The Texas Commission on Environmental Quality (TCEQ) has recently completed a study to assess ambient water and/or sediment toxicity in seven impaired waterbodies throughout Texas. These include Alligator Bayou (Segment 782A - water and sediment), Vince Bayou (107A - sediment), Bryan Municipal Lake (219A - sediment), Finfeather Lake (1209B - sediment), Arroyo Colorado Tidal (2201 - sediment), Rio Grande below Amistad Reservoir (2304 - water), and Rio Grande below Amistad Reservoir (2306 - water). The study employed established chronic bioassay tests for water and the use of whole sediment toxicity tests. In areas where toxicity was found to exist, the cause of the toxicity was investigated through the use of Toxicity Identification Evaluation (TIE) procedures. Toxicity (lethal and/or sublethal) effects were observed in water and/or sediment for four of the five waterbodies assessed. This study resulted in the removal of our waterbody from the list of impaired waterbodies (303(d) List). TIEs conducted on water and sediment provided varying results, however, in many instances additional tests were needed to adequately determine toxicity sources. The results of this study have also provided information concerning the methods and procedures used for monitoring and assessing ambient toxicity in water and sediment. This has led to the development of several recommendations for methodologies to be used in future assessments when considering ambient toxicity data and addressing narrative toxicity criteria.

**Methods**

**Project Assessment Framework**

- Toxicity tests and toxicity identification evaluations for Segments 1209A&B, 2304, 2306, and 702A were performed by TRAC Laboratories, Pensacola FL.
- Toxicity tests and toxicity identification evaluations for Segments 2201 and 1007A were performed by TRAC Laboratories, Pensacola FL.

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**Results**

**Bryan Municipal and Finfeather Lake**

Results and Toxicity Identification

Using whole sediment test methods, toxicity test results indicated that the sediment in Amistad Reservoir was significantly toxic to fish. Most samples collected were toxic during TIE Phase I and Phase III. Toxins associated with both the water and sediment were considered to be the cause of the observed toxicity. Chemical analyses of porewaters show elevated levels of copper.

**Alligator Bayou**

Results and Toxicity Identification

Significant sediment toxicity was found to occur at Station 14368 during the first two sampling events. From April 29, 2001, through April 24, 2002, nine sampling events were conducted at Stations 13228 and 13229. The EPA Toxicity Identification Evaluation (TIE) procedures were conducted on all dates. Significant sediments were found to be toxic to the invertebrate species C. tentans. The sediment toxicity test results indicate significant levels of toxicity to bottom invertebrates. Initial analyses appear to indicate that a metal or complex of metals is responsible for the toxicity. Further TIE procedures should be performed to identify the metals responsible, and TMDLs should be calculated.

**Rio Grande above Amistad Reservoir**

Results and Toxicity Identification

Throughout the nine sampling events at three stations (13196, 15817, 14397) during the same time frame. No lethal toxicity was observed at any site. Sublethally affected invertebrates were observed at one of the stations (13196). Significant sublethally affected invertebrates were observed at all of the stations within this study. A total of sixty toxicity identification evaluations were conducted on all of the samples. Segment Recommendations:

- Toxicity tests conducted on fish and invertebrates using water samples from Segment 2306 were inconclusive. The interpretation of toxicity responses is complicated by low conditions at the time of sampling. Additional toxicity tests are required to fully assess the presence and causes of toxicity in this segment.

**Arroyo Colorado Tidal**

Results and Toxicity Identification

Ten sediment samples were collected from three stations over a 15-month period. None of the samples tested for any of the bioassays tested toxic. In addition, the sediment bioassays did not exceed the guidelines. The data suggest that this segment is not impaired by ambient sediment toxicity.

**Vince Bayou**

Results and Toxicity Identification

Significant sediment toxicity was found to occur at Station 1071B during the first two sampling events. Toxicity identification evaluation (TIE) procedures were conducted on all dates. Significant sediments were found to be toxic to the invertebrate species C. tentans. Significant sediment toxicity test results indicate significant levels of toxicity to bottom invertebrates. Initial analyses appear to indicate that a metal or complex of metals is responsible for the toxicity. Further TIE procedures should be performed to identify the metals responsible, and TMDLs should be calculated.

**Segment Recommendations:***

- Toxicity tests conducted on fish and invertebrates using water samples from Segment 2306 were inconclusive. The interpretation of toxicity responses is complicated by low conditions at the time of sampling. Additional toxicity tests are required to fully assess the presence and causes of toxicity in this segment.

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