

FWDA GROUND WATER MONITORING PROGRAM

APPENDIX D

OCTOBER 2009 SAMPLING EVENT

WELL SAMPLING DATA FORMS

(On Disk)

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 100 - 115

Well Number: EMW 04
 Start Date: 10/14/09
 Start Time: 0955
 Well TD: 115
 Well DTW: 99.25
 Water Column: 15.75
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 15.75
 Volume of water in AS (gal) = 11.5
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 15.75
 Volume of water in casing (gal) = 2.57
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 14.1
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 42.3
 ACTUAL VOLUME PURGED (gal) = 8

Method of Purging: BENNETT PUMP

Field Parameters	10/14/09					Reading	10/23		
Time	0955	1000	1004	1010	1020		0930		Final Sample
Volume (gal)	INITIAL	3	5	7	8				
Flow Rate (gpm)									N/A
DTW (ft toc)	99.25				113.20		110.10		
pH	6.89	7.10	7.44	7.65					
Conductivity (uS/cm)	1250	1250	1245	1246					
Temperature (°C)	13.2 ²	13.07	13.20	13.62					
Turbidity (NTU)	7.76	10.23	115.7	19.70					
Eh/Redox (mV)									
DO (mg/L)	0.61	0.34	0.27	0.26					

Purging Field Notes:

PUMPED WELL DRY, ALLOWED TO RECHARGE THEN SAMPLED.
REMOVED ONLY 2L OF WATER BEFORE SAMPLING DUE TO LIMITED
QUANTITY OF WATER. WELL STARTED TO DRY DURING FINAL SAMPLE COLLECTION

Sample Date/Time: 10/27/09 0835
 Sampler's signature/date: Frederick E. Helburn
 Reviewer's signature/date: Matthew 10/27/09

Sample ID/TR #: EMW041009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 4
 Bore Hole Diameter (in): 3
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 12.15 - 32.15

Well Number: KW 35
 Start Date: 10/16/09
 Start Time: 1027
 Well TD: 32.15
 Well DTW: 19.43
 Water Column: 12.72
 Pump Intake (ft bgs): 12.72

WELL VOLUME CALCUCATION

Gallons per foot of annular space (from chart on back) = 0.59
 Column of water or length of AS (whichever is less) X 12.72
 Volume of water in AS (gal) = 7.51
 Gallons per foot of casing (from chart on back) = 0.6528
 Column of water X 12.72
 Volume of water in casing (gal) = 8.3
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.81
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 47.43
 ACTUAL VOLUME PURGED (gal) = 14.0

Method of Purging : 12 V PUMP

Field Parameters	Reading								
Time	1027	1029	1031	1033	1035	1037	1039		Final Sample
Volume (gal)	INITIAL	3	5	8	10	12	14		
Flow Rate (gpm)									N/A
DTW (ft toc)	19.43								
pH	7.19	7.07	6.84	6.78	6.82	6.86	6.88		
Conductivity (uS/cm)	4230	4120	3990	3920	4050	4180	4210		
Temperature (°C)	11.94	11.90	12.09	12.14	12.02	11.96	11.94		
Turbidity (NTU)	2574	716	756	37.9	25.2	65.8	111.6		
Eh/Redox (mV)									
DO (mg/L)	0.13	0.13	0.13	0.13	0.13	0.12	0.14		

Purging Field Notes:

PURGED W/12 V PUMP, UNTIL DRY. AFTER RECHARGE
COLLECT SAMPLE W/ BAILER.

Sample Date/Time: 10/21/2009 1215
 Sampler's signature/date: Frederick E. Gelber
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: FW35102009

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

FW18

10-24-09

1210

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

=

X

=

=

X

=

=

X

=

=

Method of Purging :

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Well was previously bailed dry. Collected perchlorate sample and well ran dry.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-24-09 1210

Grant Kolb 10-24-09

Matt 10/25/09

Sample ID/TR #:

FW18/102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 4
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 12-52

Well Number: FW 31
 Start Date: 10/16/09
 Start Time: 1140
 Well TD: 52.00
 Well DTW: 41.33
 Water Column: 10.67
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.59
 Column of water or length of AS (whichever is less) X 10.67
 Volume of water in AS (gal) = 6.30
 Gallons per foot of casing (from chart on back) = 0.6528
 Column of water X 10.67
 Volume of water in casing (gal) = 6.97
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 13.27
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 39.81
 ACTUAL VOLUME PURGED (gal) = 10

Method of Purging : 12 V PUMP

Field Parameters	Reading								Final Sample
Time	<u>1140 INITIAL</u>	<u>1142</u>	<u>1143</u>	<u>1146</u>	<u>1149</u>	<u>1153</u>	<u>1200</u>		
Volume (gal)	<u>INITIAL</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>10</u>		
Flow Rate (gpm)									N/A
DTW (ft toc)	<u>41.33</u>							<u>WELL WENT DRY</u>	
pH	<u>7.80</u>	<u>8.13</u>	<u>8.25</u>	<u>8.28</u>	<u>8.32</u>	<u>8.39</u>			
Conductivity (uS/cm)	<u>235</u>	<u>235</u>	<u>234</u>	<u>235</u>	<u>235</u>	<u>235</u>	<u>← 2350</u>		
Temperature (°C)	<u>12.95</u>	<u>12.66</u>	<u>12.65</u>	<u>12.65</u>	<u>12.67</u>	<u>12.78</u>			
Turbidity (NTU)	<u>69.6</u>	<u>6.32</u>	<u>3.44</u>	<u>8.59</u>	<u>10.5</u>	<u>12.8</u>			
Eh/Redox (mV)									
DO (mg/L)	<u>0.19</u>	<u>0.15</u>	<u>0.14</u>	<u>0.13</u>	<u>0.12</u>	<u>0.10</u>			

Purging Field Notes:

PURGED WELL DRY WITH 12V PUMP AFTER RECHARGE
SAMPLED WITH BAILER

Sample Date/Time:

10/21/2009 1430

Sample ID/TR #:

FW31102009

Sampler's signature/date:

Frederic G. Schubert

Reviewer's signature/date:

Matthew 10/3/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 1.6
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 33.6-53.6

Well Number: MWD1
 Start Date: 162^{SR} 10/13/09
 Start Time: 1626
 Well TD: 54.66
 Well DTW: ← not
 Water Column: recorded
 Pump Intake (ft bgs): well was

WELL VOLUME CALCUCATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 4 gal

Method of Purging : hand bailed

bailed dry.
DTW was
recorded
previously in
October 2009
during water
level
measurements.
-MLM

Field Parameters	Reading							
Time	1626	1629	1632	1635	1638	1739		Final Sample
Volume (gal)	1.0	1.5	2.0	2.5	3.0	4.0		
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	7.46	7.66	7.68	7.60	7.63			
Conductivity (uS/cm)	3600	3598	3580	3560	3560			
Temperature (°C)	15.06	14.71	14.69	14.60	14.58			
Turbidity (NTU)	496.2	389.4	436.4	397.0	366.8			
Eh/Redox (mV)								
DO (mg/L)	3.20	3.29	3.10	2.75	2.99			

Purging Field Notes:

hand bailed well dry, collected ~4.0 gal. on 10/13/09

Sample Date/Time:

10/13/09

Sample ID/TR #:

Sampler's signature/date:

- not sampled on this

Reviewer's signature/date:

Matt Matt 10/23/09 date

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

MW #1
10/22/09
0905

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)	=	
Column of water or length of AS (whichever is less)	X	
Volume of water in AS (gal)	=	
Gallons per foot of casing (from chart on back)	=	
Column of water	X	
Volume of water in casing (gal)	=	
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	
Number of EV to be purged	X	
TOTAL VOLUME TO BE PURGED (gal)	=	
ACTUAL VOLUME PURGED (gal)	=	4

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected complete sample set w bailer. Parameters had been previously measured.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10/22/09 0930

Grant Kolb 10-22-09

Matt Mat 10/23/09

Sample ID/TR #:

MW#1102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 1.5
 Annular Space (AS) Length (ft): 10
 Screened Interval (ft bgs): 32-47

Well Number: MWO2
 Start Date: 10/13/09
 Start Time: 1535
 Well TD: 49.33
 Well DTW: 49.33
 Water Column: 49.33
 Pump Intake (ft bgs): 47.33

← not recorded at this

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 2 gal

time, recorded during Oct 2009 water level measurements, Well was bailed dry, - MLM

Method of Purging : hand bailer

Field Parameters	Reading								Final Sample
Time	1535	1539	1541	1545					
Volume (gal)	.5	.5	.5	.3					
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH ^{MLM}	6.86	7.00	7.01	7.00					
Conductivity (uS/cm) ^{MLM}	243	245	245	245	2450				
Temperature (°C)	15.93	14.96	14.94	14.80					
Turbidity (NTU)	621.6	1092	>1100	>1100					
Eh/Redox (mV)									
DO (mg/L)	3.32	3.42	3.00	3.34					

Purging Field Notes:

purged well dry on 10/13, collected ~ 2.0 gal

Sample Date/Time:

not sampled on this date

Sample ID/TR #:

Sampler's signature/date:

Reviewer's signature/date:

MLM 10/23/09

WELL SAMPLING DATA FORM

Well Number: MW02

Start Date: 10-22-09

Start Time: 0825

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

Number of EV to be purged X _____

TOTAL VOLUME TO BE PURGED (gal) = _____

ACTUAL VOLUME PURGED (gal) = 4

Method of Purging : bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected complete sample set w bailer. Parameters had been previously measured.

Sample Date/Time: 10/22/09 0830

Sample ID/TR #: MW02/02009

Sampler's signature/date: Grant Kolb 10/22/09

Reviewer's signature/date: Matt Mat 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

MW 03

Start Date:

10-23-09

Start Time:

1235

Well TD:

56.2

Well DTW:

45.90

Water Column:

10.30

Pump Intake (ft bgs):

54.2

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

12

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 10.3

Volume of water in AS (gal)

= 7.52

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 10.3

Volume of water in casing (gal)

= 1.68

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 9.2

ACTUAL VOLUME PURGED (gal)

= 0.75

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1255	0	60	0	46.08	7.40	4960	14.60	2.15		4.15
1300	5	60	0.3	46.10	7.29	5340	14.39	1.51		2.30
1305	10	60	0.6	46.11	7.28	5420	14.26	1.22		1.88
1310	15	60	0.9	46.12	7.27	5440	14.11	1.12		1.72
1315	20	60	1.2	46.12	7.28	5440	14.23	1.13		1.61
1320	25	60	1.5	46.12	7.28	5430	14.33	0.73		—
1325	30	60	1.8	46.12	7.28	5410	14.37	0.71		1.60
1330	35	60	2.1	46.12	7.28	5400	14.35	0.62		1.57
1335	40	60	2.4	46.12	7.28	5390	14.28	0.42		1.53
1337	42	60	2.52	46.12	7.28	5380	14.29	1.18		1.51
1339	44	60	2.64	46.12	7.28	5370	14.33	—		1.53
1340	45	60	2.7	46.12	7.28	5380	14.38	0.61		1.52
1415				46.12						
1505				46.13	= final water level					

Purging Field Notes:

very clear water
 Press = 30 psi, Tech = 55 sec, purge = 5 sec, flow = 60 mL/min

Sample Date/Time: 10/23/09 1400

Sample ID/TR #: MW 03/02009

Sampler's signature/date:

Grant Kolb 10-23-09

Reviewer's signature/date:

10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW 20
 Start Date: 10-23-09
 Start Time: 0830
 Well TD: 59.4
 Well DTW: 44.88
 Water Column: 14.52
 Pump Intake (ft bgs): 57.37

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 14.52
 Volume of water in casing (gal) = 2.37
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.13
 ACTUAL VOLUME PURGED (gal) = 1.1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0855	0	60	0	45.04	6.90	19400	11.78	20.92		3.46
0900	5	60	0.3	45.10	6.84	18900	12.20	16.17		2.14
0905	10	65	0.6	45.10	6.84	18800	12.52	11.46		1.82
0910	15	70	0.925	45.10	6.84	18700	13.12	7.82		1.66
0915	20	70	1.275	45.10	6.84	18700	13.06	5.84		1.61
0920	25	70	1.625	45.11	—	—	—	3.91		—
0925	30	70	1.975	45.11	6.85	18800	13.32	5.47		1.52
0930	35	70	2.325	45.12	6.86	18800	—	5.17		1.37
0935	40	70	2.675	45.12	6.86	18700	13.41	5.59		1.26
0940	45	70	3.025	45.12	6.86	18700	13.62	4.73		1.20
0945	50	70	3.375	45.12	6.87	19000	13.69	4.62		1.17
0950	55	70	3.725	45.12	6.87	19000	13.77	3.88		1.13
0952	57	70	3.864	45.12	6.87	19100	13.96	2.82		1.13
0954	59	70	4.004	45.12	6.87	19000	13.81	4.30		1.14
1100				45.12		19000				
1225				45.12						

Purging Field Notes: very clear water
Rech = 60 sec, purge = 6 sec, press = 40 psi, flow = 70-75 mL/min
w stable drawdown

Sample Date/Time: 10-23-09 1900 Sample ID/TR #: MW20102009
 Sampler's signature/date: Grant Kolb 10-23-09
 Reviewer's signature/date: [Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2"
 Bore Hole Diameter (in): 8"
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 31-41

Well Number: MW225

Start Date: 17-Oct-09

Start Time: 1004 12.15

Well TD: 62.44

Well DTW: 43.28

Water Column: 36.65

Pump Intake (ft bgs): 41.54

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 2.06
 Volume of water in AS (gal) = 1.29
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 1.29
 Volume of water in casing (gal) = 0.21
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 1.50
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 4.50
 ACTUAL VOLUME PURGED (gal) = 0.750

Method of Purging: low flow Bail

Field Parameters	Reading							
Time	1245	1220	1225					Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	6.91	7.32	7.41	from on top water				
Conductivity (uS/cm)	4990	4260	4640					
Temperature (°C)	16.05	15.06	15.17					
Turbidity (NTU)	16.87	210.8	137.1					
Eh/Redox (mV)								
DO (mg/L)	5.34	4.68	5.66					

Purging Field Notes:

bailed dry

Sample Date/Time:

1245 Purge

Sample ID/TR #:

MW225102009

Sampler's signature/date:

C. D. [Signature] 19 OCT 2009

Reviewer's signature/date:

[Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-20-09

Start Time:

0810

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (µS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected partial sample set until well bailed dry.
Parameters were previously measured.

Sample Date/Time:

10/20/09 0830

Sampler's signature/date:

Grant Kolo 10/20/09

Reviewer's signature/date:

10/23/09

Sample ID/TR #:

MW22S/102009

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-21-09

Start Time:

0800

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected partial sample set until well bailed dry.
Parameters had been measured previously.

Sample Date/Time:

10/21/09 0815

Sample ID/TR #:

MW22S102009

Sampler's signature/date:

Grant Kolt 10/21/09

Reviewer's signature/date:

10/23/09

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-22-09

Start Time:

0755

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected remainder of sample set with a bailer.
Parameters had been previously measured.

Sample Date/Time:

10/22/09 0800

Sample ID/TR #: MW22S102209

Sampler's signature/date:

Grant Kolb 10/22/09

Reviewer's signature/date:

Matt M/A 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW22D
 Start Date: 10-21-09
 Start Time: 0840
 Well TD: 58.77
 Well DTW: 41.37
 Water Column: 17.40
 Pump Intake (ft bgs): 56.1

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 47-57

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17.40
 Volume of water in casing (gal) = 2.84
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.6
 ACTUAL VOLUME PURGED (gal) = 2.8

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0900	0	90	0	41.47	-	8200	13.50	4.77		3.76
0905	5	90	0.45	41.47	7.32	8050	13.59	3.20		2.61
0910	10	100	0.95	41.48	7.32	6690	13.75	2.45		2.29
0915	15	100	1.45	41.48	7.32	6340	13.75	0.90		2.20
0920	20	100	1.95	41.48	7.32	6120	13.78	1.81		1.95
0925	25	100	2.45	41.48	7.31	6000	13.85	3.60		1.73
0930	30	100	2.95	41.50	7.31	5900	13.79	1.11		1.60
0935	35	100	3.45	41.50	7.32	5910	13.88	1.58		1.45
0940	40	100	3.95	41.50	7.32	5770	13.90	0.89		1.37
0945	45	100	4.45	41.50	7.32	5720	13.93	0.82		1.26
0950	50	100	4.95	41.50	7.32	5660	13.96	1.05		1.20
1000	60	100	5.95	41.50	7.32	5570	14.03	0.21		1.11
1005	65	100	6.45	41.50	7.32	5520	14.08	1.74		1.11
1010	70	100	6.95	41.50	7.33	5480	14.03	0.38		1.04
1015	75	100	7.45	41.50	7.33	5450	14.13	0.86		0.99
1020	80	100	7.95	41.50	7.33	5410	14.04	0.15		0.95

Purging Field Notes: Began purging at 0855. Press = 40psi, Tech = 30sec
Purge = 4 sec, Flow rate = 90 ml/min. Increased purge to 4.5 sec.
Flow increased to 100 ml/min. Drawdown increased slightly, but stabilized

Sample Date/Time: 10/21/09 1100 g Sample ID/TR #: MW22D/102009 & FWD2102009
 Sampler's signature/date: Grant Kelt 10-21-09 (blind dup)
 Reviewer's signature/date: [Signature] 10/23/09 time = 1400 hrs
 Very clear water

During sampling, purge was increased to 6 sec. Flow increased to 125 ml/min w minimal increase in drawdown.

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW22D

Start Date: 10-21-09

Start Time: 0840

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs): _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : low flow

see page 1

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1025	85	100	8.45	41.50	7.33	5400	14.05	0.10		0.94
1027	87	100	8.65	41.50	7.33	5390	14.10	0.55		0.93
1029	89	100	8.85	41.50	7.33	5380	14.10	—		0.92
1031	91	100	9.05	41.50	7.33	5370	14.10	0.1		0.92
1035	95	100	9.45	41.50	7.33	5350	14.16	0.48		0.91
1037	97	100	9.65	41.50	7.33	5340	14.13	0.37		0.91
1040	100	100	9.95	41.50	7.34	5330	14.09	0.13		0.89
1042	102	100	10.15	41.50	7.34	5330	—	0.64		0.88
1044	104	100	10.35	41.50	7.34	5330	14.12	—		0.90
1300				41.52						
1500				41.52						
1550				41.50	= final water level					

Purging Field Notes:

Sample Date/Time: _____

Sample ID/TR #: _____

Sampler's signature/date: _____

Reviewer's signature/date: _____

Reviewer's signature/date:

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: SMW01
 Start Date: 24 OCT 2009
 Start Time: 0930
 Well TD: 52.15
 Well DTW: 32.00 ft
 Water Column: 20.15
 Pump Intake (ft bgs): 50.15

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 29.9-49.9

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 20.15
 Volume of water in AS (gal) = 14.71
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 20.15
 Volume of water in casing (gal) = 3.28
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 18.00
 ACTUAL VOLUME PURGED (gal) = 0.56

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0935	0	70		32.00	7.61	2070	11.41	3.98		2.00
0938	3	70		32.00	7.63	2060	11.42	3.61		2.07
0941	6	70		32.00	7.70	2070	10.65	2.54		2.07
0944	9	70		32.0	7.71	2060	11.13	2.11		1.51
0947	12	70		32.00	7.72	2060	11.37	3.51		1.48
0950	15	70		32.00	7.73	2050	11.46	4.39		1.43
0953	18	70		32.00	7.73	2060	11.49	6.62		1.40
0956	21	70		32.00	7.74	2050	11.50	6.28		1.37
0959	24	70		32.00	7.74	2050	11.58	7.99		1.32
1002	27	70		32.00	7.75	2050	11.59	7.21		1.29
1005	30	70	2.1	32.00	7.75	205	11.62	7.07		1.28

Purging Field Notes: 300 off 50m 35psi = 70ml/min for stabilization
Pumped from 29.0 → 32.0 ft, completed stabilization
and sampling at 32.0 ft. 200 off 60m 35psi = 120ml/min

Sample Date/Time: 1005 24 OCT 2009 Sample ID/TR #: SMW01102009

Sampler's signature/date: [Signature] 26 OCT 2009

Reviewer's signature/date: [Signature] 10/26/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW01
 Start Date: 15 OCT 2009
 Start Time: 0950
 Well TD: 120.7
 Well DTW: 84.22
 Water Column: 36.43
 Pump Intake (ft bgs): 118.7

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 105-120

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 15
 Volume of water in AS (gal) = 10.95
 Gallons per foot of casing (from chart on back) = 0.63
 Column of water X 36.43
 Volume of water in casing (gal) = 5.94
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 16.89
 ACTUAL VOLUME PURGED (gal) = ~1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0955	0	233		84.22	7.70	816	15.02	4.94		0.21
1000	5	233		87.52	8.32	811	14.19	3.13		0.15
1005	10	105		88.56	8.60	799	14.43	1.16		0.14
1010	15	120		88.56	8.80	789	14.70	0.17		0.14
1015	20	145		88.56	9.04	786	14.52	0.07		0.14
1020	25	145		88.56	9.22	788	14.60	0.00		0.13
1025	30	120	~16	92.51	9.34	779	14.66	0.01		0.13

Purging Field Notes:

Sample Date/Time: 1040 Sample ID/TR #: EMW01102009
 Sampler's signature/date: [Signature] 19 OCT 2009
 Reviewer's signature/date: [Signature] 23 OCT 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW03
 Start Date: 16 OCT 2009
 Start Time: 1130
 Well TD: 92.9
 Well DTW: 87.20
 Water Column: _____
 Pump Intake (ft bgs): _____

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 78-93

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) _____
 Column of water or length of AS (whichever is less) _____
 Volume of water in AS (gal) _____
 Gallons per foot of casing (from chart on back) _____
 Column of water _____
 Volume of water in casing (gal) _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) _____
 ACTUAL VOLUME PURGED (gal) _____

= _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____
 = _____

Pumped down to
 87.20 ft and completed
 stabilization, then
 sampled 1230

Method of Purging: _____

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1130	0	90		87.20	9.94	160.6	16.06	32.44		3.34
1135	5	90		87.21	11.71	1440	14.40	12.14		2.29
1140	10	90	135	87.23	11.55	0000	13.81	2.98		1.79
1145	15	90	1350	87.24	11.49		14.05	9.42		1.59
1150	20	80		87.25	11.48		14.83	3.25		1.41
1155	25	80		87.25	11.44		15.15	3.14		1.33
1200	30	80	2.550	87.25	11.39		14.82	5.75		1.33
1205	35	70		87.25	11.38		15.12	5.65		1.25
1210	40	70	3.25	87.25	11.38		14.85	5.23		1.24

Purging Field Notes:

Sample Date/Time: 1230 16 OCT 2009 Sample ID/TR #: EMW03102009
 Sampler's signature/date: G. Wagner 23 OCT 2009
 Reviewer's signature/date: M. Mott 23 Oct 09

WELL SAMPLING DATA FORM

Well Number:

FWOS2102009

Start Date:

10-28-09

Start Time:

1135

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging:

public supply well

Field Parameters	Reading							
Time	1140	1145	1150					Final Sample
Volume (gal)	100	200	300					
Flow Rate (gpm)	20	20	20					N/A
DTW (ft toc)	—	—	—					
pH	7.76	7.81	7.84					
Conductivity (uS/cm)	1181	1184	1183					
Temperature (°C)	12.64	12.61	14.20					
Turbidity (NTU)	56.57	14.25	7.70					
Eh/Redox (mV)								
DO (mg/L)	4.52	3.44	2.55					

Purging Field Notes:

Flow rate was high because the well was purged through a larger diameter maintenance pipe and not from the spigot in the well house.

