

**DATA QUALITY AUDIT
for the
Total Maximum Daily Loads for Chloride
For Waterbodies in the Vicinity of the I-93 Corridor
from Massachusetts to Manchester, NH:
Policy-Porcupine Brook
Beaver Brook
Dinsmore Brook
North Tributary to Canobie Lake**

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Purpose

The purpose of this report is to: (1) Summarize the availability of data for the TMDL between 7/1/06 and 6/30/07; (2) Summarize the results from quality control samples; and (3) Report on nonconformances with the QAPP. This report satisfies the requirements of the QAPP for quality assurance reports described in section A9 (quality assurance report), section B5 (data completeness check), and section C1 (data quality audit).

Data Completeness Audit

Four different types of measurements were made for the TMDL: In-situ datalogger readings of specific conductance; point measurements of specific conductance with hand-held meters; grab samples for chloride analysis in the laboratory; and measurements of stream flow. The data quality objective for completeness for each of these measurements was to have valid data for 80% of the planned data points during the year. In Tables 1 through 4, the planned number of measurements of each type are compared to the actual number of measurements made for the TMDL. In Tables 5 and 6, the planned number of quality assurance samples of specific conductance and chloride are compared to the actual number of measurements. Data completeness percentages less than 80% are highlighted in bold.

In-situ dataloggers were installed and maintained at the six Activity #1 stations between 7/1/06 and 6/30/07 and the 15 Activity #2 stations between 1/1/07 and 3/31/07. In-situ datalogger deployments were checked for quality control with pre- and post-deployment field calibration checks with known standards. Of the 215 deployments for the TMDL, 195 passed all QC tests. One deployment did not collect any data. The remaining 17 deployments were reviewed by DES and deemed acceptable for use in the TMDL despite the poor results from the post-deployment checks. The most common justification for accepting the results was that the datalogger passed the QC test for the low standard, but not the high standard, and all of the measured values were close to the low standard. Some of the readings from the deployments were invalidated by DES after reviewing the dataset. Typically, results were deleted because the sensor was exposed to the air during cleaning or during low water levels. Data were also lost when the sensors were encased in ice or when the datalogger power failed. All of the invalidated results are listed in the appendix for the period 7/1/06-6/30/07 for Activity #1 stations and 1/1/07-3/31/07 for Activity #2 stations.

The 80% data completeness criterion was met for 5 of the 6 Activity #1 stations and 10 of the 15 Activity #2 stations (Table 1). The data completeness at I93-DIN-01 (an Activity #1 station) was 72%. The reason for this low percentage is that all the data between 7/1/06 and 10/12/06 was invalidated because of ionic stratification¹ in the water column.

¹ Ionic stratification is a layering affect, where higher concentrations of dissolved salts increase water density. Dense water remains near the bottom of the water column. The relatively stagnant pool that formed at I93-DIN-01, combined with the relatively high salt concentrations promoted a condition conducive to ionic stratification.

Water quality monitoring at this station will continue through 9/30/07 to obtain a more complete record for the period from 10/1/06 to 9/30/07. Data from the five Activity #2 stations with incomplete records will not be used for the TMDL study to avoid introducing bias with incomplete datasets.

The actual number of grab samples for chloride and specific conductance point measurements exceeded the planned number from the QAPP (Tables 2 and 3).

Stream flow measurements were collected for every 15-minute interval between 7/1/06 and 6/30/07. To calculate the completeness statistic, DES tallied the number of measurements that met the data quality objective (an accuracy of less than 15%) (Table 4). At four of the six stations, 100% readings met the data quality objective. At the other two stations, more than 86% of the readings met the data quality objective.

Specific conductance readings with handheld meters were to be checked by field replicates every 10th measurement. Only 1 of the 20 field replicate readings was completed (Table 5). However, the handheld meters were checked against known standards in a field calibration check prior to each measurement. In addition, each specific conductance measurement was compared to the measured chloride concentration from the station visit. Therefore, the omission of field replicate readings of specific conductance with the handheld meters is insignificant in terms of quality assurance, and does not invalidate any of the sampling results for the TMDL.

The number of chloride field replicate samples and trip blanks for quality assurance was at least equal to the expected number (Table 6).

Quality Control Sample Audit

Two types of quality control samples were collected for chloride samples: field replicates and trip blanks. There were 21 pairs of routine and field replicate samples for chloride (Table 7). The relative percent difference (RPD) between the two chloride measurements ranged from 0% to 11.1%. All of the pairs passed the data quality objective of RPD less than 15%. Trip blanks were collected on 10 dates (Table 8). The chloride concentration was below detection on each of the dates, which satisfies the data quality objective. Therefore, the quality control samples do not indicate any problems with the chloride samples collected for this study.

The relationship between the specific conductance and the chloride concentration was checked by two tests. First DES recalculated the specific conductance-chloride regression equation using all the data collected for the I-93 water quality studies from 10/1/01 through 7/3/07. Only data with chloride concentrations between 15 and 1000 mg/l and specific conductance between 50 and 3,000 us/cm were included in the regression. Chloride concentrations of 1,000 mg/l and specific conductance values of 3,000 uS/cm represent the upper bound for most samples measured for the study. Samples with higher concentrations are typically outliers and have high influence on the regression. At low concentrations (<15 mg Cl/l, 50 uS/cm), laboratory method detection limits and the

influence of other ions besides chloride interfere with the regression also. Seven measurements at I93-DIN-01 between 6/30/06 and 10/11/06 were excluded from the regression because of ionic stratification in the water column that developed at that site. The resulting regression equation was not significantly different from the equation published in the QAPP:

Original Equation from QAPP

$$\text{Cl} = 0.3072 * \text{SC} - 22.002 \text{ (n=649, SE=17.9)}$$

New Equation

$$\text{Cl} = 0.3047 * \text{SC} - 23.901 \text{ (n=900, SE=21.9)}$$

For a hypothetical specific conductance reading of 1,000 us/cm, the old and new equations would predict a chloride concentration of 285 and 281 mg/l, respectively (1.4% RPD). The accuracy of the old and new equations, as represented by the standard error (SE), was almost the same. The data quality objective for the SE was 20.4 (equivalent to a 95th percentile confidence limit of +/- 40 mg/L). Given the similarity of the two equations and the lower standard error for the original equation, DES will use the equation from the QAPP to maintain consistency with that planning document.

