Appendix H

Monitoring

Stormwater/UIC Monitoring Data for 7/1/2014 to 6/30/2015

TABLE 1 – Action Levels for Pollutants	
Monitoring Parameter	Action Level at Injection Point (µg/L)
Benzo(a)pyrene	2
Pentachlorophenol	10
Di(2-ethylhexyl)phthalate	300
Lead (Total)	500
Zinc (Total)	50,000
Copper (Total)	1,300

Sample Location	1. 9/25/2014	2. 12/11/2014	3. 12/23/2014	4. 12/26/2014	5. 5/11/2015
1. Airport	x				x
2. Century Drive	x	x			
3. Boyd Acres	x	x			
4. Empire Ave	x	x			
5. Brookswood Blvd	x	x			
6. Ladera Rd	x	x			
7. Dup	x Airport	x Boyd			
8. Field Blank	x	x			
9. North Catch Basin			x	x	
10. South Catch Basin				x	

Location of Raw Data: ..\2014-15 Data

Date Sampled	Sample Location	UIC Number	COB Sample #	URC Sample #	*Benzo(a)pyrene	*Bis(2-ethylhexyl)phthalate	*Pentachlorophenol	**Copper	**Lead	**Zinc	PH	Conductivity
Units					ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Units	umhos/cm
Analytical Method					EPA 8270 C	EPA 8270 C	EPA 8270 C	EPA 200.8	EPA 200.8	EPA 200.8	EPA 150.1	EPA 120.0
Reporting Limit (MRL)					1.0	1.0	1.0	0.5	0.1	100	-	5.0
Detection Limit (MDL)					-	0.50	-	-	-	-	-	-
Effluent Discharge Action Level at Injection Point (ug/l)					2.0	300	10	1300	500	50,000	-	-
1. 9/25/2014	1. Airport	DDW009628	B4I2503-01	B4I2514-01	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	2.38	1.70	11,200	7.20	41.8
Samplers:	2. Century Drive	DDW003323	B4I2503-02	B4I2514-02	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	63.2	3.3	511	7.00	307
Jeff Buystedt	3. Boyd Acres	DDW003354	B4I2503-03	B4I2514-03	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	35.10	2.40	620	6.40	116
Dave Buchanan	4. Empire Ave	DDW008884	B4I2503-04	B4I2514-04	Not Detected(ND)	3.00	Not Detected(ND)	51.3	3.28	407	6.20	123
	5. Brookswood Blvd	DDW003312	B4I2503-05	B4I2514-05	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	65.00	1.43	411	6.30	270
	6. Ladera Rd	DDW003252	B4I2503-06	B4I2514-06	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	28.10	0.52	205	6.10	165
	7. Duplicate (Airport)	DDW009628	B4I2503-07	B4I2514-07	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	2.85	2.39	10,200	7.20	38.3
	8. Field Blank	-			Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	ND	0.11	98.8	5.20	5.50

