

Upper Klamath Lake Tributary Sampling: 2013 Data Summary Report



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INTRODUCTION

The Klamath Tribes have been monitoring nutrient concentration and loading in Upper Klamath Lake (UKL) tributaries since 1991. Data from 1991-1998 were summarized and incorporated into water and nutrient balances for UKL (Kann and Walker 1999). More recently the longer term 1991-2010 database was evaluated for seasonal and inter-annual dynamics, long term trends, and both water and nutrient balances were computed for UKL (Walker et al. 2012). This report serves as an annual update to the UKL tributary water quality database, including a summary of 2013 data (basic summary statistics and graphical analysis), and limited comparison of graphical time-series trends of tributary data collected for the 1991-2013 period. Included in this summary is an update of previous UKL tributary water quality databases with data collected during 2013, including appropriate quality assurance analyses (see Excel spreadsheets: Klamath Tribes Inflow Nutrient Data 1991-2000.xls and Klamath Tribes Inflow Nutrient-Q Data 2001-2013.xls).

METHODS

Methods followed the Klamath Tribes established procedures for field collection and laboratory analysis of water quality parameters (see Klamath Tribes QAPP and SOP; 2013 for a complete description of these methods). Beginning in 2008 for nutrient parameters, laboratory analyses transitioned from Aquatic Research, INC. in Seattle WA to the Sprague River Water Quality Laboratory (SRWQL) in Chiloquin OR. During the transition period duplicate samples were analyzed by both laboratories to confirm parameter reproducibility. Specific nutrient methodology and field collection protocol are contained in the SRWQL QAPP (Klamath Tribes 2013) and SOP (2013). Nutrient parameters (Table 1) were collected at seven tributary stations during the 2012 sampling season at an approximately biweekly frequency (Table 2; Figure 1; Figure 2). Specific computation of nutrient loading is outlined in Kann and Walker (1999) and Walker et al. (2012), but is briefly summarized here.

Table 1. Nutrient parameters collected in Upper Klamath Lake tributaries, 2013.

		Grab ^a
Parameter	Abbreviation/Unit	
Total Phosphorus	TP (μg/L)	X
Soluble Reactive Phosphorus	SRP or PO ₄ (µg/L)	X
Total Nitrogen	TN (µg/L)	X
Ammonia Nitrogen	NH ₄ -N (µg/L)	X
Nitrate-Nitrite Nitrogen	$NO_3+NO_2-N (\mu g/L)$	X
Silica	$SiO_2 (\mu g/L)^1$	X

^aGrab = integrated water column sample and x-sectional sample collected with a Van-Dorn sampler.

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¹ Silica measurements were initiated in 2008 and are now included as a regularly measured parameter. The 2012 data report provides the first inclusion of tributary silica data.

Table 2. Station location and Site ID Code for data collected in Upper Klamath Lake tributaries, 2013.

Location	Site ID Code	Latitude/Longitude			
Sprague R. @ Kirchers Bridge	WR1000	N42.567806° W121.864472°			
Annie Ck @ Snow Park	WR2000	N42.763685° W122.058362°			
Wood R @ Weed Rd	WR3000	N42.646461° W121.994959°			
Wood R @ Dike Rd	WR4000	N42.581460° W121.941536°			
7-mile canal @ Dike Rd	WR5000	N42.581970° W121.970898°			
Williamson R @ Bridge on Modoc Pt. Road	WR6000	N42.514355° W121.916714°			
Upper Klamath Lake @ Pelican Marina/Fremont Bridge (UKL Outflow)	KL0001/KL0002	N42.238472° W121.805557°			

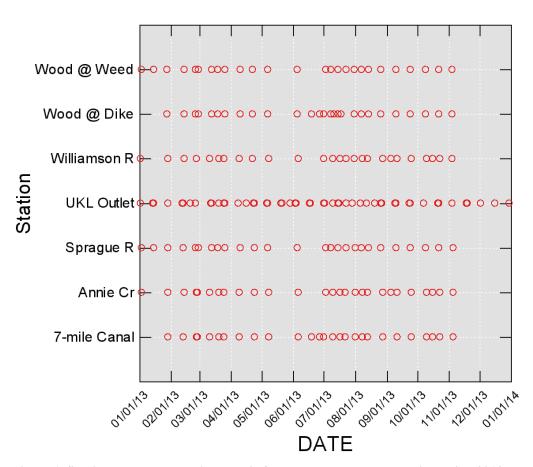


Figure 1. Spatial-temporal sampling matrix for Upper Klamath Lake tributaries, 2013.

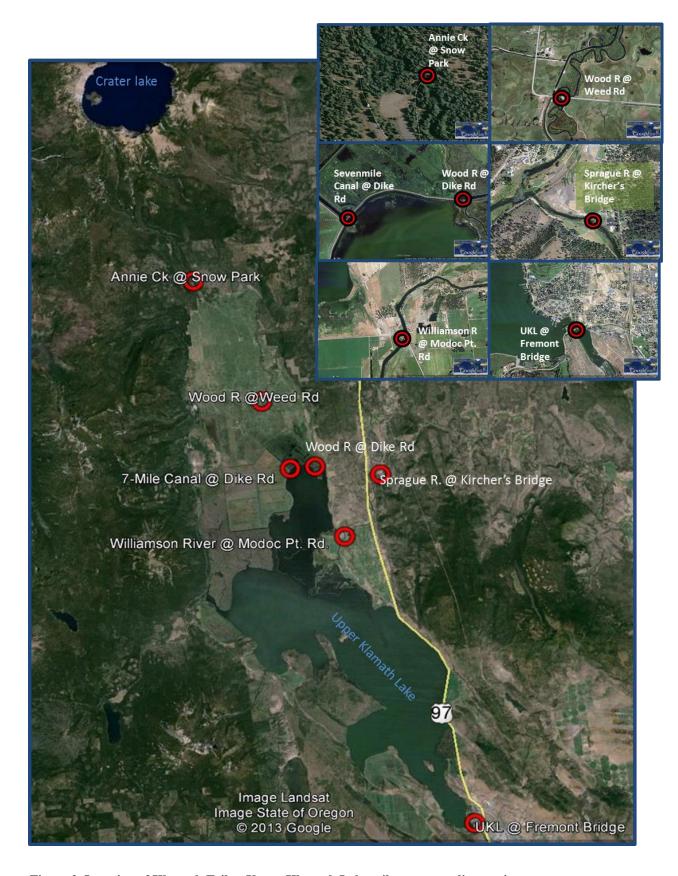


Figure 2. Location of Klamath Tribes Upper Klamath Lake tributary sampling stations.

Daily inflow volume for the Williamson and Sprague Rivers on a given sample date was extracted from continuous daily discharge data obtained from U.S. Geological Survey (USGS) stream-flow discharge stations. These data were obtained online—Williamson River Gage 11502500: http://waterdata.usgs.gov/nwis/dv/?site_no=11502500&agency_cd=USGS&referred_module=sw, and Sprague River Gage 11501000:

http://waterdata.usgs.gov/or/nwis/dv/?site_no=11501000&agency_cd=USGS&referred_module=sw). Daily outflow volume for Upper Klamath Lake (UKL outflow) was computed from the sum of USGS discharge station at Link River 11507500:

http://waterdata.usgs.gov/or/nwis/dv/?site_no=11507500&agency_cd=USGS&referred_module=sw, and_USBR A-Canal daily discharge measurements:

http://www.usbr.gov/mp/kbao/operations/water/korep1.cfm?lakeid=ukldata3.

For the Wood R. @ Weed and Wood R. @ Dike stations, continuous daily discharge measurements were generated by Graham Matthews and Associates (e.g., see GMA 2004) for 1992-2006, but these data were not available after 2006 for Dike Road. However, instantaneous discharge continued to be measured at Wood R. @ Weed, Wood R. @ Dike, 7-mile canal @ Dike Rd and Annie Cr. @ Snow Park stations by both the Klamath Tribes and GMA (2004a; 2011a). Flow measurements coinciding with nutrient sample collection dates are shown in Figure 3. Although additional nutrient concentration data were collected by GMA (e.g., 2004b; 2011b) and these data were incorporated into tributary loading calculations for the overall 1991-2010 analysis (Walker et al. 2012), only data collected by the Klamath Tribes are presented in this annual data update report.

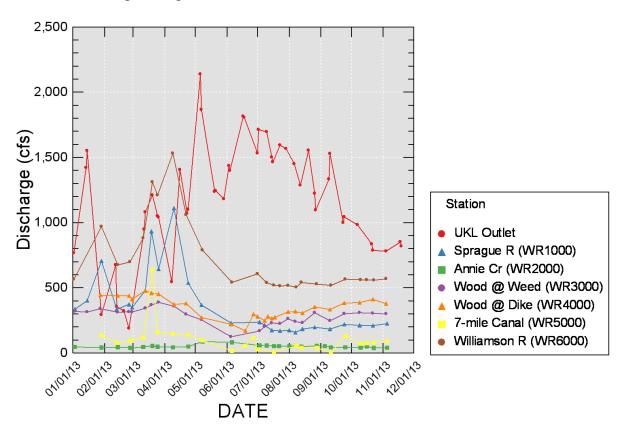


Figure 3. Flow (cfs) measurements coinciding with nutrient sample collection dates, 2013. Flow shown only for dates that nutrient data exist.

The total phosphorus (TP) and total nitrogen (TN) mass (kg/day) for each 2012 sample station and date were computed as the product of daily water volume and measured TP or TN concentration. Nutrient data collection at the UKL outflow station (Upper Klamath Lake @ Fremont Bridge) was discontinued by the Klamath Tribes during 2006-2011 due to funding reductions. Although the UKL sampling station PM is used as a surrogate for the UKL outflow for intervals when data for Upper Klamath Lake @ Fremont Bridge are not available, this caused data gaps for the October-March period during 2006 and 2007.

Beginning in 2008, the U.S. Bureau of Reclamation (USBOR) began monitoring nutrients during the winter months at Link River Dam and near the mouth of the Link River. These data were provided by USBOR along with limited data collected by PacifiCorp during the winter of 2009 and 2010 (Excel spreadsheets: *KRWQ2007-2010KLLD.xls* and *Pacificorpdata2009-2010.xlsx*). Outflow provided by USBOR for 2011 and 2012 also included additional data for 2009 and 2010 that had not been previously provided (Excel spreadsheets: *KRWQ2007-2012KLLD.xls*²) In addition, the Klamath Tribes again began sampling Upper Klamath Lake @ Fremont Bridge in 2012. Additional nutrient data were incorporated from data provided by both USGS and USBR in 2013 leading to higher frequency at this station. Station names for the various outflow stations were standardized by renaming them UKL-Out. When stations were sampled on the same date a mean was taken. Loading graphs and summaries are computed based on the October-September hydrologic water year (denoted HY in below plots).

RESULTS/DISCUSSION

Nutrient Concentration

The 2013 nutrient concentration pattern among inflow stations was similar to that of the 1991-2012 sampling period (Figure 4); total P and PO₄-P tended to be higher at the Wood River and Seven Mile stations (WR3000, WR4000, and WR5000); total N tended to be lower for the Wood River stations (WR3000 and WR4000) but higher for Seven Mile (WR5000); values for the Williamson River (WR6000) tended to be intermediate relative to other stations for most parameters, but values for the Sprague River (WR1000) tended to be lower for TP and PO₄-P, and second highest for TN after Seven Mile. In addition, Annie Creek at Snow Park (previously sampled from 2003-2012) showed consistently lower concentrations for all nutrient parameters except nitrate/nitrite among the inflow stations (Figure 4; Table 3).

With the exception of Seven Mile Canal, the UKL outlet (KL0001) tended to be higher than inflow stations for TP, lower for PO₄, and substantially higher for TN and ammonia (NH₄-N). Long-term upper quartile values for NO₃-N were also higher at the UKL Outlet station than for inflow stations, and were substantially higher in 2013. Outflow NO₃-N was notably higher than

² sources: http://www.kbmp.net/collaboration/klamath-hydroelectric-settlement-agreement-monitoring, and

spreadsheet "UKL-FreemontBridge-WQ-2012-13-BOR.xlsx" provided by Rick Carlson, Physical Scientist, Bureau of Reclamation Klamath Basin Area Office, racarlson@usbr.gov. The latter file includes additional data collected at Freemont Bridge as part of a 3-year nutrient budget study of the Klamath Project.

inflow stations during 2012. Similar to 2010, NH₄-N at the UKL Outlet was substantially higher than Seven Mile Canal³ (Figure 4; Table 3).

TP distribution in 2013 was noticeably lower for the Sprague River; Annie Creek showed lower inter-quartile range, and remaining stations were similar to the long-term 1991-2012 distribution, with fewer extreme values as well (Figure 4). Similar to 2011, the 2012 distribution of Sprague River PO₄-P concentration was noticeably lower when compared to the long-term distribution. The UKL-Outflow TP also showed a reduced inter-quartile range compared to the long-term distribution

All but Sprague River and Sevenmile were similar to their respective long-term PO₄-P distributions in 2013; the Sprague River showed a noticeably lower distribution, and Sevenmile a higher distribution. The UKL-Outflow PO₄-P distribution in 2012 was noticeably higher than the long-term distribution. Other notable departures from the long-term distributions include overall lower Outflow, Annie Cr., Wood-Dike, and Williamson TN, higher Outflow and Sevenmile NH₄-N, and higher Outflow, Wood-Weed, Wood-Dike and Sevenmile NO₃-N (Figure 4). Comparisons of inflow ammonia and nitrate-nitrite between 2013 and the long-term distribution are confounded by levels near method detection limits and by a change in detection limits when the SRWQL began processing samples in 2008⁴. However, Outflow, Williamson River, and Sevenmile values for these parameters are affected to a lesser degree because values tend to be above method detection limits. Higher Outflow nitrate values in 2013 may be due to the increased sampling frequency during winter months when NO₃-N is usually higher overall than other seasons. A plot of the June-October distributions shows that the Sprague River was lower for all parameters, and Sevenmile was higher (Appendix II)

Similar to 2012, time series plots of the 2013 concentration data show Seven Mile Canal (WR5000) to have among the highest values for TP, PO₄, PP (particulate P which equals TP minus PO₄), and TN (Figure 5). Although phosphorus values typically tend to seasonally peak during both the spring runoff period and the summer irrigation season, the peak was less pronounced in the spring than previous years, higher values generally occurred during the irrigation season in 2013. With respect to PO₄, the Wood River stations also showed high values, followed by the Williamson and then the Sprague River; a pattern similar to other years. The typical pattern of Sprague River PP concentrations being among the highest in the spring, and declining during the low-flow summer period was not observed in 2013 (Figure 5). TP, PO₄, PP, and TN at the UKL Outflow station increased relative to the inflow stations during the summer algal growing season (primarily July-August).

Ammonia (NH₄-N) and nitrate (NO₃-N) at the Outflow station also increased seasonally, ammonia in June-July and nitrate in August, with values tending to remain high through the fall and winter before declining in the spring (Figure 6). In general, ammonia in Sevenmile Cr. tends to be among the highest relative to other inflow stations. Silica concentration at the Wood River and Annie Cr. Stations tended to be higher than the Sevenmile, Sprague, and Williamson stations during the spring, with Annie Creek declining during May and June before increasing in July; the Sprague River tended to show the lowest silica concentrations (Figure 6). The UKL Outflow

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³ During 2011 and 2009 the UKL Outlet was similar to Seven Mile Canal (Kann 2011)

⁴ Aquatic Research Inc. indicated a reporting limit of 10 µg/L; the SRWQL utilizes a reporting limit of 12 µg/L.

station showed a clear seasonal pattern where silica values were depressed during the spring and early summer before increasing sharply in July to higher levels (Figure 6). The spring silica depression at the Outflow station coincides with diatom blooms occurring in Upper Klamath Lake.

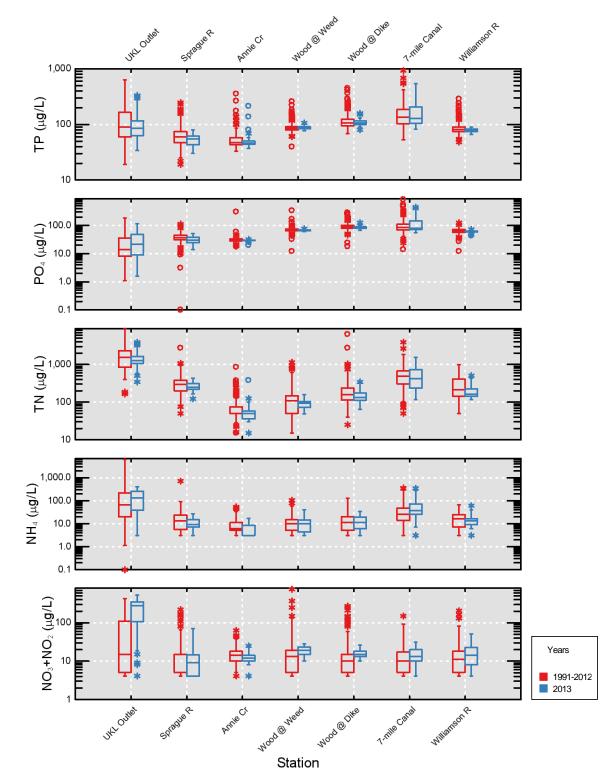


Figure 4. Station distributions of TP, SRP, TN, NH4-N, and NO3+ NO2-N concentration (μ g/L) compared between 1991-2012 (red) and 2013(blue).

Table 3. Basic statistics by station for TP, SRP, TN, NH_4 -N, NO_3 + NO_2 -N and SiO_2 concentration, and TP and TN load, Water Year 2013.