DES attempted to derive a separate regression for high specific conductance readings. There were 11 data pairs for specific conductance between 3,000 and 10,000 us/cm. There was a statistically significant relationship between specific conductance and chloride, but the error in the predictions was +/-650 mg/L chloride, which is unacceptably high for use in the TMDL study.

The second test of the specific conductance-chloride relationship was to use samples with both specific conductance and chloride data and test whether the specific conductance predicted the chloride concentration within +/-40 mg/L. There were 228 samples with both specific conductance and chloride data collected for the study. For 205 of the 228 samples (90%), the specific conductance and the original regression equation predicted the chloride concentration within +/-40 mg/L. The average absolute difference between the measured and predicted chloride concentrations was 9.9 mg/L for these 205 samples.

For the 23 samples that failed the test, the results were explained by several reasons (Table 9). Eight of the samples had errors which were slightly larger than +/-40 mg/L but were still within the 99th percentile of the regression equation uncertainty (~60 mg/L). For a sample size of 228, there should be several samples in this portion of distribution. For six of the samples, the specific conductance was outside the applicable range of the regression (>3,000 uS/cm). The other nine samples occurred at I93-DIN-01 between 7/21/06 and 10/4/06 and at I93-POCU01-01 between 12/21/06 and 2/22/07. The predicted chloride concentration in these nine samples was always greater than the actual chloride concentration. These deviations were likely due to ionic stratification. The chloride sample would have been collected from a layer of cleaner water on the surface, while the specific conductance reading was made several centimeters below the surface in denser water with higher conductance. Since the chloride sample and the specific

conductance measurement were taken from two areas with different properties, handheld meter values associated with the chloride samples will be invalidated in the database.

Ionic stratification is a data quality concern if the in-situ datalogger was positioned such that it would not collect representative data for the station. At I93-DIN-01, the specific conductance readings from the datalogger collected before 10/12/06 were erratic and clearly not representative of free-flowing conditions, typical of the streams included in the TMDL study. Therefore, these readings were rejected as discussed earlier. At I93-POCU01-01, the datalogger readings were consistent for the period 12/1/06 through 4/12/07. Therefore, the datalogger at this site appears to have collected representative data and the data will be retained.

Summary of Nonconformances with QAPP

Based on the analyses presented above and the quarterly reports during the project, the following is a list of deviations from the planned activities outlined in the QAPP.

1. The quality assurance process for datalogger deployments was slightly different from the process listed in the QAPP. Specific conductance measured by the hand held meters was not compared to the datalogger result for that date. Instead, the datalogger sensors were checked against known standards at the end of each deployment which accomplished the same objective with fewer sources of error. Therefore, the approach taken by the field crews was better than the planned activities from the QAPP and was acceptable. **No corrective action needed.**
2. Field replicate measurements of specific conductance with the handheld meters were not done. Similar to the dataloggers, the handheld meters were checked before each measurement with known standards. Therefore, the approach taken by the field crews was compatible with the data quality objectives of the QAPP and was acceptable. **No corrective action needed.**
3. For 17 datalogger deployments, DES accepted the data as valid even though the pre- or post-deployment field calibration checks did not meet data quality objectives. The most common justification for accepting the results was that the datalogger passed the QC test for the low standard, but not the high standard, and all of the measured values were close to the low standard. Table 10 summarizes the deployments for which exceptions were made for QC tests. The error introduced by using these results is small. **No corrective action needed.**
4. DES was not able to obtain a 20-year record of unit flows for the permanent USGS Beaver Brook gage in North Pelham. For typical stream gaging operations, the USGS collects measurements of stream flow every 15 minutes (unit values), which are averaged to obtain daily average values. The daily average values are corrected by USGS for the effects of ice or other problems and then published. The unit values are not corrected or published. As part of the TMDL study, the USGS agreed to provide corrected unit values for the period 7/1/06 to 6/30/07. The USGS was not able to provide corrected unit values

for the previous 20 years. Without the unit values for a 20 year period, DES will not be able to construct a flow duration curve for unit values. The flow duration curve for unit values will only be slightly different from the flow duration curve for daily average values. Therefore, DES will assume that the flow duration curves for unit values and daily averages are the same. The error associated with this assumption will be negligible. **No corrective action needed.**

5. DES was not able to correlate flows in Policy Brook and Dinsmore Brook to flows at the Beaver Brook gage as planned. The plan for the TMDL was to install five temporary stream gages for one year and to develop regression equations between the flow at these gages and the flow at the permanent USGS gage on Beaver Brook in North Pelham. For the two temporary gages on Beaver Brook, regression equations with the permanent gage were developed with acceptable error (15-21% error). However, for the temporary gages in Policy Brook and Dinsmore Brook, the error in the regression equations was unacceptable (51-70% error). There are two implications from this finding. First, it is not possible to use the historical flow record at Beaver Brook to estimate flows at Policy Brook stations before the TMDL study. Therefore, specific conductance measurements from 2001-2006 cannot be paired with flows to estimate chloride loads for past years. Only the TMDL dataset can produce accurate measurements of chloride loads in the Policy Brook watershed. Second, if chloride loads from the Policy Brook watershed will be used as a performance measure of TMDL implementation, then the stream gage at I93-POL-01V must be maintained. **Corrective Action: The TMDLs for Policy Brook and Dinsmore Brook will be based on data collected while the temporary stream gages were operational. DES will contract with USGS to maintain the stream gage at I93-POL-01V for another year (10/1/07 to 9/30/08).**

