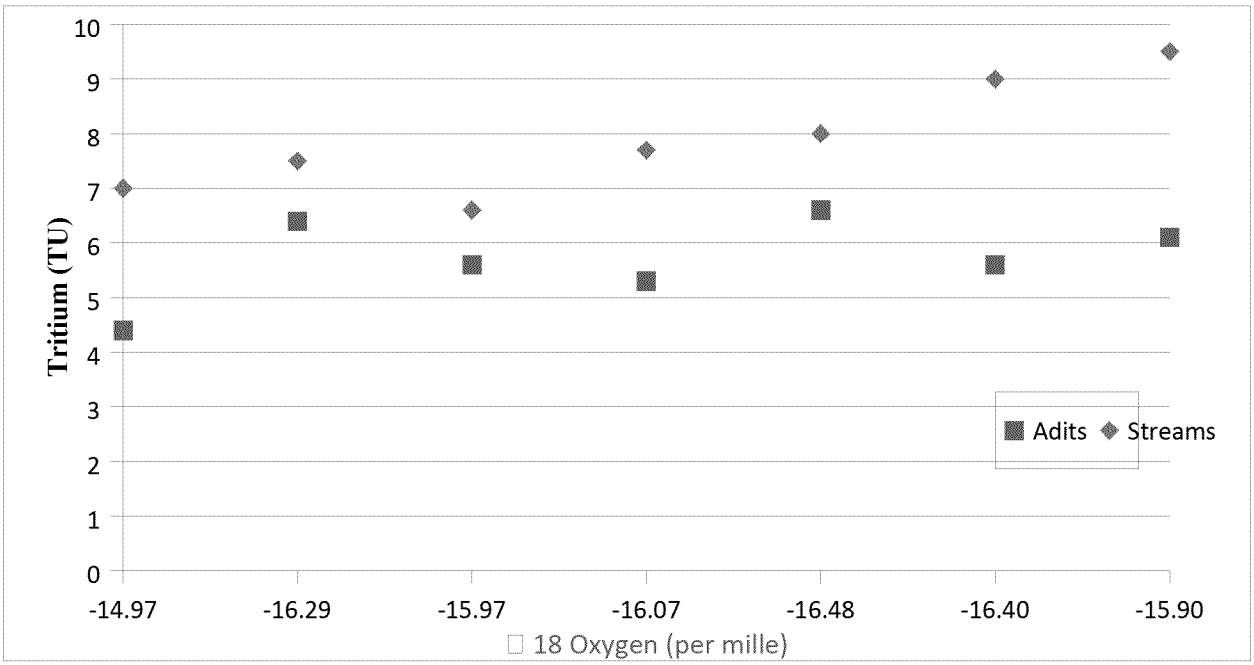

10
9
8
7
6
5
4
3
2
1
0
Tritium (TU)
-14.97
-16.29
-15.97
-16.07
-16.48
-16.40
-15.90
18 Oxygen (per mille)
Adits
Streams

Table 1. Oxygen Isotope Sample Data
Note: Samples for June 2011 in lab backlog

Sample ID	Description	October 2010 Sampling Event			March 2011 Sampling Event			June 2011 Sampling Event			September 8 to 21, 2011 Sampling Event			October 11, 2011 Sampling Event		
		$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	D-excess	$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	D-excess	$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	D-excess	$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	D-excess	$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	D-excess
CC01F	Stream above Grand Mogul	-15.31	-109.6	12.9	Snow - No Sample			Too much snow - No Sample			-15.45	-111.0	12.5			
CC01C	Stream at toe of Grand Mogul pile	-16.52	-120.4	11.8	Snow - No Sample			-17.59	-127.2	13.5	-15.86	-117.7	9.2			
CC01CL_6152011	Below Mogul Grand Mogul Stope complex	Not Sampled			Not Sampled			-17.54	-126.7	13.7	Not Sampled					
USCC02D (similar to CC01U March 2011)	Cement Creek above Mogul Mine	-14.21	-103.3	10.4	-15.53	-110.5	13.7	-17.39	-125.2	13.8	-15.54	-111.9	12.4			
CC02D	Mogul Mine adit	-14.97	-109.8	10.0	No Access			-15.90	-113.1	14.0	-15.73	-112.6	13.2	Data Pending - 1 samp (Red & Bonita)		
UASW020	Cement Creek below Mogul Mine and Mogul Mine wetlands. Official ARSG Sample description is however Cement Creek upstream of Mogul Mine	Not Sampled			-15.79	-112.8	13.5	-17.46	-126.5	13.2	-15.25	-109.7	12.3			
CC03C	Red and Bonita adit	-16.29	-118.3	12.0	-16.48	-118.7	13.2	-16.42	-118.2	13.2	-16.38	-118.8	12.2			
CC04	Stream above Gold King #7 level	-14.01	-100.9	11.2	No Access			-17.28	-124.9	13.3	-15.17	-109.3	12.1			
CC08	Gold King #7 adit	-15.97	-115.5	12.2	No Access			-16.25	-116.9	13.1	-16.28	-117.0	13.2			
CC19	American Tunnel adit	-16.07	-118.2	10.3	-16.40	-117.9	13.3	-16.5/-16.4 dup.	-117.8/-118.0 dup.	13.9/12.8 dup.	-16.35	-117.7	13.1			

