TimOsting
PE, D.WRE, CFM

Principal Engineer / COO

512/627-1563

tosting@aquastrategies.com

aquastrategies.com

Tim Osting is a professional engineer working in the field and office on water resources since 1996. Specializing in site-specific hydrology, hydraulics, water quality and environmental flows, Tim consults on complex environmental projects involving watersheds, wetlands, rivers, lakes and coasts. Tim measures flow, water levels, bathymetry and water quality. Tim develops solutions to environmental systems problems using grounded field data. Tim is experienced modeling hydrology, hydraulics, hydrodynamics, water quality, water quantity and sediments.

Personal & Professional Profile

Years of Experience 23

Education

2007
MSE, Environmental and Water Resources Eng., University of Texas at Austin

1998
BSE, Civil Eng., University of Texas at Austin

Professional Registrations/Affiliations

Professional Engineer, Texas, No. 91931

Diplomate, Water Resources Engineer, No. 564, AAWRE

Certified Floodplain Manager, No. 3492-18N

Member American Society of Civil Engineers

Professional History

2014 – PRESENT
Principal Engineer / COO – Aqua Strategies Inc.

2005 – 2014
Managing Engineer, Water Resources – Espey Consultants dba RPS, Austin, TX

2001 – 2005 (1996-1998)
Team Leader, Instream Flows – Texas Water Development Board

1998 – 2001
Designer – Steger Bizzell Engineering Inc.

Software Experience

Hydrology, Water Quality, and Hydrodynamic Modeling - HSPF, SWAT, SWMM, WAM/WRAP, CE-QUAL-W2, EPD-RIV1, WASP, EFDC, CMS-FLOW, CORMIX, QUAL2E, QUAL2K, QUALTX, River2D, SMS, RMA-2, HEC-2/RAS (sed, wq, 2D), HEC-1/HMS

Programming and GIS - FORTRAN, C++, vb, python, gawk, Object PASCAL, SQL Arc/ESRI, GSLIB, QGIS

Specialized Training

2021 COMRIX advanced training II MixZon Inc with Dr. Robert Doneker
2019 TWRI Urban Riparian Restoration
2016 WAM/WRAP training with Richard Hoffpauir II SWAT training with SSL, Ragavan Srinivasan
2014 HEC-RAS Sediment with Tony Thomas/Stanford Gibson (HEC)
2012 HEC-EFM, RPT, RAS (wq) with John Hickey/Mark Jensen (HEC)
2003 Trimble GPS Post-processed and RTK surveying II Natural Rivers: Mechanisms, Morphology and Mgmt, R.Hey

Recent Project Experience
Water Quality

2020 – 2021 - Ongoing

Water Quality Modeling, field survey, and Antidegradation Expert Testimony for contested TPDES discharge permit application. Private client.

For a TPDES permit and pending contested case hearing, Tim is measuring onsite data, evaluating TCEQ modeling, and providing applicant support for a proposed wastewater treatment plant discharge into a stream.

Water Quality Modeling, field survey, and Antidegradation Expert Testimony for contested TPDES discharge permit application. Braun and Gresham, Carson.

Expert testimony. For a TPDES permit contested case hearing, Tim measured onsite data, evaluated TCEQ CSTR model, conducted additional water quality modeling, and developed a report and prefile testimony to support a protest of a proposed wastewater treatment plant discharge into a stream.

2019 - Ongoing

Water quality on-site sampling and BMP analysis for a large resort and golf course. Private Client, Oklahoma
Project Manager. Tim is managing a project to install rainfall-activated automated water quality samplers, analyze laboratory data and assess concentrations in runoff for a private client considering conditions on over 1300 acres.

Texas Land Application Permit (TLAP) for industrial water discharge. Arroyo Environmental, Texas Foam
Project Manager. Tim is designing an irrigation system land application site for discharge of low-concentration cooling tower and boiler blowdown industrial wastewater near Bastrop, TX.

2019-CURRENT (Ongoing), 2013 – 2014, 2015

Panther Island/Trinity River Vision, CE-QUALW2 Water Quality Modeling. CDM-Smith, TRWD
Project Manager. Tim developed a CE-QUAL-W2 hydrodynamic and water quality model of the proposed Trinity River Vision project site. The site, and the model, includes a flood bypass channel, three dynamic flood gates, canals, bulkheads and re-circulation devices on the Trinity River in downtown Fort Worth, TX, including the future flood bypass channel to be constructed by USACE. The CE-QUAL-W2 model will be used to identify potential water quality issues and solutions, including gate and lake management strategies. Tim also participated in initial development of SWMM stormwater watershed models, and has developed a python tool to link the SWMM output to CE-QUAL-W2 receiving water model to create a comprehensive tool to evaluate the proposed system. Currently Tim is refining existing conditions calibration for a 5 year simulation, creating automated post-processing tools to visualize outputs, and making the model easier to use for TRWD for assessing future discharges into the system.