Table 1: Data completeness for in-situ datalogger readings of specific conductance

Station ID	# Valid Specific Conductance Datapoints	# of 15 min intervals in Reporting Period	Percent of Reporting Period with Valid Conductance Data
Activity #1 Stations (7/1/06-6/30/07)			
I93-POL-01V	34,985	35,040	99.84%
I93-POL-04X	33,747	35,040	96.31%
09-BVR	35,002	35,040	99.89%
10A-BVR	34,707	35,040	99.05%
I93-DIN-01	25,117	35,040	71.68%
I93-NTC-01	33,148	35,040	94.60%
Activity #2 Stations (1/1/07-3/31/07)			
03-SHB	8,622	8,640	99.79%
04-WRB	8,488	8,640	98.24%
06-SHB	6,026	8,640	69.75%
08-SHB	8,617	8,640	99.73%
I93-BVRU03-01	7,993	8,640	92.51%
I93-STB-02	8,626	8,640	99.84%
I93-WLPU-01	5,329	8,640	61.68%
I93-POC-02	8,620	8,640	99.77%
I93-POCU01-01	8,625	8,640	99.83%
I93-POL-02N	5,272	8,640	61.02%
I93-POL-03	8,614	8,640	99.70%
I93-DIN-05	8,593	8,640	99.46%
I93-POL-06	6,818	8,640	78.91%
I93-POLU01-01	7,611	8,640	88.09%
I93-POLU02-02	5,344	8,640	61.85%

Table 2: Data completeness for hand-held measurements of specific conductance

Location	Expected Number	Actual Number	Percent Complete
Activity #1 stations	108	123	114%
Activity #2 stations	80	105	131%

*All routine samples between 6/30/06 and 7/3/07 included.

Table 3: Data completeness for chloride water samples

Location	Expected Number	Actual Number	Percent Complete
Activity #1 stations	108	123	114%
Activity #2 stations	80	105	131%

*All routine samples between 6/30/06 and 7/3/07 included.

Table 4: Data completeness for stream flow measurements

Station ID	# Valid Flow Datapoints	# of 15 min intervals in Reporting Period	Percent of Reporting Period with Valid Flow Data
Activity #1 Stations (7/1/06-6/30/07)			
I93-POL-01V	35,040	35,040	100.00%
I93-POL-04X	35,040	35,040	100.00%
09-BVR	35,040	35,040	100.00%
10A-BVR	32,499	35,040	92.75%
I93-DIN-01	35,040	35,040	100.00%
Beaver Brook at North Pelham	30,331	35,040	86.56%

* If the USGS classified a streamflow measurement as “good” or “fair” accuracy (<10% or <15% error, respectively), the result was considered valid because the data quality objective for stream flow from the QAPP was <15% error. Stream flow measurements classified as “poor” by USGS (>15% error) will still be used in TMDL calculations.

Table 5: Data completeness for specific conductance meter quality assurance measurements

Location	Expected Number	Actual Number	Percent Complete
Field Replicates at Activity #1 stations	12	1	8%
Field Replicates at Activity #2 stations	8	0	0%

Table 6: Data completeness for chloride quality assurance samples

Location	Expected Number	Actual Number	Percent Complete
Field Replicates at Activity #1 stations	12	14	117%
Field Replicates at Activity #2 stations	8	7	88%
Trip Blanks	10	10	100%

Table 7: Chloride concentrations in routine and field replicate samples

Station	Date	Time	Routine Sample	Field Replicate	RPD (%)
09-BVR	12/6/2006	10:20	47	46	2.2%
10A-BVR	6/14/2007	12:10	48	46	4.3%
08-SHB	12/22/2006	09:31	48	48	0.0%
I93-WLPU-01	1/11/2007	14:30	52	52	0.0%
09-BVR	8/23/2006	10:15	59	59	0.0%
09-BVR	5/3/2007	12:15	59	59	0.0%
I93-POC-02	3/29/2007	13:30	64	64	0.0%
I93-DIN-01	5/24/2007	10:30	79	80	1.3%
I93-WLPU-01	3/8/2007	09:30	84	86	2.4%
I93-NTC-01	12/21/2006	10:25	110	110	0.0%
I93-NTC-01	3/12/2007	10:25	120	120	0.0%
I93-DIN-01	2/1/2007	12:30	130	130	0.0%
I93-POL-01V	5/3/2007	09:40	120	130	8.0%
I93-NTC-01	10/25/2006	10:15	140	140	0.0%
I93-POL-04X	10/4/2006	10:06	150	150	0.0%
I93-DIN-01	8/23/2006	09:30	190	170	11.1%
I93-POL-03	1/31/2007	16:20	180	190	5.4%
I93-POL-01V	7/21/2006	09:15	210	210	0.0%
I93-POL-03	2/21/2007	13:57	210	210	0.0%
I93-POL-02N	1/11/2007		940	900	4.3%
09-BVR	7/3/2007	12:30	95	96	1.0%

Table 8: Chloride concentrations in trip blank samples

Date	Chloride (mg/l) in Trip Blank	Laboratory RDL (mg/l)
7/21/06	ND	3.0
8/23/06	ND	3.0
10/4/06	ND	3.0
12/6/06	ND	3.0
01/11/2007	ND	3.0
03/08/2007	ND	3.0
04/12/2007	ND	3.0
05/03/2007	ND	3.0
05/24/2007	ND	3.0
07/03/2007	ND	3.0

Table 9: Samples for which the specific conductance does not accurately predict the chloride concentration