Sample Date/Time:

10-28-09 1030

Sample ID/TR #:

FWOS2102009

Sampler's signature/date:

Grant Kelt 10/28/09

Reviewer's signature/date:

10/28/09

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

FW056102009
10-28-09
1215

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging :

public supply well

Field Parameters	Reading								
Time	1225	1230	1235						Final Sample
Volume (gal)	300	450	600						
Flow Rate (gpm)	30	30	30						N/A
DTW (ft toc)	—	—	—						
pH	7.55	7.46	7.42						
Conductivity (uS/cm)	1269	1284	1286						
Temperature (°C)	11.83	12.26	12.28						
Turbidity (NTU)	5.79	6.62	6.40						
Eh/Redox (mV)									
DO (mg/L)	2.90	2.97	2.38						

Purging Field Notes:

Flow rate was high because well was purged from a large diameter maintenance pipe and not from the spigot in the well house.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

Sample ID/TR #:

10-28-09 1200
Grant Kolb 10/28/09 and QC sample
Blind duplicate =
FW056102009 w sample
time of 1130

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging :

public supply well

Field Parameters	Reading							
Time	1325	1330	1335					Final Sample
Volume (gal)	100	200	300					
Flow Rate (gpm)	20	20	20					N/A
DTW (ft toc)	-	-	-					
pH	7.54	7.47	7.45					
Conductivity (uS/cm)	1308	1322	1326					
Temperature (°C)	12.02	12.54	12.51					
Turbidity (NTU)	7.58	4.87	4.58					
Eh/Redox (mV)								
DO (mg/L)	6.60	2.97	2.87					

Purging Field Notes:

Flow rate was high because well was purged via larger diameter maintenance pipe and not from spigot in well house.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-28-09 1100

Grant Kolb 10-28-09

10/28/09

Sample ID/TR #:

FWOS4102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW02
 Start Date: 20 OCT 2009
 Start Time: 0945
 Well TD: 37.90
 Well DTW: 35.14.62
 Water Column: 23.28
 Pump Intake (ft bgs): 35.9

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 25-35

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 23.28
 Volume of water in casing (gal) = 3.79
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 12.55
 ACTUAL VOLUME PURGED (gal) = ~1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0945	0	140		14.62	8.16	775	10.98	5.84		0.07
0950	5	140		14.62	8.22	777	10.93	5.84		0.05
0955	10	140		14.62	8.32	780	10.91	4.44		0.05
1000	15	140		14.62	8.37	784	10.85	2.99		0.05
1005	20	140		14.62	8.37	784	10.88	1.99		0.03
1010	25	140	✓	14.62	8.40	783	10.91	2.25		0.03
1015	30	140	2.1	14.62	8.41	782	10.99	2.24		0.03

Purging Field Notes:

20 off 50m 30psi = 140 mL/min

Sample Date/Time: 1030 20 OCT 2009 Sample ID/TR #: CMW02102009

Sampler's signature/date: Spillenger 23 OCT 2009

Reviewer's signature/date: [Signature] 23 Oct 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CWW04

Start Date: 20 OCT 2009

Start Time: 1025-1125

Well TD: 43.87 137.91

Well DTW: 45.13 45.13

Water Column: 81.78

Pump Intake (ft bgs):

Well Casing Diameter (in): 2

Bore Hole Diameter (in): 8

Annular Space (AS) Length (ft): 22

Screened Interval (ft bgs): 115-135

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73

Column of water or length of AS (whichever is less) X 22

Volume of water in AS (gal) = 16.06

Gallons per foot of casing (from chart on back) = 0.163

Column of water X 81.78

Volume of water in casing (gal) = 13.33

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 29.39

ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1125	0	110	7	45.12	8.22	5040	14.96	48.83		0.08
1130	5	110		45.12	8.51	4990	13.88	9.92		0.07
1133	8	110		45.12	8.50	5000	13.21	4.01		0.06
1136	11	110		45.12	8.47	5020	13.02	1.80		0.07
1139	14	110		45.12	8.43	5090	12.77	1.30		0.06
1142	17	110		45.12	8.42	5100	12.77	0.95		0.05
1145	20	110	3080	45.12	8.42	5140	12.72	0.79		0.05
1148	23	110		45.12	8.42	5150	12.58	1.01		0.05
			22.53							
			Q07							

Purging Field Notes:

200 off 60m 40psi ~ 110 mL/min

Sample Date/Time: 20 OCT 09 1150

Sample ID/TR #: CWW04102009

Sampler's signature/date: SA [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 Oct 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMMW07
 Start Date: 20 OCT 2009
 Start Time: 1310
 Well TD: 66.60
 Well DTW: 38.95
 Water Column: 27.65
 Pump Intake (ft bgs): 64.27

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 0.8
 Annular Space (AS) Length (ft): 23
 Screened Interval (ft bgs): _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 23
 Volume of water in AS (gal) = 16.79
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 27.65
 Volume of water in casing (gal) = 4.50
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 21.30
 ACTUAL VOLUME PURGED (gal) = 0.5

Method of Purging: Low-Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1310	0	90	39.2	39.2	7.82	1520	12.72	3.23		0.08
1313	3	90		39.2	7.87	1520	12.50	0.84		0.07
1316	6	90		39.2	7.88	1520	12.43	0.167		0.07
1319	9	90		39.2	7.89	1510	12.39	0.68		0.07
1322	12	90		39.2	7.90	1510	12.25	0.55		0.07
1325	15	90		39.2	7.92	1520	12.14	0.21		0.06
1328	18	90	✓	39.2	7.93	1520	12.04	0.14		0.06
1331	21	90	1.89	39.2	7.93	1520	12.02	0.63		0.06
						L → 1520				
						out				

Purging Field Notes:

20 off 6 on 40 psi = 90 mL/min

Sample Date/Time: 1330 20 OCT 2009 Sample ID/TR #: CMMW07102009

Sampler's signature/date: G. J. J. 23 OCT 2009

Reviewer's signature/date: [Signature] 23 OCT 09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 53.1-73.1

Well Number: CMW-10
 Start Date: 10/22/09
 Start Time: 1000
 Well TD: 73.1
 Well DTW: 64.75
 Water Column: 8.35
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 8.35
 Volume of water in AS (gal) = 6.10
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 8.35
 Volume of water in casing (gal) = 1.36
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 7.46
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 22.38
 ACTUAL VOLUME PURGED (gal) = 7.0

Method of Purging : BAILER / FRED GEBHARDT & JIM HUG

Field Parameters	Reading								
Time	1000	1008	1017	1026	1030	1041	1048	1055	Final Sample
Volume (gal)	INITIAL	1	2	3	4	5	6	7	
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH	8.92	7.24	8.28	9.80	10.94	11.01	11.61		
Conductivity (uS/cm)	520	515	383	533	566	566	411	4110	
Temperature (°C)	11.17	11.41	10.65	11.48	11.42	11.41	11.42		
Turbidity (NTU)	575	119	626	523	500	855	392		
Eh/Redox (mV)									
DO (mg/L)	9.63	5.90	5.01	5.98	4.78	4.29	4.71		

Purging Field Notes:

BAILED WELL DRY, WILL SAMPLE WHEN WELL RECHARGES

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

Sample ID/TR #:

CMW10102009

Fred Gebhardt
10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW10

Start Date: 26 OCT 09

Start Time: 1015

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging : _____

= _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

CMW10 was purged and parameters taken previously. Hand bailed enough water for the complete sample set.

Sample Date/Time: 1015 26 OCT 2009

Sample ID/TR #: CMW10102009

Sampler's signature/date: [Signature] 26 OCT 2009

Reviewer's signature/date: [Signature] 10/26/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW14
 Start Date: 21 OCT 2009
 Start Time: 1255
 Well TD: 96.75
 Well DTW: 16.23
 Water Column: 80.02
 Pump Intake (ft bgs): 95.75

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 10

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 80.02
 Volume of water in casing (gal) = 13.04
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 21.08
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging: 21ST Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1220 1255	0	170		16.23	12.78	5080	10.91	51.83		0.09
1223 1258	3	170		16.23	12.95	5820	11.00	7.77		0.07
1226 1301	6	170		16.23	13.40	5970	11.13	3.93		0.06
1229 1304	9	170		16.23	13.58	5970	11.14	2.94		0.07
1232 1307	12	170		16.23	13.62	5970	11.14	3.63		0.08
1235 1310	15	170	✓	16.23	13.65	5960	11.12	3.56		0.08
1240	18	170	3.4	16.23	13.67	5960	11.08	2.61		0.07
						5960				

Purging Field Notes:

10 off 12 on 35 psi = ~ 170 ml/min

Sample Date/Time: 1245 21 OCT 09 Sample ID/TR #: CMW14102009

Sampler's signature/date: [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 OCT 09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 34.24 ~ 54.24

Well Number: CMW17
 Start Date: 10/27/09
 Start Time: 1445
 Well TD: 54.24
 Well DTW: 16.56
 Water Column: 37.68
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 22
 Volume of water in AS (gal) = 16.06
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 37.68
 Volume of water in casing (gal) = 6.15
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 22.21
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 66.63
 ACTUAL VOLUME PURGED (gal) = 7 GALS

Method of Purging : BEN BAILER

Field Parameters	Reading								
Time									Final Sample
Volume (gal)									
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH									
Conductivity (uS/cm)									
Temperature (°C)									
Turbidity (NTU)									
Eh/Redox (mV)									
DO (mg/L)									

Purging Field Notes:

DIFFICULTIES WITH PUMP. WELL WAS PUMPED DRY (7 GALS) PREVIOUSLY
NO PARAMETERS COLLECTED. REMOVED PUMP & COLLECTED SAMPLE W/
BAILER. THEN PURGED WELL DRY AGAIN, REMOVED 7 GALS

Sample Date/Time: 10/27/09 1500
 Sampler's signature/date: [Signature]
 Reviewer's signature/date: [Signature] 10/27/09

Sample ID/TR #: CMW17102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW17
 Start Date: 26 OCT 2009
 Start Time: 1150
 Well TD: 54.24
 Well DTW: 73.26
 Water Column: _____
 Pump Intake (ft bgs) 74.72.4

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Well was sampled directly. Took out 2 VOC samples and 1 nitrate/nitrite sample and ran out of water very slow to recharge. Was purged dry 4 days prior

Sample Date/Time: 1150 26 OCT 2009 Sample ID/TR #: CMW17102009
 Sampler's signature/date: [Signature] 26 OCT 2009
 Reviewer's signature/date: [Signature] 10/26/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW 18
 Start Date: 0930
 Start Time: 21 OCT 09
 Well TD: 54.10
 Well DTW: 41.05
 Water Column: 13.05
 Pump Intake (ft bgs): 51.77

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 34-54

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 13.05
 Volume of water in AS (gal) = 9.52
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 13.05
 Volume of water in casing (gal) = 2.13
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.65
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0930	0	170	0	41.05	7.36	9110	12.00	1.85		0.08
0933	3	170		41.05	7.37	9100	11.96	1.25		0.07
0936	6	170		41.05	7.40	9110	11.90	0.77		0.08
0939	9	170		41.05	7.44	9120	11.94	0.66		0.07
0942	12	170		41.05	7.46	9110	11.98	0.56		0.07
0945	15	170		41.05	7.48	9120	11.98	0.65		0.07
0948	18	170	3060ml	41.10	7.50	9120	11.96	1.28		0.07

Purging Field Notes:

12 off 6 on 34psi → was not able to sample well
ran out of water. ^{SPW} QA/QC well
 Sample Date/Time: 1000 1000 21 OCT 2009 Sample ID/TR #: CMW 18 10 2009 (FW03)

Sampler's signature/date: [Signature] 23 OCT 2009
 Reviewer's signature/date: [Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW19
 Start Date: 10/22/09
 Start Time: 12:14
 Well TD: 51.30
 Well DTW: 24.15
 Water Column: 27.15
 Pump Intake (ft bgs): _____

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17'
 Screened Interval (ft bgs): 36.3-51.3

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 17
 Volume of water in AS (gal) = 12.4
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17
 Volume of water in casing (gal) = 2.77
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.17
 ACTUAL VOLUME PURGED (gal) = 1 GAL

- 21ST DOCKED

Method of Purging : 21ST PUMP / FRED CEBHARDT & JIM HUG

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1214	0		0	24.15	10.14	1460	13.84	9.67		1.92
1230	16		0.50	24.15	9.90	1343	12.73	30.17		30.2 .87
1237	7		0.75	24.15	9.87	1315	12.84	34.1		.81
1248	11		1 GAL	24.15	9.85	1313	12.80	37.2		.79
		PUMP SPITTING N2. WELL PUMPED EARLIER.								

Purging Field Notes:

Sample Date/Time: _____ Sample ID/TR #: CMW19102009
 Sampler's signature/date: Fred Cebhardt
 Reviewer's signature/date: 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW 19
 Start Date: 26 OCT 2009
 Start Time: 1150
 Well TD: 51.30
 Well DTW: _____
 Water Column: _____
 Pump Intake (ft bgs): 49.5

Docked

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

collected samples 25 off 6 on 30 psi until remounted water, 42 L shy of full set (- 4 ups) complete last 42 L at 40 off 30 on 30, after 42 L completely remount of water

Sample Date/Time: 1150 26 OCT 2009 Sample ID/TR #: CMW 19102009
 Sampler's signature/date: [Signature] 26 OCT 2009
 Reviewer's signature/date: [Signature] 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 96.5-116.5

Well Number: CMW-22
 Start Date: 10-15-09
 Start Time: 1325
 Well TD: 120.23
 Well DTW: 114.52
 Water Column: 5.71
 Pump Intake (ft bgs): 116.23

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 5.71
 Volume of water in AS (gal) = 4.17
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 5.71
 Volume of water in casing (gal) = 0.93
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 5.1
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 15.3
 ACTUAL VOLUME PURGED (gal) = 1
 Method of Purging: bailer

Field Parameters	Reading							
Time	<u>1335</u>	<u>1345</u>	<u>1355</u>					Final Sample
Volume (gal)	<u>0.25</u>	<u>0.75</u>	<u>1</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>—</u>	<u>118.3</u>	<u>119.90</u>					
pH	<u>8.77</u>	<u>8.87</u>	<u>8.92</u>					
Conductivity (uS/cm)	<u>698</u>	<u>700</u>	<u>699</u>					
Temperature (°C)	<u>12.48</u>	<u>12.21</u>	<u>12.29</u>					
Turbidity (NTU)	<u>210.0</u>	<u>331.7</u>	<u>71000</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>3.94</u>	<u>3.02</u>	<u>3.30</u>					

Purging Field Notes:

Initial water withdrawn was clear.
Water became progressively cloudier w bailing.
Bailed dry after removal of \approx 1 gal.

Sample Date/Time: NO SAMPLE COLLECTED Sample ID/TR #: CMW221009
 Sampler's signature/date: Grant Kolo 10-15-09
 Reviewer's signature/date: Matt Mott 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
22
84-104

Well Number:

CMW-23

Start Date:

10-15-09

Start Time:

1415

Well TD:

106.6

Well DTW:

97.14

Water Column:

9.46

Pump Intake (ft bgs)

104.6

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)
Column of water or length of AS (whichever is less)
Volume of water in AS (gal)
Gallons per foot of casing (from chart on back)
Column of water
Volume of water in casing (gal)
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)
Number of EV to be purged
TOTAL VOLUME TO BE PURGED (gal)
ACTUAL VOLUME PURGED (gal)

= 0.73
X 9.46
= 6.91
= 0.163
X 9.46
= 1.54
= 8.45
X 3
= 25.35
= 1.75

Method of Purging :

bailer

Field Parameters	Reading							
Time	<u>1425</u>	<u>1435</u>	<u>1445</u>					Final Sample
Volume (gal)	<u>0.5</u>	<u>1</u>	<u>1.5</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>99.67</u>	<u>102.26</u>	<u>104.91</u>					
pH	<u>9.06</u>	<u>8.91</u>	<u>8.94</u>					
Conductivity (uS/cm)	<u>1840</u>	<u>3740</u>	<u>6120</u>					
Temperature (°C)	<u>12.57</u>	<u>12.57</u>	<u>12.59</u>					
Turbidity (NTU)	<u>71000</u>	<u>84.9</u>	<u>572.4</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>4.72</u>	<u>3.88</u>	<u>2.63</u>					

Purging Field Notes:

Initially, water was clear, but became very silty just before the well bailed dry. Removed ~1.75 gal before well went dry

Sample Date/Time:

NO SAMPLE COLLECTED

Sample ID/TR #:

CMW231009

Sampler's signature/date:

Grant Kolb 10-15-09

Reviewer's signature/date:

[Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW25
Start Date: 10-16-09
Start Time: 1145
Well TD: 98.78
Well DTW: 36.48
Water Column: 62.30
Pump Intake (ft bgs): 96.78

Well Casing Diameter (in): 2
Bore Hole Diameter (in): 8
Annular Space (AS) Length (ft): 27
Screened Interval (ft bgs): 71-96'

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
Column of water or length of AS (whichever is less) X 27
Volume of water in AS (gal) = 19.71
Gallons per foot of casing (from chart on back) = 0.163
Column of water X 62.30
Volume of water in casing (gal) = 10.15
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 29.86
ACTUAL VOLUME PURGED (gal) = 3.7

Method of Purging: Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1205	0	70	0	37.21	—	—	—	—	—	—
1210	5	50	0.25	37.75	9.15	1040	17.58	8.01		1.57
1215	10	50	0.5	38.12	9.22	1044	17.71	3.95		1.31
1220	15	70	0.85	38.53	9.25	1051	16.58	2.32		1.18
1230	25	70	1.55	39.26	9.27	1046	17.16	2.47		1.05
1240	35	70	2.25	39.77	9.27	1050	17.57	3.21		1.08
1250	45	110	3.35	40.70	9.26	1055	17.40	2.01		1.01
1255	50	120	3.95	41.73	9.29	1053	16.15	2.25		0.95
1300	55	120	4.55	42.42	9.31	1053	15.47	1.94		0.88
1315	70	120	6.35	45.11	9.31	1054	15.51	1.98		0.85
1330	85	150	8.6	47.35	9.31	1052	14.92	2.44		0.81
1345	100	220	11.9	51.54	9.30	1051	14.20	19.48		1.01
1350	105	50	12.15	51.71	9.27	1055	16.35	19.84		1.20
1355	110	40	12.35	51.81	9.26	1054	18.16	23.65		1.20
1400	115	40	12.55	51.85	9.15	1055	19.55	17.26		1.16
1405	120	40	12.75	51.91	9.05	1055		11.20		1.07

Purging Field Notes:

Water level in well dropped >0.3' on first purge w tech=66, purge=5.
Then attempted to increase purge & pump well dry. After 105 min,
Sample Date/Time: 10/18/09 1500 Sample ID/TR #: CMW25102009 decreased purge to
Sampler's signature/date: [Signature] 10-16-09 4 sec, increased
Reviewer's signature/date: [Signature] 10/23/09 tech to 75 sec.
Achieved flow rate of 30 ml/min & water
level stabilized dramatically. Parameters were stable.
Proceeded w sample collection.

