

Water-Data Report 2010

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR

Willamette Basin  
Lower Willamette Subbasin

LOCATION.--Lat 45°31'07", long 122°40'00" referenced to North American Datum of 1927, in NW ¼ NE ¼ sec.3, T.1 S., R.1 E., Multnomah County, OR, Hydrologic Unit 17090012, in pier at east end of drawspan, on upstream side of Morrison Bridge, in Portland and at mile 12.8.

DRAINAGE AREA.--11,200 mi<sup>2</sup>, approximately.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1972 to current year. Unpublished records for period October 1994 to September 2002 are available in the files of the Portland Field Office. Gage height records collected in this vicinity since 1879 are in reports of National Weather Service.

GAGE.--Acoustic velocity meter (AVM) and water-stage recorder. Datum of gage is 1.55 ft above NGVD of 1929 (levels by National Weather Service).

REMARKS.--Records good except those below 20,000 ft<sup>3</sup>/s and estimated daily discharges, which are poor. Flow regulated by many reservoirs upstream. Many diversions for irrigation upstream from station. Flow affected by tide, which can cause reverse flow during tidal cycle low flow periods. Daily mean discharge values since water year 2007 are produced from unit discharges filtered to remove daily tidal cycle.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--38 years (water years 1973-2010), 32,950 ft<sup>3</sup>/s, 23,870,000 acre-ft/yr. Water years include routed discharges 1995-2007.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 420,000 ft<sup>3</sup>/s Feb. 9, 1996; maximum gage height, 27.74 ft Feb. 9, 1996; minimum daily discharge, 4,200 ft<sup>3</sup>/s July 10, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 7, 1894 and June 1, 1948, reached stages of 33.0 ft and 30.0 ft, respectively, from information by National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 115,000 ft<sup>3</sup>/s June 7; maximum gage height, 14.51 ft June 12; minimum discharge, 7,630 ft<sup>3</sup>/s Aug. 23.

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	11,700	16,700	41,800	e62,100	32,700	38,700	94,400	52,500	31,000	17,000	12,700	e9,390
2	12,300	16,500	35,800	e88,600	e33,300	31,500	85,500	49,200	40,600	18,200	12,300	9,450
3	13,300	16,400	29,500	e92,700	e33,800	28,100	80,000	45,900	65,600	18,500	11,500	8,760
4	13,000	14,800	24,700	e79,700	e35,000	27,000	77,800	44,400	93,600	19,100	11,000	10,200
5	12,300	19,500	21,600	e72,900	e36,000	26,800	75,000	44,400	105,000	18,400	11,200	10,500
6	11,300	23,400	20,200	90,500	e35,100	26,400	68,800	41,900	110,000	18,000	11,400	9,560
7	10,500	28,500	17,200	94,600	e32,500	25,100	64,200	36,500	110,000	17,300	11,500	9,290
8	10,200	35,300	15,400	96,700	30,400	24,500	60,500	33,100	98,200	15,600	10,500	9,320
9	12,100	39,400	14,800	92,100	28,400	24,400	57,600	32,500	81,000	13,800	e10,500	10,700
10	12,000	38,800	15,900	85,200	26,600	21,700	54,600	30,200	72,600	14,900	e10,200	10,100
11	10,700	36,400	17,000	78,400	25,600	22,800	50,200	28,800	69,900	14,700	e10,400	9,760
12	10,200	35,900	17,000	73,200	e28,400	28,100	46,300	27,100	67,300	14,100	e10,100	8,510
13	10,700	35,400	19,300	73,200	e34,500	36,500	43,000	26,400	61,300	13,900	e9,740	8,160
14	11,500	33,600	20,800	72,900	e36,500	41,500	42,900	27,300	52,700	15,000	e9,680	8,860
15	11,900	30,600	19,100	71,700	36,800	40,700	43,200	28,200	45,400	14,600	e9,520	9,370
16	12,600	31,100	43,500	71,400	36,500	36,100	43,000	27,400	39,200	14,600	e9,320	10,400
17	13,500	34,000	e62,000	74,100	38,500	33,000	41,500	26,600	36,100	14,900	e9,130	10,500
18	13,000	40,900	e62,300	74,900	35,600	31,600	38,300	27,100	33,800	14,900	9,370	12,200
19	10,800	46,300	e54,900	72,100	32,000	29,800	35,100	29,200	31,400	14,000	8,990	15,800
20	9,740	47,900	e50,400	65,100	29,000	30,200	32,900	30,800	29,300	13,900	9,130	16,400
21	9,480	48,900	e57,200	57,100	25,300	30,400	33,500	30,500	26,300	13,900	9,110	13,500
22	10,800	51,000	e68,900	50,800	23,200	27,600	34,800	32,300	24,400	13,700	8,530	12,900
23	14,500	54,200	e65,700	47,300	24,700	25,600	33,200	34,400	24,400	13,500	7,630	12,200
24	14,400	52,600	e56,500	45,100	26,100	26,200	31,100	33,900	22,600	14,200	8,430	12,200
25	12,500	46,700	e49,800	46,000	28,300	29,600	28,700	34,800	19,100	15,000	8,350	11,900
26	15,000	44,000	e42,100	48,500	34,500	31,500	29,500	35,000	19,800	14,000	e8,390	11,600
27	14,100	45,400	e35,900	46,100	41,500	36,700	32,600	34,700	21,000	13,200	e8,390	10,800
28	13,700	50,300	e31,200	42,400	44,400	43,900	39,800	36,900	18,700	12,500	e8,170	11,600
29	16,200	52,100	e28,300	38,700	---	60,200	49,700	37,600	16,600	12,700	e8,560	10,800
30	20,800	47,300	e27,700	35,300	---	84,600	53,600	36,100	16,000	12,900	e8,650	10,800
31	20,200	---	e33,200	32,100	---	96,600	---	34,000	---	13,000	e8,860	---
<b>Total</b>	395,020	1,113,900	1,099,700	2,071,500	905,200	1,097,400	1,501,300	1,069,700	1,482,900	464,000	301,250	325,530
<b>Mean</b>	12,740	37,130	35,470	66,820	32,330	35,400	50,040	34,510	49,430	14,970	9,718	10,850
<b>Max</b>	20,800	54,200	68,900	96,700	44,400	96,600	94,400	52,500	110,000	19,100	12,700	16,400
<b>Min</b>	9,480	14,800	14,800	32,100	23,200	21,700	28,700	26,400	16,000	12,500	7,630	8,160
<b>Ac-ft</b>	783,500	2,209,000	2,181,000	4,109,000	1,795,000	2,177,000	2,978,000	2,122,000	2,941,000	920,300	597,500	645,700

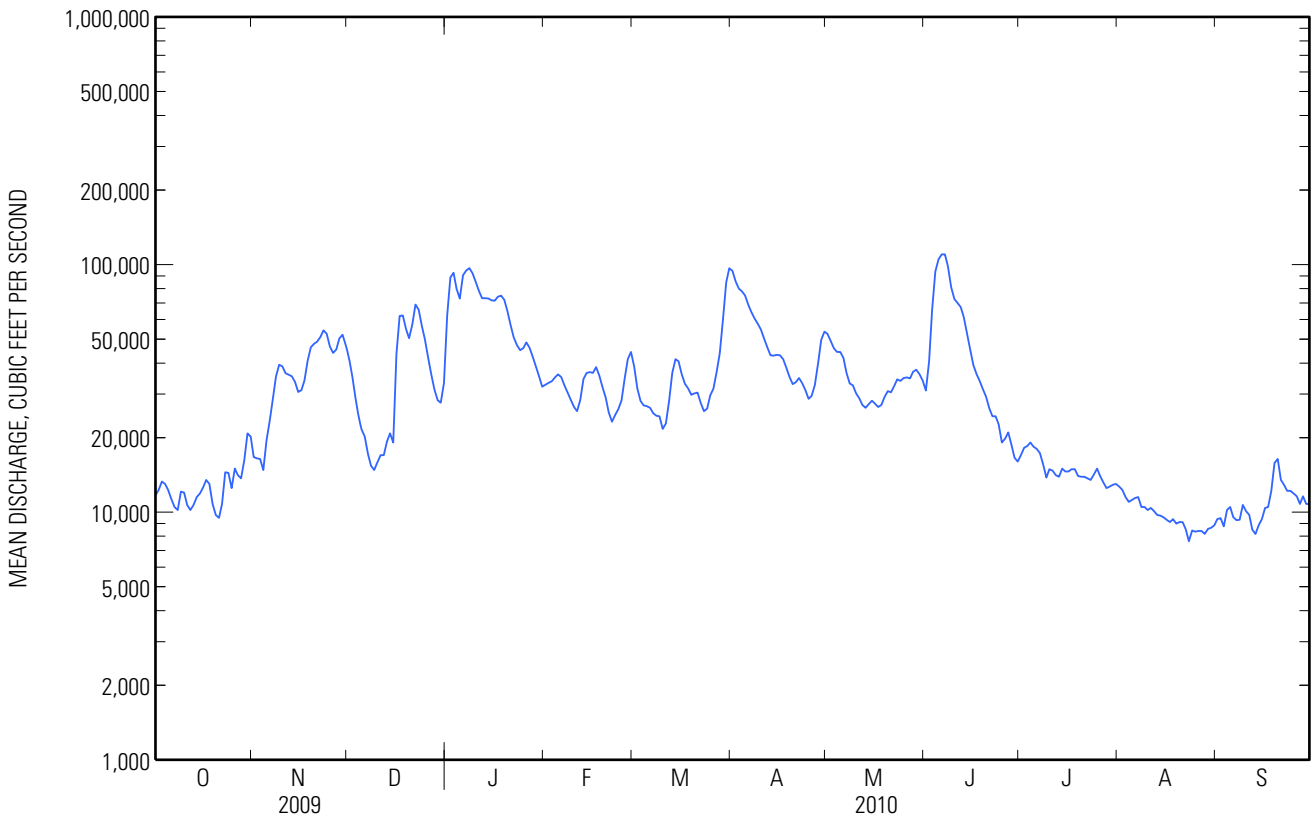
**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2010, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	15,460	39,020	66,180	68,000	52,630	43,480	35,520	27,520	19,190	9,715	8,555	11,030
<b>Max</b>	28,860	98,410	155,600	149,900	149,500	77,790	72,060	46,730	49,430	15,870	11,850	17,350
<b>(WY)</b>	(1998)	(1974)	(1997)	(2006)	(1996)	(1974)	(1993)	(1993)	(2010)	(1983)	(1993)	(1978)
<b>Min</b>	8,915	10,300	8,894	8,795	8,050	17,980	17,630	11,150	7,125	6,541	6,136	7,460
<b>(WY)</b>	(1988)	(1988)	(1977)	(1977)	(1977)	(1978)	(1977)	(1973)	(1992)	(1973)	(1973)	(2001)

14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1973 - 2010	
<b>Annual total</b>	10,709,130		11,827,400			
<b>Annual mean</b>	29,340		32,400		32,950	
<b>Highest annual mean</b>					54,490	1974
<b>Lowest annual mean</b>					13,710	1977
<b>Highest daily mean</b>	164,000	Jan 3	110,000	Jun 6	420,000	Feb 9, 1996
<b>Lowest daily mean</b>	6,260	Jul 28	7,630	Aug 23	4,200	Jul 10, 1978
<b>Annual seven-day minimum</b>	7,740	Jul 27	8,270	Aug 22	5,260	Jul 31, 1973
<b>Annual runoff (ac-ft)</b>	21,240,000		23,460,000		23,870,000	
<b>10 percent exceeds</b>	54,500		66,300		75,400	
<b>50 percent exceeds</b>	21,600		28,500		21,000	
<b>90 percent exceeds</b>	9,300		10,200		8,330	



**14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued**

**WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981, November 2001 to September 2004, January 2009 to current year.

pH: January 2009 to current year.

