TRC TOXICITY CALCULATIONS

Facility Name: Saddle Ranch Subdivision WWTP

Permit No.:   AR0053210

Is the initial receiving stream one of the following rivers?

[green box] Type "X", if yes.	Mississippi River Arkansas River Red River White River below confl. with Black River Ouachita River below confl. with Little Missouri River

All calculations based on the Mass-Balance Equation:

$(C_d \times Q_d) = (C_u \times [Q_u \times Z]) + (C_e \times Q_e)$

where: C_d = downstream pollutant concentration (mg/l)
           [aka Instream Waste Concentration (IWC)]
        Q_d = downstream flow (cfs) = $(Q_u \times Z) + Q_e$
        C_e = effluent pollutant concentration (mg/l)
        Q_e = effluent flow (cfs)
        C_u = upstream pollutant concentration (mg/l)
        Q_u = upstream flow (cfs)

        Z = MZ - Mixing Zone - % of Upstream Flow (Chronic)
        or MZ x ZID [ZID - Zone of Initial Dilution - % of Mixing Zone (Acute)]

Toxicity-based Effluent Limits (C_d = EPA "Gold Book" WQ Criteria for TRC)

$C_e = (C_d \times Q_d) - (C_u \times [Q_u \times Z]) / Q_e$

	Q_u (cfs)	C_u (mg/l)	Q_e (MGD)	Z (Chronic) ------- (Acute)	Q_e (cfs)	C_d EPA "Gold Book" (mg/l)		MZ Flow ------- ZID Flow	C_e Max. Allowable Effluent TRC Conc. (mg/l)
Chronic	0.00	0.00	0.05	67%	0.08	0.011		0.00	**0.011**
Acute				33%		0.019		0.00	**0.019**

Mixing Zone = 25% of critical upstream flow for large streams (7Q10 > 100 cfs)
             = 67% of critical upstream flow for small streams (7Q10 < 100 cfs)

      ZID = 50% of mixing zone for all streams (except as noted below)
           = 25% of mixing zone for Mississippi River, Arkansas River, Red River
                 White River below confluence with Black River,
                 and Ouachita River below confluence with Little Missouri River

[green box]	user entered value
[yellow box]	calculated value