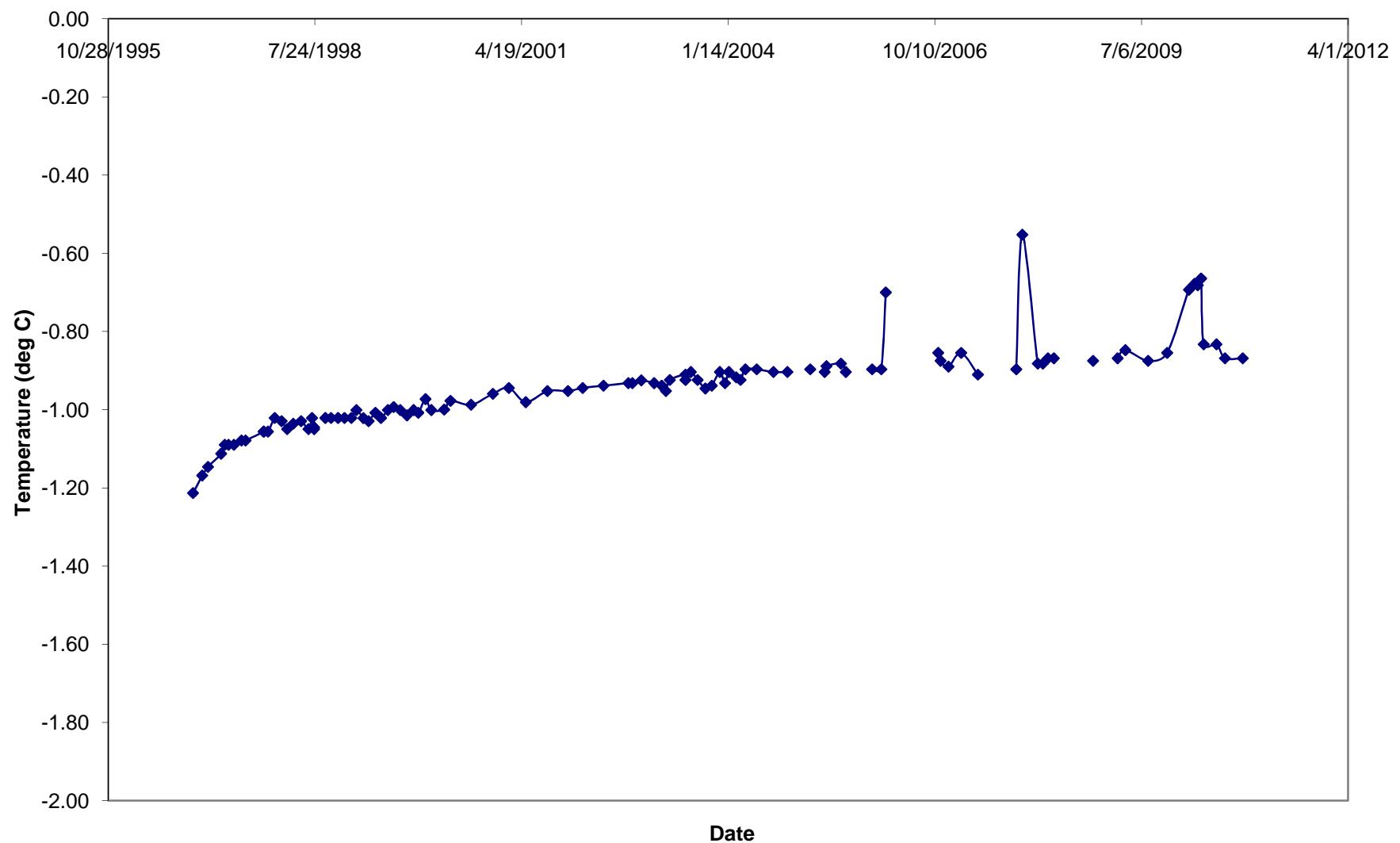
T-96-023 Temperature at 55 feet



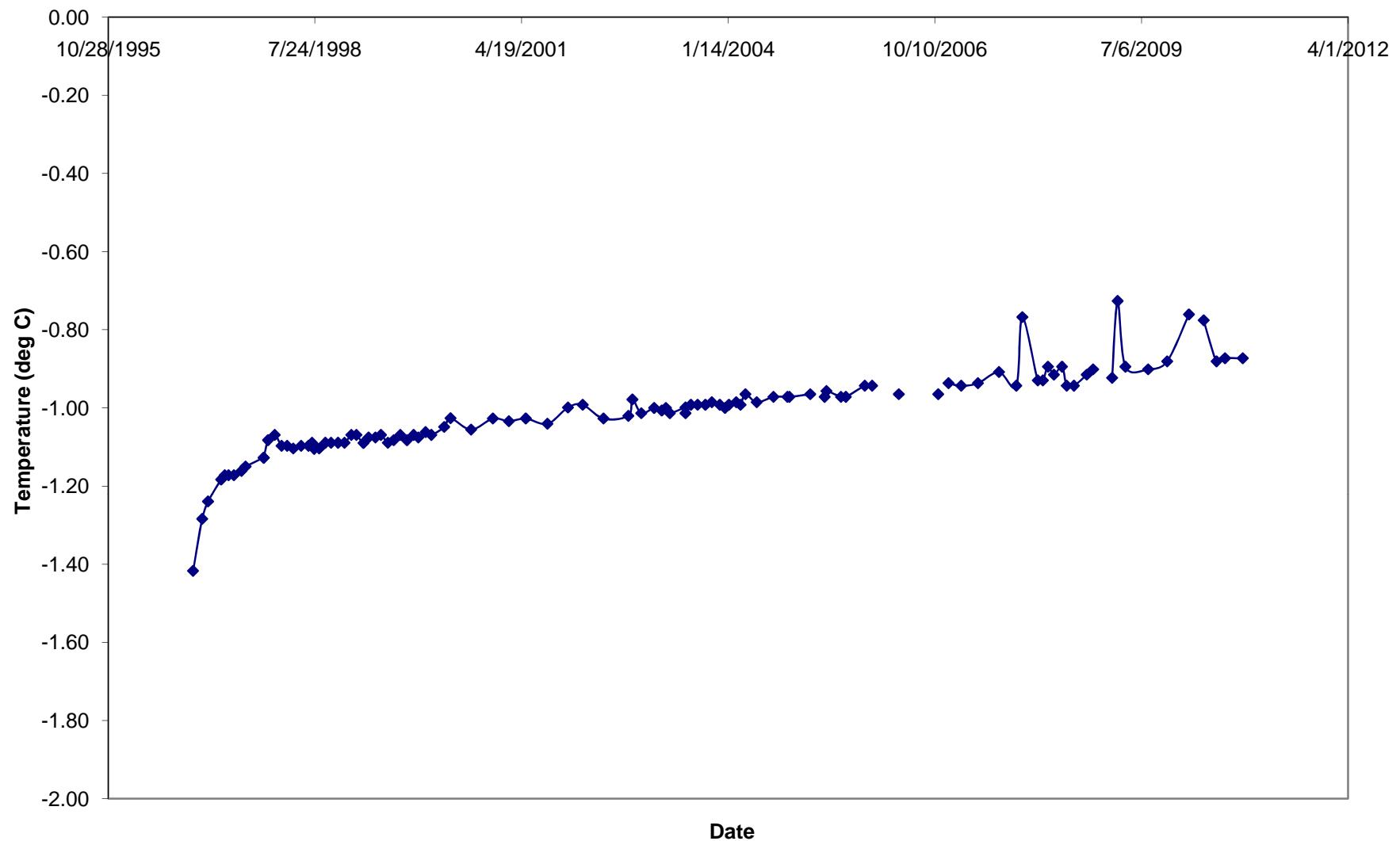
T-96-023 Temperature at 60 feet



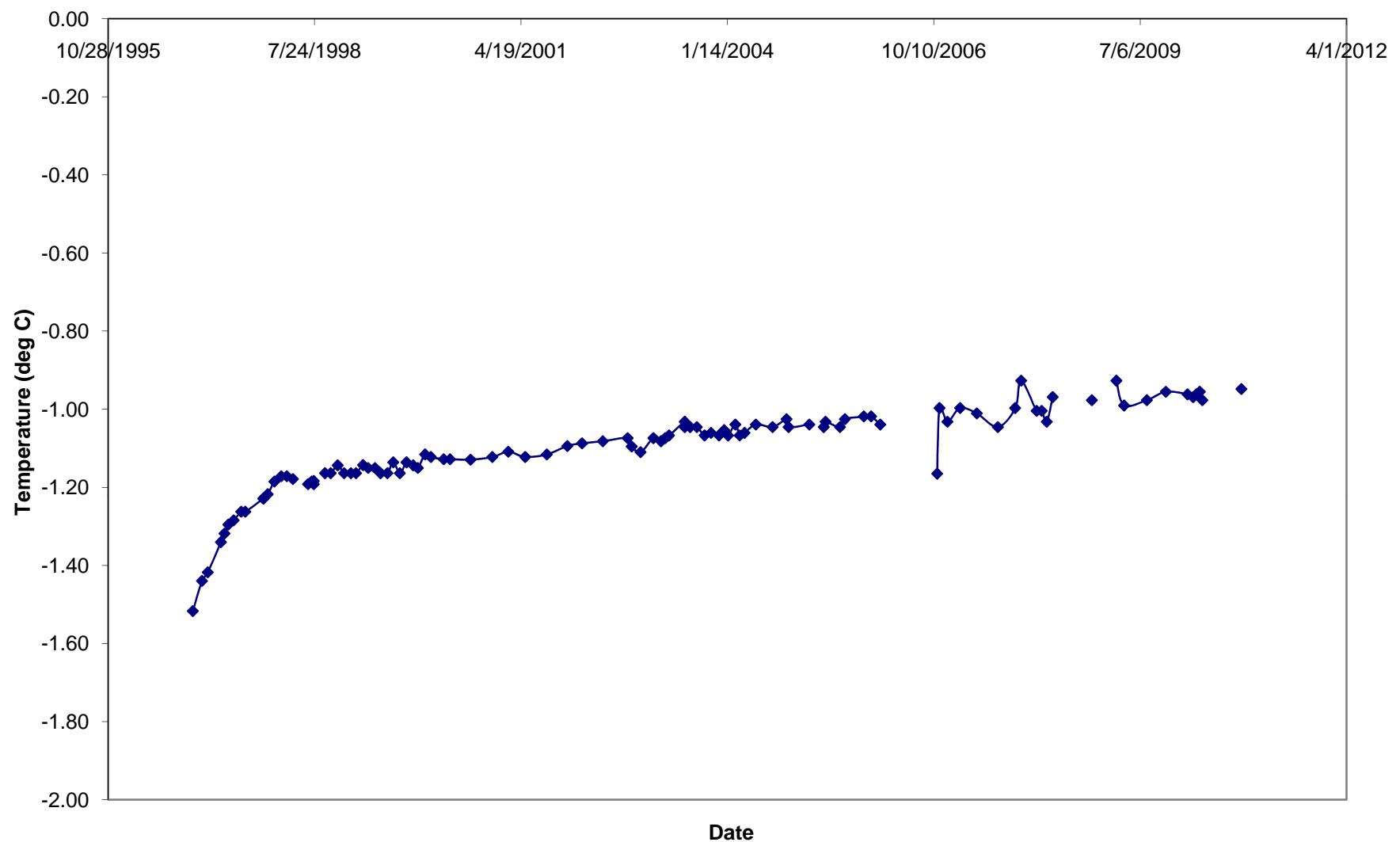
T-96-023 Temperature at 65 feet



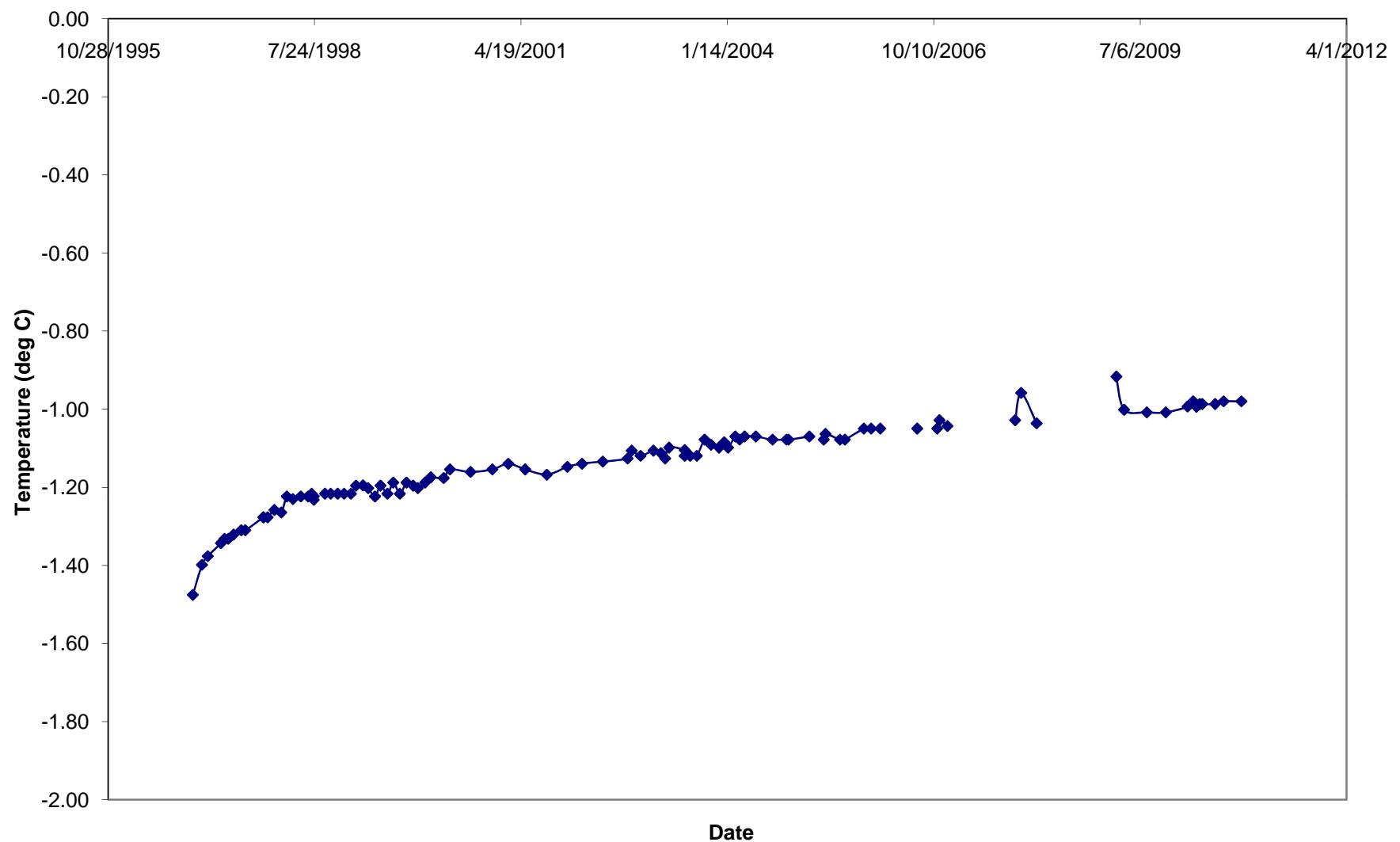
T-96-023 Temperature at 70 feet



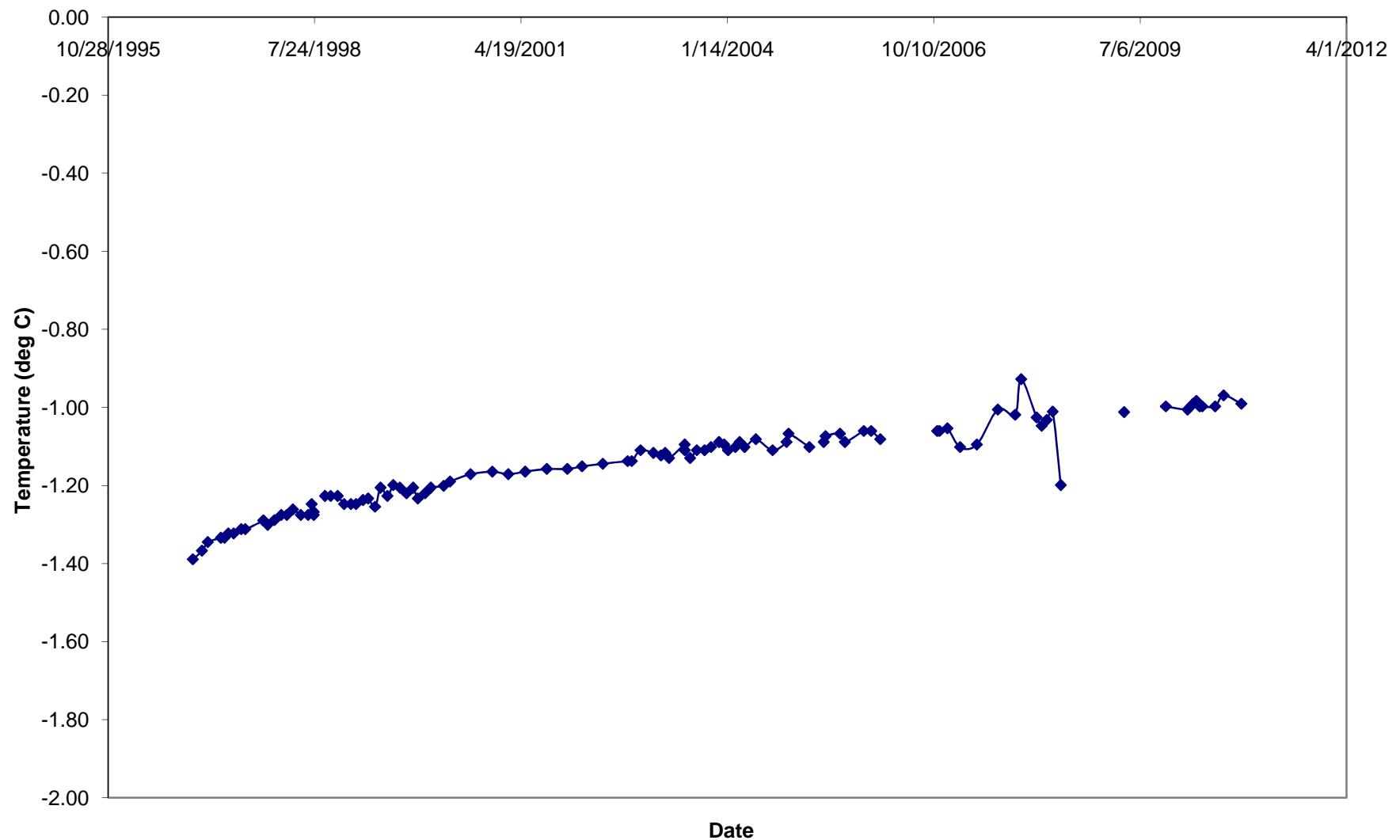
T-96-023 Temperature at 75 feet



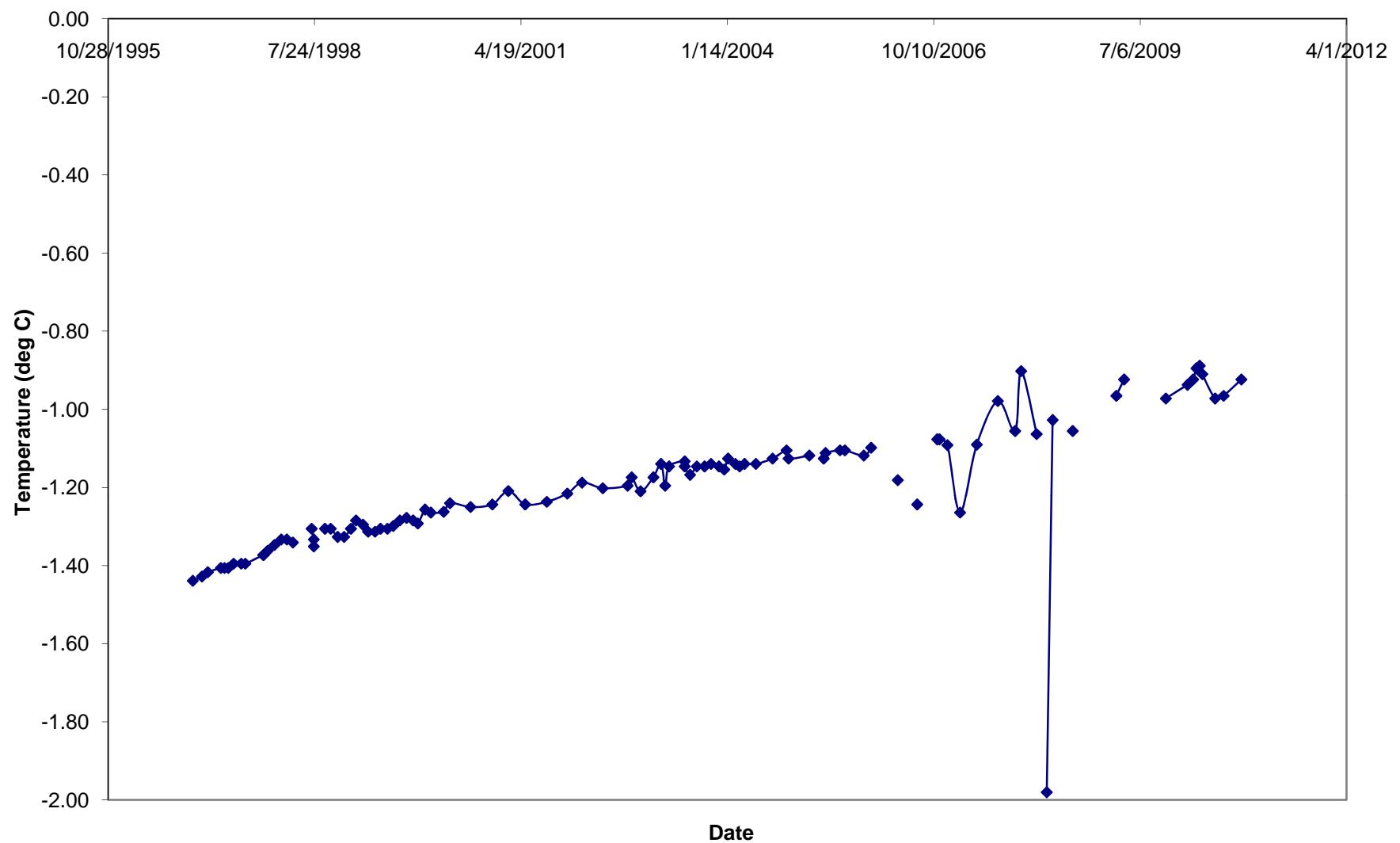
T-96-023 Temperature at 80 feet



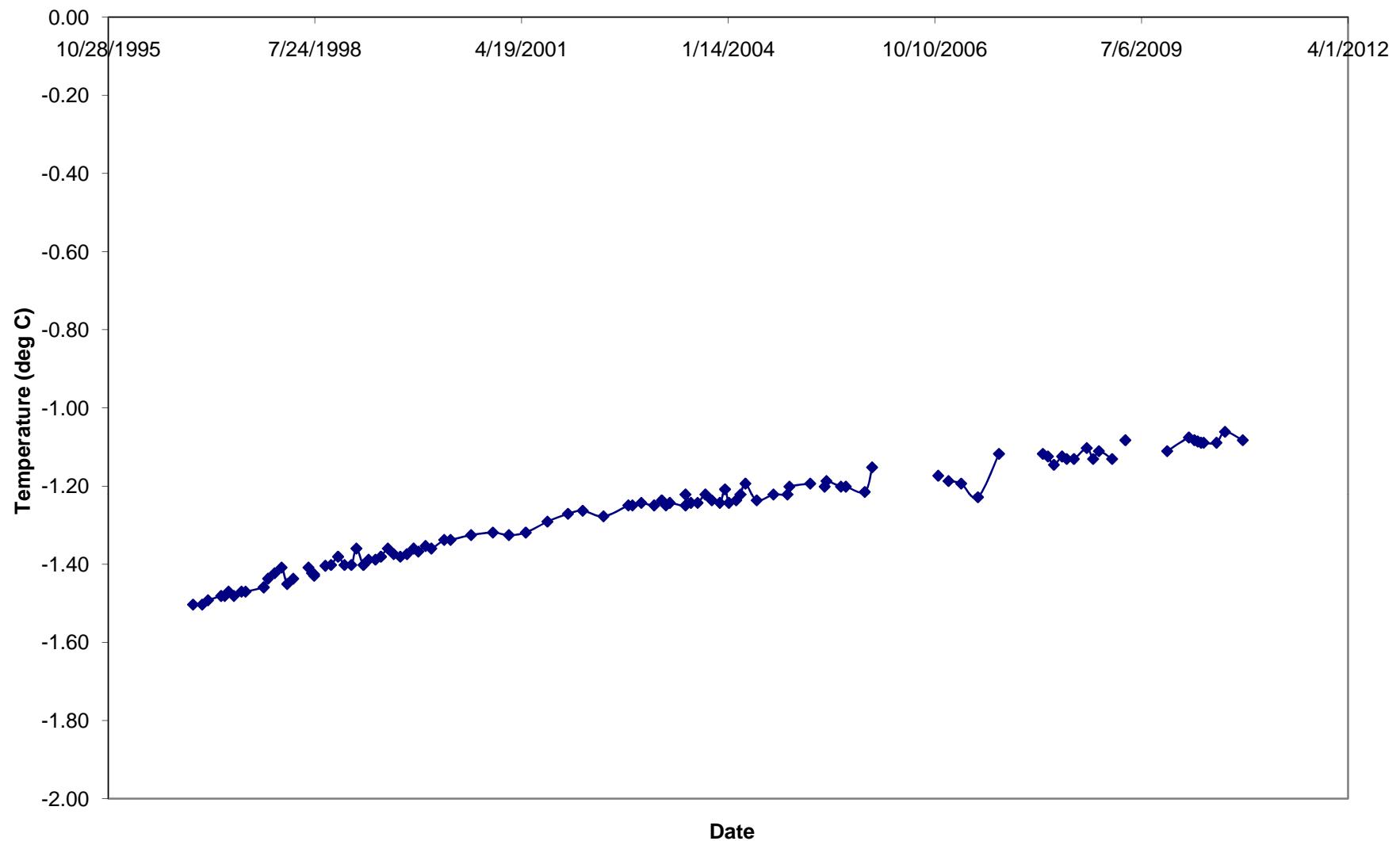
T-96-023 Temperature at 85 feet



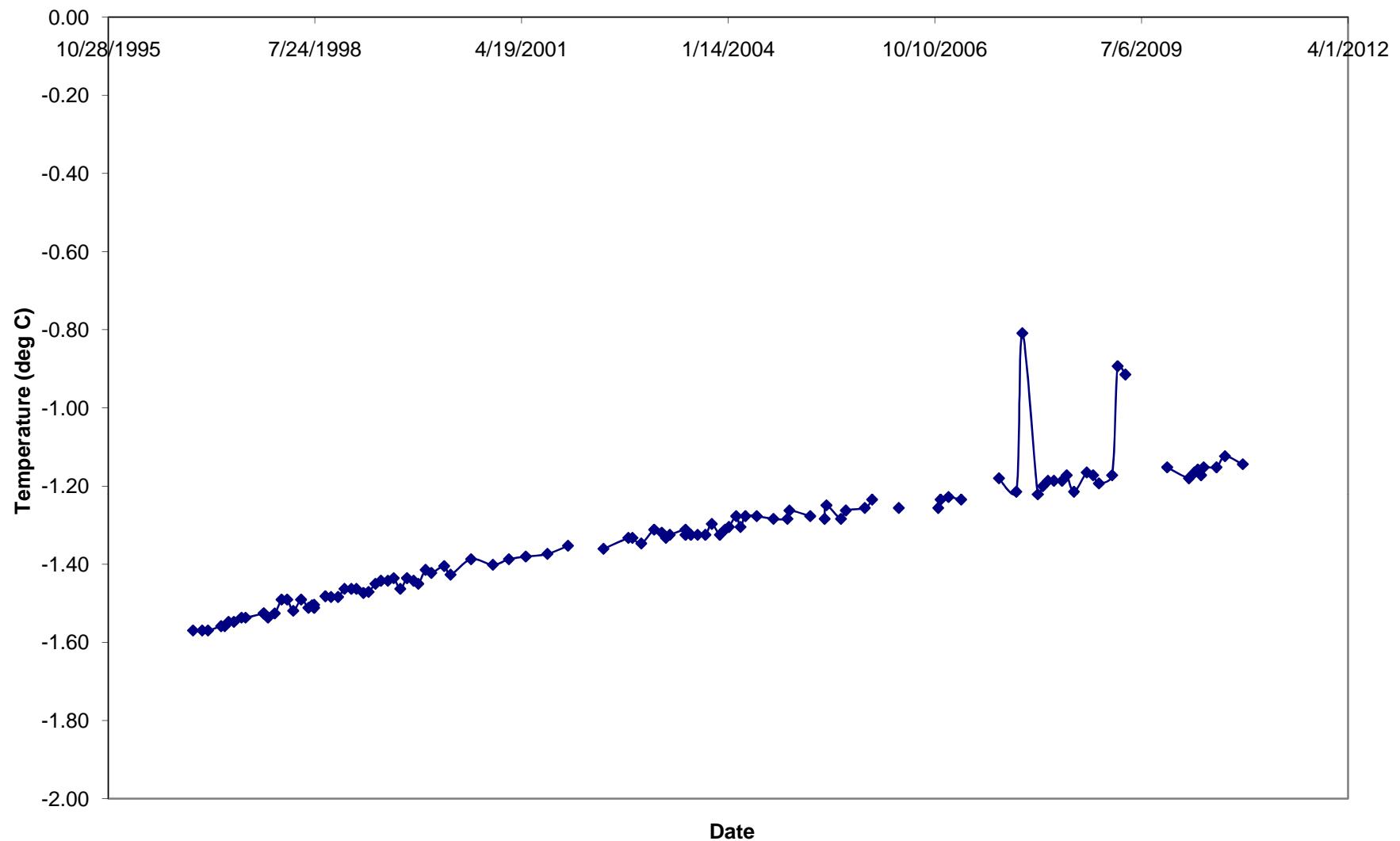
T-96-023 Temperature at 90 feet



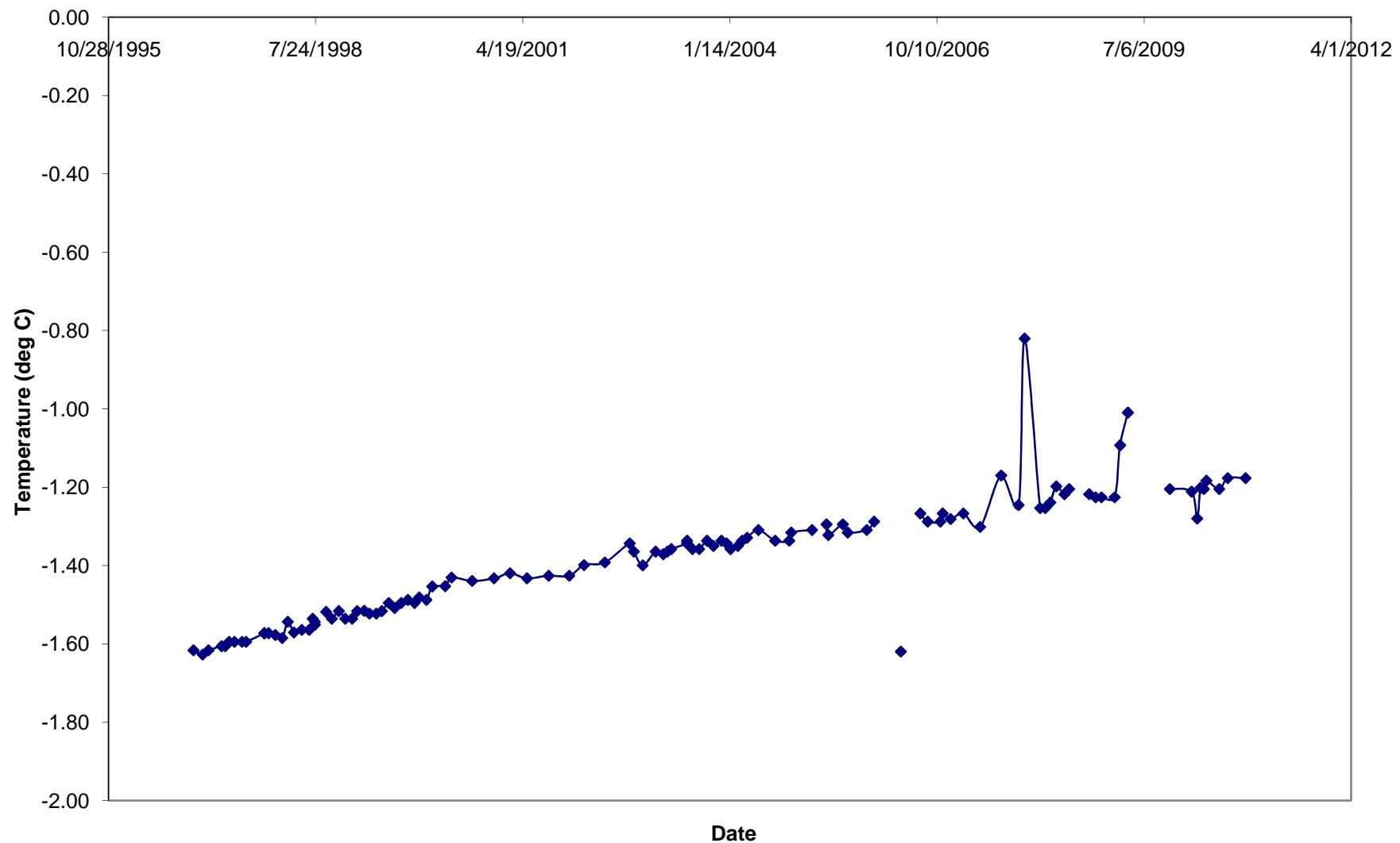
T-96-023 Temperature at 95 feet



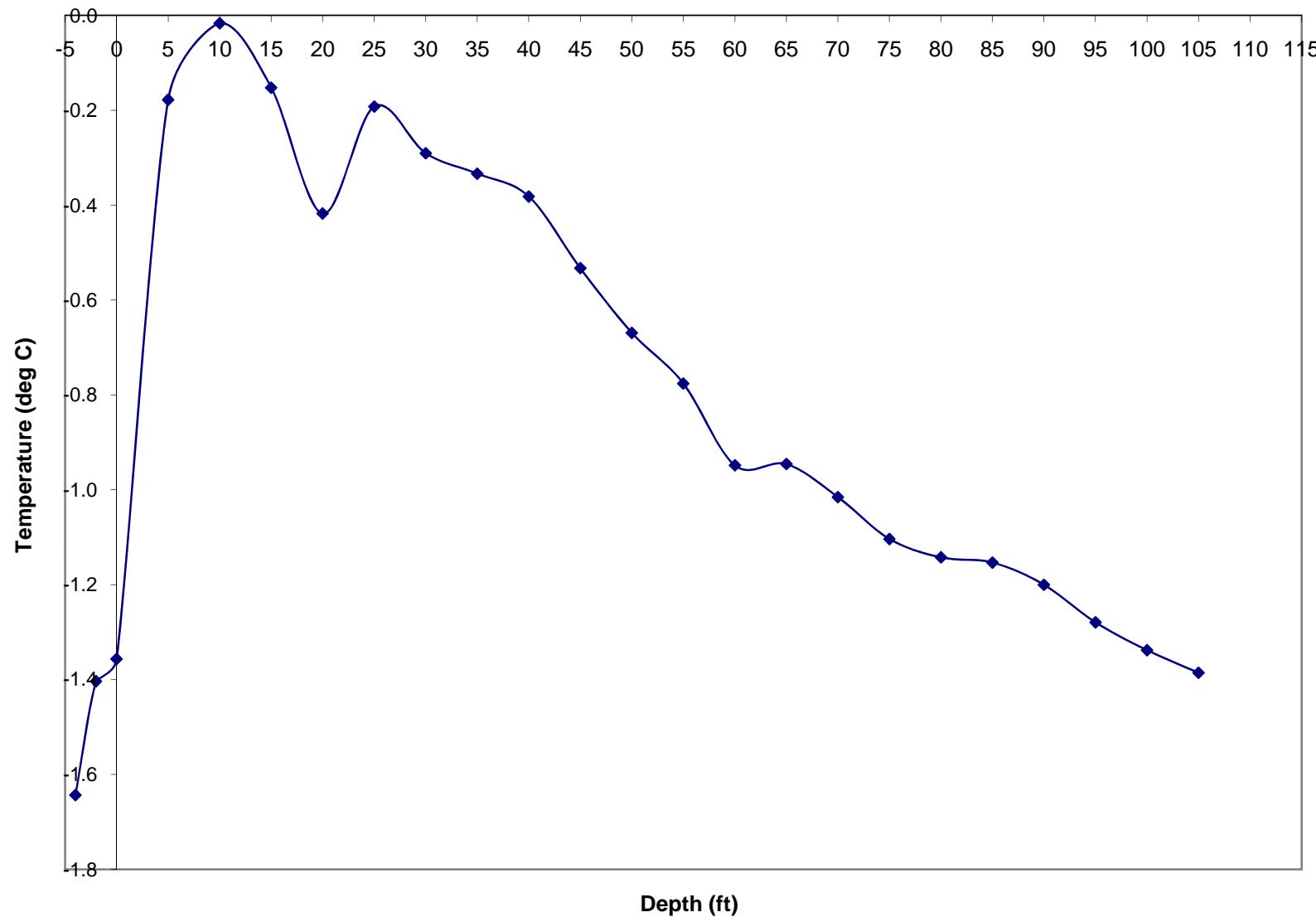
T-96-023 Temperature at 100 feet



T-96-023 Temperature at 105 feet

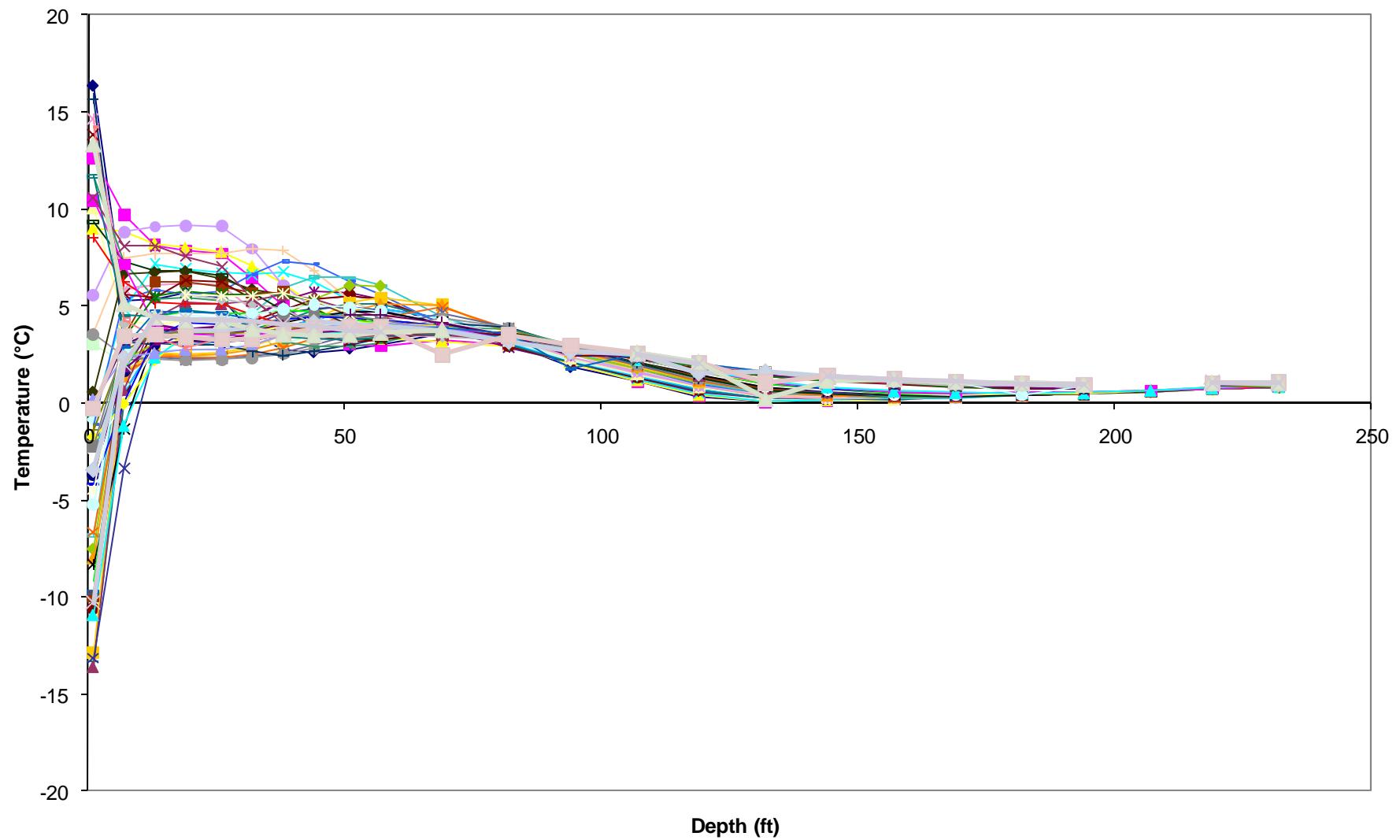


Average Temperature Depth Plot for T-96-023

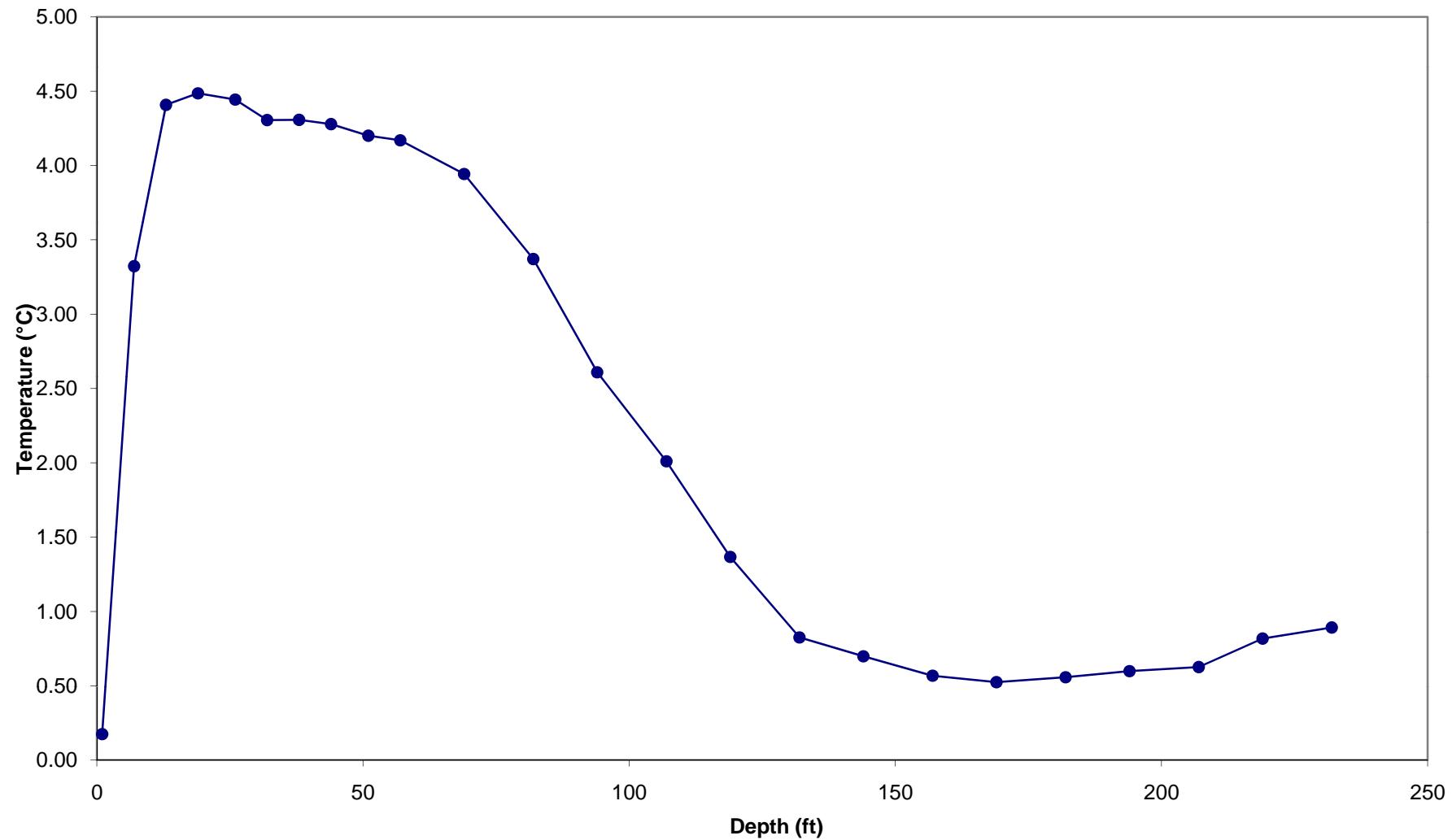


T-97-028

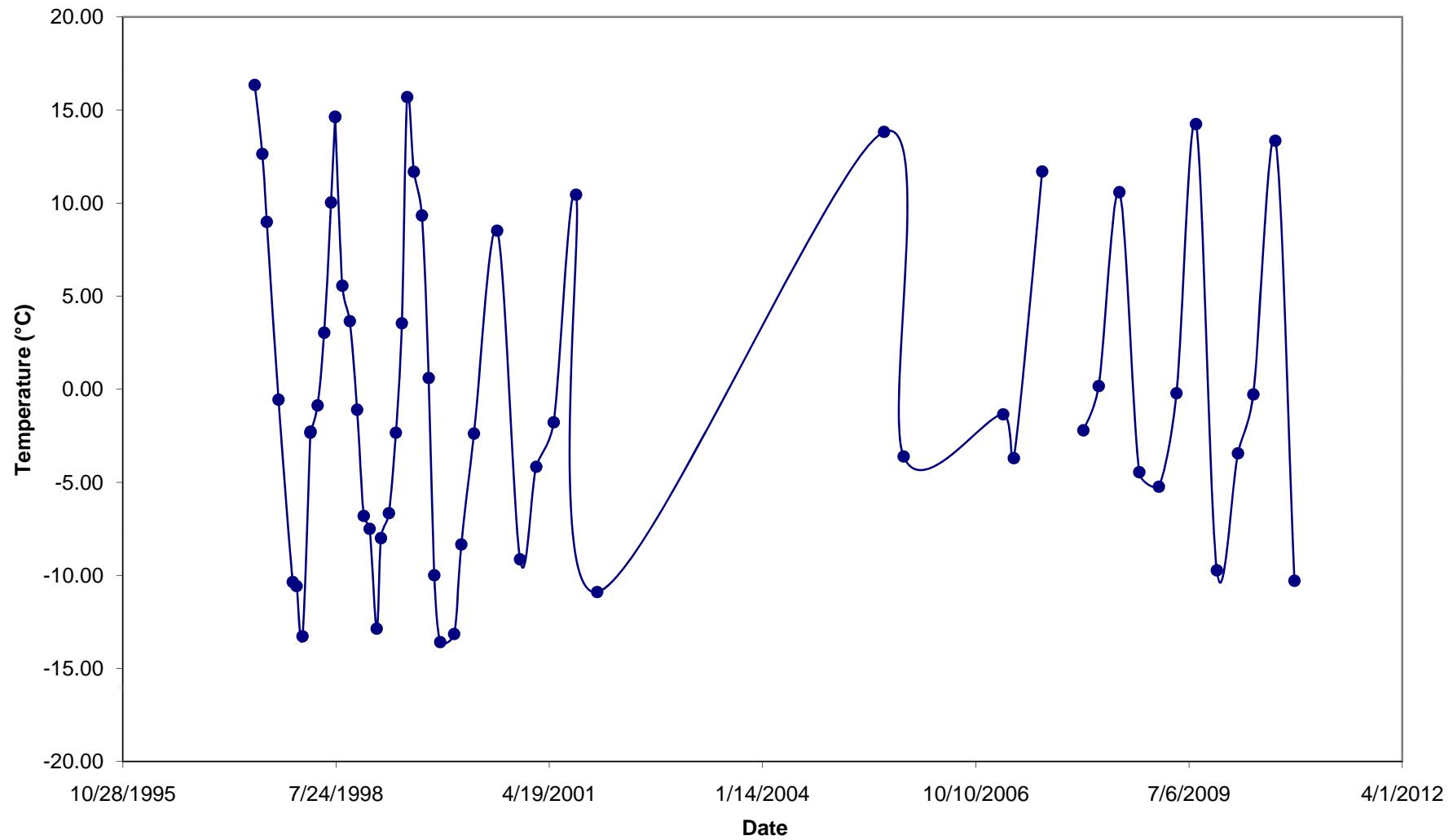
Temperature Depth Plot for T-97-028



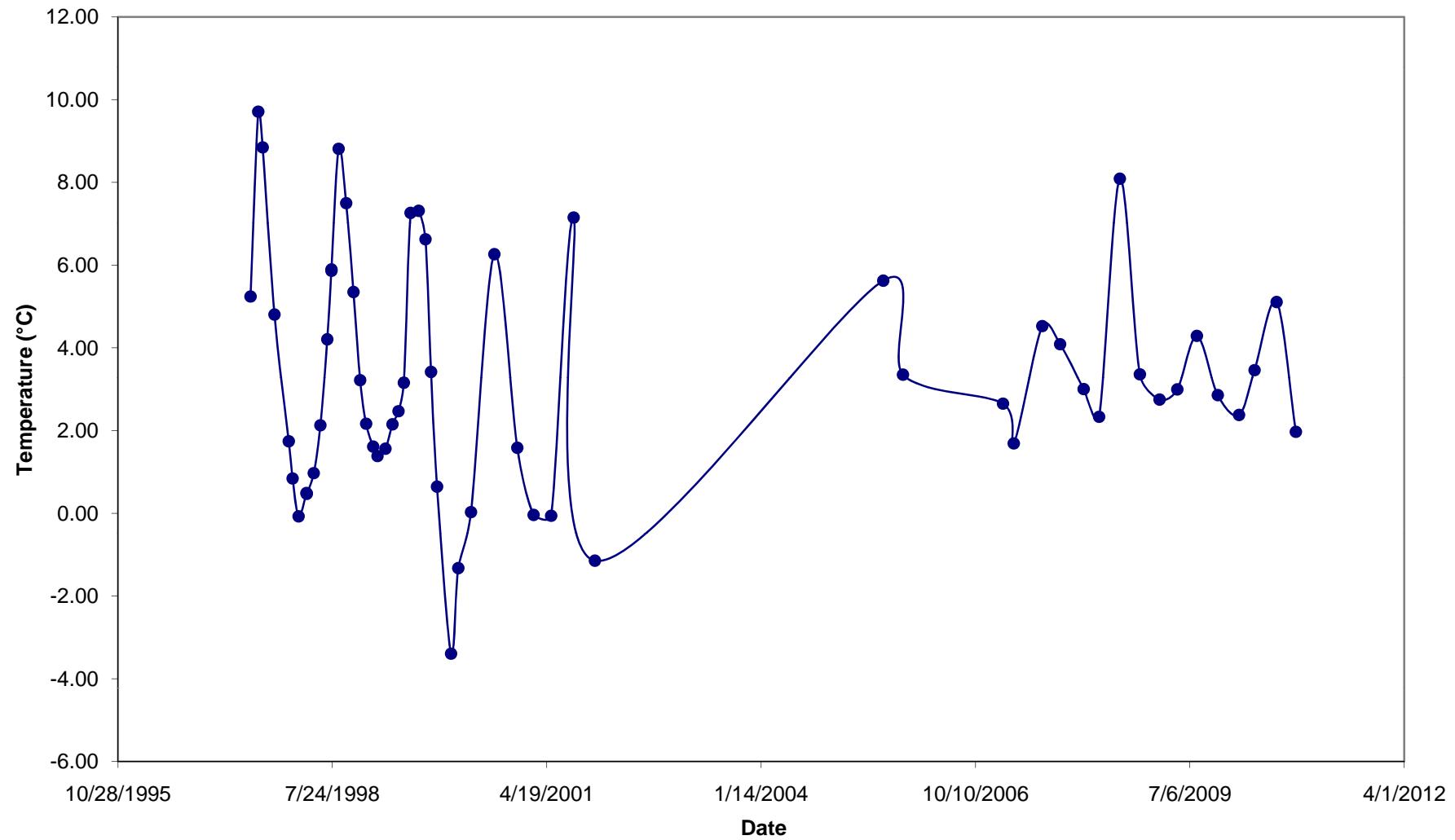
Average Temperature Depth Plot for T-97-028