WATER TEMPERATURE: November 1975 to September 1981, November 2001 to September 2005, January 2009 to current year.

DISSOLVED OXYGEN: January 2009 to current year.

TURBIDITY: January 2009 to current year.

CHLOROPHYLL: January 2009 to current year.

INSTRUMENTATION.--Water-quality monitor. Any use of trade, product, or firm names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government.

REMARKS.--

SPECIFIC CONDUCTANCE: Records excellent except those for Aug. 12-24, which are good.

PH: Records excellent except those for Mar. 25 to Apr. 9, May 5-9, 13-29, Sept. 21-30, which are good and those for Apr. 10-15, May 30 to June 3, which are fair.

WATER TEMPERATURE: Records excellent.

DISSOLVED OXYGEN: Records excellent except those for Jan. 14, July 13, 14, which are good.

TURBIDITY: Records excellent except those for Mar. 29 to Apr. 17, Apr. 30 to May 2, July 7, 8, 29, 31, Aug. 2-17, 19-24, which are good and those for Aug. 18, which is fair. Data collected using a YSI 6136 turbidity sensor. Manufacturer's stated accuracy is the greater of +/- 5 percent or 2 Formazin Nephelometric Units. FNU values below 10 are reported to nearest 0.1 FNU. Negative recorded values are reported as 0.0 FNU.

CHLOROPHYLL: No criteria have been established for rating this parameter.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 144 microsiemens July 27, 2003; minimum, 42 microsiemens Apr. 15, 16, 2002.

PH: Maximum, 8.6 units July 21, 27, 28, 30, 2009; minimum, 6.8 units Jan. 3, 4, 8, 16, 2010

WATER TEMPERATURE: Maximum, 27.5°C July 29, Aug. 7, 8, 1978; minimum, 0.0°C Jan. 3-10, 1979.

DISSOLVED OXYGEN: Maximum recorded, 14.2 mg/L Jan. 21-23, 28, 30, 2009; minimum, 7.2 mg/L Aug. 8, 2009.

TURBIDITY: Maximum, 55 FNU Jan. 3, 2010; minimum recorded, 0.8 FNU Aug. 25, 2009.

CHLOROPHYLL: Maximum, 32 ug/L Aug. 1, 2, 2009; minimum, 0.4 ug/L Jan. 23, 2010.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 98 microsiemens Aug. 25; minimum, 50 microsiemens June 4, 5.

pH: Maximum, 7.7 units Aug. 18; minimum, 6.8 units Jan. 3, 4, 8, 16.

WATER TEMPERATURE: Maximum, 22.6°C Aug. 5, 16, 19; minimum recorded, 0.9°C Dec. 13.

DISSOLVED OXYGEN: Maximum recorded, 13.8 mg/L Dec. 15, Jan. 2, 3, 8-10; minimum 8.0 mg/L Aug. 21, 22.

TURBIDITY: Maximum, 55 FNU Jan. 3; minimum recorded, 1.2 FNU Oct. 7, 9.

CHLOROPHYLL: Maximum, 10 ug/L July 21, Aug. 7; minimum, 0.8 ug/L Sept. 30.

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
<b>1</b>	80	79	79	75	70	72	68	67	68	78	76	77
<b>2</b>	79	78	79	70	68	69	68	68	68	83	72	79
<b>3</b>	79	78	78	68	66	67	69	68	68	72	62	66
<b>4</b>	79	77	78	68	65	67	71	69	70	64	62	63
<b>5</b>	77	76	77	67	66	66	72	71	71	65	64	64
<b>6</b>	76	75	75	68	66	66	75	72	74	65	62	64
<b>7</b>	76	75	75	68	66	67	78	75	76	62	61	61
<b>8</b>	76	75	76	70	66	68	80	77	79	62	60	61
<b>9</b>	77	76	76	70	68	68	82	80	81	62	61	61
<b>10</b>	77	76	77	71	68	70	83	82	83	64	62	63
<b>11</b>	77	75	76	70	66	68	84	83	84	64	64	64
<b>12</b>	76	74	75	66	65	66	83	83	83	65	64	65
<b>13</b>	76	74	75	67	66	66	83	81	82	68	65	66
<b>14</b>	76	74	75	68	67	67	81	79	80	70	68	69
<b>15</b>	76	74	75	69	68	69	82	79	80	72	70	71
<b>16</b>	78	76	77	70	69	70	83	79	82	73	70	71
<b>17</b>	79	78	78	70	69	69	85	79	82	77	73	75
<b>18</b>	80	79	79	69	67	68	81	74	76	77	75	76
<b>19</b>	79	78	79	69	67	68	74	72	72	76	75	76
<b>20</b>	79	78	79	68	65	66	72	70	70	75	74	74
<b>21</b>	79	78	78	65	64	64	70	68	70	75	74	75
<b>22</b>	79	78	78	65	64	64	68	66	67	76	75	76
<b>23</b>	78	78	78	67	65	66	70	67	69	76	75	76
<b>24</b>	79	78	79	69	67	69	69	67	68	77	76	76
<b>25</b>	79	78	79	69	68	68	69	69	69	78	77	77
<b>26</b>	79	76	77	68	68	68	69	68	68	82	78	79
<b>27</b>	77	75	76	69	68	69	70	69	69	83	81	82
<b>28</b>	77	75	76	71	68	69	73	70	71	81	80	81
<b>29</b>	78	76	77	73	70	72	75	73	73	81	80	80
<b>30</b>	78	76	77	70	67	68	76	75	75	81	80	80
<b>31</b>	78	74	76	---	---	---	77	76	76	82	81	81
<b>Month</b>	80	74	77	75	64	68	85	66	74	83	60	72

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	82	81	82	91	90	91	65	64	64	66	62	65
<b>2</b>	83	82	83	91	90	90	67	65	66	63	62	62
<b>3</b>	84	83	83	90	88	89	69	67	68	63	61	62
<b>4</b>	87	84	86	89	88	89	70	69	70	63	62	63
<b>5</b>	87	86	87	90	89	89	71	69	70	63	62	63
<b>6</b>	87	86	87	90	90	90	72	71	72	62	60	61
<b>7</b>	87	86	86	91	90	90	73	72	72	61	60	60
<b>8</b>	86	85	86	92	91	91	74	73	74	61	60	60
<b>9</b>	87	86	86	92	92	92	74	73	74	65	61	63
<b>10</b>	88	87	87	93	92	93	74	71	73	66	65	66
<b>11</b>	89	88	89	94	93	93	72	71	71	68	66	67
<b>12</b>	90	89	89	94	92	93	74	72	73	69	67	68
<b>13</b>	90	89	89	93	90	91	76	74	75	69	68	69
<b>14</b>	90	88	89	92	87	91	77	75	76	70	68	69
<b>15</b>	89	87	88	87	81	83	78	77	77	69	68	68
<b>16</b>	88	87	88	82	81	81	77	76	76	68	67	68
<b>17</b>	88	87	88	81	80	81	77	74	75	68	67	67
<b>18</b>	90	88	89	82	81	81	74	73	73	69	67	68
<b>19</b>	90	89	89	83	82	82	74	73	73	68	68	68
<b>20</b>	90	89	90	84	82	83	74	74	74	69	68	68
<b>21</b>	90	89	90	84	83	83	74	74	74	68	67	67
<b>22</b>	90	89	89	84	83	84	74	72	73	68	67	67
<b>23</b>	90	89	89	84	83	84	73	70	72	68	67	68
<b>24</b>	90	89	90	84	84	84	70	69	69	67	66	67
<b>25</b>	90	89	89	85	83	84	70	69	70	66	66	66
<b>26</b>	90	89	89	83	81	82	72	70	71	66	65	65
<b>27</b>	91	89	90	82	80	80	74	72	72	67	65	66
<b>28</b>	91	89	90	83	81	82	73	72	73	68	65	67
<b>29</b>	---	---	---	81	72	78	76	71	74	68	65	67
<b>30</b>	---	---	---	72	67	69	71	66	68	66	65	66
<b>31</b>	---	---	---	71	64	67	---	---	---	67	66	66
<b>Month</b>	91	81	88	94	64	85	78	64	72	70	60	66

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	67	66	67	80	80	80	79	78	79	91	87	89
2	68	66	67	80	79	79	80	78	78	92	88	89
3	68	60	64	80	79	79	79	78	78	90	88	89
4	61	50	56	79	78	79	88	78	82	90	88	88
5	52	50	51	81	79	80	83	80	82	93	88	89
6	54	52	54	83	80	82	83	80	82	95	88	89
7	56	53	54	83	82	82	84	80	81	89	88	89
8	58	56	57	83	82	83	82	79	80	93	88	90
9	59	58	58	84	82	82	82	79	81	93	88	89
10	61	59	60	82	81	82	81	79	80	90	89	90
11	61	60	61	85	81	82	79	79	79	91	89	90
12	60	59	59	82	82	82	83	79	81	90	88	89
13	60	59	59	83	82	82	85	82	83	89	88	88
14	62	60	61	83	82	83	87	83	83	88	87	87
15	65	62	63	84	83	83	87	82	83	88	86	86
16	66	65	65	84	83	84	86	83	84	87	86	86
17	67	66	66	83	82	82	86	82	84	88	86	87
18	68	67	68	82	79	80	85	83	83	87	86	87
19	69	68	69	80	78	78	88	83	85	87	86	86
20	71	69	70	82	77	79	89	83	85	87	86	87
21	71	70	71	83	80	80	88	83	85	92	87	89
22	72	71	71	81	80	80	88	84	86	89	84	85
23	73	72	72	81	80	80	87	84	85	90	85	88
24	73	72	73	81	78	79	89	85	87	87	85	86
25	74	72	73	79	78	78	98	86	87	93	85	86
26	75	73	74	79	77	78	87	87	87	86	81	82
27	78	74	77	81	78	79	89	87	88	82	80	81
28	80	77	79	82	81	81	91	89	90	82	81	81
29	81	80	80	82	81	82	91	89	90	81	80	80
30	82	80	81	83	80	81	89	88	88	84	80	81
31	---	---	---	80	79	80	88	87	88	---	---	---
Month	82	50	66	85	77	81	98	78	84	95	80	87