   * Analysis was performed by Umpqua Reseach Company

** Analysis was performed by Neilson Research Corporation (For the 9/25/2014 sampling event onl

Date Sampled	Sample Location	UIC Number	COB Sample #	URC Sample #	Benzo(a)pyrene	Bis(2-ethylhexyl)phthalate	Pentachlorophenol	Copper	Lead	Zinc	PH	Conductivity
Units					ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Units	umhos/cm
Analytical Method					EPA 8270 C	EPA 8270 C	EPA 8270 C	EPA 6020	EPA 6020	EPA 6020	EPA 150.1	EPA 120.0
Reporting Limit (MRL)					1.0	10.0	1.0	10	2.0	20	-	5.0
Detection Limit (MDL)					-	0.50	-	1.00	0.40	6.0	-	-
Effluent Discharge Action Level at Injection Point (ug/l)					2.0	300	10	1300	500	50,000	-	-
2. 12/11/2014	1. Airport	DDW009628	No	Sample								
Samplers:	2. Century Drive	DDW003323	B4L1102-01	B4L1109-01	Not Detected(ND)	1.00	Not Detected(ND)	22.0	2.00	249	6.8	1780
Jeff Buystedt	3. Boyd Acres	DDW003354	B4L1102-02	B4L1109-02	Not Detected(ND)	3.00	Not Detected(ND)	19.0	3.00	405	6.8	196
Dave Buchanan	4. Empire Ave	DDW008884	B4L1102-03	B4L1109-03	Not Detected(ND)	3.00	Not Detected(ND)	53.0	5.00	218	7.1	1880
	5. Brookswood Blvd	DDW003312	B4L1102-04	B4L1109-04	Not Detected(ND)	7.00	Not Detected(ND)	129	19.0	775	7.3	628
	6. Ladera Rd	DDW007912	B4L1102-05	B4L1109-05	Not Detected(ND)	1.00	Not Detected(ND)	7.00	0.80	229	6.4	67.2
	7. Duplicate (Boyd)	DDW003354	B4L1102-06	B4L1109-06	Not Detected(ND)	3.00	Not Detected(ND)	8.00	1.00	264	6.9	196
	8. Field Blank	-	B4L1102-07	B4L1109-07	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	7.00	0.50	94	6.1	4.8

Date Sampled	Sample Location	UIC Number	COB Sample #	URC Sample #	Benzo(a)pyrene	Bis(2-ethylhexyl)phthalate	Pentachlorophenol	Copper	Lead	Zinc	PH	Conductivity
	Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Units	umhos/cm
	Analytical Method				EPA 8270 C	EPA 8270 C	EPA 8270 C	EPA 6020	EPA 6020	EPA 6020	EPA 150.1	EPA 120.0
	Reporting Limit (MRL)				1.0	1.0	1.0	10	2.0	20	-	5.0
	Detection Limit (MDL)				-	0.50	-	1.00	0.40	6.0	-	-
	Effluent Discharge Action Level at Injection Point (ug/l)				2.0	300	10	1300	500	50,000	-	-
3. 12/23/2014	1.Greenwood Underpass -North Catch Bas		B4L2305-01	B4L2326-01	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	48.0	10.0	195	6.8	281

Samplers:
Steve Prazak
Dave Buchanan

					Diesel	Oil						
				Units	mg/l	mg/l						
				Analytical Method	NWTPH-Dx	NWTPH-Dx						
				MRL	20.6	41.2						
				MDL	10.3	20.6						
3. 12/23/2014	1.Greenwood Underpass -North Catch Bas		B4L2305-01	B4L2326-01	2500	ND						

Date Sampled	Sample Location	UIC Number	COB Sample #	URC Sample #	Benzo(a)pyrene	Bis(2-ethylhexyl)phthalate	Pentachlorophenol	Copper	Lead	Zinc	PH	Conductivity
	Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Units	umhos/cm
	Analytical Method				EPA 8270 C	EPA 8270 C	EPA 8270 C	EPA 6020	EPA 6020	EPA 6020	EPA 150.1	EPA 120.0
	Reporting Limit (MRL)				1.0	1.0	1.0	10	2.0	20	-	5.0
	Detection Limit (MDL)				-	0.50	-	1.00	0.40	6.0	-	-
	Effluent Discharge Action Level at Injection Point (ug/l)				2.0	300	10	1300	500	50,000	-	-
4. 12/26/2014	1.Greenwood Underpass -North Catch Bas		B4L2602-01	B4L2904-01	Not Detected(ND)	13.0	Not Detected(ND)	ND	9.0	66		
Samplers:	2.Greenwood Underpass -South Catch Bas		B4L2602-02	B4L2904-02	Not Detected(ND)	8.00	1.00	37.0	51.0	188		

Steve Prazak
Jeff Buystedt

					Diesel	Oil						
				Units	mg/l	mg/l						
				Analytical Method	NWTPH-Dx	NWTPH-Dx						
				MRL	0.235	0.471						
				MDL	0.118	0.235						
4. 12/26/2014	1.Greenwood Underpass -North Catch Bas		B4L2602-01	B4L2904-01	1.96	ND						
	2.Greenwood Underpass -South Catch Bas		B4L2602-02	B4L2904-02	0.634	0.906						