2015-2018

TPDES permit and CORMIX modeling for reverse osmosis reject water. Alan Plummer Al, Lloyd-Gosselink, City of Abilene
Technical Consultant. Tim developed a CORMIX model and designed a diffuser to discharge reverse osmosis reject water into a lake. The COMRIX modeling and diffuser design report was used for the TPDES permit that will be issued by TCEQ.

2015-2016

New Braunfels. Antidegradation Expert Testimony for contested TPDES discharge permit application. Lloyd-Gosselink, New Braunfels Utilities.
Expert testimony. For a TPDES permit contested case hearing, Tim developed a new time-series water quality model of the Guadalupe River to support the applicant's anti-degradation assessment. The case related to an amended TPDES discharge permit by NBU where the amount, limits and discharge location into the Guadalupe River would be changing. The time-varying water quality model assessed nutrient, algae, temperature and dissolved oxygen conditions before and after proposed modifications to the waste water treatment plant. Tim developed pre-file testimony and testified as an expert for both water quality and hydrology. The hearing ended favorably for NBU.

2017

Landa Lake Dissolved Oxygen Management Plan. BIO-WEST, City of New Braunfels
Technical Consultant. Tim is developing a Dissolved Oxygen (DO) Management Plan for Landa Lake. This is in support of the Edwards Aquifer Habitat Conservation Plan which supports protection of spring-dependent endangered species. This project evaluated use of aerators for the lake, resulted in development of a model considering algal and macrophyte conditions in the lake, analyzed historical data.

2016-current

Water quality sampling program for Lake of the Arbuckles Watershed Association. Chickasaw Nation, Oklahoma
Project Manager. Tim is managing a project to initiate a water quality sampling program with the Chickasaw Nation and LAWA, and coordinating sampling with Oklahoma Water Resources Board (OWRB). The sampling will set a baseline condition and then later as watershed practices are enabled the sampling will assess for surface water quality changes. The project is sampling in the streams and in the lake that is currently impaired for DO and Chl-*a*. This project is a continuation of the development of a Bureau of Reclamation Watershed Protection Plan. The HAWQS and SWAT model system was used to identify priority sub-watersheds based upon nitrogen, phosphorus and sediment loadings.

2014-2016

Water quality modeling and BMP evaluation for 319 San Marcos Watershed Protection Plan. Meadows Center for Water and Environment at Texas State University.
Project Manager. Tim provided technical assistance for this 319 WPP program which is designed to prevent a TMDL and I-Plan from being necessary. Tim analyzed hydrology conditions through an HSPF model, analyzed water quality conditions through a custom routing model and performed uncertainty analysis on model results. Tim coordinated with

TCEQ 319 staff to complete the water quality portions of the project, along with TSU staff.

2012, 2016

TCEQ, TWDB and BRA, Development of Water Quality Models, Brazos, Navasota and Little Rivers. For the Texas Instream Flow Program, Mr. Osting managed a multi-disciplinary team to first determine water quality threshold values for ecological processes and aquatic organisms, then to develop EPD-RIV1 and QUAL2K water quality models for the Brazos River, Navasota River and Little River. Existing historical data and model predictions were compared to state water quality standards and to location-specific ecological thresholds for DO and Temperature to determine whether acceptable water quality is maintained across all anticipated flow levels. Water accounting was developed for the simulation period for areas downstream of the Rosharon gauge to the Gulf of Mexico.

2006-PRESENT

TCEQ 401 Water Quality Certification - Modeling and sediment analysis

– Multiple (15+) projects for private and public clients in Tres Palacios Bay, St. Charles Bay, GIWW, Port O'Connor; Copano Bay, San Antonio Bay, Matagorda Bay, Lake Wichita: For multiple private development projects located adjacent to Texas Bays that require USACE 404 permits and associated 401 certifications, Mr. Osting was responsible for coastal water quality modeling and coastal sediment transport analysis. Mr. Osting modeled Dissolved Oxygen in waters influenced by inflows, rainfall, wind, wave and tide forces within constructed canals using RMA-2 and EFDC for hydrodynamics and both WASP (versions 5, 6 and 7.2) and QUALTX for water quality. Erosion and sediment transport analyses were performed to characterize shoreline processes responding to flow patterns and barge traffic, and to determine necessity of protection of dredged canals from infill.