Bruce Vaughn, INSTAAR Lab, 303-492-7985

Table 2. Tritium Sample Data
Note: Samples for March 2011 and June 2011 in lab backlog

Sample ID	Description	October 2010 Sampling Event TU	March 2011 Sampling Event TU	June 2011 Sampling Event	September 8 to 21, 2011 Sampling Event TU	October 11, 2011 Sampling Event (inside adit portal) TU
CC01F	Stream above Grand Mogul	7 0.4			6.9 +/- 0.4	
CC01C	Stream at toe of Grand Mogul pile	7.5 0.4		9	8.4 +/- 0.4	
CC01CL_6152011	Below Mogul Grand Mogul Stope complex	Not Sampled		9.5		
USCC02D (similar to CC01U March 2011)	Cement Creek above Mogul Mine	Not Sampled	7.7	9.2	8.1 +/-0.4	
CC02D	Mogul Mine adit	4.4 0.3		6.1	5.3 +/- 0.4	
UASW020	Cement Creek below Mogul Mine and Mogul Mine wetlands. Official ARSG Sample description is however Cement Creek upstream of Mogul Mine	Not Sampled	8	9.6	7.0 +/- 0.4	
CC03C	Red and Bonita adit	6.4 0.4	6.6	6.8	7.2 +/- 0.4	6.2 +/- 0.4
CC04	Stream above Gold King #7 level	6.6 0.4		9.7	7.6 +/- 0.4	
CC08	Gold King #7 adit	5.6 0.4		5.8	5.3 +/- 0.6	
CC19	American Tunnel adit	5.3 (dup - 4.9) 0.3	5.6	5.8	5.8 +/- 0.4 (dupe = 5.9 +/-0.4)	

Bob Michel, USGS Lab, 650-329-4547

Table 2. Tritium Sample Data

Note: Samples for March 2011 and June 2011 in lab backlog

Sample ID	Description
CC01F	Stream above Grand Mogul
CC01C	Stream at toe of Grand Mogul pile
CC01CL_6152011	Below Mogul Grand Mogul Stope complex
USCC02D (similar to CC01U March 2011)	Cement Creek above Mogul Mine
CC02D	Mogul Mine adit
UASW020	Cement Creek below Mogul Mine and Mogul Mine wetlands. Official ARSG Sample description is however Cement Creek upstream of Mogul Mine
CC03C	Red and Bonita adit
CC04	Stream above Gold King #7 level
CC08	Gold King #7 adit
CC19	American Tunnel adit

Bob Michel, USGS Lab, 650-329-4547

October 2010 Sampling Event		March 2011 Sampling Event	June 2011 Sampling Event
TU	Error +/-	TU	
7	0.4		
7.5	0.4		9
Not Sampled			9.5
Not Sampled		7.7	9.2
4.4	0.3		6.1
Not Sampled		8	9.6
6.4	0.4	6.6	6.8
6.6	0.4		9.7
5.6	0.4		5.8
5.3 (dup - 4.9)	0.3	5.6 (dupe =)	5.8

September 8 to 21, 2011 Sampling Event	October 11, 2011 Sampling Event (inside adit portal)
TU	TU
6.9 +/- 0.4	
8.4 +/- 0.4	
5.3 +/- 0.4	
7.0 +/- 0.4	
7.2 +/- 0.4	6.2 +/- 0.4
7.6 +/- 0.4	
5.3 +/- 0.6	
5.8 +/- 0.4 (dupe = 5.9 +/-0.4)	

