

## **APPENDIX A**

Taylor/TEC Stormwater Sampling Reports

SW08 Through SW12



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# **STORMWATER EVENT REPORT SW08**

## **For**

### **Non-Dry Dock Stormwater Monitoring**

#### **Conducted at**

#### **Puget Sound Naval Shipyard**

#### **Bremerton, WA**

#### **Project ENVVEST Study Area**

**November 21, 2011**



*Puget Sound Naval Shipyard and Surrounding Area*

**PNNL Contract No.: N4523A10MP00034 Amendment 1**

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## 1.0 Introduction

Taylor/TEC conducted non-dry dock stormwater sampling tasks within the Puget Sound Naval Shipyard (PSNS) and adjacent areas within Naval Base Kitsap (NBK); collectively comprising the Project ENVVEST study area, between November 15<sup>th</sup> and 22<sup>nd</sup>, 2011. This was the first of four scheduled events of the 2011-2012 project year – referred to as *Phase II*. Overall, this is the eighth Stormwater (SW08) event of the project. A summary of the preparatory and sampling events, including site specific conditions that occurred during SW08 are presented in this report, with supporting information as attachments.

This SW08 Report is organized in the subsequent manner and contains the following: Section 2, Phase II Preparatory Tasks; Section 3, Event Summary; Section 4, Project Staff Participating in SW08; Section 5, Storm Event SW08 Preparatory Tasks; Section 6, Weather Forecast Information and SW08 Targeting Details; Section 7, Precipitation and SW08 Qualification Summary; Section 8, Sampling Information, Management and Validation; Section 9, Basin Runoff Calculations; Section 10, Descriptive Statistics and Discussion of Event Station Monitoring Data; Section 11, Notable Anomalies and Variations to the PWP; and Section 12, Action Items.

Attachments to this report include: *Storm Event Summary and Sampling Information, Validation Checklist* (spreadsheet), Stormwater Field Sampling Forms and Storm Controller Notes, Chain of Custody Forms, (basin) Runoff Calculation Worksheet, Station Hydrographs, Autosampler Reports and Weather Forecast Information.

## 2.0 Phase II Preparatory Tasks

Site visits and initial setup tasks began in late August, 2011. By mid-November all six of the Phase II monitoring stations (PSNS015, PSNS084.1, PSNS115.1, PSNS124, PSNS124.1 and PSNS126) had been installed and were fully operational. No major issues or setbacks were encountered during the station setup activities. Figure 1 shows the general location of the PSNS and NBK monitoring sites.

Between October 31<sup>st</sup> and November 2<sup>nd</sup>, 2011 field equipment blanks were collected at each of the six monitoring stations. Teflon®-lined polyethylene sampling lines at each monitoring station were thoroughly back flushed with laboratory supplied DI water prior to and immediately after field blank collection. Sampling lines at each station were made ready for storm event sample collection. An equipment blank, using the same batch of laboratory supplied DI water, was also collected from a representative stainless steel dip-cup used for grab-style parameter collection.

While conducting confined space entry tasks associated with station setups, attempts were made to collect samples of accumulated sediment from within each of the Phase II stormwater monitoring vaults. In total, three composited sediment samples were collected (one each) from PSNS015, PSNS115.1 and PSNS124.1. These samples were collected between October 26<sup>th</sup> and November 10<sup>th</sup>, 2011. Insufficient amounts of sediment prevented sample collection at the other project monitoring stations. See the attached Sediment Collection Field Sheets for details.

All preparatory phase equipment blank and sediment samples were submitted under chain-of-custody (COC) procedures to the Battelle Marine Science Laboratory in Sequim, WA. See the attached COCs for details.

### 3.0 Event Summary

Main SW08 details are provided below as a “Quick Reference”:

- Event/s conducted: SW08
- Event Date/s: station prep. = 11/15/11; storm event tasks occurred between 11/20 – 11/22
- Monitoring Stations Sampled: PSNS015, 84.1, 115.1, 124, 124.1 and 126
- Antecedent Conditions Met?: Yes (greater than 3 days at each station); 0.0” in prior 24 hrs and 0.0” in prior 6 hrs preceding the storm/sampling event
- Start of Rainfall at PSNS Stations: 11/21/11 between 0420 and 0440
- Sampling Period Duration Range: start = 11/21/11 @ 0515 (PSNS015), stop = 11/22/11 @ 0938 (PSNS015). Max sampling duration = 28 hrs:21 mins
- Sampling Event Rainfall Total: PSNSB427 1.83, PSNS126 = 1.36”, PSNS124.1 = 1.99”, PSNS124 = 1.22”, PSNS115.1 = 1.45”, PSNS084.1 = 1.69”, PSNS015 = 1.82”
- Samples/Types Collected: Grab and composite samples were collected at each stations (one each at each station) for a total of 12 samples
- Quality Control (QC) Samples Collected: No QC samples were collected during SW08. Prior to SW08 equipment blank samples were collected at each monitoring station and from representative grab-sampling gear.
- Based on consideration of storm event and sample validation information, were the samples collected during SW08 valid for project purposes? (Y / N, composite, grab or both): Yes-both; all grab and composite samples collected during this event were valid.

See Table A-1; *Storm Event Summary and Sampling Information, Validation Checklist*, for additional event summary details.

### 4.0 Project Staff Participating in SW08

#### Taylor/TEC:

Dave Metallo – Project Manager, Storm Controller, Field Event and QC Manager

Brian Rupert – Field Team Leader

Ian Sahlberg – Field Team Member

#### Navy Personnel:

Bob Johnston – Project Technical Lead / Oversight / Grab sample collection lead

Christine Gebhart – NPDES Program Support / Grab sample collection support

Eric Mollerstuen – NPDES Program Support / Grab sample collection support



## 5.0 Storm Event SW08 Preparatory Tasks

On Tuesday November 15<sup>th</sup>, 2011 all six stormwater monitoring stations (PSNS015, PSNS08.1, PSNS115.1, PSNS124, PSNS124.1 and PSNS126) were initially set up for and readied for storm event / stormwater sample collection. At the time of the initial station setups all of the monitoring equipment was deemed to be functioning properly, was operational and “sample ready” (see Sections 1 and 2 of the attached *Stormwater Field Sampling Forms*).

All stations were programmed with pre-determined autosampler enable and pacing conditions set “high” to prevent premature enabling (*sample disable mode*), as directed by the Taylor/TEC Storm Controller. Station operation was passed to the Taylor /TEC Storm Controller to be managed via telemetry. Final enabling conditions were determined by the Storm Controller closer to the onset of the storm event.

## 6.0 Weather Forecast Information and SW08 Targeting Details

Prior to the onset of SW08 (11/21/11), based on data from the Navy’s rain gauge atop Building 427, 1.40” of rain was recorded, during three distinct periods at the Shipyard from the first of the month. The week prior to SW08 (again as measured by the gauge at B427) 0.77” of rain was recorded. The last measureable runoff occurred approximately 3.5 days prior to the SW08 event.

Rain was forecast at 100% probability for Monday 11/21/12, with 24-hour accumulations of over 1.75” into mid-morning of the 22<sup>nd</sup>. Project qualifying storm criteria (antecedent dry period, event probability and forecast rainfall depth) was met by early evening of the 18th, so the decision was made to continue *tracking* and targeting this well developing large storm system.

The Nation Weather System (NWS) was the main source used for the assessment of weather forecasting and conditions. Provided below is a link to the NWS-Bremerton, WA webpage; (<http://forecast.weather.gov/MapClick.php?site=sew&textField1=47.56751&textField2=-122.63127&smap=1>). A host of other internet available weather forecasting, observational and data sources are used for field and reporting purposes as appropriate Detailed *Weather Forecast Information* is attached to this report.

The routinely referenced weather models used to gain forecast information regarding the Pacific Northwest, the MM5-NAM (<http://www.atmos.washington.edu/mm5rt/rt/naminit.12km.html>) and the GFS-WRF (<http://www.atmos.washington.edu/mm5rt/rt/gfsinit.frame1.html>) (both hosted by the University of WA and initialized for the PNW) were in decent agreement with each other regarding area-wide rainfall. Below is a synopsis of the model comparison:

*Event starts on 11/21 around 0400, continuing to rain until approx. 1000, rain bands move through project area from 1000 until approx. 0100 on 11/22. Heavy rainfall to return to area around 0100 on 11/22 lasting until approx. 1000. NO more significant rain until around 1700 (11/22/11. Anticipated storm end after the 1000 portion on 11/22.*

Station status checks were conducted at various times between November 15<sup>th</sup> and 19<sup>th</sup>, becoming more frequent from the 20<sup>th</sup> onwards when more detailed observations began. The final sampler enabling conditions were appropriately set at each monitoring station on the afternoon of the 20<sup>th</sup> (*sample ready mode*). A telemetry check at 0800 on the 21<sup>st</sup> revealed that all of the stations had enabled and began their sampling routines. Table 1 lists the final enabling conditions at each monitoring station that were used for SW08, along with the rainfall amounts in the 24 and 6 hour periods prior to the onset of the storm event.

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (μS/cm)	Repeatable Conductivity Enable (Y/N)	Pacing (min)	<sup>1</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS015	0.05	0.25	2000	N	15	0.00"/ 0.00"
PSNS084.1	0.05	0.25	2000	N	15	0.00"/ 0.00"
PSNS115.1	0.05	0.25	2000	N	15	0.00"/ 0.00"
PSNS124	0.05	0.25	2000	N	15	0.00"/ 0.00"
PSNS124.1	0.05	0.25	2000	N	15	0.00"/ 0.00"
PSNS126	0.05	0.25	2000	N	15	0.00"/ 0.00"

<sup>1</sup>Conditions as checked on 11/20/11 at ~1200; final enable conditions set 11/20/11 at ~1400

## 7.0 Precipitation and SW08 Qualification Summary

### Precipitation Summary:

Previous rainfall that caused runoff to occur ( $\geq 0.03$ " rainfall without 3-hr gap) prior to the onset of SW08 ranged from 3:09 (days:hours) at PSNS084.1 to 3:14 (days:hours) at PSNS124, as measured by each stations rain gauge. Rain began to fall over the project site, as predicted, between 0420 and 0440 on November 21<sup>st</sup>. Table 2 details the period since last runoff and antecedent duration prior to the storm event, as well as the rainfall start date/time at each monitoring station.

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS015	11/17/11 15:40	3:12	11/21/11 4:35
PSNS084.1	11/17/11 19:00	3:09	11/21/11 4:40
PSNS115.1	11/17/11 16:45	3:11	11/21/11 4:30
PSNS124	11/17/11 15:40	3:13	11/21/11 4:40

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS124.1	11/17/11 15:40	3:12	11/21/11 4:35
PSNS126	11/17/11 16:40	3:11	11/21/11 4:20

<sup>1</sup>Last runoff period is defined as  $\geq 0.03$ " of rainfall without a 3-hr gap

Rainfall began registering at all stations by 0440 on 11/21/11 (see Table 2) and continued in a moderate fashion until about 0900. Sampling began at the monitoring between 0517 (PSNS015) and 0745 (PSNS84.1). Checks, via telemetry, revealed that all of the stations enabled their sampling routines as programmed; with rainfall, pipe level and conductivity values being in satisfaction of their threshold values (as listed in Table 1).

By 0930 rainfall had all but ceased. In order to preserve the amount of available / potential sampler bottles and to limit the amount of saline water captured (due to lack of runoff and rising tide levels) the decision was made to temporarily suspend the programming routines in the autosamplers. This was done via telemetry around 0945. At this point the rainfall totals at the monitoring stations ranged from 0.29" (PSNS126) to 0.35" (PSNS015 and -124.1). All six of the autosamplers sat idle for about the next eight hours (except where the storm controller re-started the units to continue with their collection during the intra-event dry period such that each sampler was poised to resume its sampling regime at its next empty bottle). Some lite shower activity was recorded during the intra-event dry period, ranging from 0.06" at PSNS126 to 0.11" at PSNS124.1. Steady (and runoff producing) rainfall resumed around 1730. At this point sampling routines were restarted at all six monitoring stations.

Light to moderate rainfall was noted until around midnight of the 21<sup>st</sup>, when the rain intensity increased to moderately heavy to heavy, as the bulk of storm system pressed inland and onto the project area. Rainfall had ceased at the stations between 0800 and 0900 on the morning of the 22<sup>nd</sup>. The sampling routines were stopped, via telemetry, around 0930. Sampling durations ranged from 25:51(hrs:mins) at PSNS084.1 to 28:21(hrs:mins) at PSNS015. Station totals during this second period of rainfall ranged from 0.85" at PSNS124 to 1.56" at PSNS124.1. The Navy's rain gauge at B427 recorded 0.34" and 1.39" during the two rainfall periods of the SW08, respectively.

Table 3 summarizes the sampling period start, sampling period end, rainfall amounts that occurred during the initial and second periods, as well as the total rainfall amounts for each monitoring station and the PSNS project gauge at B427 that occurred during SW08. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), attached to this report, provides additional sampling period rainfall information.

**Table 3. Sampling Period Information and Rainfall Totals for PSNS Gauge and Monitoring Stations**

Station	Sampling Period Start (Date/Time)	Sampling Period End (Date/Time)	Sampling Period Duration (Hrs:Mins)	<sup>1</sup> Rainfall During First Period of SW08 (in)	Rainfall During Intra-Event Period (in)	<sup>2</sup> Rainfall During Second Period of SW08 (in)	<sup>3</sup> Total Sampling Period Rainfall (in)
PSNS015	11/21/2011 5:17	11/22/2011 9:38	28:21	0.35	0.1	1.37	1.82
PSNS084.1	11/21/2011 7:45	11/22/2011 9:36	25:51	0.31	0.08	1.30	1.69
PSNS115.1	11/21/2011 5:21	11/22/2011 9:36	28:15	0.32	0.07	1.06	1.45
PSNS124	11/21/2011 5:33	11/22/2011 9:34	28:01	0.30	0.07	0.85	1.22
PSNS124.1	11/21/2011 6:42	11/22/2011 9:33	26:51	0.31	0.12	1.56	1.99
PSNS126	11/21/2011 5:24	11/22/2011 9:27	28:03	0.29	0.06	1.01	1.36
B427	NA	NA	NA	0.34	0.1	1.39	1.83

<sup>1</sup>As based on station start times until about 0945 on 11/21/11.<sup>2</sup>Period from about 1730 on 11/21/11 until about 0935 on 11/22/11.<sup>3</sup>Total Sampling Period Rainfall includes rainfall amounts from the first and second period as well as during the intra-event dry period.**SW08 Qualification Summary:**

All storm qualification conditions were met for this event. Storm event qualification conditions included wet season event date range (Oct 1 – May 1), forecast probability ( $\geq 70\%$ ), forecasted storm depth ( $\geq 0.1"$ ), storm duration ( $\geq 2$ hrs) and runoff occurrence / hydrograph stage (elevated above base flow). Antecedent dry period ( $\leq 0.1"$  rain in previous 24hrs and 0" rain in previous 6hrs) qualification for SW08 was also met without condition, as described above. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW08 qualification criteria listed above.

**8.0 Sampling Information, Management and Validation****Grab Sampling:**

Grab sample collection was performed by the Navy Team, with storm control assistance (limited to station status checks via telemetry) from Taylor/TEC as necessary. Grab sampling was conducted at all six of the monitoring stations. Grab samples were collected as per methodologies described in the 2011-12 Project Work Plan (PWP); using manual methods, a laboratory cleaned stainless steel dip cup, lowered on an extension pole, used to fill the appropriate analytical

containers. Water quality condition (conductivity and temperature) was assessed prior to the collection of the samples. Samples were collected only if conductivity was determined to be  $\leq 2000$   $\mu\text{S}/\text{cm}$ . Parameters included total petroleum hydrocarbons (NW-TPH-Dx) and fecal coliform. All samples were collected on November 22<sup>nd</sup> between 0832 (PSNS015) and 1000 (PSNS126). Sample collection was coordinated with low or lower tidal conditions to ensure that proper conductivity conditions would exist. Grab sampling times are indicated on the attached hydrographs to illustrate the water level stage during collection. Grab sample IDs, along with the other pertinent information is listed in the *Stormwater Field Sampling Forms* and in Table A-1 (both are attached). Table 4 summarizes these results.

**Table 4. Grab Sampling Information**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Grab sample ID	SW08-0056	SW08-0055	SW08-0054	SW08-0052	SW08-0053	SW08-0051
Grab Date /Time	11/22/2011 10:00	11/22/2011 9:48	11/22/2011 9:30	11/22/2011 8:50	11/22/2011 9:06	11/22/2011 8:32
Grab sample conductivity value ( $\mu\text{S}/\text{cm}$ )	534	6.09	42.8	98.9	98.6	61.6
Hydrograph stage at grab collection	Rising Limb	Intra-event Runoff	Rising Limb	Rising Limb	Rising Limb	Intra-event Runoff
Grab parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

**Composite Sampling:**

Composite sample retrieval tasks and formulation procedures were managed by Taylor/TEC with support from PNNL/MSL personnel. Composite samples were collected from all six monitoring stations.

Composite samples were collected via autosamplers which were operated and synchronized by a custom designed telemetered water quality control system. The composite sample collection period is noted above in Table 3. The sampling duration ranged from 25.85 hours at PSNS084.1 to 28.35 hours at PSNS015. The composite sample collection times ranged from 0517 on 11/21 (PSNS015) to 0938 on 11/22 at PSNS015. Table 3 also lists the rainfall that occurred during each stations sample period.

Wedge bottles from each station (contained in the autosampler bases) were brought back the C106 Stormwater Lab at B147 for processing. Composite formulation occurred on November 22<sup>nd</sup> between 1155 and 1530. Each individual wedge bottle was screened with bench-top meters for their conductivity (YSI 556) and turbidity (Hach 2100P) values. Bottles with conductivity values of

≤2000 µS/cm were considered for inclusion in the overall composite sample; bottles testing greater than 2000 µS/cm were discarded. The number and numeric identification of the wedge bottles that were used for the composite sample formulation and those that were discarded were noted in Section 5 of the Stormwater Field Sampling Forms.

Methods used in preparation, autosampler collection, retrieval and formulation of the composite samples were conducted as per the PWP. Discrete time-paced samples were collected in 1000-ml plastic wedge bottles (up to 24 bottles available in each autosampler base) at a rate of 240-ml / 15 minutes (four samples/bottle one bottle/hour) per aliquot; which, at this pacing, provides for up to 24 hours of sampling period coverage (under normal, non-duplicate, operating conditions). Samplers at each station were enabled as per the conditions stated in Section 6 of this report. Each station was outfitted with either a pressure transducer (level and temperature) / conductivity (with salinity post-calculated) probe combo (INW CT2X) or a pressure transducer (level and temperature) (Campbell CS450) and a separate multi-parameter sonde (conductivity, salinity and temperature) (YSI 6820) (PSNS084.1). Composite sample parameters included: hardness, TOC, DOC, TSS, total and dissolved metals and turbidity. A small portion from each of the overall composite samples was poured off for the assessment of its resultant conductivity and turbidity values.

Enough qualifying sample volume was collected at each station to permit analysis of all intended composite sample analytes. Composite sample formulation of all the monitoring stations was conducted in a routine manner. The total number of discrete wedge bottles collected at each sampler, along with the total number of those bottles used in the station's composite sample is noted below in Table 5. Dividing the number of wedge bottles used in the composite sample formulation by those that were excluded provides an estimation of the amount of time that freshwater conditions occurred at each station during the sampling event period.

Specific details regarding the composite formulation, results from individual bench top testing of the discrete bottles, sample IDs, sample date/time and resultant overall conductivity and turbidity values, as well as the number of wedge bottles collected during the sampling event and those used for the composite sample formulation are detailed in the *Stormwater Field Sampling Forms, Chain-of-Custody (CoC)* forms and in Table A-1 (all are attached). Table 5 summarizes these results.

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Composite sample ID	SW08-012	SW08-011	SW08-010	SW08-009	SW08-008	SW08-007
Composite Date /Time	11/22/2011 9:27	11/22/2011 9:33	11/22/2011 9:34	11/22/2011 9:36	11/22/2011 9:36	11/22/2011 9:38

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Overall Composite conductivity value (μS/cm)	187	284	651	1692	270	182
Overall Composite turbidity value (NTU)	6	25	10	4	11	16
Composite volume (ml)	8,400	7,500	5,000	6,500	7,200	8,000
Number of Bottles Collected During Sampling Event	21	21	20	22	19	21
Number of Bottles Included in Composite Sample	21	15	10	13	18	20
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	71%	50%	59%	95%	95%
Composite parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

All sampling and vault monitoring equipment operated as designed and programmed. Details pertaining to autosampler programming and event-specific operation of each monitoring stations' autosampler unit are contained in the attached *Sampler Reports*.

**QC Samples:**

No quality control samples were collected for either the grab or composite samples during SW08. As mentioned in Section 2, field equipment blanks were collected at each station prior to this initial storm sampling event. These are the only planned equipment blanks that will be collected for the 2011-12 Phase II sampling events. Equipment blank information is listed in Table A-1. Table 6 summarizes the quality control sample collection information for SW08.

**Table 6. Summary of Quality Control Sampling Information for SW08**

Sample Collection Criteria:	Results
Grab sample duplicate ID	NA
Grab sample duplicate date and time	NA
Grab sample duplicate conductivity value (μS/cm)	NA
Composite sample duplicate ID	NA
Composite sample duplicate date and time	NA
Overall Composite Duplicate conductivity value (μS/cm)	NA

Overall Composite Duplicate turbidity value (NTU)	NA
Composite Duplicate volume (ml)	NA

**Sample Management:**

All samples were handled and managed as per Section 9 of the PWP and in a manner acceptable and within industry standards regarding practices typical for tasks of this nature. Once collected, both grab and composite samples were placed into coolers and put on ice and/or into the Stormwater Laboratory refrigerator to maintain temperatures between 2 and 6 °C.

All sample IDs, collection date and time, matrix, requested parameter analysis and other associated information were documented on *Chain of Custody (CoC) Forms* (attached). Samples were in direct control of project and/or laboratory personnel at all times. Samples were delivered to the testing facility, Battelle Marine Science Laboratory in Sequim, WA, in good, useable and properly chilled condition. Adequate sample volume was collected from the targeted stations to proceed with the scheduled analysis of all parameters per the 2011-12 PWP.

**Sample Validation Summary:**

All sample validation criteria were met for this event per Section 8.2.6 of the 2011-12 PWP. Prior to processing the samples and transferring custody to the analytical laboratory, the Taylor/TEC Field Event Lead validated the samples against certain criteria. These validation criteria included runoff occurrence / hydrograph stage, sample preparation and handling review, requested parameters, ≥2 hour sampling duration or 75% storm hydrograph coverage, minimum number of aliquots, minimum sample volume collected for required parameters, discrete and composite samples conductivity measurement results, quality control sample collection and anomalous conditions assessment. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW-event qualification listed above.

## **9.0 Basin Runoff Calculations**

Rainfall runoff volumes during the SW08 sampling period were calculated for each of the basins associated with the six Phase II monitoring stations. These calculations are based on the modified Runoff Coefficient Method (RCM) as described in Section 7.4 of the 2011-12 PWP.

The RCM formula incorporates a coefficient that has a certain predetermined range of possible values, which are based primarily on the land use/land cover considerations for a particular basin or parcel. In calculating the runoff volumes for SW08, the maximum coefficient values were applied. Total runoff volume (cubic feet converted to gallons) was calculated with the general assumption that all of the rainfall upstream from a monitoring station that fell during the sampling event flowed past that station; such that basin area (ft<sup>2</sup>) X the selected coefficient (dimensionless) X rainfall amount (ft) equaled the total runoff volume.

The value ranges for the various land use/land cover categories assigned to each basin are listed in the attached *Runoff Calculation Tables*. Calculated runoff values are also presented in Table A-



1 (Storm Qualification and Sample Validation Information Checklist) (attached). Table 7 summarizes the results from these calculations.

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
126	Impervious	653,373	0.6 – 0.9	591,881	1.36	0.1133	501,792
	Pervious	9,613	0.2 – 0.4				
124.1	Impervious	109,690	0.6 – 0.9	101,245	1.99	0.1658	125,596
	Pervious	6310	0.2 – 0.4				
124	Impervious	429,302	0.6 – 0.9	396,251	1.22	0.1017	301,357
	Pervious	24,698	0.2 – 0.4				
115.1	Impervious	449,104	0.6 – 0.9	366,390	1.45	0.1208	331,178
	Pervious	13,938	0.2 – 0.4				
84.1	Impervious	23,958	0.6 – 0.9	21,562	1.69	0.1408	22,716
	Impervious	2,009,431	0.5 – 0.8				
015	Pervious	2,009,431	0.25 – 0.4	2,411,321	1.82	0.1517	2,735,753
	Impervious	653,373	0.6 – 0.9				

## 10.0 Descriptive Statistics and Discussion of Event Station Monitoring Data

Descriptive statistics for the sampling period at each monitoring station are provided in Table 8, below. These statistics include minimum, maximum, average and median for 1-hour interval rainfall data, vault level, conductivity, salinity, transducer water temperature, YSI water temperature (PSNS084.1 only) and tidal stage. Sampling period rainfall totals (includes intra-event dry periods) are also included as part of each station's rainfall information.

**Table 8. SW08 Sampling Period Rainfall and Vault Parameter Descriptive Statistics**

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS126	Min	0.00	0.04	28	2.00	4.40		0.41
	Max	0.16	5.02	48,095	42.00	10.96		12.47
	Average	0.04	1.18	6,519	7.10	9.31		6.97
	Median	0.02	0.32	209	2.00	9.64		7.01

**Table 8. SW08 Sampling Period Rainfall and Vault Parameter Descriptive Statistics**

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
	Storm Total	1.36						
PSNS124.1	Min	0.00	0.17	35	2.00	5.11		0.41
	Max	0.30	4.81	47,465	42.00	11.61		12.47
	Average	0.06	1.12	17,871	17.00	9.52		6.91
	Median	0.03	0.30	617	2.00	9.64		6.85
	Storm Total	1.99						
PSNS124	Min	0.00	0.22	16	2.00	4.80		0.41
	Max	0.16	8.54	48,090	42.00	13.07		12.47
	Average	0.04	3.45	20,719	18.66	9.77		6.91
	Median	0.02	3.16	5,367	4.11	9.82		6.85
	Storm Total	1.22						
PSNS115.1	Min	0.00	-0.03	43	2.00	4.47		0.41
	Max	0.19	12.19	47,073	42.00	12.51		12.47
	Average	0.05	6.69	11,880	11.47	9.24		6.97
	Median	0.02	7.00	1,299	2.00	9.47		7.01
	Storm Total	1.45						
PSNS084.1	Min	0.00	-0.25	73	0.05	5.32	5.37	0.41
	Max	0.21	8.04	43,031	34.33	17.53	19.27	12.47
	Average	0.05	2.92	10,934	9.48	10.91	11.06	6.91
	Median	0.03	2.69	325	0.22	10.44	10.48	6.85
	Storm Total	1.69						
PSNS015	Min	0.00	0.39	-133	2.00	4.27		0.41
	Max	0.20	9.25	47,290	42.00	13.15		12.47
	Average	0.06	4.17	7,899	12.67	8.91		6.97
	Median	0.03	4.08	32	2.00	9.15		7.01
	Storm Total	1.82						

<sup>1</sup>salinity calculations for PSNS126, 124.1, 124, 115.1 and 015 are based on an algorithm that has a lower range cut-off value of 2ppt. Actual field values may have been lower. The PSNS084.1 conductivity probe (YSI6820) utilized a different salinity algorithm function and thus is able to calculate lower low range salinity values.

#### **Hydrograph Assessment:**

The hydrograph and rainfall signatures (see attached) for all six monitoring stations and B427 (rainfall only) showed very similar patterns. The B427 gauge did show a slightly different response during the intra-event portion of the sampling event rainfall period.

The initial onset of rain caused a short-lived response in the piping systems as evidenced by very minor “blips” in the hydrographs, except at PSNS115.1. Initial pipe level response was truncated by the rising tide, which took full effect of the hydrograph signature as the rain quickly tapered off. Consequently, conductivity and salinity showed a corresponding sharp rise that was then sustained for some period until the return of the rainfall. Coincident with the return of the rainfall was the waning of the tide cycle and sharp reduction of conductivity values, at which time sampling resumed at all of the stations. Conductivity remained low (below 2,000uS/cm) for the remainder of the sampling period, with minor spikes at PSNS124.1 and 115.1. PSNS124 did show a return to seawater salinity concentrations for a brief period as the rainfall subsided slightly between the intra-event period and the second rainfall period. During this second rainfall period pipe storage effects are noted at each of the stations. The hydrographs for PSNS126 and 124.1 show indication of their respective piping systems draining out as the tide recedes past their effective tide height elevations.

As mentioned above grab sampling information for SW08 is indicated on each of the station hydrographs. Composite sample markers have been applied to the hydrographs to indicate total collection time (see attached).

#### **Telemetry Data Summary Report: TDSR**

A review of the telemetry data collected during SW08 indicated that nearly all vault parameters were properly and effectively recorded (with only very minor level issues associated with low tide and no water in the pipe). The only issues of note were associated with intermittent and mostly short-lived conductivity and salinity outages at PSNS015. However, there were two data gaps of approximately 2.5 and 7.5 hours in duration. These gaps caused no impact to sample enabling or subsequent collection. Mostly these outages were associated with very low saline conditions (where the sensors have the most difficulty recording accurate values). Once there was even a slight upward shift in the salinity concentration (in correlation to tidal effects), the conductivity probe responded as designed, and thus the salinity values became positive and representative. This issue has been noticed during past SW events during Phase I data collection. The sensors were re-calibrated as much as practicable.

A TDSR report (table), detailing the anomalies noted during SW08 is attached.

### **11.0 Notable Anomalies and Variations to the PWP**

There were no major anomalies observed or otherwise noted after completion of the sampling event and review of the associated data that would have caused any of the SW08 samples to be non-representative of the conditions from which they were collected. As reported above, all intended and scheduled grab and composite samples were submitted to the MSL within holding times and without incident. All support and sampling tasks, as well as collected samples, were managed as appropriate per the PWP.

There were, however, several minor anomalies that occurred during SW08. These were;

- Sediment samples being submitted to the laboratory with incorrect program IDs. This issue was correct by PNNL upon sample intake.
- Equipment blanks were initially submitted to the laboratory with SW08-designations, when they should have been sequentially numbered following the blanks that were collected during the Phase I efforts. Consequently, the grab samples collected during SW08 had to have their IDs changed (by adding 50 to each, e.g. SW08-001 became SW08-051 and so on) to avoid duplication in the associated Navy Project ENVVEST database. PNNL corrected this issue in the form of revised CoCs and updates within their LIMS.
- Typically, once a sampler has been enabled it is allowed to continue upon its course until its sampling routine has been completed (usually 24-hrs). However, during SW08 it was necessary to halt the samplers after the initial slug of rainfall moved through the project area. This was done, with concurrence from the Navy, in order to assure that each sampler had a sufficient amount of available wedge bottles to capture and characterize the bulk of the storm event that had been slightly delayed. During the period that samplers were manually idled the tide was high – therefore nearly all of the water that would have been sampled during this time would have been disqualified due to high salinity (not to mention that runoff had all but returned to baseflow conditions).
- Change in calculation method (not an anomaly); the method by which rainfall statistics, namely average, minimum, maximum and median were previously calculated was on static 1-hour segments; currently all of these statistics are calculated on a “rolling 1-hour data window” in an attempt to provide a more accurate and representative assessment of the actual rainfall conditions.

## 12.0 Action Items

Routine action items include resetting (reloading with bottles, charging batteries, back flushing with DI water, etc.) all four monitoring stations and re-stocking of sampling supplies. Routine station maintenance items (e.g. sensor cleaning and calibration, rain gauge maintenance, etc.) as well as storm set-up tasks will need to be completed as necessary.

Non-routine action items include trouble shooting some minor CT2X transducer calibration issues noted at PSNS015.

The current focus of the field efforts will be in maintaining proper station and equipment operational status, data and resource management and storm-tracking tasks.



Figure 1. Phase II Stormwater Monitoring Locations within the Shipyard Boundary

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## **ATTACHMENTS**

- Storm Event Summary and Sampling Information, Validation Checklist
- Stormwater Field Sampling Forms and Controller Notes
- Chain-of-Custody Forms
- Runoff Calculation Worksheet
- Station Hydrographs
- Autosampler Reports
- Weather Forecast Information
- TDSR



**Table A-1. PSNS Non-Dry Dock Stormwater Monitoring Tasks  
Storm Event Summary and Sampling Information, Validation Checklist  
Stormwater Sampling Event #8 (11/21/2011)**

This form acknowledges representativeness criteria described in the project PWP.

Mark with "Yes" to acknowledge acceptable, "No" for not acceptable, "NA" or "-" if not applicable.

<sup>1</sup> Storm Event Data:						
Project Storm Event (SW) #	8					
Event Forecast Probability (%)	100					
PSNS B427 Rain Gauge - Sample Event Total (in.)	1.83					
Rainfall and Runoff Summary:						
	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Last Runoff (≥ 0.03" rainfall without 3-hr gap) Prior to STE Start (Date/Time)	11/17/11 16:40	11/17/11 15:40	11/17/11 15:40	11/17/11 16:45	11/17/11 19:00	11/17/11 15:40
Antecedent Dry Period Duration (days: hrs)	3:11	3:12	3:13	3:11	3:09	3:12
Rainfall Prior 24-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00
Rainfall Prior 6-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00
Start of Rainfall (Date/Time)	11/21/11 4:20	11/21/11 4:35	11/21/11 4:40	11/21/11 4:30	11/21/11 4:40	11/21/11 4:35
Sampling Period Start Date & Time	11/21/2011 5:24	11/21/2011 6:42	11/21/2011 5:33	11/21/2011 5:21	11/21/2011 7:45	11/21/2011 5:17
Sampling Period End Date & Time	11/22/2011 9:27	11/22/2011 9:33	11/22/2011 9:34	11/22/2011 9:36	11/22/2011 9:36	11/22/2011 9:38
Sampling Period Duration (hrs:mins)	28:03	26:51	28:01	28:15	25:51	28:21
Sampling Period Duration Converted to Hours	28.05	26.85	28.02	28.25	25.85	28.35
Sampling Period Total Rainfall (in)	1.36	1.99	1.22	1.45	1.69	1.82
Sampling Period Max 1-hr Rainfall Intensity (in/hr)	0.16	0.30	0.16	0.19	0.21	0.20
Sampling Period Average 1-hr Rainfall Intensity (in/hr)	0.04	0.06	0.04	0.05	0.05	0.06
Runoff volume calculated for sampling period (gallons)	501,792	125,596	301,357	331,178	22,716	2,735,753
Number of Bottles Collected During Sampling Event	21	21	20	22	19	21
Number of Bottles Included in Composite Sample	21	15	10	13	18	20
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	71%	50%	59%	95%	95%
<sup>1</sup> Sample Collection Criteria:						
Grab sample ID	SW08-0056	SW08-0055	SW08-0054	SW08-0052	SW08-0053	SW08-0051
Grab Date /Time	11/22/2011 10:00	11/22/2011 9:48	11/22/2011 9:30	11/22/2011 8:50	11/22/2011 9:06	11/22/2011 8:32
Grab sample conductivity value (mS/cm)	534	6.09	42.8	98.9	98.6	61.6
Hydrograph stage at grab collection	Rising Limb	Intra-event Runoff	Rising Limb	Rising Limb	Rising Limb	Intra-event Runoff
Grab parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes
Composite sample ID	SW08-0012	SW08-0011	SW08-0010	SW08-0009	SW08-0008	SW08-0007
Composite Date /Time	11/22/2011 9:27	11/22/2011 9:33	11/22/2011 9:34	11/22/2011 9:36	11/22/2011 9:36	11/22/2011 9:38
Overall Composite conductivity value (mS/cm)	187	284	651	1692	270	182
Overall Composite turbidity value (NTU)	6	25	10	4	11	16
Composite volume (ml)	8,400	7,500	5,000	6,500	7,200	8,000
Composite parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes
<sup>1</sup> QC Sample Summary Information:						
Grab sample duplicate ID	N/A	N/A	N/A	N/A	N/A	N/A
Grab sample duplicate date and time	N/A	N/A	N/A	N/A	N/A	N/A
Grab sample duplicate conductivity value (µS/cm)	N/A	N/A	N/A	N/A	N/A	N/A
Composite sample duplicate ID	N/A	N/A	N/A	N/A	N/A	N/A
Composite sample duplicate date and time	N/A	N/A	N/A	N/A	N/A	N/A
Overall Composite Duplicate conductivity value (µS/cm)	N/A	N/A	N/A	N/A	N/A	N/A
Overall Composite Duplicate turbidity value (NTU)	N/A	N/A	N/A	N/A	N/A	N/A
Composite Duplicate volume (ml)	N/A	N/A	N/A	N/A	N/A	N/A
Associated Equipment Blank	SW08-005	SW08-006	SW08-002	SW08-001	SW08-003	SW08-004
<sup>1</sup> Storm and Sample Validation:						
Was the targeted STE antecedent or conditional antecedent qualified per PSNS PWP? (if no, then see next line)	Yes	Yes	Yes	Yes	Yes	Yes
Was the antecedent overage amount greater than 10% of the total rain event ?	N/A	N/A	N/A	N/A	N/A	N/A
Was runoff occurring OR was the hydrograph at least 10% above background pipe level during grab collection ? If no, explain in summary narrative.	Yes	Yes	Yes	Yes	Yes	Yes
Were a minimum of 8 aliquots collected OR does the composite sample represent at least 75% of the stations storm event rain volume ?	Yes	Yes	Yes	Yes	Yes	Yes
Were all 1-hr sampler bottles used for the Composite sample ≤2000 µS/cm ?	Yes	Yes	Yes	Yes	Yes	Yes
Did any anomalous conditions exist that could make samples non-representative? Explain if "Yes"	No	No	No	No	No	No
Based on consideration of the information above, was the sample collected during the STE valid for project purposes ? (Y / N, composite, grab or both)	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both

<sup>1</sup> If the answer to any of these questions is "No" OR indicate non-representative conditions, then these items should be explained in the Event Narrative.

Validation Check List Completed By:  Reviewed By / Date:  1-12-12

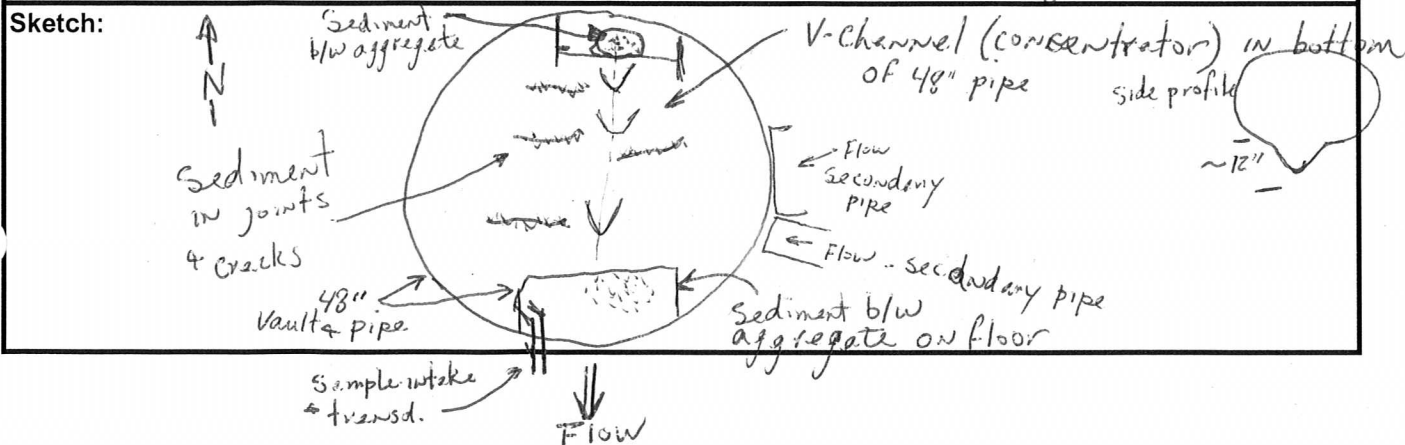


**PSNS Non-Dry Dock Stormwater Monitoring Project  
 Sediment Grab Sample Collection Field Sheet**

Personnel: <u>Metallo, Rupert</u>	Date/Time: <u>4/11/10/11 (2230)</u>
Weather: <u>Clear, cold hi 30's, lite wind</u>	

Station ID: <u>PSNS015</u>
Manhole/CB #:
Location Description:
Sampling Methodology: <u>Certified clean plastic (in sealed package) scoop</u>
Sampling Equipment Used: <u>Directly scoop material into lab-cert. clean jar</u>
Decon'ed per PWP / PSNS Sed QAPP?: <u>N/A</u>
Trip Blanks?: <u>No</u>
Sediment Grab Sample ID: <u>PSNS015SED</u> <u>3259-5 (tot. met.s)</u> <u>3259-6 (organics)</u>
Sample time: <u>2230</u> Bottles labeled?: <u>Yes</u>
Parameters for Testing: <u>Metals / Organics</u> <u>SW08-0025 = tot metals, SW08-0026 = organics</u>
Sediment Present? Approx depth? <u>Residual - Very bottom of pipe</u>
Water Present? Approx depth? <u>Yes 2-3"</u>
Water flowing? Stagnant? <u>Flowing</u>
Sed. color: brown, black, grey, yellow, red, mottled      Sed. odor: petroleum, pungent, sewage, earthy, salty
Sed. sheen: none, some, lots      Sed. consistency: gravelly, sandy, silty, clayey, organic
Est. % of sample removed (particles $\geq 2$ cm): <u>10%</u>

Notes: Sediment available for collection was present in extremely small & v. hard to access (in pipe joints & b/w pieces of debris quantities)  
 rock/concrete debris and in scour pits in among the vault floor aggregate



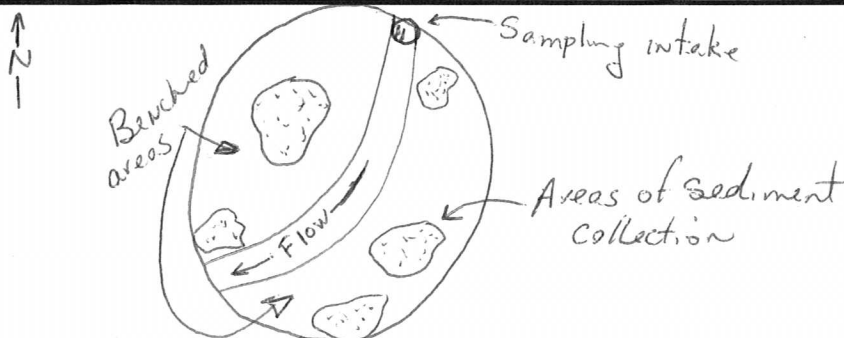
**PSNS Non-Dry Dock Stormwater Monitoring Project  
 Sediment Grab Sample Collection Field Sheet**

Personnel: <i>Metallo, Rupert</i>	Date/Time: <i>10/26/2012 (2030)</i>
Weather: <i>Overcast, to 40°s, lite NE'ly breeze</i>	

Station ID: <i>PSNS 124.1</i>
Manhole/CB #:
Location Description: <i>Vault @ SW sampling location</i>
Sampling Methodology: <i>Scoop sample material directly into lab supplied jar</i>
Sampling Equipment Used: <i>Certified clean (ment. pckaged) plastic scoop</i>
Decon'ed per PWP / PSNS Sed QAPP?: <i>N/A, used clean/disposable scoop</i>
Trip Blanks?: <i>No</i>
Sediment Grab Sample ID: <i>3259 (-1 = metals) &amp; (-3 = organics)</i>
Sample time: <i>2100</i> Bottles labeled?: <i>Yes</i>
Parameters for Testing: <i>Metals &amp; organics</i>
Sediment Present? Approx depth? <i>thin, discontinuous "pockets"</i>
Water Present? Approx depth? <i>Yes, pooled</i>
Water flowing? Stagnant? <i>Stagnant</i>
Sed. color: <i>brown, black, grey, yellow, red, mottled</i> Sed. odor: <i>petroleum, pungent, sewage, earthy, salty</i>
Sed. sheen: <i>none, some, lots</i> Sed. consistency: <i>gravelly, sandy, silty, clayey, organic</i>
Est. % of sample removed (particles $\geq 2$ cm): <i>5-7%</i>

Notes: *- Very limited of total sampleable sediment available*  
*amount*

Sketch:



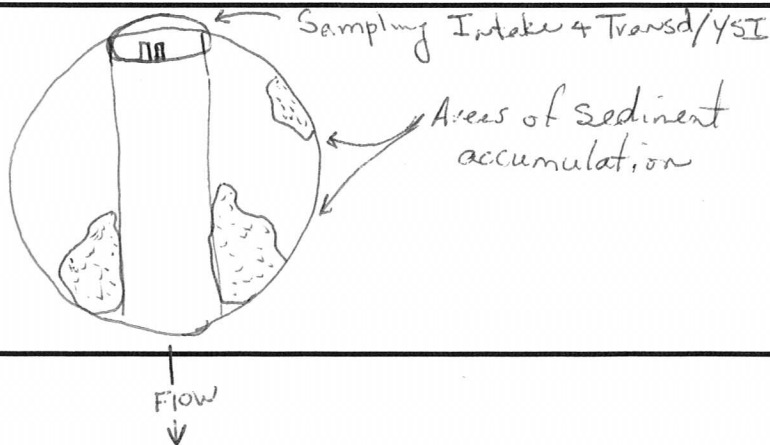
**PSNS Non-Dry Dock Stormwater Monitoring Project**  
**Sediment Grab Sample Collection Field Sheet**

Personnel: <u>Metallo, Rupert</u>	Date/Time: <u>10/26/12 (2120)</u>
Weather: <u>Overcast, to 40's, lite NE breeze</u>	

Station ID: <u>PSNS 115.1</u>
Manhole/CB #:
Location Description: <u>Vault @ the PSNS 115.1 SW sampling location</u>
Sampling Methodology: <u>Scoop material directly into lab-supplied jar</u>
Sampling Equipment Used: <u>Plastic scoop that was in a sealed cert'd clean bag</u>
Decon'ed per PWP / PSNS Sed QAPP?: <u>NA - no decon necessary - used disposable scoop</u>
Trip Blanks?: <u>NO</u>
Sediment Grab Sample ID: <u>3259 (-2 = metals) &amp; (-4 = organics)</u>
Sample time: <u>2142</u> Bottles labeled?: <u>Yes</u>
Parameters for Testing: <u>Metals &amp; organics</u>
Sediment Present? Approx depth? <u>Yes, laminant to ~1"</u>
Water Present? Approx depth? <u>NO</u>
Water flowing? Stagnant? <u>NA</u>
Sed. color: <u>brown, black, grey</u> yellow, red, mottled Sed. odor: petroleum, pungent, sewage, <u>earthy, salty</u>
Sed. sheen: <u>none</u> some, lots Sed. consistency: gravelly, <u>sandy, silty</u> clayey, organic
Est. % of sample removed (particles $\geq 2$ cm): <u>5% or less than 1-2%</u>

Notes: Several v. small pockets of sand/silt that were generally less than 1/4 to 1/2" in thickness

Sketch:

 ↑  
N


**PSNS NDDSw Monitoring Project Storm Control Work Sheet**

Sht Rev. 112111

Sheet 1 of 2

<b>Date:</b>	11/20/11 (lids off), 11/21/11 (storm st.)		<b>Sampling Support Personnel:</b>		Metallo, Rupert, Sahlberg								
<b>STE #</b>	8	<b>Antecedent Dry Cond. Met?</b>	YES for all sites	<b>Tidal Info:</b>	11/21/2011 Mon 01:22AM LST 9.0 H 06:49AM LST 4.5 L 12:57PM LST 12.5 H 08:04PM LST 0.4 L 11/22/2011 Tue 02:37AM LST 10.1 H 07:55AM LST 5.4 L 01:37PM LST 12.7 H 08:48PM LST -1.1 L								
<b>Storm Controller:</b>	Metallo		<b>Grab sampling Info:</b>	C106 to attempt grabs early on the morning of 11/22 (~0600-0800)									
<b>Pre-Storm / Weather Details:</b>	NAM & GFS in decent agreement. Event start on 11/21 around 0400, continuing to rain until approx 1000, rain bands through project area from 1000 until approx 0100 on 11/22. Heavy rainfall return at 0100 on 11/22 lasting until approx 1000. NO more significant rain until around 1700. Anticipate storm end after the 1000 portion.												
<b>Telemetry Measurements:</b>	<b>DATE/TIME (24HR)</b>												
<b>STATION:</b>	Setup @ ~1400 11/20	2200	0800 11/21/11	~0945	1733 - 1739	0857 11/22/11	0940	0946	0952	0957	1003	1010	
PSNS015 Rain <sup>1</sup>	0/0	0/0	0.32/	all units	0.05/0.5	0.01/1.47	0/1.47	0/1.38	0/1.13	0/0.92	0/1.06	0/1.07	
PSNS008 Level						3.95	4.76	3.58	8.00	4.40		1.32	
PSNS008 Cond.						103	92	108	590	47,347		2919	
Smpl Marker	2		11			22(5)	83	86	78	92	94		89
PSNS084.1 Rain	0/0	0/0		sample collection ceased	0.03/1.42	0/1.38	Stopped	Stopped	Stopped	Stopped	Stopped	Stopped	
PSNS084.1 Level						2.69	DLed	DLed	DLed	DLed	DLed	DLed	
PSNS084.1 Cond.						104	Smplr	Smplr	Smplr	Smplr	Smplr	Smplr	
Smpl Marker	2		2			14(3)	75	Rpt	Rpt	Rpt	Rpt	Rpt	
PSNS115.1 Rain	0/0	0/0		Paused sample collection as weather cleared	0.03/1.42	0/1.13	Collected	Collected	Collected	Collected	Collected	Collected	
PSNS115.1 Level						6.93	LN Data	LN Data	LN Data	LN Data	LN Data	LN Data	
PSNS115.1 Cond.	3pm					311							
Smpl Marker	3		11			27(6)	88						
PSNS124 Rain	0/0	0/0		Paused sample collection as weather cleared	0.02/1.37	0/1.92	↑	↑	↑	↑	↑	↑	
PSNS124 Level						3.18							
PSNS124 Cond.						4468							
Smpl Marker	90		10			29(5)	90	015	84.1	115	124	124	126
PSNS124.1 Rain	0/0	0/0		Paused sample collection as weather cleared	0.04/1.47	0/1.64							
PSNS124.1 Level						0.21							
PSNS124.1 Cond.						80							
Smpl Marker	2		9			22(5)	83						
PSNS126 Rain	0/0	0/0		(Paused sample collection as weather cleared)	0.03/1.38	0/1.07							
PSNS126 Level						0.09							
PSNS126 Cond.						229							
Smpl Marker	3		11			23(5)	85						

<sup>1</sup>Rain dephs are reported as 1-hr / 24-hr totals

Date:	11/20/11 (lids off), 11/21/11 (storm st.)		Sampling Support Personnel:		Metallo, Rupert, Sahlberg	
STE #	8	Storm Controller:	Metallo	Strm Evnt Start / Stp	~0517 (11/21/11) & 1010 (11/22/11) ~29 hrs	
Enabling Information:						
Sample Station:	PSNS015		PSNS084.1		PSNS115.1	
Rain enable (in/hr)	.05		.05		.05	
Level Enable (ft)	.25		.25		.25	
Cond. (µS/cm)	2000		2000		2000	
Repeat Cond Set?	NO		NO		NO	
Pacing Rate (min)	15		15		15	
Date	11/20/11		11/20/11		11/20/11	
Time	1200		1205		1215	
Comp Dup? / where:	NO		Grab Dup? / where:		NO	

## EVENT NOTES:

- ① 124 - encountered issues w/ Isco Autosampler pump (gear box); swapped out w/ back-up unit, took several (9) attempts to calibrate unit volume (240-ml)
- Checked the stations ~0800; all stations have enabled and collecting water. Units enabled: 015 (0517) 084.1 (0745) 115.1 (0521) 124 (0530) 124.1 (0642) 126 (0524)
- Spoke w/ Bob Johnston; plan is to pause sampling @ all stations during the lull in rain (late morning the late afternoon, according to forecast), turn samplers on during this period to get to next empty bottle, pause again and wait until ~~rain~~ either rain returns or ~1730. This will give us 29+ hours of coverage - enough to capture a decent portion of the next large forecasted rain front/slug @ ~0100 - 1000 on 11/22
- Re-start samplers b/w (1733) & (1739) 11/21/11 - Checked samplers ~<sup>(0900)</sup>~~(0945-1010)~~ all operating correctly
- Stopped all sampler units b/w (0945-1010)





PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 126	MH/CB#:5110	Loc. Descrip. Southwest corner of Bldg. 460
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Page: 1 of 2

pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp low 30's	
		Arrival Date/Time: 11/15/11 @ 0910	
Carry-over maintenance to do prior to set-up:		None	done? NA
Sampler Battery Voltage	12.61	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.49	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - change a week ago	Tubing Replaced? (Yes/No)	Yes
Tele. Box Desiccant OK (Yes/No)	Yes - change a week ago	Normal Smler Program or Dup. ?	Normal
Modem Status	operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp low 30's	
		Arrival Date/Time: 11/15/11 @ 0910	
Sampler Battery Voltage	12.61	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.49	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	NA	Program Reviewed (Yes/No), Dup ?	Yes
Recorded Level (FT)	2.79	Lids off bottles?	Yes
Measured Level (FT)	2.79	Diagnostics/Distributor arm check?	Yes
Offset Diff (FT)	NA	Backflush with DI?	Yes
Level Adjusted ?	No	Storm Reset (1, enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	Program Dis. 13:51:20 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =		Meas. Val. =	Diff. =
		(>10% adj. offset); Offset =	
		New Rec Val =	
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			
Sondes calibrated in storm lab prior to deployment			

Section 3. Grab Sample Collection			
Personnel: <u>RRJ, EWM, CTG</u>		Weather: <u>Rain stopped light sprinkle</u>	
		Arrival Date/Time: <u>11/22/11 0950</u>	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	<u>534 / 371</u>
Grab Parameters Collected		Salinity Reading (PPT):	<u>0.2 ppt</u>
Grab Sample ID	<u>11/22/11 0950 1000</u>	Temp. Reading (°C):	<u>10.5</u>
Grab Date/Time	<u>SW03-006 A+B</u>	Turbidity Reading (NTU)	<u>6.57 ntu</u>
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?

up deep in vault very low flow

PSNS126 (8.38 ft)



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS126 continued from previous page

Page: 2 of 2

Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>Rupert Sahlberg</u>	Weather: <u>Raining, 40°s</u>	Arrival Date/Time: <u>11/22/11 (1145)</u>	
Sampler Battery Voltage	<u>12.5+</u>	Changed? Y (N)	New voltage <u>NA</u>
Telemetry Battery Voltage	<u>12.5+</u>	Changed? Y (N)	New voltage <u>NA</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NO</u>		
Composite Begin Time (date/time)	<u>11/21/11 (0520)</u>	Sampler Report Downloaded ?	<u>Yes</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>11/22/11 (0957) Aliq 89</u>		
Total Composite Sample Volume Collected			
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Normal</u>			
Storm Contoller notified (Y or N/A)?	<u>NA</u>	Which parameter?:	<u>NA</u>
Notes: <u>No issues</u>			
Maintenance Needed: <u>Re-sets</u>			

Section 5. Compositing Scheme and QC Sampling			
Personnel: <u>Metello, Rupert Sahlberg</u>	Date/Time: <u>11/22/11 (1530)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.)			
<u>Cond. = YSI 30 Turb = Hach 2100P - Navy Meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in µS/cm; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. 701 / 7	7. 182 / 8	13. 54 / 3.5	19. 81 / 7
2. 145 / 10	8. 266 / 6	14. 38 / 4	20. 157 / 6
3. 365 / 7	9. 182 / 5	15. 34 / 4	21. 191 / 7
4. 111 / 6	10. 194 / 4	16. 49 / 6	22. 1051 / 7 <u>N(X)</u>
5. 501 / 8	11. 152 / 4	17. 43 / 8	23. <u>X</u>
6. 317 / 12	12. 67 / 4	18. 43 / 7	24. <u>X</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
<u>Used. btl's</u>			
<u>btl's 23+24 Empty, Btl not used - only 2 aliquots</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond. = 187 Turb. = 6 Vol. = 8,400 Analysis per PWP</u>			
Composite Sample ID & Time: <u>SW08-0012 (0927)</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

PSNS 124.1 (8.1977)

Station: 124.1	MH/CB#: 5880	Loc. Descrip. North of Bldg 357/west of DD#3
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Page: 1 of 2

pages per station

Section 1: Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp 30's	Arrival Date/Time: 11/15/11 @ 1013
Carry-over maintenance to do prior to set-up: None			done? NA
Sampler Battery Voltage	12.63	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	13.74	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - changed last week	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes - changed last week	Normal Smpler Program or Dup. ?	Normal
Modem Status	operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smplr Status (on/off) / last screen..	Off

Section 2: Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp 30's	Arrival Date/Time: 11/15/11 @ 1013
Sampler Battery Voltage	12.63	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	13.74	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal.'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	NA	Program Reviewed (Yes/No), Dup ?	Yes - normal
Recorded Level (FT)	1.77	Lids off bottles?	Off
Measured Level (FT)	1.67	Diagnostics/Distrubutor arm check?	Yes
Offset Diff (FT)	-0.1	Backflush with DI?	Yes
Level Adjusted ?	Yes	Storm Reset (1, enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	Program Dis. 12:42:47 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)		Sondes calibrated in storm lab prior to deployment	

Section 3: Grab Sample Collection			
Personnel: <u>BKJ EWM CSG</u>		Weather: <u>Rain Stopped</u>	Arrival Date/Time: <u>11/22/11 09:38</u>
On Composite... (Bottle #/ Aliq #)		Conductivity Reading ( $\mu S/cm$ ): <u>ms</u>	<u>6.09 / 7.9</u>
Grab Parameters Collected	<u>TPH, FC, Turb</u>	Salinity Reading (PPT):	<u>4.2</u>
Grab Sample ID	<u>SW08-603 005</u>	Temp. Reading (°C):	<u>9.7</u>
Grab Date/Time	<u>11/22/11 0447</u>	Turbidity Reading (NTU)	<u>5.59 ntu</u>
Grab Dup ID	<u>0948</u>	Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / <u>(N)</u>	Ice OK?

26" in vault no flow





PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 124.1 continued from previous pagePage: 2 of 2

## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>Rupert, Sahlberg</u>	Weather: <u>RAINING, 40's</u>	Arrival Date/Time: <u>11/22/11 (1125)</u>	
Sampler Battery Voltage	<u>12.5+</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>NA</u>
Telemetry Battery Voltage	<u>12.5+</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>NA</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NO</u>		
Composite Begin Time (date/time)	<u>11/21/11 (0640)</u>	Sampler Report Downloaded?	<u>Yes</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>11/22/11 (1003)</u>		
Total Composite Sample Volume Collected	<u>21 BTLs 90-100% of 960-ml, BTL 22 2 aliquots</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	<u>Normal</u>		
Storm Controller notified (Y or N/A)?	<u>NA</u>	Which parameter?:	<u>NA</u>
Notes:	<u>NO ISSUES</u>		
Maintenance Needed:	<u>Re-sets</u>		

## Section 5. Compositing Scheme and QC Sampling

Personnel: <u>Metallo, Rupert, Sahlberg</u>	Date/Time: <u>11/22/11 (1440)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)			
<u>Cond. = YSI 30 Turb = Hach 2100P - Navy Meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>6360/19 N</u>	7. <u>1195/60 Y</u>	13. <u>2569/24 N</u>	19. <u>50/9 Y</u>
2. <u>123/21 Y</u>	8. <u>465/47 Y</u>	14. <u>2751/21 N</u>	20. <u>67/10 Y</u>
3. <u>138/23 Y</u>	9. <u>381/35 Y</u>	15. <u>76/17 Y</u>	21. <u>90/11 Y</u>
4. <u>29470/9 N</u>	10. <u>492/25 Y</u>	16. <u>50/13 Y</u>	22. <u>25650/5 N</u>
5. <u>45000/1 N</u>	11. <u>501/25 Y</u>	17. <u>50/12 Y</u>	23. <u>Empty X</u>
6. <u>19400/6 N</u>	12. <u>476/31 Y</u>	18. <u>45/18 Y</u>	24. <u>Empty X</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
<u>Used btl's 3, 7-12, &amp; 15-21 @ 500-ml ea ~7500 ml</u>			
<u>BTLs 23 &amp; 24 = empty</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond. = 284 <math>\mu\text{S/cm}</math> Turb. = 25 NTU Vol. = 7500 ml Analysis per PWP</u>			
Composite Sample ID & Time: <u>SW08-0011 (0933)</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:



PSN 5124 (5.27ft)

PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 124	MH/CB#:5661	Loc. Descrip. Southwest section of Bldg 460	Page: 1 of 2
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pages per station

Section 1: Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temps 30's	Arrival Date/Time: 11/15/11 @1335
Carry-over maintenance to do prior to set-up: None			done? NA
Sampler Battery Voltage	12.7	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.9	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - changed last week	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes - changed last week	Normal Smlpr Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smlpr Status (on/off) / last screen..	Off

Section 2: Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temps 30's	Arrival Date/Time: 11/15/11 @1335
Sampler Battery Voltage	12.7	Changed? Y <u>N</u>	New voltage
Modem Battery Voltage	12.9	Changed? Y <u>N</u>	New voltage
Sample Tubing & Strainer OK?	Yes	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	NA	Program Reviewed (Yes/No), Dup ?	Yes - normal
Recorded Level (FT)	1.88	Lids off bottles?	Off
Measured Level (FT)	1.93	Diagnostics/Distributor arm check?	Yes
Offset Diff (FT)	0.05	Backflush with DI?	Yes
Level Adjusted ?	Yes	Storm Reset (1, enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	Program Dis. 16:04:08 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)      Sondes calibrated in storm lab prior to deployment			
Distributor arm frozen/would not work - had to switch the sampler head with back up unit - reprogrammed backup unit with current sampling setup - rechecked - all OK			

Blinking // not Blink

Section 3: Grab Sample Collection			
Personnel: <u>BRS, EWM, CTB</u>		Weather: <u>Rain Stopped</u>	Arrival Date/Time: <u>11/22/11 @ 0916</u>
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µmS/cm):	<u>42.81/30.6</u> mS
Grab Parameters Collected		Salinity Reading (PPT):	<u>28.0</u>
Grab Sample ID <u>SW08-004</u>	<u>TPH FC, Turb</u>	Temp. Reading (°C):	<u>9.7</u>
Grab Date/Time <u>11/22/08 0920</u>		Turbidity Reading (NTU)	<u>5.06</u> ntn
Grab Dup ID <u>0916</u>		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?

Vault depth 3ft



PSNS124. (5.27H)

PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS124 continued from previous page

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## Section 4: Post-Storm Sample Collection (for grab, comp or both)

Personnel:	Rupert, Sahlberg	Weather:	Raining, 40°s	Arrival Date/Time:	11/22/11 (1105)
Sampler Battery Voltage	12.5+	Changed?	Y (N)	New voltage	NA
Telemetry Battery Voltage	12.5+	Changed?	Y (N)	New voltage	NA
Additional Grabs (IDs, date/time)	N/A				
Additional Dup Grab (IDs, date/time)	N/A (0530)				
Composite Begin Time (date/time)	11/21/11 (0630)	Sampler Report Downloaded?	Yes		
Last Aliquot Taken (date/time, bott #, aliq #)	11/22/11 (0949) BTL #22 Aliq #94				
Total Composite Sample Volume Collected	22 btls 85-100 % (960 ml) btl #23 only one aliquot				
Aliquots missed/NLD (date/time/bott #/aliq #)	NONE				
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	Normal				
Storm Controller notified (Y or N/A)?	NA	Which parameter?:	NA		
Notes:	* Needed to swap Isco head (gear box issue) prior to storm event, replaced w/ backup unit				
Maintenance Needed:	Re-sets				

## Section 5: Compositing Scheme and QC Sampling

Personnel:	Metello, Rupert, Sahlberg	Date/Time:	11/22/11 (1410)
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)	Cond = YSI 30, Turb = Hach 2100P Navy meters		
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):			
1. 1537 / 15 Y	7. 2364 / 9 N	13. 1700 / 28 Y	19. 448 / 6 Y
2. 474 / 12 Y	8. 4010 / 6 N	14. 541 / 9 Y	20. 1176 / 51 Y
3. 2544 / 1 N	9. 4075 / 5 N	15. 105 / 6 Y	21. 22710 / 7 N
4. 35250 / 3 N	10. 4205 / 4 N	16. 120 / 7 Y	22. 43660 / 1 N
5. 40360 / 2 N	11. 25300 / 3 N	17. 241 / 5 Y	23. X
6. 3640 / 13 N	12. 20120 / 3 N	18. 250 / 8 Y	24. X
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)	Used btls 1, 2, 13-20 @ 500-ml ea. ~ 5000 ml total comp vol.		
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)	Comp = 651 $\mu\text{S}/\text{cm}$ Turb. = 10 NTU Vol. = 5000 ml Analysis per PWP		
Composite Sample ID & Time:	SW08-0010 (0934)		
Field Blank Collected? (date/time)	NO		
Blank ID:	NA		
Duplicate comp sample? Yes/No	NO		
Duplicate sample ID	NA		

NOTES:

PSNS 115.1 (1.27 ft)



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 115.1	MH/CB#:4860	Loc. Descrip. South of Bldg. 879
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Page: 1 of 2

pages per station

Section 1: Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temps 30's	
		Arrival Date/Time: 11/15/11 @ 1111	
Carry-over maintenance to do prior to set-up: None			done? NA
Sampler Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.98	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - changed last week	Tubing Replaced? (Yes/No)	Yes
Tele. Box Desiccant OK (Yes/No)	Yes - changed last week	Normal Smler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smplr Status (on/off) / last screen..	Off

Section 2: Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temps 30's	
		Arrival Date/Time: 11/15/11 @ 1111	
Sampler Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.98	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Setup.	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal.'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	NA	Program Reviewed (Yes/No), Dup ?	Yes, normal
Recorded Level (FT)	8.04	Lids off bottles?	Off
Measured Level (FT)	7.99	Diagnostics/Distributor arm check?	Yes
Offset Diff (FT)	-0.05	Backflush with DI?	Yes
Level Adjusted ?	Yes	Storm Reset (1, enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	Program Dis. 12:57:09 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)      Sondes calibrated in storm lab prior to deployment.			

Section 3: Grab Sample Collection			
Personnel: Jonathan Mollerstaen, Webster		Arrival Date/Time: 11/22/11 0841	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	986 / 68.5
Grab Parameters Collected		Salinity Reading (PPT):	0.0
Grab Sample ID	11/22/11 5W09-002	Temp. Reading (°C):	8.9
Grab Date/Time	11/22/11 0841	Turbidity Reading (NTU)	3.12 ntn
Grab Dup ID		Equipment running correctly?	Y
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / <u>N</u>	Ice OK?

off of water in vault, flow (very low) starting to sprinkle

PSNS 115.1 (1,27 ft)



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 115.1 continued from previous page

Page: 2 of 2

Section 4: Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>Rupert, Sahlberg</u>	Weather: <u>Raining, 40°s</u>	Arrival Date/Time: <u>11/22/11 (1045)</u>	
Sampler Battery Voltage	<u>12.5+</u>	Changed? Y (N)	New voltage <u>NA</u>
Telemetry Battery Voltage	<u>12.5+</u>	Changed? Y (N)	New voltage <u>NA</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NO</u>		
Composite Begin Time (date/time)	<u>11/21/11 (0519)</u>	Sampler Report Downloaded?	<u>Yes</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>11/22/11 (0951) BTL 23 1/4</u>		
Total Composite Sample Volume Collected	<u>80-100 % for all except # 23 (only one aliquot collected)</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Normal</u>			
Storm Controller notified (Y or N/A)?	Which parameter?:		
Notes: <u>Various btls (e.g. #8, #18, #17) have v. coarse to coarse grain black sand, shell frag's &amp; organic detritus</u>			
Maintenance Needed: <u>Typical Re-sets</u>			

Section 5: Compositing Scheme and QC Sampling			
Personnel: <u>Metallo, Rupert, Sahlberg</u>	Date/Time: <u>11/22/11 (1310)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. Info.) <u>Cond YSI 30 &amp; Turb 2100P Hach : Navy meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>10920/10</u> <u>N</u>	7. <u>2263/12</u> <u>N</u>	13. <u>635/3</u> <u>Y</u>	19. <u>34/27</u> <u>Y</u>
2. <u>3309/27</u> <u>N</u>	8. <u>575/11</u> <u>Y</u>	14. <u>44/2</u> <u>Y</u>	20. <u>63/4</u> <u>Y</u>
3. <u>13720/12</u> <u>N</u>	9. <u>1244/5</u> <u>Y</u>	15. <u>31/4</u> <u>Y</u>	21. <u>189/4</u> <u>Y</u>
4. <u>13000/10</u> <u>N</u>	10. <u>3270/3</u> <u>N</u>	16. <u>27/4</u> <u>Y</u>	22. <u>364/4</u> <u>Y</u>
5. <u>14140/8</u> <u>N</u>	11. <u>280/2</u> <u>Y</u>	17. <u>30/7</u> <u>Y</u>	23. <u>541/4</u> <u>X</u> <u>vol. issue</u>
6. <u>8000/12</u> <u>N</u>	12. <u>11730/2</u> <u>N</u>	18. <u>38/11</u> <u>Y</u>	
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Used btls 8, 9, 11, 13-22 for comp'ing. BTLs 1-7, 12 - cond issues</u> <u>btl #23 only one aliquot 13 btls total for comp'ing @ 500-ml's ea.</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 1692 <math>\mu\text{S}/\text{cm}</math> Turb. = 4 NTU Vol. = 6500 ml Analysis per PWP</u>			
Composite Sample ID & Time: <u>SW08-0009 (0936)</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:



PSNS 084.1 (5.6 ft)

PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 84.1	MH/CB#: 551	Loc. Descrip. Southeast section of Bldg 983
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Page: 1 of 2

pages per station

Section 1: Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp 30's	Arrival Date/Time: 11/15/11 @ 1217
Carry-over maintenance to do prior to set-up: None			done? NA
Sampler Battery Voltage	12.77	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - changed last week	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes - changed last week	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smplr Status (on/off) / last screen..	Off

Section 2: Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, temp 30's	Arrival Date/Time: 11/15/11 @ 1217
Sampler Battery Voltage	12.77	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal.'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	Yes	Program Reviewed (Yes/No), Dup ?	Yes - normal
Recorded Level (FT)	3.11	Lids off bottles?	Yes
Measured Level (FT)	2.78	Diagnostics/Distributor arm check?	Yes
Offset Diff (FT)	-0.33	Backflush with DI?	Yes
Level Adjusted ?	Yes	Storm Reset (1, enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	INW	Last screen...	Program Dis. 12:32:58 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)      Sondes calibrated in storm lab prior to deployment			

Section 3: Grab Sample Collection			
Personnel: Johnston EWM, CSG		Weather: Rain Stopped	Arrival Date/Time: 11/22/11 0900
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	98.9 / 72.6
Grab Parameters Collected	TPH, FC, Turb	Salinity Reading (PPT):	0.0
Grab Sample ID	SW08-003	Temp. Reading (°C):	11.1
Grab Date/Time	11/22/11 0903	Turbidity Reading (NTU)	8.60 ntn
Grab Dup ID	0906	Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / <u>N</u>	Ice OK?

Vault depth 2.5 ft

PSNS 084.1 (S, 61 ft)



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 084.1

continued from previous page

Page: 2 of 2

Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel: Rupert, Sahlberg	Weather: Raining, 40°s	Arrival Date/Time: 11/22/11 (1025)	
Sampler Battery Voltage	12.5+	Changed? Y (N)	New voltage NA
Telemetry Battery Voltage	12.5+	Changed? Y (N)	New voltage NA
Additional Grabs (IDs, date/time)	NO		
Additional Dup Grab (IDs, date/time)	NA		
Composite Begin Time (date/time)	11/21/11 (0742)	Sampler Report Downloaded?	Yes
Last Aliquot Taken (date/time, bott #, aliq #)	11/22/11 btl 19 Aliq 78 (0939)		
Total Composite Sample Volume Collected	19 Full btls		
Aliquots missed/NLD (date/time/bott #/aliq #)	None		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? OK-typical			
Storm Contoller notified (Y or N/A)?	NA	Which parameter?	NA
Notes:			
Maintenance Needed: Typical re-set tasks			

Section 5. Compositing Scheme and QC Sampling			
Personnel: Metallo, Rupert, Sahlberg	Date/Time: 11/22/11 (1225)		
Conductivity & Turbidity Meter/s Info: (Manuf., Model, Serial#, Cal. info.)			
Cond (YSI 30) / Turb (2100P) Navy meters			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):			
1. 774 / 17 / Y	7. 315 / 9 Yes	13. 46 / 9 Yes	19. 100 / 11 Yes
2. 223 / 16 / Y	8. 121 / 7	14. 48 / 15	20 No
x 3. 34000 / 51 N	9. 447 / 6	15. 67 / 11	Samples
4. 1728 / 18 / Y	10. 112 / 7	16. 50 / 16	
5. 268 / 14 / Y	11. 78 / 7	17. 117 / 12	Collected
6. 360 / 11 / Y	12. 46 / 6 ↓	18. 93 / 12 ↓	
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
Used 400-ml from btls 1-2, 4-19; 18 x 400 = 7200 ml. BTL #3 did not qualify for cond. and was used for spanning rain end-to late afternoon start.			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
Cond. = 270 $\mu\text{S}/\text{cm}$ Turb. = 11 NTU Vol. = 7200 ml. Analysis per PWP			
Composite Sample ID & Time: SW08-0008 (0936)			
Field Blank Collected? (date/time)	NO		
Blank ID:	NA		
Duplicate comp sample? Yes/No	NO		
Duplicate sample ID	NA		

NOTES:



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 015	MH/CB#: A41	Loc. Descrip. South Side of McD's (Bldg 1019) drive through lane.	Page: 1 of 2
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pages per station

Section 1: Station Reset and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, low 40's	
		Arrival Date/Time: 11/15/11 @ 1415	
Carry-over maintenance to do prior to set-up: None		done? NA	
Sampler Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	13.19	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes - changed last week	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes - changed last week	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
		Backflushed with DI?	Yes
		Suction line & quick connect attached?	Yes
		Smplr Status (on/off) / last screen..	Off

Section 2: Storm Setup and Inspection			
Personnel: Brian Rupert/Ian Sahlberg		Weather: Sunny, low 40's	
		Arrival Date/Time: 11/15/11 @ 1415	
Sampler Battery Voltage	12.72	Changed? Y <u>N</u>	New voltage NA
Modem Battery Voltage	13.19	Changed? Y <u>N</u>	New voltage NA
Sample Tubing & Strainer OK?	Yes	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	Yes
Transducer Cable OK?	Yes	Aliquot Vol. Cal'ed (Y/N & vol.)	Yes
Multi-meter Cable OK	NA	Program Reviewed (Yes/No), Dup ?	Yes - normal
Recorded Level (FT)	1.74	Lids off bottles?	Yes
Measured Level (FT)	2.59	Diagnostics/Distributor arm check?	Yes
Offset Diff (FT)	0.85	Backflush with DI?	Yes
Level Adjusted ?	Yes	Storm Reset (1; enter) Completed	Yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	INW	Last screen...	Program dis. 11:55:09 SU 20 Nov
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)		Sondes calibrated in storm lab prior to deployment	

Section 3: Grab Sample Collection			
Personnel: Johnston, Mollerstuen, G. [Signature]		Weather: Rain Stop	
		Arrival Date/Time: 11/22/11 0600	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	666 / 99.0
Grab Parameters Collected		Salinity Reading (PPT):	0.0
Grab Sample ID	5W04-001A,B	Temp. Reading (°C):	9.3
Grab Date/Time	11/22/11 0620 0832	Turbidity Reading (NTU)	9.63 ntu
Grab Dup ID		Equipment running correctly?	Yes
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / <u>N</u>	Ice OK?

About 3ft deep, flow visible Rain stopped





PSNS015 (1.96 ft)

PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS015 continued from previous pagePage: 2 of 2

Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel:	<u>Rupert, Sahlberg</u>	Weather:	<u>Reinforcing, 40°s</u>
		Arrival Date/Time:	<u>11-22-11 (1010)</u>
Sampler Battery Voltage	<u>12.5+</u>	Changed? Y (N)	<u>NA</u>
Telemetry Battery Voltage	<u>12.5+</u>	Changed? Y (N)	<u>NA</u>
Additional Grabs (IDs, date/time)	<u>NA</u>		
Additional Dup Grab (IDs, date/time)	<u>NA</u>		
Composite Begin Time (date/time)	<u>11/21/11 (0517)</u>	Sampler Report Downloaded?	<u>Yes</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>11/22/11 aliq #86 btl 21</u>		
Total Composite Sample Volume Collected	<u>2.1 Full btl's</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>Btl's 1-4 keep, Btl #5 was used to 'even' up full btl's after turning on pausing sampler after initial rain slug</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	<u>OK</u>		
Storm Controller notified (Y or N/A)?	<u>NA</u>	Which parameter?	<u>NA</u>
Notes:	<u>All worked well</u>		
Maintenance Needed:	<u>Typical resets</u>		

Section 5. Compositing Scheme and QC Sampling			
Personnel:	<u>Metello, Rupert, Sahlberg</u>	Date/Time:	<u>11-22-11 (1435)<sup>DM</sup> (1155)</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. Info.)			
<u>Navy's inst's: YSI 30 &amp; Hach 2100P, cond. &amp; turb respectively</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in µS/cm; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>919, 15</u> / Y	7. <u>68</u> / 10 / Y	13. <u>29</u> / 7 / Y	19. <u>43</u> / 18 / Y
2. <u>48</u> / 24 / Y	8. <u>85</u> / 14 / Y	14. <u>25</u> / 8 / Y	20. <u>71</u> / 12 / Y
3. <u>50</u> / 23 / Y	9. <u>84</u> / 10 / Y	15. <u>24</u> / 10 / Y	21. <u>133</u> / 9 / Y
4. <u>80</u> / 18 / Y	10. <u>93</u> / 47 / Y	16. <u>22</u> / 12 / Y	22. <u>NA</u>
x 5. <u>12</u> / 13 / Y	11. <u>78</u> / 12 / Y	17. <u>26</u> / 12 / Y	23. <u>NA</u>
6. <u>1606</u> / 25 / Y	12. <u>36</u> / 9 / Y	18. <u>26</u> / 17 / Y	24. <u>NA</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
<u>Used btl's 1-4, 6-21 for comping; 400-ml from ea.</u>			
<u>did not use btl #5 - this btl spanned rain end to mid-day (used for btl adjustment)</u>			
<u>No samples in btl's 22-24 (stopped at btl 21)</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond. = 182 µS/cm Turb. = 16 NTU Vol. = ~8000 ml Analysis per PWP 2011</u>			
Composite Sample ID & Time: <u>SW08-0007 (0938) 11/22/11</u>			
Field Blank Collected? (date/time)	<u>NA<sup>DM</sup> NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:

## Equipment Blank (Composite and Grab) Samples

## SAMPLE CHAIN OF CUSTODY FORM

Date:

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

## Battelle


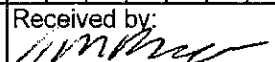
Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

				Analyze Parameters per QAPP 3 <sup>d</sup>										Phone: (360) 681-4564				
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity					No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes / Comp. Cond. Reading $\mu\text{S/cm}$
SL008-001	115.1 EB	10/31/11 0155	water					X							1			
-002	124 EB	10/31/11 0410	water					X							1			
-003	215-84.1 EB	11/1/11 0320						X							1			
-004	215 EB	11/1/11 0545						X							1			
-005	126 EB	11/2/11 1100						X							1			
-006	124.1 EB	11/2/11 1215						X							1			
-007	EB	11/2/11 1330							X						2			Ship to CAS
Relinquished by:				Received by:										Total # of Containers:				
														Shipment Method:				
Signature      Date      Time				Signature														
Printed Name      Company				Printed Name										Sample Disposition:				
Brian Rupert      TELNWL				Jim Brandenburg														
Relinquished by:				Received by:										Distribution:				
Signature      Date      Time				Signature										1) PNWL - TME				
Printed Name      Company				Printed Name										2) CAS - TPH				
														3) TAI				

# Stormwater Grab and Composite Samples

## SAMPLE CHAIN OF CUSTODY FORM

Date: \_\_\_\_\_ of \_\_\_\_\_  
 Page: \_\_\_\_\_ of \_\_\_\_\_  
 Project No.: N4523A10MP00034 Amend.1  
 Project: PSNSNon-dry Dock SW 2010

## Battelle

Marine Sciences Laboratory  
 1529 West Sequim Bay Road  
 Laboratory: Battelle MSL  
 Attention: Jill Brandenberger  
 Phone: (360) 681-4564

Analyze parameters per C/A 245P

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity ①	Total metals	Organics	No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes / Comp. Cond. (µS/cm) and Turb. (NTU) Readings
SW08-0001	PSNS015	11/22/11 (0932)	Water						X				2	Grab	8	61.6 µS/cm, 9.63 NTU
SW08-0002	PSNS115.1	11/22/11 (0950)	Water						X				2	Grab	8	98.9 µS/cm, 8.60 NTU
SW08-0003	PSNS084.1	11/22/11 (0906)	Water						X				2	Grab	8	98.6 µS/cm, 3.12 NTU
SW08-0004	PSNS124	11/22/11 (0930)	Water						X				2	Grab	8	42.8 µS/cm, 5.06 NTU
SW08-0005	PSNS124.1	11/22/11 (0948)	Water						X				2	Grab	8	6.09 µS/cm, 5.59 NTU
SW08-0006	PSNS126	11/22/11 (1000)	Water						X				2	Grab	8	534 µS/cm, 6.57 NTU
SW08-0007	PSNS015	11/22/11 (0938)	Water	X	X	X	X	X					1	Comp	8	182 µS/cm, 16 NTU
SW08-0008	PSNS084.1	11/22/11 (0936)	Water	X	X	X	X	X					1	Comp	8	270 µS/cm, 11 NTU
SW08-0009	PSNS115.1	11/22/11 (0936)	Water	X	X	X	X	X					1	Comp	8	1692 µS/cm, 4 NTU
SW08-0010	PSNS124	11/22/11 (0934)	Water	X	X	X	X	X					1	Comp	8	651 µS/cm, 10 NTU
SW08-0011	PSNS124.1	11/22/11 (0933)	Water	X	X	X	X	X					1	Comp	8	
SW08-0012	PSNS126	11/22/11 (0927)	Water	X	X	X	X	X					1	Comp	8	
	015	11/10/11 (2230)	Sed							X	X		1	Grab	Pre 8	Sed. Sample 015

Relinquished by: Brian Rupert 11/24/11 1820  
 Signature Date Time  
 Printed Name Company

Received by: Liz Jung Kern 11/24/11  
 Signature Date Time  
 Printed Name Company

Relinquished by: \_\_\_\_\_  
 Signature Date Time  
 Printed Name Company

Received by: \_\_\_\_\_  
 Signature Date Time  
 Printed Name Company

Total # of Containers: \_\_\_\_\_  
 Shipment Method: Hand delivered split @ MSL  
 Sample Disposition: \_\_\_\_\_

Distribution:  
 1) PNNL  
 2) CAS  
 3) TAI

see below

① Turbidity measurements conducted at Navy SW Lab w/ Hach 2100P benchtop meter

NOTE: sed sample should be logged in as CF 3259, part of SQV07

**Sediment  
Samples from  
PSNS 115.1 &  
124.1**

### SAMPLE CHAIN OF CUSTODY FORM

Date:

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

## Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

[illegible]

split

### SAMPLE CHAIN OF CUSTODY FORM

Page: 1 of 1

Project: Non-dry Dock Stormwater SW08

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

**PSNS NDDSW Monitoring - SW08 11/21/2011**

**Stormwater Outfall Total Discharge Volume Estimation Equations**

PSNS Drainage Basin	Total Basin Area (ft <sup>2</sup> )	Type of Surface	Percentage of Drainage Basin Surface Type	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Area of Basin Surface Type with Maximum Coefficient Value Applied (ft <sup>2</sup> )	<sup>2</sup> Total Discharge Volume (ft <sup>3</sup> )
126	662,986	Impervious	98.55	653,373	0.6 – 0.9	588,036	R(591,881)
		Pervious	1.45	9,613	0.2 – 0.4	3,845	
124.1	116,000	Impervious	94.56	109,690	0.6 – 0.9	98,721	R(101,245)
		Pervious	5.44	6310	0.2 – 0.4	2,524	
124	454,000	Impervious	94.56	429,302	0.6 – 0.9	386,372	R(396,251)
		Pervious	5.44	24,698	0.2 – 0.4	9,879	
115.1	463,042	Impervious	97	449,104	0.6 – 0.9	361,422	R(366,390)
		Pervious	3	13,938	0.2 – 0.4	4,968	
84.1	23,958	Impervious	100	23,958	0.6 – 0.9	21,562	R(21,562)
15	4,018,862	Impervious	50	2,009,431	0.5 – 0.8	1,607,549	R(2,411,321)
		Pervious	50	2,009,431	0.25 – 0.4	803,772	

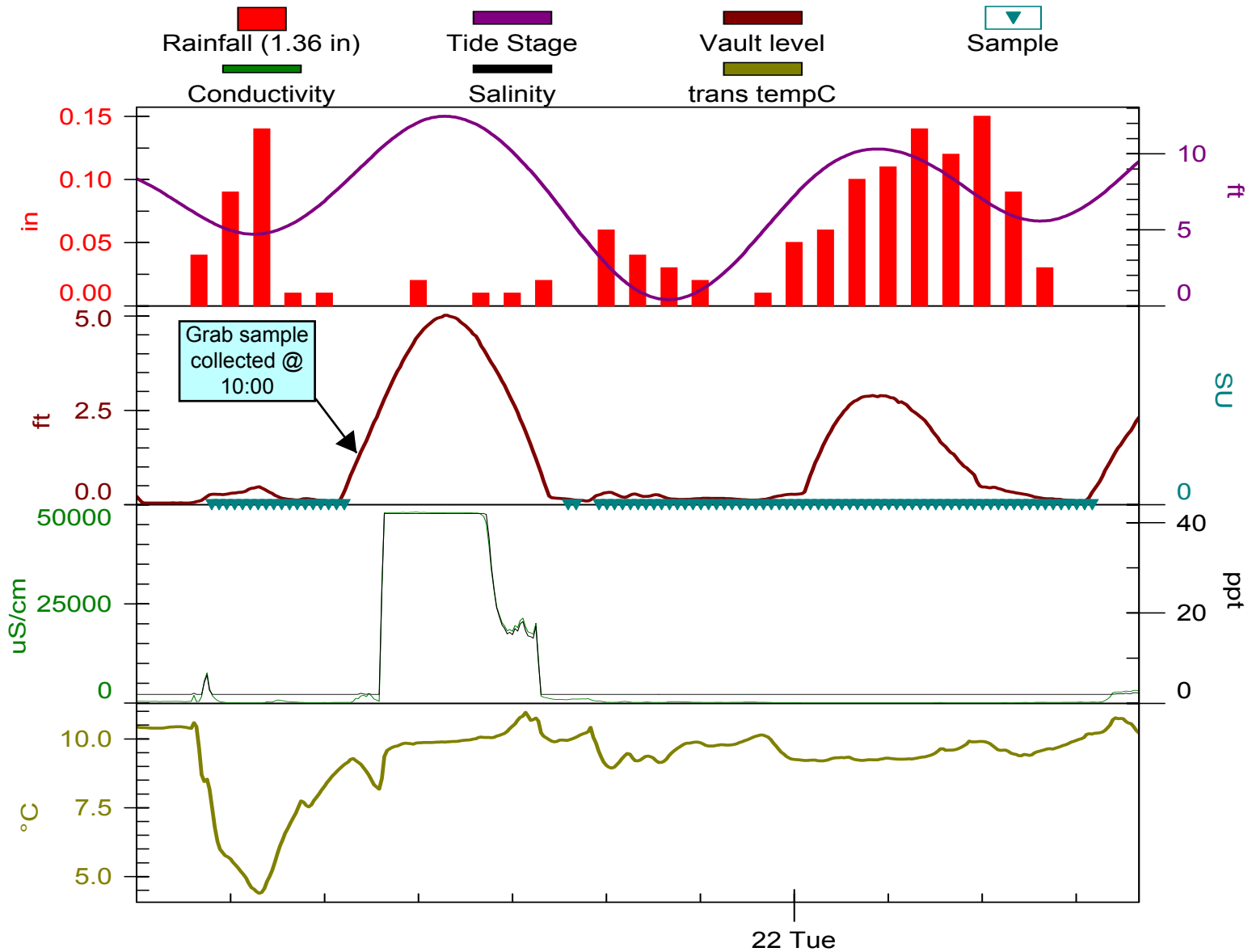
**Calculation Worksheet:**

**SW08 - 11/21/11**

STATION	Combined Drainage Area (FT <sup>2</sup> )	ENTER: Smpl Evnt Rain Total (in)	Sampl Evnt Rain Total (FT)	STE Runoff Vol. (gal)
126	591,881	1.36	0.1133	501,792
124.1	101,245	1.99	0.1658	125,596
124	396,251	1.22	0.1017	301,357
115.1	366,390	1.45	0.1208	331,178
84.1	21,562	1.69	0.1408	22,716
015	2,411,321	1.82	0.1517	2,735,753