2014

Guadalupe River Water Quality Model for Instream Flow conditions. BIO-WEST, GBRA, TWDB

Project Lead. Tim is developing a new water quality model of the Guadalupe River between Gonzales and Victoria for the Texas Instream Flow Program (TIFP) and the GBRA. The calibrated model will assess temperature and dissolved oxygen conditions, and nutrients to the extent necessary, in consideration of aquatic species thresholds. The existing HEC-RAS flood model will be used as basis for the HEC-RAS water quality model.

2009

TCEQ/TIFP/SARA In-stream Flow Water Quality Approach and Model Evaluation. BIO-WEST, SARA, TCEQ

Project Lead. To address the needs of the Texas Instream Flow Program (TIFP), the TCEQ sponsored this project to identify instream flow water quality evaluation needs, and to make recommendations on approaches and/or models applicable to instream flow studies across the state of Texas. Tim was overall project manager for this project involving the TCEQ, TPWD, TWDB, SARA, BIO-WEST, Inc., and James Miertschen and Associates, Inc. Recognizing limitations in existing water quality modeling approaches, particularly with the steady-state Qual-TX model, Tim evaluated over 50 available models and developed recommendations for models and/or approaches appropriate for analyzing time-varying water quality conditions for parameters like dissolved oxygen (DO), temperature, TSS and nutrients. Tim and colleagues compared performance of WASP, QUAL2K, EPD-Riv1, INFOWORKS-RS, HEC-RASwq and AquaTox.

2006-2010

Lake Granbury Watershed Protection Plan (WPP), BRA, TCEQ, EPA

Project Manager. Tim conducted water quality assessment to support development of an 319-funded WPP managed by the Brazos River Authority, sponsored by TCEQ and EPA. Tim was responsible for the data collection, evaluation and modeling, including a determination of important canal circulation patterns. Tim conducted a detailed analysis of alternative bacteria management measures using the SELECT approach and customized lake modeling, that included development of annualized costs for alternatives including regional sewer treatment. After vetting through stakeholders through numerous meetings, Mr. Osting managed writing of the WPP. This WPP was only the second to be accepted by the TCEQ and EPA in Texas, after Plum Creek WPP.

2008-2011

Caddo Lake Watershed Protection Plan – Jefferson, TX. NETMWD, TCEQ

Project Manager. Related to the Watershed Protection Plan (WPP) for Cypress Basin and Caddo Lake sponsored by the North East Texas Municipal Water District (NETMWD), the TCEQ and US EPA, Mr. Osting participated in scoping of a comprehensive data analysis and evaluation project leading to recommendations related to water quality modeling and data gaps. Mr. Osting also serves in a capacity to relate water quality components to instream flow building blocks. Mr. Osting man-aged water quality data analysis and source assessment, monitoring recommendations, and modeling in Phase II of the WPP for the Caddo Lake Watershed. Modeling consists of development of a SELECT model to prioritize bacteria loadings, and a SWAT whole-water-shed model linked to complementary river (QUALTX) and lake models (EFDC and WASP) to characterize the circulation patterns and water quality conditions, including response of DO in streams and the lake to changing nutrient loadings.

Recent Project Experience

Water Resources

2019 - ongoing

Operational yield assessment for Delta Regional Water Project and Panchita Reservoir – Halff, HCDD1
Project Manager. Tim developed the assessment procedure for determining maximum yield of 3 reservoirs in the Nueces-RioGrande Basin based upon existing water rights and proposed infrastructure. Tim analyzed existing naturalized flow information and is directing an uncertainty analysis on derivation of these flows, including re-development of naturalized flow information after subtracting return flows developed from data compiled as part of this project (wwtp return flows 2009-2018, irrigation returns comparable period). Tim is directing development of multiple scenarios that prioritize water use from the 3 reservoirs, water source from drainage infrastructure re-routing, and uncertainty related to naturalized flows and return flows. The estimated yield and uncertainty in yield is being assessed on a daily time step using RiverWare.

Water rights permit amendment near San Angelo, Bentwood County Club LLC
Project Manager. Tim directed completion of surface water right application and participated in TCEQ pre-application meeting for this amendment application. The amendment is to move a diversion location to Lake Nasworthy as part of an agreement with City of San Angelo.