	Max	Min	Mean
Year	98	50	77

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	October			November			December			January		
1	7.3	7.2	7.2	7.2	7.2	7.2	7.0	7.0	7.0	7.1	7.1	7.1
2	7.3	7.2	7.2	7.2	7.1	7.2	7.1	7.0	7.0	7.1	6.9	7.0
3	7.3	7.2	7.3	7.2	7.2	7.2	7.1	7.0	7.0	7.0	6.8	6.9
4	7.3	7.2	7.3	7.2	7.1	7.2	7.1	7.0	7.0	6.9	6.8	6.9
5	7.3	7.2	7.2	7.2	7.1	7.2	7.1	7.0	7.0	7.0	6.9	6.9
6	7.3	7.2	7.2	7.2	7.2	7.2	7.1	7.0	7.1	7.0	6.9	6.9
7	7.3	7.2	7.2	7.2	7.2	7.2	7.1	7.0	7.1	7.0	6.9	6.9
8	7.3	7.2	7.2	7.2	7.2	7.2	7.1	7.1	7.1	6.9	6.8	6.9
9	7.3	7.2	7.2	7.2	7.1	7.2	7.2	7.1	7.1	6.9	6.9	6.9
10	7.3	7.2	7.2	7.2	7.1	7.1	7.2	7.1	7.1	7.0	6.9	6.9
11	7.3	7.2	7.2	7.2	7.1	7.1	7.2	---	---	7.0	6.9	6.9
12	7.3	7.2	7.3	7.2	7.1	7.1	---	---	---	7.0	6.9	7.0
13	7.3	7.2	7.3	7.2	7.1	7.2	---	---	---	7.0	6.9	7.0
14	7.3	7.2	7.3	7.2	7.1	7.2	---	---	---	7.0	6.9	7.0
15	7.3	7.2	7.3	7.2	7.1	7.2	7.3	7.2	7.2	7.0	6.9	6.9
16	7.3	7.2	7.3	7.2	7.1	7.2	7.2	7.2	7.2	7.0	6.8	6.9
17	7.3	7.2	7.2	7.2	7.2	7.2	7.2	7.0	7.1	7.0	6.9	6.9
18	7.3	7.2	7.2	7.2	7.2	7.2	7.0	6.9	7.0	7.0	6.9	6.9
19	7.3	7.2	7.2	7.2	7.2	7.2	7.0	6.9	7.0	6.9	6.9	6.9
20	7.2	7.2	7.2	7.2	7.1	7.1	7.0	6.9	7.0	7.0	6.9	6.9
21	7.2	7.1	7.2	7.2	7.1	7.1	7.0	7.0	7.0	7.0	6.9	6.9
22	7.2	7.1	7.2	7.2	7.1	7.1	7.0	7.0	7.0	7.0	6.9	6.9
23	7.2	7.2	7.2	7.2	7.1	7.1	7.0	6.9	7.0	7.0	6.9	7.0
24	7.2	7.1	7.2	7.1	7.1	7.1	7.0	6.9	7.0	7.0	7.0	7.0
25	7.2	7.1	7.2	7.1	7.0	7.1	7.0	7.0	7.0	7.1	7.0	7.0
26	7.2	7.2	7.2	7.1	7.0	7.1	7.1	7.0	7.0	7.1	7.0	7.0
27	7.2	7.1	7.2	7.1	7.1	7.1	7.1	7.0	7.1	7.1	7.0	7.0
28	7.2	7.1	7.2	7.1	7.1	7.1	7.2	7.0	7.1	7.1	7.0	7.0
29	7.2	7.2	7.2	7.1	7.1	7.1	7.2	7.0	7.1	7.1	7.0	7.0
30	7.2	7.1	7.2	7.1	7.0	7.1	7.2	7.1	7.1	7.1	7.0	7.0
31	7.2	7.2	7.2	---	---	---	7.2	7.1	7.1	7.1	7.0	7.0
<b>Max</b>	7.3	7.2	7.3	7.2	7.2	7.2	---	---	---	7.1	7.1	7.1
<b>Min</b>	7.2	7.1	7.2	7.1	7.0	7.1	---	---	---	6.9	6.8	6.9



## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	February			March			April			May		
1	7.1	7.0	7.1	7.2	7.0	7.1	7.0	6.9	7.0	7.3	7.3	7.3
2	7.2	7.0	7.1	7.2	7.0	7.1	7.0	7.0	7.0	7.3	7.3	7.3
3	7.2	7.0	7.1	7.2	7.0	7.1	7.1	7.0	7.0	7.4	7.3	7.3
4	7.2	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.0	7.4	7.3	7.3
5	7.2	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.0	7.4	7.3	7.3
6	7.2	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.1	7.4	7.3	7.3
7	7.2	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.1	7.4	7.3	7.3
8	7.2	7.1	7.1	7.2	7.1	7.2	7.1	7.1	7.1	7.4	7.3	7.3
9	7.2	7.1	7.1	7.2	7.1	7.2	7.1	7.1	7.1	7.4	7.3	7.4
10	7.2	7.1	7.1	7.2	7.1	7.2	7.2	7.1	7.1	7.4	7.3	7.4
11	7.2	7.1	7.1	7.2	7.2	7.2	7.2	7.1	7.1	7.4	7.3	7.4
12	7.2	7.1	7.1	7.2	7.2	7.2	7.2	7.1	7.1	7.4	7.3	7.4
13	7.2	7.1	7.1	7.2	7.1	7.2	7.2	7.1	7.1	7.4	7.3	7.4
14	7.2	7.1	7.1	7.2	7.1	7.2	7.2	7.1	7.1	7.5	7.3	7.4
15	7.2	7.1	7.1	7.2	7.1	7.1	7.2	---	---	7.4	7.3	7.4
16	7.2	7.1	7.1	7.2	7.1	7.1	---	---	---	7.5	7.4	7.4
17	7.2	7.1	7.1	7.2	7.1	7.1	---	---	---	7.5	7.4	7.4
18	7.2	7.1	7.1	7.2	7.1	7.1	---	---	---	7.5	7.4	7.4
19	7.2	7.1	7.1	7.2	7.1	7.1	---	---	---	7.5	7.4	7.4
20	7.2	7.1	7.1	7.2	7.1	7.1	7.3	---	---	7.5	7.4	7.4
21	7.2	7.1	7.1	7.2	7.1	7.2	7.3	7.3	7.3	7.4	7.4	7.4
22	7.2	7.1	7.1	7.3	7.1	7.2	7.3	7.3	7.3	7.4	7.4	7.4
23	7.2	7.1	7.1	7.3	7.2	7.3	7.4	7.3	7.3	7.4	7.4	7.4
24	7.2	7.1	7.1	7.3	7.2	7.3	7.4	7.3	7.3	7.4	7.4	7.4
25	7.2	7.1	7.1	7.3	7.2	7.3	7.4	7.3	7.4	7.4	7.4	7.4
26	7.2	7.1	7.1	7.3	7.2	7.3	7.4	7.3	7.3	7.4	7.3	7.4
27	7.2	7.1	7.1	7.3	7.2	7.2	7.4	7.3	7.3	7.4	7.3	7.4
28	7.2	7.0	7.1	7.3	7.2	7.2	7.4	7.3	7.4	7.4	7.3	7.4
29	---	---	---	7.2	7.1	7.2	7.4	7.3	7.3	7.4	7.3	7.4
30	---	---	---	7.1	7.0	7.0	7.4	7.3	7.3	7.4	7.3	7.4
31	---	---	---	7.0	6.9	7.0	---	---	---	7.4	7.3	7.4
<b>Max</b>	7.2	7.1	7.1	7.3	7.2	7.3	---	---	---	7.5	7.4	7.4
<b>Min</b>	7.1	7.0	7.1	7.0	6.9	7.0	---	---	---	7.3	7.3	7.3