# PSNS 126

SW08 11-21-11

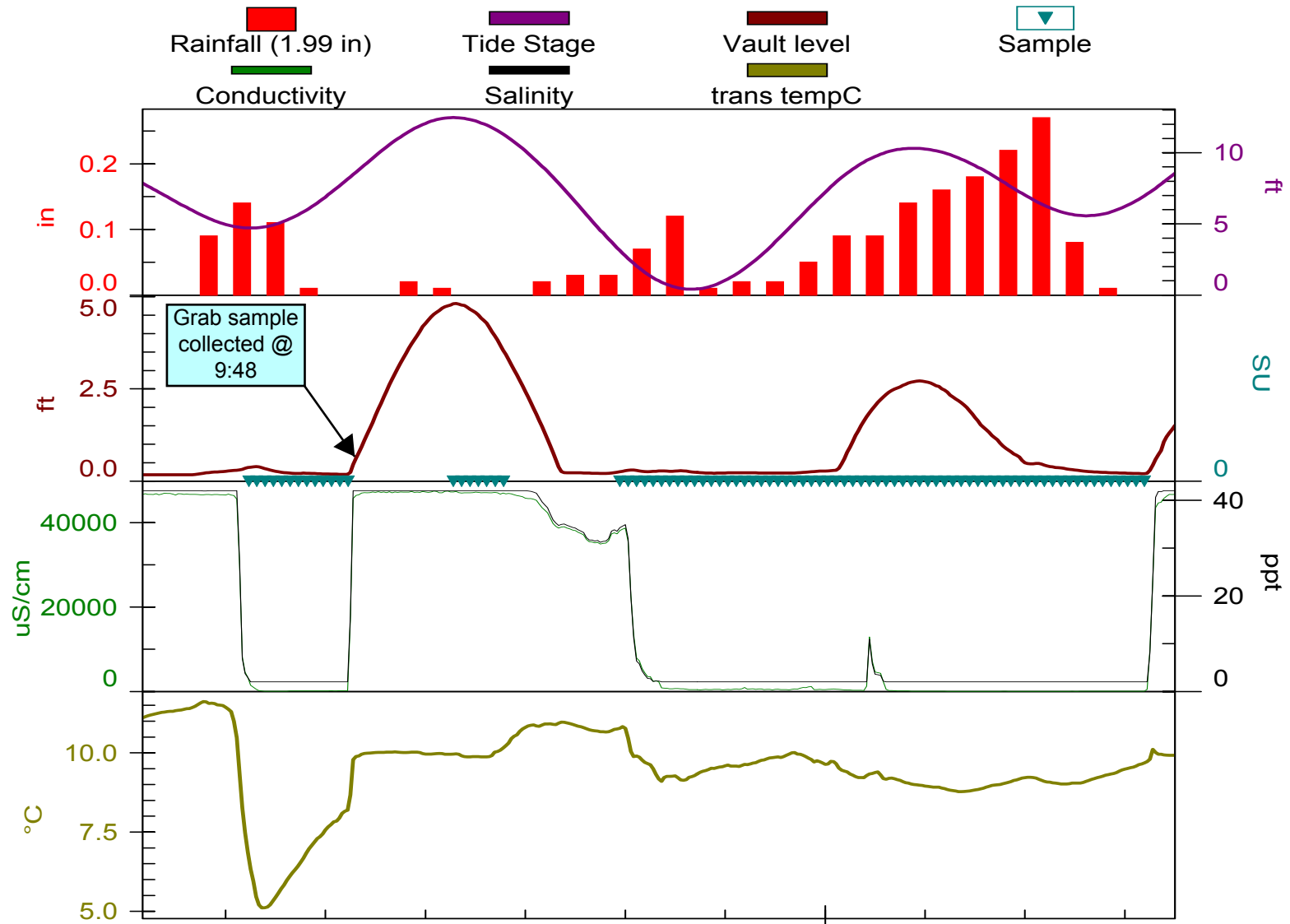


Nov 2011

11/21/2011 3:00:00 AM - 11/22/2011 11:00:00 AM

# PSNS 124.1

SW08 11-21-11



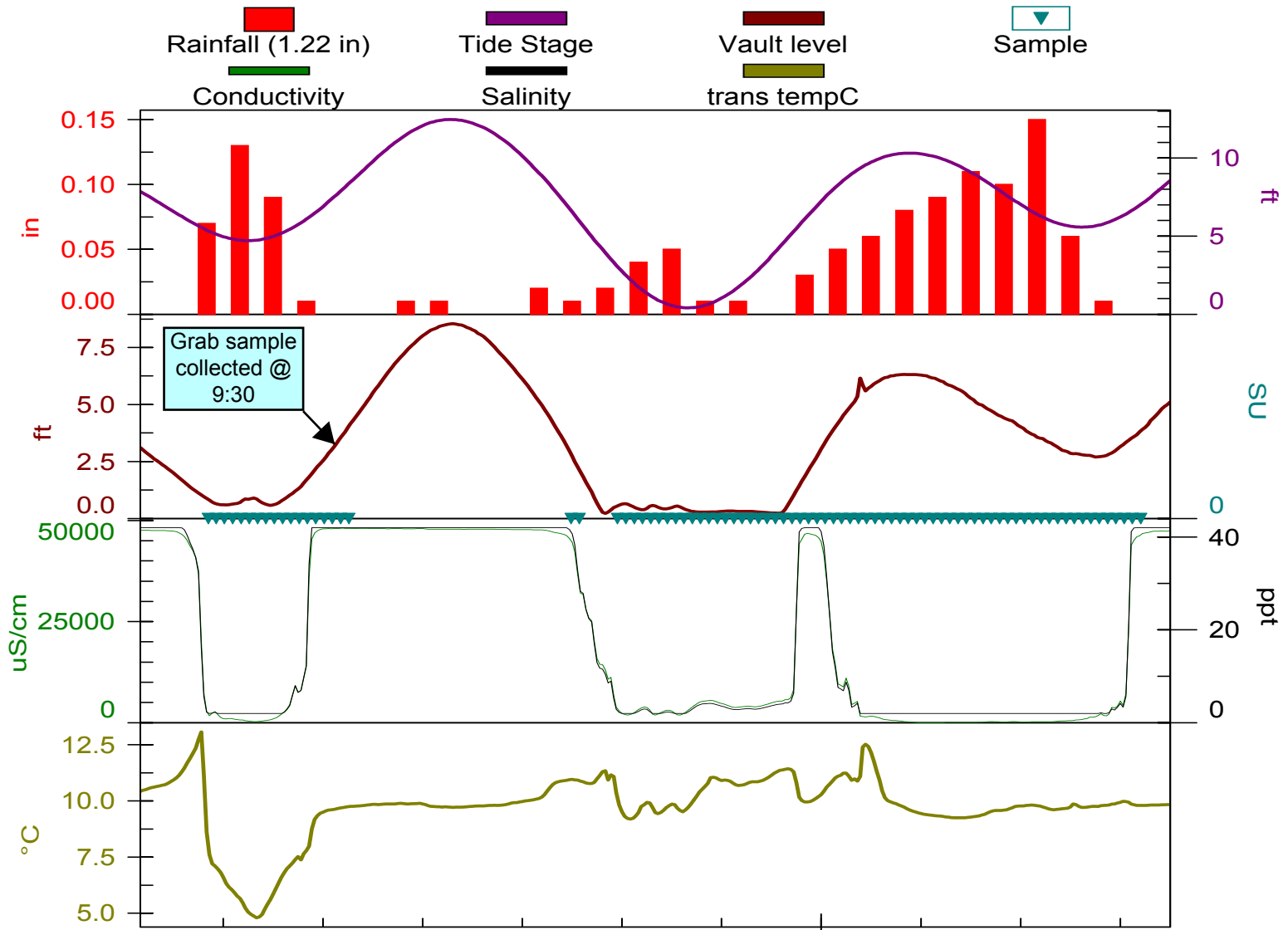
Nov 2011

11/21/2011 3:30:00 AM - 11/22/2011 10:30:00 AM



# PSNS 124

SW08 11-21-11

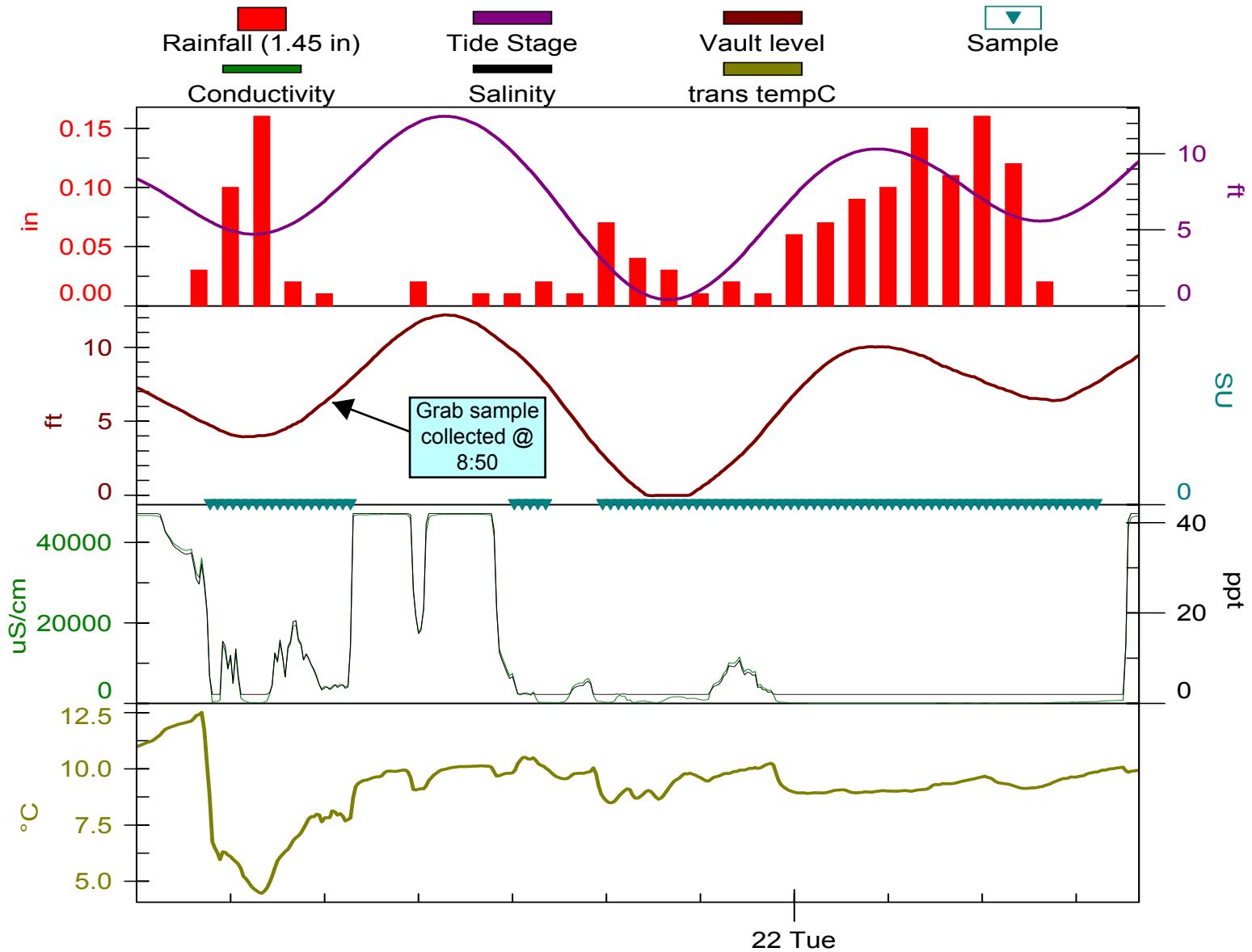


Nov 2011

11/21/2011 3:30:00 AM - 11/22/2011 10:30:00 AM

# PSNS 115.1

SW08 11-21-11

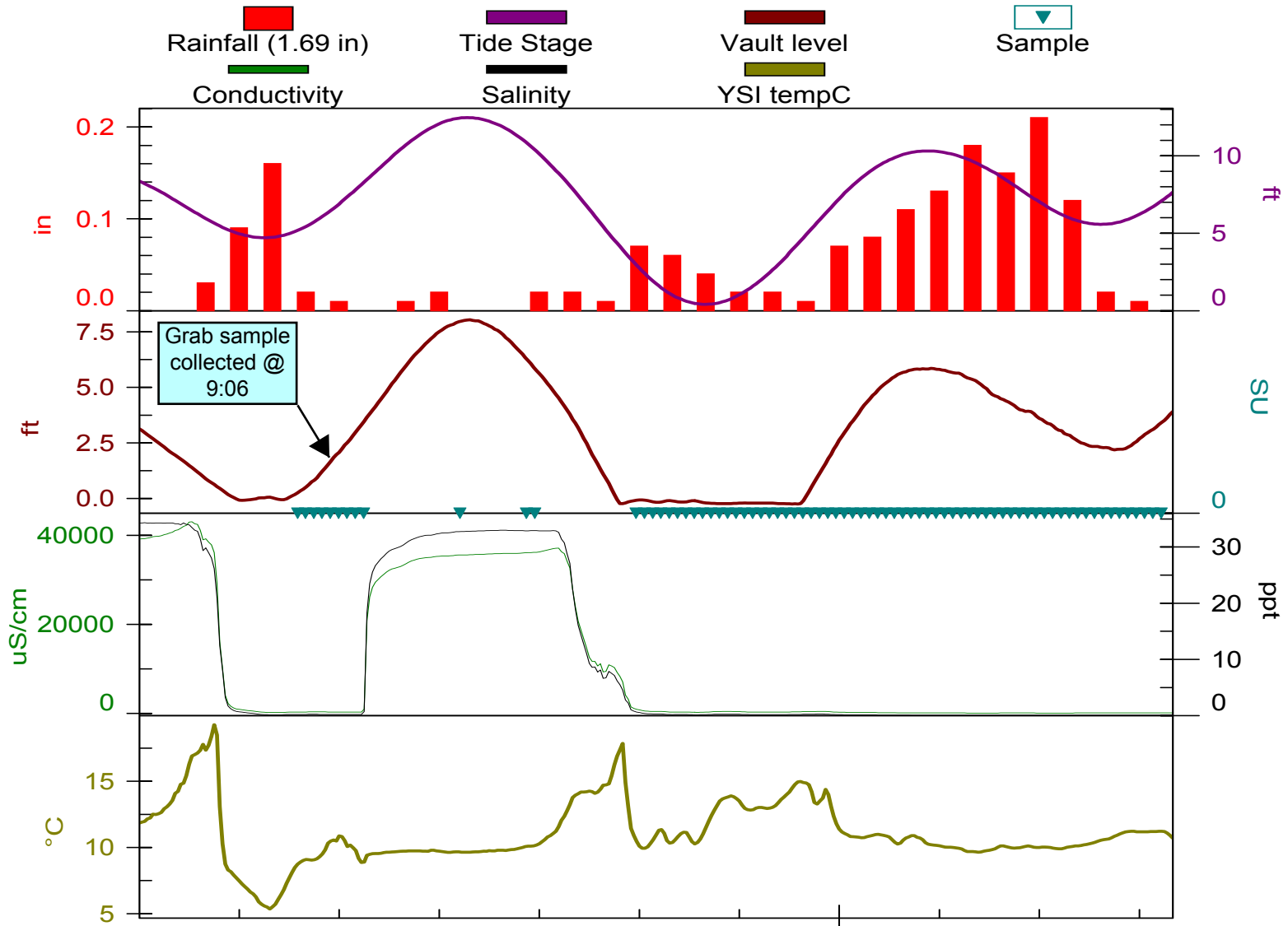


Nov 2011

11/21/2011 3:00:00 AM - 11/22/2011 11:00:00 AM

# PSNS 084.1

SW08 11-21-11



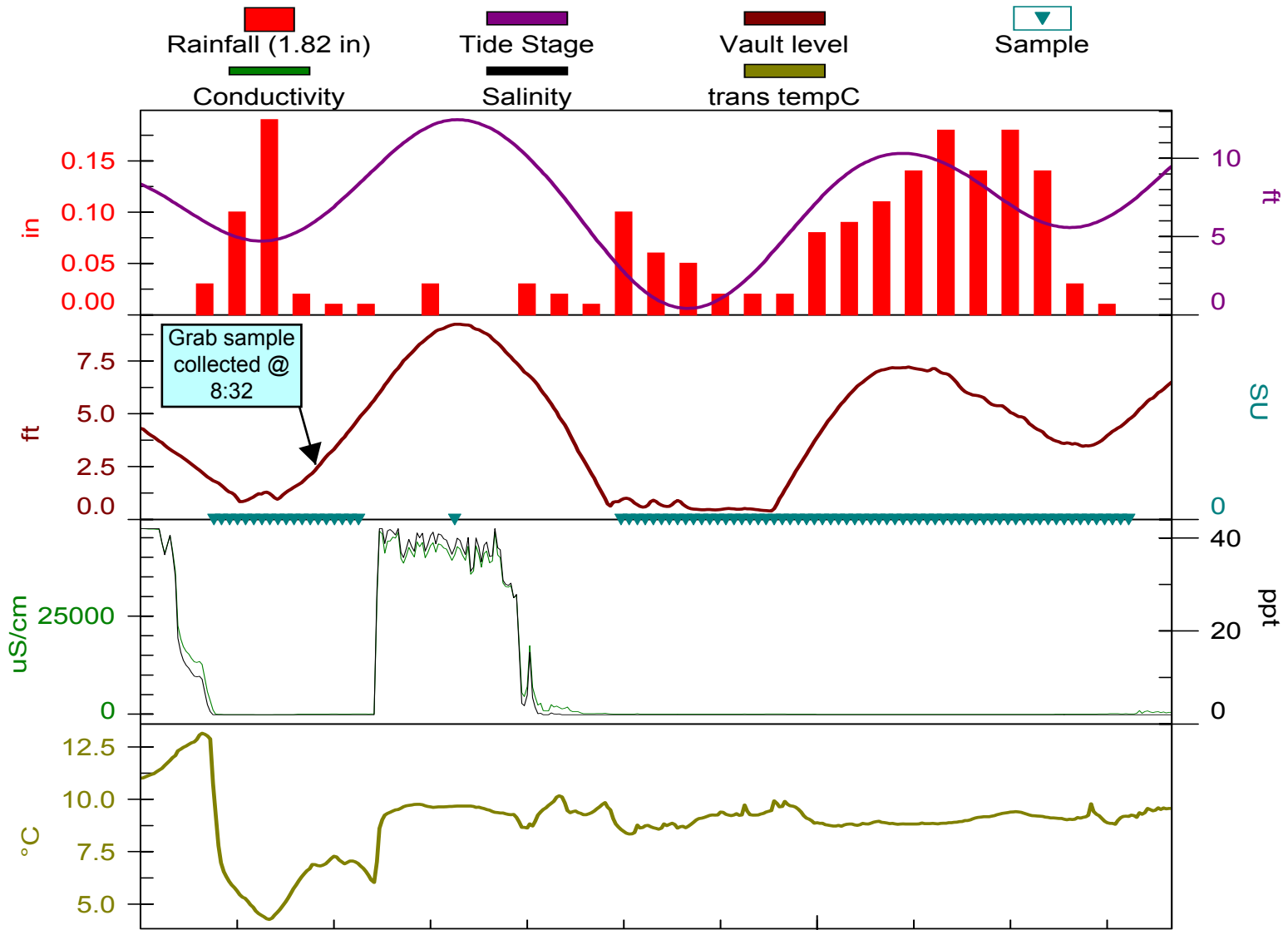
Nov 2011

11/21/2011 3:00:00 AM - 11/22/2011 10:00:00 AM

22 Tue

# PSNS 015

SW08 11-21-11

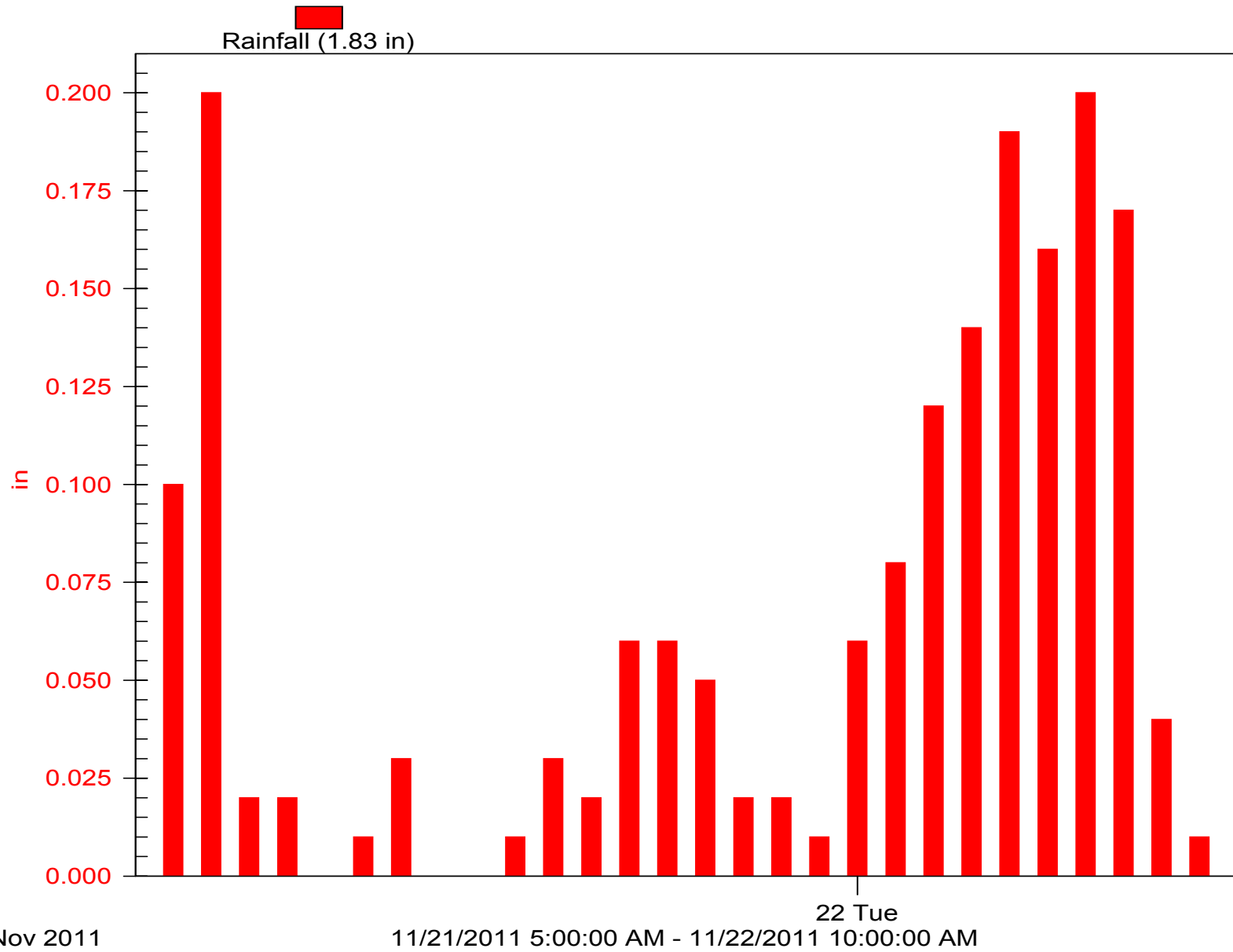


Nov 2011

22 Tue  
11/21/2011 3:00:00 AM - 11/22/2011 11:00:00 AM

# PSNS B427 Rain

SW08 11-21-11



PSNS126\_Smpl rRpt

SAMPLER ID# 1313656803 10:12 22-NOV-11

Hardware: B0 Software: 2.34

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS126"

SITE DESCRIPTION:

"PSNS126"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
19 ft SUCTION LINE  
13 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON  
QUICK VIEW/CHANGE

-----  
TAKE MEASUREMENTS  
EVERY 1 MINUTES

-----  
DUAL SAMPLER OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----  
EVENT MARK SENT  
DURING PUMP CYCLE

-----  
PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

PSNS126\_Smpl rRpt

-----  
NO PERIODIC  
SERIAL OUTPUT  
-----

-----  
INTERROGATOR  
CONNECTOR  
POWER ALWAYS ON  
-----

-----  
NO RAIN GAUGE  
-----

-----  
NO SDI -12 SONDE  
AUTO SDI -12 SCAN OFF  
-----

-----  
I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

-----  
0 ANALOG OUTPUTS  
-----

-----  
NO EXTERNAL MODEM  
-----

-----  
NO ALARM  
CONDITIONS SET  
-----

-----  
SAMPLER ID# 1313656803 10:12 22-NOV-11  
Hardware: B0 Software: 2.34  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*  
SITE: PSNS126  
PROGRAM: PSNS126  
Program Started at 13:51 SU 20-NOV-11  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	LIQUID
COUNT TO					
-----					
13:51 PGM DISABLED					
MO 21-NOV-11					
05:20 PGM ENABLED					
1,4	1	05:20	E		503
2,4	1	05:34	F		499
3,4	1	05:49	F		505
4,4	1	06:04	F		505
1,4	2	06:19	F		505
2,4	2	06:34	F		505
3,4	2	06:49	F		505
4,4	2	07:04	F		505
1,4	3	07:19	F		505
2,4	3	07:34	F		504
3,4	3	07:49	F		502
4,4	3	08:04	F		503
1,4	4	08:19	F		505
2,4	4	08:34	F		505
3,4	4	08:49	F		505
4,4	4	09:04	F		505
1,4	5	09:19	F		505
2,4	5	09:34	F		499
3,4	5	16:43	F		494
4,4	5	16:58	F		497
1,4	6	17:42	F		499



PSNS126\_Smpl rRpt

2, 4	6	17: 57	F	505
3, 4	6	18: 12	F	505
4, 4	6	18: 27	F	502
1, 4	7	18: 42	F	504
2, 4	7	18: 57	F	507
3, 4	7	19: 12	F	509
4, 4	7	19: 27	F	509
1, 4	8	19: 42	F	511
2, 4	8	19: 57	F	509
3, 4	8	20: 12	F	509
4, 4	8	20: 27	F	509
1, 4	9	20: 42	F	509
2, 4	9	20: 57	F	506
3, 4	9	21: 12	F	509
4, 4	9	21: 27	F	509
1, 4	10	21: 42	F	511
2, 4	10	21: 57	F	509
3, 4	10	22: 12	F	509
4, 4	10	22: 27	F	509
1, 4	11	22: 42	F	509
2, 4	11	22: 57	F	509
3, 4	11	23: 12	F	509
4, 4	11	23: 27	F	509
1, 4	12	23: 42	F	509
2, 4	12	23: 57	F	510
-----TU 22-NOV-11-----				
3, 4	12	00: 12	F	515
4, 4	12	00: 27	F	503
1, 4	13	00: 42	F	497
2, 4	13	00: 57	F	497
3, 4	13	01: 12	F	492
4, 4	13	01: 27	F	491
1, 4	14	01: 42	F	491
2, 4	14	01: 57	F	491
3, 4	14	02: 12	F	491
4, 4	14	02: 27	F	491
1, 4	15	02: 42	F	491
2, 4	15	02: 57	F	491
3, 4	15	03: 12	F	491
4, 4	15	03: 27	F	491
1, 4	16	03: 42	F	493
2, 4	16	03: 57	F	493
3, 4	16	04: 12	F	493
4, 4	16	04: 27	F	497
1, 4	17	04: 42	F	497
2, 4	17	04: 57	F	503
3, 4	17	05: 12	F	503
4, 4	17	05: 27	F	503
1, 4	18	05: 42	F	509
2, 4	18	05: 57	F	509
3, 4	18	06: 12	F	509
4, 4	18	06: 27	F	509
1, 4	19	06: 42	F	512
2, 4	19	06: 57	F	513
3, 4	19	07: 12	F	510
4, 4	19	07: 27	F	513
1, 4	20	07: 42	F	509
2, 4	20	07: 57	F	509
3, 4	20	08: 12	F	509
4, 4	20	08: 27	F	509
1, 4	21	08: 42	F	509
2, 4	21	08: 57	F	509
3, 4	21	09: 12	F	509

					PSNS126_Smpl rRpt
4, 4	21	09: 27	F	503	
1, 2	22	09: 42	F	503	
2, 2	22	09: 57	F	497	
SOURCE E ==> ENABLE					
SOURCE F ==> FLOW					

-----

PSNS124.1\_Smpl rRpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

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\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

> REPORT

SAMPLER ID# 3293179321 10:05 22-NOV-11

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS124-1"

SITE DESCRIPTION:

"PSNS124-1"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
56 ft SUCTION LINE  
12 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT  
DURING PUMP CYCLE

PSNS124. 1\_Smpl rRpt

-----  
PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE  
-----

I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT  
-----

NO DI ALOUT  
CONDITIONS SET  
-----

SAMPLER ID# 3293179321 10:06 22-NOV-11  
Hardware: B2 Software: 3.26  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS124-1  
PROGRAM: PSNS124-1  
Program Started at 13:42 SU 20-NOV-11  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	LIQUID	COUNT TO
-----						
		13:42	PGM	DI SABLED		
-----						
		MO 21-NOV-11				
		06:40	PGM	ENABLED		
1,4	1	06:40		E		1329
2,4	1	06:54		F		1290
3,4	1	07:09		F		1302
4,4	1	07:24		F		1314
1,4	2	07:39		F		1314
2,4	2	07:54		F		1315
3,4	2	08:09		F		1301
4,4	2	08:24		F		1315
1,4	3	08:39		F		1314
2,4	3	08:54		F		1321
3,4	3	09:09		F		1321
4,4	3	09:24		F		1327
1,4	4	09:39		F		1325
2,4	4	12:48		F		1233
3,4	4	13:03		F		1241
4,4	4	13:18		F		1249
1,4	5	13:33		F		1255
2,4	5	13:48		F		1267
3,4	5	14:04		F		1255
4,4	5	14:19		F		1292
1,4	6	17:48		F		1325
2,4	6	18:03		F		1325
3,4	6	18:18		F		1367
4,4	6	18:33		F		1331
1,4	7	18:48		F		1314
2,4	7	19:03		F		1351
3,4	7	19:18		F		1359
4,4	7	19:33		F		1361
1,4	8	19:48		F		1326
2,4	8	20:03		F		1351
3,4	8	20:18		F		1337
4,4	8	20:33		F		1337

PSNS124. 1\_Smpl rRpt

1, 4	9	20: 48	F	1338
2, 4	9	21: 03	F	1331
3, 4	9	21: 18	F	1343
4, 4	9	21: 33	F	1333
1, 4	10	21: 48	F	1343
2, 4	10	22: 03	F	1337
3, 4	10	22: 18	F	1337
4, 4	10	22: 33	F	1343
1, 4	11	22: 48	F	1352
2, 4	11	23: 03	F	1337
3, 4	11	23: 18	F	1355
4, 4	11	23: 33	F	1333
1, 4	12	23: 48	F	1337
----- TU 22-NOV-11 -----				
2, 4	12	00: 03	F	1333
3, 4	12	00: 18	F	1343
4, 4	12	00: 33	F	1326
1, 4	13	00: 48	F	1301
2, 4	13	01: 03	F	1316
3, 4	13	01: 18	F	1319
4, 4	13	01: 33	F	1307
1, 4	14	01: 48	F	1313
2, 4	14	02: 03	F	1280
3, 4	14	02: 18	F	1315
4, 4	14	02: 33	F	1313
1, 4	15	02: 48	F	1301
2, 4	15	03: 03	F	1290
3, 4	15	03: 18	F	1296
4, 4	15	03: 33	F	1301
1, 4	16	03: 48	F	1301
2, 4	16	04: 03	F	1302
3, 4	16	04: 18	F	1301
4, 4	16	04: 33	F	1309
1, 4	17	04: 48	F	1314
2, 4	17	05: 03	F	1325
3, 4	17	05: 18	F	1328
4, 4	17	05: 33	F	1333
1, 4	18	05: 48	F	1331
2, 4	18	06: 03	F	1331
3, 4	18	06: 18	F	1337
4, 4	18	06: 33	F	1345
1, 4	19	06: 48	F	1343
2, 4	19	07: 03	F	1343
3, 4	19	07: 18	F	1331
4, 4	19	07: 33	F	1339
1, 4	20	07: 48	F	1337
2, 4	20	08: 03	F	1337
3, 4	20	08: 18	F	1351
4, 4	20	08: 33	F	1332
1, 4	21	08: 48	F	1334
2, 4	21	09: 03	F	1347
3, 4	21	09: 18	F	1326
4, 4	21	09: 33	F	1337
1, 2	22	09: 48	F	1344
2, 2	22	10: 03	F	1343
SOURCE E ==> ENABLE				
SOURCE F ==> FLOW				

PSNS124\_Smpl rRpt

\*\*\*Time Stamp info. for Isco samples is 1-hour (advanced) off. Subtract one hour when assessing sampling tasks.

?

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179322

> REPORT

SAMPLER ID# 3293179322 10:59 22-NOV-11

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS 124 "

SITE DESCRIPTION:

"PSNS 124 "

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
20 ft SUCTION LINE  
16 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT  
DURING PUMP CYCLE

PSNS124\_Smpl rRpt

-----  
PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE  
-----

I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT  
-----

NO DI ALOUT  
CONDITIONS SET  
-----

SAMPLER ID# 3293179322 10: 59 22-NOV-11  
Hardware: B2 Software: 3.26  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS 124  
PROGRAM: PSNS 124  
Program Started at 16: 03 SU 20-NOV-11  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----	-----	-----	---	---	-----
		16: 03	PGM	DI SABLED	
		MO 21-NOV-11			
		06: 30	PGM	ENABLED	
1, 4	1	06: 30	E		561
2, 4	1	06: 44	F		558
3, 4	1	06: 59	F		563
4, 4	1	07: 14	F		563
1, 4	2	07: 29	F		563
2, 4	2	07: 44	F		563
3, 4	2	07: 59	F		563
4, 4	2	08: 14	F		569
1, 4	3	08: 29	F		565
2, 4	3	08: 44	F		563
3, 4	3	08: 59	F		563
4, 4	3	09: 14	F		557
1, 4	4	09: 29	F		557
2, 4	4	09: 44	F		557
3, 4	4	09: 59	F		552
4, 4	4	10: 14	F		551
1, 4	5	10: 29	F		545
2, 4	5	10: 44	F		546
3, 4	5	17: 25	F		543
4, 4	5	17: 40	F		557
1, 4	6	18: 49	F		563
2, 4	6	19: 04	F		563
3, 4	6	19: 19	F		569
4, 4	6	19: 34	F		569
1, 4	7	19: 49	F		569
2, 4	7	20: 04	F		570
3, 4	7	20: 19	F		570
4, 4	7	20: 34	F		574
1, 4	8	20: 49	F		573
2, 4	8	21: 04	F		575
3, 4	8	21: 19	F		575
4, 4	8	21: 34	F		575



PSNS124\_Smpl rRpt

1, 4	9	21: 49	F	575
2, 4	9	22: 04	F	575
3, 4	9	22: 19	F	575
4, 4	9	22: 34	F	575
1, 4	10	22: 49	F	575
2, 4	10	23: 04	F	575
3, 4	10	23: 19	F	576
4, 4	10	23: 34	F	575
1, 4	11	23: 49	F	575
----- TU 22-NOV-11 -----				
2, 4	11	00: 04	F	569
3, 4	11	00: 19	F	569
4, 4	11	00: 34	F	563
1, 4	12	00: 49	F	557
2, 4	12	01: 04	F	551
3, 4	12	01: 19	F	545
4, 4	12	01: 34	F	539
1, 4	13	01: 49	F	539
2, 4	13	02: 04	F	528
3, 4	13	02: 19	F	531
4, 4	13	02: 34	F	527
1, 4	14	02: 49	F	527
2, 4	14	03: 04	F	527
3, 4	14	03: 19	F	527
4, 4	14	03: 34	F	527
1, 4	15	03: 49	F	527
2, 4	15	04: 04	F	527
3, 4	15	04: 19	F	527
4, 4	15	04: 34	F	527
1, 4	16	04: 49	F	533
2, 4	16	05: 04	F	533
3, 4	16	05: 19	F	534
4, 4	16	05: 34	F	532
1, 4	17	05: 49	F	539
2, 4	17	06: 04	F	539
3, 4	17	06: 19	F	539
4, 4	17	06: 34	F	540
1, 4	18	06: 49	F	545
2, 4	18	07: 04	F	545
3, 4	18	07: 19	F	545
4, 4	18	07: 34	F	551
1, 4	19	07: 49	F	551
2, 4	19	08: 04	F	551
3, 4	19	08: 19	F	552
4, 4	19	08: 34	F	555
1, 4	20	08: 49	F	557
2, 4	20	09: 04	F	552
3, 4	20	09: 19	F	555
4, 4	20	09: 34	F	552
1, 4	21	09: 49	F	549
2, 4	21	10: 04	F	545
3, 4	21	10: 19	F	551
4, 4	21	10: 34	F	551
1, 1	22	10: 49	F	540
-----				
SOURCE E ==> ENABLE				
SOURCE F ==> FLOW				
-----				

PSNS115.1\_Smpl rRpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179316

> REPORT

SAMPLER ID# 3293179316 09:54 22-NOV-11

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS115-1 "

SITE DESCRIPTION:

"PSNS115-1 "

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
44 ft SUCTION LINE  
21 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT

DURING PUMP CYCLE

-----  
PUMP COUNTS FOR

EACH PURGE CYCLE:

200 PRE-SAMPLE

## AUTO POST-SAMPLE

-----  
 I /01= NONE  
 I /02= NONE  
 I /03= NONE  
 -----

0 ANALOG OUTPUTS  
 NO PERIODIC  
 SERIAL OUTPUT  
 -----

NO DIALOUT  
 CONDITIONS SET  
 -----

SAMPLER ID# 3293179316 09:54 22-NOV-11  
 Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS115-1

PROGRAM: PSNS115-1

Program Started at 12:57 SU 20-NOV-11

Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----	-----	-----	---	---	-----
		12:57	PGM	DI SABLED	
		MO 21-NOV-11			
		05:19	PGM	ENABLED	
1,4	1	05:19	E		1164
2,4	1	05:33	F		1146
3,4	1	05:48	F		1159
4,4	1	06:03	F		1161
1,4	2	06:18	F		1184
2,4	2	06:33	F		1170
3,4	2	06:48	F		1170
4,4	2	07:03	F		1181
1,4	3	07:18	F		1164
2,4	3	07:33	F		1164
3,4	3	07:48	F		1169
4,4	3	08:03	F		1158
1,4	4	08:18	F		1153
2,4	4	08:33	F		1145
3,4	4	08:48	F		1140
4,4	4	09:03	F		1133
1,4	5	09:18	F		1122
2,4	5	09:33	F		1110
3,4	5	09:48	F		1115
4,4	5	15:02	F		971
1,4	6	15:17	F		1074
2,4	6	15:32	F		1091
3,4	6	15:47	F		1116
4,4	6	16:02	F		1110
1,4	7	17:51	F		1188
2,4	7	18:06	F		1211
3,4	7	18:21	F		1223
4,4	7	18:36	F		1243
1,4	8	18:51	F		1314
2,4	8	19:06	F		1255
3,4	8	19:21	F		1311
4,4	8	19:36	F		1328
1,4	9	19:51	F		1333
2,4	9	20:06	F		1286
3,4	9	20:21	F		1301
4,4	9	20:36	F		1311

PSNS115. 1\_Smpl rRpt

1, 4	10	20: 51	F	1279
2, 4	10	21: 06	F	1268
3, 4	10	21: 21	F	1255
4, 4	10	21: 36	F	1244
1, 4	11	21: 51	F	1248
2, 4	11	22: 06	F	1225
3, 4	11	22: 21	F	1217
4, 4	11	22: 36	F	1207
1, 4	12	22: 51	F	1187
2, 4	12	23: 06	F	1176
3, 4	12	23: 21	F	1163
4, 4	12	23: 36	F	1152
1, 4	13	23: 51	F	1140
----- TU 22-NOV-11 -----				
2, 4	13	00: 06	F	1122
3, 4	13	00: 21	F	1115
4, 4	13	00: 36	F	1121
1, 4	14	00: 51	F	1106
2, 4	14	01: 06	F	1103
3, 4	14	01: 21	F	1091
4, 4	14	01: 36	F	1085
1, 4	15	01: 51	F	1081
2, 4	15	02: 06	F	1082
3, 4	15	02: 21	F	1085
4, 4	15	02: 36	F	1085
1, 4	16	02: 51	F	1086
2, 4	16	03: 06	F	1069
3, 4	16	03: 21	F	1088
4, 4	16	03: 36	F	1091
1, 4	17	03: 51	F	1098
2, 4	17	04: 06	F	1098
3, 4	17	04: 21	F	1099
4, 4	17	04: 36	F	1105
1, 4	18	04: 51	F	1103
2, 4	18	05: 06	F	1116
3, 4	18	05: 21	F	1127
4, 4	18	05: 36	F	1117
1, 4	19	05: 51	F	1117
2, 4	19	06: 06	F	1121
3, 4	19	06: 21	F	1127
4, 4	19	06: 36	F	1146
1, 4	20	06: 51	F	1135
2, 4	20	07: 06	F	1133
3, 4	20	07: 21	F	1139
4, 4	20	07: 36	F	1146
1, 4	21	07: 51	F	1141
2, 4	21	08: 06	F	1143
3, 4	21	08: 21	F	1142
4, 4	21	08: 36	F	1127
1, 4	22	08: 51	F	1134
2, 4	22	09: 06	F	1128
3, 4	22	09: 21	F	1133
4, 4	22	09: 36	F	1122
1, 1	23	09: 51	F	1110
SOURCE E ==> ENABLE				
SOURCE F ==> FLOW				

-----

PSNS084. 1\_Smpl rRpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425546782

> REPORT

SAMPLER ID# 2425546782 09:47 22-NOV-11

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS84-1"

SITE DESCRIPTION:

"PSNS84-1"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
22 ft SUCTION LINE  
15 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

NO SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT

DURING PUMP CYCLE

-----  
PUMP COUNTS FOR

EACH PURGE CYCLE:

200 PRE-SAMPLE

## AUTO POST-SAMPLE

-----  
 I /01= NONE  
 I /02= NONE  
 I /03= NONE  
 -----

0 ANALOG OUTPUTS  
 NO PERIODIC  
 SERIAL OUTPUT  
 -----

NO DIALOUT  
 CONDITIONS SET  
 -----

SAMPLER ID# 2425546782 09: 47 22-NOV-11  
 Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS84-1

PROGRAM: PSNS84-1

Program Started at 12: 32 SU 20-NOV-11

Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----	-----	-----	---	---	-----
		12: 32	PGM	DI SABLED	
		MO 21-NOV-11			
		07: 42	PGM	ENABLED	
1, 4	1	07: 42	E		534
2, 4	1	07: 56	F		532
3, 4	1	08: 11	F		530
4, 4	1	08: 26	F		529
1, 4	2	08: 41	F		519
2, 4	2	08: 56	F		524
3, 4	2	09: 11	F		518
4, 4	2	09: 26	F		518
1, 4	3	09: 41	F		512
2, 4	3	12: 34	F		483
3, 4	3	14: 34	F		494
4, 4	3	14: 49	F		500
1, 4	4	17: 51	F		548
2, 4	4	18: 06	F		549
3, 4	4	18: 21	F		549
4, 4	4	18: 36	F		547
1, 4	5	18: 51	F		554
2, 4	5	19: 06	F		554
3, 4	5	19: 21	F		554
4, 4	5	19: 36	F		554
1, 4	6	19: 51	F		554
2, 4	6	20: 06	F		554
3, 4	6	20: 21	F		554
4, 4	6	20: 36	F		554
1, 4	7	20: 51	F		554
2, 4	7	21: 06	F		554
3, 4	7	21: 21	F		555
4, 4	7	21: 36	F		555
1, 4	8	21: 51	F		558
2, 4	8	22: 06	F		555
3, 4	8	22: 21	F		554
4, 4	8	22: 36	F		555
1, 4	9	22: 51	F		552
2, 4	9	23: 06	F		542
3, 4	9	23: 21	F		536
4, 4	9	23: 36	F		530

PSNS084. 1\_Smpl rRpt

1, 4	10	23: 51	F	524
----- TU 22-NOV-11 -----				
2, 4	10	00: 06	F	524
3, 4	10	00: 21	F	518
4, 4	10	00: 36	F	513
1, 4	11	00: 51	F	510
2, 4	11	01: 06	F	508
3, 4	11	01: 21	F	506
4, 4	11	01: 36	F	506
1, 4	12	01: 51	F	506
2, 4	12	02: 06	F	501
3, 4	12	02: 21	F	504
4, 4	12	02: 36	F	501
1, 4	13	02: 51	F	506
2, 4	13	03: 06	F	506
3, 4	13	03: 21	F	506
4, 4	13	03: 36	F	501
1, 4	14	03: 51	F	505
2, 4	14	04: 06	F	507
3, 4	14	04: 21	F	510
4, 4	14	04: 36	F	512
1, 4	15	04: 51	F	512
2, 4	15	05: 06	F	513
3, 4	15	05: 21	F	516
4, 4	15	05: 36	F	518
1, 4	16	05: 51	F	518
2, 4	16	06: 06	F	518
3, 4	16	06: 21	F	519
4, 4	16	06: 36	F	524
1, 4	17	06: 51	F	525
2, 4	17	07: 06	F	525
3, 4	17	07: 21	F	525
4, 4	17	07: 36	F	524
1, 4	18	07: 51	F	530
2, 4	18	08: 06	F	525
3, 4	18	08: 21	F	530
4, 4	18	08: 36	F	525
1, 4	19	08: 51	F	524
2, 4	19	09: 06	F	524
3, 4	19	09: 21	F	518
4, 4	19	09: 36	F	518
SOURCE E ==> ENABLE				
SOURCE F ==> FLOW				



PSNS015\_Smpl Rpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425481222

> REPORT

SAMPLER ID# 2425481222 09:42 22-NOV-11

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS015"

SITE DESCRIPTION:

"PSNS015"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
22 ft SUCTION LINE  
18 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT

DURING PUMP CYCLE

-----  
PUMP COUNTS FOR

EACH PURGE CYCLE:

200 PRE-SAMPLE

## AUTO POST-SAMPLE

-----  
 I /01= NONE  
 I /02= NONE  
 I /03= NONE  
 -----

O ANALOG OUTPUTS  
 NO PERIODIC  
 SERIAL OUTPUT  
 -----

NO DIALOUT  
 CONDITIONS SET  
 -----

SAMPLER ID# 2425481222 09:42 22-NOV-11  
 Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS015

PROGRAM: PSNS015

Program Started at 11:54 SU 20-NOV-11

Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----	-----	-----	---	---	-----
		11:54	PGM	DI SABLED	
		MO 21-NOV-11			
		05:15	PGM	ENABLED	
1,4	1	05:15	E		792
2,4	1	05:29	F		794
3,4	1	05:44	F		802
4,4	1	05:59	F		808
1,4	2	06:14	F		809
2,4	2	06:29	F		826
3,4	2	06:44	F		808
4,4	2	06:59	F		810
1,4	3	07:14	F		814
2,4	3	07:29	F		808
3,4	3	07:44	F		802
4,4	3	07:59	F		796
1,4	4	08:14	F		796
2,4	4	08:29	F		786
3,4	4	08:44	F		779
4,4	4	08:59	F		778
1,4	5	09:14	F		772
2,4	5	09:29	F		766
3,4	5	09:44	F		760
4,4	5	12:43	F		706
1,4	6	17:53	F		803
2,4	6	18:08	F		816
3,4	6	18:23	F		814
4,4	6	18:38	F		824
1,4	7	18:53	F		820
2,4	7	19:08	F		828
3,4	7	19:23	F		828
4,4	7	19:38	F		822
1,4	8	19:53	F		830
2,4	8	20:08	F		832
3,4	8	20:23	F		834
4,4	8	20:38	F		828
1,4	9	20:53	F		842
2,4	9	21:08	F		836
3,4	9	21:23	F		827
4,4	9	21:38	F		833

PSNS015\_Smpl Rpt

1, 4	10	21: 53	F	834
2, 4	10	22: 08	F	834
3, 4	10	22: 23	F	835
4, 4	10	22: 38	F	834
1, 4	11	22: 53	F	816
2, 4	11	23: 08	F	810
3, 4	11	23: 23	F	802
4, 4	11	23: 38	F	790
1, 4	12	23: 53	F	780
----- TU 22-NOV-11 -----				
2, 4	12	00: 08	F	772
3, 4	12	00: 23	F	768
4, 4	12	00: 38	F	763
1, 4	13	00: 53	F	756
2, 4	13	01: 08	F	748
3, 4	13	01: 23	F	750
4, 4	13	01: 38	F	742
1, 4	14	01: 53	F	742
2, 4	14	02: 08	F	743
3, 4	14	02: 23	F	737
4, 4	14	02: 38	F	739
1, 4	15	02: 53	F	742
2, 4	15	03: 08	F	737
3, 4	15	03: 23	F	744
4, 4	15	03: 38	F	738
1, 4	16	03: 53	F	748
2, 4	16	04: 08	F	745
3, 4	16	04: 23	F	751
4, 4	16	04: 38	F	757
1, 4	17	04: 53	F	755
2, 4	17	05: 08	F	760
3, 4	17	05: 23	F	763
4, 4	17	05: 38	F	763
1, 4	18	05: 53	F	768
2, 4	18	06: 08	F	774
3, 4	18	06: 23	F	781
4, 4	18	06: 38	F	775
1, 4	19	06: 53	F	780
2, 4	19	07: 08	F	781
3, 4	19	07: 23	F	786
4, 4	19	07: 38	F	786
1, 4	20	07: 53	F	786
2, 4	20	08: 08	F	790
3, 4	20	08: 23	F	790
4, 4	20	08: 38	F	784
1, 4	21	08: 53	F	775
2, 4	21	09: 08	F	780
3, 4	21	09: 23	F	775
4, 4	21	09: 38	F	768
SOURCE E ==> ENABLE				
SOURCE F ==> FLOW				
-----				



## National Weather Service National Headquarters National Weather Service

### Area Forecast Discussion

Issued by NWS Seattle/Tacoma, WA

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000  
FXUS66 KSEW 210518 CCA  
AFDSEW

[AREA FORECAST DISCUSSION](#)...CORRECTED  
NATIONAL WEATHER SERVICE SEATTLE WA  
915 PM PST SUN NOV 20 2011

.SYNOPSIS...A [FRONT](#) WILL BRING RAIN MONDAY MORNING WITH WINDY CONDITIONS AT THE COAST AND OVER THE NORTH INTERIOR. A STRONGER FRONTAL SYSTEM WILL STALL OVER THE AREA MONDAY NIGHT THROUGH TUESDAY NIGHT OR WEDNESDAY. THIS SYSTEM WILL HAVE HEAVIER RAINS AND POSSIBLE DAMAGING WINDS OVER THE COAST AND NORTH INTERIOR. ADDITIONAL FRONTS WILL BRING RAIN LATE THANKSGIVING DAY...AND AGAIN OVER THE WEEKEND.

&&

.SHORT TERM...MID AND [HIGH CLOUDS](#) HAVE SPREAD ACROSS THE AREA IN ADVANCE OF AN APPROACHING PACIFIC FRONTAL SYSTEM. RAIN WILL REACH THE COAST AFTER MIDNIGHT TONIGHT THEN SPREAD INTO THE INTERIOR MONDAY MORNING. WITH COOL AIR CURRENTLY IN PLACE...THERE IS SOME CONCERN PRECIPITATION COULD START OUT AS SNOW BEFORE CHANGING TO RAIN IN AREAS LIKE HOOD CANAL. EVEN IF THIS DOES HAPPEN...THE COLD AIR SHOULD SCOUR PRETTY FAST AND DO NOT EXPECT SIGNIFICANT IMPACTS.

RAIN WILL CHANGE TO SHOWERS MONDAY AFTERNOON AS THE [FRONT](#) MOVES INLAND. SNOW LEVELS WILL RISE TO 3000 FEET DURING THE DAY. THERE IS ENOUGH [QPF](#) EXPECTED TO PRODUCE SEVERAL INCHES OR SNOW BY AFTERNOON IN THE CASCADES. A [WINTER WEATHER ADVISORY](#) IS OUT FOR THIS. THERE WILL ALSO BE SOME WINDY CONDITIONS COAST AND NORTH INTERIOR AS THE [FRONT](#) MOVES THROUGH...PEAKING IN THE MORNING HOURS. A WIND ADVISORY IS UP FOR THIS. HIGHS WILL WARM ON MONDAY FROM THE BELOW [NORMAL](#) TEMPERATURES OF THE LAST FEW DAYS...BUT REMAIN A BIT BELOW [NORMAL](#).

A STRONGER AND WETTER FRONTAL SYSTEM WILL MOVE OVER THE AREA MONDAY NIGHT...THEN STALL OVER THE AREA INTO TUESDAY NIGHT OR WEDNESDAY. SNOW LEVELS WILL RISE TO 5000 TO 6000 FEET MONDAY NIGHT...ENDING MOST OF THE MOUNTAIN SNOW CONCERNS ALTHOUGH THE HIGHER VOLCANOES COULD STAY ALL SNOW FOR AWHILE. EASTERLY [FLOW](#) COULD KEEP A WINTRY MIX IN THE PASSES INTO TUESDAY AS WELL. HEAVY RAINS IN THE MOUNTAINS COMBINED WITH THE HIGHER SNOW LEVELS WILL INTRODUCE FLOODING CONCERNS. SEE THE [HYDROLOGY](#) SECTION BELOW FOR MORE DETAILS. THERE WILL ALSO BE A PERIOD OF STRONG AND POSSIBLY DAMAGING WINDS FOR THE COAST AND NORTHWEST INTERIOR MONDAY NIGHT AND TUESDAY MORNING. A [HIGH WIND WATCH](#) HAS BEEN ISSUED FOR THIS. NO UPDATES PLANNED THIS EVENING. SCHNEIDER

.LONG TERM...PREVIOUS DISCUSSION...CONFIDENCE IN THE LONG TERM FORECAST REMAINS LOW. THE 12Z MODELS SHOW ANOTHER...WEAKER...[FRONT](#) MOVING INLAND ON THANKSGIVING DAY...BUT STILL HAVE TROUBLE NAILING DOWN THE TIMING. THE LATEST SOLUTIONS ARE A LITTLE SLOWER AND THE [FRONT](#) MAY NOT ARRIVE UNTIL THE EVENING HOURS. SNOW LEVELS ARE BACK DOWN TO 3000 [FT](#) AND MAY SEE MORE SNOW IN THE PASSES. OTHERWISE KEPT THE FORECAST CLOSE TO [CLIMO](#) OVER THE HOLIDAY WEEKEND. MODELS SHOW ANOTHER [FRONT](#) SLIDING INLAND BUT THE EXACT TIMING IS UNCLEAR. BUT THE EURO IS BUILDING A STRONG [RIDGE](#) OVER THE WEST WHICH MAY FORCE THE PRECIP NORTH INTO [B.C.](#) WILL NOT MAKE ANY SIGNIFICANT CHANGES JUST YET. 33

&&

.[HYDROLOGY](#)...PREVIOUS DISCUSSION...EXPECT SHARP RISES ON ALL WESTERN WA RIVER STARTING TUE...WITH POSSIBLE [RIVER FLOODING](#) TUE NIGHT INTO WED. ALTHOUGH LATEST FORECAST MODELS STILL DISPLAY A LOT OF VARIABILITY AND UNCERTAINTY...THERE IS STILL THE POSSIBILITY FOR [RIVER FLOODING](#) ACROSS WESTERN WA. THE LATEST GUIDANCE SHOWS SEVERAL INCHES OF RAIN FALLING THE IN MOUNTAINS WITH 5-8 INCHES POSSIBLE IN THE OLYMPICS...AND 3-6 INCHES IN THE CASCADES WITH HIGHER AMOUNTS POSSIBLE. THE RIVERS MOST AT RISK FOR FLOODING INCLUDE THE SKOKOMISH...ELWA...STILLAGUAMISH AND NEWAUKUM. BUT THIS ALL CHANGE...

&&

.AVIATION...AN APPROACHING FRONTAL SYSTEM WILL SPREAD MID LEVEL [MOISTURE](#) OVER W WA TONIGHT. THE [FRONT](#) WILL SPREAD RAIN AND [MVFR](#) CIGS TO THE COAST BY 12Z AND TO THE INTERIOR BY 15Z. FRONTAL PASSAGE WILL BE AROUND 15Z FOR THE COAST AND AROUND 18Z INLAND. LOW LEVEL [FLOW](#) WILL BE STRONG...WITH SSW WINDS AT FL050 RISING TO NEAR 55 [KT](#) AT 15Z THEN EASING TO SW 30 [KT](#) BY 21Z. LOW LEVEL WIND [SHEAR](#) IS POSSIBLE 12Z-18Z.

KSEA...THE APPROACHING FRONTAL SYSTEM WILL KEEP [BKN-OVC](#) MID LEVEL CLOUDS OVER THE AREA TONIGHT WITH NO [FOG](#) EXPECTED TO FORM. RAIN WILL SPREAD OVER THE TERMINAL BY 15Z WITH [CIGS](#) DROPPING TO NEAR OVC030. EXPECT [MVFR](#) [CIGS](#) THE REST OF THE DAY. WINDS ALOFT FROM 14Z-20Z FROM FL050-FL100 WILL SSW 50-60KT. KAM

&&

.MARINE...A STRONG [FRONT](#) WILL RAISE GALES OVER THE AREA LATE TONIGHT AND MONDAY MORNING. [FROPA](#) COAST WILL BE NEAR 15Z AND INLAND AROUND 18Z. A STRONGER FRONTAL SYSTEM WILL AFFECT THE AREA MONDAY EVENING THROUGH TUESDAY. A WARM [FRONT](#) WILL MOVE NE ACROSS THE [COASTAL WATERS](#) MONDAY EVENING. A DEEP SURFACE LOW WILL MOVE NE OFFSHORE TOWARD THE CENTRAL [B.C.](#) COAST MONDAY NIGHT...REACHING THE COAST AROUND 12Z. THE ASSOCIATED COLD [FRONT](#) WILL REACH THE WA COAST BY MID TUESDAY MORNING...MOVING INLAND BY MIDDAY...THEN STALLING AND WEAKENING IN THE AFTERNOON. HIGH END GALES ARE [LIKELY](#) FOR THE COAST AND INLAND AREAS PRONE TO STRONG SE WINDS. THERE IS A SMALL CHANCE THAT THE SYSTEM COULD PRODUCE STORM FORCE SUSTAINED WINDS OVER THE COASTAL WATERS...BUT NONE OF THE GUIDANCE HAS CONVINCINGLY INDICATED THAT SO FAR. KAM

&&

.SEW WATCHES/WARNINGS/ADVISORIES...

WA...WIND ADVISORY NORTHWEST INTERIOR 4 AM TO 3 PM MONDAY.

.WIND ADVISORY NORTH AND CENTRAL COAST 1 AM TO NOON MONDAY.

.[HIGH WIND WATCH](#) NORTHWEST INTERIOR MONDAY NIGHT/TUESDAY MORNING.

.[WINTER WEATHER ADVISORY](#) OLYMPICS AND CASCADES 6 AM TO 4 PM

MONDAY.

PZ...[GALE WARNING](#) ALL WATERS EXCEPT THE PUGET SOUND AND HOOD CANAL.

.[SMALL CRAFT ADVISORY](#) FOR ROUGH [BAR](#) GRAYS HARBOR [BAR](#).

.[SMALL CRAFT ADVISORY](#) PUGET SOUND AND HOOD CANAL.

.STORM [WATCH](#) [COASTAL WATERS](#) MONDAY NIGHT AND TUESDAY.

.[GALE WATCH](#) PUGET SOUND AND HOOD CANAL MONDAY NIGHT AND TUESDAY.

\$\$

YOU CAN SEE AN ILLUSTRATED VERSION OF THE FORECAST DISCUSSION AT  
[WWW.WEATHER.GOV/SEATTLE/GAFD/LATEST\\_WEBAFD.HTML](http://WWW.WEATHER.GOV/SEATTLE/GAFD/LATEST_WEBAFD.HTML).

[WWW.WEATHER.GOV/SEATTLE](http://WWW.WEATHER.GOV/SEATTLE)

National Weather Service  
National Weather Service National Headquarters  
1325 East West Highway  
Silver Spring, MD 20910


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# Your National Weather Service forecast

## Bremerton WA

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NWS Seattle, WA









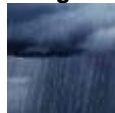
**Point Forecast:** Bremerton WA  
47.56°N 122.62°W (Elev. 0 ft)

[Mobile Weather Information](#) | [En Español](#)

**Last Update:** 3:48 pm PST Nov 20, 2011

**Forecast Valid:** 11pm PST Nov 20, 2011-6pm PST Nov 27, 2011

### Forecast at a Glance

Overnight	Monday	Monday Night	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thanksgiving Day	Thursday Night
								
80%	100%	80%	90%	90%	90%	50%		
Rain	Rain	Rain	Heavy Rain	Rain	Rain	Chance Rain	Rain Likely	Showers Likely
Lo 37 °F	Hi 46 °F	Lo 44 °F	Hi 52 °F	Lo 41 °F	Hi 46 °F	Lo 38 °F	Hi 45 °F	Lo 37 °F

### Detailed 7-day Forecast

**Overnight:** Rain, mainly after 4am. Low around 37. South southeast wind around 8 mph. Chance of precipitation is 80%.

**Monday:** Rain. High near 46. Breezy, with a south wind between 20 and 24 mph, with gusts as high as 39 mph. Chance of precipitation is 100%.

**Monday Night:** Rain. Low around 44. Breezy, with a south wind between 20 and 24 mph, with gusts as high as 39 mph. Chance of precipitation is 80%.

**Tuesday:** Rain. The rain could be heavy at times. High near 52. Windy, with a south wind between 26 and 34 mph, with gusts as high as 55 mph. Chance of precipitation is 90%.

**Tuesday Night:** Rain. Low around 41. Breezy, with a south wind between 15 and 22 mph, with gusts as high as 34 mph. Chance of precipitation is 90%.

**Wednesday:** Rain. High near 46. Chance of precipitation is 90%.

**Wednesday Night:** A 50 percent chance of rain. Cloudy, with a low around 38.

**Thanksgiving Day:** Rain likely. Cloudy, with a high near 45.

**Thursday Night:** Showers likely. Cloudy, with a low around 37.

**Friday:** A chance of showers. Cloudy, with a high near 45.

**Friday Night:** Rain likely. Cloudy, with a low around 39.


**Saturday:** Rain likely. Cloudy and breezy, with a high near 48.

**Saturday Night:** Rain likely. Cloudy, with a low around 40.

**Sunday:** Rain likely. Cloudy, with a high near 45.



### Detailed Point Forecast [Move Down]

Click Map for Forecast      [Disclaimer](#)



Map data ©2011 Google -

Requested Location      Forecast Area  
**Lat/Lon:** 47.56°N 122.62°W    **Elevation:** 0 ft

### Current Conditions [Move Up]

**Bremerton, Bremerton National Airport (KPWT)**

Lat: 47.5 Lon: -122.75 Elev: 440

Last Update on 20 Nov 22:15 PST

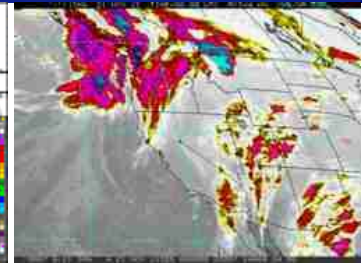
**Mostly Cloudy**

**30°F**  
**(-1°C)**

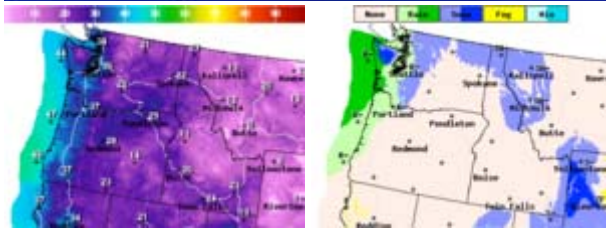
<b>Humidity:</b>	93 %
<b>Wind Speed:</b>	calm
<b>Barometer:</b>	29.82 in (N/A mb)
<b>Dewpoint:</b>	28°F (-2°C)
<b>Wind Chill:</b>	30°F (-1°C)
<b>Visibility:</b>	10.00 Miles

[More Local Wx:](#)[3 Day History:](#)

### Radar and Satellite Images



### National Digital Forecast Database



### Additional Forecasts & Information

[Zone Area Forecast for Seattle/Bremerton Area, WA](#)[Forecast Discussion](#)[Printable Forecast](#)[Text Only Forecast](#)[Hourly Weather Graph](#)[Tabular Forecast](#)[Quick Forecast](#)[International System of Units](#)[About Point Forecasts](#)[Forecast Weather Table Interface](#)[Webmaster](#)

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Seattle, WA

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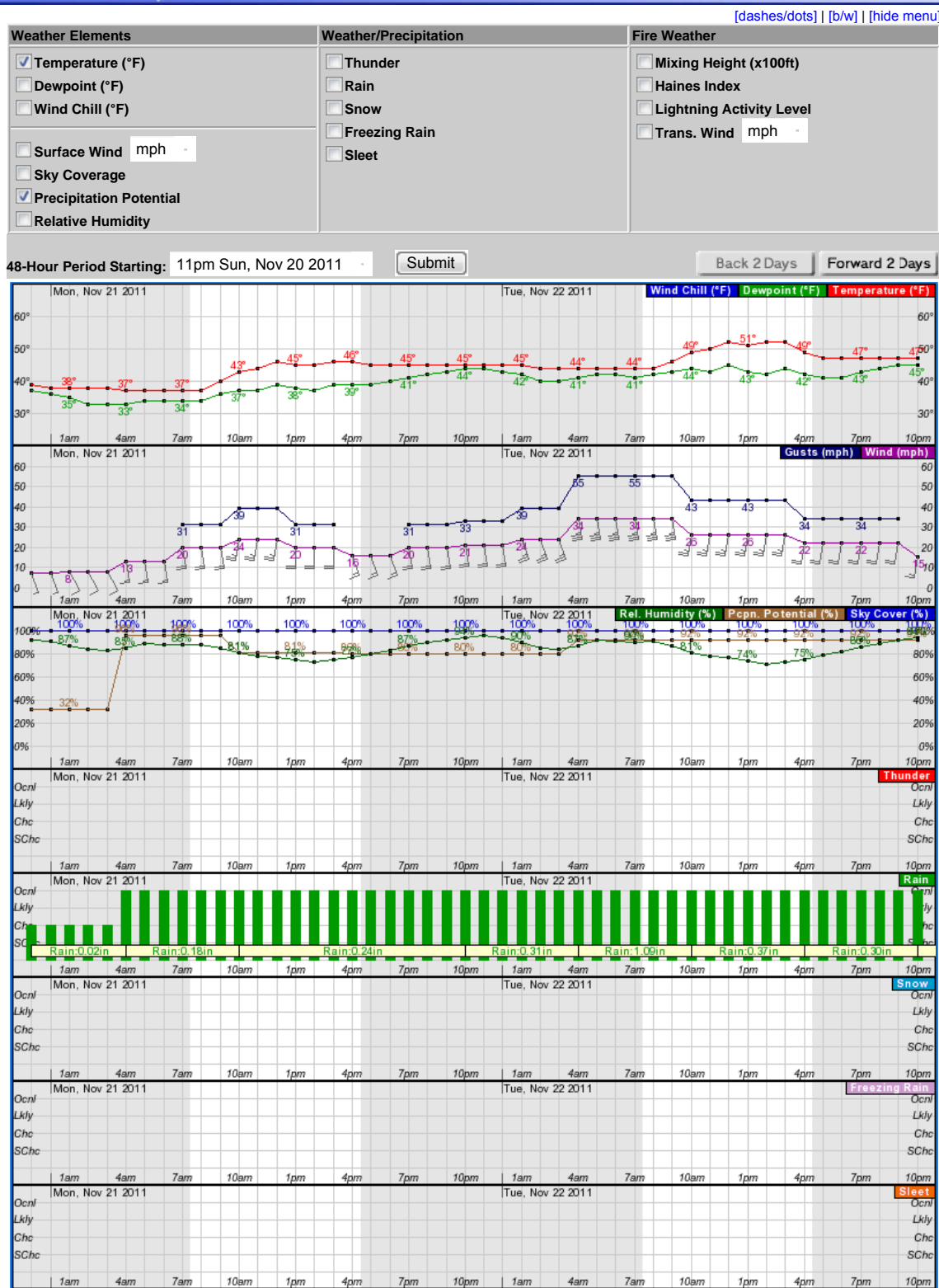
**National Weather Service Forecast Office**  
**Seattle, WA**

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weather.gov

**Point Forecast:** Bremerton WA  
47.56N 122.62W (Elev. 0 ft)  
**Hourly Weather Forecast Graph**

Last Update: 3:48 pm PST Nov 20, 2011





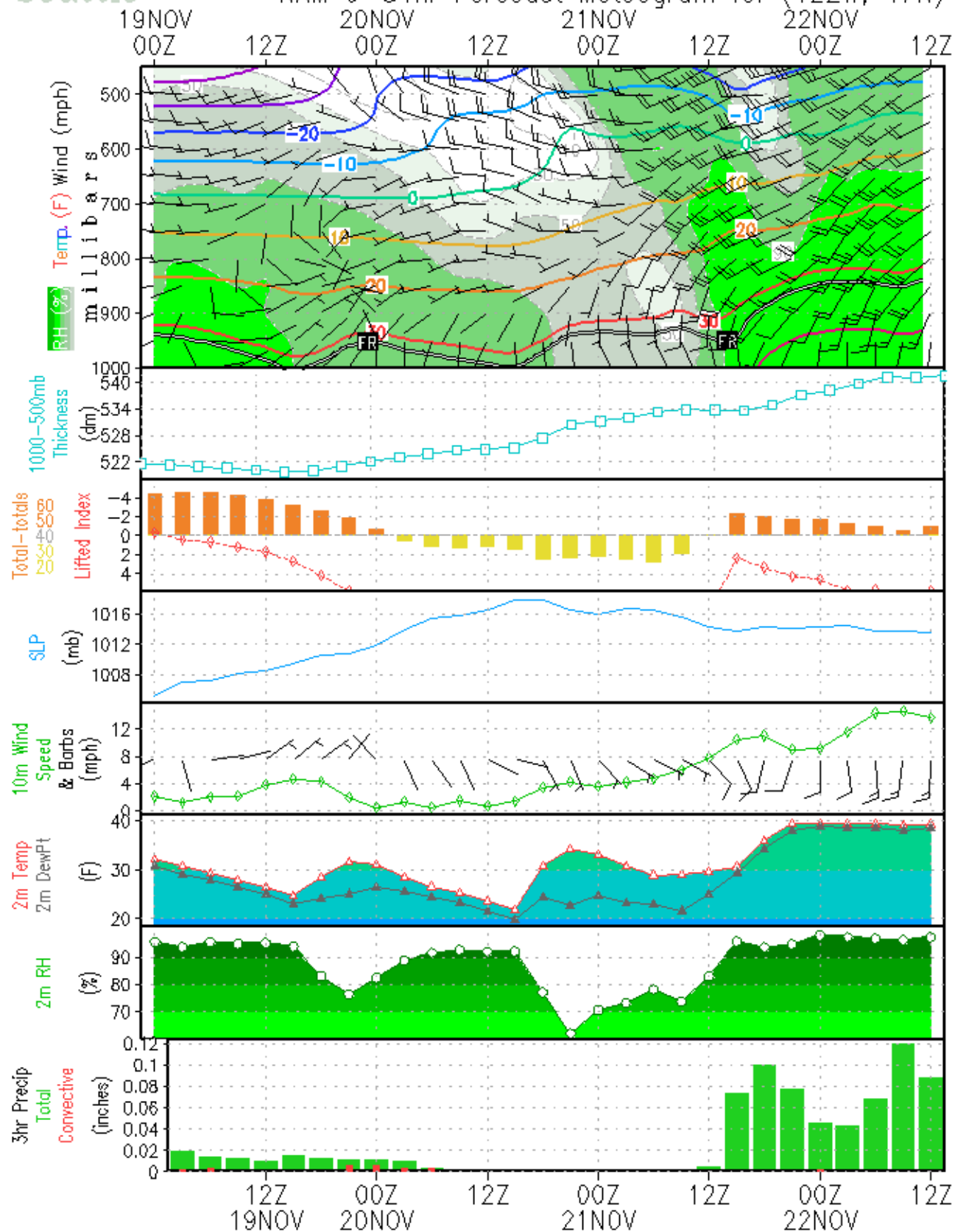
**Forecast For Lat/Lon: 47.5620/-122.6230 (Elev. 0 ft)**  
**Bremerton WA**

*Custom Weather Forecast Table*

	Sun Nov 20								Mon Nov 21								Tue Nov 22								Wed Nov 23
Weather					Chance Rain				Rain		Rain Showers		Rain		Rain		Rain				Rain				
Daily-Temp	High 41 Low 29								High 46 Low 37								High 52 Low 44								Low 41
Chance of Precip	10%	10%	10%	30%					95%	80%	80%	80%					90%	90%	90%	90%					
Precip	0.00"	0.00"	0.00"	0.02"					0.18"	0.12"	0.12"	0.31"					1.09"	0.37"	0.30"	0.23"					
12-hr Snow Total	0"		0"						0"		0"						0"		0"						
3-Hour Temp	4am: 30	7am: 29	10am: 37	1pm: 40	4pm: 40	7pm: 39	10pm: 38	1am: 37	4am: 37	7am: 37	10am: 43	1pm: 45	4pm: 46	7pm: 45	10pm: 45	1am: 44	4am: 44	7am: 44	10am: 49	1pm: 51	4pm: 49	7pm: 47	10pm: 47	1am: 44	
Cloudiness	20%	20%	56%	56%	87%	87%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Dewpoint	25	26	31	31	31	34	36	35	33	34	37	38	39	41	44	42	41	41	44	43	42	43	45	41	
Relative Humidity	82%	87%	79%	71%	70%	81%	90%	87%	85%	88%	81%	75%	77%	87%	94%	90%	87%	90%	81%	74%	75%	86%	94%	91%	
Wind	NW: 1	NW: 2	NW: 1	N: 2	SE: 1	S: 3	S: 7	SE: 8	S: 13	S: 20	S: 24	S: 20	S: 16	S: 20	S: 21	S: 24	S: 35	S: 35	S: 26	S: 26	S: 22	S: 22	S: 15	S: 15	
Snow Level (ft)	215	215	1118	1118	1204	1204	1224	1224	2174	2174	2712	2712	3375	3375	4662	4662	5380	5380	5167	5167	4042	4042	3840	3840	

# Seattle

NAM 0-84hr Forecast Meteogram for (122W, 47N)



## Telemetry Data Summary Report (TDSR); QAQC Data Notes, from 11/23/12

### **126**

Data OK, no gaps or corrupt data

### **124.1**

Data OK, no gaps or corrupt data

### **124**

Data OK, no gaps or corrupt data

### **115.1**

Vault level has negative values from 11/21/11 19:20 to 11/21/11 20:35, due to no water in pipe.

### **84.1**

Vault level has negative values from 11/21/11 17:20 to 11/21/11 22:55, due to no water in pipe.

### **015**

11/21/11 05:25 to 11/21/11 07:50, Conductivity went negative and corresponding loss of salinity values

11/21/11 17:50, no salinity value although conductivity was positive value

11/21/11 17:55 to 18:20, Conductivity went negative and corresponding loss of salinity values

11/21/11 18:25, no salinity value although conductivity was positive value

11/21/11 18:50 to 19:05, Conductivity went negative and corresponding loss of salinity values

11/21/2011 19:10, no salinity value although conductivity was positive value

11/21/2011 19:30, no salinity value although conductivity was positive value

11/21/11 19:35 to 19:40, Conductivity went negative and corresponding loss of salinity values

11/21/2011 19:45, no salinity value although conductivity was positive value

11/21/11 23:40 to 11/22/11 07:30, Conductivity went negative and corresponding loss of salinity values



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# **STORM EVENT REPORT SW09 For Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA Project ENVVEST Study Area**

**January 20, 2012**



*Puget Sound Naval Shipyard and Surrounding Area*

**PNNL Contract No.: N4523A10MP00034 Amendment 1**

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## 1.0 Introduction

Taylor/TEC conducted non-dry dock stormwater sampling tasks within the Puget Sound Naval Shipyard (PSNS) and adjacent areas within Naval Base Kitsap (NBK); collectively comprising the Project ENVVEST study area, between December 1<sup>st</sup>, 2011 and January 21<sup>st</sup>, 2012. This was the second of four scheduled events of the 2011-2012 project year – referred to as *Phase II*. Overall, this is the ninth Stormwater (SW09) event of the project. A summary of the preparatory and sampling events, including site specific conditions that occurred during SW09 are presented in this report, with supporting information as attachments.

This SW09 Report is organized in the following manner and contains: Section 2, Event Summary; Section 3, Project Staff Participating in SW09; Section 4, Storm Event SW09 Preparatory Tasks; Section 5, Weather Forecast Information and SW09 Targeting Details; Section 6, Precipitation and SW09 Qualification Summary; Section 7, Sampling Information, Management and Validation; Section 8, Basin Runoff Calculations; Section 9, Descriptive Statistics and Discussion of Event Station Monitoring Data; Section 10, Notable Anomalies and Variations to the PWP; and Section 11, Action Items.

Attachments to this report include: Table A-1, *Storm Event Summary and Sampling Information, Validation Checklist* (spreadsheet); Stormwater Field Sampling Forms and Storm Controller Notes; Chain of Custody Forms; (basin) Runoff Calculation Worksheet; Station Hydrographs; Autosampler Reports; Weather Forecast Information and a Telemetry Data Summary Report.

## 2.0 Event Summary

Main SW09 details are provided below as a “Quick Reference”:

- Event/s conducted: SW09
- Event Date/s: station prep. = 12/1/11; maint. items = 12/2/11 through 1/16/12 and storm event tasks occurred between 1/17 – 1/21/12
- Monitoring Stations Sampled: PSNS015, 84.1, 115.1, 124, 124.1 and 126
- Antecedent Conditions Met?: Yes (3 days or greater at each station); 0.0” in prior 24 hrs and 0.0” in prior 6 hrs preceding the storm/sampling event at each station.
- Start of Rainfall at PSNS Stations: 1/20/12 between 0540 (PSNS124.1) and 1005 (PSNS124)
- Sampling Period Duration Range: start = 1/20/12 @ 1207 (PSNS115.1), stop = 1/21/12 @ 1200 (PSNS126). Max sampling duration = 23 hrs:44 mins (PSNS126)
- Sampling Event Rainfall Total: PSNSB427 = 1.74”, PSNS126 = 1.03”, PSNS124.1 = 1.13”, PSNS124 = 1.18”, PSNS115.1 = 1.17”, PSNS084.1 = 1.13” and PSNS015 = 1.29”
- Samples/Types Collected: Grab and composite samples were collected at each station (one each at each station) for a total of 12 “normal” samples.
- Quality Control (QC) Samples Collected: A composite duplicate was collected at PSNS126; no grab duplicates were collected during this event.

- Based on consideration of storm event and sample validation information, were the samples collected during SW09 valid for project purposes? (Y / N, composite, grab or both): Yes-both; all grab and composite samples collected during this event were valid.

See Table A-1; *Storm Event Summary and Sampling Information, Validation Checklist*, for additional event summary details.

### **3.0 Project Staff Participating in SW09**

#### Taylor/TEC:

Dave Metallo – Project Manager, Storm Controller, Field Event and QC Manager

Brian Rupert – Field Team Leader

Bruce Beckwith – Field Team Member

Ian Sahlberg – Field Team Member

#### Navy Personnel:

Bob Johnston – Project Technical Lead / Oversight / Grab sample collection lead

Christine Gebhart – NPDES Program Support / Grab sample collection support

### **4.0 Storm Event SW09 Preparatory Tasks**

On December 1<sup>st</sup>, 2011 all six stormwater monitoring stations (PSNS015, PSNS08.1, PSNS115.1, PSNS124, PSNS124.1 and PSNS126) were reset and re-calibrated. The stations remained in standby mode until they were re-visited on January 17<sup>th</sup> and readied for storm event / stormwater sample collection. At this point all of the monitoring equipment was deemed to be functioning properly, was operational and “sample ready” (see Sections 1 and 2 of the attached *Stormwater Field Sampling Forms*).

All stations were programmed with pre-determined autosampler enable and pacing conditions set “high” to prevent premature enabling (*sample disable mode*), as directed by the Taylor/TEC Storm Controller. Station operation was passed to the Taylor /TEC Storm Controller to be managed via telemetry. Final enabling conditions were determined by the Storm Controller closer to the onset of the storm event.

### **5.0 Weather Forecast Information and SW09 Targeting Details**

Between the end of SW08 (storm event associated with SW08 lingered into 11/23/11 @ 1730) and the just prior to the onset of SW09 (1/20/12 @ 0530) the average rainfall as measured at five of the six monitoring stations (PSNS084.1 had an incomplete record during this period) during this approximately 57 day period was 5.75”. An average of only 2.41” of rainfall was recorded at these stations during the month of December; one of the driest on record dating back to 1899 (WRCC).

The last measureable runoff occurred approximately between 9 and 3 days prior to the SW09 event. Project qualifying antecedent dry period was met prior to the station being armed on 1/17/12. A potentially qualifying storm event (event probability and forecast rainfall depth) was

noted and targeted for 1/20/12. Snow was forecast with measureable accumulation of 6+ inches for the 18<sup>th</sup> and 19<sup>th</sup>. Rain was forecast at 99% probability for Friday 1/20/12, with 24-hour accumulations of over 1.44" into late-morning of the 21<sup>st</sup>. The decision was made to continue tracking and targeting this developing large storm system.

The Nation Weather System (NWS) was one the main source used for the assessment of weather forecasting and conditions. Provided below is a link to the NWS-Bremerton, WA webpage; (<http://forecast.weather.gov/MapClick.php?site=sew&textField1=47.56751&textField2=-122.63127&smap=1>). A host of other internet available weather forecasting, observational and data sources were used for field and reporting purposes as appropriate Detailed *Weather Forecast Information* is attached to this report.

Routinely referenced weather models used to gain forecast information regarding the Pacific Northwest included the MM5-NAM (<http://www.atmos.washington.edu/mm5rt/rt/naminit.12km.html>) and the GFS-WRF (<http://www.atmos.washington.edu/mm5rt/rt/gfsinit.frame1.html>) (both hosted by the University of WA and initialized for the PNW). Below is a synopsis of the model comparison for SW09:

*"GFS and NAM disagreed as to the storm event start; the GFS had earlier and heavier rain, but both models generally agreed on the storm duration and rain depths."*

The final sampler enabling conditions were appropriately set at each monitoring station on the morning of 1/20/12 (*sample ready mode*). A telemetry check at 1435 on the 20<sup>th</sup> reveled that all of the stations had enabled and began their sampling routines. Table 1 lists the final enabling conditions at each monitoring station that were used for SW09, along with the rainfall amounts in the 24 and 6 hour periods prior to the onset of the storm event.

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (µS/cm)	Repeatable Conductivity Enable (Y/N)	Pacing (min)	<sup>1</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS015	0.05	0.3	2000	N	15	0.00"/ 0.00"
PSNS084.1	0.05	0.3	2000	N	15	0.00"/ 0.00"
PSNS115.1	0.05	0.3	2000	N	15	0.00"/ 0.00"
PSNS124	0.05	0.3	2000	N	15	0.00"/ 0.00"
PSNS124.1	0.05	0.3	2000	N	15	0.00"/ 0.00"
PSNS126	0.05	0.3	2000	N	15	0.00"/ 0.00"

<sup>1</sup>Conditions as checked on 1/19/12 at ~2300; final enable conditions set 1/20/12 at 0850

## 6.0 Precipitation and SW09 Qualification Summary

### Precipitation Summary:

Previous rainfall that caused runoff to occur ( $\geq 0.03$ " rainfall without 3-hr gap) prior to the onset of SW09 ranged from 3:00 (days:hours) at PSNS124.1 to 9:23 (days:hours) at PSNS124, as measured by each stations rain gauge. Rain began to fall over the project site between 0540 and 1005 on January 20<sup>th</sup>. Table 2 details the period since last runoff, antecedent duration prior to the start of the storm event, as well as the rainfall start date/time at each monitoring station.

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS015	1/10/12 9:45	9:22	1/20/12 7:55
PSNS084.1	1/10/12 9:50	9:22	1/20/12 8:20
PSNS115.1	1/10/12 9:50	9:21	1/20/12 7:10
PSNS124	1/10/12 11:00	9:23	1/20/12 10:05
PSNS124.1	1/17/12 5:00	3:00	1/20/12 5:40
PSNS126	1/10/12 9:40	9:22	1/20/12 7:40

<sup>1</sup>Last runoff period is defined as  $\geq 0.03$ " of rainfall without a 3-hr gap

Rainfall began registering at all stations by 1005 on 1/20/12 (see Table 2) and continued in a steady fashion until the end of the event, around noon on the 21<sup>st</sup>. Sampling began at the monitoring stations between 1207 (PSNS115.1) and 1445 (PSNS124.1) on the 20<sup>th</sup>. Checks, via telemetry, revealed that all of the stations enabled their sampling routines as programmed; with rainfall, pipe level and conductivity values being in satisfaction of their threshold values, (as listed in Table 1) except for PSNS124.1 which was "force" started (via telemetry) due to suspect conductivity readings.

Rainfall was steady throughout the sampling event, mostly moderate intensities, with a brief period of heavy rain as the bulk of the system pressed down on the project area. Station sampling period rainfall totals ranged from 1.03" at PSNS126 to 1.29" at PSNS015. The Navy's rain gauge at B427 recorded 1.74" (Note: the Navy's gauge atop B427 was clogged with snow; the melt from this clog is included in the reported total value).

The sampling routines all ran their courses to completion, except for PSNS124.1 which was manually stopped one aliquot short on its last bottle. Sampling durations ranged from 10:42(hrs:mins) at PSNS124.1 to 23:73(hrs:mins) at PSNS126.

Table 3 summarizes the sampling period start, sampling period end, sampling period duration as well as the total rainfall amounts for each monitoring station and the PSNS project gauge at B427 that occurred during the sampling period associated with SW09. Table A-1 (*Storm Event*



*Summary and Sampling Information, Validation Checklist*), attached to this report, provides additional sampling period rainfall information.

**Table 3. Sampling Period Information and Rainfall Totals for Project Monitoring Stations**

Station	Sampling Period Start (Date/Time)	Sampling Period End (Date/Time)	Sampling Period Duration (Hrs:Mins)	Total Sampling Period Rainfall (in)
PSNS015	1/20/12 13:15	1/21/2012 9:57	20:42	1.29
PSNS084.1	1/20/12 13:41	1/21/2012 10:23	20:42	1.13
PSNS115.1	1/20/12 12:07	1/21/2012 9:49	21:42	1.17
PSNS124	1/20/12 14:24	1/21/2012 9:05	18:41	1.18
PSNS124.1	1/20/12 14:45	1/21/2012 1:27	10:42	1.13
PSNS126	1/20/12 12:16	1/21/12 12:00	23:44	1.03
B427	1/20/12 12:07	1/21/12 12:00	<sup>1</sup> 24:07	<sup>2</sup> 1.74

<sup>1</sup>This incorporates the total span from all monitoring stations

<sup>2</sup>Gauge initially clogged with snowpack; total for this station incorporates snow melt and event rainfall

### **SW09 Qualification Summary:**

All storm qualification conditions were met for this event. Storm event qualification conditions included wet season event date range (Oct 1 – May 1), forecast probability ( $\geq 70\%$ ), forecasted storm depth ( $\geq 0.1"$ ), storm duration ( $\geq 2$ hrs) and runoff occurrence / hydrograph stage (elevated above base flow). Antecedent dry period ( $\leq 0.1"$  rain in previous 24hrs and 0" rain in previous 6hrs) qualification for SW09 was also met without condition, as described above. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW09 qualification criteria listed above.

## **7.0 Sampling Information, Management and Validation**

### **Grab Sampling:**

Grab sample collection was lead and performed by the Navy Team, with storm control assistance (limited to station status checks via telemetry) from Taylor/TEC as necessary. Grab sampling was conducted at all six of the monitoring stations. Grab samples were collected as per methodologies described in the 2011-12 Project Work Plan (PWP). Water quality condition (conductivity and temperature) was assessed prior to the collection of the samples. Samples were collected only if conductivity was determined to be  $\leq 2000$   $\mu\text{S}/\text{cm}$ . Parameters included total petroleum hydrocarbons (NW-TPH-Dx) and fecal coliform. All grab samples were collected on January 20<sup>th</sup>

between 1700 (PSNS126) and 1827 (PSNS115.1). Sample collection was coordinated with low or lower tidal conditions to ensure that proper conductivity conditions would exist. Grab sampling times are indicated on the attached hydrographs to illustrate the water level stage during collection. Grab sample IDs, along with the other pertinent information is listed in the *Stormwater Field Sampling Forms* and in Table A-1 (both are attached). Table 4 summarizes these results.

**Table 4. Grab Sampling Information**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Grab sample ID	SW09-0001	SW09-0002	SW09-0003	SW09-0006	SW09-0004	SW09-0005
Grab Date /Time	1/20/2012 17:00	1/20/2012 17:15	1/20/2012 17:30	1/20/2012 18:27	1/20/2012 17:45	1/20/2012 18:00
Grab sample conductivity value ( $\mu\text{S}/\text{cm}$ )	92	980	1719	176	833	300
Hydrograph stage at grab collection	Elevated Flow	Elevated Flow	Falling Limb	Falling Limb	Falling Limb	Falling Limb
Grab parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

**Composite Sampling:**

Composite sample retrieval tasks and formulation procedures were managed and lead by Taylor/TEC with support from PNNL/MSL personnel as needed. Composite samples were collected from all six monitoring stations.

Composite samples were collected via autosamplers which were operated and synchronized by a custom designed telemetered water quality control system. The composite sample collection period and duration for each monitoring station is noted in Table 3.

Wedge bottles from each station (contained in the autosampler bases) were brought back the C106 Stormwater Lab at B147 for processing. Composite formulation occurred on January 20<sup>th</sup> between 1540 and 1955. The number and numeric identification of the wedge bottles that were used for the composite sample formulation and those that were discarded were noted in Section 5 of the Stormwater Field Sampling Forms.

Methods used in preparation, autosampler collection, retrieval and formulation of the composite samples were conducted in a routine manner as per the 2011-12 PWP. Samplers at each station were enabled as per the conditions stated in Section 5 of this report. Composite sample parameters included: hardness, TOC, DOC, TSS, total and dissolved metals and turbidity.

The total number of discrete wedge bottles collected at each sampler, along with the total number of those bottles used in the station's composite sample is noted below in Table 5. Dividing the

number of wedge bottles used in the composite sample formulation by the total number of wedge bottles collected during the span of the entire sampling period provides an estimation of the amount of time (as a percentage of that stations entire collection period) where freshwater (i.e. runoff) conditions occurred at each station during the corresponding sampling event period.

Specific details regarding the composite formulation, results from individual bench top testing of the discrete bottles, sample IDs, sample date/time and resultant overall conductivity and turbidity values, as well as the number of wedge bottles collected during the sampling event and those used for the composite sample formulation are detailed in the *Stormwater Field Sampling Forms, Chain-of-Custody (CoC)* forms and in Table A-1 (all are attached). Table 5 summarizes these results.

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Composite sample ID	SW09-0010	SW09-0009	SW09-0012	SW09-0008	SW09-0007	SW09-0013
Composite Date /Time	1/21/2012 11:58	1/21/2012 1:27	1/21/2012 9:05	1/21/2012 9:49	1/21/2012 10:23	1/21/2012 9:57
Overall Composite conductivity value (μS/cm)	267	333	1695	112	178	233
Overall Composite turbidity value (NTU)	8	27	8	14	23	39
Composite volume (ml)	4,800	5,600	6,800	7,600	8,400	8,400
Number of Bottles Collected During Sampling Event	24	11	19	22	21	21
Number of Bottles Included in Composite Sample	24	8	17	20	21	21
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	73%	89%	91%	100%	100%
Composite parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

All sampling and vault monitoring equipment operated as designed and programmed. Details pertaining to autosampler programming and event-specific operation of each monitoring stations' autosampler unit are contained in the attached *Sampler Reports*.

**QC Samples:**

During SW09 a composite duplicate was collected at PSNS126. Table 6 summarizes the quality control sample collection information for SW09.

**Table 6. Summary of Quality Control Sampling Information for SW09**

Sample Collection Criteria:	Results
Grab sample duplicate ID	NC
Grab sample duplicate date and time	NC
Grab sample duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	NC
Composite sample Duplicate ID	SW09-0011
Composite sample duplicate date and time	1/21/2012 11:58
Overall Composite Duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	302
Overall Composite Duplicate turbidity value (NTU)	8
Composite Duplicate volume (ml)	4800

**Sample Management:**

All samples were handled and managed as per Section 9 of the 2011-12 PWP and in a manner acceptable and within industry standards regarding practices typical for tasks of this nature. Once collected, both grab and composite samples were placed into coolers and put on ice and/or into the secure Stormwater Laboratory refrigerator to maintain temperatures between 2 and 6 °C.

All sample IDs, collection date and time, matrix, requested parameter analysis and other associated information were documented on *Chain of Custody (CoC) Forms* (attached). Samples were in direct control of project and/or laboratory personnel at all times. Samples were delivered to the testing facility, Battelle Marine Science Laboratory in Sequim, WA, in good, useable and properly chilled condition. Adequate sample volume was collected from the targeted stations to proceed with the scheduled analysis of all parameters per the 2011-12 PWP.

**Sample Validation Summary:**

All sample validation criteria were met for this event per Section 8.2.6 of the 2011-12 PWP. Prior to processing the samples and transferring custody to the analytical laboratory, the Taylor/TEC Field Event Lead validated the samples against certain criteria. These validation criteria included runoff occurrence / hydrograph stage, sample preparation and handling review, requested parameters,  $\geq 2$  hour sampling duration or 75% storm hydrograph coverage, minimum number of aliquots, minimum sample volume collected for required parameters, discrete and composite samples conductivity measurement results, quality control sample collection and anomalous conditions assessment. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW-event qualification listed above.

## 8.0 Basin Runoff Calculations

Rainfall runoff volumes during the SW09 sampling period were calculated for each of the basins associated with the six Phase II monitoring stations. These calculations are based on the modified Runoff Coefficient Method (RCM) as described in Section 7.4 of the 2011-12 PWP.

The value ranges for the various land use/land cover categories assigned to each basin are listed in the attached *Runoff Calculation Tables*. Calculated runoff values are also presented in Table A-1 (*Storm Qualification and Sample Validation Information Checklist*) (attached). Table 7 summarizes the results from these calculations.

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
126	Impervious	653,373	0.6 – 0.9	591,881	1.03	0.0858	380,034
	Pervious	9,613	0.2 – 0.4				
124.1	Impervious	109,690	0.6 – 0.9	101,245	1.13	0.0942	71,319
	Pervious	6310	0.2 – 0.4				
124	Impervious	429,302	0.6 – 0.9	396,251	1.18	0.0983	291,476
	Pervious	24,698	0.2 – 0.4				
115.1	Impervious	449,104	0.6 – 0.9	366,390	1.17	0.0975	267,227
	Pervious	13,938	0.2 – 0.4				
84.1	Impervious	23,958	0.6 – 0.9	21,562	1.13	0.0942	15,189
	Impervious	2,009,431	0.5 – 0.8				
015	Pervious	2,009,431	0.25 – 0.4	2,411,321	1.82	0.1517	2,735,753
	Impervious	653,373	0.6 – 0.9				

## 9.0 Descriptive Statistics and Discussion of Event Station Monitoring Data

Descriptive statistics for the sampling period at each monitoring station are provided in Table 8, below. These statistics include minimum, maximum, average and median at static 1-hour interval periods for vault level, conductivity, salinity, transducer water temperature, YSI water temperature (PSNS084.1 only) and tidal stage. The method by which the rainfall statistics are calculated is on a “rolling 1-hour data window” in an attempt to provide a more accurate and representative assessment of the actual rainfall conditions. Sampling period rainfall totals are also included as part of each station’s rainfall information.

Table 8. SW09 Sampling Period Rainfall and Vault Parameter Descriptive Statistics

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS126	Min	0.00	0.31	11	2.00	1.68		-1.71
	Max	0.14	5.54	47,532	42.00	7.71		12.52
	Average	0.03	2.10	2,320	3.62	4.32		7.63
	Median	0.02	1.67	69	2.00	4.37		8.58
	Storm Total	1.03						
PSNS124.1	Min	0.00	0.10	-156	2.00	2.10		-1.71
	Max	0.17	4.00	51,386	42.00	8.38		11.77
	Average	0.05	1.24	23,564	26.44	5.10		6.42
	Median	0.04	0.40	14,227	42.00	3.78		8.01
	Storm Total	1.13						
PSNS124	Min	0.00	0.30	35	2.00	2.11		-1.71
	Max	0.20	8.67	46,662	42.00	9.14		12.52
	Average	0.05	4.44	12,189	11.86	4.60		7.26
	Median	0.03	4.66	1,701	2.00	3.76		8.32
	Storm Total	1.18						
PSNS115.1	Min	0.00	0.06	44	2.00	1.49		-1.71
	Max	0.17	12.70	46,547	42.00	9.07		12.52
	Average	0.04	7.75	1,375	2.76	3.77		7.39
	Median	0.03	8.53	166	2.00	2.66		8.32
	Storm Total	1.17						
PSNS084.1	Min	0.00	-0.11	25	0.02	3.13	3.13	-1.71
	Max	0.15	8.47	48,467	44.70	14.77	14.77	12.52
	Average	0.04	4.11	7,954	6.78	6.57	6.57	7.32
	Median	0.03	4.19	129	0.10	4.44	4.44	8.19
	Storm Total	1.13						
PSNS015	Min	0.00	0.12	80	2.00	1.66		-1.71
	Max	0.16	9.20	47,238	42.00	10.30		12.52
	Average	0.04	5.05	9,446	9.87	4.45		7.50
	Median	0.04	5.50	204	2.00	2.76		8.45
	Storm Total	1.29						

<sup>1</sup>salinity calculations for PSNS126, 124.1, 124, 115.1 and 015 are based on an algorithm that has a lower range cut-off value of 2ppt. Actual field values may have been lower. The PSNS084.1 conductivity probe (YSI6820) utilized a different salinity algorithm function and thus is able to calculate lower low range salinity values.