2018 - 2019

Analysis of a low-head dam for a TPWD Sand and Gravel Permit contested case hearing, and TCEQ water right and USACE 404 compliance. Braun and Gresham PLLC, Private Client
Project Manager. Tim is providing sediment, water levels, water quality, water rights and connectivity services related to a low-head weir dam.

Hydrology assessment for development of USFWS CCAA documentation. BIO-WEST, Brazos River Authority
Project Manager. Tim provided hydrology assessment related to a Candidate species Conservation Agreement with Assurances between BRA and USFWS for potential impacts of water management on candidate endangered species. Historical, current and projected conditions were evaluated using TCEQ and BRA WAM.

Water reliability assessment in Brazos River basin, BHDA, Private Client
Technical Consultant. Tim provided water rights reliability opinion for a water user in preparation for a contested case hearing. TCEQ WAM/WRAP model files and outputs were used and bundled with a water quality assessment. WAM files were extended in time using available data.

Water reliability and water source assessment in a Texas river basin, Private Client
Technical Consultant. Tim provided water rights reliability analysis for a water user interested in reliability of multiple different water sources transported to the point of use multiple different ways. The TCEQ WAM/WRAP model files and outputs were used initially then modified by adjusting water rights and by extending the time period of assessment. Naturalized flows and other WAM inputs were updated to extend the simulation period.

2018

Water reliability assessment using extended period TCEQ WAM/WRAP, City of Granbury
Technical Consultant. Tim directed an assessment using the Brazos TCEQ WAM/WRAP package to determine reliability of a water right based upon priority date, as well as used existing available information to extend the time period of the WAM/WRAP through 2015 by adding naturalized flows, eflow triggers and net evaporation. Cost of the water right was estimated based upon other water right sales as well as the reliability of this water.

2017

Emergency Spillway 2D Modeling – Lake Cypress Springs. Carollo, Franklin County Water District
Project Manager. Tim developed a 2D HEC-RAS model and analysis scenarios to evaluate whether on-the-ground modifications are necessary to the emergency spillway at Lake Cypress Springs. Several scenarios of dirt moving were evaluated and the recommendation focused on land management changes to improve hydraulic efficiency.

Review of LCRA Water Management Plan and WAM, Private Client
Technical Consultant. Tim provided technical input related to review of WAM/WRAP model files and outputs for consistency with the most recent version of LCRA's Water Management Plan.

QAQC for Firm Yield assessment of 4 Oklahoma Lakes, Choctaw and Chickasaw Nations
Technical Consultant. Tim provided technical review and QAQC for calculations conducted by others for the firm yield of 4 reservoirs having storage volumes ranging from 2,000 ac-ft to 50,000 ac-ft.

2016-2017
Water Quality Assessment for HB1437 Interbasin Transfer (Brushy Creek) and Geomorphic Stream Sediment Assessment. K Friese & Associates, Brazos River Authority.
Project Manager. To evaluate several strategies to return approximately 20,000 ac-ft per year out of Brushy Creek from the Brazos River to the Colorado River basin, Tim conducted a water quality assessment of Brushy Creek return flows and a water quality data and modeling assessment of the Walberger Creek system, as well as a stream sediment field assessment of Cottonwood Creek. The short term and long term sediment and stream impacts resulting from increasing flow in the creek was assessed and reported. The long term water quality impact of increasing flow in the system was assessed considering the local influences and source water mixing.

2011 – PRESENT
Trinity River Long Term Monitoring and 2014-2017 SB3 Flow Validation, Trinity River Authority of Texas
Technical Consultant and Project Lead. Tim was asked to participate with staff to develop a long term monitoring program to determine major environmental processes influencing the Trinity River. With TRA staff in 2011, Tim participated in a 400-mile river navigation field survey between Fort Worth and Trinity Bay, study site selection, and establishment of four long-term monitoring sites. Baseline field activities include cross-section surveys, water surface profile surveys and sediment sampling. Modeling includes sediment transport capacity and riparian inundation mapping. 2014-2019 activities include validation of SB3 flow standards at four measurement points based upon on-site physical measurements. Sediment scour modeling and water quality modeling is in-progress, including data collection and lab measurements (sediment coring and JET testing).

2010 – PRESENT (ongoing)
System Operation Permit Water Management Plan, Brazos River Authority
Environmental Program. Tim is providing environmental program support for sediment, water quality, biology, and hydrology studies, and permitting support for staff to help craft a Water Management Plan providing for efficient use of 11 existing reservoirs. This is a multi-component, multi-year project to balance BRA permit obligations with adopted SB3 environmental flow standards. The project is currently focusing on field data collection, summary of historical studies, Standard Operation Procedures and Environmental Flows Achievement. Tim participated with BRA staff and other consultants to develop the environmental components of the Water Management Plan and Tim provided expert testimony on hydrology and environmental flows during the permit contested case hearing.