	I		1	Soluble			l	1	Total	Total
			Total	Reactive	Total	NH4	NO3+NO2		Phosphor	Nitrogen
			Phosphorus	Phosphorus	Nitrogen	Nitrogen	Nitrogen	Silica	us Load	Load
Station Code	Station Name	Parameter	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(kg/d)	(kg/d)
UKL Out	UKL Outlet	N of Cases	56	48	56	52	48	25	56	56
UKL Out	UKL Outlet	Median	85	21	1270	134	281	38600	201	3038
UKL Out	UKL Outlet	Arithmetic Mean	115	31	1505	154	243	37060	354	4330
UKL Out	UKL Outlet	Coefficient of Variation	0.714	0.975	0.554	0.812	0.613	0.185	0.995	0.901
UKL Out	UKL Outlet	Pct25	63	9	1055	39	112	30950	117	1729
UKL Out	UKL Outlet	Pct75	117	48	1640	261	351	42400	382	4454
WR1000	Sprague R	N of Cases	27	27	27	27	27	27	26	26
WR1000	Sprague R	Median	55	30	246	9	9	28500	33	162
WR1000	Sprague R	Arithmetic Mean	53	31	263	11	16	28607	52	255
WR1000	Sprague R	Coefficient of Variation	0.253	0.322	0.272	0.600	1.277	0.100	0.912	0.983
WR1000	Sprague R	Pct25	43	24	215	7	4	26550	21	116
WR1000	Sprague R	Pct75	62	38	316	16	15	30450	57	222
WR2000	Annie Cr	N of Cases	26	27	27	27	27	27	26	27
WR2000	Annie Cr	Median	46	29	50	3	12	41600	6	6
WR2000	Annie Cr	Arithmetic Mean	58	29	63	5	12	40693	9	10
WR2000	Annie Cr	Coefficient of Variation	0.645	0.085	1.065	0.732	0.402	0.083	1.154	1.748
WR2000	Annie Cr	Pct25	44	29	36	3	10	40175	5	4
WR2000	Annie Cr	Pct75	50	30	58	9	14	42275	7	8
WR3000	Wood @ Weed	N of Cases	27	27	27	27	27	27	26	26
WR3000	Wood @ Weed	Median	86	67	93	10	19	38900	64	66
WR3000	Wood @ Weed	Arithmetic Mean	88	67	93	11	19	38689	62	68
WR3000	Wood @ Weed	Coefficient of Variation	0.073	0.058	0.331	0.757	0.278	0.023	0.267	0.493
WR3000	Wood @ Weed	Pct25	83	64	72	4	15	38425	49	37
WR3000	Wood @ Weed	Pct75	91	69	105	15	23	39200	72	85
WR4000	Wood @ Dike	N of Cases	27	28	28	28	28	28	26	27
WR4000	Wood @ Dike	Median	106	85	132	11	15	37600	100	120
WR4000	Wood @ Dike	Arithmetic Mean	110	86	149	13	16	37457	96	130
WR4000	Wood @ Dike	Coefficient of Variation	0.151	0.146	0.429	0.655	0.283	0.029	0.251	0.473
WR4000	Wood @ Dike	Pct25	100	79	112	6	13	36750	75	77
WR4000	Wood @ Dike	Pct75	116	91	175	20	18	38050	109	164
WR5000	7-mile Canal	N of Cases	28	28	28	28	28	28	28	28
WR5000	7-mile Canal	Median	128	81	424	37	13	33050	30	70
WR5000	7-mile Canal	Arithmetic Mean	198	144	537	71	16	32607	28	90
WR5000	7-mile Canal	Coefficient of Variation	0.715	0.817	0.723	1.225	0.450	0.093	1.602	2.152
WR5000	7-mile Canal	Pct25	104	73	234	26	10	31050	18	28
WR5000	7-mile Canal	Pct75	208	145	733	73	20	34500	42	106
WR6000	Williamson R	N of Cases	27	27	27	27	27	27	26	26
WR6000	Williamson R	Median	78	62	161	13	14	33700	115	234
WR6000	Williamson R	Arithmetic Mean	78	61	213	16	17	33419	137	448
WR6000	Williamson R	Coefficient of Variation	0.073	0.124	0.546	0.754	0.776	0.069	0.403	1.021
WR6000	Williamson R	Pct25	75	59	142	9	8	33025	102	196
WR6000	Williamson R	Pct75	83	64	234	17	23	34475	137	505

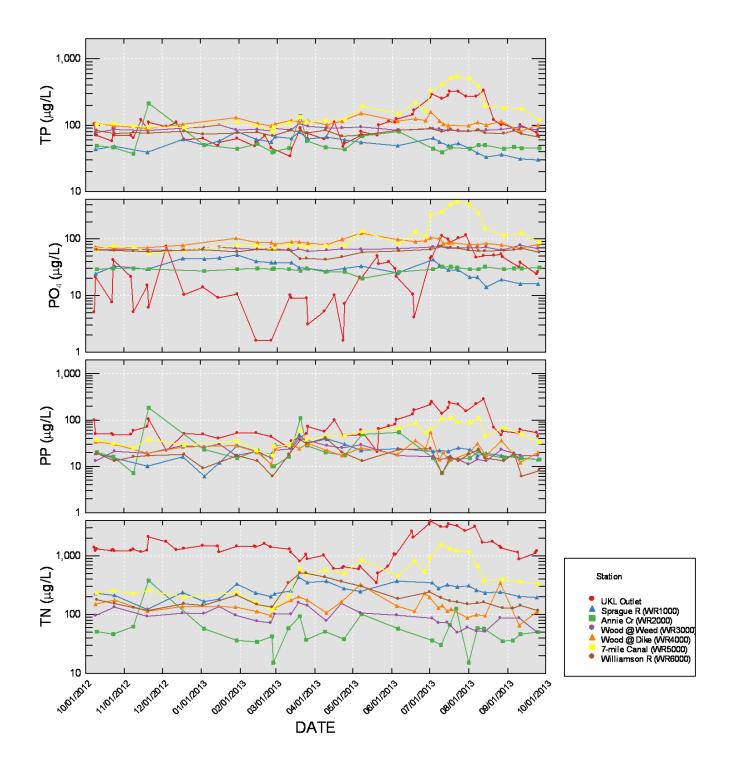


Figure 5. Time-series plot of TP, SRP, PP and TN concentrations for Upper Klamath Lake tributaries and outflow, HY 2013.

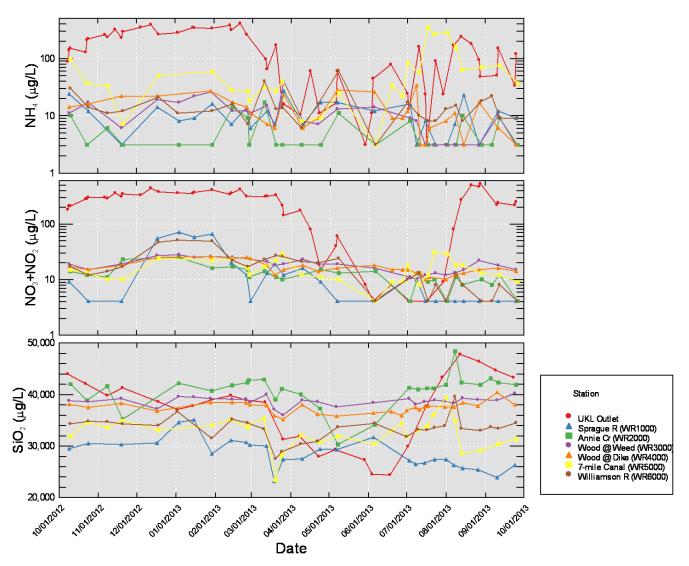


Figure 6. Time-series plot of NH₄-N, NO₃+ NO₂-N and SiO₂ concentrations for Upper Klamath Lake tributaries and outflow, HY 2013.

The TN:TP ratio at the UKL Outflow station was relatively high (TN:TP > ~15; approaching 30 in March) during the late fall and early winter (2012-2013), and similar to earlier years (see Kann 2012) ratios then remained mostly higher than tributary stations through the season (Figure 7). The lowest values of the year (~5) occurred during late-May and June. The overall pattern appears similar to earlier years when the TN:TP ratio at UKL Outflow was higher (TN:TP \cong 10) than tributary stations in April, declined during May and June, increased during early summer UKL bloom development, and declined through the bloom decline period before increasing again in September (Figure 7). The TIN:SRP ratio in the Outflow decreased from peak values of ~450 during February to ~50 in April, and then to seasonal low values in July (~0.2), before increasing sharply into August and September (~10) (Figure 7). Both TN:TP and the majority of TIN:SRP values in the inflow tributary stations indicate nitrogen limiting conditions (<10 for TN:TP and <1 for TIN:SRP) that would tend to promote nitrogen-fixing algae such as the *Aphanizomenon* prevalent in UKL. The Wood River in particular showed very low TIN:SRP ratios (<0.3).

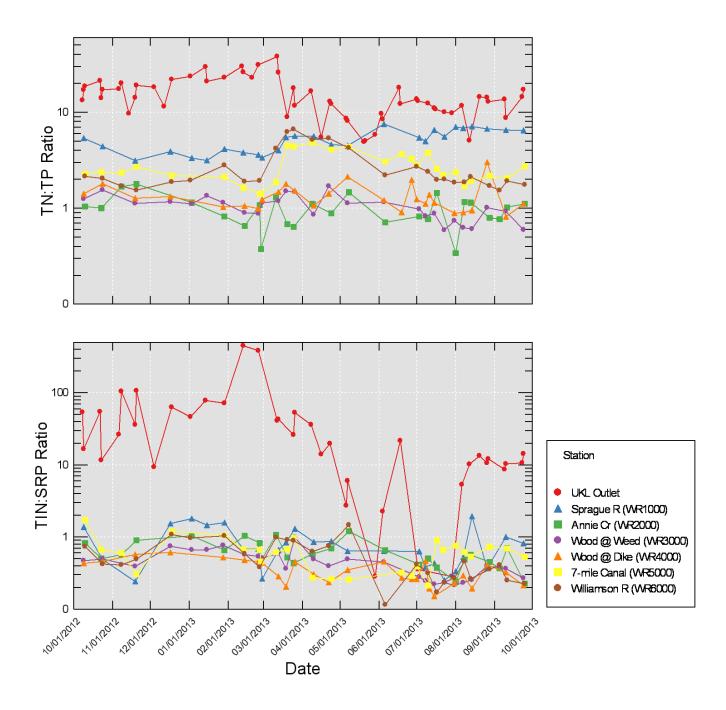


Figure 7. Total nitrogen to total phosphorus (TN:TP) and total inorganic nitrogen (NOx-N+NH₄-N) to PO₄ (TIN:SRP) ratios in Upper Klamath Lake tributaries and outflow stations, HY 2013.

Time-series plots of these ratio data comparing the Williamson River and UKL Outflow (summarized for the April-October period when data for both stations were consistently available) show that both ratios (TP:TN and TIN:SRP) were always higher leaving UKL than they were in the Williamson River inflow (Figure 8). Much of this increase is likely due to increases in UKL nitrogen due to both nitrogen-fixation by blue-green algae (particularly the dominant *Aphanizomenon flos-aquae*) and sediment regeneration of ammonia to the water column (although the ultimate source of the sediment nitrogen is also derived from settled algal biomass). Ratios rose in the outflow relative to inflow despite additional internal loading or sediment recycling of phosphorus (Walker et al. 2012), which would tend to drive ratios downward. There is also indication of cyclical sub-decadal trends, particularly for the TIN:SRP ratio, over the 1991-2013 period. Further analysis is required to explore these apparent trends.

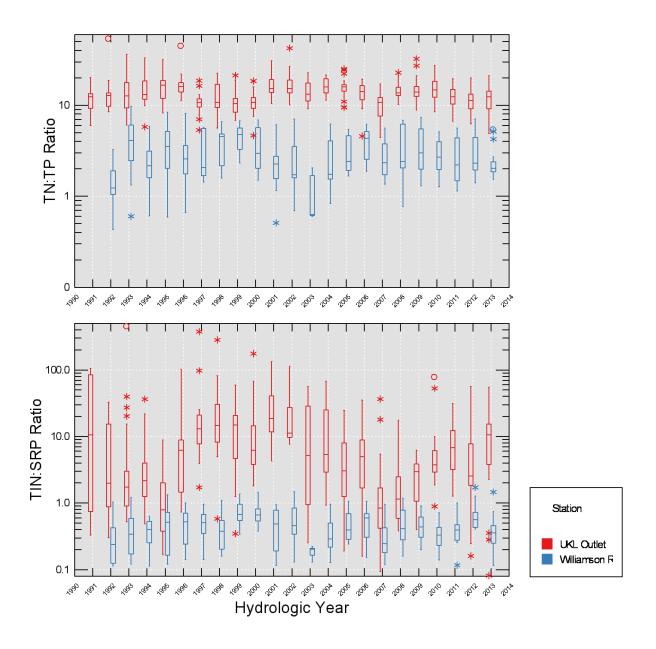


Figure 8. Total nitrogen to total phosphorus (TN:TP) and total inorganic nitrogen (NOx-N+NH₄-N) to PO₄ (TIN:SRP) ratios in the Williamson River and UKL outflow stations, April-October: 1991-2013.

TP and TN Loading

2013 Seasonal Pattern

The 2012 seasonal TP and TN tributary loading pattern showed a peak during the March-May period, generally coinciding with peak discharge (Figure 3; Figure 9). Loads then declined during the early-spring to early-summer period, generally remaining stable through the remainder of the season (although the Sprague R. continued to decline and Sevenmile fluctuated). An initial increase in UKL outflow loads of TP began in late-March, and for TN in late May, with a secondary and larger increase in early-July that is tied to internal nutrient recycling from sediments and nitrogen fixation in UKL (e.g., see Kann 1998; Kann and Walker 1999; Walker et al. 2012). Outflow TP loads were similar to or lower than Williamson River and Sprague River loading during the late-winter to early-spring spring period, but were then higher through the remainder of the year, while outflow TN loads generally remained higher than those for the Williamson River over this same period (Figure 9).

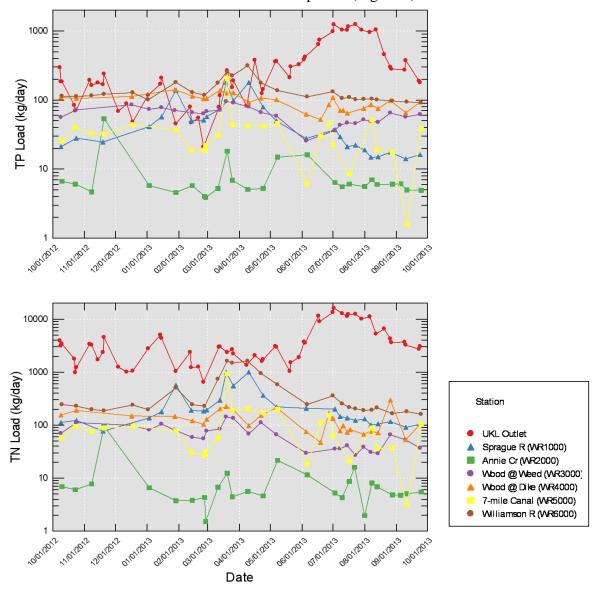


Figure 9. Seasonal TP and TN loading trends by station, HY 2013.

2013 Station Patterns

The 2013 nutrient loading pattern among stations was similar to that of the 1991-2012 sampling period (Figure 10). Also, as indicated above, TP and TN outflow loads tended to be higher than any individual inflow tributary loads during both 2013 and for the overall time period (1991-2012). Similar to 2010, when outflow TP and TN loads were lower overall than they were for the previous long-term period, 2013 outflow loads were also lower than the long term distribution. However, comparisons are somewhat confounded by the lack of winter data for the outflow during earlier years. As noted above, high UKL outlet loads reflect sediment regeneration and nitrogen fixation processes taking place in UKL.

Of the inflow tributaries, the Williamson River (WR6000) showed highest overall loading, with the 2013 TP and TN loading distributions somewhat lower than previous years. As with concentration, Annie Creek at Snow Park was consistently lower for both loading parameters (Figure 10). Sprague River TN load was more similar to the Williamson River TN load than it was for TP load (which was noticeably lower in the Sprague when compared to the Williamson), indicating that the Sprague River is contributing proportionally more nitrogen to the overall load. Both TP and TN loads in Sevenmile Canal were similar or somewhat lower (for TN) in 2013 than the long-term distribution, while Wood River TP and TN were similar to the long-term distribution (Figure 10). TP and TN loading patterns in both the Williamson and Sprague Rivers tended to follow the general pattern in discharge (although loading appears to be more closely linked to discharge in the Sprague River than in the Williamson River), and as noted above for Outflow concentration, there is indication of cyclical trending over the period of record (Figure 11).

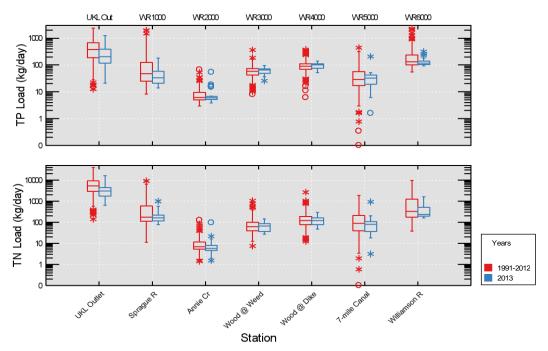


Figure 10. Station distributions of TP and TN loading compared between 1991-2012 (red) and 2013 (blue). Note: for the outflow station KL0001 there are no samples from January to mid-April in HY2006, and for HY2007-2009 and HY2011 samples are missing between November and mid-April.