### **Hydrograph Assessment:**

The rainfall signatures (see attached) for all monitoring stations, except PSNS124, showed similar patterns; with initial lite intensity, followed by a brief period of heavy rainfall, then followed by moderate to lite intensities for the remainder of the event. The rain gauges at PSNS124 and B427 showed a somewhat different response during the early portion of the sampling event rainfall period. This was likely due to snow in the cone portions of these gauges. The majority of snow was cleared from PSNS124 prior to the sampling event but a minor amount was present at the onset of the rainfall event. The gauge at B427 was not cleared at all prior to SW09.

The station hydrographs for SW09 were considered to be typical; a conductivity response to the onset of rainfall and corresponding freshwater storage in the pipes as runoff into the piping systems occurred through the rising tide cycle (except at PSNS124.1 and 124). At PSNS124 the rainfall towards the end of the event was not sufficient to overcome tidal effects and thus the system became saline sooner than the other monitoring locations. PSNS124.1 showed an intermittent return to saline conditions towards the end of the rainfall event, however, once the tide receded from its peak and reached the stations effective tide level, basin runoff again drove conductivity in the piping system back down to freshwater conditions.

As mentioned above grab sampling information for SW09 is indicated on each of the station hydrographs. Composite sample markers have been applied to the hydrographs to indicate total collection time (see attached).

### **Telemetry Data Summary Report: TDSR**

A review of the telemetry data collected since SW08 and during SW09 was conducted. There were some minor anomalies in nearly all of the stations data sets due to the limited amount of rain fall in December, 2011. Also, seawater conditions had started to affect the transducers (stainless steel instrument bodies and dielectric effects) in varying degrees as noted during maintenance inspections. PSNS084.1 and PSNS124 were the most affected by saltwater conditions. PSNS084.1 was inoperable for much of December, 2011 and required several change-outs of the YSI units and associated cabling. However, overall, data gaps and other anomalies were very minor during the period from 11/23/11 to 1/23/12. All sensors were in reasonable and accurate operation during SW09. A TDSR report (table), detailing the anomalies noted during SW09 is attached.

## **10.0 Notable Anomalies and Variations to the PWP**

There were no major anomalies observed or otherwise noted after completion of the sampling event and review of the associated data that would have caused any of the SW09 samples to be non-representative of the conditions from which they were collected. As reported above, all intended and scheduled grab and composite samples were submitted to the PNNL MSL ("the Lab") within holding times and without incident. All support and sampling tasks, as well as collected samples, were managed as appropriate per the 2011-12 PWP.

There were, however, several minor anomalies that occurred during SW09. These were;

1. The “forced” enabling start of the PSNS124.1 sampler. This action was explained in Section 6 as necessary by the Storm Controller because the conductivity values were suspect. In reviewing the data, it was noted the system was operating correctly and that indeed the conductivity value of the water in the piping system at that particular time was still saline. This forced start resulted in enabling the sampler ahead of the actual occurrence of freshwater conditions – therefore the first three discrete sample bottles were not usable for the composite formulation. However, an adequate volume of representative freshwater runoff was collected for the overall formulation of the composite sample.
2. The failure of the YSI units at PSNS084.1 due to saltwater corrosive effects and the subsequent loss of data. This was an ongoing maintenance issue that developed after SW08. It was corrected prior to SW09 and did not affect sample collection during the sampling event.
3. General maintenance issue – most of the CT2X transducers and associated stainless steel pipe ring band are showing signs of corrosion due to saltwater immersion. TEC continues to monitor the situation and plans to upgrade system components to titanium, to strengthen the earth grounds of all monitoring systems and to electrically isolate the transducers for all other metal components of the monitoring system. This maintenance issue has not affect data collection or quality – however, it does need to be addressed to assure proper and continued use of the monitoring systems.

## **11.0 Action Items**

Routine action items include resetting (reloading with bottles, charging batteries, back flushing with DI water, etc.) all six monitoring stations and re-stocking of sampling supplies. Routine station maintenance items (e.g. sensor cleaning and calibration, rain gauge maintenance, etc.) as well as storm set-up tasks will need to be completed as necessary.

Non-routine action items include trouble shooting CT2X transducer calibration and corrosion issues noted at most of the monitoring stations.

The current focus of the field efforts will be in maintaining proper station and equipment operational status, data and resource management and storm-tracking tasks.





Figure 1. Phase II Stormwater Monitoring Locations within the Shipyard Boundary

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## **ATTACHMENTS**

- Storm Event Summary and Sampling Information, Validation Checklist
- Stormwater Field Sampling Forms and Controller Notes
- Chain-of-Custody Forms
- Runoff Calculation Worksheet
- Station Hydrographs
- Autosampler Reports
- Weather Forecast Information
- TDSR



**Table A-1. PSNS Non-Dry Dock Stormwater Monitoring Tasks  
Storm and Sample Information and Validation Checklist  
Stormwater Sampling Event #9 (01/20/2012)**

This form acknowledges representativeness criteria described in the project PWP.  
Mark with "Yes" to acknowledge acceptable, "No" for not acceptable, "NA" or "-" if not applicable.

<sup>1</sup> Storm Event Data:							
Project Storm Event (SW) #	09						
Event Forecast Probability (%)	99						
PSNS B427 Rain Gauge - Sample Event Total (in.)	1.74 <sup>2</sup>						
Rainfall and Runoff Summary:		PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Last Runoff (≥ 0.03" rainfall without 3-hr gap) Prior to STE Start (Date/Time)	1/10/12 9:40	1/17/12 5:00	1/10/12 11:00	1/10/12 9:50	1/10/12 9:50	1/10/12 9:45	
Antecedent Dry Period (days: hrs)	9:22	3:00	9:23	9:21	9:22	9:22	
Rainfall Prior 24-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00	
Rainfall Prior 6-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00	
Start of Rainfall (Date/Time)	1/20/12 7:40	1/20/12 5:40	1/20/12 10:05	1/20/12 7:10	1/20/12 8:20	1/20/12 7:55	
Sampling Period Start Date & Time	1/20/12 12:16	1/20/12 14:45	1/20/12 14:24	1/20/12 12:07	1/20/12 13:41	1/20/12 13:15	
Sampling Period End Date & Time	1/21/12 12:00	1/21/2012 1:27	1/21/2012 9:05	1/21/2012 9:49	1/21/2012 10:23	1/21/2012 9:57	
Sampling Period Duration (hrs:mins)	23:44	10:42	18:41	21:42	20:42	20:42	
Sampling Period Duration (hours)	23.73	10.70	18.68	21.70	20.70	20.70	
Sampling Period Total Rainfall (in)	1.03	1.13	1.18	1.17	1.13	1.29	
Sampling Period Max 1-hr Rainfall Intensity (in/hr)	0.14	0.17	0.2	0.17	0.15	0.16	
Sampling Period Average 1-hr Rainfall Intensity (in/hr)	0.03	0.05	0.05	0.04	0.04	0.04	
Runoff volume calculated for sampling period (gallons)	380,034	71,319	291,476	267,227	15,189	1,939,078	
<sup>1</sup> Sample Collection Criteria:							
Grab sample ID	SW09-0001	SW09-0002	SW09-0003	SW09-0006	SW09-0004	SW09-0005	
Grab Date /Time	1/20/2012 17:00	1/20/2012 17:15	1/20/2012 17:30	1/20/2012 18:27	1/20/2012 17:45	1/20/2012 18:00	
Grab sample conductivity value (mS/cm)	92	980	1719	176	833	300	
Hydrograph stage at grab collection	Elevated Flow	Elevated Flow	Falling Limb	Falling Limb	Falling Limb	Falling Limb	
Grab parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes	
Composite sample ID	SW09-0010	SW09-0009	SW09-0012	SW09-0008	SW09-0007	SW09-0013	
Composite Date /Time	1/21/2012 11:58	1/21/2012 1:27	1/21/2012 9:05	1/21/2012 9:49	1/21/2012 10:23	1/21/2012 9:57	
Overall Composite conductivity value (mS/cm)	267	333	1695	112	178	233	
Overall Composite turbidity value (NTU)	8	27	8	14	23	39	
Composite volume (ml)	4,800	5,600	6,800	7,600	8,400	8,400	
Number of Bottles Collected During Sampling Event	24	11	19	22	21	21	
Number of Bottles Included in Composite Sample	24	8	17	20	21	21	
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	73%	89%	91%	100%	100%	
Composite parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes	
<sup>1</sup> QC Sample Summary Information:							
Grab sample duplicate ID	N/A	N/A	N/A	N/A	N/A	N/A	
Grab sample duplicate date and time	N/A	N/A	N/A	N/A	N/A	N/A	
Grab sample duplicate conductivity value (μS/cm)	N/A	N/A	N/A	N/A	N/A	N/A	
Composite sample duplicate ID	SW09-0011	N/A	N/A	N/A	N/A	N/A	
Composite sample duplicate date and time	1/21/2012 11:58	N/A	N/A	N/A	N/A	N/A	
Overall Composite Duplicate conductivity value (μS/cm)	302	N/A	N/A	N/A	N/A	N/A	
Overall Composite Duplicate turbidity value (NTU)	8	N/A	N/A	N/A	N/A	N/A	
Composite Duplicate volume (ml)	4800	N/A	N/A	N/A	N/A	N/A	
Associated Equipment Blank	SW08-005	SW08-006	SW08-002	SW08-001	SW08-003	SW08-004	
<sup>1</sup> Storm and Sample Validation:							
Was the targeted STE antecedent or conditional antecedent qualified per PSNS PWP? (if no, then see next line)	Yes	Yes	Yes	Yes	Yes	Yes	
Was the antecedent overage amount greater than 10% of the total rain event ?	N/A	N/A	N/A	N/A	N/A	N/A	
Was runoff occurring OR was the hydrograph at least 10% above background pipe level during grab collection ? If no, explain in summary narrative.	Yes	Yes	Yes	Yes	Yes	Yes	
Were a minimum of 8 aliquots collected OR does the composite sample represent at least 75% of the stations storm event rain volume ?	Yes	Yes	Yes	Yes	Yes	Yes	
Were all 1-hr sampler bottles used for the Composite sample ≤2000 μS/cm ?	Yes	Yes	Yes	Yes	Yes	Yes	
Did any anomalous conditions exist that could make samples non-representative? Explain if "Yes"	No	No	No	No	No	No	
Based on consideration of the information above, was the sample collected during the STE valid for project purposes ? (Y / N, composite, grab or both)	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	

<sup>1</sup> If the answer to any of these questions is "No" OR indicate non-representative conditions, then these items should be explained in the Event Narrative.

<sup>2</sup> The B427 rain gauge was likely initially clogged with snow pack. The gauge didn't record its first tip until approx. 5 hrs after the monitoring sites recorded their first tips and the total rain amount is much greater than any station.

Validation Check List Completed By: Brad Kwasnowski Reviewed By / Date: Robert C. Metello 2-16-12



**PSNS NDDSW Monitoring Project Storm Control Work Sheet**

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Sheet 1 of \_2\_

<b>Date:</b>	1/17/2012 (setup) ; 1/20/12 (storm event)				<b>Sampling Support Personnel:</b>	Grabs (C/106) + Beckwith, Comps: DM,BR and BB							
<b>STE #</b>	9	<b>Antecedent Dry Cond. Met ?</b>	Cond.	<b>Tidal Info:</b>	1/20/12 Low-Low tide @ (2059) with a -1.75'								
<b>Storm Controller:</b>	Dave Metallo				<b>Grab sampling Info.</b>	C/106 + TEC to collect ~1900-2200, dup required							
<b>Pre-Storm / Weather Details:</b>	Stormagedon snow event ! Snow on Wed and Thur 1/18 & 1/19, depths of ~6' with ice layers on top. Rain gauges cleared morning of 1/19. Snowed add. 2-3 inches on 1/19 after gauges were cleared. Gauge at PSNS124 not cleared due to access hazards. All stations ready (lids off on 1/17), will go "hot" morning of 1/20. Warm frnt to push into area ~1000 with forecsted 24-hr total of 1"+.												
<b>Telemetry Measurements:</b>	<b>DATE/TIME (24HR)</b>												
<b>STATION:</b>	1-20-12 (0850)	1435	2110	1-21-12 (0900)	~1430								
PSNS015 Rain <sup>1</sup>	.05/.08	.14/0.57	.05/1.00	0/1.23	sampling end 1257, auto stop								
PSNS015 Level	4.73	8.06	0.25	5.09									
PSNS015 Cond.	23K	484	166	120									
Smpl Marker	0	6	33	79	96								
PSNS084.1 Rain	.05/.05	.13/.51	.05/.88	0/1.08	sampling end 1339, auto stop								
PSNS084.1 Level	3.54	7	-0.1	4.02									
PSNS084.1 Cond.	38K	177	134	62									
Smpl Marker	0	4	31	78	96								
PSNS115.1 Rain	.04/.1	.13/.55	.05/.92	0/1.07	sampling end 1149, auto stop								
PSNS115.1 Level	7.79	11.22	0.08	8.25									
PSNS115.1 Cond.	1156	76	302	134									
Smpl Marker	0	11	37	84	96								
PSNS124 Rain	0/0 <sup>2</sup>	.11/.61	.05/.95	0/1.18	sampling end 1405, auto stop								
PSNS124 Level	3.73	7.19	0.32	4.28									
PSNS124 Cond.	46k	908	1960	456									
Smpl Marker	0	2	28	75	96								
PSNS124.1 Rain	.04/.10	.11/.57	.05/.89	0/1.07	sampling end 1412, manually stopped								
PSNS124.1 Level	0.11	4	0.19	0.67									
PSNS124.1 Cond.	46K	35K (sus)	55	40K									
Smpl Marker	0	1	26	74	95								
PSNS126 Rain	.08/.08	.09/.52	.06/.83	0/0.94	sampling end 1158, auto stop								
PSNS126 Level	0.59	4	0.32	1.05									
PSNS126 Cond.	1753	48	57	265									
Smpl Marker	0	11	36	84	96								

<sup>1</sup>Rain depths are reported as 1-hr / 24-hr totals

<sup>2</sup>Rain gauge not cleared on 1/19/12, 4-6" of snow-ice in top of screen

**PSNS NDDSW Monitoring Project Storm Control Work Sheet, Continued**
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 Sheet 2 of 2

Enabling Information: STE#9 01-20-12													
Sample Staion:	PSNS015		PSNS084.1		PSNS115.1		PSNS124		PSNS124.1		PSNS126		
Rain enable (in/hr)	0.05		0.05		0.05		0.05		0.05	0.05	0.05		
Level Enable (ft)	0.3		0.3		0.3		0.3		0.3	0.3	0.3		
Cond. (µS/cm)	2000		2000		2000		2000		2000	Enb Bst	2000		
Repeat. Cond Set ?	N		N		N		N		N	N	N		
Pacing Rate (min)	15		15		15		15		15	15	15		
Date	1/20/12		1/20/12		1/20/12		1/20/12		1/20/12	1/20/12	1/20/12		
Time	0850		0850		0850		0850		0850	~1445	0850		
Comp Dup ? / where:			Yes, at PSNS 126				Grab Dup ? / where:			Yes, TBD			

**EVENT NOTES:**

1. The rain gauge at 124 was not cleared yesterday (1-19) due to access concerns in icy conditions.
2. 124.1 transducer was reporting what I consider to be suspect conductivity data (could be clogged with sed.), therefore manually triggered using Enable Boost function (~1445)
3. GFS and NAM disagreed as to the storm event start; the GFS had earlier and heavier rain, but both models generally agreed on the storm duration and rain depths
4. At ~0900 on 1-21 it had only rain between 0.03 and 0.01" at the stations with clearing skies. Samplers ran their course, except at 124.1, field crew stopped at Btl 24 3/4.
5. Grab collected at all stations. However, grab duplicate only collected for FC - TPH dup not collected. Will make for this during next sampling event.



Station: 126	MH/CB#: 5110	Loc. Descrip. Southwest corner of Bldg. 460	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	Arrival Date/Time: 12/1/11 1300
Carry-over maintenance to do prior to set-up: None			done?
Sampler Battery Voltage	11.93	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Modem Battery Voltage	12.38	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Transds. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Transds. Desiccant OK (Yes/No)	Yes	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	NO - need to base to site
Notes (including channel condition):		Lid Status?	NA
Recorded level = 0.96		Backflushed with DI?	No
Measured Level = 1.04		Suction line & quick connect attached?	Yes
New Offset = +0.08		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: <u>BR/BB</u>		Weather: <u>overcast - temp low 30's</u>	Arrival Date/Time: <u>1/17/12 @ 0943</u>
Sampler Battery Voltage	<u>12.79</u>	Changed? <u>Y</u> <u>N</u> <u>addul</u>	New voltage <u>—</u>
Modem Battery Voltage	<u>12.33</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>OK</u>
Transducer Cable OK?	<u>OK</u>	Aliquot Vol. Cal.'ed (Y/N & vol.)	<u>yes / OK</u>
Multi-meter Cable OK	<u>OK</u>	Program Reviewed (Yes/No), Dup ?	<u>yes / duplicate</u>
Recorded Level (FT)	<u>4.26</u>	Lids off bottles?	<u>yes</u>
Measured Level (FT)	<u>4.24</u>	Diagnostics/Distributor arm check?	<u>yes / OK</u>
Offset Diff (FT)	<u>0.02</u>	Backflush with DI?	<u>NO</u>
Level Adjusted ?	<u>NO</u>	Storm Reset (1, enter) Completed	<u>yes</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>Prog Dic: 10:01</u>
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3. Grab Sample Collection			
Personnel: <u>CG, BB</u>		Weather: <u>Raining</u>	Arrival Date/Time: <u>1-20-12 (1650)</u>
On Composite... (Bottle #/ Aliq #)	<u>—</u>	Conductivity Reading (µS/cm):	<u>92</u>
Grab Parameters Collected	<u>TPH, FC</u>	Salinity Reading (PPT):	<u>—</u>
Grab Sample ID	<u>SW09-0001</u>	Temp. Reading (°C):	<u>2.8</u>
Grab Date/Time	<u>1/20/12 1700</u>	Turbidity Reading (NTU)	<u>6.56</u>
Grab Dup ID	<u>NA</u>	Equipment running correctly?	<u>yes</u>
Grab Dup Date/Time	<u>NA</u>	Sampler Battery Voltage (Changed?):	<u>Good</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS 126 continued from previous page

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Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>BR, BB</u>	Weather: <u>Sunny, Windy, 40°s</u>	Arrival Date/Time: <u>1-21-12 (1345)</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>NA</u>		
Additional Dup Grab (IDs, date/time)	<u>NA</u>		
Composite Begin Time (date/time)	<u>1214 1-20-12</u>	Sampler Report Downloaded ?	<u>Yes via telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>1-21-12 (1158) BTL 23/24 #8 (Dup station)</u>		
Total Composite Sample Volume Collected	<u>100% equally @ ~900-ml</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Controller notified (Y or N/A)?	Which parameter?:	<u>NA</u>	
Notes: <u>Duplicate collected at this station</u>			
Maintenance Needed: <u>Typical re-sets</u>			

Section 5. Compositing Scheme and QC Sampling			
Personnel: <u>DM, BR, BB</u>	Date/Time: <u>1-21-12 (1735)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.) <u>Cond. = YSI 30 Turb. = Hach 2100P (both Navy Meters)</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>486/20/Y</u>	7. <u>74/6/Y</u>	13. <u>43/6/Y</u>	19. <u>142/4/Y</u>
2. <u>181/16/Y</u>	8. <u>73/7/Y</u>	14. <u>43/5/Y</u>	20. <u>145/5/Y</u>
3. <u>78/1/Y</u>	9. <u>68/5/Y</u>	15. <u>35/3/Y</u>	21. <u>284/6/Y</u>
4. <u>71/18/Y</u>	10. <u>68/5/Y</u>	16. <u>35/3/Y</u>	22. <u>287/6/Y</u>
5. <u>94/12/Y</u>	11. <u>69/5/Y</u>	17. <u>48/3/Y</u>	23. <u>190/7/Y</u>
6. <u>94/10/Y</u>	12. <u>70/5/Y</u>	18. <u>48/4/Y</u>	24. <u>174/6/Y</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Even #'s - normal sample • Odd #'s - Dup sample</u> <u>Used 400 ml X 12 btls for normal sample &amp; for dup sample</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Normal sample = 4800 ml Cond. = 267 <math>\mu\text{S/cm}</math> Turb. = 8 NTU Analysis per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW09-0010 (1158) 1-21-12</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>YES</u>		
Duplicate sample ID	<u>SW09-0011 (1158) 1-21-12</u>		

## NOTES:

Dup Sample Cond. = 302  $\mu\text{S/cm}$   
 Turb = 8 NTU  
 Vol. = 4800-ml





PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 124.1	MH/CB#: 5880	Loc. Descrip. North of Bldg 357/west of DD#3	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	
		Arrival Date/Time: 12/1/11 1125	
Carry-over maintenance to do prior to set-up: None			done?
Sampler Battery Voltage	12.84 (installed charged Batt)	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Modem Battery Voltage	12.69	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes	Tubing Replaced? (Yes/No)	No
Telem. Box Desiccant OK (Yes/No)	Yes	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):		Lid Status?	On
Recorded level = 1.06		Backflushed with DI?	No
Measured Level = 1.34		Suction line & quick connect attached?	Yes
New Offset = -0.28		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: <u>BR/BB</u>		Weather: <u>overcast - temp low 30's</u>	
		Arrival Date/Time: <u>1/17/12 0900</u>	
Sampler Battery Voltage	<u>12.59</u>	Changed? <u>Y</u> <u>N</u> <u>added</u>	New voltage -
Modem Battery Voltage	<u>13.97</u>	Changed? <u>Y</u> <u>N</u>	New voltage -
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>Yes / OK</u>
Transducer Cable OK?	<u>OK</u>	Aliquot Vol. Cal.'ed (Y/N & vol.)	<u>Yes</u>
Multi-meter Cable OK	<u>OK</u>	Program Reviewed (Yes/No), Dup ?	<u>Yes / Normal</u>
Recorded Level (FT)	<u>3.80</u>	Lids off bottles?	<u>Yes</u>
Measured Level (FT)	<u>5.38</u>	Diagnostics/Distributor arm check?	<u>Yes / OK</u>
Offset Diff (FT)	<u>-0.76 (new)</u>	Backflush with DI?	<u>NO</u>
Level Adjusted ?	<u>Yes / Now 3.58</u>	Storm Reset (1, enter) Completed	<u>Yes</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>Inw</u>	Last screen...	<u>Prog. Dis = 0936</u>
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>old offset was -0.44 / Reset to 0 &amp; then put in new offset (-0.76) level was adjusted</u>			

multiple meas. were collected, as tide was falling

Section 3. Grab Sample Collection			
Personnel: <u>CG, BB</u>		Weather: <u>Raining</u>	
		Arrival Date/Time: <u>1-20-12 (1705)</u>	
On Composite... (Bottle #/ Aliq #)	<u>-</u>	Conductivity Reading (µS/cm):	<u>980</u>
Grab Parameters Collected	<u>TPH, FC</u>	Salinity Reading (PPT):	<u>-</u>
Grab Sample ID	<u>SW09-0002</u>	Temp. Reading (°C):	<u>2.6</u>
Grab Date/Time	<u>1-20-12 1715</u>	Turbidity Reading (NTU)	<u>36.1</u>
Grab Dup ID	<u>NA</u>	Equipment running correctly?	<u>Yes</u>
Grab Dup Date/Time	<u>NA</u>	Sampler Battery Voltage (Changed?):	<u>Good</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS 124.1 continued from previous page

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**Section 4. Post-Storm Sample Collection (for grab, comp or both)**

Personnel: <u>DM, BR, BB</u>		Weather: <u>Sunny, Windy, 40°s</u>		Arrival Date/Time: <u>1-21-12 (1400)</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>---</u>		
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>---</u>		
Additional Grabs (IDs, date/time)		<u>NO</u>			
Additional Dup Grab (IDs, date/time)		<u>NA</u>			
Composite Begin Time (date/time)	<u>1-20-12 (1443)</u>	Sampler Report Downloaded ?		<u>Yes, via telem</u>	
Last Aliquot Taken (date/time, bott #, aliq #)		<u>1-21-12 (1412) btl 24 3 of 4 (manually stopped)</u>			
Total Composite Sample Volume Collected		<u>100% equal vol. ~ 900 ml</u>			
Aliquots missed/NLD (date/time/bott #/aliq #)		<u>None</u>			
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>					
Storm Contoller notified (Y or <u>(N/A)</u> ):		Which parameter?:		<u>NA</u>	
Notes: <u>Stopped prgm manually in field @ BTL 24 3/4</u>					
Maintenance Needed: <u>Typical reset</u>					

**Section 5. Compositing Scheme and QC Sampling**

Personnel: <u>DM, BR, BB</u>		Date/Time: <u>1-21-12 (1740)</u>	
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>Cond. = YSI 30 Turb. = Hach 2100P (both are Navy Meters)</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>17,870/66/N</u>	7. <u>304/30/Y</u>	13. <u>44K N</u>	19. <u>↓</u>
2. <u>3358/84/N</u>	8. <u>192/25/Y</u>	14. <u>↓</u>	20. <u>↓</u>
3. <u>2620/46/N</u>	9. <u>204/23/Y</u>	15. <u>↓</u>	21. <u>34K N</u>
4. <u>747/38/Y</u>	10. <u>184/26/Y</u>	16. <u>44K N</u>	22. <u>↓</u>
5. <u>676/33/Y</u>	11. <u>126/26/Y</u>	17. <u>↓</u>	23. <u>↓</u>
6. <u>34734/Y</u>	12. <u>31550/7/N</u>	18. <u>↓</u>	24. <u>↓</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Comp Contains btl's 4-11 (~700-ml ea btl), all other btl's were over range for conductivity</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 333 <math>\mu\text{S/cm}</math> Turb. = 27 NTU Vol. = ~8500-ml Analysis per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW09-0009 (0127) 1-21-12</u>			
Field Blank Collected? (date/time)		<u>NO</u>	
Blank ID:		<u>NA</u>	
Duplicate comp sample? Yes/No		<u>NO</u>	
Duplicate sample ID		<u>NA</u>	

NOTES:



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 124	MH/CB#:5661	Loc. Descrip. Southwest section of Bldg 460	Page: 1 of 2
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Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	
		Arrival Date/Time: 12/1/2011 12:03	
Carry-over maintenance to do prior to set-up: None			done?
Sampler Battery Voltage	12.93 (installed charged Batt)	Changed? <u>Y</u> <u>N</u>	New voltage -NA
Modem Battery Voltage	12.53	Changed? <u>Y</u> <u>N</u>	New voltage -NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	Yes	Tubing Replaced? (Yes/No)	Yes
Telem. Box Desiccant OK (Yes/No)	Yes	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):	Calibrated Level	Lid Status?	On
Recorded level = 5.18	Level adjusted - Yes	Backflushed with DI?	No
Measured Level = 5.25	Also, cal'ed aliquot@240ML	Suction line & quick connect attached?	Yes
New Offset = +0.00 - after resetting to zero - level was at 5.18 on handheld		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: <u>BR/BB</u>		Weather: <u>overcast - temp low 30's</u>	
		Arrival Date/Time: <u>1/17/12 @ 1022</u>	
Sampler Battery Voltage	<u>12.55</u>	Changed? <u>Y</u> <u>N</u> <u>added</u>	New voltage —
Modem Battery Voltage	<u>12.42</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage —
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>OK</u>
Transducer Cable OK?	<u>OK</u>	Aliquot Vol. Cal'ed (Y/N & vol.)	<u>yes / OK</u>
Multi-meter Cable OK	<u>OK</u>	Program Reviewed (Yes/No), Dup ?	<u>yes / Normal</u>
Recorded Level (FT) <u>HH</u>	<u>7.74</u>	Lids off bottles?	<u>yes</u>
Measured Level (FT) <u>IFP</u>	<u>7.72</u>	Diagnostics/Distributor arm check?	<u>yes / OK</u>
Offset Diff (FT)	<u>NO (0.02 = 0.04)</u>	Backflush with DI?	<u>NO</u>
Level Adjusted ?	<u>NO</u>	Storm Reset (1, enter) Completed	<u>yes</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>Prog. Dis. 1049</u>
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>NOTE: checked &amp; adjusted level on 1/19/12</u>			
<u>HH = 6.25 IFP = 6.37 (New offset - 0.12) = New level 6.25'</u>			

Section 3. Grab Sample Collection			
Personnel: <u>CG, BB</u>		Weather: <u>Raining</u>	
		Arrival Date/Time: <u>1-20-12 (1720)</u>	
On Composite... (Bottle #/ Aliq #)	<u>—</u>	Conductivity Reading (µS/cm):	<u>1719</u>
Grab Parameters Collected	<u>TPH, FC</u>	Salinity Reading (PPT):	<u>—</u>
Grab Sample ID	<u>SW09-0003</u>	Temp. Reading (°C):	<u>4.4</u>
Grab Date/Time	<u>1/20/12 1730</u>	Turbidity Reading (NTU)	<u>21.4</u>
Grab Dup ID	<u>NA</u>	Equipment running correctly?	<u>yes</u>
Grab Dup Date/Time	<u>NA</u>	Sampler Battery Voltage (Changed?):	<u>Good</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS 124 continued from previous page

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Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>BR, BB</u>		Weather: <u>Sunny, Windy, 40°s</u>	
Sampler Battery Voltage		Good	Changed? Y <input checked="" type="radio"/> N
Telemetry Battery Voltage		Good	Changed? Y <input checked="" type="radio"/> N
Additional Grabs (IDs, date/time)		NO	
Additional Dup Grab (IDs, date/time)		NA	
Composite Begin Time (date/time)		<u>1-20-12 (1421)</u>	Sampler Report Downloaded ? <u>Yes, via telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)		<u>1-21-12 (1405) btl 24 4/4</u>	
Total Composite Sample Volume Collected		<u>95-100% for all btl's</u>	
Aliquots missed/NLD (date/time/bott #/aliq #)		<u>None</u>	
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Controller notified (Y or N/A): <input checked="" type="radio"/>		Which parameter?: <u>NA</u>	
Notes:			
Maintenance Needed: <u>Re-sets</u>			

Section 5. Compositing Scheme and QC Sampling			
Personnel: <u>DM, BR, BB</u>		Date/Time: <u>1-21-12 (1415)</u>	
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)			
<u>Cond. = YSI 30 Turb. = Hach 2100P (both are Navy meters)</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu S/cm$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. 1836/17 / Y	7. 1420/7 / Y	13. 405/6 / Y	19. 351/3 / Y
2. 510/13 / Y	8. 1828/4 / Y	14. 313/5 / Y	20. 2384/3 / N
3. 620/13 / Y	9. 1725/6 / Y	15. 31500/3 / N	21. 3164/3 / N
4. 1712/18 / Y	10. 1670/4 / Y	16. 18,050/5 / N	22. 21,700/2 / N
5. 1875/10 / Y	11. 735/13 / Y	17. 650/4 / Y	23. 43,130/1 / N
6. 1531/6 / Y	12. 705/8 / Y	18. 131/2 / Y	24. 43,440/2 / N
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
<u>Used btl's 1-14 and 17-19 for comp sample. Btl's 15, 16, 20-24 were not used due to being over-range for conductivity</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond. = 1695 <math>\mu S/cm</math> Turb. = 8 NTU Vol. = 6800-ml Analysis per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW09-0012 (0905) 1-21-12</u>			
Field Blank Collected? (date/time)		NO	
Blank ID:		NA	
Duplicate comp sample? Yes/No		NO	
Duplicate sample ID		NA	

NOTES:



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 115.1	MH/CB#:4860	Loc. Descrip. South of Bldg. 879	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	
		Arrival Date/Time: 12/1/11 1050	
Carry-over maintenance to do prior to set-up: None			done?
Sampler Battery Voltage	13.02 (installed chrgd Batt)	Changed? <u>Y</u> <u>N</u>	New voltage -NA
Modem Battery Voltage	12.61	Changed? <u>Y</u> <u>N</u>	New voltage -NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Trands. Desiccant OK (Yes/No)	No - changed in field	Tubing Replaced? (Yes/No)	No
Telem. Box Desiccant OK (Yes/No)	Yes - needs moisture card instal.	Normal Smpler Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	Yes
Notes (including channel condition):	Calibrated Level	Lid Status?	On
Recorded level = 10.44	Level adjusted - Yes	Backflushed with DI?	No
Measured Level = 10.34	Also, cal'ed aliquot@240ML	Suction line & quick connect attached?	Yes
New Offset = -.10		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: <u>BR/BB</u>		Weather: <u>Overcast - temp low 30's</u>	
		Arrival Date/Time: <u>1/17/12 @ 1100</u>	
Sampler Battery Voltage	<u>12.59</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>—</u>
Modem Battery Voltage	<u>13.97</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>OK</u>
Transducer Cable OK?	<u>OK</u>	Aliquot Vol. Cal.'ed (Y/N & vol.)	<u>Yes</u>
Multi-meter Cable OK	<u>OK</u>	Program Reviewed (Yes/No), Dup ?	<u>Yes / normal</u>
Recorded Level (FT)	<u>11.55</u>	Lids off bottles?	<u>Yes</u>
Measured Level (FT)	<u>11.68</u>	Diagnostics/Distributor arm check?	<u>Yes / OK</u>
Offset Diff (FT)	<u>+0.04</u>	Backflush with DI?	<u>NO</u>
Level Adjusted ?	<u>Yes / New = 11.679</u>	Storm Reset (1, enter) Completed	<u>Yes</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>prog. Dis. <del>488</del> 1114</u>
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =	(>10% adj. offset); Offset = New Rec Val =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3. Grab Sample Collection			
Personnel: <u>CG, BTB</u>		Weather: <u>Raining</u>	
		Arrival Date/Time: <u>1-20-12 (1815)</u>	
On Composite... (Bottle #/ Aliq #)	<u>—</u>	Conductivity Reading (µS/cm):	<u>176</u>
Grab Parameters Collected	<u>TPH, FC</u>	Salinity Reading (PPT):	<u>—</u>
Grab Sample ID	<u>SW09-0006</u>	Temp. Reading (°C):	<u>2.1</u>
Grab Date/Time	<u>BOP NA 1/20/12 1827</u>	Turbidity Reading (NTU)	<u>7.59</u>
Grab Dup ID	<u>NA</u>	Equipment running correctly?	<u>Yes</u>
Grab Dup Date/Time	<u>NA</u>	Sampler Battery Voltage (Changed?):	<u>Good</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? <u>Y</u> / <u>N</u>	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS 115.1 continued from previous page

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**Section 4. Post-Storm Sample Collection (for grab, comp or both)**

Personnel: <u>BR, BB</u>	Weather: <u>Clear, Windy, 40°S</u>	Arrival Date/Time: <u>1-21-12 (1430)</u>
Sampler Battery Voltage	<u>Good</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>
Additional Grabs (IDs, date/time)	<u>NO</u>	
Additional Dup Grab (IDs, date/time)	<u>NO</u>	
Composite Begin Time (date/time)	<u>1-20-12 (1205)</u>	Sampler Report Downloaded? <u>Yes - telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>1-21-12 (1149) BTL 24 4/4</u>	
Total Composite Sample Volume Collected	<u>generally 100%, several btl's ~ 850-900 ml</u>	
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>	
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>		
Storm Contoller notified (Y or N/A):	Which parameter?:	<u>NA</u>
Notes: <u>BTLs 1-8 contained "floaters" - were noticeably turbid, BTL #8 has sediment and other settleable detritus</u>		
Maintenance Needed: <u>Re-sets</u>		

**Section 5. Compositing Scheme and QC Sampling**

Personnel: <u>DM, BR, BB</u>	Date/Time: <u>1-21-12 (1640)</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.) <u>Cond. = YSI 30 (Navy meter) Turb. = Hach 2100P (Navy Meter)</u>	
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):	
1. <u>3832/15/ N</u>	7. <u>388/12/ Y</u>
2. <u>262/29/ <del>NY</del></u>	8. <u>230/37/ Y</u>
3. <u>69/46/ Y</u>	9. <u>137/7/ Y</u>
4. <u>50/31/ Y</u>	10. <u>238/7/ Y</u>
5. <u>56/16/ Y</u>	11. <u>289/7/ Y</u>
6. <u>131/12/ Y</u>	12. <u>6780/4/ <del>YN</del></u>
13. <u>3713/6/ <del>YN</del></u>	14. <u>121/5/ Y</u>
15. <u>25/3/ Y</u>	16. <u>19/3/ Y</u>
17. <u>18/3/ Y</u>	18. <u>18/2/ Y</u>
19. <u>26/2/ Y</u>	20. <u>44/3/ Y</u>
21. <u>78/4/ Y</u>	22. <u>113/5/ Y</u>
23. <u>+6 hrs after last rain</u>	24. <u>Same as above</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Used bottles 2-11, 14-22. BTL's 1, 12 &amp; 13 were over range for cond.</u> <u>BTL's 23 &amp; 24 not used because they were &gt; 6 hrs after last rain * Comp btl's = 400 ml ea.</u>	
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 112 Turb = 14 Vol. = 7600-ml Analysis = per 2011-12 PWP</u>	
Composite Sample ID & Time: <u>SW09-0008 (0949)</u>	
Field Blank Collected? (date/time)	<u>NO</u>
Blank ID:	<u>NA</u>
Duplicate comp sample? Yes/No	<u>NO</u>
Duplicate sample ID	<u>NA</u>

NOTES:



Station: 84.1	MH/CB#: 551	Loc. Descrip. Southeast section of Bldg 983	Page: 1 of 1
---------------	-------------	---	--------------

pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	
Carry-over maintenance to do prior to set-up: None		Arrival Date/Time: 12/1/11 1030	
Sampler Battery Voltage		12.87 (installed charged Batt)	Changed? <u>Y</u> <u>N</u>
Modem Battery Voltage		12.14	Changed? <u>Y</u> <u>N</u>
Sample Tubing & Strainer OK?		Yes	Sampler Info.
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes
Trands. Cable OK?		Yes	Internal Sampler Tubing OK?
Trands. Desiccant OK (Yes/No)		Yes	Tubing Replaced? (Yes/No)
Telem. Box Desiccant OK (Yes/No)		Yes	Normal Smpler Program or Dup. ?
Modem Status		Operational	Bottles Loaded ?
Notes (including channel condition):		Calibrated Level	Lid Status?
Recorded level = 6.78		Level adjusted - Yes	Backflushed with DI?
Measured Level = 6.38		Also, cal'ed aliquot@240ML	Suction line & quick connect attached?
New Offset = -0.40			Smplr Status (on/off) / last screen..

Section 2. Storm Setup and Inspection			
Personnel: <u>BR/BB</u>		Weather: <u>Overcast - temp low 30's</u>	
Sampler Battery Voltage		12.26	Changed? <u>Y</u> <u>(N)</u>
Modem Battery Voltage		12.56	Changed? <u>(Y)</u> <u>N</u> <u>Added</u>
Sample Tubing & Strainer OK?		<u>OK</u>	Sampler Setup
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>OK</u>
Transducer Cable OK?		<u>OK</u>	Aliquot Vol. Cal'ed (Y/N & vol.)
Multi-meter Cable OK		<u>OK</u>	Program Reviewed (Yes/No), Dup ?
Recorded Level (FT)		<u>7.93</u>	Lids off bottles?
Measured Level (FT)		<u>7.13</u>	Diagnostics/Distributor arm check?
Offset Diff (FT)		<u>-0.24</u>	Backflush with DI?
Level Adjusted ?		<u>yes - new level = 7.13</u>	Storm Reset (1, enter) Completed
Cond. Sonde Type (YSI6820 or INW-CT2X)		<u>INW</u>	Last screen...
Cond. Sonde Cal. Info. : Recorded Val. =		Meas. Val. =	Diff. =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)		<u>changed &amp; Desiccant pulls(3) - IN telem. box</u>	

Section 3. Grab Sample Collection			
Personnel: <u>CG, BB</u>		Weather: <u>Raining / Snowing</u>	
On Composite... (Bottle #/ Aliq #)		Arrival Date/Time: <u>1-20-12 (1130)</u>	
Grab Parameters Collected		Conductivity Reading (µS/cm):	<u>833</u>
Grab Sample ID		Salinity Reading (PPT):	
Grab Date/Time		Temp. Reading (°C):	<u>4.4</u>
Grab Dup ID		Turbidity Reading (NTU)	<u>21.4</u>
Grab Dup Date/Time		Equipment running correctly?	<u>Yes</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary):		Sampler Battery Voltage (Changed?):	<u>Good</u>
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS D84.1 continued from previous page

 Page: 2 of 2
**Section 4. Post-Storm Sample Collection (for grab, comp or both)**

Personnel: <u>BR, BB</u>		Weather: <u>Sunny, Windy, 40°s</u>		Arrival Date/Time: <u>1-21-12 (1315)(1445)</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>---</u>		
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>---</u>		
Additional Grabs (IDs, date/time)		<u>No</u>			
Additional Dup Grab (IDs, date/time)		<u>No</u>			
Composite Begin Time (date/time)		<u>1-20-12 (1339)</u>	Sampler Report Downloaded ?		<u>Yes - Telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)		<u>1-21-12 BTL 24 4-4 (1323)</u>			
Total Composite Sample Volume Collected		<u>100%</u>			
Aliquots missed/NLD (date/time/bott #/aliq #)		<u>NONE</u>			
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>					
Storm Contoller notified (Y or N/A)?		Which parameter?:		<u>NA</u>	
Notes: <u>Notable "floaters" in first 8 btl's</u>					
Maintenance Needed: <u>Re-set, replace fuse in sampler power wrong site for this, DM 015</u>					

**Section 5. Compositing Scheme and QC Sampling**

Personnel: <u>DM, BR</u>		Date/Time: <u>1-21-12 (1540)</u>	
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.) <u>Conductivity = YSI 30 (Navy Meter) Turbidity = 2100P Hach (Navy Meter)</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1 879/61.5 / Y	7 142/30 / Y	13 50/12 / Y	19 27/6 / Y
2 219/53 / Y	8 127/22 / Y	14 30/9 / Y	20 80/1 / Y
3 214/50 / Y	9 130/14 / Y	15 26/8 / Y	21 111/7 / Y
4 295/40 / Y	10 112/13 / Y	16 21/6 / Y	22 NA - base flow
5 842/32 / Y	11 97/16 / Y	17 19/5 / Y	23 NA - base flow
6 306/33 / Y	12 56/19 / Y	18 22/6 / Y	24 NA - base flow
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Used 400-ml for each bottle, bottles 1-21, btl's 22-24 were not used from in comp samples because they were beyond 6 hrs after last rain</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 178 <math>\mu\text{S}/\text{cm}</math> Turb. = 23 <sub>pm</sub> Vol. = 8400 Analysis = per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW09-00087 (1023)</u>			
Field Blank Collected? (date/time)		<u>NO</u>	
Blank ID:		<u>NA</u>	
Duplicate comp sample? Yes/No		<u>NO</u>	
Duplicate sample ID		<u>NA</u>	

NOTES:



Station: 015	MH/CB#: A41	Loc. Descrip. South Side of McD's (Bldg 1019) drive through lane.	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel: Brian Rupert/Bruce Beckwith		Weather: Overcast, high 30's	
		Arrival Date/Time: 12/1/11 1000	
Carry-over maintenance to do prior to set-up: None			done?
Sampler Battery Voltage	12.76 (added sampler batt)	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Modem Battery Voltage	12.43	Changed? <u>Y</u> <u>N</u>	New voltage - NA
Sample Tubing & Strainer OK?	Yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	Yes - correct
Transds. Cable OK?	Yes	Internal Sampler Tubing OK?	Yes
Transds. Desiccant OK (Yes/No)	Yes	Tubing Replaced? (Yes/No)	No
Telem. Box Desiccant OK (Yes/No)	Yes	Normal Smpler Program or Dup. ?	Normal
Modem Status	On - working	Bottles Loaded ?	Yes
Notes (including channel condition):	Calibrated Level	Lid Status?	On
Recorded level = 7.04	Level adjusted - Yes	Backflushed with DI?	No
Measured Level = 7.71	Also, cal'ed aliquot@240ML	Suction line & quick connect attached?	Yes
New Offset = +0.67		Smplr Status (on/off) / last screen..	Off

Section 2. Storm Setup and Inspection			
Personnel: <u>BL/BB</u>		Weather: <u>overcast, temp low 30's</u>	
		Arrival Date/Time: <u>1300</u>	
Sampler Battery Voltage <u>12.34</u>	<u>12.34 v</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage —
Modem Battery Voltage <u>12.79</u>	<u>12.79 v</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage —
Sample Tubing & Strainer OK? <u>OK</u>	<u>OK</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>OK</u>
Transducer Cable OK?	<u>OK</u>	Aliquot Vol. Cal'ed (Y/N & vol.)	<u>Yes / OK</u>
Multi-meter Cable OK	<u>OK</u>	Program Reviewed (Yes/No), Dup ?	<u>Yes / OK - Normal</u>
Recorded Level (FT) <u>HH</u>	<u>5.14</u>	Lids off bottles?	<u>Yes</u>
Measured Level (FT) <u>IFP</u>	<u>6.16</u>	Diagnostics/Distributor arm check?	<u>Yes / OK</u>
Offset Diff (FT)	<u>1.02'</u>	Backflush with DI?	<u>NO</u>
Level Adjusted ?	<u>Y / new offset = -33.76</u>	Storm Reset (1, enter) Completed	<u>Yes</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>Disab. 13:31</u>
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>old offset -34.78 / old sonde changed out w/ new one - this one is not pressure compensated.</u>			

Section 3. Grab Sample Collection			
Personnel: <u>CG, BB</u>		Weather: <u>Raining</u>	
		Arrival Date/Time: <u>1-20-12 (1745)</u>	
On Composite... (Bottle #/ Aliq #)	<u>—</u>	Conductivity Reading (µS/cm):	<u>300</u>
Grab Parameters Collected	<u>TPH FC</u>	Salinity Reading (PPT):	<u>—</u>
Grab Sample ID	<u>SW09-0005</u>	Temp. Reading (°C):	<u>2.3</u>
Grab Date/Time	<u>1/20/12 1800</u>	Turbidity Reading (NTU)	<u>41.4</u>
Grab Dup ID	<u>NA</u>	Equipment running correctly?	<u>Yes</u>
Grab Dup Date/Time	<u>NA</u>	Sampler Battery Voltage (Changed?):	<u>Good</u>
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? <u>Y</u> / <u>N</u>	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Station: PSNS015 continued from previous page

 Page: 2 of 2

Section 4. Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>BR, BB</u>	Weather: <u>Sunny, Windy, 40°s</u>	Arrival Date/Time: <u>1-21-12 (1315)</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NA</u>		
Composite Begin Time (date/time)	<u>1-20-12 (1313)</u>	Sampler Report Downloaded ?	<u>Yes, telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>1-21-12 (1257) BTL 24 4/4</u>		
Total Composite Sample Volume Collected	<u>100%</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Contoller notified (Y or N/A)?	Which parameter?: <u>NA</u>		
Notes: <u>Water has somewhat high turbidity w/ fine-grained, settleable material in wedge bottles</u>			
Maintenance Needed: <u>Re-sets, Auto sampler power cable had blown fuse - needs replacement</u>			

Section 5. Compositing Scheme and QC Sampling			
Personnel: <u>DM, BR, BB</u>	Date/Time: <u>1-21-12 (1955)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.) <u>Cond. = YSI 30 Turb. = Hach 2100P both are Navy Meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>1633/168/ Y</u>	7. <u>200/ 41/ Y</u>	13. <u>77/24/ Y</u>	19. <u>85/8/ Y</u>
2. <u>492/168/ Y</u>	8. <u>163/ 40/ Y</u>	14. <u>71/18/ Y</u>	20. <u>97/11/ Y</u>
3. <u>328/78/ Y</u>	9. <u>149/38/ Y</u>	15. <u>70/13/ Y</u>	21. <u>105/13/ Y</u>
4. <u>280/165/ Y</u>	10. <u>150/28/ Y</u>	16. <u>65/4/ Y</u>	22. <u>251/17/ Y X</u>
5. <u>394/62/ Y</u>	11. <u>150/25/ Y</u>	17. <u>68/11/ Y</u>	23. <u>99/23/ Y X</u>
6. <u>260/48/ Y</u>	12. <u>108/46/ Y</u>	18. <u>72/10/ Y</u>	24. <u>504/27/ Y X</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Cond. = 233 <math>\mu\text{S/cm}</math> Turb. = 39 Vol. = 8400 ml Analysis per 2011-12 PWP</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Used btl's 1-21 for comp. Did not use btl's 22-24 because they were 76 hrs post rainfall end</u>			
Composite Sample ID & Time: <u>SW09-0013 (-1257) 1-21-12 (0957)</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:

Date: 1/20/2012

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

## Stormwater Event #09

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

[illegible]

Date: 1/21/2012

Project No.: N4523A10MP00034 Amend.1

## Battelle

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Project: TSN090414 Dry Dock SW 2010				Analyze parameters per QAP/FSP														Phone: (360) 681-4564				
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity						No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes / Comp. Cond. (µS/cm) and Turb. (NTU) Readings			
SW09-0007	PSNS 084.1	1023	SW	X	X	X	X	X								1	C	09	178	23		
SW09-0008	PSNS 115.1	0949	SW	X	X	X	X	X								1	C	09	112	14		
SW09-0009	PSNS 124.1	0127	SW	X	X	X	X	X								1	C	09	333	27		
SW09-0010	PSNS 126	1158	SW	X	X	X	X	X								1	C	09	267	8		
SW09-0011	PSNS 126 DUP	1158	SW	X	X	X	X	X								1	C	09	302	8		
SW09-0012	PSNS 124	0905	SW	X	X	X	X	X								1	C	09	1695	8		
SW09-0013	PSNS 015	0957	SW	X	X	X	X	X								1	C	09	233	39		
<div>DM</div>																						
Relinquished by: <u>[Signature]</u> <u>1/21/12</u> <u>2200</u> Signature Date Time <u>Brian Rupert</u> <u>TRC</u> Printed Name Company				Received by: <u>[Signature]</u> <u>1/21/12</u> <u>2200</u> Signature Date Time <u>Jim Brandenberger</u> Printed Name				Total # of Containers: Shipment Method: Sample Disposition:														
Relinquished by: _____ Signature Date Time Printed Name Company				Received by: _____ Signature Printed Name				Distribution: 1) PNNL 2) CAS 3) TAI														

① Turbidity measured at Navy Stormwater Lab during comp'ing session

**PSNS NDDSW Monitoring -- SW09 1/20/12**  
**Stormwater Outfall Total Discharge Volume Estimation Equations**

PSNS Drainage Basin	Total Basin Area (ft <sup>2</sup> )	Type of Surface	Percentage of Drainage Basin Surface Type	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Area of Basin Surface Type with Maximum Coefficient Value Applied (ft <sup>2</sup> )	<sup>2</sup> Total Discharge Volume (ft <sup>3</sup> )
126	662,986	Impervious	98.55	653,373	0.6 – 0.9	588,036	R(591,881)
		Pervious	1.45	9,613	0.2 – 0.4	3,845	
124.1	116,000	Impervious	94.56	109,690	0.6 – 0.9	98,721	R(101,245)
		Pervious	5.44	6310	0.2 – 0.4	2,524	
124	454,000	Impervious	94.56	429,302	0.6 – 0.9	386,372	R(396,251)
		Pervious	5.44	24,698	0.2 – 0.4	9,879	
115.1	463,042	Impervious	97	449,104	0.6 – 0.9	361,422	R(366,390)
		Pervious	3	13,938	0.2 – 0.4	4,968	
96	717,872	Impervious	97	696,336	0.6 – 0.9	626,702	R(635,317)
		Pervious	3	21,536	0.2 – 0.4	8,615	
84.1	23,958	Impervious	100	23,958	0.6 – 0.9	21,562	R(21,562)
82.5	87,120	Impervious	100	87120	0.7 - 0.95	82,764	R(82,764)
81.1	965,294	Impervious	97	936,335	0.6 – 0.9	842703	R(849,074)
		Pervious	3	28,959	0.18 – 0.22	6,371	
32	208,653	Impervious	97	202,393	0.6 – 0.9	182,154	R(184,658)
		Pervious	3	6,260	0.2 – 0.4	2,504	
15	4,018,862	Impervious	50	2,009,431	0.5 – 0.8	1,607,549	R(2,411,321)
		Pervious	50	2,009,431	0.25 – 0.4	803,772	
8	553,650	Impervious	94	520,431	0.5 – 0.8	416349	R(429,637)
		Pervious	6	33,219	0.2 – 0.4	13,288	

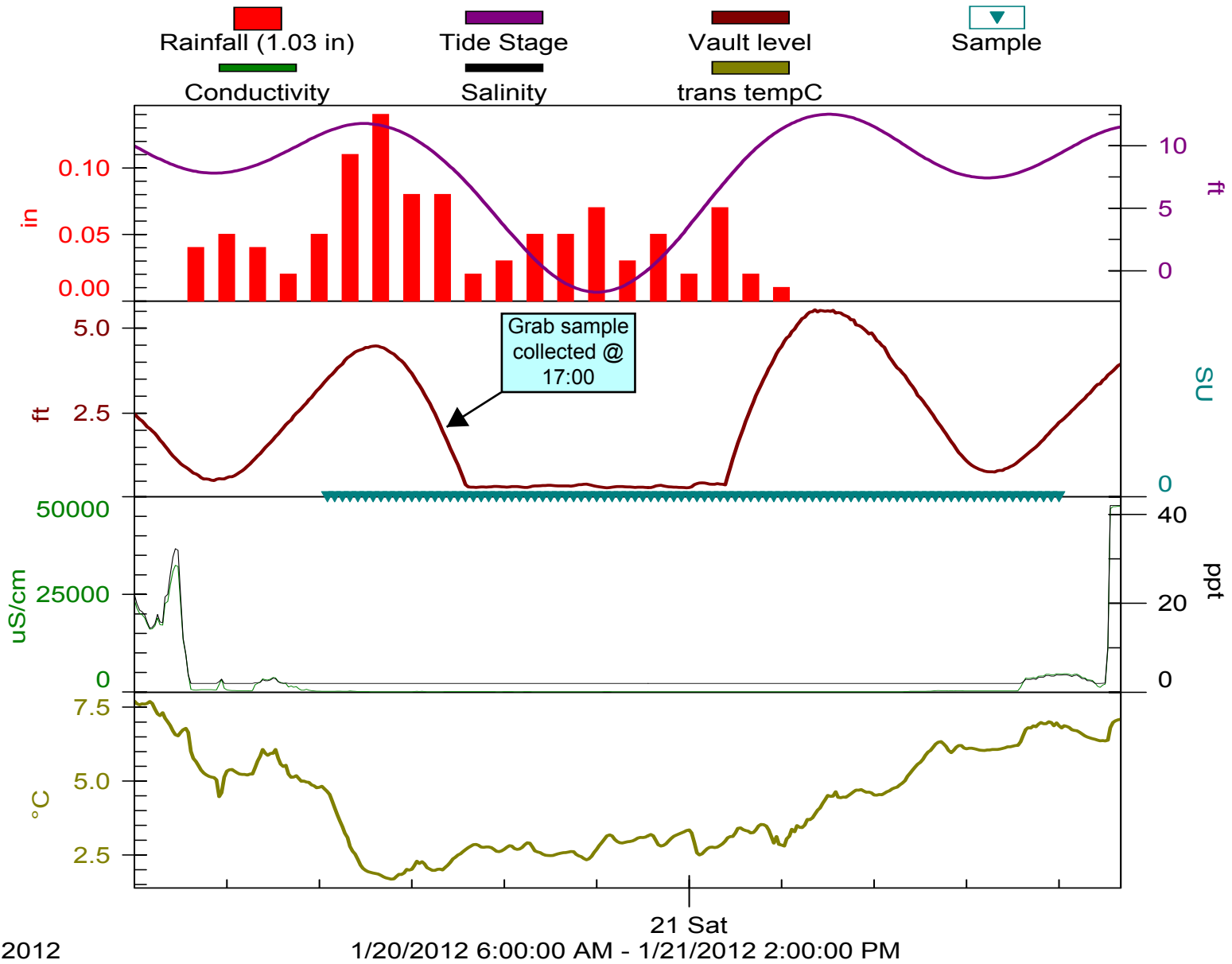
**Calculation Worksheet:**

**SW09 -- 1/20/12**

STATION	Combined Drainage Area (FT <sup>2</sup> )	ENTER: Smpl Evnt Rain Total (in)	Sampl Evnt Rain Total (FT)	STE Runoff Vol. (gal)
126	591,881	1.03	0.0858	380,033.70
124.1	101,245	1.13	0.0942	71,318.55
124	396,251	1.18	0.0983	291,476.04
115.1	366,390	1.17	0.0975	267,226.77
84.1	21,562	1.13	0.0942	15,188.61
015	2,411,321	1.82	0.1517	2,735,753.10

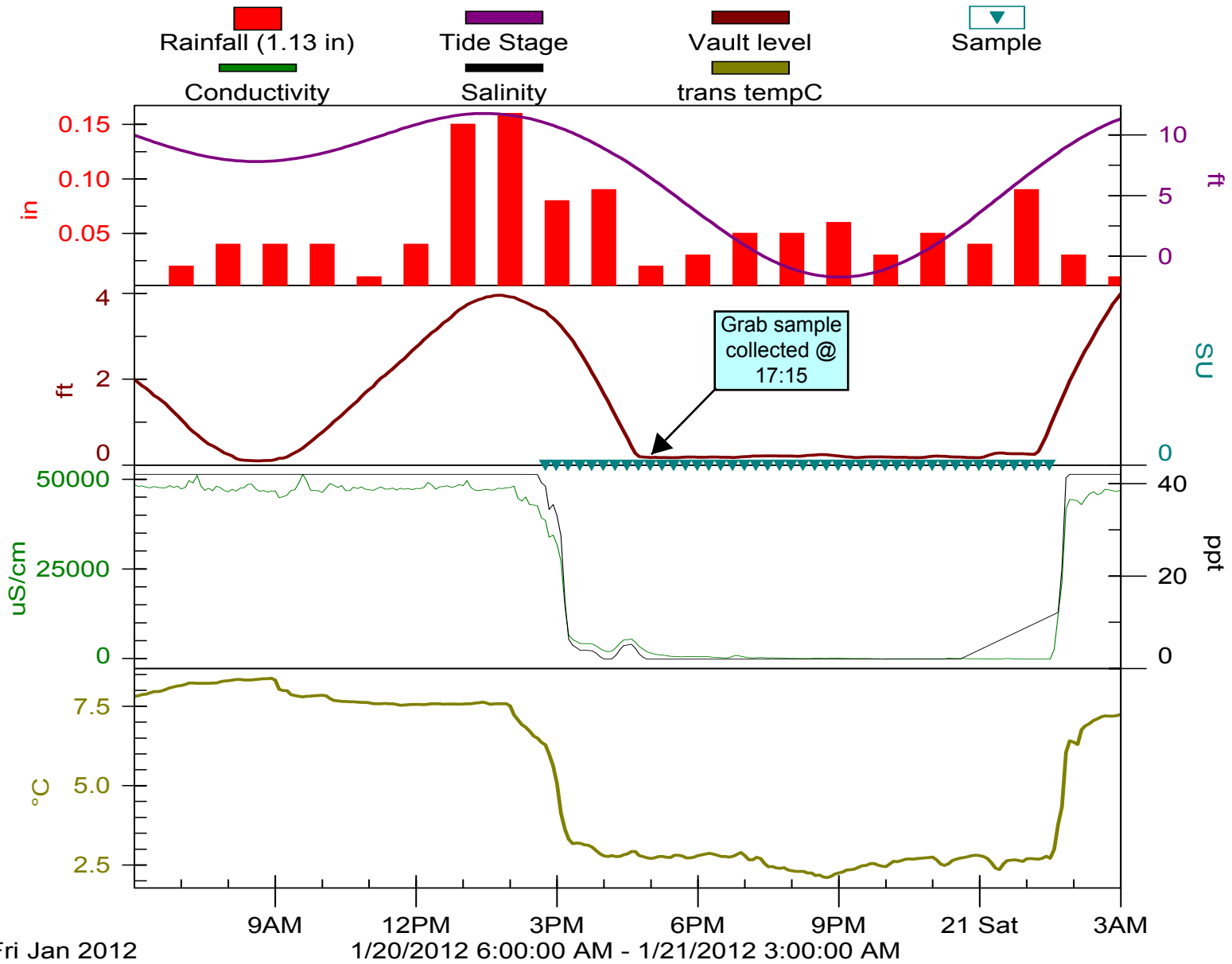
# PSNS 126

SW09 1-20-12



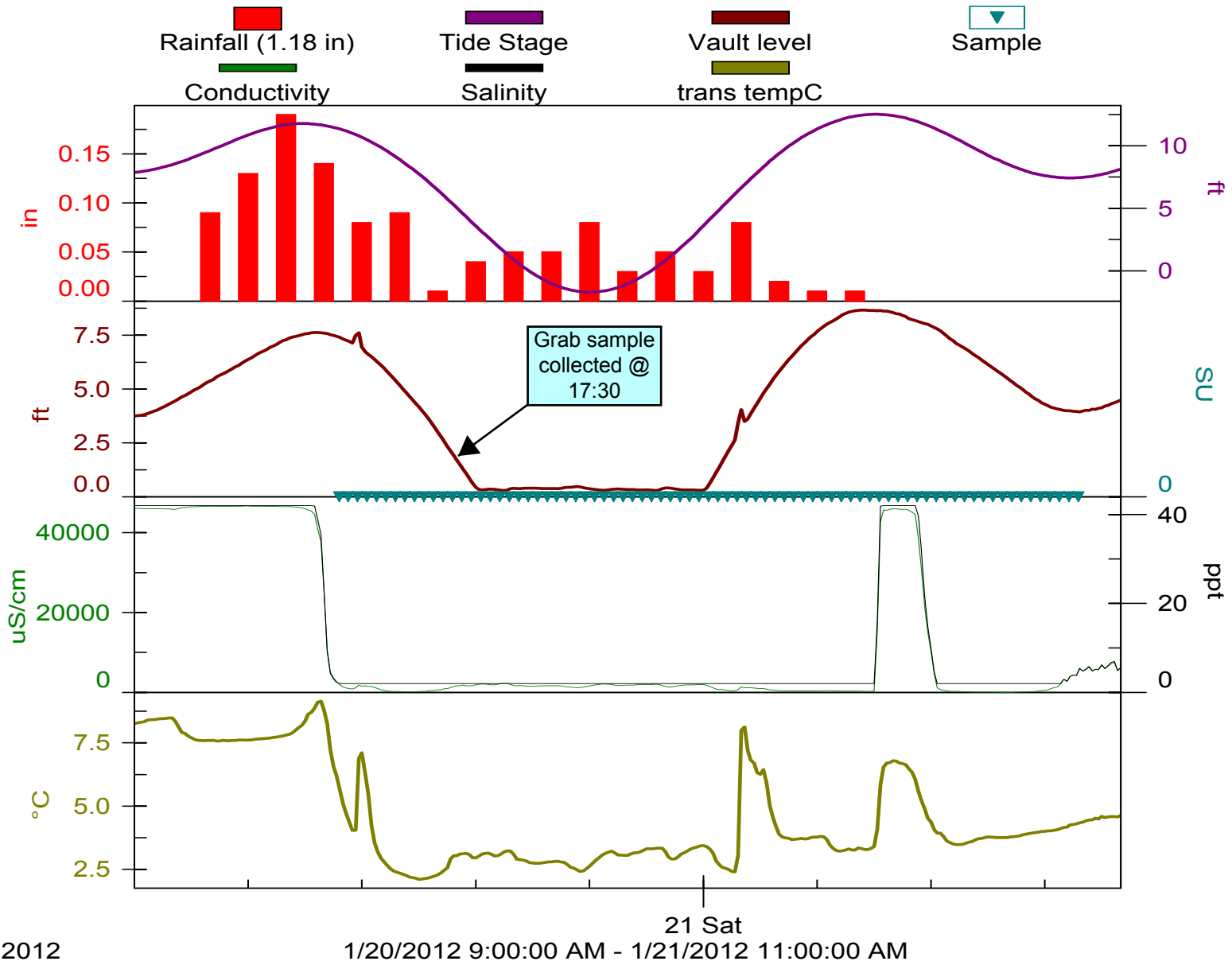
# PSNS 124.1

SW09 1-20-12



# PSNS 124

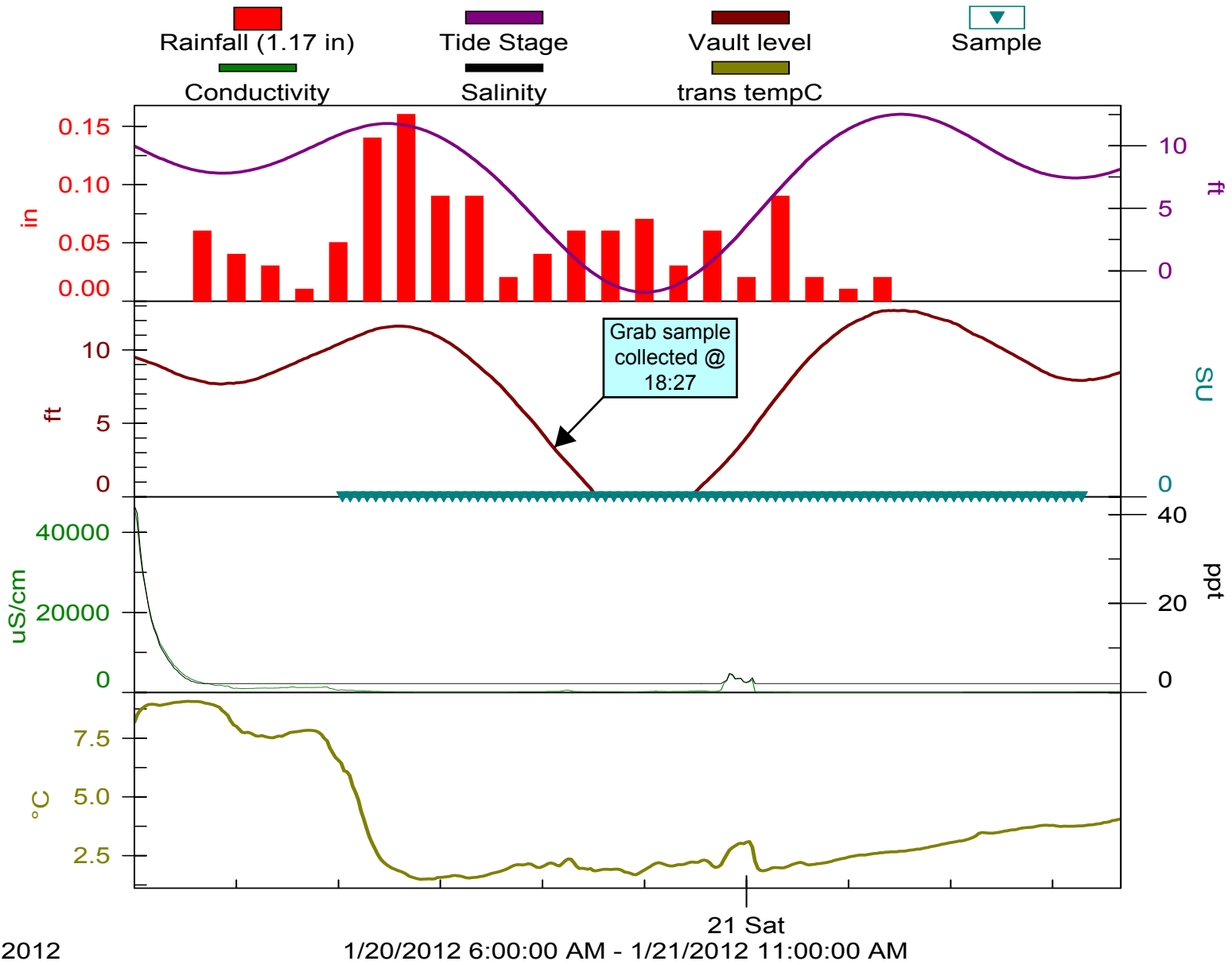
SW09 1-20-12





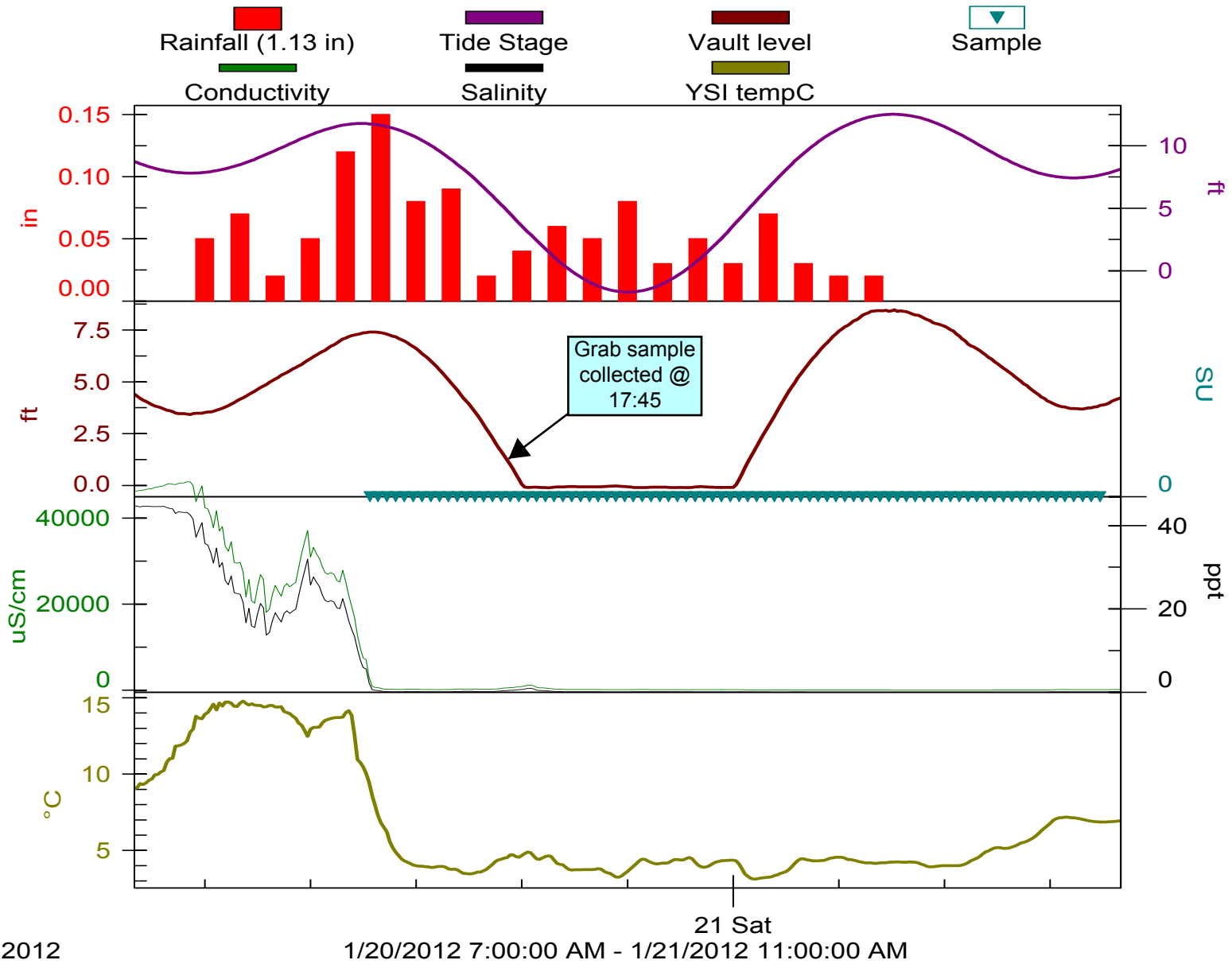
# PSNS 115.1

SW09 1-20-12



# PSNS 084.1

SW09 1-20-12

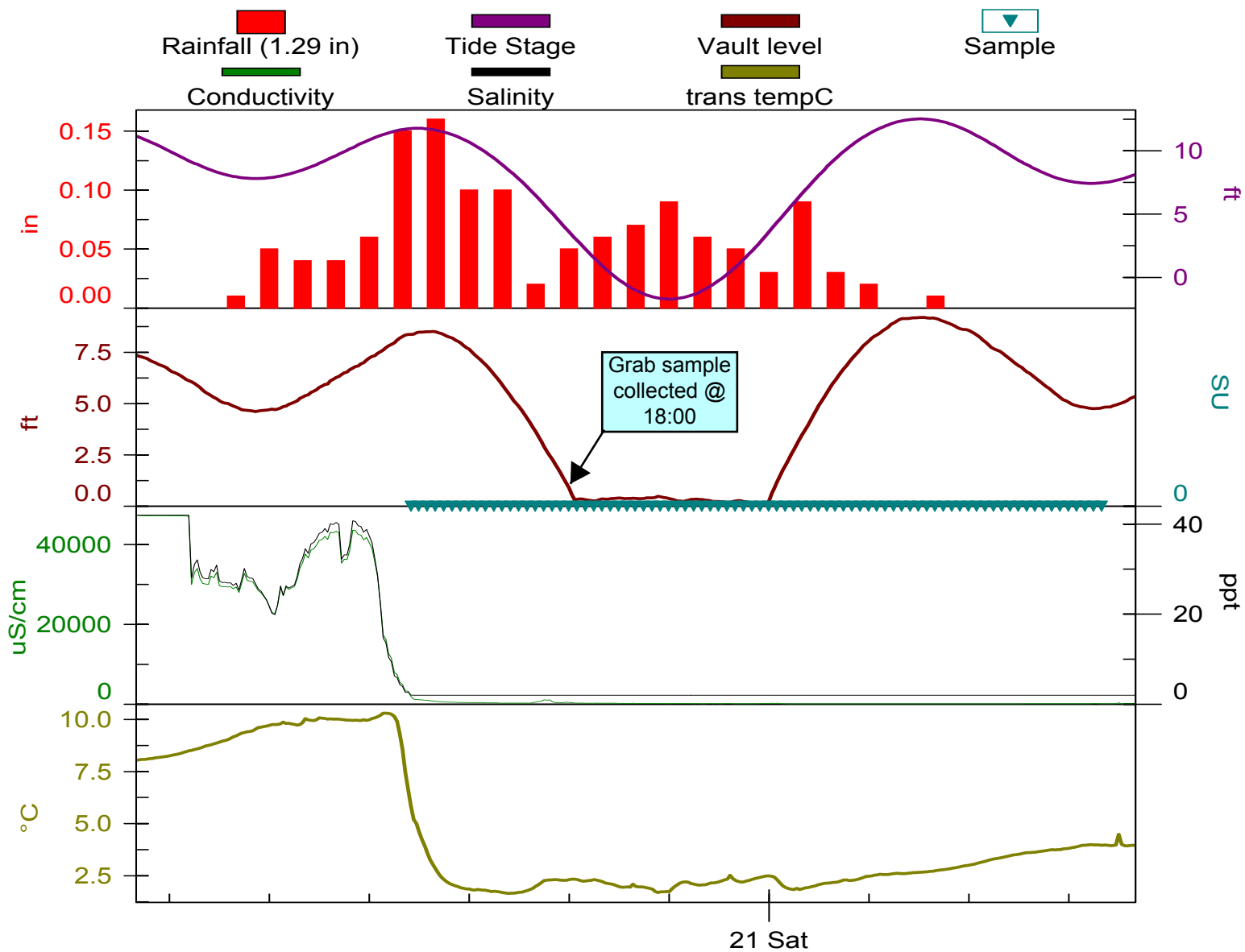


Jan 2012

1/20/2012 7:00:00 AM - 1/21/2012 11:00:00 AM

# PSNS 015

SW09 1-20-12

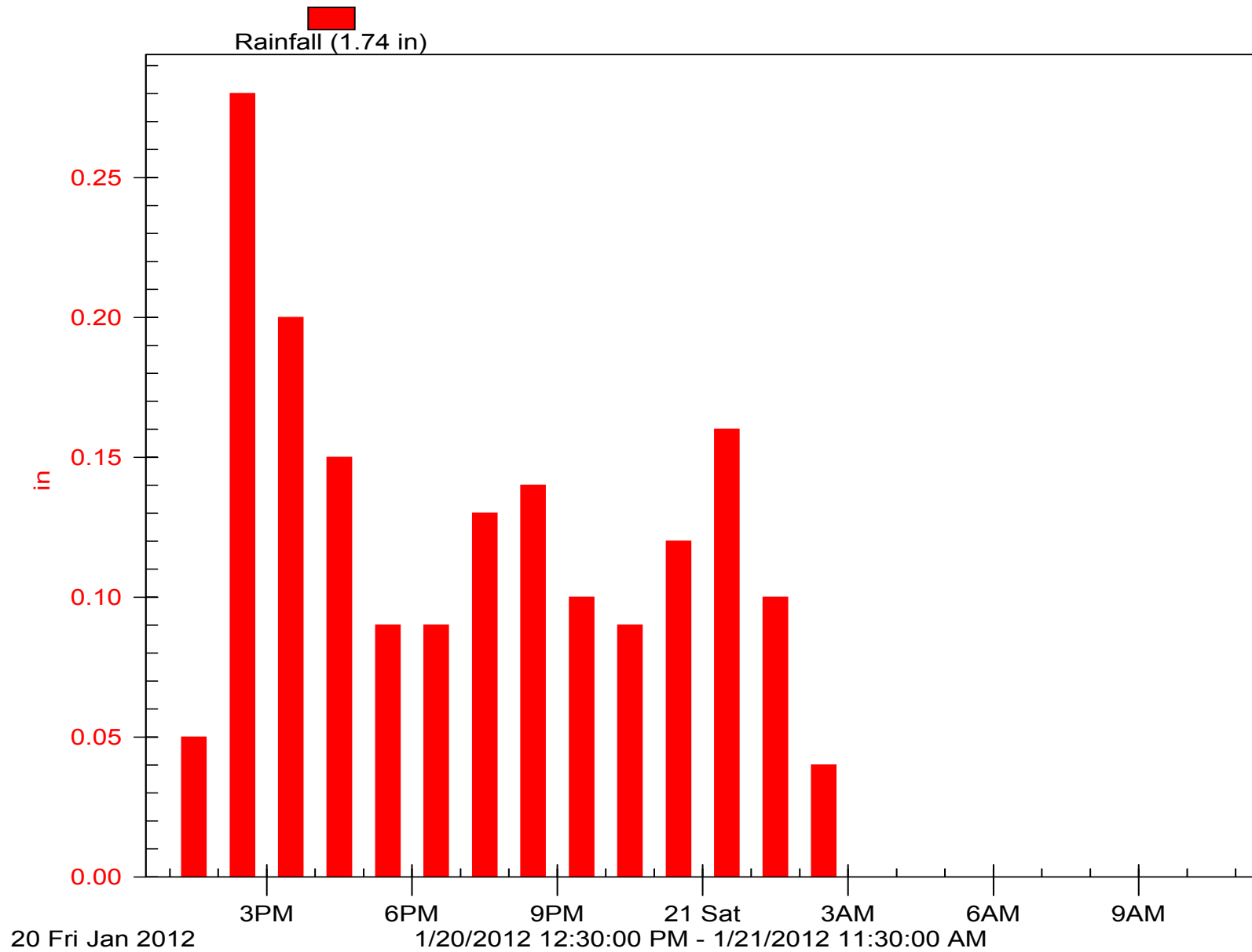


Jan 2012

1/20/2012 5:00:00 AM - 1/21/2012 11:00:00 AM

# PSNS B427 Rain

SW09 1-20-12



PSNS126 Smpl r Rpt

CR1000>P

1: ComRS232  
2: ComME  
3: Com310  
4: ComSDC7  
5: ComSDC8  
6: Com320  
7: ComSDC10  
8: ComSDC11  
9: SDI -12  
10: COM2  
11: COM3  
12: COM4  
14: SDM-SI 04  
32..47: SDM-SI 01

Select: 10

Enter timeout (secs): 60  
opening 10

?

\*\*\* Model 6712 HW Rev: B0 SW Rev: 2.34.0000 ID 1313656803

> ??

\*\*\* Model 6712 HW Rev: B0 SW Rev: 2.34.0000 ID 1313656803

> ??

\*\*\* Model 6712 HW Rev: B0 SW Rev: 2.34.0000 ID 1313656803

> REPORT

SAMPLER ID# 1313656803 15:39 21-JAN-12

Hardware: B0 Software: 2.34

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS126DUP"

SITE DESCRIPTION:

"PSNS126DUP"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS

19 ft SUCTION LINE

13 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

2 BOTTLES/SAMPLE

8 SAMPLES/BOTTLE

-----  
VOLUME:

120 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

```

-----
ENABLE:
0 PAUSE & RESUMES
-----
NO DELAY TO START
-----
-----
LIQUID DETECT ON
QUICK VIEW/CHANGE
-----
TAKE MEASUREMENTS
EVERY 1 MINUTES
-----
DUAL SAMPLER OFF
BTL FULL DETECT OFF
TIMED BACKLIGHT
-----
EVENT MARK SENT
DURING PUMP CYCLE
-----
PUMP COUNTS FOR
EACH PURGE CYCLE:
200 PRE-SAMPLE
AUTO POST-SAMPLE
-----
NO PERIODIC
SERIAL OUTPUT
-----
INTERROGATOR
CONNECTOR
POWER ALWAYS ON
-----
-----
NO RAIN GAUGE
-----
NO SDI-12 SONDE
AUTO SDI-12 SCAN OFF
-----
I/O1= NONE
I/O2= NONE
I/O3= NONE
-----
0 ANALOG OUTPUTS
-----
NO EXTERNAL MODEM
-----
NO ALARM
CONDITIONS SET
-----
-----

```

```

-----
SAMPLER ID# 1313656803 15:39 21-JAN-12
Hardware: B0 Software: 2.34
***** SAMPLING RESULTS *****
SITE: PSNS126DUP
PROGRAM: PSNS126DUP
Program Started at 10:01 TU 17-JAN-12
Nominal Sample Volume = 120 ml

```

```

COUNT
TO
SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

```

PSNS126 Smpl r Rpt

```

-----
10: 01 PGM DI SABLED
FR 20-JAN-12 -----
12: 14 PGM ENABLED
1, 8 1-2 12: 14 E 479
2, 8 1-2 12: 28 F 476
3, 8 1-2 12: 43 F 476
4, 8 1-2 12: 58 F 475
5, 8 1-2 13: 13 F 476
6, 8 1-2 13: 28 F 475
7, 8 1-2 13: 43 F 481
8, 8 1-2 13: 58 F 481
1, 8 3-4 14: 13 F 482
2, 8 3-4 14: 28 F 483
3, 8 3-4 14: 43 F 482
4, 8 3-4 14: 58 F 485
5, 8 3-4 15: 13 F 487
6, 8 3-4 15: 28 F 488
7, 8 3-4 15: 43 F 495
8, 8 3-4 15: 58 F 499
1, 8 5-6 16: 13 F 499
2, 8 5-6 16: 28 F 501
3, 8 5-6 16: 43 F 513
4, 8 5-6 16: 58 F 511
5, 8 5-6 17: 13 F 513
6, 8 5-6 17: 28 F 511
7, 8 5-6 17: 43 F 513
8, 8 5-6 17: 58 F 511
1, 8 7-8 18: 13 F 513
2, 8 7-8 18: 28 F 512
3, 8 7-8 18: 43 F 513
4, 8 7-8 18: 58 F 513
5, 8 7-8 19: 13 F 513
6, 8 7-8 19: 28 F 512
7, 8 7-8 19: 43 F 513
8, 8 7-8 19: 58 F 514
1, 8 9-10 20: 13 F 513
2, 8 9-10 20: 28 F 514
3, 8 9-10 20: 43 F 513
4, 8 9-10 20: 58 F 514
5, 8 9-10 21: 13 F 513
6, 8 9-10 21: 28 F 513
7, 8 9-10 21: 43 F 513
8, 8 9-10 21: 58 F 514
1, 8 11-12 22: 13 F 513
2, 8 11-12 22: 28 F 513
3, 8 11-12 22: 43 F 515
4, 8 11-12 22: 58 F 517
5, 8 11-12 23: 13 F 517
6, 8 11-12 23: 28 F 517
7, 8 11-12 23: 43 F 514
8, 8 11-12 23: 58 F 513
-----
SA 21-JAN-12 -----
1, 8 13-14 00: 13 F 517
2, 8 13-14 00: 28 F 513
3, 8 13-14 00: 43 F 513
4, 8 13-14 00: 58 F 513
5, 8 13-14 01: 13 F 506
6, 8 13-14 01: 28 F 501
7, 8 13-14 01: 43 F 499
8, 8 13-14 01: 58 F 493
1, 8 15-16 02: 13 F 491
2, 8 15-16 02: 28 F 487

```

PSNS126 Smpl r Rpt

3,8	15-16	02: 43	F	487
4,8	15-16	02: 58	F	484
5,8	15-16	03: 13	F	483
6,8	15-16	03: 28	F	483
7,8	15-16	03: 43	F	483
8,8	15-16	03: 58	F	479
1,8	17-18	04: 13	F	481
2,8	17-18	04: 28	F	477
3,8	17-18	04: 43	F	476
4,8	17-18	04: 58	F	481
5,8	17-18	05: 13	F	480
6,8	17-18	05: 28	F	481
7,8	17-18	05: 43	F	481
8,8	17-18	05: 58	F	481
1,8	19-20	06: 13	F	487
2,8	19-20	06: 28	F	484
3,8	19-20	06: 43	F	485
4,8	19-20	06: 58	F	487
5,8	19-20	07: 13	F	490
6,8	19-20	07: 28	F	490
7,8	19-20	07: 43	F	493
8,8	19-20	07: 58	F	495
1,8	21-22	08: 13	F	494
2,8	21-22	08: 28	F	501
3,8	21-22	08: 43	F	499
4,8	21-22	08: 58	F	502
5,8	21-22	09: 13	F	505
6,8	21-22	09: 28	F	502
7,8	21-22	09: 43	F	505
8,8	21-22	09: 58	F	507
1,8	23-24	10: 13	F	505
2,8	23-24	10: 28	F	503
3,8	23-24	10: 43	F	499
4,8	23-24	10: 58	F	501
5,8	23-24	11: 13	F	503
6,8	23-24	11: 28	F	499
7,8	23-24	11: 43	F	497
8,8	23-24	11: 58	F	493

11: 58 PGM DONE 21-JAN

SOURCE E ==> ENABLE

SOURCE F ==> FLOW



exiting talk thru

CR1000>P

1: ComRS232

2: ComME

3: Com310

4: ComSDC7

5: ComSDC8

6: Com320

7: ComSDC10

8: ComSDC11

9: SDI-12

10: COM2

11: COM3

12: COM4

14: SDM-SI 04

32..47: SDM-SI 01

Select: 10

Enter timeout (secs): 60

opening 10

?

