Nitrogen Load Allocation Analysis

2009

	current annual load	% Reduction	Annual load Allocation	Rounded
nurseries	507	23.1%	389.9	390
ag fields	655	23.1%	503.7	504
orchards	790	23.1%	607.5	607
park	7	25.0%	5.3	5
residential	650	22.0%	507.0	507
urban	53	25.0%	39.8	40
septic disposal	200	0.0%	200.0	200
air depo.	40	0.0%	40.0	40
Caltrans	153	23.1%	117.7	118
UnID'd/Future PS			33	33
Total NPS & PS loads	3055	20.0%	2443.7	2444
			Target WLA & Load Allocation	2444

2013

	current annual load	% Reduction	Annual load Allocation	Rounded
nurseries	507	41.1%	298.6	299
ag fields	655	41.1%	385.8	386
orchards	790	41.1%	465.3	465
park	7	50.0%	3.5	3
residential	650	40.0%	390.0	390
urban	53	50.0%	26.5	27
septic disposal	200	50.0%	100.0	100
air depo.	40	0.0%	40.0	40
Caltrans	153	41.1%	90	90
Unid'd/Future PS			33.0	33
Total NPS & PS loads	3055	40.0%	1832.8	1833
			Target WLA & Load Allocation	1833

2017

	current annual load	% Reduction	Annual load Allocation	Rounded
nurseries	507	61.4%	195.7	196
ag fields	655	61.4%	252.8	253
orchards	790	61.4%	304.9	305
park	7	50.0%	3.5	3
residential	650	60.0%	260	260
urban	53	50.0%	27	27
septic disposal	200	77.0%	46	46
air depo.	40	0.0%	40	40
Caltrans	153	61.4%	59	59
Unid'd/Future PS			33	33
Total NPS & PS loads	3055	60.0%	1221.5	1222
			Target WLA & Load Allocation	1222

Nitrogen Load Allocation Analysis

Final Target (1.0 mg/L) Load Reduction				
2021	current annual load	% Reduction	Annual load Allocation	Rounded
nurseries	507	77.0%	116.6	116
ag fields	655	77.0%	150.7	151
orchards	790	77.0%	181.7	182
park	7	50.0%	3.5	3
residential	650	77.0%	149.5	149
urban	53	50.0%	26.5	27
septic disposal	200	77.0%	46.0	46
air depo.	40	0.0%	40.0	40
Caltrans	153	68.0%	49	49
UnID'd/Future PS			33	33
Total NPS & PS loads	3055	74.0%	796.4	796
Background	779		Target WLA & Load Allocation	796
Total RC Load Estimate	3834			

Shading indicates that the load reduction is at its maximum reduction/allocation.

Rationale for Allocation Decisions for Final Target TMDLs

1. The Source's ability to generate a load. This is based on coefficients/deposition rates and the land area. See Tables 1 and 2 below.

2. Proximity of Land Uses with high phosphorus concentrations in the creek. Monitoring data (Table B-2, Figure 7-2) and land use map (Figure A-2) were used.

3. The concentrations are high for the most part throughout the watershed. All tributaries in the lower watershed, draining off of residential and orchard land uses are high. The high concentrations in the lower reaches are likely influenced by the tributaries. WG-4 is high in the winter and spring months. The sources above WG-4 are agricultural fields and Rainbow Valley. Rainbow Glen Tributary does not appear to be influencing RC. Jubilee has moderate concentrations (6 ppm) and appears to be influenced by the orchard immediately upstream of it and potentially the Conservation Camp and other uses in the upper watershed.

4. Ag, Orch, Nurs., and Res. - have highest potential to generate load based on (coefficients * area), and are identified as sources in high concentration areas.

5. Ag, Orch, Nurs. - fertilizer use and irrigation inherent to the type of business. However, it is feasible to exercise effective control over fertilizer and irrigation application and runoff.

6. Residential areas are expected to have landscaping, private orchards, and large animals (e.g., horses, llamas).

7. Urban: small in area with highest coefficient. Large reductions will show small returns. However, urban uses can feasibly take measures to better manage and reduce runoff from properties.

8. Air Deposition is very small and not easily controllable from within watershed.

9. Load from non-functioning septic tank disposal systems (representing 42% of all systems) are responsible for approx. half of the total load to groundwater from septic tank disposal systems. While only 200 kg/yr is estimated to get into the creek, they will continue to be sources to groundwater and therefore the creek. Reduction of load will be phased in over 3 phase-in period and the issue of non-functioning systems should be completely resolved by the end of the TMDL compliance.

10. Park (assume to be a maintained park): actions can be taken to reduce nutrients and over-irrigation and control runoff and erosion. Total reductions should be made at first compliance point because more than 4 years of phasing is unnecessary.

11. Urban and Caltrans load reductions are phased in over the first two phase periods.

12. A placeholder of 2% of the TMDL (1,658 kg N/yr) is in place for unidentified and future point sources.

13. Land designated as "Preserve" is undeveloped/open land.

Nitrogen Reduction Time Schedule		Final WLA + LA Target:		796 kg/yr
completion date	load (kg/yr)	Percent reduction		compliance time
current[1]	3055			
2009	2444	0.2	20 percent	4 years
2013	1833	0.4	20 percent	4 years
2017	1222	0.6	20 percent	4 years
2021	796	0.74	14 percent	4 years
				16 years

[1] Current load estimate of nonpoint and point sources in the watershed (exludes background).

Table 1 - Current TN Load Estimates

	rank (lo - hi)	original loads
park	1	7
urban	2	53
air depo.	3	40
septic	8	200
nurseries	4	507
residential	5	650
ag fields	6	655
orchards	7	790

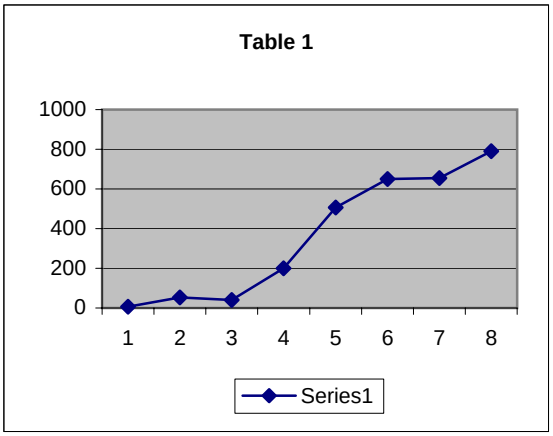

Table 2 - TN Land Use Coefficients

LU (hectares)	low to high	N coefficient
orchards (316)	1	2.5
residential (250)	2	2.6
park (2)	3	3.4
nurseries (137)	4	3.7
ag fields (177)	5	3.7
urban (14)	6	3.8