

APPENDIX E
RESIDENTIAL EQUIVALENCY CALCULATIONS

City of Bonney Lake Summer Treatment Plant Loadings		
Description	Loadings/ Residential Equivalent (RE) 2 Year 7-06 thr 6-08	3 Year 7-05 thru 6-08
Average Flow	191	196
gpd/RE		
Maximum Month Flow	270	331
gpd/RE		
Average BOD5	0.38	0.39
LBS/RE		
Maximum Month BOD5	0.44	0.44
LBS/RE		
Average TSS	0.42	0.43
LBS/RE		
Maximum Month TSS	0.49	0.57
LBS/RE		

Revised Numbers based on Removal of Falling Water Accounts			
Description	2-Year Avg RE's	2-Year Avg RE's (less Falling Water)	
Average Flow	6,145	6,030	
gpd/RE	1,176,259	195	
Maximum Month Flow	6,145	6,030	
gpd/RE	1,658,282	275	
Average BOD5	6,145	6,030	
LBS/RE	2,360	0.39	
Maximum Month BOD5	6,145	6,030	
LBS/RE	2,677	0.44	
Average TSS	6,145	6,030	
LBS/RE	2,611	0.43	
Maximum Month TSS	6,145	6,030	
LBS/RE	3,018	0.50	

Peak Day/Peak Month Factor* 1.59
 *Dec 2007, reviewed treatment plant reports from September 07 to June 08. Bonney Lake Only

City of Bonney Lake
 Summer Treatment Plant(STP) Capacity in Residential Equivalents(RE)

Description	Bonney Lake STP Capacity (Bonney Lake June 2008 Sewer Residential Equivalents 6.317)		Phase II Capacity		Current Capacity in RE		Revised Capacity in RE	
	Current SPT Capacity	Based on 2 Yr Loadings	Based on 3 Yr Loadings	Based on 2 Yr Loadings	Based on 2 Yr Loadings	Based on 3 Yr Loadings	Based on 2 Yr Loadings	Based on 2 Yr Loadings
Average Flow	2	8,939	8,770	2	11,911	11,659	11,688	
MGD								
Maximum Month Flow	2	8,504	6,925	3	11,302	9,203	11,091	
MGD								
Average BOD5	2,963	7,714	7,634	3,847	10,016	9,912	9,828	
LBS/Day								
Maximum Month BOD5	NA	NA	NA	4,500	10,329	10,329	10,136	
LBS/Day								
Average TSS	2,938	6,912	6,832	3,835	9,024	8,919	8,855	
LBS/Day								
Maximum Month TSS	NA	NA	NA	4,500	9,161	7,876	8,990	
Lbs/Day								

Date: August 4, 2008

TO: Geoff Dillard

From: Ron Heinke

Subject: Bonney Lake Capacity at Sumner Wastewater Treatment Plant

The current capacity of the Sumner Plant and the Bonney Lake Capacity are as follows:

Current Capacity:

Description	Plant Capacity	Bonney Lake Capacity
Average Monthly Flow	3.43 MGD	1.715 MGD
Maximum Month Flow	4.59 MGD	2.295 MGD
BOD 5	5925 #/Day	2962.5 #/Day
TSS	5875 #/Day	2937.5 #/Day

Bonney Lake Loading based on 3 year records (7-05 thru 6-08) at the Sumner Plant are as follows:

Average Monthly Flow	196 gpd/RE
Maximum Month Flow	331 gpd/RE
BOD 5	.39 #/day/RE
TSS	.43 #/Day/RE

Based on these existing 3 year loadings the current Bonney Lake Capacity in RE's is as Follows:

Average Monthly Flow	8,770 RE
Maximum Month Flow	6,925 RE
BOD 5	7.634 RE
TSS	6,832 RE

Bonney Lake Loading based on 2 year records (7-06 thru 6-08) at the Sumner Plant are as follows:

Average Monthly Flow	191 gpd/RE
Maximum Month Flow	270 gpd/RE

BOD 5	.38 #/day/RE
TSS	.42 #/Day/RE

Based on these existing 3 year loadings the current Bonney Lake Capacity in RE's is as Follows:

Average Monthly Flow	8,959 RE
Maximum Month Flow	8,504 RE
BOD 5	7.714 RE
TSS	6,912 RE

The connected Residential Equivalents in June 2008 was 6,317, leaving a minimum capacity available for addition connections.

A similar evaluation based on the proposed expansion follows:

Proposed Expanded Capacity:

Description	Plant Capacity	Bonney Lake Capacity
Average Monthly Flow	4.56 MGD	2.28 MGD
Maximum Month Flow	6.1 MGD	3.05 MGD
BOD 5	7,693 #/Day	3,846.5 #/Day
TSS	7,670 #/Day	3,835 #/Day

Bonney Lake Loading based on 2 year records (7-05 thru 6-08) at the Sumner Plant are as follows:

Average Monthly Flow	196 gpd/RE
Maximum Month Flow	331 gpd/RE
BOD 5	.39 #/day/RE
TSS	.43 #/Day/RE

Based on these existing 2 year loadings the current Bonney Lake Capacity in RE's is as Follows:

Average Monthly Flow	11,659 RE
Maximum Month Flow	9,203 RE
BOD 5	9,912 RE

TSS	8,919 RE
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Bonney Lake Loading based on 2 year records (7-06 thru 6-08) at the Sumner Plant are as follows:

Average Monthly Flow	191 gpd/RE
Maximum Month Flow	270 gpd/RE
BOD 5	.38 #/day/RE
TSS	.42 #/Day/RE

Based on these existing 2 year loadings the current Bonney Lake Capacity in RE's is as Follows:

Average Monthly Flow	11,911 RE
Maximum Month Flow	11,302 RE
BOD 5	10,016 RE
TSS	9,024 RE

Both BOD and TSS limit the RE that can be accommodated currently and after the proposed expansion. If the two statistics are valid then the City has current capacity for 595 RE's and 2,707 after the expansion. However, I believe the City contract does allow loadings upto 55% of Plant capacity if the additional capacity is not in use by Sumner.