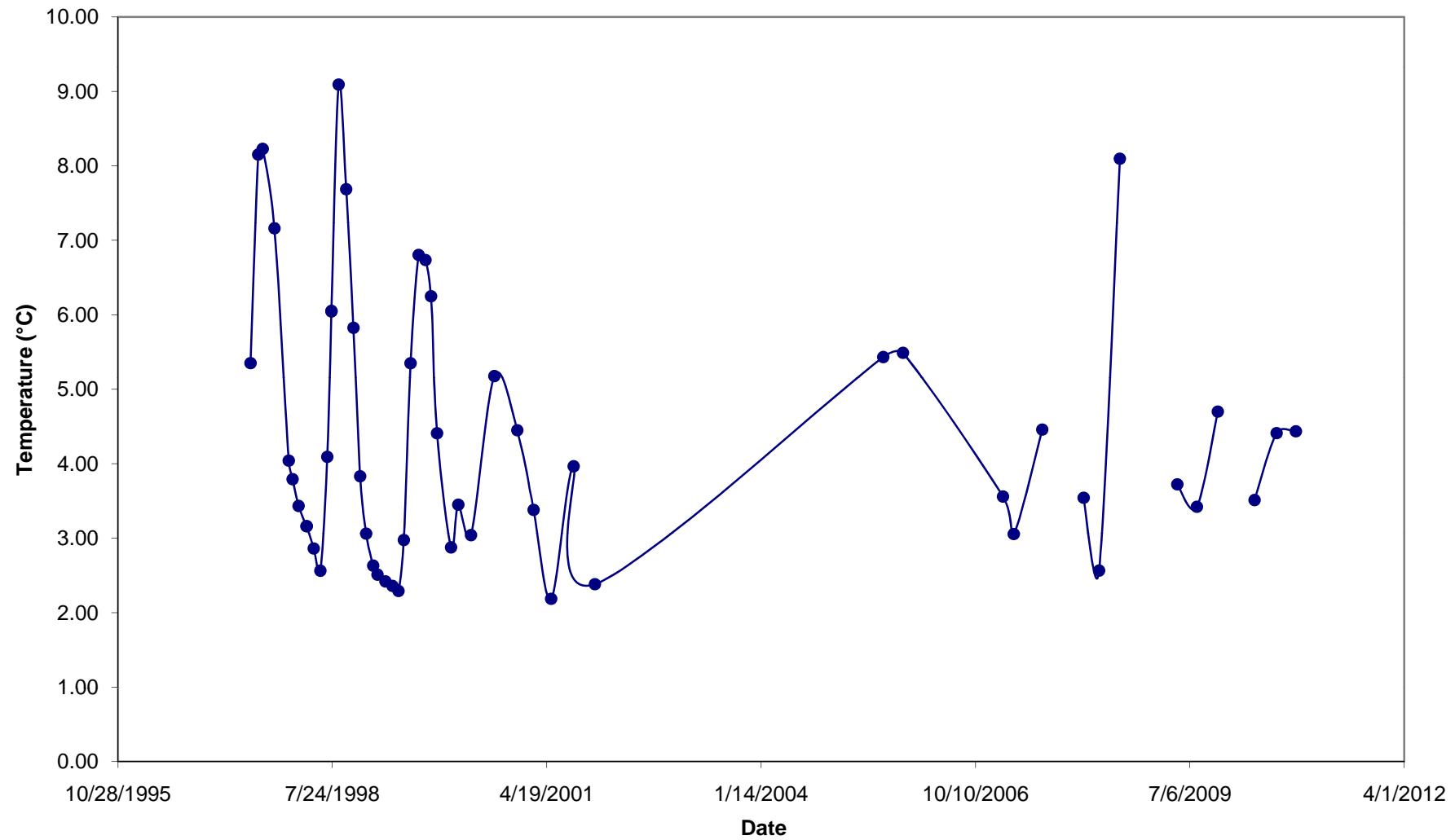
T-97-028 Temperature at 1 feet



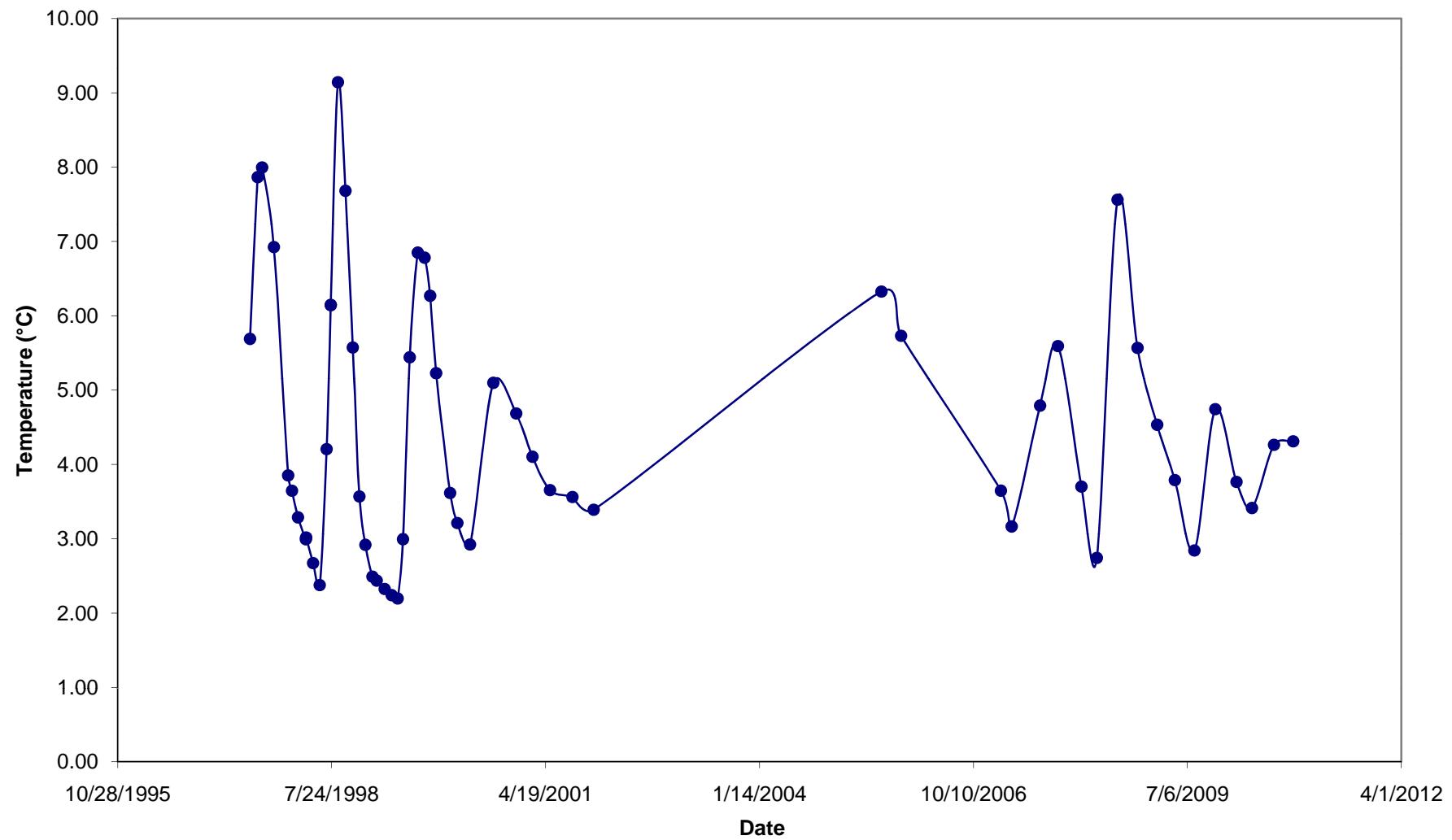
T-97-028 Temperature at 7 feet



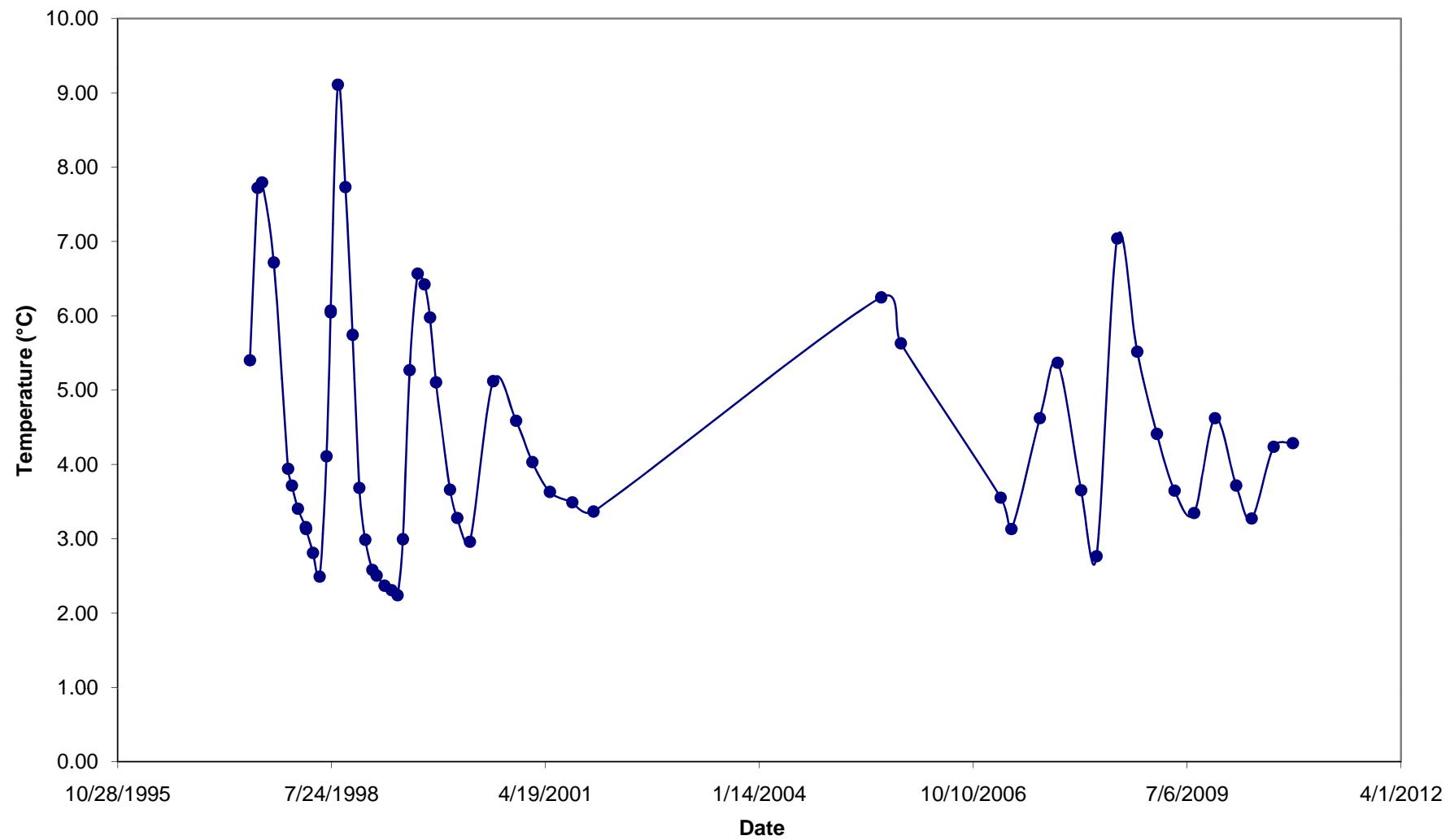
T-97-028 Temperature at 13 feet



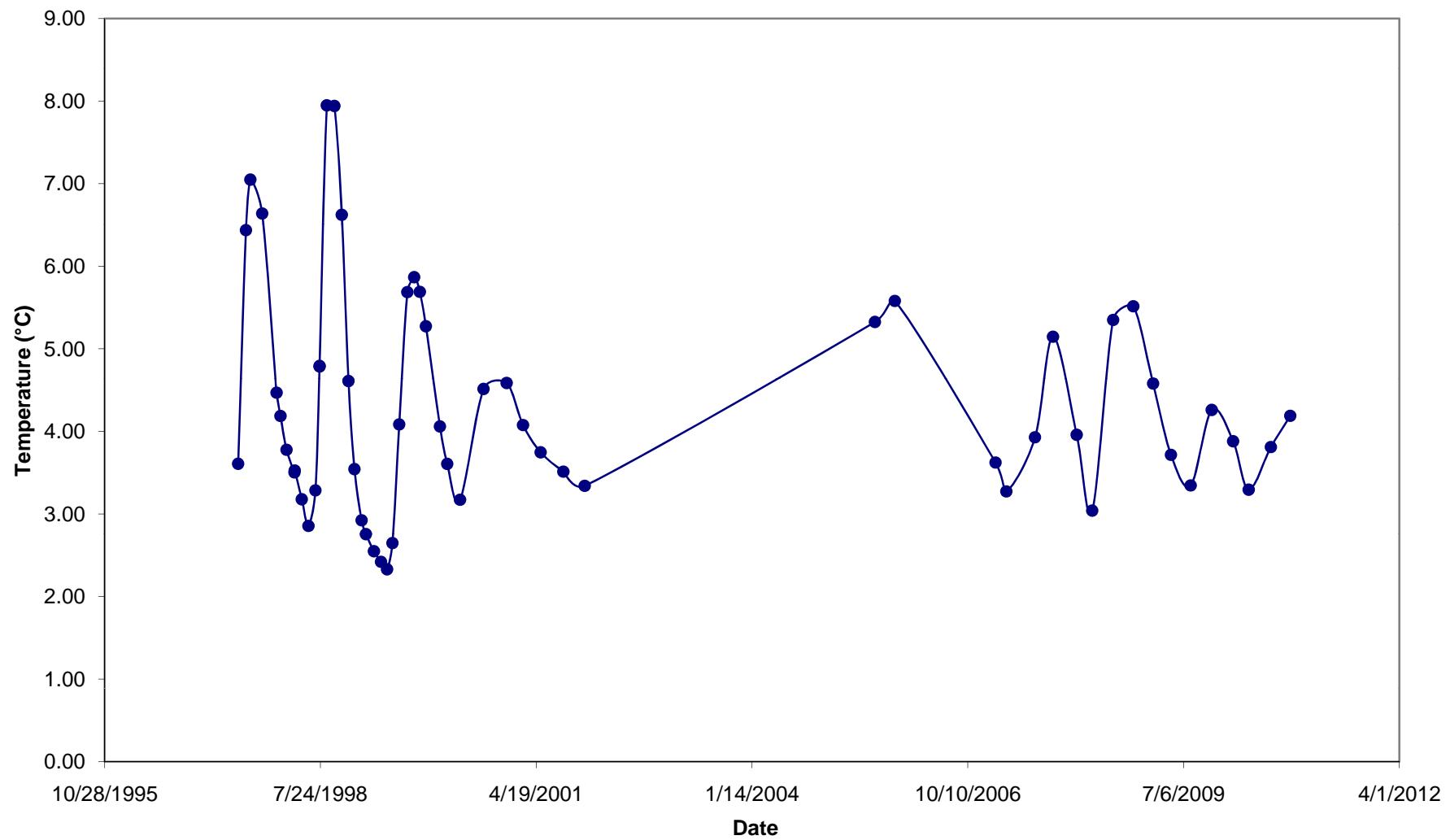
T-97-028 Temperature at 19 feet



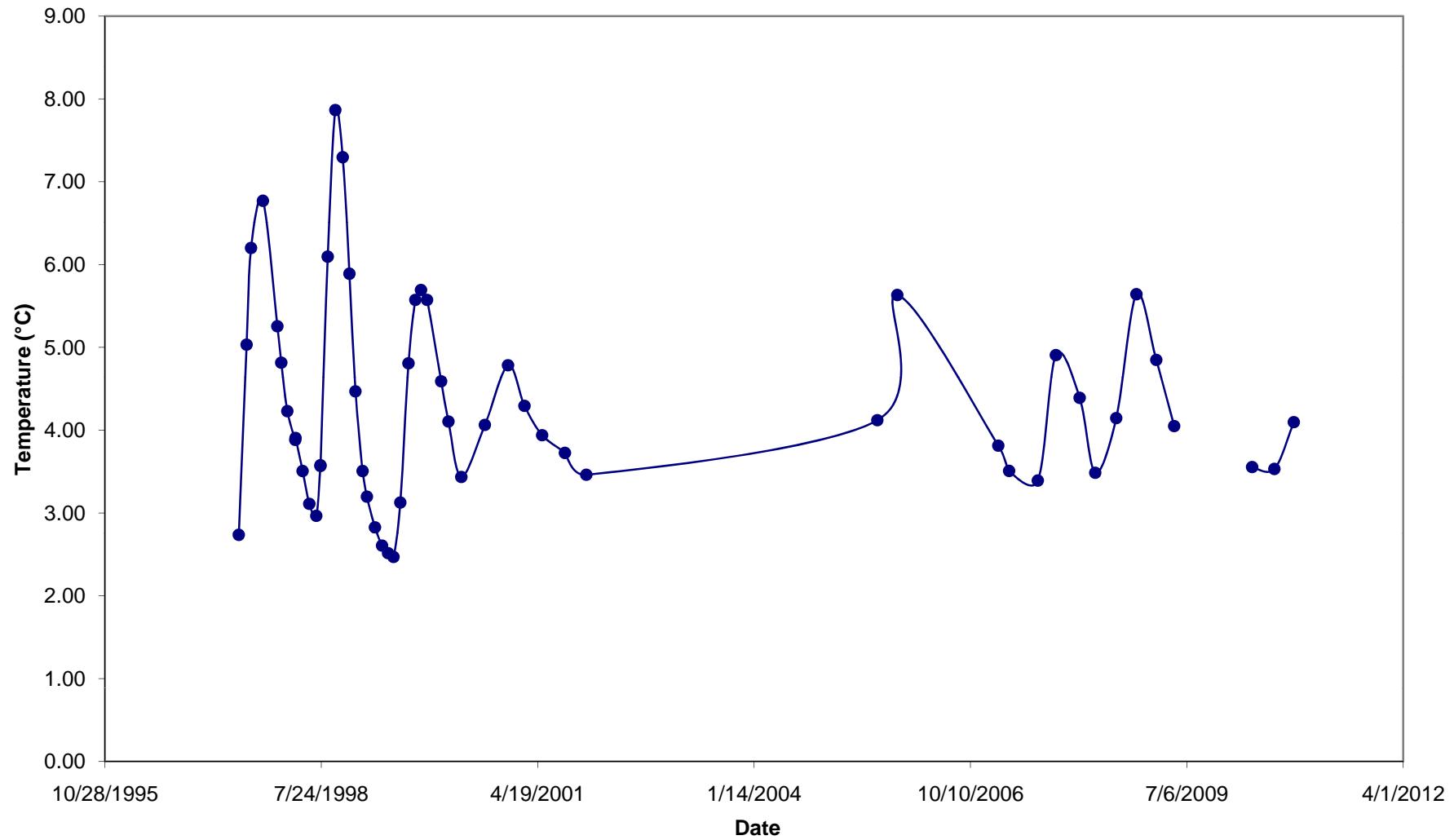
T-97-028 Temperature at 26 feet



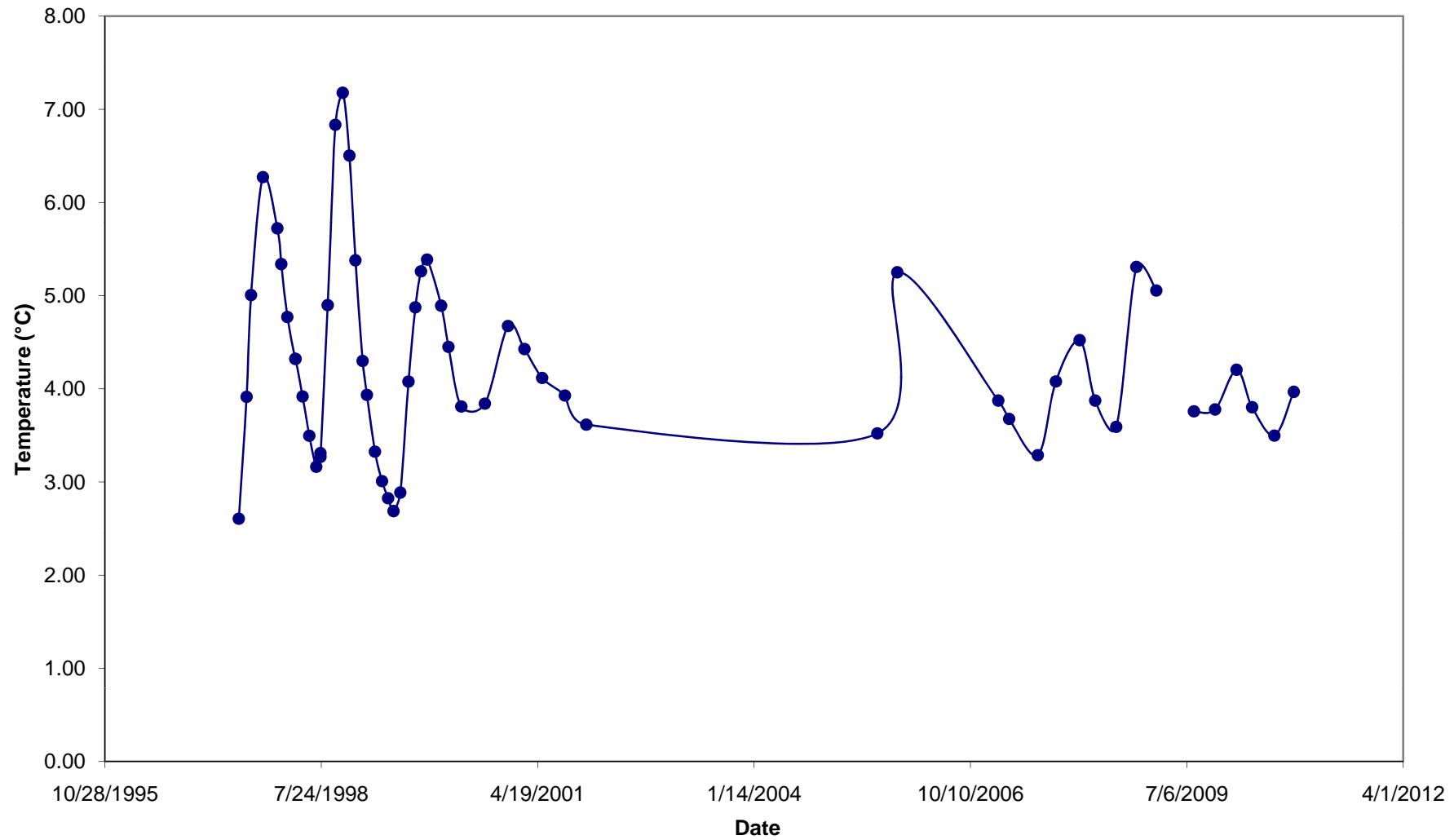
T-97-028 Temperature at 32 feet



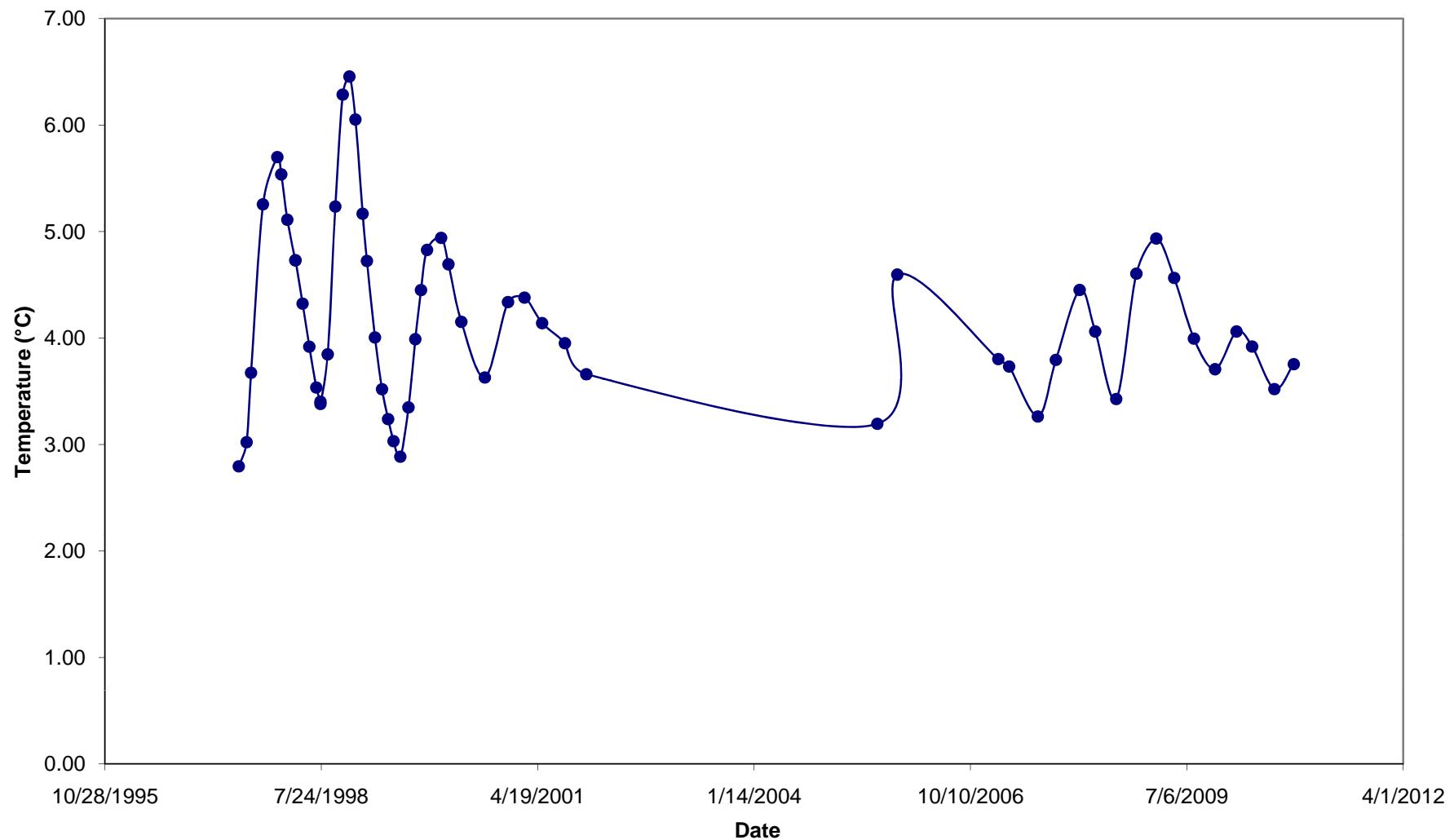
T-97-028 Temperature at 38 feet



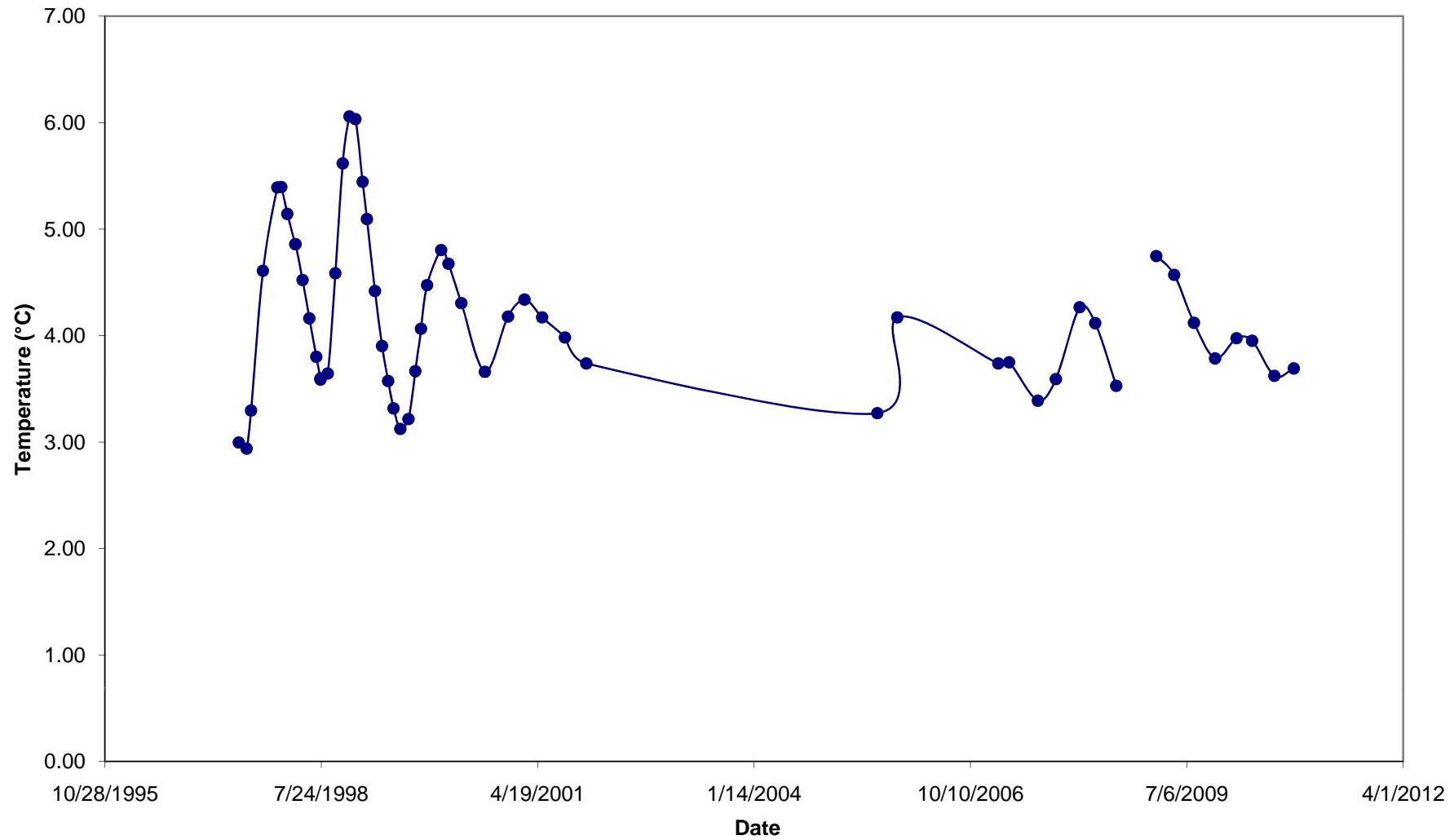
T-97-028 Temperature at 44 feet



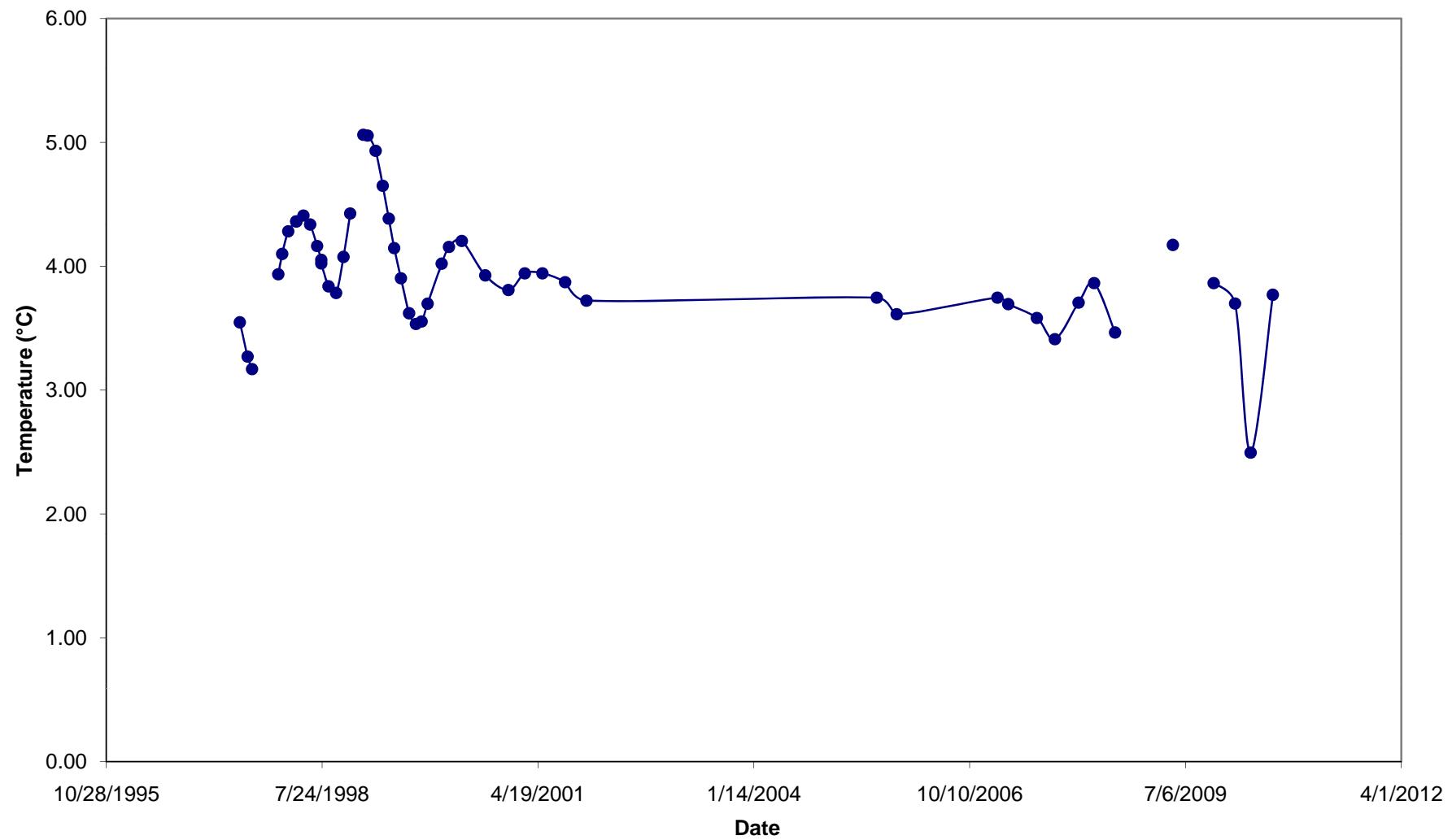
T-97-028 Temperature at 51 feet



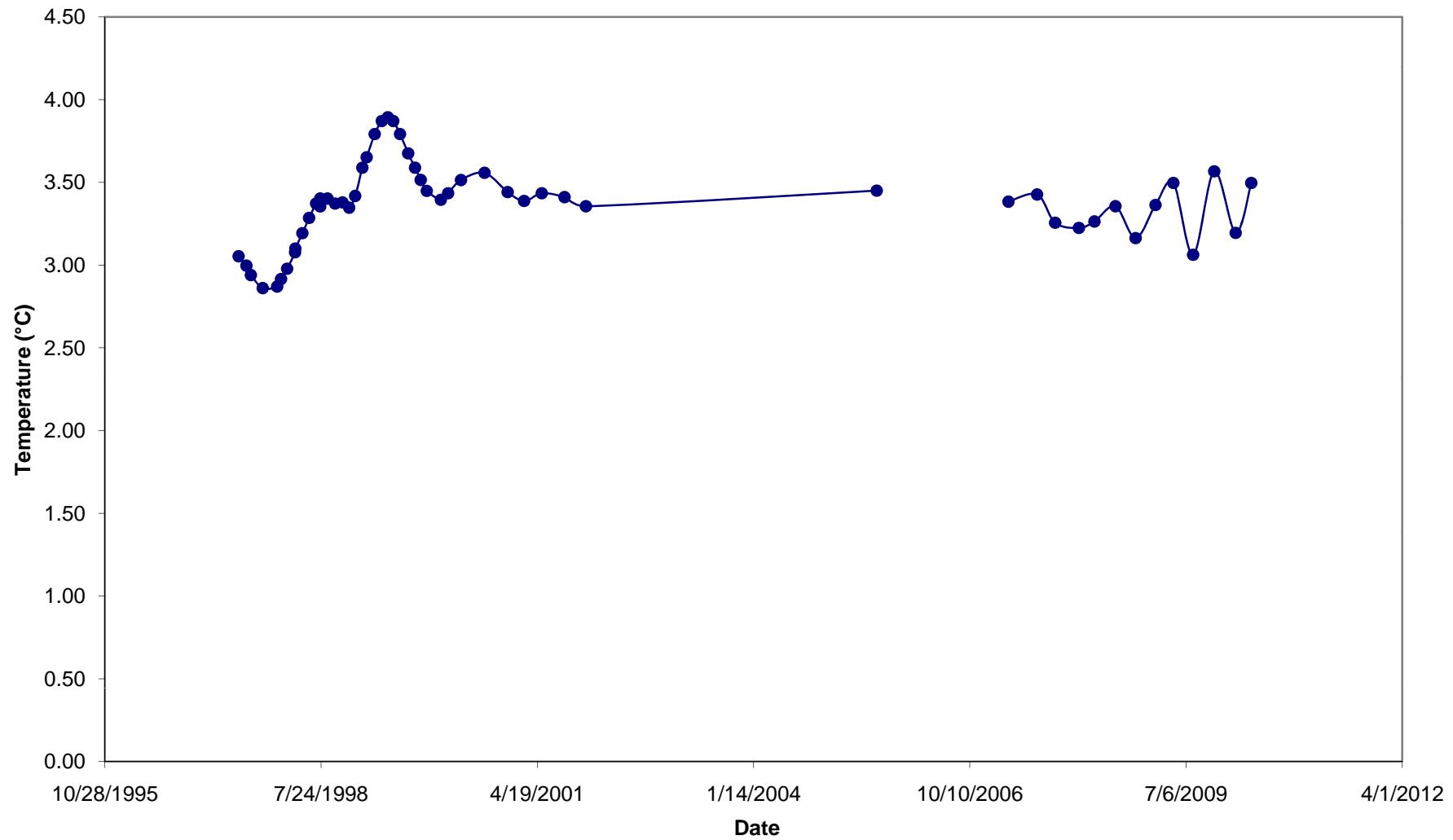
T-97-028 Temperature at 57 feet



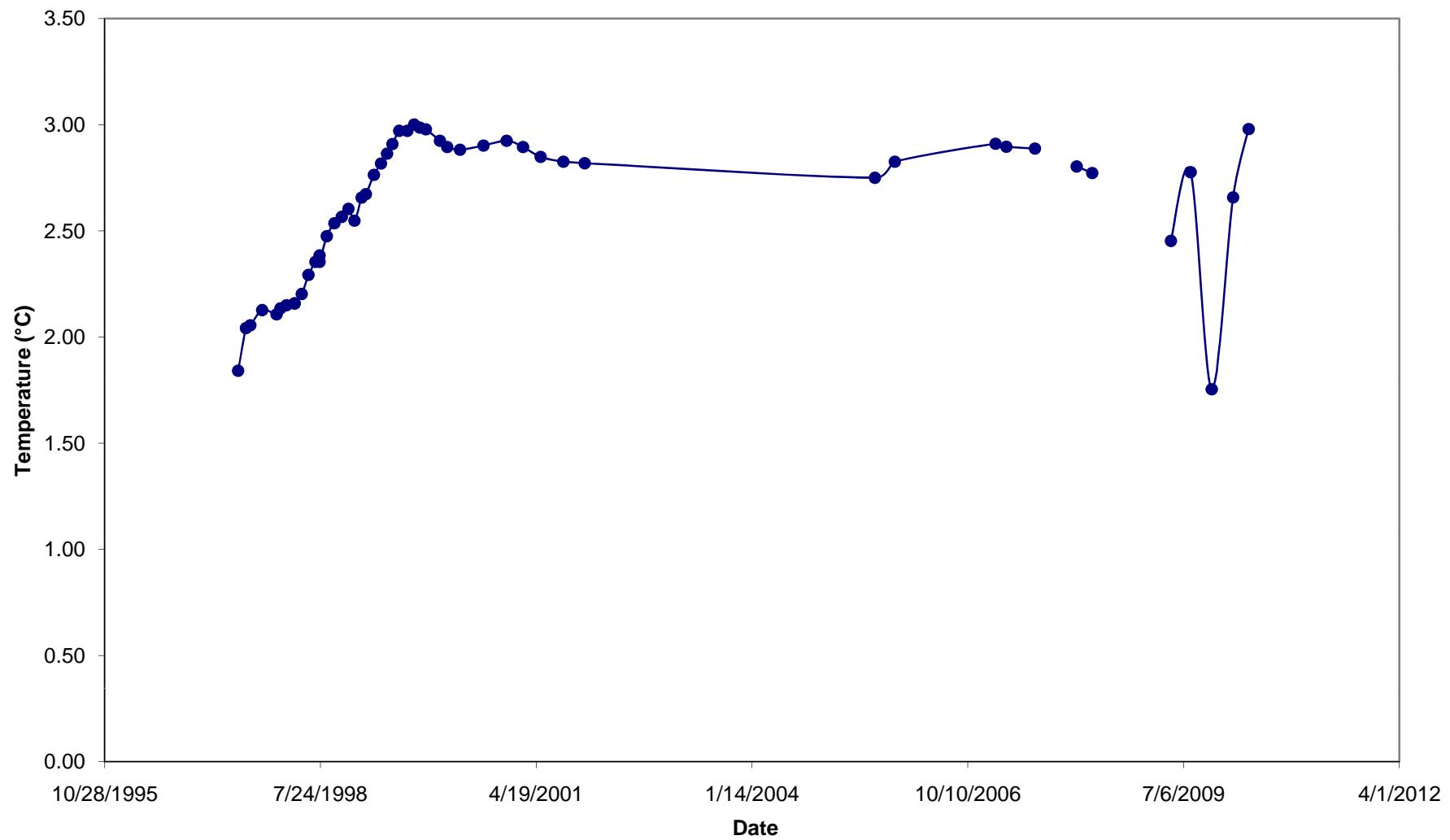
T-97-028 Temperature at 69 feet



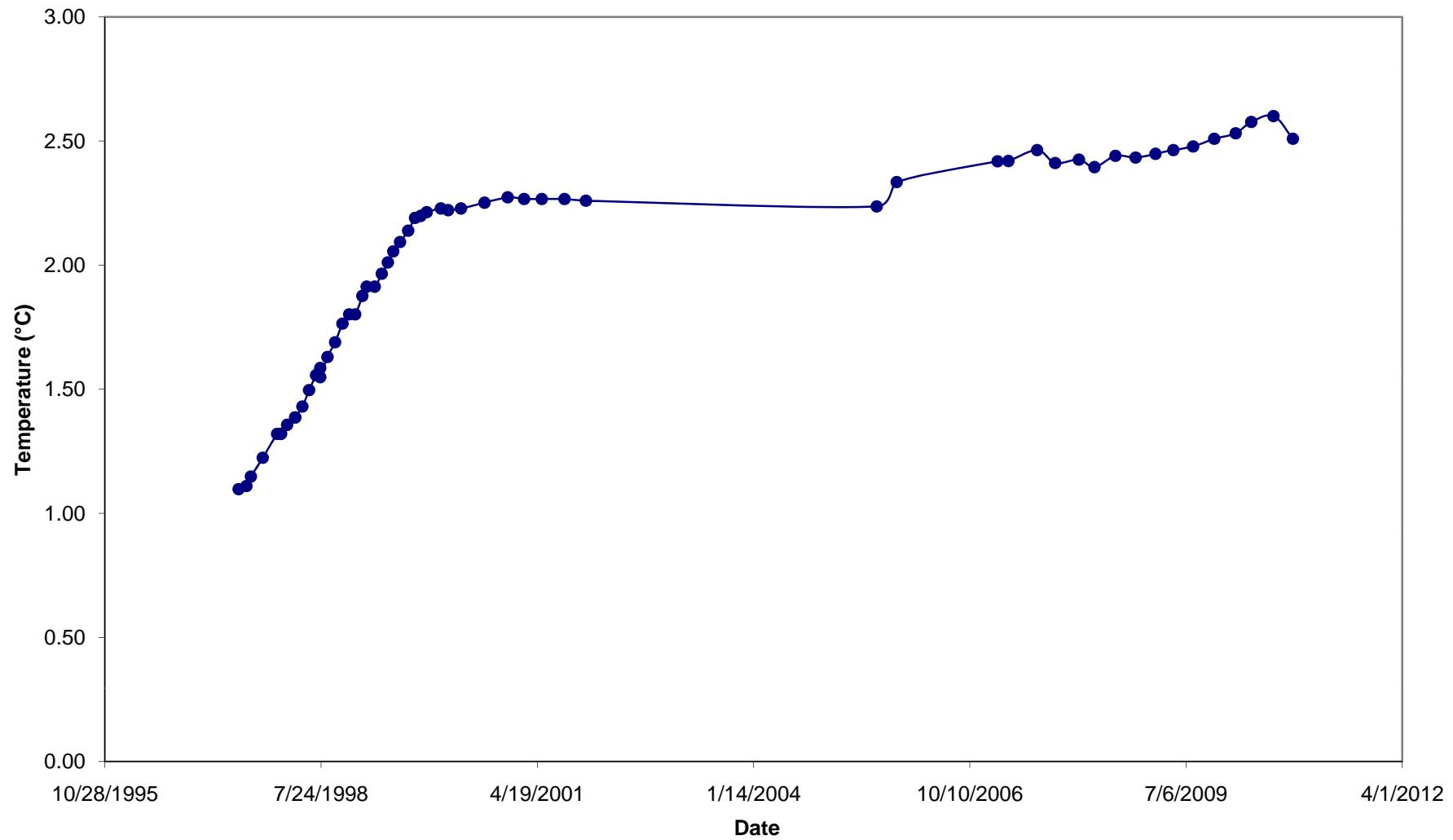
T-97-028 Temperature at 82 feet



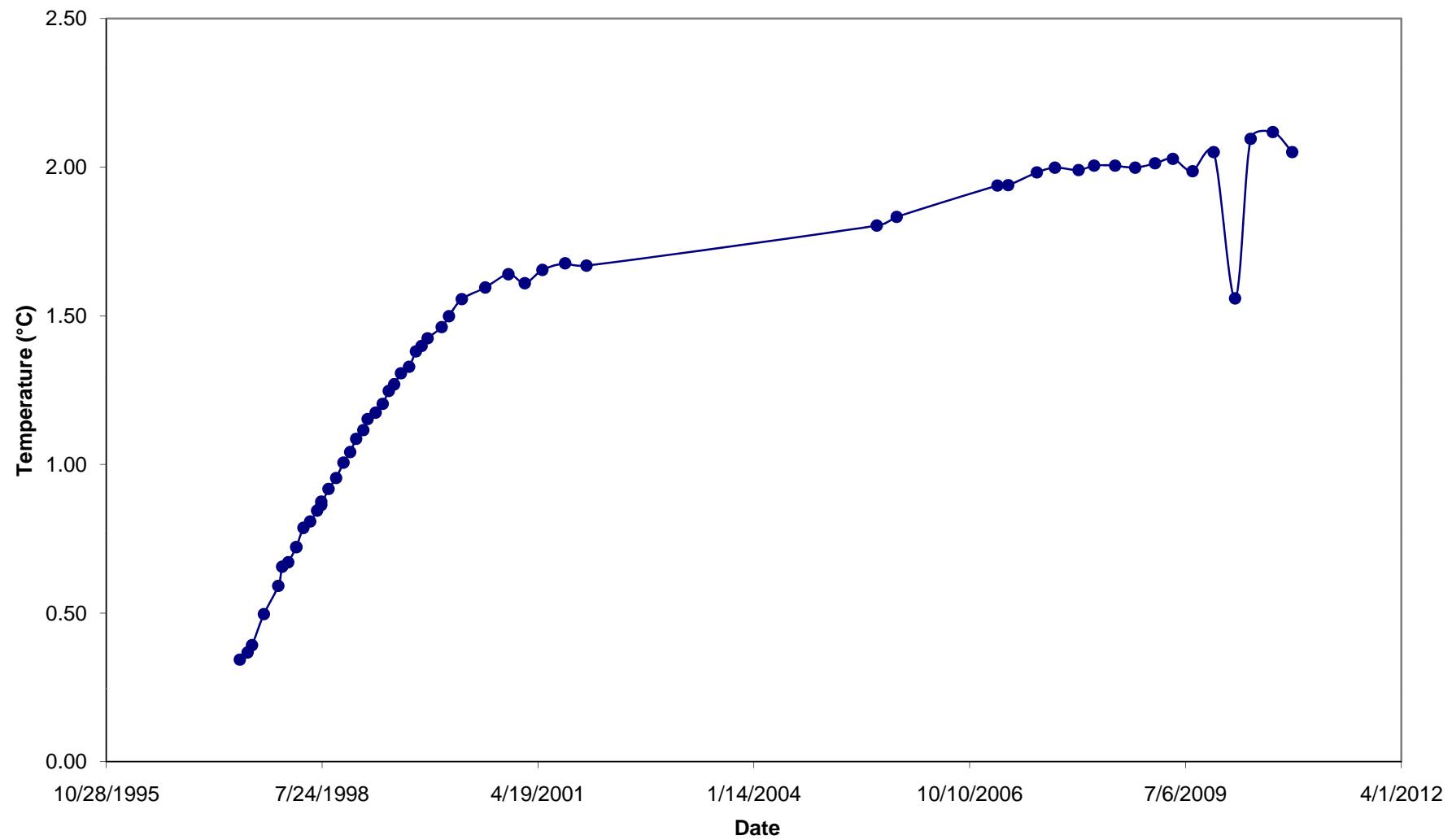
T-97-028 Temperature at 94 feet