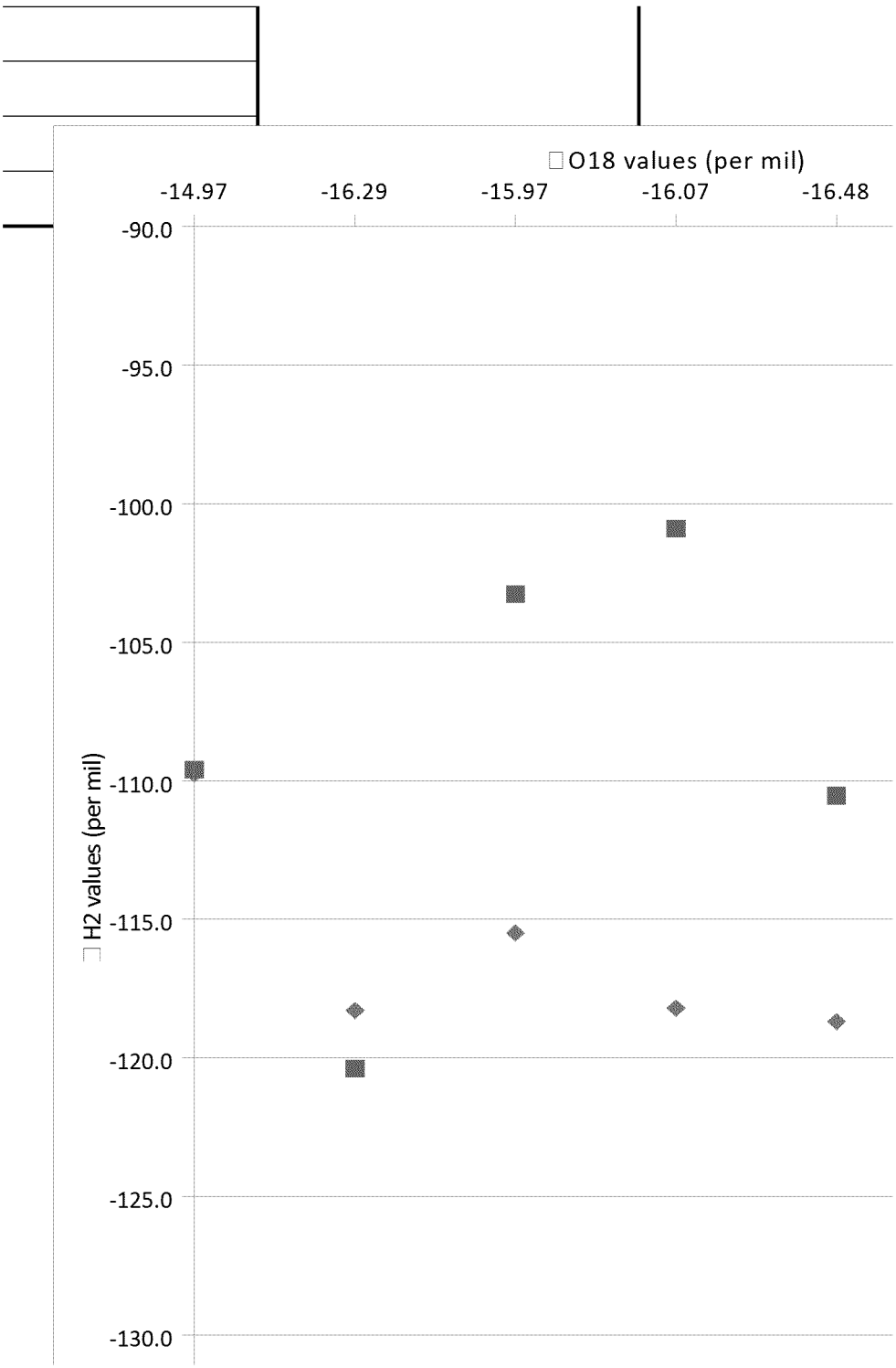
UACC020D-9122011 8.1 +/- 0.4

	δ^2H per mil	O18	O18 W
Streams	-109.8	-14.97	-18
	-118.3	-16.29	-17
	-115.5	-15.97	-16
	-118.2	-16.07	-15
			-12
	-14.97	-109.8	
	-16.29	-118.3	
	-15.97	-115.5	
	-16.07	-118.2	
	-16.48	-118.7	
	-16.40	-117.9	
	-15.90	-113.1	
	-16.42	-118.2	
	-16.25	-116.9	
	-16.50	-117.8	
	-15.73	-112.6	
	-16.38	-118.8	
	-16.28	-117.0	
	-16.35	-117.7	