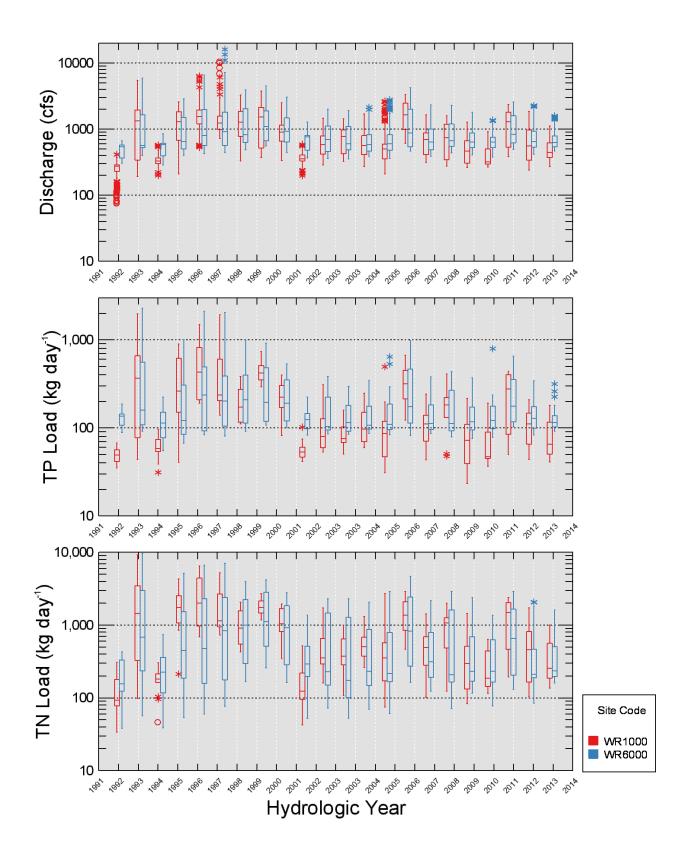


Figure 11. Distribution of Williamson River (WR6000) and Sprague River (WR1000) daily discharge (top panel), TP load (middle panel), and TN load (bottom panel) for the January-May inflow period, 1992-2013.

Inter-annual Patterns, 1991-2013

Although it is beyond the scope of this 2013 data summary report to analyze the inter-annual trends in detail, 1991-2013 comparisons for all sampling stations for three periods (all dates, the June-September period, and the Jan-May period) are shown for reference in Figures 11 to 24. Briefly, in 2013 the June -September UKL outflow TP loads were similar to 2011 but still generally lower than many previous years (Figure 12). Similarly, June-September TN loads were similar to 2011 but were also lower than many previous years (Figure 19). Note that for the UKL outlet station, the June-September period provides the most consistent inter-annual comparison due to changes in the winter and early spring sampling frequency over the period of record.

June-September and TP and TN loading distributions for the Sprague River in 2013 were higher than 2012, which was an exceptionally low year, but were still low relative to many other years (Figure 13 and Figure 20). Similarly Williamson River TP and TN loading distributions were among the lowest for the June-September period, but low to intermediate for the January through May period (Figure 18 and Figure 25). TN loading distributions for the Wood River stations during 2013 tended to be intermediate for the period of record, but was lower at both Weed and Dike Rd. during the June-September period (Figure 22 and Figure 23). The Wood River TP loading distribution for 2013 tended to be intermediate when compared to previous years (Figure 15 and Figure 16). Seven Mile Canal TP and TN loading during 2013 was similar to previous years (Figure 17 and Figure 24), and overall loads for Annie Creek during the Jan-May and Jun-Sep periods were lower compared to previous years (Figure 14 and Figure 21).

Inter-annual comparisons of nutrient concentration and loading at the various UKL inflow stations requires refined estimation of loading using multiple regression based-algorithms that represent concentration variations associated with flow (i.e., magnitude as well as ascending/descending limb of hydrograph), season (i.e., Julian day), and year (e.g., Walker and Havens 2003). A comprehensive analysis of time-series trends as well as hydrologic and nutrient budgets for UKL has been completed through 2010 (Walker et al. 2012).

SUMMARY

With the addition of 2013 data, the UKL tributary nutrient and loading database now includes 23 years of data and includes the years 1991-2013. As with the UKL water quality database, such a long-term monitoring program is essential for assessing change relative to management programs, as well as for understanding inter-annual dynamics. Also similar to recommendations for the UKL water quality database, continued monitoring is recommended to accommodate the restoration time-frame for Klamath Basin activities and to increase statistical power (sample size) for inter-variable analyses. While this data summary report is intended to provide an update of the long-term data base with 2013 tributary and outflow data, Walker et al. (2012) provide a more detailed and comprehensive analysis of the long-term UKL tributary database including statistical trend analyses and construction of hydrologic and nutrient budgets for UKL using the 1991-2010 dataset (Walker et al. 2012). A similar comprehensive treatment of the data is recommended at five year intervals.

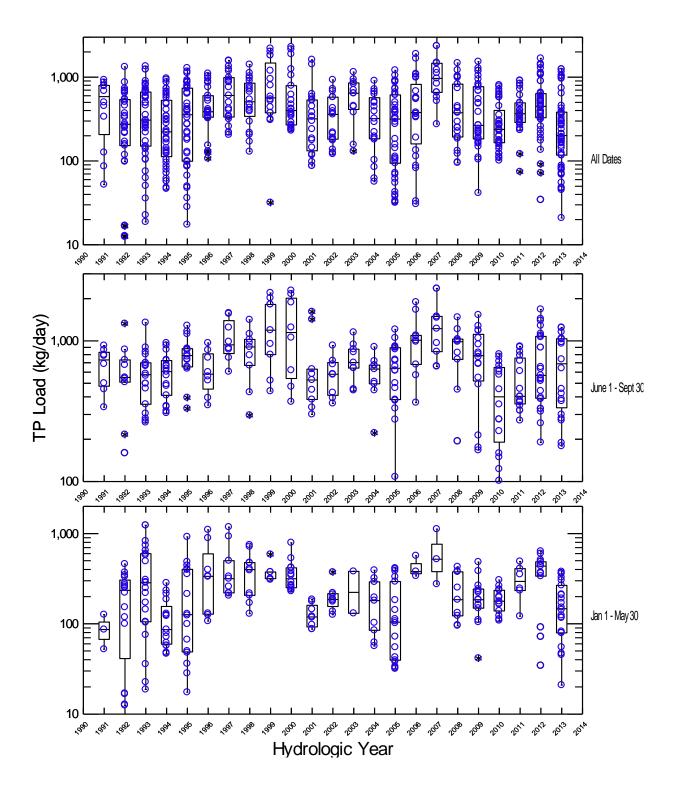


Figure 12. Annual and seasonal distributions of UKL Outlet TP loading, 1991-2013. Note: in HY2006, there are no samples from January to mid-April and in HY2007-2008 and 2011 there are no samples from November to mid-April.

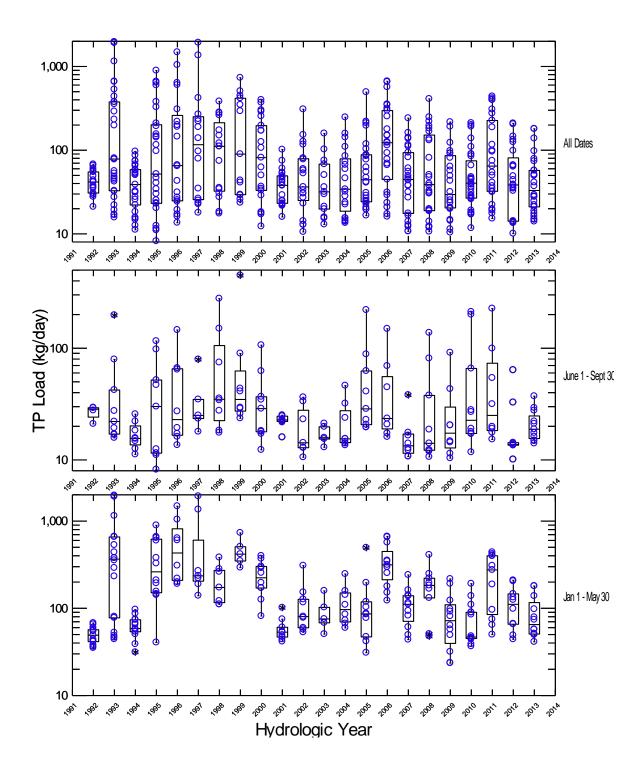


Figure 13. Annual and seasonal distributions of Sprague River TP loading, 1992-2013.

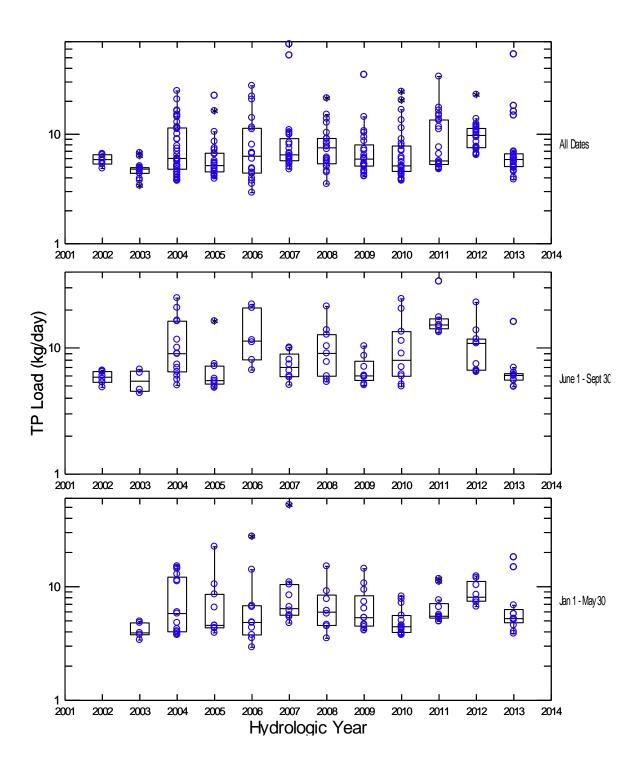


Figure 14. Annual and seasonal distributions of Annie Creek TP loading, 2002-2013.

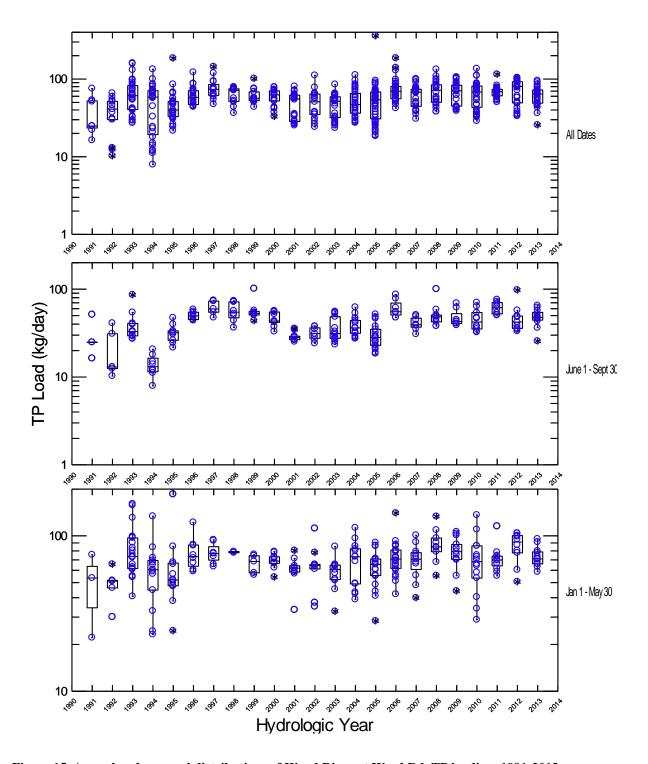


Figure 15. Annual and seasonal distributions of Wood River at Weed Rd. TP loading, 1991-2013.

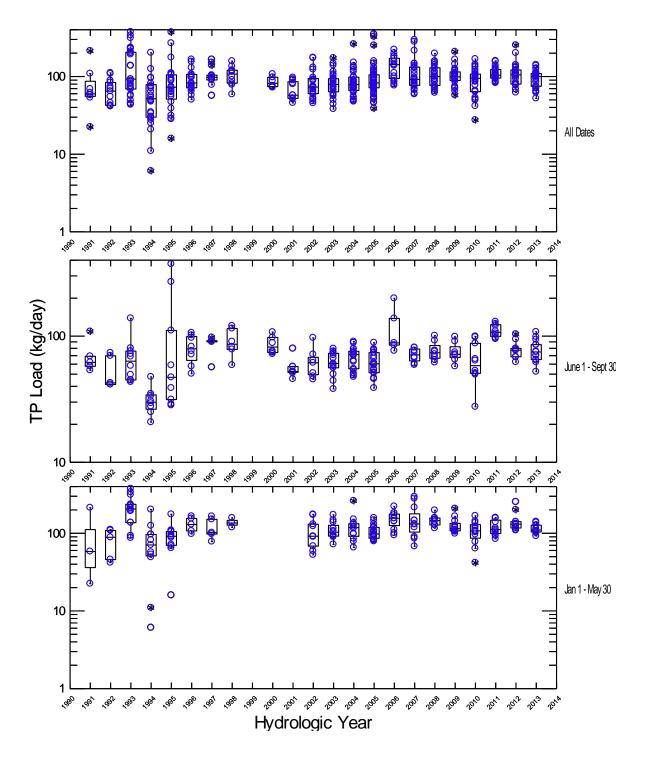


Figure 16. Annual and seasonal distributions of Wood River at Dike Rd. TP loading, 1991-2013.

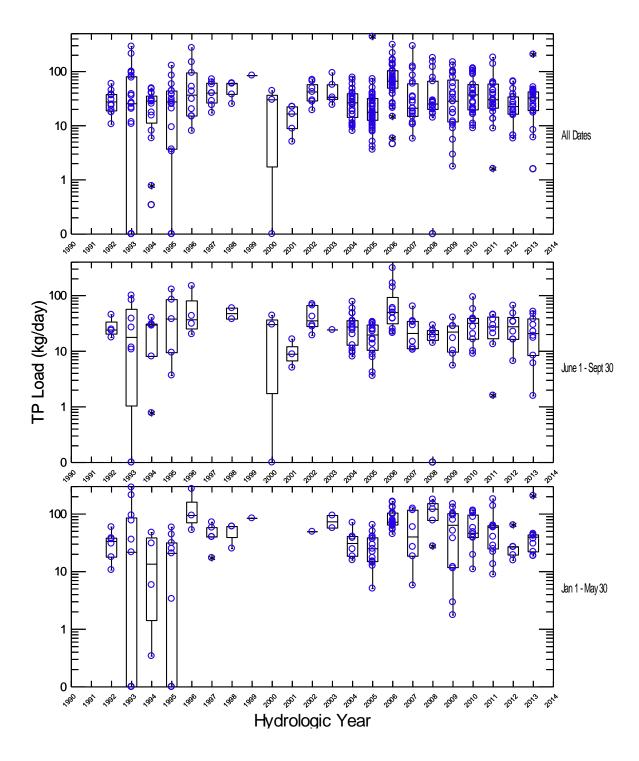


Figure 17. Annual and seasonal distributions of Seven Mile Canal TP loading, 1992-2013. Note that occurrences of zero load are due to lake-backwater effects when no flow is measured at the sampling location

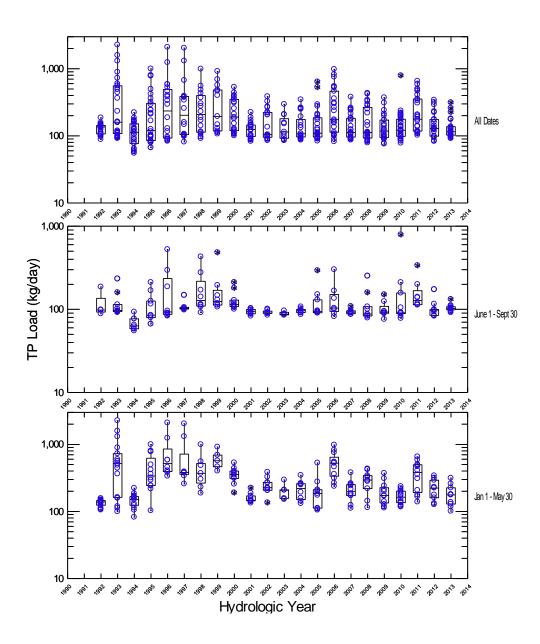


Figure 18. Annual and seasonal distributions of Williamson River TP loading, 1992-2013.

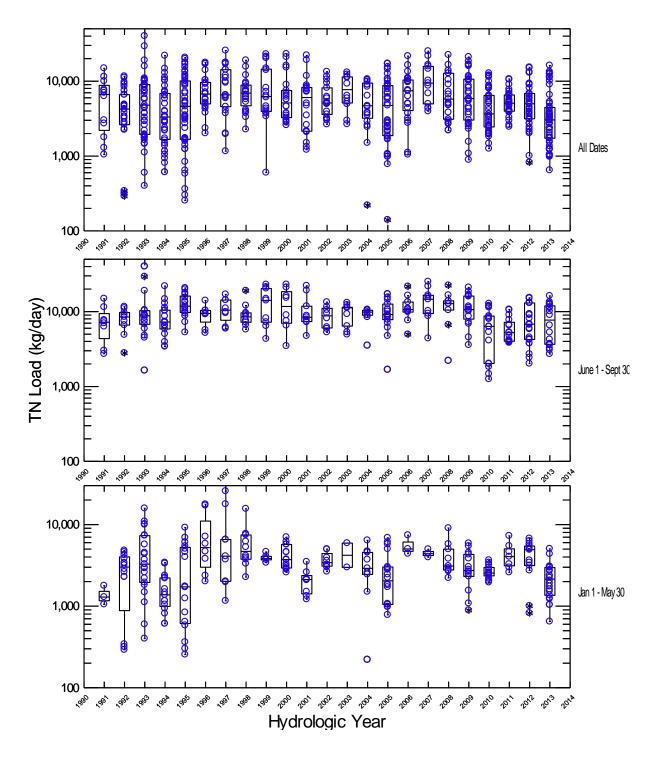


Figure 19. Annual and seasonal distributions of UKL Outlet TN loading, 1991-2013. Note: in HY2006, there are no samples from January to mid-April and in HY2007-2008 and 2011 there are no samples from November to mid-April.