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

> REPORT

SAMPLER ID# 3293179321 15:49 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS124-1"

SITE DESCRIPTION:

"PSNS124-1"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS

56 ft SUCTION LINE

12 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

NO DELAY TO START

LIQUID DETECT ON  
NO RAIN GAGE

NO YSI SONDE

MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

EVENT MARK SENT  
DURING PUMP CYCLE

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

I /01= NONE

I /02= NONE

I /03= NONE

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

NO DIALOUT  
CONDITIONS SET

SAMPLER ID# 3293179321 15:49 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS124-1

PROGRAM: PSNS124-1

Program Started at 09:34 TU 17-JAN-12

Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	LIQUID
COUNT TO					
-----					
09:34 PGM DISABLED					
FR 20-JAN-12 -----					
14:43 PGM ENABLED					
1,4	1	14:43	E		1262
2,4	1	14:57	F		1250
3,4	1	15:12	F		1258
4,4	1	15:27	F		1251
1,4	2	15:42	F		1286
2,4	2	15:57	F		1297
3,4	2	16:12	F		1302
4,4	2	16:27	F		1320
1,4	3	16:42	F		1323
2,4	3	16:57	F		1327
3,4	3	17:12	F		1337
4,4	3	17:27	F		1331
1,4	4	17:42	F		1332
2,4	4	17:57	F		1328
3,4	4	18:12	F		1332

PSNS124.1 Smpl r Rpt

4, 4	4	18: 27	F	1333
1, 4	5	18: 42	F	1334
2, 4	5	18: 57	F	1336
3, 4	5	19: 12	F	1335
4, 4	5	19: 27	F	1361
1, 4	6	19: 42	F	1334
2, 4	6	19: 57	F	1332
3, 4	6	20: 12	F	1331
4, 4	6	20: 27	F	1334
1, 4	7	20: 42	F	1334
2, 4	7	20: 57	F	1331
3, 4	7	21: 12	F	1341
4, 4	7	21: 27	F	1337
1, 4	8	21: 42	F	1337
2, 4	8	21: 57	F	1338
3, 4	8	22: 12	F	1344
4, 4	8	22: 27	F	1345
1, 4	9	22: 42	F	1338
2, 4	9	22: 57	F	1332
3, 4	9	23: 12	F	1344
4, 4	9	23: 27	F	1343
1, 4	10	23: 42	F	1344
2, 4	10	23: 57	F	1344
----- SA 21-JAN-12 -----				
3, 4	10	00: 12	F	1343
4, 4	10	00: 27	F	1337
1, 4	11	00: 42	F	1338
2, 4	11	00: 57	F	1343
3, 4	11	01: 12	F	1338
4, 4	11	01: 27	F	1332
1, 4	12	01: 42	F	1314
2, 4	12	01: 57	F	1320
3, 4	12	02: 12	F	1319
4, 4	12	02: 27	F	1301
1, 4	13	02: 42	F	1289
2, 4	13	02: 57	F	1290
3, 4	13	03: 12	F	1278
4, 4	13	03: 27	F	1279
1, 4	14	03: 42	F	1278
2, 4	14	03: 57	F	1298
3, 4	14	04: 12	F	1274
4, 4	14	04: 27	F	1267
1, 4	15	04: 42	F	1264
2, 4	15	04: 57	F	1267
3, 4	15	05: 12	F	1297
4, 4	15	05: 27	F	1273
1, 4	16	05: 42	F	1278
2, 4	16	05: 57	F	1274
3, 4	16	06: 12	F	1279
4, 4	16	06: 27	F	1290
1, 4	17	06: 42	F	1277
2, 4	17	06: 57	F	1301
3, 4	17	07: 12	F	1302
4, 4	17	07: 27	F	1308
1, 4	18	07: 42	F	1311
2, 4	18	07: 57	F	1314
3, 4	18	08: 12	F	1326
4, 4	18	08: 27	F	1324
1, 4	19	08: 42	F	1332
2, 4	19	08: 57	F	1367
3, 4	19	09: 12	F	1333
4, 4	19	09: 27	F	1355
1, 4	20	09: 42	F	1339

PSNS124.1 Smpl r Rpt

2, 4	20	09: 57	F	1349
3, 4	20	10: 12	F	1361
4, 4	20	10: 27	F	1343
1, 4	21	10: 42	F	1367
2, 4	21	10: 57	F	1337
3, 4	21	11: 12	F	1343
4, 4	21	11: 27	F	1351
1, 4	22	11: 42	F	1350
2, 4	22	11: 57	F	1350
3, 4	22	12: 12	F	1323
4, 4	22	12: 27	F	1361
1, 4	23	12: 42	F	1339
2, 4	23	12: 57	F	1289
3, 4	23	13: 12	F	1281
4, 4	23	13: 27	F	1303
1, 3	24	13: 42	F	1308
2, 3	24	13: 57	F	1277
3, 3	24	14: 12	F	1284

14: 20 MANUAL PAUSE

14: 20 PGM STOPPED 21-JAN

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

PSNS124 Smpl r Rpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179322

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179322

> REPORT

SAMPLER ID# 3293179322 14:22 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS 124 "

SITE DESCRIPTION:

"PSNS 124 "

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
20 ft SUCTION LINE  
16 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT

DURING PUMP CYCLE

-----  
PUMP COUNTS FOR

# PSNS124 Smpl r Rpt

EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----  
I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT  
-----

NO DIALOUT  
CONDITIONS SET

-----  
SAMPLER ID# 3293179322 14: 22 21-JAN-12  
Hardware: B2 Software: 3.26  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS 124  
PROGRAM: PSNS 124  
Program Started at 10: 48 TU 17-JAN-12  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE ERROR	COUNT TO LIQUID
-----	-----	-----	-----	-----
		10: 48	PGM DI SABLED	
		FR 20-JAN-12		
		14: 21	PGM ENABLED	
1, 4	1	14: 21	E	511
2, 4	1	14: 35	F	508
3, 4	1	14: 50	F	507
4, 4	1	15: 05	F	513
1, 4	2	15: 20	F	519
2, 4	2	15: 35	F	527
3, 4	2	15: 50	F	531
4, 4	2	16: 05	F	533
1, 4	3	16: 20	F	532
2, 4	3	16: 35	F	537
3, 4	3	16: 50	F	543
4, 4	3	17: 05	F	549
1, 4	4	17: 20	F	555
2, 4	4	17: 35	F	561
3, 4	4	17: 50	F	575
4, 4	4	18: 05	F	573
1, 4	5	18: 20	F	575
2, 4	5	18: 35	F	575
3, 4	5	18: 50	F	575
4, 4	5	19: 05	F	575
1, 4	6	19: 20	F	573
2, 4	6	19: 35	F	573
3, 4	6	19: 50	F	573
4, 4	6	20: 05	F	575
1, 4	7	20: 20	F	573
2, 4	7	20: 35	F	573
3, 4	7	20: 50	F	573
4, 4	7	21: 05	F	575
1, 4	8	21: 20	F	573
2, 4	8	21: 35	F	575
3, 4	8	21: 50	F	573
4, 4	8	22: 05	F	570
1, 4	9	22: 20	F	575
2, 4	9	22: 35	F	573

PSNS124 Smpl r Rpt

3, 4	9	22: 50	F	575
4, 4	9	23: 05	F	568
1, 4	10	23: 20	F	573
2, 4	10	23: 35	F	573
3, 4	10	23: 50	F	573
----- SA 21-JAN-12 -----				
4, 4	10	00: 05	F	573
1, 4	11	00: 20	F	562
2, 4	11	00: 35	F	556
3, 4	11	00: 50	F	551
4, 4	11	01: 05	F	543
1, 4	12	01: 20	F	537
2, 4	12	01: 35	F	532
3, 4	12	01: 50	F	531
4, 4	12	02: 05	F	525
1, 4	13	02: 20	F	525
2, 4	13	02: 35	F	519
3, 4	13	02: 50	F	516
4, 4	13	03: 05	F	513
1, 4	14	03: 20	F	515
2, 4	14	03: 35	F	515
3, 4	14	03: 50	F	510
4, 4	14	04: 05	F	511
1, 4	15	04: 20	F	513
2, 4	15	04: 35	F	513
3, 4	15	04: 50	F	513
4, 4	15	05: 05	F	513
1, 4	16	05: 20	F	514
2, 4	16	05: 35	F	517
3, 4	16	05: 50	F	513
4, 4	16	06: 05	F	513
1, 4	17	06: 20	F	519
2, 4	17	06: 35	F	519
3, 4	17	06: 50	F	521
4, 4	17	07: 05	F	525
1, 4	18	07: 20	F	525
2, 4	18	07: 35	F	525
3, 4	18	07: 50	F	531
4, 4	18	08: 05	F	535
1, 4	19	08: 20	F	531
2, 4	19	08: 35	F	537
3, 4	19	08: 50	F	537
4, 4	19	09: 05	F	539
1, 4	20	09: 20	F	545
2, 4	20	09: 35	F	537
3, 4	20	09: 50	F	538
4, 4	20	10: 05	F	537
1, 4	21	10: 20	F	537
2, 4	21	10: 35	F	537
3, 4	21	10: 50	F	537
4, 4	21	11: 05	F	537
1, 4	22	11: 20	F	537
2, 4	22	11: 35	F	537
3, 4	22	11: 50	F	537
4, 4	22	12: 05	F	537
1, 4	23	12: 20	F	531
2, 4	23	12: 35	F	531
3, 4	23	12: 50	F	526
4, 4	23	13: 05	F	529
1, 4	24	13: 20	F	527
2, 4	24	13: 35	F	522
3, 4	24	13: 50	F	525
4, 4	24	14: 05	F	519

PSNS124 Smpl r Rpt

14:06 PGM DONE 21-JAN

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

---



PSNS115.1 Smplr Rpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179316

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179316

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179316

> REPORT

SAMPLER ID# 3293179316 14:27 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS115-1 "

SITE DESCRIPTION:

"PSNS115-1 "

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS

44 ft SUCTION LINE

21 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT  
DURING PUMP CYCLE

PSNS115.1 Smpl r Rpt

-----  
PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE  
-----

I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT  
-----

NO DI ALOUT  
CONDI TIONS SET  
-----

SAMPLER ID# 3293179316 14: 27 21-JAN-12  
Hardware: B2 Software: 3.26  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS115-1  
PROGRAM: PSNS115-1  
Program Started at 11: 14 TU 17-JAN-12  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----					
11: 14 PGM DI SABLED					
-----					
FR 20-JAN-12					
-----					
12: 05 PGM ENABLED					
1, 4	1	12: 05	E		1049
2, 4	1	12: 19	F		1050
3, 4	1	12: 34	F		1049
4, 4	1	12: 49	F		1049
1, 4	2	13: 04	F		1049
2, 4	2	13: 19	F		1044
3, 4	2	13: 34	F		1049
4, 4	2	13: 49	F		1044
1, 4	3	14: 04	F		1049
2, 4	3	14: 19	F		1049
3, 4	3	14: 34	F		1044
4, 4	3	14: 49	F		1061
1, 4	4	15: 04	F		1067
2, 4	4	15: 19	F		1073
3, 4	4	15: 34	F		1074
4, 4	4	15: 49	F		1091
1, 4	5	16: 04	F		1092
2, 4	5	16: 19	F		1104
3, 4	5	16: 34	F		1121
4, 4	5	16: 49	F		1124
1, 4	6	17: 04	F		1139
2, 4	6	17: 19	F		1148
3, 4	6	17: 34	F		1163
4, 4	6	17: 49	F		1176
1, 4	7	18: 04	F		1181
2, 4	7	18: 19	F		1208
3, 4	7	18: 34	F		1223
4, 4	7	18: 49	F		1232
1, 4	8	19: 04	F		1273
2, 4	8	19: 19	F		1346
3, 4	8	19: 34	F		1341
4, 4	8	19: 49	F		1462

PSNS115.1 Smpl r Rpt

1, 4	9	20: 04	F	1401
2, 4	9	20: 19	F	1340
3, 4	9	20: 34	F	3602
4, 4	9	20: 49	F	1350
1, 4	10	21: 04	F	1331
2, 4	10	21: 19	F	1313
3, 4	10	21: 34	F	1345
4, 4	10	21: 49	F	1340
1, 4	11	22: 04	F	1331
2, 4	11	22: 19	F	1328
3, 4	11	22: 34	F	1293
4, 4	11	22: 49	F	1262
1, 4	12	23: 04	F	1260
2, 4	12	23: 19	F	1238
3, 4	12	23: 34	F	1214
4, 4	12	23: 49	F	1202
-----SA 21-JAN-12-----				
1, 4	13	00: 04	F	1188
2, 4	13	00: 19	F	1177
3, 4	13	00: 34	F	1154
4, 4	13	00: 49	F	1145
1, 4	14	01: 04	F	1133
2, 4	14	01: 19	F	1110
3, 4	14	01: 34	F	1104
4, 4	14	01: 49	F	1098
1, 4	15	02: 04	F	1091
2, 4	15	02: 19	F	1079
3, 4	15	02: 34	F	1073
4, 4	15	02: 49	F	1065
1, 4	16	03: 04	F	1067
2, 4	16	03: 19	F	1056
3, 4	16	03: 34	F	1055
4, 4	16	03: 49	F	1057
1, 4	17	04: 04	F	1058
2, 4	17	04: 19	F	1050
3, 4	17	04: 34	F	1050
4, 4	17	04: 49	F	1044
1, 4	18	05: 04	F	1055
2, 4	18	05: 19	F	1050
3, 4	18	05: 34	F	1050
4, 4	18	05: 49	F	1056
1, 4	19	06: 04	F	1051
2, 4	19	06: 19	F	1067
3, 4	19	06: 34	F	1073
4, 4	19	06: 49	F	1075
1, 4	20	07: 04	F	1073
2, 4	20	07: 19	F	1087
3, 4	20	07: 34	F	1080
4, 4	20	07: 49	F	1081
1, 4	21	08: 04	F	1097
2, 4	21	08: 19	F	1103
3, 4	21	08: 34	F	1102
4, 4	21	08: 49	F	1106
1, 4	22	09: 04	F	1110
2, 4	22	09: 19	F	1115
3, 4	22	09: 34	F	1115
4, 4	22	09: 49	F	1117
1, 4	23	10: 04	F	1115
2, 4	23	10: 19	F	1112
3, 4	23	10: 34	F	1110
4, 4	23	10: 49	F	1099
1, 4	24	11: 04	F	1104
2, 4	24	11: 19	F	1109

PSNS115.1 Smpl r Rpt  
3, 4 24 11: 34 F 1100  
4, 4 24 11: 49 F 1097  
11: 50 PGM DONE 21-JAN  
SOURCE E ==> ENABLE  
SOURCE F ==> FLOW  
-----

PSNS084.1 Smplr Rpt

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425546782

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425546782

> REPORT

SAMPLER ID# 2425546782 14:29 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS84-1"

SITE DESCRIPTION:

"PSNS84-1"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS  
22 ft SUCTION LINE  
15 ft SUCTION HEAD  
0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

NO SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----  
ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----  
EVENT MARK SENT

DURING PUMP CYCLE

-----  
PUMP COUNTS FOR

PSNS084.1 Smpl r Rpt

EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----  
I /01= NONE  
I /02= NONE  
I /03= NONE  
-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT  
-----

NO DIALOUT  
CONDITIONS SET  
-----

-----  
SAMPLER ID# 2425546782 14:30 21-JAN-12  
Hardware: B2 Software: 3.26  
\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*  
SITE: PSNS84-1  
PROGRAM: PSNS84-1  
Program Started at 11:39 TU 17-JAN-12  
Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	COUNT TO LIQUID
-----					
11:39 PGM DISABLED					
-----					
FR 20-JAN-12					
-----					
13:39 PGM ENABLED					
1,4	1	13:39	E		484
2,4	1	13:53	F		486
3,4	1	14:08	F		492
4,4	1	14:23	F		492
1,4	2	14:38	F		493
2,4	2	14:53	F		496
3,4	2	15:08	F		499
4,4	2	15:23	F		502
1,4	3	15:38	F		505
2,4	3	15:53	F		509
3,4	3	16:08	F		511
4,4	3	16:23	F		520
1,4	4	16:38	F		522
2,4	4	16:53	F		524
3,4	4	17:08	F		534
4,4	4	17:23	F		536
1,4	5	17:38	F		546
2,4	5	17:53	F		548
3,4	5	18:08	F		558
4,4	5	18:23	F		555
1,4	6	18:38	F		562
2,4	6	18:53	F		560
3,4	6	19:08	F		558
4,4	6	19:23	F		558
1,4	7	19:38	F		558
2,4	7	19:53	F		556
3,4	7	20:08	F		556
4,4	7	20:23	F		558
1,4	8	20:38	F		560
2,4	8	20:53	F		558
3,4	8	21:08	F		560
4,4	8	21:23	F		558
1,4	9	21:38	F		558
2,4	9	21:53	F		558

PSNS084.1 Smpl r Rpt

3, 4	9	22: 08	F	558
4, 4	9	22: 23	F	559
1, 4	10	22: 38	F	562
2, 4	10	22: 53	F	560
3, 4	10	23: 08	F	558
4, 4	10	23: 23	F	560
1, 4	11	23: 38	F	558
2, 4	11	23: 53	F	560
----- SA 21-JAN-12 -----				
3, 4	11	00: 08	F	552
4, 4	11	00: 23	F	546
1, 4	12	00: 38	F	536
2, 4	12	00: 53	F	534
3, 4	12	01: 08	F	524
4, 4	12	01: 23	F	522
1, 4	13	01: 38	F	514
2, 4	13	01: 53	F	512
3, 4	13	02: 08	F	510
4, 4	13	02: 23	F	504
1, 4	14	02: 38	F	500
2, 4	14	02: 53	F	498
3, 4	14	03: 08	F	494
4, 4	14	03: 23	F	495
1, 4	15	03: 38	F	498
2, 4	15	03: 53	F	493
3, 4	15	04: 08	F	491
4, 4	15	04: 23	F	490
1, 4	16	04: 38	F	493
2, 4	16	04: 53	F	491
3, 4	16	05: 08	F	490
4, 4	16	05: 23	F	491
1, 4	17	05: 38	F	496
2, 4	17	05: 53	F	498
3, 4	17	06: 08	F	498
4, 4	17	06: 23	F	498
1, 4	18	06: 38	F	500
2, 4	18	06: 53	F	504
3, 4	18	07: 08	F	504
4, 4	18	07: 23	F	504
1, 4	19	07: 38	F	510
2, 4	19	07: 53	F	509
3, 4	19	08: 08	F	511
4, 4	19	08: 23	F	509
1, 4	20	08: 38	F	516
2, 4	20	08: 53	F	516
3, 4	20	09: 08	F	517
4, 4	20	09: 23	F	522
1, 4	21	09: 38	F	518
2, 4	21	09: 53	F	519
3, 4	21	10: 08	F	520
4, 4	21	10: 23	F	522
1, 4	22	10: 38	F	518
2, 4	22	10: 53	F	518
3, 4	22	11: 08	F	518
4, 4	22	11: 23	F	512
1, 4	23	11: 38	F	511
2, 4	23	11: 53	F	508
3, 4	23	12: 08	F	510
4, 4	23	12: 23	F	506
1, 4	24	12: 38	F	506
2, 4	24	12: 53	F	506
3, 4	24	13: 08	F	506
4, 4	24	13: 23	F	496

PSNS084.1 Smplr Rpt  
13:23 PGM DONE 21-JAN  
SOURCE E ==> ENABLE  
SOURCE F ==> FLOW

---



PSNS015 Smpl r Rpt

CR1000>P

1: ComRS232  
2: ComME  
3: Com310  
4: ComSDC7  
5: ComSDC8  
6: Com320  
7: ComSDC10  
8: ComSDC11  
9: SDI -12  
10: COM2  
11: COM3  
12: COM4  
14: SDM-SI 04  
32..47: SDM-SI 01

Select: 10

Enter timeout (secs): 60

opening 10

?

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425481222

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425481222

>

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425481222

> REPORT

SAMPLER ID# 2425481222 16:36 21-JAN-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----  
PROGRAM NAME:

"PSNS015"

SITE DESCRIPTION:

"PSNS015"

-----  
UNITS SELECTED:

LENGTH: ft

-----  
24, 1000 ml BTLS

22 ft SUCTION LINE

18 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----  
ONE-PART PROGRAM

-----  
PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----  
DISTRIBUTION:

4 SAMPLES/BOTTLE

-----  
VOLUME:

240 ml SAMPLES

-----  
ENABLE:

NONE PROGRAMMED

-----  
ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

PSNS015 Smpl r Rpt

ENABLE:  
 O PAUSE & RESUMES  
 -----  
 NO DELAY TO START  
 -----  
 -----  
 LIQUID DETECT ON  
 NO RAIN GAGE  
 -----  
 NO YSI SONDE  
 -----  
 MASTER/SLAVE OFF  
 BTL FULL DETECT OFF  
 TIMED BACKLIGHT  
 -----  
 EVENT MARK SENT  
 DURING PUMP CYCLE  
 -----  
 PUMP COUNTS FOR  
 EACH PURGE CYCLE:  
 200 PRE-SAMPLE  
 AUTO POST-SAMPLE  
 -----  
 I /01= NONE  
 I /02= NONE  
 I /03= NONE  
 -----  
 O ANALOG OUTPUTS  
 NO PERIODIC  
 SERIAL OUTPUT  
 -----  
 NO DIALOUT  
 CONDITIONS SET

-----  
 SAMPLER ID# 2425481222 16:36 21-JAN-12  
 Hardware: B2 Software: 3.26  
 \*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS015  
 PROGRAM: PSNS015  
 Program Started at 13:31 TU 17-JAN-12  
 Nominal Sample Volume = 240 ml

SAMPLE	BOTTLE	TIME	SOURCE	ERROR	LIQUID	COUNT TO
-----						
		13:31	PGM	DI	SABLED	
		FR 20-JAN-12	-----			
		13:13	PGM	ENABLED		
1,4	1	13:13	E			707
2,4	1	13:27	F			700
3,4	1	13:42	F			703
4,4	1	13:57	F			706
1,4	2	14:12	F			711
2,4	2	14:27	F			707
3,4	2	14:42	F			712
4,4	2	14:57	F			722
1,4	3	15:12	F			723
2,4	3	15:27	F			725
3,4	3	15:42	F			736
4,4	3	15:57	F			740
1,4	4	16:12	F			747
2,4	4	16:27	F			754

PSNS015 Smpl r Rpt

3, 4	4	16: 42	F	758
4, 4	4	16: 57	F	770
1, 4	5	17: 12	F	779
2, 4	5	17: 27	F	786
3, 4	5	17: 42	F	796
4, 4	5	17: 57	F	814
1, 4	6	18: 12	F	824
2, 4	6	18: 27	F	828
3, 4	6	18: 42	F	823
4, 4	6	18: 57	F	821
1, 4	7	19: 12	F	827
2, 4	7	19: 27	F	815
3, 4	7	19: 42	F	822
4, 4	7	19: 57	F	820
1, 4	8	20: 12	F	821
2, 4	8	20: 27	F	818
3, 4	8	20: 42	F	824
4, 4	8	20: 57	F	818
1, 4	9	21: 12	F	871
2, 4	9	21: 27	F	856
3, 4	9	21: 42	F	818
4, 4	9	21: 57	F	821
1, 4	10	22: 12	F	820
2, 4	10	22: 27	F	845
3, 4	10	22: 42	F	824
4, 4	10	22: 57	F	912
1, 4	11	23: 12	F	826
2, 4	11	23: 27	F	894
3, 4	11	23: 42	F	824
4, 4	11	23: 57	F	821
----- SA 21-JAN-12 -----				
1, 4	12	00: 12	F	802
2, 4	12	00: 27	F	796
3, 4	12	00: 42	F	785
4, 4	12	00: 57	F	772
1, 4	13	01: 12	F	762
2, 4	13	01: 27	F	752
3, 4	13	01: 42	F	746
4, 4	13	01: 57	F	740
1, 4	14	02: 12	F	736
2, 4	14	02: 27	F	728
3, 4	14	02: 42	F	723
4, 4	14	02: 57	F	718
1, 4	15	03: 12	F	717
2, 4	15	03: 27	F	718
3, 4	15	03: 42	F	710
4, 4	15	03: 57	F	706
1, 4	16	04: 12	F	706
2, 4	16	04: 27	F	712
3, 4	16	04: 42	F	713
4, 4	16	04: 57	F	707
1, 4	17	05: 12	F	712
2, 4	17	05: 27	F	712
3, 4	17	05: 42	F	712
4, 4	17	05: 57	F	711
1, 4	18	06: 12	F	718
2, 4	18	06: 27	F	717
3, 4	18	06: 42	F	725
4, 4	18	06: 57	F	727
1, 4	19	07: 12	F	730
2, 4	19	07: 27	F	731
3, 4	19	07: 42	F	731
4, 4	19	07: 57	F	736

PSNS015 Smpl r Rpt

1, 4	20	08: 12	F	740
2, 4	20	08: 27	F	746
3, 4	20	08: 42	F	748
4, 4	20	08: 57	F	747
1, 4	21	09: 12	F	754
2, 4	21	09: 27	F	760
3, 4	21	09: 42	F	760
4, 4	21	09: 57	F	758
1, 4	22	10: 12	F	760
2, 4	22	10: 27	F	752
3, 4	22	10: 42	F	754
4, 4	22	10: 57	F	756
1, 4	23	11: 12	F	751
2, 4	23	11: 27	F	745
3, 4	23	11: 42	F	745
4, 4	23	11: 57	F	742
1, 4	24	12: 12	F	738
2, 4	24	12: 27	F	738
3, 4	24	12: 42	F	738
4, 4	24	12: 57	F	736

12: 58 PGM DONE 21-JAN

SOURCE E ==> ENABLE

SOURCE F ==> FLOW



## National Weather Service National Headquarters National Weather Service

### Area Forecast Discussion

Issued by NWS Seattle/Tacoma, WA

**Current Version** | [Previous Version](#) | [Text Only](#) | [Print](#) | [Product List](#) | [Glossary Off](#)

Versions: [1234567891011121314151617181920212223242526272829303132333435](#)

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FXUS66 KSEW 201706  
AFDSEW

#### [AREA FORECAST DISCUSSION](#)

NATIONAL WEATHER SERVICE SEATTLE WA  
900 AM PST FRI JAN 20 2012

.SYNOPSIS...TEMPERATURES WILL CONTINUE TO GRADUALLY WARM OVER WESTERN WASHINGTON TODAY. A WARMER WET FRONTAL SYSTEM WILL REACH WESTERN WASHINGTON THIS EVENING. AN [ACTIVE](#) WEATHER PATTERN WILL CONTINUE THROUGH THE MIDDLE OF NEXT WEEK AS A SERIES OF FRONTS REACH THE AREA.

&&

.SHORT TERM...TEMPS STILL BELOW FREEZING OVER THE NORTHWEST INTERIOR...BUT THERE ISN'T MUCH COLD AIR LEFT TO DRAIN INTO THE AREA AND BLI-YWL [GRADIENT](#) HAS FALLEN FROM -15MB 24HRS AGO TO -8MB. THAT [GRADIENT](#) WILL TICK UP A NOTCH TODAY AS THE EASTERLY [GRADIENT](#) AHEAD OF THE FRONTAL SYSTEM JUST OFFSHORE INCREASES OVER WRN WA AND THE [WINTER WEATHER ADVISORY](#) THAT IS IN EFFECT UP THEIR TIL 4PM SEEMS JUST ABOUT RIGHT...WITH SOME MIXED [PCPN](#) TODAY AND THEN TURNING OVER TO RAIN BY EVENING. THE LIGHT NE WIND UP THERE NOW SHOULD SWITCH TO A SOUTHEAST WIND AS THE LAST OF THE COLD AIR FINALLY SCOURS OUT AS WINDS ALOFT AHEAD OF THE VIGOROUS [FRONT](#) JUST OFFSHORE START TO MIX DOWN. FOR THE REST OF THE LOWLANDS OF WRN WA THE MOST WE MIGHT SEE IS SOME WET SNOW...BUT THE MILD RAINY WEATHER FOR LATER TODAY IS AN EASY FORECAST. THERE ARE MANY WAYS TO WARM WRN WA...EASTERLY DOWNSLOPE OFF THE CASCADES...ANY MIXING FROM THE INCREASINGLY WARM AIR ALOFT...AND THE FACT THAT WE HAVE ALREADY GRADUALLY WARMED OVERNIGHT. THE 24HR CHANGE IN TEMPS OVER WRN WA AT 8AM RANGED FROM 2 TO 12 DEGREES AS THE FRASER [OUTFLOW](#) AND [NLY](#) WIND WE HAD YDY PETERED OUT OVERNIGHT.

THE MAIN FNTL BAND SHOULD REACH WRN WA THIS EVENING...WITH PRECIP INCREASING THIS AFTERNOON AND THE STRONGEST [PTN](#) OF THE [FRONT](#) WITH THE MOST [MOISTURE](#) AND WARMTH ALOFT OVER WRN WA 4-7PM. THEN OVERNIGHT THE [NAM](#) SHOWS STRONG WINDS ALOFT OVER OREGON...PUSHING BACK UP OVER THE CASCADES BEFORE DAYBREAK...SO THERE WILL PROBABLY BE TWO SURGES OF RAIN FOR THE LOWLANDS AND TWO SURGES OF HEAVY MIXED [PCPN](#) AND SNOW FOR THE MOUNTAINS. FOR THE OLYMPICS MUCH OF THE PRECIP OVERNIGHT WILL BE RAIN AS 850MB TEMPS WARM TO +4C...BUT OVER THE CASCADES COLD AIR WILL KEEP THE PRECIP SNOW OR A MIX OF SNOW AND FREEZING RAIN IN THE PASSES...WHILE ALONG THE MORE EXPOSED WEST SLOPES OF THE CASCADES THE SNOW LEVEL RISES. EXPOSED PEAKS LIKE MT RAINIER COULD SEE THE SNOW LEVEL RISE TO 6000 FEET TONIGHT...WHILE THE SNOW LEVEL REMAINS AT THE SURFACE IN THE PASSES. THE NORTH CASCADES WILL PROBABLY SEE OF AN AREAL AVERAGE SNOW LEVEL RISING TO [ARND](#) 2000FT TONIGHT...BUT THAT IS PRETTY TRICKY TOO AND IT COULD VERY WELL SLOPE FROM A PEAK OF 5000FT AT MT PILCHUCK IN SNOHOMISH COUNTY TO A SNOW LEVEL CLOSE THE SURFACE WAY UP AT MARBLEMOUNT.

IN THE AFTERNOON [FCST](#) DISCUSSION I WILL ADDRESS THE POTENTIAL FOR WINDY WEATHER LATE TONIGHT AS WHAT SORT OF LOOKS LIKE THE BENT BACK [TROUGH](#) COMES THRU WRN WA...THE [NAM](#) SHOWS A 16MB PDX-BLI [GRADIENT](#) AT 4AM WITH THE STRONGEST [GRADIENT](#) OVER THE PUGET SOUND [BASIN](#). I HAVE NOT HAD A CHANCE TO EXPLORE ANY OF THE GUIDANCE FROM THE UW [MESOSCALE](#) MODELS THOROUGHLY...BUT THE UW 4KM WRF-GFS SHOWS SE GALES [COASTAL WATERS](#) AND EAST ENTRANCE STRAIT OF JUAN DE FUCA THIS AFTERNOON AHEAD OF THE [FRONT](#)...AND A [WIND SHIFT](#) TO [WLY](#) [ARND](#) MIDNIGHT TONIGHT ON THE COAST...WITH A BRIEF SW [GALE](#) OVER PUGET SOUND AND A [WLY](#) [GALE](#) IN THE STRAIT AT 12Z. THAT IS NOT NEARLY AS WINDY AS THE [NAM](#) [SLP](#) [FCST](#) SUGGESTS. 19

.LONG TERM...A QUICK LOOK AT THE LATEST 12Z [GFS](#) SHOWS A PRETTY TYPICAL FRONTAL SYSTEM ON TAP FOR SUN NITE...[HEIGHT](#) RISES MONDAY AFTERNOON THROUGH TUESDAY WHICH SET UP A MILD SW [FLOW](#) AND BAROCLINIC ZONE FOR PROBABLY TWO FNTL WAVES TUE AND WED...THAT WILL BE WARM WET AND WINDY WITH A PERIOD OF RAIN IN THE MOUNTAINS...AND THEN COOLING WITH STRONG [WLY](#) [FLOW](#) [ALE](#) THU AND FRI...BUT THE [FLOW](#) TURNING MORE [NWLY](#) AND [HEIGHT](#) RISING LATE IN THE WEEK. THE [GFS](#) AND [ECMWF](#) THEN DIVERGE SHARPLY AFTER THAT...AS MUCH AS I HAVE SEEN RECENTLY. 19

&&

.[HYDROLOGY](#)...PERIODS OF HEAVY RAIN LATER TODAY INTO SATURDAY ON TOP OF THE SNOW BLANKETING ALL OF WESTERN WASHINGTON COULD CAUSE RIVER FLOODING IN SOUTHWEST WASHINGTON AND [URBAN AND SMALL STREAM FLOODING](#) THROUGHOUT THE AREA. THE RAIN COMBINED WITH LOWLAND SNOW MELT COULD DRIVE THE SKOKOMISH AND CHEHALIS RIVERS ABOVE [FLOOD](#) STAGE BETWEEN TONIGHT AND SATURDAY EVENING...EVEN THOUGH THE [RIVER FLOODING](#) IS

EXPECTED TO MINOR.

ALL AREAS COULD SEE EXCESSIVE SURFACE [RUNOFF](#) WITH [PONDING](#) OF WATER...[PONDING](#) AROUND CLOGGED DRAINS OR CULVERTS...AND/OR SMALL STREAMS GOING OVER THEIR BANKS. WORSE AREA FLOODING COULD OCCUR IN SPOTS...PARTICULARLY IN THE AREAS OF DEEP LOWLAND SNOW AND HEAVIER RAIN LIKE THE SOUTHWEST INTERIOR. SNOW MELTING INTO THE SOIL AND THE UPCOMING ADDITION OF [RAINFALL](#) WILL INCREASE THE THREAT OF LANDSLIDES.

UNCERTAINTY IS HIGH WITH THIS EVENT AND THE SNOW MELT IS A BIG PART OF THAT UNCERTAINTY. THE TEMPERATURES ONLY WARM TO THE MID FORTIES WHICH WOULD NOT ARGUE FOR A FAST MELTING OF SNOW...HOWEVER...SNOW MELT CAN ACT IN SUCH A WAY AS TO HOLD THE RAIN WATER AND THEN MELT AND RELEASE THE WATER IN A RELATIVELY SHORT PERIOD OF TIME WHICH WOULD GREATLY INCREASE THE RIVER [RUNOFF](#). IT IS EXTREMELY DIFFICULT TO SAY HOW THE SNOW WILL MELT. RIVER MODELS DO NOT ALWAYS HANDLE THESE SITUATIONS VERY WELL SO SPECIFIC RIVER FORECASTS MAY NOT FULLY INDICATE THE EXISTING [FLOOD](#) RISK. BOWER/FELTON

&&

.AVIATION...SHOWERS WILL CONTINUE ACROSS WESTERN WA TODAY AS A [PAC](#) SYSTEM MOVES INLAND. EXPECT OCCASIONAL [MVFR](#) CIGS. WARMER MARINE AIR HAS SPREAD INLAND TO AROUND KPAE THIS MORNING. THE LOW LEVEL AIR MASS IS WARM ENOUGH FOR RAIN AT THE SURFACE. THE LAST AREA TO TRANSITION WILL BE THE N INTERIOR AS FRASER RIVER [OUTFLOW](#) CONTINUES. HOWEVER NE [PRES](#) GRADIENTS ARE DECREASING AND WINDS ARE FORECAST TO SWITCH TO S/SE EARLY THIS AFTERNOON. UNTIL THEN...EXPECT A MIXED BAG OF PRECIP FOR AREAS LIKE KBLI...WITH A TRANSITION TO RAIN SHOWERS THIS AFTERNOON. TEMPS WILL REMAIN ABOVE FREEZING TONIGHT. 33

KSEA...RAIN SHOWERS EXPECTED TODAY WITH SURFACE TEMPS REMAINING ABOVE FREEZING. EXPECT OCCASIONAL [MVFR](#) CEILINGS. S/SE [FLOW](#) WILL INCREASE LATE TONIGHT. 33

&&

.MARINE...EXPECT INCREASING S/SE [FLOW](#) OVER THE WATERS TODAY AS A STRONG [PAC](#) SYSTEM APPROACHES WESTERN WA. [GALE](#) WARNINGS REMAIN IN EFFECT FOR THE [COASTAL WATERS](#)...ENTRANCES TO THE STRAIT... AND NORTHERN INLAND WATERS. HIGH END [SMALL CRAFT ADVISORY](#) WINDS ARE FORECAST FOR THE CENTRAL STRAIT...ADMIRALTY INLET...PUGET SOUND AND HOOD CANAL. A SURFACE [TROUGH](#) WILL MOVE INLAND LATE TONIGHT BRINGING A [BURST](#) OF SOUTH WINDS TO THE INTERIOR...MAY SEE GALES FOR PUGET SOUND AND HOOD CANAL. POST FRONTAL GALES ARE ANTICIPATE THROUGH THE STRAIT OF JUAN DE FUCA [SAT](#) MORNING/AFTERNOON AS WELL.

STRONG FRONTAL SYSTEMS WILL ALSO MOVE THROUGH WESTERN WASHINGTON AND ITS [COASTAL WATERS](#) LATE THIS WEEKEND AND AGAIN EARLY NEXT WEEK. FAIRLY WIDESPREAD GALES ARE [LIKELY](#) WITH BOTH SYSTEMS.

WESTERLY SWELLS WILL BUILD TO 20 TO 25 [FT](#) LATE SATURDAY THROUGH SUNDAY...CREATING HIGH SURF CONDITIONS ALONG THE COAST. 33

&&

WA...[WINTER WEATHER ADVISORY](#) FOR THE NORTHWEST INTERIOR UNTIL 4 PM.  
[WINTER WEATHER ADVISORY](#) FOR THE REMAINDER OF THE INTERIOR AND THE STRAIT UNTIL 10 AM.  
.WINTER STORM [WATCH](#) NORTH AND CENTRAL CASCADES LATE THIS AFTERNOON THROUGH SATURDAY MORNING.  
. [FLOOD WATCH](#) FOR WESTERN WASHINGTON TONIGHT THROUGH SATURDAY NIGHT.

PZ...[GALE WARNING](#) [COASTAL WATERS](#)...ENTRANCES TO THE STRAIT...AND NORTHERN INLAND WATERS THROUGH NOON SATURDAY.  
. [GALE WARNING](#) FOR THE CENTRAL STRAIT OF JUAN DE FUCA SATURDAY MORNING.  
. [SMALL CRAFT ADVISORY](#) FOR ADMIRALTY INLET...PUGET SOUND AND HOOD CANAL.  
. [SMALL CRAFT ADVISORY](#) FOR ROUGH [BAR](#) CONDITIONS THROUGH SATURDAY.

\$\$

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Page last modified: Apr 14th, 2011 20:35 UTC



# Your National Weather Service forecast

## Bremerton WA

Enter Your "City, ST" or zip code  

 BOOKMARK
 



NWS Seattle, WA

**Point Forecast:** Bremerton WA  
47.56°N 122.62°W (Elev. 0 ft)

[Mobile Weather Information](#) | [En Español](#)

**Last Update:** 4:40 am PST Jan 20, 2012

**Forecast Valid:** 9am PST Jan 20, 2012-6pm PST Jan 26, 2012

### Forecast at a Glance

Today	Tonight	Saturday	Saturday Night	Sunday	Sunday Night	Monday	Monday Night	Tuesday
								
<b>100%</b>	<b>100%</b>	<b>70%</b>	<b>40%</b>	<b>90%</b>	<b>90%</b>	<b>70%</b>		
Wintry Mix	Rain	Showers Likely	Chance Showers	Rain	Rain	Showers Likely	Chance Showers	Rain
Hi <b>38 °F</b>	Lo <b>38 °F</b>	Hi <b>46 °F</b>	Lo <b>39 °F</b>	Hi <b>45 °F</b>	Lo <b>38 °F</b>	Hi <b>44 °F</b>	Lo <b>38 °F</b>	Hi <b>47 °F</b>

### Detailed 7-day Forecast

Hazardous weather condition(s):

**Winter Weather Advisory**  
**Flood Watch**

**Today:** Occasional snow and freezing drizzle before 10am, then rain. Snow level 200 feet rising to 3700 feet. High near 38. North wind 7 to 13 mph becoming south. Chance of precipitation is 100%. Little or no ice accumulation expected. Little or no snow accumulation expected.

**Tonight:** Rain. Low around 38. Southeast wind 11 to 16 mph becoming northeast. Chance of precipitation is 100%.

**Saturday:** Showers likely, mainly before 10am. Cloudy, with a high near 46. Windy, with a southwest wind between 22 and 30 mph. Chance of precipitation is 70%.

**Saturday Night:** A 40 percent chance of showers. Mostly cloudy, with a low around 39. South southwest wind around 15 mph.

**Sunday:** Rain. High near 45. South southeast wind between 11 and 13 mph. Chance of precipitation is 90%.

**Sunday Night:** Rain. Low around 38. Chance of precipitation is 90%.

**Monday:** Showers likely. Cloudy, with a high near 44. Chance of precipitation is 70%.

**Monday Night:** A chance of showers. Cloudy, with a low around 38.

**Tuesday:** Rain. Cloudy, with a high near 47.

**Tuesday Night:** Rain. Cloudy, with a low around 37.

**Wednesday:** Rain. Mostly cloudy, with a high near 51.

**Wednesday Night:** Rain. Cloudy, with a low around 37.

### Detailed Point Forecast [Move Down]

Click Map for Forecast [Disclaimer](#)



Map data ©2012 Google -

Requested Location ■ Forecast Area

**Lat/Lon:** 47.56°N 122.62°W    **Elevation:** 0 ft




### Current Conditions [Move Up]

**Bremerton, Bremerton National Airport (KPWT)**

Lat: 47.5 Lon: -122.75 Elev: 440  
 Last Update on 20 Jan 8:15 PST

**Overcast**

**32°F**

**(0°C)**

<b>Humidity:</b>	93 %
<b>Wind Speed:</b>	calm
<b>Barometer:</b>	29.66 in (N/A mb)
<b>Dewpoint:</b>	30°F (-1°C)
<b>Wind Chill:</b>	32°F (0°C)
<b>Visibility:</b>	1.75 Miles

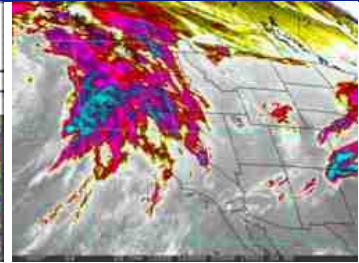


**Thursday:** Showers. Cloudy, with a high near 48.

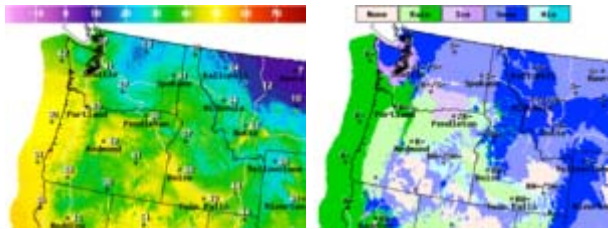
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[3 Day History:](#)

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### National Digital Forecast Database



### Additional Forecasts & Information

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[Forecast Discussion](#)

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# National Weather Service Forecast Office

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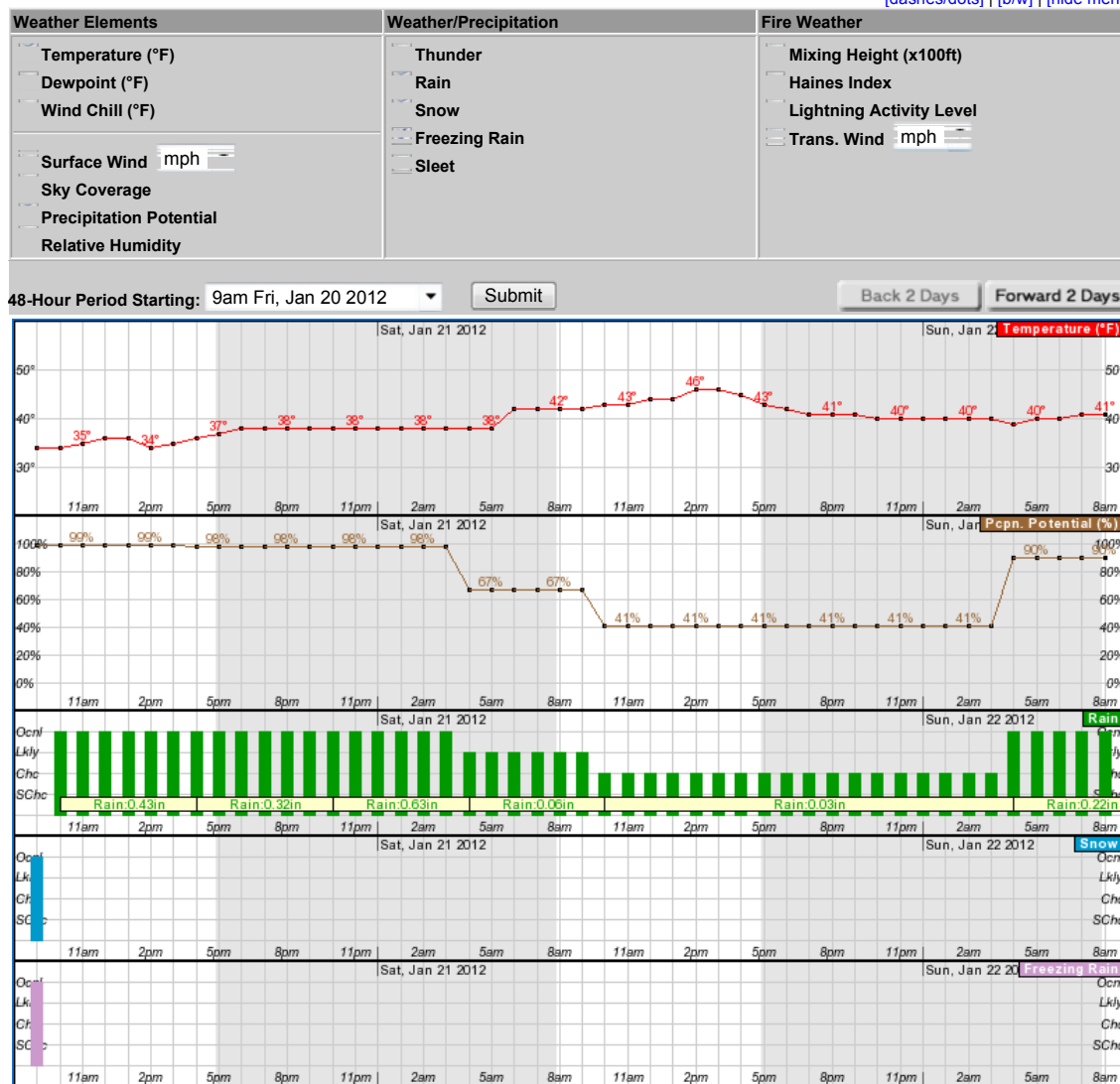
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**Point Forecast:** Bremerton WA  
 47.56N 122.62W (Elev. 0 ft)

Last Update: 4:40 am PST Jan 20, 2012

### Hourly Weather Forecast Graph

[\[dashes/dots\]](#) | [\[b/w\]](#) | [\[hide menu\]](#)



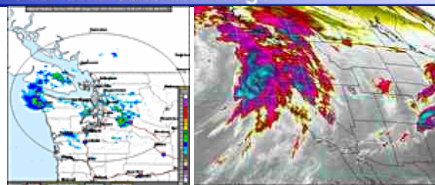
**Sunday, January 22 at 12am**

Temperature: 40 °F

Precipitation Potential: 41%

Rain: Chance (30%-50%)    Snow: <10%    Freezing Rain: <10%

#### Radar and Satellite Images



#### Additional Forecasts & Information

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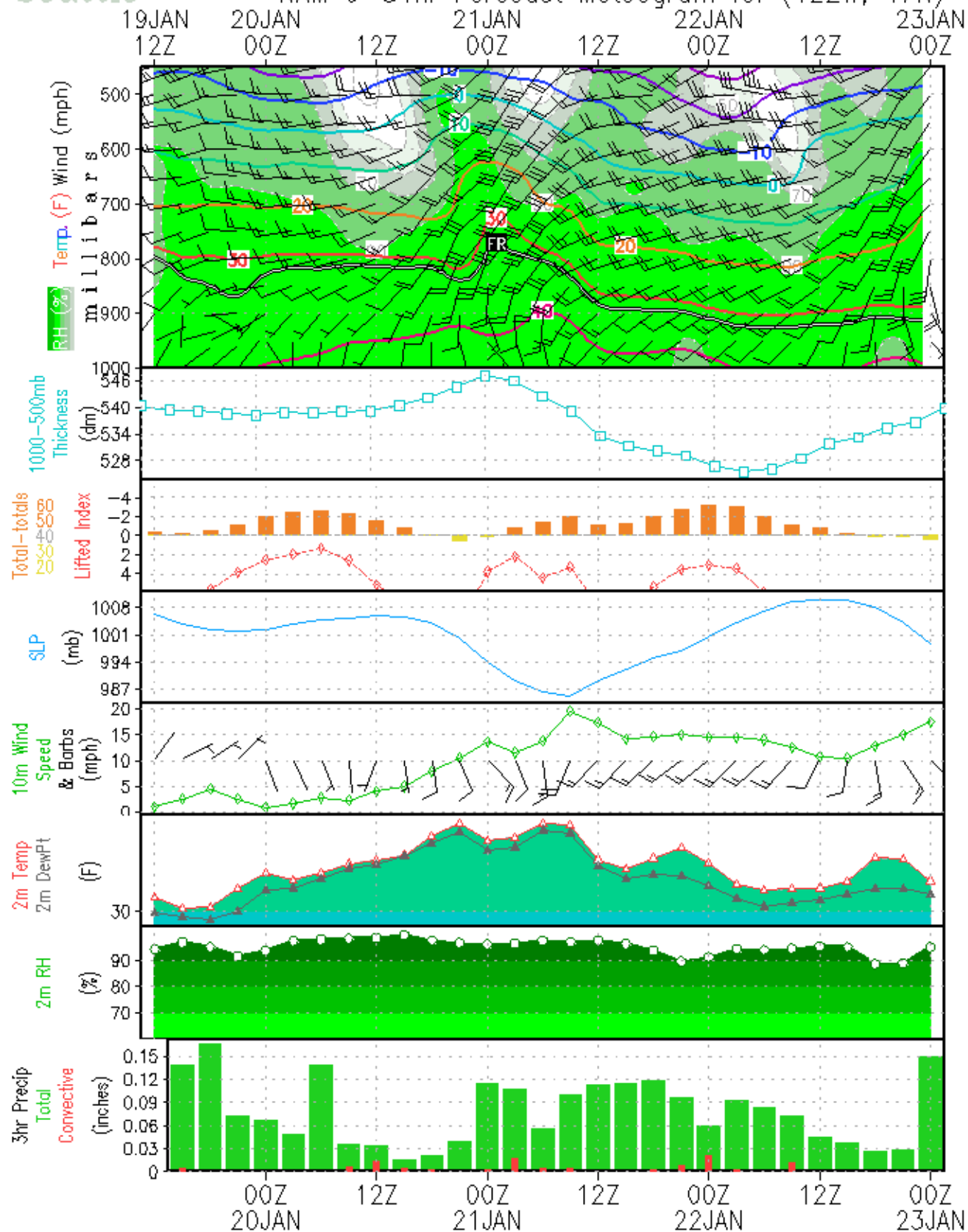
**Forecast For Lat/Lon: 47.5620/-122.6230 (Elev. 0 ft)**  
**Bremerton WA**

*Custom Weather Forecast Table*

	Fri Jan 20												Sat Jan 21								Sun Jan 22								Mon Jan 23
Weather	Occasional Freezing Drizzle and Snow				Rain				Likely Rain	Scattered Rain Showers		Chance Rain Showers				Rain													
Daily-Temp	High 38 Low 31								High 46 Low 38								High 45 Low 39								Low 38				
Chance of Precip	100%		100%		100%		100%		65%		40%		40%		40%		90%		90%		90%		90%						
Precip	0.06"		0.43"		0.32"		0.63"		0.06"		0.01"		0.01"		0.01"		0.22"		0.26"		0.14"		0.12"						
12-hr Snow Total	0"				0"				0"				0"				0"				0"								
3-Hour	4am	7am	10am	1pm	4pm	7pm	10pm	1am	4am	7am	10am	1pm	4pm	7pm	10pm	1am	4am	7am	10am	1pm	4pm	7pm	10pm	1am					
Temp	31	33	34	36	36	38	38	38	38	42	43	44	45	41	40	40	39	41	42	43	44	40	39	39					
Cloudiness	95%	95%	98%	98%	98%	98%	92%	92%	97%	97%	97%	97%	76%	76%	76%	76%	97%	97%	97%	97%	97%	97%	97%	97%					
Dewpoint	31	31	34	36	36	38	37	38	38	38	40	40	37	34	32	33	33	35	38	39	36	34	32	33					
Relative Humidity	91%	91%	95%	90%	76%	82%	83%	85%	85%	85%	88%	85%	73%	76%	76%	77%	78%	79%	88%	86%	73%	79%	78%	80%					
Wind	N	N	E	S	SE	SE	NE	NE	S	SW	S	SW	SW	SW	S	S	S	S	SE	SE	SE	SE	S	S					
	8	8	7	13	16	16	12	12	25	30	22	22	15	15	14	14	13	13	12	12	12	12	18	18					
Snow Level (ft)	206	206	206	366	840	2740	2751	5175	5175	3256	3256	2393	2393	2182	2182	1652	1652	1603	1603	1898	1898	1695	1695	1695	1695				

# Seattle

NAM 0-84hr Forecast Meteogram for (122W, 47N)



## Telemetry Data Summary Report (TDSR); QAQC Data Notes, from 11/23/11 to 1/23/12

### 126

12/4/11 to 12/8/11 Values for conductivity and salinity (low) showed little to no response to tidal fluctuations. No rain during this period.  
Rest of data set 11/23/11 to 1/23/12 OK

### 124.1

11/30/11 to 12/21/11, Sensor likely clogged in period of little to no rain. Cond/Sal readings were effected by tidal deposition. Readings during this period showed little response.  
12/27/11 to 1/23/11, During rain events, conductivity values went negative and corresponding salinity values missing, including SW09 sampling event on 1/20/11.

### 124

11/23/11 02:00-06:15, Negative conductivity (no salinity) values with elevated level.  
12/21/11 17:45, Start of negative level values when nearing zero, periodic until 12/26/11. Values ok until 1/8/12.  
1/8/12, Negative level values when nearing zero until end of review record 1/23/12 13:00.

### 115.1

11/23/11 to 1/17/12, Negative level values when near or at zero, periodic.  
1/17/12, Level values look ok, no negative values when at or near zero until end of review record 1/23/12 13:00.

### 84.1

Intermittent negative level values when at or near zero from 11/22/11 to 12/6/11.  
12/6/11 07:20, All data missing or corrupt  
Level and trans temp restored on 12/6/11 12:05, with intermittent negative values when at or near zero.  
Temperatures for both YSI and trans reaches high temps (37+ deg Celsius) on episodic basis.  
All data missing on 12/19/11 14:55 until 12/21/11 19:10. YSI data (cond, sal, temp) corrupt again on 12/22/11 00:20.  
Level and trans temp data OK from 12/21/11 19:10 to 12/27/11 15:10 (no negative values).  
All data missing on 12/27/11 15:10 until 1/2/12 17:40.  
All data OK from 1/2/12 to 1/17/12.  
1/17/12 15:10, Intermittent negative level values when level get at or near zero through to 1/23/12 at the end of review record.

### 015

11/22/11 to 12/31/11: When level reaches approx 0.5 or below, conductivity goes negative and correspondingly no salinity value.  
During this time period, salinity values would be missing although conductivity values were OK. This seemed to happen after a period of negative conductivity values. This pattern occurred again sporadically until 1/17/12.  
12/21/11 20:20 to 21:25, Temperature intermittent, missing values  
12/1/11, Small missing data, due to station maintenance  
1/10/12 22:15-22:20, Level Spike  
1/10/12 to 1/16/12, Negative level when at or near zero.  
1/7/12 13:10 to 13:15, No data, due to station maintenance  
1/7/12 13:20, After this point, all data looks OK to 1/23/12 13:00, end of review record.



---

# **STORM EVENT REPORT SW10**

## **For**

### **Non-Dry Dock Stormwater Monitoring**

#### **Conducted at**

#### **Puget Sound Naval Shipyard**

#### **Bremerton, WA**

#### **Project ENVVEST Study Area**

**February 28, 2012**



*Puget Sound Naval Shipyard and Surrounding Area*

**PNNL Contract No.: N4523A10MP00034 Amendment 1**

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## 1.0 Introduction

Taylor/TEC conducted non-dry dock stormwater sampling tasks within the Puget Sound Naval Shipyard (PSNS) and adjacent areas within Naval Base Kitsap (NBK); collectively comprising the Project ENVVEST study area, between January 23<sup>rd</sup> and February 29<sup>th</sup>, 2012. This was the third of four scheduled events of the 2011-2012 project year – referred to as *Phase II*. Overall, this is the tenth Stormwater (SW10) event of the project. A summary of the preparatory and sampling events, including site specific conditions that occurred during SW10 are presented in this report, with supporting information as attachments.

This SW10 Report is organized in the following manner and contains: Section 2, Event Summary; Section 3, Project Staff Participating in SW10; Section 4, Storm Event SW10 Preparatory Tasks; Section 5, Weather Forecast Information and SW10 Targeting Details; Section 6, Precipitation and SW10 Qualification Summary; Section 7, Sampling Information, Management and Validation; Section 8, Basin Runoff Calculations; Section 9, Descriptive Statistics and Discussion of Event Station Monitoring Data; Section 10, Notable Anomalies and Variations to the PWP; and Section 11, Action Items.

Attachments to this report include: Table A-1, *Storm Event Summary and Sampling Information, Validation Checklist* (spreadsheet); Stormwater Field Sampling Forms and Storm Controller Notes; Chain of Custody Forms; (basin) Runoff Calculation Worksheet; Station Hydrographs; Autosampler Reports; Weather Forecast Information and a Telemetry Data Summary Report.

## 2.0 SW10 Event Summary

Main SW10 details are provided below as a “Quick Reference”:

- Event/s Conducted: SW10
- Event Date/s: maint. items; 1/23/12 through 2/27/12, station prep.; 2/28/11; and storm event tasks occurred between 2/28 – 2/29/12
- Monitoring Stations Sampled: PSNS015, 84.1, 115.1, 124, 124.1 and 126
- Antecedent Conditions Met?: Yes (3 days or greater at each station); 0.0” in prior 24 hrs and 0.0” in prior 6 hrs preceding the storm/sampling event at each station.
- Start of Rainfall at PSNS Stations: 2/28/12 between 1615 (PSNS126, 124 and 084.1) and 1635 (PSNS115.1)
- Sampling Period Duration Range: start =2/28/12 @ 1643 (PSNS015) and stop = 2/29/12 @ 1340 (PSNS115.1). Max sampling duration = 20 hrs:44 mins (PSNS115.1 and 015)
- Sampling Event Rainfall Total: PSNSB427 = 0.57”, PSNS126 = 0.45”, PSNS124.1 = 0.23”, PSNS124 = 0.19”, PSNS115.1 = 0.46”, PSNS084.1 = 0.55” and PSNS015 = 0.58”
- Samples/Types Collected: Grab and composite samples were collected at each station (one each at each station) for a total of 12 “normal” samples.
- Quality Control (QC) Samples Collected: Both composite and grab sample duplicates were collected at PSNS126 during this event.

- Based on consideration of storm event and sample validation information, were the samples collected during SW10 valid for project purposes? (Y / N, composite, grab or both): Yes-both; all grab and composite samples collected during this event were valid.

See Table A-1; *Storm Event Summary and Sampling Information, Validation Checklist*, for additional event summary details.

### 3.0 Project Staff Participating in SW10

#### Taylor/TEC:

Dave Metallo – Project Manager, Storm Controller, Field Event and QC Manager

Brian Rupert – Field Team Leader

Bruce Beckwith – Field Team Member, Navy grab sampling support

#### Navy Personnel:

Bob Johnston – Project Technical Lead / Oversight / Grab sample collection lead

### 4.0 Storm Event SW10 Preparatory Tasks

On February 28<sup>th</sup>, 2012 all six stormwater monitoring stations (PSNS015, PSNS08.1, PSNS115.1, PSNS124, PSNS124.1 and PSNS126) were reset and re-calibrated. The stations were also readied for storm event / stormwater sample collection on the same day. At this point all of the monitoring equipment was deemed to be functioning properly, was operational and “sample ready” (see Sections 1 and 2 of the attached *Stormwater Field Sampling Forms*).

All stations were programmed with pre-determined autosampler enable and pacing conditions set “high” to prevent premature enabling (*sample disable mode*), as directed by the Taylor/TEC Storm Controller. Station operation was passed to the Taylor /TEC Storm Controller to be managed via telemetry. Final enabling conditions were determined by the Storm Controller closer to the onset of the storm event.

### 5.0 Weather Forecast Information and SW10 Targeting Details

Between the end of SW09 (1/21/12 ~ 1330) and the just prior to the onset of SW10 (2/28/12 @ 1615) the average rainfall as measured at the six monitoring stations during this approximately 38 day period was 4.22”. The Navy’s rain gauge at Build 427 recorded a total of 4.91” during this period.

The last measureable runoff occurred approximately 3 days prior to the SW10 event. Project qualifying antecedent dry period was met prior to the stations being armed on 2/28/12. A potentially qualifying storm event (event probability and forecast rainfall depth) was identified and targeted for 2/28/12. Rain was forecast at 100% probability for Tuesday 2/28/12, with 24-hour accumulations of over 0.40” into the evening of the 29<sup>th</sup>. A rain-snow mix was forecasted to begin the event later in the afternoon of the 28<sup>th</sup>, changing to all rain by later in the morning of the 29<sup>th</sup> – with no measureable amounts of snow accumulation. The decision was made to continue tracking and targeting this developing large storm system.



The Nation Weather System (NWS) was one the main source used for the assessment of weather forecasting and conditions. Provided below is a link to the NWS-Bremerton, WA webpage; (<http://forecast.weather.gov/MapClick.php?site=sew&textField1=47.56751&textField2=-122.63127&smap=1>). A host of other internet available weather forecasting, observational and data sources were used for field and reporting purposes as appropriate Detailed *Weather Forecast Information* is attached to this report.

Routinely referenced weather models used to gain forecast information regarding the Pacific Northwest included the MM5-NAM (<http://www.atmos.washington.edu/mm5rt/rt/naminit.12km.html>) and the GFS-WRF (<http://www.atmos.washington.edu/mm5rt/rt/gfsinit.frame1.html>) (both hosted by the University of WA and initialized for the PNW). Below is a synopsis of the model comparison for SW10:

*“GFS and NAM are in good agreement regarding storm start (~1500 on the 28<sup>th</sup>) but disagree slightly as to event duration; at 11 and 19 hours, respectively. The GFS has the event rain total at approximately 0.72” and the NAM approximately 1.10-inches”*

Final sampler enabling conditions were appropriately set at each monitoring station early on afternoon of the 28<sup>th</sup> (*sample ready mode*). Table 1 lists the final enabling conditions at each monitoring station that were used for SW10, along with the rainfall amounts in the 24 and 6 hour periods prior to the onset of the storm event.

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (μS/cm)	Repeatable Conductivity Enable (Y/N)	Pacing (min)	<sup>1</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS015	0.03	0.3	2000	N	15	0.00”/ 0.00”
PSNS084.1	0.03	0.3	2000	N	15	0.00”/ 0.00”
PSNS115.1	0.03	0.3	2000	N	15	0.00”/ 0.00”
PSNS124	0.03	0.3	2000	N	15	0.00”/ 0.00”
PSNS124.1	0.03	0.3	2000	N	15	0.00”/ 0.00”
PSNS126	0.03	0.3	2000	N	15	0.00”/ 0.00”

<sup>1</sup>Conditions as checked on 2/28/12 at 1110; final enable conditions set at ~1400

## 6.0 Precipitation and SW10 Qualification Summary

### Precipitation Summary:

Previous rainfall that caused runoff to occur ( $\geq 0.03$ " rainfall without 3-hr gap) prior to the onset of SW10 ranged from 3:17 (days:hours) at all stations except PSNS115.1 to 3:18 (days:hours) at PSNS115.1 as measured by each stations rain gauge. Rain began to fall over the project site

between 1615 and 1635 on February 28<sup>th</sup>. Table 2 details the period since last runoff, antecedent duration prior to the start of the storm event, as well as the rainfall start date/time at each monitoring station.

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS015	2/24/12 22:35	3:17	2/28/12 16:20
PSNS084.1	2/24/12 22:35	3:17	2/28/12 16:15
PSNS115.1	2/24/12 22:35	3:18	2/28/12 16:35
PSNS124	2/24/12 22:35	3:17	2/28/12 16:15
PSNS124.1	2/24/12 22:35	3:17	2/28/12 16:25
PSNS126	2/24/12 22:45	3:17	2/28/12 16:15

<sup>1</sup>Last runoff period is defined as  $\geq 0.03''$  of rainfall without a 3-hr gap

Rainfall began registering at all stations by 1635 on 2/28/12 (see Table 2). The rainfall intensities began in a moderate to moderately heavy fashion.

Operational checks during the evening of the 28<sup>th</sup>, via telemetry, revealed that all of the stations enabled their sampling routines as programmed; with rainfall, pipe level and conductivity values being in satisfaction of their threshold values, (as listed in Table 1) except for stations PSNS084.1 and PSNS124.1. It was noted that the water level in the piping system associated with PSNS124.1 was not building to / exceeding its enabling condition (0.30') as expected. PSNS084.1 had an issue stemming from a battery swap after its enabling conditions had been set – thus causing a reset of the rain depth counter and sample pacing setting. Therefore these stations were “manually” started via telemetric control. Sampling began at these monitoring stations between 1643 (PSNS015) and 1842 (PSNS124.1) on the 28<sup>th</sup>.

The initial rainfall associated with the beginning of the event lasted for a couple of hours then tailed off to moderate to light intensities for several more hours. An intra-event period of no rain fall lasting between six and eight hours split the overall SW10 event into two – resuming in a moderate fashion for another four to five hours before ending altogether around 1300 on the 29<sup>th</sup>.

Station sampling period rainfall totals ranged from 0.23" at PSNS124.1 to 0.58" at PSNS015. The Navy's rain gauge at B427 recorded 0.57".

The sampling routines all ran their courses to completion, except for PSNS124.1 which was manually stopped at the completion of its 23<sup>rd</sup> (of 24) composite bottle. Sampling durations (the range of time covering bottles used in the formulation of the overall station composite sample) ranged from 1:44(hrs:mins) (PSNS124.1 and 124) to 20:44(hrs:mins) (PSNS115.1 and 015).

Table 3 summarizes the sampling period start, sampling period end, sampling period duration as well as the total rainfall amounts for each monitoring station and the PSNS project gauge at B427 that occurred during the sampling period associated with SW10. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), attached to this report, provides additional sampling period rainfall information.

**Table 3. Sampling Period Information and Rainfall Totals for Project Monitoring Stations**

Station	Sampling Period Start (Date/Time)	Sampling Period End (Date/Time)	Sampling Period Duration (Hrs:Mins)	Total Sampling Period Rainfall (in)
PSNS015	2/28/12 16:43	2/29/2012 13:27	20:44	0.58
PSNS084.1	2/28/12 18:37	2/29/2012 13:36	18:59	0.55
PSNS115.1	2/28/12 16:56	2/29/2012 13:40	20:44	0.46
PSNS124	2/28/12 17:07	2/28/2012 18:51	1:44	0.19
PSNS124.1	2/28/12 18:42	2/28/2012 20:26	1:44	0.23
PSNS126	2/28/12 16:53	2/29/2012 12:37	19:44	0.45
<sup>1</sup> B427	2/28/12 16:43	2/29/2012 13:40	20:57	0.57

<sup>1</sup>B427 start/stop and duration incorporates the total span from all monitoring stations

### **SW10 Qualification Summary:**

All storm qualification conditions were met for this event. Storm event qualification conditions included wet season event date range (Oct 1 – May 1), forecast probability ( $\geq 70\%$ ), forecasted storm depth ( $\geq 0.1"$ ), storm duration ( $\geq 2$ hrs) and runoff occurrence / hydrograph stage (elevated above base flow). Antecedent dry period ( $\leq 0.1"$  rain in previous 24hrs and 0" rain in previous 6hrs) qualification for SW10 was also met without condition, as described above. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW10 qualification criteria listed above.

## **7.0 Sampling Information, Management and Validation**

### **Grab Sampling:**

Grab sample collection was lead and performed by the Navy Team, with storm control assistance (limited to station status checks via telemetry) from Taylor/TEC as necessary. Grab sampling was conducted at all six of the monitoring stations. Grab samples were collected as per methodologies described in the 2011-12 Project Work Plan (PWP). Parameters included total petroleum hydrocarbons (NW-TPH-Dx) and fecal coliform. All grab samples were collected on February 29<sup>th</sup>

between 1535 (PSNS124.1) and 1720 (PSNS015). Sample collection was coordinated with low or lower tidal conditions to ensure that proper conductivity conditions would exist. Grab sampling times are indicated on the attached hydrographs to illustrate the water level stage during collection. Grab sample IDs, along with the other pertinent information is listed in the *Stormwater Field Sampling Forms* and in Table A-1 (both are attached). Table 4 summarizes these results.

**Table 4. Grab Sampling Information**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Grab sample ID	SW10-002	SW10-001	SW10-004	SW10-005	SW10-006	SW10-007
Grab Date /Time	2/29/2012 15:58	2/29/2012 15:35	2/29/2012 16:18	2/29/2012 16:40	2/29/2012 16:58	2/29/2012 17:20
Grab sample conductivity value (μS/cm)	338	2882	5180	2840	253	405
Hydrograph stage at grab collection	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Falling Limb
Grab parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

**Composite Sampling:**

Composite sample retrieval tasks and formulation procedures were managed and lead by Taylor/TEC with support from PNNL/MSL personnel as needed. Composite samples were collected from all six monitoring stations.

Composite samples were collected via autosamplers which were operated and synchronized by a custom designed telemetered water quality control system. The composite sample collection period and duration for each monitoring station is noted in Table 3.

Wedge bottles from each station (contained in the autosampler bases) were brought back the C106 Stormwater Lab at B147 for processing. Composite formulation occurred on February 29<sup>th</sup> between 1850 and 2210. The number and numeric identification of the wedge bottles that were used for the composite sample formulation and those that were discarded were noted in Section 5 of the attached *Stormwater Field Sampling Forms*.

Methods used in preparation, autosampler collection, retrieval and formulation of the composite samples were conducted in a routine manner as per the 2011-12 PWP. Samplers at each station were enabled as per the conditions stated in Section 5 of this report. Composite sample parameters included: hardness, TOC, DOC, TSS, total and dissolved metals and turbidity.

The total number of discrete wedge bottles collected at each sampler, along with the total number of those bottles used in the station's composite sample is noted below in Table 5. Dividing the

number of wedge bottles used in the composite sample formulation by the total number of wedge bottles collected during the span of the entire sampling period provides an estimation of the amount of time (as a percentage of that stations entire collection period) where freshwater (i.e. runoff) conditions occurred at each station during the corresponding sampling event period.

Specific details regarding the composite formulation, results from individual bench top testing of the discrete bottles, sample IDs, sample date/time and resultant overall conductivity and turbidity values, as well as the number of wedge bottles collected during the sampling event and those used for the composite sample formulation are detailed in the *Stormwater Field Sampling Forms*, *Chain-of-Custody (CoC)* forms and in Table A-1 (all are attached). Table 5 summarizes these results.

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Composite sample ID	SW10-0010	SW10-0014	SW10-0012	SW10-0013	SW10-009	SW10-008
Composite Date /Time	2/29/2012 12:37	2/28/2012 20:26	2/28/2012 18:51	2/29/2012 13:40	2/29/2012 13:36	2/29/2012 13:27
Overall Composite conductivity value (µS/cm)	245	1493	1162	493	146	222
Overall Composite turbidity value (NTU)	8	15	20	7	16	17
Composite volume (ml)	9,000	850	2,000	7,000	8,000	8,500
Number of Bottles Collected During Sampling Event	20	2	2	21	21	21
Number of Bottles Included in Composite Sample	20	1	2	14	17	17
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	50%	100%	67%	81%	81%
Composite parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

All sampling and vault monitoring equipment operated as designed and programmed. Details pertaining to autosampler programming and event-specific operation of each monitoring stations' autosampler unit are contained in the attached *Sampler Reports*.

#### **QC Samples:**

During SW10 both grab and composite duplicate samples were collected at PSNS126. Table 6 summarizes the quality control sample collection information for SW10.

**Table 6. Summary of Quality Control Sampling Information for SW10**

Sample Collection Criteria:	Results
Grab sample duplicate ID	SW10-003
Grab sample duplicate date and time	2/29/2012 16:00
Grab sample duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	338
Composite sample Duplicate ID	SW10-0011
Composite sample duplicate date and time	2/29/2012 12:37
Overall Composite Duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	252
Overall Composite Duplicate turbidity value (NTU)	8
Composite Duplicate volume (ml)	9000

**Sample Management:**

All samples were handled and managed as per Section 9 of the 2011-12 PWP and in a manner acceptable and within industry standards regarding practices typical for tasks of this nature. Once collected, both grab and composite samples were placed into coolers and put on ice and/or into the secure Stormwater Laboratory refrigerator to maintain temperatures between 2 and 6 °C.

All sample IDs, collection date and time, matrix, requested parameter analysis and other associated information were documented on *Chain of Custody (CoC) Forms* (attached). Samples were in direct control of project and/or laboratory personnel at all times. Samples were delivered to the testing facility, Battelle Marine Science Laboratory in Sequim, WA, in good, useable and properly chilled condition. Adequate sample volume was collected from the targeted stations to proceed with the scheduled analysis of all parameters per the 2011-12 PWP.

**Sample Validation Summary:**

All sample validation criteria were met for this event per Section 8.2.6 of the 2011-12 PWP, except at PSNS124.1 – which failed to meet the prescribed minimum number of aliquots and duration. This issue is further described in Section 10 of this report. Prior to processing the samples and transferring custody to the analytical laboratory, the Taylor/TEC Field Event Lead validated the samples against certain criteria. These validation criteria included runoff occurrence / hydrograph stage, sample preparation and handling review, requested parameters,  $\geq 2$  hour sampling duration or 75% storm hydrograph coverage, minimum number of aliquots, minimum sample volume collected for required parameters, discrete and composite samples conductivity measurement results, quality control sample collection and anomalous conditions assessment. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW-event qualification listed above.

## 8.0 Basin Runoff Calculations

Rainfall runoff volumes during the SW10 sampling period were calculated for each of the basins associated with the six Phase II monitoring stations. These calculations are based on the modified Runoff Coefficient Method (RCM) as described in Section 7.4 of the 2011-12 PWP.

The value ranges for the various land use/land cover categories assigned to each basin are listed in the attached *Runoff Calculation Tables*. Calculated runoff values are also presented in Table A-1 (*Storm Qualification and Sample Validation Information Checklist*) (attached). Table 7 summarizes the results from these calculations.

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
126	Impervious	653,373	0.6 – 0.9	591,881	0.45	0.0375	166,034
	Pervious	9,613	0.2 – 0.4				
124.1	Impervious	109,690	0.6 – 0.9	101,245	0.23	0.0192	14,516
	Pervious	6310	0.2 – 0.4				
124	Impervious	429,302	0.6 – 0.9	396,251	0.19	0.0158	46,933
	Pervious	24,698	0.2 – 0.4				
115.1	Impervious	449,104	0.6 – 0.9	366,390	0.46	0.0383	105,064
	Pervious	13,938	0.2 – 0.4				
84.1	Impervious	23,958	0.6 – 0.9	21,562	0.55	0.0458	7,393
	Impervious	2,009,431	0.5 – 0.8				
015	Pervious	2,009,431	0.25 – 0.4	2,411,321	0.58	0.0483	871,833
	Impervious	653,373	0.6 – 0.9				

## 9.0 Descriptive Statistics and Discussion of Event Station Monitoring Data

Descriptive statistics for the sampling period at each monitoring station are provided in Table 8, below. These statistics include minimum, maximum, average and median at static 1-hour interval periods for vault level, conductivity, salinity, transducer water temperature, YSI water temperature (PSNS084.1 only) and tidal stage. The method by which the rainfall statistics are calculated is on a “rolling 1-hour data window” in an attempt to provide a more accurate and representative assessment of the actual rainfall conditions. Sampling period rainfall totals are also included as part of each station’s rainfall information.

Table 8. SW10 Sampling Period Rainfall and Vault Parameter Descriptive Statistics

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS126	Min	0.00	0.14	68	2.00	4.12		1.68
	Max	0.10	2.56	1,848	2.00	9.32		10.36
	Average	0.02	0.90	167	2.00	7.04		7.46
	Median	0.01	0.47	135	2.00	7.43		7.94
	Storm Total	0.45						
PSNS124.1	Min	0.00	0.12	-479	2.00	6.06		1.68
	Max	0.10	0.69	46,386	42.00	8.33		8.54
	Average	0.04	0.20	24,684	30.48	7.41		4.33
	Median	0.03	0.19	40,932	41.74	7.52		3.86
	Storm Total	0.23						
PSNS124	Min	0.00	0.16	659	2.00	5.54		1.68
	Max	0.10	2.32	14,065	11.62	11.22		6.39
	Average	0.04	0.58	6,407	5.73	8.27		3.15
	Median	0.04	0.49	4,895	4.27	10.00		2.51
	Storm Total	0.19						
PSNS115.1	Min	0.00	0.72	46	2.00	3.96		1.62
	Max	0.09	9.77	46,920	42.00	9.55		10.36
	Average	0.02	5.94	7,535	7.73	6.90		6.42
	Median	0.00	6.97	684	2.00	7.06		7.17
	Storm Total	0.46						
PSNS084.1	Min	0.00	-0.23	239	0.16	7.12	7.07	1.62
	Max	0.11	5.47	29,328	26.92	35.07	36.43	10.36
	Average	0.02	2.53	5,289	4.46	13.03	11.77	6.71
	Median	0.01	2.88	770	0.41	8.83	8.84	7.42
	Storm Total	0.55						
PSNS015	Min	0.00	0.12	49	2.00	4.08		1.68
	Max	0.12	6.67	45,617	42.00	12.02		10.36
	Average	0.02	3.62	2,151	3.71	7.08		6.92
	Median	0.01	4.15	122	2.00	6.92		7.55
	Storm Total	0.58						

<sup>1</sup>salinity calculations for PSNS126, 124.1, 124, 115.1 and 015 are based on an algorithm that has a lower range cut-off value of 2ppt. Actual field values may have been lower. The PSNS084.1 conductivity probe (YSI6820) utilized a different salinity algorithm function and thus is able to calculate lower low range salinity values.



### **Hydrograph Assessment:**

The rainfall signatures for all monitoring stations showed similar patterns; a bimodal pattern with more intense and longer duration initial peaks, followed by an intra-event dry period, then finishing the event with second, less intense, shorter duration rainfall episodes. The Navy's rain gauge atop B427 also reflected this bimodal rainfall signature. Most of the monitoring stations showed a certain amount of freshwater runoff storage, with the exception of PSNS 124.1 and 124 – which seemed to remain tidally effected in spite of the rainfall event. A return to higher conductivity conditions was noted in the stations (124.1 and 124, aside) during the intra-event dry period, with a rapid response back to freshwater conditions at the onset of the second rain period (as noted in PSNS115.1, 084.1 and 015). Hydrograph responses are considered to be typical for these stations. The differences noted at PSNS124.1 could possibly be attributed to its small basin area which could not produce enough runoff during this particular rainfall event to overcome the tide. An obvious reason for PSNS124 not overcoming tidal influences is not as straightforward. One possibility is that the 124 basin may be rather “flashy”, with the bulk of the runoff occurring prior to the lessening of the initial rainfall intensity, then not producing enough additional runoff to overcome tidal effects for the remainder of the storm event.

As mentioned above, grab sampling information for SW10 is indicated on each of the station hydrographs. Composite sample markers have been applied to the hydrographs to indicate total collection time (i.e. sample event period). The monitoring station hydrographs, as well as the rainfall graph for B427, are attached.

### **Telemetry Data Summary Report: TDSR**

A review of the telemetry data collected since SW09; from 1/23 to 3/1/12, including the SW10 event, was conducted. There were some minor anomalies in nearly all of the stations data sets due to maintenance and/or transducer replacement tasks. As noted in the previous TDSR, exposure of the transducers to seawater had caused various corrosion issues, which warranty additional maintenance. PSNS124 was noted to have issues from 2/2 through 3/1. However, the transducer was on-line and functioning properly during the SW10 event.

Overall, data gaps and other anomalies were very minor during the period from 2/28/12 to 2/29/12. All sensors were in reasonable and accurate operation during SW10. A TDSR report (table), detailing the anomalies noted during SW10 (and the period is attached.

## **10.0 Notable Anomalies and Variations to the PWP**

There were no major anomalies observed or otherwise noted after completion of the sampling event and review of the associated data that would have caused any of the SW10 samples to be non-representative of the conditions from which they were collected. As reported above, all intended and scheduled grab and composite samples were submitted to the PNNL MSL (“the Lab”) within holding times and without incident. All support and sampling tasks, as well as collected samples, were managed as appropriate per the 2011-12 PWP.

There were, however, several minor anomalies that occurred during SW10. These were;

1. The “forced” enabling start of the PSNS124.1 and 84.1 samplers. This action was explained in Section 6 as necessary.
2. As noted on the Storm Controller Form (see attached *Field Forms*) and mentioned in Section 6, the same battery swap at PSNS084.1 that caused issues with the rainfall totalizer (“rolling” time increment counter) had also caused an issue with the sampler pacing (collection frequency) counter. The counter reverted back to its default value of zero-minutes. Therefore, when the sampler was activated it collected samples one after the other with no time pacing in between. This effected water collected into the first two discrete wedge bottles. This discrepancy was accounted for during the formulation of the overall composite sample for this station by combing the contents of bottles 1 and 2 into a sub-composite and using this material to stand for one discrete sample bottle. Therefore there were 16 usable discrete samples, out of a span of 21, that were utilized during the overall composite sample formulation.
3. The composite sample at PSNS124.1 was comprised of a single discrete wedge bottle (BTL#2). Freshwater conditions only occurred at this monitoring station during this bottles’ collection period; saline conditions dominated for the remainder of the SW10 event. The 2011-12 PWP stipulates that composite samples should represent at least 2 hours of duration and contain a minimum of 8 aliquots. The resulting sample represented one of duration and four sample aliquots. This situation was discussed with the Lab and it was decided that the SW10 sample from PSNS124.1 should be (and was) submitted for analysis. Although this sample was conditional accepted it is considered to be representative of the freshwater conditions that existed at PSNS124.1 during the SW10 event.
4. Several of the grab samples (PSNS124.1, 124 and 115.1) were collected from their monitoring stations during less than optimal periods when saline conditions in their corresponding vaults were greater than 2,000 $\mu$ S/cm. See Table 4, above (or Table A-1) for conductivity values. Logistics, coupled with the particulars of the SW10 rainfall event caused the collection of the grab samples during these times. In general saline conditions are avoided due to their effects on the analyses of metals and associated parameters. However, the grab sample parameter consisted of total petroleum hydrocarbon – which is not as effected by higher salinity than other project specific compounds of concern. Grab samples were submitted to the Lab, who in turn managed their analyses accordingly.
5. General maintenance issue – corrosion impacts continued to affect the transducers and associated monitoring/mounting equipment. TEC increased maintenance efforts during this period and has planned for the upgrade of all transducers (to titanium bodies) and other key portions of the monitoring systems.

## **11.0 Action Items**

Routine action items include resetting (reloading with bottles, charging batteries, back flushing with DI water, etc.) all six monitoring stations and re-stocking of sampling supplies. Routine station maintenance items (e.g. sensor cleaning and calibration, rain gauge maintenance, etc.) as well as storm set-up tasks will need to be completed as necessary.

Non-routine action items include the continued trouble shooting of the CT2X transducers, calibration and managing corrosion issues noted at most of the monitoring stations.

The current focus of the field efforts will be in maintaining proper station and equipment operational status, data and resource management and storm-tracking tasks.



Figure 1. Phase II Stormwater Monitoring Locations within the Shipyard Boundary

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## ATTACHMENTS

- Storm Event Summary and Sampling Information, Validation Checklist
- Stormwater Field Sampling Forms and Controller Notes
- Chain-of-Custody Forms
- Runoff Calculation Worksheet
- Station Hydrographs
- Autosampler Reports
- Weather Forecast Information
- TDSR



**Table A-1. PSNS Non-Dry Dock Stormwater Monitoring Tasks  
Storm and Sample Information and Validation Checklist  
Stormwater Sampling Event #10 (2/28/12)**

*This form acknowledges representativeness criteria described in the project PWP.  
Mark with "Yes" to acknowledge acceptable, "No" for not acceptable, "NA" or "-" if not applicable.*

<sup>1</sup> Storm Event Data:						
Project Storm Event (SW) #	10					
Event Forecast Probability (%)	100					
PSNS B427 Rain Gauge - Sample Event Total (in.)	0.57					
Rainfall and Runoff Summary:						
	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Last Runoff ( $\geq 0.03$ " rainfall without 3-hr gap) Prior to STE Start (Date/Time)	2/24/12 22:45	2/24/12 22:35	2/24/12 22:35	2/24/12 22:35	2/24/12 22:35	2/24/12 22:35
Antecedent Dry Period (days: hrs)	3:17	3:17	3:17	3:18	3:17	3:17
Rainfall Prior 24-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00
Rainfall Prior 6-hrs to Sampling Start	0.00	0.00	0.00	0.00	0.00	0.00
Start of Rainfall (Date/Time)	2/28/12 16:15	2/28/12 16:25	2/28/12 16:15	2/28/12 16:35	2/28/12 16:15	2/28/12 16:20
Sampling Period Start Date & Time	2/28/12 16:53	2/28/12 18:42	2/28/12 17:07	2/28/12 16:56	2/28/12 18:37	2/28/12 16:43
Sampling Period End Date & Time	2/29/2012 12:37	2/28/2012 20:26	2/28/2012 18:51	2/29/2012 13:40	2/29/2012 13:36	2/29/2012 13:27
Sampling Period Duration (hrs:mins)	19:44	1:44	1:44	20:44	18:59	20:44
Sampling Period Duration (hours)	19.73	1.73	1.73	20.73	18.98	20.73
Sampling Period Total Rainfall (in)	0.45	0.23	0.19	0.46	0.55	0.58
Sampling Period Max 1-hr Rainfall Intensity (in/hr)	0.10	0.10	0.10	0.09	0.11	0.12
Sampling Period Average 1-hr Rainfall Intensity (in/hr)	0.02	0.04	0.04	0.02	0.02	0.02
Runoff volume calculated for sampling period (gallons)	166,034	14,516	46,933	105,064	7,393	871,833
<sup>1</sup> Sample Collection Criteria:						
Grab sample ID	SW10-002	SW10-001	SW10-004	SW10-005	SW10-006	SW10-007
Grab Date /Time	2/29/2012 15:58	2/29/2012 15:35	2/29/2012 16:18	2/29/2012 16:40	2/29/2012 16:58	2/29/2012 17:20
Grab sample conductivity value ( $\mu\text{S}/\text{cm}$ )	338	2882	5180	2840	253	405
Hydrograph stage at grab collection	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Falling Limb
Grab parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes
Composite sample ID	SW10-0010	SW10-0014	SW10-0012	SW10-0013	SW10-009	SW10-008
Composite Date /Time	2/29/2012 12:37	2/28/2012 20:26	2/28/2012 18:51	2/29/2012 13:40	2/29/2012 13:36	2/29/2012 13:27
Overall Composite conductivity value ( $\mu\text{S}/\text{cm}$ )	245	1493	1162	493	146	222
Overall Composite turbidity value (NTU)	8	15	20	7	16	17
Composite volume (ml)	9,000	850	2,000	7,000	8,000	8,500
Number of Bottles Collected During Sampling Event	20	2	2	21	21	21
Number of Bottles Included in Composite Sample	20	1	2	14	16	17
Percentage of Total Sampling Period that Freshwater Conditions Occurred	100%	50%	100%	67%	76%	81%
Composite parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes
<sup>1</sup> QC Sample Summary Information:						
Grab sample duplicate ID	SW10-003	N/A	N/A	N/A	N/A	N/A
Grab sample duplicate date and time	2/29/2012 16:00	N/A	N/A	N/A	N/A	N/A
Grab sample duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	338	N/A	N/A	N/A	N/A	N/A
Composite sample duplicate ID	SW10-0011	N/A	N/A	N/A	N/A	N/A
Composite sample duplicate date and time	2/29/2012 12:37	N/A	N/A	N/A	N/A	N/A
Overall Composite Duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	252	N/A	N/A	N/A	N/A	N/A
Overall Composite Duplicate turbidity value (NTU)	8	N/A	N/A	N/A	N/A	N/A
Composite Duplicate volume (ml)	9000	N/A	N/A	N/A	N/A	N/A
Associated Equipment Blank	SW08-005	SW08-006	SW08-002	SW08-001	SW08-003	SW08-004
<sup>1</sup> Storm and Sample Validation:						
Was the targeted STE antecedent or conditional antecedent qualified per PSNS PWP? (if no, then see next line)	Yes	Yes	Yes	Yes	Yes	Yes
Was the antecedent overage amount greater than 10% of the total rain event ?	N/A	N/A	N/A	N/A	N/A	N/A
Was runoff occurring OR was the hydrograph at least 10% above background pipe level during grab collection ? If no, explain in summary narrative.	Yes	Yes	Yes	Yes	Yes	Yes
Were a minimum of 8 aliquots collected OR does the composite sample represent at least 75% of the stations storm event rain volume ?	Yes	No	Yes	Yes	Yes	Yes
Were all 1-hr sampler bottles used for the Composite sample $\leq 2000 \mu\text{S}/\text{cm}$ ?	Yes	Yes	Yes	Yes	Yes	Yes
Did any anomalous conditions exist that could make samples non-representative? Explain if "Yes"	No	No	No	No	No	No
Based on consideration of the information above, was the sample collected during the STE valid for project purposes ? (Y / N, composite, grab or both)	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both

<sup>1</sup> If the answer to any of these questions is "No" OR indicate non-representative conditions, then these items should be explained in the Event Narrative.

Validation Check List Completed By: Brad Kwasnowski Reviewed By /Date: Amil C. Metello 3-22-12



Date:	2-28-2012			Sampling Support Personnel:	Rupert, Beckwith; Metallo (controller)				
STE #	10	Antecedent Dry Cond. Met?	Yes	Tidal Info:	2/28 LL = (1532) @ 1.51' 2/29 LL = (1626) @ 1.58'				
Storm Controller:	Metallo			Grab sampling Info:	C106 to collect if possible				
Pre-Storm / Weather Details:	NWS has forecast 0.36" from 1700 (2-28) to 1000 (2-29), w/ another 0.07 afterwards through Thurs. 3-1. GFS: rain arrives ~ 1500 w/ bulk of storm over by 0200 2-29. NAM; rain start ~ 1500 last until ~ 1000 2-29 GFS = 0.72" NAM = 1.10"								
Telemetry Measurements:	① Rain total suspect... DATE/TIME (24HR) ② initial pacing btis 142 set to 0 ② initial pacing btis 142 set to 0								
STATION:	2-28-12 (1110)	(1338)	(1834)		2-29-12 (0136)	(0740)	(1320)		Storm END/DL
PSNS015 Rain <sup>1</sup>	0/0		0.07/20		0.01/37	0.01/38	0/58		
PSNS008 Level	3.62'		1.40'		4.42'	6.13'	1.24'		Routine
PSNS008 Cond.	10,356		118		102	45967	241		Completed
Smpl Marker	0		8		36	61	83		RTD'd (~1700)
PSNS084.1 Rain	0/0		08/132		0.01/81	0/51	0/59		Routine
PSNS084.1 Level	2.44		0.62		3.25	5.02	0.12		Completed
PSNS084.1 Cond.	41598		256		241	24910	5880		Smplr Rpt
Smpl Marker	0		②		36	60	82		Via telem (~1752)
PSNS115.1 Rain	0/0		06/16		0.01/31	0/31	0/46		Routine
PSNS115.1 Level	6.50		4.70		7.49	9.28	4.29		Completed
PSNS115.1 Cond.	43004		313		110	46864	2401		Smplr Rpt
Smpl Marker	0		7		35	60	82		Via Telem (~1745)
PSNS124 Rain	0/0	0/0	05/17		0.01/30	0/30	0/41		Routine
PSNS124 Level		0.22	0.90		3.67	5.44	0.42		Completed
PSNS124 Cond.		9474	713		22783	47328	12893		Smplr Rpt
Smpl Marker	0	0	7		35	59	82		Via Telem (~1740)
PSNS124.1 Rain	0/0		06/18		0.01/33	0/33	0.01/49		Routine
PSNS124.1 Level	0.12	0.12	0.24		0.16	1.70	0.15		Halted @ 23 4/4
PSNS124.1 Cond.	48861	52929	863		44358	45137	12826		Smplr Rpt
Smpl Marker	0	0	0.1 enable boost		28	51	74		Via telem (~1735)
PSNS126 Rain	0/0		06/18		0.01/30	0/31	0/45		Routine
PSNS126 Level	0.14		0.36		0.26	2.09	0.17		Completed
PSNS126 Cond.	96		131		136	168	98		Smplr Rpt
Smpl Marker	0		8		36	60	83		Via Telem (~1725)

<sup>1</sup>Rain depts are reported as 1-hr / 24-hr totals

126 Rain Last 72 hrs: 126 (0.0), 015 (0.0), 84.1 (0.0), 115.1 (0.0), 124 (0.0), 124.1 (0.0)



Date:	2-28-12		Sampling Support Personnel:		Rupert, Beckwith								
STE #	10	Storm Controller:	Metallo		Strm Evnt Start / Stp		~(1615) 2/28/12 / Sample Stop = (1340) 2/29/12						
Enabling Information:													
Sample Station:	PSNS015		PSNS084.1		PSNS115.1		PSNS124		PSNS124.1		PSNS126		Batts 100 / Smpl
Rain enable (in/hr)	0.03		0.03		0.03		0.03		0.03		0.03		126: 12.08 12.68
Level Enable (ft)	<del>0.3</del> 20	0.3	20		20	0.3	0.3		20	0.3	<del>0.3</del> 20	0.3	
Cond. (μS/cm)	2000		2000		2000		2000		2000		2000		124.1 : 13 / 12.73
Repeat. Cond Set ?	No		No		No		No		No		No		124 : 12.73 / 12.70
Pacing Rate (min)	15		15		15		15		15		15		115 : 13.061
Date	2-28	2-28	2-28		2-28	2-28	2-28		2-28	2-28	2-28	2-28	84.1 : 11.81 / 12.81
Time	1116	1347	1119		1122	1401	1341		1126	1352	1108	1349	015 : 13.10 / 12.80
Comp Dup ? / where:			PSNS126				Grab Dup ? / where:			PSNS126			

## EVENT NOTES:

- ① as of (1100~) all level enable's are temporarily set to 20' as a preventative measure  
? Ask Brian if Storm-Reset was enabled @ PSNS126
- Field crew will swap out logger battery @ 84.1 w/ fresh unit
  - Conducted 3 rds of telem. check by 1424 - all <sup>stations</sup> properly set
  - Battery Levels good. Swapped out 84.1 = 12.57(Log) + 12.81 (Smpl)
  - Checked stations several times b/w ~1830 + 0130(2-29) and all was well, except the following : @1830 all stations were enable except 84.1 + 124.1 - both of stations needed to be "manually" started - 124.1 because the level in the pipe just wasn't building to .3 (it was ~.26') and 84.1 had a new battery installed and (after the afternoon settings were applied) thus causing pace rate to be defaulted to 0, rain counter not stabilized and - station was enable boosted to start ~1101.5 behind other stations. The pacing was not adjusted to 15 mins until ~9 to 10 samples were collected in a rapid mode. Back on track for remainder of event.



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 126	MH/CB#: 5110	Loc. Descrip. B460 SW side	Page: 1 of 2
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Section 1. Station Reset and Inspection			
Personnel:		Weather:	
Arrival Date/Time:		done?	
Carry-over maintenance to do prior to set-up:			
Sampler Battery Voltage	Changed? Y N	New voltage	
Modem Battery Voltage	Changed? Y N	New voltage	
Sample Tubing & Strainer OK?	Sampler Info.		
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	
Trands. Cable OK?	Internal Sampler Tubing OK?		
Trands. Desiccant OK (Yes/No)	Tubing Replaced? (Yes/No)		
Telem. Box Desiccant OK (Yes/No)	Normal Smpler Program or Dup. ?		
Modem Status	Bottles Loaded ?		
Notes (including channel condition):		Lid Status?	
		Backflushed with DI?	
		Suction line & quick connect attached?	
		Smplr Status (on/off) / last screen..	

Section 2. Storm Setup and Inspection			
Personnel: BR/BB		Weather: overcast, temp 30's	
Arrival Date/Time: 0953 2/28/12			
Sampler Battery Voltage 12.81	New-added 2/27/12	Changed? Y (N)	New voltage
Modem Battery Voltage 12.27		Changed? Y (N)	New voltage
Sample Tubing & Strainer OK?	OK	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	
Transducer Cable OK?	Yes	Yes/OK	
Multi-meter Cable OK	Yes	Aliquot Vol. Cal'ed (Y/N & vol.)	
Recorded Level (FT)	1.53	Yes	
Measured Level (FT)	1.62	Program Reviewed (Yes/No), Dup ?	
Offset Diff (FT)	0.09	Yes / Dup	
Level Adjusted ?	Yes / now 1.57	Lids off bottles?	
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Yes	
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diagnostics/Distributor arm check?	
		Yes	
		Backflush with DI?	
		NO	
		Storm Reset (1, enter) Completed	
		Yes	
		Last screen...	
		Prod's 10/15	
Cond. Sonde Cal. Info. : Recorded Val. = Meas. Val. = Diff. = (>10% adj. offset); Offset = New Rec Val = 2/28/12			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3. Grab Sample Collection			
Personnel: Johnston / Beckwith		Weather: Clear	
Arrival Date/Time: 1558		Field LAB	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	137 338
Grab Parameters Collected	TPH, FC, Turb	Salinity Reading (PPT):	
Grab Sample ID	SW1016-002	Temp. Reading (°C):	8.0 7.6
Grab Date/Time	2/29/2012 1558	Turbidity Reading (NTU)	2.72
Grab Dup ID	SW1016-003	Equipment running correctly?	Yes
Grab Dup Date/Time	2/29/2012 1600	Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which? OK			
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.) pretty good flow 4" deep			



Station: PSNS 126 continued from previous page

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Section 4: Post-Storm Sample Collection (for grab, comp or both)			
Personnel: <u>BR</u>	Weather: <u>Overcast, windy, 30's</u>		Arrival Date/Time: <u>2/29/12 (1710)</u>
Sampler Battery Voltage	<u>Good</u>	Changed? Y (N)	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y (N)	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>No</u>		
Additional Dup Grab (IDs, date/time)	<u>No</u>		
Composite Begin Time (date/time)	<u>2-28-12 (1653)</u>	Sampler Report Downloaded?	<u>Yes - telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>2-29-12 (1637) btl 23/24 4 of 4</u>		
Total Composite Sample Volume Collected	<u>24 btl's 100%</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>None</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Normal / typical</u>			
Storm Contoller notified (Y or N/A):	Which parameter?: <u>NA</u>		
Notes: <u>Duplicate sample collected at this location</u>			
Maintenance Needed: <u>Typical Re-set</u>			

Section 5: Compositing Scheme and QC Sampling			
Personnel: <u>DM / BR / BB</u>		Date/Time: <u>2/29/12 (2000)</u>	
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>YSI 30 (Cond.) + Hach 2100P (Turb.) - Navy meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S/cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):			
1. <u>472/15/Y</u>	7. <u>205/6/Y</u>	13. <u>276/3/Y</u>	19. <u>139/17/Y</u>
2. <u>459/12/Y</u>	8. <u>203/6/Y</u>	14. <u>259/3/Y</u>	20. <u>139/12/Y</u>
3. <u>212/10/Y</u>	9. <u>195/5/Y</u>	15. <u>389/17/Y</u>	21. <u>X base flow</u>
4. <u>208/10/Y</u>	10. <u>195/5/Y</u>	16. <u>328/2/Y</u>	22. <u>145/6/X base flow</u>
5. <u>208/7/Y</u>	11. <u>187/3/Y</u>	17. <u>185/15/Y</u>	23. <u>X base flow</u>
6. <u>206/9/Y</u>	12. <u>188/3/Y</u>	18. <u>191/16/Y</u>	24. <u>137/3/X base flow</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>Even #'s btl's = Sample Odd #'s btl's = Dup</u> <u>Sample: used btl's 2, 4, ..., 20, excluded 22-24 - base flow</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 245 Turb = 8 Vol. = ~9000 ml Analysis: per PWP</u>			
Composite Sample ID & Time: <u>SW10C-003 (1237) Normal Sample</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>YES</u>		
Duplicate sample ID	<u>SW10C-004 (1237) duplicate</u>		

NOTES:

Dup. Info:

Cond. = 252 Turb. = 8 Vol. = ~9000 ml

Used btl's 1, 3, 5, ..., 19; excluded btl's 21+23 - base flow

Sample Info.