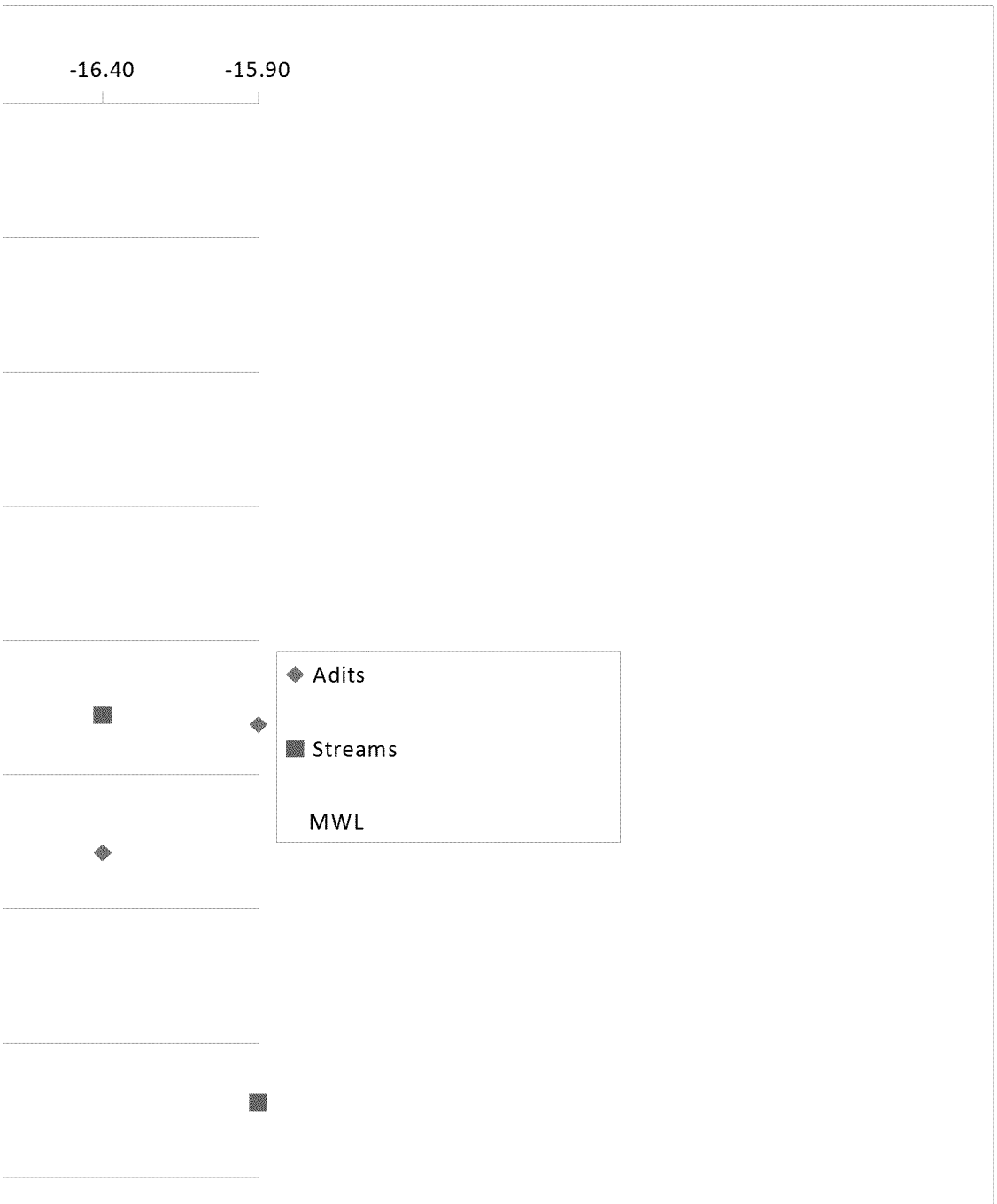
	δ^2H per mil	O18
Adits	-15.31	-109.6
	-16.52	-120.4
	-14.21	-103.3
	-14.01	-100.9
	-15.53	-110.5
	-15.79	-112.8
	-17.59	-127.2

-17.54	-126.7
-17.39	-125.2
-17.46	-126.5
-17.28	-124.9
-15.45	-111.0
-15.86	-117.7
-15.54	-111.9
-15.25	-109.7
-15.17	-109.3

