

Project Trip Report

Baker

Project Name: Tapped Lake & Nigliq Channel Water Quality	Date of Trip: November 28, 2007
Project Code: 112810	Submitted by: Mark McBroom

Weather: -20° F, 0-5 mph wind

Mark McBroom (Baker) and Darren Saxowsky of LCMF departed Alpine on Wednesday November 28, 2007 at 8:00 AM for Tapped Lake near CD4 and the Nigliq Channel. Prior to departure equipment was assembled, calibrated and prepared for transport. Ice thickness, total depth, freeboard, temperature, salinity, conductivity, and dissolved oxygen (DO) were collected at predetermined locations. Sampling took place at the deepest location within Tapped Lake and the Nigliq Channel immediately outside of the Tapped Lake recharge channel. Locations were selected based on LCMF bathymetric surveys conducted in 2005 (see attached drawing). Specific conductance was calculated from observed temperatures and conductivity. Results are tabulated in the attached sheet.

In-situ water quality parameters were recorded using a YSI-30 meter (conductivity, salinity, and temperature). Dissolved oxygen was measured using a Hach HQ-40d LDO meter. All measurements were made from below the ice surface to the river bottom at one-foot intervals. The DO meter was calibrated prior to the trip by TTT Environmental. The YSI-30 was calibrated prior to departure on November 28 by Mr. McBroom.

Concentrations of specific conductance were recorded between 4573 and 40346 $\mu\text{S}/\text{cm}$. Specific conductance increased with depth at both sampling locations. An oxycline was evident at the Tapped Lake sampling location with values ranging from 0.5 milligrams per liter (mg/L) at 10 feet of depth to 13.6 mg/L at 2 feet of depth. A rapid change in salinity was observed at this location increasing from 6.6 to 16.7 parts per thousand (ppt) between 7 and 8 feet of depth. Observed salinity and dissolved oxygen remained relatively constant throughout the sampled water column in the Nigliq Channel.