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM
Well Number: CMW 25Start Date: 10-16-09Start Time: 1145Well TD: 98.78Well DTW: 36.48

Water Column: _____

Pump Intake (ft bgs): _____

Well Casing Diameter (in): 2Bore Hole Diameter (in): 8Annular Space (AS) Length (ft): 27

Screened Interval (ft bgs): _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

ACTUAL VOLUME PURGED (gal) = _____

Method of Purging: low flow

} see page 1

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1410	125	40	12.95	51.97	8.95	1055	20.37	11.02		0.97
1415	130	30	13.1	51.99	8.91	1055	20.96	5.93		0.93
1420	135	30	13.25	52.04	8.90	1056	21.28	5.97		0.92
1425	140	30	13.4	52.04	8.90	1056	21.35	4.41		0.90
1430	145	30	13.55	52.11	8.87	1057	21.65	3.65		0.87
1435	150	30	13.7	52.15	8.85	1057	21.49	2.81		0.83
1440	155	30	13.85	52.15	8.84	1058	21.61	3.38		0.82
1445	160	30	14.0	52.18	8.85	1058	21.79	2.43		0.80
1447	162	30	14.06	52.22	8.85	1057	21.46	2.64		0.81
1610	Final water level = 53.11'									

Purging Field Notes:

met stabilization guidelines prior to sampling. May need to be pumped down further next event

Sample Date/Time: _____

Sample ID/TR #: _____

Sampler's signature/date: _____

Reviewer's signature/date: _____

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: Kmw-09
 Start Date: 10-15-09
 Start Time: 1015 1040
 Well TD: 72.9
 Well DTW: 39.20
 Water Column: 33.7
 Pump Intake (ft bgs): 70.9

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 60-70'

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 33.7
 Volume of water in casing (gal) = 5.49
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 14.25
 ACTUAL VOLUME PURGED (gal) = 4

Method of Purging: Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1045	0	90	0	39.20	7.81	3450	12.71	4.42		3.09
1050	5	90	0.45	39.20	8.19	3480	12.33	2.24		2.02
1055	10	90	0.9	39.20	8.28	3490	12.22	1.50		1.76
1100	15	90	1.35	39.20	8.23	3500	12.18	0.34		1.58
1105	20	90	1.8	39.20	8.18	3520	12.17	0.66		1.46
1110	25	90	2.25	39.20	8.14	3520	12.26	0.33		1.45
1113	28	90	2.52	39.20	8.11	3530	12.36	0.55		1.40
1116	31	90	2.79	39.20	8.09	3540	12.52	0.26		1.37
1119	34	90	3.06	39.20	8.07	3540	12.61	0.91		1.34
1121	36	90	3.24	—	8.06	3550	12.62	—		1.35
1123	38	90	3.42	39.20	8.05	3550	12.65	0.20		1.34
1125	40	90	3.6	39.20	8.04	3550	12.64	—		1.32
1127	42	90	3.78	39.20	8.03	3560	12.66	—		1.30
1129	44	90	3.96	39.20	8.03	3560	12.80	0.22		1.31

Purging Field Notes:

Very clear water. Pressure = 35-37 psi, reach = 30 sec,
purge = 5 sec, flow rate = 90 mL/min. Final H₂O level

Sample Date/Time: 10/15/09 1200 Sample ID/TR #: Kmw09102009

Sampler's signature/date: Grant Korb 10-15-09

Reviewer's signature/date: Matt Mast 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
12
158-168

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

KMW-10
10-16-09
0845
171.02'
166.93'
4.09
169.02

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>4.09</u>
Volume of water in AS (gal)	=	<u>2.99</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>4.09</u>
Volume of water in casing (gal)	=	<u>0.67</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>3.66</u>
Number of EV to be purged	X	<u>3</u>
TOTAL VOLUME TO BE PURGED (gal)	=	<u>10.98</u>
ACTUAL VOLUME PURGED (gal)	=	<u>2</u>

Method of Purging :

bauler

Field Parameters	Reading							
Time	<u>0905</u>	<u>0915</u>	<u>0930</u>					Final Sample
Volume (gal)	<u>0.25</u>	<u>0.5</u>	<u>0.75</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>167.31</u>	<u>167.91</u>	<u>168.38</u>					
pH	<u>7.75</u>	<u>7.53</u>	<u>7.40</u>					
Conductivity (uS/cm)	<u>948</u>	<u>893</u>	<u>895</u>					
Temperature (°C)	<u>13.34</u>	<u>12.84</u>	<u>12.85</u>					
Turbidity (NTU)	<u>14.20</u>	<u>25.87</u>	<u>50.76</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>7.10</u>	<u>6.42</u>	<u>5.91</u>					

Purging Field Notes:

Very clear water. Removed approx 2 gal
total before well was dry

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

No sample collected
Grant Kolb
10/26/09

Sample ID/TR #:

KMW101009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: KMW 11
 Start Date: 22 OCT 2009
 Start Time: 0910
 Well TD: 57.44
 Well DTW: 32.40
 Water Column: 25.04
 Pump Intake (ft bgs): 55.11

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 25-55

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 22
 Volume of water in AS (gal) = 16.06
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 25.04
 Volume of water in casing (gal) = 4.08
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 20.14
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging : Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0910	0	160	0	32.40	8.21	991	11.55	43.60		0.07
0913	3	160	480	32.43	8.57	991	11.25	3.93		0.04
0916	6	160	960	32.46	8.68	994	11.63	3.52		0.04
0919	9	160	1440	32.49	8.70	996	11.63	37.68		0.04
0922	12	160	1920	32.52	8.73	998	11.66	76.58		0.03
0925	15	160	2400	32.55	8.74	997	11.63	2.53		0.04
0928	18	160	2880	32.60	8.75	997	11.60	158.0		0.03

Purging Field Notes:

Turbidity doesn't appear to have stabilized.

Sample Date/Time: 0930 22 OCT 09 Sample ID/TR #: KMW 11102009

Sampler's signature/date: SAULSON 23 OCT 2009

Reviewer's signature/date: [Signature] 23 OCT 09

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 55.49 - 75.49

Well Number:	KMW 12
Start Date:	10/10/09
Start Time:	0902
Well TD:	75.49
Well DTW:	48.58
Water Column:	26.91
Pump Intake (ft bgs)	119.02

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>22</u>
Volume of water in AS (gal)	=	<u>16.06</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>26.91</u>
Volume of water in casing (gal)	=	<u>4.39</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>20.45</u>
Number of EV to be purged	X	<u>3</u>
TOTAL VOLUME TO BE PURGED (gal)	=	<u>61.35</u>
ACTUAL VOLUME PURGED (gal)	=	<u>13</u>

Method of Purging : BENNETT PUMP

Field Parameters	Reading								
Time	0902	0905	0907	0910	0913	0920	0926		Final Sample
Volume (gal)	INITIAL	3	5	7	9	11	13		
Flow Rate (gpm)									N/A
DTW (ft toc)	48.58								
pH	6.87	6.81	6.85	6.89	6.92	7.43	7.72	4080	
Conductivity (uS/cm)	417	414	415	416	419	408	408		
Temperature (°C)	11.41	11.30	11.28	11.27	11.28	11.29	11.41		
Turbidity (NTU)	29.9	12.5	38.7	18.5	42.7	13.3	10.5		
Eh/Redox (mV)									
DO (mg/L)	0.29	0.18	0.16	0.16	0.14	0.13	0.15		

PUMPED WELL DRY, SAMPLED AFTER WELL RECHARGED.

Sample Date/Time: 10/21/09 0915
 Sampler's signature/date: Fredrick E. Kellhaus
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: KML012102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-01

Start Date:

10-14-09

Start Time:

1030

Well TD:

61.23'

Well DTW:

35.94

Water Column:

25.29

Pump Intake (ft bgs):

59.23

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

17

Screened Interval (ft bgs):

44-59

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 17

Volume of water in AS (gal)

= 12.41

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 25.29

Volume of water in casing (gal)

= 4.12

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 16.53

ACTUAL VOLUME PURGED (gal)

= 0.6

Method of Purging:

low flow purge

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1150	0	50	0	36.04	7.57	2890	16.09	145.3		3.83
1155	5	50	0.25	36.05	7.61	2840	15.73	75.86		3.29
1200	10	50	0.5	36.05	7.64	2830	15.53	46.80		3.16
1205	15	50	0.75	36.06	7.64	2820	15.61	32.81		3.11
1210	20	50	1.0	36.06	7.64	2850	15.60	28.00		3.05
1215	25	50	1.25	36.06	7.64	2860	15.56	19.16		3.07
1220	30	50	1.50	36.06	7.64	2800	15.64	8.99		3.03
1225	35	50	1.75	36.06	7.65	2810	15.72	7.21		2.91
1230	40	50	2.0	36.06	7.65	2810	15.98	6.37		2.90
1235	45	50	2.25	36.06	7.65	2810	15.99	4.54		2.91
1237	47	50	2.35	36.06	7.65	2810	15.91	4.87		2.91
1330				36.05						
1405				36.05						

Purging Field Notes:

Began purging at 1140. Pressure = 35psi, reach = 30sec, purge = 7 sec, flow rate = 50-60 mL/min very clear water

Sample Date/Time:

10-14-09, 1300 Sample ID/TR #1

TMW01142009

Sampler's signature/date:

Grant Kolt 10-14-09

Reviewer's signature/date:

Matt Munt 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW02
 Start Date: 14 OCT 2009
 Start Time: 0945
 Well TD: 37.984.09
 Well DTW: 55.18
 Water Column: 29.91
 Pump Intake (ft bgs): 82.09

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 16
 Screened Interval (ft bgs): (14) 67.9-81.9

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.13
 Column of water or length of AS (whichever is less) X 14
 Volume of water in AS (gal) = 10.22
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 29.91
 Volume of water in casing (gal) = 4.88
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.10
 ACTUAL VOLUME PURGED (gal) = 0.33 ~ 1 Gal

Method of Purging : Low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0945	0	125	0.000	55.15	7.19	445.0	14.33	45.96		5.53
0950	5	125	0.250		7.55	446.0	14.13	23.96		5.85
0955	10	125	0.375		7.97	448.0	13.64	23.96		5.66
1000	15	125	.500		8.06	446.0	13.49	10.98		5.33
1005	20	125	.625		8.13	446.0	13.75	23.64		5.98
1010	25	125	.750		8.15	447.0	13.75	82.61		6.35
1015	30	125	.875		8.17	447.0	13.71	42.08		SR 8.17 6.40
1020	35	125	1.00		8.18	447.0	13.74	45.510		SR 8.17 6.42
1025	40	125	1.125		8.28	447	14.13	25.42		SR 8.19 6.35
1030	45	125	1.250	56.1	8.22	447	13.85	10.54		6.34
			3.750							

Purging Field Notes:

This pump is allowing water to return to well, need replaced or added one-way valve

Sample Date/Time: 1035 14 OCT 09 Sample ID/TR #: TMW02102009

Sampler's signature/date: SA Wagner 14 OCT 2009

Reviewer's signature/date: Mat Mat 10/23/09

- appears stabilized but need more DTW measurements & DO. is

Math Math 10/23/09

Walt Malt 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW-26
 Start Date: 10-17-09
 Start Time: 0910
 Well TD: 57.24
 Well DTW: 47.12
 Water Column: 10.12
 Pump Intake (ft bgs): 55.24

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 45-55

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 10.12
 Volume of water in AS (gal) = 7.39
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 10.12
 Volume of water in casing (gal) = 1.65
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 9.04
 ACTUAL VOLUME PURGED (gal) = 0.5

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0950	0	30	0	47.30	7.78	4940	16.13	1.90		4.57
0955	5	30	0.15	47.30	7.58	4940	16.07	2.00		3.06
1005	15	30	0.45	47.25	7.59	3620	17.24	2.54		3.15
1010	20	30	0.6	47.28	7.58	4940	17.56	3.80		3.08
1015	25	30	0.75	47.30	7.56	4950	17.39	1.41		2.66
1020	30	30	0.9	47.31	7.54	4940	17.08	1.72		2.30
1025	35	30	1.05	47.32	7.33	4950	16.72	2.29		2.00
1030	40	50	1.30	47.36	7.52	4950	16.16	1.55		1.70
1035	45	50	1.55	47.36	7.52	4950	16.00	1.38		1.59
1037	47	50	1.65	47.36	7.52	4950	16.00	1.29		1.61
1039	49	50	1.75	47.36	7.52	4950	15.91	0.86		1.61
1040	50	50	1.8	47.36	7.52	4950	15.92	1.20		1.61
Final water level at 1305 = 47.39'										

Purging Field Notes:

Began purging at 0930. Very clear water. Began to purge 6 sec a reel = 90 sec. Flow = 30 mL/min. Reduced flow to recharge to 60 sec.

Sample Date/Time: 10-17-09 1109 Sample ID/TR #: TMW06102009
 Sampler's signature/date: Grant Kolb 10-17-09
 Reviewer's signature/date: [Signature] 10/23/09

Flow increased to 50 mL/min & drawdown was stable. Pressure = 30 psi.

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 57.37 - 67.37

Well Number: TMW 07
 Start Date: 10/19/09
 Start Time: 1213
 Well TD: 67.37
 Well DTW: 47.78
 Water Column: 19.59
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.13
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 19.59
 Volume of water in casing (gal) = 3.19
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.95
 Number of EV to be purged X
 TOTAL VOLUME TO BE PURGED (gal) =
 ACTUAL VOLUME PURGED (gal) = * 6

Method of Purging : 12 V PUMP + BAILER

Field Parameters	Reading								Final Sample
Time	<u>1213</u> 1215	<u>1215</u>	<u>1216</u>	<u>1505</u>	<u>1519</u>	<u>1529</u>			
Volume (gal)	<u>INITIAL</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>6</u>			
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH	<u>7.16</u>	<u>7.38</u>	<u>7.50</u>	<u>6.99</u>	<u>7.56</u>	<u>7.81</u>			
Conductivity (uS/cm)	<u>5070</u>	<u>5090</u>	<u>5080</u>	<u>5080</u>	<u>5190</u>	<u>5340</u>	<u>5340</u>	<u>5340</u>	
Temperature (°C)	<u>14.51</u>	<u>14.05</u>	<u>13.99</u>	<u>13.39</u>	<u>13.19</u>	<u>13.20</u>			
Turbidity (NTU)	<u>26.4</u>	<u>48.5</u>	<u>110</u>	<u>—</u>	<u>232</u>	<u>459</u>			
Eh/Redox (mV)									
DO (mg/L)	<u>6.32</u>	<u>3.16</u>	<u>2.74</u>	<u>6.50</u>	<u>3.25</u>	<u>3.93</u>			

Purging Field Notes:

* HAD ISSUES WITH 12V PUMP. BDELAY IN FINISHING PURGING.
WELL BAILED DRY.

Sample Date/Time: 10/20/09 0840
 Sampler's signature/date: [Signature]
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: TMW07102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW004 TMW-08
 Start Date: 17-Oct-09
 Start Time: 0925 ~~0110~~ 1010
 Well TD: 115 62.41
 Well DTW: 114.41 36.65
 Water Column: 25.76
 Pump Intake (ft bgs): 60.41

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 32
 Screened Interval (ft bgs): 30-62

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 25.76
 Volume of water in AS (gal) = 18.81
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 25.76
 Volume of water in casing (gal) = 4.20
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 23.11
 ACTUAL VOLUME PURGED (gal) = 0.56

Method of Purging: Bentley ^{SR} Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toe)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1010	0	50.0	0	36.65 <u>114.41</u>	6.91	15300	14.84	85.78		4.16
1015	5	50.0	0.25	36.65	7.24	16400	14.69	180.1		2.10
1020	10	50.0	0.50	36.65	7.34	16400	14.67	132.8		1.60
1025	15	50	0.75	36.65	7.35	16400	14.63	84.58		1.51
1030	20	50	1.0	36.65	7.36	16400	14.68	75.37		1.49
1035	25	50	1.25	36.65	7.37	16400	14.75	76.96		1.34
1040	30	50	1.50	36.65	7.38	16400	14.75	61.97		1.28
1045	35	50	1.75	36.65	7.38	16400	14.82	78.42		1.28

Purging Field Notes:

~~well was purged~~ ^{SR} pressure = 30 psi, purge = 5 sec, recharge = 20 sec
 collected

Sample Date/Time: 1045 Sample ID/TR #: TMW008102009
 Sampler's signature/date: [Signature] 19 OCT 2009
 Reviewer's signature/date: [Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW10
 Start Date: 19 OCT 2009
 Start Time: 1310
 Well TD: 61.80
 Well DTW: 36.99
 Water Column: 24.81
 Pump Intake (ft bgs): 59.47

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8.75
 Annular Space (AS) Length (ft): 33
 Screened Interval (ft bgs): 31.23-61.23

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 24.81
 Volume of water in AS (gal) = 18.11
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 24.81
 Volume of water in casing (gal) = 4.04
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 22.14
 ACTUAL VOLUME PURGED (gal) = 0.4

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1310	0	120		36.99	6.85	5980	16.65	38.00		0.11
1315	5	100			7.51	7100	15.90	23.37		0.08
1320	10	100			7.59	7150	15.45	12.71		0.07
1325	15	100			7.62	7090	15.58	9.06		0.07
1330	20	100			7.63	7030	15.46	7.03		0.07
1335	25	100	1.50	37.20	7.65	6740	15.20	7.09		0.06
			2.5							

Purging Field Notes:

25 off 50n 30psi = 100 ml/min

Sample Date/Time: TMW10102009 Sample ID/TR #: 1345 19 OCT 2009

Sampler's signature/date: [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 Oct 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-11

Start Date:

10-20-09

Start Time:

0920

Well TD:

82.52'

Well DTW:

66.61'

Water Column:

15.91'

Pump Intake (ft bgs):

80.52'

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

27

Screened Interval (ft bgs):

55-60

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 15.91

Volume of water in AS (gal)

= 11.61

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 15.91

Volume of water in casing (gal)

= 2.59

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 14.2

ACTUAL VOLUME PURGED (gal)

= 0.6

Method of Purging:

Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0940	0	40	0	66.70	8.35	2200	17.25	275.9		5.99
0945	5	40	0.2	66.72	8.08	2230	16.79	277.5		4.20
0950	10	40	0.4	66.72	7.99	2240	16.20	236.9		3.00
0955	15	40	0.6	66.72	7.97	2240	15.34	190.6		2.52
1000	20	40	0.8	66.72	7.95	2230	15.05	162.4		2.27
1005	25	40	1.0	66.72	7.94	2220	15.87	132.1		2.21
1010	30	40	1.2	66.72	7.94	2220	16.28	109.0		2.19
1015	35	40	1.4	66.72	7.94	2220	16.33	91.14		2.11
1020	40	40	1.6	66.72	7.95	2220	16.81	76.59		2.04
1025	45	40	1.8	66.72	7.95	2220	17.00	67.39		2.02
1030	50	40	2.0	66.72	7.95	2210	17.06	58.78		2.18
1032	52	40	2.08	66.72	7.94	2210	17.24	51.77		2.37
1037	57	40	2.28	66.72	7.95	2200	18.05	49.05		2.62
1315		Final water level = 66.72								

Purging Field Notes:

Press = 40psi, purge = 7 sec, reach = 55 sec, + flow = 40 mL/min

Sample Date/Time: 10-20-09 1100 Sample ID/TR #: TMW11102009

Sampler's signature/date:

Grant Kelle 10-20-09

Reviewer's signature/date:

10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW13

Start Date: 10-22-09

Start Time: 1000

Well TD: 73.78

Well DTW: 59.99

Water Column: 13.79

Pump Intake (ft bgs): 71.45

Well Casing Diameter (in): 2

Bore Hole Diameter (in): 8

Annular Space (AS) Length (ft): 12

Screened Interval (ft bgs): 60.7 - 70.7

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73

Column of water or length of AS (whichever is less) X 12

Volume of water in AS (gal) = 8.76

Gallons per foot of casing (from chart on back) = 0.163

Column of water X 13.79

Volume of water in casing (gal) = 2.25

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.01

ACTUAL VOLUME PURGED (gal) = 0.8

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1025	0	70	0	60.10	7.62	2340	13.32	1.61		4.10
1030	5	70	0.35	60.10	7.53	2330	13.65	1.27		2.83
1035	10	70	0.70	60.11	7.50	2330	13.93	0.54		2.29
1040	15	70	1.05	60.11	7.50	2330	14.03	0.41		2.10
1045	20	70	1.4	60.11	7.50	2330	14.21	0.15		1.91
1050	25	70	1.75	60.11	7.51	2330	14.36	0.35		1.77
1055	30	70	2.1	60.11	7.51	2330	14.40	0.41		1.72
1100	35	70	2.45	60.11	7.51	2330	14.47	0.42		—
1105	40	70	2.8	60.11	7.51	2350	14.44	0.11		1.69
1107	42	70	2.94	60.11	7.51	2340	14.42	0.33		1.61
1109	44	70	3.08	60.11	7.51	2350	14.45	—		1.62
1215				60.11						
1240				60.11	= final water level					

Purging Field Notes: Began purging at 1017. Purge = 75sec, Rech = 30sec, flow rate = 70 ml/min, press = 38-46 psi. Very clear water

Sample Date/Time: 10-22-09 1138

Sample ID/TR #: TMW13102009

Sampler's signature/date: Grant Kelb 10-22-09

Reviewer's signature/date: Mat Mat 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-14A

Start Date:

10-27-09

Start Time:

0820

Well TD:

112.1

Well DTW:

62.41

Water Column:

49.69

Pump Intake (ft bgs):

98.7

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

17

Screened Interval (ft bgs):

94.25 - 109.25

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 17

Volume of water in AS (gal)

= 12.41

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 49.69

Volume of water in casing (gal)

= 8.10

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 20.51

ACTUAL VOLUME PURGED (gal)

= 1

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0855	0	60	0	63.41	8.14	1880	11.37	10.14		2.49
0900	5	50	0.3	63.72	8.43	1880	10.81	9.57		1.94
0905	10	50	0.55	63.72	8.49	1870	10.70	12.68		1.76
0910	15	50	0.8	63.72	8.53	1870	11.07	9.11		1.56
0915	20	50	1.05	63.72	8.61	1870	11.32	13.17		1.39
0920	25	50	1.3	63.72	8.68	1870	11.18	8.03		1.28
0925	30	50	1.55	63.72	8.72	1880	11.17	4.87		1.19
0930	35	50	1.8	63.72	8.74	1880	11.29	3.22		—
0935	40	50	2.05	63.72	8.75	1880	11.39	6.46		1.08
0940	45	50	2.3	63.72	8.77	1880	11.41	6.37		1.01
0945	50	50	2.55	63.72	8.78	1890	11.35	1.86		0.98
0950	55	50	2.8	63.72	8.78	1870	11.37	4.79		0.92
0955	60	50	3.05	63.72	8.77	1870	11.51	3.01		0.86
1000	65	50	3.3	63.72	8.78	1870	11.85	2.80		0.84
1002	67	50	3.4	63.72	8.79	1870	12.17	1.18		0.82
1005	70	50	3.55	63.72	8.78	1870	12.54	1.90		0.83

Purging Field Notes:

Very clear water w strong sulfur odor. Did not dock ZIST until 0900 hrs. by which time drawdown = 6.31. Upon docking ZIST at 0900, drawdown stable throughout parameter measurements.