-134
-126
-118
-110
-86



-135.0

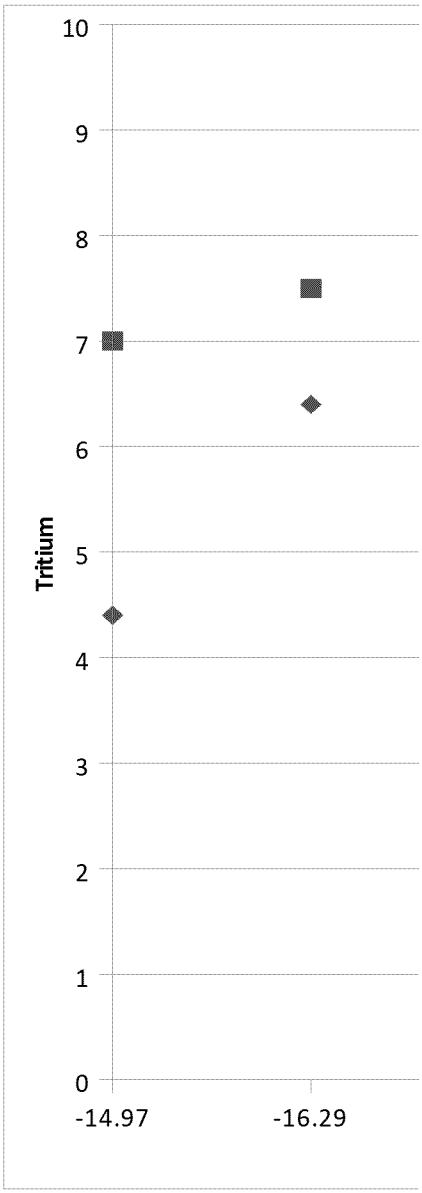

-16.40
-15.90
Adits
Streams
MWL

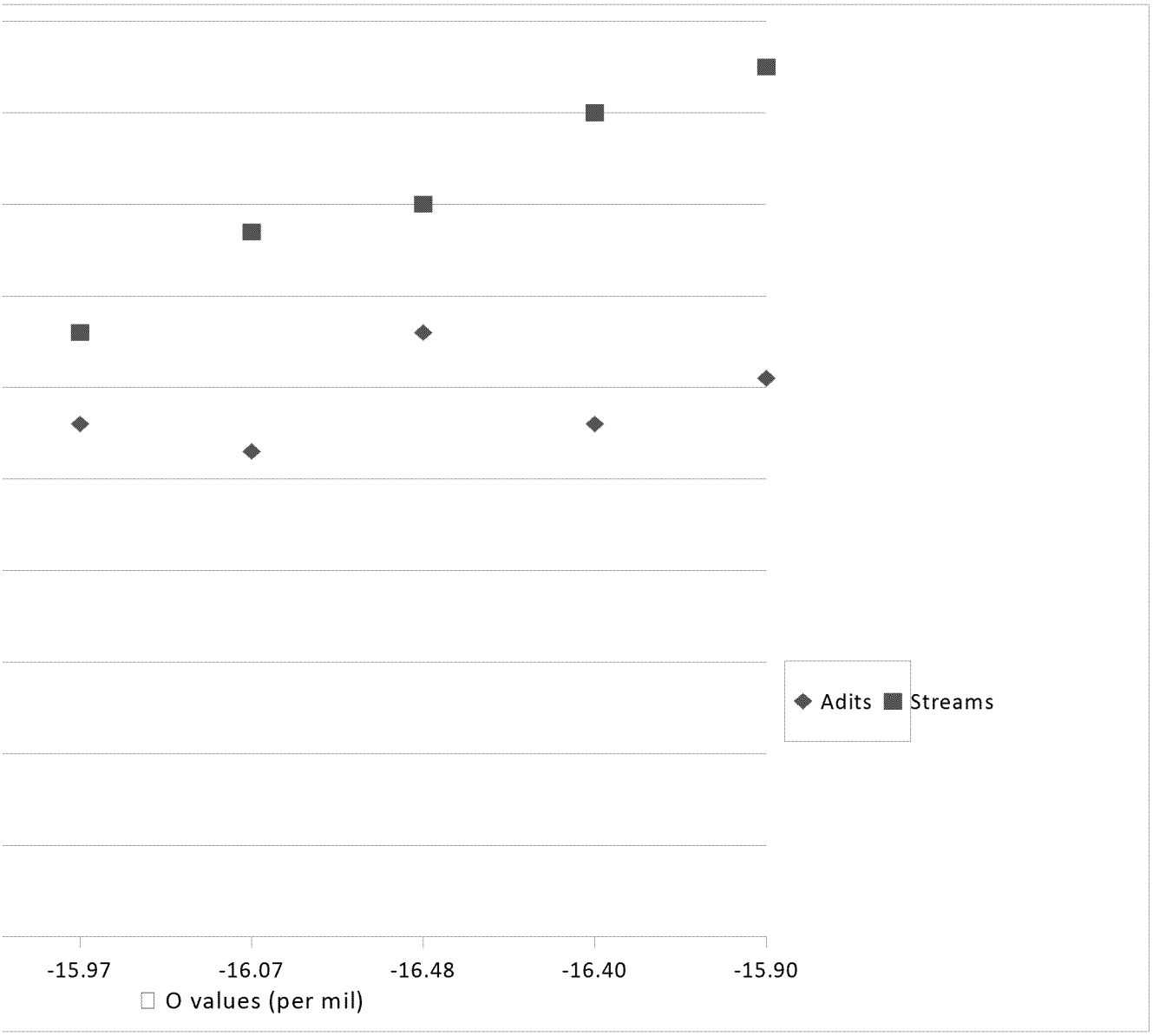
Streams

			Tritium
CC01F	-15.31	CC01F	7
CC01C	-16.52	CC01C	7.5
CC04	-14.01	CC04	6.6
USCC02D	-15.53	to CC01U	7.7
UASW020	-15.79	UASW020	8
CC01C	-17.59	CC01C	9
CC01CL	-17.54	CC01CL – 6152011 –	9.5
USCC02D	-17.39	to CC01U	9.2
UASW020	-17.46	UASW020	9.6
CC04	-17.28	CC04	9.7
CC01C	-15.86		8.4
CC01F	-15.45		6.9
USCC02D	-15.54		8.1
UASW020	-15.25		7
CC04	-15.17		7.6

adits

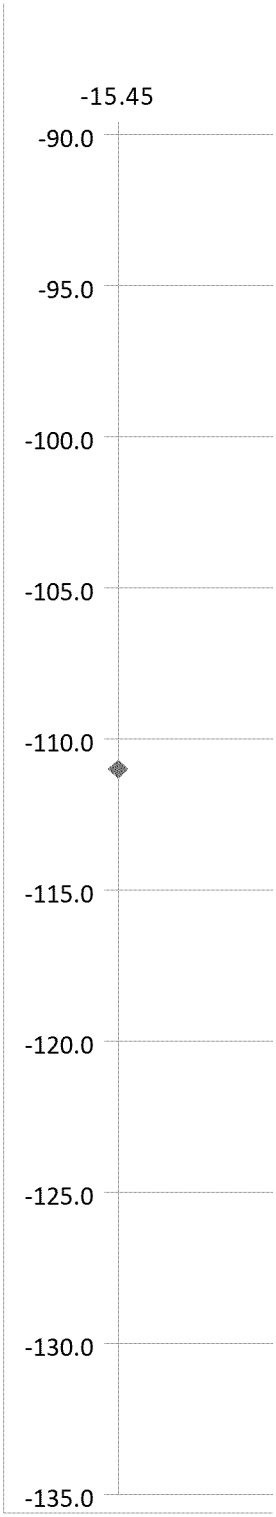
CC02D	-14.97	CC02D	4.4
CC03C	-16.29	CC03C	6.4
CC08	-15.97	CC08	5.6
CC19	-16.07	CC19	5.3
CC03C	-16.48	CC03C	6.6
CC19	-16.40	CC19	5.6
CC02D	-15.90	CC02D	6.1
CC03C	-16.42	CC03C	6.8
CC08	-16.25	CC08	5.8
CC19	-16.50	CC19	5.8
CC02D	-15.73	CC02D	5.3
CC03C	-16.38	CC03C	7.2
CC08	-16.28	CC08	5.3
CC19	-16.35	CC19	5.8