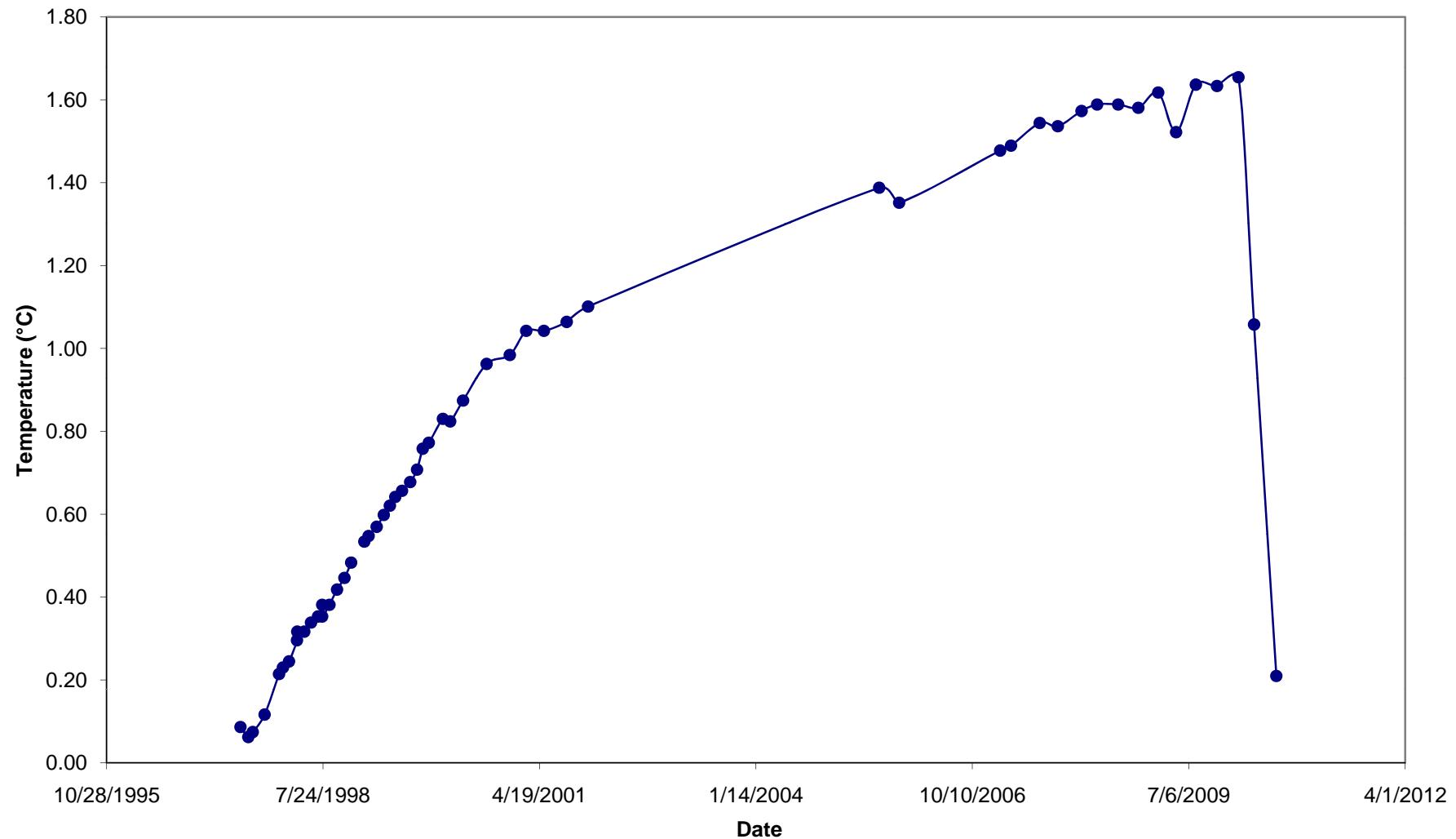
T-97-028 Temperature at 107 feet



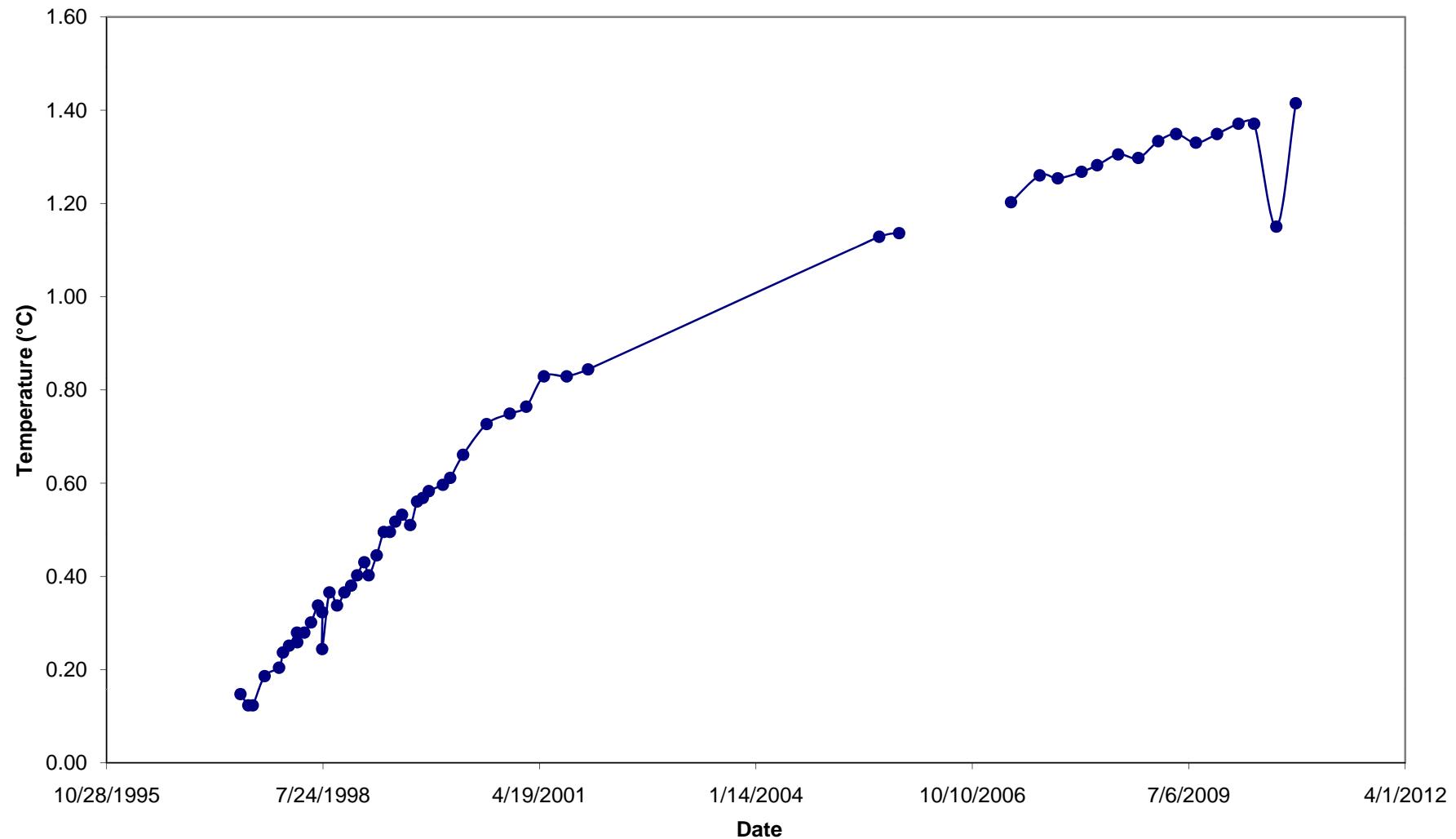
T-97-028 Temperature at 119 feet



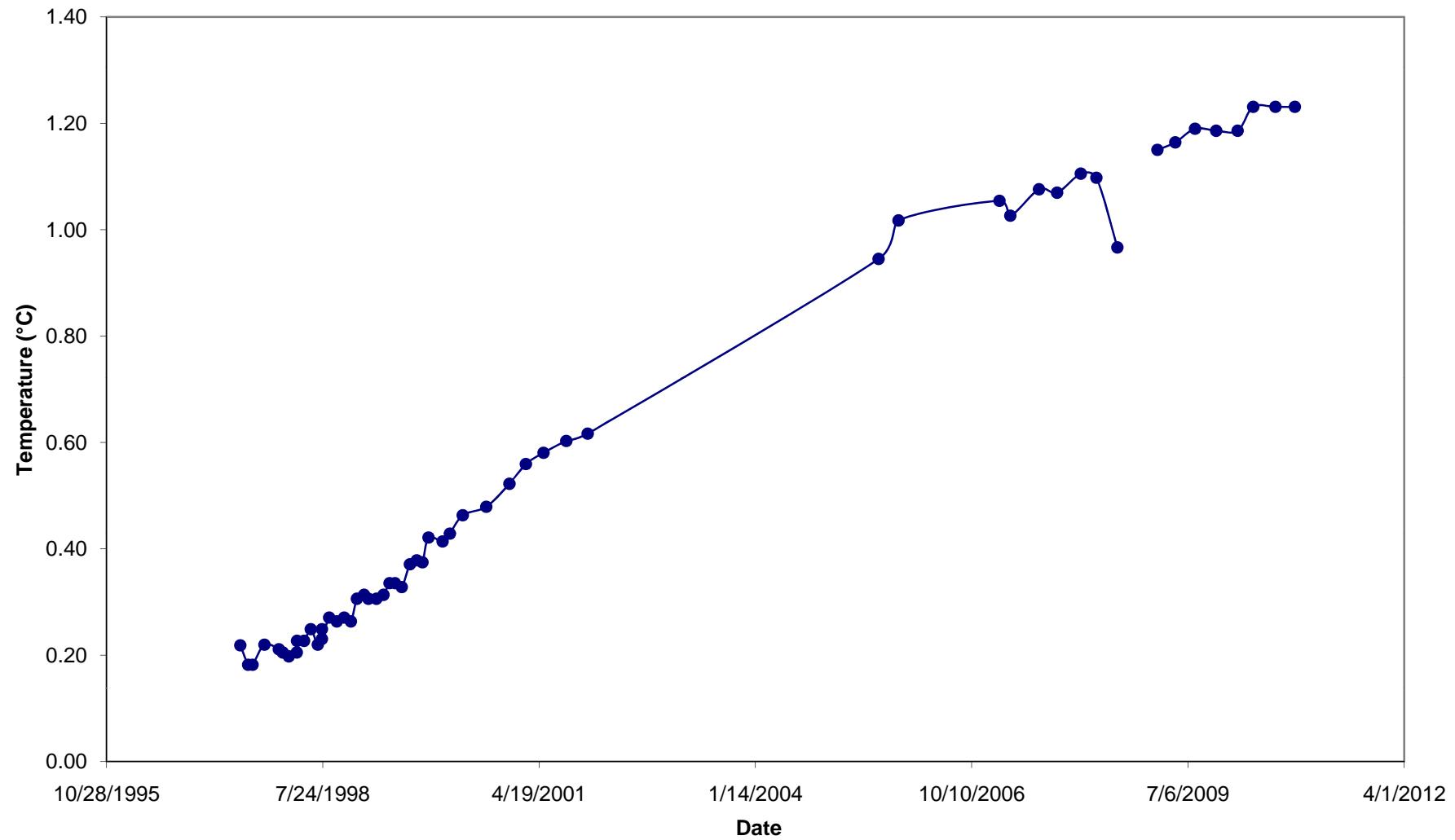
T-97-028 Temperature at 132 feet



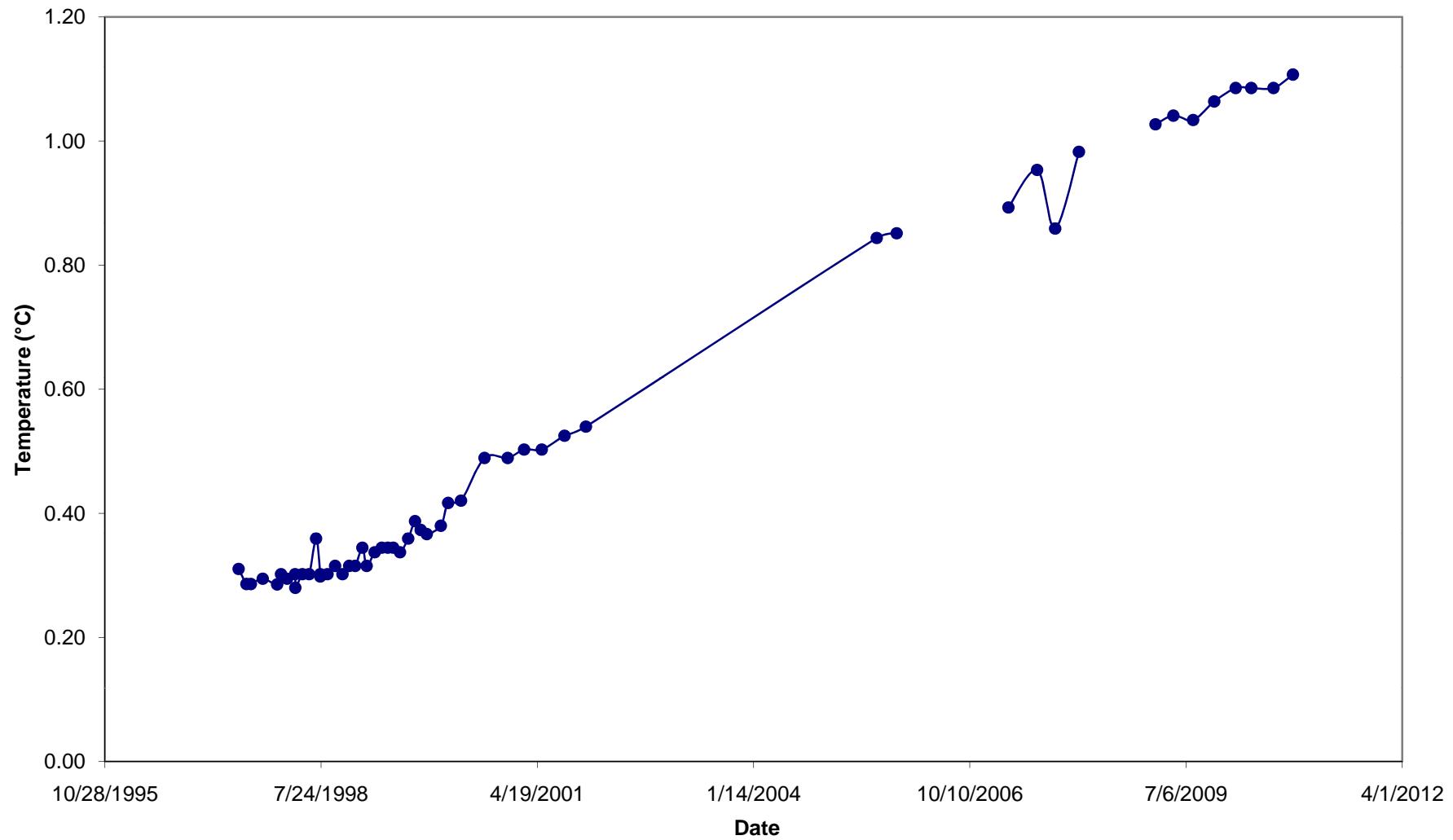
T-97-028 Temperature at 144 feet



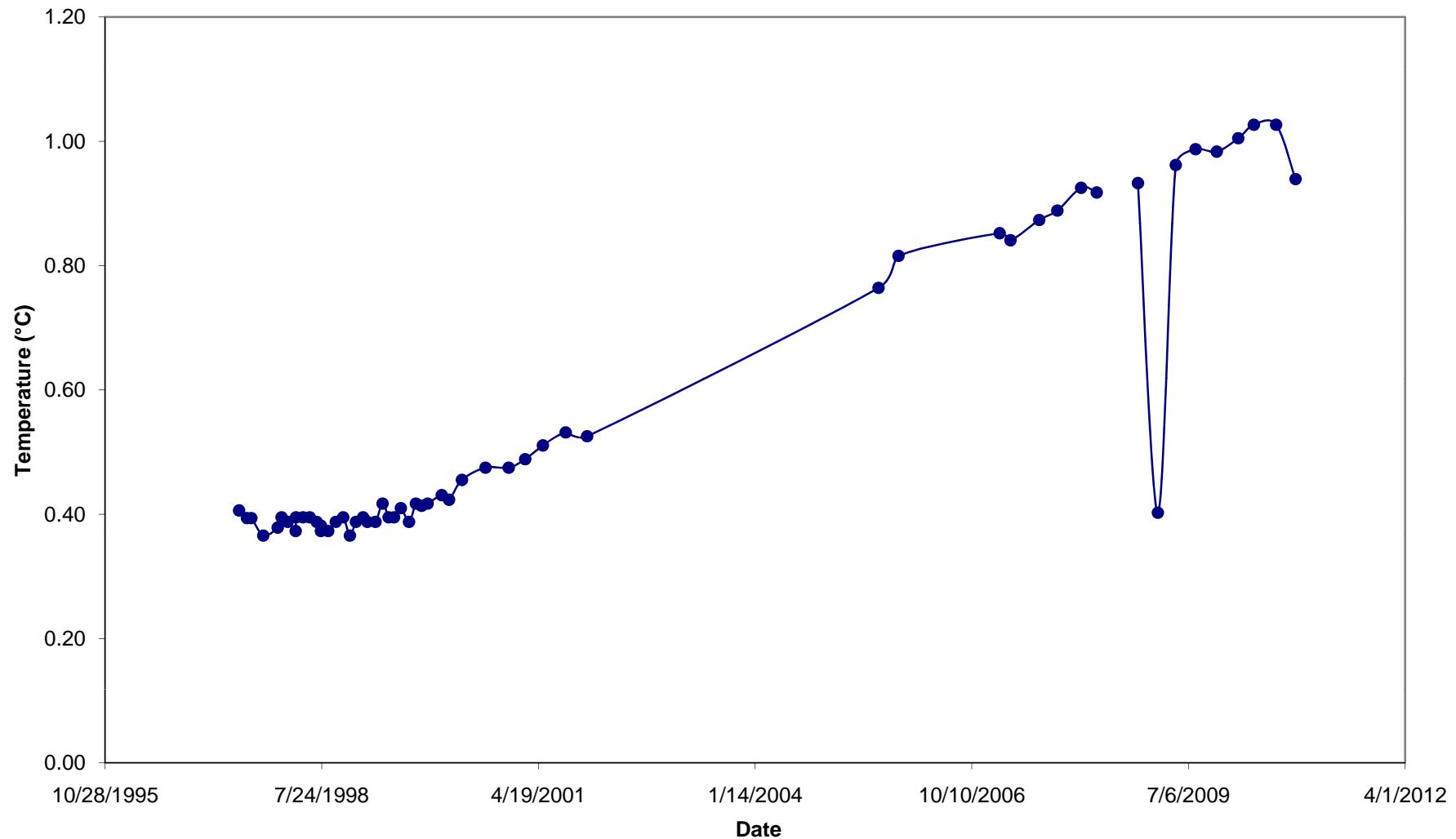
T-97-028 Temperature at 157 feet



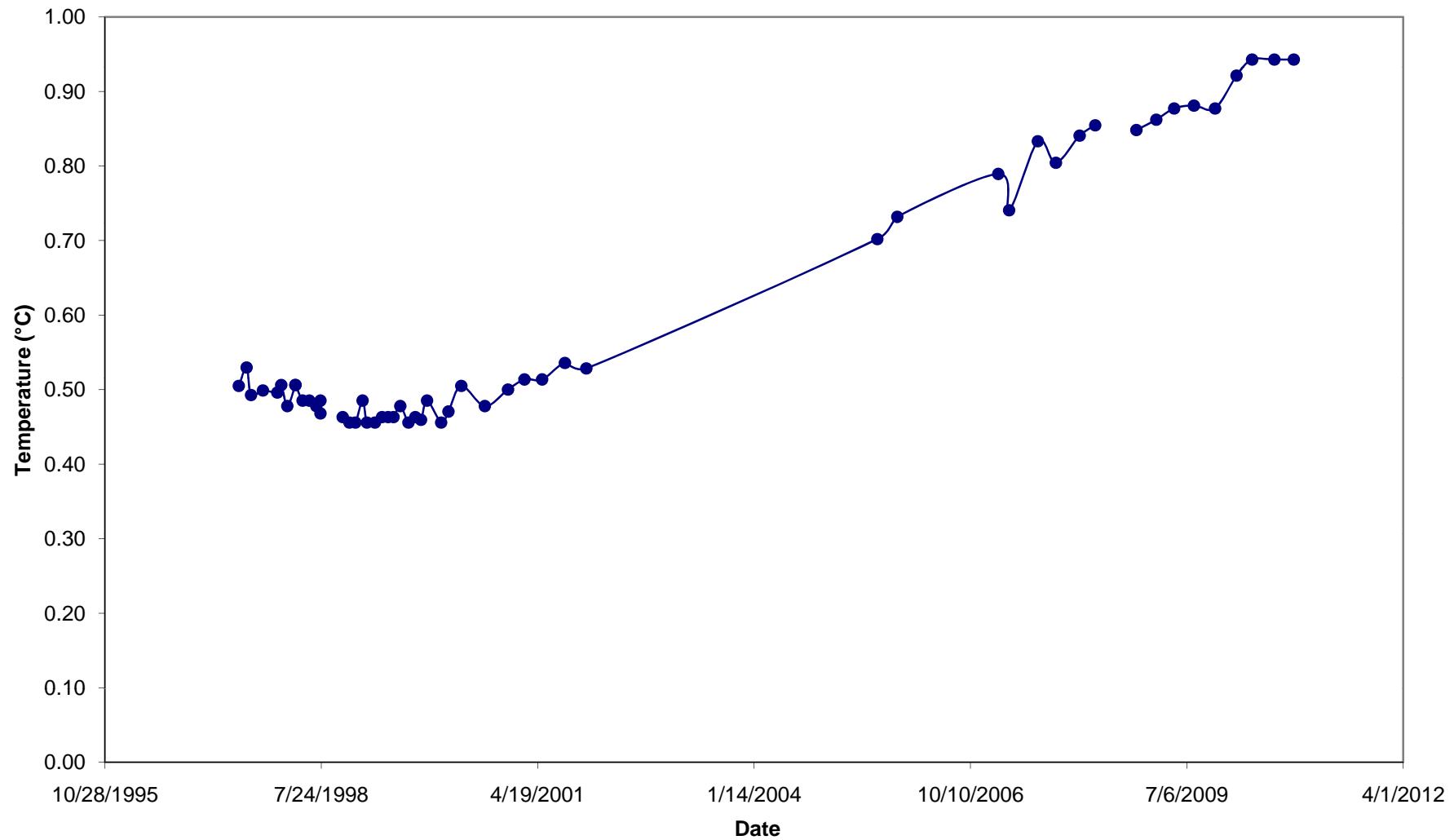
T-97-028 Temperature at 169 feet



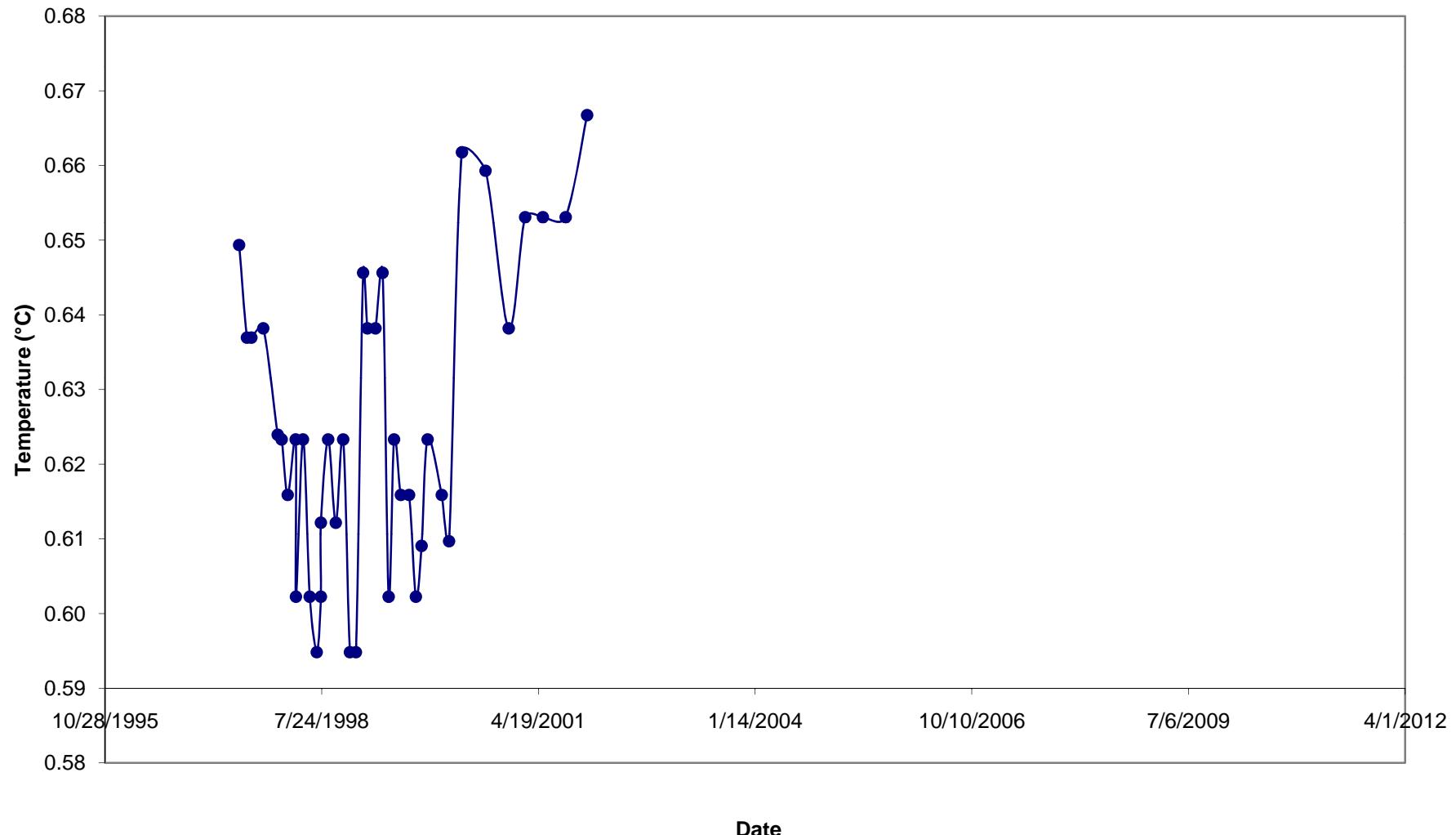
T-97-028 Temperature at 182 feet



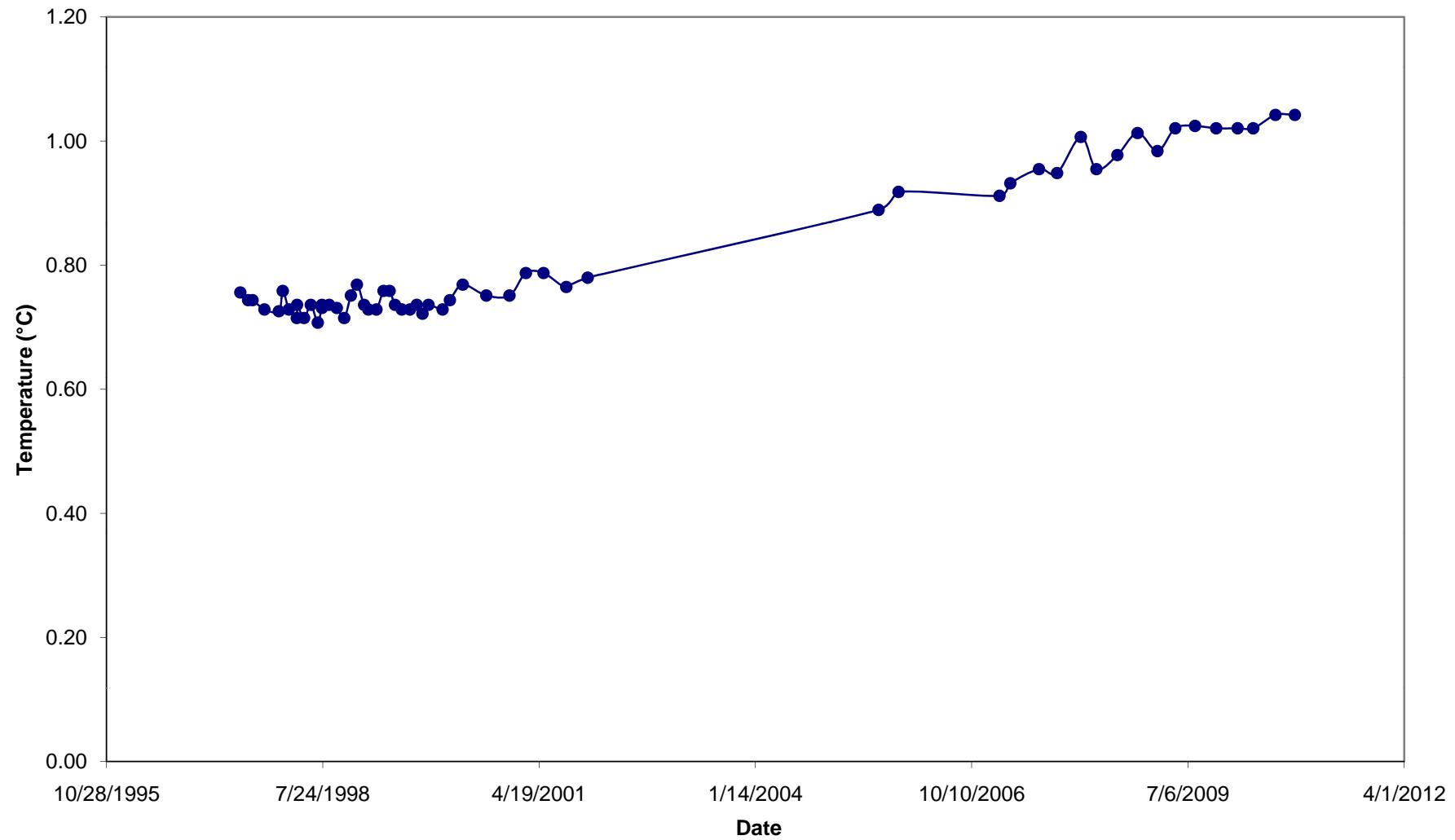
T-97-028 Temperature at 194 feet



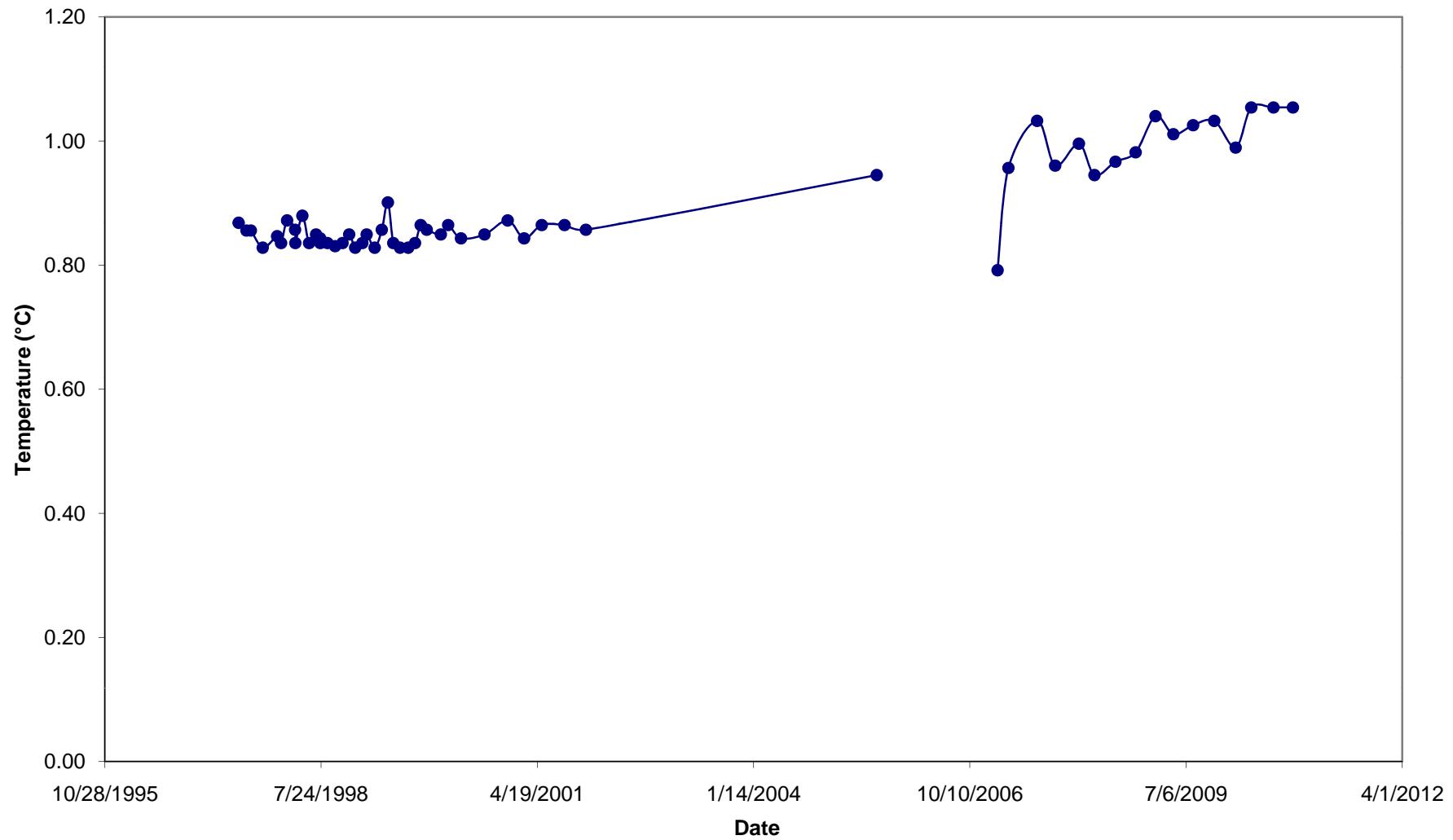
T-97-028 Temperature at 207 feet



T-97-028 Temperature at 219 feet

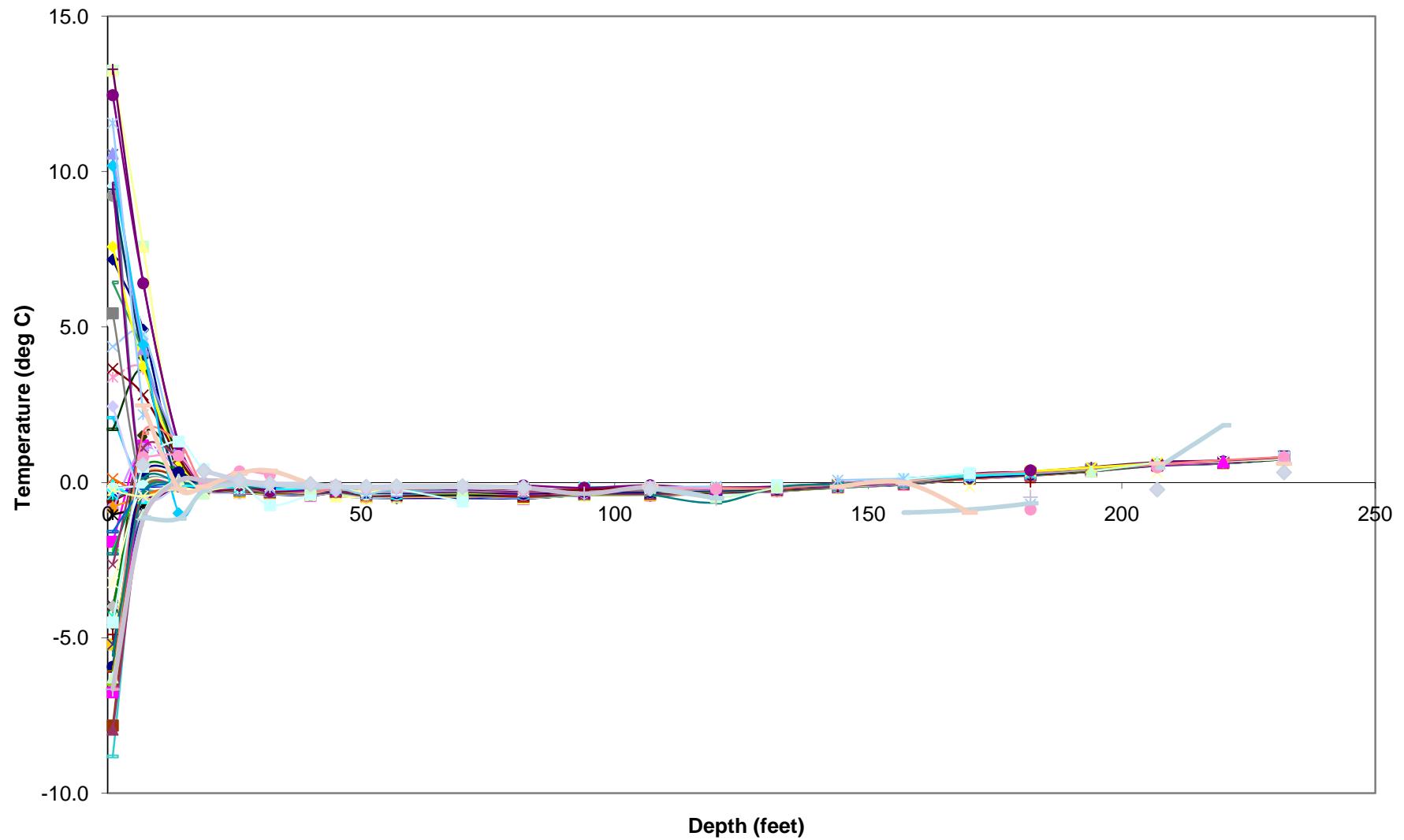


T-97-028 Temperature at 232 feet

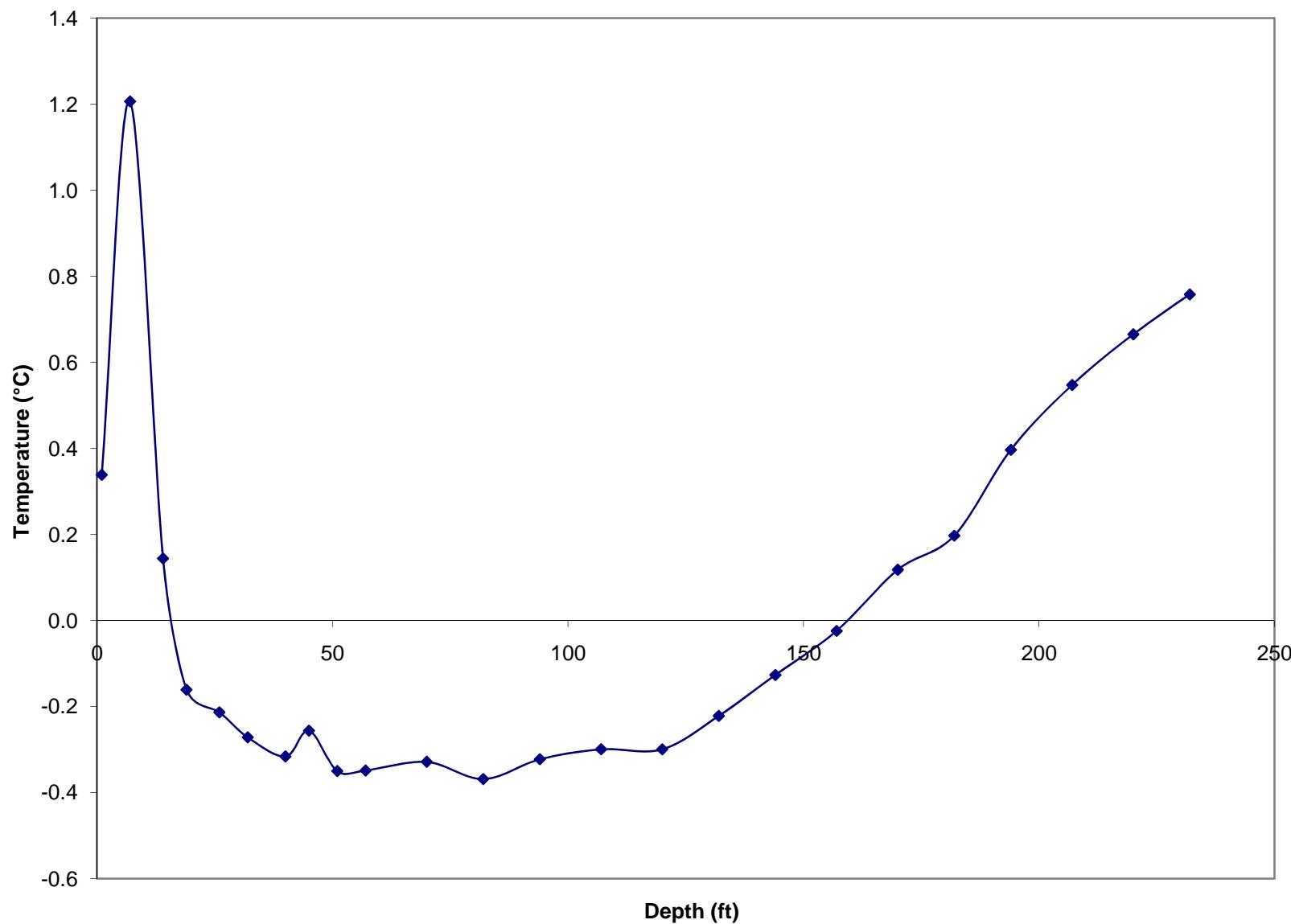


T-97-029

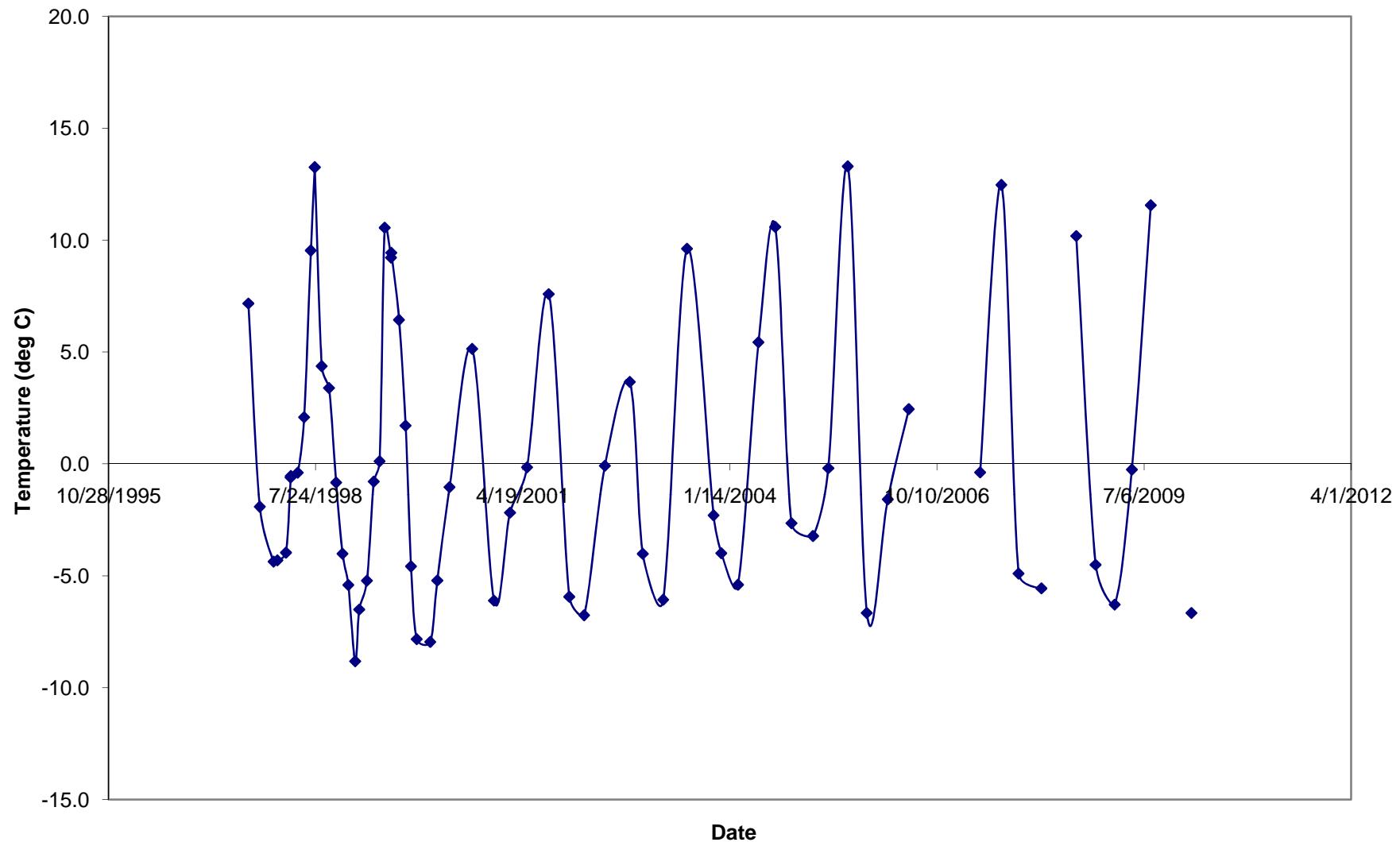
Temperature depth plot - T-97-029



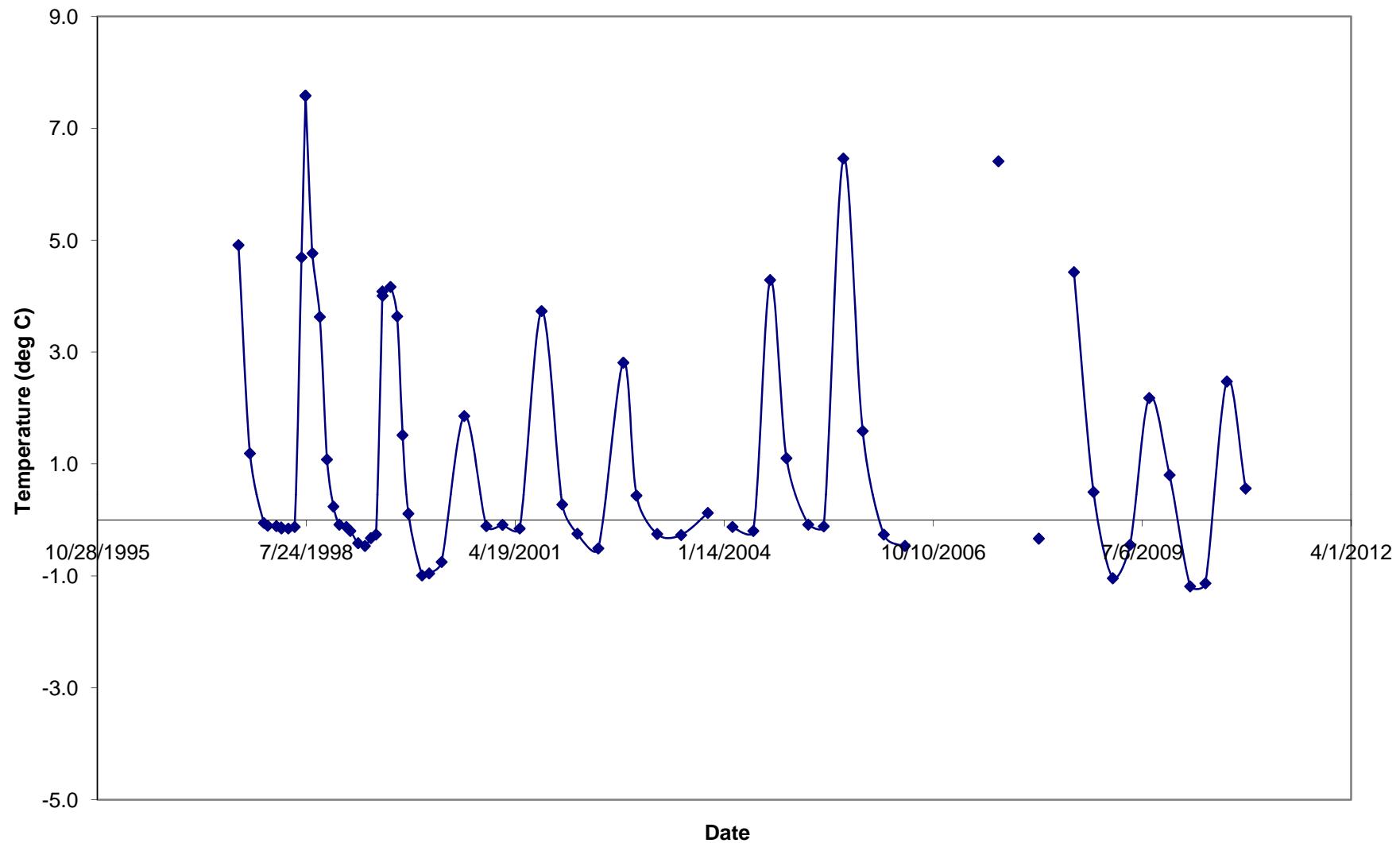
Average Temperature Depth Plot for T-97-029