Tapped Lake and Nigliq Channel Water Quality Monitoring

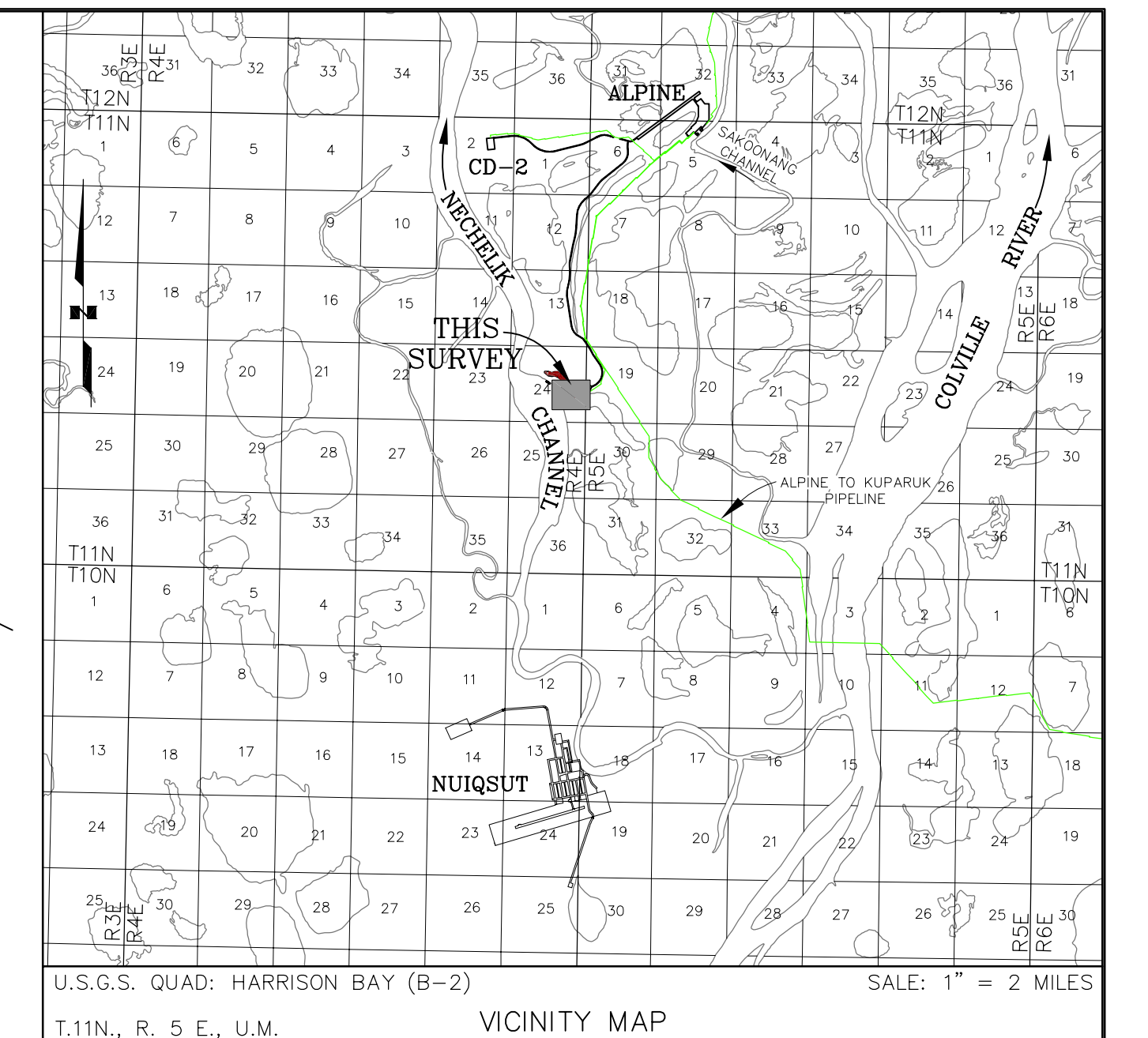
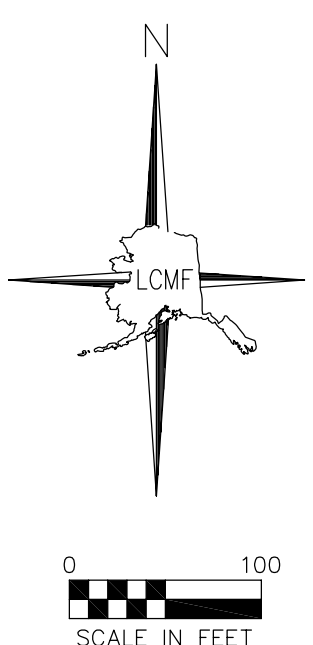
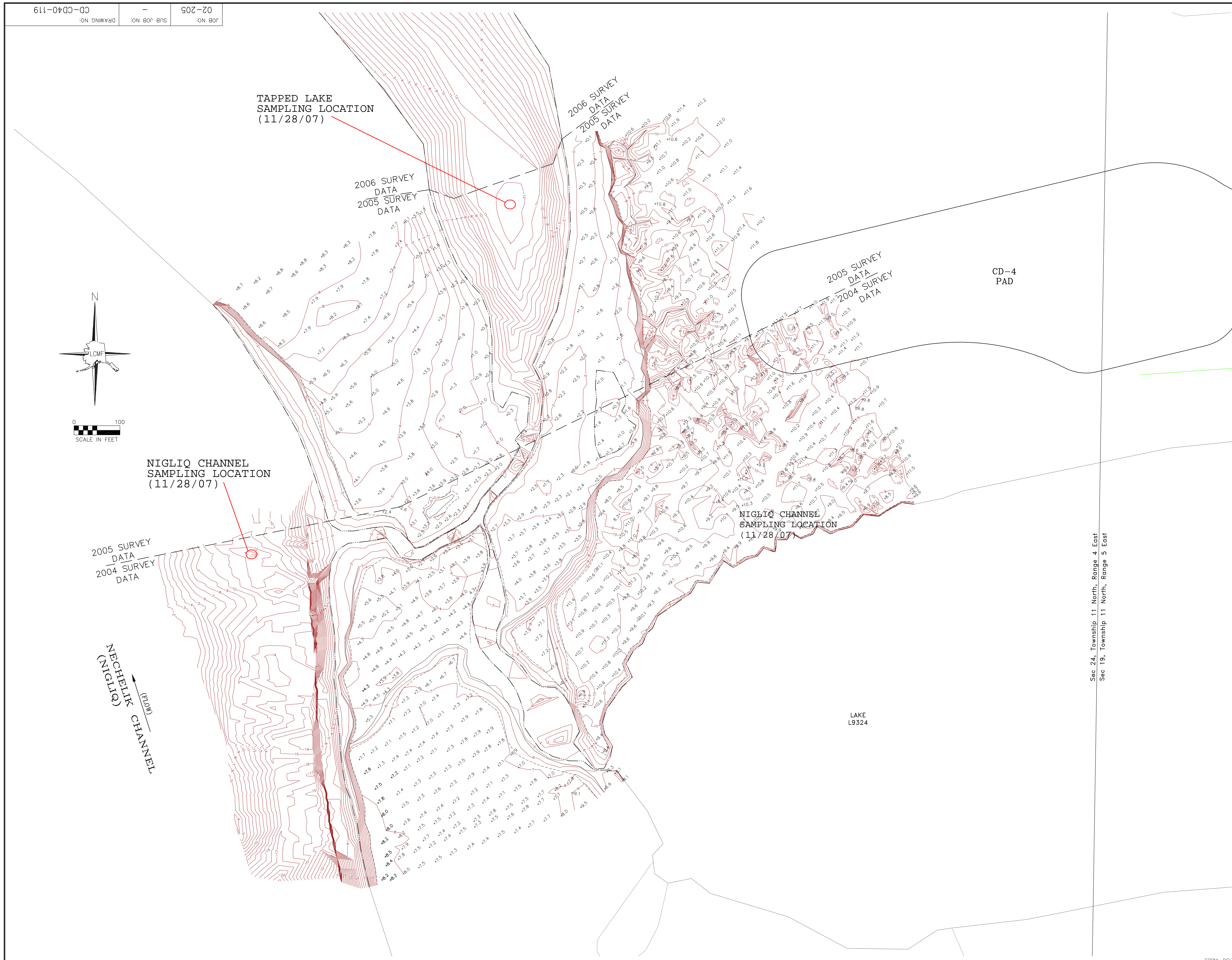