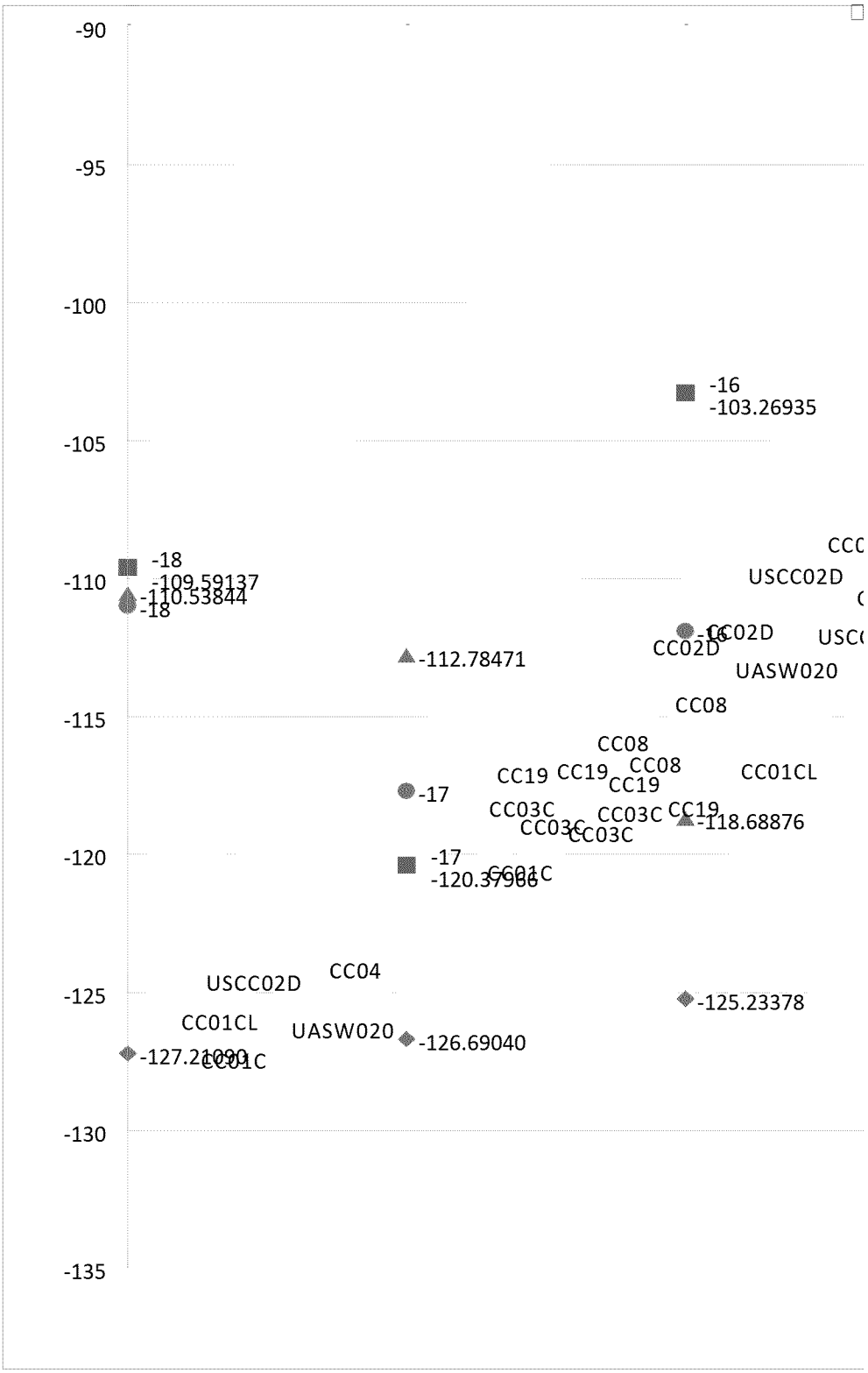



Adits
Streams
-15.97
-16.07
-16.48
-16.40
-15.90
O values (per mil)

