SUMMARY AND CONCLUSION

From 1986 to 2018, data pertaining to watershed characteristics, site-specific physical habitat, physicochemical water quality and biological characteristics of 114 least disturbed streams have been collected and summarized in this report. Since the release of Bayer et al. 1992, a total of 101 sampling events were conducted across 11 ecoregions (Appendix A-1). Additionally, 42 historic least disturbed streams (i.e., streams sampled from 1986 to 1990 in Bayer et al. 1992) were revisited to gain a better understanding of variation among least disturbed streams and patterns within each biological aggregated ecoregion. Twenty-nine streams were sampled in Bayer et al. 1992 but were not revisited. These streams are still included in this report; however, it is important to note that their status as least disturbed might have changed. Several of these streams, specifically in Central Texas, have experienced high levels of development that have increased the combined land cover for developed land use (open space and low, medium, and high intensity) to proportions that are significantly higher than they were when sites were first sampled in Bayer et al. 1992. These sites should be revisited to assess their status as least disturbed streams.

Data from historical streams provide information for identifying trends over time. The major purpose of the aquatic ecoregion project and least disturbed streams project is to establish baselines for the development of indices designed to evaluate aquatic life use established in the Texas Surface Water Quality Standards. Data collected through these projects and others have established the regionalized fish index of biotic integrity for every ecoregion in Texas as well as the regionalized macrobenthic index of biotic integrity for all ecoregions except Ecoregion 31 and aggregated Ecoregions 25 and 26. Future phases of this study will aim to collect data to regionalize the final macrobenthic indices for Ecoregion 31 and aggregated Ecoregions 25 and 26 and refine regionalized fish and macrobenthic indices if necessary. There is a need to revisit a subset of least disturbed streams to evaluate conditions overtime and detect any changes in biological communities, especially as it pertains to shifting environmental conditions.

This study provides a list of least disturbed streams for each of the Texas Ecoregions that have been evaluated as being appropriate reference streams based on having little urban and industrial development, little high intensity agriculture, no major point sources of pollution, no atypical sources of non-point source pollution, and are not channelized or have no other major physical habitat modifications. Streams such as Croton Creek, North Fork of the Wichita River, and Palo Duro Creek meet these physical characteristics of least disturbed streams but do not support biological communities to attain the presumed high aquatic life use due to natural conditions. There is still a need to adjust site-specific aquatic life uses and supporting criteria for some streams, especially in Ecoregion 26. Ecoregion habitat attributes may be found in Appendix B, water quality parameters may be found in Appendix C, and a list of fish and macrobenthic species collected at each site are summarized in Appendix D and Appendix E, respectively.

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