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 1241	MH/CB#: 5880	Loc. Descrip. DD#3 eastside	Page: 1 of 2
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pages per station

Section 1: Station Reset and Inspection			
Personnel:		Weather:	
Arrival Date/Time:		done?	
Carry-over maintenance to do prior to set-up:			
Sampler Battery Voltage	Changed? Y N	New voltage	
Modem Battery Voltage	Changed? Y N	New voltage	
Sample Tubing & Strainer OK?	Sampler Info.		
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	
Trands. Cable OK?	Internal Sampler Tubing OK?		
Trands. Desiccant OK (Yes/No)	Tubing Replaced? (Yes/No)		
Tele. Box Desiccant OK (Yes/No)	Normal Smplr Program or Dup. ?		
Modem Status	Bottles Loaded ?		
Notes (including channel condition):		Lid Status?	
		Backflushed with DI?	
		Suction line & quick connect attached?	
		Smplr Status (on/off) / last screen..	

Section 2: Storm Setup and Inspection			
Personnel: BR/BD		Weather: overcast / Temp 80°	
Arrival Date/Time: 1040 / 2/28/12			
Sampler Battery Voltage	Added 2/27/12	Changed? Y (N)	New voltage
Modem Battery Voltage		Changed? Y (N)	New voltage
Sample Tubing & Strainer OK?	Yes/ok	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	
Transducer Cable OK?	OK	Aliquot Vol. Cal'ed (Y/N & vol.)	
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ?	
Recorded Level (FT)	0.92	Lids off bottles?	
Measured Level (FT)	0.17	Diagnostics/Distributor arm check?	
Offset Diff (FT)	-0.73	Backflush with DI?	
Level Adjusted ?	Yes	Storm Reset (1, enter) Completed	
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =	(>10% adj. offset); Offset =
		New Rec Val = 2/28/12	
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3: Grab Sample Collection			
Personnel: John Hall / Beckwith		Weather: Clear	
Arrival Date/Time: 1530			
On Composite... (Bottle #/ Aliq #)	Conductivity Reading (µS/cm):	800-10000	
Grab Parameters Collected	Salinity Reading (PPT):	28.82	
Grab Sample ID	Temp. Reading (°C):	7.3	
Grab Date/Time	Turbidity Reading (NTU)	2.2	
Grab Dup ID	Equipment running correctly?	Yes	
Grab Dup Date/Time	Sampler Battery Voltage (Changed?):		
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?	Grab MS/MSD Collected ? Y / N	Ice OK?	
Notes: (what meter was used for site readings, etc.)			
standing water stratified from top about 6" deep no flow			

mm





PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 1241 continued from previous page

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## Section 4: Post-Storm Sample Collection (for grab, comp or both)

Personnel: BR	Weather: Overcast, 30°s Windy	Arrival Date/Time: 2-29-12 1745
Sampler Battery Voltage	Good	Changed? Y (N)
Telemetry Battery Voltage	Good	Changed? Y (N)
Additional Grabs (IDs, date/time)	No	
Additional Dup Grab (IDs, date/time)	No	
Composite Begin Time (date/time)	2-28-12 (1842)	Sampler Report Downloaded? Yes, telem
Last Aliquot Taken (date/time, bott #, aliq #)	2-29-12 (1726) BTL 23 4/4	
Total Composite Sample Volume Collected	100% 23 btl's - full	
Aliquots missed/NLD (date/time/bott #/aliq #)	None	
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	Normal	
Storm Controller notified (Y or N/A)?	NA	Which parameter?: NA
Notes:	Stopped sampler via telem. Due to pipe dia / basin size the level in this pipe didn't get to 0.3'; forced start @ ~1842 via telem	
Maintenance Needed:	Reset	

## Section 5: Compositing Scheme and QC Sampling

Personnel: DM, BR, BB	Date/Time: 2-29-12 (2210)		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)			
Cond. = YSI 30 Turb. = Hach 2100P - both Navy meters			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. 15750/12/N	7. 41510/2/N	13. 44650/11/N	19. 29530/15/N
2. 1493/151 NY	8. 40750/2/N	14. 44570/11/N	20. 26400/27/N
3. 36470/3/N	9. 40420/2/N	15. 44300/11/N	21. 22140/31/N
4. 42750/11/N	10. 38500/3/N	16. 40700/31/N	22. 18310/42/N
5. 42550/11/N	11. 35700/3/N	17. 37300/8/N	23. 14720/44/N
6. 41960/2/N	12. 42006/2/N	18. 33950/151/N	24. X Empty
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
Only (1) qualifying bottle; #2			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
Cond. = 1493 Turb. = 15 Vol. = ~850 ml Analysis: rev PWP			
Composite Sample ID & Time: SW10C-007 (2026) 2-28-12			
Field Blank Collected? (date/time)	No		
Blank ID:	NA		
Duplicate comp sample? Yes/No	No		
Duplicate sample ID:	NA		

## NOTES:

\*\* Very low vol. of water; ~1000 ml



SPNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 124	MH/CB#: 5881	Loc. Descip. B357/DWS build	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel:	Weather:	Arrival Date/Time:	
Carry-over maintenance to do prior to set-up:			done?
Sampler Battery Voltage		Changed? Y N	New voltage
Modem Battery Voltage		Changed? Y N	New voltage
Sample Tubing & Strainer OK?		Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	
Trans. Cable OK?		Internal Sampler Tubing OK?	
Trans. Desiccant OK (Yes/No)		Tubing Replaced? (Yes/No)	
Telem. Box Desiccant OK (Yes/No)		Normal Smplr Program or Dup. ?	
Modem Status		Bottles Loaded ?	
Notes (including channel condition):		Lid Status?	
		Backflushed with DI?	
		Suction line & quick connect attached?	
		Smplr Status (on/off) / last screen...	

Section 2. Storm Setup and Inspection			
Personnel: BR/AB	Weather: Light Rain	Arrival Date/Time: 1230 2/28/12	
Sampler Battery Voltage 12.80	added 2/27/12	Changed? Y (N)	New voltage
Modem Battery Voltage 12.80		Changed? Y (N)	New voltage
Sample Tubing & Strainer OK?	OK	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	OK
Transducer Cable OK?	OK	Aliquot Vol. Cal'ed (Y/N & vol.)	Y
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ?	Yes/Normal
Recorded Level (FT)	0.22	Lids off bottles?	Y
Measured Level (FT)	0.21	Diagnostics/Distributor arm check?	Y
Offset Diff (FT)	0	Backflush with DI?	NO
Level Adjusted ?	NO	Storm Reset (1, enter) Completed	YES
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	Prog. Disa. 1358
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =	(>10% adj. offset); Offset =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)		New Rec Val =	2/28/12

Section 3. Grab Sample Collection			
Personnel: Johnston/Buckwiler	Weather: Cloudy Windy	Arrival Date/Time: 2/29/2012 1616 LAB	
On Composite... (Bottle # Aliq #)		Conductivity Reading (µS/cm):	5000-20000 5180
Grab Parameters Collected	TPH, FC, turb	Salinity Reading (PPT):	
Grab Sample ID	SW106-004	Temp. Reading (°C):	10 8.4
Grab Date/Time	2/29/12 1618	Turbidity Reading (NTU)	3.21
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			
Very low flow but moving 5" depth strange smell exhaust			



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 124

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## Section 4: Post-Storm Sample Collection (for grab, comp or both)

Personnel:	BR	Weather:	Overcast, 30's, windy	Arrival Date/Time:	2-29-12 (1735)
Sampler Battery Voltage	Good	Changed?	Y (N)	New voltage	—
Telemetry Battery Voltage	Good	Changed?	Y (N)	New voltage	—
Additional Grabs (IDs, date/time)	No				
Additional Dup Grab (IDs, date/time)	No				
Composite Begin Time (date/time)	1707	Sampler Report Downloaded ?	Yes - telem		
Last Aliquot Taken (date/time, bott #, aliq #)	2-29-12 (1651) BTL 24 4/4				
Total Composite Sample Volume Collected	100%				
Aliquots missed/NLD (date/time/bott #/aliq #)	None				
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? Typical					
Storm Controller notified (Y or N/A)?	NA	Which parameter?:	NA		
Notes: Just prior to storm event the refurbished titanium transducer was placed back into vault					
Maintenance Needed: Typical re-sets					

## Section 5: Compositing Scheme and QC Sampling

Personnel:	DM, BR, BB	Date/Time:	2-29-12 (2050)
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)			
Cond = YSI 30 Turb = Hach 2100P both Navy meters			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. 1120/27 / Y	7. 36260/4 / N	13. 43180/1 / N	19. 17350/10 / N
2. 805/19 / Y	8. 24780/5 / N	14. 43670/1 / N	20. 22690/2 / N
3. 13620/9 / N	9. 19430/8 / N	15. 43300/1 / N	21. 15140/6 / N
4. 42500/1 / N	10. 23490/6 / N	16. 43700/1 / N	22. 6340/6 / N
5. 43750/2 / N	11. 26000/4 / N	17. 40930/1 / N	23. 8850/5 / N
6. 43120/1 / N	12. 32280/2 / N	18. 25540/7 / N	24. 9150 / N
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
Btl's 1 and 2 = ~2000 ml			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
Cond. = 1162 Turb = 20 Vol. = ~2000 ml Analysis per PWP			
Composite Sample ID & Time: SWIOC-005 (1851) 2-28-12			
Field Blank Collected? (date/time)	No		
Blank ID:	NA		
Duplicate comp sample? Yes/No	No		
Duplicate sample ID	NA		

## NOTES:

\* Very low vol. in comp. sample



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Station: 115.1	MH/CB#: 4860	Loc. Descrip. B879	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel:	Weather:	Arrival Date/Time:	
Carry-over maintenance to do prior to set-up:			done?
Sampler Battery Voltage 12.49	added 2/27/12	Changed? Y N	New voltage
Modem Battery Voltage 12.99		Changed? Y N	New voltage
Sample Tubing & Strainer OK?		Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	
Trans. Cable OK?		Internal Sampler Tubing OK?	
Trans. Desiccant OK (Yes/No)		Tubing Replaced? (Yes/No)	
Tele. Box Desiccant OK (Yes/No)		Normal Smplr Program or Dup. ?	
Modem Status		Bottles Loaded ?	
Notes (including channel condition):		Lid Status?	
		Backflushed with DI?	
		Suction line & quick connect attached?	
		Smplr Status (on/off) / last screen..	

Section 2. Storm Setup and Inspection			
Personnel: BK/BA	Weather: Light Rain	Arrival Date/Time: 1415 2/28/12	
Sampler Battery Voltage 12.49	added 2/27/12	Changed? Y (N)	New voltage —
Modem Battery Voltage 12.99	—	Changed? Y (N)	New voltage —
Sample Tubing & Strainer OK?	OK	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	OK
Transducer Cable OK?	OK	Aliquot Vol. Cal'ed (Y/N & vol.)	Y
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ?	yes / normal
Recorded Level (FT)	1.05	Lids off bottles?	yes
Measured Level (FT)	1.15	Diagnostics/Distributor arm check?	yes
Offset Diff (FT)	0.10	Backflush with DI?	NO
Level Adjusted ?	yes	Storm Reset (1, enter) Completed	yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	prog. Disa. 1433
Cond. Sonde Cal. Info. : Recorded Val. =		Meas. Val. =	Diff. = (>10% adj. offset); Offset = New Rec Val = 2/28/12
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3. Grab Sample Collection			
Personnel: Johnston Beckwith	Weather: Cloudy Windy	Arrival Date/Time: 1635 LA/B	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	3000-6000 2840
Grab Parameters Collected	TPH, FC, Turb	Salinity Reading (PPT):	
Grab Sample ID	SW106-005	Temp. Reading (°C):	7.7 8.3
Grab Date/Time	2/29/12 1640	Turbidity Reading (NTU)	2.81
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			
standing water very slight flow 6" deep			





PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 115.1 continued from previous page

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## Section 4: Post-Storm Sample Collection (for grab, comp or both)

Personnel: BR	Weather: Overcast, 30's, Windy	Arrival Date/Time: 2-29-12 (1725)	
Sampler Battery Voltage	Good	Changed? Y (N)	New voltage
Telemetry Battery Voltage	Good	Changed? Y (N)	New voltage
Additional Grabs (IDs, date/time)	No		
Additional Dup Grab (IDs, date/time)	No		
Composite Begin Time (date/time)	2-28-12 (1656)	Sampler Report Downloaded?	Yes - via telem
Last Aliquot Taken (date/time, bott #, aliq #)	2-29-12 (1640) Btl 24 4/4		
Total Composite Sample Volume Collected	100%		
Aliquots missed/NLD (date/time/bott #/aliq #)	None		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? Typical			
Storm Controller notified (Y or N/A)?	NA	Which parameter?:	NA
Notes:			
Maintenance Needed: Resets			

## Section 5: Compositing Scheme and QC Sampling

Personnel: DM, BR, BB	Date/Time: 2-29-12 (2135)		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.)			
Cond = YSI 30 Turb = Hach 2100P - both Navy meters			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):			
1. 9600/2/N	7. 63/4/Y	13. 875/2/Y	19. 83/22/Y
2. 14270/3/N	8. 77/2/Y	14. 30310/1/N	20. 137/10/Y
3. 2410/5/N	9. 104/3/Y	15. 43030/2/N	21. 1956/10/Y
4. 4922/5/NY	10. 161/3/Y	16. 39310/1/N	22. 5160/33/N
5. 1154/6/Y	11. 253/3/Y	17. 4436/10/N	23. 6670/30/N
6. 391/4/Y	12. 520/3/Y	18. 52/22/Y	24. 6420/9/N
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
14 qualifying btl's - 500 ml. from ea. bottle			
Used btl's 4-13 & 18-21			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
Cond. = 493 Turb. = 7 Vol. = ~7000 Analysis per PWP			
Composite Sample ID & Time: SWIOC-006 (1340)			
Field Blank Collected? (date/time)	No		
Blank ID:	NA		
Duplicate comp sample? Yes/No	No		
Duplicate sample ID	NA		

NOTES:



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 84.1	MH/CB#: MH 551	Loc. Descrip. Build 983	Page: 1 of 2
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pages per station

Section 1. Station Reset and Inspection			
Personnel:		Weather:	
Arrival Date/Time:		done?	
Carry-over maintenance to do prior to set-up:			
Sampler Battery Voltage	Changed? Y N	New voltage	
Modem Battery Voltage	Changed? Y N	New voltage	
Sample Tubing & Strainer OK?	Sampler Info.		
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	
Trands. Cable OK?	Internal Sampler Tubing OK?		
Trands. Desiccant OK (Yes/No)	Tubing Replaced? (Yes/No)		
Tele. Box Desiccant OK (Yes/No)	Normal Smpmr Program or Dup. ?		
Modem Status	Bottles Loaded ?		
Notes (including channel condition):		Lid Status?	
		Backflushed with DI?	
		Suction line & quick connect attached?	
		Smplr Status (on/off) / last screen..	

Section 2. Storm Setup and Inspection			
Personnel: BZ/BR		Weather: Light Rain	
Arrival Date/Time: 1440/2/28/12			
Sampler Battery Voltage	added 2/27/12	Changed? Y (N)	New voltage
Modem Battery Voltage	11.92	Changed? (Y) N	New voltage 12.76
Sample Tubing & Strainer OK?	OK	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	
Transducer Cable OK?	OK	Aliquot Vol. Cal.'ed (Y/N & vol.) YES	
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ? YES Normal	
Recorded Level (FT)	-0.23	Lids off bottles? YES	
Measured Level (FT)	Not enough water	Diagnostics/Distributor arm check? YES	
Offset Diff (FT)	↓	Backflush with DI? NO	
Level Adjusted ?		Storm Reset (1, enter) Completed YES	
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen... Prog Disc 1/508	
Cond. Sonde Cal. Info. : Recorded Val. =		Meas. Val. = Diff. = (>10% adj. offset); Offset = New Rec Val = 2/28/12	
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

Section 3. Grab Sample Collection			
Personnel: Johnston/Bellwith		Weather: Cloudy Windy sprinkling	
Arrival Date/Time: 1655		LAB	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	380 253
Grab Parameters Collected	TPH, FC, Turb	Salinity Reading (PPT):	
Grab Sample ID	SW106-006	Temp. Reading (°C):	30 15.9
Grab Date/Time	2/29/12 1658	Turbidity Reading (NTU)	5.72
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			
Flowing from main channel Very warm water Grab - sand in sample			



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS084.1 continued from previous pagePage 2 of 2

## Section 4: Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>BR</u>	Weather: <u>Overcast, Windy, 30°s</u>	Arrival Date/Time: <u>2/29/12 (1800)</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y (N) <u>(N)</u>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y (N) <u>(N)</u>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>No</u>		
Additional Dup Grab (IDs, date/time)	<u>No</u>		
Composite Begin Time (date/time)	<u>2/28/12 (1837)</u>	Sampler Report Downloaded?	<u>Yes via telem.</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>2/29/12 (1636)</u>		
Total Composite Sample Volume Collected	<u>100%</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>None</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>OK-typical</u>			
Storm Controller notified (Y or N/A)?	Which parameter?:	<u>NA</u>	
Notes: <u>This station was manually started due a default that occurred in the data logger prgm as a result of swapping out the logger battery - btl's 1+2 paced at 0-mins</u>			
Maintenance Needed: <u>Resets</u>			

## Section 5: Compositing Scheme and QC Sampling

Personnel: <u>DM/BR/BB</u>	Date/Time: <u>2/29/2012 (1930)</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>YSI 30 (cond.) + Hach 2100P (Turb.) - Navy Meters</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1. <u>114/15/Y</u>	7. <u>67/9/Y</u>	13. <u>169/1/Y</u>	19. <u>211/31/Y</u>
2. <u>83/15/Y</u>	8. <u>61/8/Y</u>	14. <u>34830/3/N</u>	20. <u>164/29/Y</u>
3. <u>77/14/Y</u>	9. <u>67/8/Y</u>	15. <u>43500/1/N</u>	21. <u>491/28/Y</u>
4. <u>73/10/Y</u>	10. <u>74/8/Y</u>	16. <u>43650/1/N</u>	22. <u>646/20/Y</u> X
5. <u>76/11/Y</u>	11. <u>84/7/Y</u>	17. <u>33100/5/N</u>	23. <u>492/15/Y</u> X
6. <u>79/12/Y</u>	12. <u>91/7/Y</u>	18. <u>1631/25/Y</u>	24. <u>418/12/Y</u> X
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>① BTL's represent 8-mins of coverage due to pacing glitch - combined 16 btl's + combined btl's 1+2 = 16 btl's; decided not to use btl's 22-24, baseflow</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 146    Turb. = 16    Vol. = <del>9500</del> 8000 ml    Analysis per PWP</u>			
Composite Sample ID & Time: <u>SWIOC-002 (1336)</u>			
Field Blank Collected? (date/time)	<u>No</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>No</u>		
Duplicate sample ID	<u>NA</u>		

## NOTES:

Combined 250-ml's from each from BTL's 1+2 (500 ml total) + 500 ml ea. from btl's 3-13, 18-21; 16X500 = 8000 ml



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 015	MH/CB#: A42	Loc. Descrip. McDs drivethru	Page: 1 of 2
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pages per station

Section 1: Station Reset and Inspection			
Personnel: BIL/BIL	Weather: overcast, temp low 30s	Arrival Date/Time: 2/28/12 0820	
Carry-over maintenance to do prior to set-up:	none	done?	
Sampler Battery Voltage 12.96	added new one 2/27/12	Changed? Y (N)	New voltage
Modem Battery Voltage 12.70		Changed? Y (N)	New voltage
Sample Tubing & Strainer OK?	yes	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	yes
Trans. Cable OK?	yes	Internal Sampler Tubing OK?	OK
Trans. Desiccant OK (Yes/No)	yes	Tubing Replaced? (Yes/No)	no
Telem. Box Desiccant OK (Yes/No)	yes	Normal Smpler Program or Dup. ?	normal
Modem Status	yes	Bottles Loaded ?	yes
Notes (including channel condition): Grounded Box -		Lid Status?	on
		Backflushed with DI?	no
		Suction line & quick connect attached?	yes
		Smplr Status (on/off) / last screen...	off

Section 2: Storm Setup and Inspection			
Personnel: BIL/BIL	Weather: overcast	Arrival Date/Time: Same as above	
Sampler Battery Voltage		Changed? Y (N)	New voltage
Modem Battery Voltage		Changed? Y (N)	New voltage
Sample Tubing & Strainer OK?		Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	yes
Transducer Cable OK?	OK	Aliquot Vol. Cal'ed (Y/N & vol.)	yes 1.0 240ml
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ?	yes / no
Recorded Level (FT)	6.61	Lids off bottles?	off
Measured Level (FT)	6.60	Diagnostics/Distributor arm check?	yes
Offset Diff (FT)	0.01	Backflush with DI?	no
Level Adjusted ?	no	Storm Reset (1, enter) Completed	yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	CT2X	Last screen...	off 226 D.56
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =	(>10% adj. offset); Offset = New Rec Val = 0.913
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.)			

2/28/12

Section 3: Grab Sample Collection			
Personnel: Johnston / Beckwith	Weather: Cloudy Windy	Arrival Date/Time: 1515	LAB
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	303 152
Grab Parameters Collected	TPH FC, turb	Salinity Reading (PPT):	
Grab Sample ID	SW/06-007	Temp. Reading (°C):	9.6 8.7
Grab Date/Time	2/29/12 1516	Turbidity Reading (NTU)	7.11 16.2
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?: Side Channel			
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.)			

Flow from main and port 3:00 measurements from main 4" deep  
side stream @ 3:00 sampled for FC tea colored

3:00  
side  
channel





PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

Station: PSNS 015 continued from previous pagePage: 2 of 2

## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>DM/BR</u>	Weather: <u>Overcast, breezy, 40°</u>	Arrival Date/Time: <u>2/29/12 (1650)</u>
Sampler Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u> New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <u>(N)</u> New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>No</u>	
Additional Dup Grab (IDs, date/time)	<u>NO</u>	
Composite Begin Time (date/time)	<u>2-28-12 (1643)</u>	Sampler Report Downloaded? <u>Yes - RTD</u>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>2-29 (1342) BTL 22 1 of 4</u>	
Total Composite Sample Volume Collected	<u>100%</u>	
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>BTL 22 2/4 (NM) → 24 4/4 (NL) 11 aliquots total</u>	
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	<u>OK-typical</u>	
Storm Controller notified (Y or N/A)?	Which parameter?:	<u>NA</u>
Notes: <u>BTL #8 - cap was left on - No samples collected in this btl</u>		
Maintenance Needed: <u>Pump head tubing needs to be changed, Reset station</u>		

## Section 5. Compositing Scheme and QC Sampling

Personnel: <u>DM/BR/BB</u>	Date/Time: <u>2-29-12 (1850)</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>YSI 30 &amp; Hach 2100P - both Navy owned meters</u>	
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):	
1. <u>1196/55 / Y</u>	7. <u>48/12 / Y</u>
2. <u>60/18 / Y</u>	8. <u>Empty-cap on</u>
3. <u>43/19 / Y</u>	9. <u>49/14 / Y</u>
4. <u>45/16 / Y</u>	10. <u>170/12 / Y</u>
5. <u>87/11 / Y</u>	11. <u>235/8 / Y</u>
6. <u>67/14 / Y</u>	12. <u>371/8 / Y</u>
13. <u>341/9 / Y</u>	14. <u>372/9 / Y</u>
15. <u>10200/9 / Y</u>	16. <u>43000/2 / N</u>
17. <u>10680/12 / N</u>	18. <u>166/23 / Y</u>
19. <u>49/18 / Y</u>	20. <u>66/17 / Y</u>
21. <u>108/20 / Y</u>	22. <u>One aliq. - X</u>
23. <u>No liquid - X</u>	24. <u>No liquid - X</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>17-BTLs @ 960-ml = 16,320 ÷ 2 = 8,160 — used 500 ml's from the 17 "keepers" above = 8500ml</u>	
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond. = 222 Turb. = 17 Vol. = 8500ml Analysis per PWP</u>	
Composite Sample ID & Time: <u>SWIOC-001 (1327)</u>	
Field Blank Collected? (date/time)	<u>NO</u>
Blank ID:	<u>NA</u>
Duplicate comp sample? Yes/No	<u>NO</u>
Duplicate sample ID	<u>NA</u>

NOTES:

# SAMPLE CHAIN OF CUSTODY FORM

Date: 2/29/2012 <sup>pm</sup> 1  
 Page: 1 of 2  
 Project No.: N4523A10MP00034 Amend.1  
 Project: PSNSNon-dry Dock SW 2010

## Battelle

Marine Sciences Laboratory  
 1529 West Sequim Bay Road  
 Laboratory: Battelle MSL  
 Attention: Jill Brandenberger  
 Phone: (360) 681-4564

				Analyze parameters per QAP/FSP														
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity - ①				No. containers	Sample Type (Grab vs. Comp)	Storm#	COND <del>MS</del> NTU	Notes / Comp. Cond. (µS/cm) and Turb. (NTU) Readings
SW106-001	PSNS 124.1	2/29/2012 1535	SW						X					2	G	SW10	2882	62.8
SW106-002	PSNS 126	1558	SW						X					2	G	SW10	338	2.72
SW106-003	PSNS 126 DUP	1600	SW						X					2	G	SW10		
SW106-004	PSNS 124	1618	SW						X					2	G	SW10	5180	3.21 smelled @ exhaust
SW106-005	PSNS 115.1	1640	SW						X					2	G	SW10	2840	2.81
SW106-006	PSNS 084.1	1658	SW						X					2	G	SW10	253	5.72 break in sample
SW106-007	PSNS 015	1720	SW						X					2	G	SW10	405	16.2
SW106-0018	PSNS 015	1327	SW	X	X	X	X	X						1	C	SW10	222	17
SW106-0029	PSNS 084.1	1336	SW	X	X	X	X	X						1	C	SW10	146	16
SW106-00310	PSNS 126	1237	SW	X	X	X	X	X						1	C	SW10	245	8
SW106-00411	PSNS 126 DUP	1237	SW	X	X	X	X	X						1	C	SW10	252	8
② SW106-00512	PSNS 124	2.29.12 (1851)	SW	X	X	X	X	X						1	C	SW10	1162	20
SW106-00613	PSNS 115.1	2.29.12 (1340)	SW	X	X	X	X	X						1	C	SW10	493	7
③ SW106-00714	PSNS 124.1	2.29.12 (2026)	SW	X	X	X	X	X						1	C	SW10	1493	15

Relinquished by: RF 2/29/2012 1825

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Company: \_\_\_\_\_

Relinquished by: BG Beckwith 3/1/2012 1000

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: Cardno TEC Company: \_\_\_\_\_

Received by: BG Beckwith

Signature: \_\_\_\_\_

Printed Name: BG Beckwith

Received by: Jill Brandenberger

Signature: \_\_\_\_\_

Printed Name: Jill Brandenberger PNNL

Total # of Containers: \_\_\_\_\_

Shipment Method: Hand carry

Sample Disposition: \_\_\_\_\_

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

- ① Turbidity measured in SW Lab w/ Hach 2100P meter
- ② Very low sample vol. > 2000ml
- ③ Extremely low sample vol > 1000 ml

**PSNS NDDSW Monitoring Stormwater Sampling Event #10 (2/28/12)**  
**Stormwater Outfall Total Discharge Volume Estimation Equations**

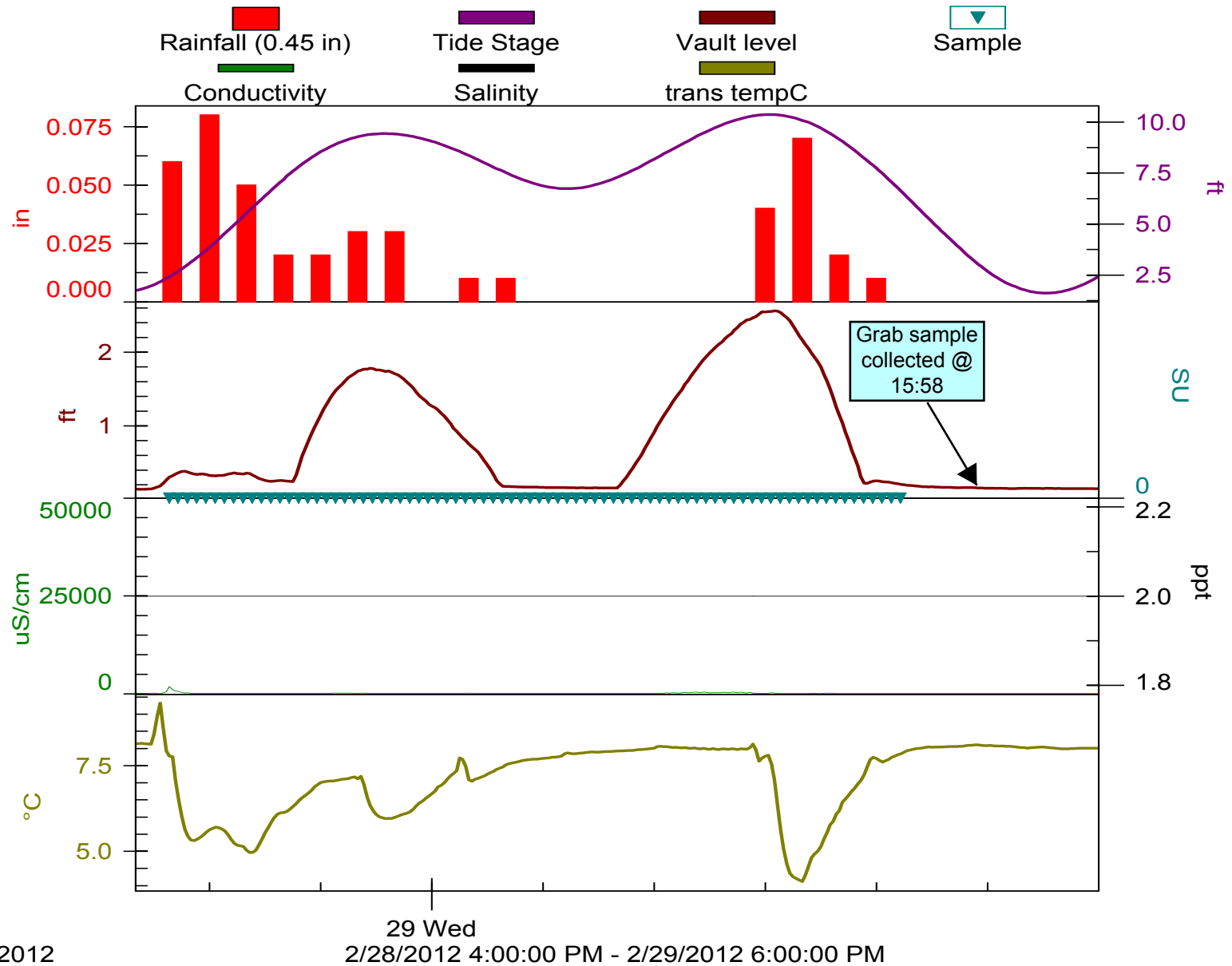
PSNS Drainage Basin	Total Basin Area (ft <sup>2</sup> )	Type of Surface	Percentage of Drainage Basin Surface Type	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Area of Basin Surface Type with Maximum Coefficient Value Applied (ft <sup>2</sup> )	<sup>2</sup> Total Discharge Volume (ft <sup>3</sup> )
126	662,986	Impervious	98.55	653,373	0.6 – 0.9	588,036	R(591,881)
		Pervious	1.45	9,613	0.2 – 0.4	3,845	
124.1	116,000	Impervious	94.56	109,690	0.6 – 0.9	98,721	R(101,245)
		Pervious	5.44	6310	0.2 – 0.4	2,524	
124	454,000	Impervious	94.56	429,302	0.6 – 0.9	386,372	R(396,251)
		Pervious	5.44	24,698	0.2 – 0.4	9,879	
115.1	463,042	Impervious	97	449,104	0.6 – 0.9	361,422	R(366,390)
		Pervious	3	13,938	0.2 – 0.4	4,968	
84.1	23,958	Impervious	100	23,958	0.6 – 0.9	21,562	R(21,562)
15	4,018,862	Impervious	50	2,009,431	0.5 – 0.8	1,607,549	R(2,411,321)
		Pervious	50	2,009,431	0.25 – 0.4	803,772	

**Calculation Worksheet:**

STATION	Combined Drainage Area (FT <sup>2</sup> )	ENTER: Smpl Evnt Rain Total (in)	Sampl Evnt Rain Total (FT)	STE Runoff Vol. (gal)
126	591,881	0.45	0.0375	166,034
124.1	101,245	0.23	0.0192	14,516
124	396,251	0.19	0.0158	46,933
115.1	366,390	0.46	0.0383	105,064
84.1	21,562	0.55	0.0458	7,393
015	2,411,321	0.58	0.0483	871,833

# PSNS 126

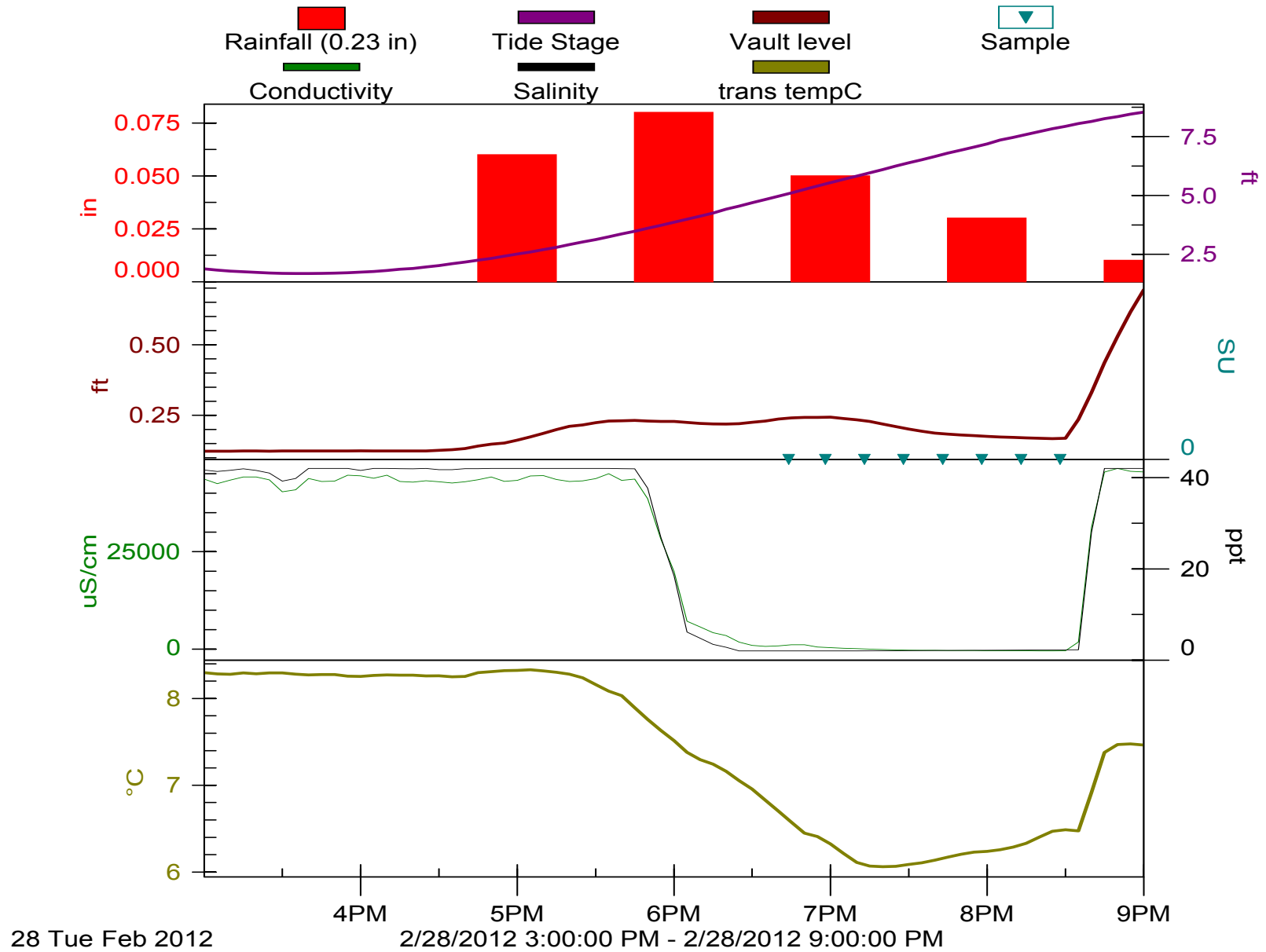
SW10 2-28-12





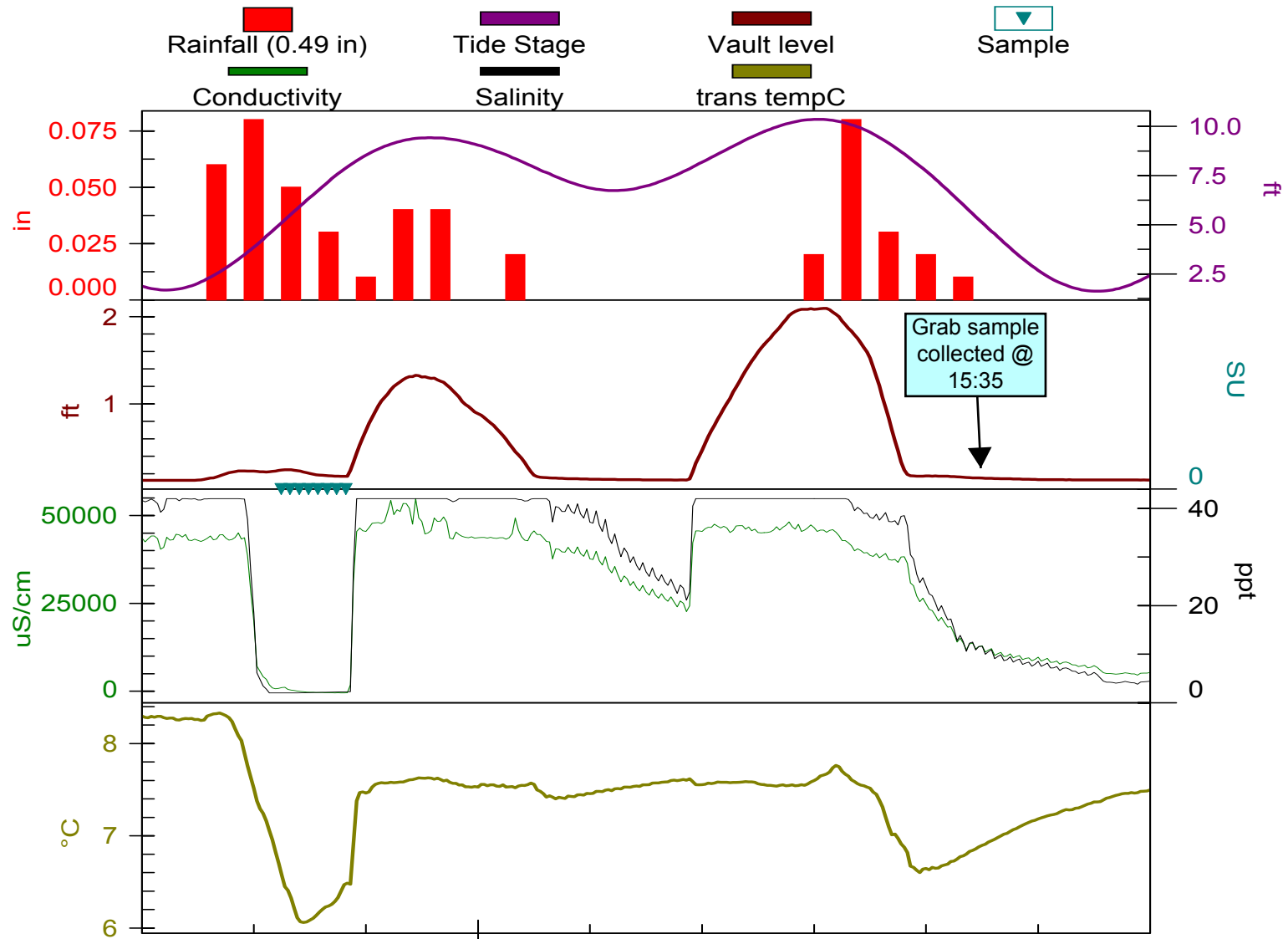
# PSNS 124.1

SW10 2-28-12



# PSNS 124.1

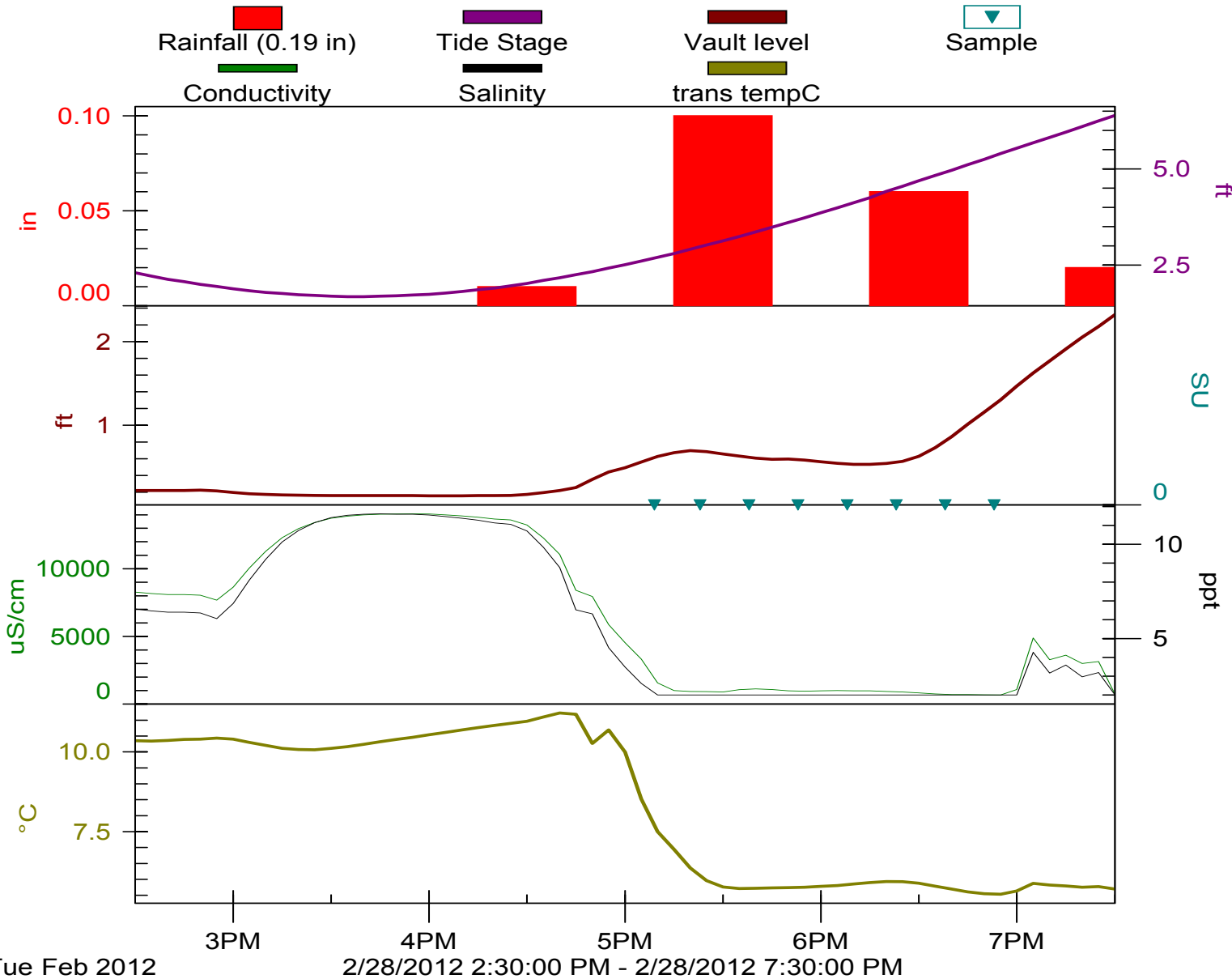
SW10 2-28-12



Feb 2012

29 Wed  
2/28/2012 3:00:00 PM - 2/29/2012 6:00:00 PM

PSNS 124  
SW10 2-28-12

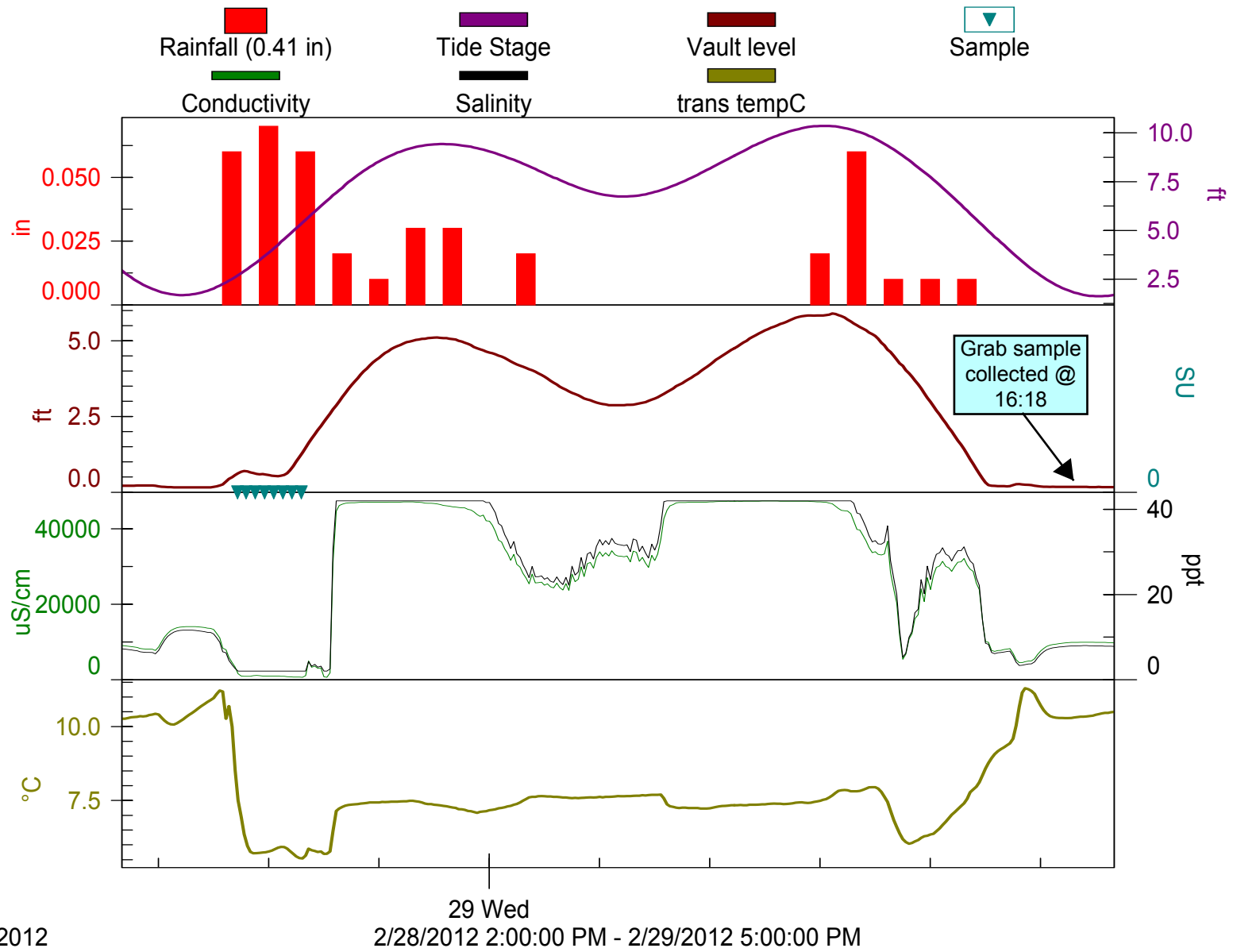


28 Tue Feb 2012

2/28/2012 2:30:00 PM - 2/28/2012 7:30:00 PM

# PSNS 124

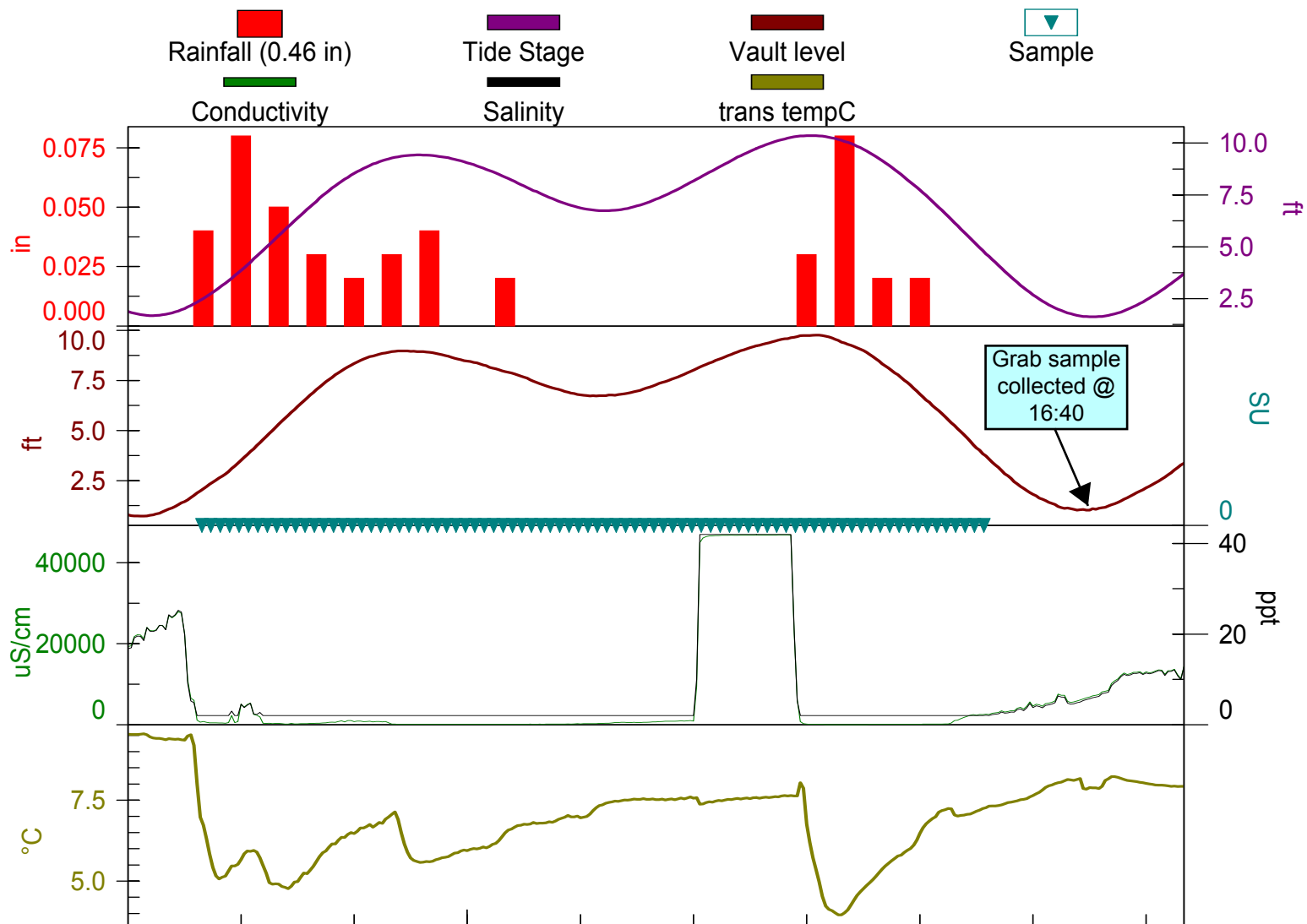
SW10 2-28-12



Feb 2012

# PSNS 115.1

SW10 2-28-12

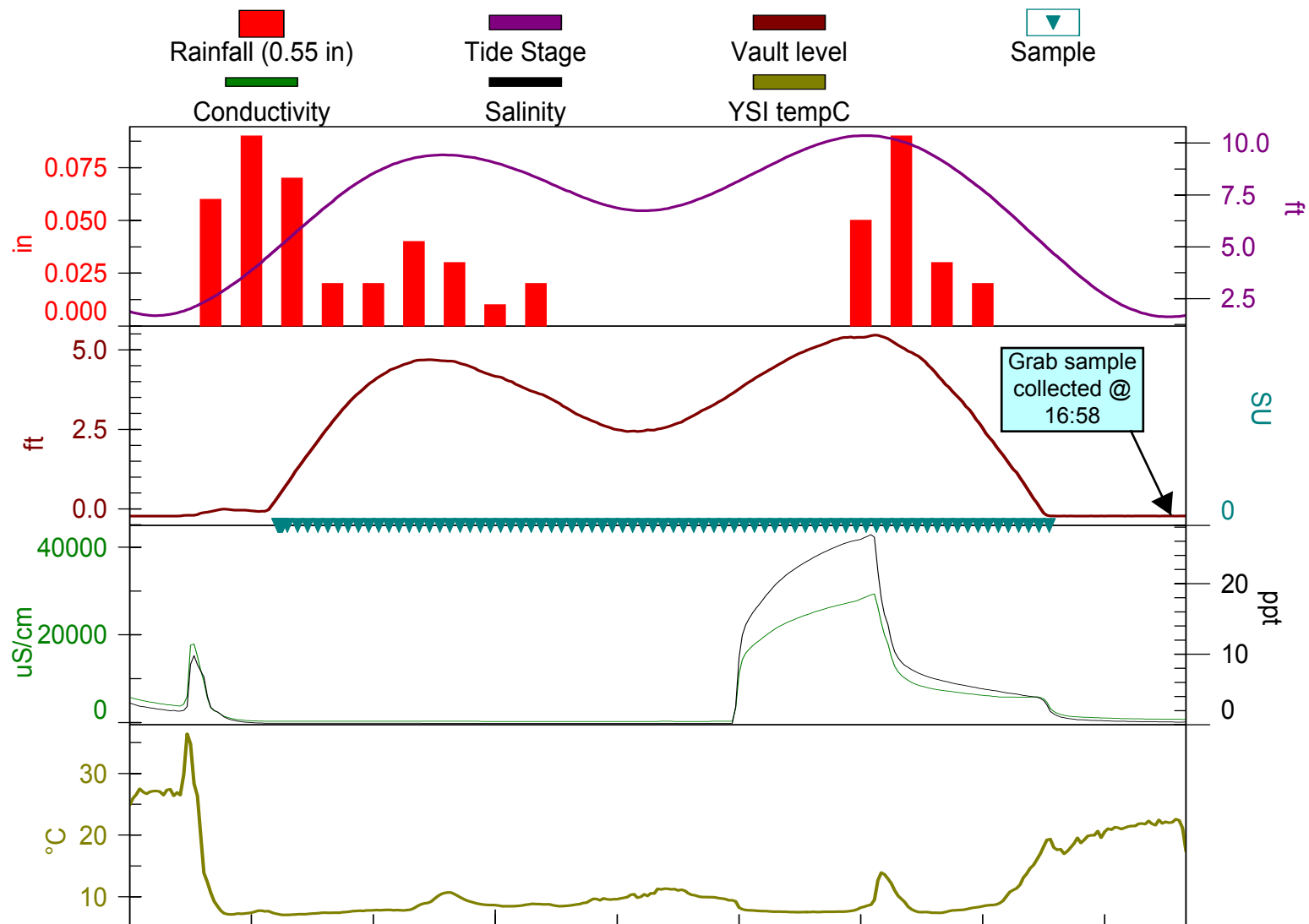


Feb 2012

29 Wed  
2/28/2012 3:00:00 PM - 2/29/2012 7:00:00 PM

# PSNS 084.1

SW10 2-28-12

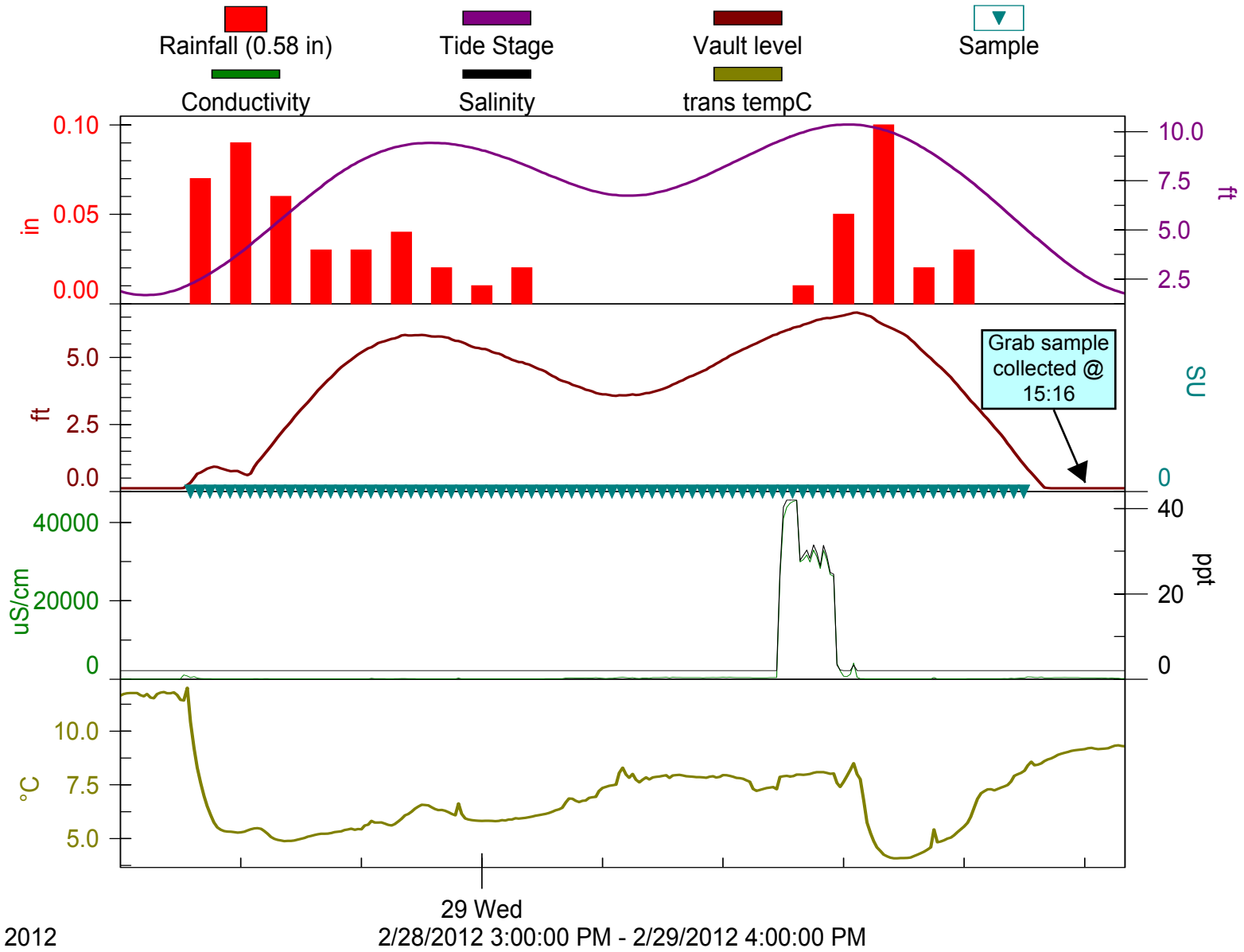


Feb 2012

29 Wed  
2/28/2012 3:00:00 PM - 2/29/2012 5:00:00 PM

# PSNS 015

SW10 2-28-12



Feb 2012

Rainfall (0.57 in)

in

0.10  
0.09  
0.08  
0.07  
0.06  
0.05  
0.04  
0.03  
0.02  
0.01  
0.00

3PM 6PM 9PM 29 Wed 3AM 6AM 9AM 12PM

28 Tue Feb 2012 2/28/2012 2:30:00 PM - 2/29/2012 1:30:00 PM

Time	Rainfall (in)
3PM 28 Tue Feb 2012	0.00
4PM 28 Tue Feb 2012	0.01
5PM 28 Tue Feb 2012	0.10
6PM 28 Tue Feb 2012	0.08
7PM 28 Tue Feb 2012	0.05
8PM 28 Tue Feb 2012	0.02
9PM 28 Tue Feb 2012	0.01
10PM 28 Tue Feb 2012	0.06
11PM 28 Tue Feb 2012	0.03
12PM 28 Tue Feb 2012	0.00
1AM 29 Wed	0.02
2AM 29 Wed	0.00
3AM 29 Wed	0.00
4AM 29 Wed	0.00
5AM 29 Wed	0.00
6AM 29 Wed	0.00
7AM 29 Wed	0.00
8AM 29 Wed	0.01
9AM 29 Wed	0.09
10AM 29 Wed	0.06
11AM 29 Wed	0.01
12PM 29 Wed	0.02



\*\*\* Model 6712 HW Rev: B0 SW Rev: 2.34.0000 ID 1313656803

> REPORT

SAMPLER ID# 1313656803 17:24 29-FEB-12

Hardware: B0 Software: 2.34

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS126DUP"

SITE DESCRIPTION:

"PSNS126DUP"

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

19 ft SUCTION LINE

13 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----

DISTRIBUTION:

2 BOTTLES/SAMPLE

8 SAMPLES/BOTTLE

-----

VOLUME:

120 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

QUICK VIEW/CHANGE

-----

TAKE MEASUREMENTS

EVERY 1 MINUTES  
-----  
DUAL SAMPLER OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT  
-----

EVENT MARK SENT  
DURING PUMP CYCLE  
-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE  
-----

NO PERIODIC  
SERIAL OUTPUT  
-----

INTERROGATOR  
CONNECTOR  
POWER ALWAYS ON  
-----  
-----  
-----

NO RAIN GAUGE  
-----

NO SDI-12 SONDE  
AUTO SDI-12 SCAN OFF  
-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE  
-----

0 ANALOG OUTPUTS  
-----

NO EXTERNAL MODEM  
-----

NO ALARM  
CONDITIONS SET  
-----  
-----

-----  
SAMPLER ID# 1313656803 17:24 29-FEB-12

Hardware: B0 Software: 2.34

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS126DUP

PROGRAM: PSNS126DUP

Program Started at 10:15 TU 28-FEB-12

Nominal Sample Volume = 120 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID  
-----

10:15 PGM DISABLED

16:53 PGM ENABLED

1,8	1-2	16:53	E	501
2,8	1-2	17:07	F	500
3,8	1-2	17:22	F	507
4,8	1-2	17:37	F	503
5,8	1-2	17:52	F	509
6,8	1-2	18:07	F	509
7,8	1-2	18:22	F	507
8,8	1-2	18:37	F	509
1,8	3-4	18:52	F	507
2,8	3-4	19:07	F	509
3,8	3-4	19:22	F	507
4,8	3-4	19:37	F	507
5,8	3-4	19:52	F	506
6,8	3-4	20:07	F	507
7,8	3-4	20:22	F	503
8,8	3-4	20:37	F	498
1,8	5-6	20:52	F	495
2,8	5-6	21:07	F	497
3,8	5-6	21:22	F	493
4,8	5-6	21:37	F	494
5,8	5-6	21:52	F	491
6,8	5-6	22:07	F	495
7,8	5-6	22:22	F	492
8,8	5-6	22:37	F	495
1,8	7-8	22:52	F	495
2,8	7-8	23:07	F	495
3,8	7-8	23:22	F	497
4,8	7-8	23:37	F	497
5,8	7-8	23:52	F	495

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6,8	7-8	00:07	F	494
7,8	7-8	00:22	F	497
8,8	7-8	00:37	F	497
1,8	9-10	00:52	F	495
2,8	9-10	01:07	F	497
3,8	9-10	01:22	F	495
4,8	9-10	01:37	F	503
5,8	9-10	01:52	F	503
6,8	9-10	02:07	F	503
7,8	9-10	02:22	F	507
8,8	9-10	02:37	F	503
1,8	11-12	02:52	F	507
2,8	11-12	03:07	F	501
3,8	11-12	03:22	F	501
4,8	11-12	03:37	F	503
5,8	11-12	03:52	F	507
6,8	11-12	04:07	F	501
7,8	11-12	04:22	F	502
8,8	11-12	04:37	F	503
1,8	13-14	04:52	F	503
2,8	13-14	05:07	F	500
3,8	13-14	05:22	F	500
4,8	13-14	05:37	F	497
5,8	13-14	05:52	F	497

6,8	13-14 06:07	F	497
7,8	13-14 06:22	F	493
8,8	13-14 06:37	F	492
1,8	15-16 06:52	F	489
2,8	15-16 07:07	F	491
3,8	15-16 07:22	F	491
4,8	15-16 07:37	F	491
5,8	15-16 07:52	F	491
6,8	15-16 08:07	F	489
7,8	15-16 08:22	F	486
8,8	15-16 08:37	F	489
1,8	17-18 08:52	F	486
2,8	17-18 09:07	F	488
3,8	17-18 09:22	F	491
4,8	17-18 09:37	F	489
5,8	17-18 09:52	F	491
6,8	17-18 10:07	F	491
7,8	17-18 10:22	F	491
8,8	17-18 10:37	F	495
1,8	19-20 10:52	F	497
2,8	19-20 11:07	F	497
3,8	19-20 11:22	F	503
4,8	19-20 11:37	F	503
5,8	19-20 11:52	F	504
6,8	19-20 12:07	F	504
7,8	19-20 12:22	F	504
8,8	19-20 12:37	F	503
1,8	21-22 12:52	F	502
2,8	21-22 13:07	F	503
3,8	21-22 13:22	F	503
4,8	21-22 13:37	F	503
5,8	21-22 13:52	F	503
6,8	21-22 14:07	F	504
7,8	21-22 14:22	F	503
8,8	21-22 14:37	F	503
1,8	23-24 14:52	F	503
2,8	23-24 15:07	F	503
3,8	23-24 15:22	F	503
4,8	23-24 15:37	F	507
5,8	23-24 15:52	F	503
6,8	23-24 16:07	F	505
7,8	23-24 16:22	F	503
8,8	23-24 16:37	F	504

16:38 PGM DONE 29-FEB

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179321

> REPORT

SAMPLER ID# 3293179321 17:32 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS124-1 "

SITE DESCRIPTION:

"PSNS124-1 "

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

56 ft SUCTION LINE

12 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----

DISTRIBUTION:

4 SAMPLES/BOTTLE

-----

VOLUME:

240 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE

-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

-----

NO DIALOUT  
CONDITIONS SET

-----  
SAMPLER ID# 3293179321 17:32 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS124-1

PROGRAM: PSNS124-1

Program Started at 11:00 TU 28-FEB-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

----- -- -- -----  
11:00 PGM DISABLED  
18:42 PGM ENABLED

1,4	1	18:42	E	1343
2,4	1	18:56	F	1310
3,4	1	19:11	F	1313
4,4	1	19:26	F	1309
1,4	2	19:41	F	1310
2,4	2	19:56	F	1319
3,4	2	20:11	F	1321
4,4	2	20:26	F	1323
1,4	3	20:41	F	1343
2,4	3	20:56	F	1345
3,4	3	21:11	F	1327
4,4	3	21:26	F	1369
1,4	4	21:41	F	1301
2,4	4	21:56	F	1337
3,4	4	22:11	F	1351
4,4	4	22:26	F	1301
1,4	5	22:41	F	1313
2,4	5	22:56	F	1315

3,4	5	23:11	F	1313
4,4	5	23:26	F	1316
1,4	6	23:41	F	1325
2,4	6	23:56	F	1373

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3,4	6	00:11	F	1385
4,4	6	00:26	F	1327
1,4	7	00:41	F	1321
2,4	7	00:56	F	1327
3,4	7	01:11	F	1391
4,4	7	01:26	F	1393
1,4	8	01:41	F	1331
2,4	8	01:56	F	1391
3,4	8	02:11	F	1339
4,4	8	02:26	F	1319
1,4	9	02:41	F	1385
2,4	9	02:56	F	1319
3,4	9	03:11	F	1361
4,4	9	03:26	F	1361
1,4	10	03:41	F	1357
2,4	10	03:56	F	1337
3,4	10	04:11	F	1397
4,4	10	04:26	F	1397
1,4	11	04:41	F	1361
2,4	11	04:56	F	1373
3,4	11	05:11	F	1319
4,4	11	05:26	F	1343
1,4	12	05:41	F	1379
2,4	12	05:56	F	1331
3,4	12	06:11	F	1337
4,4	12	06:26	F	1325
1,4	13	06:41	F	1345
2,4	13	06:56	F	1316
3,4	13	07:11	F	1319
4,4	13	07:26	F	1313
1,4	14	07:41	F	1333
2,4	14	07:56	F	1293
3,4	14	08:11	F	1303
4,4	14	08:26	F	1283
1,4	15	08:41	F	1301
2,4	15	08:56	F	1319
3,4	15	09:11	F	1313
4,4	15	09:26	F	1283
1,4	16	09:41	F	1307
2,4	16	09:56	F	1302
3,4	16	10:11	F	1313
4,4	16	10:26	F	1303
1,4	17	10:41	F	1295
2,4	17	10:56	F	1331
3,4	17	11:11	F	1331
4,4	17	11:26	F	1339
1,4	18	11:41	F	1351
2,4	18	11:56	F	1343
3,4	18	12:11	F	1331

4,4	18	12:26	F	1349
1,4	19	12:41	F	1331
2,4	19	12:56	F	1345
3,4	19	13:11	F	1325
4,4	19	13:26	F	1333
1,4	20	13:41	F	1331
2,4	20	13:56	F	1337
3,4	20	14:11	F	1323
4,4	20	14:26	F	1327
1,4	21	14:41	F	1325
2,4	21	14:56	F	1325
3,4	21	15:11	F	1319
4,4	21	15:26	F	1337
1,4	22	15:41	F	1335
2,4	22	15:56	F	1331
3,4	22	16:11	F	1331
4,4	22	16:26	F	1317
1,4	23	16:41	F	1319
2,4	23	16:56	F	1327
3,4	23	17:11	F	1331
4,4	23	17:26	F	1359

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----



\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179322

> REPORT

SAMPLER ID# 3293179322 17:39 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS 124 "

SITE DESCRIPTION:

"PSNS 124 "

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

20 ft SUCTION LINE

16 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----

DISTRIBUTION:

4 SAMPLES/BOTTLE

-----

VOLUME:

240 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE

-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

-----

NO DIALOUT  
CONDITIONS SET

-----

SAMPLER ID# 3293179322 17:39 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS 124

PROGRAM: PSNS 124

Program Started at 13:58 TU 28-FEB-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

13:58 PGM DISABLED

17:07 PGM ENABLED

1,4	1	17:07	E	566
2,4	1	17:21	F	561
3,4	1	17:36	F	567
4,4	1	17:51	F	569
1,4	2	18:06	F	567
2,4	2	18:21	F	567
3,4	2	18:36	F	567
4,4	2	18:51	F	561
1,4	3	19:06	F	557
2,4	3	19:21	F	555
3,4	3	19:36	F	549
4,4	3	19:51	F	549
1,4	4	20:06	F	551
2,4	4	20:21	F	544
3,4	4	20:36	F	543
4,4	4	20:51	F	543
1,4	5	21:06	F	537
2,4	5	21:21	F	539

3,4	5	21:36	F	537
4,4	5	21:51	F	539
1,4	6	22:06	F	539
2,4	6	22:21	F	537
3,4	6	22:36	F	537
4,4	6	22:51	F	532
1,4	7	23:06	F	537
2,4	7	23:21	F	534
3,4	7	23:36	F	539
4,4	7	23:51	F	537

----- WE 29-FEB-12 -----

1,4	8	00:06	F	537
2,4	8	00:21	F	537
3,4	8	00:36	F	539
4,4	8	00:51	F	537
1,4	9	01:06	F	539
2,4	9	01:21	F	537
3,4	9	01:36	F	545
4,4	9	01:51	F	545
1,4	10	02:06	F	545
2,4	10	02:21	F	546
3,4	10	02:36	F	546
4,4	10	02:51	F	551
1,4	11	03:06	F	549
2,4	11	03:21	F	551
3,4	11	03:36	F	549
4,4	11	03:51	F	551
1,4	12	04:06	F	549
2,4	12	04:21	F	551
3,4	12	04:36	F	549
4,4	12	04:51	F	551
1,4	13	05:06	F	543
2,4	13	05:21	F	543
3,4	13	05:36	F	543
4,4	13	05:51	F	538
1,4	14	06:06	F	540
2,4	14	06:21	F	537
3,4	14	06:36	F	534
4,4	14	06:51	F	534
1,4	15	07:06	F	533
2,4	15	07:21	F	533
3,4	15	07:36	F	531
4,4	15	07:51	F	533
1,4	16	08:06	F	533
2,4	16	08:21	F	527
3,4	16	08:36	F	525
4,4	16	08:51	F	528
1,4	17	09:06	F	529
2,4	17	09:21	F	526
3,4	17	09:36	F	528
4,4	17	09:51	F	531
1,4	18	10:06	F	531
2,4	18	10:21	F	531
3,4	18	10:36	F	531

4,4	18	10:51	F	537
1,4	19	11:06	F	539
2,4	19	11:21	F	543
3,4	19	11:36	F	543
4,4	19	11:51	F	549
1,4	20	12:06	F	552
2,4	20	12:21	F	555
3,4	20	12:36	F	561
4,4	20	12:51	F	563
1,4	21	13:06	F	569
2,4	21	13:21	F	573
3,4	21	13:36	F	575
4,4	21	13:51	F	573
1,4	22	14:06	F	575
2,4	22	14:21	F	575
3,4	22	14:36	F	575
4,4	22	14:51	F	575
1,4	23	15:06	F	575
2,4	23	15:21	F	575
3,4	23	15:36	F	575
4,4	23	15:51	F	573
1,4	24	16:06	F	576
2,4	24	16:21	F	575
3,4	24	16:36	F	575
4,4	24	16:51	F	573

16:52 PGM DONE 29-FEB

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----

\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 3293179316

> REPORT

SAMPLER ID# 3293179316 17:44 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS115-1 "

SITE DESCRIPTION:

"PSNS115-1 "

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

44 ft SUCTION LINE

21 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----

DISTRIBUTION:

4 SAMPLES/BOTTLE

-----

VOLUME:

240 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE

-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

-----

NO DIALOUT  
CONDITIONS SET

-----  
SAMPLER ID# 3293179316 17:44 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS115-1

PROGRAM: PSNS115-1

Program Started at 14:33 TU 28-FEB-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

14:33 PGM DISABLED

16:56 PGM ENABLED

1,4	1	16:56	E	1220
2,4	1	17:10	F	1220
3,4	1	17:25	F	1218
4,4	1	17:40	F	1200
1,4	2	17:55	F	1212
2,4	2	18:10	F	1188
3,4	2	18:25	F	1184
4,4	2	18:40	F	1172
1,4	3	18:55	F	1152
2,4	3	19:10	F	1153
3,4	3	19:25	F	1154
4,4	3	19:40	F	1148
1,4	4	19:55	F	1135
2,4	4	20:10	F	1129
3,4	4	20:25	F	1116
4,4	4	20:40	F	1112
1,4	5	20:55	F	1106
2,4	5	21:10	F	1105

3,4	5	21:25	F	1100
4,4	5	21:40	F	1098
1,4	6	21:55	F	1095
2,4	6	22:10	F	1093
3,4	6	22:25	F	1093
4,4	6	22:40	F	1093
1,4	7	22:55	F	1094
2,4	7	23:10	F	1099
3,4	7	23:25	F	1110
4,4	7	23:40	F	1099
1,4	8	23:55	F	1100

----- WE 29-FEB-12 -----

2,4	8	00:10	F	1105
3,4	8	00:25	F	1105
4,4	8	00:40	F	1106
1,4	9	00:55	F	1117
2,4	9	01:10	F	1112
3,4	9	01:25	F	1122
4,4	9	01:40	F	1136
1,4	10	01:55	F	1128
2,4	10	02:10	F	1127
3,4	10	02:25	F	1137
4,4	10	02:40	F	1130
1,4	11	02:55	F	1142
2,4	11	03:10	F	1130
3,4	11	03:25	F	1130
4,4	11	03:40	F	1128
1,4	12	03:55	F	1129
2,4	12	04:10	F	1130
3,4	12	04:25	F	1125
4,4	12	04:40	F	1117
1,4	13	04:55	F	1136
2,4	13	05:10	F	1118
3,4	13	05:25	F	1116
4,4	13	05:40	F	1116
1,4	14	05:55	F	1110
2,4	14	06:10	F	1118
3,4	14	06:25	F	1113
4,4	14	06:40	F	1117
1,4	15	06:55	F	1105
2,4	15	07:10	F	1098
3,4	15	07:25	F	1101
4,4	15	07:40	F	1104
1,4	16	07:55	F	1110
2,4	16	08:10	F	1088
3,4	16	08:25	F	1093
4,4	16	08:40	F	1079
1,4	17	08:55	F	1070
2,4	17	09:10	F	1074
3,4	17	09:25	F	1082
4,4	17	09:40	F	1080
1,4	18	09:55	F	1087
2,4	18	10:10	F	1087
3,4	18	10:25	F	1081

4,4	18	10:40	F	1088
1,4	19	10:55	F	1092
2,4	19	11:10	F	1104
3,4	19	11:25	F	1110
4,4	19	11:40	F	1117
1,4	20	11:55	F	1129
2,4	20	12:10	F	1136
3,4	20	12:25	F	1140
4,4	20	12:40	F	1146
1,4	21	12:55	F	1160
2,4	21	13:10	F	1177
3,4	21	13:25	F	1215
4,4	21	13:40	F	1196
1,4	22	13:55	F	1213
2,4	22	14:10	F	1215
3,4	22	14:25	F	1225
4,4	22	14:40	F	1239
1,4	23	14:55	F	1249
2,4	23	15:10	F	1255
3,4	23	15:25	F	1255
4,4	23	15:40	F	1257
1,4	24	15:55	F	1261
2,4	24	16:10	F	1274
3,4	24	16:25	F	1261
4,4	24	16:40	F	1262

16:41 PGM DONE 29-FEB

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----



\*\*\* Model 6700 HW Rev: B2 SW Rev: 3.26.0000 ID 2425546782

SAMPLER ID# 2425546782 17:49 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS84-1 "

SITE DESCRIPTION:

"PSNS84-1 "

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

22 ft SUCTION LINE

15 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

NO SAMPLE AT START

-----

DISTRIBUTION:

4 SAMPLES/BOTTLE

-----

VOLUME:

240 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF

BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

I/O1= NONE

I/O2= NONE

I/O3= NONE

-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

-----

NO DIALOUT  
CONDITIONS SET

-----  
SAMPLER ID# 2425546782 17:49 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS84-1

PROGRAM: PSNS84-1

Program Started at 15:05 TU 28-FEB-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

15:05 PGM DISABLED

18:37 PGM ENABLED

1,4	1	18:37	E	546
2,4	1	18:38	F	541
3,4	1	18:39	F	548
4,4	1	18:40	F	547
1,4	2	18:41	F	550
2,4	2	18:42	F	552
3,4	2	18:43	F	552
4,4	2	18:44	F	553
1,4	3	18:51	F	552
2,4	3	19:06	F	540
3,4	3	19:21	F	540
4,4	3	19:36	F	534
1,4	4	19:51	F	528
2,4	4	20:06	F	524
3,4	4	20:21	F	522
4,4	4	20:36	F	522
1,4	5	20:51	F	517
2,4	5	21:06	F	513
3,4	5	21:21	F	512

4,4	5	21:36	F	513
1,4	6	21:51	F	512
2,4	6	22:06	F	512
3,4	6	22:21	F	512
4,4	6	22:36	F	511
1,4	7	22:51	F	512
2,4	7	23:06	F	510
3,4	7	23:21	F	512
4,4	7	23:36	F	512
1,4	8	23:51	F	511

----- WE 29-FEB-12 -----

2,4	8	00:06	F	513
3,4	8	00:21	F	513
4,4	8	00:36	F	514
1,4	9	00:51	F	517
2,4	9	01:06	F	518
3,4	9	01:21	F	520
4,4	9	01:36	F	522
1,4	10	01:51	F	520
2,4	10	02:06	F	524
3,4	10	02:21	F	524
4,4	10	02:36	F	525
1,4	11	02:51	F	524
2,4	11	03:06	F	526
3,4	11	03:21	F	526
4,4	11	03:36	F	528
1,4	12	03:51	F	526
2,4	12	04:06	F	526
3,4	12	04:21	F	526
4,4	12	04:36	F	521
1,4	13	04:51	F	519
2,4	13	05:06	F	519
3,4	13	05:21	F	518
4,4	13	05:36	F	520
1,4	14	05:51	F	517
2,4	14	06:06	F	518
3,4	14	06:21	F	520
4,4	14	06:36	F	516
1,4	15	06:51	F	516
2,4	15	07:06	F	511
3,4	15	07:21	F	512
4,4	15	07:36	F	512
1,4	16	07:51	F	508
2,4	16	08:06	F	510
3,4	16	08:21	F	509
4,4	16	08:36	F	507
1,4	17	08:51	F	507
2,4	17	09:06	F	507
3,4	17	09:21	F	506
4,4	17	09:36	F	505
1,4	18	09:51	F	501
2,4	18	10:06	F	507
3,4	18	10:21	F	512
4,4	18	10:36	F	514

1,4	19	10:51	F	514
2,4	19	11:06	F	520
3,4	19	11:21	F	520
4,4	19	11:36	F	526
1,4	20	11:51	F	526
2,4	20	12:06	F	532
3,4	20	12:21	F	534
4,4	20	12:36	F	538
1,4	21	12:51	F	539
2,4	21	13:06	F	548
3,4	21	13:21	F	551
4,4	21	13:36	F	560
1,4	22	13:51	F	558
2,4	22	14:06	F	558
3,4	22	14:21	F	564
4,4	22	14:36	F	560
1,4	23	14:51	F	559
2,4	23	15:06	F	558
3,4	23	15:21	F	560
4,4	23	15:36	F	555
1,4	24	15:51	F	558
2,4	24	16:06	F	560
3,4	24	16:21	F	558
4,4	24	16:36	F	558

16:36 PGM DONE 29-FEB

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----

SAMPLER ID# 2425481222 16:38 29-FEB-12

Hardware: B2 Software: 3.26

\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\*

-----

PROGRAM NAME:

"PSNS015 "

SITE DESCRIPTION:

"PSNS015 "

-----

UNITS SELECTED:

LENGTH: ft

-----

24, 1000 ml BTLS

22 ft SUCTION LINE

18 ft SUCTION HEAD

0 RINSES, 0 RETRIES

-----

ONE-PART PROGRAM

-----

PACING:

FLOW, EVERY

1 PULSES

SAMPLE AT START

-----

DISTRIBUTION:

4 SAMPLES/BOTTLE

-----

VOLUME:

240 ml SAMPLES

-----

ENABLE:

NONE PROGRAMMED

-----

ENABLE:

ONCE ENABLED,

STAY ENABLED

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----  
NO DELAY TO START

-----  
-----  
-----  
LIQUID DETECT ON

NO RAIN GAGE

-----  
NO YSI SONDE

-----  
MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----  
EVENT MARK SENT  
DURING PUMP CYCLE

-----  
PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----  
I/O1= NONE  
I/O2= NONE  
I/O3= NONE

-----  
0 ANALOG OUTPUTS

NO PERIODIC  
SERIAL OUTPUT

-----  
NO DIALOUT  
CONDITIONS SET

-----  
  
SAMPLER ID# 2425481222 16:38 29-FEB-12  
Hardware: B2     Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS015  
PROGRAM: PSNS015  
Program Started at 09:13 TU 28-FEB-12  
Nominal Sample Volume = 240 ml

COUNT  
TO  
SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----					
		09:13	PGM DISABLED		
		16:43	PGM ENABLED		
1,4	1	16:43	E	832	
2,4	1	16:57	F	828	
3,4	1	17:12	F	826	
4,4	1	17:27	F	830	
1,4	2	17:42	F	834	
2,4	2	17:57	F	835	
3,4	2	18:12	F	831	
4,4	2	18:27	F	816	
1,4	3	18:42	F	816	
2,4	3	18:57	F	812	
3,4	3	19:12	F	804	
4,4	3	19:27	F	792	
1,4	4	19:42	F	790	
2,4	4	19:57	F	788	
3,4	4	20:12	F	774	
4,4	4	20:27	F	773	
1,4	5	20:42	F	768	
2,4	5	20:57	F	772	
3,4	5	21:12	F	768	
4,4	5	21:27	F	762	
1,4	6	21:42	F	760	
2,4	6	21:57	F	757	
3,4	6	22:12	F	760	
4,4	6	22:27	F	764	
1,4	7	22:42	F	762	
2,4	7	22:57	F	760	
3,4	7	23:12	F	762	
4,4	7	23:27	F	761	
1,4	8	23:42	F	757	
2,4	8	23:57	F	768	
----- WE 29-FEB-12 -----					
3,4	8	00:12	F	768	
4,4	8	00:27	F	768	
1,4	9	00:42	F	768	
2,4	9	00:57	F	774	
3,4	9	01:12	F	772	
4,4	9	01:27	F	774	
1,4	10	01:42	F	780	
2,4	10	01:57	F	786	
3,4	10	02:12	F	784	
4,4	10	02:27	F	784	
1,4	11	02:42	F	792	
2,4	11	02:57	F	792	

3,4	11	03:12	F	792
4,4	11	03:27	F	787
1,4	12	03:42	F	786
2,4	12	03:57	F	788
3,4	12	04:12	F	786
4,4	12	04:27	F	784
1,4	13	04:42	F	786
2,4	13	04:57	F	782
3,4	13	05:12	F	778
4,4	13	05:27	F	773
1,4	14	05:42	F	768
2,4	14	05:57	F	772
3,4	14	06:12	F	766
4,4	14	06:27	F	766
1,4	15	06:42	F	764
2,4	15	06:57	F	760
3,4	15	07:12	F	755
4,4	15	07:27	F	760
1,4	16	07:42	F	760
2,4	16	07:57	F	760
3,4	16	08:12	F	756
4,4	16	08:27	F	757
1,4	17	08:42	F	755
2,4	17	08:57	F	748
3,4	17	09:12	F	750
4,4	17	09:27	F	750
1,4	18	09:42	F	754
2,4	18	09:57	F	754
3,4	18	10:12	F	762
4,4	18	10:27	F	760
1,4	19	10:42	F	760
2,4	19	10:57	F	768
3,4	19	11:12	F	772
4,4	19	11:27	F	775
1,4	20	11:42	F	786
2,4	20	11:57	F	790
3,4	20	12:12	F	792
4,4	20	12:27	F	798
1,4	21	12:42	F	813
2,4	21	12:57	F	822
3,4	21	13:12	F	830
4,4	21	13:27	F	836
1,4	22	13:42	F	846
2,4	22	13:57	F NM	*
3,4	22	14:12	F NL	*
4,4	22	14:27	F NL	*
1,4	23	14:42	F NL	*
2,4	23	14:57	F NL	*
3,4	23	15:12	F NL	*
4,4	23	15:27	F NL	*
1,4	24	15:42	F NL	*
2,4	24	15:57	F NL	*
3,4	24	16:12	F NL	*
4,4	24	16:27	F NL	*



16:28 PGM DONE 29-FEB

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

ERROR NL ==> NO LIQUID DETECTED!

ERROR NM ==> NO MORE LIQUID!

---



## National Weather Service National Headquarters National Weather Service

### Area Forecast Discussion

Issued by NWS Seattle/Tacoma, WA

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000  
FXUS66 KSEW 281913 AAA  
AFDSEW

#### [AREA FORECAST DISCUSSION](#)

NATIONAL WEATHER SERVICE SEATTLE WA  
1110 AM PST TUE FEB 28 2012...UPDATED

.SYNOPSIS...A STRONG PACIFIC FRONTAL SYSTEM WILL BRING RAIN AND POSSIBLY A LITTLE SNOW TO WESTERN WASHINGTON THIS AFTERNOON AND TONIGHT. A COLD [UPPER LEVEL](#) LOW WILL REMAIN OVER THE AREA WEDNESDAY THEN SLIP EASTWARD THURSDAY...WHICH WILL ALLOW [SCATTERED](#) RAIN AND SNOW SHOWERS TO PERSIST. A WARM [FRONT](#) WILL BRING SOME RAIN TO THE AREA FRIDAY AND SATURDAY. A COLD [FRONT](#) WILL APPROACH THE AREA LATE THIS WEEKEND.

&&

.SHORT TERM...UPDATED THE FORECAST TO UPGRADE THE HOOD CANAL WINTER STORM [WATCH](#) TO A WINTER STORM [WARNING](#). AS STATED BELOW THIS IS MAINLY FOR THE PORTION OF THE ZONES NEAREST THE OLYMPICS. THE ONLY CHANGE I MADE WAS TO MOVE THE [WARNING](#) TIME UP TO NOON RATHER THAN THE 4 PM START TIME AS THE PRECIPITATION IS MOVING IN QUICKLY. ALSO CUT IT OFF A FEW HOURS EARLY WEDNESDAY MORNING. NO OTHER CHANGES MADE TO THE FORECAST.

REMAINDER IS FROM PREVIOUS DISCUSSION...[IR](#) IMAGERY INDICATES RATHER STRONG SYSTEM APPROACHING THE WEST COAST WITH DEEP VORT CENTER GENERATING AN EXPANSIVE CLOUD SHIELD EAST OF 130W WHICH HAS SPREAD ACROSS THE REGION. THE MAIN AREA OF PRECIPITATION REMAINS JUST OFFSHORE ACCORDING TO THE COASTAL [RADAR](#) AS THE NEGATIVE TILTED FRONTAL SYSTEM APPROACHES. THE VORT CENTER IS DIVING FAR ENOUGH SOUTH THAT THE HEAVIEST PRECIPITATION WILL BE OVER OREGON AND CALIFORNIA WITH THE APPROACHING FRONTAL SYSTEM BUT THAT DOESN/T [MEAN](#) THAT WE WON/T GET OUR SHARE. MOST OF WESTERN WASHINGTON WILL SEE AT LEAST SOME PRECIPITATION WITH THE [FRONT](#) BUT THERE WILL BE A GOOD EAST TO WEST [GRADIENT](#) THANKS TO THE DRY EAST [FLOW](#) OFF THE CASCADES. THE CASCADES FOOTHILLS AREA (THINK ENUMCLAW NORTHBEND) WILL [LIKELY](#) SEE ONLY A FEW HUNDREDTHS THROUGH THE EVENING LATE TODAY INTO TONIGHT...AND THE CENTRAL SOUND JUST A COUPLE OF TENTHS OF AN INCH OF RAIN (THINK THE [METRO](#) AREA).

THE COAST WILL GET THE MOST LIQUID PRECIPITATION AS USUAL AND [LIKELY](#) AROUND 3/4 OF AN INCH. HOWEVER...THE PLACE TO [WATCH](#) TODAY IS THE HOOD CANAL AREA...BASICALLY WEST OF A SHELTON-BELFAIR LINE. THE LOWER [AIR MASS](#) IS COOL AND DRY WITH TEMPERATURES IN THE LOWER TO MID 30S AND DEWPOINTS IN THE MID 20S TO LOWER 30S. SOUTHEAST LOW LEVEL [FLOW](#) IN ADVANCE OF THE [FRONT](#) WILL CREATE [UPSLOPE FLOW](#) ALONG HOOD CANAL LATE THIS AFTERNOON INTO TONIGHT. [MESOSCALE](#) MODELS SHOW SIGNIFICANT [QPF](#) OVER THE AREA THROUGH ABOUT MIDNIGHT. INITIAL EVAPORATIVE COOLING AND CONTINUING HEAVIER PRECIP MAY BE ENOUGH TO DROP 1-8 INCHES OF SNOW ACROSS THE WESTERN PORTION OF THE ZONE...WITH A TIGHT [GRADIENT](#) IN ACCUMULATIONS FROM NEAR THE OLYMPIC FOOTHILLS TO POINTS FARTHER EAST. A WINTER STORM [WATCH](#) HAD BEEN ISSUED EARLIER THIS MORNING IN ANTICIPATION OF THIS. I STILL SEE THE POTENTIAL FOR THIS TO OCCUR...GENERALLY AFFECTING A RELATIVELY SMALL AREA...SO LATER THIS MORNING I WILL [LIKELY](#) UPGRADE THIS TO A WINTER STORM [WARNING](#) FOR A LIMITED PORTION OF THE HOOD CANAL ZONE.

[MESOSCALE](#) MODELS STILL SHOW STRONG PRESSURE GRADIENTS AND SOUTHEAST WINDS AFFECTING MAINLY THE COAST AND NORTHWEST INTERIOR THROUGH THIS EVENING. WINDS ARE PICKING UP THIS MORNING AND HAVE ALREADY REACHED [GALE](#) OVER THE INTERIOR WATERS SO THIS LOOKS LIKE IT IS MOVING RIGHT ALONG. FOR NOW...NO CHANGE IS PLANNED RELATED TO THE WIND ADVISORY.