Station	Date	Sp. Cond. (uS/cm)	Predicted Cl (mg/L)	Actual Cl (mg/L)	Difference (mg/L)	Explanation
I93-BVRU03-01	12/21/2006	433	111	70	41	99 th percentile
I93-BVRU03-01	2/1/2007	529	141	92	49	99 th percentile
I93-DIN-01	7/21/2006	873	246	130	116	Stratification
I93-DIN-01	8/10/2006	1,483	434	210	224	Stratification
I93-DIN-01	8/23/2006	1,040	297	190	107	Stratification
I93-DIN-01	9/13/2006	1,330	387	190	197	Stratification
I93-DIN-01	10/4/2006	1,303	378	170	208	Stratification
I93-NTC-01	7/21/2006	1,140	328	380	-52	99 th percentile
I93-NTC-01	2/21/2007	840	236	280	-44	99 th percentile
I93-POCU01-01	12/21/2006	870	245	160	85	Stratification
I93-POCU01-01	1/11/2007	842	237	120	117	Stratification
I93-POCU01-01	1/31/2007	1,415	413	320	93	Stratification
I93-POCU01-01	2/22/2007	1,746	514	360	154	Stratification
I93-POCU01-01	3/8/2007	1,342	390	350	40	99 th percentile
I93-POL-01V	7/3/2007	910	258	320	-62	99 th percentile
I93-POL-02N	1/11/2007	4,302	1,300	940	360	>3,000 uS/cm
I93-POL-02N	1/31/2007	4,996	1,513	1,100	413	>3,000 uS/cm
I93-POL-02N	3/28/2007	5,735	1,740	1,900	-160	>3,000 uS/cm
I93-POL-02N	4/12/2007	3,601	1,084	520	564	>3,000 uS/cm
I93-POL-04X	7/3/2007	895	253	210	43	99 th percentile
I93-POLU01-01	2/1/2007	1,148	331	280	51	99 th percentile
I93-POLU02-02	2/1/2007	36,130	11,077	5,300	5,777	>3,000 uS/cm
I93-POLU02-02	2/21/2007	59,622	18,294	14,000	4,294	>3,000 uS/cm

Table 10: Datalogger deployments which failed one or more quality control test(s) but were still considered valid by DES

Station	Start Date	End Date	Agency	Explanation
I93-DIN-01	4/11/2007	5/3/2007	DES	Logger calibrated with faulty standard. Calibration redone and measurements adjusted using specific conductance from handheld meter. See DES quarterly report from 4/13/07 for details.
I93-POL-01V	4/12/2007	5/3/2007	DES	Logger calibrated with faulty standard. Calibration redone and measurements adjusted using specific conductance from handheld meter. See DES quarterly report from 4/13/07 for details.
I93-POL-04X	4/12/2007	5/3/2007	DES	Logger calibrated with faulty standard. Calibration redone and measurements adjusted using specific conductance from handheld meter. See DES quarterly report from 4/13/07 for details.
03-SHB	2/1/2007	2/21/2007	DES	Failed the high standard post-deployment check (10,000 uS/cm). Passed the low standard pre- and post-deployment check (100 uS/cm). Data for the deployment were typically <600 us/cm, which is closer to the low standard than the high standard. Therefore, data from deployment are considered valid.
03-SHB	2/21/2007	3/7/2007	DES	Failed high standard pre- and post-deployment checks (2,000 and 10,000 uS/cm). Passed the low standard pre- and post-deployment checks (100 uS/cm). The measurements for the deployment were typically <500 us/cm, which is closer to the low standard than the high standard. Therefore, data from the deployment were considered valid.
03-SHB	3/7/2007	3/29/2007	DES	Failed high standard pre- and post-deployment checks (2,000 and 10,000 uS/cm). Passed the low standard pre- and post-deployment checks (100 uS/cm). The measurements for the deployment were typically <400 us/cm, which is closer to the low standard than the high standard. Therefore, data from the deployment were considered valid.
04-WRB	3/29/2007	4/11/2007	DES	Meter stopped recording on 3/30/07. Could not perform post-deployment calibration check. Pre-deployment calibration check was sufficient to pass short record.
06-SHB	2/1/2007	2/21/2007	DES	Failed high standard post-deployment check (10,000 uS/cm). Passed low standard pre- and post-deployment checks (100 uS/cm). The measurements during this deployment were typically <300 uS/cm, which is closer to the low standard than the high standard. Therefore, data were considered valid. Datalogger lost power from 2/15/07 to 2/21/07.
06-SHB	2/21/2007	3/7/2007	DES	Failed high standard post-deployment check (10,000 uS/cm). Passed low standard pre- and post-deployment checks (100 uS/cm). The measurements during this deployment were typically <400 uS/cm, which is closer to the low standard than the high standard. Therefore, data were considered valid.

