Ammonia Toxicity Analysis
for
Waste Load Allocation Development (Updated 2013)

Date: 4/10/2017
Facility: Ray City WPCP
NPDES Permit Number: GA0033553
Receiving Stream: Cat Creek to the Withlacoochee River
Engineer: Lucy Sun
Comments: Reissuance

Reissuance

Stream and Facility Data:

Background Stream pH (standard units):	6.0		RV_09_1657, 58, 59
Effluent pH (standard units):	8.5		
Final Stream pH (standard units):	6.13		
Stream Temperature (Celsius):	27.0		USGS 02318700
30Q3 Streamflow (cfs):	0.43		30Q3
Stream background concentration (Total NH3-N, mg/L):	0.04		
Facility Discharge (MGD/cfs):	0.1	0.15	
Total Combined Flow (cfs):	0.58		

Effluent concentration (Total NH3-N, mg/L) = 5.2 — No limit. Recommend limit 5.2 mg/L

If 5.19 is greater than 17.4 mg/L, use 17.4 mg/L in WLA modeling.

Chronic Criterion based on Villosa iris (Rainbow mussel):

Instream CCC = criterion continuous concentration (chronic criterion):

$$CCC = 0.8876 \times (0.0278 / (1 + 10^{(7.688 - pH)}) + 1.1994 / (1 + 10^{(pH - 7.688)})) \times (2.126 \times 10^{0.028 \times (20 - MAX(T,7))})$$

Allowable instream concentration CCC (Total NH3-N, mg/l) = 1.40

Based on National Criterion For Ammonia In Fresh Water As Revised In Year 2013

Source: Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater 2013, U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, EPA-822-R-13-001. April 2013. Washington, D.C.