Recent Project Experience
Coastal

2018-2019
USFWS Bahia Grande Restoration, Reconnection and Tidal Circulation Modeling (CMS-FLOW/WAVE). Scheibe Consultants LLC and USFWS.
Project Manager. Tim is providing sediment, water levels, water quality, water rights and connectivity services related to a low-head weir dam. Tim is responsible for development of a CMS-FLOW and CMS-WAVE model for the Bahia Grande restoration area complex near Port Isabel, TX. He is responsible for sizing a new tidal inlet channel between Bahia Grande and the Paso Corvinas lagoons, and for developing hydraulic information for protection of existing bird habitat/rookery islands.

2014-2015
Coastal wave and runup evaluation for Texas City Rainwater Inner Levee. Scheibe Consulting
Project Lead. To respond to FEMA levee certification review comments issued to the City of Texas City, Tim provided a coastal wind and wave analysis considering 1% (eg, 100-year) hurricane conditions and historical flood study reports. The analysis resulted in wave setup, runup and overtopping estimates for the existing levee. Tim conducted GIS mapping activities, including DEM development from LiDAR .las files, levee alignment stationing and extracting elevation profiles.

2014-2015
Jetty Assessment and Coastal Modeling, San Bernard River at the Gulf of Mexico. RPS, Dannenbaum Eng., Brazoria County, TX
Project Lead. Tim was lead for the littoral sediment task on a team to recommend geometric properties of a jetty to

manage sedimentation at the San Bernard River mouth at the Gulf of Mexico. The project included on-site assessment, data accumulation, and development of a TX-BLEND hydrodynamic model.

2016

Nueces Bay Rookery Island Restoration Survey, Scheibe Consulting, CBBEP
Project Manager. For a Costal Bend Bays Estuary Program (CBBEP), Tim conducted on-site elevation survey using survey-grade GPS to characterize existing condition of rookery island beach profiles in Nueces Bay and to determine fill volumes necessary for restoration. Tim also conducted a hydrographic survey using a vessel-mounted echosounder to determine appropriate construction barge pathways from White's Point to the restoration islands.

2015

East Matagorda Bay Freshwater Inflow Infrastructure Assessment – Texas State University MCWE, TWDB
Technical Consultant. In support the SB3 stakeholder group for the Colorado and Lavaca River Basins and Bays, Mr. Osting developed flow need amounts for a conceptual design for a proposed pipeline delivering augmented freshwater inflow to East Matagorda Bay from the Lower Colorado River. This hydrologic restoration project is designed to improve the ecological health of this minor bay.

USACE 404 permit support for wetlands and barge docking at a sand quarry site. RPS and private client, Texas.
Tim participated in conceptual design of stream and wetlands restoration concept plan for an after-the-fact 404 permit. He provided bathymetric survey field services and conceptual planning assistance for onsite barge docking facilities, including permit planning.

2008

Lower Brazos River Salinity Monitoring Project –Brazoria County, TX. - BRA, TWDB
Project Manager. As part of a USACE-funded effort to evaluate movement of salinity from the Gulf of Mexico upstream into the Brazos River, the Texas Water Development Board (TWDB) and Brazos River Authority (BRA) sponsored this project to monitor salinity in a 30-mile reach of the Brazos River. Tim led the team to install and maintain conductivity, temperature and water level data loggers. The sensor installations collected data through Hurricane Ike.

Recent Project Experience

Hydrographic Survey and Sediment

2019

Lower Colorado River Supplemental Hydrographic and Cross-section Survey. Scheibe Consultants, TWDB
Project Manager. Tim managed measurement of 22 cross-sections of the Colorado River in Colorado, Wharton and Matagorda Counties. The survey used survey-grade GPS RTK/VRS along with echosoundings, and will be used for a flood protection planning study.

Lake Whitney Hydrographic and Sediment Survey. CDM Smith, US Army Corps of Engineers
Project Manager. Tim managed and executed the field program to determine the current volume and accumulated sediment volume of Lake Whitney, Texas. Tim conducted extensive QAQC on data processing and final determination of elevation-area-capacity tables.