Sample Date: November 28, 2007

Upstream Location Time	Water Depth (ft)	Ice Thickness (ft)	Free Board (ft)	Sample Depth (ft)	Temp (°C)	Conductivity (µS/cm)	Specific Conductance (µS/cm)	DO (mg/L)	DO (Percent Saturation)	Salinity (ppt)
Tapped Lake N70°17'33" W150°59'57" 8:35 a.m.	10.9	1.5	0	1	-	-	-	-	-	-
				2	0.0	2332	4573	13.6	91.7	2.3
				3	0.1	2497	4877	13.3	90.3	2.5
				4	0.3	2970	5757	12.9	87.7	3.0
				5	0.3	3347	6488	12.5	84.9	3.4
				6	0.4	4380	8458	11.7	78.7	4.5
				7	0.9	6380	12092	7.2	50.0	6.6
				8	1.3	15390	28741	3.0	21.6	16.7
				9	1.6	21310	39364	0.5	3.6	23.6
				10	1.8	22000	40346	0.5	3.8	24.4
Nigliq Channel N70°17'25" W151°00'14" 9:10 a.m.	11.6	1.2	0	1	-	-	-	-	-	-
				2	0.1	4839	9452	-	-	5.0
				3	0.5	19420	37361	9.8	66.2	22.2
				4	0.7	20140	38456	9.7	66.1	22.8
				5	0.8	20310	38636	9.7	66.1	23.0
				6	0.8	20390	38788	9.9	67.7	23.2
				7	0.8	20450	38902	9.9	67.1	23.2
				8	0.7	20520	39181	10.0	67.9	23.3
				9	0.7	20530	39200	10.0	67.8	23.4
				10	0.7	20580	39296	9.9	67.3	23.4
				11	0.7	20530	39200	10.0	67.6	23.4