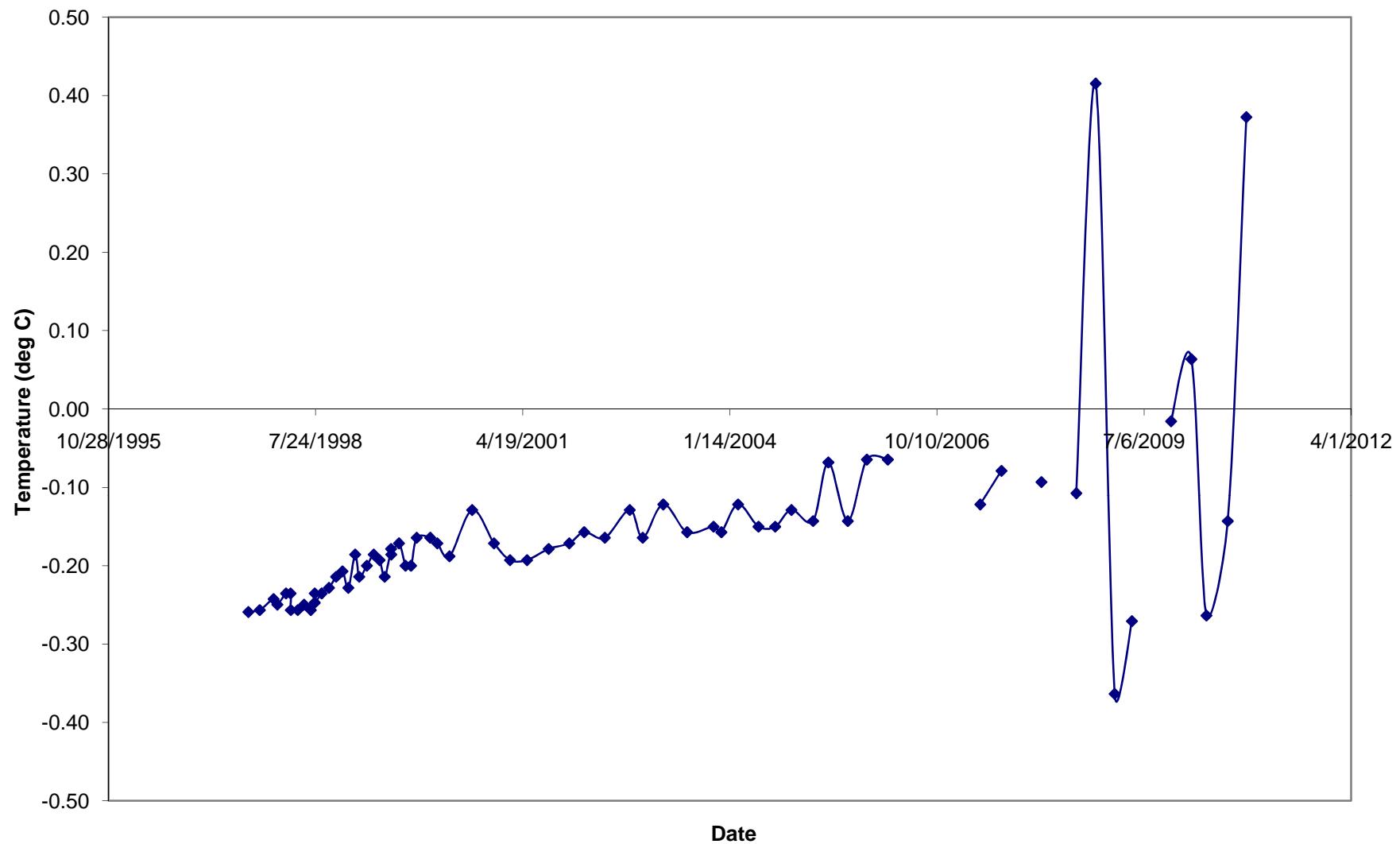
T-97-029 Temperature at 1 foot



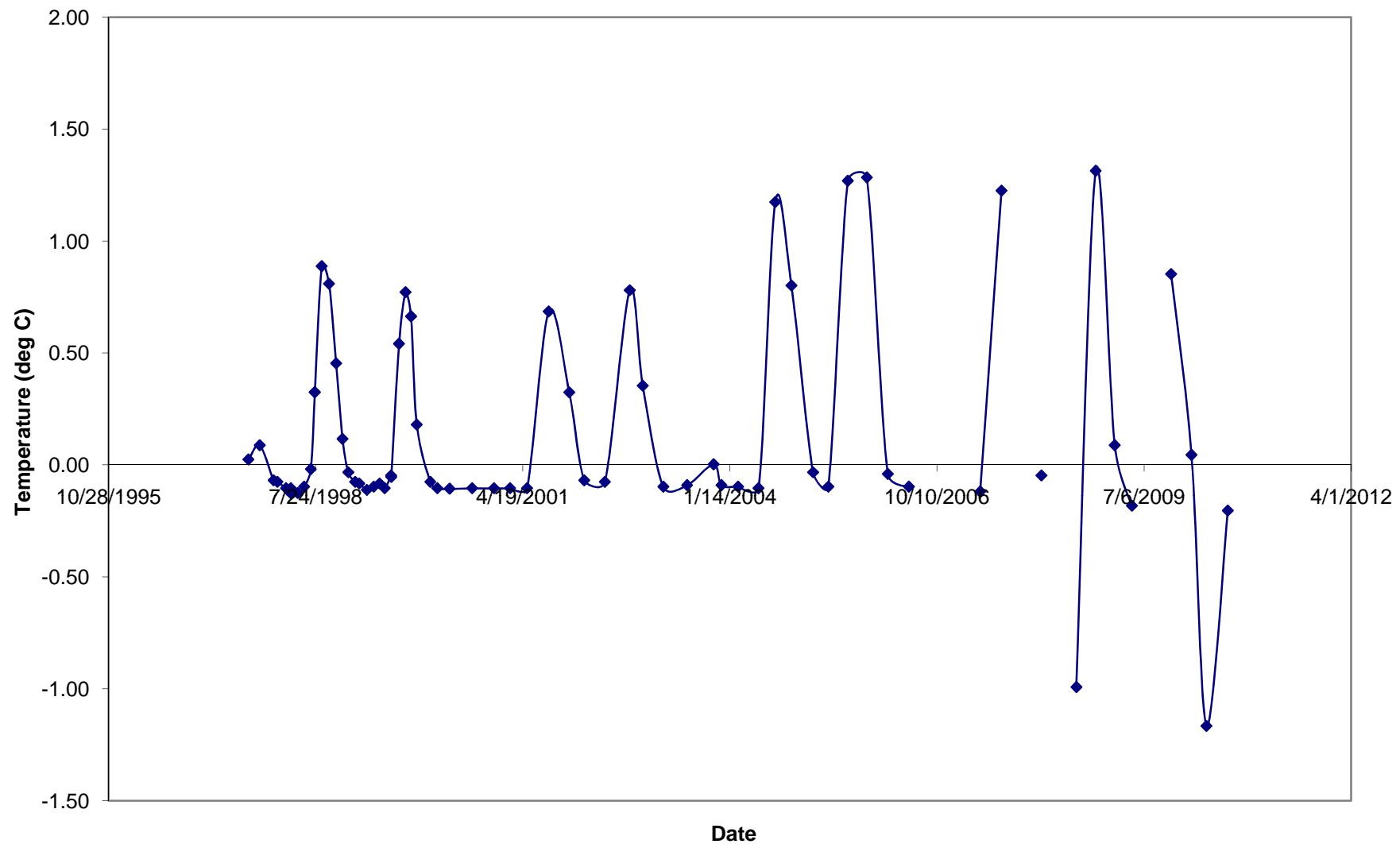
T-97-029 Temperature at 7 feet



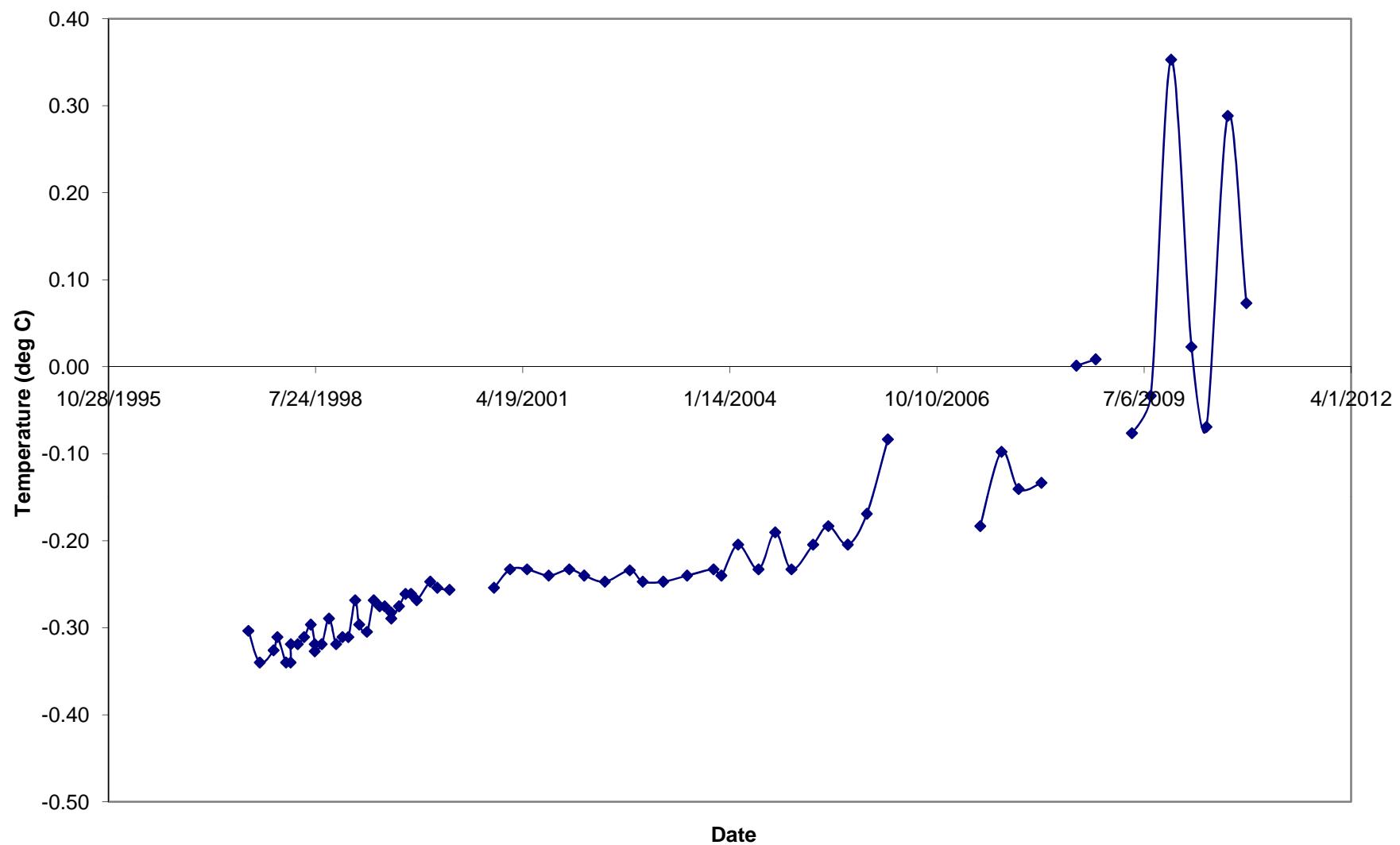
T-97-029 Temperature at 14 feet



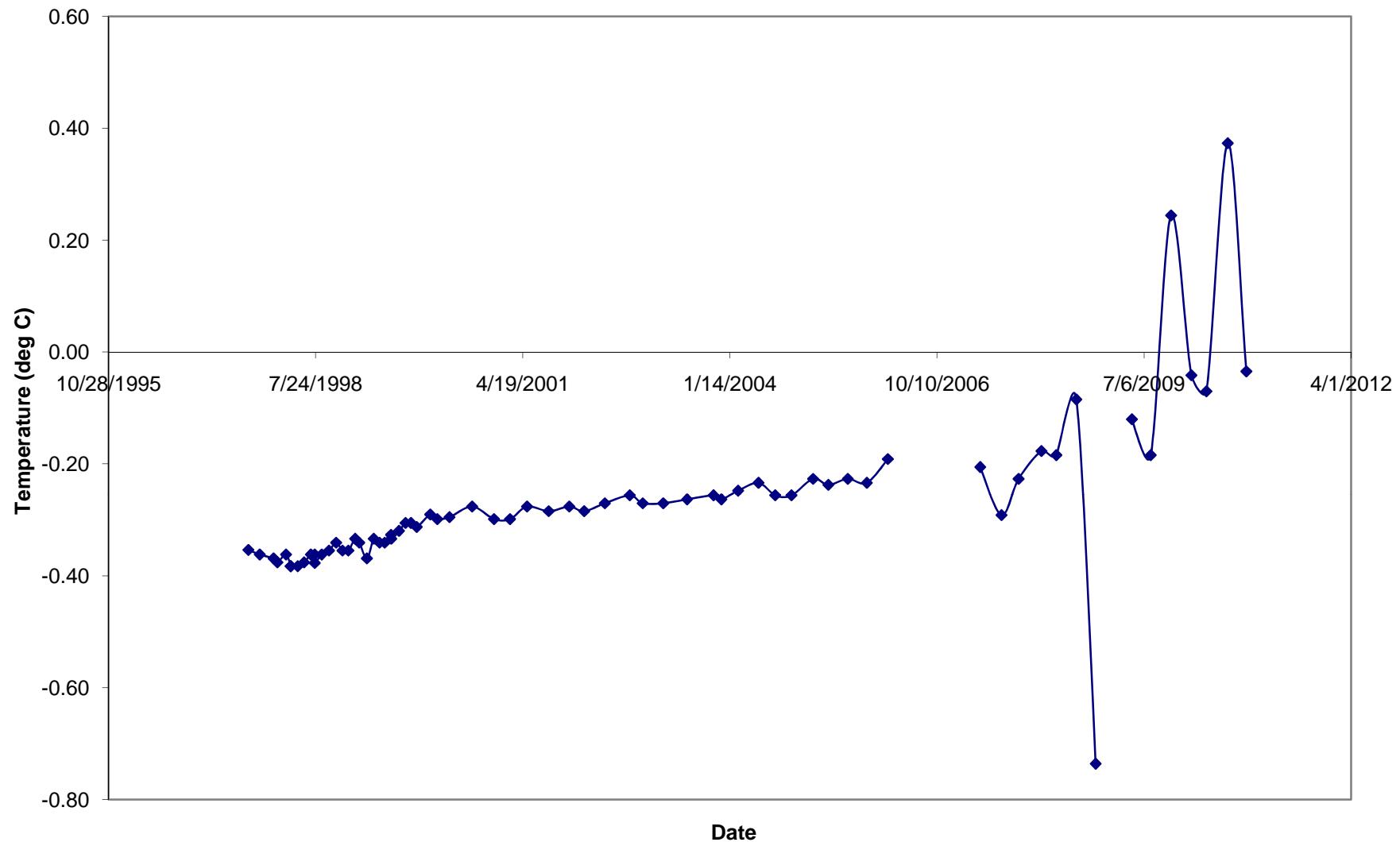
T-97-029 Temperature at 19 feet



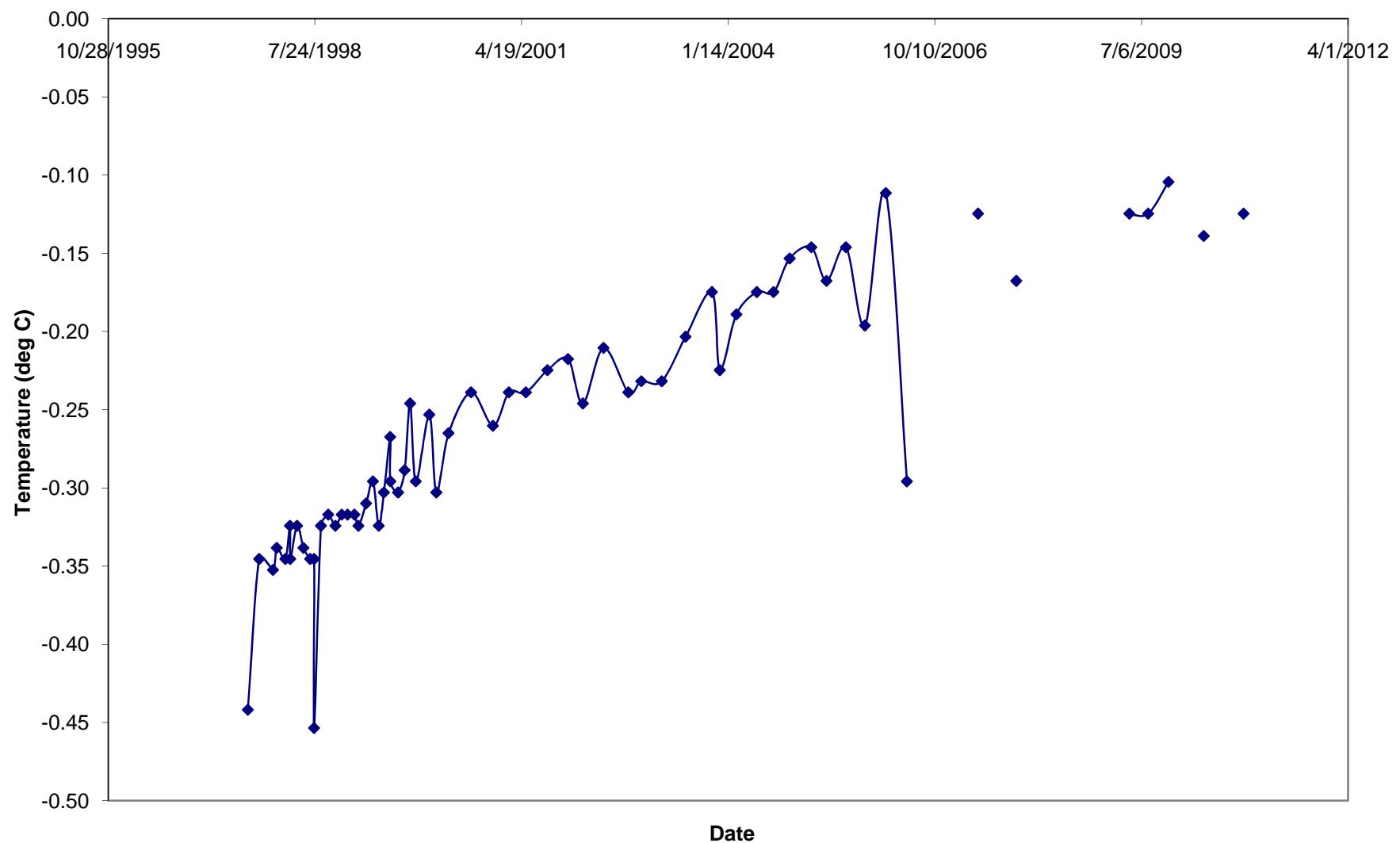
T-97-029 Temperature at 26 feet



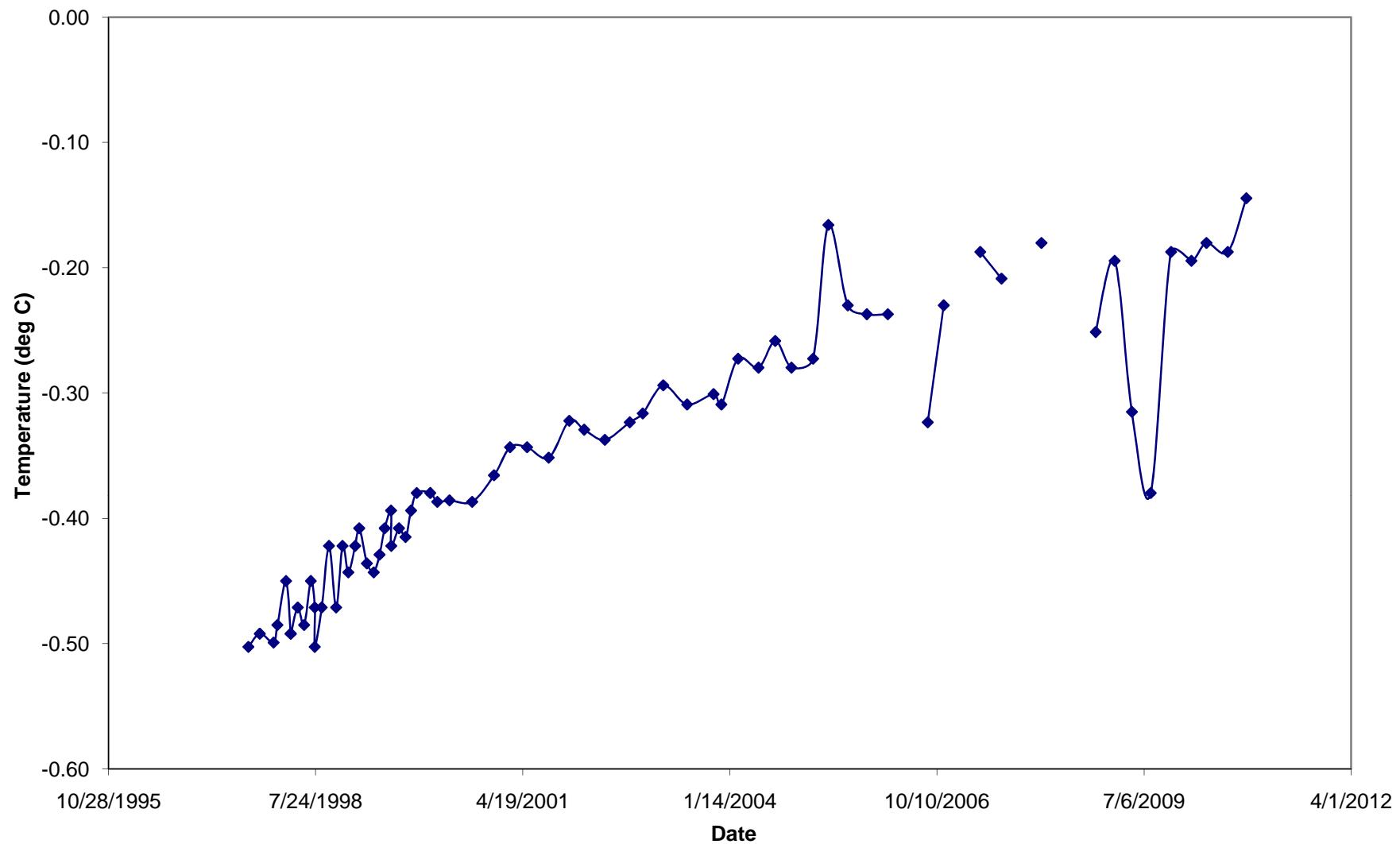
T-97-029 Temperature at 32 feet



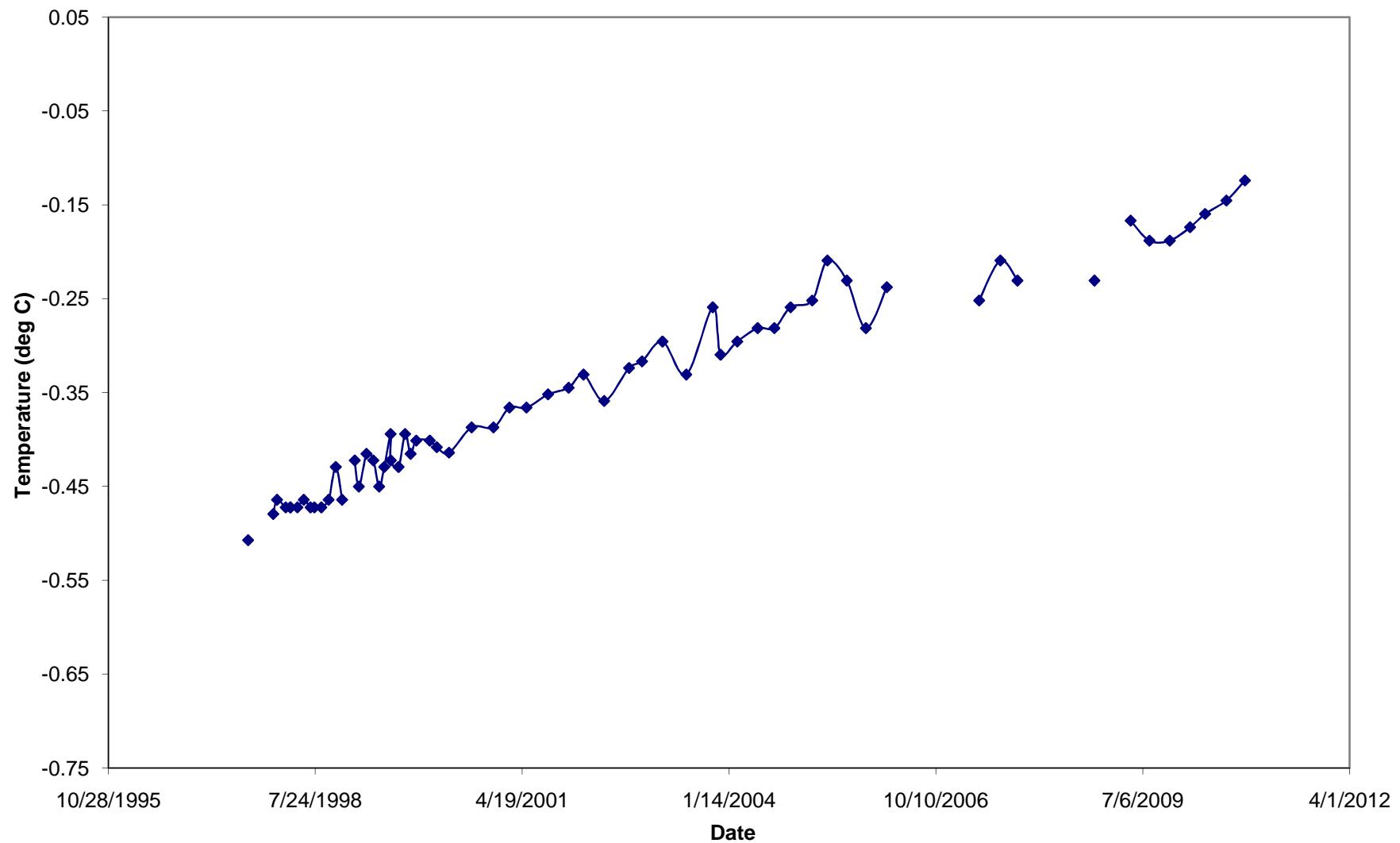
T-97-029 Temperature at 40 feet



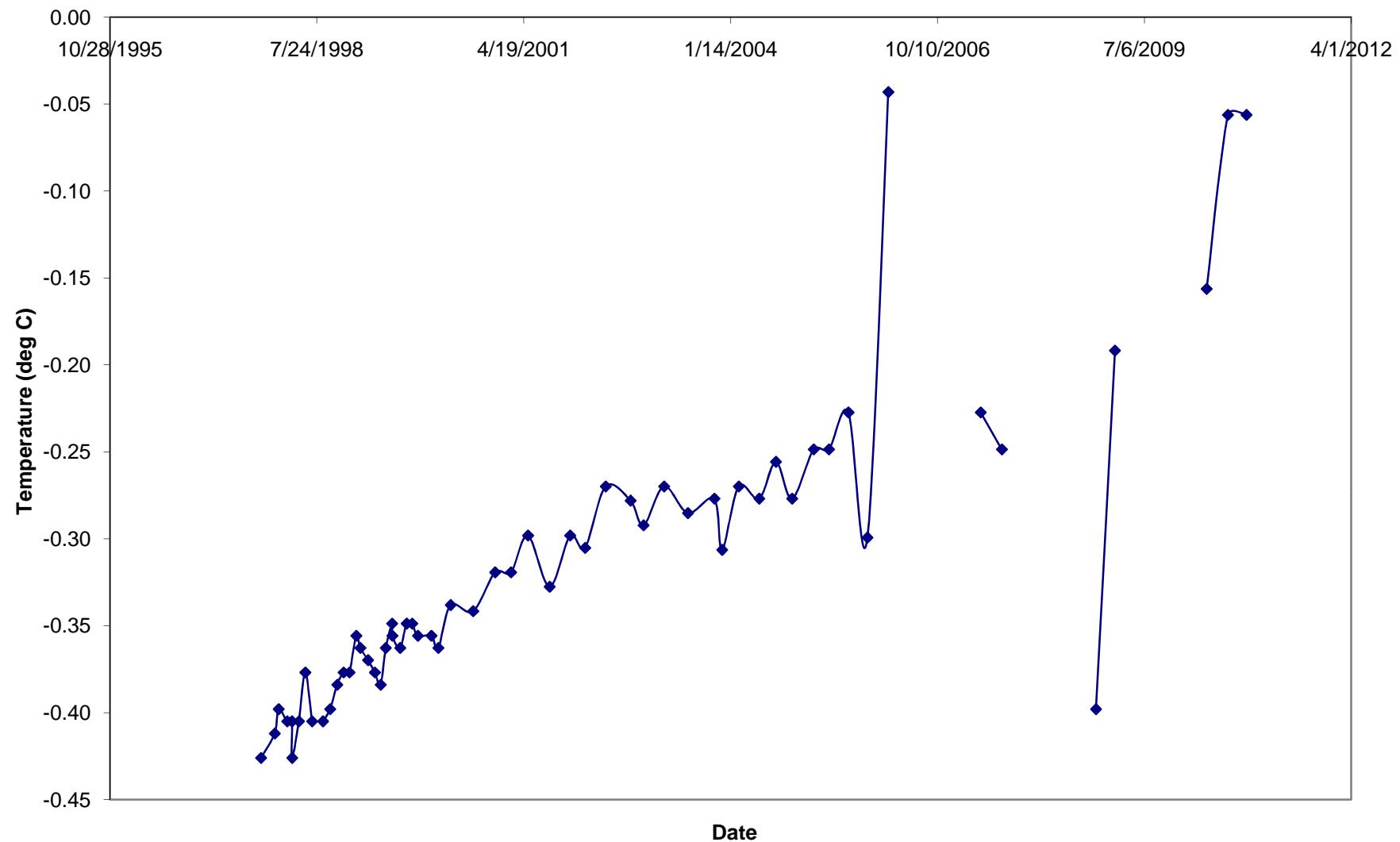
T-97-029 Temperature at 45 feet



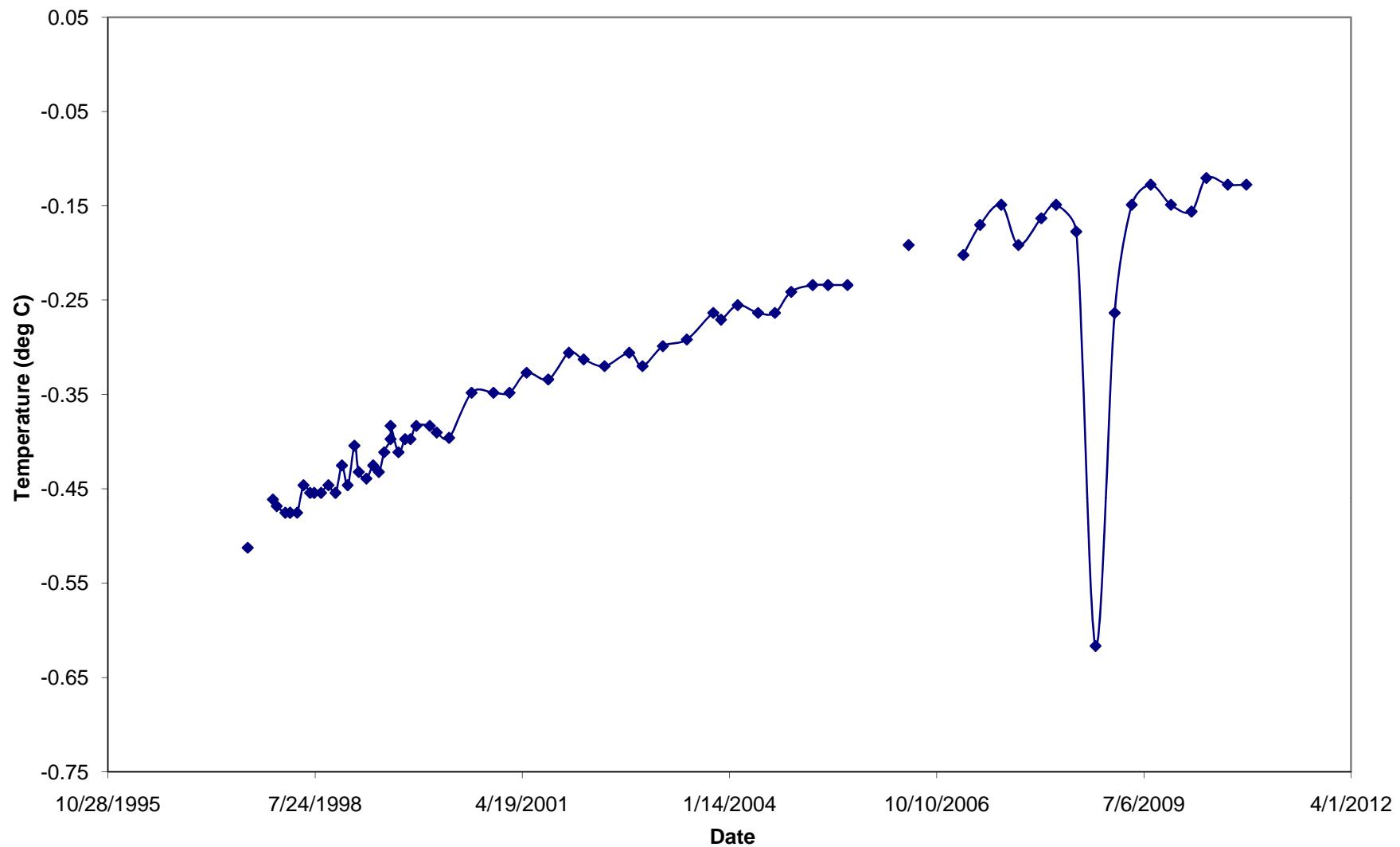
T-97-029 Temperature at 51 feet



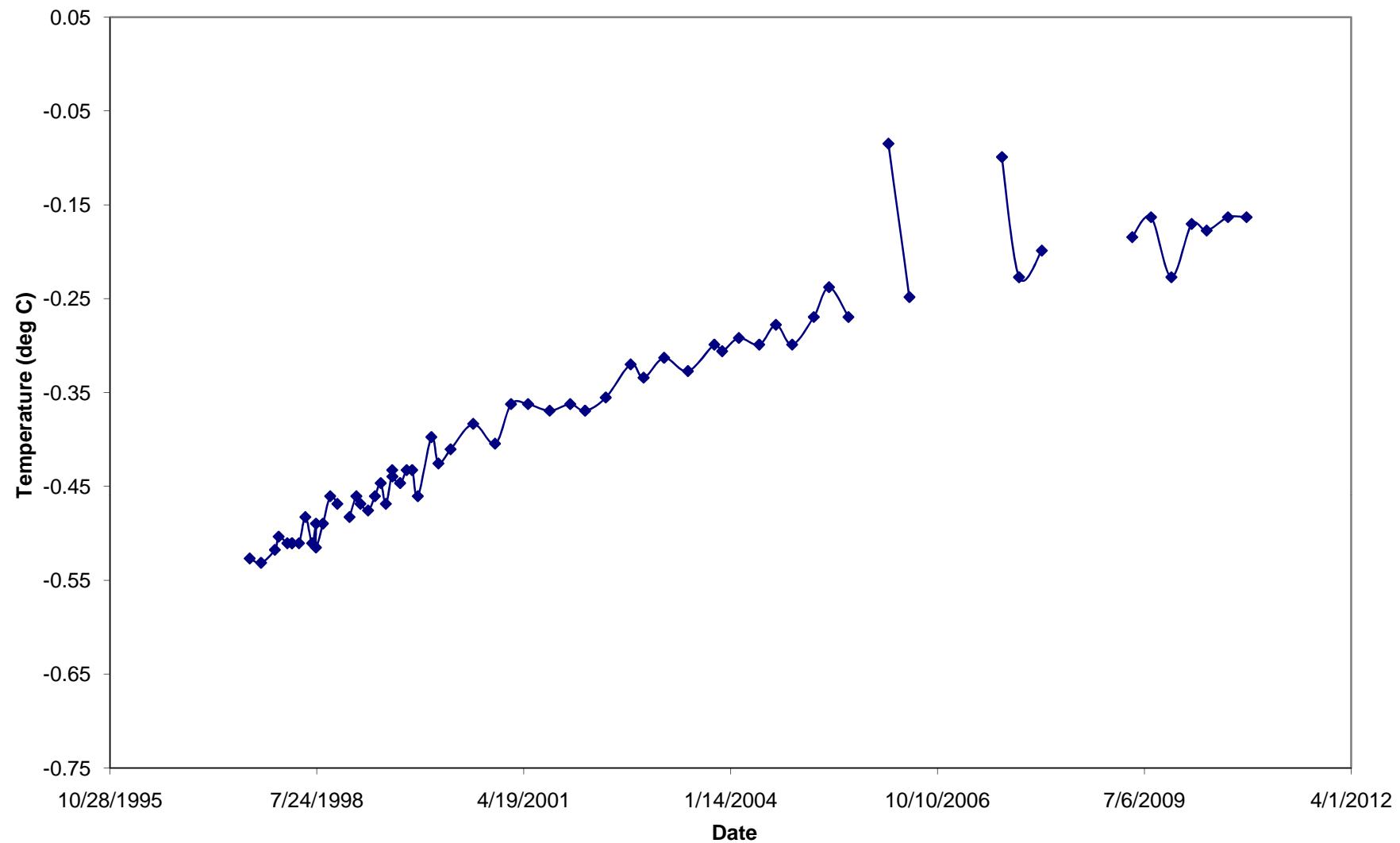
T-97-029 Temperature at 57 feet



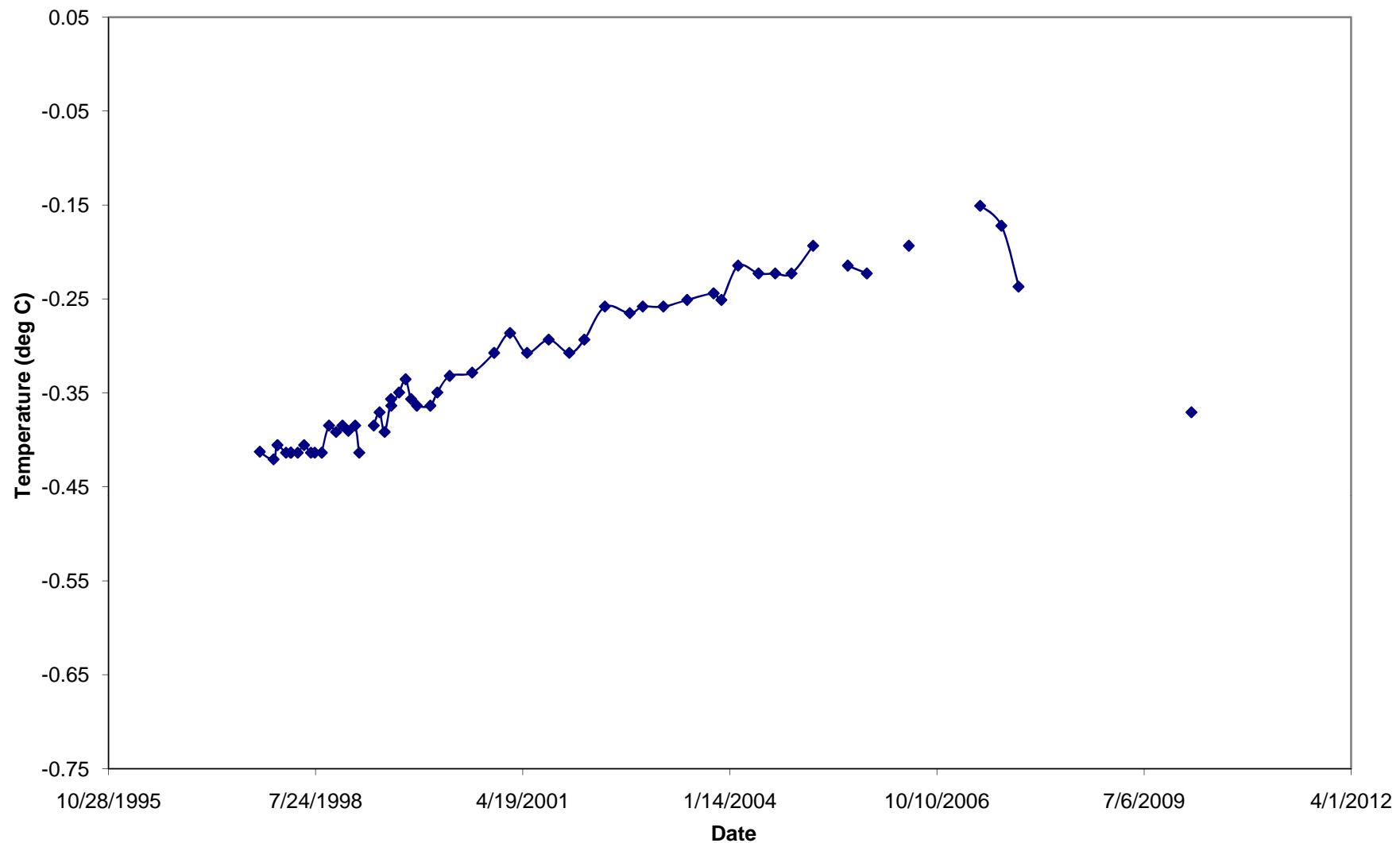
T-97-029 Temperature at 70 feet



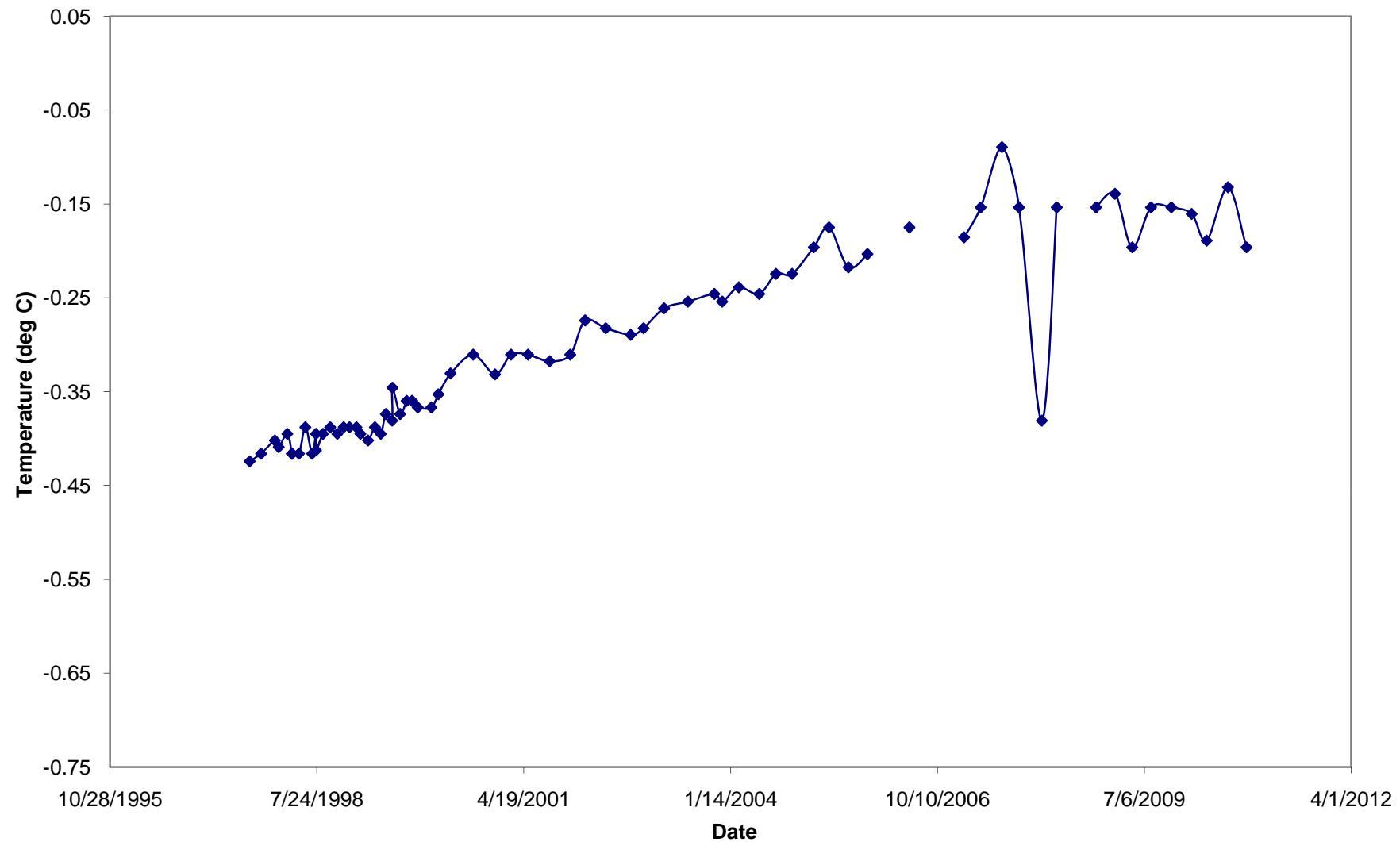
T-97-029 Temperature at 82 feet



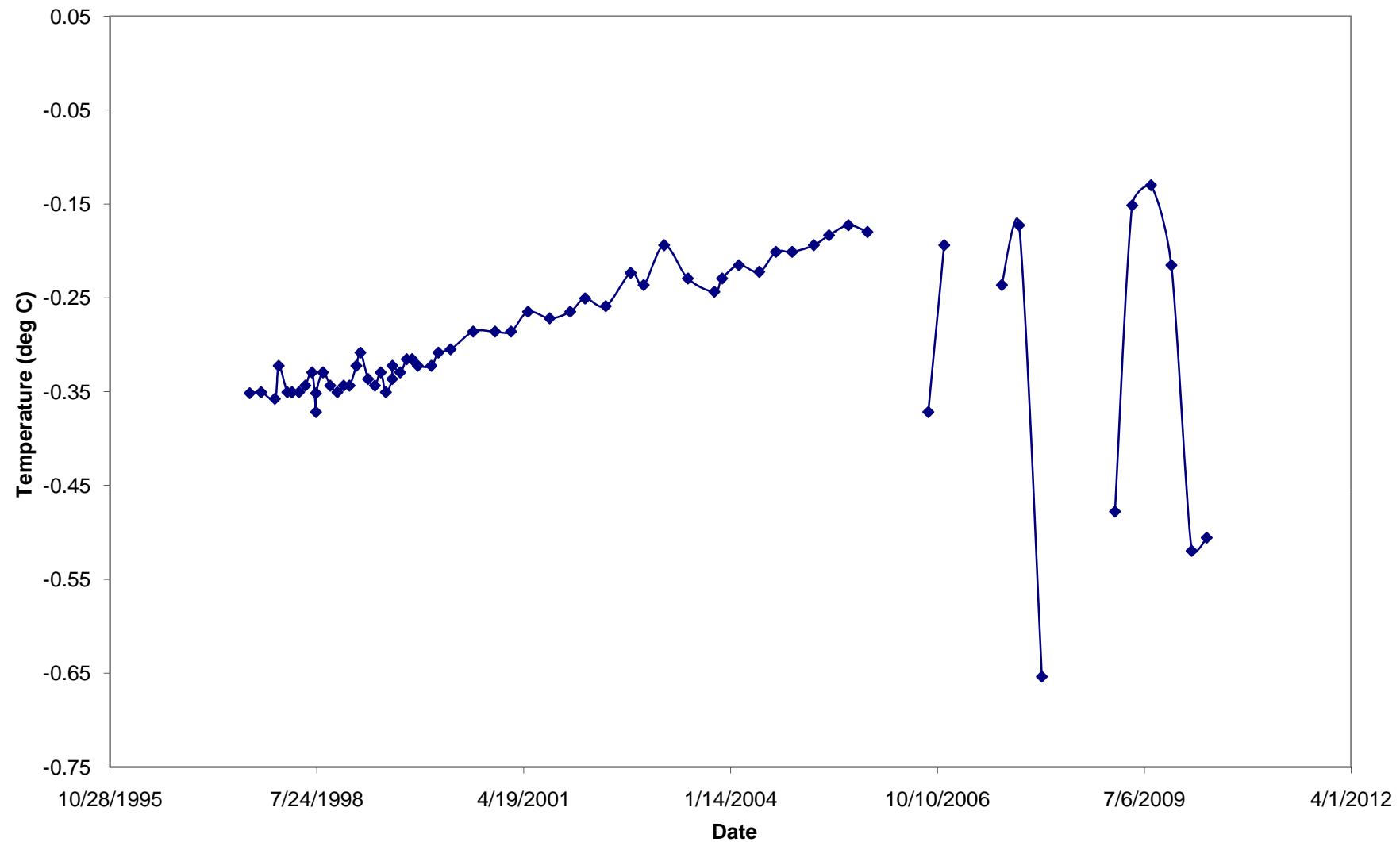
T-97-029 Temperature at 94 feet