Pressure = 55 psi, rock = 60 sec, purge = 5 sec, flow = 50 mL/min

Sample Date/Time: 10-27-09 1815

Sample ID/TR #: TMW14A102009

Sampler's signature/date:

Grant Kelb 10-27-09

Reviewer's signature/date:

Matthew 10/28/09

FWD1102009 =

blind dup - time 1500 hrs

Final water level = 63.79 at 1550 hrs

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW15
 Start Date: 10-26-09
 Start Time: 0845
 Well TD: 76.65
 Well DTW: 64.33
 Water Column: 12.32
 Pump Intake (ft bgs): 74.65

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 56-71

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12.32
 Volume of water in AS (gal) = 8.99
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 12.32
 Volume of water in casing (gal) = 2.01
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.00
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0920	0	120	0	64.56	7.78	2290	12.55	4.27		1.88
0925	5	60	0.6	64.51	7.79	2290	12.05	2.70		1.74
0930	10	60	0.9	64.46	7.65	2300	12.23	1.28		1.96
0935	15	60	1.2	64.42	7.60	2300	12.39	2.94		1.92
0940	20	60	1.5	64.42	7.59	2300	12.57	1.16		1.80
0945	25	60	1.8	64.41	7.59	2300	12.61	1.49		—
0950	30	60	2.1	64.41	7.60	2300	12.77	1.57		1.86
0955	35	60	2.4	64.41	7.61	2300	13.01	1.35		1.84
1000	40	60	2.7	64.41	7.61	2320	13.07	1.55		1.85
1300				64.41						
1445				64.41						

Purging Field Notes: Began purging at 0905. Initial settings of P = 55psi, tech = 30 sec, & purge = 12 sec resulted in flow of 7120ml/min and getting water at end of purge. Reduced P to 40psi + purge to 8 sec. Increased recharge to 40 sec. Flow was 60-70 ml/min. Water level then increased and stabilized during purging.

Sample Date/Time: 10/26/09 1000 Sample ID/TR #: TMW15102009 - primary & QC
 Sampler's signature/date: Grant Kolb 10/26/09 FW Q5102009 - blind dup 1445hrs
 Reviewer's signature/date: Watt 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 15 127.2 - 142.2

Well Number: TMW16
 Start Date: 10/15/09
 Start Time: 1006
 Well TD: 142.2
 Well DTW: 55.40
 Water Column: 86.8
 Pump Intake (ft bgs): 140.2

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.432, 73
 Column of water or length of AS (whichever is less) X 15
 Volume of water in AS (gal) = 10.92
 Gallons per foot of casing (from chart on back) = .1632
 Column of water X 86.8
 Volume of water in casing (gal) = 14.19
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 25.09
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 75.27
 ACTUAL VOLUME PURGED (gal) = 20.8

Method of Purging : BENNETT PUMP

Field Parameters	Reading								
Time	<u>1006</u>	<u>1009</u>	<u>1012</u>	<u>1016</u>	<u>1022</u>	<u>1028</u>	<u>1032</u>	<u>1036</u>	<u>1042</u> Final Sample
Volume (gal)	<u>INITIAL</u>	<u>2</u>	<u>4</u>	<u>7</u>	<u>10</u>	<u>13</u>	<u>15</u>	<u>17</u>	<u>20</u>
Flow Rate (gpm)									N/A
DTW (ft toc)	<u>55.40</u>								
pH	<u>7.65</u>	<u>8.11</u>	<u>8.28</u>	<u>8.39</u>	<u>8.50</u>	<u>8.49</u>	<u>8.57</u>	<u>8.65</u>	<u>8.67</u>
Conductivity (uS/cm)	<u>2230</u>	<u>1830</u>	<u>1810</u>	<u>1810</u>	<u>1740</u>	<u>1530</u>	<u>1770</u>	<u>1850</u>	<u>2170</u>
Temperature (°C)	<u>12.82</u>	<u>12.85</u>	<u>12.80</u>	<u>12.78</u>	<u>12.76</u>	<u>12.75</u>	<u>12.79</u>	<u>12.83</u>	<u>12.92</u>
Turbidity (NTU)	<u>114</u>	<u>35.2</u>	<u>22.4</u>	<u>31.0</u>	<u>68.6</u>	<u>146</u>	<u>1062</u>	<u>843</u>	<u>568</u>
Eh/Redox (mV)									
DO (mg/L)	<u>5.91</u>	<u>2.45</u>	<u>1.83</u>	<u>1.80</u>	<u>1.33</u>	<u>1.25</u>	<u>1.27</u>	<u>1.18</u>	<u>1.01</u>

Purging Field Notes:

PUMPED WELL DRY, SAMPLED AFTER RECHARGE.

Sample Date/Time:

10/20/09 1200

Sample ID/TR #:

TMW16102009

Sampler's signature/date:

Fredrick G. Kuhlman

Reviewer's signature/date:

10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 148.7 - 158.7

Well Number: TMW18
 Start Date: 10/14/09
 Start Time: 1400
 Well TD: 158.7 ^{MLM} 160.7
 Well DTW: 54.36
 Water Column: 104.34
 Pump Intake (ft bgs): 158.7

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 104.34
 Volume of water in casing (gal) = 17.03
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 25.8
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 77.40
 ACTUAL VOLUME PURGED (gal) = 17.5

DTW 10/23
 0810 87.66

Method of Purging : BENNETT PUMP

Field Parameters	Reading								Final Sample
Time	1400	1408	1413	1420	1426	1433	1440	1445	
Volume (gal)	INITIAL	3	5	8	10	13	16	17.5	
Flow Rate (gpm)									N/A
DTW (ft toc)	54.36							157.16	
pH	10.99	10.96	10.98	10.95	10.93	10.95	11.15		
Conductivity (uS/cm)	3100	3020	2990	2990	3010	2300	3040		
Temperature (°C)	13.21	13.48	13.20	13.10	13.12	13.12	13.13		
Turbidity (NTU)	660	45.5	15.9	10.7	13.0	20.2	113.7		
Eh/Redox (mV)									
DO (mg/L)	0.39	0.34	0.29	0.27	0.20	0.21	0.18		

Purging Field Notes:

PURGED WELL DRY, ALLOWED TO RECHARGE THEN SAMPLED.
PURGED AN ADDITIONAL 3 GALS BEFORE SAMPLING.

Sample Date/Time:

10/23/09 1040

Sample ID/TR #:

TMW18102009

Sampler's signature/date:

Justin G. Helber

Reviewer's signature/date:

Matt Mott 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 172.97-187.97

Well Number: TMW 19
 Start Date: 10/15/09
 Start Time: 1113
 Well TD: 187.97
 Well DTW: 42.33
 Water Column: 145.64
 Pump Intake (ft bgs): 185.97

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 17
 Volume of water in AS (gal) = 12.41
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 145.64
 Volume of water in casing (gal) = 23.77
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 36.18
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 108.54
 ACTUAL VOLUME PURGED (gal) = 26

Method of Purging: BENNETT PUMP

Field Parameters	Reading								
Time	1113	1117	1120	1124	1129	1133	1138	1145	Final Sample N/A
Volume (gal)	INITIAL	3	5	7	10	13	15	18	
Flow Rate (gpm)									
DTW (ft toc)	42.33								
pH	7.92	8.17	8.19	8.23	8.27	8.27	8.26	8.24	
Conductivity (uS/cm)	2920	2900	2870	2840	2620	2540	2490	2450	
Temperature (°C)	12.63	12.82	12.79	12.77	12.72	12.68	12.71	12.74	
Turbidity (NTU)	58.2	145	155	284	544	728	787	1100+	
Eh/Redox (mV)									
DO (mg/L)	4.17	1.56	1.25	1.05	1.34	1.05	0.88	0.86	

Purging Field Notes:

PURGED WELL DRY, ALLOW TO RECHARGE THEN COLLECTED
SAMPLE. PURGED ADDITIONAL 3 GALS BEFORE COLLECTING
SAMPLE ON 10/23. WATER LEVEL BEFORE COLLECTION 42.41

Sample Date/Time: 10/23/09 0900
 Sampler's signature/date: Frederick S. Belmont
 Reviewer's signature/date: Matt Mart 10/23/09

Sample ID/TR #: TMW19102009

WELL SAMPLING DATA FORM

Well Number: TMW 19Start Date: 10/15/09Start Time: 1113

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

Number of EV to be purged X _____

TOTAL VOLUME TO BE PURGED (gal) = _____

ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading							
Time	1150	1156	1200	1206				Final Sample
Volume (gal)	20	22	24	26				
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	8.27	8.31	8.34	8.55				
Conductivity (uS/cm)	2480	2480	2490	3020				
Temperature (°C)	12.75	12.75	12.76	12.94				
Turbidity (NTU)	968	979	709	1315				
Eh/Redox (mV)								
DO (mg/L)	0.93	0.88	0.93	0.82				

Purging Field Notes:

Sample Date/Time: 10/23/09 0900

Sample ID/TR #: _____

Sampler's signature/date: Frederick E. R. [Signature]

Reviewer's signature/date: _____

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW 21

Start Date:

10-24-09

Start Time:

0855

Well TD:

61.31

Well DTW:

50.49

Water Column:

10.82

Pump Intake (ft bgs):

58.98

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

12

Screened Interval (ft bgs):

48-58

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 10.82

Volume of water in AS (gal)

= 7.90

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 10.82

Volume of water in casing (gal)

= 1.76

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 9.66

ACTUAL VOLUME PURGED (gal)

= 2.4

Method of Purging:

Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0925	0	100	0	51.31	7.67	2640	12.81	97.59		2.55
0940	15	100	1.5	51.58	7.69	2640	13.00	71.62		1.82
0945	20	100	2.0	51.59	7.69	2640	13.16	55.26		1.76
0950	25	100	2.5	51.62	7.70	2640	13.25	50.77		1.62
0955	30	100	3.0	51.68	7.70	2640	13.21	47.81		—
1000	35	100	3.5	51.73	7.70	2640	13.10	48.50		1.43
1005	40	100	4.0	51.78	7.70	2640	13.26	50.36		1.31
1010	45	100	4.5	51.83	7.71	2640	13.36	61.13		1.18
1015	50	100	5.0	51.87	7.71	2640	13.64	72.58		1.10
1020	55	100	5.5	51.93	7.71	2640	13.87	96.12		1.02
1025	60	100	6.0	51.95	7.71	2640	13.92	111.5		0.96
1030	65	100	6.5	51.98	7.72	2640	13.92	118.3		0.94
1035	70	100	7.0	51.99	7.71	2640	14.13	124.0		0.88
1040	75	100	7.5	52.01	7.71	2640	14.12	126.7		0.87
1045	80	100	8.0	52.01	7.71	2640	14.29	135.9		0.84
1050	85	100	8.5	52.01	7.71	2640	14.28	131.1		0.82

Purging Field Notes:

Began purging at 0910, with initial press of 30 psi, 10 flow. Increased P to 40 psi + then 50 psi before flow appeared. Reduced P to 30 psi + flow continued for duration. Each > 30 sec, Purge = 7 sec

Sample Date/Time: 10-24-09 1100

Sample ID/TR #: TMW21/102009

Flow = 100ml/min

Sampler's signature/date:

Grant Kolo 10-24-09

Reviewer's signature/date:

Matt Mat 10/24/09

Reviewer's signature/date:

See
Page
1

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2"
 Bore Hole Diameter (in): 8"
 Annular Space (AS) Length (ft): 12'
 Screened Interval (ft bgs): _____

Well Number: TMW-22
 Start Date: 10-13-09
 Start Time: 1615
 Well TD: 65.21'
 Well DTW: 48.79'
 Water Column: 16.42
 Pump Intake (ft bgs): No Pump

WELL VOLUME CALCUATION

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>12</u>
Volume of water in AS (gal)	=	<u>8.76</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>16.42</u>
Volume of water in casing (gal)	=	<u>2.68</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>11.44</u>
Number of EV to be purged	X	<u>3</u>
TOTAL VOLUME TO BE PURGED (gal)	=	<u>34.32</u>
ACTUAL VOLUME PURGED (gal)	=	<u>4</u>
Method of Purging : <u>bailer</u>		

Field Parameters	Reading							
Time	<u>1630</u>	<u>1640</u>	<u>1650</u>					Final Sample
Volume (gal)	<u>0.75</u>	<u>2.5</u>	<u>4</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>54.74</u>	<u>57.70</u>	<u>61.40</u>					
pH	<u>7.52</u>	<u>7.72</u>	<u>7.77</u>					
Conductivity (uS/cm)	<u>3480</u>	<u>3590</u>	<u>3490</u>					
Temperature (°C)	<u>12.74</u>	<u>12.71</u>	<u>12.83</u>					
Turbidity (NTU)	<u>340.6</u>	<u>621.9</u>	<u>71000</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>0.59</u>	<u>0.28</u>	<u>0.24</u>					

Purging Field Notes:

Clear water at beginning of bailing & became progressively cloudier. Bailed 6 gal total before well was dry.

Sample Date/Time: no sample collected Sample ID/TR #: _____
 Sampler's signature/date: Grant Kels 10-13-09
 Reviewer's signature/date: [Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
12
52-62

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

TMW22
10-19-09
0815
65.23
48.94
16.29
63.93

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
Column of water or length of AS (whichever is less) X _____
Volume of water in AS (gal) = _____
Gallons per foot of casing (from chart on back) = _____
Column of water X _____
Volume of water in casing (gal) = _____
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
Number of EV to be purged X _____
TOTAL VOLUME TO BE PURGED (gal) = _____
ACTUAL VOLUME PURGED (gal) = Ø

Method of Purging : bailer - well was previously purged and parameters measured

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (µS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected full set of samples w a bailer. Parameters were measured previously. No purging performed at time of sampling.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-19-09 0900

Grant Kelle 10-19-09

Matthew 10/23/09

Sample ID/TR #:

TMW22102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2'
8"
12'
46-56'

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

TMW-23

1530 10-13-09

1530

59.5'

45.58'

13.92'

NO pump

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)	=	0.73
Column of water or length of AS (whichever is less)	X	12
Volume of water in AS (gal)	=	8.76
Gallons per foot of casing (from chart on back)	=	0.163
Column of water	X	13.92
Volume of water in casing (gal)	=	2.27
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	11.03
Number of EV to be purged	X	3
TOTAL VOLUME TO BE PURGED (gal)	=	33.09
ACTUAL VOLUME PURGED (gal)	=	3.5

Method of Purging : bailing

Field Parameters	Reading							
Time	1535	1545	1555					Final Sample
Volume (gal)	0.5	2.5	3.5					
Flow Rate (gpm)								N/A
DTW (ft toc)	49.02	54.80	57.34					
pH	7.56	7.74	7.79					
Conductivity (uS/cm)	3230	3230	3250					
Temperature (°C)	13.40	13.09	13.05					
Turbidity (NTU)	825.3	>1000	110.6					
Eh/Redox (mV)								
DO (mg/L)	0.84	0.57	0.40					

Purging Field Notes:

Very muddy purge water. Bailed well dry upon removal of 4.5 gal

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

no sample collected
Smart Koke 10-13-09
10/23/09

Sample ID/TR #:

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: TMW-23

Start Date: 10-19-09

Start Time: 1520

Well TD: 59.5

Well DTW: 45.72

Water Column: 13.78

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 0
 Method of Purging : bailer

Field Parameters	Reading								
Time									Final Sample
Volume (gal)									
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH									
Conductivity (uS/cm)									
Temperature (°C)									
Turbidity (NTU)									
Eh/Redox (mV)									
DO (mg/L)									

Purging Field Notes:

Collected full set of samples w a bailer. Parameters were measured previously. No purging performed at time of sampling. Water level = 45.72 w bailer in well. Very muddy water.

Sample Date/Time: 10-19-09 1600

Sample ID/TR #: TMW23/02009

Sampler's signature/date: Grant Kolb 10-19-09

Reviewer's signature/date: [Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW 24
 Start Date: 10-19-09
 Start Time: 0925
 Well TD: 57.41
 Well DTW: 39.51
 Water Column: 17.90
 Pump Intake (ft bgs): 55.41

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 47-54

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17.90
 Volume of water in casing (gal) = 2.92
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.68
 ACTUAL VOLUME PURGED (gal) = 0.3

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1000	0	30	0	40.34	7.88	2860	19.21	6.03		3.73
1005	5	25	0.15	40.37	7.81	2870	19.16	3.39		2.67
1010	10	30	0.275	40.41	7.79	2880	18.77	2.10		2.47
1015	15	25	0.425	40.41	7.79	2850	18.66	2.82		2.31
1020	20	25	0.55	40.41	7.79	3840	19.00	1.98		2.24
1025	25	25	0.675	40.38	7.80	3840	19.83	1.77		2.25
1030	30	25	0.8	40.38	7.80	3840	20.07	1.53		2.17
1035	35	25	0.925	40.41	7.81	3840	19.80	1.42		2.14
1040	40	25	1.05	40.40	7.82	3840	20.01	1.33		2.14
1045	45	25	1.175	40.40	7.83	3820	20.15	1.75		2.13
1050	50	25	1.3	40.40	7.84	3830	19.92	1.88		2.11
1052	52	25	1.35	40.40	7.84	3840	19.97	—		2.12
1500	Final water level = 40.55'									

Purging Field Notes:

Took at least 10 min to fill flow thru cell.
 Began purging around 0940. Very clear water. Initial purge/tech settings drew water level down too much. Adjusted tech to

Sample Date/Time: 10-19-09 1200 Sample ID/TR #: TMW 24/102009
 Sampler's signature/date: Grant Feld 10-19-09
 Reviewer's signature/date: Matt Matt 10/23/09

Drawdown then stabilized during parameter measurements.

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW 27
 Start Date: 24 OCT 2009
 Start Time: 1110
 Well TD: 73.26
 Well DTW: ~~30.60~~ 29.90
 Water Column: 43.36
 Pump Intake (ft bgs): 72.14

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 10

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12.0
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 43.36
 Volume of water in casing (gal) = 7.05
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.82
 ACTUAL VOLUME PURGED (gal) = ~ 1.5

Method of Purging :

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1110	0	140		29.90	7.58	147.6	13.69	1.19		1.50
1113	3	140		29.90	7.63	147.9	14.04	2.48		1.44
1116	6	140		29.90	7.70	148.7	14.00	2.00		1.34
1119	9	140		29.90	7.72	149.2	13.93	1.77		1.30
1122	12	140		29.90	7.73	149.3	13.98	6.49		1.24
1125	15	140		29.90	7.74	151.0	13.98	6.17		1.16
1128	18	140		29.90	7.76	151.0	13.94	4.73		1.13
1131	21	140		29.90	7.76	152.0	13.98	6.22		1.11
1134	24	140	3.36	29.90	7.77	153.0	14.07	3.10		1.10
						↑				
						1530				
						<i>[Signature]</i>				

Purging Field Notes:

Pumped from 28.50 to 29.90 ft. 2009 6 on 35psi
~ 140 mL/min completed stabilization, sampled at 200 mL/min
 Sample Date/Time: 1130 24 OCT 2009 Sample ID/TR #: TMW 27102009 and maintained
 Sampler's signature/date: *[Signature]* 26 OCT 2009 water level 29.90
 Reviewer's signature/date: *[Signature]* 10/26/09 ft

230c109

1590

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2"
8"
12'
49-59

Well Number:
Start Date:
Start Time:
Well TD:
Well DTW:
Water Column:
Pump Intake (ft bgs)

TMW-29
10-14-09
0920
61.65
57.22
4.43
no pump

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)
Column of water or length of AS (whichever is less)
Volume of water in AS (gal)
Gallons per foot of casing (from chart on back)
Column of water
Volume of water in casing (gal)
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)
Number of EV to be purged
TOTAL VOLUME TO BE PURGED (gal)
ACTUAL VOLUME PURGED (gal)

= 0.73
X 4.43
= 3.23
= 0.163
X 4.43
= 0.72
= 3.95
X 3
= 11.85
= 2

Method of Purging :

bailer

Field Parameters	Reading							
Time	0930	0935	0955					Final Sample
Volume (gal)	0.5	1	2					
Flow Rate (gpm)								
DTW (ft toc)	59.43	59.91	60.08					N/A
pH	7.78	7.82	7.88					
Conductivity (uS/cm)	2570	2550	2520					
Temperature (°C)	12.85	12.66	12.76					
Turbidity (NTU)	>1000	865.1	705.7					
Eh/Redox (mV)								
DO (mg/L)	6.84	4.33	4.41					

Purging Field Notes:

Sample Date/Time:

no sample collected

Sample ID/TR #:

Sampler's signature/date:

Grant Kolt 10-14-09

Reviewer's signature/date:

10/23/09

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

TMW 29

10-20-09

0830

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected full set of samples w bailer. Parameters were measured previously.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10/20/09 0900

Grant Kelle 10/20/09

Matt 10/23/09

Sample ID/TR #:

TMW29102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 100 - 115

Well Number: EMW 04
 Start Date: 10/14/09
 Start Time: 0955
 Well TD: 115
 Well DTW: 99.25
 Water Column: 15.75
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 15.75
 Volume of water in AS (gal) = 11.5
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 15.75
 Volume of water in casing (gal) = 2.57
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 14.1
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 42.3
 ACTUAL VOLUME PURGED (gal) = 8

Method of Purging: BENNETT PUMP

Field Parameters	10/14/09					Reading	10/23		
Time	0955	1000	1004	1010	1020		0930		Final Sample
Volume (gal)	INITIAL	3	5	7	8				
Flow Rate (gpm)									N/A
DTW (ft toc)	99.25				113.20		110.10		
pH	6.89	7.10	7.44	7.65					
Conductivity (uS/cm)	1250	1250	1245	1246					
Temperature (°C)	13.2 ²	13.07	13.20	13.62					
Turbidity (NTU)	7.76	10.23	115.7	19.70					
Eh/Redox (mV)									
DO (mg/L)	0.61	0.34	0.27	0.26					

Purging Field Notes:

PUMPED WELL DRY, ALLOWED TO RECHARGE THEN SAMPLED.
REMOVED ONLY 2L OF WATER BEFORE SAMPLING DUE TO LIMITED
QUANTITY OF WATER. WELL STARTED TO DRY DURING FINAL SAMPLE COLLECTION

Sample Date/Time: 10/27/09 0835
 Sampler's signature/date: Frederick E. Helburn
 Reviewer's signature/date: Matthew 10/27/09

Sample ID/TR #: EMW041009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 4
 Bore Hole Diameter (in): 3
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 12.15 - 32.15

Well Number: KW 35
 Start Date: 10/16/09
 Start Time: 1027
 Well TD: 32.15
 Well DTW: 19.43
 Water Column: 12.72
 Pump Intake (ft bgs):

WELL VOLUME CALCUCATION

Gallons per foot of annular space (from chart on back) = 0.59
 Column of water or length of AS (whichever is less) X 12.72
 Volume of water in AS (gal) = 7.51
 Gallons per foot of casing (from chart on back) = 0.6528
 Column of water X 12.72
 Volume of water in casing (gal) = 8.3
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.81
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 47.43
 ACTUAL VOLUME PURGED (gal) = 14.0

Method of Purging : 12 V PUMP

Field Parameters	Reading								Final Sample
Time	1027	1029	1031	1033	1035	1037	1039		
Volume (gal)	INITIAL	3	5	8	10	12	14		
Flow Rate (gpm)									N/A
DTW (ft toc)	19.43								
pH	7.19	7.07	6.84	6.78	6.82	6.86	6.88		
Conductivity (uS/cm)	4230	4120	3990	3920	4050	4180	4210		
Temperature (°C)	11.94	11.90	12.09	12.14	12.02	11.96	11.94		
Turbidity (NTU)	2574	716	756	37.9	25.2	65.8	111.6		
Eh/Redox (mV)									
DO (mg/L)	0.13	0.13	0.13	0.13	0.13	0.12	0.14		

Purging Field Notes:

PURGED W/12 V PUMP, UNTIL DRY. AFTER RECHARGE
COLLECT SAMPLE W/ BAILER.