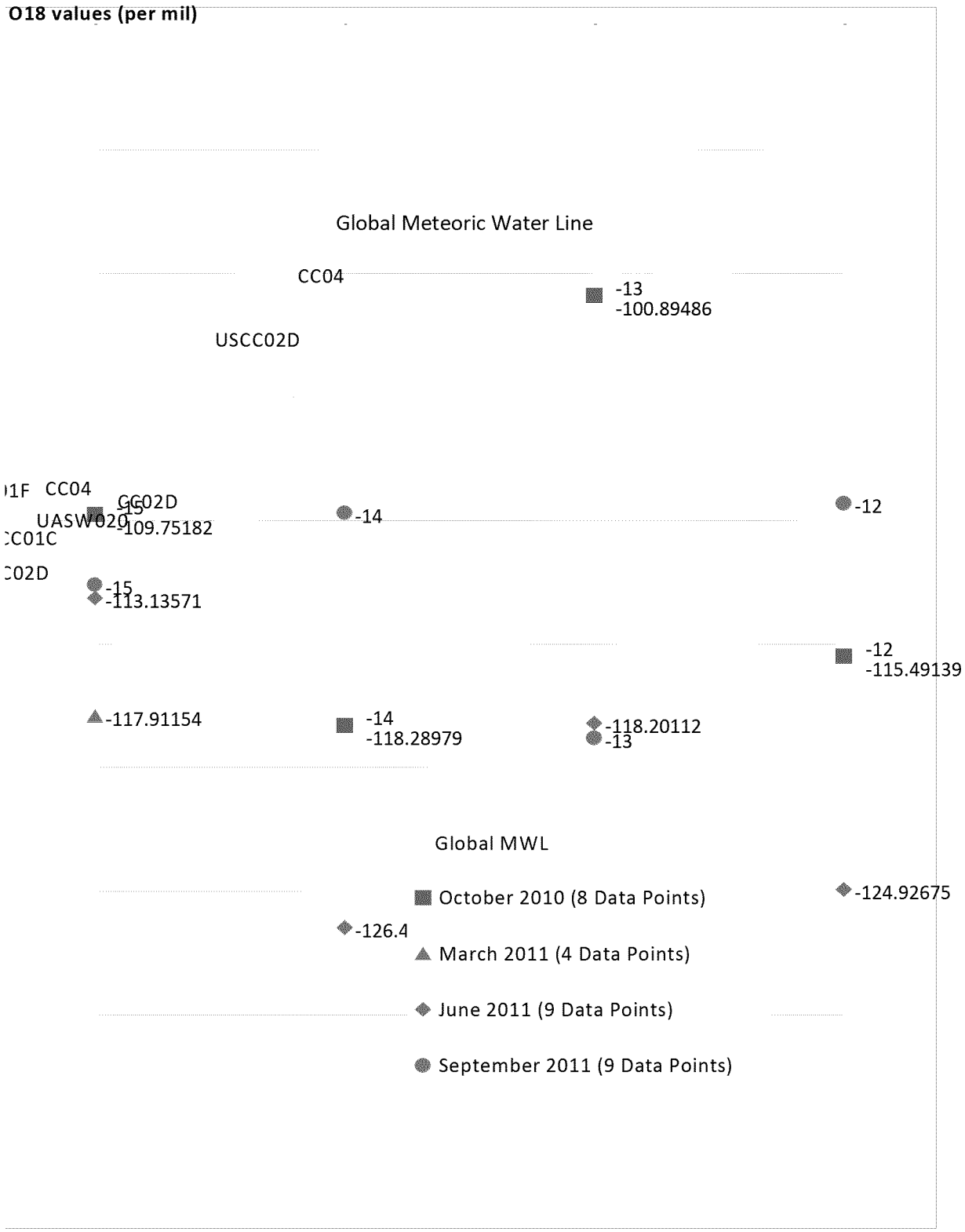
	$\delta^{18}O$ per mil	$\delta^{2}H$ per mil	O18	2D
CC01F	-15.31	-109.6	-15.31	-112.48
CC01C	-16.52	-120.4	-16.52	-122.13618
USCC02D	-14.21	-103.3	-14.21	-103.64611
CC02D	-14.97	-109.8	-14.97	-109.72970
CC03C	-16.29	-118.3	-16.29	-120.33087
CC04	-14.01	-100.9	-14.01	-102.06925
CC08	-15.97	-115.5	-15.97	-117.72137
CC19	-16.07	-118.2	-16.07	-118.56
USCC02D	-15.53	-110.5	-15.53	-114.21328
UASW020	-15.79	-112.8	-15.79	-116.30770
CC03C	-16.48	-118.7	-16.48	-121.85842
CC19	-16.40	-117.9	-16.40	-121.21080
CC01C	-17.59	-127.2	-17.59	-130.69950
CC01CL	-17.54	-126.7	-17.54	-130.34784
USCC02D	-17.39	-125.2	-17.39	-129.15465
CC02D	-15.90	-113.1	-15.90	-117.17489
UASW020	-17.46	-126.5	-17.46	-129.65955
CC03C	-16.42	-118.2	-16.42	-121.37487
CC04	-17.28	-124.9	-17.28	-128.20008
CC08	-16.25	-116.9	-16.25	-120.03400
CC19	-16.50	-117.8	-16.50	-122
CC01C	-15.45	-111.0		
CC01CL	-15.86	-117.7		
USCC02D	-15.54	-111.9		
CC02D	-15.73	-112.6		
UASW020	-15.25	-109.7		
CC03C	-16.38	-118.8		
CC04	-15.17	-109.3		
CC08	-16.28	-117.0		
CC19	-16.35	-117.7		

O18 W	
-18	-134
-17	-126
-16	-118
-15	-110
-14	-102
-13	-94
-12	-86
MWL Calc.	