Date Sampled	Sample Location	UIC Number	COB Sample #	URC Sample #	Benzo(a)pyrene	Bis(2-ethylhexyl)phthalate	Pentachlorophenol	Copper	Lead	Zinc	PH	Conductivity
	Units				ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	Units	umhos/cm
	Analytical Method				EPA 8270 C	EPA 8270 C	EPA 8270 C	EPA 6020	EPA 6020	EPA 6020	EPA 150.1	EPA 120.0
	Reporting Limit (MRL)				1.0	1.0	1.0	10	2.0	20	-	5.0
	Detection Limit (MDL)				-	0.50	-	1.00	0.40	6.0	-	-
	Effluent Discharge Action Level at Injection Point (ug/l)				2.0	300	10	1300	500	50,000	-	-
5. 5/11/2015	1. Airport	DDW009628	B5E1105-01	B5E1108-01	Not Detected(ND)	Not Detected(ND)	Not Detected(ND)	ND	ND	2,010		
Samplers:	2. Century Drive	DDW003323										
Jeff Buystedt	3. Boyd Acres	DDW003354										
Dave Buchanan	4. Empire Ave	DDW008884										
	5. Brookswood Blvd	DDW003312										
	6. Ladera Rd	DDW007912										
	7. Dup Century	DDW003323										
	8. Field Blank	-										

Installed Date	Deployment Location	Received Date	# of Samples Collected	Sample Conditions				Copy of Forecast	Agrimet Weather Station Data			Storm Notes
				Precipitation Potential for rain is ≥70% within 4 hours of event	Predicted rainfall amount of ≥ 0.1 inches per storm within a 12 hour period	Predicted rainfall event duration ≥ 3 hours	Antecedent dry period ≥ 8 hours (As defined by <0.05 inches of precipitation over the previous 8 hours).		Total Measured Precp.	Strom Duration	Peak Rain Intensity	
9/24/2014	All Locations	9/25/2014	6	Y (85%)	Y (.36")	Y (16 hours)	Yes	NOAA_09-24-2014_G.pdf	.50"	18 Hours	.04"/15 mins	
10/21/2014	All Locations	10/22/2014	0	Y (86%)	Y (.32")	Y (11 Hours)	Yes	10-24-2014.xlsx	.15"	10 Hours	.02"/15 mins	Not enough rain to fill sample buckets.
12/10/2014	All Locations	12/11/2014	5	Y (82%)	Y (.18")	Y (11 Hours)	Yes	NOAA_12-09-2014_G.pdf	.05"	1 Hour	.02"/15 mins	
NA	Greenwood underpass	12/23/2014	1	-	-	-	-	-	-	-	-	This sampling was the result of a BSNF train spill and not part of routine UIC monitoring program.
NA	Greenwood underpass	12/26/2014	2	-	-	-	-	-	-	-	-	This sampling was the result of a BSNF train spill and not part of routine UIC monitoring program.
5/10/2015	Airport Only	5/11/2015	1	N (60%)	Y (.10"-.25")	Y (>12 Hours)	Yes	NOAA_05-11-2015.pdf	.60"	14 Hours	.06"/15 mins	

Overview
Training course for City of Bend personnel that will be performing sampling and submitting samples to the Water Quality Laboratory

Purpose
- ORELAP, TNI approved quality plan requires samplers be familiar with sampling procedures
- Program specific sampling plans and permits direct samplers as to when and how to take samples
- Data derived from sample analyses is reported to state and federal agencies
- Data derived from sample analyses can be used for City levied fines and fees, has to be legally defensible

Goals of Proper Sampling Technique
- Samples should be representative of sample source
- Samples should be collected in a timely, efficient manner
- Samples should be delivered to the laboratory with the proper handling techniques
- Samples should be labeled clearly and all sample information should be recorded on Chain of Custody form

City of Bend SOP 2001 'Sample Handling & Receiving'
- Drexell Barnes, group review handout

Collection and Handling of Samples for Trace Metals Analysis
- Jeff Buystedt, Presentation

Questions
- ?