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

PH, WATER, UNFILTERED, FIELD, STANDARD UNITS  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	June			July			August			September		
1	7.4	7.3	7.3	7.5	7.5	7.5	7.4	7.4	7.4	7.5	7.4	7.4
2	7.4	7.3	7.4	7.5	7.4	7.5	7.5	7.4	7.4	7.5	7.4	7.5
3	7.3	7.1	7.3	7.5	7.4	7.5	7.5	7.4	7.4	7.6	7.5	7.5
4	7.3	7.1	7.2	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.5	7.5
5	7.1	7.0	7.1	7.4	7.4	7.4	7.5	7.4	7.4	7.6	7.5	7.5
6	7.1	7.0	7.1	7.5	7.4	7.4	7.5	7.4	7.4	7.6	7.5	7.5
7	7.1	7.0	7.1	7.5	7.4	7.5	7.5	7.4	7.4	7.5	7.5	7.5
8	7.2	7.0	7.1	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.5
9	7.2	7.1	7.2	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.4
10	7.2	7.2	7.2	7.4	7.4	7.4	7.5	7.4	7.4	7.5	7.3	7.4
11	7.2	7.1	7.2	7.4	7.3	7.4	7.5	7.4	7.4	7.5	7.4	7.4
12	7.2	7.2	7.2	7.4	7.3	7.3	7.5	7.4	7.4	7.4	7.2	7.3
13	7.3	7.2	7.2	7.4	7.3	7.3	7.5	7.4	7.4	7.4	7.3	7.3
14	7.2	7.2	7.2	---	---	---	7.5	7.4	7.4	---	---	---
15	7.3	7.2	7.2	---	---	---	7.5	7.4	7.4	---	---	---
16	7.3	7.2	7.3	7.5	7.3	7.4	7.6	7.4	7.4	---	---	---
17	7.3	7.2	7.3	7.5	7.4	7.5	7.6	7.4	7.5	---	---	---
18	7.3	7.3	7.3	7.5	7.4	7.5	7.7	7.4	7.4	---	---	---
19	7.3	7.2	7.3	7.5	7.4	7.5	7.5	7.4	7.4	---	---	---
20	7.3	7.2	7.3	7.5	7.4	7.5	7.5	7.4	7.4	---	---	---
21	7.3	7.3	7.3	7.5	7.4	7.5	7.5	7.4	7.4	7.6	7.4	7.5
22	7.4	7.3	7.3	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.5
23	7.4	7.3	7.3	7.5	7.4	7.5	7.5	7.4	7.4	7.5	7.4	7.5
24	7.5	7.3	7.3	7.5	7.4	7.5	---	---	---	7.5	7.4	7.5
25	7.5	7.4	7.4	7.5	7.4	7.4	---	---	---	7.5	7.3	7.5
26	7.5	7.4	7.4	7.5	7.4	7.4	---	---	---	7.4	7.4	7.4
27	7.5	7.4	7.4	7.5	7.4	7.4	---	---	---	7.4	7.3	7.4
28	7.5	7.4	7.4	7.5	7.4	7.4	---	---	---	7.4	7.3	7.4
29	7.5	7.4	7.5	7.5	7.4	7.4	---	---	---	7.4	7.3	7.4
30	7.5	7.4	7.5	7.5	7.4	7.4	7.5	7.4	7.5	7.4	7.4	7.4
31	---	---	---	7.4	7.4	7.4	7.4	7.4	7.4	---	---	---
<b>Max</b>	7.5	7.4	7.5	---	---	---	---	---	---	---	---	---
<b>Min</b>	7.1	7.0	7.1	---	---	---	---	---	---	---	---	---

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
<b>1</b>	16.9	16.6	16.7	11.6	11.1	11.3	8.1	7.7	7.9	5.2	4.1	4.6
<b>2</b>	16.6	16.0	16.3	11.2	10.8	11.0	7.7	7.2	7.5	6.4	5.2	5.8
<b>3</b>	16.0	15.5	15.8	11.2	10.8	11.0	7.3	6.9	7.2	7.0	6.4	6.8
<b>4</b>	15.5	14.9	15.2	11.3	11.1	11.2	6.9	6.6	6.7	7.0	6.9	7.0
<b>5</b>	14.9	14.5	14.7	11.3	10.9	11.0	6.6	6.1	6.3	7.1	7.0	7.0
<b>6</b>	14.7	14.4	14.5	11.0	10.5	10.7	6.2	5.4	5.8	7.4	7.1	7.2
<b>7</b>	14.6	14.4	14.4	10.6	10.2	10.3	5.4	4.5	5.0	7.5	7.4	7.4
<b>8</b>	14.4	14.2	14.3	10.2	9.9	10.0	4.5	3.7	4.1	7.4	7.0	7.2
<b>9</b>	14.3	13.9	14.1	10.0	9.8	10.0	3.8	2.8	3.3	7.0	6.8	6.9
<b>10</b>	13.9	13.3	13.6	10.0	9.8	9.9	2.9	2.2	2.5	6.8	6.7	6.8
<b>11</b>	13.4	12.9	13.1	9.9	9.6	9.8	2.2	1.6	1.8	7.0	6.8	6.9
<b>12</b>	12.9	12.7	12.8	9.6	9.5	9.5	1.6	1.1	1.3	7.2	7.0	7.1
<b>13</b>	12.7	12.6	12.7	9.6	9.4	9.5	1.2	0.9	1.1	7.4	7.2	7.2
<b>14</b>	12.9	12.5	12.7	9.4	9.0	9.2	1.4	1.2	1.3	7.7	7.3	7.5
<b>15</b>	12.8	12.6	12.7	9.0	8.8	8.9	2.1	1.4	1.7	7.8	7.7	7.7
<b>16</b>	12.8	12.5	12.6	8.8	8.6	8.7	3.7	2.1	2.8	7.8	7.7	7.7
<b>17</b>	12.8	12.5	12.6	8.8	8.6	8.7	5.3	3.7	4.6	8.0	7.8	7.9
<b>18</b>	12.9	12.5	12.7	8.7	8.6	8.6	6.3	5.3	5.8	8.2	8.0	8.0
<b>19</b>	13.4	12.9	13.1	8.9	8.6	8.8	6.8	6.3	6.6	8.2	8.1	8.1
<b>20</b>	14.2	13.4	13.8	9.0	8.6	8.8	7.2	6.8	7.0	8.1	7.8	7.9
<b>21</b>	14.6	14.2	14.4	8.6	8.5	8.5	7.6	7.2	7.4	7.8	7.6	7.7
<b>22</b>	14.6	14.5	14.5	8.6	8.5	8.6	7.6	7.5	7.5	7.7	7.6	7.6
<b>23</b>	14.5	14.3	14.4	8.5	8.1	8.2	7.5	6.7	7.2	7.6	7.4	7.5
<b>24</b>	14.3	14.0	14.1	8.3	8.1	8.2	6.7	6.0	6.3	7.5	7.3	7.4
<b>25</b>	14.0	13.4	13.6	8.3	8.1	8.2	6.0	5.3	5.6	7.3	7.1	7.2
<b>26</b>	13.4	13.1	13.3	8.2	8.1	8.2	5.3	4.8	5.0	7.2	7.1	7.1
<b>27</b>	13.1	12.8	13.0	8.3	8.1	8.2	4.8	4.4	4.6	7.3	7.2	7.2
<b>28</b>	12.8	12.4	12.5	8.2	8.1	8.1	4.5	4.3	4.4	7.5	7.3	7.4
<b>29</b>	12.4	12.0	12.2	8.5	8.2	8.4	4.3	4.0	4.2	7.6	7.4	7.5
<b>30</b>	12.1	11.9	12.0	8.5	8.1	8.3	4.0	3.9	4.0	7.4	7.2	7.4
<b>31</b>	12.0	11.6	11.8	---	---	---	4.1	4.0	4.0	7.5	7.2	7.3
<b>Month</b>	16.9	11.6	13.7	11.6	8.1	9.3	8.1	0.9	4.9	8.2	4.1	7.2

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
<b>1</b>	7.6	7.4	7.5	9.3	9.0	9.2	8.3	8.1	8.2	10.9	10.6	10.7
<b>2</b>	7.9	7.6	7.7	9.4	9.1	9.3	8.5	8.2	8.3	10.9	10.7	10.8
<b>3</b>	8.0	7.8	7.9	9.4	9.2	9.3	8.7	8.4	8.5	11.4	10.9	11.2
<b>4</b>	8.1	7.8	7.9	9.4	9.2	9.3	8.6	8.3	8.5	11.6	11.1	11.4
<b>5</b>	8.1	7.8	8.0	9.5	9.3	9.4	8.3	8.0	8.1	11.6	11.1	11.3
<b>6</b>	8.3	8.0	8.2	9.5	9.2	9.4	8.3	8.0	8.1	11.2	10.4	10.9
<b>7</b>	8.5	8.2	8.4	9.5	9.2	9.4	8.5	8.2	8.3	10.9	10.3	10.6
<b>8</b>	8.6	8.3	8.4	9.5	9.2	9.3	9.0	8.5	8.7	11.3	10.3	10.9
<b>9</b>	8.5	8.2	8.3	9.4	9.1	9.2	9.4	9.0	9.1	12.2	10.8	11.6
<b>10</b>	8.2	7.9	8.1	9.3	9.0	9.2	9.6	9.3	9.5	12.7	11.8	12.2
<b>11</b>	7.9	7.7	7.8	9.2	9.0	9.1	9.7	9.3	9.4	12.9	12.5	12.7
<b>12</b>	7.8	7.7	7.7	9.1	8.6	8.9	9.8	9.5	9.7	13.0	12.8	12.9
<b>13</b>	7.8	7.7	7.8	8.6	8.0	8.3	10.4	9.8	10.2	13.5	12.8	13.1
<b>14</b>	8.2	7.8	8.0	8.3	8.0	8.1	10.9	10.3	10.7	13.7	12.9	13.3
<b>15</b>	8.7	8.2	8.6	8.3	8.0	8.1	11.4	10.8	11.2	13.9	13.2	13.6
<b>16</b>	9.0	8.7	8.9	8.4	8.0	8.2	11.5	11.2	11.3	14.5	13.8	14.2
<b>17</b>	9.1	8.8	9.0	8.8	8.2	8.4	11.6	11.2	11.4	15.2	14.5	14.8
<b>18</b>	9.2	8.9	9.0	9.1	8.5	8.8	11.9	11.2	11.6	15.6	15.0	15.3
<b>19</b>	9.2	8.8	9.0	9.4	8.8	9.1	12.0	11.5	11.8	15.5	15.1	15.3
<b>20</b>	8.9	8.6	8.8	9.6	9.1	9.3	12.0	11.7	11.9	15.1	14.6	14.9
<b>21</b>	8.6	8.2	8.4	9.8	9.4	9.6	11.9	11.6	11.8	14.6	13.7	14.2
<b>22</b>	8.2	7.8	8.0	10.0	9.6	9.8	11.7	11.4	11.6	13.7	12.9	13.2
<b>23</b>	7.8	7.4	7.7	10.3	9.6	10.0	11.4	10.8	11.2	12.9	12.2	12.5
<b>24</b>	7.6	7.3	7.4	10.8	10.0	10.4	11.3	10.6	10.9	12.3	11.9	12.1
<b>25</b>	7.6	7.2	7.4	11.0	10.5	10.7	11.4	10.8	11.1	11.9	11.6	11.8
<b>26</b>	7.6	7.2	7.3	11.0	10.5	10.7	11.6	11.2	11.4	12.0	11.6	11.7
<b>27</b>	8.3	7.6	7.9	10.8	10.4	10.6	11.9	11.6	11.7	12.5	11.8	12.1
<b>28</b>	9.1	8.3	8.8	10.6	10.1	10.5	11.8	11.4	11.7	12.6	12.2	12.4
<b>29</b>	---	---	---	10.1	9.3	9.8	11.4	11.0	11.2	12.9	12.5	12.7
<b>30</b>	---	---	---	9.3	8.9	9.0	11.0	10.6	10.8	12.9	12.5	12.7
<b>31</b>	---	---	---	9.0	8.3	8.6	---	---	---	13.5	12.6	13.0
<b>Month</b>	9.2	7.2	8.1	11.0	8.0	9.3	12.0	8.0	10.3	15.6	10.3	12.6