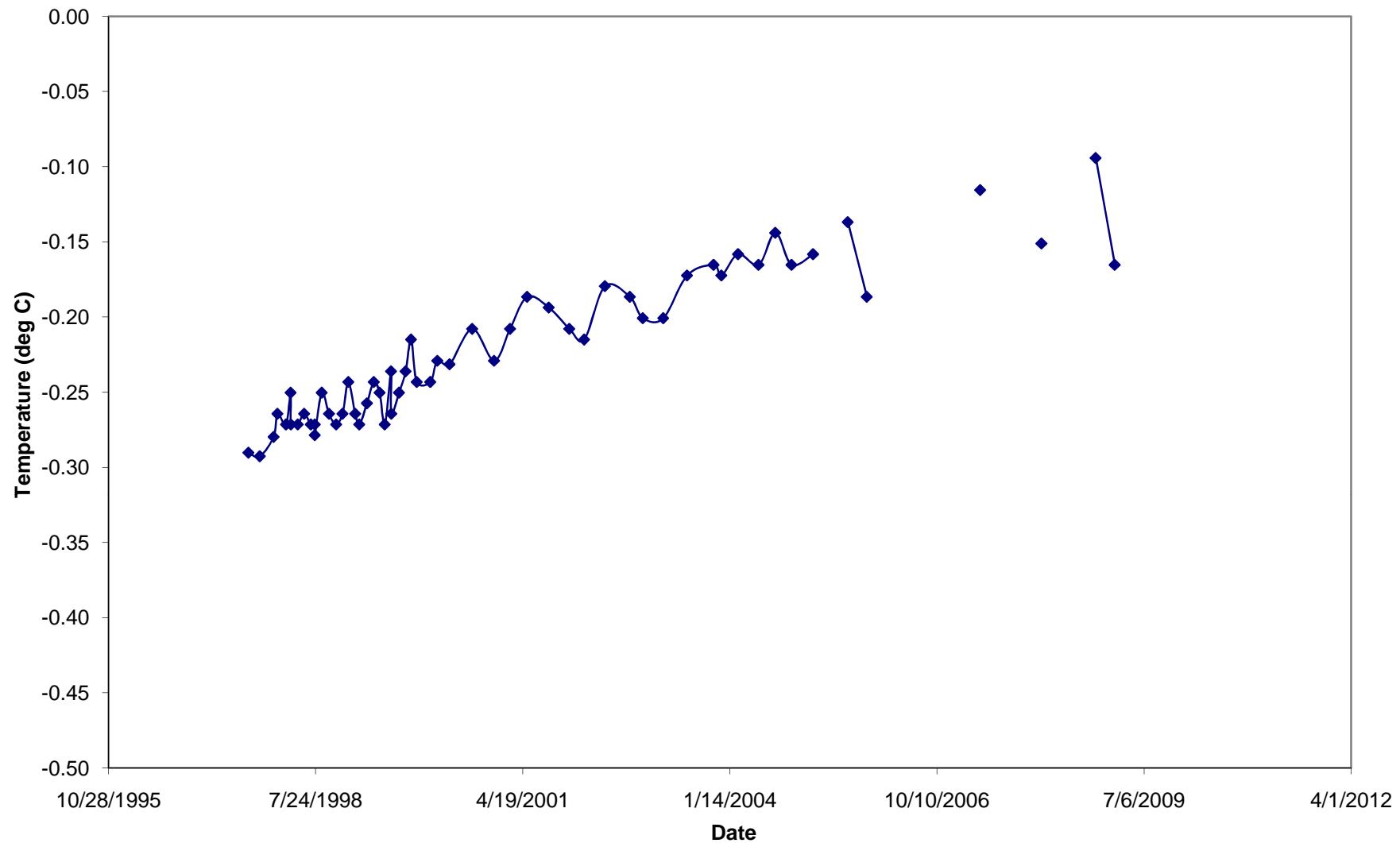
T-97-029 Temperature at 107 feet



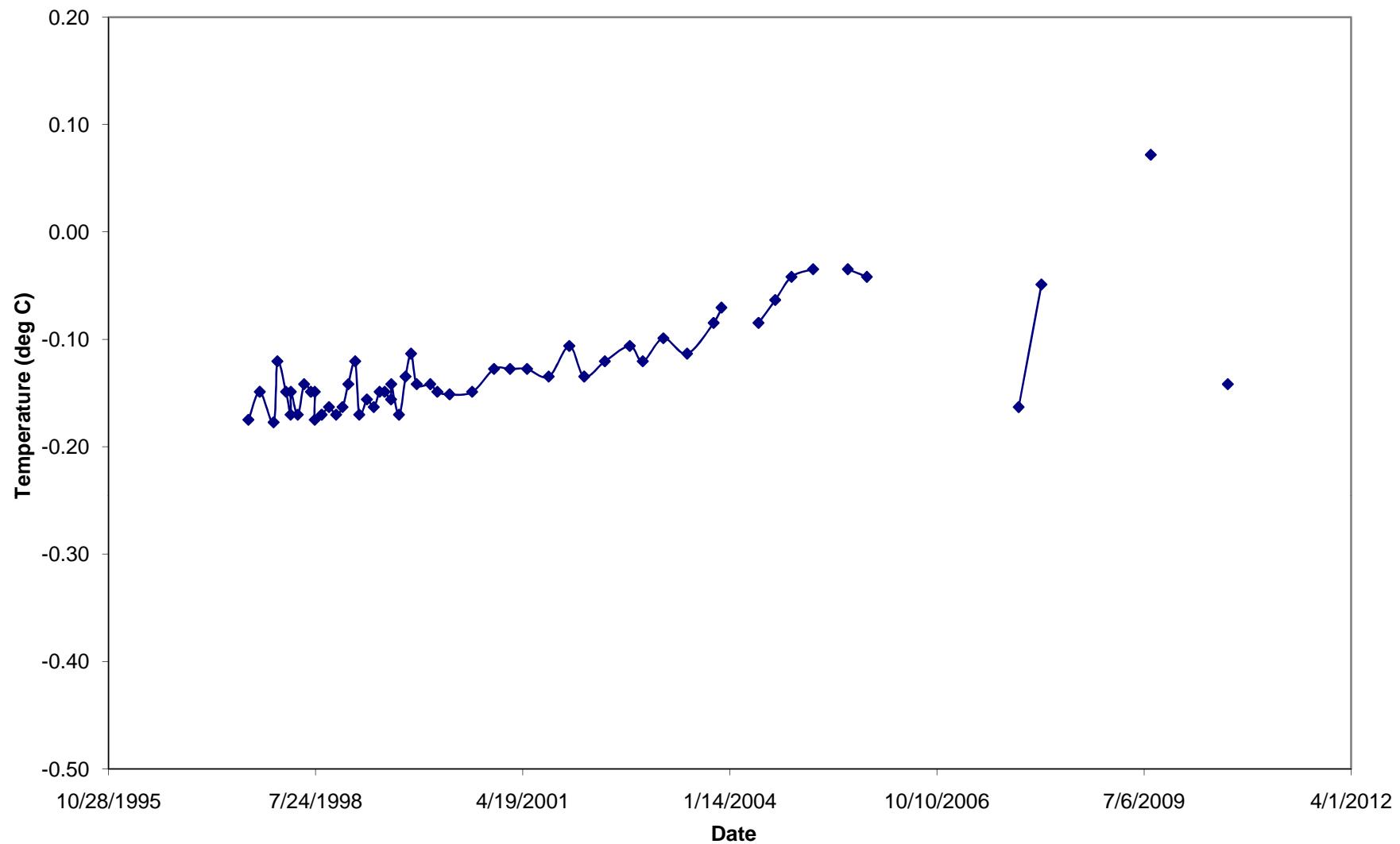
T-97-029 Temperature at 120 feet



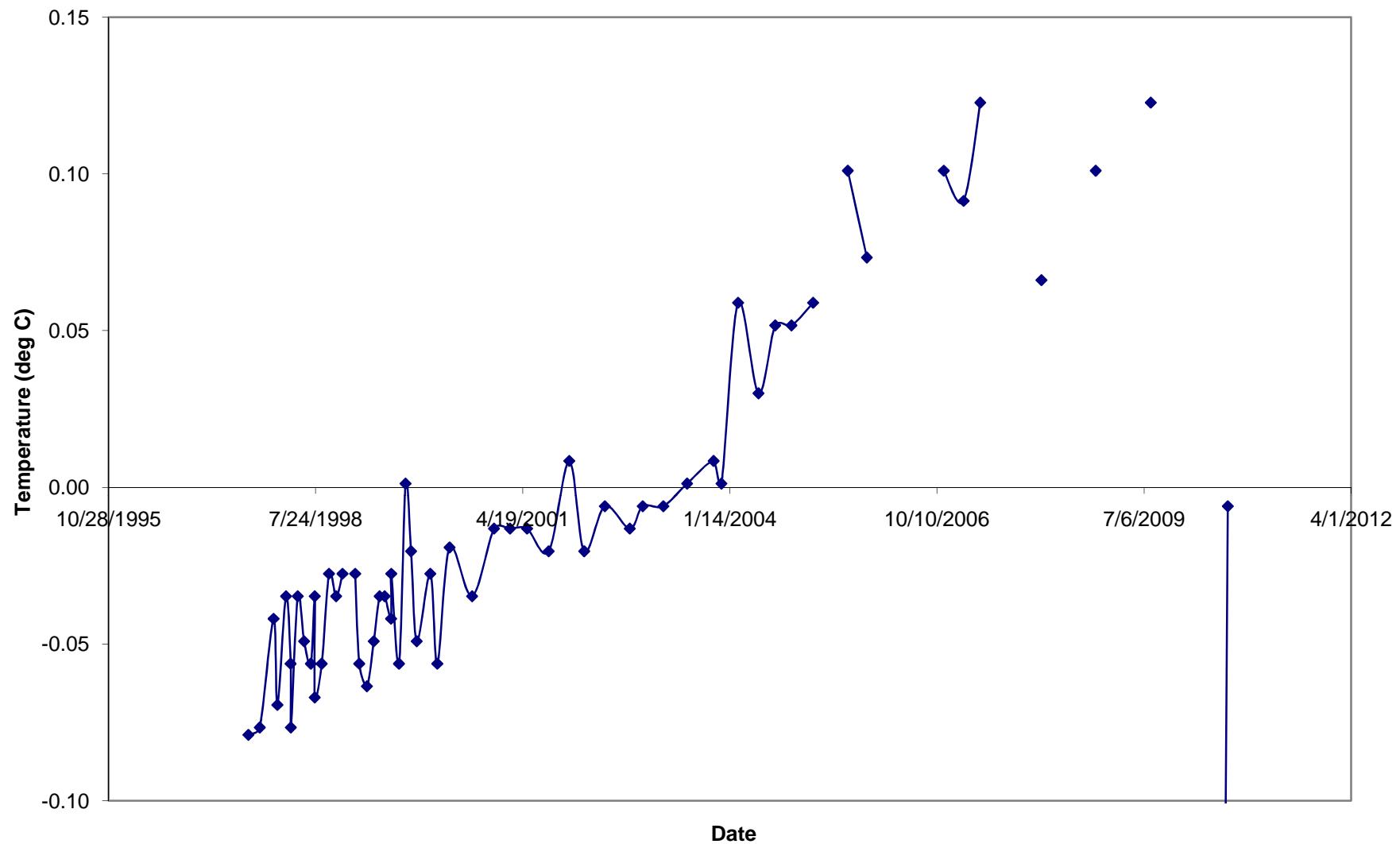
T-97-029 Temperature at 132 feet



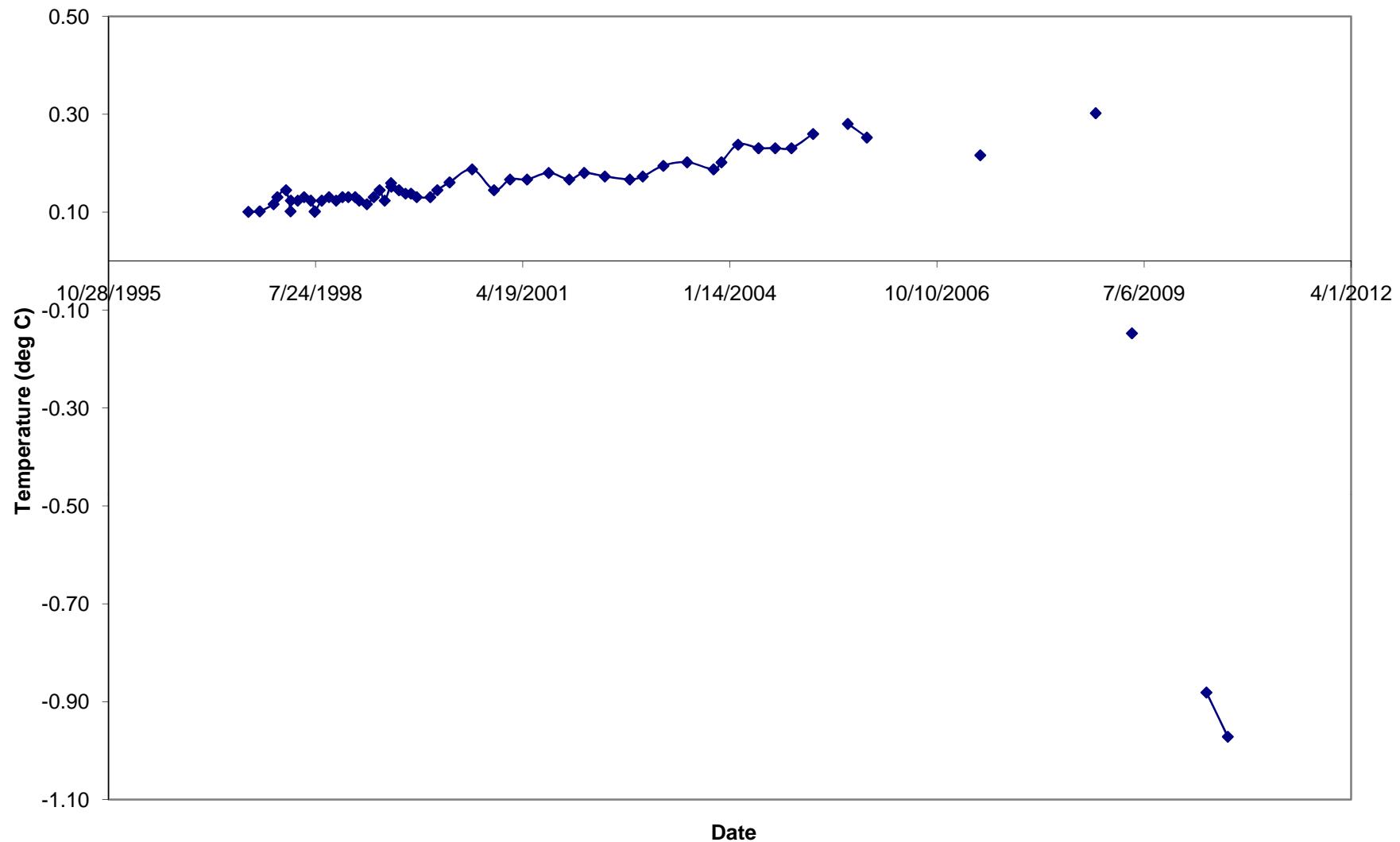
T-97-029 Temperature at 144 feet



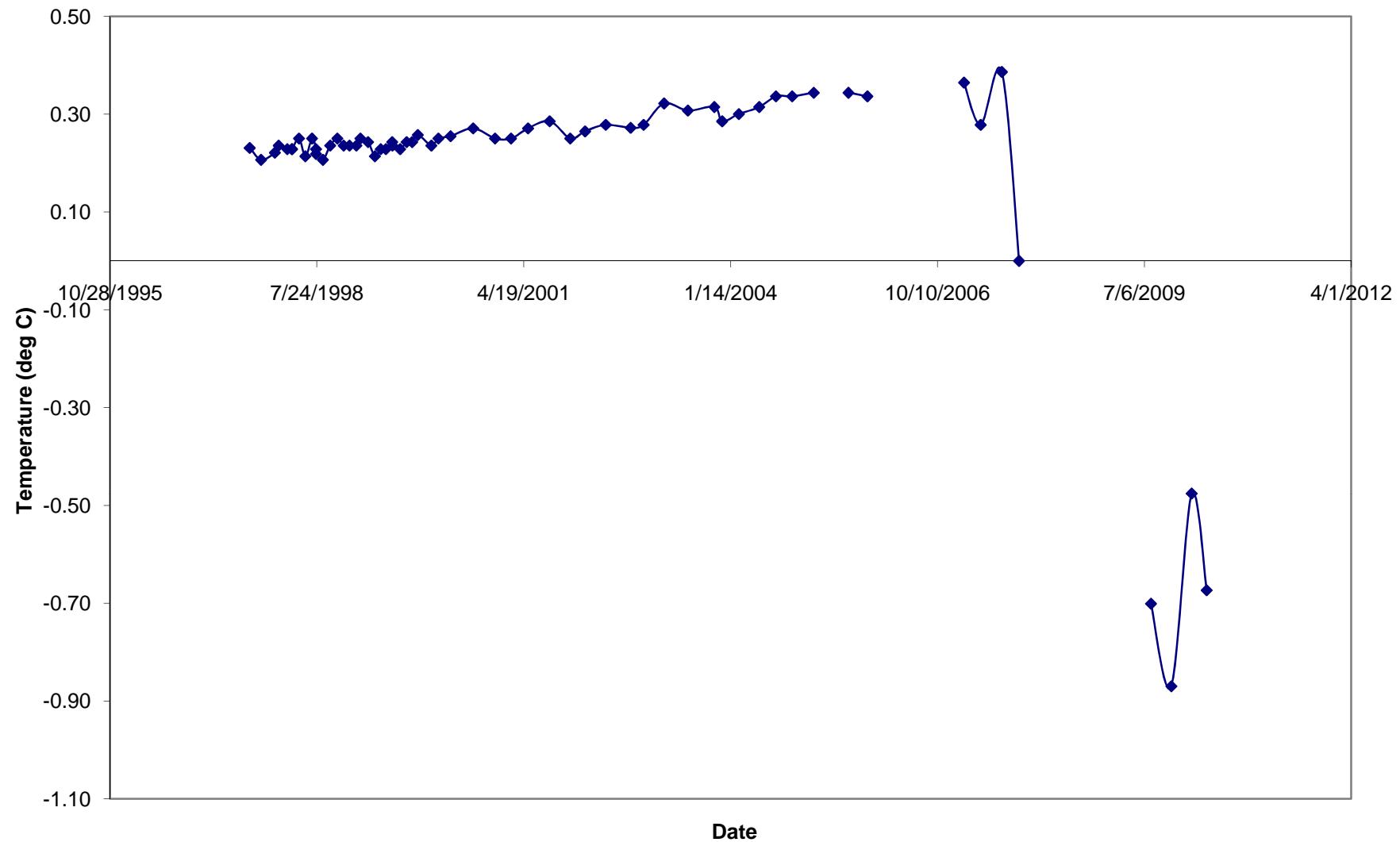
T-97-029 Temperature at 157 feet



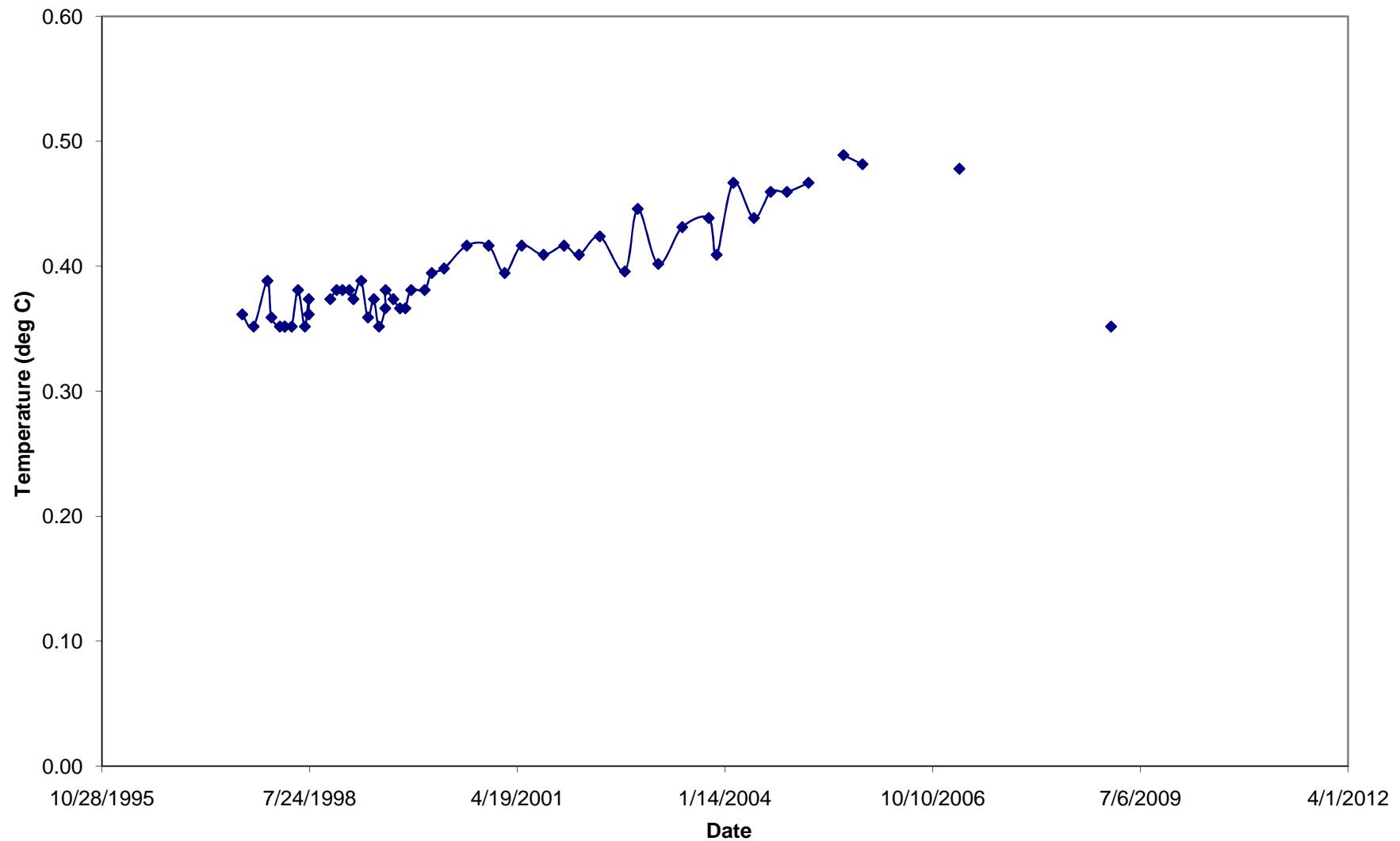
T-97-029 Temperature at 170 feet



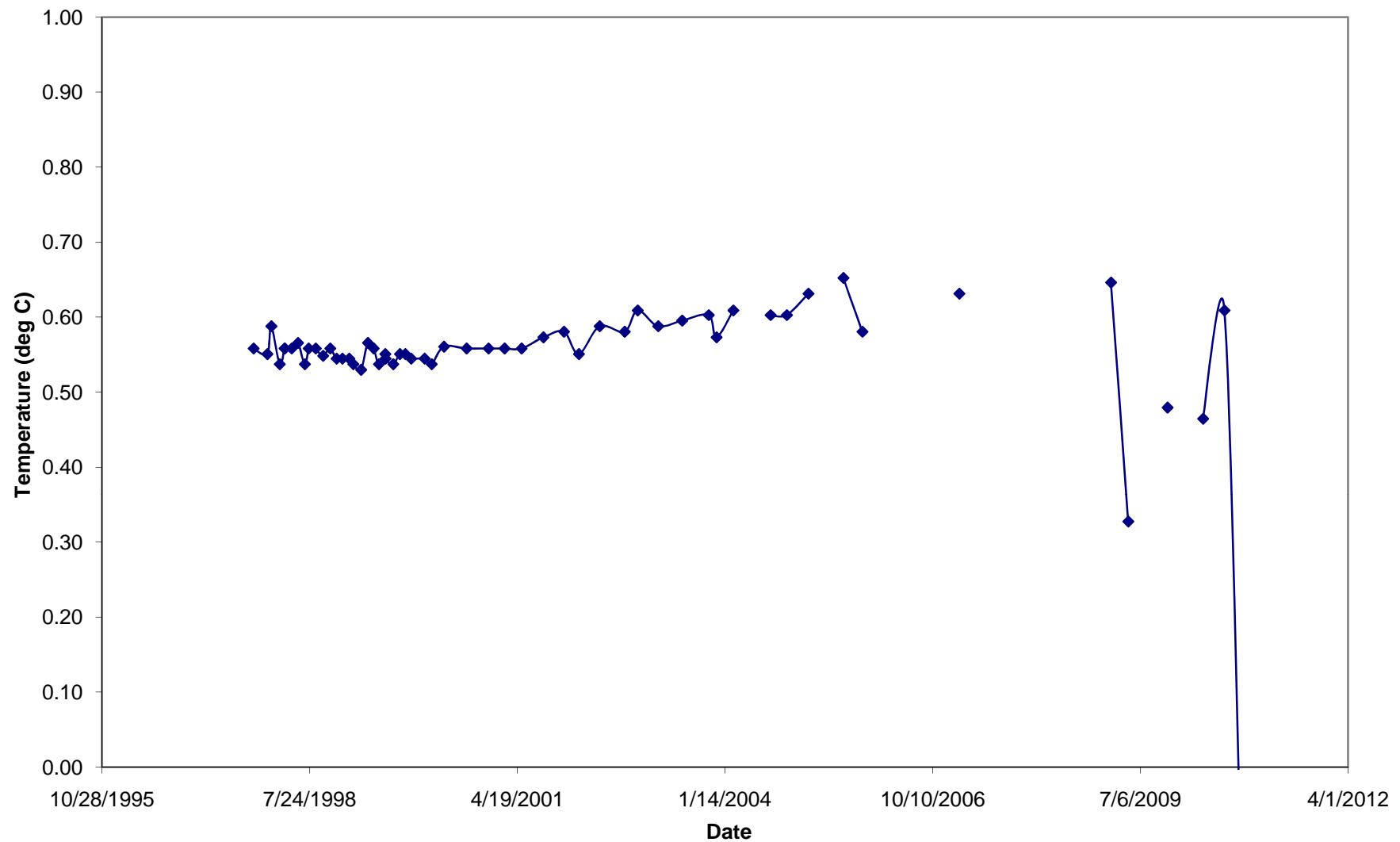
T-97-029 Temperature at 182 feet



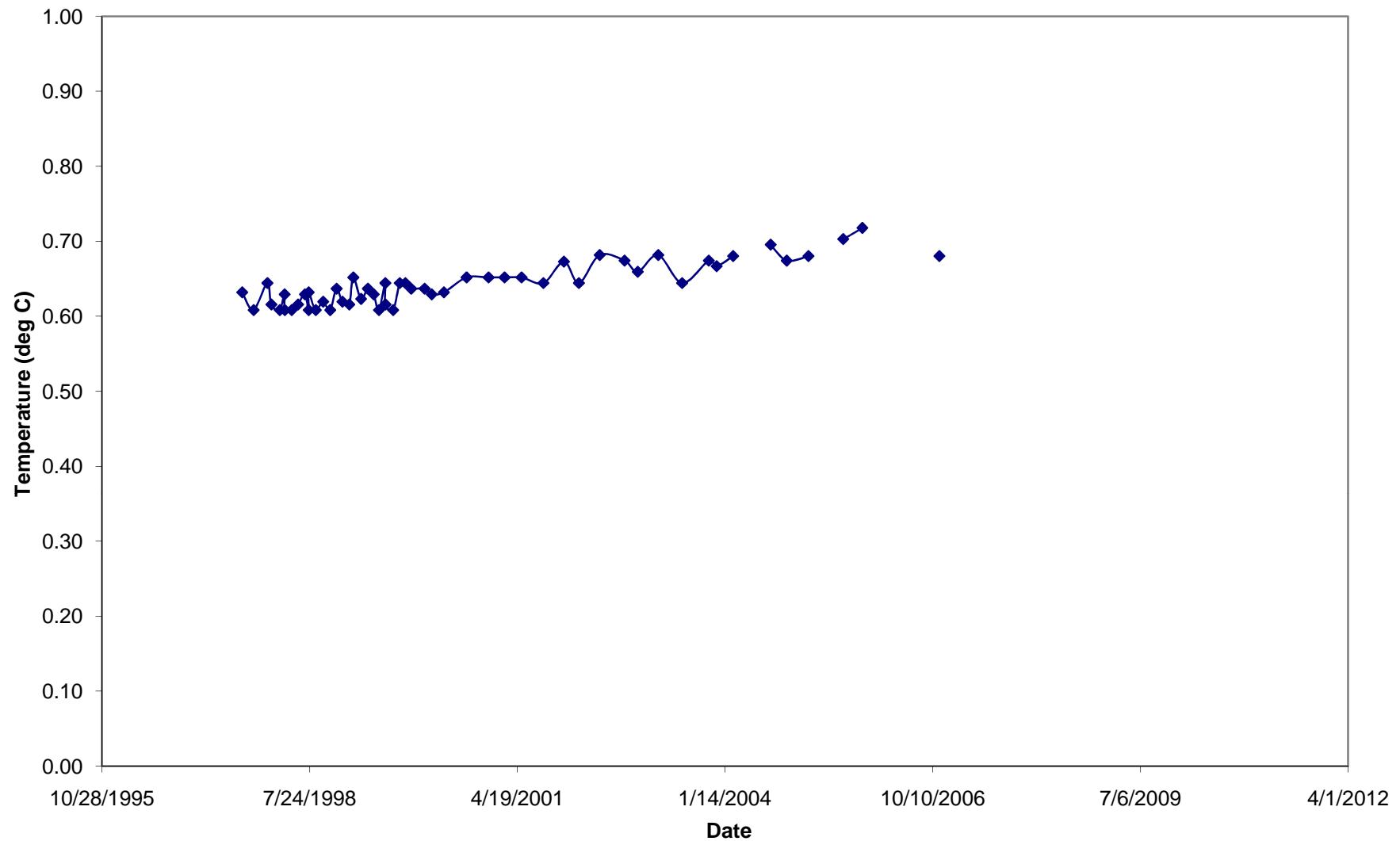
T-97-029 Temperature at 194 feet



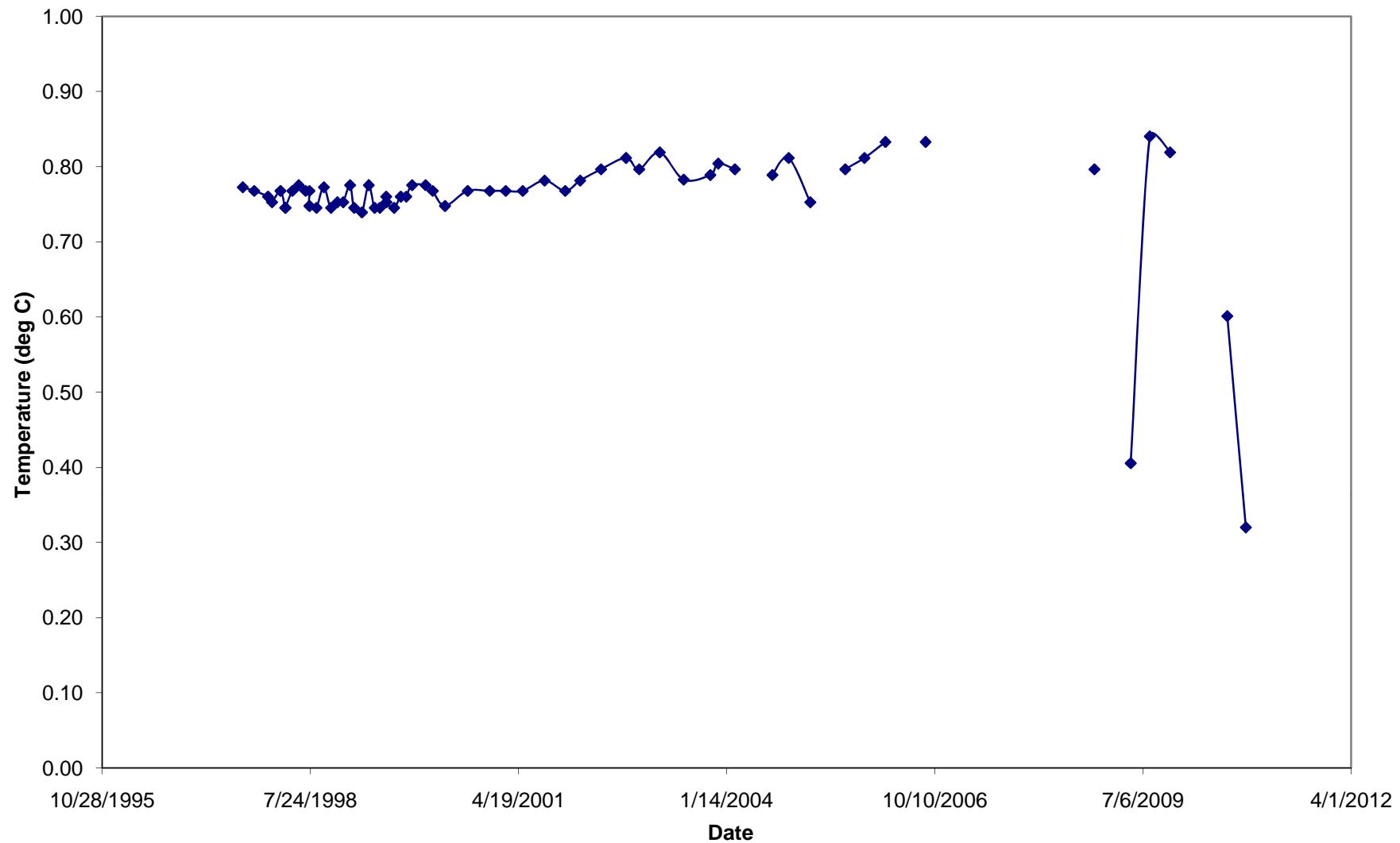
T-97-029 Temperature at 207 feet



T-97-029 Temperature at 220 feet

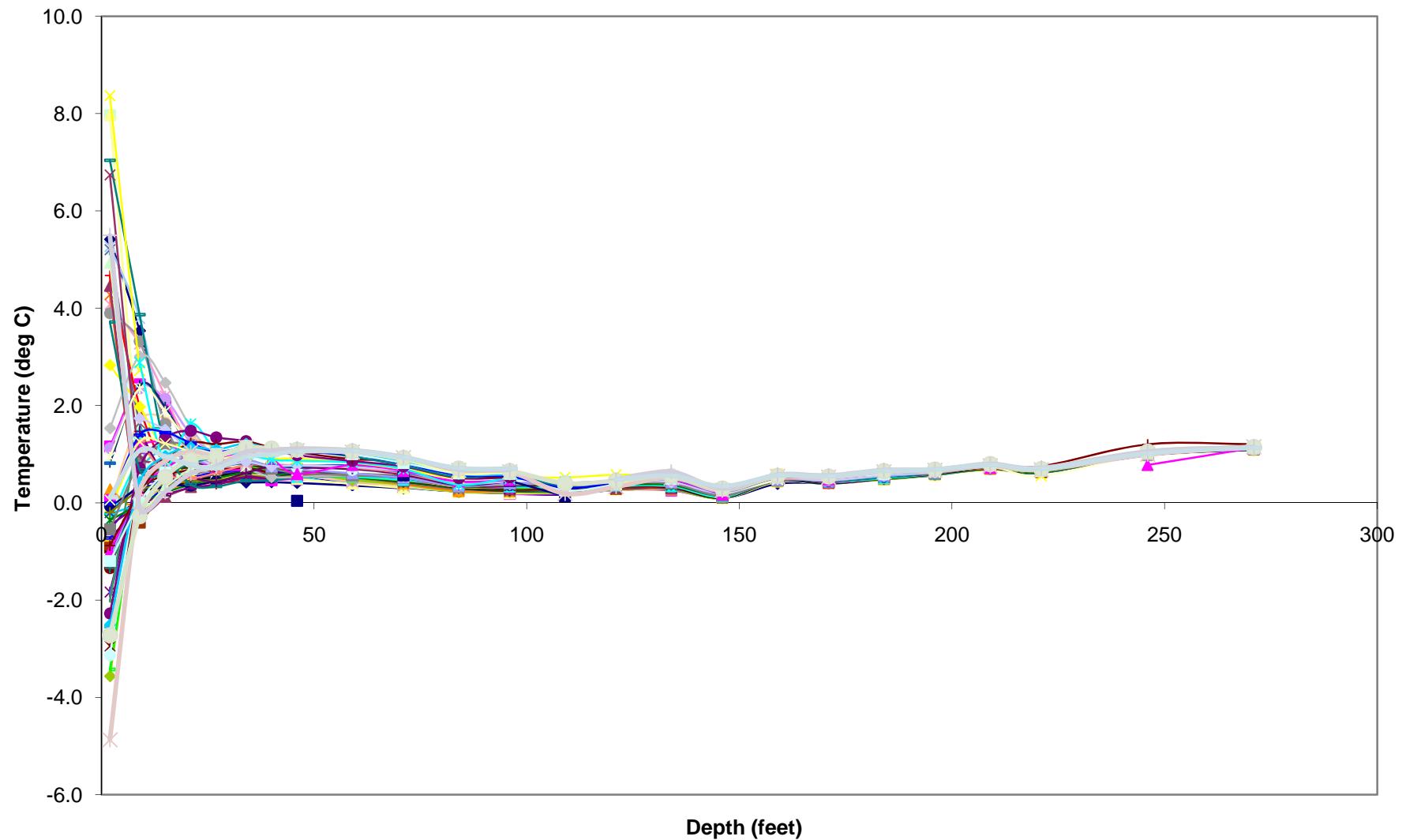


T-97-029 Temperature at 232 feet

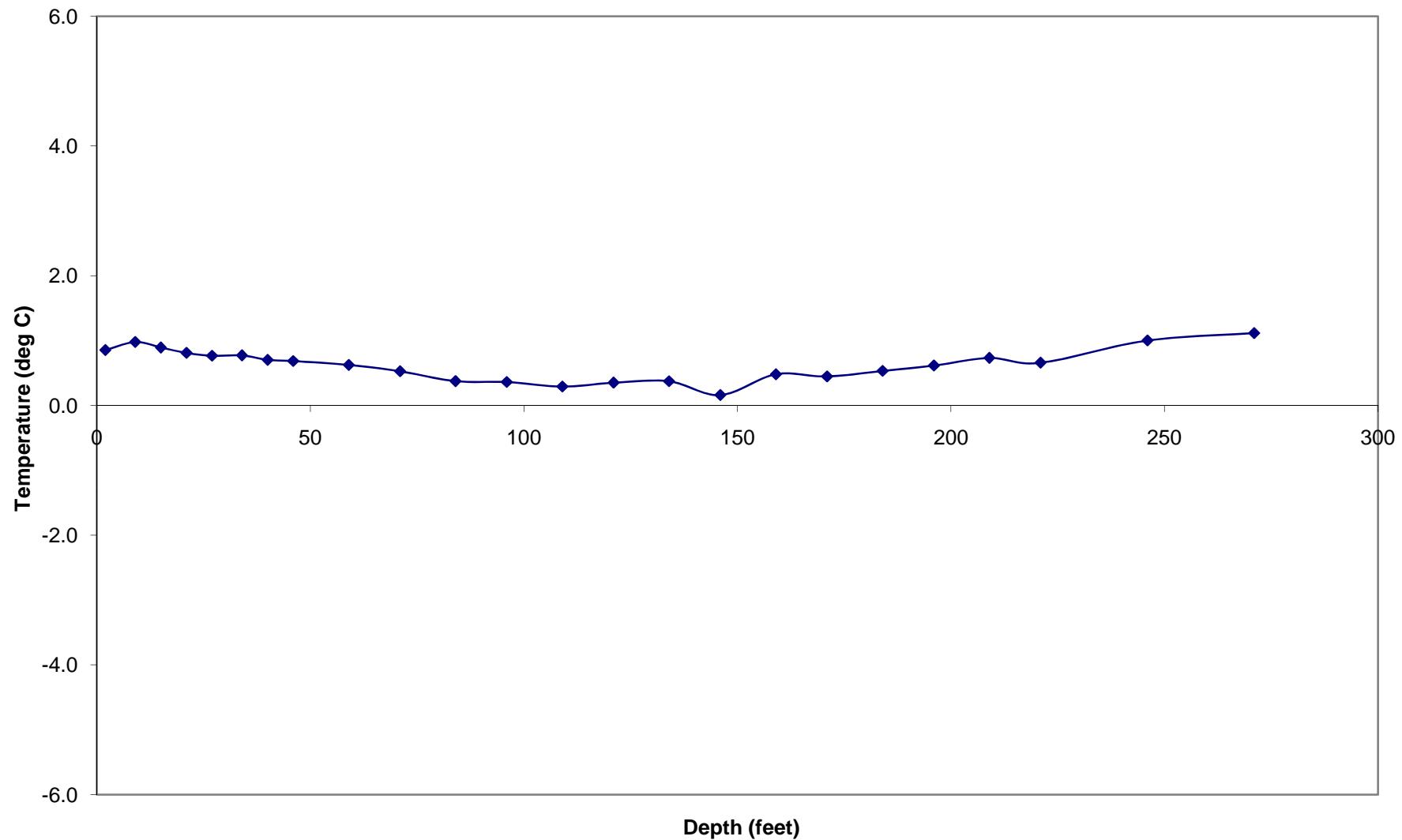


T-97-030

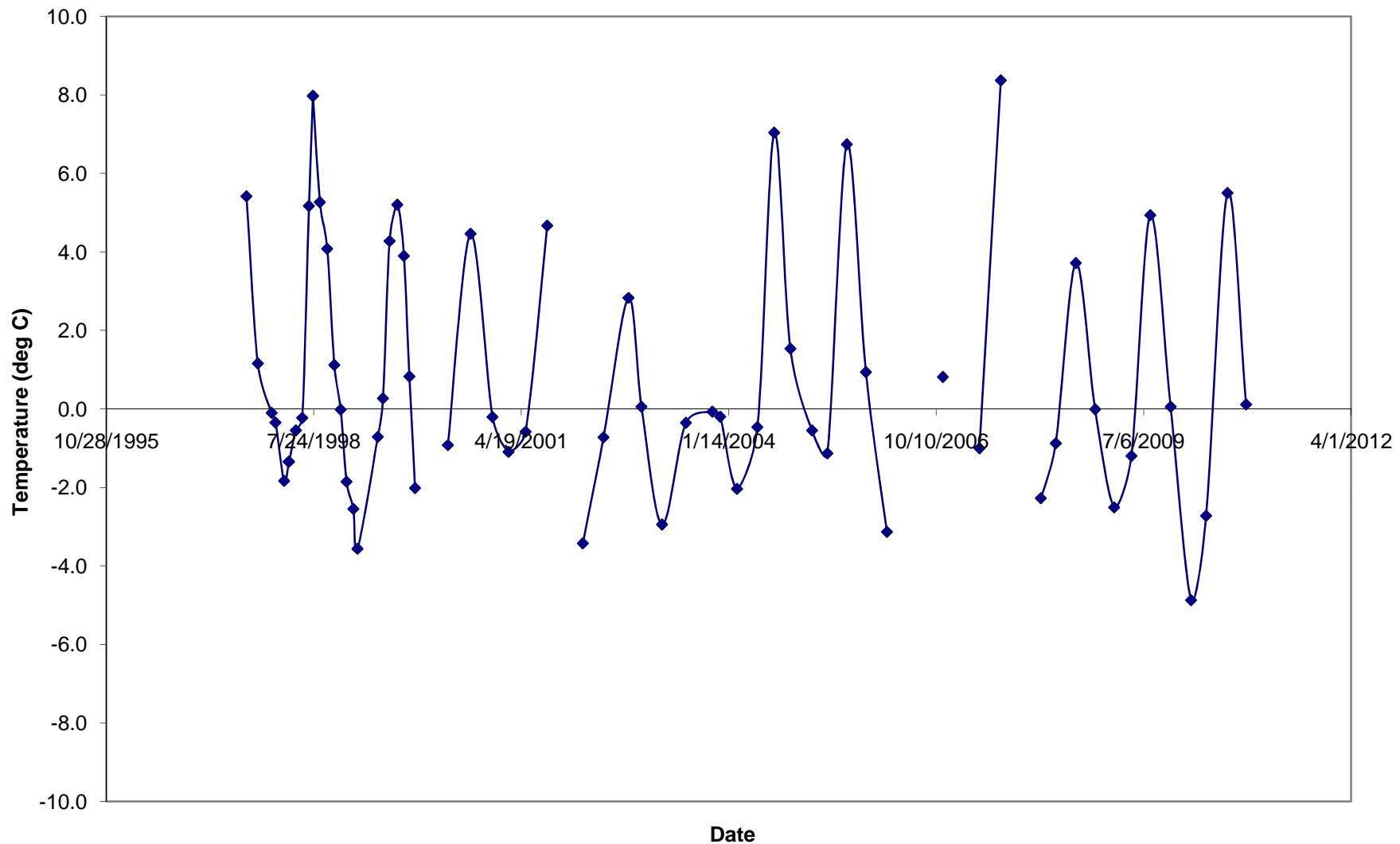
Temperature depth plot - T-97-030



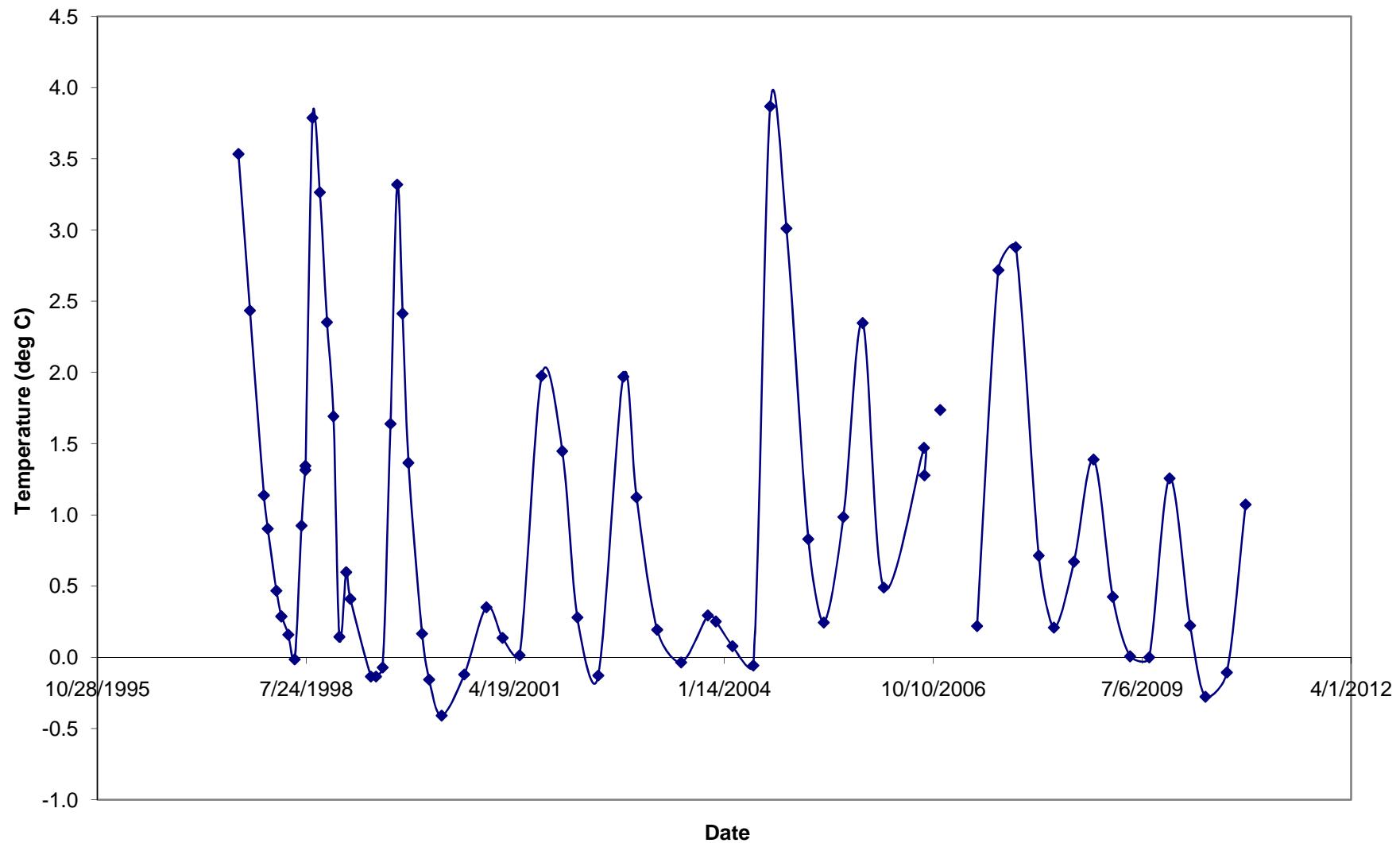
T-97-030 - Average temperatures versus depth