Conclusion
- Sign and date attendance sheet

Standard Operating Procedure
Sample Handling and Receiving

Technical Review: _____ Date: 6/6/13
Drexell Barnes, Laboratory Supervisor/Technical Manager

Supervisory/QC Approval: _____ Date: 6/6/13
Steven J. Prazak, QA Manager

1.0   Test method

This SOP details sample handling and receiving procedures. Refer to COB 2005 "Bacteriological Test Sample Handling and Receiving" for bacteriological sample handling. Refer to individual sampling plans for specific sample handling information.

2.0   Matrix

This SOP is applicable to all matrices.

3.0   Detection Limit

Not Applicable

4.0   Scope and Application

This procedure applies to all samples received at the City of Bend Water Quality Laboratory. Samples collected with a separate sampling plan are subject to the requirements of the sampling plan. Applicable plans are listed in section 14.0.

5.0   Summary

The City of Bend Water Quality Laboratory processes samples from multiple sources. Each of these sources has their own sampling plans. The Laboratory also provides sampling services. The laboratory uses sampling plans provided by clients or prepared in consultation with the client. The plan must include any factors that must be controlled to ensure the validity of the test.

6.0 Glossary and Definitions

Definitions of terms used in this SOP are included in the in the Quality Assurance Manual.

7.0 Interferences

The laboratory's procedures for dealing with nonconformances are used when deviations from sampling plans are necessary or the client requests any deviations from the sampling plan or sampling procedures. The requests are documented and included in the final test report.

8.0 Safety

The toxicity or carcinogenity of each reagent used in this method has not been precisely defined; however each chemical compound should be treated as a potential health hazard and handled accordingly. For further information regarding the chemicals used in this method refer to the COB chemical hygiene plan.

9.0 Equipment and Supplies

The laboratory offers clean sampling containers for use by clients. Containers are purchased only from approved suppliers.

Samples containers are provided with sufficient ice and packing materials to prevent sample damage and to maintain the required preservation temperature.

10.0 Reagents and Standards

The City of Bend Laboratory uses the reagents suggested in Standard Methods Table 1060:I unless a client or sampling plan requires a deviation from this table.

11.0 Sample Collection, Preservation, Shipment and Storage

See procedure section of this SOP.

12.0 Quality Control

Specific quality control is dependent upon the analysis to be performed. Refer to individual method SOP's.

13.0 Calibration and Standardization

Not applicable

14.0 Procedure

14.1 Sample Collection

Many of the samples collected by The City of Bend Water Quality Laboratory staff, and clients, are subcontracted to outside laboratories for analysis. In these cases bottle kits and sampling procedures are provided by the subcontract laboratory and are strictly adhered to.

When bottle kits are not provided by a subcontract laboratory, Standard Methods Table 1060:I is followed unless otherwise specified by the client or sampling plan.

Sampling procedures are detailed in individual sampling plans for each client. Sampling plans shall, whenever reasonable, be based on appropriate statistical methods. Refer to Table 1 for a list of sampling plans in use. If a sampling plan is not available the laboratory follows the sampling procedures in section 1060 of Standard Methods for the Examination of Water and Wastewater, latest promulgated version.

The laboratory's procedures for dealing with nonconformances are used when the client requests any deviations from the sampling plan or sampling procedures. The requests are documented and included in the final test report. The sampling plan as well as the sampling procedure shall be available at the location where sampling is undertaken.

Sampling records shall include the date and time of sampling, sampling procedure used, the identification of the sampler, environmental conditions (if relevant) and diagrams or other equivalent means to identify the sampling location as necessary and, if appropriate, the statistics the sampling procedures are based upon.