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
<b>1</b>	13.3	13.1	13.2	19.4	19.1	19.2	22.4	21.9	22.1	20.0	19.6	19.7
<b>2</b>	13.9	13.2	13.5	19.3	19.0	19.2	22.2	21.7	21.9	20.0	19.4	19.7
<b>3</b>	13.9	12.7	13.2	19.2	18.8	18.9	22.1	21.3	21.5	20.4	19.4	19.8
<b>4</b>	12.8	11.3	12.1	18.8	18.2	18.5	22.2	21.5	21.7	19.7	19.2	19.4
<b>5</b>	11.8	11.2	11.4	18.2	17.6	17.9	22.6	21.6	21.9	19.2	19.0	19.1
<b>6</b>	12.0	11.8	12.0	18.0	17.4	17.7	21.9	21.1	21.5	19.4	18.7	19.0
<b>7</b>	12.6	12.0	12.4	18.4	17.5	17.9	21.8	21.1	21.3	18.8	18.4	18.7
<b>8</b>	13.1	12.6	12.8	19.2	18.0	18.5	21.7	21.2	21.4	18.7	18.3	18.5
<b>9</b>	13.5	13.1	13.3	20.1	18.7	19.3	21.3	21.1	21.2	19.0	18.6	18.8
<b>10</b>	13.4	13.0	13.2	20.6	19.4	20.0	21.5	21.1	21.3	19.0	18.9	18.9
<b>11</b>	13.0	12.6	12.7	21.5	20.3	20.7	21.7	21.2	21.4	18.9	18.6	18.7
<b>12</b>	12.7	12.4	12.5	21.6	21.0	21.3	22.2	21.3	21.5	18.8	18.4	18.6
<b>13</b>	13.6	12.7	13.1	22.0	21.4	21.7	22.0	21.5	21.7	18.7	18.4	18.5
<b>14</b>	13.8	13.6	13.7	22.0	21.6	21.8	22.1	21.7	21.8	18.4	18.0	18.2
<b>15</b>	14.3	13.8	14.1	22.4	21.7	22.0	22.4	21.8	22.0	18.1	17.8	17.9
<b>16</b>	14.6	14.2	14.5	22.3	21.9	22.1	22.6	21.7	22.0	18.0	17.7	17.8
<b>17</b>	14.4	13.9	14.2	21.9	21.4	21.5	22.4	21.7	21.9	18.1	17.7	17.9
<b>18</b>	14.0	13.6	13.8	21.4	20.9	21.0	22.4	21.6	21.9	18.2	17.9	18.1
<b>19</b>	13.9	13.4	13.6	21.0	20.6	20.7	22.6	21.9	22.0	18.5	18.2	18.3
<b>20</b>	14.0	13.5	13.7	20.9	20.6	20.7	22.3	21.8	22.0	18.4	18.1	18.2
<b>21</b>	14.3	13.8	14.0	21.3	20.5	20.8	22.1	21.9	22.0	18.1	17.7	17.9
<b>22</b>	14.7	14.2	14.4	21.0	20.5	20.7	22.0	21.7	21.8	17.8	17.5	17.6
<b>23</b>	15.4	14.4	14.8	21.0	20.2	20.5	22.1	21.6	21.8	17.5	17.0	17.2
<b>24</b>	16.0	15.0	15.4	21.0	20.3	20.6	21.9	21.3	21.6	17.3	16.9	17.0
<b>25</b>	16.9	15.7	16.2	21.3	20.5	20.8	21.9	21.1	21.4	17.0	16.7	16.8
<b>26</b>	17.9	16.8	17.2	22.0	21.0	21.3	21.2	20.8	21.0	17.0	16.8	16.9
<b>27</b>	18.6	17.4	17.9	22.1	21.4	21.6	20.9	20.5	20.7	17.5	16.7	17.0
<b>28</b>	18.9	18.5	18.7	22.0	21.5	21.7	20.5	20.2	20.4	17.1	16.7	16.9
<b>29</b>	19.0	18.9	19.0	22.4	21.7	22.0	20.2	19.7	19.9	17.1	16.6	16.8
<b>30</b>	19.4	19.0	19.2	22.4	21.8	22.1	19.8	19.6	19.7	17.2	16.8	17.0
<b>31</b>	---	---	---	22.3	21.9	22.1	19.7	19.6	19.6	---	---	---
<b>Month</b>	19.4	11.2	14.3	22.4	17.4	20.5	22.6	19.6	21.4	20.4	16.6	18.2

	Max	Min	Mean
<b>Year</b>	22.6	0.9	12.5

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
<b>1</b>	9.5	9.2	9.3	11.7	11.3	11.5	12.6	12.5	12.5	13.6	13.3	13.4
<b>2</b>	9.7	9.4	9.6	11.8	11.5	11.6	12.6	12.4	12.5	13.8	13.6	13.8
<b>3</b>	9.7	9.5	9.6	11.7	11.3	11.6	12.6	12.4	12.5	13.8	13.6	13.7
<b>4</b>	9.8	9.7	9.8	11.6	11.3	11.5	12.5	12.2	12.4	13.7	13.5	13.6
<b>5</b>	10.0	9.8	9.9	11.5	11.3	11.4	12.4	12.2	12.3	13.6	13.3	13.4
<b>6</b>	10.0	9.9	10	11.6	11.3	11.4	12.4	12.2	12.3	13.4	13.2	13.3
<b>7</b>	10.2	9.9	10.1	11.8	11.4	11.6	12.6	12.3	12.4	13.6	13.4	13.5
<b>8</b>	10.3	10.0	10.1	11.9	11.6	11.7	12.8	12.5	12.6	13.8	13.6	13.7
<b>9</b>	10.2	10.0	10.1	12.0	11.8	11.9	13.1	12.6	12.8	13.8	13.8	13.8
<b>10</b>	10.3	10.1	10.2	12.1	11.8	12.0	13.2	13.0	13.1	13.8	13.7	13.8
<b>11</b>	10.5	10.2	10.4	12.1	12.0	12.0	---	13.2	---	13.7	13.5	13.6
<b>12</b>	10.5	10.3	10.4	12.1	11.9	12.0	---	---	---	13.5	13.3	13.4
<b>13</b>	10.5	10.2	10.3	12.1	11.9	12.0	---	---	---	13.4	13.2	13.3
<b>14</b>	10.3	10.1	10.2	12.2	11.9	12.1	---	---	---	13.5	13.4	13.5
<b>15</b>	10.2	10.0	10.1	12.3	12.1	12.3	13.8	13.4	13.6	13.5	13.2	13.3
<b>16</b>	10.5	10.0	10.2	12.4	12.1	12.2	13.5	13.1	13.2	13.2	13.1	13.2
<b>17</b>	10.6	10.4	10.5	12.2	11.9	12.1	13.5	13.4	13.5	13.1	13.0	13.1
<b>18</b>	10.6	10.3	10.5	12.3	12.0	12.1	13.5	13.2	13.3	13.0	12.9	12.9
<b>19</b>	10.4	10.2	10.3	12.4	12.2	12.2	13.3	13.0	13.1	12.9	12.8	12.9
<b>20</b>	10.3	10.0	10.1	12.3	12.2	12.2	13.0	12.7	12.8	12.9	12.8	12.9
<b>21</b>	10.0	9.8	9.9	12.3	12.2	12.2	12.7	12.4	12.5	12.8	12.7	12.7
<b>22</b>	9.9	9.7	9.8	12.3	12.1	12.2	12.9	12.4	12.6	12.7	12.6	12.7
<b>23</b>	10.2	9.8	9.9	12.8	12.3	12.6	13.2	12.9	13.1	12.9	12.7	12.8
<b>24</b>	10.6	10.2	10.4	12.8	12.6	12.7	13.4	13.2	13.3	12.9	12.8	12.9
<b>25</b>	10.8	10.4	10.6	12.7	12.6	12.6	13.4	13.3	13.4	13.0	12.8	12.9
<b>26</b>	10.9	10.6	10.7	12.6	12.3	12.5	13.6	13.4	13.4	13.1	13.0	13.0
<b>27</b>	10.9	10.7	10.7	12.4	12.2	12.3	13.6	13.4	13.5	13.1	13.0	13.1
<b>28</b>	11.1	10.7	10.9	12.7	12.4	12.5	13.7	13.5	13.6	13.1	12.9	13.0
<b>29</b>	11.3	10.9	11.1	12.7	12.5	12.6	13.5	13.3	13.4	12.9	12.8	12.8
<b>30</b>	11.2	10.9	11.1	12.6	12.4	12.5	13.3	13.2	13.3	12.9	12.8	12.8
<b>31</b>	11.5	11.0	11.2	---	---	---	13.4	13.2	13.3	12.9	12.7	12.8
<b>Month</b>	11.5	9.2	10.3	12.8	11.3	12.1	---	---	---	13.8	12.6	13.2