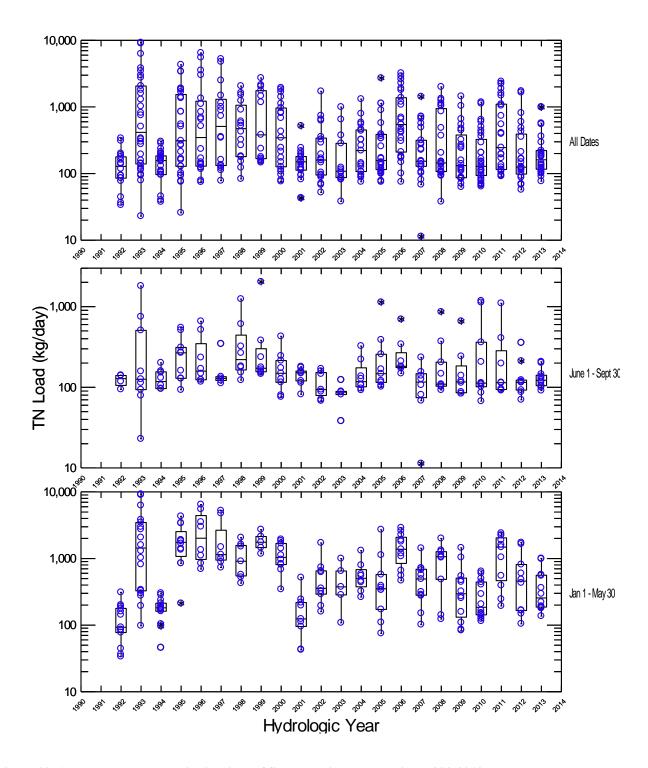


Figure 20. Annual and seasonal distributions of Sprague River TN loading, 1992-2013.

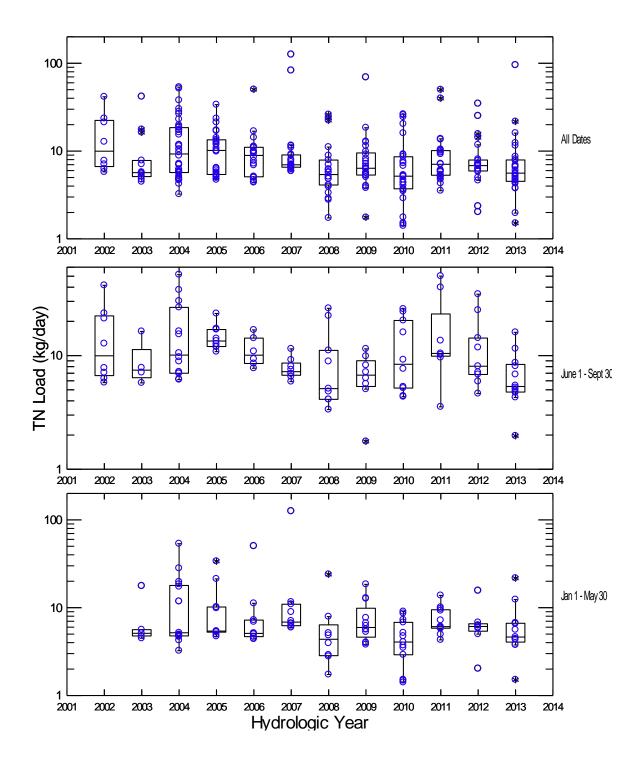


Figure 21. Annual and seasonal distributions of Annie Creek TN loading, 2002-2013.

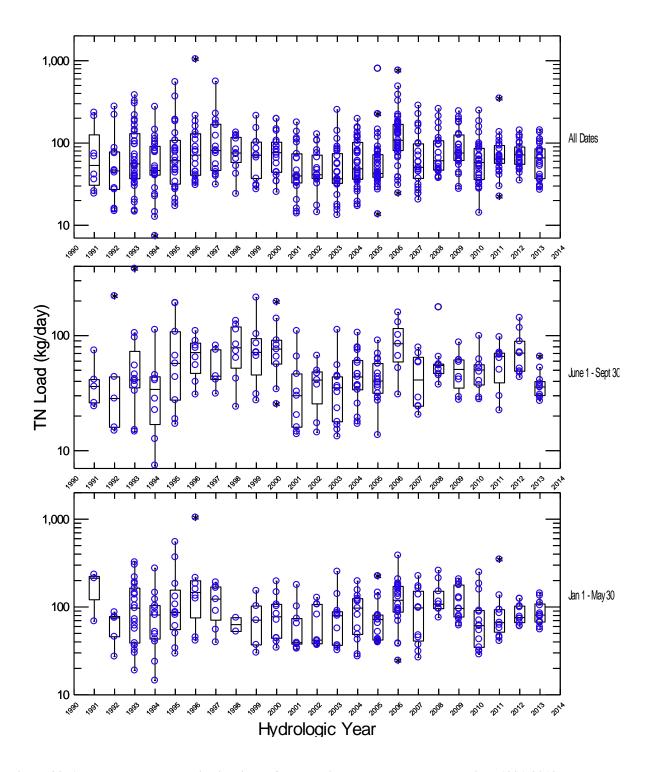


Figure 22. Annual and seasonal distributions of Wood River at Weed Rd. TN loading, 1991-2013.

TN Loads at Wood River at Dike Rd (WR4000) HY1991-2013

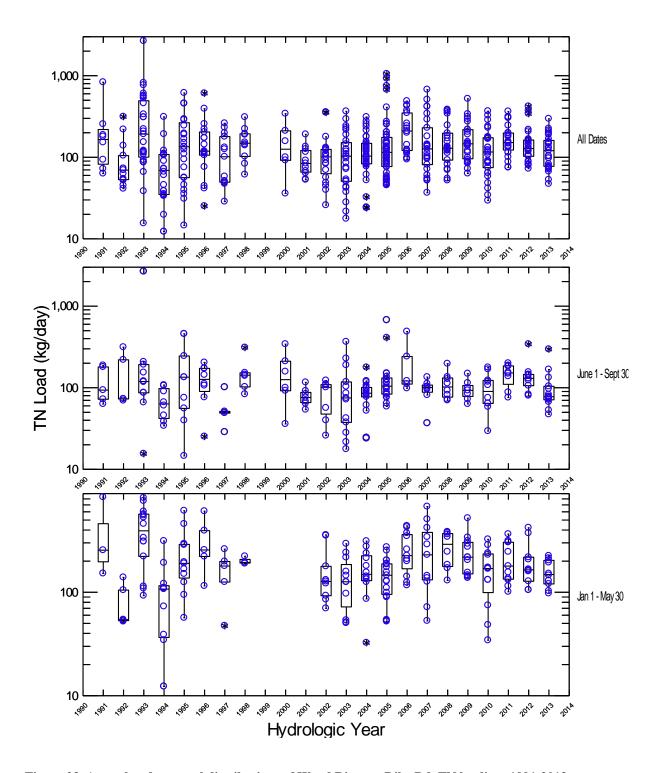


Figure 23. Annual and seasonal distributions of Wood River at Dike Rd. TN loading, 1991-2013.

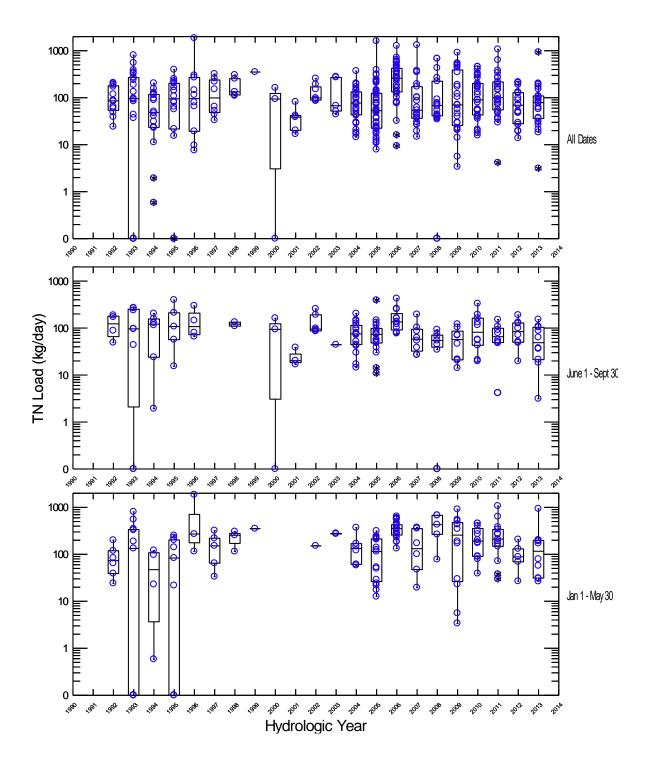


Figure 24. Annual and seasonal distributions of Seven Mile Canal TN loading, 1992-2013. Note that occurrences of zero load are due to lake-backwater effects when no flow is measured at the sampling location.

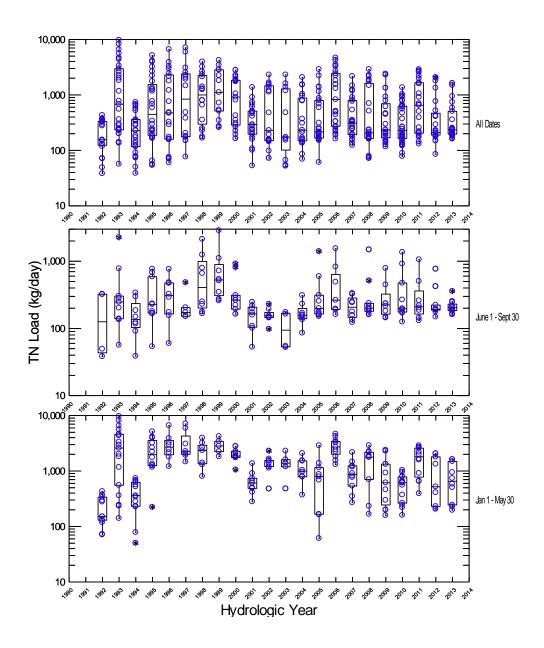


Figure 25. Annual and seasonal distributions of Williamson River TN loading, 1992-2013.

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APPENDIX I: Basic monthly statistics by station for TP, SRP, TN, NH_4 -N, NO_3 + NO_2 -N, SiO_2 concentration, and TP and TN load, Water Year 2013.

	T	1	T								
Statio n	Station	Mon		Total Phospho rus	Soluble Reactive Phospho rus	Total Nitrog en	NH4 Nitrog en	NO3+N O2 Nitroge n	Silic a (µg/	Total Phospho rus Load	Total Nitrog en Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(μg/L)	 (μg/L)	L)	(kg/d)	(kg/d)
UKL				(1-0)	(1-0)	(1-0)	(1-0)	(F-0) /	,	(0) - 1	(0) - /
Out	UKL Outlet	10	N of Cases	6	4	6	6	6	2	6	6
UKL									430		
Out	UKL Outlet	10	Median	71	14	1240	145	245	25	134	2459
UKL									430		
Out	UKL Outlet	10	Arithmetic Mean	77	19	1261	156	244	25	148	2411
UKL			Coefficient of						0.03		
Out	UKL Outlet	10	Variation	0.216	0.902	0.053	0.323	0.202	0	0.607	0.514
UKL									421		
Out	UKL Outlet	10	Pct25	70	6	1210	129	210	00	72	1227
UKL									439		
Out	UKL Outlet	10	Pct75	90	32	1300	210	281	50	184	3423
UKL											
Out	UKL Outlet	11	N of Cases	5	4	5	5	5	2	5	5
UKL									405		
Out	UKL Outlet	11	Median	87	11	1230	260	310	50	178	3257
UKL									405		
Out	UKL Outlet	11	Arithmetic Mean	90	12	1396	268	321	50	188	3053
UKL			Coefficient of						0.02		
Out	UKL Outlet	11	Variation	0.271	0.656	0.280	0.144	0.096	6	0.164	0.352
UKL	LUCI Contlet	4.4	D-+25	60	6	4205	22.4	207	398	166	2200
Out	UKL Outlet	11	Pct25	69	6	1205	234	297	00	166	2206
UKL	LUCI Outlet	11	D-+7F	112	10	1.400	200	250	413	205	2007
Out UKL	UKL Outlet	11	Pct75	113	18	1483	300	350	00	205	3667
Out	UKL Outlet	12	N of Cases	3	2	3	3	3	1	3	3
UKL	OKL Outlet	12	N OI Cases	3		3	3	3	386	3	3
Out	UKL Outlet	12	Median	95	42	1325	350	379	00	69	1054
UKL	OKE OUTIEL	14	Micaidii	93	44	1323	330	313	386	09	1034
Out	UKL Outlet	12	Arithmetic Mean	89	42	1438	335	383	00	68	1104
UKL	J.12 Juliet		Coefficient of	03	74	1.50	333	303	1.00	00	2207
Out	UKL Outlet	12	Variation	0.287	1.068	0.177	0.193	0.144	0	0.292	0.116
UKL									_		
Out	UKL Outlet	12	Pct25	69	10	1276	285	342		53	1020
UKL											
Out	UKL Outlet	12	Pct75	106	73	1629	380	425		83	1200
UKL											
Out	UKL Outlet	1	N of Cases	4	3	4	4	4	3	4	4
UKL									378		
Out	UKL Outlet	1	Median	59	10	1448	339	365	00	144	3574
UKL									379		
Out	UKL Outlet	1	Arithmetic Mean	58	11	1383	327	374	67	136	3306
UKL			Coefficient of						0.02		
Out	UKL Outlet	1	Variation	0.118	0.226	0.113	0.091	0.067	5	0.522	0.539
UKL									372		
Out	UKL Outlet	1	Pct25	52	9	1298	310	358	75	82	1911
UKL									387		
Out	UKL Outlet	1	Pct75	63	13	1468	344	390	00	189	4700

	1										
Statio n Code UKL	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
Out	UKL Outlet	2	N of Cases	4	2	4	4	4	2	4	4
UKL				-	_	-			393	-	
Out	UKL Outlet	2	Median	51	2	1425	347	349	50	51	1241
UKL									393		
Out	UKL Outlet	2	Arithmetic Mean	54	2	1463	342	358	50	50	1377
UKL			Coefficient of						0.01		
Out	UKL Outlet	2	Variation	0.205	0.000	0.064	0.195	0.127	6	0.477	0.526
UKL	LUKI O ALA	_	D-+25	47	_	4.405	200	227	389	2.4	026
Out UKL	UKL Outlet	2	Pct25	47	2	1405	288	327	00 398	34	936
Out	UKL Outlet	2	Pct75	62	2	1520	395	389	00	67	1818
UKL	OKE Outlet		10075	02		1320	333	303	- 00	07	1010
Out	UKL Outlet	3	N of Cases	5	4	5	5	5	2	5	5
UKL									349		
Out	UKL Outlet	3	Median	59	9	1050	65	312	00	152	2698
UKL									349		
Out	UKL Outlet	3	Arithmetic Mean	60	8	1031	72	263	00	161	2660
UKL			Coefficient of						0.14		
Out	UKL Outlet	3	Variation	0.375	0.412	0.192	0.898	0.308	6	0.449	0.134
UKL		_	D 125	42	_	057	4-	400	313	407	2224
Out	UKL Outlet	3	Pct25	42	6	857	15	198	00	107	2334
UKL Out	UKL Outlet	3	Pct75	79	9	1178	115	320	385 00	210	2997
UKL	OKE Outlet		10075	73	3	1170	113	320	- 00	210	2337
Out	UKL Outlet	4	N of Cases	4	4	4	3	4	2	4	4
UKL									299		
Out	UKL Outlet	4	Median	57	6	630	11	49	25	133	1672
UKL									299		
Out	UKL Outlet	4	Arithmetic Mean	68	6	720	27	72	25	182	1691
UKL			Coefficient of	0.420	0.604	0.270	4.050	4 000	0.09	0.704	0.474
Out UKL	UKL Outlet	4	Variation	0.420	0.601	0.278	1.053	1.038	279	0.734	0.174
Out	UKL Outlet	4	Pct25	50	3	607	10	17	50	103	1481
UKL	OKE Outlet	_	10025	30	3	007	10	- 17	319	103	1401
Out	UKL Outlet	4	Pct75	86	9	833	48	128	00	260	1902
UKL											
Out	UKL Outlet	5	N of Cases	5	5	5	3	3	2	5	5
UKL									283		
Out	UKL Outlet	5	Median	80	36	588	16	40	00	326	1897
UKL	LUZI O et t	_	A	20	22	F 40	2.0	2.0	283	242	2400
Out	UKL Outlet	5	Arithmetic Mean	86	33	548	26	36	00	313	2100
UKL Out	UKL Outlet	5	Coefficient of Variation	0.226	0.382	0.238	1.127	0.729	0.05 0	0.197	0.427
UKL	OKL Outlet	3	Variation	0.220	0.362	0.236	1.127	0.729	273	0.197	0.427
Out	UKL Outlet	5	Pct25	70	21	461	6	16	00	281	1400
UKL		_							293		
Out	UKL Outlet	5	Pct75	103	42	652	49	55	00	361	2994
UKL											
Out	UKL Outlet	6	N of Cases	4	4	4	3	2	2	4	4
UKL		_							244		
Out	UKL Outlet	6	Median	134	16	1550	45	6	50	531	6368