Sample Date/Time: 10/21/2009 1215
 Sampler's signature/date: Frederick E. Gelber
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: FW35102009

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

FW18

10-24-09

1210

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

=

X

=

=

X

=

=

X

=

=

Method of Purging :

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Well was previously bailed dry. Collected perchlorate sample and well ran dry.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-24-09 1210

Grant Kolb 10-24-09

Matt 10/25/09

Sample ID/TR #:

FW18/102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 4
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 12-52

Well Number: FW 31
 Start Date: 10/16/09
 Start Time: 1140
 Well TD: 52.00
 Well DTW: 41.33
 Water Column: 10.67
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.59
 Column of water or length of AS (whichever is less) X 10.67
 Volume of water in AS (gal) = 6.30
 Gallons per foot of casing (from chart on back) = 0.6528
 Column of water X 10.67
 Volume of water in casing (gal) = 6.97
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 13.27
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 39.81
 ACTUAL VOLUME PURGED (gal) = 10

Method of Purging : 12 V PUMP

Field Parameters	Reading								Final Sample
Time	<u>1140</u> INITIAL	<u>1142</u>	<u>1143</u>	<u>1146</u>	<u>1149</u>	<u>1153</u>	<u>1200</u>		
Volume (gal)	<u>INITIAL</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>7</u>	<u>9</u>	<u>10</u>		
Flow Rate (gpm)									N/A
DTW (ft toc)	<u>41.33</u>							<u>WELL WENT</u>	
pH	<u>7.80</u>	<u>8.13</u>	<u>8.25</u>	<u>8.28</u>	<u>8.32</u>	<u>8.39</u>	<u>DRY</u>		
Conductivity (uS/cm)	<u>235</u>	<u>235</u>	<u>234</u>	<u>235</u>	<u>235</u>	<u>235</u>	<u>← 2350</u>		
Temperature (°C)	<u>12.95</u>	<u>12.66</u>	<u>12.65</u>	<u>12.65</u>	<u>12.67</u>	<u>12.78</u>			
Turbidity (NTU)	<u>69.6</u>	<u>6.32</u>	<u>3.44</u>	<u>8.59</u>	<u>10.5</u>	<u>12.8</u>			
Eh/Redox (mV)									
DO (mg/L)	<u>0.19</u>	<u>0.15</u>	<u>0.14</u>	<u>0.13</u>	<u>0.12</u>	<u>0.10</u>			

Purging Field Notes:

PURGED WELL DRY WITH 12V PUMP AFTER RECHARGE
SAMPLED WITH BAILER

Sample Date/Time:

10/21/2009 1430

Sample ID/TR #:

FW31102009

Sampler's signature/date:

Frederic G. Schubert

Reviewer's signature/date:

Matthew 10/3/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 1.6
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 33.6-53.6

Well Number: MWD1
 Start Date: 162^{SR} 10/13/09
 Start Time: 1626
 Well TD: 54.66
 Well DTW: ← not
 Water Column: recorded
 Pump Intake (ft bgs): well was

WELL VOLUME CALCUCATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 4 gal

Method of Purging : hand bailed

bailed dry.
DTW was
recorded
previously in
October 2009
during water
level
measurements.
-MLM

Field Parameters	Reading							
Time	1626	1629	1632	1635	1638	1739		Final Sample
Volume (gal)	1.0	1.5	2.0	2.5	3.0	4.0		
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	7.46	7.66	7.68	7.60	7.63			
Conductivity (uS/cm)	3600	3598	3580	3560	3560			
Temperature (°C)	15.06	14.71	14.69	14.60	14.58			
Turbidity (NTU)	496.2	389.4	436.4	397.0	366.8			
Eh/Redox (mV)								
DO (mg/L)	3.20	3.29	3.10	2.75	2.99			

Purging Field Notes:

hand bailed well dry, collected ~40 gal. on 10/13/09

Sample Date/Time:

10/13/09

Sample ID/TR #:

Sampler's signature/date:

- not sampled on this

Reviewer's signature/date:

Matt Matt 10/23/09 date

WELL SAMPLING DATA FORM

Well Number: MW #1

Start Date: 10/22/09

Start Time: 0905

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

Number of EV to be purged X _____

TOTAL VOLUME TO BE PURGED (gal) = _____

ACTUAL VOLUME PURGED (gal) = 4

Method of Purging : bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected complete sample set w bailer. Parameters had been previously measured.

Sample Date/Time: 10/22/09 0930

Sample ID/TR #: MW#1102009

Sampler's signature/date: Grant Kolb 10-22-09

Reviewer's signature/date: Matt Matt 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 1.5
 Annular Space (AS) Length (ft): 10
 Screened Interval (ft bgs): 32-47

Well Number: MWOZ
 Start Date: 10/13/09
 Start Time: 1535
 Well TD: 49.33
 Well DTW: 49.33
 Water Column: 49.33
 Pump Intake (ft bgs): 47.33

not recorded at this

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 2 gal

time, recorded during Oct 2009 water level measurements, Well was bailed dry, - MLM

Method of Purging : hand bailer

Field Parameters	Reading								Final Sample
Time	1535	1539	1541	1545					
Volume (gal)	.5	.5	.5	.3					
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH ^{MLM}	6.86	7.00	7.01	7.00					
Conductivity (uS/cm)	243	245	245	245	2450				
Temperature (°C)	15.93	14.96	14.94	14.80					
Turbidity (NTU)	621.6	1092	>1100	>1100					
Eh/Redox (mV)									
DO (mg/L)	3.32	3.42	3.00	3.34					

Purging Field Notes:

purged well dry on 10/13, collected ~ 2.0 gal

Sample Date/Time:

not sampled on this date

Sample ID/TR #:

Sampler's signature/date:

Reviewer's signature/date:

MLM 10/23/09

WELL SAMPLING DATA FORM

Well Number: MW02

Start Date: 10-22-09

Start Time: 0825

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

Number of EV to be purged X _____

TOTAL VOLUME TO BE PURGED (gal) = _____

ACTUAL VOLUME PURGED (gal) = 4

Method of Purging : bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected complete sample set w bailer. Parameters had been previously measured.

Sample Date/Time: 10/22/09 0830

Sample ID/TR #: MW02/02009

Sampler's signature/date: Grant Kolb 10/22/09

Reviewer's signature/date: Matt Mat 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

MW 03

Start Date:

10-23-09

Start Time:

1235

Well TD:

56.2

Well DTW:

45.90

Water Column:

10.30

Pump Intake (ft bgs):

54.2

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

12

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 10.3

Volume of water in AS (gal)

= 7.52

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 10.3

Volume of water in casing (gal)

= 1.68

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 9.2

ACTUAL VOLUME PURGED (gal)

= 0.75

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1255	0	60	0	46.08	7.40	4960	14.60	2.15		4.15
1300	5	60	0.3	46.10	7.29	5340	14.39	1.51		2.30
1305	10	60	0.6	46.11	7.28	5420	14.26	1.22		1.88
1310	15	60	0.9	46.12	7.27	5440	14.11	1.12		1.72
1315	20	60	1.2	46.12	7.28	5440	14.23	1.13		1.61
1320	25	60	1.5	46.12	7.28	5430	14.33	0.73		—
1325	30	60	1.8	46.12	7.28	5410	14.37	0.71		1.60
1330	35	60	2.1	46.12	7.28	5400	14.35	0.62		1.57
1335	40	60	2.4	46.12	7.28	5390	14.28	0.42		1.53
1337	42	60	2.52	46.12	7.28	5380	14.29	1.18		1.51
1339	44	60	2.64	46.12	7.28	5370	14.33	—		1.53
1340	45	60	2.7	46.12	7.28	5380	14.38	0.61		1.52
1415				46.12						
1505				46.13	= final water level					

Purging Field Notes:

very clear water
 Press = 30 psi, Tech = 55 sec, purge = 5 sec, flow = 60 mL/min

Sample Date/Time: 10/23/09 1400

Sample ID/TR #: MW 03/02009

Sampler's signature/date:

Grant Kolb 10-23-09

Reviewer's signature/date:

10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW 20
 Start Date: 10-23-09
 Start Time: 0830
 Well TD: 59.4
 Well DTW: 44.88
 Water Column: 14.52
 Pump Intake (ft bgs): 57.37

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 14.52
 Volume of water in casing (gal) = 2.37
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.13
 ACTUAL VOLUME PURGED (gal) = 1.1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0855	0	60	0	45.04	6.90	19400	11.78	20.92		3.46
0900	5	60	0.3	45.10	6.84	18900	12.20	16.17		2.14
0905	10	65	0.6	45.10	6.84	18800	12.52	11.46		1.82
0910	15	70	0.925	45.10	6.84	18700	13.12	7.82		1.66
0915	20	70	1.275	45.10	6.84	18700	13.06	5.84		1.61
0920	25	70	1.625	45.11	—	—	—	3.91		—
0925	30	70	1.975	45.11	6.85	18800	13.32	5.47		1.52
0930	35	70	2.325	45.12	6.86	18800	—	5.17		1.37
0935	40	70	2.675	45.12	6.86	18700	13.41	5.59		1.26
0940	45	70	3.025	45.12	6.86	18700	13.62	4.73		1.20
0945	50	70	3.375	45.12	6.87	19000	13.69	4.62		1.17
0950	55	70	3.725	45.12	6.87	19000	13.77	3.88		1.13
0952	57	70	3.864	45.12	6.87	19100	13.96	2.82		1.13
0954	59	70	4.004	45.12	6.87	19000	13.81	4.30		1.14
1100				45.12		19000				
1225				45.12						

Purging Field Notes: very clear water
Rech = 60 sec, purge = 6 sec, press = 40 psi, flow = 70-75 mL/min
w stable drawdown

Sample Date/Time: 10-23-09 1900 Sample ID/TR #: MW20102009
 Sampler's signature/date: Grant Kolb 10-23-09
 Reviewer's signature/date: [Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2"
 Bore Hole Diameter (in): 8"
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 31-41

Well Number: MW225

Start Date: 17-Oct-09

Start Time: 1004 12.15

Well TD: 62.44

Well DTW: 43.28

Water Column: 36.65

Pump Intake (ft bgs): 41.54

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 2.06
 Volume of water in AS (gal) = 1.29
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 1.29
 Volume of water in casing (gal) = 0.21
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 1.50
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 4.50
 ACTUAL VOLUME PURGED (gal) = 0.750

Method of Purging: low flow Bail

Field Parameters	Reading							
Time	1245	1220	1225					Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	6.91	7.32	7.41	from on top water				
Conductivity (uS/cm)	4990	4260	4640					
Temperature (°C)	16.05	15.06	15.17					
Turbidity (NTU)	16.87	210.8	137.1					
Eh/Redox (mV)								
DO (mg/L)	5.34	4.68	5.66					

Purging Field Notes:

bailed dry

Sample Date/Time:

1245 Purge

Sample ID/TR #:

MW225102009

Sampler's signature/date:

C. D. [Signature] 19 OCT 2009

Reviewer's signature/date:

[Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-20-09

Start Time:

0810

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (µS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected partial sample set until well bailed dry.
Parameters were previously measured.

Sample Date/Time:

10/20/09 0830

Sampler's signature/date:

Grant Kolo 10/20/09

Reviewer's signature/date:

10/23/09

Sample ID/TR #:

MW22S/102009

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-21-09

Start Time:

0800

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected partial sample set until well bailed dry.
Parameters had been measured previously.

Sample Date/Time:

10/21/09 0815

Sample ID/TR #:

MW22S102009

Sampler's signature/date:

Grant Kolt 10/21/09

Reviewer's signature/date:

MW22S 10/23/09

WELL SAMPLING DATA FORM

Well Number:

MW22S

Start Date:

10-22-09

Start Time:

0755

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected remainder of sample set with a bailer.
Parameters had been previously measured.

Sample Date/Time:

10/22/09 0800

Sample ID/TR #: MW22S102209

Sampler's signature/date:

Grant Kolb 10/22/09

Reviewer's signature/date:

Matt M/A 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW22D
 Start Date: 10-21-09
 Start Time: 0840
 Well TD: 58.77
 Well DTW: 41.37
 Water Column: 17.40
 Pump Intake (ft bgs): 56.1

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 47-57

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17.40
 Volume of water in casing (gal) = 2.84
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.6
 ACTUAL VOLUME PURGED (gal) = 2.8

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0900	0	90	0	41.47	-	8200	13.50	4.77		3.76
0905	5	90	0.45	41.47	7.32	8050	13.59	3.20		2.61
0910	10	100	0.95	41.48	7.32	6690	13.75	2.45		2.29
0915	15	100	1.45	41.48	7.32	6340	13.75	0.90		2.20
0920	20	100	1.95	41.48	7.32	6120	13.78	1.81		1.95
0925	25	100	2.45	41.48	7.31	6000	13.85	3.60		1.73
0930	30	100	2.95	41.50	7.31	5900	13.79	1.11		1.60
0935	35	100	3.45	41.50	7.32	5910	13.88	1.58		1.45
0940	40	100	3.95	41.50	7.32	5770	13.90	0.89		1.37
0945	45	100	4.45	41.50	7.32	5720	13.93	0.82		1.26
0950	50	100	4.95	41.50	7.32	5660	13.96	1.05		1.20
1000	60	100	5.95	41.50	7.32	5570	14.03	0.21		1.11
1005	65	100	6.45	41.50	7.32	5520	14.08	1.74		1.11
1010	70	100	6.95	41.50	7.33	5480	14.03	0.38		1.04
1015	75	100	7.45	41.50	7.33	5450	14.13	0.86		0.99
1020	80	100	7.95	41.50	7.33	5410	14.04	0.15		0.95

Purging Field Notes: Began purging at 0855. Press = 40psi, Tech = 30 sec
Purge = 4 sec, Flow rate = 90 ml/min. Increased purge to 4.5 sec.
Flow increased to 100 ml/min. Drawdown increased slightly, but stabilized

Sample Date/Time: 10/21/09 1100 g Sample ID/TR #: MW22D/102009 & FWD2102009
 Sampler's signature/date: Grant Kelt 10-21-09 (blind dup)
 Reviewer's signature/date: [Signature] 10/23/09 time = 1400 hrs
 Very clear water

During sampling, purge was increased to 6 sec. Flow increased to 125 ml/min w minimal increase in drawdown.

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: MW22D

Start Date: 10-21-09

Start Time: 0840

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs): _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) _____

Column of water or length of AS (whichever is less) _____

Volume of water in AS (gal) _____

Gallons per foot of casing (from chart on back) _____

Column of water _____

Volume of water in casing (gal) _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) _____

ACTUAL VOLUME PURGED (gal) _____

= _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____
 = _____

} see page 1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1025	85	100	8.45	41.50	7.33	5400	14.05	0.10		0.94
1027	87	100	8.65	41.50	7.33	5390	14.10	0.55		0.93
1029	89	100	8.85	41.50	7.33	5380	14.10	—		0.92
1031	91	100	9.05	41.50	7.33	5370	14.10	0.1		0.92
1035	95	100	9.45	41.50	7.33	5350	14.16	0.48		0.91
1037	97	100	9.65	41.50	7.33	5340	14.13	0.37		0.91
1040	100	100	9.95	41.50	7.34	5330	14.09	0.13		0.89
1042	102	100	10.15	41.50	7.34	5330	—	0.64		0.88
1044	104	100	10.35	41.50	7.34	5330	14.12	—		0.90
1300				41.52						
1500				41.52						
1550				41.50	= final water level					

Purging Field Notes:

Sample Date/Time: _____

Sample ID/TR #: _____

Sampler's signature/date: _____

Reviewer's signature/date: _____

Reviewer's signature/date:

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: SMW01
 Start Date: 24 OCT 2009
 Start Time: 0930
 Well TD: 52.15
 Well DTW: 32.00 ft
 Water Column: 20.15
 Pump Intake (ft bgs): 50.15

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 29.9-49.9

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 20.15
 Volume of water in AS (gal) = 14.71
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 20.15
 Volume of water in casing (gal) = 3.28
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 18.00
 ACTUAL VOLUME PURGED (gal) = 0.56

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0935	0	70		32.00	7.61	2070	11.41	3.98		2.00
0938	3	70		32.00	7.63	2060	11.42	3.61		1.85
0941	6	70		32.00	7.70	2070	10.65	2.54		1.56
0944	9	70		32.0	7.71	2060	11.13	2.11		1.51
0947	12	70		32.00	7.72	2060	11.37	3.51		1.48
0950	15	70		32.00	7.73	2050	11.46	4.39		1.43
0953	18	70		32.00	7.73	2060	11.49	6.62		1.40
0956	21	70		32.00	7.74	2050	11.50	6.28		1.37
0959	24	70		32.00	7.74	2050	11.58	7.99		1.32
1002	27	70		32.00	7.75	2050	11.59	7.21		1.29
1005	30	70	2.1	32.00	7.75	205	11.62	7.07		1.28

Purging Field Notes: 300 off 50m 35psi = 70ml/min for stabilization
Pumped from 29.0 → 32.0 ft, completed stabilization
and sampling at 32.0 ft. 200 off 60m 35psi = 120ml/min

Sample Date/Time: 1005 24 OCT 2009 Sample ID/TR #: SMW01102009

Sampler's signature/date: [Signature] 26 OCT 2009

Reviewer's signature/date: [Signature] 10/26/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW01
 Start Date: 15 OCT 2009
 Start Time: 0950
 Well TD: 120.7
 Well DTW: 84.22
 Water Column: 36.43
 Pump Intake (ft bgs): 118.7

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 105-120

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 15
 Volume of water in AS (gal) = 10.95
 Gallons per foot of casing (from chart on back) = 0.63
 Column of water X 36.43
 Volume of water in casing (gal) = 5.94
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 16.89
 ACTUAL VOLUME PURGED (gal) = ~1

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0955	0	233		84.22	7.70	816	15.02	4.94		0.21
1000	5	233		87.52	8.32	811	14.19	3.13		0.15
1005	10	105		88.56	8.60	799	14.43	1.16		0.14
1010	15	120		88.56	8.80	789	14.70	0.17		0.14
1015	20	145		88.56	9.04	786	14.52	0.07		0.14
1020	25	145		88.56	9.22	788	14.60	0.00		0.13
1025	30	120	~16	92.51	9.34	779	14.66	0.01		0.13

Purging Field Notes:

Sample Date/Time: 1040 Sample ID/TR #: EMW01102009
 Sampler's signature/date: [Signature] 19 OCT 2009
 Reviewer's signature/date: [Signature] 23 OCT 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW03
 Start Date: 16 OCT 2009
 Start Time: 1130
 Well TD: 92.9
 Well DTW: 87.20
 Water Column: _____
 Pump Intake (ft bgs): _____

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 78-93

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) _____
 Column of water or length of AS (whichever is less) _____
 Volume of water in AS (gal) _____
 Gallons per foot of casing (from chart on back) _____
 Column of water _____
 Volume of water in casing (gal) _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) _____
 ACTUAL VOLUME PURGED (gal) _____

= _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____
 = _____

Pumped down to
 87.20 ft and completed
 stabilization, then
 sampled 1230

Method of Purging: _____

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1130	0	90		87.20	9.94	160.6	16.06	32.44		3.34
1135	5	90		87.21	11.71	1440	14.40	12.14		2.29
1140	10	90	135	87.23	11.55	0000	13.81	2.98		1.79
1145	15	90	1350	87.24	11.49		14.05	9.42		1.59
1150	20	80		87.25	11.48		14.83	3.25		1.41
1155	25	80		87.25	11.44		15.15	3.14		1.33
1200	30	80	2.550	87.25	11.39		14.82	5.75		1.33
1205	35	70		87.25	11.38		15.12	5.65		1.25
1210	40	70	3.25	87.25	11.38		14.85	5.23		1.24

Purging Field Notes:

Sample Date/Time: 1230 16 OCT 2009 Sample ID/TR #: EMW03102009
 Sampler's signature/date: G. Wagner 23 OCT 2009
 Reviewer's signature/date: M. Mott 23 Oct 09

WELL SAMPLING DATA FORM

Well Number:

FWOS2102009

Start Date:

10-28-09

Start Time:

1135

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging:

public supply well

Field Parameters	Reading							
Time	1140	1145	1150					Final Sample
Volume (gal)	100	200	300					
Flow Rate (gpm)	20	20	20					N/A
DTW (ft toc)	—	—	—					
pH	7.76	7.81	7.84					
Conductivity (uS/cm)	1181	1184	1183					
Temperature (°C)	12.64	12.61	14.20					
Turbidity (NTU)	56.57	14.25	7.70					
Eh/Redox (mV)								
DO (mg/L)	4.52	3.44	2.55					

Purging Field Notes:

Flow rate was high because the well was purged through a larger diameter maintenance pipe and not from the spigot in the well house.