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	12.7	12.4	12.5	12.5	12.3	12.4	13.3	13.1	13.2	12.0	11.9	12.0
2	12.4	12.3	12.3	12.3	12.0	12.2	13.3	12.8	13.0	12.0	11.9	12.0
3	12.4	12.3	12.3	---	11.8	---	12.9	12.8	12.9	12.0	11.7	11.8
4	12.5	12.3	12.4	12.1	11.9	12.0	12.9	12.8	12.9	11.8	11.6	11.7
5	12.4	12.3	12.4	12.1	11.9	12.0	13.0	12.9	12.9	11.8	11.7	11.8
6	12.5	12.3	12.4	12.1	11.9	12.0	13.1	12.9	13.0	12.1	11.8	11.9
7	12.4	12.3	12.4	12.0	11.8	11.9	13.1	12.9	13.1	12.1	11.9	12.0
8	12.3	12.2	12.3	11.9	11.8	11.9	12.9	12.7	12.8	12.0	11.6	11.7
9	12.3	12.1	12.2	11.9	11.7	11.8	12.7	12.6	12.7	11.6	11.2	11.4
10	12.3	12.2	12.2	11.9	11.7	11.8	12.6	12.3	12.4	11.3	10.9	11.1
11	12.3	12.2	12.2	11.9	11.7	11.8	12.3	12.2	12.3	11.0	10.8	10.9
12	12.3	12.2	12.2	11.9	11.7	11.8	12.2	12.0	12.0	11.0	10.8	10.9
13	12.4	12.1	12.3	12.7	11.8	12.1	12.0	11.8	11.8	11.0	10.7	10.9
14	12.6	12.4	12.6	12.9	12.7	12.9	11.8	11.7	11.7	11.0	10.8	10.9
15	12.6	12.4	12.5	13.0	12.8	12.9	11.9	11.5	11.7	11.0	10.7	10.9
16	12.6	12.4	12.5	12.9	12.5	12.7	11.8	11.7	11.7	10.8	10.5	10.7
17	12.5	12.4	12.4	12.5	12.4	12.4	11.8	11.6	11.7	10.6	10.4	10.5
18	12.5	12.3	12.4	12.4	12.1	12.3	11.7	11.6	11.6	10.4	10.2	10.3
19	12.3	12.0	12.2	12.2	12.0	12.1	11.6	11.2	11.4	10.3	10.1	10.2
20	12.1	12.0	12.1	12.1	11.9	12.0	11.3	11.0	11.2	10.3	10.1	10.2
21	12.2	12.0	12.1	11.9	11.8	11.8	11.2	11.0	11.1	10.6	10.3	10.5
22	12.3	12.1	12.2	11.8	11.7	11.7	11.6	11.2	11.4	10.8	10.5	10.7
23	12.4	12.2	12.3	11.8	11.6	11.7	11.8	11.6	11.7	11.0	10.8	10.9
24	12.4	12.3	12.3	11.7	11.5	11.6	11.9	11.7	11.8	11.1	10.9	11.0
25	12.5	12.3	12.4	11.5	11.2	11.4	11.8	11.7	11.8	11.2	11.1	11.2
26	12.6	12.3	12.5	11.4	11.2	11.3	11.7	11.2	11.6	11.2	11.0	11.1
27	12.6	12.3	12.4	11.9	11.3	11.6	11.2	11.0	11.1	11.1	10.9	11.0
28	12.6	12.4	12.5	12.1	11.9	12.0	11.3	11.0	11.1	11.0	10.9	10.9
29	---	---	---	12.1	11.9	12.0	11.9	11.3	11.6	11.0	10.9	11.0
30	---	---	---	12.7	12.0	12.3	12.0	11.9	11.9	11.1	10.9	11.0
31	---	---	---	13.2	12.6	12.9	---	---	---	11.0	10.7	10.8
Month	12.7	12.0	12.3	---	11.2	---	13.3	11.0	12.0	12.1	10.1	11.1

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	10.8	10.6	10.7	10.0	9.7	9.8	8.6	8.3	8.5	8.7	8.4	8.6
2	10.7	10.4	10.6	9.9	9.6	9.7	8.8	8.3	8.5	8.9	8.5	8.7
3	11.5	10.4	10.8	9.8	9.5	9.7	8.9	8.4	8.6	9.2	8.5	8.8
4	12.3	11.5	11.9	10.1	9.8	9.9	8.8	8.4	8.6	9.0	8.8	8.9
5	12.5	12.3	12.4	10.3	9.9	10.1	9.1	8.4	8.6	9.0	8.8	8.9
6	12.6	12.4	12.5	10.3	10.1	10.2	9.1	8.5	8.7	9.1	8.9	9.0
7	12.6	12.5	12.5	10.4	10.1	10.2	9.1	8.6	8.8	9.1	8.9	9.0
8	12.5	12.2	12.3	10.2	9.9	10.1	8.9	8.6	8.7	9.1	8.8	8.9
9	12.2	11.8	12.0	10.0	9.8	9.9	8.8	8.6	8.7	9.3	8.7	8.9
10	11.9	11.8	11.8	9.8	9.5	9.6	8.8	8.5	8.6	9.3	8.7	8.9
11	12.1	11.9	12.0	9.5	8.9	9.2	8.8	8.4	8.6	9.0	8.6	8.8
12	12.2	12.1	12.2	9.0	8.6	8.9	8.8	8.4	8.6	9.1	8.8	8.9
13	12.2	11.8	12.0	8.8	8.3	8.6	8.8	8.4	8.6	9.2	8.9	9.0
14	11.8	11.6	11.7	8.7	8.3	8.6	8.8	8.4	8.6	9.1	8.9	9.0
15	11.6	11.2	11.4	8.8	8.5	8.6	9.2	8.3	8.6	9.2	8.9	9.0
16	11.2	11.1	11.1	8.8	8.5	8.6	9.3	8.4	8.8	9.2	8.9	9.1
17	11.2	11.1	11.2	8.8	8.5	8.7	9.4	8.5	8.9	9.1	8.9	9.1
18	11.4	11.2	11.3	9.0	8.6	8.8	9.5	8.4	8.8	9.0	8.8	9.0
19	11.4	11.3	11.4	9.1	8.8	8.9	8.7	8.1	8.5	9.0	8.8	8.9
20	11.3	11.2	11.3	8.9	8.7	8.8	8.8	8.2	8.4	9.1	8.8	8.9
21	11.2	11.1	11.2	8.9	8.6	8.8	8.5	8.0	8.3	9.3	8.9	9.1
22	11.2	11.0	11.1	9.0	8.6	8.8	8.7	8.0	8.3	9.5	9.2	9.3
23	11.1	11.0	11.0	9.0	8.7	8.8	8.7	8.1	8.4	9.5	9.2	9.3
24	11.0	10.8	10.9	9.0	8.7	8.9	8.9	8.1	8.6	9.5	9.2	9.3
25	10.8	10.5	10.6	9.0	8.7	8.8	9.2	8.4	8.7	9.4	9.2	9.4
26	10.5	10.2	10.3	9.1	8.6	8.8	8.9	8.6	8.7	9.5	9.3	9.4
27	10.5	10.1	10.2	9.0	8.6	8.8	9.1	8.6	8.7	9.4	9.2	9.3
28	10.3	9.8	10.1	8.8	8.5	8.7	9.0	8.6	8.8	9.4	9.1	9.3
29	10.1	9.8	9.9	8.7	8.4	8.6	9.3	8.7	8.8	9.4	9.2	9.4
30	10.0	9.7	9.8	8.7	8.4	8.5	9.1	8.8	8.9	9.4	9.2	9.3
31	---	---	---	8.6	8.3	8.5	8.8	8.6	8.7	---	---	---
Month	12.6	9.7	11.3	10.4	8.3	9.1	9.5	8.0	8.6	9.5	8.4	9.0



## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	October			November			December			January		
<b>1</b>	2.3	1.3	1.9	4.7	2.5	3.6	13	9.0	10	18	6.5	9.6
<b>2</b>	2.4	1.4	1.7	5.8	2.8	4.0	10	7.5	8.7	54	18	42
<b>3</b>	2.7	1.3	1.8	5.8	3.1	4.1	8.6	6.6	7.6	55	43	48
<b>4</b>	2.7	1.4	1.7	5.9	3.1	4.1	7.5	5.4	6.5	46	29	36
<b>5</b>	2.8	1.4	1.8	5.7	3.2	4.3	6.5	4.6	5.6	30	21	24
<b>6</b>	2.3	1.3	1.7	5.5	2.9	4.0	6.3	4.5	5.1	24	19	22
<b>7</b>	2.6	1.2	1.7	5.6	3.3	4.2	6.3	4.3	4.9	36	24	30
<b>8</b>	3.1	1.3	1.7	7.0	4.1	5.5	5.6	4.0	4.6	38	31	35
<b>9</b>	2.0	1.2	1.6	7.8	5.3	6.2	6.1	3.7	4.4	32	23	26
<b>10</b>	2.4	1.3	1.6	9.2	6.3	7.7	4.6	3.5	4.0	24	19	22
<b>11</b>	2.5	1.5	1.9	9.4	7.1	8.2	---	---	---	20	17	18
<b>12</b>	2.9	1.6	2.2	8.4	6.4	7.4	---	---	---	18	14	16
<b>13</b>	3.5	1.7	2.5	8.4	5.8	6.8	---	---	---	16	13	14
<b>14</b>	4.5	1.7	2.7	7.6	5.6	6.4	---	---	---	19	15	18
<b>15</b>	3.3	1.9	2.5	7.4	5.5	6.4	3.8	2.3	2.9	20	17	18
<b>16</b>	3.1	1.9	2.4	6.8	5.5	6.1	9.1	3.6	6.8	24	17	19
<b>17</b>	3.7	1.9	2.5	7.0	4.9	5.6	28	7.8	15	24	18	21
<b>18</b>	3.3	1.9	2.6	6.8	4.8	5.4	36	28	31	26	23	25
<b>19</b>	4.1	2.2	2.6	8.0	4.6	5.8	31	20	26	25	22	24
<b>20</b>	3.1	2.1	2.4	10	7.7	9.2	22	15	18	26	20	24
<b>21</b>	2.9	1.9	2.4	12	8.3	9.4	17	14	15	20	16	18
<b>22</b>	2.9	1.9	2.3	12	8.8	10	19	14	17	17	14	15
<b>23</b>	3.4	2.0	2.5	13	9.2	11	24	18	21	14	11	13
<b>24</b>	3.3	1.9	2.7	17	12	15	24	16	19	12	10	11
<b>25</b>	6.2	1.9	2.6	17	11	14	17	12	15	12	10	11
<b>26</b>	6.3	1.8	2.6	14	9.4	11	13	9.5	11	15	10	11
<b>27</b>	3.5	2.2	3.0	11	8.3	9.3	10	7.5	8.7	15	13	14
<b>28</b>	4.1	2.4	3.1	11	7.8	9.2	8.3	6.4	7.4	14	11	13
<b>29</b>	4.1	2.2	3.1	14	9.6	12	7.1	5.2	6.4	12	9.5	11
<b>30</b>	6.7	2.8	3.9	14	10	12	6.7	5.3	6.0	10	8.1	9.0
<b>31</b>	4.7	3.0	3.7	---	---	---	7.0	4.7	5.6	9.0	7.1	7.9
<b>Max</b>	6.7	3.0	3.9	17	12	15	---	---	---	55	43	48
<b>Min</b>	2.0	1.2	1.6	4.7	2.5	3.6	---	---	---	9.0	6.5	7.9