FOR WEDNESDAY ONWARD...A DEEP 519 DM COLD [UPPER LEVEL](#) LOW WILL MOVE OVERHEAD THEN EAST ON THURSDAY. SNOW LEVELS WILL RANGE GENERALLY FROM 500 TO 1000 FEET DEPENDING ON THE TIME OF DAY...BUT IN THE UNSTABLE [AIR MASS](#) HEAVIER SHOWERS WILL [LIKELY](#) BRING SNOW DOWN TO SEA-LEVEL. THE SHOWERS WILL BE HIT-AND-MISS WITH A [CONVERGENCE](#) ZONE AND TERRAIN DRIVEN SHOWER BANDS PROBABLY RESULTING IN MORE PERSISTENT SHOWERS FOR SOME AREAS. NO REAL ACCUMULATION IS EXPECTED SINCE THE SNOW SHOULD MELT QUICKLY. SHOWERS SHOULD BEGIN DECREASING THURSDAY AS THE LOW MOVES EAST AND NORTHWEST [FLOW](#) DEVELOPS OVER THE AREA. CERNIGLIA

.LONG TERM...FROM PREVIOUS DISCUSSION...[GFS/ECMWF](#) BOTH HAVE STRONGER W [FLOW](#) DEVELOPING ACROSS THE NE PACIFIC ON FRIDAY...FLOWING OVER THE TOP OF A BROAD FLAT [RIDGE](#) OFFSHORE. THIS IS A GOOD WARM [ADVECTION](#) PATTERN. THE [GFS](#) IS MORE AGGRESSIVE WITH THE WARM [ADVECTION](#)...SHOWING 24-36 HOURS OF DECENT WARM [ADVECTION](#) FROM FRIDAY AFTERNOON THROUGH MOST OF SATURDAY. [GFS](#) 850 [MB](#) WINDS ONLY TOP OUT AT

W 35 [KT](#) FRIDAY NIGHT...SO THIS MORE LIKE MODERATE [FLOW](#). THE [ECMWF](#) SHOWS WEAKER WARM [ADVECTION](#) AND LESS PRECIP. BOTH MODELS AGREE THAT A COLD [FRONT](#) WILL BE MOVING INTO THE AREA SUNDAY NIGHT AND MONDAY. KAM

&&

.[HYDROLOGY](#)...  
FLOODING IS NOT EXPECTED THROUGH EARLY NEXT WEEK.

&&

.AVIATION...RAIN ALONG THE COAST WILL SPREAD INLAND THIS AFTERNOON/EVENING AS AN OCCLUDED [FRONT](#) MOVES IN. EXPECT GUSTY S/SE [FLOW](#) AT THE SURFACE WITH HIGHEST WINDS ALONG THE COAST AND NORTH INTERIOR. MAY SEE CIGS LOWER TO [MVFR](#) THIS EVENING. THE [AIR MASS](#) WILL REMAIN COOL AND UNSTABLE OVERNIGHT WITH SNOW LEVELS NEAR THE SURFACE. MAY SEE A -RASN MIX BUT ACCUMULATING SNOWFALL IS NOT EXPECTED AT THE MAIN TERMINALS. 33

KSEA...CIGS WILL GRADUALLY LOWER TODAY AS A [PAC](#) SYSTEM MOVES INLAND. RAIN WILL SPREAD TO THE PUGET SOUND AREA AROUND 00Z THIS AFTERNOON...[MVFR](#) CONDITIONS POSSIBLE. S/SE [FLOW](#) WILL ALSO INCREASE WITH GUSTS TO 20 [KT](#). THE [AIR MASS](#) WILL REMAIN COOL AND UNSTABLE TONIGHT WITH [ISOLATED](#) TO [SCATTERED](#) SHOWERS...POSSIBLE RAIN/SNOW MIX IN THE REGION. HOWEVER...ACCUMULATING SNOWFALL AT SEATAC IS NOT EXPECTED. 33

&&

.MARINE...THE [SHORT TERM FORECAST](#) REMAINS ON TRACK. A VIGOROUS [PAC](#) SYSTEM WILL IMPACT THE REGION TODAY WITH INCREASING S/SE [FLOW](#) OVER THE WATERS. [GALE](#) WARNINGS AND [SMALL CRAFT](#) ADVISORIES ARE POSTED FOR THE AREA. THE OCCLUDED [FRONT](#) WILL MOVE INLAND AROUND 03Z TONIGHT WITH WINDS EASING LATE THIS EVENING. ONSHORE [FLOW](#) WILL PREVAIL ON WED AS THE SURFACE LOW WEAKENS/FILLS OVER THE NORTH COAST. THE NEXT SYSTEM...A WEAK SURFACE [TROUGH](#) WILL REACH THE COAST FRI NIGHT. 33

&&

.SEW WATCHES/WARNINGS/ADVISORIES...  
WA...WIND ADVISORY UNTIL 10 PM PST THIS EVENING FOR THE COAST AND NORTHWEST INTERIOR.  
WINTER STORM [WATCH](#) FOR HOOD CANAL LATE THIS AFTERNOON AND TONIGHT.  
[WINTER WEATHER ADVISORY](#) FOR THE CASCADES TONIGHT.

PZ...[GALE WARNING COASTAL WATERS](#)...EAST AND WEST ENTRANCE STRAIT OF JUAN DE FUCA...NORTHERN INLAND WATERS AND ADMIRALTY INLET.  
. [SMALL CRAFT ADVISORY](#) CENTRAL STRAIT JUAN DE FUCA AND PUGET SOUND AND HOOD CANAL.  
. [SMALL CRAFT ADVISORY](#) GRAYS HARBOR [BAR](#) FOR ROUGH CONDITIONS.

\$\$

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# Your National Weather Service forecast

## Bremerton WA

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NWS Seattle, WA

**Point Forecast:** Bremerton WA

47.56°N 122.62°W (Elev. 0 ft)

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**Last Update:** 4:36 am PST Feb 28, 2012

**Forecast Valid:** 1pm PST Feb 28, 2012-6pm PST Mar 5, 2012

### Forecast at a Glance

This Afternoon	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night	Saturday
								
50%	100%	60%	60%	50%	40%	40%		
Chance Rain/Snow	Rain/Snow	Rain/Snow Likely	Showers Likely	Chance Showers	Chance Showers	Chance Rain	Chance Rain	Chance Showers
Hi 44 °F	Lo 33 °F	Hi 43 °F	Lo 35 °F	Hi 44 °F	Lo 37 °F	Hi 46 °F	Lo 39 °F	Hi 48 °F

### Detailed 7-day Forecast

**This Afternoon:** A chance of rain and snow before 4pm, then a chance of rain. Snow level 300 feet. Cloudy, with a high near 44. South wind around 9 mph. Chance of precipitation is 50%. Little or no snow accumulation expected.

**Tonight:** Rain before 10pm, then rain, possibly mixed with snow. Snow level 500 feet. Low around 33. South wind between 10 and 15 mph. Chance of precipitation is 100%. Little or no snow accumulation expected.

**Wednesday:** Rain and snow showers likely, becoming all rain after 10am. Snow level 600 feet. Mostly cloudy, with a high near 43. South southwest wind between 3 and 10 mph. Chance of precipitation is 60%. Little or no snow accumulation expected.

**Wednesday Night:** Showers likely. Mostly cloudy, with a low around 35. Southwest wind between 9 and 11 mph. Chance of precipitation is 60%.

**Thursday:** A 50 percent chance of showers. Partly sunny, with a high near 44. South southwest wind between 5 and 11 mph.

**Thursday Night:** A 40 percent chance of showers. Mostly cloudy, with a low around 37.

**Friday:** A 40 percent chance of rain. Cloudy, with a high near 46.

**Friday Night:** A chance of rain. Mostly cloudy and breezy, with a low around 39.

**Saturday:** A chance of showers. Mostly cloudy and breezy, with a high near 48.

**Saturday Night:** A chance of showers. Mostly cloudy, with a low around 40.

**Sunday:** A chance of showers. Mostly cloudy, with a high near 47.

### Detailed Point Forecast

[\[Move Down\]](#)

Click Map for Forecast      [Disclaimer](#)

Requested Location

**Lat/Lon:** 47.56°N 122.62°W

Forecast Area

**Elevation:** 0 ft




### Current Conditions

[\[Move Up\]](#)

**Bremerton, Bremerton National Airport (KPWT)**

Lat: 47.5 Lon: -122.75 Elev: 440

Last Update on 28 Feb 11:55 PST

**Overcast**

39°F

(4°C)

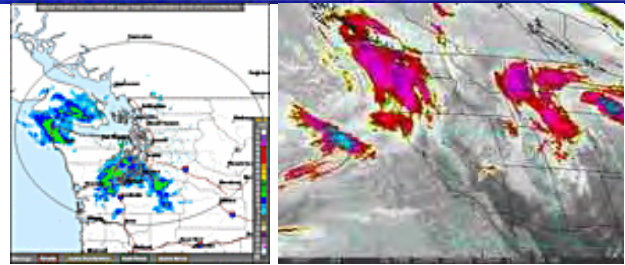
Humidity:	52 %
Wind Speed:	S 7 MPH
Barometer:	29.79 in (N/A mb)
Dewpoint:	23°F (-5°C)
Wind Chill:	34°F (1°C)
Visibility:	10.00 Miles

**Sunday Night:** Rain likely. Mostly cloudy, with a low around 38.

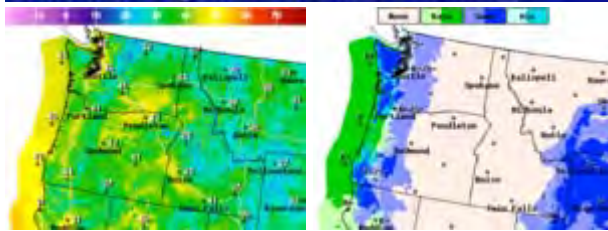
**Monday:** Showers likely. Mostly cloudy, with a high near 46.

[More Local Wx:](#)[3 Day History:](#)

### Radar and Satellite Images



### National Digital Forecast Database




### Additional Forecasts & Information

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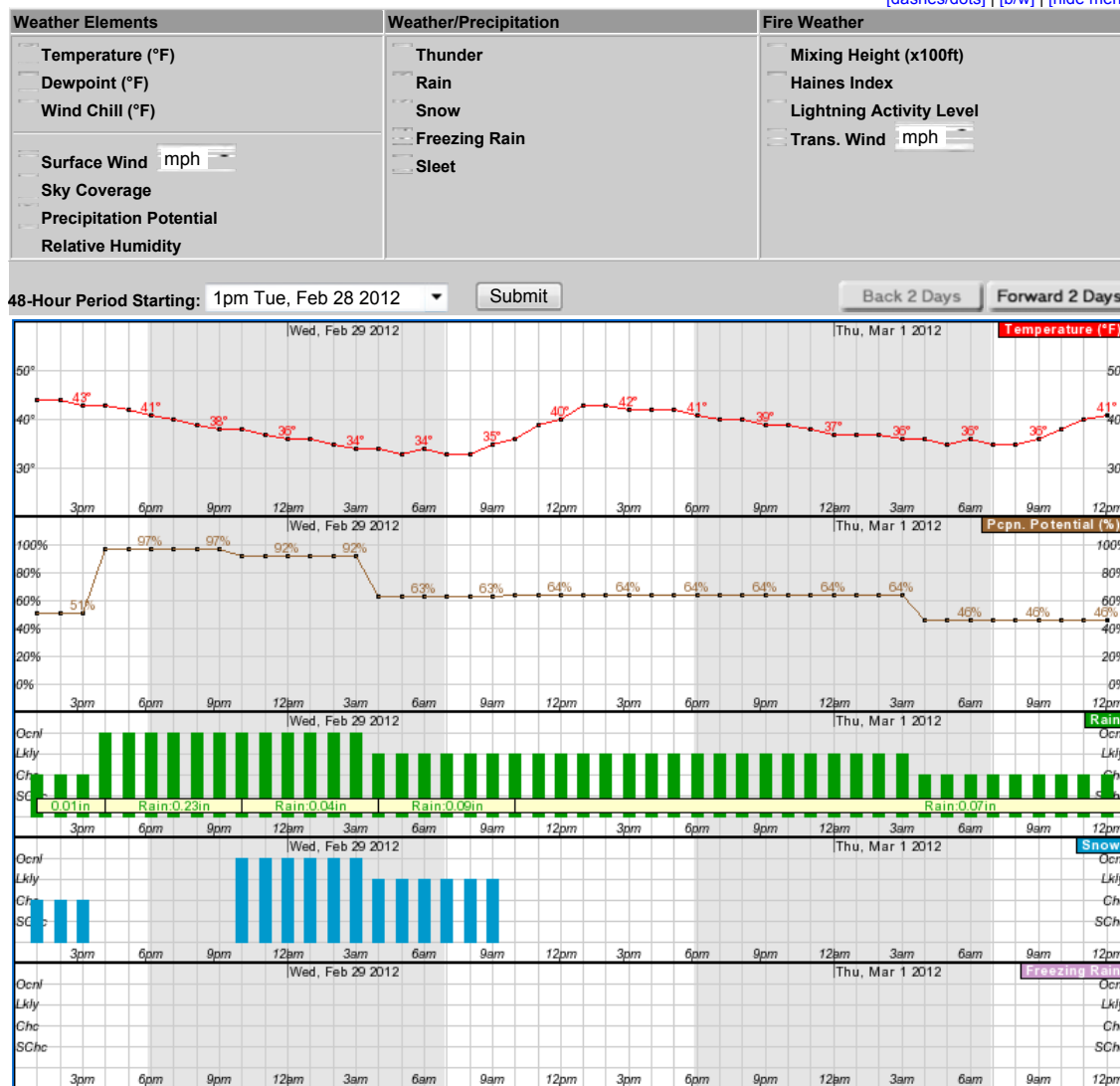
HomeNewsOrganizationSearch for:

Point Forecast: Bremerton WA  
47.56N 122.62W (Elev. 0 ft)

Last Update: 4:36 am PST Feb 28, 2012

### Hourly Weather Forecast Graph

[\[dashes/dots\]](#) [\[b/w\]](#) [\[hide menu\]](#)



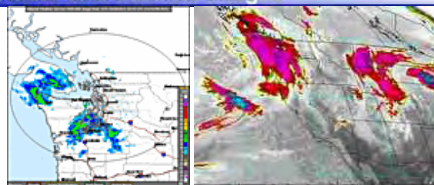
Thursday, March 1 at 6am

Temperature: 36 °F

Precipitation Potential: 46%

Rain: Chance (30%-50%) Snow: <10% Freezing Rain: <10%

### Radar and Satellite Images



### Additional Forecasts & Information

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[7-Day Forecast](#) [Tabular Forecast](#)  
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## Forecast For Lat/Lon: 47.5620/-122.6230 (Elev. 0 ft)

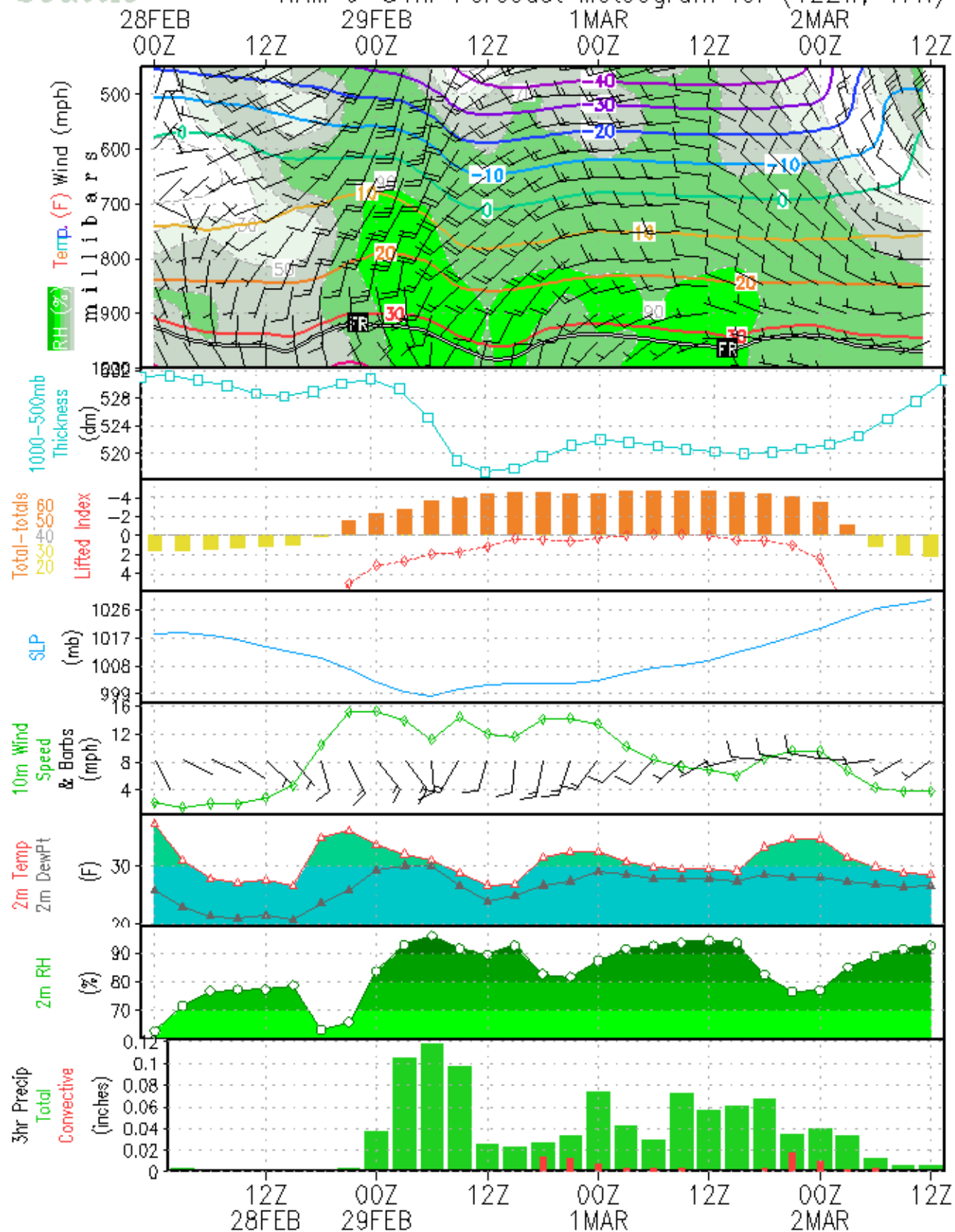
Custom Weather Forecast Table

	Tue Feb 28							Wed Feb 29							Thu Mar 01							Fri Mar 02		
Weather		Chance Rain and Snow		Rain		Rain and Snow		Likely Rain Showers and Snow Showers		Likely Rain Showers					Chance Rain Showers									
Daily-Temp	High 44 Low 31							High 43 Low 33							High 44 Low 35							Low 37		
Chance of Precip	5%	50%		95%		90%		65%		65%		65%		65%		45%		45%		40%		40%		
Precip	0.00"	0.02"		0.23"		0.04"		0.09"		0.01"		0.01"		0.01"		0.01"		0.01"		0.01"		0.01"		
12-hr Snow Total	0"			0"				0"				0"			0"				0"					
Sig Wave Height	1'		2'		1'		2'		1'		1'		1'		1'		1'		1'		1'			
3-Hour	5am	8am	11am	2pm	5pm	8pm	11pm	2am	5am	8am	11am	2pm	5pm	8pm	11pm	2am	5am	8am	11am	2pm	5pm	8pm	11pm	2am
Temp	32	32	35	44	43	40	38	36	34	33	36	43	42	40	39	37	36	35	38	44	43	41	40	39
Cloudiness	81%	81%	100%	100%	100%	100%	100%	100%	72%	72%	84%	84%	85%	85%	83%	83%	62%	62%	60%	60%	61%	61%	61%	61%
Dewpoint	31	30	33	38	37	38	37	34	33	32	34	37	37	38	37	35	35	35	37	42	40	38	37	36
Relative Humdity	96%	95%	93%	80%	81%	92%	96%	93%	96%	95%	93%	80%	81%	92%	96%	93%	98%	98%	97%	92%	89%	89%	89%	89%
Wind	S	S	S	S	S	S	SE	SW	S	S	S	SW	SW	SW	SW	SW	SW	SW	SW	SW	NW	NW	E	E
Snow Level (ft)	5	8	14	9	13	10	15	10	9	10	3	7	9	9	12	12	12	12	5	5	2	2	1	1
	395	395	343	343	705	705	429	429	410	410	733	733	1340	1340	989	989	530	530	955	955	1605	1605	1282	1282



# Seattle

NAM 0-84hr Forecast Meteogram for (122W, 47N)





Telemetry Data Summary Report  
 QAQC Data Notes from STE#10  
 Data review from 1/23/12 to 3/1/12

Site	Parameter	Issue	Start Date/Time	End Date/Time	G-A-R Level of Concern	Comments
15	Level	Negative Level	2/2/2012 18:40	2/2/2012 18:50	Green	10 minute significant negative level recorded (down to -33.4 ft)
15	Temperature	Missing Data	2/2/2012 18:40	2/2/2012 18:40	Green	5 min data gap for temp
15	Level	Level Drift	1/23/2012 0:00	2/2/2012 18:45	Red	Transducer level drifted up gradually during this period (base level from 0.4' to 1.3'); it was calibrated and corrected on 2/2/2012 @ 18:45)
15	Salinity	Null Data	2/2/2012 18:40	2/28/2012 13:45	Green	Salinity wasn't calculated during low tide when the Conductivity sensor was dry and recording a negative level
84.1	YSI Temperature	Inaccurate Data	Entire Record	Entire Record	Amber	YSI temperature doesn't track well with INW transducer temperature during dry conditions, and generally above 30 degrees C
115.1	Rainfall	Inaccurate Data	2/2/2012 15:25	2/2/2012 15:35	Amber	5.51" of rain recorded in 15 mins.; likely due to calibration or error
124	Level	Inaccurate/Missing Data	2/4/2012 0:55	3/1/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Temperature	Inaccurate/Missing Data	2/4/2012 0:55	3/1/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Conductivity	Inaccurate/Missing Data	2/4/2012 0:55	3/1/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Salinity	Inaccurate/Missing Data	2/4/2012 0:55	3/1/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124.1	Level	Inaccurate/Missing Data	2/17/2012 18:15	2/17/2012 19:15	Amber	60 minute data gap (inaccurate negative value reported)
124.1	Temperature	Inaccurate/Missing Data	2/17/2012 18:15	2/17/2012 19:15	Amber	60 minute data gap
124.1	Conductivity	Inaccurate/Missing Data	2/17/2012 18:15	2/17/2012 19:15	Amber	60 minute data gap (inaccurate negative value reported)
124.1	Salinity	Inaccurate/Missing Data	2/17/2012 18:15	2/17/2012 19:15	Amber	60 minute data gap
124.1	Salinity	Null Data	1/25/2012 23:40	2/28/2012 20:30	Green	Salinity wasn't calculated during low tide when the Conductivity sensor was dry and recording a negative level
126	Rainfall	Inaccurate/Missing Data	2/17/2012 15:10	2/17/2012 16:45	Green	95 minute data gap
126	Level	Inaccurate/Missing Data	2/17/2012 15:10	2/17/2012 16:45	Green	95 minute data gap
126	Temperature	Inaccurate/Missing Data	2/17/2012 15:10	2/17/2012 16:45	Green	95 minute data gap
126	Conductivity	Inaccurate/Missing Data	2/17/2012 15:10	2/17/2012 16:45	Green	95 minute data gap
126	Salinity	Inaccurate/Missing Data	2/17/2012 15:10	2/17/2012 16:45	Green	95 minute data gap



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# **STORM EVENT REPORT SW11**

## **For**

### **Non-Dry Dock Stormwater Monitoring**

#### **Conducted at**

##### **Puget Sound Naval Shipyard**

##### **Bremerton, WA**

##### **Project ENVVEST Study Area**

**March 14, 2012**



*Puget Sound Naval Shipyard and Surrounding Area*

**PNNL Contract No.: N4523A10MP00034 Amendment 1**

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## 1.0 Introduction

Taylor/TEC conducted non-dry dock stormwater sampling tasks within the Puget Sound Naval Shipyard (PSNS) and adjacent areas within Naval Base Kitsap (NBK); collectively comprising the Project ENVVEST study area, between February 29<sup>th</sup> and March 15<sup>th</sup> 2012. This was the fourth of four scheduled events of the 2011-2012 project year – referred to as *Phase II*. Overall, this is the eleventh Stormwater (SW11) event of the project. A summary of the preparatory and sampling events, including site specific conditions that occurred during SW11 are presented in this report, with supporting information as attachments.

This SW11 Report is organized in the following manner and contains: Section 2, SW11 Event Summary; Section 3, Project Staff Participating in SW11; Section 4, Storm Event SW11 Preparatory Tasks; Section 5, Weather Forecast Information and SW11 Targeting Details; Section 6, Precipitation and SW11 Qualification Summary; Section 7, Sampling Information, Management and Validation; Section 8, Basin Runoff Calculations; Section 9, Descriptive Statistics and Discussion of Event Station Monitoring Data; Section 10, Notable Anomalies and Variations to the PWP; and Section 11, Action Items.

Attachments to this report include: Table A-1, *Storm Event Summary and Sampling Information, Validation Checklist* (spreadsheet); Stormwater Field Sampling Forms and Storm Controller Notes; Chain of Custody Forms; (basin) Runoff Calculation Worksheet; Station Hydrographs; Autosampler Reports; Weather Forecast Information and a Telemetry Data Summary Report.

## 2.0 SW11 Event Summary

Main SW11 details are provided below as a “Quick Reference”:

- Event/s Conducted: SW11
- Event Date/s: maint. items; 2/29/12 through 3/7/12, station prep.; 3/8/12; and storm event tasks occurred between 3/14 – 3/15/12
- Monitoring Stations Sampled: PSNS015, 84.1, 115.1, 124, 124.1 and 126
- Antecedent Conditions Met?: Yes;  $\leq 0.1$ " in prior 24 hrs and 0.0" in prior 6 hrs preceding the storm/sampling event at each station.
- Start of Rainfall at PSNS Stations: 3/14/12 between 0710 (PSNS015) and 0800 (PSNS115.1)
- Sampling Period Duration Range: start = 3/14/12 @ 0845 (PSNS126 and 115.1) and stop = 3/15/12 @ 1658 (PSNS124). Max sampling duration = 31 hrs:13 mins @ PSNS115.1
- Sampling Event Rainfall Total: PSNSB427 = 1.42", PSNS126 = 1.29", PSNS124.1 = 1.52", PSNS124 = 1.23", PSNS115.1 = 1.17", PSNS084.1 = 1.58" and PSNS015 = 1.75"
- Samples/Types Collected: Grab and composite samples were collected at each station (one each at each station) for a total of 12 “normal” samples.
- Quality Control (QC) Samples Collected: One composite (PSNS015) and two grab (PSNS124.1 and 124) sample duplicates were collected during the SW11 event.

- Based on consideration of storm event and sample validation information, were the samples collected during SW11 valid for project purposes? (Y / N, composite, grab or both): Yes-both; all grab and composite samples collected during this event were valid.

See Table A-1; *Storm Event Summary and Sampling Information, Validation Checklist*, for additional event summary details.

### 3.0 Project Staff Participating in SW11

#### Taylor/TEC:

Dave Metallo – Project Manager, Storm Controller, Field Event and QC Manager

Brian Rupert – Field Team Leader

Bruce Beckwith – Field Team Member

#### Navy Personnel:

Bob Johnston – Project Technical Lead / Oversight / Grab sample collection lead

Larry Hsu – Project Manager, Field Team Member

Christine Gebhart – Assistant Program Manager, Field Team Member

Eric Mollerstuen – Field Team Member

### 4.0 Storm Event SW11 Preparatory Tasks

On February 28<sup>th</sup>, 2012 all six stormwater monitoring stations (PSNS015, PSNS08.1, PSNS115.1, PSNS124, PSNS124.1 and PSNS126) were reset and re-calibrated. The stations were also readied for storm event / stormwater sample collection on the same day. At this point all of the monitoring equipment was deemed to be functioning properly, was operational and “sample ready” (see Sections 1 and 2 of the attached *Stormwater Field Sampling Forms*).

All stations were programmed with pre-determined autosampler enable and pacing conditions set “high” to prevent premature enabling (*sample disable mode*), as directed by the Taylor/TEC Storm Controller. Station operation was passed to the Taylor /TEC Storm Controller to be managed via telemetry. Final enabling conditions were determined by the Storm Controller closer to the onset of the storm event.

### 5.0 Weather Forecast Information and SW11 Targeting Details

Between the end of SW10 (2/29/12 ~ 1400) and the just prior to the onset of SW11 (3/14/12 @ 0700) the average rainfall as measured at the six monitoring stations during this approximately 14 day period was 2.00”. The Navy’s rain gauge at Build 427 recorded a total of 2.47” during this period.

The last measureable runoff occurred approximately 18 to 34 hours prior to the SW11 event. Project qualifying antecedent dry period was met prior to the stations being armed on 3/14/12. A potentially qualifying storm event (event probability and forecast rainfall depth) was identified and

targeted for 3/14/12. Rain was forecast at between 90% to 100% probability for Wednesday 3/14/12, with 24-hour accumulations of between 1.13" to 1.41" into the later afternoon of the 15<sup>th</sup>.

The Nation Weather System (NWS) was one of the main sources used for the assessment of weather forecasting and conditions. Provided below is a link to the NWS-Bremerton, WA webpage; (<http://forecast.weather.gov/MapClick.php?site=sew&textField1=47.56751&textField2=-122.63127&smap=1>). A host of other internet available weather forecasting, observational and data sources were used for field and reporting purposes as appropriate Detailed *Weather Forecast Information* is attached to this report.

The NWS called for a vigorous frontal system to move through the area during the day (of the 14<sup>th</sup>) followed quickly by another weather system that night. Wet and occasionally windy weather and heavy mountain snow and snow down to within several hundred feet of sea-level was forecast for the Puget Sound area.

Routinely referenced weather models used to gain forecast information regarding the Pacific Northwest included the MM5-NAM (<http://www.atmos.washington.edu/mm5rt/rt/naminit.12km.html>) and the GFS-WRF (<http://www.atmos.washington.edu/mm5rt/rt/gfsinit.frame1.html>) (both hosted by the University of WA and initialized for the PNW). Below is a synopsis of the model comparison for SW11:

*"The models disagreed on the rain event start, with the NAM several hours earlier then the GFS. Both models have rain over the project area for the majority of the day on the 14<sup>th</sup>. Again the models differ slightly in the timing of a return to heavy/steady rain, with the NAM around 2200 on the 14<sup>th</sup> and the GFS at 0100 on the 15<sup>th</sup>. Both models show that once heavy/steady does return it will remain so until the 24-hr mark regarding the project autosamplers collection scheme."*

Final sampler enabling conditions were appropriately set at each monitoring station early on morning of the 14<sup>th</sup> (*sample ready mode*). The enabling conditions at PSNS124.1 were re-fined at approximately 1240 on 3/14 to compensate for pipe water level conditions. Table 1 lists the final enabling conditions at each monitoring station that were used for SW11, along with the rainfall amounts in the 24 and 6 hour periods prior to the onset of the storm event.

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (µS/cm)	Repeatable Conductivity Enable (Y/N)	<sup>1</sup> Pacing (min)	<sup>2</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS015	0.05	0.3	2000	N	15/30/15	0.08"/ 0.00"
PSNS084.1	0.05	0.3	2000	N	15/30/15	0.07"/ 0.00"
PSNS115.1	0.05	0.3	2000	N	15/30/15	0.05"/ 0.00"
PSNS124	0.05	0.3	2000	N	15/30/15	0.04"/ 0.00"

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (μS/cm)	Repeatable Conductivity Enable (Y/N)	<sup>1</sup> Pacing (min)	<sup>2</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS124.1	0.05	0.2	2000	N	15/30/15	0.06"/ 0.00"
PSNS126	0.05	0.3	2000	N	15/30/15	0.05"/ 0.00"

<sup>1</sup>Pacing rates initially set at 15 minutes, changed to 30 minutes at ~ 1530 on 3/14 to compensate for storm conditions, then back to 15 minutes at ~ 0500 on 3/15

<sup>2</sup>Conditions as checked on 3/14/12 at ~0830; final enable conditions set at ~0455 (PSNS124.1 @ 1240)

## 6.0 Precipitation and SW11 Qualification Summary

### Precipitation Summary:

Previous rainfall that caused runoff to occur ( $\geq 0.03$ " rainfall without 3-hr gap) prior to the onset of SW11 ranged from 18 hours at PSNS124.1 and 015 to 1:10 (days:hours) at PSNS126, 124 and 115.1 as measured by each stations rain gauge. Rain began to fall over the project site between 0710 and 0800 on March 14<sup>th</sup>. Table 2 details the period since last runoff, antecedent duration prior to the start of the storm event, as well as the rainfall start date/time at each monitoring station.

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS015	3/13/12 12:30	0:18	3/14/12 7:10
PSNS084.1	3/13/12 12:25	0:19	3/14/12 7:45
PSNS115.1	3/12/12 21:25	1:10	3/14/12 8:00
PSNS124	3/12/12 21:35	1:10	3/14/12 7:55
PSNS124.1	3/13/12 13:00	0:18	3/14/12 7:20
PSNS126	3/12/12 21:30	1:10	3/14/12 7:50

<sup>1</sup>Last runoff period is defined as  $\geq 0.03$ " of rainfall without a 3-hr gap

The rainfall intensities began in a light to moderate fashion. Operational checks during the mid- to late-morning of March 14<sup>th</sup>, via telemetry, revealed that all of the stations enabled their sampling routines as programmed; with rainfall, pipe level and conductivity values being in satisfaction of their threshold values, (as listed in Table 1) except for PSNS124.1. It was noted that the water level in the piping system associated with PSNS124.1 was not building to/exceeding its enabling condition (0.30') as expected. Therefore this station was "manually" started via telemetric control. Sampling began at PSNS124.1 at 1244 on the 14<sup>th</sup>.

Rainfall intensities remained low to moderate, but steady throughout the course of the SW11 event. There were a few hours of moderately heavy rainfall intensities noted at several of the monitoring stations during the second half of the rain event before the weather system passed by the project area; tailing very light rain intensities before ending completely around 1730 on March 15<sup>th</sup>.

Station sampling period rainfall totals ranged from 1.17" at PSNS115.1 to 1.75" at PSNS015. The Navy's rain gauge at B427 recorded 1.42" over the entire length of the sampling period for all project monitoring stations.

The sampling routines all ran their courses to completion (24 discrete composite bottles). Sampling durations (the range of time covering bottles used in the formulation of the overall station composite sample) ranged from 26:06(hrs:mins) at PSNS124 to 31:13(hrs:mins) at PSNS115.1.

Table 3 summarizes the sampling period start, sampling period end, sampling period duration as well as the total rainfall amounts for each monitoring station and the PSNS project gauge at B427 that occurred during the sampling period associated with SW11. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), attached to this report, provides additional sampling period rainfall information.

**Table 3. Sampling Period Information and Rainfall Totals for Project Monitoring Stations**

Station	Sampling Period Start (Date/Time)	Sampling Period End (Date/Time)	Sampling Period Duration (Hrs:Mins)	Total Sampling Period Rainfall (in)
PSNS015	3/14/12 10:18	3/15/2012 16:01	29:43	1.75
PSNS084.1	3/14/12 10:42	3/15/2012 16:56	30:14	1.58
PSNS115.1	3/14/12 8:45	3/15/2012 15:58	31:13	1.17
PSNS124	3/14/12 11:54	3/15/2012 14:00	26:06	1.23
PSNS124.1	3/14/12 12:44	3/15/2012 16:58	28:14	1.52
PSNS126	3/14/12 8:45	3/15/2012 15:29	30:44	1.29
<sup>1</sup> B427	3/14/12 8:45	3/15/2012 16:58	32:13	1.42

<sup>1</sup>B427 start/stop and duration incorporates the total span from all monitoring stations

**SW11 Qualification Summary:**

All storm qualification conditions were met for this event. Storm event qualification conditions included wet season event date range (Oct 1 – May 1), forecast probability ( $\geq 70\%$ ), forecasted

storm depth ( $\geq 0.1$ " ), storm duration ( $\geq 2$ hrs) and runoff occurrence / hydrograph stage (elevated above base flow). Antecedent dry period ( $\leq 0.1$ " rain in previous 24hrs and 0" rain in previous 6hrs) qualification for SW11 was also met without condition, as described above. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW11 qualification criteria listed above.

## 7.0 Sampling Information, Management and Validation

### Grab Sampling:

Grab sample collection was lead and performed by the Navy Team, with storm control assistance (limited to station status checks via telemetry) from Taylor/TEC as necessary. Grab sampling was conducted at all six of the monitoring stations. Grab samples were collected as per methodologies described in the 2011-12 Project Work Plan (PWP). Parameters included total petroleum hydrocarbons (NW-TPH-Dx) and fecal coliform. Grab samples were collected between 3/14 1420 (PSNS015) and 3/15 1658 (PSNS124.1). Attempts were made to coordinate the collection of grab samples with low or lower tidal conditions, ensuring that proper conductivity conditions would exist. Grab sampling times are indicated on the attached hydrographs to illustrate the water level stage during collection. Grab sample IDs, along with the other pertinent information is listed in the *Stormwater Field Sampling Forms* and in Table A-1 (both are attached). Table 4 summarizes these results.

**Table 4. Grab Sampling Information**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Grab sample ID	SW11-003	SW11-007	SW11-005	SW11-004	SW11-002	SW11-001
Grab Date /Time	3/15/2012 15:42	3/15/2012 16:58	3/15/2012 16:26	3/15/2012 16:05	3/14/2012 14:55	3/14/2012 14:20
Grab sample conductivity value ( $\mu\text{S}/\text{cm}$ )	224	NA	7310	297	2.8	35.5
Hydrograph stage at grab collection	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Intra-event Runoff	Intra-event Runoff
Grab parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

### Composite Sampling:

Composite sample retrieval tasks and formulation procedures were managed and lead by Taylor/TEC with support from PNNL/MSL personnel as needed. Composite samples were collected from all six monitoring stations.



Composite samples were collected via autosamplers which were operated and synchronized by a custom designed telemetered water quality control system. The composite sample collection period and duration for each monitoring station is noted in Table 3.

Discrete sample (wedge) bottles from each station (contained in the autosampler bases) were brought back the C106 Stormwater Lab at B147 for processing. Composite formulation occurred on March 15<sup>th</sup> between 1830 and 2250. The numeric identification and amount of wedge bottles that were used for the composite sample formulation and those that were discarded were noted in Section 5 of the attached *Stormwater Field Sampling Forms*.

Methods used in preparation, autosampler collection, retrieval and formulation of the composite samples were conducted in a routine manner as per the 2011-12 PWP. Samplers at each station were enabled as per the conditions stated in Section 5 of this report. Composite sample parameters included: hardness, TOC, DOC, TSS, total and dissolved metals and turbidity.

The total number of discrete wedge bottles collected at each sampler, along with the total number of those bottles used in the station's composite sample is noted below in Table 5. Dividing the number of wedge bottles used in the composite sample formulation by the total number of wedge bottles collected during the span of the entire sampling period provides an estimation of the amount of time (as a percentage of that stations entire collection period) where freshwater (i.e. runoff) conditions occurred at each station during the corresponding sampling event period.

Specific details regarding the composite formulation, results from individual bench top testing of the discrete bottles, sample IDs, sample date/time and resultant overall conductivity and turbidity values, as well as the number of wedge bottles collected during the sampling event and those used for the composite sample formulation are detailed in the *Stormwater Field Sampling Forms*, *Chain-of-Custody (CoC)* forms and in Table A-1 (all are attached). Table 5 summarizes these results.

**Table 5. Composite Sampling Details**

<b>Sample Collection Criteria:</b>	<b>PSNS126</b>	<b>PSNS124.1</b>	<b>PSNS124</b>	<b>PSNS115.1</b>	<b>PSNS084.1</b>	<b>PSNS015</b>
Composite sample ID	SW11-013	SW11-014	SW11-015	SW11-012	SW11-011	SW11-009
Composite Date /Time	3/15/2012 15:29	3/15/2012 16:58	3/15/2012 14:00	3/15/2012 15:58	3/15/2012 16:56	3/15/2012 16:01
Overall Composite conductivity value (µS/cm)	192	190	521	293	142	83
Overall Composite turbidity value (NTU)	12	4	20	9	17	NA
Composite volume (ml)	8,700	8,400	5,500	7,800	8,700	6,000

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Number of Bottles Collected During Sampling Event	24	22	23	24	24	24
Number of Bottles Included in Composite Sample	23	18	12	21	22	24
Percentage of Total Sampling Period that Freshwater Conditions Occurred	96%	82%	52%	88%	92%	100%
Composite parameters collected per PSNS PWP?	Yes	Yes	Yes	Yes	Yes	Yes

All sampling and vault monitoring equipment operated as designed and programmed. Details pertaining to autosampler programming and event-specific operation of each monitoring stations' autosampler unit are contained in the attached *Sampler Reports*.

**QC Samples:**

During SW11 two grab and one composite duplicate samples were collected at PSNS124.1, 124 and 015 respectively. Table 6 summarizes the quality control sample collection information for SW11.

**Table 6. Summary of Quality Control Sampling Information for SW11**

Sample Collection Criteria:	PSNS124.1	PSNS124	PSNS015
Grab sample duplicate ID	SW11-008	SW11-006	
Grab sample duplicate date and time	3/15/2012 17:05	3/15/2012 16:30	
Grab sample duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	NA	7310	
Composite sample Duplicate ID			SW11-010
Composite sample duplicate date and time			3/15/2012 16:01
Overall Composite Duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )			82
Overall Composite Duplicate turbidity value (NTU)			NA
Composite Duplicate volume (ml)			6,000

**Sample Management:**

All samples were handled and managed as per Section 9 of the 2011-12 PWP and in a manner acceptable and within industry standards regarding practices typical for tasks of this nature. Once

collected, both grab and composite samples were placed into coolers and put on ice and/or into the secure Stormwater Laboratory refrigerator to maintain temperatures between 2 and 6 °C.

All sample IDs, collection date and time, matrix, requested parameter analysis and other associated information were documented on *Chain of Custody (CoC) Forms* (attached). Samples were in direct control of project and/or laboratory personnel at all times. Samples were delivered to the testing facility, Battelle Marine Science Laboratory in Sequim, WA, in good, useable and properly chilled condition. Adequate sample volume was collected from the targeted stations to proceed with the scheduled analysis of all parameters per the 2011-12 PWP.

#### **Sample Validation Summary:**

All sample validation criteria were met for this event per Section 8.2.6 of the 2011-12 PWP. Prior to processing the samples and transferring custody to the analytical laboratory, the Taylor/TEC Field Event Lead validated the samples against certain criteria. These validation criteria included runoff occurrence / hydrograph stage, sample preparation and handling review, requested parameters, ≥2 hour sampling duration or 75% storm hydrograph coverage, minimum number of aliquots, minimum sample volume collected for required parameters, discrete and composite samples conductivity measurement results, quality control sample collection and anomalous conditions assessment. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW-event qualification listed above.

## **8.0 Basin Runoff Calculations**

Rainfall runoff volumes during the SW11 sampling period were calculated for each of the basins associated with the six Phase II monitoring stations. These calculations are based on the modified Runoff Coefficient Method (RCM) as described in Section 7.4 of the 2011-12 PWP.

The value ranges for the various land use/land cover categories assigned to each basin are listed in the attached *Runoff Calculation Tables*. Calculated runoff values are also presented in Table A-1 (*Storm Qualification and Sample Validation Information Checklist*) (attached). Table 7 summarizes the results from these calculations.

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
126	Impervious	653,373	0.6 – 0.9	591,881	1.29	0.1075	475,965
	Pervious	9,613	0.2 – 0.4				
124.1	Impervious	109,690	0.6 – 0.9	101,245	1.52	0.1267	95,933
	Pervious	6310	0.2 – 0.4				
124	Impervious	429,302	0.6 – 0.9	396,251	1.23	0.1025	303,827
	Pervious	24,698	0.2 – 0.4				

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
115.1	Impervious	449,104	0.6 – 0.9	366,390	1.17	0.0975	267,227
	Pervious	13,938	0.2 – 0.4				
84.1	Impervious	23,958	0.6 – 0.9	21,562	1.58	0.1317	21,237
	Impervious	2,009,431	0.5 – 0.8				
015	Pervious	2,009,431	0.25 – 0.4	2,411,321	1.75	0.1458	2,630,532
	Impervious	653,373	0.6 – 0.9				

## 9.0 Descriptive Statistics and Discussion of Event Station Monitoring Data

Descriptive statistics for the sampling period at each monitoring station are provided in Table 8, below. These statistics include minimum, maximum, average and median at static 1-hour interval periods for vault level, conductivity, salinity, transducer water temperature, YSI water temperature (PSNS084.1 only) and tidal stage. The method by which the rainfall statistics are calculated is on a “rolling 1-hour data window” in an attempt to provide a more accurate and representative assessment of the actual rainfall conditions. Sampling period rainfall totals are also included as part of each station’s rainfall information.

**Table 8. SW11 Sampling Period Rainfall and Vault Parameter Descriptive Statistics**

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS126	Min	0.00	0.02	40	2.00	5.45		-0.32
	Max	0.19	3.91	47,708	42.00	10.93		11.36
	Average	0.04	1.44	2,382	3.77	8.44		6.91
	Median	0.02	1.06	134	2.00	8.45		7.94
	Storm Total	1.29						
PSNS124.1	Min	0.00	0.08	25	2.00	5.64		-0.32
	Max	0.27	3.25	46,199	42.00	8.48		10.74
	Average	0.04	1.06	10,080	10.80	7.45		6.06
	Median	0.03	0.33	218	2.00	7.53		7.12
	Storm Total	1.52						

**Table 8. SW11 Sampling Period Rainfall and Vault Parameter Descriptive Statistics**

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS124	Min	0.00	0.21	34	2.00	5.77		-0.32
	Max	0.19	7.31	43,343	42.00	10.15		11.36
	Average	0.04	4.26	13,464	13.53	8.17		7.21
	Median	0.03	4.88	2,995	2.34	8.11		8.10
	Storm Total	1.23						
PSNS115.1	Min	0.00	0.12	-143	2.00	4.75		-0.32
	Max	0.17	11.25	45,726	42.00	10.67		11.36
	Average	0.03	7.15	3,320	5.00	7.78		6.84
	Median	0.02	8.27	74	2.00	7.86		7.83
	Storm Total	1.17						
PSNS084.1	Min	0.00	-0.24	20	0.01	6.75	6.85	-0.32
	Max	0.22	7.00	49,504	48.44	16.70	16.97	11.36
	Average	0.05	3.55	4,365	4.27	9.90	10.02	6.68
	Median	0.03	4.13	133	0.09	9.35	9.46	7.70
	Storm Total	1.58						
PSNS015	Min	0.00	0.35	65	2.00	4.68		-0.32
	Max	0.21	8.28	32,975	31.69	10.93		11.36
	Average	0.05	4.78	2,287	3.80	7.84		6.84
	Median	0.04	5.51	117	2.00	7.85		7.83
	Storm Total	1.75						

<sup>1</sup>salinity calculations for PSNS126, 124.1, 124, 115.1 and 015 are based on an algorithm that has a lower range cut-off value of 2ppt. Actual field values may have been lower. The PSNS084.1 conductivity probe (YSI6820) utilized a different salinity algorithm function and thus is able to calculate lower low range salinity values.

### **Hydrograph Assessment:**

The rainfall signatures for all monitoring stations showed similar bimodal patterns. The initial rainfall phase was followed by a very brief (one to two hours) intra-event period where rainfall intensity lessened or ceased, then follow by a second heavier intensity rainfall period that lasted

about twice as long as the initial phase. The Navy's rain gauge atop B427 also reflected this bimodal rainfall signature.

All of the monitoring stations showed freshwater pipe storage effects, except for PSNS124.1 and 124. These two stations had returns of tidal conditions within their piping systems, before again returning to freshwater conditions that dominated until the end of the sampling event. Hydrograph responses are considered to be typical for these stations.

As mentioned above, grab sampling information for SW11 is indicated on each of the station hydrographs. Composite sample markers have been applied to the hydrographs to indicate total collection time (i.e. sample event period). The monitoring station hydrographs, as well as the rainfall graph for B427, are attached.

#### **Telemetry Data Summary Report: TDSR**

A review of the telemetry data collected since SW10; from 3/1/12 to 3/16/12, including the SW11 event, was conducted. There were some minor anomalies in nearly all of the stations data sets due to maintenance and/or transducer replacement tasks and the seasonal time change.

Overall, data gaps and other anomalies during the SW11 storm event period were not noted. All sensors were in reasonable and accurate operation during SW11. A TDSR report (table), detailing the anomalies noted during SW11 and the period since the last sampling event is attached.

### **10.0 Notable Anomalies and Variations to the PWP**

There were no major anomalies observed or otherwise noted after completion of the sampling event and review of the associated data that would have caused any of the SW11 samples to be non-representative of the conditions from which they were collected. As reported above, all intended and scheduled grab and composite samples were submitted to the PNNL MSL ("the Lab") within holding times and without incident. All support and sampling tasks, as well as collected samples, were managed as appropriate per the 2011-12 PWP.

There were, however, several minor anomalies that occurred during SW11. These were;

1. The "forced" enabling start of the PSNS124.1 sampler. It was noted that the water level in the piping system was not building to/exceeding its enabling condition (0.30') as expected. Therefore this station was "manually" started via telemetric control by lowering the enabling water level to 0.2'.
2. Pacing rates for each of the six stations were initially set at 15 minutes. Due to the particulars of the storm event; lessening in intensity after the initial front pushed through the project area, and wanting to make certain to capture the bulk of the second front, the pacing rates were adjusted to 30 minutes. After a certain period, based again on current event particulars at that time, the pacing rates were adjusted back to 15 minutes. Composite sample formulation accounted for these changes accordingly (see the

addendum to the field forms with detailed composite formulation notes). Table 9, below, provides an account of these pacing rates changes.

**Table 9. SW11 Composite Sample Pacing Rate Information**

Station ID	Pacing Rate Changed to 30 Min.s (Date/Time)	Bottle Where Change Occurred	Pacing Rate Switched Back to 15 Min.s (Date/Time)	Bottle Where Change Back Occurred
<sup>1</sup> PSNS015	3/14/12 1600	7/8	3/15/12 0430	13/14
PSNS084.1	3/14/12 1530	6	3/15/12 0500	13
PSNS115.1	3/14/12 1530	7	3/15/12 0500	14
PSNS124	3/14/12 1540	5	3/15/12 0500	12
PSNS124.1	3/14/12 1530	4	3/15/12 0500	11
PSNS126	3/14/12 1730	8	3/15/12 0430	14

<sup>1</sup>Duplicate collected at PSNS015; two bottle groups are collected at any one time; therefore any changes effect that pair

- The grab sample at PSNS124 was collected from its monitoring station when conductivity was at 7310 $\mu$ S/cm. Logistics, coupled with the particulars of the SW11 rainfall event caused the collection of this grab sample under less than optimal conditions. In general high saline conditions ( $\geq 2000\mu$ S/cm) are avoided due to their effects on the analyses of metals and associated parameters. However, the SW11 grab sample parameter consisted of total petroleum hydrocarbon – which is not as effected by higher salinity than other project specific compounds of concern. Grab samples were submitted to the Lab, who in turn managed this analysis accordingly.
- There were no / missing conductivity and turbidity values for the PSNS124.1 grab and PSNS015 composite samples, respectively. The exact reason/s for these omissions is unclear.
- General maintenance issue – TEC had replaced all of the stainless steel bodied transducers with titanium units with corresponding titanium connectors, etc. prior to the SW11 sampling event. Some anomalies during early March, noted in the TDSR were caused by these activities. TEC conducted follw-up maintenance checks to ensure proper meter operations.

## 11.0 Action Items

Routine action items include resetting (reloading with bottles, charging batteries, back flushing with DI water, etc.) all six monitoring stations and re-stocking of sampling supplies. Routine station maintenance items (e.g. sensor cleaning and calibration, rain gauge maintenance, etc.) as well as storm set-up tasks will need to be completed as necessary.

Non-routine action items include planning for yearly monitoring station demobilization tasks. However, the Navy would like any remaining project resources to be focused on an attempt to collect data and samples from an additional “bonus” storm event. TEC is currently monitoring the weather forecasts and models for a targetable event.

In addition, TEC is planning to set up a field capable/deployable LISST particle analyzer at PSNS015. Use of the LISST analyzer will be the focus of the bonus sampling event.

The current focus of the field efforts will be in maintaining proper station and equipment operational status, data and resource management and storm-tracking tasks.





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## **ATTACHMENTS**

- Storm Event Summary and Sampling Information, Validation Checklist (Table A-1)
- Stormwater Field Sampling Forms and Controller Notes
- Chain-of-Custody Forms
- Runoff Calculation Worksheet
- Station Hydrographs
- Autosampler Reports
- Weather Forecast Information
- TDSR

Table A-1. PSNS Non-Dry Dock Stormwater Monitoring Tasks  
Storm and Sample Information and Validation Checklist  
Stormwater Sampling Event #11 (3/14/12)



*This form acknowledges representativeness criteria described in the project PWP.  
Mark with "Yes" to acknowledge acceptable, "No" for not acceptable, "NA" or "-" if not applicable.*

<sup>1</sup> Storm Event Data:							
Project Storm Event (SW) #	11						
Event Forecast Probability (%)	90-100%						
PSNS B427 Rain Gauge - Sample Event Total (in.)	1.42						
Rainfall and Runoff Summary:		PSNS126	PSNS124.1	PSNS124	PSNS115.1	PSNS084.1	PSNS015
Last Runoff (≥ 0.03" rainfall without 3-hr gap) Prior to STE Start (Date/Time)	3/12/12 21:30	3/13/12 13:00	3/12/12 21:35	3/12/12 21:25	3/13/12 12:25	3/13/12 12:30	
Antecedent Dry Period (days: hrs)	1:10	0:18	1:10	1:10	0:19	0:18	
Rainfall Prior 24-hrs to Rain Event Start	0.05	0.06	0.04	0.05	0.07	0.08	
Rainfall Prior 6-hrs to Rain Event Start	0.00	0.00	0.00	0.00	0.00	0.00	
Start of Rainfall (Date/Time)	3/14/12 7:50	3/14/12 7:20	3/14/12 7:55	3/14/12 8:00	3/14/12 7:45	3/14/12 7:10	
Sampling Period Start Date & Time	3/14/12 8:45	3/14/12 12:44	3/14/12 11:54	3/14/12 8:45	3/14/12 10:42	3/14/12 10:18	
Sampling Period End Date & Time	3/15/2012 15:29	3/15/2012 16:58	3/15/2012 14:00	3/15/2012 15:58	3/15/2012 16:56	3/15/2012 16:01	
Sampling Period Duration (hrs:mins)	30:44	28:14	26:06	31:13	30:14	29:43	
Sampling Period Duration (hours)	30.73	28.23	26.10	31.22	30.23	29.72	
Sampling Period Total Rainfall (in)	1.29	1.52	1.23	1.17	1.58	1.75	
Sampling Period Max 1-hr Rainfall Intensity (in/hr)	0.19	0.27	0.19	0.17	0.22	0.21	
Sampling Period Average 1-hr Rainfall Intensity (in/hr)	0.04	0.05	0.05	0.04	0.05	0.06	
Runoff volume calculated for sampling period (gallons)	475,965	95,933	303,827	267,227	21,237	2,630,532	
<sup>1</sup> Sample Collection Criteria:							
Grab sample ID	SW11-003	SW11-007	SW11-005	SW11-004	SW11-002	SW11-001	
Grab Date /Time	3/15/2012 15:42	3/15/2012 16:58	3/15/2012 16:26	3/15/2012 16:05	3/14/2012 14:55	3/14/2012 14:20	
Grab sample conductivity value (µS/cm)	224	NA	7310	297	2.8	35.5	
Hydrograph stage at grab collection	Falling Limb	Falling Limb	Falling Limb	Falling Limb	Intra-event Runoff	Intra-event Runoff	
Grab parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes	
Composite sample ID	SW11-013	SW11-014	SW11-015	SW11-012	SW11-011	SW11-009	
Composite Date /Time	3/15/2012 15:29	3/15/2012 16:58	3/15/2012 14:00	3/15/2012 15:58	3/15/2012 16:56	3/15/2012 16:01	
Overall Composite conductivity value (mS/cm)	192	190	521	293	142	83	
Overall Composite turbidity value (NTU)	12	4	20	9	17	NA	
Composite volume (ml)	8,700	8,400	5,500	7,800	8,700	6,000	
Number of Bottles Collected During Sampling Event	24	22	23	24	24	24	
Number of Bottles Included in Composite Sample	23	18	12	21	22	24	
Percentage of Total Storm Period Duration Represented by Composite Sample	96%	82%	52%	88%	92%	100%	
Composite parameters collected per PSNS PWP ?	Yes	Yes	Yes	Yes	Yes	Yes	
<sup>1</sup> QC Sample Summary Information:							
Grab sample duplicate ID	N/A	SW11-008	SW11-006	N/A	N/A	N/A	
Grab sample duplicate date and time	N/A	3/15/2012 17:05	3/15/2012 16:30	N/A	N/A	N/A	
Grab sample duplicate conductivity value (µS/cm)	N/A	NA	7310	N/A	N/A	N/A	
Composite sample duplicate ID	N/A	N/A	N/A	N/A	N/A	SW11-010	
Composite sample duplicate date and time	N/A	N/A	N/A	N/A	N/A	3/15/2012 16:01	
Overall Composite Duplicate conductivity value (µS/cm)	N/A	N/A	N/A	N/A	N/A	82	
Overall Composite Duplicate turbidity value (NTU)	N/A	N/A	N/A	N/A	N/A	NA	
Composite Duplicate volume (ml)	N/A	N/A	N/A	N/A	N/A	6,000	
Associated Equipment Blank	SW08-005	SW08-006	SW08-002	SW08-001	SW08-003	SW08-004	
<sup>1</sup> Storm and Sample Validation:							
Was the targeted STE antecedent or conditional antecedent qualified per PSNS PWP? (if no, then see next line)	Yes	Yes	Yes	Yes	Yes	Yes	
Was the antecedent overage amount greater than 10% of the total rain event ?	N/A	N/A	N/A	N/A	N/A	N/A	
Was runoff occurring OR was the hydrograph at least 10% above background pipe level during grab collection ? If no, explain in summary narrative.	Yes	Yes	Yes	Yes	Yes	Yes	
Were a minimum of 8 aliquots collected OR does the composite sample represent at least 75% of the stations storm event rain volume ?	Yes	Yes	Yes	Yes	Yes	Yes	
Were all 1-hr sampler bottles used for the Composite sample ≤2000 µS/cm ?	Yes	Yes	Yes	Yes	Yes	Yes	
Did any anomalous conditions exist that could make samples non-representative? Explain if "Yes"	No	No	No	No	No	No	
Based on consideration of the information above, was the sample collected during the STE valid for project purposes ? (Y / N, composite, grab or both)	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	Yes, both	

<sup>1</sup> If the answer to any of these questions is "No" OR indicate non-representative conditions, then these items should be explained in the Event Narrative.



Date:	3-13			Sampling Support Personnel:		Meto Rupert, Beckwith						
STE #	11	Antecedent Dry Cond. Met?	Conditional	Tidal Info: 3-14 (Wed) LL = -0.34' @ 1701, 3-15 (Thurs) LL = 0.09' (1608)								
Storm Controller:	Metello			Grab sampling Info.		C106 to collect, Need (2) duplicates						
Pre-Storm / Weather Details:		NAM: STE start ~0400 3/14, tails off, then gets heavy @ 0900, fluctuates until 2200, then steady until the 24-hr mark. GFS: STE start ~0700 3/14, steady to ~1800, then tails off, picks back up ~0100 3/15 & steady until 24-hr mark.										
Telemetry Measurements:	DATE/TIME (24HR)											
STATION:	3-13-12 (1815)	3-14-12 (0445)	3-14-12 (0830)	3-14-12 (1240)	3-14-12 (1506)	3-14-12 (2240)	3-15-12 (0434)	3-15-12 (1102)	DL Timestamp		3-15-12 (1530)-(1558)	
PSNS015 Rain <sup>1</sup>	0/1.18	0/	0/	.08/1.39	.01/1.51	.01/1.66	.16/1.08	.01/1.46	Current		.01/2.12	
PSNS008 Level	0.25			4.96	0.47	6.48	5.20	7.89	PST		.049	
PSNS008 Cond.	554			81	164	119	71	74			173	
Smpl Marker	2			12	22	37	59	48 *	76		95	
PSNS084.1 Rain	0/1.12	0/	0/	.07/1.36	.02/1.47	.02/1.16	.013/1.93	.01/1.32	Current		.01/1.88	
PSNS084.1 Level	0.25			3.62	-0.20	5.16	3.74	6.66	PST		-0.21	
PSNS084.1 Cond.	11607			1662	454	87	33	26			195	
Smpl Marker	1			9	20	34	46 *	72	5pm		91	
PSNS115.1 Rain	0/1.10	0/	0/	.07/1.31	.01/1.39	.01/1.49	.10/1.76	.01/1.00	1-hr		0/1.44	
PSNS115.1 Level	2.60			7.83	2.18	9.46	7.98	10.93	behind		3.04	
PSNS115.1 Cond.	13213			00	1546	167	7	17			341	
Smpl Marker	1			13	23	38	50 *	76	4pm		95	
PSNS124 Rain	0/1.08	0/	0/	.07/1.31	.01/1.39	.01/1.49	.12/1.78	.01/1.04	Current		0/1.48	
PSNS124 Level	0.17			3.94	0.32	5.53	4.09	7.04	PST		0.28	
PSNS124 Cond.	14093			2076	3048	37100	462	75			3961	
Smpl Marker	3			7	17	29	42 *	67	6		87	
PSNS124.1 Rain	0/1.14	0/	0/	.08/1.41	.02/1.50	.03/1.65	.13/1.02	.01/1.26	Current		0/1.85	
PSNS124.1 Level	0.08			0.23	0.12	1.73	.40	3.20	DS		0.08	
PSNS124.1 Cond.	40521			2107	194	45,700	318	66	PST		175	
Smpl Marker	2			NA (2)	12	26	38 *	64	7		83	
PSNS126 Rain	0/1.09	0/	0/	.06/1.31	.01/1.39	.01/1.5	.12/1.80	.01/1.13	1-Hr		0/1.59	
PSNS126 Level	-1.08	③ 0.00		0.23	.08	2.08	.49	3.54	behind		.05	
PSNS126 Cond.	619			87	155	888	57	184			175	
Smpl Marker	0			12	22	40	52 *	78	330		96	

<sup>1</sup>Rain depts are reported as 1-hr / 24-hr totals

① reset Cond. offset to +130 ② lowered enable level to 0.2' - enable @ ~1245 ③ changed level offset from -1.13 to -0.04  
 \* Changed pacing back to 15-min/smpl

Date:	3.13 & 3.14.12				Sampling Support Personnel:		Rupert, Beckwith					
STE #	11		Storm Controller:		Metello		Strm Evnt Start / Stp		Start: ~0930			
Enabling Information:												
Sample Station:	PSNS015		PSNS084.1		PSNS115.1		PSNS124		PSNS124.1		PSNS126	
Rain enable (in/hr)	0.05		0.05		0.05		0.05		0.05		0.05	
Level Enable (ft)	0.3		0.3		0.3		0.3		0.2		0.3	
Cond. (µS/cm)	2000		2000		2000		2000		2000		2000	
Repeat. Cond Set ?	NO		NO		NO		NO		NO		NO	
Pacing Rate (min)	15 → 30 BTL 7/8		15 30 BTL 6		15 30 BTL 7		15 30 BTL 5		15 30 BTL 3/4		15 30 BTL 8	
Date	3.14.12		3.14.12		3.14.12		3.14.12		3.14.12		3.14.12	
Time	0445		0447		0449		0451		0453		1240 0455	
Comp Dup ? / where:			PSNS 015				Grab Dup ? / where:			015 & 84.1 124 & 124.1		

## EVENT NOTES:

- PSNS 115.1 Started (0944) 3.14.11
- ▽'ed 124.1 level enable to 0.2 because even with 0.08"/hr rain pipe level was not building beyond ~0.22'/0.23'
- Spoke w/ Navy (Johnston) ~1300; informed me that they wished to keep the samplers running until ~1800 3.15.12. Will adjust the pacing rates accordingly.
  - 015 - ▽'ed to 30 min pacing @ BTL 5 7/8 → ▽'ed back to 15-min Smpl 48 BTL 13/14
  - PSNS 084.1 - ▽'ed to 30 min pacing @ BTL 6 → ▽'ed back to 15 min Smpl 46 BTL 11.5(12) - 13
  - 115.1 - @ BTL 7 → ▽'ed back to 15 min Smpl 50 BTL 12.5(13) - 14
  - 124 - @ BTL 5 → ▽'ed back to 15 min Smpl 42 BTL 10.5(11) - 12
  - 124.1 - @ BTL 3/4 → ▽'ed back to 15 min Smpl 38 BTL 9.5(10) - 11
  - 126 - @ BTL 8 → ▽'ed back to 15-min Smpl 52-BTL 14

# PSNS STE #11

- Pre-event set-up (3.13.12) (~1815)

	<u>Raw 0/24</u>	<u>Cond</u>	<u>Sal</u>	<u>Temp</u>	<u>Logger Bat</u>	<u>Sampler Bat</u>
015	0/18	554	2	9.87	13	12.80
	* enable	lvl = 5555	pacing 15	Smp Mrk = 2	switches = 1,1,1,0	
	rain 0.03		lvl = 0.25'			
	cond 2K					
084	0/12	1607	1	23.78/23.52	12.53	12.73
	Lvl = -0.25'	enable lvl = 555, rain = 0.03, cond. = 2K	pacing = 15	Smp Mrk = 1	switches = 1,1,1,0	
115	0/10	13213	11.75	8.57	14.19	12.73
	enable lvl = 555	rain = 0.03	pacing 15	Smp Mrk = 1	Lvl = 2.60'	
	cond = 2K		switches = 1,1,1,0			
124	0/08	14093	12	10.53	13.34	12.73
	enable lvl = 555, rain 0.03	cond. = 2060	pacing = 15	Smp Mrk = 3	Lvl = 0.17'	
	all enable	switches = 1,1,1,0				
124.1	0/14	40.521	40	8.0	14.51	12.85
	enable lvl = 555, rain = 0.03, cond. = 2000		pacing = 15	Smp Mrk = 2	switches = 1,1,1,0	Lvl = 0.08'
126	0/09	619	8.60	12.55		12.67
	enable lvl = 55, rain = 0.03, cond. = 200		pacing = 15	Smp Mrk = 0	switches = 1,1,1,0	
	Lvl = -1.08'					



DL'ed W.F. 3/13/12 PM ✓ 7-D, ✓ Hily, ✓ Text, ✓ Diggrid, ✓ M.G.

NAM Ste starts ~ 0400 3/14, tails off, then gets heavy @ 0900, fluxes until 2200, then steady until the 24-hr mark

GFS: Ste & start = 0700 3/14 steady to ~1800, picks back up ~0100 3/15 then steady until 24 hr-mark

Tide/s Wed 3/14 LL = -0.34' 1701 Thur 3/15 LL = 0.09 @ 1608

~ (0445) - Set current "real" trigger levels

- V'ed lvl offset @ 126 from -1.13 to -0.04 to have sensor read "0.00"
- Cond. values @ 015, 115, maybe another were in the 2k range w/ 3-6' of water in vault ???
- Reading southern PS but not at SY





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## Section 1. Station Reset and Inspection

Personnel: <u>B. Rupert</u>	Weather: <u>Sunny, temp 60's</u>	Arrival Date/Time: <u>3/8/12 1358</u>
Carry-over maintenance to do prior to set-up: <u>Add Refurbished Titanium sensor to unit</u>	done? <u>X</u>	
Sampler Battery Voltage <u>add 3/8/12</u>	<u>12.84</u>	Changed? Y (N)
Modem Battery Voltage	<u>12.37</u>	Changed? Y (N)
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Info.
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)
Trands. Cable OK?	<u>Yes</u>	<u>X</u>
Trands. Desiccant OK (Yes/No)	<u>Y</u>	Internal Sampler Tubing OK?
Tele. Box Desiccant OK (Yes/No)	<u>Y</u>	<u>✓</u>
Modem Status	<u>operational</u>	Tubing Replaced? (Yes/No)
Notes (including channel condition):		<u>No</u>
		Normal Smpler Program or Dup. ?
		<u>Dup</u>
		Bottles Loaded ?
		<u>Y</u>
		Lid Status?
		<u>ON</u>
		Backflushed with DI?
		<u>No</u>
		Suction line & quick connect attached?
		<u>Yes</u>
		Smplr Status (on/off) / last screen..
		<u>off.</u>

## Section 2. Storm Setup and Inspection

Personnel: <u>IS/BB</u>	Weather: <u>mostly cloudy</u>	Arrival Date/Time: <u>3/13/12 9:15</u>
Sampler Battery Voltage	<u>12.54</u>	Changed? Y (N)
Modem Battery Voltage	<u>12.25</u>	Changed? Y (N)
Sample Tubing & Strainer OK?	<u>Y</u>	Sampler Setup
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)
Transducer Cable OK?	<u>Y</u>	<u>NO - Ded</u>
Multi-meter Cable OK	<u>Y</u>	Aliquot Vol. Cal'ed (Y/N & vol.)
Recorded Level (FT)	<u>5.00</u>	<u>Y 2.90</u>
Measured Level (FT)	<u>3.88</u>	Program Reviewed (Yes/No), Dup ?
Offset Diff (FT)	<u>1.22</u>	<u>Y / NO</u>
Level Adjusted ?	<u>Y</u>	Lids off bottles?
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	<u>Y</u>
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diagnostics/Distributor arm check?
		<u>Y</u>
		Backflush with DI?
		<u>Y</u>
		Storm Reset (1, enter) Completed
		<u>Y</u>
		Last screen...
		<u>* inhibited</u>
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) - <u>N/A</u>		

## Section 3. Grab Sample Collection

Personnel: <u>Jonathan Moller/Steven</u>	Weather: <u>Rain stopped</u>	Arrival Date/Time: <u>3/15/2012 1538</u>
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):
Grab Parameters Collected	<u>TPH, Taib, FL</u>	<u>224</u>
Grab Sample ID	<u>SW116grab-005</u>	Salinity Reading (PPT):
Grab Date/Time	<u>3/15/2012 1542</u>	Temp. Reading (°C):
Grab Dup ID		<u>9.9</u>
Grab Dup Date/Time		Turbidity Reading (NTU)
		Equipment running correctly?
		<u>✓</u>
		Sampler Battery Voltage (Changed?):
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:		
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N
		Ice OK?
Notes: (what meter was used for site readings, etc.)		
<u>Rain just stopped; still flowing in main channel</u>		



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Taylor Associates, Inc.

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## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel:	<u>BR/BB</u>	Weather:	<u>Sunny, Windy - 50's</u>	Arrival Date/Time:	<u>3/15/12 1745</u>
Sampler Battery Voltage	<u>Good</u>	Changed?	Y <input checked="" type="radio"/> N	New voltage	<u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed?	Y <input checked="" type="radio"/> N	New voltage	<u>—</u>
Additional Grabs (IDs, date/time)	<u>NO</u>				
Additional Dup Grab (IDs, date/time)	<u>NO</u>				
Composite Begin Time (date/time)	<u>3/14/12 8:45</u>	Sampler Report Downloaded ?	<u>Y - telem</u>		
Last Aliquot Taken (date/time, bott #, aliq #)					
Total Composite Sample Volume Collected	<u>100% / Bottles 23 &amp; 24 Empty</u>				
Aliquots missed/NLD (date/time/bott #/aliq #)					
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	<u>None Typical</u>				
Storm Contoller notified (Y or <input checked="" type="radio"/> N/A)?	Which parameter?: <u>NO</u>				
Notes:	<u>None</u>				
Maintenance Needed:	<u>None</u>				

## Section 5. Compositing Scheme and QC Sampling

Personnel:	<u>BR/BB</u>	Date/Time:	<u>3/15/12 2100</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal. info.)			
<u>Cond = VSP (New meter) Turb = 2100P Hach</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):			
1	1100/12/Y	7	111/10/Y
2	724/18/Y	8	176/6/Y
3	175/14/Y	9	165/5/Y
4	112/13/Y	10	309/5/Y
5	258/8/Y	11	280/4/Y
6	167/7/Y	12	124/5/Y
13	97/8/Y	19	149/40/Y
14	74/11/Y	20	227/20/Y
15	133/10/Y	21	147/12/Y
16	104/12/Y	22	228/12/Y
17	89/11/Y	23	240/14/Y
18	51/11/Y	24	276/6/Y
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)			
<u>used Bottles 1-7 &amp; 14-24 @ 300mL / bottles 8-13 @ 600mL</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond = 192 <math>\mu\text{S}/\text{cm}</math> Turb = 12 Vol = 8,700 Analysis = per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW11-015 1529</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:



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## Section 1. Station Reset and Inspection

Personnel: <u>B. Rupert</u>	Weather: <u>Sunny, temp 60's</u>	Arrival Date/Time: <u>3/8/12 1420</u>
Carry-over maintenance to do prior to set-up: <u>none</u>	done? <u>-</u>	
Sampler Battery Voltage <u>added 3/8/12</u> <u>12.98</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>-</u>
Modem Battery Voltage <u>13.34</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>-</u>
Sample Tubing & Strainer OK? <u>OK</u>	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No) <u>OK</u>
Trands. Cable OK? <u>OK</u>	Internal Sampler Tubing OK? <u>OK</u>	
Trands. Desiccant OK (Yes/No) <u>OK</u>	Tubing Replaced? (Yes/No) <u>Yes</u>	
Telem. Box Desiccant OK (Yes/No) <u>NO/changed</u>	Normal Smpler Program or Dup. ? <u>normal</u>	
Modem Status <u>Operational</u>	Bottles Loaded ? <u>Yes</u>	
Notes (including channel condition):	Lid Status? <u>on</u>	
	Backflushed with DI? <u>no</u>	
	Suction line & quick connect attached? <u>Yes</u>	
	Smplr Status (on/off) / last screen.. <u>off</u>	

## Section 2. Storm Setup and Inspection

Personnel: <u>IS / BA</u>	Weather: <u>mostly cloudy</u>	Arrival Date/Time: <u>3/13/12 09:45</u>
Sampler Battery Voltage <u>12.70</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>-</u>
Modem Battery Voltage <u>12.74</u>	Changed? <u>Y</u> <u>(N)</u>	New voltage <u>-</u>
Sample Tubing & Strainer OK? <u>Y</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No) <u>NO - Δed</u>
Transducer Cable OK? <u>Y</u>	Aliquot Vol. Cal.'ed (Y/N & vol.) <u>Y</u> <u>240</u>	
Multi-meter Cable OK <u>Y</u>	Program Reviewed (Yes/No), Dup ? <u>Y / N</u>	
Recorded Level (FT) <u>4.25</u>	Lids off bottles? <u>Y</u>	
Measured Level (FT) <u>4.17</u>	Diagnostics/Distributor arm check? <u>Y</u>	
Offset Diff (FT) <u>.08</u>	Backflush with DI? <u>Y</u>	
Level Adjusted ? <u>Y</u>	Storm Reset (1, enter) Completed <u>Y</u>	
Cond. Sonde Type (YSI6820 or INW-CT2X) <u>INW</u>	Last screen... <u>Inhibited</u>	
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =
		(>10% adj. offset); Offset =
		New Rec Val =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>-</u>		

## Section 3. Grab Sample Collection

Personnel: <u>Johnston / Mullerstein</u>	Weather: <u>Rainy cold sun</u>	Arrival Date/Time: <u>3/15/12 1755</u>
On Composite... (Bottle #/ Aliq #)	Conductivity Reading (μS/cm):	
Grab Parameters Collected <u>TPH, Turb, Sal</u>	Salinity Reading (PPT):	
Grab Sample ID <u>SW16796-004</u>	Temp. Reading (°C):	
Grab Date/Time <u>3/15/2012 1756</u>	Turbidity Reading (NTU)	
Grab Dup ID <u>SW16796-010</u>	Equipment running correctly?	
Grab Dup Date/Time <u>3/15/2012 1705</u>	Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:		
Storm Controller notified (Y or N/A)?	Grab MS/MSD Collected ? <u>Y</u> / <u>N</u>	Ice OK?
Notes: (what meter was used for site readings, etc.) <u>Sun out Rain stopped</u>		





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## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>BR/BB</u>	Weather: <u>Sunny, windy 50's</u>	Arrival Date/Time: <u>3/15/12 1800</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NO</u>		
Composite Begin Time (date/time)	<u>3/14/12 12:44</u>	Sampler Report Downloaded ?	<u>Y-telecom</u>
Last Aliquot Taken (date/time, bott #, aliq #)			
Total Composite Sample Volume Collected	<u>100% - Bottles 23 &amp; 24 Empty</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)			
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Contoller notified (Y or N/A)?	Which parameter?: <u>NO</u>		
Notes: <u>Notable Turbidity throughout most bottles</u>			
Maintenance Needed: <u>NONE</u>			

## Section 5. Compositing Scheme and QC Sampling

Personnel: <u>BB/BR</u>	Date/Time: <u>3/15/12 2200</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>Cond = YSI (new meter) Turb = 2100p Hach</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1 928/47/Y	7 38,000/61/N	13 54/11/Y	19 100/17/Y
2 219/65/Y	8 44,400/2/N	14 61/16/Y	20 166/15/Y
3 189/64/Y	9 43,650/3/N	15 41/54/Y	21 180/14/Y
4 219/62/Y	10 17,250/11/NO	16 71/30/Y	22 104/15/Y
5 217/56/Y	11 440/10/Y	17 74/26/Y	23 Empty
6 295/38/Y	12 58/10/Y	18 65/24/Y	24 Empty
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>used bottles 1-3 &amp; 11-22 &amp; 400ml/ Bottles 4-6 &amp; 800ml</u> <u>Bottles 7-10 not used - cond too high</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>Cond = 190 <math>\mu\text{S}/\text{cm}</math> Turb = 4 Vol = 8,400 Analysis = per 2011-12 PWS</u>			
Composite Sample ID & Time: <u>SW11-016 (1658) 3/15/12</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:



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Section 1. Station Reset and Inspection			
Personnel: <u>BN</u>	Weather: <u>Sunny, 60's</u>	Arrival Date/Time: <u>3/8/12 1445</u>	
Carry-over maintenance to do prior to set-up:			done?
Sampler Battery Voltage <u>added 3/8/12</u>	<u>12.84</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Modem Battery Voltage	<u>13.56</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	<u>OK</u>
Transds. Cable OK?	<u>OK</u>	Internal Sampler Tubing OK?	<u>OK</u>
Transds. Desiccant OK (Yes/No)	<u>OK</u>	Tubing Replaced? (Yes/No)	<u>Yes</u>
Telem. Box Desiccant OK (Yes/No)	<u>OK</u>	Normal Smpler Program or Dup. ?	<u>Normal</u>
Modem Status	<u>Operational</u>	Bottles Loaded ?	<u>Yes</u>
Notes (including channel condition):		Lid Status?	<u>ON</u>
		Backflushed with DI?	<u>NO</u>
		Suction line & quick connect attached?	<u>Yes</u>
		Smplr Status (on/off) / last screen..	<u>off</u>

Section 2. Storm Setup and Inspection			
Personnel: <u>IS / BB</u>	Weather: <u>cloudy</u>	Arrival Date/Time: <u>3/13/12 10:10</u>	
Sampler Battery Voltage	<u>12.76</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Modem Battery Voltage	<u>12.85</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>Y</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>NO - Ded</u>
Transducer Cable OK?	<u>Y</u>	Aliquot Vol. Cal.'ed (Y/N & vol.)	<u>Y</u> <u>240</u>
Multi-meter Cable OK	<u>Y</u>	Program Reviewed (Yes/No), Dup ?	<u>Y / N</u> <u>3</u>
Recorded Level (FT)	<u>7.43</u>	Lids off bottles?	<u>Y</u>
Measured Level (FT)	<u>7.53</u>	Diagnostics/Distributor arm check?	<u>Y</u>
Offset Diff (FT)	<u>.10</u>	Backflush with DI?	<u>Y</u>
Level Adjusted ?	<u>NO</u>	Storm Reset (1, enter) Completed	<u>Y</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>inhibited</u>
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diff. =	(>10% adj. offset); Offset = New Rec Val =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>—</u>			

Section 3. Grab Sample Collection			
Personnel: <u>Johnston / Moller Stan</u>	Weather: <u>Sun!</u>	Arrival Date/Time: <u>3/15/12 1625</u>	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading ( $\mu\text{S}/\text{cm}$ ):	<u>7310</u>
Grab Parameters Collected	<u>pH, Turb, FL</u>	Salinity Reading (PPT):	
Grab Sample ID	<u>SW110-AB-007</u>	Temp. Reading ( $^{\circ}\text{C}$ ):	<u>10.2</u>
Grab Date/Time	<u>3/15/12 1624</u>	Turbidity Reading (NTU)	
Grab Dup ID	<u>-068</u>	Equipment running correctly?	
Grab Dup Date/Time	<u>3/15/12 1630</u>	Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.) <u>Sun came out - Flow is very low water still moving at bottom of CB</u>			

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**Section 4. Post-Storm Sample Collection (for grab, comp or both)**

Personnel: <u>BR/BB</u>	Weather: <u>Sunny, windy 50's</u>	Arrival Date/Time: <u>3/15/12 1815</u>
Sampler Battery Voltage	<u>Good</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>
Additional Grabs (IDs, date/time)	<u>NO</u>	
Additional Dup Grab (IDs, date/time)	<u>NO</u>	
Composite Begin Time (date/time)	<u>3/14/12 11:54</u>	Sampler Report Downloaded? <u>Y-tele</u>
Last Aliquot Taken (date/time, bott #, aliq #)		
Total Composite Sample Volume Collected	<u>100% Bottle 23 1/2 full / 24 empty</u>	
Aliquots missed/NLD (date/time/bott #/aliq #)		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>		
Storm Contoller notified (Y or <input checked="" type="radio"/> N/A)?	Which parameter?: <u>NO</u>	
Notes: <u>NONE</u>		
Maintenance Needed: <u>NONE</u>		

**Section 5. Compositing Scheme and QC Sampling**

Personnel: <u>BR/BB</u>	Date/Time: <u>3/15/12 2250</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.)	
<u>Cond = VSI (new meter) Turb = 2100P Hach</u>	
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu S/cm$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):	
1 860/17/Y	7 23,000/6/NO
2 1515/13/Y	8 26,250/2/N
3 2470/19/NO	9 41,300/3/N
4 4,080/9/NO	10 16,000/5/N
5 4,050/9/NO	11 660/9/Y
6 6,370/9/NO	12 440/9/Y
13 2,070/7/N	14 2,330/5/N
15 282/5/Y	16 70/26/Y
17 63/31/Y	18 74/24/Y
19 58/13/Y	20 1310/7/Y
21 51080/10/Y	22 4900/40/Y
23 1016/124/Y	24 Empty
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)	
<u>used bottles 1-2 &amp; 15-20 e 500ml / Bottle 11 e 100% / Bottle 23 not used</u>	
<u>Did not use bottles 3-10, 13, 14 &amp; 21-22 Due to high Turbidity as it was too Flow</u>	
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)	
<u>Cond = 521 <math>\mu S/cm</math> Turb = 20 Vol. 5500 Analysis = per 2011-12 PWP</u>	
Composite Sample ID & Time: <u>SW11-017 (1400) 3/15/12</u>	
Field Blank Collected? (date/time)	<u>NO</u>
Blank ID:	<u>NA</u>
Duplicate comp sample? Yes/No	<u>NO</u>
Duplicate sample ID	<u>NA</u>

NOTES:





PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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## Section 1. Station Reset and Inspection

Personnel: <u>R. Rupert</u>	Weather: <u>Sunny, Temp 60's</u>	Arrival Date/Time: <u>1400 3/8/12</u>
Carry-over maintenance to do prior to set-up: _____ done?		
Sampler Battery Voltage <u>added 3/8/12</u>	<u>12.79</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/> New voltage _____
Modem Battery Voltage	<u>13.51</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/> New voltage _____
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Info.
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)
Trans. Cable OK?	<u>OK</u>	<u>YES</u>
Trans. Desiccant OK (Yes/No)	<u>OK</u>	Internal Sampler Tubing OK?
Telem. Box Desiccant OK (Yes/No)	<u>OK</u>	<u>OK</u>
Modem Status	<u>operational</u>	Tubing Replaced? (Yes/No)
Notes (including channel condition):		<u>YES</u>
		Normal Smpler Program or Dup. ?
		<u>Normal</u>
		Bottles Loaded ?
		<u>YES</u>
		Lid Status?
		<u>ON</u>
		Backflushed with DI?
		<u>NO</u>
		Suction line & quick connect attached?
		<u>Yes</u>
		Smplr Status (on/off) / last screen..
		<u>off</u>

## Section 2. Storm Setup and Inspection

Personnel: <u>IS / AB</u>	Weather: <u>light rain</u>	Arrival Date/Time: <u>3/13/12 10:25</u>
Sampler Battery Voltage	<u>12.71</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/> New voltage _____
Modem Battery Voltage	<u>13.31</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/> New voltage _____
Sample Tubing & Strainer OK?	<u>Y</u>	Sampler Setup
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)
Transducer Cable OK?	<u>Y</u>	<u>NO - Dead</u>
Multi-meter Cable OK	<u>Y</u>	Aliquot Vol. Cal'ed (Y/N & vol.)
Recorded Level (FT)	<u>10.79</u>	<u>Y 240</u>
Measured Level (FT)	<u>10.71</u>	Program Reviewed (Yes/No), Dup ?
Offset Diff (FT)	<u>.08</u>	<u>Y / N</u>
Level Adjusted ?	<u>NO</u>	Lids off bottles?
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	<u>Y</u>
Cond. Sonde Cal. Info. : Recorded Val. =	Meas. Val. =	Diagnostics/Distributor arm check?
		<u>Y</u>
		Backflush with DI?
		<u>Y</u>
		Storm Reset (1, enter) Completed
		<u>Y</u>
		Last screen...
		<u>disabled</u>
Cond. Sonde Cal. Info. : Recorded Val. = Meas. Val. = Diff. = (>10% adj. offset); Offset = New Rec Val =		
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) _____		

## Section 3. Grab Sample Collection

Personnel: <u>Johnston / Mollerstrom</u>	Weather: <u>Rainy Cold Rainy</u>	Arrival Date/Time: <u>3/14/12 1600</u>
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):
Grab Parameters Collected	<u>TPH, Turb, FC</u>	<u>2700 297</u>
Grab Sample ID		Salinity Reading (PPT):
Grab Date/Time	<u>3/14/12 1605</u>	<u>7.8 7.8</u>
Grab Dup ID		Temp. Reading (°C):
Grab Dup Date/Time	<u>3/14/12 1518</u>	
		Turbidity Reading (NTU)
		Equipment running correctly?
		Sampler Battery Voltage (Changed?):
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:		
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N
		Ice OK?
Notes: (what meter was used for site readings, etc.)		
<u>(No sample conductivity too high 3/14/12) depth ~4ft</u> <u>Rainy 3/15 in vault</u>		



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>BR/BB</u>	Weather: <u>clear, sunny 50's</u>	Arrival Date/Time: <u>3/15/12 1730</u>	
Sampler Battery Voltage	<u>Good</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>NO</u>		
Additional Dup Grab (IDs, date/time)	<u>NO</u>		
Composite Begin Time (date/time)	<u>3/14/12 8:45</u>	Sampler Report Downloaded ?	<u>Y - telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)			
Total Composite Sample Volume Collected	<u>100%</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Contoller notified (Y or <u>N/A</u> )?	Which parameter?: <u>NA</u>		
Notes: <u>NONE</u>			
Maintenance Needed: <u>NONE</u>			

## Section 5. Compositing Scheme and QC Sampling

Personnel: <u>BR/BB</u>	Date/Time: <u>3/15/12 2010</u>		
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.)			
<u>Cond = YSI (new meter) Turb = 2100P Hach</u>			
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):			
1 <u>483/14/Y</u>	7 <u>800/5/Y</u>	13 <u>20/7/Y</u>	19 <u>19/17/Y</u>
2 <u>221/12/Y</u>	8 <u>8730/3/N</u>	14 <u>22/3/Y</u>	20 <u>36/10/Y</u>
3 <u>22/8/Y</u>	9 <u>9,220/3/Y</u>	15 <u>34/3/Y</u>	21 <u>60/7/Y</u>
4 <u>55/7/Y</u>	10 <u>1200/3/Y</u>	16 <u>22/4/Y</u>	22 <u>83/9/Y</u>
5 <u>1045/6/Y</u>	11 <u>223/2/Y</u>	17 <u>15/7/Y</u>	23 <u>403/8/Y</u>
6 <u>3,800/9/N</u>	12 <u>27/4/Y</u>	18 <u>17/40/Y</u>	24 <u>793/12/Y</u>
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>usal bottles 1-5, 14-24 e 300mL / bottles 7, 10, 11-13 e 600mL</u> <u>not used bottles 6, 8, 9 - cond too high</u>			
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)			
<u>Cond = 293 <math>\mu\text{S}/\text{cm}</math> Turb = 9 Vol = 7,800 Analysis = Per 2011-12 PWP</u>			
Composite Sample ID & Time: <u>SW11-014 (1558)</u>			
Field Blank Collected? (date/time)	<u>NO</u>		
Blank ID:	<u>NA</u>		
Duplicate comp sample? Yes/No	<u>NO</u>		
Duplicate sample ID	<u>NA</u>		

NOTES:





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Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Section 1. Station Reset and Inspection			
Personnel: <u>B. Rupert</u>	Weather: <u>Sunny, 60's</u>	Arrival Date/Time: <u>1500 3/8/12</u>	
Carry-over maintenance to do prior to set-up:			done?
Sampler Battery Voltage <u>added 3/8/12</u>	<u>12.83</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Modem Battery Voltage	<u>13.06</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	<u>OK</u>
Trans. Cable OK?	<u>OK</u>	Internal Sampler Tubing OK?	<u>OK</u>
Trans. Desiccant OK (Yes/No)	<u>OK</u>	Tubing Replaced? (Yes/No)	<u>YES</u>
Telem. Box Desiccant OK (Yes/No)	<u>no-changed</u>	Normal Smpler Program or Dup. ?	<u>Normal</u>
Modem Status	<u>operational</u>	Bottles Loaded ?	<u>YES</u>
Notes (including channel condition):		Lid Status?	<u>ON</u>
		Backflushed with DI?	<u>NO</u>
		Suction line & quick connect attached?	<u>Yes</u>
		Smplr Status (on/off) / last screen..	<u>off</u>

Section 2. Storm Setup and Inspection			
Personnel: <u>IS/B</u>	Weather: <u>cloudy</u>	Arrival Date/Time: <u>3/13/12 10:50</u>	
Sampler Battery Voltage	<u>12.45</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Modem Battery Voltage	<u>12.59</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>	New voltage <u>—</u>
Sample Tubing & Strainer OK?	<u>Y</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>NO-Def</u>
Transducer Cable OK?	<u>Y</u>	Aliquot Vol. Cal.'ed (Y/N & vol.)	<u>Y 240</u>
Multi-meter Cable OK	<u>Y</u>	Program Reviewed (Yes/No), Dup ?	<u>Y / N</u>
Recorded Level (FT)	<u>5.84</u>	Lids off bottles?	<u>Y</u>
Measured Level (FT)	<u>5.83</u>	Diagnostics/Distributor arm check?	<u>Y</u>
Offset Diff (FT)	<u>.01</u>	Backflush with DI?	<u>Y</u>
Level Adjusted ?	<u>NO</u>	Storm Reset (1, enter) Completed	<u>Y</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>disabled</u>
Cond. Sonde Cal. Info. : Recorded Val. =      Meas. Val. =      Diff. =      (>10% adj. offset); Offset =      New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) <u>—</u>			

Section 3. Grab Sample Collection			
Personnel: <u>Young/Hsu</u>	Weather: <u>Rainy cold</u>	Arrival Date/Time: <u>3/14/12 1445</u>	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	<u>2.8</u>
Grab Parameters Collected		Salinity Reading (PPT):	
Grab Sample ID		Temp. Reading (°C):	<u>7.2</u>
Grab Date/Time	<u>3/14/12 1455</u>	Turbidity Reading (NTU)	
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time	<u>3/14/12 1455</u>	Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:			
Storm Contoller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK? <input type="checkbox"/>
Notes: (what meter was used for site readings, etc.)			



PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel: <u>BR/BR</u>	Weather: <u>clear, windy 50's</u>	Arrival Date/Time: <u>1715 3/15/12</u>	
Sampler Battery Voltage	<u>good</u>	Changed? Y (N) <u>(N)</u>	New voltage <u>—</u>
Telemetry Battery Voltage	<u>good</u>	Changed? Y (N) <u>(N)</u>	New voltage <u>—</u>
Additional Grabs (IDs, date/time)	<u>no</u>		
Additional Dup Grab (IDs, date/time)	<u>no</u>		
Composite Begin Time (date/time)	<u>3/14/12 10:42</u>	Sampler Report Downloaded ?	<u>yes - telem</u>
Last Aliquot Taken (date/time, bott #, aliq #)			
Total Composite Sample Volume Collected	<u>100%</u>		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>NONE</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>Typical</u>			
Storm Contoller notified (Y or N/A)?	Which parameter?: <u>NA</u>		
Notes: <u>notable "floaters" in first 5 bottles</u>			
Maintenance Needed: <u>NONE</u>			

## Section 5. Compositing Scheme and QC Sampling

Personnel: <u>BR/BR</u>	Date/Time: <u>3/15/12 1915</u>						
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>COND = YSI (new meter) Turb = 2100P Hach</u>							
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):							
1	8,340 / 18 / N	7	264 / 9 / Y	13	27 / 12 / Y	19	18 / 52 / Y
2	449 / 30 / Y	8	219 / 8 / Y	14	33 / 9 / Y	20	19 / 22 / Y
3	403 / 18 / Y	9	133 / 8 / Y	15	47 / 9 / Y	21	45 / 12 / Y
4	8,888 / 14 / N	10	81 / 6 / Y	16	36 / 12 / Y	22	96 / 12 / Y
5	580 / 14 / Y	11	39 / 12 / Y	17	22 / 26 / Y	23	198 / 29 / Y
6	183 / 15 / Y	12	35 / 25 / Y	18	17 / 19 / Y	24	152 / 23 / Y
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>used 300 mL from bottles 2, 3 &amp; 5, 13-24 / 600 mL from bottles 6-12</u>							
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>COND = 142 <math>\mu\text{S}/\text{cm}</math> Turb = 17 Vol = 8,700 Analysis = per 2011-2012 PWD</u>							
Composite Sample ID & Time: <u>SW11-013 (1656)</u>							
Field Blank Collected? (date/time)	<u>NO</u>						
Blank ID:	<u>NA</u>						
Duplicate comp sample? Yes/No	<u>NO</u>						
Duplicate sample ID	<u>NA</u>						

NOTES:



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Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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Section 1. Station Reset and Inspection			
Personnel: <u>BIL</u>	Weather: <u>Sunny, 60's</u>	Arrival Date/Time: <u>15/5 3/8/12</u>	
Carry-over maintenance to do prior to set-up:			done?
Sampler Battery Voltage <u>added 3/8/12</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>	
Modem Battery Voltage	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>	
Sample Tubing & Strainer OK?	<u>OK</u>	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	<u>OK</u>
Trans. Cable OK?	<u>OK</u>	Internal Sampler Tubing OK?	<u>OK</u>
Trans. Desiccant OK (Yes/No)	<u>OK</u>	Tubing Replaced? (Yes/No)	<u>YES</u>
Telem. Box Desiccant OK (Yes/No)	<u>OK</u>	Normal Smplr Program or Dup. ?	<u>Normal</u>
Modem Status	<u>Operational</u>	Bottles Loaded ?	<u>YES</u>
Notes (including channel condition):		Lid Status?	<u>ON</u>
		Backflushed with DI?	<u>YES NO</u>
		Suction line & quick connect attached?	<u>YES</u>
		Smplr Status (on/off) / last screen..	<u>OFF</u>

Section 2. Storm Setup and Inspection			
Personnel: <u>JS / BB</u>	Weather: <u>light rain</u>	Arrival Date/Time: <u>3/13/12 11:10</u>	
Sampler Battery Voltage <u>12.74</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>	
Modem Battery Voltage <u>13.19</u>	Changed? Y <input checked="" type="radio"/> N <input type="radio"/>	New voltage <u>—</u>	
Sample Tubing & Strainer OK?	<u>Y</u>	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	<u>NO - dead</u>
Transducer Cable OK?	<u>Y</u>	Aliquot Vol. Cal'ed (Y/N & vol.)	<u>Y 120</u>
Multi-meter Cable OK	<u>Y</u>	Program Reviewed (Yes/No), Dup ?	<u>Y / Y</u>
Recorded Level (FT)	<u>5.96</u>	Lids off bottles?	<u>Y</u>
Measured Level (FT)	<u>6.14</u>	Diagnostics/Distributor arm check?	<u>Y</u>
Offset Diff (FT)	<u>.18</u>	Backflush with DI?	<u>Y</u>
Level Adjusted ?	<u>Y</u>	Storm Reset (1, enter) Completed	<u>Y</u>
Cond. Sonde Type (YSI6820 or INW-CT2X)	<u>INW</u>	Last screen...	<u>disabled</u>
Cond. Sonde Cal. Info. : Recorded Val. = Meas. Val. = Diff. = (>10% adj. offset); Offset = New Rec Val =			
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) - <u>15.25</u> <u>6.14</u> <u>.18</u> <u>- 9.11</u> <u>5.96</u>			

Section 3. Grab Sample Collection			
Personnel: <u>Young / Hsu</u>	Weather: <u>Rainy Cold</u>	Arrival Date/Time: <u>14/5 3/14/12</u>	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):	<u>35.5</u>
Grab Parameters Collected	<u>pH Pecal</u>	Salinity Reading (PPT):	
Grab Sample ID		Temp. Reading (°C):	<u>6.8</u>
Grab Date/Time	<u>3/14/12 1420</u>	Turbidity Reading (NTU)	
Grab Dup ID		Equipment running correctly?	
Grab Dup Date/Time	<u>3/14/12 1420</u>	Sampler Battery Voltage (Changed?):	
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which? <u>bad odor</u>			
Storm Controller notified (Y or N/A)?		Grab MS/MSD Collected ? Y / N	Ice OK?
Notes: (what meter was used for site readings, etc.) <u>YSI 30 used</u>			





PSNS NPDES Non-dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

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## Section 4. Post-Storm Sample Collection (for grab, comp or both)

Personnel:	<u>BR/BB</u>	Weather:	<u>Sunny, windy 50's</u>	Arrival Date/Time:	<u>1600 3/15/12</u>
Sampler Battery Voltage	<u>good</u>	Changed?	Y (N)	New voltage	<u>—</u>
Telemetry Battery Voltage	<u>good</u>	Changed?	Y (N)	New voltage	<u>—</u>
Additional Grabs (IDs, date/time)	<u>NO</u>				
Additional Dup Grab (IDs, date/time)	<u>NO</u>				
Composite Begin Time (date/time)	<u>3/14/12 10:18</u>	Sampler Report Downloaded ?	<u>yes - telem</u>		
Last Aliquot Taken (date/time, bott #, aliq #)					
Total Composite Sample Volume Collected	<u>100% - Except bottles 1 &amp; 2 (50%)</u>				
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>bottles 1 &amp; 2 only half full</u>				
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)?	<u>Typical</u>				
Storm Contoller notified (Y or N/A)?	<u>NA</u>	Which parameter?	<u>NA</u>		
Notes:	<u>notable "floaters" in Bottles 4, 3, 4, 14, 17, 18, 19, 21, 23 &amp; 24</u>				
Maintenance Needed:	<u>None</u>				

## Section 5. Compositing Scheme and QC Sampling

Personnel:	<u>BR/BB</u>	Date/Time:	<u>1830</u>												
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.)	<u>COND = YSF (new one) Turb = 2100P Hach</u>														
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smpl be included in comp smpl Y/N):															
2	230	1	NA Y	14	21	1	NA Y	1	43	1	NA Y	13	21	1	NA X
4	103	1	NA Y	16	35	1	Y	3	85	1	Y	15	35	1	Y
6	105	1	NA Y	18	22	1	Y	5	100	1	Y	17	22	1	Y
8	142	1	Y	20	22	1	Y	7	150	1	Y	19	22	1	Y
10	134	1	Y	22	66	1	Y	9	141	1	Y	21	45	1	Y
12	42	1	Y	24	141	1	Y	11	42	1	Y	23	139	1	Y
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample)	<u>2, 4, 6, 14, 16, 18, 20, 22, 24 400 mL</u>	<u>8, 10 &amp; 12 800 mL</u>	<u>Same for Dup</u>	<u>7, 9 &amp; 11 800 mL</u>											
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis)	<u>SW11-011 = 83 COND</u>	<u>SW11-012 Dup = 82 COND</u>	<u>6000 mL for Env, from 24 Bottles</u>												
Composite Sample ID & Time:	<u>SW11-011</u>	<u>1601</u>	<u>3/15/12</u>												
Field Blank Collected? (date/time)	<u>NO</u>														
Blank ID:	<u>NA</u>														
Duplicate comp sample? Yes/No	<u>Yes</u>														
Duplicate sample ID	<u>SW11-012</u>														

NOTES:

# SW 11 Comp Samples Formulation Notes:

<u>015</u>		<u>DUP</u>	
2	14	1	<del>13</del>
4	16	3	15
6	18	5	17
(8)	20	(7)	19
(10)	22	(9)	21
(12)	24	(11)	23

Keep all —

400-ml @ 15 min } 6000-ml per  
800-ml @ 30 min }

<u>84.1</u>	$\nabla 30 @$ BTL6-12	$\nabla 15 @$ 13
<del>1</del>	(1)	13
2	(8)	14
3	(9)	15
<del>4</del>	(10)	16
5	(11)	17
(6)	(12)	18

15X 300 } 8700  
7X 600 }  
Smpl time (1656)

115.1 total rainfall 1.20"

Died to 30 min BTL 7-13, Died back to 15 min btl 14-24

1	(7)	(13)	19
2	<del>(8)</del>	14	20
3	<del>(9)</del>	15	21
4	(10)	16	22
5	(11)	17	23
<del>6</del>	(12)	18	24

16x300

5x600

4800

3000

7800-ml

Sample Time = 1558

126 total rain = 1.32"

Died to 30 min @ BTL 8-13, Died back to 15 min 14-24

<del>1</del>	7	(13)	19
2	(8)	14	20
3	(9)	15	21
4	(10)	16	22
5	(11)	17	23
6	(12)	18	24

17x300

6x600

5100

3600

8700

124

total rain = 1.24"

Died to 30 min @ BTL 5-11

<del>1</del>	<del>(7)</del>	<del>13</del>
2	<del>(8)</del>	<del>14</del>
<del>3</del>	<del>(9)</del>	15
4	<del>(10)</del>	16
<del>(5)</del>	(11)	17
<del>(6)</del>	12	18

19

20

~~21~~

~~22~~

23 1/2

24 empty

4500  
~~5000~~  
~~4500~~  
 1x1000 1600

5500-ml  
 (1400)

ved to 30 min @ BTL 4-10

124.1 total rain = 1.53

1	<del>7</del>	13	19
2	<del>8</del>	14	20
3	<del>9</del>	15	21
(4)	<del>10</del>	16	22
(5)	11	17	23 empty
(6)	12	18	24 empty

$15 \times 400 = 6000$   
 $3 \times 800 = 2400$  } 8400

(1658)

# SAMPLE CHAIN OF CUSTODY FORM

Date: 3/14/12

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

## Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

				Analyze parameters per QAP/FSP														
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity					No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes / Comp. Cond. (µS/cm) and Turb. (NTU) Readings
SW11-001	015	3/14/12 1420	SW						X						1	Grab	11	A2 SW11-001
SW11-002	015 DUP	↓ ↓							X						1			B3 SW11-001
SW11-003	084.1	3/14/12 1455							X						1			A3 SW11-002
SW11-004	084.1 DUP	↓ ↓							X						1			B3 SW11-002
SW11-005	126	3/15/12 1542							X						2			
SW11-006	115.1	3/15/12 1605							X						2			
SW11-007	124	3/15/12 1626							X						2			
SW11-008	124 DUP	3/15/12 1630							X						2			
SW11-009	124.1	3/15/12 1658							X						2			
SW11-010	124.1 DUP	3/15/12 1705							X						2			
Relinquished by: <i>[Signature]</i> 3/16/12 0920				Received by: <i>[Signature]</i> 3/16/12 0920										Total # of Containers: <i>[Blank]</i>				
Signature: <i>Brian Rupert</i> Date: <i>3/16/12</i> Time: <i>0920</i>				Signature: <i>Jill Brandenberger</i>										Shipment Method: <i>Hand delivery</i>				
Printed Name: <i>Brian Rupert</i> Company: <i>Cardno TCE</i>				Printed Name: <i>Jill Brandenberger</i>										Sample Disposition: <i>[Blank]</i>				
Relinquished by: <i>[Blank]</i>				Received by: <i>[Blank]</i>										Distribution: <i>[Blank]</i>				
Signature: <i>[Blank]</i> Date: <i>[Blank]</i> Time: <i>[Blank]</i>				Signature: <i>[Blank]</i>										1) PNNL				
Printed Name: <i>[Blank]</i> Company: <i>[Blank]</i>				Printed Name: <i>[Blank]</i>										2) CAS				
														3) TAI				

3/16/12



Date: 3/15/12

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

## Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

SN11-

009
010
011
012
013
014
015
Σ
311412

NA<sup>①</sup> - Did not have Turbidity meter during collection

② Turbidity measured in SW Lab w/ Tech 2100p meter

**PSNS NDDSW Monitoring      Stormwater Sampling Event #11 (3/14/12)**  
**Stormwater Outfall Total Discharge Volume Estimation Equations**

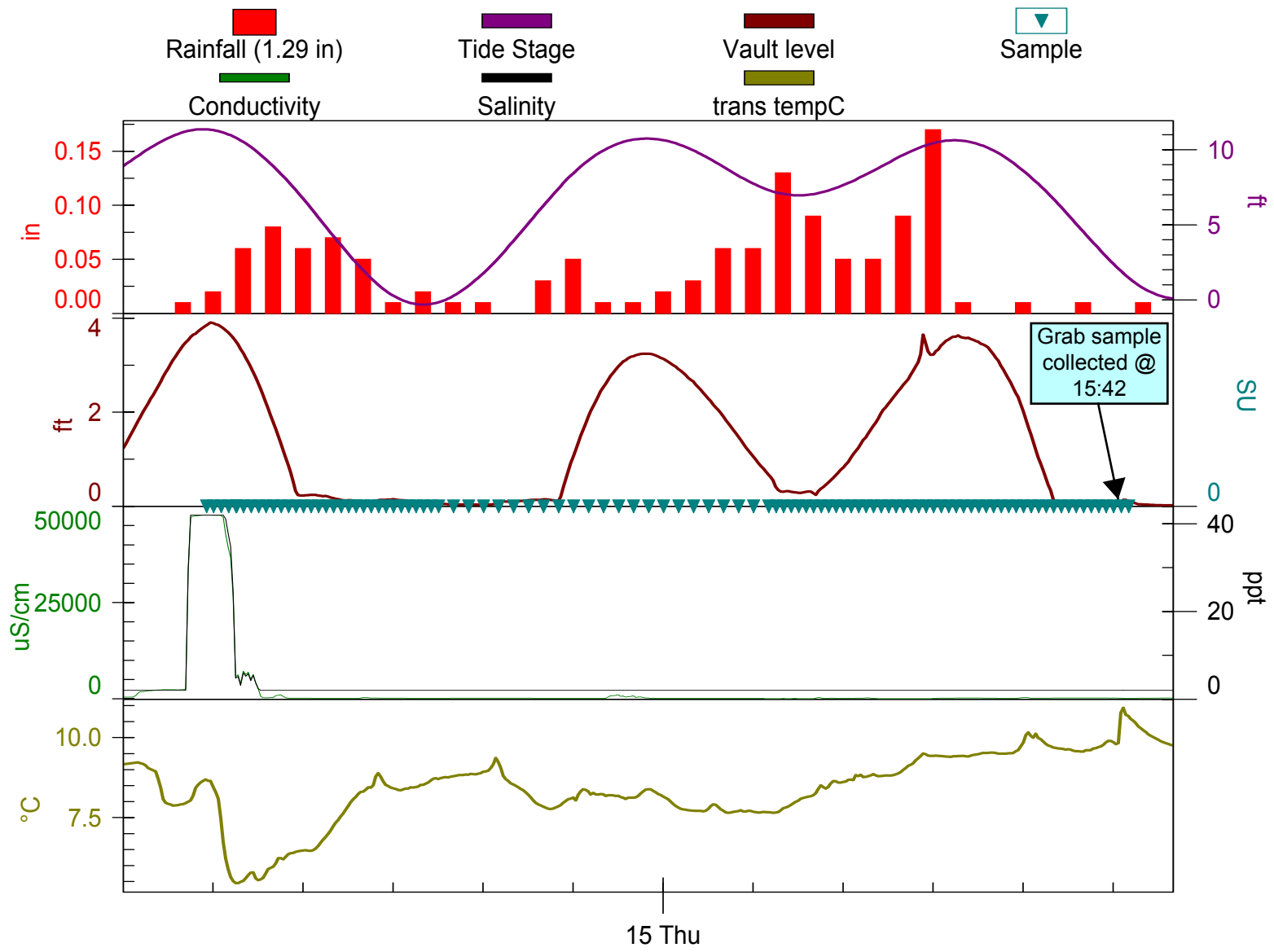
PSNS Drainage Basin	Total Basin Area (ft <sup>2</sup> )	Type of Surface	Percentage of Drainage Basin Surface Type	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Area of Basin Surface Type with Maximum Coefficient Value Applied (ft <sup>2</sup> )	<sup>2</sup> Total Discharge Volume (ft <sup>3</sup> )
126	662,986	Impervious	98.55	653,373	0.6 – 0.9	588,036	R(591,881)
		Pervious	1.45	9,613	0.2 – 0.4	3,845	
124.1	116,000	Impervious	94.56	109,690	0.6 – 0.9	98,721	R(101,245)
		Pervious	5.44	6310	0.2 – 0.4	2,524	
124	454,000	Impervious	94.56	429,302	0.6 – 0.9	386,372	R(396,251)
		Pervious	5.44	24,698	0.2 – 0.4	9,879	
115.1	463,042	Impervious	97	449,104	0.6 – 0.9	361,422	R(366,390)
		Pervious	3	13,938	0.2 – 0.4	4,968	
84.1	23,958	Impervious	100	23,958	0.6 – 0.9	21,562	R(21,562)
15	4,018,862	Impervious	50	2,009,431	0.5 – 0.8	1,607,549	R(2,411,321)
		Pervious	50	2,009,431	0.25 – 0.4	803,772	

**Calculation Worksheet:**

STATION	Combined Drainage Area (FT <sup>2</sup> )	ENTER: Smpl Evnt Rain Total (in)	Sampl Evnt Rain Total (FT)	STE Runoff Vol. (gal)
126	591,881	1.29	0.1075	475,965
124.1	101,245	1.52	0.1267	95,933
124	396,251	1.23	0.1025	303,827
115.1	366,390	1.17	0.0975	267,227
84.1	21,562	1.58	0.1317	21,237
015	2,411,321	1.75	0.1458	2,630,532

# PSNS 126

SW11 3-14-12

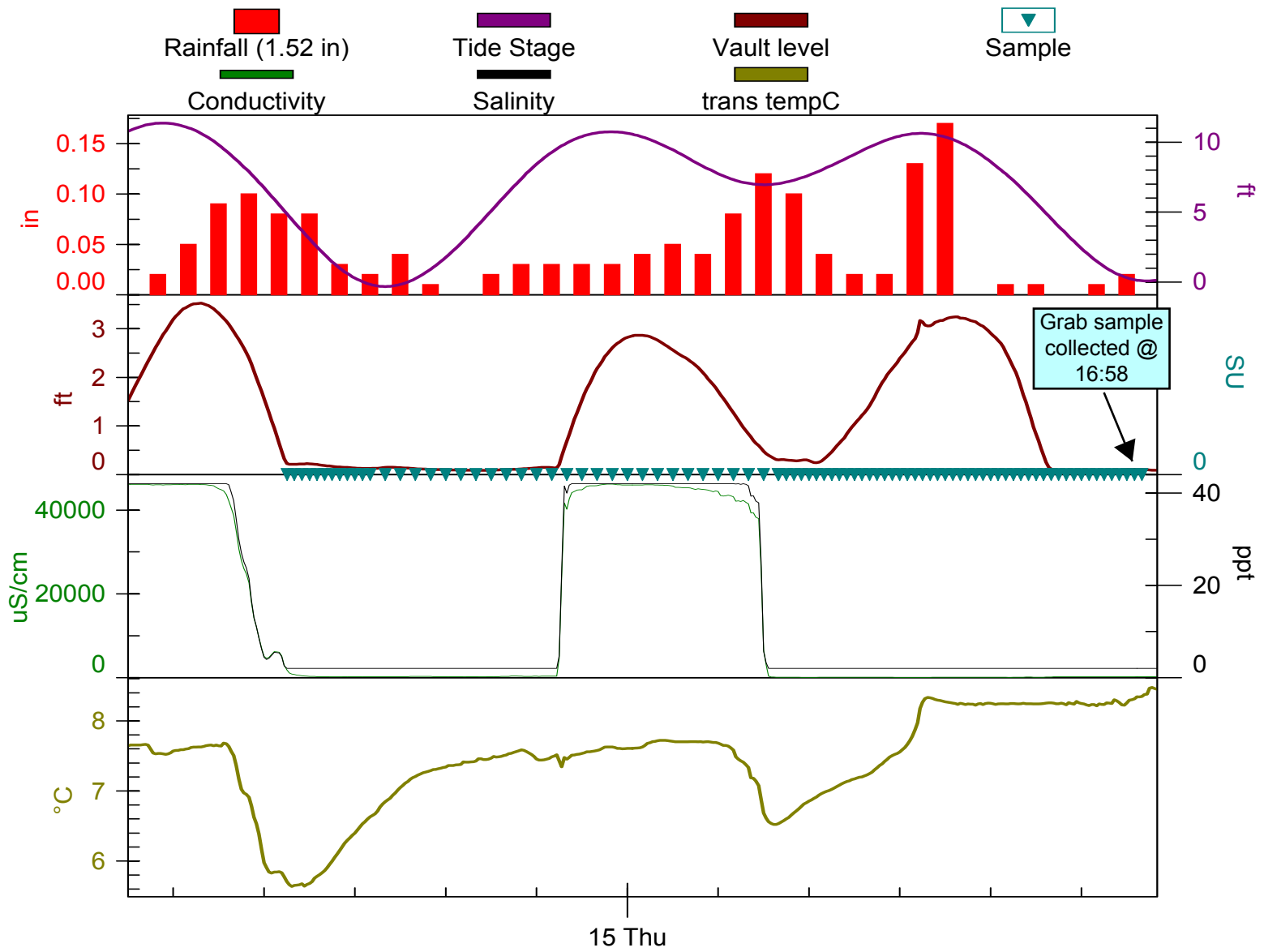


Mar 2012

15 Thu  
3/14/2012 6:00:00 AM - 3/15/2012 5:00:00 PM

# PSNS 124.1

SW11 3-14-12

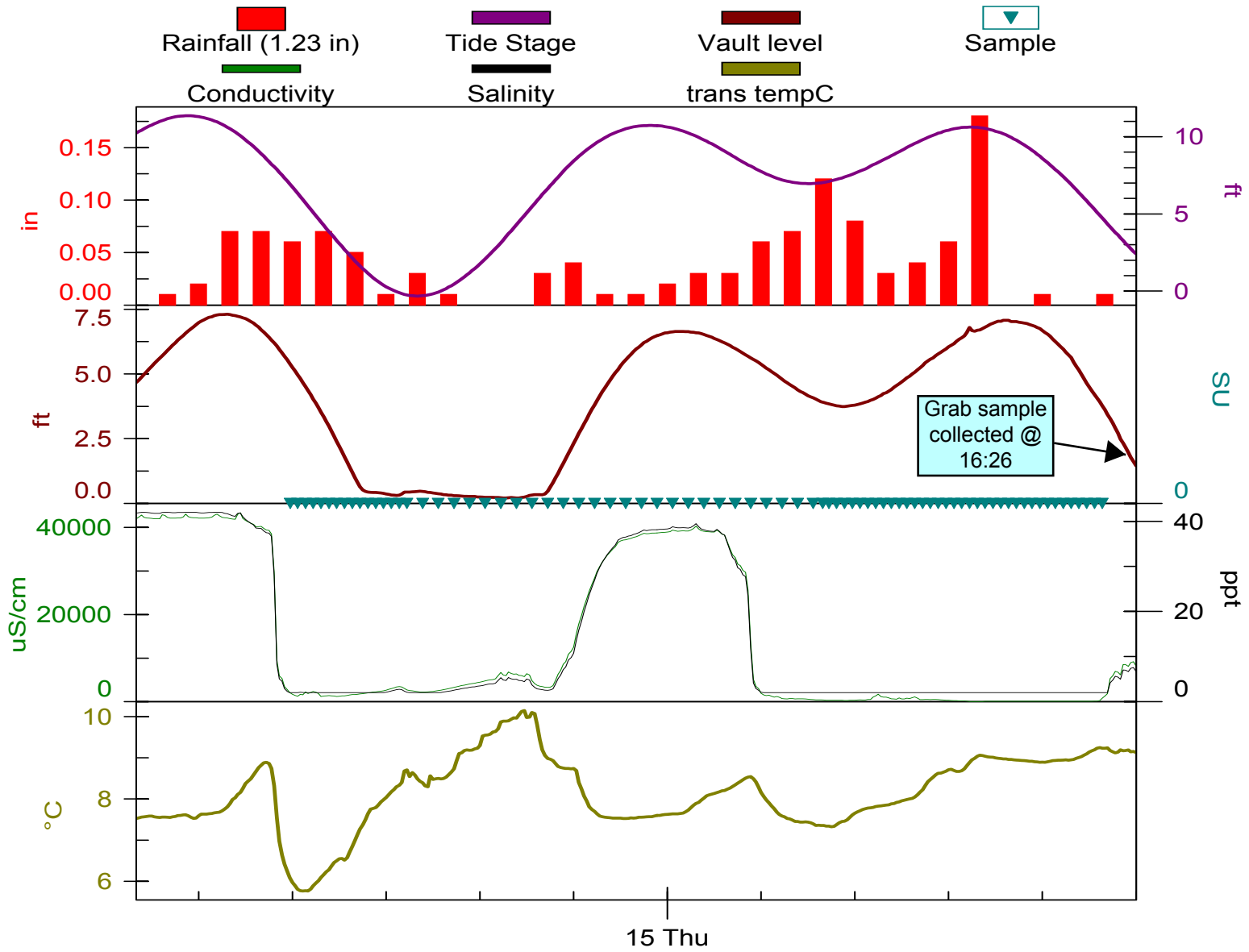


Mar 2012

3/14/2012 7:30:00 AM - 3/15/2012 5:30:00 PM

# PSNS 124

SW11 3-14-12

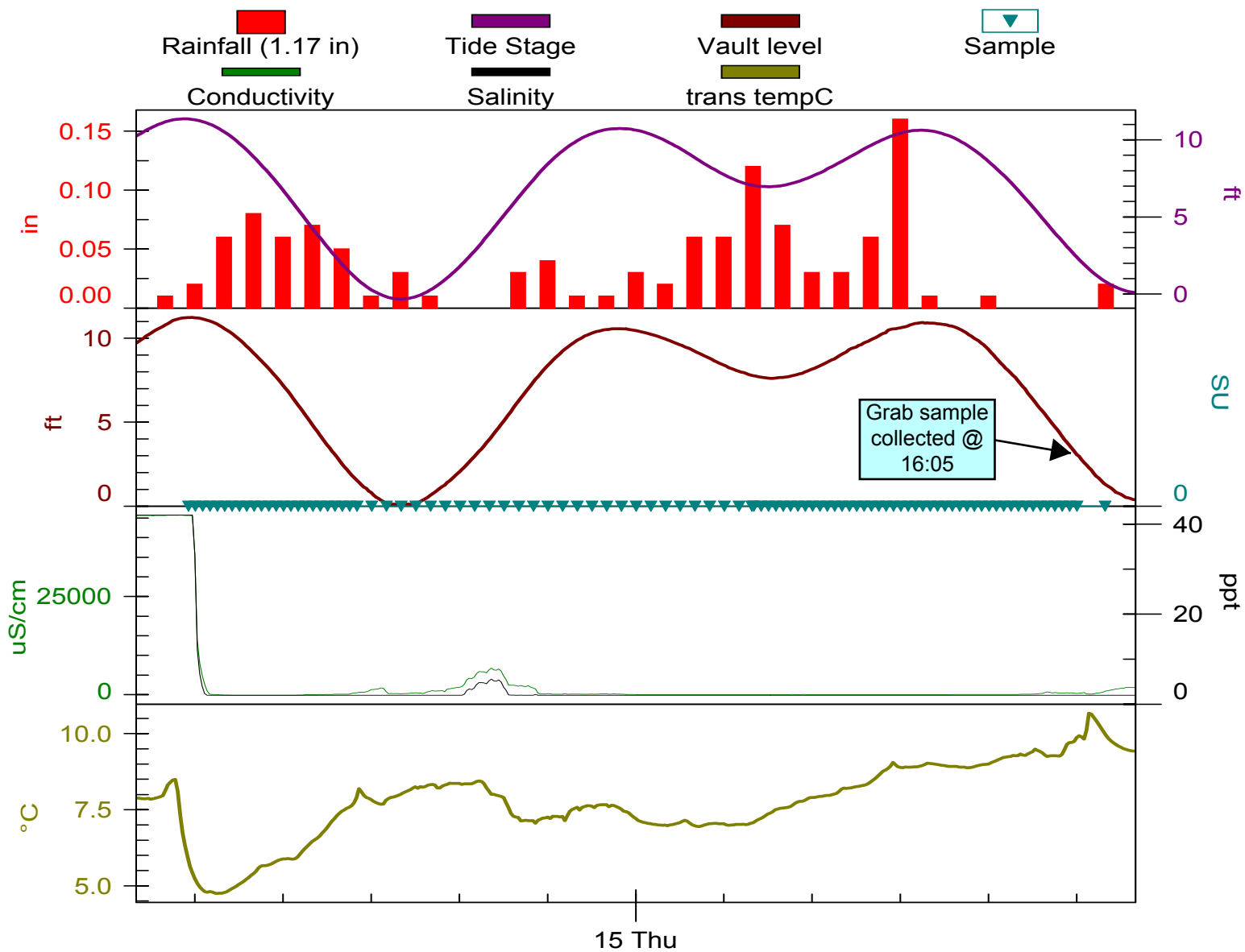


Mar 2012

15 Thu  
3/14/2012 7:00:00 AM - 3/15/2012 3:00:00 PM

# PSNS 115.1

SW11 3-14-12

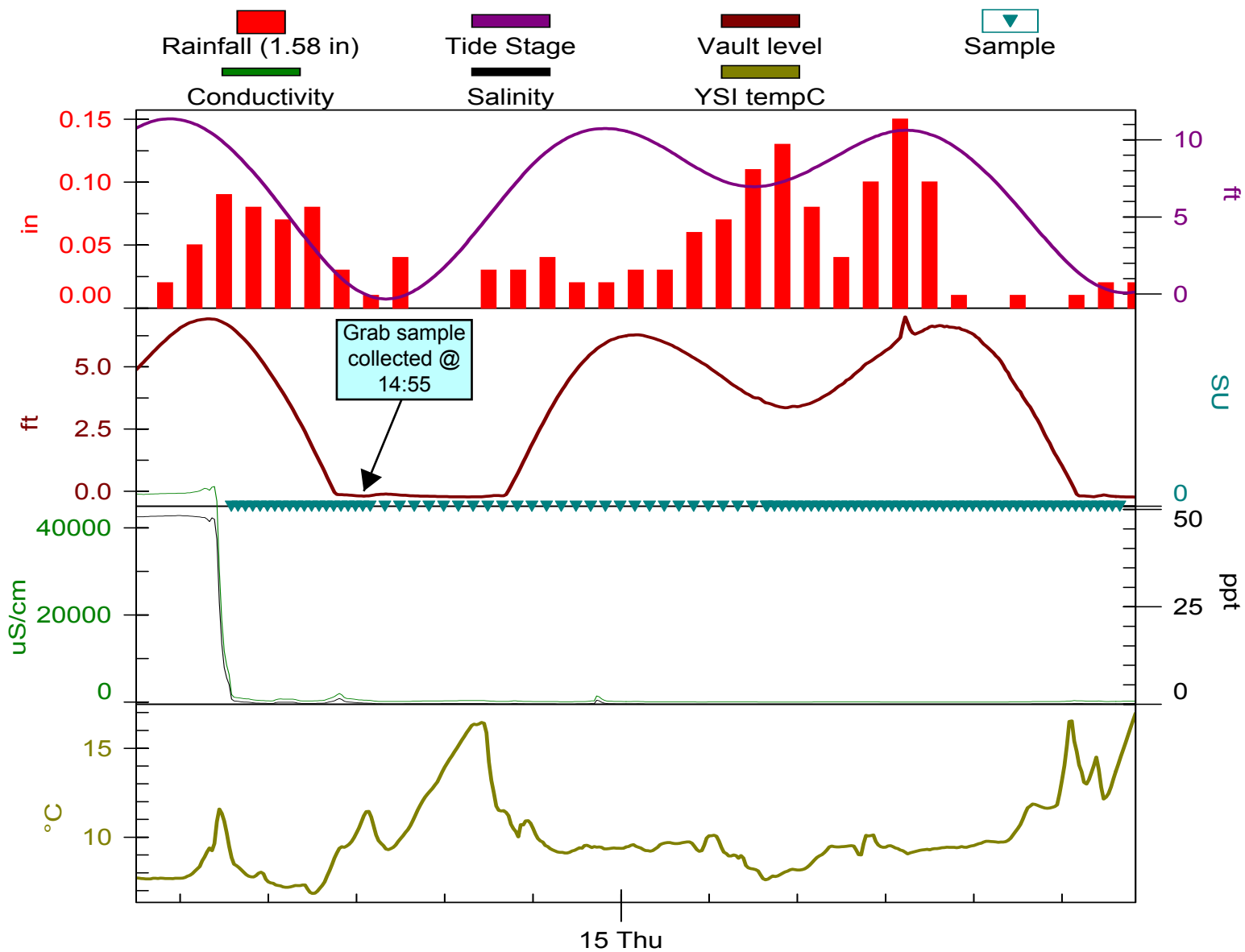


Mar 2012

15 Thu  
3/14/2012 7:00:00 AM - 3/15/2012 5:00:00 PM

# PSNS 084.1

SW11 3-14-12

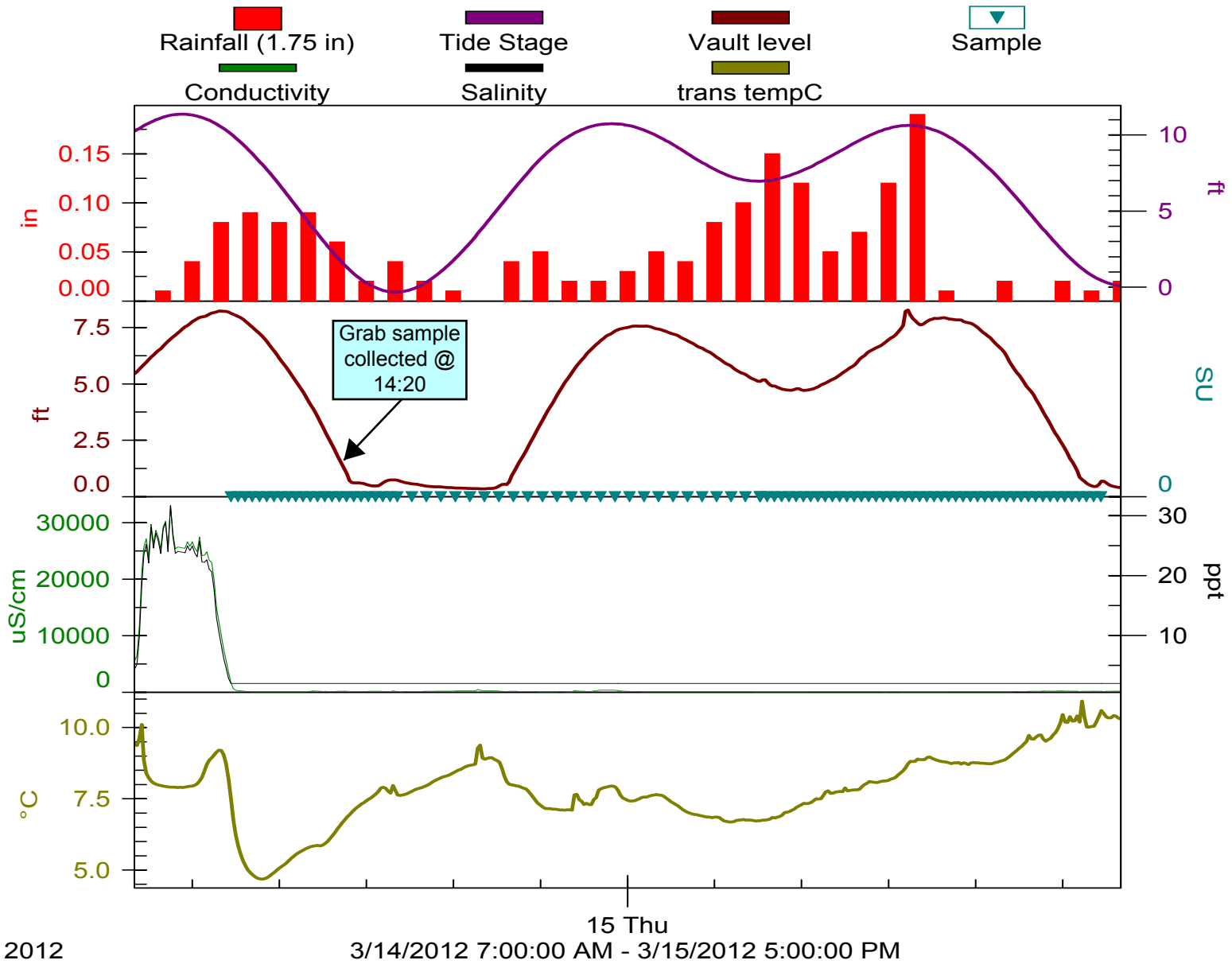


Mar 2012

3/14/2012 7:30:00 AM - 3/15/2012 5:30:00 PM

# PSNS 015

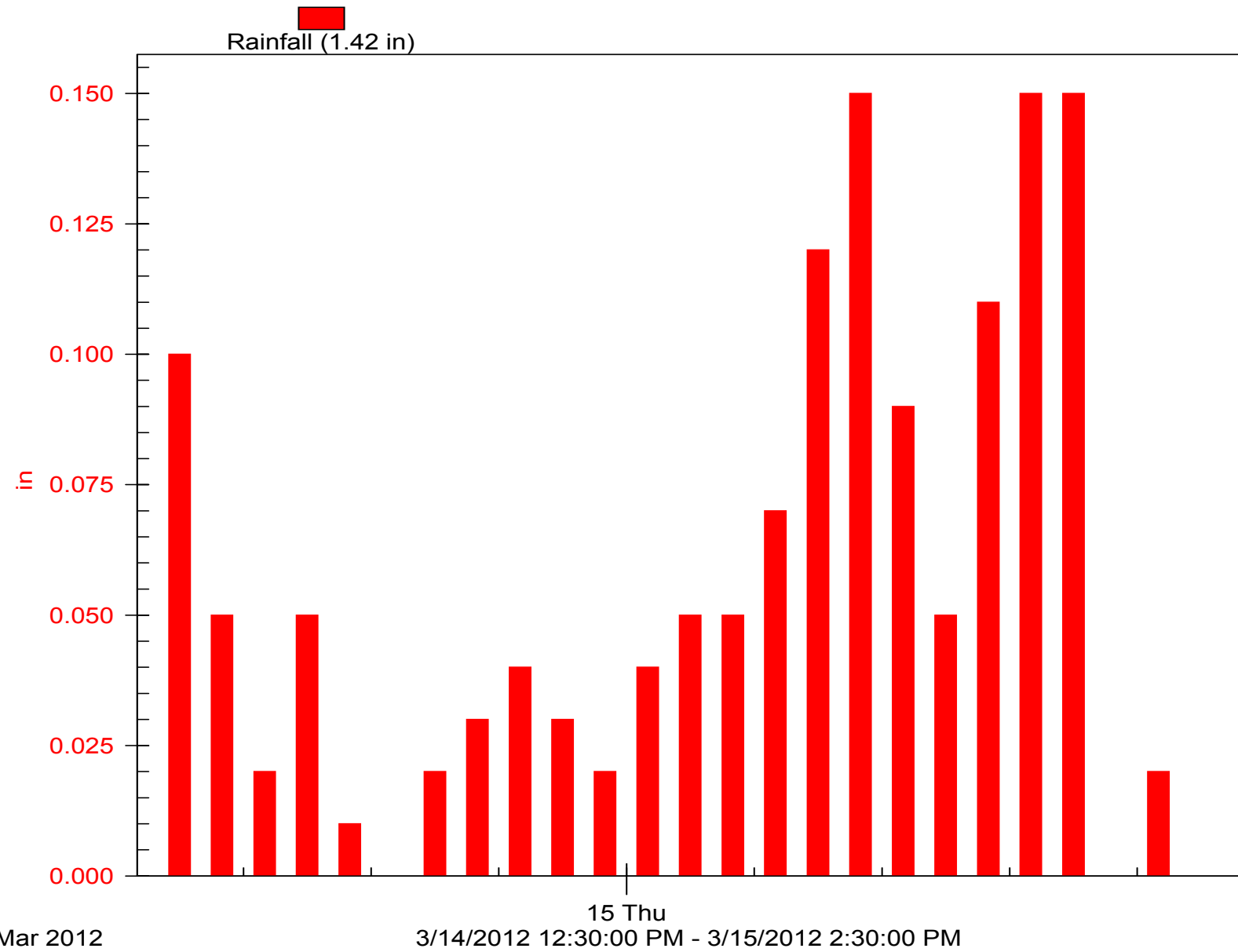
SW11 3-14-12





# PSNS B427 Rain

SW11 3-14-12



## SW11 015 Smplr Report

**SAMPLER ID# 2425481222 16:04 15-MAR-12**

**Hardware: B2     Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----**  
**PROGRAM NAME:**  
**"PSNS015DUP"**

**SITE DESCRIPTION:**  
**"PSNS015 "**

**-----**  
**UNITS SELECTED:**  
**LENGTH: ft**

**-----**  
**24, 1000 ml BTLS**  
**21 ft SUCTION LINE**  
**13 ft SUCTION HEAD**  
**0 RINSES, 0 RETRIES**

**-----**  
**ONE-PART PROGRAM**

**-----**  
**PACING:**  
**FLOW, EVERY**  
**1 PULSES**  
**SAMPLE AT START**  
**-STRIBUTION:**  
**2 BOTTLES/SAMPLE**  
**8 SAMPLES/BOTTLE**

**-----**  
**VOLUME:**  
**120 ml SAMPLES**

**-----**  
**ENABLE:**  
**NONE PROGRAMMED**

**-----**  
**ENABLE:**  
**ONCE ENABLED,**  
**STAY ENABLED**

**SW11 015 Smplr Report**

**SAMPLE AT ENABLE**

-----

**ENABLE:**

**0 PAUSE & RESUMES**

-----

**NO DELAY TO START**

-----

-----

-----

**LIQUID DETECT ON**

**NO RAIN GAGE**

-----

**NO YSI SONDE**

-----

**MASTER/SLAVE OFF**

**BTL FULL DETECT OFF**

**TIMED BACKLIGHT**

-----

**EVENT MARK SENT**

**DURING PUMP CYCLE**

-----

**PUMP COUNTS FOR**

**EACH PURGE CYCLE:**

**200 PRE-SAMPLE**

**AUTO POST-SAMPLE**

-----

**I/O1= NONE**

**I/O2= NONE**

**I/O3= NONE**

-----

**0 ANALOG OUTPUTS**

**NO PERIODIC**

**SERIAL OUTPUT**

-----

**NO DIALOUT**

**CONDITIONS SET**

-----  
**SAMPLER ID# 2425481222 16:04 15-MAR-12**

# SW11 015 Smplr Report

Hardware: B2      Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS015

PROGRAM: PSNS015DUP

Program Started at 11:32 TU 13-MAR-12

Nominal Sample Volume = 120 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

```
-----
11:32 PGM DISABLED
----- WE 14-MAR-12 -----
10:17 PGM ENABLED
1,8 1-2 10:17 E P *
10:18 POWER FAILED!
10:18 POWER RESTORED
2,8 1-2 10:31 F P *
10:32 POWER FAILED!
10:32 POWER RESTORED
3,8 1-2 10:46 F P *
10:47 POWER FAILED!
10:47 POWER RESTORED
4,8 1-2 11:01 F P *
11:02 POWER FAILED!
11:02 POWER RESTORED
5,8 1-2 11:16 F 736
6,8 1-2 11:31 F 735
7,8 1-2 11:46 F 748
8,8 1-2 12:01 F 754
1,8 3-4 12:16 F 767
2,8 3-4 12:31 F 768
3,8 3-4 12:46 F 774
4,8 3-4 13:01 F 780
5,8 3-4 13:16 F 787
6,8 3-4 13:31 F 796
7,8 3-4 13:46 F 804
8,8 3-4 14:01 F 810
1,8 5-6 14:16 F 827
```

# SW11 015 Smplr Report

2,8	5-6	14:31	F	832
3,8	5-6	14:46	F	834
4,8	5-6	15:01	F	834
5,8	5-6	15:16	F	838
6,8	5-6	15:31	F	834
7,8	5-6	15:46	F	828
8,8	5-6	16:01	F	833
1,8	7-8	16:31	F	828
2,8	7-8	17:01	F	832
3,8	7-8	17:31	F	829
4,8	7-8	18:01	F	828
5,8	7-8	18:31	F	834
6,8	7-8	19:01	F	828
7,8	7-8	19:31	F	823
8,8	7-8	20:01	F	814
1,8	9-10	20:31	F	804
2,8	9-10	21:01	F	785
3,8	9-10	21:31	F	772
4,8	9-10	22:01	F	760
5,8	9-10	22:31	F	751
6,8	9-10	23:01	F	749
7,8	9-10	23:31	F	743

----- TH 15-MAR-12 -----

8,8	9-10	00:01	F	748
1,8	11-12	00:31	F	745
2,8	11-12	01:01	F	743
3,8	11-12	01:31	F	743
4,8	11-12	02:01	F	748
5,8	11-12	02:31	F	749
6,8	11-12	03:01	F	756
7,8	11-12	03:31	F	761
8,8	11-12	04:01	F	762
1,8	13-14	04:31	F	772
2,8	13-14	04:32	F	769
3,8	13-14	04:46	F	775
4,8	13-14	05:01	F	781
5,8	13-14	05:16	F	778
6,8	13-14	05:31	F	779

# **SW11 015 Smplr Report**

7,8	13-14 05:46	F	779
8,8	13-14 06:01	F	780
1,8	15-16 06:16	F	784
2,8	15-16 06:31	F	780
3,8	15-16 06:46	F	778
4,8	15-16 07:01	F	781
5,8	15-16 07:16	F	775
6,8	15-16 07:31	F	772
7,8	15-16 07:46	F	772
8,8	15-16 08:01	F	766
1,8	17-18 08:16	F	762
2,8	17-18 08:31	F	763
3,8	17-18 08:46	F	762
4,8	17-18 09:01	F	755
5,8	17-18 09:16	F	752
6,8	17-18 09:31	F	748
7,8	17-18 09:46	F	755
8,8	17-18 10:01	F	757
1,8	19-20 10:16	F	751
2,8	19-20 10:31	F	750
3,8	19-20 10:46	F	743
4,8	19-20 11:01	F	749
5,8	19-20 11:16	F	751
6,8	19-20 11:31	F	749
7,8	19-20 11:46	F	750
8,8	19-20 12:01	F	754
1,8	21-22 12:16	F	756
2,8	21-22 12:31	F	762
3,8	21-22 12:46	F	767
4,8	21-22 13:01	F	766
5,8	21-22 13:16	F	772
6,8	21-22 13:31	F	778
7,8	21-22 13:46	F	780
8,8	21-22 14:01	F	790
1,8	23-24 14:16	F	797
2,8	23-24 14:31	F	809
3,8	23-24 14:46	F	816
4,8	23-24 15:01	F	823

# **SW11 015 Smplr Report**

5,8	23-24 15:16	F	833
6,8	23-24 15:31	F	844
7,8	23-24 15:46	F	845
8,8	23-24 16:01	F	847

**16:02 PGM DONE 15-MAR**

**SOURCE E ==> ENABLE**

**SOURCE F ==> FLOW**

**ERROR P ==> POWER FAILED!**

-----

## SW11 084.1 Smplr Report

**SAMPLER ID# 2425546782 17:05 15-MAR-12**

**Hardware: B2    Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----**

**PROGRAM NAME:**

**"PSNS84-1 "**

**SITE DESCRIPTION:**

**"PSNS84-1 "**

**-----**

**UNITS SELECTED:**

**LENGTH: ft**

**-----**

**24, 1000 ml BTLS  
22 ft SUCTION LINE  
15 ft SUCTION HEAD  
0 RINSES, 0 RETRIES**

**-----**

**ONE-PART PROGRAM**

**-----**

**PACING:**

**FLOW, EVERY**

**1 PULSES**

**NO SAMPLE AT START**

**-----**

**DISTRIBUTION:**

**4 SAMPLES/BOTTLE**

**-----**

**VOLUME:**

**240 ml SAMPLES**

**-----**

**ENABLE:**

**NONE PROGRAMMED**

**-----**

**ENABLE:**

**ONCE ENABLED,  
STAY ENABLED**



**SW11 084.1 Smplr Report**

**SAMPLE AT ENABLE**

-----

**ENABLE:**

**0 PAUSE & RESUMES**

-----

**NO DELAY TO START**

-----

-----

-----

**LIQUID DETECT ON**

**NO RAIN GAGE**

-----

**NO YSI SONDE**

-----

**MASTER/SLAVE OFF**

**BTL FULL DETECT OFF**

**TIMED BACKLIGHT**

-----

**EVENT MARK SENT**

**DURING PUMP CYCLE**

-----

**PUMP COUNTS FOR**

**EACH PURGE CYCLE:**

**200 PRE-SAMPLE**

**AUTO POST-SAMPLE**

-----

**I/O1= NONE**

**I/O2= NONE**

**I/O3= NONE**

-----

**0 ANALOG OUTPUTS**

**NO PERIODIC**

**SERIAL OUTPUT**

-----

**NO DIALOUT**

**CONDITIONS SET**

-----  
**SAMPLER ID# 2425546782 17:05 15-MAR-12**

# SW11 084.1 Smplr Report

Hardware: B2      Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS84-1

PROGRAM: PSNS84-1

Program Started at 11:00 TU 13-MAR-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

11:00 PGM DISABLED

----- WE 14-MAR-12 -----

10:42 PGM ENABLED

1,4	1	10:42	E	495
2,4	1	10:56	F	502
3,4	1	11:11	F	506
4,4	1	11:26	F	508
1,4	2	11:41	F	514
2,4	2	11:56	F	515
3,4	2	12:11	F	520
4,4	2	12:26	F	521
1,4	3	12:41	F	530
2,4	3	12:56	F	532
3,4	3	13:11	F	538
4,4	3	13:26	F	544
1,4	4	13:41	F	550
2,4	4	13:56	F	556
3,4	4	14:11	F	562
4,4	4	14:26	F	568
1,4	5	14:41	F	568
2,4	5	14:56	F	568
3,4	5	15:11	F	568
4,4	5	15:26	F	568
1,4	6	15:56	F	568
2,4	6	16:26	F	563
3,4	6	16:56	F	566
4,4	6	17:26	F	562
1,4	7	17:56	F	562

# SW11 084.1 Smplr Report

2,4	7	18:26	F	562
3,4	7	18:56	F	562
4,4	7	19:26	F	562
1,4	8	19:56	F	562
2,4	8	20:26	F	545
3,4	8	20:56	F	536
4,4	8	21:26	F	527
1,4	9	21:56	F	524
2,4	9	22:26	F	520
3,4	9	22:56	F	509
4,4	9	23:26	F	512
1,4	10	23:56	F	508

----- TH 15-MAR-12 -----

2,4	10	00:26	F	508
3,4	10	00:56	F	509
4,4	10	01:26	F	508
1,4	11	01:56	F	514
2,4	11	02:26	F	514
3,4	11	02:56	F	514
4,4	11	03:26	F	520
1,4	12	03:56	F	526
2,4	12	04:26	F	526
3,4	12	04:54	F	527
4,4	12	04:56	F	534
1,4	13	05:11	F	532
2,4	13	05:26	F	535
3,4	13	05:41	F	536
4,4	13	05:56	F	538
1,4	14	06:11	F	532
2,4	14	06:26	F	534
3,4	14	06:41	F	532
4,4	14	06:56	F	534
1,4	15	07:11	F	532
2,4	15	07:26	F	529
3,4	15	07:41	F	526
4,4	15	07:56	F	525
1,4	16	08:11	F	521
2,4	16	08:26	F	524

# SW11 084.1 Smplr Report

3,4	16	08:41	F	520
4,4	16	08:56	F	522
1,4	17	09:11	F	520
2,4	17	09:26	F	515
3,4	17	09:41	F	512
4,4	17	09:56	F	515
1,4	18	10:11	F	516
2,4	18	10:26	F	516
3,4	18	10:41	F	511
4,4	18	10:56	F	512
1,4	19	11:11	F	514
2,4	19	11:26	F	514
3,4	19	11:41	F	514
4,4	19	11:56	F	514
1,4	20	12:11	F	516
2,4	20	12:26	F	519
3,4	20	12:41	F	519
4,4	20	12:56	F	524
1,4	21	13:11	F	526
2,4	21	13:26	F	532
3,4	21	13:41	F	534
4,4	21	13:56	F	538
1,4	22	14:11	F	538
2,4	22	14:26	F	544
3,4	22	14:41	F	552
4,4	22	14:56	F	558
1,4	23	15:11	F	563
2,4	23	15:26	F	566
3,4	23	15:41	F	570
4,4	23	15:56	F	570
1,4	24	16:11	F	570
2,4	24	16:26	F	568
3,4	24	16:41	F	570
4,4	24	16:56	F	568

16:57 PGM DONE 15-MAR

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

## SW11 115.1 Smplr Report

**SAMPLER ID# 3293179316 16:09 15-MAR-12**

**Hardware: B2     Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----  
PROGRAM NAME:**

**"PSNS115-1 "**

**SITE DESCRIPTION:**

**"PSNS115-1 "**

**-----  
UNITS SELECTED:**

**LENGTH: ft**

**-----  
24, 1000 ml BTLS  
44 ft SUCTION LINE  
21 ft SUCTION HEAD  
0 RINSES, 0 RETRIES**

**-----  
ONE-PART PROGRAM**

**-----  
PACING:  
FLOW, EVERY  
1 PULSES  
SAMPLE AT START**

**-----  
DISTRIBUTION:  
4 SAMPLES/BOTTLE**

**-----  
VOLUME:  
240 ml SAMPLES**

**-----  
ENABLE:  
NONE PROGRAMMED**

**-----  
ENABLE:  
ONCE ENABLED,  
STAY ENABLED**

**SW11 115.1 Smplr Report**

**SAMPLE AT ENABLE**

-----

**ENABLE:**

**0 PAUSE & RESUMES**

-----

**NO DELAY TO START**

-----

-----

-----

**LIQUID DETECT ON**

**NO RAIN GAGE**

-----

**NO YSI SONDE**

-----

**MASTER/SLAVE OFF**

**BTL FULL DETECT OFF**

**TIMED BACKLIGHT**

-----

**EVENT MARK SENT**

**DURING PUMP CYCLE**

-----

**PUMP COUNTS FOR**

**EACH PURGE CYCLE:**

**200 PRE-SAMPLE**

**AUTO POST-SAMPLE**

-----

**I/O1= NONE**

**I/O2= NONE**

**I/O3= NONE**

-----

**0 ANALOG OUTPUTS**

**NO PERIODIC**

**SERIAL OUTPUT**

-----

**NO DIALOUT**

**CONDITIONS SET**

-----

**SAMPLER ID# 3293179316 16:09 15-MAR-12**

# SW11 115.1 Smplr Report

Hardware: B2      Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS115-1

PROGRAM: PSNS115-1

Program Started at 10:39 TU 13-MAR-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

10:39 PGM DISABLED

----- WE 14-MAR-12 -----

09:44 PGM ENABLED

1,4	1	09:44	E	1048
2,4	1	09:58	F	1057
3,4	1	10:13	F	1058
4,4	1	10:28	F	1062
1,4	2	10:43	F	1069
2,4	2	10:58	F	1080
3,4	2	11:13	F	1087
4,4	2	11:28	F	1099
1,4	3	11:43	F	1091
2,4	3	11:58	F	1106
3,4	3	12:13	F	1111
4,4	3	12:28	F	1116
1,4	4	12:43	F	1129
2,4	4	12:58	F	1140
3,4	4	13:13	F	1152
4,4	4	13:28	F	1171
1,4	5	13:43	F	1176
2,4	5	13:58	F	1188
3,4	5	14:13	F	1208
4,4	5	14:28	F	1207
1,4	6	14:43	F	1230
2,4	6	14:58	F	1236
3,4	6	15:13	F	1266
4,4	6	15:28	F	1273
1,4	7	15:58	F	1291

# SW11 115.1 Smplr Report

2,4	7	16:28	F	1320
3,4	7	16:58	F	1299
4,4	7	17:28	F	1331
1,4	8	17:58	F	1283
2,4	8	18:28	F	1267
3,4	8	18:58	F	1249
4,4	8	19:28	F	1219
1,4	9	19:58	F	1196
2,4	9	20:28	F	1176
3,4	9	20:58	F	1151
4,4	9	21:28	F	1125
1,4	10	21:58	F	1116
2,4	10	22:28	F	1098
3,4	10	22:58	F	1081
4,4	10	23:28	F	1086
1,4	11	23:58	F	1081

----- TH 15-MAR-12 -----

2,4	11	00:28	F	1080
3,4	11	00:58	F	1074
4,4	11	01:28	F	1080
1,4	12	01:58	F	1086
2,4	12	02:28	F	1093
3,4	12	02:58	F	1098
4,4	12	03:28	F	1117
1,4	13	03:58	F	1122
2,4	13	04:28	F	1134
3,4	13	04:54	F	1128
4,4	13	04:58	F	1140
1,4	14	05:13	F	1139
2,4	14	05:28	F	1136
3,4	14	05:43	F	1140
4,4	14	05:58	F	1146
1,4	15	06:13	F	1147
2,4	15	06:28	F	1146
3,4	15	06:43	F	1148
4,4	15	06:58	F	1135
1,4	16	07:13	F	1122
2,4	16	07:28	F	1134



# SW11 115.1 Smplr Report

3,4	16	07:43	F	1128
4,4	16	07:58	F	1115
1,4	17	08:13	F	1118
2,4	17	08:28	F	1110
3,4	17	08:43	F	1109
4,4	17	08:58	F	1110
1,4	18	09:13	F	1106
2,4	18	09:28	F	1098
3,4	18	09:43	F	1369
4,4	18	09:58	F	1111
1,4	19	10:13	F	1093
2,4	19	10:28	F	1089
3,4	19	10:43	F	1093
4,4	19	10:58	F	1092
1,4	20	11:13	F	1092
2,4	20	11:28	F	1092
3,4	20	11:43	F	1094
4,4	20	11:58	F	1098
1,4	21	12:13	F	1098
2,4	21	12:28	F	1104
3,4	21	12:43	F	1111
4,4	21	12:58	F	1122
1,4	22	13:13	F	1129
2,4	22	13:28	F	1129
3,4	22	13:43	F	1140
4,4	22	13:58	F	1146
1,4	23	14:13	F	1172
2,4	23	14:28	F	1176
3,4	23	14:43	F	1181
4,4	23	14:58	F	1209
1,4	24	15:13	F	1214
2,4	24	15:28	F	1231
3,4	24	15:43	F	1231
4,4	24	15:58	F	1233

15:59 PGM DONE 15-MAR

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

## SW11 124 Smplr Report

**SAMPLER ID# 3293179322 16:41 15-MAR-12**

**Hardware: B2    Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----  
PROGRAM NAME:**

**"PSNS 124 "**

**SITE DESCRIPTION:**

**"PSNS 124 "**

**-----  
UNITS SELECTED:**

**LENGTH: ft**

**-----  
24, 1000 ml BTLS  
20 ft SUCTION LINE  
16 ft SUCTION HEAD  
0 RINSES, 0 RETRIES**

**-----  
ONE-PART PROGRAM**

**-----  
PACING:  
FLOW, EVERY  
1 PULSES  
SAMPLE AT START**

**-----  
DISTRIBUTION:  
4 SAMPLES/BOTTLE**

**-----  
VOLUME:  
240 ml SAMPLES**

**-----  
ENABLE:  
NONE PROGRAMMED**

**-----  
ENABLE:  
ONCE ENABLED,  
STAY ENABLED**

## SW11 124 Smplr Report

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----

EVENT MARK SENT

DURING PUMP CYCLE

-----

PUMP COUNTS FOR

EACH PURGE CYCLE:

200 PRE-SAMPLE

AUTO POST-SAMPLE

-----

I/O1= NONE

I/O2= NONE

I/O3= NONE

-----

0 ANALOG OUTPUTS

NO PERIODIC

SERIAL OUTPUT

-----

NO DIALOUT

CONDITIONS SET

-----  
SAMPLER ID# 3293179322 16:41 15-MAR-12

# SW11 124 Smplr Report

Hardware: B2      Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS 124

PROGRAM: PSNS 124

Program Started at 10:21 TU 13-MAR-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

-----

10:21 PGM DISABLED

----- WE 14-MAR-12 -----

11:54 PGM ENABLED

1,4	1	11:54	E	521
2,4	1	12:08	F	522
3,4	1	12:23	F	527
4,4	1	12:38	F	528
1,4	2	12:53	F	537
2,4	2	13:08	F	539
3,4	2	13:23	F	545
4,4	2	13:38	F	552
1,4	3	13:53	F	557
2,4	3	14:08	F	563
3,4	3	14:23	F	563
4,4	3	14:38	F	563
1,4	4	14:53	F	563
2,4	4	15:08	F	564
3,4	4	15:23	F	569
4,4	4	15:38	F	564
1,4	5	16:08	F	561
2,4	5	16:38	F	564
3,4	5	17:08	F	563
4,4	5	17:38	F	563
1,4	6	18:08	F	563
2,4	6	18:38	F	564
3,4	6	19:08	F	564
4,4	6	19:38	F	567
1,4	7	20:08	F	563

# SW11 124 Smplr Report

2,4	7	20:38	F	557
3,4	7	21:08	F	546
4,4	7	21:38	F	539
1,4	8	22:08	F	533
2,4	8	22:38	F	527
3,4	8	23:08	F	522
4,4	8	23:38	F	519

----- TH 15-MAR-12 -----

1,4	9	00:08	F	521
2,4	9	00:38	F	522
3,4	9	01:08	F	520
4,4	9	01:38	F	520
1,4	10	02:08	F	525
2,4	10	02:38	F	527
3,4	10	03:08	F	527
4,4	10	03:38	F	533
1,4	11	04:08	F	533
2,4	11	04:38	F	539
3,4	11	04:56	F	539
4,4	11	05:08	F	539
1,4	12	05:23	F	539
2,4	12	05:38	F	545
3,4	12	05:53	F	545
4,4	12	06:08	F	545
1,4	13	06:23	F	540
2,4	13	06:38	F	540
3,4	13	06:53	F	540
4,4	13	07:08	F	539
1,4	14	07:23	F	534
2,4	14	07:38	F	534
3,4	14	07:53	F	534
4,4	14	08:08	F	533
1,4	15	08:23	F	533
2,4	15	08:38	F	528
3,4	15	08:53	F	531
4,4	15	09:08	F	527
1,4	16	09:23	F	522
2,4	16	09:38	F	522

# SW11 124 Smplr Report

3,4	16	09:53	F	527
4,4	16	10:08	F	521
1,4	17	10:23	F	521
2,4	17	10:38	F	521
3,4	17	10:53	F	522
4,4	17	11:08	F	521
1,4	18	11:23	F	521
2,4	18	11:38	F	521
3,4	18	11:53	F	522
4,4	18	12:08	F	528
1,4	19	12:23	F	527
2,4	19	12:38	F	527
3,4	19	12:53	F	533
4,4	19	13:08	F	533
1,4	20	13:23	F	539
2,4	20	13:38	F	541
3,4	20	13:53	F	540
4,4	20	14:08	F	545
1,4	21	14:23	F	554
2,4	21	14:38	F	556
3,4	21	14:53	F	563
4,4	21	15:08	F	571
1,4	22	15:23	F	577
2,4	22	15:38	F	577
3,4	22	15:53	F	577
4,4	22	16:08	F	575
1,2	23	16:23	F	577
2,2	23	16:38	F	577

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----

## SW11 124.1 Smplr Report

**SAMPLER ID# 3293179321 17:10 15-MAR-12**

**Hardware: B2    Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----**  
**PROGRAM NAME:**

**"PSNS124-1 "**

**SITE DESCRIPTION:**

**"PSNS124-1 "**

**-----**  
**UNITS SELECTED:**

**LENGTH: ft**

**-----**  
**24, 1000 ml BTLS**  
**56 ft SUCTION LINE**  
**12 ft SUCTION HEAD**  
**0 RINSES, 0 RETRIES**

**-----**  
**ONE-PART PROGRAM**

**-----**  
**PACING:**

**FLOW, EVERY**

**1 PULSES**

**SAMPLE AT START**

**-----**  
**DISTRIBUTION:**

**4 SAMPLES/BOTTLE**

**-----**  
**VOLUME:**

**240 ml SAMPLES**

**-----**  
**ENABLE:**

**NONE PROGRAMMED**

**-----**  
**ENABLE:**

**ONCE ENABLED,**

## SW11 124.1 Smplr Report

STAY ENABLED  
SAMPLE AT ENABLE

-----

ENABLE:  
0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

LIQUID DETECT ON  
NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE

-----

0 ANALOG OUTPUTS  
NO PERIODIC  
SERIAL OUTPUT

-----

NO DIALOUT  
CONDITIONS SET

-----



SW11 124.1 Smplr Report

SAMPLER ID# 3293179321 17:10 15-MAR-12

Hardware: B2 Software: 3.26

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS124-1

PROGRAM: PSNS124-1

Program Started at 10:02 TU 13-MAR-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

----- -- -- -----

10:02 PGM DISABLED

----- WE 14-MAR-12 -----

12:44 PGM ENABLED

1,4	1	12:44	E	1320
2,4	1	12:58	F	1311
3,4	1	13:13	F	1303
4,4	1	13:28	F	1313
1,4	2	13:43	F	1314
2,4	2	13:58	F	1334
3,4	2	14:13	F	1316
4,4	2	14:28	F	1329
1,4	3	14:43	F	1319
2,4	3	14:58	F	1326
3,4	3	15:13	F	1346
4,4	3	15:28	F	1333
1,4	4	15:58	F	1314
2,4	4	16:28	F	1310
3,4	4	16:58	F	1330
4,4	4	17:28	F	1339
1,4	5	17:58	F	1340
2,4	5	18:28	F	1334
3,4	5	18:58	F	1326
4,4	5	19:28	F	1329
1,4	6	19:58	F	1332
2,4	6	20:28	F	1320
3,4	6	20:58	F	1331
4,4	6	21:28	F	1349

# SW11 124.1 Smplr Report

1,4	7	21:58	F	1327
2,4	7	22:28	F	1296
3,4	7	22:58	F	1297
4,4	7	23:28	F	1289
1,4	8	23:58	F	1285
-----TH 15-MAR-12-----				
2,4	8	00:28	F	1281
3,4	8	00:58	F	1316
4,4	8	01:28	F	1280
1,4	9	01:58	F	1318
2,4	9	02:28	F	1294
3,4	9	02:58	F	1322
4,4	9	03:28	F	1327
1,4	10	03:58	F	1328
2,4	10	04:28	F	1349
3,4	10	04:57	F	1328
4,4	10	04:58	F	1356
1,4	11	05:13	F	1327
2,4	11	05:28	F	1375
3,4	11	05:43	F	1370
4,4	11	05:58	F	1345
1,4	12	06:13	F	1350
2,4	12	06:28	F	1333
3,4	12	06:43	F	1364
4,4	12	06:58	F	1341
1,4	13	07:13	F	1362
2,4	13	07:28	F	1322
3,4	13	07:43	F	1341
4,4	13	07:58	F	1329
1,4	14	08:13	F	1326
2,4	14	08:28	F	1322
3,4	14	08:43	F	1316
4,4	14	08:58	F	1320
1,4	15	09:13	F	1314
2,4	15	09:28	F	1321
3,4	15	09:43	F	1286
4,4	15	09:58	F	1316
1,4	16	10:13	F	1296

# SW11 124.1 Smplr Report

2,4	16	10:28	F	1302
3,4	16	10:43	F	1286
4,4	16	10:58	F	1285
1,4	17	11:13	F	1282
2,4	17	11:28	F	1305
3,4	17	11:43	F	1303
4,4	17	11:58	F	1292
1,4	18	12:13	F	1293
2,4	18	12:28	F	1310
3,4	18	12:43	F	1319
4,4	18	12:58	F	1322
1,4	19	13:13	F	1320
2,4	19	13:28	F	1328
3,4	19	13:43	F	1337
4,4	19	13:58	F	1338
1,4	20	14:13	F	1343
2,4	20	14:28	F	1367
3,4	20	14:43	F	1357
4,4	20	14:58	F	1363
1,4	21	15:13	F	1358
2,4	21	15:28	F	1363
3,4	21	15:43	F	1363
4,4	21	15:58	F	1345
1,4	22	16:13	F	1361
2,4	22	16:28	F	1360
3,4	22	16:43	F	1355
4,4	22	16:58	F	1349

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

-----

## SW11 126 Smplr Report

**SAMPLER ID# 1313656803 15:37 15-MAR-12**

**Hardware: B0 Software: 2.34**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----**  
**PROGRAM NAME:**

**"PSNS126 "**

**SITE DESCRIPTION:**

**"PSNS126 "**

**-----**  
**UNITS SELECTED:**

**LENGTH: ft**

**-----**  
**24, 1000 ml BTLS**  
**19 ft SUCTION LINE**  
**13 ft SUCTION HEAD**  
**0 RINSES, 0 RETRIES**

**-----**  
**ONE-PART PROGRAM**

**-----**  
**PACING:**

**FLOW, EVERY**

**1 PULSES**

**SAMPLE AT START**

**-----**  
**DISTRIBUTION:**

**4 SAMPLES/BOTTLE**

**-----**  
**VOLUME:**

**240 ml SAMPLES**

**-----**  
**ENABLE:**

**NONE PROGRAMMED**

**-----**  
**ENABLE:**

**ONCE ENABLED,**

## SW11 126 Smplr Report

STAY ENABLED  
SAMPLE AT ENABLE

-----

ENABLE:  
0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

LIQUID DETECT ON  
QUICK VIEW/CHANGE

-----

TAKE MEASUREMENTS  
EVERY 1 MINUTES

-----

DUAL SAMPLER OFF  
BTL FULL DETECT OFF  
TIMED BACKLIGHT

-----

EVENT MARK SENT  
DURING PUMP CYCLE

-----

PUMP COUNTS FOR  
EACH PURGE CYCLE:  
200 PRE-SAMPLE  
AUTO POST-SAMPLE

-----

NO PERIODIC  
SERIAL OUTPUT

-----

INTERROGATOR  
CONNECTOR  
POWER ALWAYS ON

-----

-----

-----

NO RAIN GAUGE

## SW11 126 Smplr Report

-----  
NO SDI-12 SONDE  
AUTO SDI-12 SCAN OFF  
-----

I/O1= NONE  
I/O2= NONE  
I/O3= NONE  
-----

0 ANALOG OUTPUTS  
-----

NO EXTERNAL MODEM  
-----

NO ALARM  
CONDITIONS SET  
-----  
-----

-----  
SAMPLER ID# 1313656803 15:37 15-MAR-12

Hardware: B0 Software: 2.34

\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\*

SITE: PSNS126

PROGRAM: PSNS126

Program Started at 09:36 TU 13-MAR-12

Nominal Sample Volume = 240 ml

COUNT

TO

SAMPLE BOTTLE TIME SOURCE ERROR LIQUID

----- -- -- -----  
09:36 PGM DISABLED

----- WE 14-MAR-12 -----

09:45 PGM ENABLED

1,4	1	09:45	E	473
2,4	1	09:59	F	473
3,4	1	10:14	F	471
4,4	1	10:29	F	475
1,4	2	10:44	F	475
2,4	2	10:59	F	475
3,4	2	11:14	F	479

# SW11 126 Smplr Report

4,4	2	11:29	F	483
1,4	3	11:44	F	483
2,4	3	11:59	F	489
3,4	3	12:14	F	489
4,4	3	12:29	F	495
1,4	4	12:44	F	501
2,4	4	12:59	F	501
3,4	4	13:14	F	501
4,4	4	13:29	F	501
1,4	5	13:44	F	501
2,4	5	13:59	F	501
3,4	5	14:14	F	501
4,4	5	14:29	F	501
1,4	6	14:44	F	501
2,4	6	14:59	F	501
3,4	6	15:14	F	501
4,4	6	15:29	F	501
1,4	7	15:44	F	501
2,4	7	15:59	F	501
3,4	7	16:14	F	501
4,4	7	16:29	F	501
1,4	8	16:59	F	498
2,4	8	17:29	F	499
3,4	8	17:59	F	496
4,4	8	18:29	F	495
1,4	9	18:59	F	495
2,4	9	19:29	F	495
3,4	9	19:59	F	496
4,4	9	20:29	F	498
1,4	10	20:59	F	499
2,4	10	21:29	F	501
3,4	10	21:59	F	489
4,4	10	22:29	F	483
1,4	11	22:59	F	480
2,4	11	23:29	F	477
3,4	11	23:59	F	477

----- TH 15-MAR-12 -----

4,4	11	00:29	F	477
-----	----	-------	---	-----

# **SW11 126 Smplr Report**

1,4	12	00:59	F	477
2,4	12	01:29	F	477
3,4	12	01:59	F	483
4,4	12	02:29	F	483
1,4	13	02:59	F	483
2,4	13	03:29	F	489
3,4	13	03:59	F	489
4,4	13	04:29	F	495
1,4	14	04:44	F	503
2,4	14	04:59	F	503
3,4	14	05:14	F	503
4,4	14	05:29	F	505
1,4	15	05:44	F	503
2,4	15	05:59	F	509
3,4	15	06:14	F	501
4,4	15	06:29	F	495
1,4	16	06:44	F	497
2,4	16	06:59	F	495
3,4	16	07:14	F	495
4,4	16	07:29	F	492
1,4	17	07:44	F	493
2,4	17	07:59	F	489
3,4	17	08:14	F	489
4,4	17	08:29	F	491
1,4	18	08:44	F	485
2,4	18	08:59	F	483
3,4	18	09:14	F	485
4,4	18	09:29	F	483
1,4	19	09:44	F	485
2,4	19	09:59	F	483
3,4	19	10:14	F	480
4,4	19	10:29	F	483
1,4	20	10:44	F	478
2,4	20	10:59	F	477
3,4	20	11:14	F	480
4,4	20	11:29	F	481
1,4	21	11:44	F	482
2,4	21	11:59	F	483



# SW11 126 Smplr Report

3,4	21	12:14	F	483
4,4	21	12:29	F	486
1,4	22	12:44	F	489
2,4	22	12:59	F	489
3,4	22	13:14	F	492
4,4	22	13:29	F	493
1,4	23	13:44	F	499
2,4	23	13:59	F	501
3,4	23	14:14	F	501
4,4	23	14:29	F	502
1,4	24	14:44	F	501
2,4	24	14:59	F	503
3,4	24	15:14	F	503
4,4	24	15:29	F	503

15:30 PGM DONE 15-MAR

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

---



## National Weather Service National Headquarters National Weather Service

### Area Forecast Discussion

Issued by NWS Seattle/Tacoma, WA

**Current Version** | [Previous Version](#) | [Text Only](#) | [Print](#) | [Product List](#) | [Glossary Off](#)  
Versions: [123456789101112131415161718192021222324252627282930](#)

000  
FXUS66 KSEW 141047  
AFDSEW

#### [AREA FORECAST DISCUSSION](#)

NATIONAL WEATHER SERVICE SEATTLE WA  
300 AM PDT WED MAR 14 2012

.SYNOPSIS...A VIGOROUS FRONTAL SYSTEM WILL MOVE THROUGH THE AREA TODAY...FOLLOWED QUICKLY BY ANOTHER WEATHER SYSTEM TONIGHT AND THURSDAY...FOR WET AND OCCASIONALLY WINDY WEATHER AND [HEAVY SNOW](#) IN THE MOUNTAINS. SHOWERY WEATHER WILL CONTINUE ON FRIDAY. THE WEATHER PATTERN WILL REMAIN [ACTIVE](#) ON SATURDAY AS ANOTHER STRONG SURFACE LOW MOVES INLAND.

&&

.SHORT TERM...THE UPPER [TROUGH](#) THAT MOVED THROUGH WESTERN WASHINGTON TUESDAY IS WELL EAST OF THE REGION NOW...AND THE NEXT FRONTAL SYSTEM IS APPROACHING FROM THE OFFSHORE WATERS. SO WE HAVE A BRIEF LULL IN THE [ACTIVE](#) WEATHER PATTERN EARLY THIS MORNING...WITH MAINLY CLOUDY SKIES AND SPOTTY LIGHT PRECIPITATION. A COLD [AIR MASS](#) REMAINS OVER THE FORECAST AREA WITH TEMPERATURES IN THE 30S AND THE SNOW LEVEL WITHIN A FEW HUNDRED FEET OF SEA LEVEL.

PRECIPITATION WILL SPREAD ACROSS WESTERN WASHINGTON THIS MORNING... AND THE SURFACE [FRONT](#) WILL SWING NORTHEAST ACROSS THE AREA THIS AFTERNOON. FAIRLY STRONG SOUTHEAST PRESSURE GRADIENTS ACROSS THE REGION SHOULD PRODUCE WIND ADVISORY WINDS (IE SUSTAINED UP TO 35 MPH AND GUSTS UP TO 55 MPH) IN THE COASTAL AND NORTHWEST INTERIOR ZONES. A WIND ADVISORY IS ALREADY IN EFFECT TODAY FOR THOSE AREA. IT WILL BE BREEZY TO WINDY ELSEWHERE.

THIS SYSTEM WILL REPLACE THE COLD [AIR MASS](#) WITH A Milder ONE... HOWEVER AS PRECIPITATION STARTS THIS MORNING IT WILL STILL BE COLD ENOUGH FOR SNOW IN THE WESTERN WASHINGTON LOWLANDS. WITH ONE MAIN EXCEPTION...ACCUMULATIONS SHOULD BE LIMITED TO AROUND 1 INCH AS THE COLD LOW LEVEL AIR IS QUICKLY SCOURED AWAY. THE EXCEPTION IS THE AREA ALONG THE EAST SIDE OF THE OLYMPIC MOUNTAINS...IN OTHER WORDS THE HOOD CANAL AREA ZONE. COLD AIR IS NATURALLY TRAPPED THERE DURING LOW LEVEL EASTERLY [FLOW](#) AHEAD OF A [FRONT](#)...AND SIGNIFICANT PRECIPITATION AMOUNTS WILL OCCUR WHILE IT IS STILL THERE. A WINTER STORM [WARNING](#) IS IN EFFECT THERE FOR ACCUMULATIONS OF 2 TO 6 INCHES THIS MORNING.

ANOTHER STRONG FRONTAL SYSTEM...WHICH IS BEGINNING TO DEVELOP OUT NEAR 155W...WILL MOVE THROUGH WESTERN WASHINGTON TONIGHT AND THURSDAY. THIS FEATURE...ASSOCIATED WITH A STRONG WESTERLY [JET](#)... WILL BRING ANOTHER ROUND OF WINDY CONDITIONS ESPECIALLY TO THE COAST AND NORTHWEST INTERIOR. THE DEVELOPING SURFACE LOW IS FORECAST TO CURL NORTHEAST OUTSIDE OF 130W INTO HAIDA GWAII -- RECENTLY KNOWN AS THE QUEEN CHARLOTTE -- WHICH SUGGESTS [HIGH WIND](#) IS UNLIKELY FOR WESTERN WASHINGTON. SO WE WILL STAY WITH THE IDEA OF ANOTHER WIND ADVISORY LEVEL EVENT.

PRECIPITATION WITH THIS SYSTEM WILL ALSO BE SUBSTANTIAL FOR BOTH THE LOWLANDS AND THE MOUNTAINS. THE TWO SYSTEMS COMBINED WILL PRODUCE [STORM TOTAL PRECIPITATION](#) AMOUNTS OF 1 TO 2.5 INCHES FOR THE COASTAL...SOUTHWEST WASHINGTON...AND HOOD CANAL AREA ZONES AND ROUGHLY 0.5 TO 1.5 INCHES ELSEWHERE IN THE INTERIOR LOWLANDS. THE MOUNTAINS WILL GET 2 TO 5 INCHES OF PRECIPITATION AS THE SNOW LEVEL RISES GRADUALLY TO AROUND 4500 [FT](#) ON THURSDAY. A WINTER STORM [WARNING](#) IS IN EFFECT FOR THE MOUNTAINS ALREADY.

A COOL AND UNSTABLE [AIR MASS](#) WILL FOLLOW THE [FRONT](#) FOR THURSDAY NIGHT FOR WIDESPREAD SHOWERS. A SHOWERY REGIME WILL CONTINUE FRIDAY AHEAD OF ANOTHER DEVELOP SYSTEM OFFSHORE. THE SNOW LEVEL WILL FALL TO AROUND 2500 [FT](#) THURSDAY NIGHT AND FRIDAY. MCDONNAL

.LONG TERM...A FEW DAYS AGO IT LOOKED LIKE SATURDAY WOULD BE A COOL BUT RATHER QUIET DAY WITH A MIX OF LIGHT SHOWERS AND SOME SUN BREAKS. THE FORECAST HAS CHANGED THOUGH...AND IT COULD CHANGE MORE OVER THE NEXT DAY OR SO.

ON FRIDAY THERE WILL BE ANOTHER DEEP COLD UPPER [TROUGH](#) CENTERED OFFSHORE ALONG 140W...AND A VERY STRONG NORTHWEST [JET](#) OF 180 [KT](#) OR SO WILL BEGIN TO INTERACT WITH IT. ALL THE MODELS ARE FORECASTING THE DEVELOPMENT OF ANOTHER FRONTAL SYSTEM...BUT THEY ARE HAVING LOTS OF DIFFICULTY WITH STRENGTH...TIMING AND TRACK. SOME RUNS OF THE EUROPEAN MODEL HAVE INDICATED A WINDSTORM SCENARIO. I DO NOT FEEL ENOUGH CONFIDENCE TO MAKE LONG TERM FORECAST CHANGE AT THIS TIME...BUT IT WILL BE INTERESTING TO SEE HOW THIS DEVELOPS.

SUNDAY AND MAYBE MONDAY WILL PROBABLY BE QUIETER DAYS BEFORE ANOTHER STRONG FRONTAL SYSTEM ARRIVES TUESDAY...OR MAYBE IT WILL ARRIVE MONDAY. THE MODELS ARE TRENDING TOWARD THE IDEA OF A BRIEFER AND BRIEFER BREAK LATE THIS WEEKEND AND EARLY NEXT WEEK BEFORE A VERY [ACTIVE](#) WEATHER PATTERN RESUMES NEXT WEEK. MCDONNAL

&&

.[HYDROLOGY](#)...AS DISCUSSED ABOVE THE PRECIPITATION FROM THE STORM TODAY AND THE STORM TONIGHT AND THURSDAY WILL BE SUBSTANTIAL...WITH GENERALLY 2 TO 5 INCHES IN THE MOUNTAINS DURING A 48-HOUR PERIOD. THE HEAVIEST AMOUNTS WILL OCCUR OVER THE SOUTH SLOPES OF THE OLYMPICS...AND THE [MEAN AREAL PRECIPITATION](#) OVER THE SKOKOMISH RIVER [BASIN](#) WILL [LIKELY](#) BE AROUND 3 INCHES. THE SNOW LEVEL WILL GRADUALLY RISE TO AROUND 4500 [FT](#) THURSDAY.

EVEN WITH RELATIVELY LOW SNOW LEVELS DURING MOST OF THE EVENT... THERE IS SOMETHING LIKE A 20 PERCENT CHANCE THAT THE UNIQUELY [FLOOD](#)-PRONE SKOKOMISH RIVER WILL HAVE [MINOR FLOODING](#) ON THURSDAY. HOWEVER THE LATEST NORTHWEST [RIVER FORECAST CENTER](#) MODEL KEEPS IT BELOW [FLOOD](#) STAGE...SO WE FEEL IT DOES NOT WARRANT A [FLOOD WATCH](#) AT THIS TIME.

FLOODING IS NOT EXPECTED ON ANY OTHER RIVER IN THE FORECAST AREA DURING THE NEXT 7 DAYS. MCDONNAL

&&

.AVIATION...MODERATE SOUTHWESTERLY [FLOW](#) ALOFT WILL CONTINUE TODAY. AT THE SURFACE STRONG SOUTHEASTERLY GRADIENTS WILL PERSIST TODAY AS A [FRONT](#) MOVES INLAND. THE [AIR MASS](#) IS MOIST AND [STABLE](#).

WESTERN WASHINGTON WILL BE BETWEEN SYSTEMS UNTIL 12Z-15Z. A STRONG WEATHER SYSTEM WILL REACH THE COAST WEDNESDAY MORNING AND MOVE INLAND DURING THE DAY. PRECIPITATION WILL BEGIN AS SNOW IN SOME AREAS BUT TURN TO ALL RAIN BY 18Z OR SO. CEILINGS WILL FALL FROM [VFR](#) TO [MVFR](#) EVERYWHERE.

KSEA...DISCUSSION ABOVE APPLIES. WINDS WILL BE SOUTHEAST 8-12 [KT](#) EARLY THIS MORNING RISING TO SOUTH 12G22 [KT](#) AFTER 18Z. CHB

&&

.MARINE...A STRONG WEATHER SYSTEM WILL MOVE ONSHORE THIS MORNING. STRONG SOUTHEAST GALES WILL RESULT OVER MOST WATERS TODAY. AFTER A RELATIVE LULL THIS EVENING...ANOTHER SYSTEM WILL BRING MORE SOUTHEAST GALES ON THURSDAY. A [SURGE](#) OF SOUTHWESTERLY WIND WILL FOLLOW ON FRIDAY.

THE FORECAST GETS HAZY AFTER THAT AS MODELS DIFFER SIGNIFICANTLY IN THE TRACK OF THE NEXT LOW. THE NEW [GFS](#) AND EURO MODELS MOVE THE LOW RIGHT OVER WESTERN WASHINGTON...MOVING FROM SOUTHWEST TO NORTHEAST. THIS IS A WINDY BUT NOT TOO WINDY SCENARIO. THE NEW [NAM](#) WANTS TO KEEP THE LOW IN OREGON. THIS STORM CERTAINLY BEARS WATCHING. CHB

&&

.SEW WATCHES/WARNINGS/ADVISORIES...  
WA...WINTER STORM [WARNING](#) FOR THE CASCADES AND OLYMPICS THROUGH THROUGH THURSDAY.  
.WINTER STORM [WARNING](#) FOR THE HOOD CANAL AREA THIS MORNING.  
.WIND ADVISORY FOR THE COAST AND NORTH INTERIOR TODAY.  
PZ...[GALE WARNING](#) ALL WATERS EXCEPT CENTRAL STRAIT AND PUGET SOUND.  
[SMALL CRAFT ADVISORY](#) CENTRAL STRAIT AND PUGET SOUND.  
[SMALL CRAFT ADVISORY](#) FOR ROUGH GRAYS HARBOR [BAR](#).

&&

\$\$

YOU CAN SEE AN ILLUSTRATED VERSION OF THE FORECAST DISCUSSION AT [WWW.WEATHER.GOV/SEATTLE/GAFD/LATEST\\_WEBAFD.HTML](http://WWW.WEATHER.GOV/SEATTLE/GAFD/LATEST_WEBAFD.HTML).

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National Weather Service National Headquarters  
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# Your National Weather Service forecast

## Bremerton WA

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NWS Seattle, WA

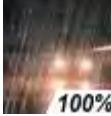
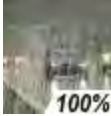
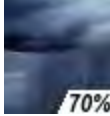




**Point Forecast:** Bremerton WA  
47.56°N 122.62°W (Elev. 0 ft)

[Mobile Weather Information](#) | [En Español](#)

**Last Update:** 4:18 am PDT Mar 14, 2012

**Forecast Valid:** 10am PDT Mar 14, 2012-6pm PDT Mar 20, 2012

### Forecast at a Glance

Today	Tonight	Thursday	Thursday Night	Friday	Friday Night	Saturday	Saturday Night	Sunday
								
90%	100%	100%	70%	70%	70%	60%		
Rain	Rain	Rain	Showers Likely	Showers Likely	Showers Likely	Showers Likely	Chance Showers	Chance Showers
Hi 43 °F	Lo 42 °F	Hi 49 °F	Lo 41 °F	Hi 47 °F	Lo 39 °F	Hi 45 °F	Lo 37 °F	Hi 46 °F

### Detailed 7-day Forecast

**Today:** Rain. High near 43. South wind between 15 and 17 mph. Chance of precipitation is 90%.

**Tonight:** Rain. Low around 42. South southeast wind between 10 and 13 mph. Chance of precipitation is 100%.

**Thursday:** Rain. High near 49. South southwest wind between 10 and 16 mph. Chance of precipitation is 100%.

**Thursday Night:** Showers likely. Cloudy, with a low around 41. South southwest wind between 7 and 11 mph. Chance of precipitation is 70%.

**Friday:** Showers likely. Mostly cloudy, with a high near 47. South southwest wind between 8 and 10 mph. Chance of precipitation is 70%.

**Friday Night:** Showers likely. Mostly cloudy, with a low around 39. Chance of precipitation is 70%.

**Saturday:** Showers likely. Mostly cloudy, with a high near 45. Chance of precipitation is 60%.

**Saturday Night:** A chance of showers. Mostly cloudy, with a low around 37.

**Sunday:** A chance of showers. Partly sunny, with a high near 46.

**Sunday Night:** A chance of showers. Mostly cloudy, with a low around 37.

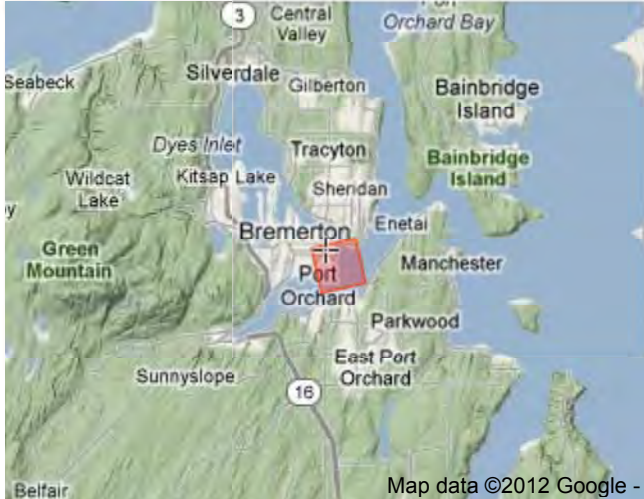
**Monday:** A chance of showers. Mostly cloudy, with a high near 46.