Sample Date/Time:

10-28-09 1030

Sample ID/TR #:

FWOS2102009

Sampler's signature/date:

Grant Kelt 10/28/09

Reviewer's signature/date:

10/28/09

WELL SAMPLING DATA FORM

Well Number:

FW056102009

Start Date:

10-28-09

Start Time:

1215

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

public supply well

Field Parameters	Reading							
Time	1225	1230	1235					Final Sample
Volume (gal)	300	450	600					
Flow Rate (gpm)	30	30	30					N/A
DTW (ft toc)	—	—	—					
pH	7.55	7.46	7.42					
Conductivity (uS/cm)	1269	1284	1286					
Temperature (°C)	11.83	12.26	12.28					
Turbidity (NTU)	5.79	6.62	6.40					
Eh/Redox (mV)								
DO (mg/L)	2.90	2.97	2.38					

Purging Field Notes:

Flow rate was high because well was purged from a large diameter maintenance pipe and not from the spigot in the well house.

Sample Date/Time:

10-28-09 1200

Sample ID/TR #:

FW056102009

Sampler's signature/date:

Grant Kolb 10/28/09 and QC sample

Reviewer's signature/date:

Blind duplicate = FW056102009 w sample time of 1130

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

FWOS4102009
10-28-09
1315

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging :

public supply well

Field Parameters	Reading							
Time	1325	1330	1335					Final Sample
Volume (gal)	100	200	300					
Flow Rate (gpm)	20	20	20					N/A
DTW (ft toc)	-	-	-					
pH	7.54	7.47	7.45					
Conductivity (uS/cm)	1308	1322	1326					
Temperature (°C)	12.02	12.54	12.51					
Turbidity (NTU)	7.58	4.87	4.58					
Eh/Redox (mV)								
DO (mg/L)	6.60	2.97	2.87					

Purging Field Notes:

Flow rate was high because well was purged via larger diameter maintenance pipe and not from spigot in well house.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-28-09 1100

Grant Kolb 10-28-09

10/28/09

Sample ID/TR #:

FWOS4102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW02
 Start Date: 20 OCT 2009
 Start Time: 0945
 Well TD: 37.90
 Well DTW: 35.14.62
 Water Column: 23.28
 Pump Intake (ft bgs): 35.9

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 25-35

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 23.28
 Volume of water in casing (gal) = 3.79
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 12.55
 ACTUAL VOLUME PURGED (gal) = ~1

Method of Purging :

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0945	0	140		14.62	8.16	775	10.98	5.84		0.07
0950	5	140		14.62	8.22	777	10.93	5.84		0.05
0955	10	140		14.62	8.32	780	10.91	4.44		0.05
1000	15	140		14.62	8.37	784	10.85	2.99		0.05
1005	20	140		14.62	8.37	784	10.88	1.99		0.03
1010	25	140	✓	14.62	8.40	783	10.91	2.25		0.03
1015	30	140	2.1	14.62	8.41	782	10.99	2.24		0.03

Purging Field Notes:

20 off 50m 30psi = 140 mL/min

Sample Date/Time: 1030 20 OCT 2009 Sample ID/TR #: CMW02102009

Sampler's signature/date: Spillenger 23 OCT 2009

Reviewer's signature/date: [Signature] 23 Oct 09

73 Oct 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMMW07
 Start Date: 20 OCT 2009
 Start Time: 1310
 Well TD: 66.60
 Well DTW: 38.95
 Water Column: 27.65
 Pump Intake (ft bgs): 64.27

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 23
 Screened Interval (ft bgs): _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 23
 Volume of water in AS (gal) = 16.79
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 27.65
 Volume of water in casing (gal) = 4.50
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 21.30
 ACTUAL VOLUME PURGED (gal) = 0.5

Method of Purging: Low-Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1310	0	90	39.2	39.2	7.82	1520	12.72	3.23		0.08
1313	3	90		39.2	7.87	1520	12.50	0.84		0.07
1316	6	90		39.2	7.88	1520	12.43	0.167		0.07
1319	9	90		39.2	7.89	1510	12.39	0.68		0.07
1322	12	90		39.2	7.90	1510	12.25	0.55		0.07
1325	15	90		39.2	7.92	1520	12.14	0.21		0.06
1328	18	90	✓	39.2	7.93	1520	12.04	0.14		0.06
1331	21	90	1.89	39.2	7.93	1520	12.02	0.63		0.06
						L → 1520				
						out				

Purging Field Notes:

20 off 6 on 40 psi = 90 mL/min

Sample Date/Time: 1330 20 OCT 2009 Sample ID/TR #: CMMW07102009

Sampler's signature/date: GA [signature] 23 OCT 2009

Reviewer's signature/date: [signature] 23 Oct 09

WELL SAMPLING DATA FORM

Well Number:

CMW-10

Start Date:

10/22/09

Start Time:

1000

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

22

Screened Interval (ft bgs):

53.1-73.1

Well TD:

73.1

Well DTW:

64.75

Water Column:

8.35

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

0.73

Column of water or length of AS (whichever is less)

X

8.35

Volume of water in AS (gal)

=

6.10

Gallons per foot of casing (from chart on back)

=

0.1632

Column of water

X

8.35

Volume of water in casing (gal)

=

1.36

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

7.46

Number of EV to be purged

X

3

TOTAL VOLUME TO BE PURGED (gal)

=

22.38

ACTUAL VOLUME PURGED (gal)

=

7.0

Method of Purging :

BAILER / FRED GEBHARDT & JIM HUG

Field Parameters	Reading								Final Sample
Time	1000	1008	1017	1026	1030	1041	1048	1055	
Volume (gal)	INITIAL	1	2	3	4	5	6	7	
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH	8.92	7.24	8.28	9.80	10.94	11.01	11.61		
Conductivity (uS/cm)	520	515	383	533	566	566	411	4110	
Temperature (°C)	11.17	11.41	10.65	11.48	11.42	11.41	11.42		
Turbidity (NTU)	575	119	626	523	500	855	392		
Eh/Redox (mV)									
DO (mg/L)	9.63	5.90	5.01	5.98	4.78	4.29	4.71		

Purging Field Notes:

BAILED WELL DRY, WILL SAMPLE WHEN WELL RECHARGES

Sample Date/Time:

Sample ID/TR #:

CMW10102009

Sampler's signature/date:

Fred Gebhardt
10/26/09

Reviewer's signature/date:

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW10

Start Date: 26 OCT 09

Start Time: 1015

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging : _____

= _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____
 X _____
 = _____
 = _____

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

CMW10 was purged and parameters taken previously. Hand bailed enough water for the complete sample set.

Sample Date/Time: 1015 26 OCT 2009

Sample ID/TR #: CMW10102009

Sampler's signature/date: [Signature] 26 OCT 2009

Reviewer's signature/date: [Signature] 10/26/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW14

Start Date: 21 OCT 2009

Start Time: 1255

Well TD: 96.75

Well DTW: 16.23

Water Column: 80.02

Pump Intake (ft bgs): 95.75

Well Casing Diameter (in): 2

Bore Hole Diameter (in): 8

Annular Space (AS) Length (ft): 12

Screened Interval (ft bgs): 10

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73

Column of water or length of AS (whichever is less) X 12

Volume of water in AS (gal) = 8.76

Gallons per foot of casing (from chart on back) = 0.163

Column of water X 80.02

Volume of water in casing (gal) = 13.04

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 21.08

ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging: ZIST Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (μS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1220	0	170		16.23	12.78	5080	10.91	51.83		0.09
1223	3	170		16.23	12.95	5820	11.00	7.77		0.07
1226	6	170		16.23	13.40	5970	11.13	3.93		0.06
1229	9	170		16.23	13.58	5970	11.14	2.94		0.07
1232	12	170		16.23	13.62	5970	11.14	3.63		0.08
1235	15	170	✓	16.23	13.65	5960	11.12	3.56		0.08
1240	18	170	3.4	16.23	13.67	5960	11.08	2.61		0.07
						5960				

Purging Field Notes:

10 off 12 on 35 psi = ~ 170 ml/min

Sample Date/Time: 1245 21 OCT 09 Sample ID/TR #: CMW14102009

Sampler's signature/date: [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 OCT 09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 34.24 ~ 54.24

Well Number: CMW17
 Start Date: 10/27/09
 Start Time: 1445
 Well TD: 54.24
 Well DTW: 16.56
 Water Column: 37.68
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 22
 Volume of water in AS (gal) = 16.06
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 37.68
 Volume of water in casing (gal) = 6.15
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 22.21
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 66.63
 ACTUAL VOLUME PURGED (gal) = 7 GALS

Method of Purging : BEN BAILER

Field Parameters	Reading								
Time									Final Sample
Volume (gal)									
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH									
Conductivity (uS/cm)									
Temperature (°C)									
Turbidity (NTU)									
Eh/Redox (mV)									
DO (mg/L)									

Purging Field Notes:

DIFFICULTIES WITH PUMP. WELL WAS PUMPED DRY (7 GALS) PREVIOUSLY
NO PARAMETERS COLLECTED. REMOVED PUMP & COLLECTED SAMPLE W/
BAILER. THEN PURGED WELL DRY AGAIN, REMOVED 7 GALS

Sample Date/Time: 10/27/09 1500
 Sampler's signature/date: [Signature]
 Reviewer's signature/date: [Signature] 10/27/09

Sample ID/TR #: CMW17102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW17
 Start Date: 26 OCT 2009
 Start Time: 1150
 Well TD: 54.24
 Well DTW: 73.26
 Water Column: _____
 Pump Intake (ft bgs) 74.72.4

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading								
Time									Final Sample
Volume (gal)									
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH									
Conductivity (uS/cm)									
Temperature (°C)									
Turbidity (NTU)									
Eh/Redox (mV)									
DO (mg/L)									

Purging Field Notes:

Well was sampled directly. Took out 2 VOC samples and 1 nitrate/nitrite sample and ran out of water very slow to recharge. Was purged dry 4 days prior

Sample Date/Time: 1150 26 OCT 2009 Sample ID/TR #: CMW17102009
 Sampler's signature/date: [Signature] 26 OCT 2009
 Reviewer's signature/date: [Signature] 10/26/09

Well Number:	CNW 18
Start Date:	0930
Start Time:	21 OCT 09
Well TD:	54.10
Well DTW:	41.05
Water Column:	13.05
Pump Intake (ft bgs):	51.77

Well TD:	54.10
Well DTW:	41.05
Water Column:	13.05
Pump Intake (ft bgs):	51.77

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>13.05</u>
Volume of water in AS (gal)	=	<u>9.52</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>13.05</u>
Volume of water in casing (gal)	=	<u>2.13</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>11.65</u>
ACTUAL VOLUME PURGED (gal)	=	<u>0.75</u>

low flow

[illegible]

Purging Field Notes:

12 off 6 on 34 psi → ^{SPW} ~~was not able to sample well~~
~~ran out of water.~~ QA/QC well (FW03)

Sample Date/Time: ~~1000 1000~~ 21 OCT 2009 Sample ID/TR #: CHW18102009

Sampler's signature/date: W. Delbinger 23 OCT 2009

Reviewer's signature/date: Matt Mart 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW19
 Start Date: 10/22/09
 Start Time: 12:14
 Well TD: 51.30
 Well DTW: 24.15
 Water Column: 27.15
 Pump Intake (ft bgs): _____

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17'
 Screened Interval (ft bgs): 36.3-51.3

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 17
 Volume of water in AS (gal) = 12.4
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17
 Volume of water in casing (gal) = 2.77
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.17
 ACTUAL VOLUME PURGED (gal) = 1 GAL

- 21ST DOCKED

Method of Purging : 21ST PUMP / FRED CEBHARDT & JIM HUG

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1214	0		0	24.15	10.14	1460	13.84	9.67		1.92
1230	16		0.50	24.15	9.90	1343	12.73	30.17		30.2 .87
1237	7		0.75	24.15	9.87	1315	12.84	34.1		.81
1248	11		1 GAL	24.15	9.85	1313	12.80	37.2		.79
		PUMP SPITTING N2. WELL PUMPED EARLIER.								

Purging Field Notes:

Sample Date/Time: _____ Sample ID/TR #: CMW19102009
 Sampler's signature/date: Fred Cebhardt
 Reviewer's signature/date: 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: CMW 19
 Start Date: 26 OCT 2009
 Start Time: 1150
 Well TD: 51.30
 Well DTW: _____
 Water Column: _____
 Pump Intake (ft bgs): 49.5

Docked

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

collected samples 25 off 6 on 30 psi until remounted water, 42 L shy of full set (- 4 ups) complete last 42 L at 40 off 3 on 30, after 42 L completely remount of water

Sample Date/Time: 1150 26 OCT 2009 Sample ID/TR #: CMW 19102009
 Sampler's signature/date: [Signature] 26 OCT 2009
 Reviewer's signature/date: [Signature] 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 96.5-116.5

Well Number: CMW-22
 Start Date: 10-15-09
 Start Time: 1325
 Well TD: 120.23
 Well DTW: 114.52
 Water Column: 5.71
 Pump Intake (ft bgs) 116.23

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 5.71
 Volume of water in AS (gal) = 4.17
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 5.71
 Volume of water in casing (gal) = 0.93
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 5.1
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 15.3
 ACTUAL VOLUME PURGED (gal) = 1
 Method of Purging: bailer

Field Parameters	Reading							
Time	<u>1335</u>	<u>1345</u>	<u>1355</u>					Final Sample
Volume (gal)	<u>0.25</u>	<u>0.75</u>	<u>1</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>—</u>	<u>118.3</u>	<u>119.90</u>					
pH	<u>8.77</u>	<u>8.87</u>	<u>8.92</u>					
Conductivity (uS/cm)	<u>698</u>	<u>700</u>	<u>699</u>					
Temperature (°C)	<u>12.48</u>	<u>12.21</u>	<u>12.29</u>					
Turbidity (NTU)	<u>210.0</u>	<u>331.7</u>	<u>71000</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>3.94</u>	<u>3.02</u>	<u>3.30</u>					

Purging Field Notes:

Initial water withdrawn was clear.
Water became progressively cloudier w bailing.
Bailed dry after removal of ≈ 1 gal.

Sample Date/Time: NO SAMPLE COLLECTED Sample ID/TR #: CMW221009
 Sampler's signature/date: Grant Kolo 10-15-09
 Reviewer's signature/date: Matt Mott 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
22
84-104

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

CMW-23
10-15-09
1415
106.6
97.14
9.46
104.6

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)
Column of water or length of AS (whichever is less)
Volume of water in AS (gal)
Gallons per foot of casing (from chart on back)
Column of water
Volume of water in casing (gal)
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)
Number of EV to be purged
TOTAL VOLUME TO BE PURGED (gal)
ACTUAL VOLUME PURGED (gal)

= 0.73
X 9.46
= 6.91
= 0.163
X 9.46
= 1.54
= 8.45
X 3
= 25.35
= 1.75

Method of Purging :

bailer

Field Parameters	Reading								Final Sample
Time	1425	1435	1445						
Volume (gal)	0.5	1	1.5						
Flow Rate (gpm)									N/A
DTW (ft toc)	99.67	102.26	104.91						
pH	9.06	8.91	8.94						
Conductivity (uS/cm)	1840	3740	6120						
Temperature (°C)	12.57	12.57	12.59						
Turbidity (NTU)	71000	84.9	572.4						
Eh/Redox (mV)									
DO (mg/L)	4.72	3.88	2.63						

Purging Field Notes:

Initially, water was clear, but became very silty just before the well bailed dry. Removed ~1.75 gal before well went dry

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

NO SAMPLE COLLECTED
Grant Kolb 10-15-09
10/23/09

Sample ID/TR #:

CMW231009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: CMW25
Start Date: 10-16-09
Start Time: 1145
Well TD: 98.78
Well DTW: 36.48
Water Column: 62.30
Pump Intake (ft bgs): 96.78

Well Casing Diameter (in): 2
Bore Hole Diameter (in): 8
Annular Space (AS) Length (ft): 27
Screened Interval (ft bgs): 71-96'

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
Column of water or length of AS (whichever is less) X 27
Volume of water in AS (gal) = 19.71
Gallons per foot of casing (from chart on back) = 0.163
Column of water X 62.30
Volume of water in casing (gal) = 10.15
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 29.86
ACTUAL VOLUME PURGED (gal) = 3.7

Method of Purging: Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1205	0	70	0	37.21	—	—	—	—	—	—
1210	5	50	0.25	37.75	9.15	1040	17.58	8.01		1.57
1215	10	50	0.5	38.12	9.22	1044	17.71	3.95		1.31
1220	15	70	0.85	38.53	9.25	1051	16.58	2.32		1.18
1230	25	70	1.55	39.26	9.27	1046	17.16	2.47		1.05
1240	35	70	2.25	39.77	9.27	1050	17.57	3.21		1.08
1250	45	110	3.35	40.70	9.26	1055	17.40	2.01		1.01
1255	50	120	3.95	41.73	9.29	1053	16.15	2.25		0.95
1300	55	120	4.55	42.42	9.31	1053	15.47	1.94		0.88
1315	70	120	6.35	45.11	9.31	1054	15.51	1.98		0.85
1330	85	150	8.6	47.35	9.31	1052	14.92	2.44		0.81
1345	100	220	11.9	51.54	9.30	1051	14.20	19.48		1.01
1350	105	50	12.15	51.71	9.27	1055	16.35	19.84		1.20
1355	110	40	12.35	51.81	9.26	1054	18.16	23.65		1.20
1400	115	40	12.55	51.85	9.15	1055	19.55	17.26		1.16
1405	120	40	12.75	51.91	9.05	1055		11.20		1.07

Purging Field Notes:

Water level in well dropped >0.3' on first purge w tech=66, purge=5.
Then attempted to increase purge & pump well dry. After 105 min,
Sample Date/Time: 10/18/09 1500 Sample ID/TR #: CMW25102009 decreased purge to
Sampler's signature/date: [Signature] 10-16-09 4 sec, increased
Reviewer's signature/date: [Signature] 10/23/09 tech to 75 sec.
Achieved flow rate of 30 ml/min & water
level stabilized dramatically. Parameters were stable.
Proceeded w sample collection.

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

CMW 25

Start Date:

10-16-09

Start Time:

1145

Well TD:

98.78

Well DTW:

36.48

Water Column:

Pump Intake (ft bgs):

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

27

Screened Interval (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging:

low flow

 =
 X
 =
 =
 X
 =
 =
 =
 =

 see
 page
 1

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1410	125	40	12.95	51.97	8.95	1055	20.37	11.02		0.97
1415	130	30	13.1	51.99	8.91	1055	20.96	5.93		0.93
1420	135	30	13.25	52.04	8.90	1056	21.28	5.97		0.92
1425	140	30	13.4	52.04	8.90	1056	21.35	4.41		0.90
1430	145	30	13.55	52.11	8.87	1057	21.65	3.65		0.87
1435	150	30	13.7	52.15	8.85	1057	21.49	2.81		0.83
1440	155	30	13.85	52.15	8.84	1058	21.61	3.38		0.82
1445	160	30	14.0	52.18	8.85	1058	21.79	2.43		0.80
1447	162	30	14.06	52.22	8.85	1057	21.46	2.64		0.81
1610	Final water level = 53.11'									

Purging Field Notes:

 met stabilization guidelines prior to sampling. May need
 to be pumped down further next event

Sample Date/Time:

Sample ID/TR #:

Sampler's signature/date:

Reviewer's signature/date:

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: Kmw-09
 Start Date: 10-15-09
 Start Time: 1015 1040
 Well TD: 72.9
 Well DTW: 39.20
 Water Column: 33.7
 Pump Intake (ft bgs): 70.9

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 60-70'

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 33.7
 Volume of water in casing (gal) = 5.49
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 14.25
 ACTUAL VOLUME PURGED (gal) = 4

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1045	0	90	0	39.20	7.81	3450	12.71	4.42		3.09
1050	5	90	0.45	39.20	8.19	3480	12.33	2.24		2.02
1055	10	90	0.9	39.20	8.28	3490	12.22	1.50		1.76
1100	15	90	1.35	39.20	8.23	3500	12.18	0.34		1.58
1105	20	90	1.8	39.20	8.18	3520	12.17	0.66		1.46
1110	25	90	2.25	39.20	8.14	3520	12.26	0.33		1.45
1113	28	90	2.52	39.20	8.11	3530	12.36	0.55		1.40
1116	31	90	2.79	39.20	8.09	3540	12.52	0.26		1.37
1119	34	90	3.06	39.20	8.07	3540	12.61	0.91		1.34
1121	36	90	3.24	—	8.06	3550	12.62	—		1.35
1123	38	90	3.42	39.20	8.05	3550	12.65	0.20		1.34
1125	40	90	3.6	39.20	8.04	3550	12.64	—		1.32
1127	42	90	3.78	39.20	8.03	3560	12.66	—		1.30
1129	44	90	3.96	39.20	8.03	3560	12.80	0.22		1.31

Purging Field Notes:

Very clear water. Pressure = 35-37 psi, reach = 30 sec,
purge = 5 sec, flow rate = 90 mL/min. Final H₂O level

Sample Date/Time: 10/15/09 1200 Sample ID/TR #: Kmw09102009

Sampler's signature/date: Grant Korb 10-15-09

Reviewer's signature/date: Matt Mast 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
12
158-168

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

KMW-10
10-16-09
0845
171.02'
166.93'
4.09
169.02

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>4.09</u>
Volume of water in AS (gal)	=	<u>2.99</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>4.09</u>
Volume of water in casing (gal)	=	<u>0.67</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>3.66</u>
Number of EV to be purged	X	<u>3</u>
TOTAL VOLUME TO BE PURGED (gal)	=	<u>10.98</u>
ACTUAL VOLUME PURGED (gal)	=	<u>2</u>
Method of Purging :		<u>bauler</u>

Field Parameters	Reading							
Time	0905	0915	0930					Final Sample
Volume (gal)	0.25	0.5	0.75					
Flow Rate (gpm)								N/A
DTW (ft toc)	167.31	167.91	168.38					
pH	7.75	7.53	7.40					
Conductivity (uS/cm)	948	893	895					
Temperature (°C)	13.34	12.84	12.85					
Turbidity (NTU)	14.20	25.87	50.76					
Eh/Redox (mV)								
DO (mg/L)	7.10	6.42	5.91					

Purging Field Notes:

Very clear water. Removed approx 2 gal
total before well was dry

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

No sample collected
Grant Kolb
10/26/09

Sample ID/TR #:

KMW101009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: KMW 11
 Start Date: 22 OCT 2009
 Start Time: 0910
 Well TD: 57.44
 Well DTW: 32.40
 Water Column: 25.04
 Pump Intake (ft bgs): 55.11

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 25-55

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 22
 Volume of water in AS (gal) = 16.06
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 25.04
 Volume of water in casing (gal) = 4.08
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 20.14
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging : Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0910	0	160	0	32.40	8.21	991	11.55	43.60		0.07
0913	3	160	480	32.43	8.57	991	11.25	3.93		0.04
0916	6	160	960	32.46	8.68	994	11.63	3.52		0.04
0919	9	160	1440	32.49	8.70	996	11.63	37.68		0.04
0922	12	160	1920	32.52	8.73	998	11.66	76.58		0.03
0925	15	160	2400	32.55	8.74	997	11.63	2.53		0.04
0928	18	160	2880	32.60	8.75	997	11.60	158.0		0.03

Purging Field Notes:

Turbidity doesn't appear to have stabilized.