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	February			March			April			May		
1	8.1	6.7	7.4	22	18	20	52	38	44	13	9.9	12
2	7.7	6.0	6.9	21	16	19	39	26	32	11	7.7	9.3
3	7.7	6.1	6.8	16	13	15	28	20	23	8.5	6.3	7.5
4	8.4	6.3	7.4	13	9.2	11	25	21	23	7.5	5.2	6.2
5	10	8.1	9.0	10	7.1	8.8	24	20	22	6.5	5.0	5.5
6	11	9.0	9.8	9.7	6.3	7.3	21	16	18	6.6	4.8	5.4
7	10	9.2	9.8	7.1	6.0	6.4	17	15	16	6.1	4.2	4.8
8	10	8.9	9.6	6.6	5.2	6.0	17	15	16	5.5	3.6	4.3
9	9.5	7.7	8.4	6.5	4.9	5.5	17	14	15	4.7	3.6	3.9
10	8.1	6.6	7.6	5.9	4.5	5.1	14	12	13	5.1	3.5	4.0
11	8.2	6.3	7.1	5.4	4.3	4.9	14	11	12	4.9	3.3	3.7
12	7.6	6.2	6.7	5.7	4.2	4.8	12	10	11	5.1	2.7	3.5
13	7.3	6.1	6.5	6.7	4.7	5.6	11	9.8	10	3.8	2.6	3.2
14	11	6.3	7.5	15	6.4	10	11	9.7	10	3.6	2.5	2.9
15	15	11	13	19	14	17	11	8.1	10	4.4	2.5	3.1
16	15	13	14	19	15	17	12	8.9	10	3.8	2.7	3.3
17	14	12	13	17	13	15	12	9.5	11	5.5	2.5	3.1
18	12	10	12	13	9.5	12	11	7.3	9.0	4.0	2.2	2.5
19	11	9.8	10	11	7.8	9.2	8.7	5.7	7.3	3.5	2.0	2.4
20	11	8.3	9.2	8.6	6.5	7.8	6.4	5.0	5.7	3.4	2.1	2.6
21	9.0	7.1	8.0	7.6	5.7	6.4	6.7	4.2	5.0	4.8	2.4	3.0
22	7.9	6.3	6.9	7.0	5.1	5.6	5.9	4.1	4.7	4.1	2.5	3.3
23	7.2	5.7	6.2	5.7	4.3	5.1	6.1	3.9	4.4	5.9	3.8	4.6
24	6.2	5.4	5.8	5.5	4.0	4.6	5.3	3.9	4.4	5.4	4.0	4.5
25	6.1	5.1	5.6	6.0	3.8	4.3	6.2	4.0	4.5	4.8	3.8	4.2
26	7.8	5.1	5.7	6.0	3.7	4.5	5.2	3.9	4.5	5.7	3.8	4.9
27	12	7.0	8.5	6.1	4.2	5.1	5.0	3.8	4.3	5.5	4.3	4.7
28	18	12	14	12	5.0	7.4	5.4	3.8	4.2	5.6	4.2	4.6
29	---	---	---	25	12	19	7.9	4.6	6.5	6.8	4.2	4.9
30	---	---	---	40	24	33	12	7.8	11	6.4	4.9	5.5
31	---	---	---	54	40	49	---	---	---	6.9	5.1	5.6
<b>Max</b>	18	13	14	54	40	49	52	38	44	13	9.9	12
<b>Min</b>	6.1	5.1	5.6	5.4	3.7	4.3	5.0	3.8	4.2	3.4	2.0	2.4

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS**  
**WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	June			July			August			September		
<b>1</b>	7.4	4.6	5.3	19	3.6	5.8	5.4	3.3	3.9	4.9	2.6	3.5
<b>2</b>	5.6	4.4	4.8	9.4	4.0	5.5	5.5	3.1	4.0	5.4	3.1	3.9
<b>3</b>	13	5.1	8.0	7.9	3.6	4.6	7.0	3.2	3.9	5.2	3.1	4.0
<b>4</b>	33	11	16	12	4.1	4.9	5.8	2.8	3.9	5.1	3.5	4.0
<b>5</b>	33	28	30	13	3.8	7.5	6.0	2.8	4.0	9.6	2.9	4.1
<b>6</b>	35	28	31	20	3.9	8.3	4.9	3.1	3.8	4.8	3.3	3.7
<b>7</b>	33	26	30	15	3.7	8.8	10	3.3	4.3	5.2	3.0	3.6
<b>8</b>	26	19	23	18	3.8	7.8	5.3	3.6	4.5	6.2	3.0	3.5
<b>9</b>	19	14	16	5.4	3.3	4.0	6.1	4.0	4.7	4.8	3.2	3.8
<b>10</b>	15	11	13	5.1	3.2	3.6	7.2	3.6	4.7	4.2	3.1	3.7
<b>11</b>	12	9.8	11	5.0	3.1	3.7	6.0	3.2	4.4	4.7	2.7	3.5
<b>12</b>	11	9.3	10	5.1	3.3	4.0	6.4	3.7	4.9	4.7	2.6	3.4
<b>13</b>	10	8.7	9.6	5.0	3.3	3.9	6.7	4.1	5.2	3.9	2.9	3.3
<b>14</b>	9.4	7.7	8.6	4.8	2.6	3.6	8.1	3.6	5.2	4.1	2.6	3.2
<b>15</b>	8.0	6.4	7.2	4.7	2.6	3.2	8.1	3.3	4.8	4.0	2.6	3.2
<b>16</b>	8.2	5.7	6.3	4.9	2.5	3.3	11	3.8	6.5	3.5	2.5	3.2
<b>17</b>	8.5	5.1	5.6	12	2.7	3.7	12	3.8	6.5	4.3	2.4	3.0
<b>18</b>	14	4.7	5.0	6.8	3.0	4.0	16	4.3	7.7	4.2	2.7	3.4
<b>19</b>	6.2	4.5	4.9	6.2	2.9	3.9	16	2.9	3.8	4.4	3.0	3.6
<b>20</b>	5.4	4.5	4.9	4.9	3.5	4.0	4.7	3.1	3.7	5.4	3.0	4.0
<b>21</b>	5.1	4.3	4.7	5.2	2.9	3.8	5.9	3.1	3.7	6.4	3.0	3.7
<b>22</b>	5.2	4.1	4.4	5.4	3.3	4.1	5.8	3.4	3.9	6.7	2.9	3.6
<b>23</b>	4.7	3.7	4.2	5.6	3.2	4.1	4.8	3.4	4.0	4.3	3.1	3.7
<b>24</b>	5.1	3.7	4.2	5.3	3.1	4.0	4.7	2.1	3.5	4.6	2.7	3.6
<b>25</b>	4.6	3.5	3.9	5.7	3.2	3.9	4.0	2.3	3.0	3.9	2.5	3.1
<b>26</b>	4.5	3.2	3.6	5.3	3.0	4.1	4.2	2.6	3.2	5.0	3.2	3.8
<b>27</b>	7.0	3.1	3.6	6.1	3.3	4.3	4.3	2.4	3.1	4.2	3.0	3.6
<b>28</b>	5.0	3.1	3.6	6.1	3.6	4.4	3.9	2.4	3.1	4.0	2.6	3.2
<b>29</b>	7.0	3.1	3.8	5.9	3.3	4.3	4.2	2.6	3.2	3.6	2.5	3.0
<b>30</b>	5.8	3.1	4.1	5.9	3.3	4.1	4.5	2.5	3.4	3.7	2.2	2.7
<b>31</b>	---	---	---	6.5	3.3	4.2	5.1	3.2	3.9	---	---	---
<b>Max</b>	35	28	31	20	4.1	8.8	16	4.3	7.7	9.6	3.5	4.1
<b>Min</b>	4.5	3.1	3.6	4.7	2.5	3.2	3.9	2.1	3.0	3.5	2.2	2.7

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**CHLOROPHYLL, TOTAL, WATER, FLUOROMETRIC, 650-700 NANOMETERS, IN SITU SENSOR, MICROGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
<b>1</b>	3.7	2.2	3.0	3.0	1.8	2.3	4.0	2.9	3.4	2.8	1.9	2.2
<b>2</b>	3.9	2.2	2.9	3.0	1.6	2.3	3.7	2.5	3.2	4.8	2.3	3.5
<b>3</b>	3.8	2.2	3.0	2.9	1.8	2.3	3.6	2.3	3.1	4.7	3.6	4.1
<b>4</b>	3.8	2.1	3.0	2.9	1.5	2.3	3.7	2.5	3.1	4.2	2.6	3.6
<b>5</b>	3.4	1.9	2.8	2.9	1.5	2.3	3.5	2.2	3.0	3.7	2.3	3.0
<b>6</b>	3.5	1.8	2.6	2.9	1.4	2.2	3.6	2.3	3.0	3.4	2.1	2.8
<b>7</b>	3.2	1.8	2.5	3.3	1.4	2.3	3.4	2.3	2.9	3.9	2.4	3.1
<b>8</b>	3.5	1.8	2.5	3.2	1.6	2.4	3.3	2.3	2.8	4.0	2.7	3.4
<b>9</b>	3.2	1.7	2.5	3.2	1.6	2.6	3.2	2.2	2.8	3.4	2.0	2.8
<b>10</b>	3.2	1.8	2.5	3.5	2.1	2.7	3.3	2.3	2.7	3.2	2.1	2.7
<b>11</b>	3.3	1.4	2.4	3.6	2.3	2.8	---	---	---	3.0	1.7	2.4
<b>12</b>	2.9	1.8	2.3	3.3	2.2	2.7	---	---	---	2.8	1.9	2.3
<b>13</b>	2.7	1.7	2.3	3.5	2.3	2.8	---	---	---	3.0	1.4	2.3
<b>14</b>	3.1	1.8	2.3	3.2	2.0	2.7	---	---	---	3.3	1.6	2.6
<b>15</b>	2.9	1.6	2.3	3.2	1.9	2.6	2.3	1.4	1.9	3.3	2.1	2.8
<b>16</b>	2.8	1.7	2.3	3.1	2.0	2.6	2.7	1.4	2.2	3.6	2.1	2.9
<b>17</b>	3.0	1.6	2.3	3.3	1.9	2.5	3.6	1.9	2.8	3.5	2.2	2.9
<b>18</b>	2.9	1.8	2.3	3.2	1.7	2.5	4.1	3.0	3.6	3.6	2.5	3.0
<b>19</b>	2.9	1.7	2.4	3.2	2.0	2.5	3.9	2.9	3.4	3.6	2.2	3.0
<b>20</b>	2.9	1.8	2.3	3.6	2.2	2.8	3.5	2.5	3.0	3.7	2.4	3.1
<b>21</b>	3.1	1.7	2.4	3.4	2.2	2.8	3.8	2.4	2.9	3.3	2.0	2.7
<b>22</b>	3.3	1.4	2.4	3.5	2.1	2.9	3.4	2.5	3.0	3.5	2.0	2.6
<b>23</b>	3.1	1.5	2.5	3.5	2.0	2.9	3.8	2.3	3.1	3.1	1.9	2.4
<b>24</b>	3.1	1.6	2.4	3.8	2.6	3.2	3.4	2.5	2.9	2.8	1.5	2.2
<b>25</b>	3.2	1.6	2.3	3.8	2.9	3.3	3.2	2.1	2.7	2.8	1.9	2.2
<b>26</b>	3.0	1.6	2.3	4.2	2.4	3.2	2.8	1.7	2.4	2.9	1.8	2.3
<b>27</b>	3.2	1.5	2.3	3.8	2.7	3.2	3.0	1.8	2.2	2.9	1.7	2.3
<b>28</b>	2.9	1.6	2.3	3.8	2.5	3.1	2.6	1.7	2.2	3.0	1.7	2.3
<b>29</b>	3.0	1.8	2.3	4.0	2.6	3.2	2.6	1.4	2.1	2.9	1.3	2.2
<b>30</b>	2.9	1.7	2.4	4.1	2.9	3.5	2.5	1.4	2.0	2.7	1.3	2.1
<b>31</b>	3.1	1.7	2.3	---	---	---	2.6	1.4	2.1	2.5	1.5	2.0
<b>Month</b>	3.9	1.4	2.5	4.2	1.4	2.7	---	---	---	4.8	1.3	2.7