08-SHB	3/29/2007	4/11/2007	DES	Post deploy calibration check failed for both high and low standard. However, side-by-side deployment with In situ logger was identical and the In situ logger passed all QC checks. Therefore, consider data to be valid.
10A-BVR	3/8/2007	3/30/2007	DES	No post-calibration check of high-end standard (i.e., 2,000 uS/cm). However, ambient specific conductance levels were typically <300 uS/cm, so the 100 uS/cm standard served as an adequate quality check.
I93-DIN-01	1/11/2007	2/1/2007	DOT	Failed the low standard (100 uS/cm) check by a small amount (7 uS/cm). The sensor read 127 uS/cm, which was outside the acceptable range of 80-120 uS/cm. The data from this deployment were deemed valid because there was good agreement between the specific conductance measured by the datasonde and an independently calibrated handheld meter at the end of the deployment.
I93-DIN-05	1/11/2007	2/1/2007	DOT	Failed low standard post-deployment check by 2 uS/cm. Passed high standard pre- and post-deployment checks. Data considered valid because of good agreement between datalogger and handheld meter agreement (side-by-side measurements).
I93-DIN-05	2/1/2007	2/21/2007	DOT	Failed low standard post-deployment check by 2 uS/cm. Passed high standard pre- and post-deployment checks. Data considered valid because of good agreement between datalogger and handheld meter agreement (side-by-side measurements).
I93-POL-06	1/11/2007	2/1/2007	DOT	Datalogger was encased in ice at end of deployment and no QC measurements were made. The data record indicated anomalous readings starting on 1/30/07, probably due to ice. Data invalidated from 1/30/07 to end of deployment. All other data considered valid.
I93-POL-06	2/8/2007	2/21/2007	DES/DOT	Failed high standard post-deployment check (10,000 uS/cm). Passed low standard pre- and post-deployment checks (100 uS/cm). The measurements during this deployment were typically <600 uS/cm, which is closer to the low standard than the high standard. Therefore, data were considered valid. Datalogger stopped recording from 2/17/07 to 2/21/07. Logger was deployed by DES but retrieved by DOT.
I93-POLU01-01	12/20/2006	1/11/2007	DOT	The 2,000 uS/cm post-calibration check exceeded the acceptance criteria in the QAPP: reading=2,250 uS/cm, acceptance range=1800-2200 uS/cm. However, DES deemed all results for the deployment ending on 1/11/07 valid because side-by-side measurements of the datalogger and the handheld meter indicated good agreement.

Appendix: Invalidated Specific Conductance Readings from Dataloggers

Activity	Station	Date	Number of Invalid Results	Explanation
1	09-BVR	7/21/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	8/10/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	8/23/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	9/13/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	10/4/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	10/25/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	11/15/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	12/6/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	12/21/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	2/1/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	2/22/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	3/8/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	09-BVR	3/29/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	4/12/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	4/12/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING. END OF HYDROLAB DEPLOYMENT, BEGINNING OF IN-SITU DEPLOYMENT. INSTALLATION I93T033.
1	09-BVR	4/23/2007	1	DATALOGGER REMOVED FROM WATER TO CHECK ON FUNCTIONS AFTER SPRING FLOODS
1	09-BVR	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	5/24/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	09-BVR	5/24/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING. REPLACED METER 45782 WITH 45781.
1	09-BVR	6/14/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	7/21/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	8/10/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	8/23/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	9/13/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	10/2/2006	63	DATALOGGER POWER LOSS
1	10A-BVR	10/3/2006	63	DATALOGGER POWER LOSS
1	10A-BVR	10/4/2006	36	DATALOGGER POWER LOSS
1	10A-BVR	10/4/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	10/25/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	11/15/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	12/6/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	12/21/2006	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	1/10/2007	78	DATALOGGER POWER LOSS
1	10A-BVR	1/11/2007	57	DATALOGGER POWER LOSS

Activity	Station	Date	Number of Invalid Results	Explanation
1	10A-BVR	1/11/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	2/1/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	2/22/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	3/8/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	10A-BVR	3/30/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	4/12/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING. DATALOGGER REPLACED WITH INSITU UNIT. BEGIN INSTALLATION I93T032 AT 1445.
1	10A-BVR	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	5/24/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	10A-BVR	6/14/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	7/1/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/2/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/3/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/4/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/5/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/6/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/7/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/8/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/9/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/10/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/11/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/12/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/13/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/14/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/15/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/16/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/17/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/18/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/19/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/20/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/21/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/22/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/23/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/24/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/25/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/26/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/27/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06
1	I93-DIN-01	7/28/2006	96	INTERMITTENT STRATIFICATION AT SAMPLING STATION BETWEEN 6/30/06 AND 10/12/06

Activity	Station	Date	Number of Invalid Results	Explanation
1	I93-DIN-01	12/6/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	12/21/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	2/1/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	2/21/2007	6	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	I93-DIN-01	3/12/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	3/28/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	4/11/2007	6	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	4/11/2007	1	DOT SONDE REPLACED WITH DES IN-SITU DATASONDE BEGIN INSTALLATION I93T028 AT 1400
1	I93-DIN-01	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	5/24/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-DIN-01	6/14/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	7/21/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	8/10/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	8/11/2006	26	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/12/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/13/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/14/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/15/2006	69	DATA SUSPECT; DATALOGGER PREVIOUSLY OUT OF WATER
1	I93-NTC-01	8/15/2006	27	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/16/2006	6	DATA SUSPECT; DATALOGGER PREVIOUSLY OUT OF WATER
1	I93-NTC-01	8/16/2006	90	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/17/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/18/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/19/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/20/2006	21	DATA SUSPECT; DATALOGGER PREVIOUSLY OUT OF WATER
1	I93-NTC-01	8/20/2006	18	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	8/23/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	9/13/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	9/18/2006	42	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/19/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/20/2006	31	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/27/2006	40	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/28/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/29/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	9/30/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/1/2006	76	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/2/2006	23	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW

Activity	Station	Date	Number of Invalid Results	Explanation
1	I93-NTC-01	10/4/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	10/7/2006	30	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/8/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/9/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/10/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/11/2006	96	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/12/2006	17	DATALOGGER OUT OF WATER DUE TO LOW STREAM FLOW
1	I93-NTC-01	10/25/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	11/15/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	12/6/2006	1	DATALOGGER RETRIEVED FOR INPSECTION AND CLEANING
1	I93-NTC-01	12/21/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	2/1/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	2/21/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	I93-NTC-01	3/12/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	3/28/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	4/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	4/11/2007	1	DOT DATALOGGER REPLACED WITH DES IN-SITU DATASONDE, BEGIN INSTALLATION I93T029 AT 1400
1	I93-NTC-01	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	5/24/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-NTC-01	6/14/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	8/2/2006	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	8/10/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	8/23/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	10/26/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	11/15/2006	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	12/6/2006	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	12/21/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	2/22/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	3/7/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	I93-POL-01V	3/28/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	4/12/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	5/24/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-01V	6/2/2007	12	LOW CONDUCTIVITY READING. SENSOR PROBABLY EXPOSED TO THE AIR.
1	I93-POL-01V	6/14/2007	1	SONDE RETRIEVED FOR INSPECTION AND CLEANING