	T	I									
Statio n Code UKL	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
Out	UKL Outlet	6	Arithmetic Mean	136	16	1683	45	6	50	547	6948
UKL			Coefficient of						0.00		00.10
Out	UKL Outlet	6	Variation	0.184	0.696	0.454	0.757	0.471	3	0.312	0.569
UKL	LUZI O ALA		D-+25	447	7	4050	40		244	404	2640
Out UKL	UKL Outlet	6	Pct25	117	7	1050	19	4	00 245	404	3640
Out	UKL Outlet	6	Pct75	156	26	2315	70	8	00	690	10256
UKL											
Out	UKL Outlet	7	N of Cases	7	7	7	7	3	3	7	7
UKL Out	UKL Outlet	7	Median	280	98	3200	24	4	376 00	1037	12473
UKL	OKL Outlet		ivieulali	200	36	3200	24	4	369	1037	12473
Out	UKL Outlet	7	Arithmetic Mean	286	87	3274	48	6	33	1104	12676
UKL			Coefficient of						0.18		
Out	UKL Outlet	7	Variation	0.099	0.337	0.122	1.177	0.509	2	0.099	0.150
UKL Out	UKL Outlet	7	Pct25	264	58	3083	16	4	318 25	1030	11583
UKL	OKL Oddict	,	1 0025	204	30	3003	10	7	418	1030	11303
Out	UKL Outlet	7	Pct75	314	111	3550	74	8	75	1219	13262
UKL		_									
Out	UKL Outlet	8	N of Cases	5	5	5	5	5	2	5	5
UKL Out	UKL Outlet	8	Median	120	50	1680	170	469	471 00	456	5282
UKL					- 30	1000	27.0	.00	471		3202
Out	UKL Outlet	8	Arithmetic Mean	185	50	1864	147	370	00	608	6173
UKL	LUZI O ALA		Coefficient of	0.502	0.050	0.202	0.545	0.546	0.02	0.602	0.405
Out UKL	UKL Outlet	8	Variation	0.583	0.050	0.393	0.515	0.516	1 464	0.603	0.485
Out	UKL Outlet	8	Pct25	104	48	1403	83	224	00	295	4091
UKL									478		
Out	UKL Outlet	8	Pct75	286	52	2083	195	508	00	979	7716
UKL Out	UKL Outlet	9	N of Cases	4	4	4	4	4	2	4	4
UKL	OKL Oddict		N OI Cases			7		-	440		-
Out	UKL Outlet	9	Median	80	29	1123	85	230	00	230	3158
UKL		_							440		
Out UKL	UKL Outlet	9	Arithmetic Mean Coefficient of	83	30	1079	88	232	0.02	253	3182
Out	UKL Outlet	9	Variation	0.155	0.214	0.134	0.629	0.068	0.02	0.358	0.129
UKL									433	1.503	
Out	UKL Outlet	9	Pct25	74	25	990	42	219	00	183	2888
UKL Out	UKL Outlet	9	Pct75	92	35	1168	135	245	447 00	323	3476
WR10	OKL OULIEL	9	FCL/J	92	33	1100	133	243	00	323	34/0
00	Sprague R	10	N of Cases	2	2	2	2	2	2	2	2
WR10									300		
00	Sprague R	10	Median	46	29	221	18	7	00	24	117
WR10 00	Sprague R	10	Arithmetic Mean	46	29	221	18	7	300 00	24	117
WR10	Sprague II	10	Coefficient of	70	23	221	10	,	0.02	27	11/
00	Sprague R	10	Variation	0.078	0.223	0.061	0.471	0.544	4	0.203	0.066

					Soluble			NO3+N			Total
				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio				Phospho	Phospho	Nitrog	Nitrog	Nitroge	а	Phospho	en
n	Station	Mon		rus	rus	en	en	n	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(µg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR10		40	D 125	42	2.4	244	4.0		295	24	440
00	Sprague R	10	Pct25	43	24	211	12	4	00 305	21	112
WR10 00	Sprague R	10	Pct75	48	33	230	24	9	00	28	123
WR10	Sprague K	10	PCL/5	40	33	230	24	9	00	20	123
00	Sprague R	11	N of Cases	1	1	1	1	1	1	1	1
WR10	Spragae II		iv or cases					-	303	-	
00	Sprague R	11	Median	39	29	122	3	4	00	25	77
WR10									303		
00	Sprague R	11	Arithmetic Mean	39	29	122	3	4	00	25	77
WR10			Coefficient of						1.00		
00	Sprague R	11	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR10											
00	Sprague R	11	Pct25								
WR10											
00	Sprague R	11	Pct75								
WR10	Cara ave D	12	N of Coope	1		1	4		_	0	0
00 WP10	Sprague R	12	N of Cases	1	1	1	1	1	206	0	0
WR10 00	Sprague R	12	Median	61	45	237	14	55	306 00		
WR10	Sprague N	12	ivieulali	01	43	237	14	33	306		
00	Sprague R	12	Arithmetic Mean	61	45	237	14	55	00		
WR10	Spragae II	12	Coefficient of	01	43	237	14	33	1.00		
00	Sprague R	12	Variation	1.000	1.000	1.000	1.000	1.000	0		
WR10											
00	Sprague R	12	Pct25								
WR10											
00	Sprague R	12	Pct75								
WR10											
00	Sprague R	1	N of Cases	3	3	3	3	3	3	3	3
WR10		_				400			346		4=0
00 WR10	Sprague R	1	Median	58	46	182	9	66	00	57	179
00	Sprague R	1	Arithmetic Mean	63	47	226	11	65	327 33	79	295
WR10	Sprague it		Coefficient of	03	47	220	11	0.5	0.11	13	293
00	Sprague R	1	Variation	0.248	0.088	0.400	0.396	0.101	2	0.662	0.810
WR10	op.ugue		variation.	0.2.0	0.000	01.100	0.050	0.101	300	0.002	0.010
00	Sprague R	1	Pct25	52	45	170	8	60	25	45	147
WR10									349		
00	Sprague R	1	Pct75	75	51	293	14	70	75	118	472
WR10											
00	Sprague R	2	N of Cases	3	3	3	3	3	3	3	3
WR10		_				_			307		
00	Sprague R	2	Median	61	38	225	7	12	00	51	190
WR10	Coros: - D	_	A sith matical Accord	C1	20	340	_	42	306	F2	400
00 WP10	Sprague R	2	Arithmetic Mean	61	39	219	9	12	67	53	189
WR10 00	Sprague R	2	Coefficient of Variation	0.090	0.030	0.074	0.484	0.667	0.01 5	0.074	0.024
WR10	Sprague n		variatiOH	0.090	0.030	0.074	0.404	0.007	303	0.074	0.024
00	Sprague R	2	Pct25	57	38	207	6	6	25	50	185
WR10	Sp. agac it	_		3,		207			310		100
00	Sprague R	2	Pct75	66	40	230	12	18	00	56	192
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Statio n Code WR10	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
00	Sprague R	3	N of Cases	3	3	3	3	3	3	3	3
WR10	Spragae II	<u> </u>	iv or cases			3	<u> </u>		274		3
00	Sprague R	3	Median	63	31	350	12	13	00	98	551
WR10									268		
00	Sprague R	3	Arithmetic Mean	68	33	345	15	15	67	117	610
WR10			Coefficient of						0.12		
00	Sprague R	3	Variation	0.140	0.132	0.261	0.679	0.258	8	0.476	0.571
WR10 00	Cara au a D	2	D-+2F	62	20	277		12	242 50	00	250
WR10	Sprague R	3	Pct25	02	30	277	8	12	293	80	359
00	Sprague R	3	Pct75	75	36	412	23	18	50	160	877
WR10											
00	Sprague R	4	N of Cases	2	2	2	2	2	2	2	2
WR10									284		
00	Sprague R	4	Median	63	29	323	12	13	50	129	682
WR10	C		A	62	20	222	4.2	42	284	120	602
00 WR10	Sprague R	4	Arithmetic Mean Coefficient of	63	29	323	12	13	50 0.04	129	682
00	Sprague R	4	Variation	0.067	0.074	0.204	0.589	0.396	7	0.550	0.663
WR10	Spragae		variation.	0.007	0.07	0.20	0.005	0.030	275	0.000	0.000
00	Sprague R	4	Pct25	60	27	276	7	9	00	79	363
WR10									294		
00	Sprague R	4	Pct75	66	30	369	17	16	00	179	1002
WR10	Corogue D	_	N of Coses	1	1	1	1	1	1	1	1
00 WR10	Sprague R	5	N of Cases	1	1	1	1	1	293	1	1
00	Sprague R	5	Median	55	33	246	17	4	00	50	222
WR10	- cpragare r								293		
00	Sprague R	5	Arithmetic Mean	55	33	246	17	4	00	50	222
WR10			Coefficient of						1.00		
00	Sprague R	5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR10 00	Sprague R	5	Pct25								
WR10	Sprague K	3	PCL25								
00	Sprague R	5	Pct75								
WR10											
00	Sprague R	6	N of Cases	1	1	1	1	1	1	1	1
WR10									317		
00	Sprague R	6	Median	49	25	369	12	4	00	28	208
WR10 00	Sprague R	6	Arithmetic Mean	49	25	369	12	4	317 00	28	208
WR10	Sprague n	U	Coefficient of	49	23	309	12	4	1.00	20	200
00	Sprague R	6	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR10											
00	Sprague R	6	Pct25								
WR10											
00	Sprague R	6	Pct75								
WR10 00	Sprague R	7	N of Cases	4	4	4	4	4	4	4	4
WR10	Sprague n	/	IN OI Cases	4	4	4	4	4	269	4	4
00	Sprague R	7	Median	55	31	307	6	7	50	26	141
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Statio n Code	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
WR10		_				242		_	269		
00	Sprague R	7	Arithmetic Mean Coefficient of	56	33	310	8	7	50	27	151
WR10 00	Caragua D	7	Variation	0.114	0.213	0.096	0.010	0.531	0.01	0.273	0.220
WR10	Sprague R		Variation	0.114	0.213	0.096	0.818	0.521	266	0.273	0.228
00	Sprague R	7	Pct25	51	28	287	3	4	00	22	129
WR10	Spragae it	<u> </u>	10023	31	20	207	,		273		123
00	Sprague R	7	Pct75	60	39	333	12	11	00	33	173
WR10	-10										
00	Sprague R	8	N of Cases	4	4	4	4	4	4	4	4
WR10									260		
00	Sprague R	8	Median	37	20	250	5	4	00	16	111
WR10									262		
00	Sprague R	8	Arithmetic Mean	38	19	261	9	4	00	16	113
WR10			Coefficient of						0.03		
00	Sprague R	8	Variation	0.123	0.176	0.128	1.058	0.000	4	0.120	0.121
WR10	_							_	255		
00	Sprague R	8	Pct25	35	17	238	3	4	50	15	103
WR10	C		D-+75	44	24	204	4.5		268	40	124
00	Sprague R	8	Pct75	41	21	284	15	4	50	18	124
WR10 00	Sprague R	9	N of Cases	2	2	2	2	2	2	2	2
WR10	Sprague K	9	N OI Cases						251		
00	Sprague R	9	Median	31	16	198	11	4	00	15	97
WR10	Spragae N		Wicalan	31	10	130			251	13	
00	Sprague R	9	Arithmetic Mean	31	16	198	11	4	00	15	97
WR10	-10		Coefficient of	_	-				0.06	_	
00	Sprague R	9	Variation	0.023	0.000	0.029	0.202	0.000	8	0.100	0.094
WR10									239		
00	Sprague R	9	Pct25	30	16	194	9	4	00	14	91
WR10									263		
00	Sprague R	9	Pct75	31	16	202	12	4	00	16	104
WR20							_		_	_	_
00	Annie Cr	10	N of Cases	2	2	2	2	2	2	2	2
WR20	Ammin Co	10	N.A. aliana	40	20	40	_	12	404	C	
00 WR20	Annie Cr	10	Median	48	30	49	7	13	50 404	6	6
00	Annie Cr	10	Arithmetic Mean	48	30	49	7	13	50	6	6
WR20	Annie Ci	10	Coefficient of	40	30	49		13	0.05	Ü	0
00	Annie Cr	10	Variation	0.045	0.024	0.073	0.761	0.109	4	0.065	0.094
WR20		10	7.0.10.1011	0.043	0.027	5.575	3.,01	3.103	389	0.005	5.054
00	Annie Cr	10	Pct25	46	29	46	3	12	00	6	6
WR20									420		
00	Annie Cr	10	Pct75	49	30	51	10	14	00	7	7
WR20											
00	Annie Cr	11	N of Cases	2	2	2	2	2	2	2	2
WR20					-				384	-	
00	Annie Cr	11	Median	125	30	221	5	17	00	29	52
WR20									384		
00	Annie Cr	11	Arithmetic Mean	125	30	221	5	17	00	29	52
WR20	A	4.4	Coefficient of	0.000	0.004	4.047	0.474	0.400	0.11	4 400	1 201
00	Annie Cr	11	Variation	0.996	0.024	1.017	0.471	0.499	8	1.192	1.204

Statio n Code	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (μg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
WR20					•				352	_	
00	Annie Cr	11	Pct25	37	29	62	3	11	00	5	8
WR20 00	Annia Cr	11	Dot7F	213	20	270	6	22	416 00	Γ4	٥٦
WR20	Annie Cr	11	Pct75	213	30	379	0	23	00	54	95
00	Annie Cr	1	N of Cases	2	2	2	2	2	2	2	2
WR20				_	_	_		_	414	_	_
00	Annie Cr	1	Median	47	28	47	3	21	50	5	5
WR20									414		
00	Annie Cr	1	Arithmetic Mean	47	28	47	3	21	50	5	5
WR20			Coefficient of	0.000	0.054	0.240	0.000	0.240	0.02	0.466	0.204
00 WR20	Annie Cr	1	Variation	0.090	0.051	0.319	0.000	0.310	6 407	0.166	0.391
00	Annie Cr	1	Pct25	44	27	36	3	16	00	4	4
WR20	Ailille Ci		FCC25	44	21	30	3	10	422	- 4	4
00	Annie Cr	1	Pct75	50	29	57	3	25	00	6	6
WR20											
00	Annie Cr	2	N of Cases	3	3	3	3	3	3	3	3
WR20									423		
00	Annie Cr	2	Median	40	30	34	9	15	00	4	4
WR20		_							423	_	
00	Annie Cr	2	Arithmetic Mean	44	30	30	9	14	00	4	3
WR20 00	Annie Cr	2	Coefficient of Variation	0.166	0.019	0.457	0.635	0.213	0.01	0.236	0.481
WR20	Aiiiic Ci		Variation	0.100	0.013	0.437	0.033	0.213	419	0.230	0.401
00	Annie Cr	2	Pct25	39	29	20	5	12	25	4	2
WR20									426		
00	Annie Cr	2	Pct75	49	30	40	13	17	75	5	4
WR20			_								
00	Annie Cr	3	N of Cases	3	3	3	3	3	3	3	3
WR20 00	Annie Cr	3	Median	58	29	58	3	11	411 00	7	7
WR20	Allille Ci	3	ivieulali	36	23	36	3	11	410	,	,
00	Annie Cr	3	Arithmetic Mean	80	29	63	8	12	00	10	8
WR20			Coefficient of						0.04		
00	Annie Cr	3	Variation	0.622	0.053	0.451	1.054	0.178	8	0.705	0.529
WR20									395		
00	Annie Cr	3	Pct25	48	28	42	3	10	25	6	5
WR20 00	Annie Cr	3	Dc+75	117	30	84	11	12	424 50	15	11
WR20	Annie Ci	э	Pct75	11/	30	84	14	13	50	15	11
00	Annie Cr	4	N of Cases	2	2	2	2	2	2	2	2
WR20									386		_
00	Annie Cr	4	Median	45	26	45	3	14	50	5	5
WR20					-				386	-	
00	Annie Cr	4	Arithmetic Mean	45	26	45	3	14	50	5	5
WR20		_	Coefficient of						0.04		
00	Annie Cr	4	Variation	0.048	0.000	0.207	0.000	0.157	9	0.022	0.138
WR20 00	Annie Cr	4	Pct25	43	26	38	3	12	373 00	5	5
WR20	Annie Ci	4	TULES	43	20	30	3	12	400	3	3
00	Annie Cr	4	Pct75	46	26	51	3	15	00	5	6
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Statio n Code	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
WR20 00	Annie Cr	5	N of Cases	1	1	1	1	1	1	1	1
WR20	Aiiiic Ci	3	IV 01 Cases						303		
00	Annie Cr	5	Median	69	20	101	11	13	00	15	22
WR20									303		
00	Annie Cr	5	Arithmetic Mean	69	20	101	11	13	00	15	22
WR20	Avania Gu	_	Coefficient of	4 000	4 000	4 000	4 000	4 000	1.00	4 000	4 000
00 WR20	Annie Cr	5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
00	Annie Cr	5	Pct25								
WR20	7 time Ci		1 0025								
00	Annie Cr	5	Pct75								
WR20											
00	Annie Cr	6	N of Cases	1	1	1	1	1	1	1	1
WR20 00	Annie Cr	6	Madian	80	26	57	2	1.4	341 00	16	11
WR20	Annie Cr	6	Median	80	26	57	3	14	341	16	11
00	Annie Cr	6	Arithmetic Mean	80	26	57	3	14	00	16	11
WR20			Coefficient of						1.00		
00	Annie Cr	6	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR20											
00	Annie Cr	6	Pct25								
WR20 00	Annie Cr	6	Pct75								
WR20	Allille Ci	0	PCL/5								
00	Annie Cr	7	N of Cases	3	4	4	4	4	4	3	4
WR20									412		
00	Annie Cr	7	Median	44	32	51	3	10	00	6	7
WR20		_					_		411	_	_
00 WR20	Annie Cr	7	Arithmetic Mean Coefficient of	43	31	64	4	9	75	6	8
00	Annie Cr	7	Variation	0.084	0.046	0.676	0.588	0.416	0.00	0.072	0.631
WR20	7 time Ci	,	Variation	0.004	0.040	0.070	0.500	0.410	411	0.072	0.031
00	Annie Cr	7	Pct25	40	30	33	3	7	00	6	5
WR20									412		
00	Annie Cr	7	Pct75	46	32	96	6	12	50	6	12
WR20 00	Annie Cr	8	N of Cases	4	4	4	4	4	4	4	4
WR20	Annie Ci	0	IN OI CASES	4	4	4	4	4	421	4	4
00	Annie Cr	8	Median	47	29	46	3	9	00	6	6
WR20									436		
00	Annie Cr	8	Arithmetic Mean	47	30	41	5	8	25	6	5
WR20	Annia C		Coefficient of	0.074	0.050	0.400	0.727	0.375	0.07	0.000	0.504
00 WR20	Annie Cr	8	Variation	0.074	0.050	0.496	0.737	0.375	3 419	0.098	0.501
00	Annie Cr	8	Pct25	44	29	25	3	6	00	6	3
WR20									453		
00	Annie Cr	8	Pct75	50	31	58	7	11	50	6	7
WR20											
00	Annie Cr	9	N of Cases	3	3	3	3	3	3	3	3
WR20 00	Annie Cr	9	Median	45	30	46	3	8	423 00	5	5
UU	Annie Cr	פ	IVICUIdII	45	30	40	3	٥	UU)) 5