-15.45
-90.0
-95.0
-100.0
-105.0
-110.0
-115.0
-120.0
-125.0
-130.0
-135.0


-90
-95
-100
-105
-110
-115
-120
-125
-130
-135
-16
-103.26935
-18
-109.59137
-110.53844
-18
-112.78471
-17
-17
-120.37966
-118.68876
-125.23378
-126.69040
-127.21090
CC01C
CC01CL
USCC02D
CC04
UASW020
CC02D
CC08
CC19
CC03C
CC01C
Sep-11

-15.86
-15.54
-15.73
-15.25
-1


O18 values (per mil)
Global Meteoric Water Line
CC04
-13
-100.89486
USCC02D
)1F
CC04
CC02D
-15
UASW020
-109.75182
-14
-12
:C01C
:02D
-15
-113.13571
-12
-115.49139
-117.91154
-14
-118.28979
-118.20112
-13
Global MWL
-124.92675
October 2010 (8 Data Points)
-126.4
March 2011 (4 Data Points)
June 2011 (9 Data Points)
September 2011 (9 Data Points)

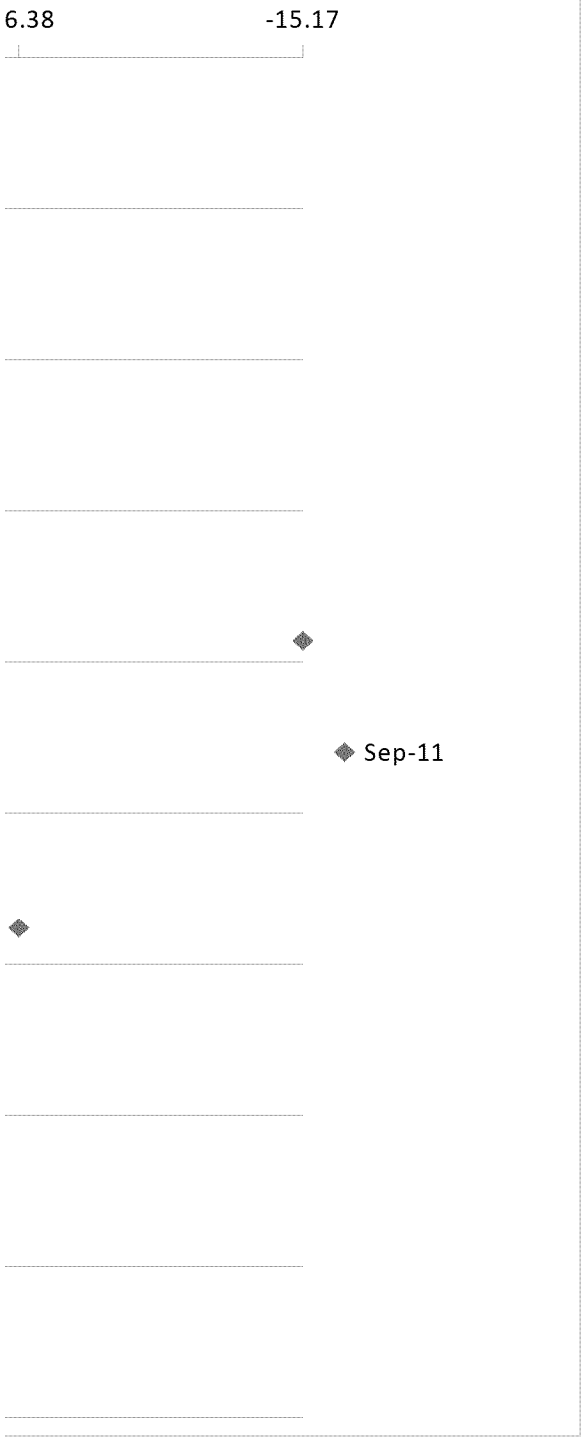

6.38
-15.17
Sep-11

Table 3. Dissolved Oxygen - Red & Bonita Adit

Sample ID	Description	August 25, 2011 Time 16:10 hours			
		DO	pH	SC (microS)	Temp (°C)
Field measurement	Inby the adit collapse via well RB-1	7.87mg/L / 93.1%	4.68	45.4	6.2
	Outside adit collapse - ambient	7.21mg/L / 87.0%	5.48	1,995	6.0

Samples obtained prior to removal of adit collapse.

DO - Dissolved Oxygen (miligrams per liter, and percent)

SC - Specific Conductivity (micro seimens)

°C - Degrees Celsius