Notes:

- (1) All sample location coordinates referenced to NAD83 datum.
- (2) Freeboard is the distance from the top of ice to the water surface.
- (3) Sample depth is measured from the water surface.
- (4) Salinity, conductivity, and temperature were measured using a YSI-30 meter
- (5) Specific conductance (referenced to 25°C) was obtained using a conversion coefficient of 0.0196 based on empirical data
- (6) Dissolved oxygen was measured using a Hach HQ40



LEGEND:

- EDGE OF WATER
- - - TOE OF BANK
- - - - TOP OF BANK

NOTES:

1. DATE OF SURVEY: JUNE 23, 2004, SEPTEMBER 27, 2005 AND FEBRUARY 27, 2006.
2. REFERENCE FIELD BOOK: LCMF2004-07, PGS 67-69, 72-74; LCMF2005-24, PGS 20, 30-33, LCMF2006-05, PGS. 35-37.
3. HORIZONTAL DATUM BASED ON RECORD COORDINATES OF CD-4, NANUQ CONTROL MONUMENTS NANUQ-4 AND NANUQ-5. COORDINATES ARE NAD 83 ALASKA STATE PLANE, ZONE 4, IN FEET.
4. VERTICAL DATUM BASED ON BRITISH PETROLEUM MEAN SEA LEVEL, IN FEET.
5. SURVEY OF 2004 TOPOGRAPHY, AS SHOWN, PRIOR TO CONSTRUCTION OF CD-4 PAD.

Sec 24, Township 11 North, Range 4 East
 Sec 19, Township 11 North, Range 5 East

NIGLIQ CHANNEL SAMPLING LOCATION (11/28/07)

TAPPED LAKE SAMPLING LOCATION (11/28/07)

NIGLIQ CHANNEL SAMPLING LOCATION (11/28/07)

CD-4 PAD

LAKE L9324

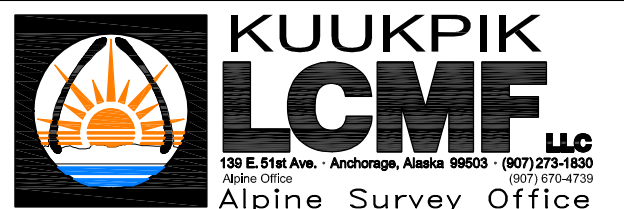
2005 SURVEY DATA
 2004 SURVEY DATA

2006 SURVEY DATA
 2005 SURVEY DATA


2006 SURVEY DATA
 2005 SURVEY DATA

2005 SURVEY DATA
 2004 SURVEY DATA

NECHELIK CHANNEL (FLOOD)



KUUKPIIK LCMF
 131 E 51st Ave., Anchorage, Alaska 99503 (907)272-1885
 Alpine Survey Office



ConocoPhillips
 Alaska, Inc.

ALPINE	MODULE: CD40	UNIT: CD
PROPOSED CD-4 BOAT LAUNCH TOPOGRAPHIC SURVEY ALPINE, ALASKA		
REDRAWN FROM:	CONSTRUCTION SHEET OF	
1 2 3 4 5 6		
DO NOT SCALE ABOVE SCALE FOR REFERENCE ONLY		
DATE: 9/27/05	DRAWN: CZ	DESIGN: -
SCALE: 1" = 100'	CHECKED: DB	ECM NO: K05128ACS
	APPROVAL: -	CC NO: -
JOB NO: 02-205	SUB JOB NO: -	CADD FILE NO: 05-09-23-1
	DRAWING NO: CE-CD40-119	PART: 1 OF 2
		REV: 2

REFERENCE DWG NO./SHT NO:																				
REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP	REV	DATE	REVISIONS	BY	CHK	JOB ENGR	PROJ ENGR	CUST APP					
								2	2/28/06	UPDATED PER K06037ACS						AG	DB			
								1	10/03/05	ISSUED PER K05128ACS						CZ	DB			