Activity	Station	Date	Number of Invalid Results	Explanation
1	I93-POL-04X	8/2/2006	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	8/10/2006	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	8/21/2006	86	DATALOGGER MALFUNCTION
1	I93-POL-04X	8/22/2006	96	DATALOGGER MALFUNCTION
1	I93-POL-04X	8/23/2006	44	DATALOGGER MALFUNCTION
1	I93-POL-04X	10/25/2006	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	10/27/2006	39	DATALOGGER RETRIEVED FOR MAINTENANCE
1	I93-POL-04X	10/28/2006	96	DATALOGGER RETRIEVED FOR MAINTENANCE
1	I93-POL-04X	10/29/2006	96	DATALOGGER RETRIEVED FOR MAINTENANCE
1	I93-POL-04X	10/30/2006	96	DATALOGGER RETRIEVED FOR MAINTENANCE
1	I93-POL-04X	10/31/2006	60	DATALOGGER RETRIEVED FOR MAINTENANCE
1	I93-POL-04X	12/21/2006	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	1/31/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	2/21/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	3/7/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
1	I93-POL-04X	3/28/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	4/12/2007	1	DATALOGGER RETRIEVED AND REPLACED WITH IN-SITU UNIT BEGIN INSTALLATION I93T031
1	I93-POL-04X	4/12/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	4/13/2007	1	SENSOR MALFUNCTION OR EXPOSURE TO THE AIR
1	I93-POL-04X	4/24/2007	71	SENSOR EXPOSED TO THE AIR
1	I93-POL-04X	4/25/2007	96	SENSOR EXPOSED TO THE AIR
1	I93-POL-04X	4/26/2007	54	SENSOR EXPOSED TO THE AIR
1	I93-POL-04X	5/3/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	5/24/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
1	I93-POL-04X	5/29/2007	54	SENSOR EXPOSED TO AIR DUE TO WATER LEVEL DROP
1	I93-POL-04X	5/30/2007	96	SENSOR EXPOSED TO AIR DUE TO WATER LEVEL DROP
1	I93-POL-04X	5/31/2007	96	SENSOR EXPOSED TO AIR DUE TO WATER LEVEL DROP
1	I93-POL-04X	6/1/2007	96	SENSOR EXPOSED TO AIR DUE TO WATER LEVEL DROP
1	I93-POL-04X	6/2/2007	80	SENSOR EXPOSED TO AIR DUE TO WATER LEVEL DROP
1	I93-POL-04X	6/14/2007	2	SONDE RETRIEVED FOR INSPECTION AND CLEANING
2	03-SHB	1/11/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	03-SHB	2/1/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	03-SHB	2/21/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	03-SHB	3/7/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	03-SHB	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	03-SHB	3/29/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING

Activity	Station	Date	Number of Invalid Results	Explanation
2	04-WRB	1/31/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	2/22/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	3/7/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	04-WRB	3/29/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	3/30/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	04-WRB	3/30/2007	1	END OF DEPLOYMENT. DATALOGGER WAS DEAD AT END OF DEPLOYMENT (4/11/07) AND ONLY RECORDED TO 3/30/07.\
2	06-SHB	1/11/2007	54	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	06-SHB	1/12/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/13/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/14/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/15/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/16/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/17/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/18/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/19/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/20/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/21/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/22/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/23/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/24/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/25/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/26/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/27/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/28/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/29/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/30/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	1/31/2007	96	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	2/1/2007	48	DATA FOR DEPLOYMENT COULD NOT BE RETRIEVED FROM DATALOGGER
2	06-SHB	2/15/2007	51	DATALOGGER POWER LOSS
2	06-SHB	2/16/2007	96	DATALOGGER POWER LOSS
2	06-SHB	2/17/2007	96	DATALOGGER POWER LOSS
2	06-SHB	2/18/2007	96	DATALOGGER POWER LOSS
2	06-SHB	2/19/2007	96	DATALOGGER POWER LOSS
2	06-SHB	2/20/2007	96	DATALOGGER POWER LOSS
2	06-SHB	2/21/2007	45	DATALOGGER POWER LOSS
2	06-SHB	2/21/2007	6	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING

Activity	Station	Date	Number of Invalid Results	Explanation
2	06-SHB	3/7/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING, YSI UNIT REPLACED WITH INSITU UNIT, INSITU READING FOR 11:20:09 ASSIGNED TO THE 11:15 TIME SLOT.
2	06-SHB	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	06-SHB	3/29/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	08-SHB	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	08-SHB	1/31/2007	6	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	08-SHB	2/21/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	08-SHB	3/7/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	08-SHB	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	08-SHB	3/29/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-BVRU03-01	1/11/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-BVRU03-01	1/31/2007	1	DATALOGGER PREPPED FOR INSPECTION AND CLEANING ON 2/1/2007
2	I93-BVRU03-01	1/31/2007	1	DATALOGGER PREPPED FOR INSPECTION AND CLEANING ON 2/1/2008
2	I93-BVRU03-01	2/1/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-BVRU03-01	2/8/2007	3	DATALOGGER RETRIEVED TO REPLACE DATALOGGER AT STATION ID I93-POL-06
2	I93-BVRU03-01	2/19/2007	27	DATALOGGER POWER LOSS
2	I93-BVRU03-01	2/20/2007	91	DATALOGGER POWER LOSS
2	I93-BVRU03-01	2/21/2007	54	DATALOGGER POWER LOSS
2	I93-BVRU03-01	2/21/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-BVRU03-01	3/2/2007	22	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/3/2007	96	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/4/2007	96	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/5/2007	96	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/6/2007	96	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/7/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-BVRU03-01	3/7/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING, CHANGED DATALOGGER FROM YSI TO INSITU, INSITU RECORD AT 12:29:52 ASSIGNED TO THE 12:30 TIME SLOT
2	I93-BVRU03-01	3/7/2007	48	SENSOR GUARD FILLED WITH SEDIMENT
2	I93-BVRU03-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	I93-BVRU03-01	3/29/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-DIN-05	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-DIN-05	2/1/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-DIN-05	2/21/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-DIN-05	2/24/2007	6	DATA INVALIDATED BY DOT CONTRACTOR, SUSPECT INTERFERENCE WITH SEDIMENT OR ICE
2	I93-DIN-05	2/25/2007	4	DATA INVALIDATED BY DOT CONTRACTOR, SUSPECT INTERFERENCE WITH SEDIMENT OR ICE
2	I93-DIN-05	2/26/2007	24	DATA INVALIDATED BY DOT CONTRACTOR, SUSPECT INTERFERENCE WITH SEDIMENT OR ICE
2	I93-DIN-05	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	I93-DIN-05	3/12/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	I93-DIN-05	3/28/2007	1	DATALOGGER RETRIEVED FOR CLEANING AND INSPECTION