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**CHLOROPHYLL, TOTAL, WATER, FLUOROMETRIC, 650-700 NANOMETERS, IN SITU SENSOR, MICROGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	2.4	1.4	1.9	3.4	1.9	2.7	4.5	2.9	3.8	4.3	2.9	3.7
<b>2</b>	2.7	1.3	1.9	3.3	2.0	2.6	4.1	2.4	3.3	3.9	2.7	3.2
<b>3</b>	2.7	1.3	2.0	2.9	1.7	2.3	3.6	2.4	2.9	3.7	2.4	3.1
<b>4</b>	2.4	1.4	2.0	2.6	1.6	2.1	3.6	2.2	2.8	3.6	2.2	2.9
<b>5</b>	2.5	0.9	2.0	2.7	1.4	2.0	3.5	2.1	2.8	3.3	2.0	2.7
<b>6</b>	2.6	1.7	2.2	3.0	1.4	2.0	3.5	2.1	2.7	3.4	2.1	2.7
<b>7</b>	2.8	1.8	2.2	2.8	1.3	2.0	3.4	1.7	2.6	3.4	1.8	2.6
<b>8</b>	2.6	1.6	2.1	2.8	1.4	2.1	3.0	1.8	2.6	3.3	1.9	2.6
<b>9</b>	2.8	1.5	2.0	2.5	1.3	2.0	2.9	1.9	2.5	3.5	1.4	2.7
<b>10</b>	2.4	1.3	1.9	2.8	1.1	2.0	3.2	1.8	2.4	3.6	2.1	2.8
<b>11</b>	2.5	1.4	2.0	2.8	1.4	2.0	3.5	1.7	2.4	3.7	1.9	2.6
<b>12</b>	2.6	1.4	1.9	2.6	1.3	2.0	3.0	1.7	2.4	3.4	1.9	2.7
<b>13</b>	2.3	0.9	1.8	2.7	1.3	2.0	3.3	1.8	2.5	3.6	2.0	2.6
<b>14</b>	2.4	1.2	1.9	2.9	1.5	2.2	3.0	1.8	2.4	3.5	2.1	2.7
<b>15</b>	2.9	1.6	2.2	3.2	2.1	2.6	3.6	1.9	2.7	4.1	2.1	3.0
<b>16</b>	2.8	1.6	2.3	3.4	2.1	2.7	3.5	1.7	2.8	4.2	2.4	3.2
<b>17</b>	2.9	1.5	2.3	3.2	2.0	2.5	3.8	2.2	2.9	4.3	2.3	3.3
<b>18</b>	2.8	1.5	2.2	3.1	1.6	2.3	3.9	2.0	2.9	4.5	2.2	3.6
<b>19</b>	2.7	1.3	2.1	2.8	1.8	2.3	3.6	1.6	2.7	4.5	2.5	3.4
<b>20</b>	2.7	1.4	2.0	2.9	1.5	2.1	3.5	2.1	2.7	4.2	2.5	3.3
<b>21</b>	2.5	1.5	2.0	3.3	1.6	2.3	3.5	2.1	2.6	3.9	2.1	3.0
<b>22</b>	2.4	1.0	1.8	3.1	1.7	2.2	3.3	1.7	2.6	4.2	2.2	3.0
<b>23</b>	2.3	1.1	1.7	2.9	1.7	2.2	3.8	1.9	2.6	3.7	2.3	3.0
<b>24</b>	2.2	1.1	1.7	3.3	1.4	2.2	3.3	1.8	2.6	3.5	1.8	3.0
<b>25</b>	2.2	1.1	1.7	3.0	1.8	2.4	3.5	1.9	2.7	3.6	2.4	3.1
<b>26</b>	2.4	1.1	1.7	3.1	1.7	2.4	3.8	1.8	2.8	3.9	2.2	3.0
<b>27</b>	2.4	1.5	2.0	2.9	1.4	2.3	3.6	1.8	2.9	4.0	2.4	3.1
<b>28</b>	2.7	1.4	2.2	3.0	2.0	2.4	3.5	2.3	2.8	3.8	2.3	3.0
<b>29</b>	---	---	---	3.9	2.1	3.1	3.8	1.9	2.9	3.7	1.8	2.9
<b>30</b>	---	---	---	4.4	2.8	3.4	4.6	2.4	3.5	4.3	2.5	3.2
<b>31</b>	---	---	---	4.8	3.4	4.1	---	---	---	4.1	2.5	3.2
<b>Month</b>	2.9	0.9	2.0	4.8	1.1	2.4	4.6	1.6	2.8	4.5	1.4	3.0

## 14211720 WILLAMETTE RIVER AT PORTLAND, OR—Continued

**CHLOROPHYLL, TOTAL, WATER, FLUOROMETRIC, 650-700 NANOMETERS, IN SITU SENSOR, MICROGRAMS PER LITER  
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
<b>1</b>	4.3	2.4	3.1	5.9	3.1	4.1	5.6	1.9	3.4	4.3	2.3	3.4
<b>2</b>	4.2	2.0	3.0	5.0	2.8	3.8	5.1	2.6	3.5	4.4	2.3	3.3
<b>3</b>	3.8	2.3	3.2	4.3	2.7	3.4	5.0	2.8	3.7	5.9	1.9	3.6
<b>4</b>	4.9	2.8	3.9	3.9	2.2	3.1	4.7	2.1	3.6	5.0	2.3	3.5
<b>5</b>	5.1	3.2	4.1	5.2	1.7	3.2	8.3	2.4	4.3	4.7	2.2	3.6
<b>6</b>	5.6	3.2	3.9	3.9	2.2	3.1	7.9	2.2	4.3	5.3	2.7	3.7
<b>7</b>	5.6	2.7	3.9	4.2	2.0	3.2	10	3.0	4.6	4.4	2.9	3.6
<b>8</b>	5.1	2.5	3.5	4.2	2.2	3.3	6.8	2.7	4.0	4.4	2.8	3.5
<b>9</b>	4.5	2.5	3.3	4.2	2.3	3.4	7.8	2.3	4.1	4.2	2.3	3.4
<b>10</b>	3.8	2.1	3.0	4.4	2.5	3.6	5.2	2.6	3.9	3.9	2.0	3.0
<b>11</b>	3.7	2.3	2.9	4.5	2.1	3.5	4.7	2.6	3.7	3.7	2.0	2.8
<b>12</b>	3.5	1.9	2.8	6.2	1.8	3.3	5.1	2.6	3.8	3.6	1.8	2.7
<b>13</b>	3.6	1.9	2.9	4.1	2.1	3.2	5.4	3.1	4.0	3.6	2.0	2.7
<b>14</b>	3.6	1.9	2.8	4.8	2.5	3.5	5.2	2.7	3.9	3.9	1.6	2.7
<b>15</b>	3.5	2.2	2.8	4.7	2.5	3.6	6.7	3.6	4.4	3.4	1.6	2.6
<b>16</b>	3.8	2.1	2.9	4.7	2.3	3.7	7.5	3.1	5.0	4.7	1.7	2.7
<b>17</b>	3.7	2.0	2.9	5.1	2.6	3.9	8.4	3.1	5.4	3.4	1.9	2.6
<b>18</b>	3.7	1.9	2.8	4.9	2.5	3.8	8.0	3.2	4.9	3.4	1.8	2.6
<b>19</b>	3.6	2.2	2.8	5.3	2.7	3.9	6.2	3.0	4.2	3.4	1.8	2.5
<b>20</b>	3.4	1.8	2.6	4.6	2.3	3.5	6.3	2.8	4.0	3.3	1.8	2.5
<b>21</b>	3.8	1.9	2.8	10	1.7	3.5	5.9	2.7	4.1	3.3	1.5	2.4
<b>22</b>	3.6	1.7	2.7	4.6	1.7	3.4	7.0	2.8	4.3	3.3	1.4	2.3
<b>23</b>	3.6	2.1	2.9	4.5	1.5	3.2	5.8	3.1	4.1	3.7	1.5	2.3
<b>24</b>	4.1	2.1	3.0	4.6	2.2	3.3	5.8	3.1	4.2	3.1	1.1	2.3
<b>25</b>	4.1	1.9	3.3	5.1	2.7	3.7	7.7	3.2	4.6	3.5	1.7	2.5
<b>26</b>	4.9	2.5	3.9	5.2	2.0	3.6	6.6	3.2	4.2	3.6	1.7	2.6
<b>27</b>	5.6	2.6	4.3	4.9	2.6	3.8	5.6	2.6	4.0	3.1	1.2	2.3
<b>28</b>	6.6	3.4	4.6	5.2	3.0	3.8	5.2	2.7	3.9	3.2	1.3	2.2
<b>29</b>	5.5	3.5	4.2	5.4	2.7	3.7	6.2	2.3	3.9	2.9	1.1	2.2
<b>30</b>	5.6	2.9	4.1	4.9	2.6	3.7	5.8	3.3	4.0	3.0	0.8	2.1
<b>31</b>	---	---	---	8.4	2.3	3.7	4.6	2.8	3.7	---	---	---
<b>Month</b>	6.6	1.7	3.3	10	1.5	3.5	10	1.9	4.1	5.9	0.8	2.8