**Monday Night:** Rain likely. Mostly cloudy, with a low around 39.



**Tuesday:** Rain likely. Mostly cloudy, with a high near 46.

### Detailed Point Forecast [Move Down]



Click Map for Forecast [Disclaimer](#)



Map data ©2012 Google -

 Requested Location
  Forecast Area

**Lat/Lon:** 47.56°N 122.62°W    **Elevation:** 0 ft

### Current Conditions [Move Up]

#### Bremerton, Bremerton National Airport (KPWT)

Lat: 47.5 Lon: -122.75 Elev: 440  
Last Update on 14 Mar 8:55 PDT

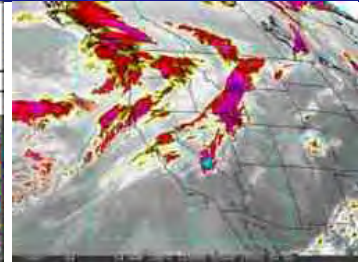
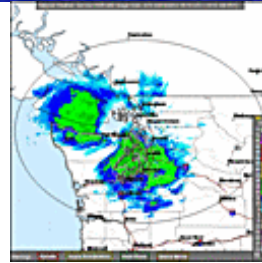
**Overcast**

**32°F**  
**(0°C)**

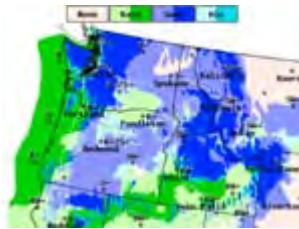
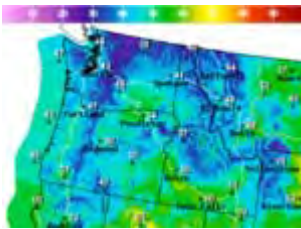
<b>Humidity:</b>	80 %
<b>Wind Speed:</b>	calm
<b>Barometer:</b>	29.75 in (N/A mb)
<b>Dewpoint:</b>	27°F (-3°C)
<b>Wind Chill:</b>	32°F (0°C)
<b>Visibility:</b>	1.25 Miles

[More Local Wx:](#)[3 Day History:](#)

### Radar and Satellite Images



### National Digital Forecast Database




### Additional Forecasts & Information

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Seattle, WA

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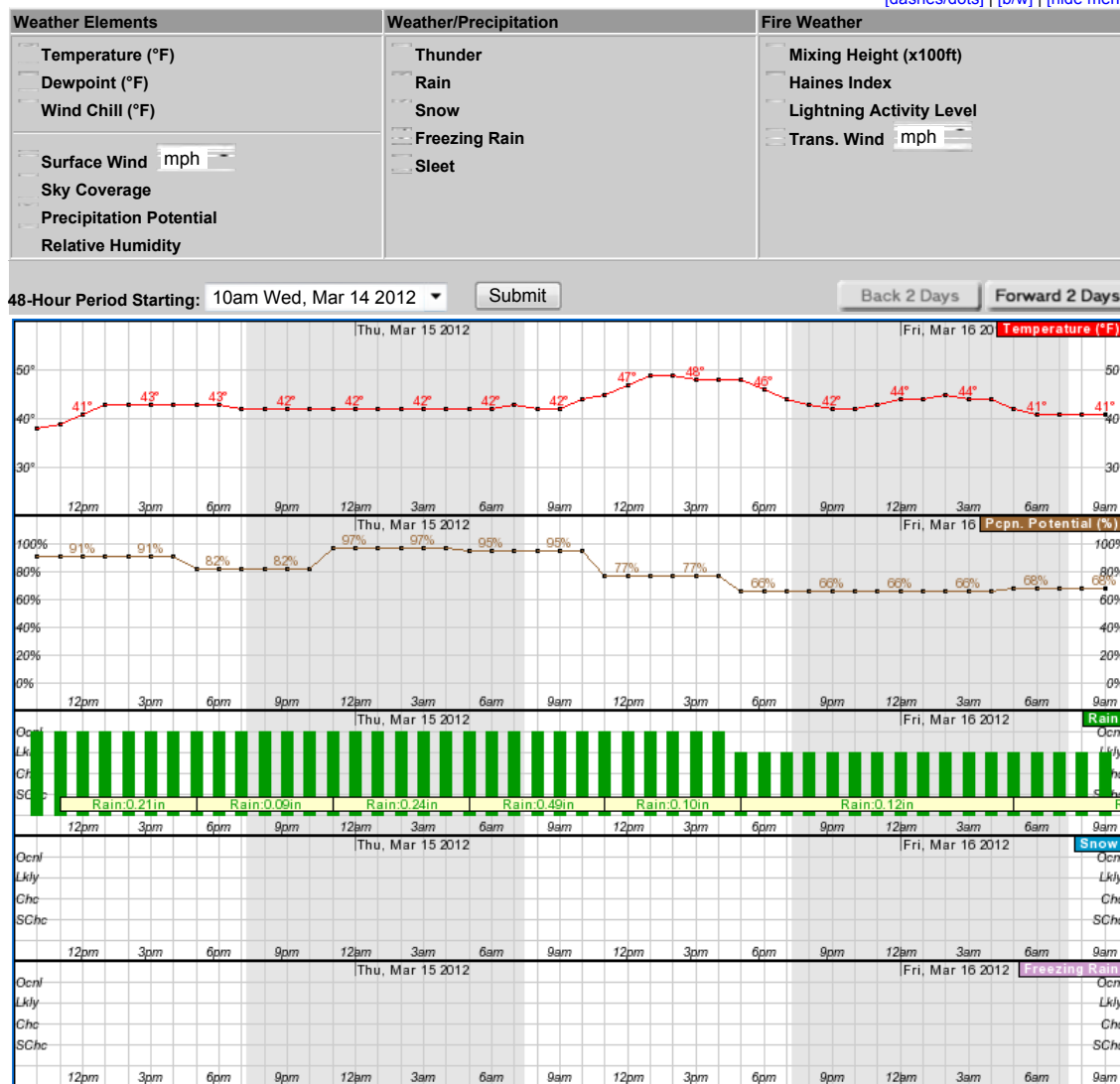
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Point Forecast: Bremerton WA  
47.56N 122.62W (Elev. 0 ft)

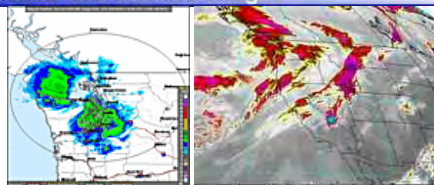
Last Update: 4:18 am PDT Mar 14, 2012

### Hourly Weather Forecast Graph

[\[dashes/dots\]](#) | [\[b/w\]](#) | [\[hide menu\]](#)



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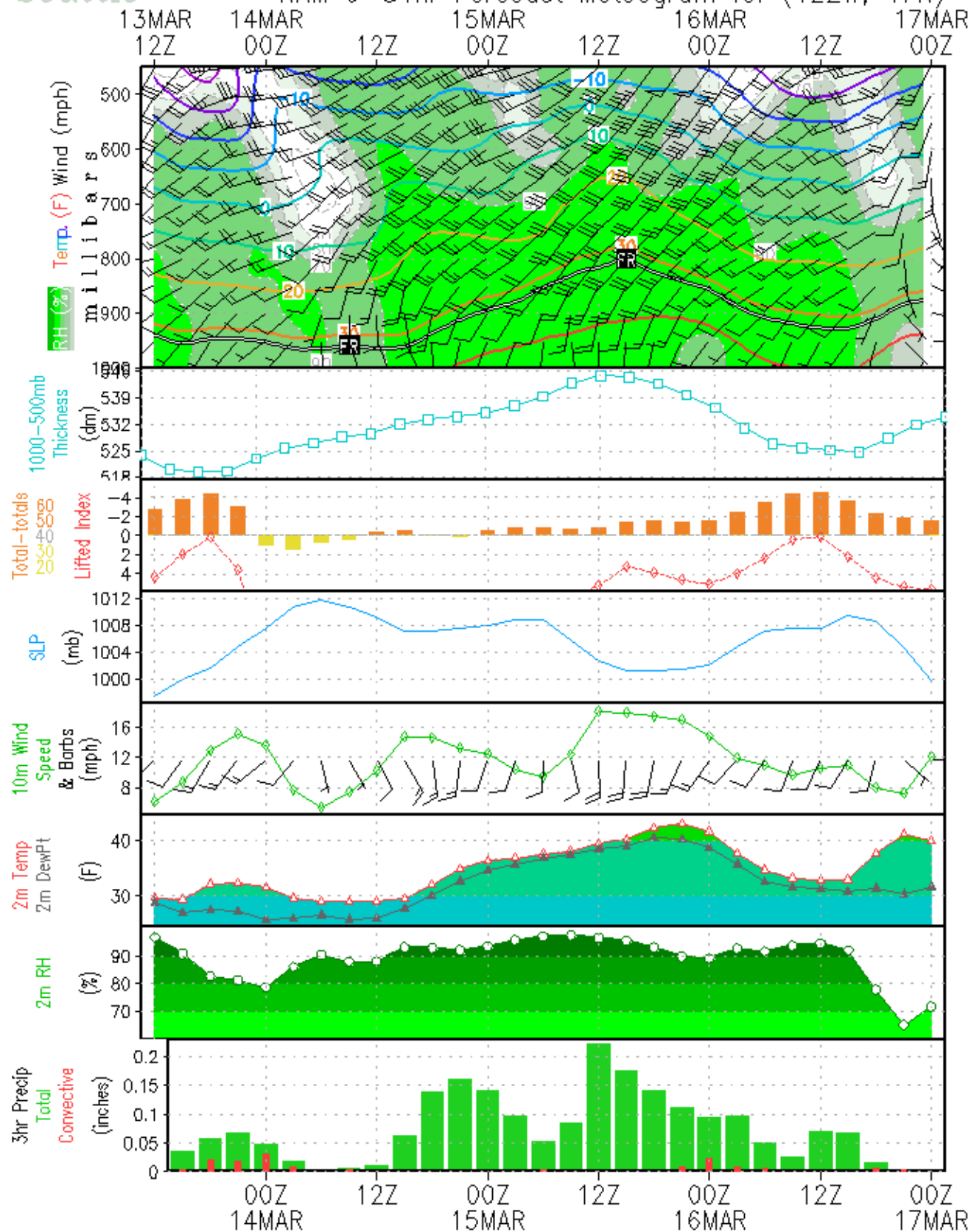
**Forecast For Lat/Lon: 47.5620/-122.6230 (Elev. 0 ft)**  
**Bremerton WA**

*Custom Weather Forecast Table*

	Wed Mar 14							Thu Mar 15							Fri Mar 16							Sat Mar 17		
Weather	Rain							Rain	Rain	Likely Rain Showers														
Daily-Temp	High 43 Low 36							High 49 Low 42							High 47 Low 41							Low 39		
Chance of Precip	90%	90%	80%	95%	95%	75%	65%	65%	70%	70%	75%	75%												
Precip	0.28"	0.21"	0.09"	0.24"	0.49"	0.10"	0.06"	0.06"	0.01"	0.01"	0.23"	0.20"												
12-hr Snow Total	0"			0"				0"				0"			0"				0"					
3-Hour Temp	5am 37	8am 36	11am 39	2pm 43	5pm 43	8pm 42	11pm 42	2am 42	5am 42	8am 42	11am 45	2pm 49	5pm 48	8pm 43	11pm 43	2am 45	5am 42	8am 41	11am 44	2pm 47	5pm 46	8pm 41	11pm 41	2am 43
Cloudiness	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	99%	97%	97%	97%	97%	81%	81%	81%	81%	78%	78%	78%	78%
Dewpoint	34	34	37	39	39	41	41	40	39	39	42	45	44	43	42	42	37	38	41	41	40	39	38	39
Relative Humidity	88%	92%	92%	86%	87%	94%	94%	91%	87%	90%	90%	86%	87%	98%	96%	89%	83%	89%	89%	80%	81%	90%	90%	87%
Wind	SE 15	S 16	S 15	S 17	S 13	S 10	SE 12	S 13	S 14	S 16	SW 10	S 13	S 12	SW 12	S 8	SW 7	S 8	S 10	S 8	S 9	E 9	E 9	S 7	S 7
Snow Level (ft)	511	511	1878	1878	2378	2378	3833	3833	4737	4737	4276	4276	3525	3525	2576	2576	2102	2102	2274	2274	2574	2574	2308	2308

# Seattle

## NAM 0-84hr Forecast Meteogram for (122W, 47N)





**Telemetry Data Summary Report**  
**QAQC Data Notes from STE#11**  
**Data review from 3/1/12 to 3/16/12**

Site	Parameter	Issue	Start Date/Time	End Date/Time	GAR Level of Concern	Comments
15	Level	Missing Data	3/2/2012 17:15	3/7/2012 22:10	Amber	Missing data due (likely) due to sensor removal, rebuild, and reinstall
15	Temperature	Missing Data	3/2/2012 17:15	3/7/2012 22:10	Amber	Missing data due (likely) due to sensor removal, rebuild, and reinstall
15	Salinity	Missing Data	3/2/2012 17:15	3/7/2012 22:10	Amber	Missing data due (likely) due to sensor removal, rebuild, and reinstall
15	Conductivity	Missing Data	3/2/2012 17:15	3/7/2012 22:10	Amber	Missing data due (likely) due to sensor removal, rebuild, and reinstall
15	Rainfall	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
15	Level	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
15	Temperature	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
15	Salinity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
15	Conductivity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
84.1	Rainfall	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
84.1	Level	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
84.1	Temperature	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
84.1	Salinity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
84.1	Conductivity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
115.1	Level	Missing Data	3/6/2012 15:25	3/6/2012 15:40	Green	20 minute data gap
115.1	Salinity	Missing Data	3/6/2012 15:25	3/6/2012 15:40	Green	20 minute data gap
115.1	Conductivity	Missing Data	3/6/2012 15:25	3/6/2012 15:40	Green	20 minute data gap
124	Level	Inaccurate/Missing Data	3/1/2012 0:00	3/6/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Temperature	Inaccurate/Missing Data	3/1/2012 0:00	3/6/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Conductivity	Inaccurate/Missing Data	3/1/2012 0:00	3/6/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Salinity	Inaccurate/Missing Data	3/1/2012 0:00	3/6/2012 13:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124	Rainfall	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124	Level	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124	Temperature	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124	Salinity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124	Conductivity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124	Level	Level Drift	3/8/2012 20:45	4/20/2012 14:35	Amber	Transducer level drifted up gradually during this period (base level from 0.04' to 0.14'); after 4/20/12 it returns to a base level around 0.00 when dry
124.1	Level	Inaccurate/Missing Data	3/2/2012 15:35	3/7/2012 21:15	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124.1	Temperature	Inaccurate/Missing Data	3/2/2012 15:35	3/7/2012 21:15	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124.1	Conductivity	Inaccurate/Missing Data	3/2/2012 15:35	3/7/2012 21:15	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124.1	Salinity	Inaccurate/Missing Data	3/2/2012 15:35	3/7/2012 21:15	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
124.1	Rainfall	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124.1	Level	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124.1	Temperature	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124.1	Salinity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
124.1	Conductivity	Missing Data	3/12/2012 0:05	3/12/2012 1:00	Green	Missing Data due to DST switch
126	Rainfall	Inaccurate/Missing Data	3/2/2012 14:55	3/7/2012 18:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
126	Level	Inaccurate/Missing Data	3/2/2012 14:55	3/7/2012 18:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
126	Temperature	Inaccurate/Missing Data	3/2/2012 14:55	3/7/2012 18:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
126	Conductivity	Inaccurate/Missing Data	3/2/2012 18:55	3/7/2012 18:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
126	Salinity	Inaccurate/Missing Data	3/2/2012 19:40	3/7/2012 18:55	Amber	Data during this period is inaccurate and/or missing due to sensor removal, rebuild, and reinstall
126	Level	Negative Level	3/13/2012 10:45	3/14/2012 3:50	Red	Seemingly inaccurate negative level readings



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# **STORM EVENT REPORT SW12**

## **For**

### **Non-Dry Dock Stormwater Monitoring**

#### **Conducted at**

##### **Puget Sound Naval Shipyard**

##### **Bremerton, WA**

##### **Project ENVVEST Study Area**

**April 19, 2012**



*Puget Sound Naval Shipyard and Surrounding Area*

**PNNL Contract No.: N4523A10MP00034 Amendment 1**

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## 1.0 Introduction

Taylor/TEC conducted non-dry dock stormwater sampling tasks within the Puget Sound Naval Shipyard (PSNS) and adjacent areas within Naval Base Kitsap (NBK); collectively comprising the Project ENVVEST study area, between March 16<sup>th</sup> and April 20<sup>th</sup> 2012. This was the fifth event (additional event) of the 2011-2012 project year – referred to as *Phase II*. Overall, this is the twelfth Stormwater (SW12) event of the project. A summary of the preparatory and sampling events, including site specific conditions that occurred during SW12 are presented in this report, with supporting information as attachments.

This SW12 Report is organized in the following manner and contains: Section 2, SW12 Event Summary; Section 3, Project Staff Participating in SW12; Section 4, Storm Event SW12 Preparatory Tasks; Section 5, Weather Forecast Information and SW12 Targeting Details; Section 6, Precipitation and SW12 Qualification Summary; Section 7, Sampling Information, Management and Validation; Section 8, Basin Runoff Calculations; Section 9, Descriptive Statistics and Discussion of Event Station Monitoring Data; Section 10, Notable Anomalies and Variations to the PWP; and Section 11, Action Items.

Attachments to this report include: Table A-1, *Storm Event Summary and Sampling Information, Validation Checklist* (spreadsheet); Stormwater Field Sampling Forms and Storm Controller Notes; Chain of Custody Forms; (basin) Runoff Calculation Worksheet; Station Hydrographs; Autosampler Reports; Weather Forecast Information and a Telemetry Data Summary Report.

## 2.0 SW12 Event Summary

Main SW12 details are provided below as a “Quick Reference”:

- Event/s Conducted: SW12
- Event Date/s: maint. items; 3/16 through 4/12, station prep.; 4/13; and storm event tasks occurring between 4/18 and 4/20/12
- Monitoring Stations Sampled: PSNS015 only
- Antecedent Conditions Met?: Yes;  $\leq 0.1$ " in prior 24 hrs and 0.0" in prior 6 hrs preceding the storm/sampling event at each station.
- Start of Rainfall at PSNS Stations: 4/19/12 1535 (PSNS015)
- Sampling Period Duration Range: start = 4/19/12 @ 1732 and stop = 4/20/12 @ 1037; Max sampling duration = 17 hrs:05 mins (PSNS015)
- Sampling Event Rainfall Total: PSNSB427 = 0.47" and PSNS015 = 0.46"
- Samples/Types Collected: One overall and 18 discrete hourly (single wedge bottle) composite samples (pollutograph samples) were collected and individually analyzed. Also – a vault sediment sample (SQV07-006) was collected. No grab samples collected.

- Quality Control (QC) Samples Collected: No duplicate or other QC samples were collected during the SW12 event.
- Based on consideration of storm event and sample validation information, were the samples collected during SW12 valid for project purposes? (Y / N, composite, grab or both): Yes-composite; all composite samples collected during this event were valid.
- Special Note: A Laser In-Situ Scattering and Transmissiometry (LISST) analyzer from Sequoia Scientific ([www.sequoiasci.com](http://www.sequoiasci.com)) was deployed on 4/13/12, prior to the SW12 event. The LISST-StreamSide unit was used to generate real-time stormwater runoff sediment data.

See Table A-1; *Storm Event Summary and Sampling Information, Validation Checklist*, for additional event summary details.

### 3.0 Project Staff Participating in SW12

#### Taylor/TEC:

Dave Metallo – Project Manager, Storm Controller, Field Event and QC Manager

Brian Rupert – Field Team Leader

Curtis Nickerson – Program Manager (LISST deployment only)

Ian Sahlberg – Field Team Member (LISST deployment only)

#### PNNL:

Jill Brandenberger – Project Manager, QC Manager, Project Chemist

#### Navy Personnel:

Bob Johnston – Project Technical Lead / Oversight / Grab sample collection lead

### 4.0 Storm Event SW12 Preparatory Tasks

On April 13<sup>th</sup>, 2012 monitoring station PSNS015 was reset and its sensors re-calibrated. The station was also readied for storm event / stormwater sample collection on the same day. A portable LISST-StreamSide stormwater runoff sediment analyzer was also deployed at this station, calibrated and made operational. At this point all of the monitoring equipment was deemed to be functioning properly, was operational and “sample ready” (see Sections 1 and 2 of the attached *Stormwater Field Sampling Forms*).

The station was programmed with pre-determined autosampler enable and pacing conditions set “high” to prevent premature enabling (*sample disable mode*), as directed by the Taylor/TEC Storm Controller. Station operation was passed to the Taylor /TEC Storm Controller to be managed via telemetry. Final enabling conditions were determined by the Storm Controller closer to the onset of the storm event.

## 5.0 Weather Forecast Information and SW12 Targeting Details

Between the end of SW11 (3/16/12 ~ 1900) and the just prior to the onset of SW12 (4/19/12 ~ 1500) the rainfall as measured at PSNS015 during this approximately 34 day period was 3.95". The Navy's rain gauge at Build 427 recorded a total of 4.02" during the same period.

The last measureable runoff occurred approximately 34 hours prior to the start of SW12 event. Project qualifying antecedent dry period was met prior to the stations being armed on 4/19/12. A potentially qualifying storm event (event probability and forecast rainfall depth) was identified and targeted as rain was forecast at between 85 to 95% probability for Thursday 4/19/12, with 24-hour accumulations of 0.68" into Friday, late morning – early afternoon, the 20<sup>th</sup>.

The Nation Weather System (NWS) was one of the main sources used for the assessment of weather forecasting and conditions. Provided below is a link to the NWS-Bremerton, WA webpage; (<http://forecast.weather.gov/MapClick.php?site=sew&textField1=47.56751&textField2=-122.63127&smap=1>). A host of other internet available weather forecasting, observational and data sources were used for field and reporting purposes as appropriate Detailed *Weather Forecast Information* is attached to this report.

The NWS called for a frontal system that will reach western Washington by this afternoon and evening (4/19). The **front** will move through the area Friday morning (4/20). A weak high pressure system will build later Friday into Saturday (4/21).

Routinely referenced weather models used to gain forecast information regarding the Pacific Northwest included the MM5-NAM (<http://www.atmos.washington.edu/mm5rt/rt/naminit.12km.html>) and the GFS-WRF (<http://www.atmos.washington.edu/mm5rt/rt/gfsinit.frame1.html>) (both hosted by the University of WA and initialized for the PNW). Below is a synopsis of the model comparison for SW12:

*"Models are in broad agreement regarding timing (and rain depth) with steady rain beginning in the Puget Sound region early to mid-afternoon (1300-1400) and increasing through early this evening. Rainfall will be more generous with this system across the lowlands than previous systems. Widespread amounts of a half inch and locally higher should be expected through this evening...then additional amounts with the cold front late tonight/Friday morning."*

Final sampler enabling conditions were appropriately set at the monitoring station around noon of 4/18 (*sample ready mode*). Table 1 lists the final enabling conditions at the PSNS015 monitoring station used for SW12, along with the rainfall amounts in the 24 and 6 hour periods prior to the onset of the storm event.

**Table 1. Monitoring Station Enabling Conditions**

Station	Rainfall (in/hr)	Level (ft)	Conductivity (μS/cm)	Repeatable Conductivity Enable (Y/N)	Sample Pacing Rate (min)	<sup>2</sup> Rainfall Prior to Event Start (24hr/6hr)
PSNS015	0.03	0.3	2000	N	15	0.00"/ 0.00"

<sup>1</sup>Conditions as checked on 4/19/12 at ~1029; final enable conditions set 4/18/12 ~1200

## 6.0 Precipitation and SW12 Qualification Summary

### Precipitation Summary:

Previous rainfall that caused runoff to occur ( $\geq 0.03$ " rainfall without 3-hr gap) prior to the onset of SW12 was 34 hours as measured by the PSNS015 rain gauge. Rain began to fall over the project site at 1535 on April 19<sup>th</sup>. Table 2 details the period since last runoff, antecedent duration prior to the start of the storm event, as well as the rainfall start date/time at each monitoring station.

**Table 2. Pre-Rain Event Conditions**

Station	Last Runoff <sup>1</sup> (Date/Time)	Antecedent Duration (Days: Hrs)	Start of Rainfall (Date/Time)
PSNS015	4/18/12 4:40	1:10	4/19/12 15:35

<sup>1</sup>Last runoff period is defined as  $\geq 0.03$ " of rainfall without a 3-hr gap

Rainfall intensity began in a light to moderate fashion. Operational checks during the late-afternoon early-evening of April 19<sup>th</sup>, via telemetry, revealed that the station had enabled its sampling routine as programmed; with rainfall, pipe level and conductivity values being in satisfaction of their threshold values, (as listed in Table 1).

Rainfall intensities remained low during most of the SW12 event, but steady for the first 7 to 8 hours. Rainfall then became sporadic before the weather system passed by the project area; tailing very light rain intensities before ending completely around 1030 on 4/20.

PSNS015 sampling period rainfall total was 0.46". The Navy's rain gauge at B427 recorded 0.47" for the same length of sampling period.

The sampling routine was manually stopped at bottle 19 at approximately 1150 on 4/20. Sampling duration (the range of time covering bottles used in the formulation of the overall station composite sample) was 17:05 (hours: mins).

Table 3 summarizes the sampling period start, end and duration as well as the total rainfall amounts for PSNS015 and the gauge at B427 that occurred during the SW12 sampling period. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), attached to this report, provides additional sampling period rainfall information.

**Table 3. Sampling Period Information and Rainfall Totals for Project Monitoring Stations**

Station	Sampling Period Start (Date/Time)	Sampling Period End (Date/Time)	Sampling Period Duration (Hrs:Mins)	Total Sampling Period Rainfall (in)
PSNS015	4/19/12 17:32	4/20/2012 10:37	17:05	0.46
B427	4/19/12 17:32	4/20/2012 10:37	17:05	0.47

<sup>1</sup>B427 start/stop and duration incorporates the total span from all monitoring stations utilized during the SW event

**SW12 Qualification Summary:**

All storm qualification conditions were met for this event. Storm event qualification conditions included wet season event date range (Oct 1 – May 1), forecast probability ( $\geq 70\%$ ), forecasted storm depth ( $\geq 0.1"$ ), storm duration ( $\geq 2$ hrs) and runoff occurrence / hydrograph stage (elevated above base flow). Antecedent dry period ( $\leq 0.1"$  rain in previous 24hrs and 0" rain in previous 6hrs) qualification for SW12 was also met without condition, as described above. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW12 qualification criteria listed above.

## 7.0 Sampling Information, Management and Validation

**Grab Sampling:**

No stormwater grab samples were collected during the SW12 event. However, a vault sediment grab sample was collected from the PSNS015 vault prior to the SW12 event, during the installation of the LISST-StreamSide sensor. Sediment sampling was conducted as per methodologies described in the 2011-12 Project Work Plan (PWP). Parameters included total metals. The grab sample was collected on 4/13/12 at approximately 1400. Grab sample ID, along with the other pertinent information is listed on the *Stormwater Field Sampling and CoC Forms* and in Table A-1 (all are attached). Table 4 summarizes these results.

**Table 4. Grab Sampling Information**

Station	Grab Sample Type	Grab Sample ID	Grab Date /Time	Grab parameters collected per PSNS PWP?
PSNS015	Sediment	SQV07-006	4/13/2012 (~1400)	YES

**Composite Sampling:**

Composite sample retrieval tasks and formulation procedures were managed and lead by Taylor/TEC with support from PNNL/MSL personnel as needed. Composite samples were collected from only PSNS015 during this event.

Composite samples were collected via an autosampler which was operated and synchronized by a custom designed telemetered water quality control system. The composite sample collection

period and duration is noted in Table 3. The autosampler was enabled as per the conditions stated in Section 5 of this report. Composite sample parameters included: hardness, TOC, DOC, TSS, total and dissolved metals and turbidity.

Discrete sample (wedge) bottles (contained in the autosampler bases) were brought back the C106 Stormwater Lab at B147 for processing. Composite formulation occurred on April 20<sup>th</sup>. The numeric identification and amount of wedge bottles that were used for the overall composite sample formulation and those that were discarded were noted in Section 5 of the attached *Stormwater Field Sampling Forms*.

Methods used in preparation, autosampler collection, retrieval and formulation of the composite samples were conducted in a manner consistent with the 2011-12 PWP. However, a modified compositing scheme was employed for this event. A smaller than usual amount (~70ml) was extracted from each of the 14 qualifying wedge bottle. This ~908ml was placed into a common container for typical composite sample analysis. The remaining water from each of the 18 total wedge bottles collected during the event was separately prepared for individual (single bottle) analysis. Individual analysis of each wedge bottle was completed to produced an event pollutograph.

The total number of discrete wedge bottles collected, along with the total number of those bottles used in the station's composite sample is noted below in Table 5. Dividing the number of wedge bottles used in the composite sample formulation by the total number of wedge bottles collected during the span of the entire sampling period provides an estimation of the amount of time (as a percentage of that stations entire collection period) where freshwater (i.e. runoff) conditions occurred at each station during the corresponding sampling event period.

Specific details regarding the composite formulation, results from individual bench top testing of the discrete bottles, sample IDs, sample date/time and resultant overall conductivity and turbidity values, as well as the number of wedge bottles collected during the sampling event and those used for the composite sample formulation are detailed in the *Stormwater Field Sampling Forms*, *Chain-of-Custody (CoC)* forms and in Table A-1 (all are attached). Table 5 summarizes these results.

**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS015
Composite sample ID	SW12-020
Composite Date /Time	4/20/2012 10:37
Overall Composite conductivity value ( $\mu\text{S}/\text{cm}$ )	338
Overall Composite turbidity value (NTU)	17
Composite volume (ml)	980



**Table 5. Composite Sampling Details**

Sample Collection Criteria:	PSNS015
Number of Bottles Collected During Sampling Event	18
Number of Bottles Included in Composite Sample	14
Percentage of Total Sampling Period that Freshwater Conditions Occurred	78%
Composite parameters collected per PSNS PWP?	Yes

All sampling and vault monitoring equipment operated as designed and programmed. Details pertaining to programming and event-specific operation of the autosampler unit are contained in the attached *Sampler Report*.

**QC Samples:**

No QC samples were collected during SW12. Table 6 summarizes the quality control sample collection information for SW12.

**Table 6. Summary of Quality Control Sampling Information for SW12**

Sample Collection Criteria:	PSNS015
Grab sample duplicate ID	N/A
Grab sample duplicate date and time	N/A
Grab sample duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	N/A
Composite sample Duplicate ID	N/A
Composite sample duplicate date and time	N/A
Overall Composite Duplicate conductivity value ( $\mu\text{S}/\text{cm}$ )	N/A
Overall Composite Duplicate turbidity value (NTU)	N/A
Composite Duplicate volume (ml)	N/A

**Sample Management:**

All samples were handled and managed as per Section 9 of the 2011-12 PWP and in a manner acceptable and within industry standards regarding practices typical for tasks of this nature. Once collected, both grab and composite samples were placed into coolers and put on ice and/or into the secure Stormwater Laboratory refrigerator to maintain temperatures between 2 and 6 °C.

All sample IDs, collection date and time, matrix, requested parameter analysis and other associated information were documented on *Chain of Custody (CoC) Forms* (attached). Samples were in direct control of project and/or laboratory personnel at all times. Samples were delivered to the testing facility, Battelle Marine Science Laboratory in Sequim, WA, in good, useable and

properly chilled condition. Adequate sample volume was collected from the targeted stations to proceed with the scheduled analysis of all parameters per the 2011-12 PWP.

### **Sample Validation Summary:**

All sample validation criteria were met for this event per Section 8.2.6 of the 2011-12 PWP. Prior to processing the samples and transferring custody to the analytical laboratory, the Taylor/TEC Field Event Lead validated the samples against certain criteria. These validation criteria included runoff occurrence / hydrograph stage, sample preparation and handling review, requested parameters,  $\geq 2$  hour sampling duration or 75% storm hydrograph coverage, minimum number of aliquots, minimum sample volume collected for required parameters, discrete and composite samples conductivity measurement results, quality control sample collection and anomalous conditions assessment. Table A-1 (*Storm Event Summary and Sampling Information, Validation Checklist*), documents the particular SW-event qualification listed above.

## **8.0 Basin Runoff Calculations**

Rainfall runoff volumes during the SW12 sampling period were calculated for each of the basins associated with the six Phase II monitoring stations. These calculations are based on the modified Runoff Coefficient Method (RCM) as described in Section 7.4 of the 2011-12 PWP.

The value ranges for the various land use/land cover categories assigned to each basin are listed in the attached *Runoff Calculation Tables*. Calculated runoff values are also presented in Table A-1 (*Storm Qualification and Sample Validation Information Checklist*) (attached). Table 7 summarizes the results from these calculations.

**Table 7. Runoff Calculations**

Station	Type of Surface	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Combined Drainage Area (Ft <sup>2</sup> )	Sample Event Rain Total (In)	Sample Event Rain Total (Ft)	Sample Event Period Runoff Vol. (Gal)
015	Pervious	2,009,431	0.25 – 0.4	2,411,321	0.46	0.0383	691,454
	Impervious	653,373	0.6 – 0.9				

## **9.0 Descriptive Statistics and Discussion of Event Station Monitoring Data**

Descriptive statistics for the sampling period at the PSNS015 monitoring station are provided in Table 8, below. These statistics include minimum, maximum, average and median at static 1-hour interval periods for vault level, conductivity, salinity, transducer water temperature, and tidal stage. The method by which the rainfall statistics are calculated is on a “rolling 1-hour data window” in an attempt to provide a more accurate and representative assessment of the actual rainfall conditions. Sampling period rainfall totals are also included as part of the station’s rainfall information.

**Table 8. SW12 Sampling Period Rainfall and Vault Parameter Descriptive Statistics**

Station ID	Statistics	Rainfall (1 hr) (in)	Vault level (ft)	Conductivity (uS/cm)	<sup>1</sup> Salinity (ppt)	trans temp (°C)	YSI temp (°C)	Tide Stage (ft)
PSNS015	Min	0.00	0.18	53	2.00	9.94		0.46
	Max	0.13	7.43	45,658	42.00	16.17		10.99
	Average	0.02	4.02	7,188	7.63	12.45		7.17
	Median	0.01	4.30	333	2.00	12.83		7.81
	Storm Total	0.46						

<sup>1</sup>salinity calculations for 015 are based on an algorithm that has a lower range cut-off value of 2ppt. Actual field values may have been lower.

### **Hydrograph Assessment:**

SW12 was a relatively straightforward event with one main frontal push of rainfall across the project area, beginning with moderate intensity lasting for about four hours, then tailing to low intensity rainfall for another nine hours, before lessening even further in the final four hours of the event. The rainfall signature showed this single frontal phase reflected in PSNS015 hydrograph. The Navy's rain gauge atop B427 also reflected a very similar rainfall signature.

The hydrograph showed freshwater pipe storage effects until the rainfall intensity decreased to the point that runoff could not overcome the tidal effect on the piping system. A return to higher conductivity conditions was noted towards the latter portion of the sampling period. Composite sample markers have been applied to the hydrographs to indicate total collection time (i.e. sample event period).

As mentioned above, a LISST StreamSide sensor was installed at PSNS015 and was collecting data during the SW12 event. A hydrograph displaying stormwater runoff sediment information generated during the event is provided. In addition to rainfall, conductivity and vault (water) level, the hydrograph displays mean grain size as well as three major grain size fractions. These size fractionations include clay/silt (<63µm), very fine/fine grain sand (64-234µm) and medium grain sand (235-386µm). Additional information and interpretation regarding the LISST data will be included in the 2011-12 Annual Report. The monitoring station hydrographs, as well as the rainfall graph for B427, are attached.

### **Telemetry Data Summary Report: TDSR**

A review of the telemetry data collected since SW11; from 3/16/12 to 4/24/12, including the SW12 event, was conducted. There were some minor anomalies in nearly all of the stations data sets, mainly due to the Daylight Savings Time change, transducer maintenance/replacement tasks or stations being demobilized and taken offline for the monitoring season.

Overall, there were no data anomalies at PSNS015 during the SW12 event.

All sensors were in reasonable and accurate operation during SW12. A TDSR report (table), detailing the anomalies noted during SW12 and the period since the last sampling event is attached.

## **10.0 Notable Anomalies and Variations to the PWP**

There were no major anomalies observed or otherwise noted after completion of the sampling event and review of the associated data that would have caused any of the SW12 samples to be non-representative of the conditions from which they were collected. As reported above, all intended and scheduled grab and composite samples were submitted to the PNNL MSL (“the Lab”) within holding times and without incident. All support and sampling tasks, as well as collected samples, were managed as appropriate per the 2011-12 PWP.

A listing of the minor anomaly that occurred during SW12 is included below. This was;

1. During the course of the SW12, while interacting with the PSNS015 station via telemetry a communication issue developed that prevented the Storm Controller from viewing real-time vault and rainfall data as well the ability to control any of the autosampler functions. Field staff was deployed early on the morning of 4/20 to attempt to troubleshoot the issue. The modem was power cycled several times – however, this did not remedy the situation. Since the storm event was nearly over and that the sampler was operating correctly it was decided to leave the system operate in this manner until it either ran its programming course or was manually shut-off. No impacts to the sampler or samples resulted and after the event was completed the communication issue was fixed.

## **11.0 Action Items**

This was the last sampling event for the 2011-12 season. The current focus of the field efforts will be in properly demobilizing the monitoring stations and associated equipment.



Figure 1. Phase II Stormwater Monitoring Locations within the Shipyard Boundary

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## **ATTACHMENTS**

- Storm Event Summary and Sampling Information, Validation Checklist (Table A-1)
- Stormwater Field Sampling Forms and Controller Notes
- Chain-of-Custody Forms
- Runoff Calculation Worksheet
- Station Hydrographs
- Autosampler Reports
- Weather Forecast Information
- TDSR

Table A-1. PSNS Non-Dry Dock Stormwater Monitoring Tasks  
Storm and Sample Information and Validation Checklist  
Stormwater Sampling Event #12 (4/19/12)

*This form acknowledges representativeness criteria described in the project PWP.  
Mark with "Yes" to acknowledge acceptable, "No" for not acceptable, "NA" or "-" if not applicable.*

<sup>1</sup> Storm Event Data:	
Project Storm Event (SW) #	12
Event Forecast Probability (%)	85-95%
PSNS B427 Rain Gauge - Sample Event Total (in.)	0.47
Rainfall and Runoff Summary:	
PSNS015	
Last Runoff (≥ 0.03" rainfall without 3-hr gap) Prior to STE Start (Date/Time)	4/18/12 4:40
Antecedent Dry Period (days: hrs)	1:10
Rainfall Prior 24-hrs to Rain Event Start	0.00
Rainfall Prior 6-hrs to Rain Event Start	0.00
Start of Rainfall (Date/Time)	4/19/12 15:35
Sampling Period Start Date & Time	4/19/12 17:32
Sampling Period End Date & Time	4/20/2012 10:37
Sampling Period Duration (hrs:mins)	17:05
Sampling Period Duration (hours)	17.08
Sampling Period Total Rainfall (in)	0.46
Sampling Period Max 1-hr Rainfall Intensity (in/hr)	0.13
Sampling Period Average 1-hr Rainfall Intensity (in/hr)	0.02
Runoff volume calculated for sampling period (gallons)	691,454
<sup>1</sup> Sample Collection Criteria:	
Grab sample ID	Not Collected
Grab Date /Time	N/A
Grab sample conductivity value (µS/cm)	N/A
Hydrograph stage at grab collection	N/A
Grab parameters collected per PSNS PWP ?	N/A
Composite sample ID	SW12-020
Composite Date /Time	4/20/2012 10:37
Overall Composite conductivity value (µS/cm)	338
Overall Composite turbidity value (NTU)	17
Composite volume (ml)	980
Number of Bottles Collected During Sampling Event	18
Number of Bottles Included in Composite Sample	14
Percentage of Total Storm Period Duration Represented by Composite Sample	78%
Composite parameters collected per PSNS PWP ?	Yes
<sup>1</sup> QC Sample Summary Information:	
Grab sample duplicate ID	N/A
Grab sample duplicate date and time	N/A
Grab sample duplicate conductivity value (µS/cm)	N/A
Composite sample duplicate ID	N/A
Composite sample duplicate date and time	N/A
Overall Composite Duplicate conductivity value (µS/cm)	N/A
Overall Composite Duplicate turbidity value (NTU)	N/A
Composite Duplicate volume (ml)	N/A
Associated Equipment Blank	SW08-004
<sup>1</sup> Storm and Sample Validation:	
Was the targeted STE antecedent or conditional antecedent qualified per PSNS PWP? (if no, then see next line)	Yes
Was the antecedent overage amount greater than 10% of the total rain event ?	N/A
Was runoff occurring OR was the hydrograph at least 10% above background pipe level during grab collection ? If no, explain in summary narrative.	Yes
Were a minimum of 8 aliquots collected OR does the composite sample represent at least 75% of the stations storm event rain volume ?	Yes
Were all 1-hr sampler bottles used for the Composite sample ≤2000 µS/cm ?	Yes
Did any anomalous conditions exist that could make samples non-representative? Explain if "Yes"	No
Based on consideration of the information above, was the sample collected during the STE valid for project purposes ? (Y / N, composite, grab or both)	Yes, both

<sup>1</sup> If the answer to any of these questions is "No" OR indicate non-representative conditions, then these items should be explained in the Event Narrative.



Date:	4/18/12			Sampling Support Personnel:		Rupert							
STE #	12 (BONUS)	Antecedent Dry Cond. Met?	Yes	Tidal Info: 4-19-12 (1114) 0.88' L 4-20-12 (0452) 11.14'H, (1141) 0.25' L									
Storm Controller:	Metallo			Grab sampling Info. None scheduled									
Pre-Storm / Weather Details:	*Sampling only at PSNS015. GFS: event start (1400) 4-19-12 to (1900) = 0.38", 0900-1200 on 4-20 + 0.16" ~ .54" total; NAM: event start (1300) 4-19-12 to (2000) = 0.36", 0000-0700 4-20 = 0.04" ~ .40" total; NWS predicting 0.68" b/w 1200 4-19 & 1700 4-20												
Telemetry Measurements:	DATE/TIME (24HR)												
STATION:	4-18-12 (1200)	4-19-12 (1029)	(1200)	(1430)	(1600)	(1749)	(1930)	(2030) (193)	4-20 (0800)	4-20 (1149)			
PSNS015 Rain <sup>1</sup>	01.13	010	010	010	041.04	071.22	031.29	3	Not				
PSNS015 Level	0.18	0.19	0.19	2.40	5.66	7.04	5.67	Conversion Issues lost-comm	Comm. Not Yet restored	0.19			
PSNS015 Cond.	53	56.44	1143	9697	31804	328	167			52.99			
Smpl Marker	5 <sup>①</sup>	5	5	5	5	7	14						
PSNS084.1 Rain													
PSNS084.1 Level													
PSNS084.1 Cond.													
Smpl Marker													
PSNS115.1 Rain													
PSNS115.1 Level													
PSNS115.1 Cond.													
Smpl Marker													
PSNS124 Rain													
PSNS124 Level													
PSNS124 Cond.													
Smpl Marker													
PSNS124.1 Rain													
PSNS124.1 Level													
PSNS124.1 Cond.													
Smpl Marker													
PSNS126 Rain													
PSNS126 Level													
PSNS126 Cond.													
Smpl Marker													

<sup>1</sup>Rain dephs are reported as 1-hr / 24-hr totals

① Smpl marker (5) as a result of sampler calibration

Date:	4.18.12		Sampling Support Personnel:		Rupert	
STE #	12 (Bonus)	Storm Controller:	Metallo	Strm Evnt Start / Stp	4-19-12 (1154-1727) 4-20-12 (~1150)	
Enabling Information:						
Sample Station:	PSNS015	PSNS084.1	PSNS115.1	PSNS124	PSNS124.1	PSNS126
Rain enable (in/hr)	0.03					
Level Enable (ft)	0.3					
Cond. (µS/cm)	2000					
Repeat. Cond Set ?	No					
Pacing Rate (min)	15					
Date	4.18.11					
Time	1200					
Comp Dup ? / where:		NONE collected		Grab Dup ? / where:		NONE collected

## EVENT NOTES:

## Batt Levels:

4/18/12 logger 13.72  
 smplr 12.80

4/19/12 logger 14.13  
 smplr 12.79

## Storm Summary:

Storm rainfall = 0.46"

Sample period rainfall = 0.28"

- This event (#12-Bonus) is being conducted at PSNS015 only. There has been a LISST Streamside analyzer installed (4/13) and is collecting data since 4/13 and throughout the storm event period.
- ~ (1930) 4-19 datalogger developed communication issue (due to "hang up" w/ terminal emulator function). Sent Rupert to site to check things out. Power cycled the modem several times - but to no avail. Decided not to power cycle the datalogger mid-storm. Will have Rupert take additional actions in the morning if comm hasn't been re-established. ~0800 4/20 comm still not re-est'd - will wait out remainder of storm and have Rupert call me from the site to work through comm issues.



PSNS NPDES Non-Dry Dock Monitoring and Support

Telemetry, 24-1L bottle set-up

Taylor Associates, Inc.

ver.020411

Station: 015	MH/CB#:	Loc. Descrip. McDonalds	Page: 1 of 2
--------------	---------	-------------------------	--------------

pages per station

Section 1. Station Reset and Inspection			
Personnel: BR/IS/Dm/CN		Weather: Sunny, temp 60's	Arrival Date/Time: 1330 4/13/12
Carry-over maintenance to do prior to set-up: none			done?
Sampler Battery Voltage	NO Battery 12.55-12	Changed? Y N added	New voltage —
Modem Battery Voltage	13.94	Changed? Y (N)	New voltage —
Sample Tubing & Strainer OK?	OK	Sampler Info.	
Transducer & Telemetry System Info.		Time Display OK? (Yes/No)	yes OK
Trans. Cable OK?	OK	Internal Sampler Tubing OK?	OK
Trans. Desiccant OK (Yes/No)	OK	Tubing Replaced? (Yes/No)	NO
Telem. Box Desiccant OK (Yes/No)	OK	Normal Smpmr Program or Dup. ?	Normal
Modem Status	Operational	Bottles Loaded ?	YES
Notes (including channel condition): New off set = + 0.17		Lid Status?	ON
		Backflushed with DI?	NO
		Suction line & quick connect attached?	yes
		Smpmr Status (on/off) / last screen..	off

Section 2. Storm Setup and Inspection			
Personnel: BR		Weather: Sunny, winds 10 mph	Arrival Date/Time: 4/18/12 @ 1300
Sampler Battery Voltage	12.55	Changed? Y (N) added	New voltage —
Modem Battery Voltage	13.65	Changed? Y (N)	New voltage —
Sample Tubing & Strainer OK?	OK	Sampler Setup	
Transducer & Multi-meter Setup		Time/Date Display OK? (Yes/No)	OK
Transducer Cable OK?	OK	Aliquot Vol. Cal'ed (Y/N & vol.)	yes (5 tries)
Multi-meter Cable OK	OK	Program Reviewed (Yes/No), Dup ?	Normal
Recorded Level (FT)	13.85	Lids off bottles?	yes
Measured Level (FT)	13.85	Diagnostics/Distributor arm check?	yes
Offset Diff (FT)	0	Backflush with DI?	NO
Level Adjusted ?	NO	Storm Reset (1, enter) Completed	yes
Cond. Sonde Type (YSI6820 or INW-CT2X)	INW	Last screen... Program Dis 1317	4/18/12
Cond. Sonde Cal. Info. : Recorded Val. =		Meas. Val. =	Diff. = (>10% adj. offset); Offset = New Rec Val =
Notes: (e.g. enabling values, cond cal. meter make/model/ser#, etc.) offset not changed / left at +0.17			

Section 3. Grab Sample Collection					
Personnel:		Weather:		Arrival Date/Time:	
On Composite... (Bottle #/ Aliq #)		Conductivity Reading (µS/cm):			
Grab Parameters Collected		Salinity Reading (PPT):			
Grab Sample ID		Temp. Reading (°C):			
Grab Date/Time	NA	Turbidity Reading (NTU)			
Grab Dup ID		Equipment running correctly?			
Grab Dup Date/Time		Sampler Battery Voltage (Changed?):			
Sample Observations (notify storm controller if sample turbidity, odor, color, foam, or sheen look out of the ordinary): which?:					
Storm Controller notified (Y or N/A)?:		Grab MS/MSD Collected ? Y / N		Ice OK?	
Notes: (what meter was used for site readings, etc.)					

NO Grabs collected as part of Bonus storm.

Station: 015 continued from previous page

 Page: 2 of 2
**Section 4. Post-Storm Sample Collection (for grab, comp or both)**

Personnel: <u>B2 / 1 Bob</u>	Weather: <u>overcast / Light Rain</u>	Arrival Date/Time: <u>4/20/12 @ 1130</u>
Sampler Battery Voltage	<u>Good - removed</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>
Telemetry Battery Voltage	<u>Good</u>	Changed? Y <input type="radio"/> N <input checked="" type="radio"/>
Additional Grabs (IDs, date/time)		
Additional Dup Grab (IDs, date/time)		
Composite Begin Time (date/time)	<u>1732</u>	Sampler Report Downloaded? <input checked="" type="checkbox"/>
Last Aliquot Taken (date/time, bott #, aliq #)	<u>4/20/12 @ 1037 bottle 18 20/4 last aliq. sent.</u>	
Total Composite Sample Volume Collected		
Aliquots missed/NLD (date/time/bott #/aliq #)	<u>19-24 Empty bottle 18 1/2 full</u>	
<u>- 16 110% full -</u>		
Channel Condition / Observations (oil/sheen, floatables, turbidity, suspended solids, discoloration, odor...)? <u>NO major observations / Typical</u>		
Storm Contoller notified (Y or N/A)? <input checked="" type="checkbox"/>	Which parameter? <u>NO</u>	
Notes: <u>None Manual stop @ 1139</u>		
Maintenance Needed: <u>None</u>		

**Section 5. Compositing Scheme and QC Sampling**

Personnel: <u>B2 / Jill B</u>	Date/Time: <u>4/20/12</u>
Conductivity & Turbidity Meter/s Info. (Manuf., Model, Serial#, Cal.info.) <u>COND = EC 300 / Turbidity Z100P Hoch</u>	
Conductivity & Turbidity Testing (List ind. smplr bottle; cond. reading in $\mu\text{S}/\text{cm}$ ; turb. reading in NTU; will ind. smplr be included in comp smplr Y/N):	
1 1,200 / 42 / Y	7 417 / 9 / Y
2 70 / 25 / Y	8 228 / 13 / Y
3 42 / 16 / Y	9 581 / 11 / Y
4 67 / 17 / Y	10 8,300 / 10 / N
5 168 / 20 / Y	11 40,100 / 6 / N
6 304 / 18 / Y	12 42,350 / 4 / N
13 15,750 / 8 / N	14 1,065 / 10 / Y
15 311 / 8 / Y	16 236 / 33 / Y
17 158 / 12 / Y	18 186 / 9 1/2 mL
19 E	20 E
21 E	22 E
23 E	24 E
Brief Description of Compositing Scheme: (include what bottles, based on bench-top screening above, where used for the overall composite sample) <u>used 70 mL from 14 bottles / Total = 980 mL</u>	
Overall Composite Info. (include conductivity and turbidity measurements, volume and requested analysis) <u>COND = 338 Turb = 17 Vol = 500 980 mL Analysis = Per 2011-12 prep</u>	
Composite Sample ID & Time: <u>SW12-019 (1037) 4/20/12</u>	
Field Blank Collected? (date/time)	<u>NO</u>
Blank ID:	<u>NA</u>
Duplicate comp sample? Yes/No	<u>NO</u>
Duplicate sample ID	<u>NO</u>

NOTES:

(4.4 9.12)



# SAMPLE CHAIN OF CUSTODY FORM

Date:

Page: Page 1 of 2

Project No.: 54220 / 62375

Project: Non-dry Dock Stormwater SW12

SW = Stormwater

## Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

3174  
Diss

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TPH	TME/DME	DME	No. containers	Sample Type (grab vs. Comp)	Storm#	Notes/Comments
133 SW12-001 134	PSNSOIS - 1	4/20/12 1031	SW			X	X	X	X		3	comp	SW12	
135 SW12-002 136	PSNSOIS - 2		SW			X	X		X		3		SW12	
137 SW12-003 138	PSNSOIS - 3		SW			X	X		X		3		SW12	Amphiodie
139 SW12-004 140	PSNSOIS - 4		SW			X	X		X		3		SW12	
141 SW12-005 142	PSNSOIS - 5		SW			X	X		X		3		SW12	Debris; organic & detritus
143 SW12-006 144	PSNSOIS - 6		SW			X	X		X		3		SW12	Debris; organic (soil/grass)
145 SW12-007 146	PSNSOIS - 7		SW			X	X		X		3		SW12	
147 SW12-008 148	PSNSOIS - 8		SW			X	X		X		3		SW12	
149 SW12-009 148	PSNSOIS - 9		SW			X	X		X		3		SW12	
151 SW12-010 150	PSNSOIS - 10		SW			X	X		X		3		SW12	Amphiodie
153 SW12-011 152	PSNSOIS - 11		SW			X	X		X		3		SW12	
155 SW12-012 156	PSNSOIS - 12		SW			X	X		X		3		SW12	
157 SW12-013 158	PSNSOIS - 13		SW			X	X		X		3		SW12	Amphiodie

Relinquished by:

Signature: *[Signature]* Date: 4/20/12 Time: 1750  
Printed Name: Jim Brandenberger Company: PNNL

Received by:

Signature: *[Signature]* Date: 4/20/12 Time: 1830  
Printed Name: C. Sushan Company: MSL

Total # of Containers

Shipment Method:  
Hand Delivered to MSL

Relinquished by:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
Printed Name: \_\_\_\_\_ Company: \_\_\_\_\_

Received by:

Signature: \_\_\_\_\_  
Printed Name: \_\_\_\_\_

Sample Disposition:

Distribution:  
1) PNNL  
2) CAS

4/20/12

# **SAMPLE CHAIN OF CUSTODY FORM**

Date:

Page: Page of 2

Project No.: 54220 / 62375

Project: Non-dry Dock Stormwater SW12

SW = Stormwater

## **Battelle**

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TPH	TME/DME	DME	No. containers	Sample Type (grab vs. Comp)	Storm#	Notes/Comments
3174														
159 SW12-014	PSNSO15-14	4/20/12 1037	SW			X	X		X		3	comp	SW12	
161 SW12-015	PSNSO15-15		SW			X	X		X		3		SW12	
163 SW12-016	PSNSO15-16		SW			X	X		X		3		SW12	Debris, organic & Detritus
165 SW12-017	PSNSO15-17		SW			X	X		X		3		SW12	Small amount of Detritus
167 SW12-018	PSNSO15-18		SW			X	X		X		3		SW12	
3259-7 SW12-019	PSNSO15	4/13/12	SW						X		1	grab	SW12	vault sediment
169 SW12-020	PSNSO15	4/20/12 1037	SW			X	X		X		3	comp	SW12	storm comp
SW12-021			SW										SW12	
SW12-022			SW										SW12	
SW12-023			SW										SW12	
SW12-024			SW										SW12	
SW12-025			SW										SW12	
SQV07-006 8/4/23/12														
Relinquished by: <u>JM Brandenberger</u> 4/20/12 1750				Received by: <u>C. Susun</u> 4/20/12 1830				Total # of Containers						
Signature: <u>JM Brandenberger</u> Date: <u>4/20/12</u> Time: <u>1750</u>				Signature: <u>C. Susun</u>				Shipment Method:						
Printed Name: <u>JM Brandenberger</u> Company: <u>PNNL</u>				Printed Name: <u>C. Susun</u>				Hand Delivered to MSL						
Relinquished by:				Received by:				Sample Disposition:						
Signature: _____ Date: _____ Time: _____				Signature: _____				Distribution:						
Printed Name: _____ Company: _____				Printed Name: _____				1) PNNL						
								2) CAS						

8/4/2012

**PSNS NDDSW Monitoring      Stormwater Sampling Event #12 (4/19/12)**

**Stormwater Outfall Total Discharge Volume Estimation Equations**

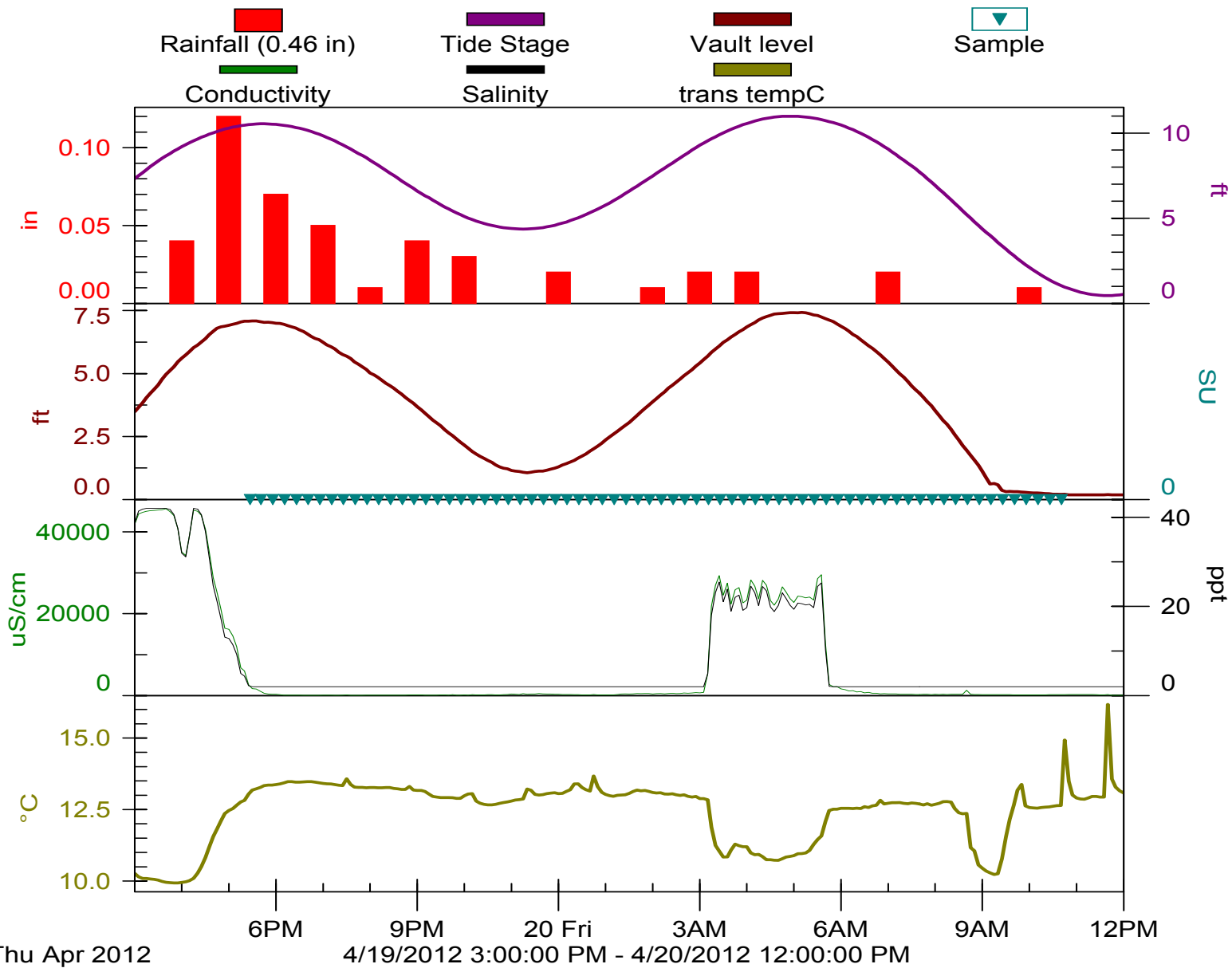
PSNS Drainage Basin	Total Basin Area (ft <sup>2</sup> )	Type of Surface	Percentage of Drainage Basin Surface Type	Area of Basin Surface Type (ft <sup>2</sup> )	<sup>1</sup> Runoff Coefficient Range	Area of Basin Surface Type with Maximum Coefficient Value Applied (ft <sup>2</sup> )	<sup>2</sup> Total Discharge Volume (ft <sup>3</sup> )
126	662,986	Impervious	98.55	653,373	0.6 – 0.9	588,036	R(591,881)
		Pervious	1.45	9,613	0.2 – 0.4	3,845	
124.1	116,000	Impervious	94.56	109,690	0.6 – 0.9	98,721	R(101,245)
		Pervious	5.44	6310	0.2 – 0.4	2,524	
124	454,000	Impervious	94.56	429,302	0.6 – 0.9	386,372	R(396,251)
		Pervious	5.44	24,698	0.2 – 0.4	9,879	
115.1	463,042	Impervious	97	449,104	0.6 – 0.9	361,422	R(366,390)
		Pervious	3	13,938	0.2 – 0.4	4,968	
84.1	23,958	Impervious	100	23,958	0.6 – 0.9	21,562	R(21,562)
15	4,018,862	Impervious	50	2,009,431	0.5 – 0.8	1,607,549	R(2,411,321)
		Pervious	50	2,009,431	0.25 – 0.4	803,772	

**Calculation Worksheet:**

STATION	Combined Drainage Area (FT <sup>2</sup> )	ENTER: Smpl Evnt Rain Total (in)	Sampl Evnt Rain Total (FT)	STE Runoff Vol. (gal)
126	591,881	0.00	0.0000	0
124.1	101,245	0.00	0.0000	0
124	396,251	0.00	0.0000	0
115.1	366,390	0.00	0.0000	0
84.1	21,562	0.00	0.0000	0
015	2,411,321	0.46	0.0383	691,454

# PSNS 015

SW12 4-19-12

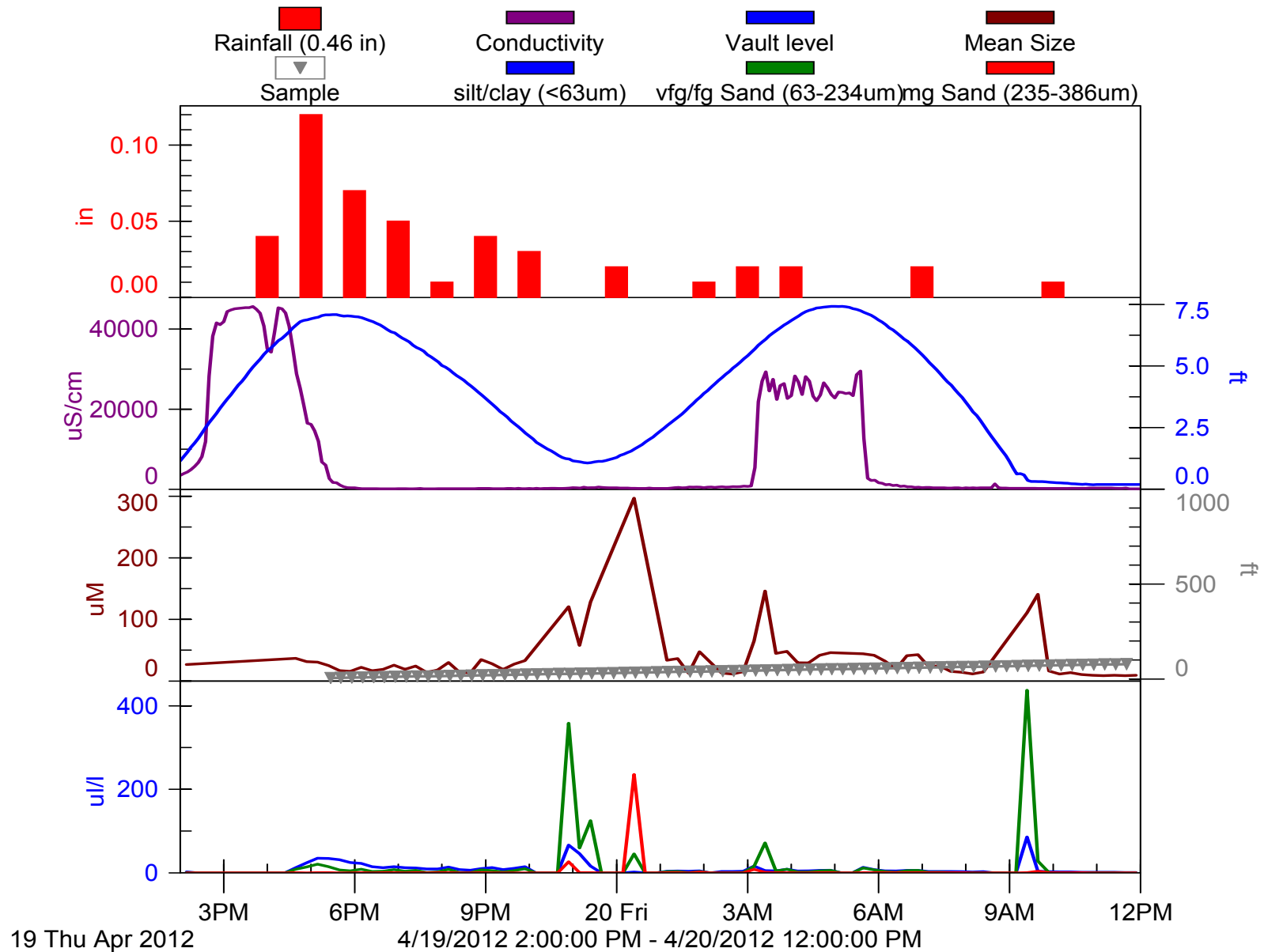




LISST-StreamSide Data for the  
SW12 Event

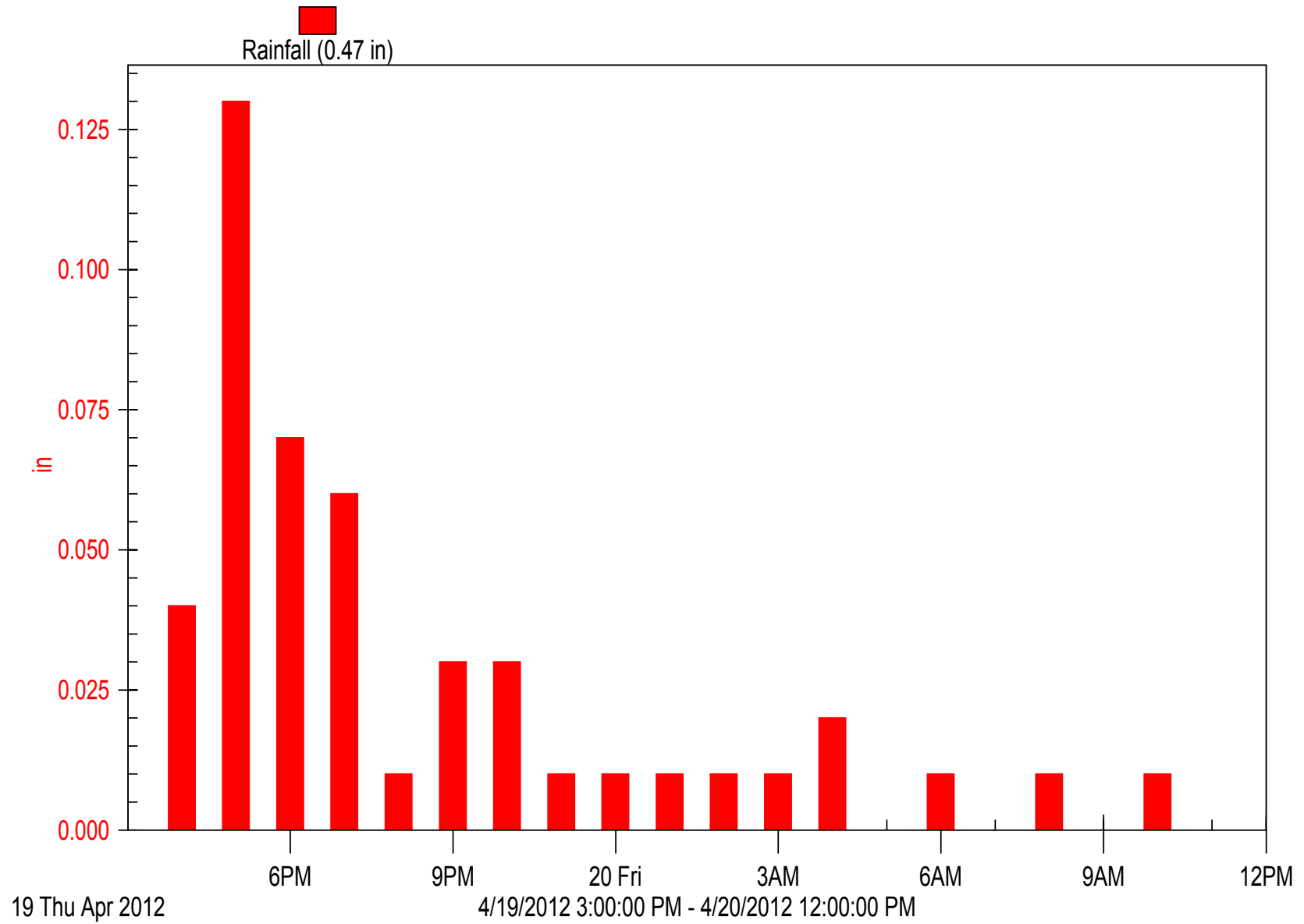
# PSNS 015

SW12 4/19/2012 Total Storm Period



# PSNS B427 Rain

SW12 4-19-12



**STE#12 PSNS015**

**SAMPLER ID# 2425481222 11:48 20-APR-12**

**Hardware: B2     Software: 3.26**

**\*\*\*\*\* PROGRAM SETTINGS \*\*\*\*\***

**-----**

**PROGRAM NAME:**

**"PSNS015 "**

**SITE DESCRIPTION:**

**"PSNS015 "**

**-----**

**UNITS SELECTED:**

**LENGTH: ft**

**-----**

**24, 1000 ml BTLS  
22 ft SUCTION LINE  
18 ft SUCTION HEAD  
0 RINSES, 0 RETRIES**

**-----**

**ONE-PART PROGRAM**

**-----**

**PACING:**

**FLOW, EVERY**

**1 PULSES**

**SAMPLE AT START**

**-----**

**DISTRIBUTION:**

**4 SAMPLES/BOTTLE**

**-----**

**VOLUME:**

**240 ml SAMPLES**

**-----**

**ENABLE:**

**NONE PROGRAMMED**

**-----**

**ENABLE:**

**ONCE ENABLED,  
STAY ENABLED**

STE#12 PSNS015

SAMPLE AT ENABLE

-----

ENABLE:

0 PAUSE & RESUMES

-----

NO DELAY TO START

-----

-----

-----

LIQUID DETECT ON

NO RAIN GAGE

-----

NO YSI SONDE

-----

MASTER/SLAVE OFF

BTL FULL DETECT OFF

TIMED BACKLIGHT

-----

EVENT MARK SENT

DURING PUMP CYCLE

-----

PUMP COUNTS FOR

EACH PURGE CYCLE:

200 PRE-SAMPLE

AUTO POST-SAMPLE

-----

I/O1= NONE

I/O2= NONE

I/O3= NONE

-----

0 ANALOG OUTPUTS

NO PERIODIC

SERIAL OUTPUT

-----

NO DIALOUT

CONDITIONS SET

-----  
SAMPLER ID# 2425481222 11:48 20-APR-12

**STE#12 PSNS015**

**Hardware: B2      Software: 3.26**

**\*\*\*\*\* SAMPLING RESULTS \*\*\*\*\***

**SITE: PSNS015**

**PROGRAM: PSNS015**

**Program Started at 13:17 WE 18-APR-12**

**Nominal Sample Volume = 240 ml**

**COUNT**

**TO**

**SAMPLE BOTTLE TIME SOURCE ERROR LIQUID**

-----

**13:17 PGM DISABLED**

----- **TH 19-APR-12** -----

**17:23 PGM ENABLED**

1,4	1	17:23	E	750
2,4	1	17:37	F	749
3,4	1	17:52	F	747
4,4	1	18:07	F	748
1,4	2	18:22	F	749
2,4	2	18:37	F	754
3,4	2	18:52	F	753
4,4	2	19:07	F	759
1,4	3	19:22	F	761
2,4	3	19:37	F	766
3,4	3	19:52	F	770
4,4	3	20:07	F	773
1,4	4	20:22	F	776
2,4	4	20:37	F	777
3,4	4	20:52	F	781
4,4	4	21:07	F	784
1,4	5	21:22	F	790
2,4	5	21:37	F	797
3,4	5	21:52	F	803
4,4	5	22:07	F	812
1,4	6	22:22	F	813
2,4	6	22:37	F	820
3,4	6	22:52	F	815
4,4	6	23:07	F	821
1,4	7	23:22	F	816

**STE#12 PSNS015**

2,4	7	23:37	F	819
3,4	7	23:52	F	814
-----FR 20-APR-12-----				
4,4	7	00:07	F	814
1,4	8	00:22	F	807
2,4	8	00:37	F	803
3,4	8	00:52	F	801
4,4	8	01:07	F	795
1,4	9	01:22	F	790
2,4	9	01:37	F	789
3,4	9	01:52	F	785
4,4	9	02:07	F	778
1,4	10	02:22	F	775
2,4	10	02:37	F	768
3,4	10	02:52	F	766
4,4	10	03:07	F	767
1,4	11	03:22	F	761
2,4	11	03:37	F	761
3,4	11	03:52	F	759
4,4	11	04:07	F	755
1,4	12	04:22	F	749
2,4	12	04:37	F	745
3,4	12	04:52	F	748
4,4	12	05:07	F	747
1,4	13	05:22	F	746
2,4	13	05:37	F	743
3,4	13	05:52	F	745
4,4	13	06:07	F	749
1,4	14	06:22	F	749
2,4	14	06:37	F	755
3,4	14	06:52	F	757
4,4	14	07:07	F	761
1,4	15	07:22	F	767
2,4	15	07:37	F	768
3,4	15	07:52	F	778
4,4	15	08:07	F	786
1,4	16	08:22	F	790
2,4	16	08:37	F	805

**STE#12 PSNS015**

3,4	16	08:52	F NM	*
4,4	16	09:07	F	827
1,4	17	09:22	F	826
2,4	17	09:37	F	823
3,4	17	09:52	F	823
4,4	17	10:07	F	826
1,4	18	10:22	F NM	*
2,4	18	10:37	F NM	*
3,4	18	10:52	F NL	*
4,4	18	11:07	F NL	*
1,2	19	11:22	F NL	*
2,2	19	11:37	F NL	*

11:39 MANUAL PAUSE

11:39 PGM STOPPED 20-APR

SOURCE E ==> ENABLE

SOURCE F ==> FLOW

ERROR NL ==> NO LIQUID DETECTED!

ERROR NM ==> NO MORE LIQUID!

-----

## National Weather Service National Headquarters National Weather Service

### Area Forecast Discussion

Issued by NWS Seattle/Tacoma, WA

**Current Version** | [Previous Version](#) | [Text Only](#) | [Print](#) | [Product List](#) | [Glossary Off](#)  
Versions: [123456789101112131415161718192021222324252627282930313233343536](#)

000  
FXUS66 KSEW 191548  
AFDSEW

[AREA FORECAST DISCUSSION](#)  
NATIONAL WEATHER SERVICE SEATTLE WA  
845 AM PDT THU APR 19 2012...CORRECTED

.SYNOPSIS...A FRONTAL SYSTEM WILL REACH WESTERN WASHINGTON THIS AFTERNOON AND EVENING. THE [FRONT](#) WILL MOVE THROUGH THE AREA FRIDAY MORNING. WEAK HIGH PRESSURE WILL BUILD LATER FRIDAY INTO SATURDAY. AN UPPER [TROUGH](#) WILL DEVELOP OVER THE PACIFIC NORTHWEST NEXT WEEK.

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.SHORT TERM...[IR](#) SATELLITE IMAGE SHOWS BRIGHTER CLOUD TOPS ASSOCIATED WITH THE WARM FRONTAL [MOISTURE](#) APPROACHING THE COAST THIS MORNING. A FEW SHOWERS IN ADVANCE OF THE MAIN BULK OF [MOISTURE](#) HAVE ALREADY SKIRTED THROUGH WRN OREGON AND SW WA THIS MORNING. MODELS INDICATE THE STEADIER [RAINFALL](#) WILL REACH THE COAST BY MIDDAY AND QUICKLY SPREAD INLAND. MODELS ARE IN BROAD AGREEMENT REGARDING TIMING WITH STEADY RAIN BEGINNING IN THE PUGET SOUND REGION EARLY TO MID AFTERNOON AND INCREASING THROUGH EARLY THIS EVENING. [RAINFALL](#) WILL BE MORE GENEROUS WITH THIS SYSTEM ACROSS THE LOWLANDS THAN PREVIOUS SYSTEMS. WIDESPREAD AMOUNTS OF A HALF INCH AND LOCALLY HIGHER SHOULD BE EXPECTED THROUGH THIS EVENING...THEN ADDITIONAL AMOUNTS WITH THE COLD [FRONT](#) LATE TONIGHT/FRIDAY MORNING. HEAVIER [RAINFALL](#) ACROSS THE SW INTERIOR AND PUGET SOUND WILL LIFT FURTHER [NWD](#) BY LATE THIS EVENING THEN SLIDE [SWD](#) AGAIN WITH THE [FRONT](#) EARLY FRIDAY MORNING. MODELS ARE NOT IN GOOD AGREEMENT AS TO HOW QUICKLY THIS [FRONT](#) MOVES OUT OF THE AREA. THE [ECMWF](#) IS THE FASTEST WHILE THE [GFS](#) SHOWS A DYING [FRONT](#) LINGERING INTO EARLY SATURDAY. THE AVERAGE OF THE MODELS THE PAST SEVERAL RUNS INDICATE THE [ECMWF](#) SOLUTION MAKES THE MOST SENSE.

HIGH PRESSURE CENTERED OVER THE EXTREME DESERT SW WILL BUILD [NWD](#) SATURDAY AND SUNDAY. THIS SHOULD PROVIDE MOSTLY DRY WEATHER FOR THE AREA. HOWEVER...MODELS HAVE NOTABLY BACKED OFF ON THE STRENGTH OF THE [RIDGE](#) WHICH IS NOW CENTERED FURTHER S THAN THE FOUR CORNERS REGION THAT THE MODELS INDICATED THE LAST COUPLE DAYS. WHILE A DRY AND WARMER SATURDAY APPEARS TO BE A SAFE BET...THE SUNDAY FORECAST IS SOMEWHAT TRICKIER. IF THE [RIDGE](#) FLATTENS AND MOVES OFF TO THE E A LITTLE QUICKER...THEN MOIST SW [FLOW](#) COULD BRING SOME LIGHT RAIN TO THE COAST AND OLYMPIC PENINSULA...AND POSSIBLY EVEN TO AREAS FURTHER INLAND. WATCHING HOW MODELS HAVE VARIED THE PAST COUPLE DAYS AND ALSO THE GENERAL PATTERN MAKES ME BELIEVE DRY WEATHER WILL HOLD ACROSS THE AREA WITH JUST A CHANCE OF SOME LIGHT RAIN SKIRTING THE COAST AND MAYBE OLYMPICS...IF ANY RAIN AT ALL. IF THE [MOISTURE](#) REMAINS MOSTLY OFFSHORE...SUNDAY COULD IN FACT BE THE WARMEST DAY. THE 60S IN THE FORECAST AREA FINE FOR NOW BUT I COULD ENVISION THE GREATER PUGET SOUND REGION REACHING NEAR 70. MERCER

.LONG TERM...PREVIOUS DISCUSSION FOLLOWS...DETAILS OF HOW MUCH [MOISTURE](#) KICKS OUT OF THE WEAK UPPER [TROUGH](#) SUNDAY AND MONDAY KEEPS CHANGING. THE LATEST 00Z [GFS](#) HAS THE [TROUGH](#) MOVING THROUGH THE REGION MONDAY AND A NEW PRETTY VIGOROUS LOOKING UPPER [TROUGH](#) DEVELOPING IN THE NE [PAC](#) TUE AND WED...SO THE FIRST HALF OF NEXT WEEK IS [LIKELY](#) TO BE COOL AND WET. THE [MOSTLY CLOUDY](#)/CHANCE OF SHOWERS THAT IS IN THE [FCST](#) NOW PROBABLY NEEDS A PUSH TOWARD AT LEAST A COUPLE PERIODS OF MORE ORGANIZED PRECIPITATION. 19

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.AVIATION...WESTERLY [FLOW](#) ALOFT OVER THE PACIFIC NORTHWEST THIS MORNING WITH A WEAK UPPER [RIDGE](#) JUST OFFSHORE. THE [RIDGE](#) WILL MOVE INLAND TODAY...THEN THE [FLOW](#) WILL INCREASE AND BACK TO SOUTHWEST AS A [FRONT](#) MOVES THROUGH THE REGION LATE TODAY AND TONIGHT. THE AIR MASS WILL BE [STABLE](#) AND WITH MID LEVEL [MOISTURE](#) THIS MORNING...THEN BECOME MOIST ALL LEVELS BY AFTERNOON.

MOSTLY [VFR](#) SKIES ACROSS WESTERN WASHINGTON THIS MORNING...BUT THERE IS A MIX OF CONDITIONS WITH LOCAL [IFR](#) CEILINGS AND [ISOLATED](#) FOG AT THE MOST [FOG](#)-PRONE SPOTS. MID LEVEL CLOUDS WILL INCREASE LATE THIS MORNING...AND RAIN WITH THE INCOMING [FRONT](#) WILL REACH THE COAST BEFORE NOON AND SPREAD INLAND DURING THE AFTERNOON. CONDITIONS SHOULD DETERIORATE TO [MVFR](#) AND LOCAL [IFR](#) RATHER QUICKLY THIS AFTERNOON. MOIST ONSHORE [FLOW](#) WILL [MEAN](#) LITTLE IMPROVEMENT BEHIND THE [FRONT](#) LATER TONIGHT.

KSEA...RAIN WILL BEGIN AT KSEA AROUND 2 PM TODAY WITH [MVFR](#) CONDITIONS [LIKELY](#) BY 5 PM. MCDONNAL/13



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.MARINE...A [FRONT](#) WILL MOVE INTO THE WASHINGTON [COASTAL WATERS](#) LATE TODAY AND INLAND ACROSS WESTERN WASHINGTON TONIGHT. THE [FRONT](#) SHOULD BRING [SMALL CRAFT ADVISORY](#) SOUTHERLY WINDS TO THE [COASTAL WATERS](#) AND MOST INLAND WATERS ZONES...FOLLOWED BY WESTERLY [SMALL CRAFT ADVISORY](#) WINDS TONIGHT IN THE CENTRAL STRAIT OF JUAN DE FUCA AND EAST ENTRANCE.

HIGH PRESSURE WILL BUILD OVER THE PACIFIC NORTHWEST OFFSHORE WATERS IN THE [WAKE](#) OF THE [FRONT](#) LATE TONIGHT AND FRIDAY. THE HIGH WILL SHIFT INLAND FRIDAY NIGHT AND SATURDAY...AND A WEAK [FRONT](#) COULD BRUSH THE FORECAST AREA SUNDAY. ONSHORE [FLOW](#) WILL DEVELOP MONDAY.  
MCDONNAL

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.SEW WATCHES/WARNINGS/ADVISORIES...  
WA...NONE.  
PZ...[SMALL CRAFT ADVISORY](#) ALL WATERS.


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FOR THE GRAPHICAL [AFD](#) VISIT...  
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## Your National Weather Service forecast

# Bremerton WA



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NWS Seattle, WA

**Point Forecast:** Bremerton WA





47.56°N 122.62°W (Elev. 0 ft)

[Mobile Weather Information](#) | [En Español](#)

**Last Update:** 5:11 am PDT Apr 19, 2012

**Forecast Valid:** 12pm PDT Apr 19, 2012-6pm PDT Apr 25, 2012

### Forecast at a Glance

This Afternoon	Tonight	Friday	Friday Night	Saturday	Saturday Night	Sunday	Sunday Night	Monday
								
70%	100%	90%						
Rain Likely	Rain	Showers	Mostly Cloudy	Partly Sunny	Mostly Cloudy	Mostly Cloudy	Chance Showers	Chance Showers
Hi 57 °F	Lo 48 °F	Hi 56 °F	Lo 47 °F	Hi 59 °F	Lo 47 °F	Hi 61 °F	Lo 49 °F	Hi 59 °F

### Detailed 7-day Forecast

**This Afternoon:** Rain likely. Cloudy, with a high near 57. South wind around 7 mph. Chance of precipitation is 70%.

**Tonight:** Rain. Low around 48. South southwest wind between 5 and 14 mph. Chance of precipitation is 100%.

**Friday:** Showers, mainly before 11am. High near 56. Southwest wind at 7 mph becoming northeast. Chance of precipitation is 90%.

**Friday Night:** Mostly cloudy, with a low around 47. Calm wind.

**Saturday:** Partly sunny, with a high near 59. North northeast wind between 5 and 7 mph.

**Saturday Night:** Mostly cloudy, with a low around 47.

**Sunday:** Mostly cloudy, with a high near 61.

**Sunday Night:** A chance of showers. Mostly cloudy, with a low around 49.

**Monday:** A chance of showers. Mostly cloudy, with a high near 59.

**Monday Night:** A chance of showers. Mostly cloudy, with a low around 45.


**Tuesday:** A chance of showers. Mostly cloudy, with a high near 56.

**Tuesday Night:** A chance of showers. Mostly cloudy, with a low around 45.

**Wednesday:** A chance of showers. Mostly cloudy, with a high near 57.

### Detailed Point Forecast [Move Down]



Click Map for Forecast [Disclaimer](#)



Map data ©2012 Google -

Requested Location ■ Forecast Area

**Lat/Lon:** 47.56°N 122.62°W **Elevation:** 0 ft

### Current Conditions [Move Up]

**Bremerton, Bremerton National Airport (KPWT)**

Lat: 47.5 Lon: -122.75 Elev: 440

Last Update on 19 Apr 10:55 PDT

Observation Quality is **Caution**

**Mostly Cloudy**

**36°F**

**Humidity:** 100 %

**Wind Speed:** SSW 5 MPH

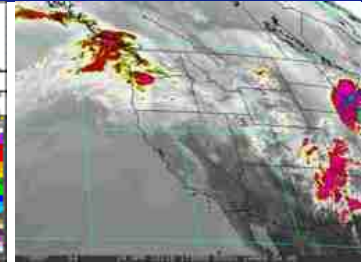
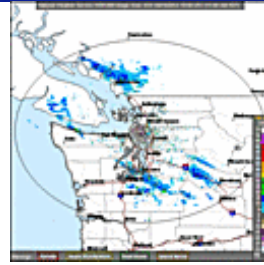
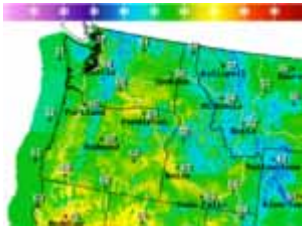
**Barometer:** 30.09 in (N/A mb)

**Dewpoint:** 36°F (2°C)

**Wind Chill:** 32°F (0°C)

**(2°C)****Visibility:**

10.00 Miles

**More Local Wx:****3 Day History:****Radar and Satellite Images****National Digital Forecast Database****Additional Forecasts & Information**[Zone Area Forecast for Seattle/Bremerton Area, WA](#)[Forecast Discussion](#)[Printable Forecast](#)[Text Only Forecast](#)[Hourly Weather Graph](#)[Tabular Forecast](#)[Quick Forecast](#)[International System of Units](#)[About Point Forecasts](#)[Forecast Weather Table Interface](#)[Webmaster](#)National Weather Service:  
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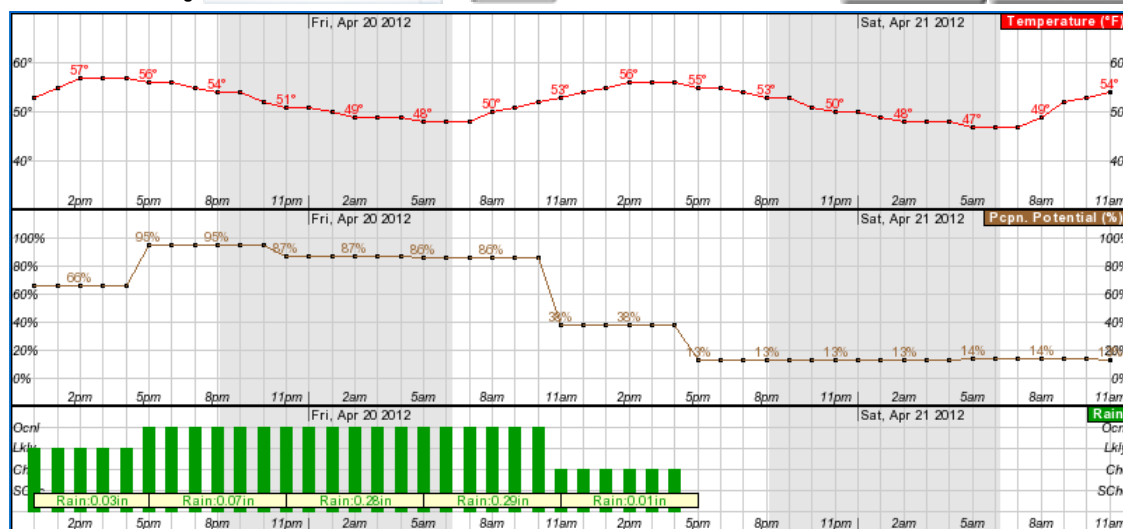
**Point Forecast:** Bremerton WA  
47.56N 122.62W (Elev. 0 ft)

Last Update: 5:11 am PDT Apr 19, 2012

**Hourly Weather Forecast Graph**[\[dashes/dots\]](#) [\[b/w\]](#) [\[hide menu\]](#)

Weather Elements	Weather/Precipitation	Fire Weather
<input checked="" type="checkbox"/> Temperature (°F)	<input type="checkbox"/> Thunder	<input type="checkbox"/> Mixing Height (x100ft)
<input type="checkbox"/> Dewpoint (°F)	<input checked="" type="checkbox"/> Rain	<input type="checkbox"/> Haines Index
<input type="checkbox"/> Wind Chill (°F)	<input type="checkbox"/> Snow	<input type="checkbox"/> Lightning Activity Level
<input type="checkbox"/> Surface Wind <input type="text" value="mph"/>	<input type="checkbox"/> Freezing Rain	<input type="checkbox"/> Trans. Wind <input type="text" value="mph"/>
<input type="checkbox"/> Sky Coverage	<input type="checkbox"/> Sleet	
<input checked="" type="checkbox"/> Precipitation Potential		
<input type="checkbox"/> Relative Humidity		

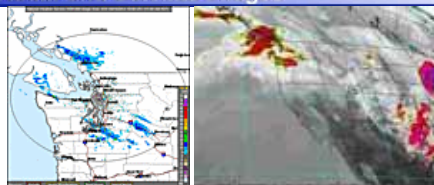
48-Hour Period Starting: 12pm Thu, Apr 19 2012

**Saturday, April 21 at 9am**

Temperature: 52 °F

Precipitation Potential: 14%

Rain: &lt;10%

**Radar and Satellite Images****Additional Forecasts & Information**[International System of Units](#)[Forecast Discussion](#)[7-Day Forecast](#)[Tabular Forecast](#)[Quick Forecast](#)

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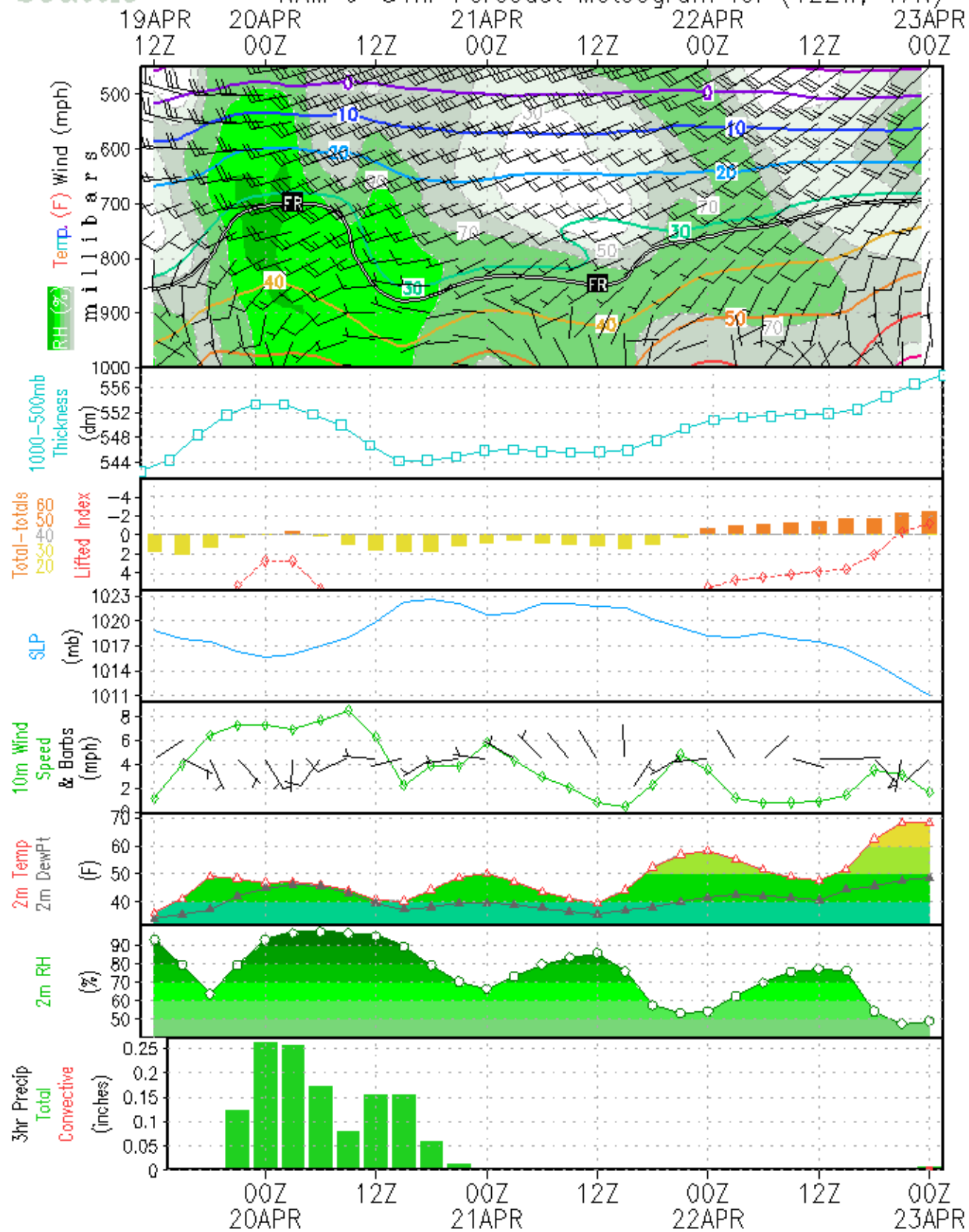
**Forecast For Lat/Lon: 47.5620/-122.6230 (Elev. 0 ft)**  
**Bremerton WA**

*Custom Weather Forecast Table*

	Thu Apr 19								Fri Apr 20								Sat Apr 21
Weather	Likely Rain				Rain				Rain				Chance Rain Showers				
Daily-Temp	High <b>57</b> Low <b>43</b>								High <b>56</b> Low <b>48</b>								Low <b>47</b>
Chance of Precip	15%	65%	95%		85%			85%	40%	15%			15%				15%
Precip	0.00"	0.04"	0.07"		0.28"			0.29"	0.01"	0.00"			0.00"				0.00"
12-hr Snow Total	0"				0"				0"				0"				
3-Hour Temp	5am 43	8am 46	11am 51	2pm 57	5pm 56	8pm 54	11pm 51	2am 49	5am 48	8am 50	11am 53	2pm 56	5pm 55	8pm 53	11pm 50	2am 48	
Cloudiness	57%	57%	100%	100%	100%	100%	100%	100%	91%	91%	74%	74%	60%	60%	60%	60%	
Dewpoint	42	44	45	47	47	47	47	47	47	47	47	47	47	47	46	46	
Relative Humidity	96%	93%	80%	69%	72%	77%	86%	93%	96%	89%	80%	72%	74%	80%	86%	93%	
Wind	S 3	E 3	SE 6	S 7	S 5	S 14	S 12	SW 8	SW 5	NE 6	NE 7	SE 3	S 2	S 2	N 2	N 2	
Snow Level (ft)	3189	3189	5152	5152	8191	8191	8433	8433	7005	7005	4886	4886	4833	4833	5452	5452	

# Seattle

NAM 0-84hr Forecast Meteogram for (122W, 47N)





Telemetry Data Summary Report  
 QAQC Data Notes from SW12  
 Data review from 3/16/12 to 4/24/12

Site	Parameter	Issue	Start Date/Time	End Date/Time	GAR Level of Concern	Comments
15	Level	Level Drift	3/13/2012 13:45	4/13/2012 15:15	Amber	Transducer level drifted up gradually during this period (base level from approx. 0.06' to 0.25'); from 4/13/12 15:15 to the end of record it recorded a base level of approx. 0.19'))
84.1	YSI Temperature	Inconsistent Data	Entire Record	Entire Record	Amber	YSI temperature doesn't track well with INW transducer temperature during dry conditions, and generally above 30 degrees C
84.1	All	End of Data		4/5/2012 11:25	Green	End of data record
115.1	Rainfall	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
115.1	Level	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
115.1	Temperature	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
115.1	Salinity	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
115.1	Conductivity	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
115.1	Conductivity	Inaccurate Data	Low Tide	Low Tide	Green	Negative measurements recorded during low-low tides on 4/6, 4/11, 4/12, and 4/20...disregard as error due to sensor being in air
115.1	Salinity	Null Data	Low Tide	Low Tide	Green	No measurements recorded during low-low tides on 4/6, 4/11, 4/12, and 4/20...disregard as error due to the Conductivity sensor recording negative values
126	Rainfall	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
126	Level	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
126	Temperature	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
126	Salinity	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch
126	Conductivity	Missing Data	3/16/2012 9:00	3/16/2012 9:55	Green	Missing Data due to DST switch