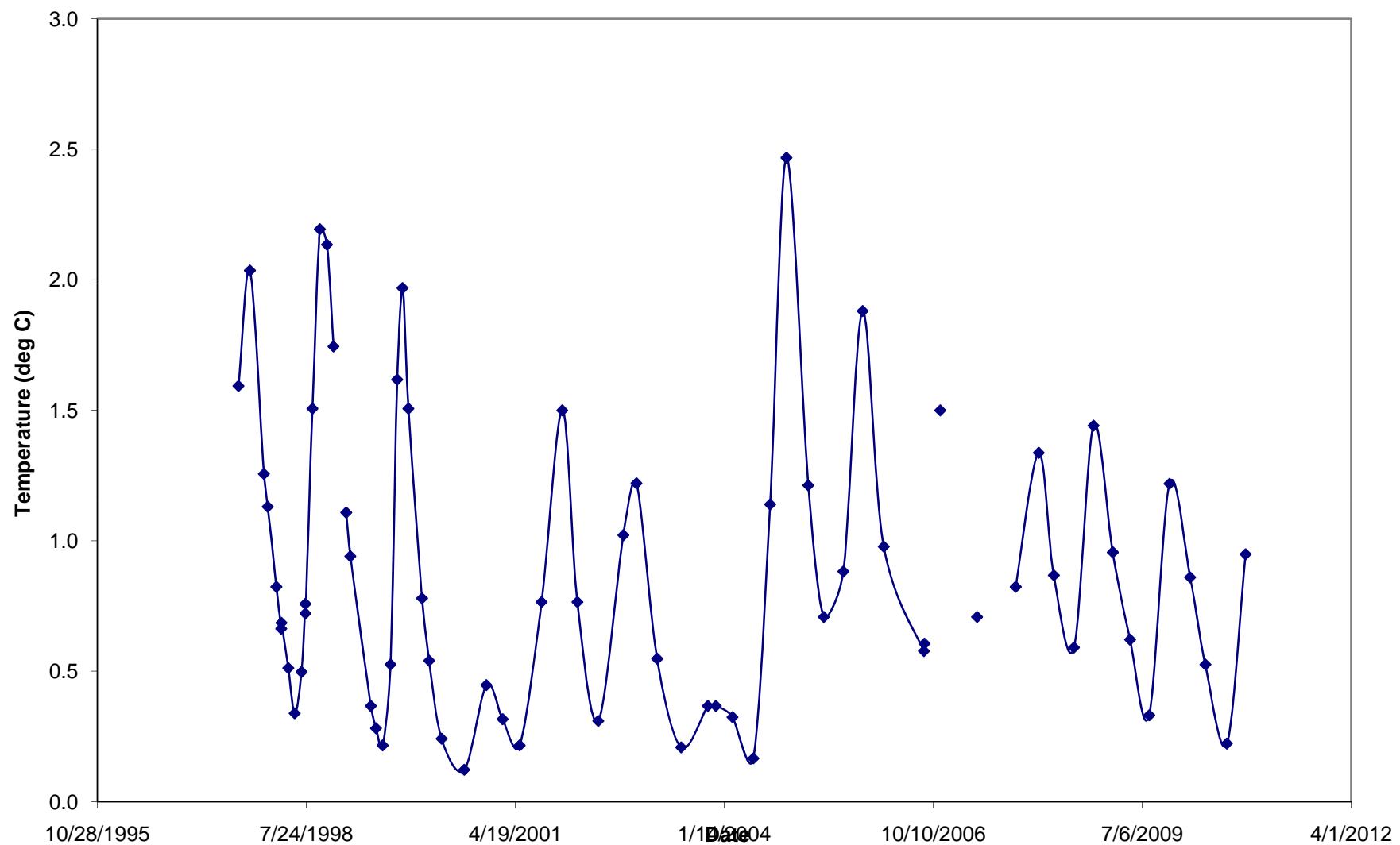
T-97-030 - Temperature at 2 feet



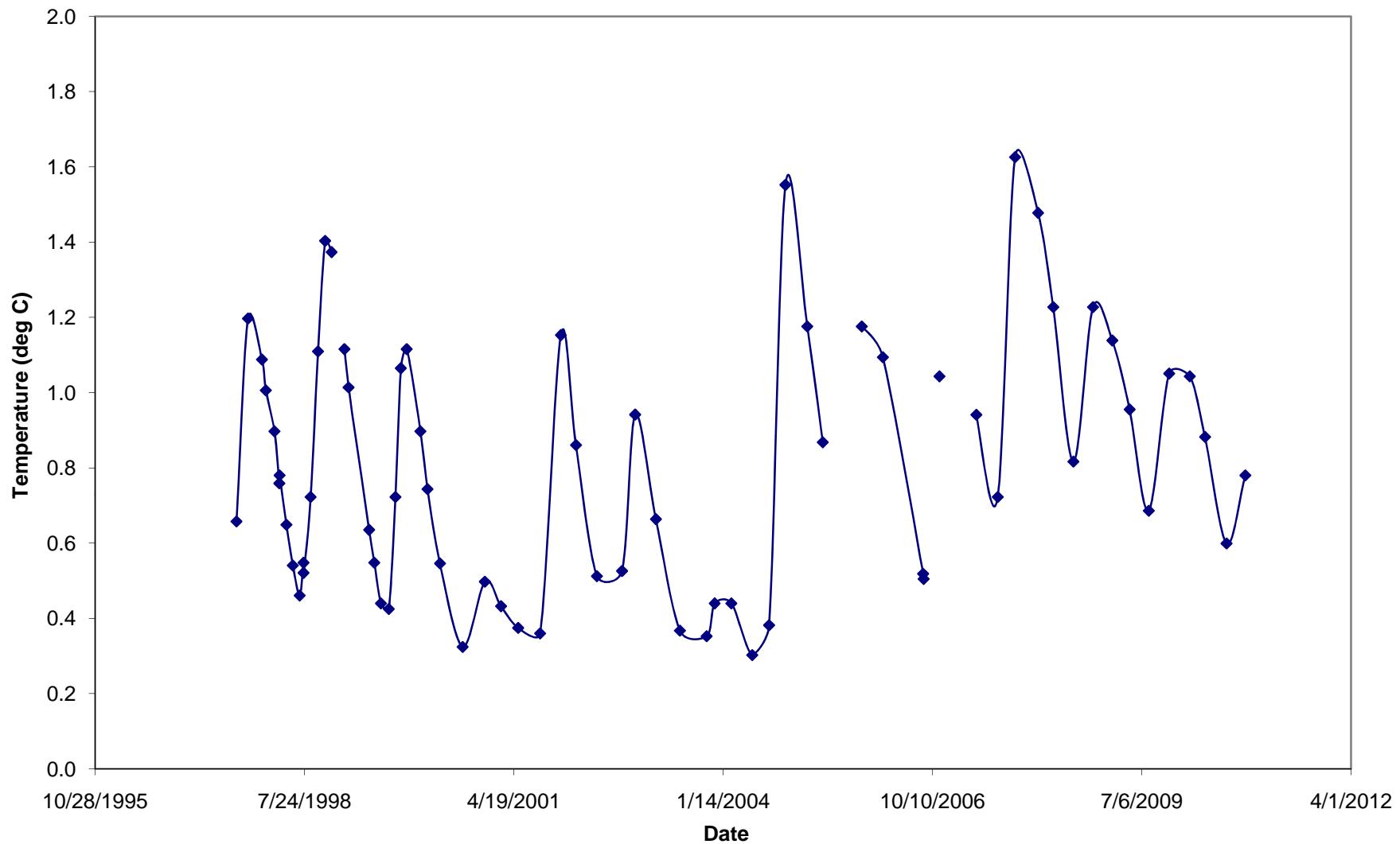
T-97-030 - Temperature at 9 feet



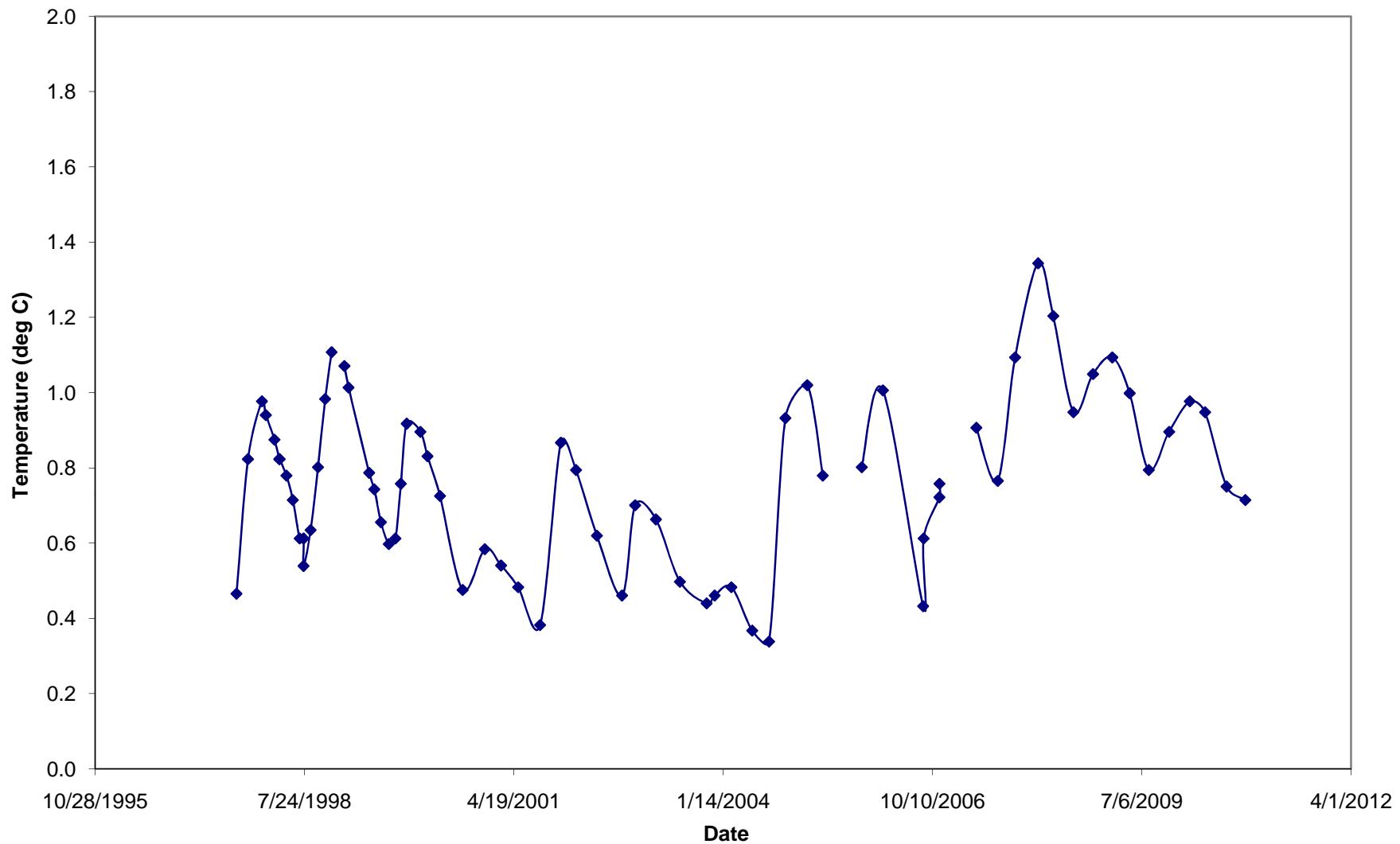
T-97-030 - Temperature at 15 feet



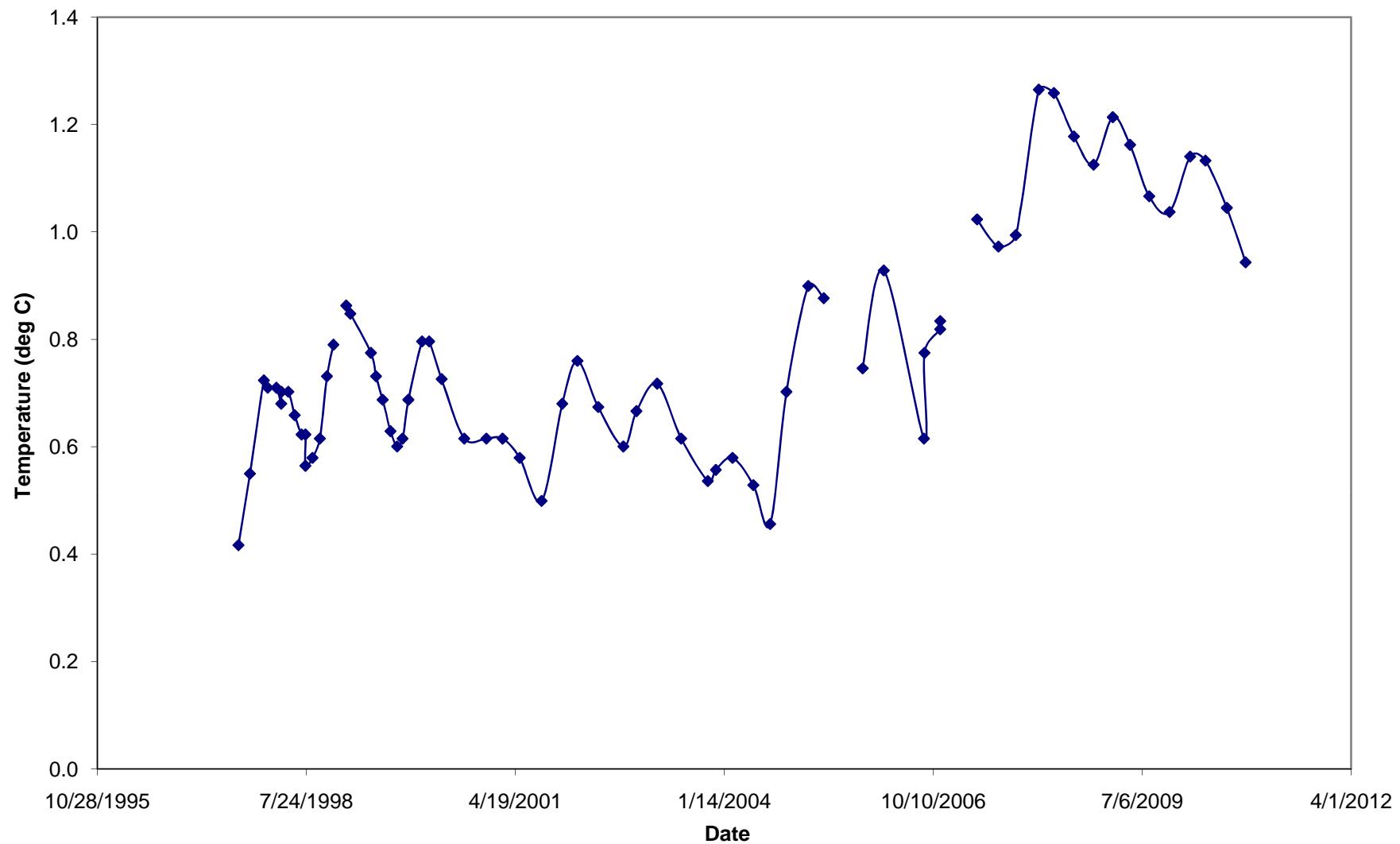
T-97-030 - Temperature at 21 feet



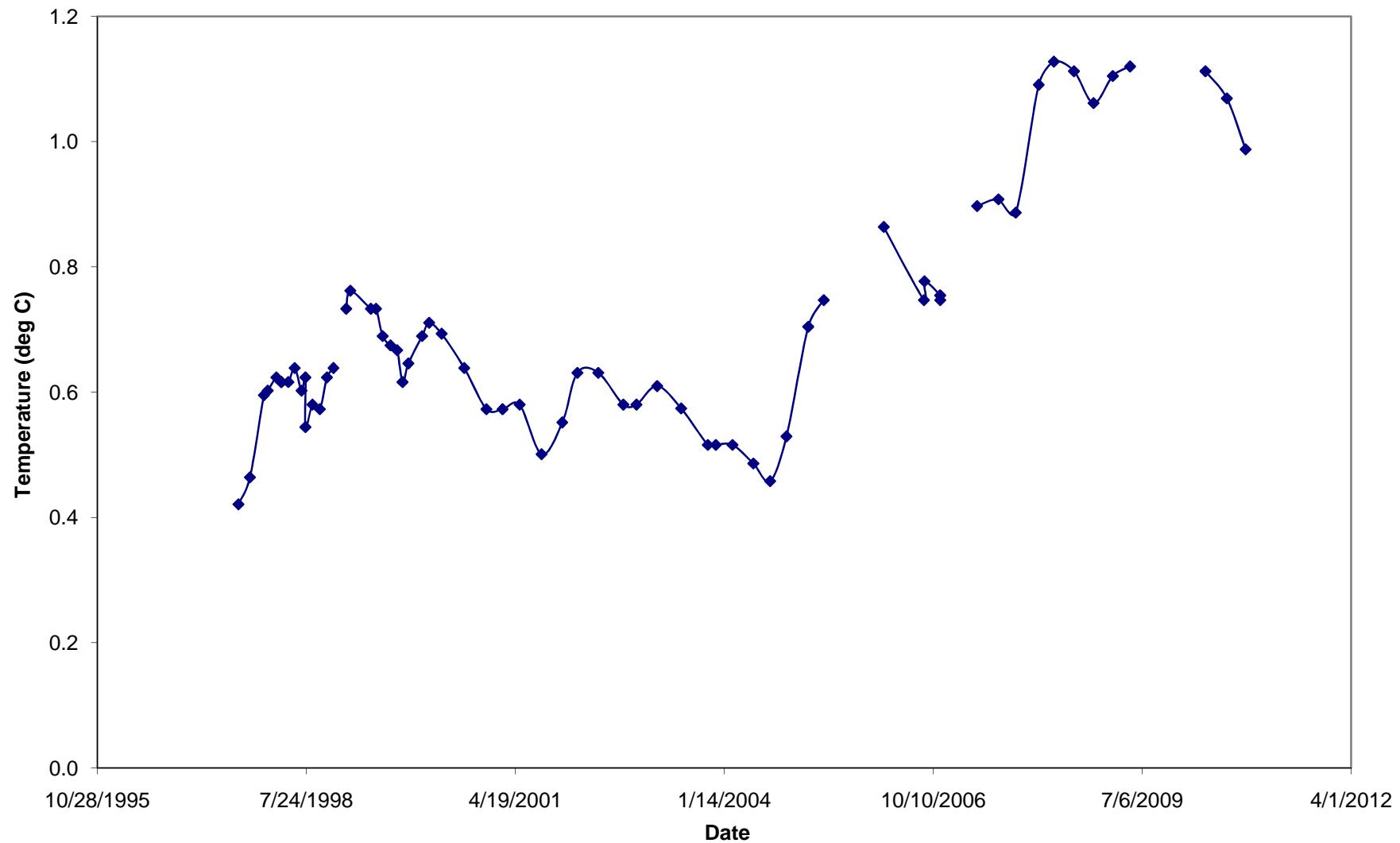
T-97-030 - Temperature at 27 feet



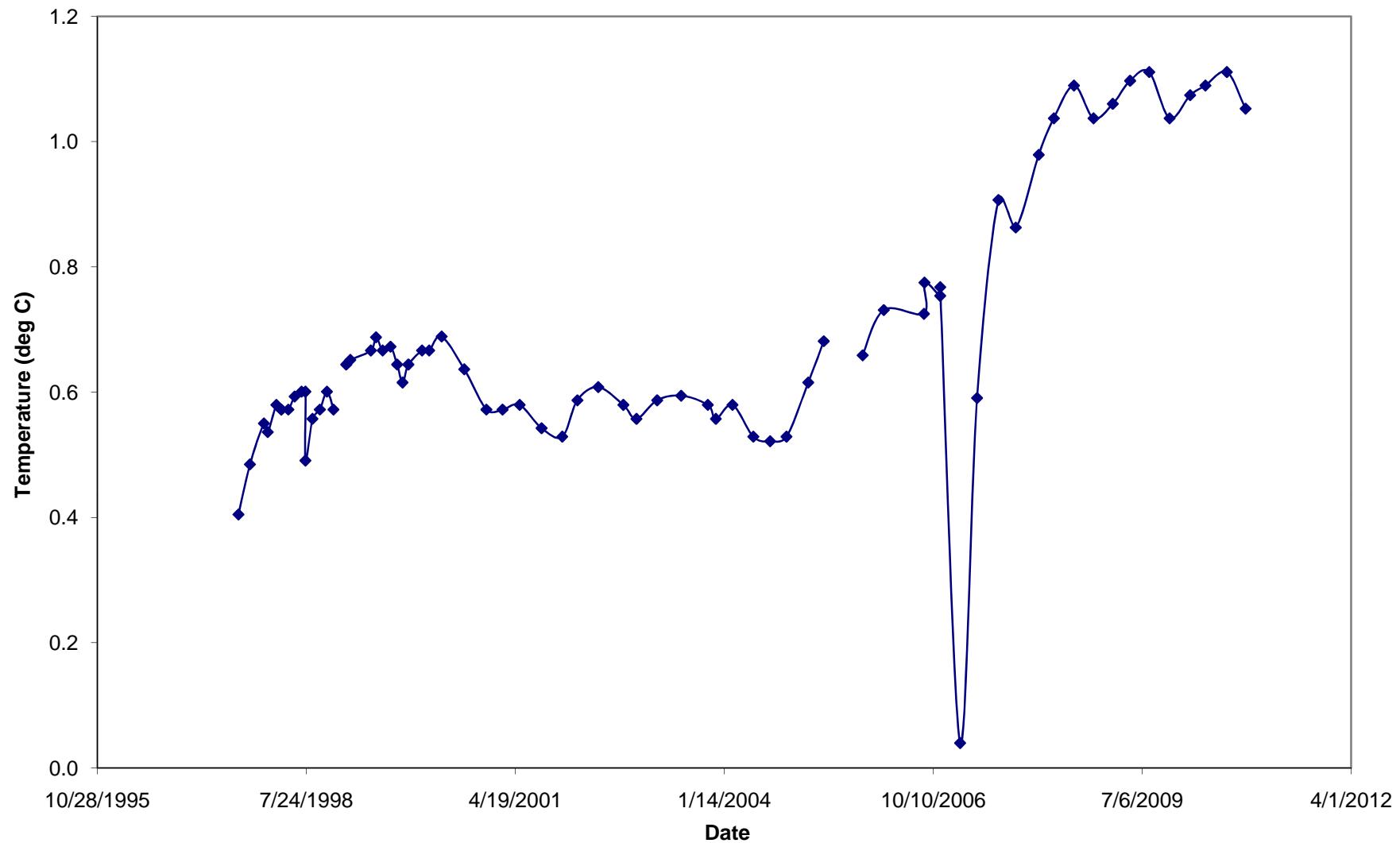
T-97-030 - Temperature at 34 feet



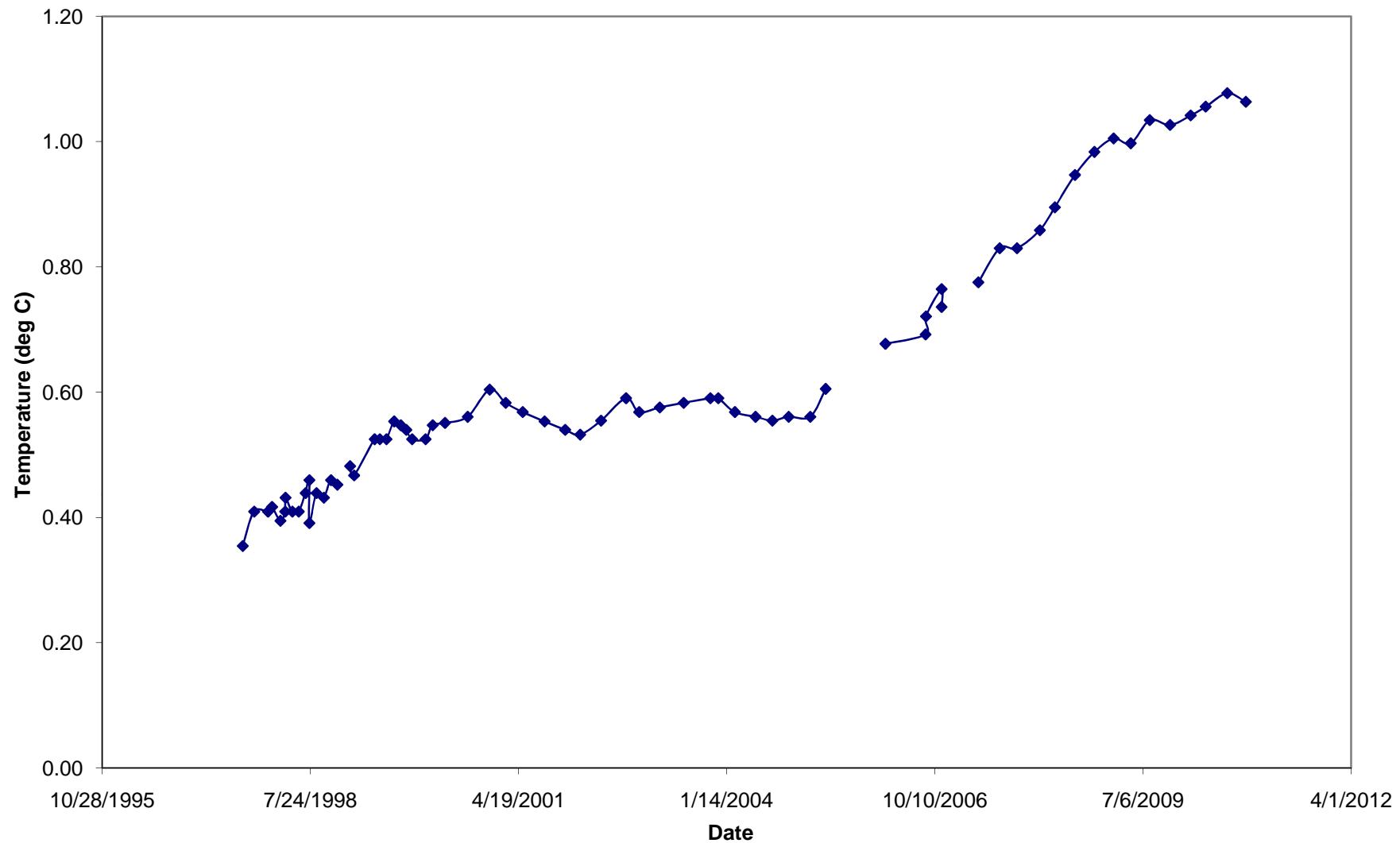
T-97-030 - Temperature at 40 feet



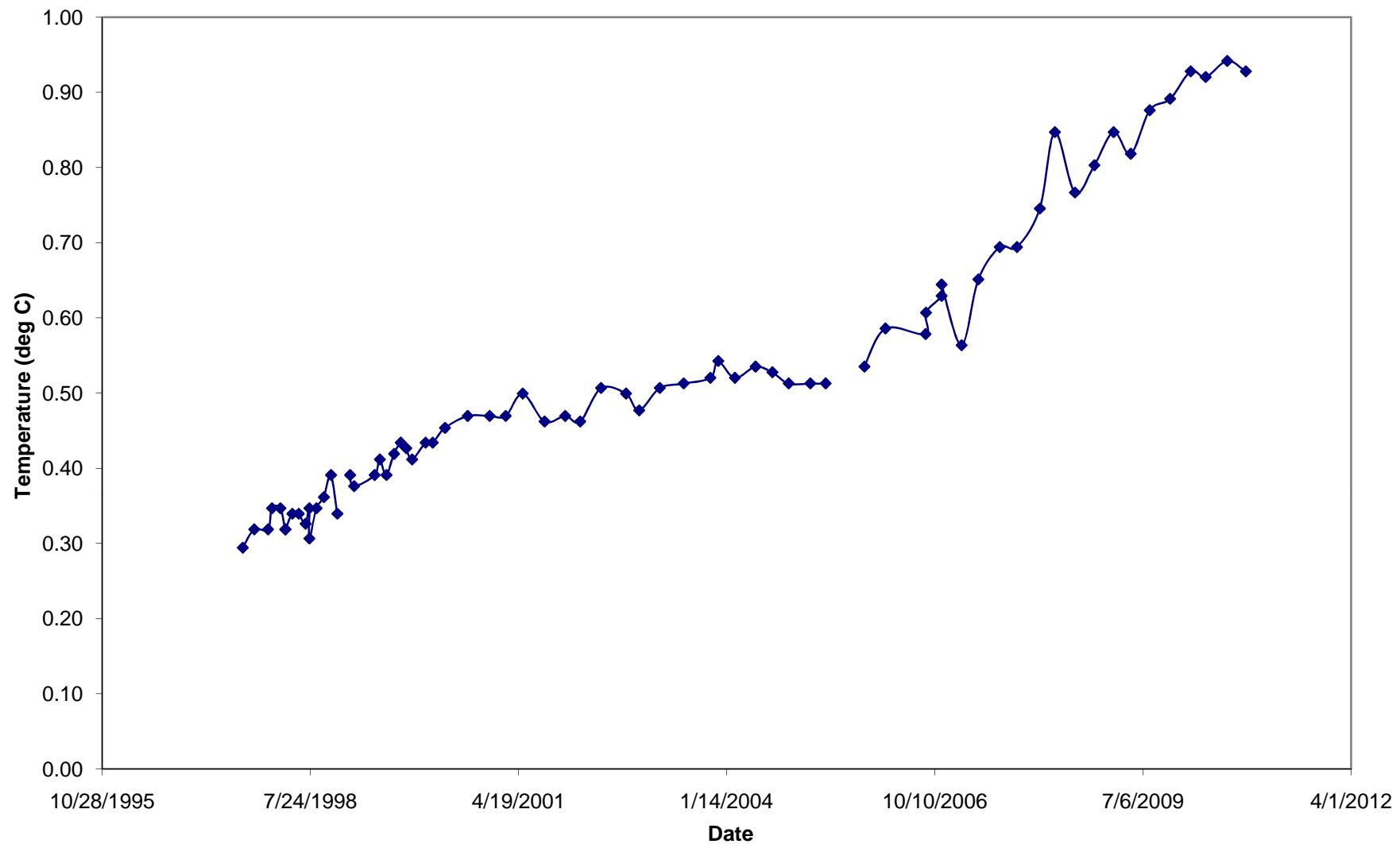
T-97-030 - Temperature at 46 feet



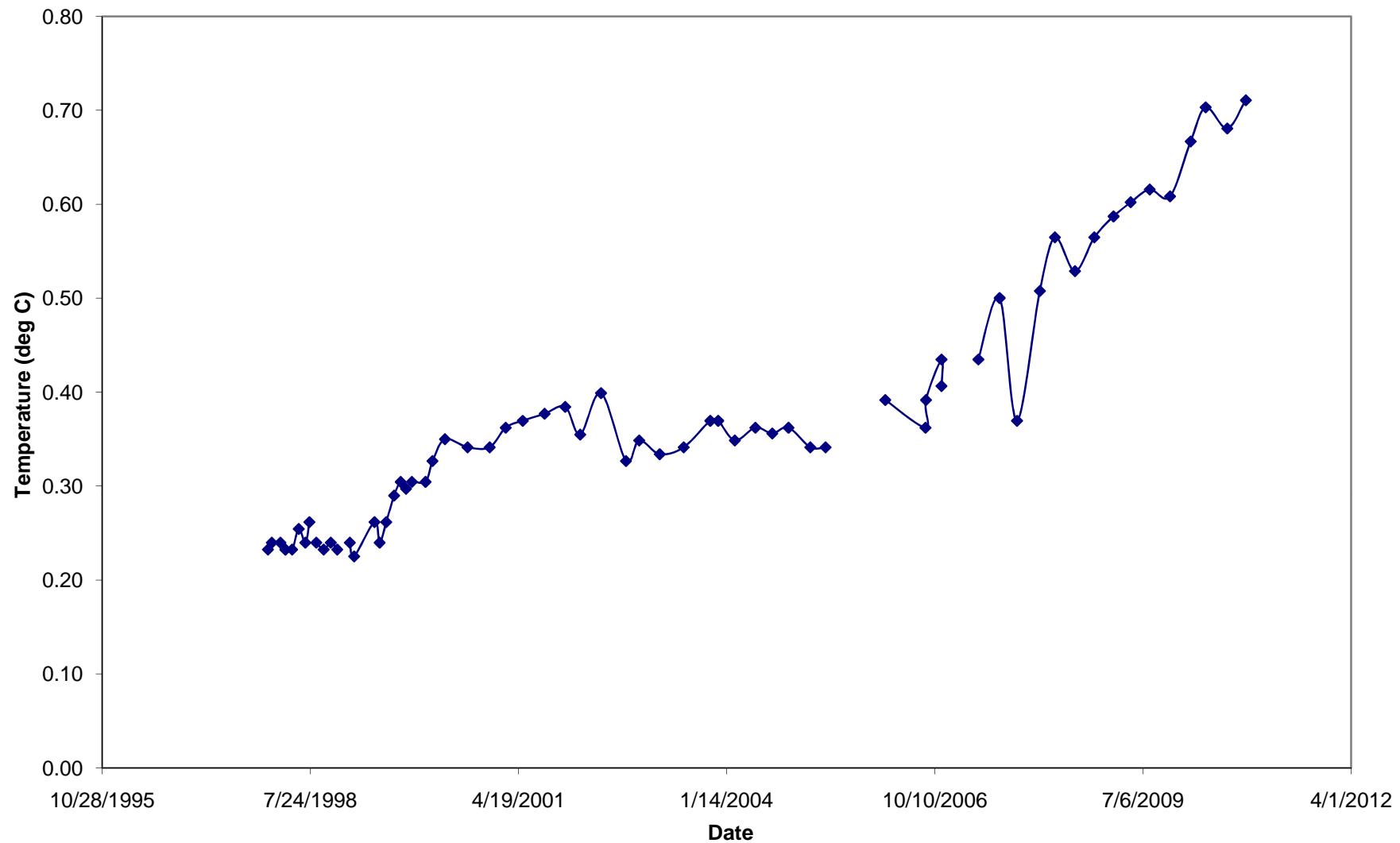
T-97-030 - Temperature at 59 feet



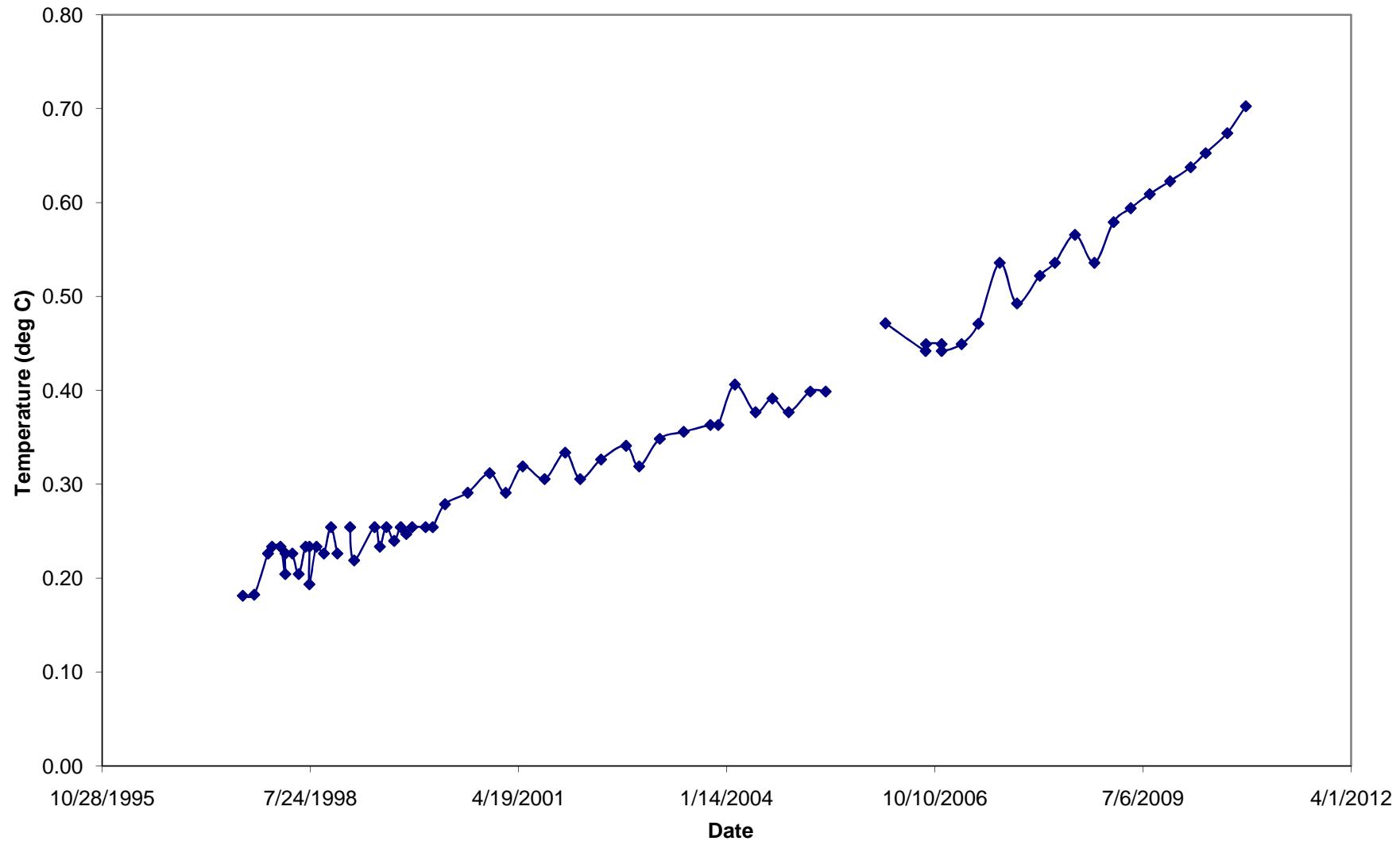
T-97-030 - Temperature at 71 feet



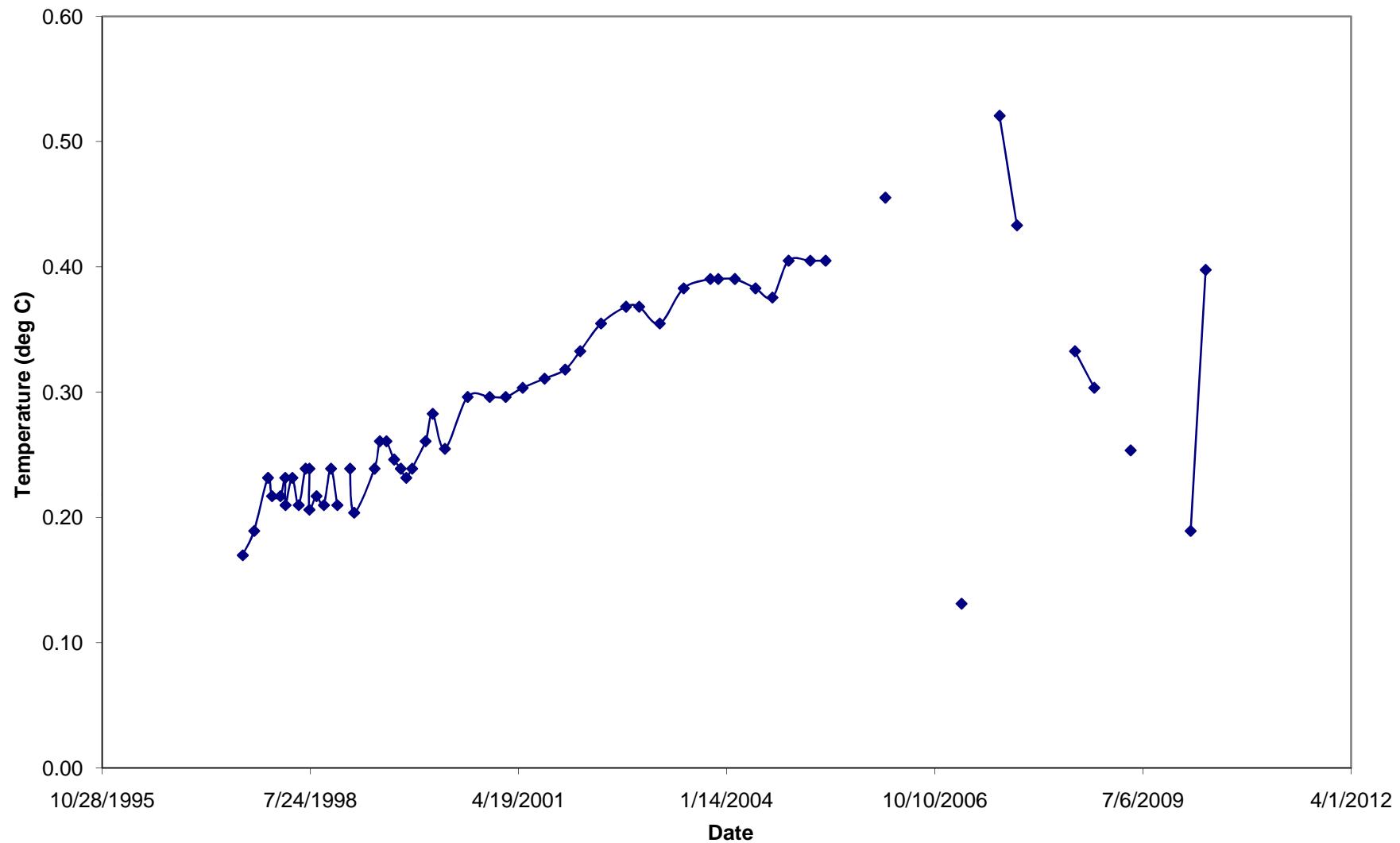
T-97-030 - Temperature at 84 feet