Table 1 – Sampling Plans	
Client Type	Plan
Drinking water clients	COB 2005 "Bacteriological Test Sample Handling and Receiving"
Water Quality Laboratory	Water Quality Monitoring Plan
Water Reclamation Facility	Groundwater Monitoring Plan
Stormwater	Stormwater Sampling and Analysis Plan
Industrial Pretreatment	Industrial Pretreatment Sampling Plan
Water Reclamation Facility	WPCF Permit
Water Reclamation Facility	Sanitary Sewer Overflow to surface water of the state

14.2 Sample Receiving

Upon receipt samples are inspected for the following:

Collection time: There must be adequate time to perform all required analysis prior to expiration of the samples.

Container Requirements: Samples must be in bottles provided by the lab unless previously agreed upon with the client and adequately documented. Sample bottles cannot show signs of leaking or damage that could cause contamination. All sample bottles must be uniquely identifiable with a waterproof label or waterproof ink.

Sample Volume: Volume must be sufficient to perform the necessary tests.

Preservation: If preservation is required, pH of samples is checked to assure proper preservation.

Temperature: Samples that require thermal preservation must be received on ice. If samples were not collected on the day of receipt in the lab, the temperature of the samples must be recorded on the Chain of Custody. Samples collected in the vicinity of the lab and brought into the lab directly following collection do not need to be received on ice.

Chain of Custody: With the exception of lab collected samples that may be recorded in logbooks and then entered directly into the Laboratory Information Management System (LIMS), a complete chain of custody must accompany all samples.

Chain of Custody Requirements (must be in permanent ink):
- Name and contact information of client
- Name of sample collector
- Date and time of collection
- Sample location or other unique identification of the sample must match bottle label
- The requested analyses (including applicable approved method numbers)
- Type of sample (grab, composite)
- Preservation type
- Special remarks concerning the sample (if needed)
- Signature of person relinquishing the samples to the lab and the date and time relinquished

Upon sample receipt, the sample custodian will sign the Chain of Custody to indicate the criteria listed above have been met. If any of the criteria above have not been met, or the sample custodian feels that sample integrity has otherwise been compromised, the sample with be rejected and the client will be notified immediately. A rejected sample can be analyzed at the request of the client but the test results will indicate that they do not comply with applicable regulations.

The sample custodian is also required to assure the samples are logged into the LIMS. The LIMS generates a unique sample identification number for each sample. This laboratory sample ID shall maintain an unequivocal link with the unique field ID assigned to each sample. The laboratory sample ID shall be placed as a durable mark on the sample container. Samples collected at the Water Reclamation Facility which are analyzed immediately upon receipt do not get labeled with the LIMS generated sample ID number. The unique field ID is adequate to identify these samples if they are disposed of immediately following analysis.

14.3 Sample Storage

Samples shall be stored according to the conditions specified by preservation protocols.

Samples that require thermal preservation shall be stored under refrigeration that is +/-2°C of the specified preservation temperature unless regulatory or method specific criteria exist.

For samples with a specified storage temperature of 4°C, storage at a temperature above the freezing point of water to 6°C shall be acceptable.

Samples shall be stored away from all standards, reagents, and food. Samples shall be stored in such a manner to prevent cross contamination.

15.0 Data Analysis and Calculations

There are no calculations for this procedure.

16.0 Method Performance

Method performance is monitored by the analysis of a quality control samples at time of analysis and is method specific.

17.0   Pollution Prevention

The City of Bend Water Quality Laboratory reduces waste whenever possible. Bottles are washed and reused when allowed by the method. Containers are recycled whenever possible.

18.0   Data Assessment and Acceptance Criteria

Not applicable

19.0   Corrective Action for Out of Control Data

Not applicable

20.0   Contingencies for Handling Out of Control or Unacceptable Data

Not applicable

21.0   Waste Management

Samples are poured in the sink, or returned to the customer, after analysis is complete unless another method of disposal is required by the method.

22.0   References

Standard Methods for the Examination of Water and Wastewater, Latest promulgated edition

TNI Quality Systems, promulgated version.

23.0   Tables, Diagrams, Flow Charts, Validation Data

None