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					Soluble			NO3+N			Total
a				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio				Phospho	Phospho	Nitrog	Nitrog	Nitroge	a ,	Phospho	en
n	Station	Mon		rus	rus	en	en	n	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(µg/L)	(µg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR20				4.6	20		_	0	424	-	_
00	Annie Cr	9	Arithmetic Mean	46	30	44	5	8	33	5	5
WR20			Coefficient of		0.040				0.01	0.400	
00	Annie Cr	9	Variation	0.025	0.019	0.164	0.693	0.500	4	0.132	0.074
WR20	A		D-+2F	45	20	20	2	-	420	-	_
00	Annie Cr	9	Pct25	45	30	39	3	5	00	5	5
WR20 00	Annie Cr	9	Do+7F	47	31	49	8	11	429 00	6	_
		9	Pct75	47	31	49	٥	11	00	0	5
WR30	Wood @	10	N of Coope	2	2	,	_	2	,	2	,
00	Weed	10	N of Cases	2	2	2	2	2	2	2	2
WR30 00	Wood @ Weed	10	Median	82	C.E.	115	1.4	17	387 00	64	01
		10	iviedian	82	65	115	14	17	387	04	91
WR30	Wood @ Weed	10	Arithmetic Mean	82	C.E.	115	1.4	17	387 00	64	01
00		10		82	65	115	14	17		64	91
WR30 00	Wood @	10	Coefficient of	0.078	0.011	0.220	0.202	0.166	0.00	0.176	0.224
	Weed	10	Variation	0.078	0.011	0.228	0.303	0.100		0.176	0.324
WR30 00	Wood @ Weed	10	Pct25	77	64	96	11	15	386 00	56	70
	Wood @	10	PUIZS	77	04	90	11	15		50	70
WR30 00	Weed	10	Do+7E	86	6E	133	17	10	388 00	72	111
		10	Pct75	80	65	155	17	19	00	72	111
WR30 00	Wood @ Weed	11	N of Cases	1	1	1	1	1	1	0	0
	1	11	in or cases	1	1	1	1	1		U	U
WR30 00	Wood @	11	Madian	83	64	93	6	19	392 00		
WR30	Weed Wood @	11	Median	83	04	93	0	19	392		
00	Weed	11	Arithmetic Mean	83	64	93	6	19	00		
WR30	Wood @	11	Coefficient of	03	04	93	0	19	1.00		
00	Weed	11	Variation	1.000	1.000	1.000	1.000	1.000	0		
WR30	Wood @	11	Variation	1.000	1.000	1.000	1.000	1.000	0		
00	Weed	11	Pct25								
WR30	Wood @	11	10025								
00	Weed	11	Pct75								
WR30	Wood @	11	10075								
00	Weed	12	N of Cases	1	1	1	1	1	1	1	1
WR30	Wood @	12	N OT Cases						372		
00	Weed	12	Median	90	62	105	19	27	00	85	99
WR30	Wood @	14	Micaidii	30	02	103	13		372	0.5	33
00	Weed	12	Arithmetic Mean	90	62	105	19	27	00	85	99
WR30	Wood @	14	Coefficient of	30	02	103	13		1.00	0.5	33
00	Weed	12	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR30	Wood @	12	Variation	1.000	1.000	1.000	1.000	1.000	-	1.000	1.000
00	Weed	12	Pct25								
WR30	Wood @		. 3023								
00	Weed	12	Pct75								
WR30	Wood @		. 30, 0								
00	Weed	1	N of Cases	3	3	3	3	3	3	3	3
WR30	Wood @			3					395		
00	Weed	1	Median	94	68	104	22	26	00	73	81
WR30	Wood @	_		J T		107			394	, ,	01
00	Weed	1	Arithmetic Mean	93	69	112	22	26	33	74	89
WR30	Wood @		Coefficient of	33					0.00	, ,	
00	Weed	1	Variation	0.086	0.025	0.185	0.208	0.058	5	0.048	0.154

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											_
					Soluble			NO3+N			Total
a				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio	a			Phospho	Phospho	Nitrog	Nitrog	Nitroge	a ,	Phospho	en
n	Station	Mon	Damanatan	rus	rus	en	en	n (/1)	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(µg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR30	Wood @		D-+25	07	60	00	40	25	392	74	0.4
00	Weed	1	Pct25	87	68	99	18	25	75	71	81
WR30	Wood @	4	D-+75	00	70	120	25	20	395	77	00
00	Weed	1	Pct75	99	70	128	25	28	75	77	99
WR30	Wood @	2	N of Coose	2	2	2	_	2	,	2	2
00 WR30	Weed Wood @	2	N of Cases	3	3	3	3	3	3 391	3	3
00	Weed	2	Median	86	67	77	12	24	391	66	59
WR30	Wood @		ivieulali	80	07	//	12	24	389	00	39
00	Weed	2	Arithmetic Mean	86	66	83	12	24	00	66	64
WR30	Wood @		Coefficient of	80	00	03	12	24	0.00	00	04
00	Weed	2	Variation	0.041	0.017	0.186	0.049	0.042	9	0.039	0.186
WR30	Wood @		Variation	0.041	0.017	0.160	0.049	0.042	386	0.039	0.100
00	Weed	2	Pct25	83	66	73	11	23	50	64	56
WR30			PUIZS	03	00	/3	11	23	391	04	30
00	Wood @ Weed	2	Pct75	88	67	95	12	25	00	68	73
WR30	Wood @		FCC75	00	07	33	12	23	00	06	/3
00	Weed	3	N of Cases	3	3	3	3	3	3	3	3
WR30	Wood @	3	IN OI Cases	3	3	3	3	3	371	3	3
00	Weed	3	Median	96	61	142	15	19	00	91	135
WR30	Wood @	3	IVICUIAII	30	01	142	13	15	377	91	133
00	Weed	3	Arithmetic Mean	96	62	134	20	19	00	86	121
WR30	Wood @	3	Coefficient of	30	02	134	20	13	0.05	80	121
00	Weed	3	Variation	0.110	0.052	0.223	0.866	0.079	5	0.149	0.261
WR30	Wood @		Variation	0.110	0.032	0.223	0.800	0.073	362	0.143	0.201
00	Weed	3	Pct25	88	60	111	8	18	75	76	97
WR30	Wood @	,	10025	00	00	111	0	10	392	70	37
00	Weed	3	Pct75	104	65	155	34	21	75	94	141
WR30	Wood @		10075	10-	03	133	34	21	7.5	34	171
00	Weed	4	N of Cases	2	2	2	2	2	2	2	2
WR30	Wood @		14 61 64363	_	_		_	_	387	_	_
00	Weed	4	Median	91	65	116	8	21	50	73	90
WR30	Wood @	<u> </u>	171001011						387		- 30
00	Weed	4	Arithmetic Mean	91	65	116	8	21	50	73	90
WR30	Wood @	<u> </u>	Coefficient of						0.00		
00	Weed	4	Variation	0.000	0.033	0.463	0.094	0.135	5	0.135	0.339
WR30	Wood @	<u> </u>		2.000	2.000	21.00	2.33 /	27200	386	2.200	2.300
00	Weed	4	Pct25	91	63	78	7	19	00	66	68
WR30	Wood @					, ,			389		
00	Weed	4	Pct75	91	66	154	8	23	00	80	112
WR30	Wood @						, i				
00	Weed	5	N of Cases	1	1	1	1	1	1	1	1
WR30	Wood @								376		
00	Weed	5	Median	94	65	106	13	19	00	59	66
WR30	Wood @								376		
00	Weed	5	Arithmetic Mean	94	65	106	13	19	00	59	66
WR30	Wood @		Coefficient of						1.00		
00	Weed	5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR30	Wood @										
00	Weed	5	Pct25								
WR30	Wood @										
00	Weed	5	Pct75								
	1										

Statio n Code WR30	Station Name Wood @	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (μg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
00	Weed	6	N of Cases	1	1	1	1	1	1	1	1
WR30	Wood @	0	N OI Cases	1	1	1	1	1	384	1	1
00	Weed	6	Median	84	67	97	14	16	00	26	29
WR30	Wood @	- 0	Wiedian	04	07	31	14	10	384	20	23
00	Weed	6	Arithmetic Mean	84	67	97	14	16	00	26	29
WR30	Wood @		Coefficient of	- 07	- 07	37	17	10	1.00	20	23
00	Weed	6	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR30	Wood @										
00	Weed	6	Pct25								
WR30	Wood @										
00	Weed	6	Pct75								
WR30	Wood @										
00	Weed	7	N of Cases	5	5	5	5	5	5	5	5
WR30	Wood @								387		
00	Weed	7	Median	83	70	72	3	12	00	46	36
WR30	Wood @								387		
00	Weed	7	Arithmetic Mean	84	70	68	5	12	00	45	36
WR30	Wood @		Coefficient of						0.01		
00	Weed	7	Variation	0.035	0.029	0.207	0.583	0.098	0	0.127	0.150
WR30	Wood @								384		
00	Weed	7	Pct25	83	69	57	3	11	75	41	33
WR30	Wood @				_			_	389		
00	Weed	7	Pct75	87	72	76	8	12	75	48	39
WR30	Wood @		N. 60	2	2	2		2	_	2	2
00	Weed	8	N of Cases	3	3	3	3	3	3	3	3
WR30	Wood @	0	Median	0.4	60	F2	2	15	390 00	40	21
00 WR30	Weed	8	iviedian	84	69	52	3	15	388	49	31
00	Wood @ Weed	8	Arithmetic Mean	84	68	63	3	17	67	54	42
WR30	Wood @	8	Coefficient of	04	08	03	3	17	0.01	34	42
00	Weed	8	Variation	0.018	0.062	0.324	0.000	0.284	3	0.180	0.498
WR30	Wood @		10.100.011	0.020	0.002	0.02.	0.000	0.20	384	0.1200	01.50
00	Weed	8	Pct25	83	65	51	3	14	75	48	29
WR30	Wood @								392		
00	Weed	8	Pct75	86	71	78	3	20	25	61	57
WR30	Wood @										
00	Weed	9	N of Cases	2	2	2	2	2	2	2	2
WR30	Wood @								395		
00	Weed	9	Median	89	72	69	7	17	50	59	45
WR30	Wood @								395		
00	Weed	9	Arithmetic Mean	89	72	69	7	17	50	59	45
WR30	Wood @		Coefficient of						0.02		
00	Weed	9	Variation	0.079	0.098	0.382	0.761	0.129	3	0.058	0.251
WR30	Wood @	_	D 125				_		389	==	
00	Weed	9	Pct25	84	67	50	3	15	00	57	37
WR30	Wood @	_	D-475	^4		67	4.0	40	402	63	
00	Weed	9	Pct75	94	77	87	10	18	00	62	53
WR40 00	Wood @	10	N of Cases	2	2	2	2	2	2	2	2
WR40	Dike Wood @	10	N of Cases	2	2	2	2	2	378	2	2
00	Dike	10	Median	102	70	163	15	16	00	107	172
	DIKE	10	iviculati	102	/0	103	1.0	10	JU	107	1/2

	1		<u> </u>						I		
				-	Soluble			NO3+N	6.11		Total
c				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio	6			Phospho	Phospho	Nitrog	Nitrog	Nitroge	a , ,	Phospho	en
n	Station	Mon	Damanatan	rus	rus	en	en	n (/1)	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(µg/L)	(µg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR40	Wood @	10	A with we satis B A seed	402	70	462	4.5	4.6	378	407	472
00	Dike	10	Arithmetic Mean	102	70	163	15	16	00	107	172
WR40	Wood @	10	Coefficient of	0.055	0.040	0.442	0.004	0.000	0.01	0.027	0.444
00	Dike	10	Variation	0.055	0.040	0.113	0.094	0.088	275	0.027	0.141
WR40	Wood @	10	D-+3E	00	co	150	1.4	15	375	105	155
00 WR40	Dike Wood @	10	Pct25	98	68	150	14	15	00 381	105	155
00	Dike	10	Pct75	106	72	176	16	17	00	109	189
WR40	Wood @	10	PUI/3	100	12	170	10	1/	00	109	109
00	Dike	11	N of Coses	1	1	1	1	1	1	0	_
WR40	Wood @	11	N of Cases	1	1	1	1	1	383	0	0
00	Dike	11	Median	89	70	113	22	18	383		
WR40	Wood @	11	ivieulali	69	70	113	22	10	383		
00	Dike	11	Arithmetic Mean	89	70	113	22	18	00		
WR40	Wood @	11	Coefficient of	89	70	113	22	18	1.00		
00	Dike	11	Variation	1.000	1.000	1.000	1.000	1.000	1.00		
WR40	Wood @	11	Variation	1.000	1.000	1.000	1.000	1.000	U		
00	Dike	11	Pct25								
WR40	Wood @	11	PUIZS								
00	Dike	11	Pct75								
WR40	Wood @	11	PUI/3								
00	Dike	12	N of Cases	1	1	1	1	1	1	1	1
WR40	Wood @	12	IN OI Cases	1	1	1	1	1	368	1	1
00	Dike	12	Median	103	77	136	22	25	00	113	149
WR40	Wood @	12	Wiedian	103	- //	130	22	23	368	113	143
00	Dike	12	Arithmetic Mean	103	77	136	22	25	00	113	149
WR40	Wood @	12	Coefficient of	103	- //	130	22	23	1.00	113	143
00	Dike	12	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR40	Wood @	12	Variation	1.000	1.000	1.000	1.000	1.000	- U	1.000	1.000
00	Dike	12	Pct25								
WR40	Wood @	12	10025								
00	Dike	12	Pct75								
WR40	Wood @		1 007 5								
00	Dike	1	N of Cases	1	1	1	1	1	1	1	1
WR40	Wood @		14 61 64363		_				385	_	
00	Dike	1	Median	130	102	134	27	26	00	141	146
WR40	Wood @		171001011	100		20.			385		2.0
00	Dike	1	Arithmetic Mean	130	102	134	27	26	00	141	146
WR40	Wood @		Coefficient of	155	102	13 /			1.00	1,1	1.0
00	Dike	1	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR40	Wood @	1						_,,,,,			
00	Dike	1	Pct25								
WR40	Wood @										
00	Dike	1	Pct75								
WR40	Wood @										
00	Dike	2	N of Cases	3	3	3	3	3	3	3	3
WR40	Wood @								384		
00	Dike	2	Median	104	86	112	14	24	00	105	120
WR40	Wood @								383		
00	Dike	2	Arithmetic Mean	102	84	112	14	24	00	108	117
WR40	Wood @		Coefficient of						0.00		
00	Dike	2	Variation	0.046	0.041	0.143	0.214	0.024	7	0.051	0.114
· · · · · · · · · · · · · · · · · · ·	·		L						·		