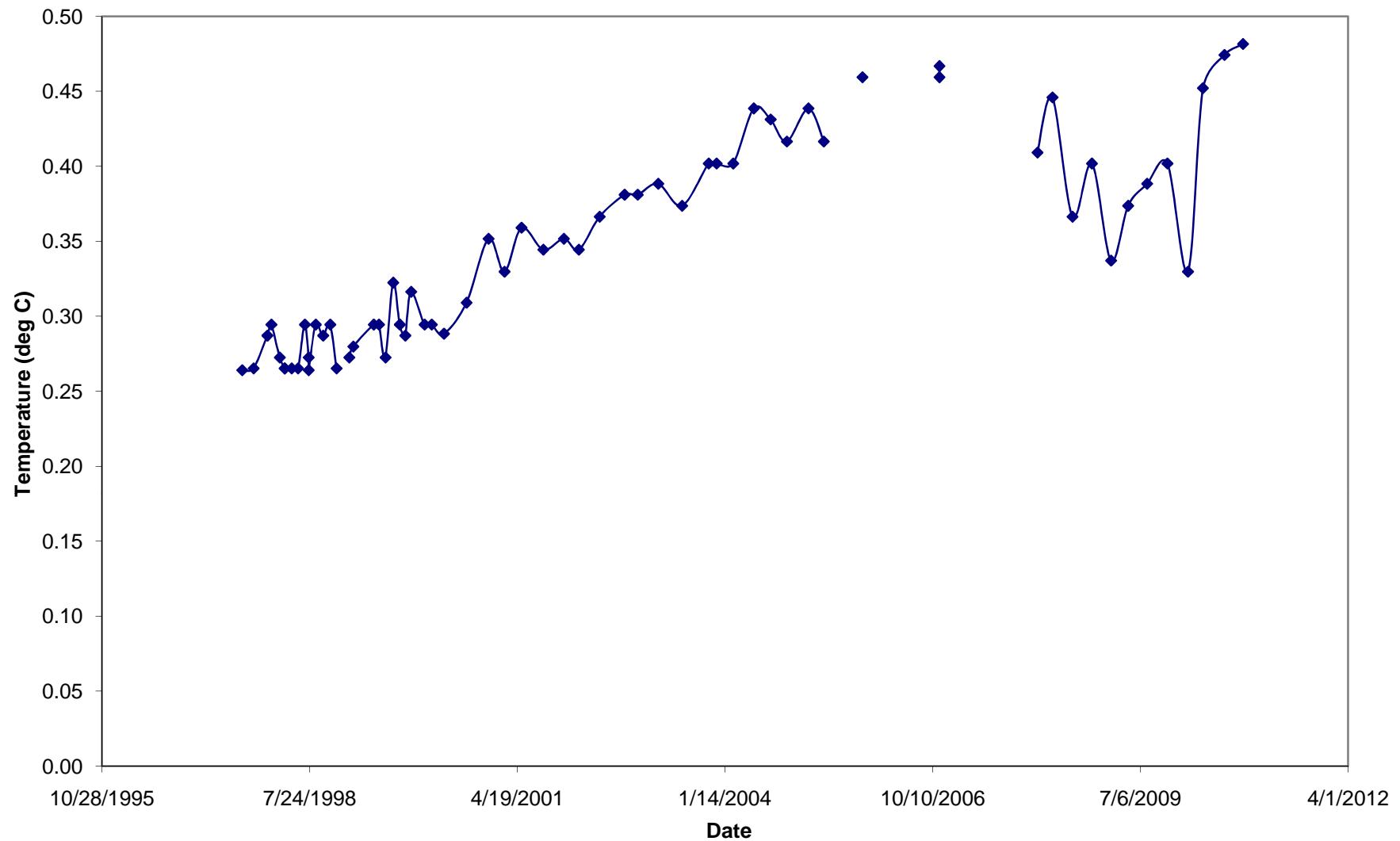
T-97-030 - Temperature at 96 feet



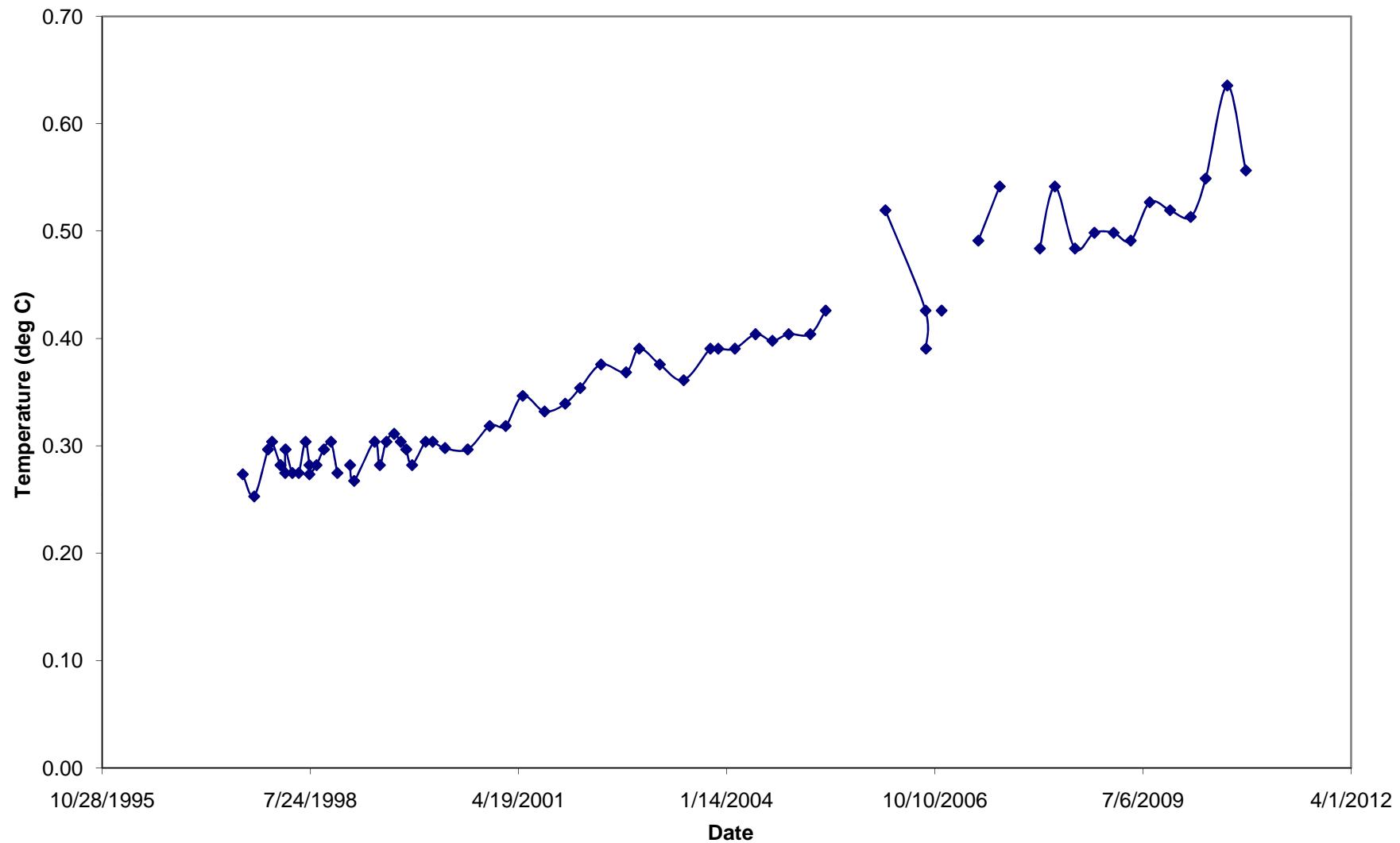
T-97-030 - Temperature at 109 feet



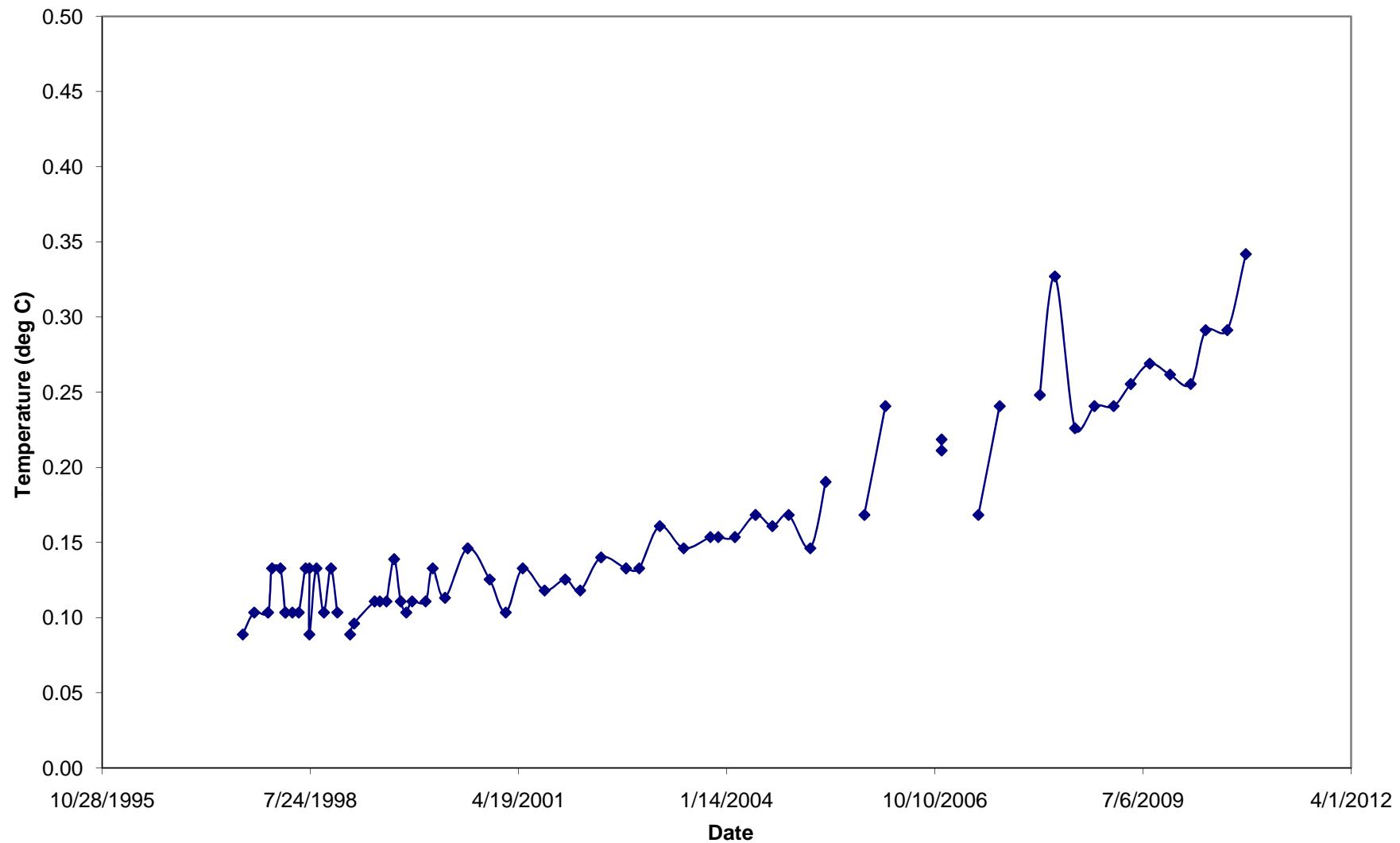
T-97-030 - Temperature at 121 feet



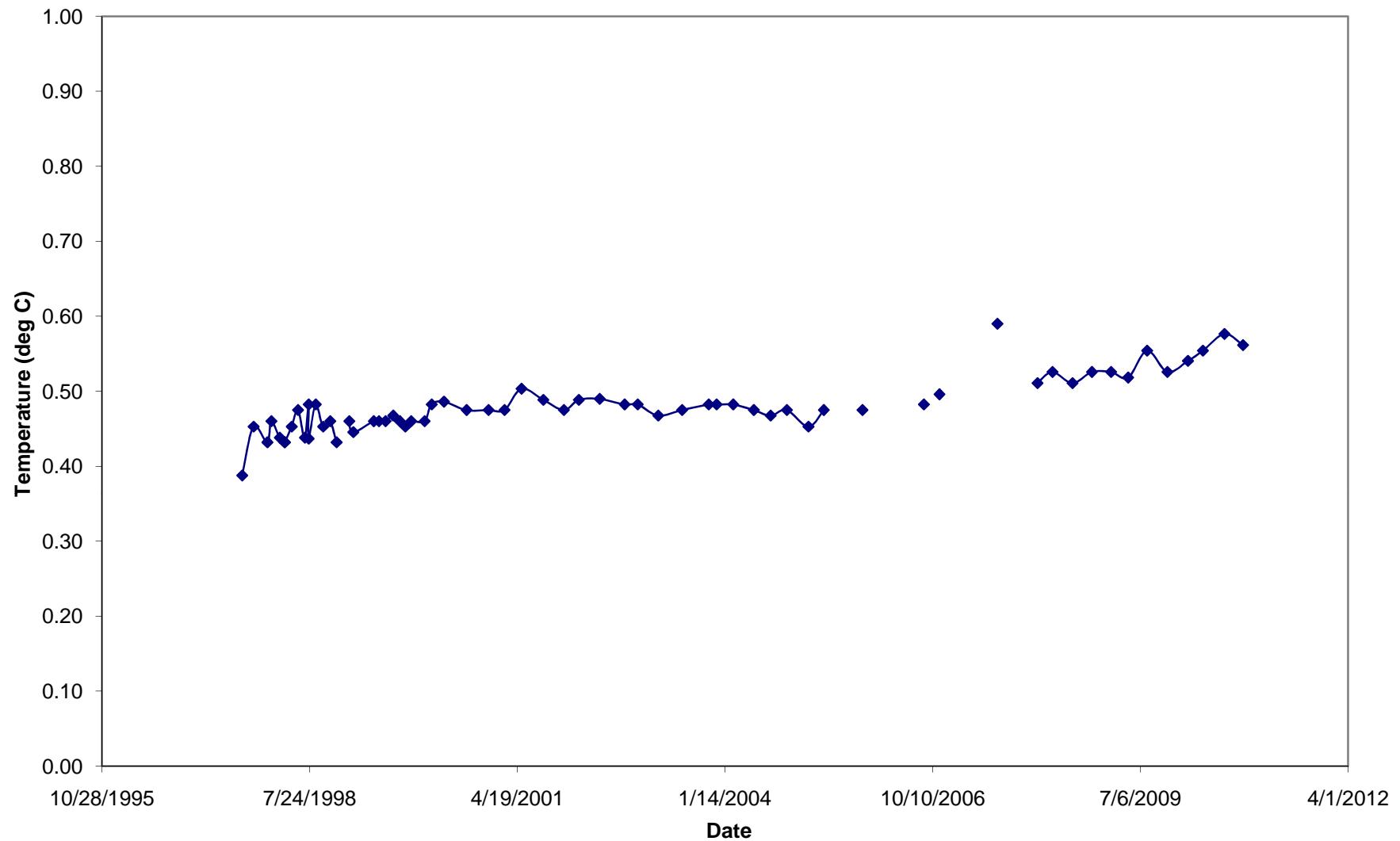
T-97-030 - Temperature at 134 feet



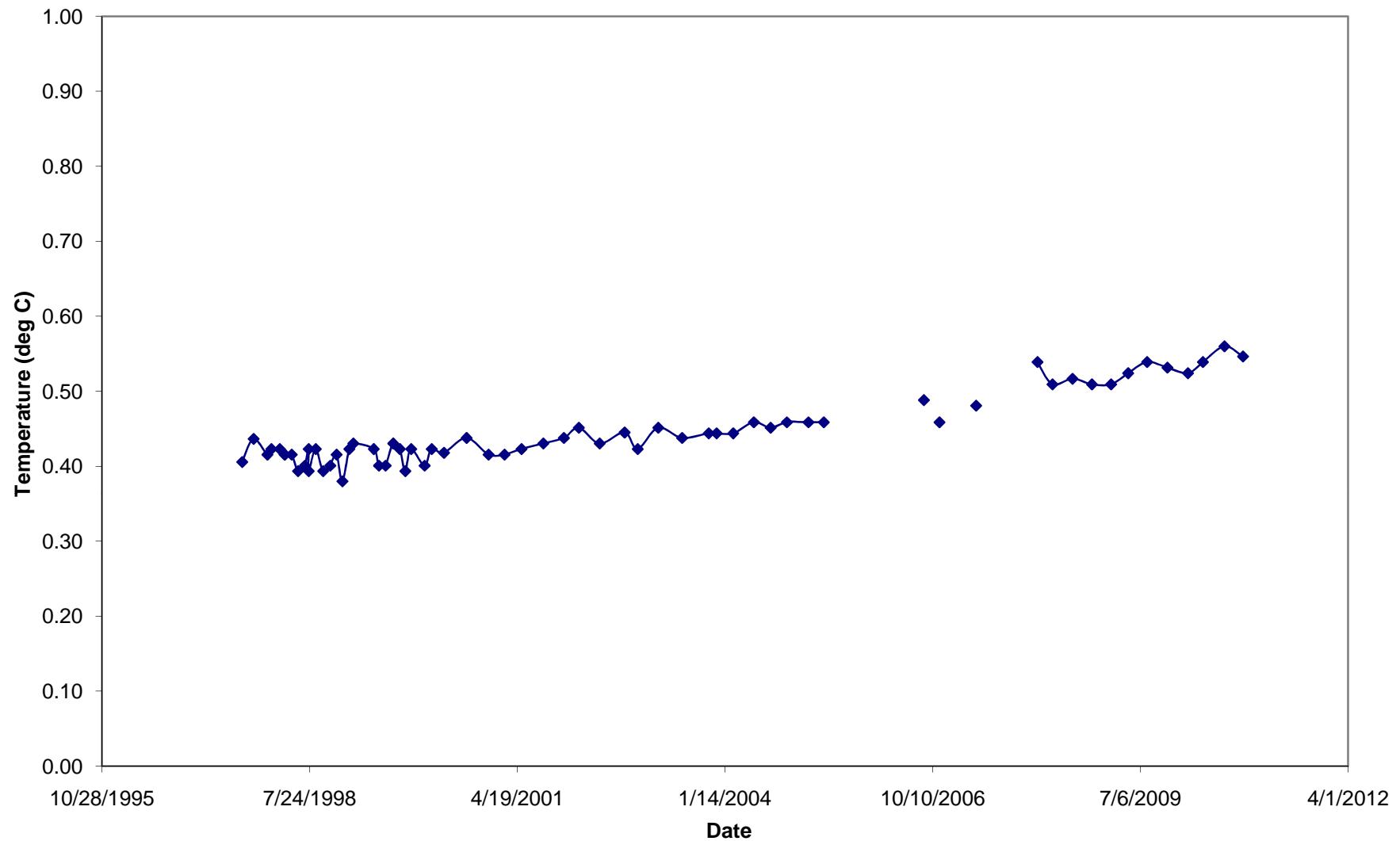
T-97-030 - Temperature at 146 feet



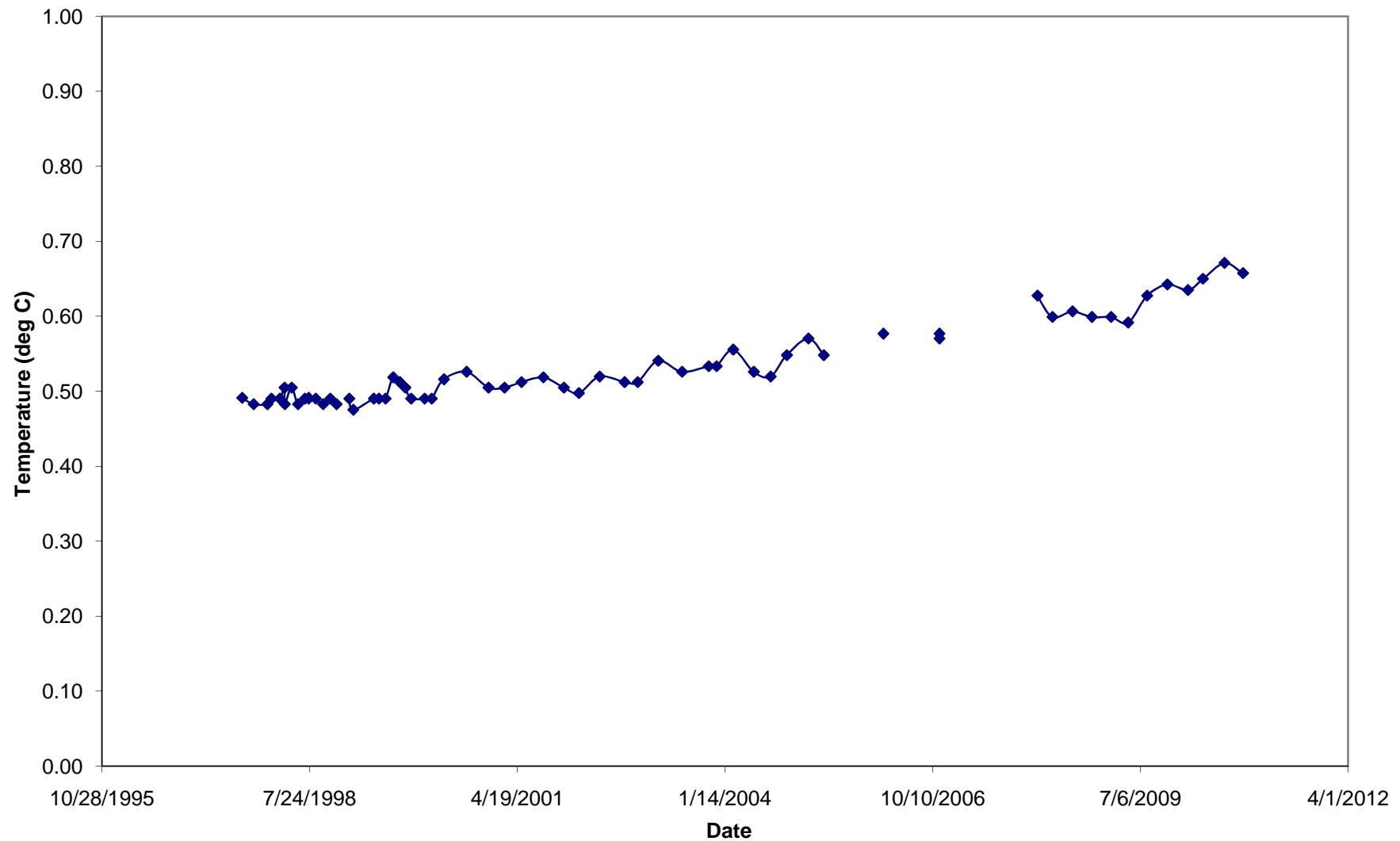
T-97-030 - Temperature at 159 feet



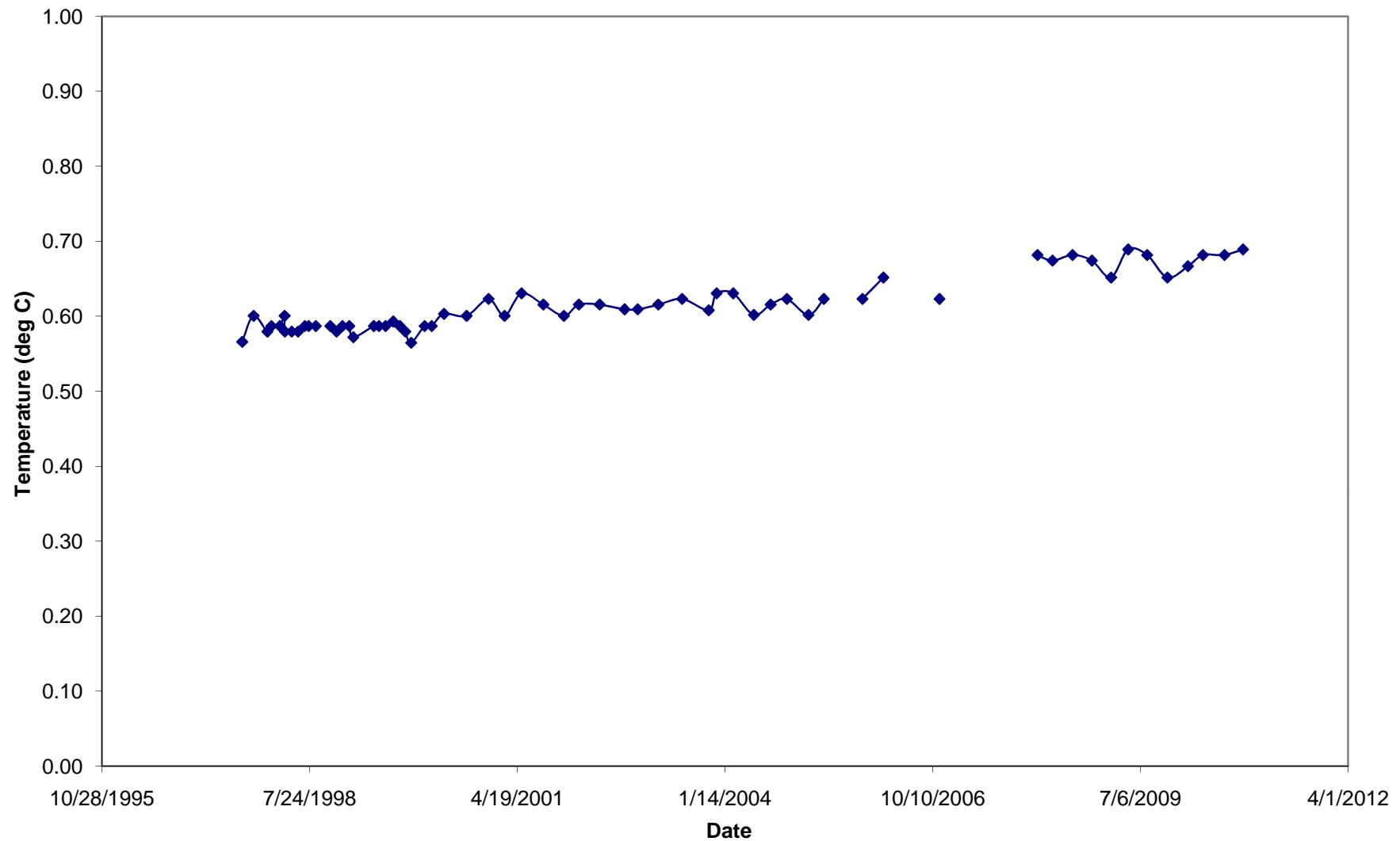
T-97-030 - Temperature at 171 feet



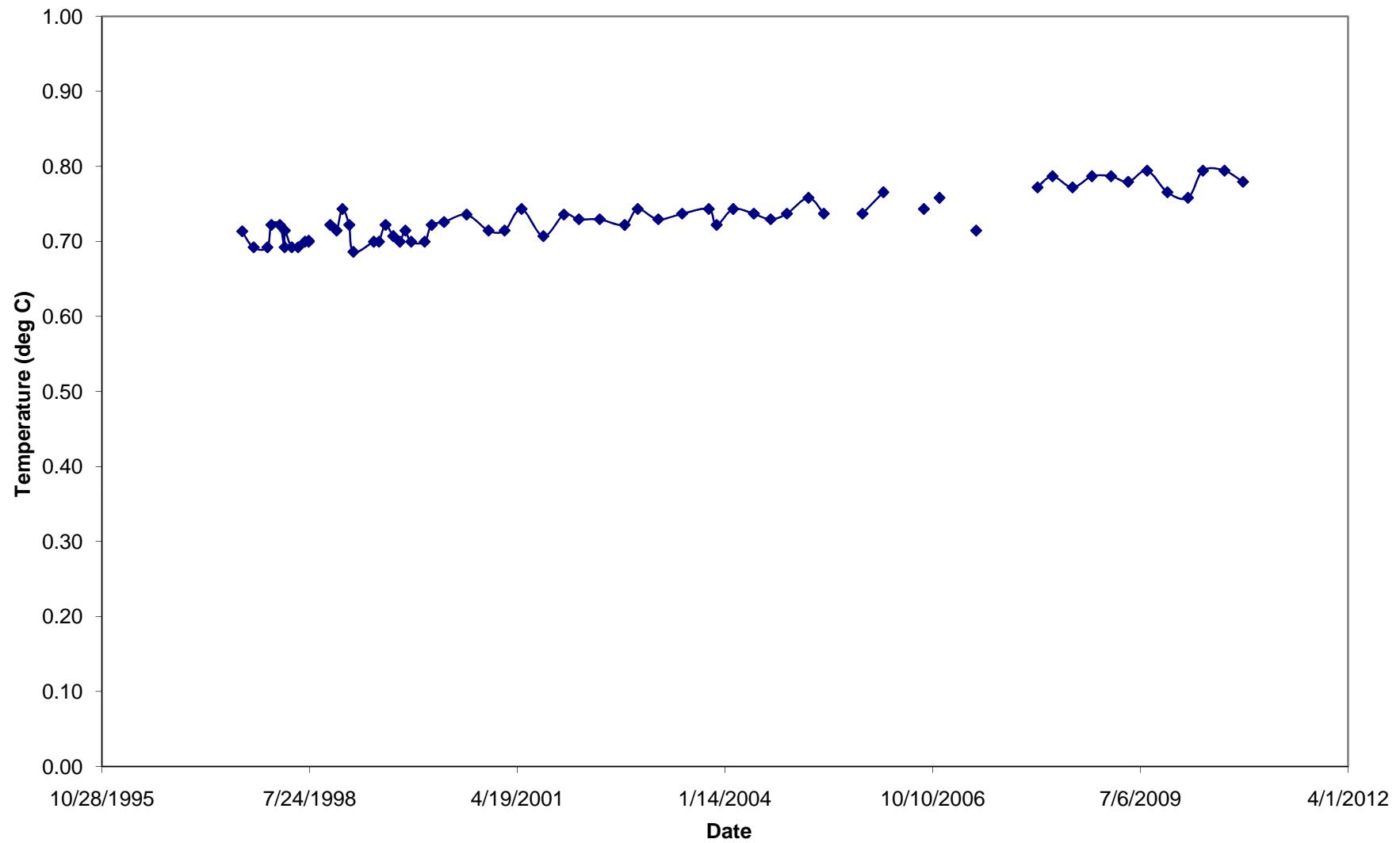
T-97-030 - Temperature at 184 feet



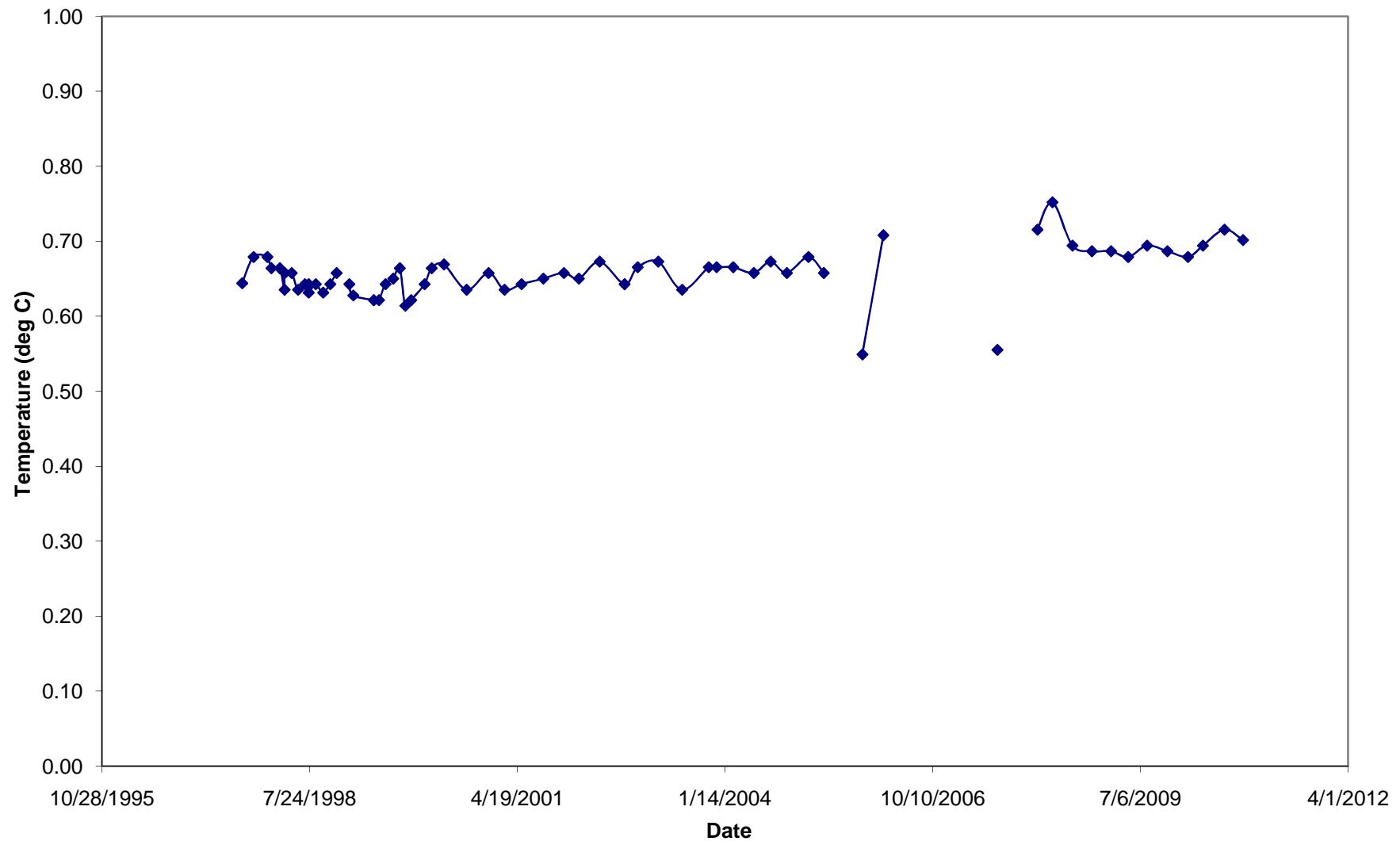
T-97-030 - Temperature at 196 feet



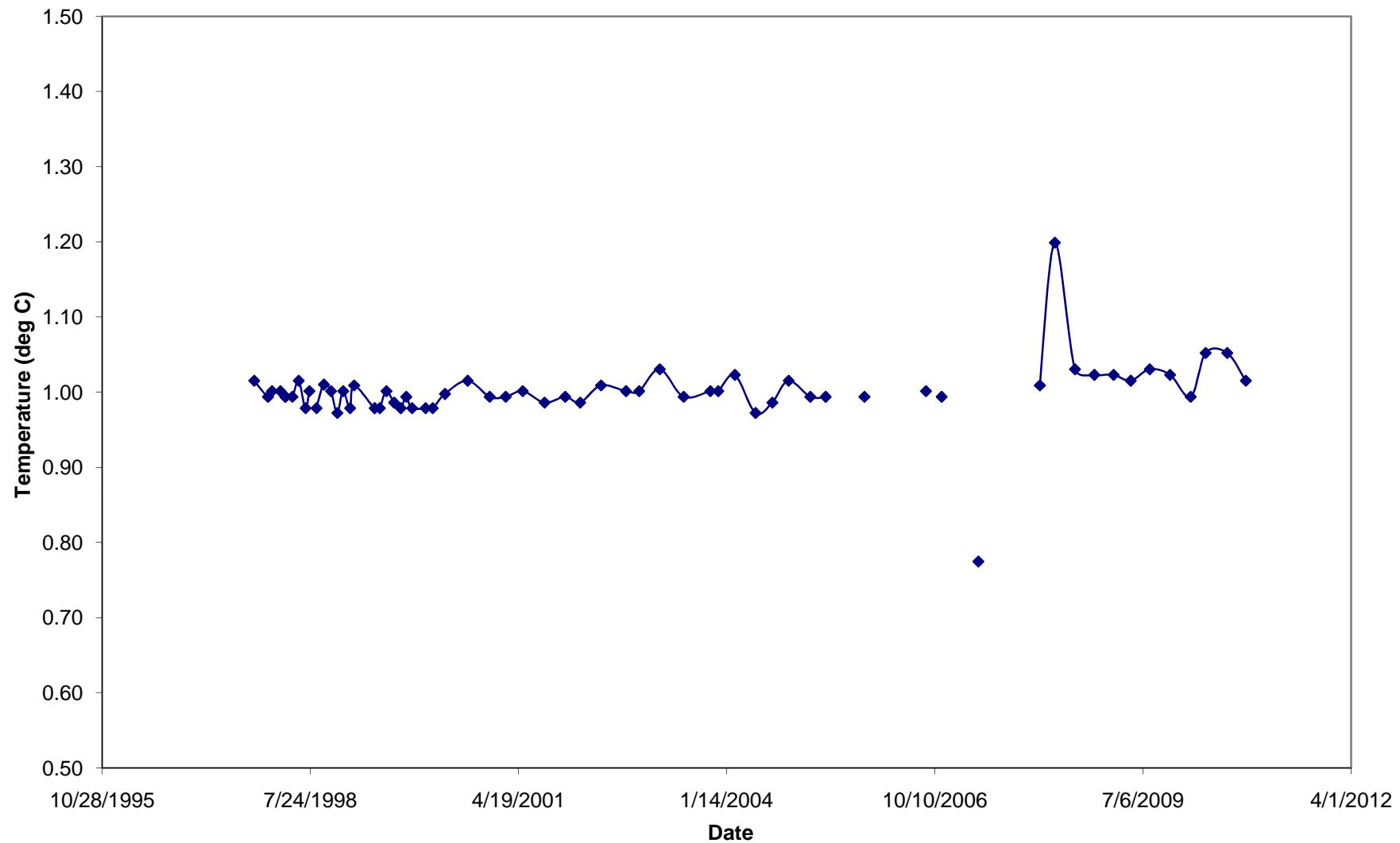
T-97-030 - Temperature at 209 feet



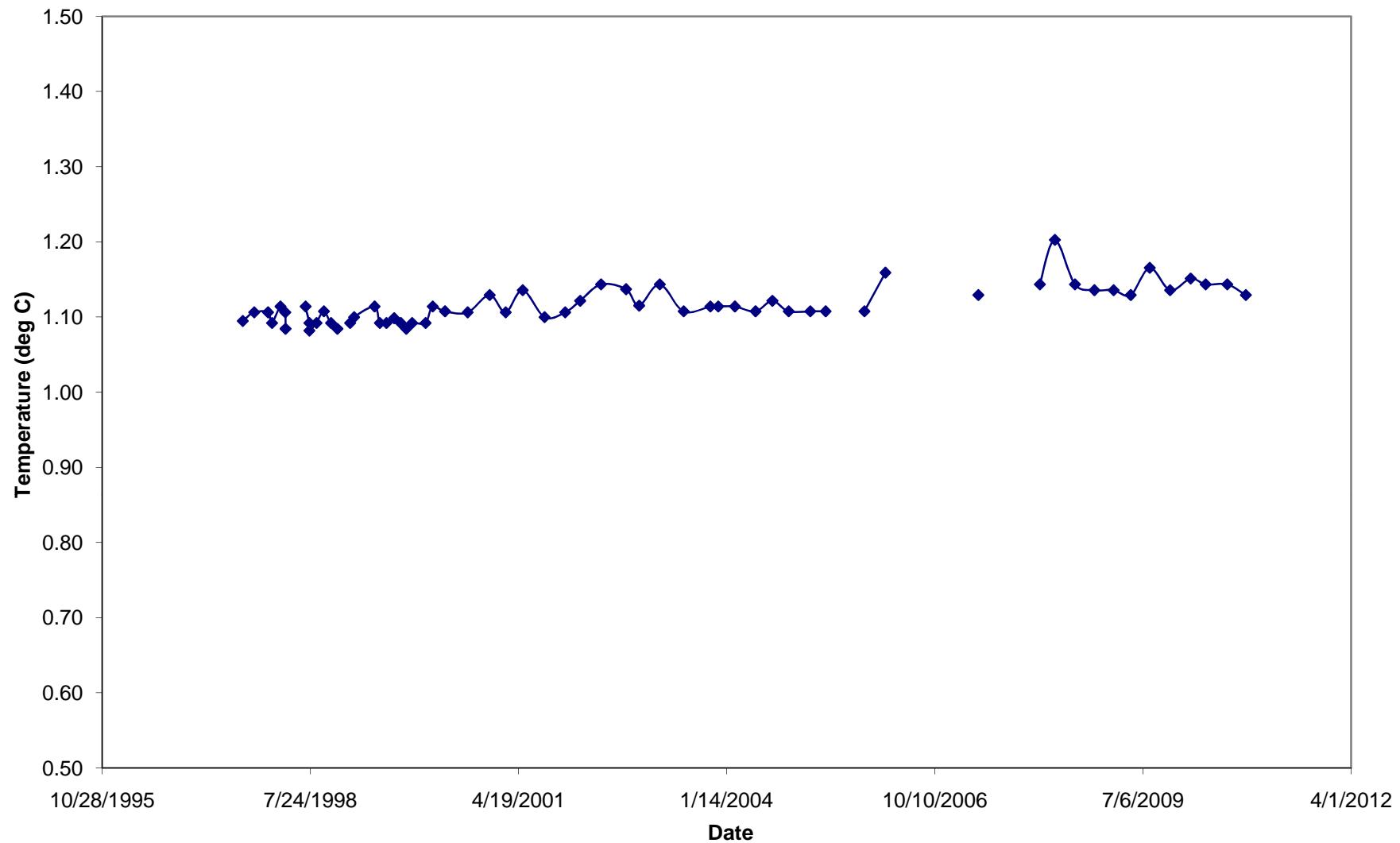