Sample Date/Time: 0930 22 OCT 09 Sample ID/TR #: KMW 11102009

Sampler's signature/date: SA [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 OCT 09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 22
 Screened Interval (ft bgs): 55.49 - 75.49

Well Number:	KMW 12
Start Date:	10/16/09
Start Time:	0902
Well TD:	75.49
Well DTW:	48.58
Water Column:	26.91
Pump Intake (ft bgs)	119.22

WELL VOLUME CALCUATION

Gallons per foot of annular space (from chart on back)	=	<u>0.73</u>
Column of water or length of AS (whichever is less)	X	<u>22</u>
Volume of water in AS (gal)	=	<u>16.06</u>
Gallons per foot of casing (from chart on back)	=	<u>0.163</u>
Column of water	X	<u>26.91</u>
Volume of water in casing (gal)	=	<u>4.39</u>
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	<u>20.45</u>
Number of EV to be purged	X	<u>3</u>
TOTAL VOLUME TO BE PURGED (gal)	=	<u>61.35</u>
ACTUAL VOLUME PURGED (gal)	=	<u>13</u>

Method of Purging : BENNETT PUMP

Field Parameters	Reading								
Time	0902	0905	0907	0910	0913	0920	0926		Final Sample
Volume (gal)	INITIAL	3	5	7	9	11	13		
Flow Rate (gpm)									N/A
DTW (ft toc)	48.58								
pH	6.87	6.81	6.85	6.89	6.92	7.43	7.72	4080	
Conductivity (uS/cm)	417	414	415	416	419	408	408		
Temperature (°C)	11.41	11.30	11.28	11.27	11.28	11.29	11.41		
Turbidity (NTU)	29.9	12.5	38.7	18.5	42.7	13.3	10.5		
Eh/Redox (mV)									
DO (mg/L)	0.29	0.18	0.16	0.16	0.14	0.13	0.15		

Purging Field Notes:

PUMPED WELL DRY, SAMPLED AFTER WELL RECHARGED.

Sample Date/Time: 10/21/09 0915
 Sampler's signature/date: Fredrick E. Schmitt
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: KML012102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-01

Start Date:

10-14-09

Start Time:

1030

Well TD:

61.23'

Well DTW:

35.94

Water Column:

25.29

Pump Intake (ft bgs):

59.23

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

17

Screened Interval (ft bgs):

44-59

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 17

Volume of water in AS (gal)

= 12.41

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 25.29

Volume of water in casing (gal)

= 4.12

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 16.53

ACTUAL VOLUME PURGED (gal)

= 0.6

Method of Purging:

low flow purge

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1150	0	50	0	36.04	7.57	2890	16.09	145.3		3.83
1155	5	50	0.25	36.05	7.61	2840	15.73	75.86		3.29
1200	10	50	0.5	36.05	7.64	2830	15.53	46.80		3.16
1205	15	50	0.75	36.06	7.64	2820	15.61	32.81		3.11
1210	20	50	1.0	36.06	7.64	2850	15.60	28.00		3.05
1215	25	50	1.25	36.06	7.64	2860	15.56	19.16		3.07
1220	30	50	1.50	36.06	7.64	2800	15.64	8.99		3.03
1225	35	50	1.75	36.06	7.65	2810	15.72	7.21		2.91
1230	40	50	2.0	36.06	7.65	2810	15.98	6.37		2.90
1235	45	50	2.25	36.06	7.65	2810	15.99	4.54		2.91
1237	47	50	2.35	36.06	7.65	2810	15.91	4.87		2.91
1330				36.05						
1405				36.05						

Purging Field Notes:

Began purging at 1140. Pressure = 35psi, reach = 30sec, purge = 7 sec, flow rate = 50-60 ml/min very clear water

Sample Date/Time: 10-14-09, 1300 Sample ID/TR #1 TMW01142009

Sampler's signature/date:

Grant Kolt 10-14-09

Reviewer's signature/date:

Matt Manta 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW02
 Start Date: 14 OCT 2009
 Start Time: 0945
 Well TD: 37.984.09
 Well DTW: 55.18
 Water Column: 29.91
 Pump Intake (ft bgs): 82.09

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 16
 Screened Interval (ft bgs): (14) 67.9-81.9

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.13
 Column of water or length of AS (whichever is less) X 14
 Volume of water in AS (gal) = 10.22
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 29.91
 Volume of water in casing (gal) = 4.88
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.10
 ACTUAL VOLUME PURGED (gal) = 0.33 ~ 1 Gal

Method of Purging : Low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0945	0	125	0.000	55.15	7.19	445.0	14.33	45.96		5.53
0950	5	125	0.250		7.55	446.0	14.13	23.96		5.85
0955	10	125	0.375		7.97	448.0	13.64	23.96		5.66
1000	15	125	.500		8.06	446.0	13.49	10.98		5.33
1005	20	125	.625		8.13	446.0	13.75	23.64		5.98
1010	25	125	.750		8.15	447.0	13.75	82.61		6.35
1015	30	125	.875		8.17	447.0	13.71	42.08		SR 8.17 6.40
1020	35	125	1.00		8.18	447.0	13.74	45.510		SR 8.17 6.42
1025	40	125	1.125		8.28	447	14.13	25.42		SR 8.19 6.35
1030	45	125	1.250	56.1	8.22	447	13.85	10.54		6.34
			3.750							

Purging Field Notes:

This pump is allowing water to return to well, need replaced or added one-way valve

Sample Date/Time: 1035 14 OCT 09 Sample ID/TR #: TMW02102009

Sampler's signature/date: SA Wagner 14 OCT 2009

Reviewer's signature/date: Mat Mat 10/23/09

- appears stabilized but need more DTW measurements & DO. is

Math Mart 10/23/09

Walt Malt 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW-26
 Start Date: 10-17-09
 Start Time: 0910
 Well TD: 57.24
 Well DTW: 47.12
 Water Column: 10.12
 Pump Intake (ft bgs): 55.24

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 45-55

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 10.12
 Volume of water in AS (gal) = 7.39
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 10.12
 Volume of water in casing (gal) = 1.65
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 9.04
 ACTUAL VOLUME PURGED (gal) = 0.5

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0950	0	30	0	47.30	7.78	4940	16.13	1.90		4.57
0955	5	30	0.15	47.30	7.58	4940	16.07	2.00		3.06
1005	15	30	0.45	47.25	7.59	3620	17.24	2.54		3.15
1010	20	30	0.6	47.28	7.58	4940	17.56	3.80		3.08
1015	25	30	0.75	47.30	7.56	4950	17.39	1.41		2.66
1020	30	30	0.9	47.31	7.54	4940	17.08	1.72		2.30
1025	35	30	1.05	47.32	7.33	4950	16.72	2.29		2.00
1030	40	50	1.30	47.36	7.52	4950	16.16	1.55		1.70
1035	45	50	1.55	47.36	7.52	4950	16.00	1.38		1.59
1037	47	50	1.65	47.36	7.52	4950	16.00	1.29		1.61
1039	49	50	1.75	47.36	7.52	4950	15.91	0.86		1.61
1040	50	50	1.8	47.36	7.52	4950	15.92	1.20		1.61
Final water level at 1305 = 47.39'										

Purging Field Notes:

Began purging at 0930. Very clear water. Began to purge 6 sec a reel = 90 sec. Flow = 30 mL/min. Reduced flow to recharge to 60 sec.

Sample Date/Time: 10-17-09 1109 Sample ID/TR #: TMW06102009
 Sampler's signature/date: Grant Kolb 10-17-09
 Reviewer's signature/date: [Signature] 10/23/09

Flow increased to 50 mL/min & drawdown was stable. Pressure = 30 psi.

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 57.37 - 67.37

Well Number: TMW 07
 Start Date: 10/19/09
 Start Time: 1213
 Well TD: 67.37
 Well DTW: 47.78
 Water Column: 19.59
 Pump Intake (ft bgs):

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.13
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 19.59
 Volume of water in casing (gal) = 3.19
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.95
 Number of EV to be purged X
 TOTAL VOLUME TO BE PURGED (gal) =
 ACTUAL VOLUME PURGED (gal) = * 6

Method of Purging : 12 V PUMP + BAILER

Field Parameters	Reading								Final Sample
Time	<u>1213</u>	<u>1215</u>	<u>1216</u>	<u>1505</u>	<u>1519</u>	<u>1529</u>			
Volume (gal)	<u>INITIAL</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>6</u>			
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH	<u>7.16</u>	<u>7.38</u>	<u>7.50</u>	<u>6.99</u>	<u>7.56</u>	<u>7.81</u>			
Conductivity (uS/cm)	<u>5070</u>	<u>5090</u>	<u>5080</u>	<u>5080</u>	<u>5190</u>	<u>5340</u>	<u>5340</u>		
Temperature (°C)	<u>14.51</u>	<u>14.05</u>	<u>13.99</u>	<u>13.39</u>	<u>13.19</u>	<u>13.20</u>			
Turbidity (NTU)	<u>26.4</u>	<u>48.5</u>	<u>110</u>	<u>—</u>	<u>232</u>	<u>459</u>			
Eh/Redox (mV)									
DO (mg/L)	<u>6.32</u>	<u>3.16</u>	<u>2.74</u>	<u>6.50</u>	<u>3.25</u>	<u>3.93</u>			

Purging Field Notes:

* HAD ISSUES WITH 12V PUMP. DELAY IN FINISHING PURGING.
WELL BAILED DRY.

Sample Date/Time: 10/20/09 0840
 Sampler's signature/date: [Signature]
 Reviewer's signature/date: [Signature] 10/23/09

Sample ID/TR #: TMW07102009

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: EMW004 TMW-08
 Start Date: 17-Oct-09
 Start Time: 0925 ~~0110~~ 1010
 Well TD: 115 62.41
 Well DTW: 114.41 36.65
 Water Column: 25.76
 Pump Intake (ft bgs): 60.41

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 32
 Screened Interval (ft bgs): 30-62

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 25.76
 Volume of water in AS (gal) = 18.81
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 25.76
 Volume of water in casing (gal) = 4.20
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 23.11
 ACTUAL VOLUME PURGED (gal) = 0.56

Method of Purging: Bentley ^{SR} Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toe)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1010	0	50.0	0	36.65 <u>114.41</u>	6.91	15300	14.84	85.78		4.16
1015	5	50.0	0.25	36.65	7.24	16400	14.69	180.1		2.10
1020	10	50.0	0.50	36.65	7.34	16400	14.67	132.8		1.60
1025	15	50	0.75	36.65	7.35	16400	14.63	84.58		1.51
1030	20	50	1.0	36.65	7.36	16400	14.68	75.37		1.49
1035	25	50	1.25	36.65	7.37	16400	14.75	76.96		1.34
1040	30	50	1.50	36.65	7.38	16400	14.75	61.97		1.28
1045	35	50	1.75	36.65	7.38	16400	14.82	78.42		1.28

Purging Field Notes:

~~well was purged~~ ^{SR} pressure = 30 psi, purge = 5 sec, recharge = 20 sec
 collected

Sample Date/Time: 1045 Sample ID/TR #: TMW008102009
 Sampler's signature/date: [Signature] 19 OCT 2009
 Reviewer's signature/date: [Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW10

Start Date: 19 OCT 2009

Start Time: 1310

Well TD: 61.80

Well DTW: 36.99

Water Column: 24.81

Pump Intake (ft bgs): 59.47

Well Casing Diameter (in): 2

Bore Hole Diameter (in): 8.75

Annular Space (AS) Length (ft): 33

Screened Interval (ft bgs): 31.23-61.23

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73

Column of water or length of AS (whichever is less) X 24.81

Volume of water in AS (gal) = 18.11

Gallons per foot of casing (from chart on back) = 0.163

Column of water X 24.81

Volume of water in casing (gal) = 4.04

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 22.14

ACTUAL VOLUME PURGED (gal) = 0.4

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1310	0	120		36.99	6.85	5980	16.65	38.00		0.11
1315	5	100			7.51	7100	15.90	23.37		0.08
1320	10	100			7.59	7150	15.45	12.71		0.07
1325	15	100			7.62	7090	15.58	9.06		0.07
1330	20	100			7.63	7030	15.46	7.03		0.07
1335	25	100	1.50	37.20	7.65	6740	15.20	7.09		0.06
			2.5							

Purging Field Notes:

25 off 50m 30psi = 100 ml/min

Sample Date/Time: TMW10102009 Sample ID/TR #: 1345 19 OCT 2009

Sampler's signature/date: [Signature] 23 OCT 2009

Reviewer's signature/date: [Signature] 23 Oct 09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-11

Start Date:

10-20-09

Start Time:

0920

Well TD:

82.52'

Well DTW:

66.61'

Water Column:

15.91'

Pump Intake (ft bgs):

80.52'

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

27

Screened Interval (ft bgs):

55-60

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 15.91

Volume of water in AS (gal)

= 11.61

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 15.91

Volume of water in casing (gal)

= 2.59

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 14.2

ACTUAL VOLUME PURGED (gal)

= 0.6

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0940	0	40	0	66.70	8.35	2200	17.25	275.9		5.99
0945	5	40	0.2	66.72	8.08	2230	16.79	277.5		4.20
0950	10	40	0.4	66.72	7.99	2240	16.20	236.9		3.00
0955	15	40	0.6	66.72	7.97	2240	15.34	190.6		2.52
1000	20	40	0.8	66.72	7.95	2230	15.05	162.4		2.27
1005	25	40	1.0	66.72	7.94	2220	15.87	132.1		2.21
1010	30	40	1.2	66.72	7.94	2220	16.28	109.0		2.19
1015	35	40	1.4	66.72	7.94	2220	16.33	91.14		2.11
1020	40	40	1.6	66.72	7.95	2220	16.81	76.59		2.04
1025	45	40	1.8	66.72	7.95	2220	17.00	67.39		2.02
1030	50	40	2.0	66.72	7.95	2210	17.06	58.78		2.18
1032	52	40	2.08	66.72	7.94	2210	17.24	51.77		2.37
1037	57	40	2.28	66.72	7.95	2200	18.05	49.05		2.62
1315		Final water level = 66.72								

Purging Field Notes:

Press = 40psi, purge = 7 sec, reach = 55 sec, + allow = 40 ml/min

Sample Date/Time: 10-20-09 1100 Sample ID/TR #: TMW11102009

Sampler's signature/date:

Grant Kelle 10-20-09

Reviewer's signature/date:

10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW13

Start Date:

10-22-09

Start Time:

1000

Well TD:

73.78

Well DTW:

59.99

Water Column:

13.79

Pump Intake (ft bgs):

71.45

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

12

Screened Interval (ft bgs):

60.7 - 70.7

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 12

Volume of water in AS (gal)

= 8.76

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 13.79

Volume of water in casing (gal)

= 2.25

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 11.01

ACTUAL VOLUME PURGED (gal)

= 0.8

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1025	0	70	0	60.10	7.62	2340	13.32	1.61		4.10
1030	5	70	0.35	60.10	7.53	2330	13.65	1.27		2.83
1035	10	70	0.70	60.11	7.50	2330	13.93	0.54		2.29
1040	15	70	1.05	60.11	7.50	2330	14.03	0.41		2.10
1045	20	70	1.4	60.11	7.50	2330	14.21	0.15		1.91
1050	25	70	1.75	60.11	7.51	2330	14.36	0.35		1.77
1055	30	70	2.1	60.11	7.51	2330	14.40	0.41		1.72
1100	35	70	2.45	60.11	7.51	2330	14.47	0.42		—
1105	40	70	2.8	60.11	7.51	2350	14.44	0.11		1.69
1107	42	70	2.94	60.11	7.51	2340	14.42	0.33		1.61
1109	44	70	3.08	60.11	7.51	2350	14.45	—		1.62
1215				60.11						
1240				60.11	= final water level					

Purging Field Notes: Began purging at 1017. Purge = 75 sec, Rech = 30 sec,
flow rate = 70 ml/min, press = 38-46 psi. Very clear water

Sample Date/Time: 10-22-09 1138

Sample ID/TR #: TMW13102009

Sampler's signature/date:

Grant Kelb 10-22-09

Reviewer's signature/date:

Mat Mat 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW-14A

Start Date:

10-27-09

Start Time:

0820

Well TD:

112.1

Well DTW:

62.41

Water Column:

49.69

Pump Intake (ft bgs):

98.7

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

17

Screened Interval (ft bgs):

94.25 - 109.25

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 17

Volume of water in AS (gal)

= 12.41

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 49.69

Volume of water in casing (gal)

= 8.10

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 20.51

ACTUAL VOLUME PURGED (gal)

= 1

Method of Purging:

low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0855	0	60	0	63.41	8.14	1880	11.37	10.14		2.49
0900	5	50	0.3	63.72	8.43	1880	10.81	9.57		1.94
0905	10	50	0.55	63.72	8.49	1870	10.70	12.68		1.76
0910	15	50	0.8	63.72	8.53	1870	11.07	9.11		1.56
0915	20	50	1.05	63.72	8.61	1870	11.32	13.17		1.39
0920	25	50	1.3	63.72	8.68	1870	11.18	8.03		1.28
0925	30	50	1.55	63.72	8.72	1880	11.17	4.87		1.19
0930	35	50	1.8	63.72	8.74	1880	11.29	3.22		—
0935	40	50	2.05	63.72	8.75	1880	11.39	6.46		1.08
0940	45	50	2.3	63.72	8.77	1880	11.41	6.37		1.01
0945	50	50	2.55	63.72	8.78	1890	11.35	1.86		0.98
0950	55	50	2.8	63.72	8.78	1870	11.37	4.79		0.92
0955	60	50	3.05	63.72	8.77	1870	11.51	3.01		0.86
1000	65	50	3.3	63.72	8.78	1870	11.85	2.80		0.84
1002	67	50	3.4	63.72	8.79	1870	12.17	1.18		0.82
1005	70	50	3.55	63.72	8.78	1870	12.54	1.90		0.83

Purging Field Notes:

Very clear water w strong sulfur odor. Did not dock ZIST until 0900 hrs. by which time drawdown = 6.31. Upon docking ZIST at 0900, drawdown stable throughout parameter measurements.

Pressure = 55 psi, rock = 60 sec, purge = 5 sec, flow = 50 mL/min

Sample Date/Time: 10-27-09 1815

Sample ID/TR #: TMW14A102009

Sampler's signature/date:

Grant Kelb 10-27-09

Reviewer's signature/date:

Matthew 10/28/09

FWD1102009 =

blind dup - time 1500 hrs

Final water level = 63.79 at 1550 hrs

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW15
 Start Date: 10-26-09
 Start Time: 0845
 Well TD: 76.65
 Well DTW: 64.33
 Water Column: 12.32
 Pump Intake (ft bgs): 74.65

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 56-71

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12.32
 Volume of water in AS (gal) = 8.99
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 12.32
 Volume of water in casing (gal) = 2.01
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.00
 ACTUAL VOLUME PURGED (gal) = 0.75

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft toc)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0920	0	120	0	64.56	7.78	2290	12.55	4.27		1.88
0925	5	60	0.6	64.51	7.79	2290	12.05	2.70		1.74
0930	10	60	0.9	64.46	7.65	2300	12.23	1.28		1.96
0935	15	60	1.2	64.42	7.60	2300	12.39	2.94		1.92
0940	20	60	1.5	64.42	7.59	2300	12.57	1.16		1.80
0945	25	60	1.8	64.41	7.59	2300	12.61	1.49		—
0950	30	60	2.1	64.41	7.60	2300	12.77	1.57		1.86
0955	35	60	2.4	64.41	7.61	2300	13.01	1.35		1.84
1000	40	60	2.7	64.41	7.61	2320	13.07	1.55		1.85
1300				64.41						
1445				64.41						

Purging Field Notes: Began purging at 0905. Initial settings of P = 55psi, tech = 30 sec, & purge = 12 sec resulted in flow of 7120ml/min and getting water at end of purge. Reduced P to 40psi + purge to 8 sec. Increased recharge to 40 sec. Flow was 60-70 ml/min. Water level then increased and stabilized during purging.