Lake Hydrographic and Sediment Survey. Private Client
Project Manager. Tim managed and executed the field program to determine the current volume and accumulated sediment volume of a water supply reservoir of approximately 1,000 surface acres in the Brazos basin. Tim conducted extensive QAQC on data processing and final determination of elevation-area-capacity tables.

2017

Analysis of sediment removal from a hill country water body. Braun and Gresham PLLC, Private Client
Project Manager. Tim provided on-site consulting to provide supporting data and an opinion related to a intermittent (non-perennial) and non-navigable stream. Permitting information was provided related to sediment removal upstream of an existing water crossing.

Lake Wister, Lake Carl Albert, New Spiro Lake: Sediment and Hydrographic Surveys – Poteau, TX- USACE and Choctaw Nation
Project Manager. Tim was field and data manager for a sediment thickness and hydrographic survey of Lake Wister, a 7500 surface acre water supply reservoir near Poteau, OK. The crew used a multi-frequency echosounder, RTK

GPS, and advanced data post-processing techniques to determine the Elevation Area Capacity table, sediment accumulation, and sediment accumulation rates. Physical core samples were collected to calibrate the sediment thickness identified in the echosounder trace. Data collection was completed in May 2017 and the report is to be completed in Summer 2017. Lakes Carl Albert and New Spiro were surveyed at the same time using the same methods.

2016

Travisso Reservoir Hydrographic Survey – Nameless, TX. Scheibe Consulting LLC

Project Manager. For a development project, Tim conducted a hydrographic survey of an existing amenity lake. The 20-foot deep lake was surveyed using an echosounder and differential GPS system. An on-site elevation control benchmark was established and elevations of respective outlet structures were measured.

2014-PRESENT

Lake Wichita Revitalization Project. Water Planning and Water Quality. - USACE 404/401 permit. Carollo, City of Wichita Falls

Task Manager. Mr. Osting, with the Lake Wichita Study Committee and the City of Wichita Falls, coordinated 404 permit pre-application meetings with the USACE Tulsa District. The lake project plan currently involves excavating over 5,000 ac-ft of sediment then construction of shoreline amenities (parks, marinas, ramps, activity centers). Mr. Osting is conducting lake level analysis, water availability, water quality, habitat and bathymetry analyses to assist the City in determining project design objectives. Mr. Osting has completed materials included in the USACE 404 application that was submitted in November 2016 including 401 certification materials for the lake and constructed canals.

Recent Project Experience

Environmental Flow

2016

Caddo Lake Environmental Flows, Hydrology and water quality -- Caddo Lake Institute

Technical Consultant. Mr. Osting provided technical support for water quality and sediment considerations at the Caddo Lake environmental flows update meeting in December 2016. He also helped to scope collection of LiDAR data for the riparian areas in the basin and to QAQC the data to prepare it for the next steps of improving understanding of inundation in bottomland wetland areas.

2015

East Matagorda Bay Freshwater Inflow Infrastructure Assessment – Texas State University MCWE, TWDB

Technical Consultant. In support the SB3 stakeholder group for the Colorado and Lavaca River Basins and Bays, Mr. Osting developed flow need amounts for a conceptual design for a proposed pipeline delivering augmented freshwater inflow to East Matagorda Bay from the Lower Colorado River. This hydrologic restoration project is designed to improve the ecological health of this minor bay.

Additional Project Experience

2013-2014

Endangered Species Riffle Beetle Habitat Restoration – Landa Lake, New Braunfels. RPS, City of New Braunfels, EAA

Technical Consultant. In support of the approved Edwards Aquifer Habitat Conservation Plan (HCP), Mr. Osting was project manager for riparian shore-line restoration and sediment removal activities. This work preserves and enhances habitat near artesian springs to protect the endangered riffle beetle. The shoreline rehabilitation work has prevented many cubic yards of sediment from entering riffle beetle habitat. Lake dredging work is being evaluated to determine if it has uncovered potential habitat areas on the lake bottom.

2013

Waxahachie Creek Geomorphic Stability Assessment. KBR, TRWD

Project Manager. In support of river-crossing design for a 110-inch raw water transmission line (TRWD IPL), Tim conducted a geomorphic stability assessment of 3 miles of Waxahachie Creek. The assessment included an on-site survey, office geomorphic assessment, HEC-RAS modeling, stable cross-section assessment and recommendations for long-term monitoring.

Sediment Island Removal –Comal River (old channel), New Braunfels. BIO-WEST, City of New Braunfels,

EAA.
Technical Consultant. In support of the approved Habitat Conservation Plan (HCP), Mr. Osting provided to BIO-WEST on-site services that included fluvial geomorphology, turbidity minimization, and stream restoration oversight to excavation contractors during restoration activities. This project was to benefit the endangered fountain darter.

