
APPENDIX A: SOURCE ANALYSIS CALCULATIONS

Methodology for Wastewater Drains/Reaches Load

Regional Board staff estimated the amount of trash in the seven main drains/reaches in Mexicali that empty into the New River or its tributaries on the Mexican side of the International Boundary (Figueroa-Acevedo, personal communication 2004). Wastewater drain load for volume of trash was estimated using the following equation for each drain:

$$\text{Volume of trash} = (\text{Length} \times \text{Width} \times \text{Depth}) \times \text{Number of locations where trash accumulated}$$

Where:

Volume of trash	=	Volume of trash, in cubic feet
Length*	=	Estimated length of accumulated trash along the drain, in feet
Width**	=	Estimated width of accumulated trash on the slope of the drain, in feet
Depth**	=	Estimated depth of accumulated trash, in feet

* Estimated using vehicle odometer

** Estimated from field observations

Wind and urban runoff were included implicitly in calculations for drains/reaches because data consisted of direct observation of accumulated trash, and did not distinguish between trash deposited by people, wind, or runoff.

Tula West Drain

Location: From Rio Santa Cruz Street to San Luis Rio Colorado (SLRC) Highway

Description: Originates about 20 miles east of Mexicali. Carries agricultural drainage. Flows through Mexicali industrial and residential areas, discharging into the Mexicali Drain. Encased in a box culvert as it enters the metropolitan area from Tecnológico de Mexicali to Rio Santa Cruz Street. Receives trash upstream of the Instituto Tecnológico de Mexicali, but to a lesser degree. Consists of open earthen channel immediately downstream of the encasement/ San Luis Rio Colorado (SLRC) Highway, where drain is constantly littered.

Primary Trash: Plastic bottles, styrofoam, paper, car tires, household appliances, furniture, animal carcasses, paint containers, oil cans, dismantled cars.

Calculations: $\text{Volume of trash} = (120 \text{ feet} \times 20 \text{ feet} \times 1 \text{ foot}) \times 12 = 28,800 \text{ ft}^3$

Mexico Drain

Location: From Gonzalez-Ortega Outfall to Mexicali Drain

Description: Carries about 3 million gallons per day (MGD) of partially treated water from Gonzalez-Ortega Lagoons, and 1 to 2 MGD of Mexicali Valley agricultural

discharges. Tributary to Mexicali Drain. Bulky trash becomes trapped at a culvert located upstream of the intersection with the Mexicali Drain.

Primary Trash: Plastic containers, styrofoam, construction debris, household appliances, furniture, tires.

Calculations: Volume of trash = (100 feet x 20 feet x 1 foot) x 1 = 2,000 ft³

Mexicali Drain

Location: From Mexico Drain to Lake Xochimilco

Description: Crosses through two land disposal sites used for clandestine dumping. Trash is deposited along drain banks and bottom of drain. Abundant trash occurs from the intersection with the Mexico Drain downstream to Lake Xochimilco.

Primary Trash: Plastic containers, styrofoam, construction debris, household appliances, furniture, tires.

Calculations: Volume of trash = (100 feet x 20 feet x 1 foot) x 8 = 16,000 ft³

Ken-Mex Drain

Location: From Ken-Mex Outfall to Mexicali Drain

Description: Located behind Ken-Mex factory, a few hundred yards east of Pumping Plant No. 4. Transports factory effluent. Almost completely filled with trash.

Primary Trash: Not described

Calculations: Volume of trash = (500 feet x 10 feet x 5 feet) x 1 = 25,000 ft³

Puente Reforma

Location: New River from Reforma Avenue to International Boundary

Description: Encased below ground from Lazaro Cardenas Avenue to Reforma Avenue (approximately ½-mile south of International Boundary). Consists of open earthen channel downstream of Reforma Avenue, where illegal border crossings are frequent.

Primary Trash: Related to illegal border crossings. Flotation devices (e.g., inner tubes, styrofoam, wooden boards, plastic containers), trash bags.

Calculations: Volume of trash = unknown

Del Norte Drain

Location: Entire drain length

TMDL and Implementation Plan for Trash in the New River at the International Boundary

Description: Transports mostly Mexicali Valley agricultural runoff, with some industrial wastes (e.g., slaughterhouse) and raw sewage from squatters along drain banks upstream of San Felipe Highway. Heavily littered.

Primary Trash: Not described

Calculations: Volume of trash = (1,320 feet x 15 feet x 2 feet) x 1 = 39,600 ft³

International Drain

Location: Entire drain length

Description: Transports wastewater from Zaragoza Lagoons, newly-constructed power plants west of the Lagoons, SuKarne slaughterhouse, and agricultural drainage from fields west of Mexicali. Below ground for 1.7 miles in Mexicali residential areas (from Colonia Baja California between the streets of Punta Bandera and Bahi'a Lucerna, to the International Boundary). Upstream of this area, the drain is an open channel littered from nearby residential developments.

Primary Trash: Not described

Calculations: Volume of trash = (40 feet x 20 feet x 1 foot) x 1 = 800 ft³