T-97-030 - Temperature at 221 feet



T-97-030 - Temperature at 246 feet



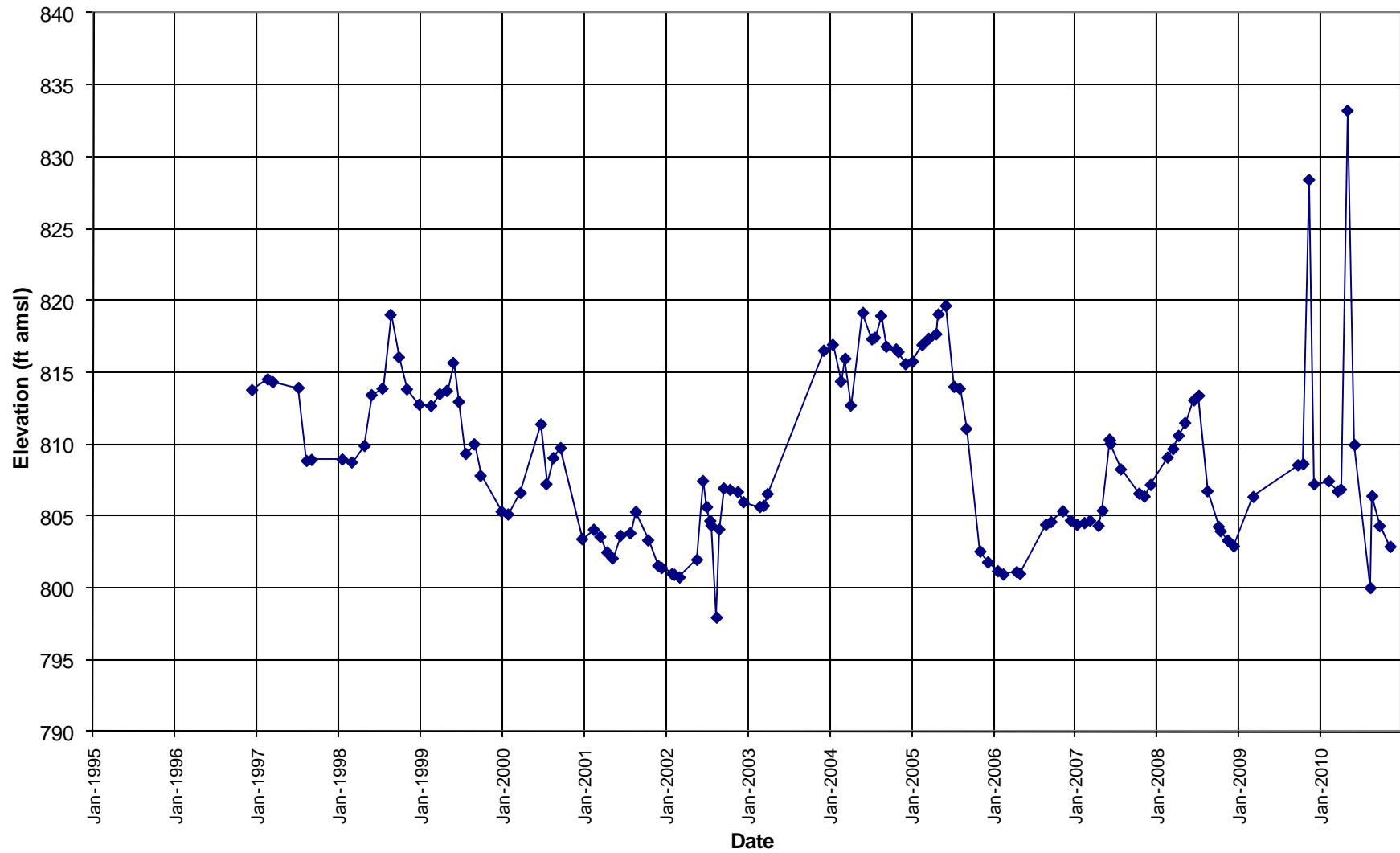
T-97-030 - Temperature at 271 feet



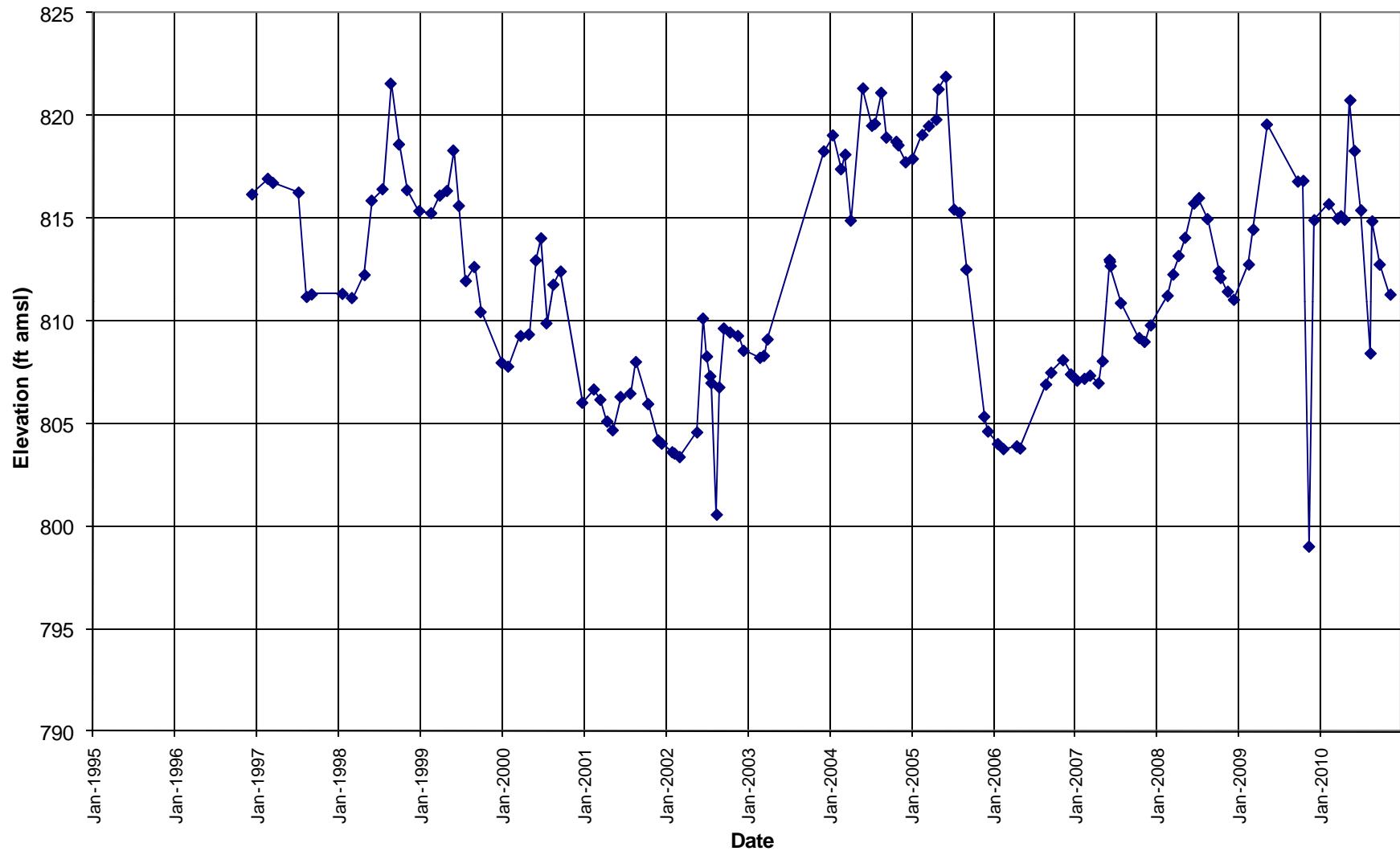
APPENDIX C

Water Level Data from Long-Term Monitoring Locations

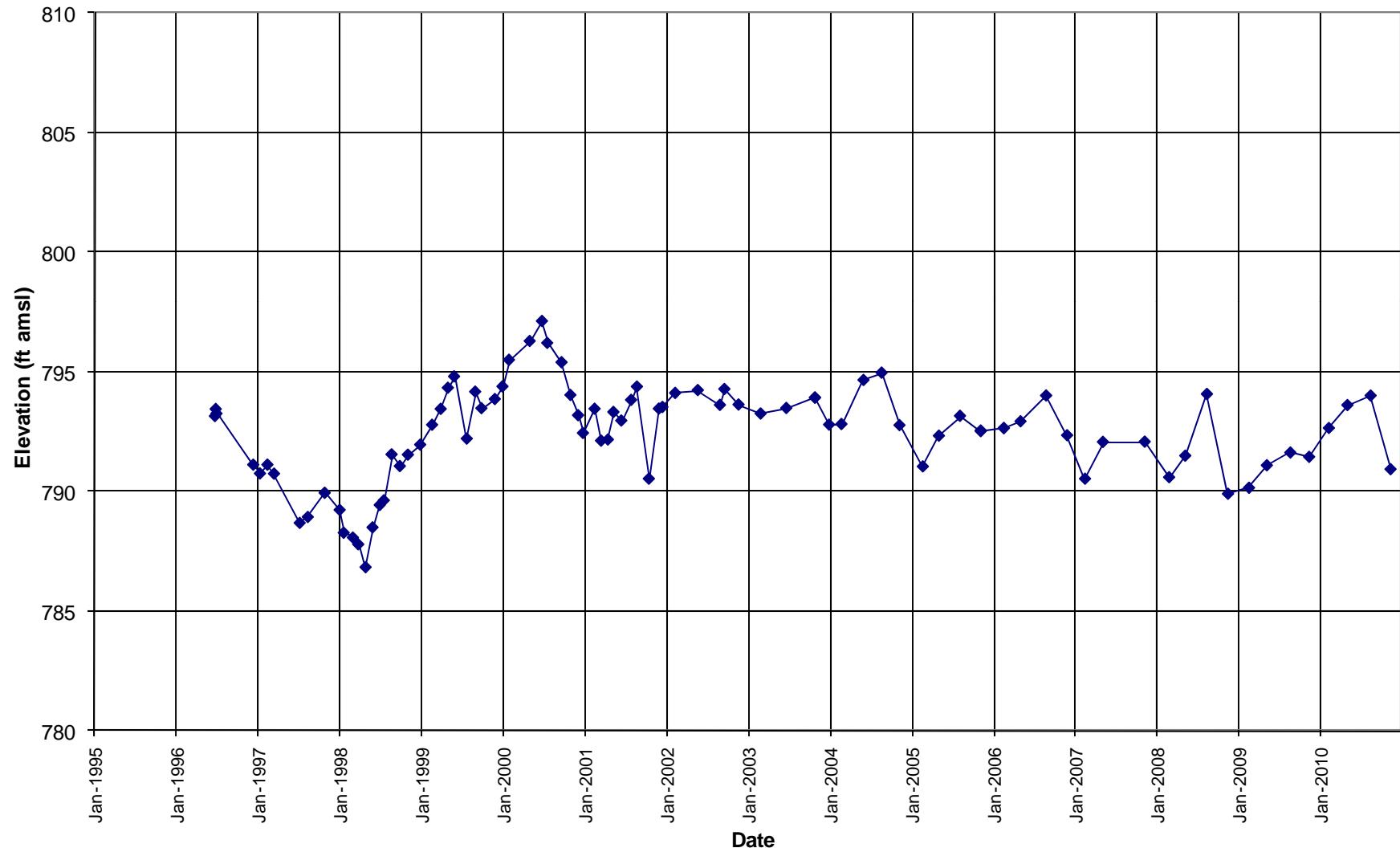
Elevation Hydrograph for P-08A



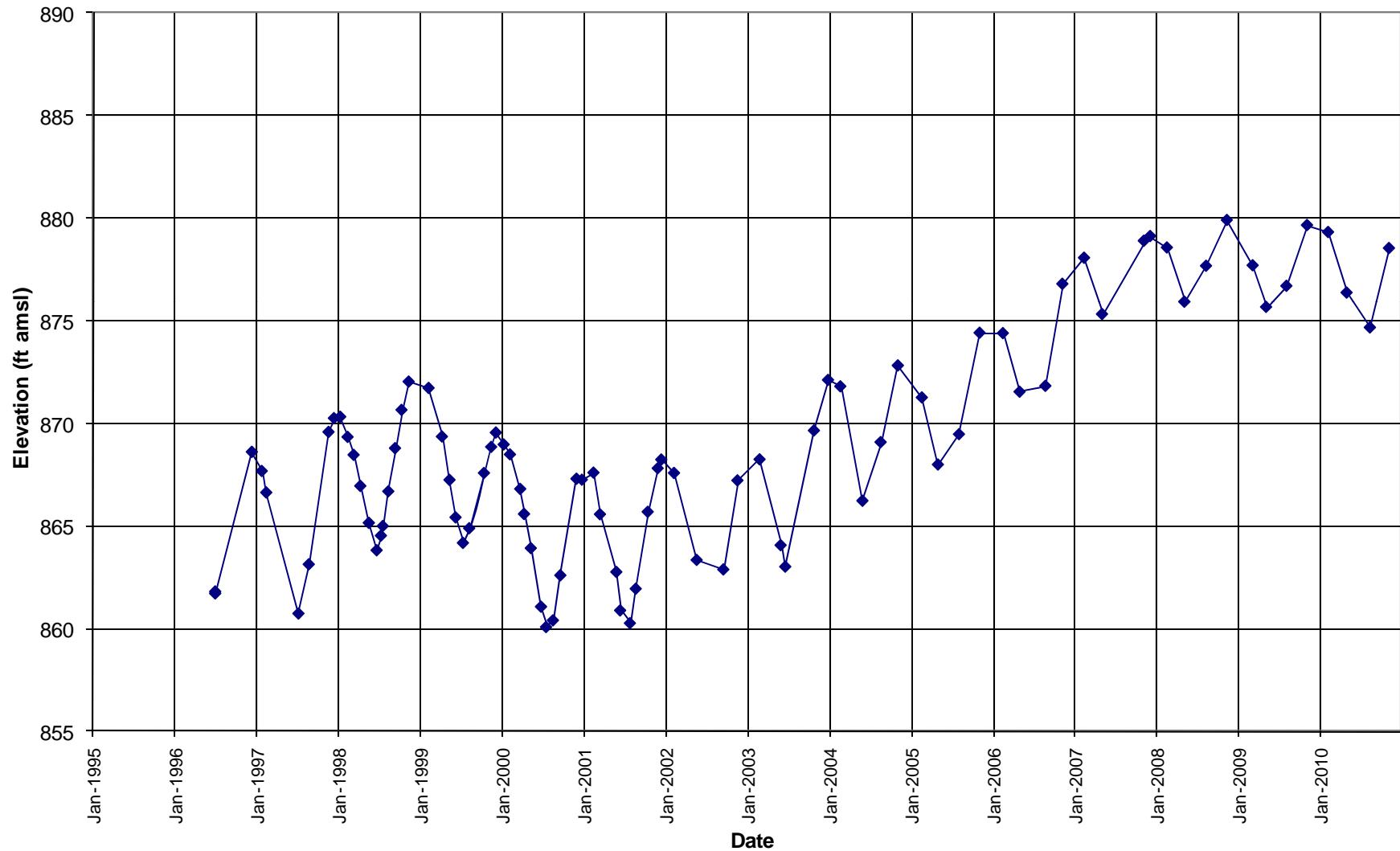
Elevation Hydrograph for P-08B



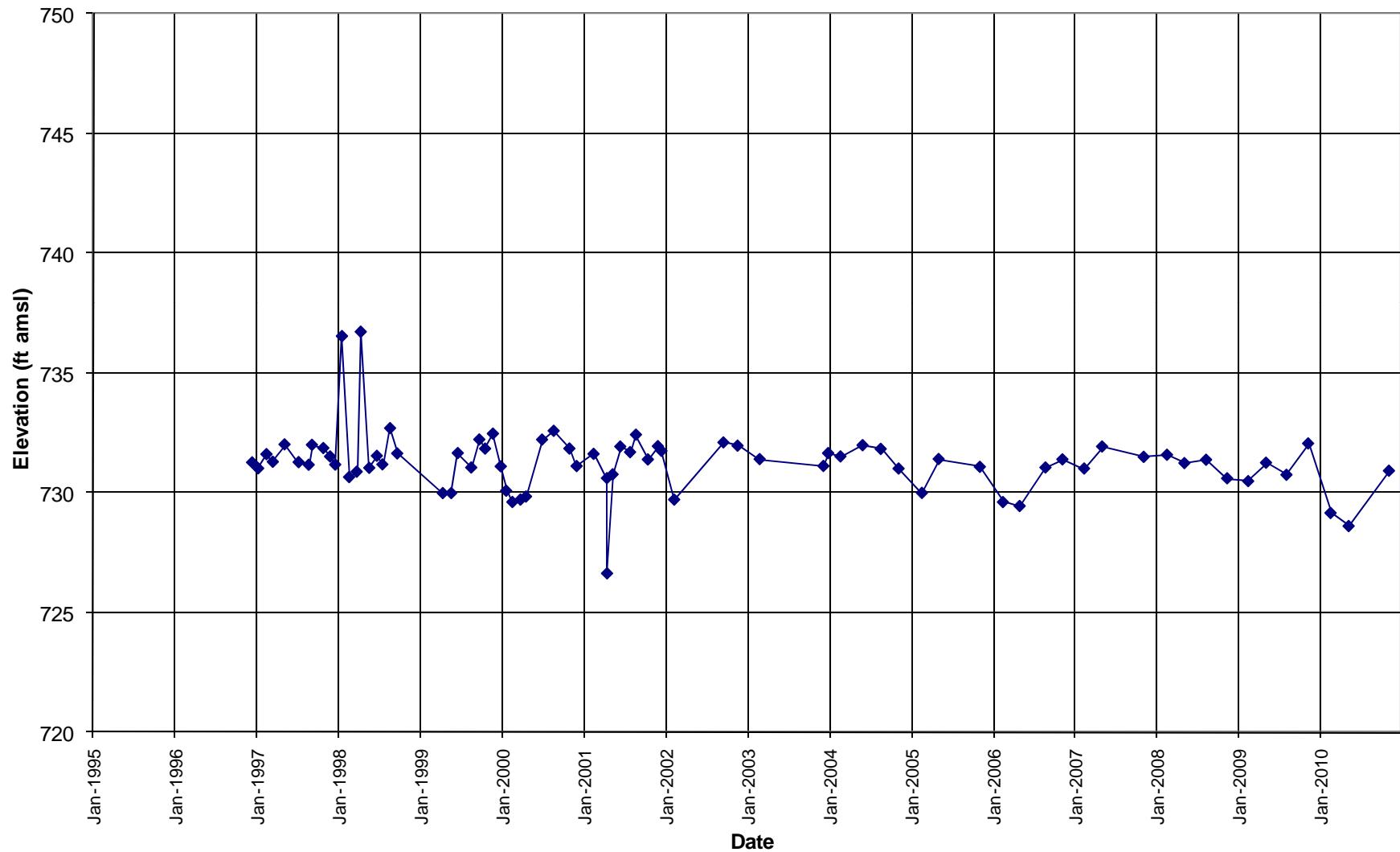
Elevation Hydrograph for P-96-010



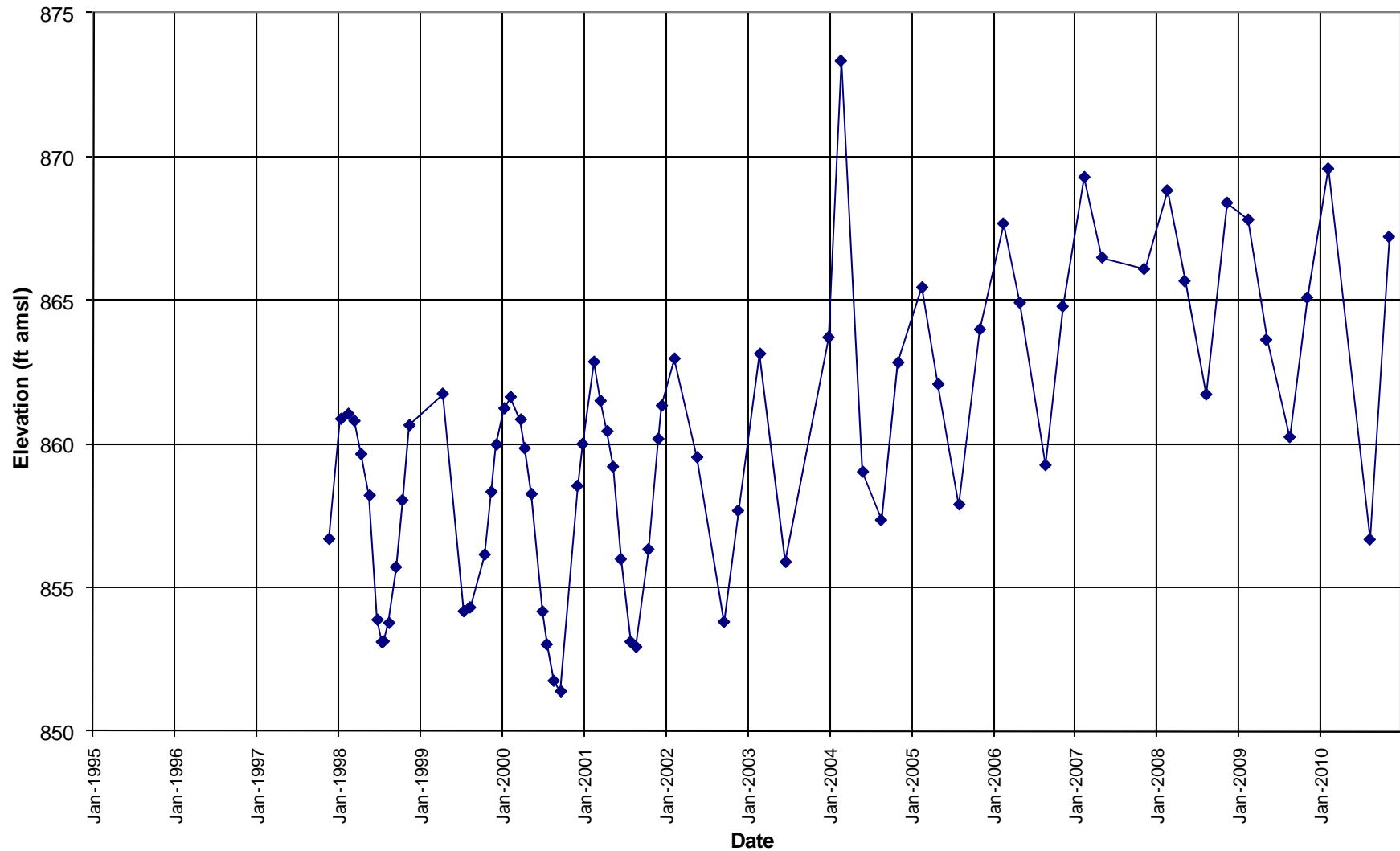
Elevation Hydrograph for P-96-013



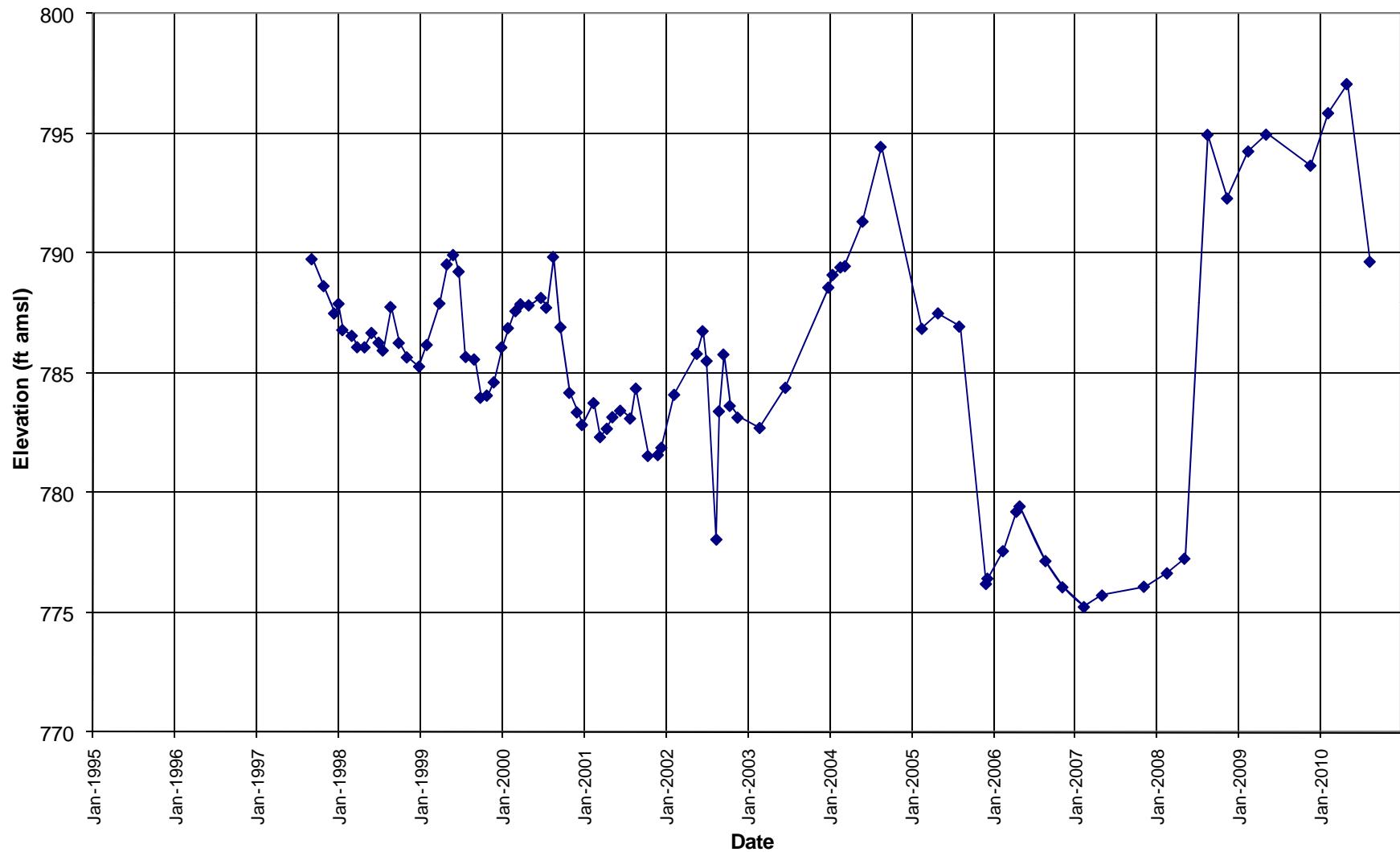
Elevation Hydrograph for P-96-015



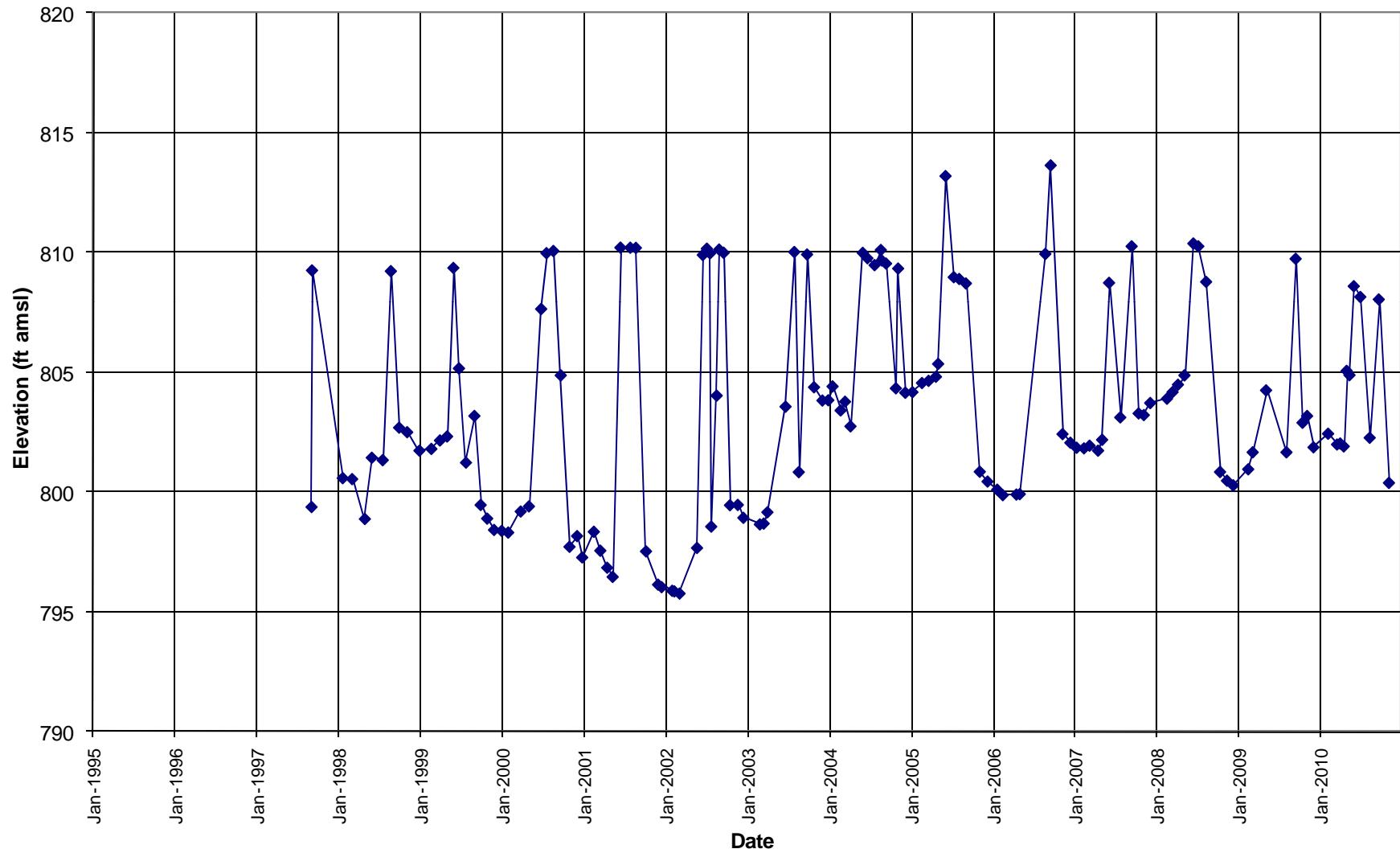
Elevation Hydrograph for P-97-012



Elevation Hydrograph for P-97-020



Elevation Hydrograph for P-97-028



Elevation Hydrograph for SPP-97-002