Old Channel Restoration– Comal River, New Braunfels. BIO-WEST, City of New Braunfels, EAA
Technical Consultant. In support of the approved Habitat Conservation Plan (HCP), Mr. Osting provided modeling support and on-site vegetation installation assistance to staff at BIO-WEST.

2008-2011
San Antonio River Instream Flow Planning Project –San Antonio River, TX. BIO-WEST, SARA
Project Manager. The San Antonio River Authority (SARA), in collaboration with the Texas Instream Flow Program, is conducting a basin specific study of the lower San Antonio River Basin. SARA initially selected the team of BIO-WEST and RPS team to serve in an advisory role to SARA, but the project team's role has evolved and now includes field, technical and professional services covering project over-sight, study design development, historical document reviews, methodology evaluations, data analysis, field data collection, habitat modeling, water quality modeling, sediment transport analysis, report preparation and meeting with State agencies, local officials or the public. Mr. Osting has participated with SARA and the TIFP throughout the SB2 Study Design process, and is currently managing execution of a field study program to evaluate changes in aquatic habitat across a low range of flows. Mr. Osting has developed 1D and 2D hydraulic and habitat models to assess habitat at low flows and is currently collecting data to develop 2D hydraulic models at five sites. Mr. Osting led development of a riparian area modeling effort that links results of 1D HEC-RAS near-channel floodplain inundation models to the Texas Ecological Systems Classification Project (TESCP) which is an ecosystem spatial dataset.

Colorado River Instream Flow Analysis -- Colorado River, TX
Mr. Osting worked with the LCRA and BioWest, Inc., on the Colorado River Instream Flow Study to determine environmental needs. Mr. Osting conducted field work and provided technical assistance for data collection efforts at 10 sites on the Colorado River between Austin and Bay City. Data collected at each site included instream bathymetry (single-beam echosounder), point velocity (ADV), current profiles (ADCP), water surface elevation (survey-grade differential GPS), water surface fluctuation (level gauges) and water edge (Laser rangefinder). Mr. Osting participated in all phases of the project with concentration on data interpretation, development of River2D hydrodynamic models and integration of hydrodynamics with aquatic habitat. Mr. Osting participated in development of flow regime recommendations that maintain health of the river ecosystem.

Matagorda Bay Health Evaluation, Marsh Habitat Analysis – Matagorda Bay, TX. LCRA
Technical Consultant. Mr. Osting is responsible for design and programming of automated tools to evaluate and utilize hydro-dynamic and salinity model output for the Marsh Habitat Analysis. The tool integrates model output, habitat mapping, salinity suitability and habitat suitability to provide insight into suitability of marsh conditions for a variety of species for a variety of scenarios. Mr. Osting is also responsible for troubleshooting and QA/QC hydrodynamic and water quality model simulations (RMA-2, RMA-4). Mr. Osting and other RPS staff performed extensive uncertainty analysis on the habitat model and results of habitat model.

SAC/SJRA SB3 Ecological Overlay "drill-down" – San Jacinto River watershed, TX. SJRA, TCEQ
Project Manager. In support of the Texas SB3 environmental flows process, RPS conducted a review of existing literature within the San Jacinto River watershed on behalf of the San Jacinto River Authority (SJRA) and the Science Advisory Committee (SAC) of the SB3 Environmental Flows Advisory Group. The primary objective of this work is to extract from existing studies information relevant to development of environmental flow guidelines within the basin. A detailed matrix of occurrence of 117 fish species was analyzed to develop focal species that may be relevant to focal environmental flow components. Biology, water quality, physical processes (geomorphology) and sediment/ nutrient data and reports were investigated to support development of relationships of ecological parameters with flow.

2008
Highlands Reservoir Hydrographic Survey – Highlands, TX. SJRA
Project Manager. As part of a system-wide canal and water supply evaluation conducted by RPS for the San Jacinto River Authority, Mr. Osting was responsible for hydrographic/ volumetric survey of Highlands Reservoir, a 600 surface acre water impoundment.