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POC-02	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POC-02	1/31/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POC-02	2/21/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POC-02	3/8/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POC-02	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POC-02	3/29/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POCU01-01	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POCU01-01	3/8/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POCU01-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POCU01-01	3/29/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-02N	1/11/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-02N	1/31/2007	6	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-02N	1/31/2007	44	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/1/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/2/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/3/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/4/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/5/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/6/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/7/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/8/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/9/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/10/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/11/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/12/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/13/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/14/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/15/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/16/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/17/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/18/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/19/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/20/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/21/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/22/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/23/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/24/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/25/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/26/2007	96	DATALOGGER SENSORS ENCASED IN ICE

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POL-02N	2/27/2007	96	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	2/28/2007	61	DATALOGGER SENSORS ENCASED IN ICE
2	193-POL-02N	3/6/2007	25	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/7/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/8/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/9/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/10/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/11/2007	92	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POL-02N	3/12/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/13/2007	53	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POL-02N	3/13/2007	7	DATALOGGER RETRIEVED AND RETURNED TO LAB FOR REPAIR
2	193-POL-03	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-03	1/31/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-03	2/7/2007	11	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-03	2/21/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-03	3/7/2007	4	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-03	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POL-03	3/28/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-06	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-06	1/30/2007	5	VALUES SUSPECT LOW DUE TO ICE BUILD-UP ON CONDUCTIVITY SENSOR PORT
2	193-POL-06	1/31/2007	96	VALUES SUSPECT LOW DUE TO ICE BUILD-UP ON CONDUCTIVITY SENSOR PORT
2	193-POL-06	2/1/2007	55	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/1/2007	41	VALUES SUSPECT LOW DUE TO ICE BUILD-UP ON CONDUCTIVITY SENSOR PORT
2	193-POL-06	2/2/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/3/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/4/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/5/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/6/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/7/2007	96	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/8/2007	47	DATALOGGER REMOVED DUE TO MALFUNCTION
2	193-POL-06	2/17/2007	60	DATALOGGER PROGRAMMING ERROR
2	193-POL-06	2/18/2007	96	DATALOGGER PROGRAMMING ERROR
2	193-POL-06	2/19/2007	96	DATALOGGER PROGRAMMING ERROR
2	193-POL-06	2/20/2007	96	DATALOGGER PROGRAMMING ERROR
2	193-POL-06	2/21/2007	61	DATALOGGER PROGRAMMING ERROR
2	193-POL-06	3/1/2007	1	RESULT INVALIDATED, SUSPECT INTEFERENCE WITH ICE OR SEDIMENT
2	193-POL-06	3/6/2007	54	DATALOGGER POWER LOSS
2	193-POL-06	3/7/2007	96	DATALOGGER POWER LOSS

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POL-06	3/8/2007	96	DATALOGGER POWER LOSS
2	193-POL-06	3/9/2007	96	DATALOGGER POWER LOSS
2	193-POL-06	3/10/2007	96	DATALOGGER POWER LOSS
2	193-POL-06	3/11/2007	92	DATALOGGER POWER LOSS
2	193-POL-06	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POL-06	3/12/2007	52	DATALOGGER POWER LOSS
2	193-POL-06	3/12/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POL-06	3/28/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU01-01	1/1/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/2/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/3/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/4/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/5/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/6/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/7/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/8/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/9/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/10/2007	96	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	1/11/2007	54	DATALOGGER DID NOT RECORD DURING DEPLOYMENT. NOT DATA PROVIDED TO DES BY DOT.
2	193-POLU01-01	2/1/2007	5	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU01-01	2/21/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU01-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POLU01-01	3/12/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU01-01	3/28/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU02-02	1/1/2007	13	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/11/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU02-02	1/15/2007	16	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/19/2007	54	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/27/2007	78	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POLU02-02	1/28/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/29/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/30/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	1/31/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/1/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU02-02	2/1/2007	95	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/2/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/3/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/4/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/5/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/6/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/7/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/8/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POLU02-02	2/9/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/10/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/11/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/12/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/13/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/14/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/15/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/16/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/17/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/18/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/19/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/20/2007	96	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/21/2007	46	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-POLU02-02	2/21/2007	50	UNBELIEVABLY HIGH EXCURSION OF SPECIFIC CONDUCTANCE. BRACKETTING TESTS INDICATE VERY LOCALIZED SOURCE. DATA ARE NOT REPRESENTATIVE OF RIVER CONDITIONS. READINGS HIGHER THAN 3000 US/CM WERE INVALIDATED.
2	193-POLU02-02	2/22/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/23/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/24/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/25/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/26/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/27/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	2/28/2007	96	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	3/1/2007	55	DATALOGGER MALFUNCTION; WATER IN BATTERY COMPARTMENT
2	193-POLU02-02	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-POLU02-02	3/12/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-POLU02-02	3/28/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-STB-02	1/11/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-STB-02	2/1/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-STB-02	2/22/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-STB-02	3/8/2007	2	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-STB-02	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-STB-02	3/30/2007	1	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-WLPU-01	1/11/2007	34	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/12/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/13/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/14/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/15/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/16/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/17/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/18/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/19/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/20/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/21/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/22/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/23/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/24/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/25/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/26/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/27/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/28/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/29/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT

Activity	Station	Date	Number of Invalid Results	Explanation
2	193-WLPU-01	1/30/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	1/31/2007	96	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	2/1/2007	53	DATALOGGER POWER LOSS, WATER IN BATTERY COMPARTMENT
2	193-WLPU-01	2/1/2007	9	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-WLPU-01	2/13/2007	17	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/14/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/15/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/16/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/17/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/18/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/19/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/20/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/21/2007	96	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	2/22/2007	42	DATALOGGER MALFUNCTION; REMOVED FROM SERVICE
2	193-WLPU-01	3/3/2007	36	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/4/2007	96	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/5/2007	96	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/6/2007	96	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/7/2007	96	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/8/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING
2	193-WLPU-01	3/8/2007	38	SPECOND TRACE DROPS QUICKLY AND THEN SPIKES AT END OF DEPLOYMENT
2	193-WLPU-01	3/11/2007	4	DAYLIGHT SAVINGS TIME ADJUSTMENT
2	193-WLPU-01	3/30/2007	3	DATALOGGER RETRIEVED FOR INSPECTION AND CLEANING

Appendix B

Data Quality Audit Addendum

Dinsmore Brook TMDL Data from 7/1/07 to 10/9/07

December 1, 2007

Purpose

The purpose of this report is to: (1) Summarize the availability of data for the TMDL for Dinsmore Brook between 7/1/07 and 10/9/07; (2) Summarize the results from quality control samples; and (3) Report on nonconformances with the QAPP. This report satisfies the requirements of the QAPP for quality assurance reports described in section A9 (quality assurance report), section B5 (data completeness check), and section C1 (data quality audit).

In this addendum, only the additional information for station visits to I93-DIN-01 between 7/1/07 and 10/9/07 has been summarized. Additional data quality information for the Dinsmore Brook watershed from 7/1/06 to 6/30/07 is available in the rest of the Data Quality Audit report (NHDES-R-WD-07-39).

Data Completeness

All five data logger deployments at I93-DIN-01 from 7/4/07 to 10/9/07 passed QC tests. Combining these data with valid results from 10/1/06 to 6/30/07, the total number of valid specific conductance (SC) measurements at I93-DIN-01 between 10/1/06 and 9/30/07 was 33,942 (35,040 expected, 96.9%).

Number of quality assurance SC meter readings and chloride samples at I93-DIN-01 between 7/4/07 and 10/9/07: 5 (5 expected)

Number of quality assurance SC and chloride field duplicates at I93-DIN-01 between 7/4/07 and 10/9/07: 1 (1 expected)

Number of valid stream flow measurements at I93-DIN-01 between 10/1/06 and 9/30/07: 35,040 (35,040 expected, 100%)

Number of trip blanks collected during field sampling: 2 (2 expected). The chloride concentration in the trip blanks were both ND (<3 mg/L).

Quality Control Sample Audit

The field duplicate measurements of specific conductance and chloride collected on 9/28/07 are summarized in the following table. The relative percent difference (RPD) between the measurements met the data quality objectives (<15%).

Parameter	Routine Sample	Field Duplicate	RPD
Specific conductance (uS/cm)	1095	1108	1.2%
Chloride (mg/L)	230	210	9.1%

The relationship between specific conductance and chloride was checked by comparing the measured chloride concentration to the chloride concentration predicted by the SC measurement with a YSI-30 meter. The paired chloride and SC results from the five visits to station I93-DIN-01 between 7/4/07 and 10/9/07 are shown in the following table. Chloride concentrations were predicted from the SC values using the relationship: $Cl = 0.307 * SC - 22.0$. The data quality objective for this test was a difference of less than 40 mg/L.

Date	Time	Chloride from lab sample (mg/L)	Specific Conductance from meter (uS/cm)	Chloride predicted from SC (mg/L)	Difference (mg/L)
7/26/2007	10:50 AM	210	824	231	21
8/17/2007	11:12 AM	190	1108	318	128
9/7/2007	9:10 AM	330	1026	293	-37
9/28/2007	10:30 AM	230	1095	314	84
10/9/2007	9:50 AM	220	869	245	25

The data in the table show that the data quality objective was not met on two of the five days.

- On 8/17/07, the SC reading by the meter (1,108 uS/cm) agreed with the SC recorded by the datalogger at 11:15 (1,028 uS/cm). However, the measured chloride concentration from the lab (190 mg Cl/L) was lower than would be expected from the SC-Chloride relationship (318 mg Cl/L).
- On 9/28/07, the SC measured by the datalogger showed rapid variation at the time of the station visit. The SC measured by the datalogger at 10:30 am was 718 uS/cm (198 mg Cl/L). By 11:00, the SC measured by the datalogger had risen to 1,179 uS/cm (340 mg Cl/L). The laboratory result for chloride (230 mg/L) fell between these two values and, therefore, the quality assurance test was considered to have met data quality objectives.

Despite the discrepancies on two dates (one of which can be explained), the SC data collected by the data logger appears to be representative of chloride concentrations in Dinsmore Brook.

Summary of Nonconformances with QAPP

None