Sample Date/Time: 10/26/09 1000 Sample ID/TR #: TMW15102009 - primary & QC
 Sampler's signature/date: Grant Kolb 10/26/09 FW Q5102009 - blind dup 1445hrs
 Reviewer's signature/date: Watt 10/26/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 15 127.2 - 142.2

Well Number: TMW16
 Start Date: 10/15/09
 Start Time: 1006
 Well TD: 142.2
 Well DTW: 55.40
 Water Column: 86.8
 Pump Intake (ft bgs): 140.2

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.4832, 73
 Column of water or length of AS (whichever is less) X 15
 Volume of water in AS (gal) = 10.92
 Gallons per foot of casing (from chart on back) = .1632
 Column of water X 86.8
 Volume of water in casing (gal) = 14.19
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 25.09
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 75.27
 ACTUAL VOLUME PURGED (gal) = 20.8

Method of Purging : BENNETT PUMP

Field Parameters	Reading								
Time	<u>1006</u>	<u>1009</u>	<u>1012</u>	<u>1016</u>	<u>1022</u>	<u>1028</u>	<u>1032</u>	<u>1036</u>	<u>1042</u> Final Sample
Volume (gal)	<u>INITIAL</u>	<u>2</u>	<u>4</u>	<u>7</u>	<u>10</u>	<u>13</u>	<u>15</u>	<u>17</u>	<u>20</u>
Flow Rate (gpm)									N/A
DTW (ft toc)	<u>55.40</u>								
pH	<u>7.65</u>	<u>8.11</u>	<u>8.28</u>	<u>8.39</u>	<u>8.50</u>	<u>8.49</u>	<u>8.57</u>	<u>8.65</u>	<u>8.67</u>
Conductivity (uS/cm)	<u>2230</u>	<u>1830</u>	<u>1810</u>	<u>1810</u>	<u>1740</u>	<u>1530</u>	<u>1770</u>	<u>1850</u>	<u>2170</u>
Temperature (°C)	<u>12.82</u>	<u>12.85</u>	<u>12.80</u>	<u>12.78</u>	<u>12.76</u>	<u>12.75</u>	<u>12.79</u>	<u>12.83</u>	<u>12.92</u>
Turbidity (NTU)	<u>114</u>	<u>35.2</u>	<u>22.4</u>	<u>31.0</u>	<u>68.6</u>	<u>146</u>	<u>1062</u>	<u>843</u>	<u>568</u>
Eh/Redox (mV)									
DO (mg/L)	<u>5.91</u>	<u>2.45</u>	<u>1.83</u>	<u>1.80</u>	<u>1.33</u>	<u>1.25</u>	<u>1.27</u>	<u>1.18</u>	<u>1.01</u>

Purging Field Notes:

PUMPED WELL DRY, SAMPLED AFTER RECHARGE.

Sample Date/Time:

10/20/09 1200

Sample ID/TR #:

TMW16102009

Sampler's signature/date:

Fredrick G. Kuhlman

Reviewer's signature/date:

10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 148.7 - 158.7

Well Number: TMW18
 Start Date: 10/14/09
 Start Time: 1400
 Well TD: 158.7 ^{MLM} 160.7
 Well DTW: 54.36
 Water Column: 104.34
 Pump Intake (ft bgs): 158.7

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 104.34
 Volume of water in casing (gal) = 17.03
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 25.8
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 77.40
 ACTUAL VOLUME PURGED (gal) = 17.5

DTW 10/23
 0810 87.66

Method of Purging : BENNETT PUMP

Field Parameters	Reading								Final Sample
Time	1400	1408	1413	1420	1426	1433	1440	1445	
Volume (gal)	INITIAL	3	5	8	10	13	16	17.5	
Flow Rate (gpm)									N/A
DTW (ft toc)	54.36							157.16	
pH	10.99	10.96	10.98	10.95	10.93	10.95	11.15		
Conductivity (uS/cm)	3100	3020	2990	2990	3010	2300	3040		
Temperature (°C)	13.21	13.48	13.20	13.10	13.12	13.12	13.13		
Turbidity (NTU)	660	45.5	15.9	10.7	13.0	20.2	113.7		
Eh/Redox (mV)									
DO (mg/L)	0.39	0.34	0.29	0.27	0.20	0.21	0.18		

Purging Field Notes:

PURGED WELL DRY, ALLOWED TO RECHARGE THEN SAMPLED.
PURGED AN ADDITIONAL 3 GALS BEFORE SAMPLING.

Sample Date/Time:

10/23/09 1040

Sample ID/TR #:

TMW18102009

Sampler's signature/date:

Justin G. Helber

Reviewer's signature/date:

Matt Mott 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 17
 Screened Interval (ft bgs): 172.97-187.97

Well Number: TMW 19
 Start Date: 10/15/09
 Start Time: 1113
 Well TD: 187.97
 Well DTW: 42.33
 Water Column: 145.64
 Pump Intake (ft bgs) 185.97

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 17
 Volume of water in AS (gal) = 12.41
 Gallons per foot of casing (from chart on back) = 0.1632
 Column of water X 145.64
 Volume of water in casing (gal) = 23.77
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 36.18
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 108.54
 ACTUAL VOLUME PURGED (gal) = 26

Method of Purging: BENNETT PUMP

Field Parameters	Reading								
Time	1113	1117	1120	1124	1129	1133	1138	1145	Final Sample
Volume (gal)	INITIAL	3	5	7	10	13	15	18	
Flow Rate (gpm)									
DTW (ft toc)	42.33								
pH	7.92	8.17	8.19	8.23	8.27	8.27	8.26	8.24	
Conductivity (uS/cm)	2920	2900	2870	2840	2620	2540	2490	2450	
Temperature (°C)	12.63	12.82	12.79	12.77	12.72	12.68	12.71	12.74	
Turbidity (NTU)	58.2	145	155	284	544	728	787	1100+	
Eh/Redox (mV)									
DO (mg/L)	4.17	1.56	1.25	1.05	1.34	1.05	0.88	0.86	

Purging Field Notes:

PURGED WELL DRY, ALLOW TO RECHARGE THEN COLLECTED
SAMPLE. PURGED ADDITIONAL 3 GALS BEFORE COLLECTING
SAMPLE ON 10/23. WATER LEVEL BEFORE COLLECTION 42.41

Sample Date/Time: 10/23/09 0900
 Sampler's signature/date: Frederick S. Belmont
 Reviewer's signature/date: Matt Mart 10/23/09

Sample ID/TR #: TMW19102009

WELL SAMPLING DATA FORM

Well Number: TMW 19Start Date: 10/15/09Start Time: 1113

Well Casing Diameter (in): _____

Bore Hole Diameter (in): _____

Annular Space (AS) Length (ft): _____

Screened Interval (ft bgs): _____

Well TD: _____

Well DTW: _____

Water Column: _____

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____

Column of water or length of AS (whichever is less) X _____

Volume of water in AS (gal) = _____

Gallons per foot of casing (from chart on back) = _____

Column of water X _____

Volume of water in casing (gal) = _____

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____

Number of EV to be purged X _____

TOTAL VOLUME TO BE PURGED (gal) = _____

ACTUAL VOLUME PURGED (gal) = _____

Method of Purging : _____

Field Parameters	Reading							
Time	1150	1156	1200	1206				Final Sample
Volume (gal)	20	22	24	26				
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH	8.27	8.31	8.34	8.55				
Conductivity (uS/cm)	2480	2480	2490	3020				
Temperature (°C)	12.75	12.75	12.76	12.94				
Turbidity (NTU)	968	979	709	1315				
Eh/Redox (mV)								
DO (mg/L)	0.93	0.88	0.93	0.82				

Purging Field Notes:

Sample Date/Time: 10/23/09 0900

Sample ID/TR #: _____

Sampler's signature/date: Frederick E. R. [Signature]

Reviewer's signature/date: _____

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number:

TMW 21

Start Date:

10-24-09

Start Time:

0855

Well TD:

61.31

Well DTW:

50.49

Water Column:

10.82

Pump Intake (ft bgs):

58.98

Well Casing Diameter (in):

2

Bore Hole Diameter (in):

8

Annular Space (AS) Length (ft):

12

Screened Interval (ft bgs):

48-58

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

= 0.73

Column of water or length of AS (whichever is less)

X 10.82

Volume of water in AS (gal)

= 7.90

Gallons per foot of casing (from chart on back)

= 0.163

Column of water

X 10.82

Volume of water in casing (gal)

= 1.76

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

= 9.66

ACTUAL VOLUME PURGED (gal)

= 2.4

Method of Purging:

Low Flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
0925	0	100	0	51.31	7.67	2640	12.81	97.59		2.55
0940	15	100	1.5	51.58	7.69	2640	13.00	71.62		1.82
0945	20	100	2.0	51.59	7.69	2640	13.16	55.26		1.76
0950	25	100	2.5	51.62	7.70	2640	13.25	50.77		1.62
0955	30	100	3.0	51.68	7.70	2640	13.21	47.81		—
1000	35	100	3.5	51.73	7.70	2640	13.10	48.50		1.43
1005	40	100	4.0	51.78	7.70	2640	13.26	50.36		1.31
1010	45	100	4.5	51.83	7.71	2640	13.36	61.13		1.18
1015	50	100	5.0	51.87	7.71	2640	13.64	72.58		1.10
1020	55	100	5.5	51.93	7.71	2640	13.87	96.12		1.02
1025	60	100	6.0	51.95	7.71	2640	13.92	111.5		0.96
1030	65	100	6.5	51.98	7.72	2640	13.92	118.3		0.94
1035	70	100	7.0	51.99	7.71	2640	14.13	124.0		0.88
1040	75	100	7.5	52.01	7.71	2640	14.12	126.7		0.87
1045	80	100	8.0	52.01	7.71	2640	14.29	135.9		0.84
1050	85	100	8.5	52.01	7.71	2640	14.28	131.1		0.82

Purging Field Notes:

Began purging at 0910, with initial press of 30 psi, 10 flow. Increased P to 40 psi + then 50 psi before flow appeared. Reduced P to 30 psi + flow continued for duration. Each > 30 sec, Purge = 7 sec

Sample Date/Time: 10-24-09 1100

Sample ID/TR #: TMW21/102009

Flow = 100ml/min

Sampler's signature/date:

Grant Kolo 10-24-09

Reviewer's signature/date:

Matt Mat 10/24/09

Reviewer's signature/date:

pg 2 of 2

TMW 21

10-24-09

0865

See
Page
1

WELL SAMPLING DATA FORM

Well Casing Diameter (in): 2"
 Bore Hole Diameter (in): 8"
 Annular Space (AS) Length (ft): 12'
 Screened Interval (ft bgs): _____

Well Number: TMW-22
 Start Date: 10-13-09
 Start Time: 1615
 Well TD: 65.21'
 Well DTW: 48.79'
 Water Column: 16.42
 Pump Intake (ft bgs): No Pump

WELL VOLUME CALCUATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 16.42
 Volume of water in casing (gal) = 2.68
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.44
 Number of EV to be purged X 3
 TOTAL VOLUME TO BE PURGED (gal) = 34.32
 ACTUAL VOLUME PURGED (gal) = 4
 Method of Purging : bailer

Field Parameters	Reading							
Time	<u>1630</u>	<u>1640</u>	<u>1650</u>					Final Sample
Volume (gal)	<u>0.75</u>	<u>2.5</u>	<u>4</u>					
Flow Rate (gpm)								N/A
DTW (ft toc)	<u>54.74</u>	<u>57.70</u>	<u>61.40</u>					
pH	<u>7.52</u>	<u>7.72</u>	<u>7.77</u>					
Conductivity (uS/cm)	<u>3480</u>	<u>3590</u>	<u>3490</u>					
Temperature (°C)	<u>12.74</u>	<u>12.71</u>	<u>12.83</u>					
Turbidity (NTU)	<u>340.6</u>	<u>621.9</u>	<u>71000</u>					
Eh/Redox (mV)								
DO (mg/L)	<u>0.59</u>	<u>0.28</u>	<u>0.24</u>					

Purging Field Notes:

Clear water at beginning of bailing & became progressively cloudier. Bailed 6 gal total before well was dry.

Sample Date/Time: no sample collected Sample ID/TR #: _____
 Sampler's signature/date: Grant Kolo 10-13-09
 Reviewer's signature/date: [Signature] 10/23/09

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2
8
12
52-62

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

TMW22
10-19-09
0815
65.23
48.94
16.29
63.93

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

Column of water or length of AS (whichever is less)

Volume of water in AS (gal)

Gallons per foot of casing (from chart on back)

Column of water

Volume of water in casing (gal)

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

Number of EV to be purged

TOTAL VOLUME TO BE PURGED (gal)

ACTUAL VOLUME PURGED (gal)

Method of Purging :

=

X

=

=

X

=

=

X

=

=

bailer - well was previously purged and parameters measured

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected full set of samples w a bailer. Parameters were measured previously. No purging performed at time of sampling.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10-19-09 0900

Grant Kelle 10-19-09

Matthew 10/23/09

Sample ID/TR #:

TMW22102009

WELL SAMPLING DATA FORM

Well Casing Diameter (in):
Bore Hole Diameter (in):
Annular Space (AS) Length (ft):
Screened Interval (ft bgs):

2'
8"
12'
46-56'

Well Number:

Start Date:

Start Time:

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

TMW-23

1530 10-13-09

1530

59.5'

45.58'

13.92'

NO pump

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)	=	0.73
Column of water or length of AS (whichever is less)	X	12
Volume of water in AS (gal)	=	8.76
Gallons per foot of casing (from chart on back)	=	0.163
Column of water	X	13.92
Volume of water in casing (gal)	=	2.27
ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)	=	11.03
Number of EV to be purged	X	3
TOTAL VOLUME TO BE PURGED (gal)	=	33.09
ACTUAL VOLUME PURGED (gal)	=	3.5

Method of Purging : bailing

Field Parameters	Reading							
Time	1535	1545	1555					Final Sample
Volume (gal)	0.5	2.5	3.5					
Flow Rate (gpm)								N/A
DTW (ft toc)	49.02	54.80	57.34					
pH	7.56	7.74	7.79					
Conductivity (uS/cm)	3230	3230	3250					
Temperature (°C)	13.40	13.09	13.05					
Turbidity (NTU)	825.3	>1000	110.6					
Eh/Redox (mV)								
DO (mg/L)	0.84	0.57	0.40					

Purging Field Notes:

Very muddy purge water. Bailed well dry upon removal of 4.5 gal

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

no sample collected
Smart Koke 10-13-09
10/23/09

Sample ID/TR #:

WELL SAMPLING DATA FORM

Well Casing Diameter (in): _____
 Bore Hole Diameter (in): _____
 Annular Space (AS) Length (ft): _____
 Screened Interval (ft bgs): _____

Well Number: TMW-23

Start Date: 10-19-09

Start Time: 1520

Well TD: 59.5

Well DTW: 45.72

Water Column: 13.78

Pump Intake (ft bgs) _____

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = _____
 Column of water or length of AS (whichever is less) X _____
 Volume of water in AS (gal) = _____
 Gallons per foot of casing (from chart on back) = _____
 Column of water X _____
 Volume of water in casing (gal) = _____
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = _____
 Number of EV to be purged X _____
 TOTAL VOLUME TO BE PURGED (gal) = _____
 ACTUAL VOLUME PURGED (gal) = 0
 Method of Purging : bailer

Field Parameters	Reading								
Time									Final Sample
Volume (gal)									
Flow Rate (gpm)									N/A
DTW (ft toc)									
pH									
Conductivity (uS/cm)									
Temperature (°C)									
Turbidity (NTU)									
Eh/Redox (mV)									
DO (mg/L)									

Purging Field Notes:

Collected full set of samples w a bailer. Parameters were measured previously. No purging performed at time of sampling. Water level = 45.72 w bailer in well. Very muddy water.

Sample Date/Time: 10-19-09 1600

Sample ID/TR #: TMW23/02009

Sampler's signature/date: Grant Kolb 10-19-09

Reviewer's signature/date: [Signature] 10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW 24
 Start Date: 10-19-09
 Start Time: 0925
 Well TD: 57.41
 Well DTW: 39.51
 Water Column: 17.90
 Pump Intake (ft bgs): 55.41

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 47-54

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 17.90
 Volume of water in casing (gal) = 2.92
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 11.68
 ACTUAL VOLUME PURGED (gal) = 0.3

Method of Purging: low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1000	0	30	0	40.34	7.88	2860	19.21	6.03		3.73
1005	5	25	0.15	40.37	7.81	2870	19.16	3.39		2.67
1010	10	30	0.275	40.41	7.79	2880	18.77	2.10		2.47
1015	15	25	0.425	40.41	7.79	2850	18.66	2.82		2.31
1020	20	25	0.55	40.41	7.79	3840	19.00	1.98		2.24
1025	25	25	0.675	40.38	7.80	3840	19.83	1.77		2.25
1030	30	25	0.8	40.38	7.80	3840	20.07	1.53		2.17
1035	35	25	0.925	40.41	7.81	3840	19.80	1.42		2.14
1040	40	25	1.05	40.40	7.82	3840	20.01	1.33		2.14
1045	45	25	1.175	40.40	7.83	3820	20.15	1.75		2.13
1050	50	25	1.3	40.40	7.84	3830	19.92	1.88		2.11
1052	52	25	1.35	40.40	7.84	3840	19.97	—		2.12
1500	Final water level = 40.55'									

Purging Field Notes:

Took at least 10 min to fill flow thru cell.
 Began purging around 0940. Very clear water. Initial purge/tech settings drew water level down too much. Adjusted tech to

Sample Date/Time: 10-19-09 1200 Sample ID/TR #: TMW 24/102009
 Sampler's signature/date: Grant Feld 10-19-09
 Reviewer's signature/date: Matt 10/23/09

Drawdown then stabilized during parameter measurements.

10/23/09

FORT WINGATE DEPOT ACTIVITY
LOW FLOW WELL SAMPLING DATA FORM

Well Number: TMW 27
 Start Date: 24 OCT 2009
 Start Time: 1110
 Well TD: 73.26
 Well DTW: ~~30.60~~ 29.90
 Water Column: 43.36
 Pump Intake (ft bgs): 72.14

Well Casing Diameter (in): 2
 Bore Hole Diameter (in): 8
 Annular Space (AS) Length (ft): 12
 Screened Interval (ft bgs): 10

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back) = 0.73
 Column of water or length of AS (whichever is less) X 12.0
 Volume of water in AS (gal) = 8.76
 Gallons per foot of casing (from chart on back) = 0.163
 Column of water X 43.36
 Volume of water in casing (gal) = 7.05
 ONE EQUIVALENT VOLUME [EV] (AS + casing, gal) = 15.82
 ACTUAL VOLUME PURGED (gal) = ~ 1.5

Method of Purging : low flow

Time	Minutes Elapsed	Flow Rate (mL/min)	Cumulative Volume (L)	DTW (ft to c)	pH	Cond. (µS/cm)	Temp. (C)	Turbidity (NTU)	Redox (mV)	DO (mg/L)
1110	0	140		29.90	7.58	147.6	13.69	1.19		1.50
1113	3	140		29.90	7.63	147.9	14.04	2.48		1.44
1116	6	140		29.90	7.70	148.7	14.00	2.00		1.34
1119	9	140		29.90	7.72	149.2	13.93	1.77		1.30
1122	12	140		29.90	7.73	149.3	13.98	6.49		1.24
1125	15	140		29.90	7.74	151.0	13.98	6.17		1.16
1128	18	140		29.90	7.76	151.0	13.94	4.73		1.13
1131	21	140		29.90	7.76	152.0	13.98	6.22		1.11
1134	24	140	3.36	29.90	7.77	153.0	14.07	3.10		1.10
						↑				
						1530				
						<i>[Signature]</i>				

Purging Field Notes:

Pumped from 28.50 to 29.90 ft. 2009 6 on 35psi
~ 140 mL/min completed 5 stabilization, sampled at 200 mL/min
 Sample Date/Time: 1130 24 OCT 2009 Sample ID/TR #: TMW 27102009 and maintained
 Sampler's signature/date: *[Signature]* 26 OCT 2009 water level 29.90
 Reviewer's signature/date: *[Signature]* 10/26/09 ft

230c109

WELL SAMPLING DATA FORM

2⁴
8²
12¹
49-59

TMW-29

10-14-09

0920

66.65

57.22

4.43

no pump

WELL VOLUME CALCUATION

$$= 0.73$$
$$\begin{array}{r} 4.43 \\ \times 2.1 \\ \hline \end{array}$$
$$= \frac{1.1}{3.23}$$
$$= 0.163$$
$$\begin{array}{r} 4.43 \\ \times 1.1 \\ \hline \end{array}$$
$$= \frac{0.72}{2.25}$$
$$= \frac{5.75}{3}$$
$$\begin{array}{r} \times \\ \hline 11.85 \end{array}$$
$$\frac{11.05}{2}$$

bailer

Field Parameters	Reading							
Time	0930	0935	0955					Final Sample
Volume (gal)	0.5	1	2					
Flow Rate (gpm)								N/A
DTW (ft toc)	59.43	59.91	60.08					
pH	7.78	7.88	7.88					
Conductivity (uS/cm)	2570	2550	2520					
Temperature (°C)	12.85	12.66	12.76					
Turbidity (NTU)	>1000	865.1	705.4					
Eh/Redox (mV)								
DO (mg/L)	6.84	4.33	4.41					

Purging Field Notes:

no sample collected

Grant Kolo 10-14-09

Matt Mast 10/23/09

WELL SAMPLING DATA FORM

Well Number:

Start Date:

Start Time:

TMW 29

10-20-09

0830

Well Casing Diameter (in):

Bore Hole Diameter (in):

Annular Space (AS) Length (ft):

Screened Interval (ft bgs):

Well TD:

Well DTW:

Water Column:

Pump Intake (ft bgs)

WELL VOLUME CALCULATION

Gallons per foot of annular space (from chart on back)

=

Column of water or length of AS (whichever is less)

X

Volume of water in AS (gal)

=

Gallons per foot of casing (from chart on back)

=

Column of water

X

Volume of water in casing (gal)

=

ONE EQUIVALENT VOLUME [EV] (AS + casing, gal)

=

Number of EV to be purged

X

TOTAL VOLUME TO BE PURGED (gal)

=

ACTUAL VOLUME PURGED (gal)

=

Method of Purging :

bailer

Field Parameters	Reading							
Time								Final Sample
Volume (gal)								
Flow Rate (gpm)								N/A
DTW (ft toc)								
pH								
Conductivity (uS/cm)								
Temperature (°C)								
Turbidity (NTU)								
Eh/Redox (mV)								
DO (mg/L)								

Purging Field Notes:

Collected full set of samples w bailer. Parameters were measured previously.

Sample Date/Time:

Sampler's signature/date:

Reviewer's signature/date:

10/20/09 0900

Grant Kelle 10/20/09

10/23/09

Sample ID/TR #:

TMW29102009