Statio										I		
Name	Statio					Reactive			02			Nitrog
Code		Station	Mon			· ·	_		_			
MR40				Parameter								
Dike Very Name Very Name				· a.aetc.	(MO/ =/	(MO/ =/	(1-67-7	(140/ -/	(1007 -7		(1.6/ 5/	(6/ ∞/
WR40			2	Pct25	99	82	100	12	24		104	107
Dotal Dike 2 Pct75 106 86 124 16 25 75 112 127	WR40	Wood @								384		
Dike	00	Dike	2	Pct75	106	86	124	16	25	75	112	127
WR40	WR40	Wood @										
Dike	00	Dike	3	N of Cases	3	3	3	3	3	3	3	3
WR40	WR40	Wood @								359		
Dike	00	Dike	3	Median	115	88	175	7	15		127	203
WR40	WR40	Wood @										
Dike			3		115	87	183	12	15		130	207
WR40		_										
DO			3	Variation	0.026	0.027	0.080	0.795	0.200		0.050	0.076
WR40			_									
Dike			3	Pct25	113	85	174	6	13		126	196
WR40		_	2	0.75	447	00	404	40	47		425	240
Dike			3	Pct/5	11/	88	194	19	1/	00	135	219
WR40				N of Coope	_	_	2	_	2	_	2	2
Dike			4	N of Cases	2	2		2	2		2	2
WR40			4	Madian	100	90	125	0	16		00	124
OD Dike 4 Arithmetic Mean 108 89 135 8 16 00 99 124 WR40 Wood @ Coefficient of Dike 4 Variation 0.092 0.152 0.293 0.283 0.177 4 0.106 0.307 WR40 Wood @ 100 Dike 4 Pct25 101 79 107 6 14 00 92 97 WR40 Wood @ 00 Dike 4 Pct75 115 98 163 9 18 00 107 151 WR40 Wood @ 0 Dike 5 N of Cases 1 <t< td=""><td></td><td></td><td>4</td><td>iviedian</td><td>108</td><td>89</td><td>135</td><td>0</td><td>10</td><td></td><td>99</td><td>124</td></t<>			4	iviedian	108	89	135	0	10		99	124
WR40 Wood @ Dike 4 Coefficient of Variation 0.092 0.152 0.293 0.283 0.177 4 0.106 0.307 WR40 Wood @ OD Dike 4 Pct25 101 79 107 6 14 00 92 97 WR40 Wood @ OD Dike 4 Pct75 115 98 163 9 18 00 107 151 WR40 Wood @ OD Dike 5 N of Cases 1			4	Arithmotic Moan	100	90	125	0	16		00	124
Dike			4		100	03	133	0	10		33	124
WR40 Wood @ Dike 4 Pct25 101 79 107 6 14 00 92 97 WR40 Wood @ Dike 4 Pct75 115 98 163 9 18 00 107 151 WR40 Wood @ Dike 5 N of Cases 1			4		0.092	0.152	0 293	0.283	0 177		0 106	0 307
OO			7	Variation	0.032	0.132	0.233	0.203	0.177		0.100	0.507
WR40 Wood @ Dike 4 Pct75 115 98 163 9 18 00 107 151 WR40 Wood @ OO Dike 5 N of Cases 1		_	4	Pct25	101	79	107	6	14		92	97
00 Dike 4 Pct75 115 98 163 9 18 00 107 151 WR40 Wood @ Dike 5 N of Cases 1				. 0.20	101		207					3,
WR40 00 Wood @ Dike 5 N of Cases 1 </td <td></td> <td>_</td> <td>4</td> <td>Pct75</td> <td>115</td> <td>98</td> <td>163</td> <td>9</td> <td>18</td> <td></td> <td>107</td> <td>151</td>		_	4	Pct75	115	98	163	9	18		107	151
00 Dike 5 N of Cases 1	WR40	Wood @										
00 Dike 5 Median 151 126 320 28 16 00 101 213 WR40 Wood @ Dike 5 Arithmetic Mean 151 126 320 28 16 00 101 213 WR40 Wood @ Coefficient of Oike 1.000	00		5	N of Cases	1	1	1	1	1	1	1	1
WR40 Wood @ Olike 5 Arithmetic Mean 151 126 320 28 16 00 101 213 WR40 Wood @ Olike 5 Variation 1.000 1.00	WR40	Wood @								358		
00 Dike 5 Arithmetic Mean 151 126 320 28 16 00 101 213 WR40 Wood @ ODike 5 Variation 1.000	00	Dike	5	Median	151	126	320	28	16	00	101	213
WR40 00	WR40	Wood @								358		
00 Dike 5 Variation 1.000 1.000 1.000 1.000 0 1.000 </td <td>00</td> <td></td> <td>5</td> <td>Arithmetic Mean</td> <td>151</td> <td>126</td> <td>320</td> <td>28</td> <td>16</td> <td>00</td> <td>101</td> <td>213</td>	00		5	Arithmetic Mean	151	126	320	28	16	00	101	213
WR40 Wood @ Dike 5 Pct25 Section (Section of One) Pct75 Pc	WR40									1.00		
00 Dike 5 Pct25 ————————————————————————————————————			5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR40 Wood @ 00 Dike 5 Pct75 P												
00 Dike 5 Pct75 ————————————————————————————————————			5	Pct25								
WR40 Wood @ 00 6 N of Cases 3		_	_	D-475								
00 Dike 6 N of Cases 3 4 0 0 0 6 2 75 8 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3			5	PCT/5								
WR40 Wood @ 00 6 Median 117 93 139 9 15 00 62 75 WR40 Wood @ 00 Dike 6 Arithmetic Mean 119 93 161 15 16 33 66 96 WR40 Wood @ 00 Coefficient of 00 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ 00 Dike 6 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 00 Wood @ 00 Wood @ 00 Wood @ 00 366 Wood @ 00			6	N of Cases	2	2	2	2	2	2	2	2
00 Dike 6 Median 117 93 139 9 15 00 62 75 WR40 Wood @ 00 Dike 6 Arithmetic Mean 119 93 161 15 16 33 66 96 WR40 Wood @ 00 Coefficient of Variation 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ 00 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 00 Wood @ 00 <td< td=""><td></td><td></td><td>0</td><td>IN OI Cases</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td></td><td>3</td><td>3</td></td<>			0	IN OI Cases	3	3	3	3	3		3	3
WR40 Wood @ 00 Dike 6 Arithmetic Mean 119 93 161 15 16 33 66 96 WR40 Wood @ 00 Coefficient of Variation 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ 00 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 00 Wood @ 00 366 366 96			6	Median	117	0.2	120	0	10		62	75
00 Dike 6 Arithmetic Mean 119 93 161 15 16 33 66 96 WR40 Wood @ Coefficient of 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ Wood @ 100 120 9 15 25 55 54 WR40 Wood @ Wood @ Wood @ 366 Wood @ 366 Wood @ Wood @ Wood @ 366 Wood @ Wood			0	IVICUIAII	11/	33	133	3	13		02	13
WR40 Wood @ Dike Coefficient of Variation 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ 00 Dike 6 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 366 366 366 366 366 366			6	Arithmetic Mean	110	дз	161	15	16		66	96
00 Dike 6 Variation 0.044 0.043 0.382 0.669 0.108 1 0.255 0.652 WR40 Wood @ 6 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 366					113	33	101	1.5	10		00	90
WR40 Wood @ 00 Dike 6 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 366 366			6		0.044	0.043	0.382	0.669	0.108		0.255	0.652
00 Dike 6 Pct25 116 90 120 9 15 25 55 54 WR40 Wood @ 366			<u> </u>		5.5 1 7	5.515	3.552	3.003	3.200		0.200	
WR40 Wood @ 366		_	6	Pct25	116	90	120	9	15		55	54
			6	Pct75	123	96	207	22	17		79	144

	1										
Statio n Code WR40	Station Name Wood @	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
00	Dike	7	N of Cases	5	6	6	6	6	6	5	6
WR40	Wood @		N OI Cases	3	0	0	0	U	375	3	0
00	Dike	7	Median	103	86	126	7	12	50	70	80
WR40	Wood @		Wiedian	103	00	120	,	12	374	70	80
00	Dike	7	Arithmetic Mean	115	90	132	11	12	17	78	89
WR40	Wood @		Coefficient of	113	30	132	11	12	0.00	70	83
00	Dike	7	Variation	0.219	0.117	0.275	1.069	0.167	9	0.224	0.273
WR40	Wood @		Variation	0.213	0.117	0.273	1.003	0.107	371	0.224	0.273
00	Dike	7	Pct25	99	83	113	3	10	00	69	73
WR40	Wood @	,	10025	33	- 03	113		10	376	- 03	7.5
00	Dike	7	Pct75	127	102	142	12	13	00	84	97
WR40	Wood @										
00	Dike	8	N of Cases	3	3	3	3	3	3	3	3
WR40	Wood @								378		
00	Dike	8	Median	110	79	99	11	13	00	86	77
WR40	Wood @								379		
00	Dike	8	Arithmetic Mean	108	80	179	10	13	33	86	148
WR40	Wood @		Coefficient of				_		0.01		
00	Dike	8	Variation	0.067	0.033	0.794	0.680	0.115	1	0.138	0.867
WR40	Wood @								376		
00	Dike	8	Pct25	103	78	96	5	12	50	78	73
WR40	Wood @								382		
00	Dike	8	Pct75	113	82	282	16	15	50	95	242
WR40	Wood @										
00	Dike	9	N of Cases	2	2	2	2	2	2	2	2
WR40	Wood @								392		
00	Dike	9	Median	90	74	88	5	15	00	79	79
WR40	Wood @								392		
00	Dike	9	Arithmetic Mean	90	74	88	5	15	00	79	79
WR40	Wood @		Coefficient of						0.04		
00	Dike	9	Variation	0.157	0.115	0.370	0.471	0.094	3	0.254	0.460
WR40	Wood @								380		
00	Dike	9	Pct25	80	68	65	3	14	00	65	53
WR40	Wood @								404		
00	Dike	9	Pct75	100	80	111	6	16	00	94	104
WR50	7-mile		_								
00	Canal	10	N of Cases	2	2	2	2	2	2	2	2
WR50	7-mile								332		
00	Canal	10	Median	104	70	242	67	14	50	33	76
WR50	7-mile	10	A	404	70	242	67		332	22	7.0
00	Canal	10	Arithmetic Mean	104	70	242	67	14	50	33	76
WR50	7-mile	10	Coefficient of	0.027	0.101	0.001	0.633	0.101	0.05	0.245	0 247
00	Canal	10	Variation	0.027	0.101	0.061	0.633	0.101	7	0.315	0.347
WR50 00	7-mile	10	Dc+25	102	65	221	37	10	319 00	יר	E 7
	Canal	10	Pct25	102	65	231	3/	13	346	25	57
WR50 00	7-mile Canal	10	Pct75	106	75	252	97	15	346 00	40	95
WR50	7-mile	10	FUL/3	100	/3	232	97	13	00	40	90
00	Canal	11	N of Cases	2	2	2	2	2	2	2	2
WR50	7-mile	-11	14 01 Cases						342		
00	Canal	11	Median	96	64	241	20	10	50	33	82
- 55	Janai		caiaii		0-₹	271		10	50	55	02

	1		I	ı			l		l		
					Soluble			NO3+N			Total
				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio				Phospho	Phospho	Nitrog	Nitrog	Nitroge	а	Phospho	en
n	Station	Mon		rus	rus	en	en	n	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR50	7-mile								342		
00	Canal	11	Arithmetic Mean	96	64	241	20	10	50	33	82
WR50	7-mile		Coefficient of						0.02		
00	Canal	11	Variation	0.022	0.177	0.079	0.919	0.000	7	0.005	0.097
WR50	7-mile								336		
00	Canal	11	Pct25	94	56	227	7	10	00	32	76
WR50	7-mile								349		
00	Canal	11	Pct75	97	72	254	33	10	00	33	88
WR50	7-mile										
00	Canal	12	N of Cases	1	1	1	1	1	1	1	1
WR50	7-mile								331		
00	Canal	12	Median	91	62	199	50	24	00	44	96
WR50	7-mile		171001011						331		- 30
00	Canal	12	Arithmetic Mean	91	62	199	50	24	00	44	96
WR50	7-mile		Coefficient of	31	02	133	30	2-7	1.00		30
00	Canal	12	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR50	7-mile	12	Variation	1.000	1.000	1.000	1.000	1.000	U	1.000	1.000
00	Canal	12	Pct25								
		12	PUIZS								
WR50	7-mile	4.2	D-+75								
00	Canal	12	Pct75								
WR50	7-mile				_	_		_		_	
00	Canal	1	N of Cases	1	1	1	1	1	1	1	1
WR50	7-mile	_							340		
00	Canal	1	Median	112	77	237	59	22	00	37	79
WR50	7-mile								340		
00	Canal	1	Arithmetic Mean	112	77	237	59	22	00	37	79
WR50	7-mile		Coefficient of						1.00		
00	Canal	1	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR50	7-mile										
00	Canal	1	Pct25								
WR50	7-mile										
00	Canal	1	Pct75								
WR50	7-mile										
00	Canal	2	N of Cases	3	3	3	3	3	3	3	3
WR50	7-mile								341		
00	Canal	2	Median	93	66	132	27	16	00	19	30
WR50	7-mile							-	342		
00	Canal	2	Arithmetic Mean	91	69	136	24	17	67	20	29
WR50	7-mile		Coefficient of						0.02		
00	Canal	2	Variation	0.090	0.088	0.164	0.226	0.328	2	0.097	0.086
WR50	7-mile								337		
00	Canal	2	Pct25	85	65	120	20	13	25	19	27
WR50	7-mile								348		
00	Canal	2	Pct75	97	74	153	28	21	50	21	31
WR50	7-mile										
00	Canal	3	N of Cases	3	3	3	3	3	3	3	3
WR50	7-mile					,			282		
00	Canal	3	Median	110	73	481	32	22	00	43	189
WR50	7-mile		.riculali	110	,,	-01	32		289	7.5	100
00	Canal	3	Arithmetic Mean	117	75	427	33	23	67	94	393
WR50	7-mile	3	Coefficient of	11/	/3	44/	33	23	0.20	J4	333
		2		0.122	0.051	0.401	0.100	0.266		1 051	1 201
00	Canal	3	Variation	0.122	0.051	0.481	0.199	0.266	7	1.051	1.201

	1								I		
Statio n Code	Station Name	Mon th	Darameter	Total Phospho rus	Soluble Reactive Phospho rus	Total Nitrog en	NH4 Nitrog en	NO3+N O2 Nitroge	Silic a (µg/ L)	Total Phospho rus Load	Total Nitrog en Load
WR50	7-mile	un	Parameter	(μg/L)	(μg/L)	(μg/L)	(µg/L)	(μg/L)	246	(kg/d)	(kg/d)
		_	D-+2F	100	72	270	20	10		24	00
00	Canal	3	Pct25	108	72	270	28	18	00	34	90
WR50	7-mile		D-+7F	127	70	F70	20	27	335	100	740
00	Canal	3	Pct75	127	78	570	38	27	25	166	748
WR50 00	7-mile	4	N of Cocos	2	2	2	2	2	2	2	2
WR50	Canal 7-mile	4	N of Cases						314	2	2
00	Canal	4	Median	120	75	533	9	12	00	42	186
WR50	7-mile	4	Wiedian	120	73	333	3	12	314	42	100
00	Canal	4	Arithmetic Mean	120	75	533	9	12	00	42	186
WR50	7-mile	4	Coefficient of	120	73	333	3	12	0.03	42	100
00	Canal	4	Variation	0.024	0.019	0.092	0.083	0.061	2	0.004	0.119
WR50	7-mile		variation	0.021	0.013	0.032	0.003	0.001	307	0.001	0.113
00	Canal	4	Pct25	118	74	498	8	11	00	42	171
WR50	7-mile		10023	110	, ,	130			321		
00	Canal	4	Pct75	122	76	567	9	12	00	42	202
WR50	7-mile										
00	Canal	5	N of Cases	1	1	1	1	1	1	1	1
WR50	7-mile	_							319		
00	Canal	5	Median	192	137	837	25	10	00	45	198
WR50	7-mile								319		
00	Canal	5	Arithmetic Mean	192	137	837	25	10	00	45	198
WR50	7-mile		Coefficient of						1.00	_	
00	Canal	5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR50	7-mile										
00	Canal	5	Pct25								
WR50	7-mile										
00	Canal	5	Pct75								
WR50	7-mile										
00	Canal	6	N of Cases	3	3	3	3	3	3	3	3
WR50	7-mile								330		
00	Canal	6	Median	161	108	526	22	9	00	30	109
WR50	7-mile								326		
00	Canal	6	Arithmetic Mean	176	108	595	20	7	00	27	93
WR50	7-mile		Coefficient of						0.06		
00	Canal	6	Variation	0.212	0.237	0.312	0.795	0.394	2	0.744	0.734
WR50	7-mile								310		
00	Canal	6	Pct25	152	89	471	8	5	50	12	41
WR50	7-mile							_	340	_	
00	Canal	6	Pct75	205	127	735	31	9	50	42	141
WR50	7-mile	_	N -f C	_	_	_	_	_	_	_	
00	Canal	7	N of Cases	4	4	4	4	4	4	4	4
WR50	7-mile	_	Madian	4.00	353	1360	474	4.5	334	_	30
00	Canal	7	Median	463	353	1260	174	15	50	-9	-20
WR50	7-mile	_	A with months B.4 = = :-	440	254	1242	100	47	337	22	00
00	Canal	7	Arithmetic Mean	448	354	1243	188	17	25	-22	-80
WR50	7-mile	,	Coefficient of	0.222	0.242	0.211	0.751	0.503	0.05	2 222	2 201
00	Canal	7	Variation	0.222	0.243	0.211	0.751	0.582	3	-2.322	-2.291
WR50 00	7-mile	7	Dc+25	267	202	1055	70	10	324 50	F0	202
WR50	Canal	 '	Pct25	367	283	1055	70	10		-59	-202
00	7-mile	7	Dc+75	528	126	1430	207	25	350 00	1 5	42
UU	Canal		Pct75	326	426	1430	307	23	UU	15	42

Statio		1										
Note Note	n Code	Name		Parameter	Phospho rus	Reactive Phospho rus	Nitrog en	Nitrog en	O2 Nitroge n	а (µg/	Phospho rus Load	Nitrog en Load
WR50				N of Coope	4	4	4	4	4	_	4	,
OO Canal 8 Median 294 217 528 113 18 00 18 37 WRSD 7-mile Coal 8 Arithmetic Mean 317 239 653 143 20 00 19 33 WRSD 7-mile Coefficient of Operation of Coeff			8	N of Cases	4	4	4	4	4		4	4
MRS0				NA a dia a	204	247	F20	112	10		10	27
00 Canal 8 Arithmetic Mean 317 239 653 143 20 00 19 33 WR50 7-mile Coefficient of Ocaral 0.485 0.562 0.574 0.715 0.347 0.15 1.352 1.405 WR50 7-mile 0 Canal 8 Pct25 190 133 385 67 16 50 3 4 WR50 7-mile 0 Canal 8 Pct25 444 346 921 219 24 50 35 62 WR50 7-mile 9 Nof Cases 2<			8	iviedian	294	217	528	113	18		18	37
MYSO 7-mile			0	Arithmatic Maan	217	220	CE2	142	20		10	22
OO Canal 8 Variation 0.485 0.562 0.574 0.715 0.347 6 1.352 1.405 WR50 7-mile 0 Canal 8 Pct25 190 133 385 67 16 50 3 4 WR50 7-mile 0 Canal 8 Pct75 444 346 921 219 24 50 35 62 WR50 7-mile 9 Nof Cases 2			٥		317	239	053	143	20		19	33
WR50			0		0.405	0.563	0 574	0.715	0.247		1 252	1 405
OO Canal 8 Pct25 190 133 385 67 16 50 3 4 WRSO 7-mile Canal 8 Pct75 4444 346 921 219 24 50 35 62 WRSO 7-mile OO Canal 9 Nof Cases 2 <t< td=""><td></td><td></td><td>٥</td><td>Variation</td><td>0.465</td><td>0.302</td><td>0.574</td><td>0.715</td><td>0.547</td><td></td><td>1.552</td><td>1.403</td></t<>			٥	Variation	0.465	0.302	0.574	0.715	0.547		1.552	1.403
WR50				Do+2F	100	122	205	67	16		2	4
OO Canal 8 Pct75 444 346 921 219 24 50 35 62 WRSO 7-mile O Canal 9 N of Cases 2 <td></td> <td></td> <td>٥</td> <td>PUIZS</td> <td>190</td> <td>155</td> <td>383</td> <td>67</td> <td>10</td> <td></td> <td>3</td> <td>4</td>			٥	PUIZS	190	155	383	67	10		3	4
WR50			0	Do+7E	444	246	021	210	24		25	62
OO Canal 9 N of Cases 2 3			٥	PCC75	444	340	921	219	24	30	33	02
WR50			0	N of Cases	2	2	2	2	,	2	າ	2
OO Canal 9 Median 148 107 344 57 11 00 20 53 WR50 O 7-mile Canal 9 Arithmetic Mean 148 107 344 57 11 00 20 53 WR50 O 7-mile Ocanal 9 Variation 0.268 0.264 0.070 0.488 0.202 3 1.308 1.334 WR50 O Canal 9 Pct25 120 87 327 37 9 00 1 334 WR50 O 7-mile Ocanal 9 Pct75 176 127 361 76 12 00 38 104 WR60 OCANAL 10 Nof Cases 2			9	N OI Cases								
WR50			0	Madian	1.10	107	244	E 7	11		20	E 2
OO Canal 9 Arithmetic Mean 148 107 344 57 11 00 20 53 WR50 O 7-mile Ocanal 9 Variation 0.268 0.264 0.070 0.488 0.202 3 1.308 1.334 WR50 Ocanal 9 Pct25 120 87 327 37 9 00 1 3 WR50 Canal 9 Pct25 120 87 361 76 122 00 38 104 WR60 Canal 9 Pct75 176 127 361 76 122 00 38 104 WR60 WR60 Williamson On R R DO Williams			9	iviedian	148	107	344	57	11		20	55
WR50			0	Arithmatic Maan	1.10	107	244	E 7	11		20	E 2
OO Canal 9 Variation 0.268 0.264 0.070 0.488 0.202 3 1.308 1.314 WR50 7-mile 9 Pct25 120 87 327 37 9 00 1 3 WR50 7-mile 0 12 87 327 37 9 00 1 3 WR60 Canal 9 Pct75 176 127 361 76 12 00 38 104 WR60 Williamson On R 10 Nof Cases 2			9		148	107	344	57	11		20	55
WR50 O			0		0.260	0.264	0.070	0.400	0.202		1 200	1 224
OO Canal 9 Pct25 120 87 327 37 9 00 1 3 WR500 Canal 9 Pct75 176 127 361 76 122 00 38 104 WR600 Williamson OO R 10 N of Cases 2 <td< td=""><td></td><td></td><td>9</td><td>Variation</td><td>0.208</td><td>0.204</td><td>0.070</td><td>0.466</td><td>0.202</td><td></td><td>1.506</td><td>1.554</td></td<>			9	Variation	0.208	0.204	0.070	0.466	0.202		1.506	1.554
WR50 O Canal O			0	Do+2E	120	07	227	27	0		1	2
OO Canal 9 Pct75 176 127 361 76 12 00 38 104 WR60 Williamson R00 R 10 N of Cases 2			9	PUIZS	120	07	327	37	9			3
WR60 OW R 10 N of Cases 2			0	Do+7E	176	127	261	76	12		20	104
00 R 10 N of Cases 2 345 347 345 345 347 348 347 348			9	FCC73	170	127	301	70	12	00	36	104
WR60 Williamson 00 R 10 Median 79 63 166 22 15 50 113 237 WR60 Williamson 00 R 10 Arithmetic Mean 79 63 166 22 15 50 113 237 WR60 Williamson 00 Coefficient of 00 0.01 0.004 0.001 0.001 0.004 0.001 0.001 0.004 0.001 0.001 0.004 0.001 0.001 0.004 0.001 0.001 0.004 0.001 0.004 0.001 0.001 0.004 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 <			10	N of Cases	2	2	2	2	2	2	2	2
00 R 10 Median 79 63 166 22 15 50 113 237 WR60 Williamson ORR 10 Arithmetic Mean 79 63 166 22 15 50 113 237 WR60 Williamson ORR 10 Variation 0.072 0.022 0.107 0.514 0.244 0 0.013 0.048 WR60 Williamson ORR 10 Pct25 75 62 153 14 12 00 112 229 WR60 Williamson ORR 10 Pct75 83 64 178 30 17 00 114 245 WR60 Williamson ORR 11 Nof Cases 2 <			10	N OI Cases							2	
WR60 00 R Williamson R 10 Arithmetic Mean 79 63 166 22 15 50 113 237 WR60 Williamson O0 R Coefficient of O0 R 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01			10	Median	79	63	166	22	15		113	227
OO R 10 Arithmetic Mean 79 63 166 22 15 50 113 237 WR60 Williamson OR Coefficient of Variation 0.072 0.022 0.107 0.514 0.244 0 0.013 0.048 WR60 Williamson OR To Pct25 75 62 153 14 12 00 112 229 WR60 Williamson OR To Pct75 83 64 178 30 17 00 114 245 WR60 Williamson OR To Pct75 83 64 178 30 17 00 114 245 WR60 Williamson OR To Pct75 83 64 178 30 17 00 114 245 WR60 Williamson OR To Median 77 60 124 12 16 00 119 192 WR60 Williamson OR To Coefficient of Variation OR <th< td=""><td></td><td></td><td>10</td><td>Wicaiaii</td><td>73</td><td>03</td><td>100</td><td></td><td>13</td><td></td><td>113</td><td>237</td></th<>			10	Wicaiaii	73	03	100		13		113	237
WR60 (0) R Williamson (0) Variation Coefficient of (0) Variation O.072 (0.022) O.107 (0.514) O.244 (0) (0.013) O.013 (0.048) WR60 (0) R Williamson (0) R 10 Pct25 75 (2) RS 62 I53 I53 I4 I2 I2 I53 14 I2 ID IS			10	Arithmetic Mean	79	63	166	22	15		113	237
OO R 10 Variation 0.072 0.022 0.107 0.514 0.244 0 0.013 0.048 WR60 Williamson OO R 10 Pct25 75 62 153 14 12 00 112 229 WR60 Williamson OO R 10 Pct75 83 64 178 30 17 00 114 245 WR60 Williamson OO R 11 N of Cases 2 <t< td=""><td></td><td></td><td>10</td><td></td><td>7.5</td><td>- 03</td><td>100</td><td></td><td>13</td><td></td><td>113</td><td>237</td></t<>			10		7.5	- 03	100		13		113	237
WR60 ON R Williamson R 10 Pct25 75 Pct25 62 Pct25 153 Pct25 14 Pct25 343 Pct29 343 Pct29 348 Pct29 345 Pct29 <th< td=""><td></td><td></td><td>10</td><td></td><td>0.072</td><td>0.022</td><td>0 107</td><td>0.514</td><td>0 244</td><td></td><td>0.013</td><td>0.048</td></th<>			10		0.072	0.022	0 107	0.514	0 244		0.013	0.048
OO R 10 Pct25 75 62 153 14 12 00 112 229 WR60 Williamson OO R 10 Pct75 83 64 178 30 17 00 114 245 WR60 Williamson OO R 11 N of Cases 2			10	Variation	0.072	0.022	0.107	0.511	0.211		0.013	0.010
WR60 Williamson 00 R 10 Pct75 83 64 178 30 17 00 114 245 WR60 Williamson 00 R 11 N of Cases 2 <td></td> <td></td> <td>10</td> <td>Pct25</td> <td>75</td> <td>62</td> <td>153</td> <td>14</td> <td>12</td> <td></td> <td>112</td> <td>229</td>			10	Pct25	75	62	153	14	12		112	229
OO R 10 Pct75 83 64 178 30 17 00 114 245 WR60 Williamson 00 R 11 N of Cases 2 <td></td> <td></td> <td>10</td> <td>10023</td> <td>,3</td> <td>02</td> <td>133</td> <td></td> <td></td> <td></td> <td></td> <td></td>			10	10023	,3	02	133					
WR60 00 R Williamson 00 R 11 N of Cases 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			10	Pct75	83	64	178	30	17		114	245
00 R 11 N of Cases 2 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>2.0</td><td></td><td></td><td>- 00</td><td></td><td></td></t<>							2.0			- 00		
WR60 Williamson 00 R 11 Median 77 60 124 12 16 00 119 192 WR60 Williamson 00 R 11 Arithmetic Mean 77 60 124 12 16 00 119 192 WR60 Williamson 00 Coefficient of 000 0.000 0.024 0.080 0.061 0.137 8 0.033 0.038 WR60 Williamson 00 R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson 00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 00 R 12 N of Cases 1 <t< td=""><td></td><td></td><td>11</td><td>N of Cases</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></t<>			11	N of Cases	2	2	2	2	2	2	2	2
00 R 11 Median 77 60 124 12 16 00 119 192 WR60 Williamson 00 R 11 Arithmetic Mean 77 60 124 12 16 00 119 192 WR60 Williamson 00 Coefficient of 0009 0.024 0.080 0.061 0.137 8 0.033 0.038 WR60 Williamson 00 R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson 00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 00 R 12 N of Cases 1			·-									
WR60 ON R Williamson ON R 11 Arithmetic Mean 77 60 124 12 16 00 119 192 345 00 119 192 WR60 Williamson ON R Coefficient of ON R 0.009 0.004 0.080 0.061 0.137 8 0.033 0.038 0.033 0.038 WR60 Williamson ON R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson ON R 77 61 131 12 17 00 121 197 WR60 Williamson ON R 77 61 131 12 17 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11	Median	77	60	124	12	16		119	192
00 R 11 Arithmetic Mean 77 60 124 12 16 00 119 192 WR60 Williamson Coefficient of OO R 0.009 0.024 0.080 0.061 0.137 8 0.033 0.038 WR60 Williamson OO R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson OO R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson OO R 12 N of Cases 1<												
WR60 00 R Williamson 00 R Coefficient of Variation 0.009 0.024 0.080 0.061 0.137 8 0.033 0.038 WR60 WR60 R Williamson 00 R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson 00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 00 R 12 N of Cases 1 <			11	Arithmetic Mean	77	60	124	12	16		119	192
00 R 11 Variation 0.009 0.024 0.080 0.061 0.137 8 0.033 0.038 WR60 Williamson R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson 00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 00 R 12 N of Cases 1 <td></td> <td>Williamson</td> <td></td>		Williamson										
WR60 00 R Williamson 00 R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson 00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 00 R 12 N of Cases 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 WR60 Williamson 00 R 12 N of Cases 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11		0.009	0.024	0.080	0.061	0.137		0.033	0.038
00 R 11 Pct25 76 59 117 11 14 00 116 187 WR60 Williamson R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson N of Cases 1	WR60	Williamson								343		
WR60 OO R Williamson OO R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson OO R 12 N of Cases 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			11	Pct25	76	59	117	11	14		116	187
00 R 11 Pct75 77 61 131 12 17 00 121 197 WR60 Williamson 12 N of Cases 1	WR60	Williamson								347		
WR60 Williamson 00 R 12 N of Cases 1 1 1 1 1 1 1 1 1 1			11	Pct75	77	61	131	12	17		121	197
00 R 12 N of Cases 1 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>												
WR60 Williamson 340			12	N of Cases	1	1	1	1	1	1	1	1
	WR60	Williamson								340		
			12	Median	81	63	152	21	47	00	128	240

Statio n Code	Station Name	Mon th	Parameter	Total Phospho rus (μg/L)	Soluble Reactive Phospho rus (µg/L)	Total Nitrog en (μg/L)	NH4 Nitrog en (μg/L)	NO3+N O2 Nitroge n (μg/L)	Silic a (µg/ L)	Total Phospho rus Load (kg/d)	Total Nitrog en Load (kg/d)
WR60 00	Williamson R	12	Arithmetic Mean	81	63	152	21	47	340 00	128	240
WR60	Williamson	12	Coefficient of	01	03	152	21	47	1.00	120	240
00	R	12	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR60	Williamson										
00	R	12	Pct25								
WR60	Williamson	12	Do+7F								
00 WR60	R Williamson	12	Pct75								
00	R	1	N of Cases	2	2	2	2	2	2	2	2
WR60	Williamson			_	_	_	_	_	341	_	_
00	R	1	Median	75	62	178	12	50	00	141	351
WR60	Williamson	_				4=0			341		0-4
00 WR60	R Williamson	1	Arithmetic Mean Coefficient of	75	62	178	12	50	0.10	141	351
00	R	1	Variation	0.028	0.057	0.283	0.061	0.028	0.10	0.399	0.623
WR60	Williamson	_		0.000		0.200			315		0.000
00	R	1	Pct25	73	59	142	11	49	00	101	196
WR60	Williamson			_	_		_		367		_
00	R	1	Pct75	76	64	213	12	51	00	180	505
WR60 00	Williamson R	2	N of Cases	2	2	2	2	2	2	2	2
WR60	Williamson		IV OI Cases						348		
00	R	2	Median	74	64	141	12	20	50	123	236
WR60	Williamson								348		
00	R	2	Arithmetic Mean	74	64	141	12	20	50	123	236
WR60 00	Williamson R	2	Coefficient of Variation	0.087	0.022	0.075	0.553	0.181	0.01 4	0.063	0.052
WR60	Williamson		variation	0.007	0.022	0.073	0.555	0.101	345	0.003	0.032
00	R	2	Pct25	69	63	133	7	17	00	118	227
WR60	Williamson								352		
00	R	2	Pct75	78	65	148	16	22	00	129	244
WR60 00	Williamson R	3	N of Cases	3	3	3	3	3	3	3	3
WR60	Williamson	,	N OI Cases	<u> </u>	<u> </u>	3	3	3	289	3	3
00	R	3	Median	81	45	503	14	26	00	225	1489
WR60	Williamson								299		
00	R	3	Arithmetic Mean	80	51	450	22	25	00	220	1282
WR60 00	Williamson R	3	Coefficient of Variation	0.040	0.221	0.206	0.685	0.082	0.10	0.189	0.370
WR60	Williamson	,	variation	0.040	0.221	0.200	0.003	0.002	278	0.103	0.570
00	R	3	Pct25	77	44	383	13	24	50	189	927
WR60	Williamson				<u> </u>				322		
00	R Millianaan	3	Pct75	82	59	505	34	27	00	251	1586
WR60 00	Williamson R	4	N of Cases	2	2	2	2	2	2	2	2
WR60	Williamson	-	IN OI COSES						306		
00	R	4	Median	76	46	399	11	21	50	245	1283
WR60	Williamson								306		
00	R	4	Arithmetic Mean	76	46	399	11	21	50	245	1283
WR60	Williamson	4	Coefficient of	0.140	0.070	0.122	0.642	0.034	0.01	0.200	0 272
00	R	4	Variation	0.149	0.078	0.122	0.643	0.034		0.398	0.373

					Soluble			NO3+N			Total
				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio				Phospho	Phospho	Nitrog	Nitrog	Nitroge	а	Phospho	en
n	Station	Mon		rus	rus	en	en	n	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(µg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR60	Williamson								304		
00	R	4	Pct25	68	43	364	6	20	00	176	944
WR60	Williamson	_							309		
00	R M/III:	4	Pct75	84	48	433	16	21	00	314	1621
WR60 00	Williamson R	5	N of Cases	1	1	1	1	1	1	1	1
WR60	Williamson	<u> </u>	N OI Cases	1	1	1	1	1	337	1	1
00	R	5	Median	71	58	301	61	24	00	137	581
WR60	Williamson								337		
00	R	5	Arithmetic Mean	71	58	301	61	24	00	137	581
WR60	Williamson		Coefficient of						1.00		
00	R	5	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR60	Williamson										
00	R	5	Pct25								
WR60	Williamson										
00	R	5	Pct75								
WR60 00	Williamson	_	N of Cases	1	1	1	1	1	1	1	1
WR60	R Williamson	6	N of Cases	1	1	1	1	1	344	1	1
00	R	6	Median	84	61	185	3	4	00	111	245
WR60	Williamson		Wicalaii	0-1	01	103	<u> </u>	-	344	111	243
00	R	6	Arithmetic Mean	84	61	185	3	4	00	111	245
WR60	Williamson		Coefficient of						1.00		
00	R	6	Variation	1.000	1.000	1.000	1.000	1.000	0	1.000	1.000
WR60	Williamson										
00	R	6	Pct25								
WR60	Williamson										
00	R	6	Pct75								
WR60 00	Williamson	7	N of Coses	5	5	5	5	5	5	5	5
WR60	R Williamson	/	N of Cases	3	3	3	3	3	332	3	3
00	R	7	Median	81	68	170	10	8	00	106	216
WR60	Williamson		Wicalan	01	- 00	170	10		331	100	210
00	R	7	Arithmetic Mean	83	68	183	11	8	20	110	244
WR60	Williamson		Coefficient of						0.02		
00	R	7	Variation	0.047	0.058	0.196	0.342	0.500	4	0.115	0.278
WR60	Williamson								327		
00	R	7	Pct25	81	65	159	8	4	75	102	200
WR60	Williamson	_	DatZE	2-		201			336	44-	270
00 WR60	R Williamson	7	Pct75	87	71	204	14	11	75	115	279
00	R	8	N of Cases	3	3	3	3	3	3	3	3
WR60	Williamson	-	it or cases	,	<u> </u>		,	<u> </u>	334	, ,	,
00	R	8	Median	76	61	156	15	8	00	101	192
WR60	Williamson								353		
00	R	8	Arithmetic Mean	78	61	148	14	8	33	100	190
WR60	Williamson		Coefficient of		-				0.10	-	
00	R	8	Variation	0.063	0.009	0.120	0.375	0.541	5	0.033	0.126
WR60	Williamson				_	_	_		331		_
00	R	8	Pct25	75	61	135	10	5	00	98	172
WR60	Williamson	0	Dot 75	02	(3	100	17	43	380	100	200
00	R	8	Pct75	82	62	160	17	12	50	103	208

					Soluble			NO3+N			Total
				Total	Reactive	Total	NH4	02	Silic	Total	Nitrog
Statio				Phospho	Phospho	Nitrog	Nitrog	Nitroge	а	Phospho	en
n	Station	Mon		rus	rus	en	en	n	(μg/	rus Load	Load
Code	Name	th	Parameter	(μg/L)	(μg/L)	(μg/L)	(μg/L)	(μg/L)	L)	(kg/d)	(kg/d)
WR60	Williamson										
00	R	9	N of Cases	3	3	3	3	3	3	2	2
WR60	Williamson								337		
00	R	9	Median	74	64	127	9	4	00	93	170
WR60	Williamson								338		
00	R	9	Arithmetic Mean	74	63	128	13	5	67	93	170
WR60	Williamson		Coefficient of						0.01		
00	R	9	Variation	0.114	0.079	0.102	0.563	0.433	7	0.019	0.082
WR60	Williamson								334		
00	R	9	Pct25	68	60	119	9	4	75	91	160
WR60	Williamson								343		
00	R	9	Pct75	81	67	138	19	7	00	94	180

APPENDIX II: Station distributions of TP, SRP, TN, NH4-N, NO3+ NO2-N concentrations (µg/L) and TP and TN loading (kg/day) during the irrigation season of June-October