2011
Nueces River Regional Sediment Management Plan (RSMP) – Phase 1, 2 & ITR – Corpus Christi, TX. Halff, USACE
Project Manager. Mr. Osting worked with Halff and Associates and the US Army Corps of Engineers (USACE) to evaluate sediment within the Nueces River basin between Choke Canyon reservoir and the Gulf of Mexico. Phase 1 of

this Section 2037 project identified current sediment needs, problems and opportunities, as well as potential sediment strategies or management measures that benefit the region. A wide range of potential opportunities were identified involving alluvial watershed sediment sources, lake impoundment, fluvial river transport, bay sediment loading, navigation dredging and spoils, coastal erosion and estuarine marsh areas. Mr. Osting was responsible for preliminary evaluation of Lake Corpus Christi sediment bypass strategies (including hydrosuction dredging), assessment of coastal erosion risk areas, fluvial sediment transport and marsh issues. Phase 2 expands the level of stakeholder involvement, and provides additional information on specific sediment management opportunities. Mr. Osting is responsible for evaluation of sediment management opportunities for Lake Corpus Christi, including maintenance dredging and dredge material disposal. Mr. Osting conducted an Independent Technical Re-view (ITR) of conceptual design of marsh restoration breakwaters in Nueces Bay.

Blue Water Shores WWTP outfall location dye study – Acton, TX. BRA, TCEQ
The Blue Water Shores Waste-water Treatment Plant (WWTP) is permitted to discharges treated effluent into Lake Granbury. To determine where the outfall that was constructed in the late 1970s was located, Rhodamine WT dye was injected into the discharge waste stream. A fluorometer mounted in a boat was used to continuously sample and analyze lake water to identify and track the dye plume emitted from the discharge location. The plume pattern was used to estimate location of the end of the outfall pipe.

2012
BRA, Chloride/TDS Concentration Predictive Tool, Texas: Mr. Osting is project lead for the development of an automated forecast system for chloride and total dissolved solids (TDS) concentration within the Brazos River basin, from the Salt Fork Brazos River downstream through Possum Kingdom Lake, Lake Granbury and Lake Whitney. The daily forecast can be used by Brazos River Authority (BRA) staff or customers to more effectively manage water supply in the basin. The concentration forecast will consider antecedent conditions in the watershed and upstream water bodies. Uncertainty in the underlying datasets and in the forecast are incorporated into the forecast.

2010
EARIP Comal River stream modeling. BIO-WEST, EAA
Modeler. Tim developed a QUAL2E temperature model of Landa Lake and the old and new Comal River channels to assess temperature conditions for a range of flow split scenarios, including recirculation. Tim also provided siting and conceptual design for the proposed experimental channel area.

2008
Lake Granbury Canal Circulation Dye Studies –Granbury, TX
Project Manager. BRA. As part of a lakeside canal modeling effort, the exchange of lake water with canal water was estimated. Ex-change differed among different canals having different configurations, a circulation study was conducted. Rhodamine WT dye was deployed into six canal systems then the dye plume was tracked using a flourometer and GPS system over the following 36 to 48 hours. On-site wind and environmental data was collected for the duration of the study. The dye tracks were used to estimate a combined dispersion/ diffusion coefficient for each canal system.

Lake Canal Construction Specification Study, WQ Modeling –Lake Granbury, TX. BRA
Tim worked with the Brazos River Authority (BRA) and Brown and Gay Engineers to determine appropriate geometric configurations for new residential canals. Tim determined appropriate configurations based upon water quality aspects considering existing lake-wide conditions, orientation with respect to prevailing winds, cross-sectional and longitudinal geometry, circulation patterns and depth fluctuations. The EFDC hydro-dynamic model, combined with the WASP water quality model were used to evaluate a matrix of geometric configurations based upon flushing time and Dissolved Oxygen concentration. Canal widths, depths, lengths, configuration and orientation were recommended on the basis of this water quality modeling effort.

2012
Flood zone analysis - Ascension Parish, LA
Technical Consultant. For a private client, evaluate likelihood of project site inundation from backwater hydraulics. The downstream area was complicated by an expansive marsh system, drainage canals and connection to Lake Maurepas and Lake Pontchartrain subject to hurricane surge flooding.

2008
MRGO Closure Dike design for USACE-MVN – New Orleans, LA
Technical Consultant. The Mississippi River - Gulf Outlet (MRGO) is a deep-draft ship channel that transects a sensitive coastal wetland environment from the Gulf of Mexico to the Port of New Orleans, Louisiana. After an in-depth study, the US Government has decided to close the MRGO to both deep-and shallow-draft navigation. Mr. Osting and other RPS staff participated in evaluation of two alternative closure dikes: a cellular sheet pile wall and a rubble-mound

breakwater. Based upon predicted storm surge, water depth and potential breaking wave heights, Mr. Osting developed wave loading forces for the vertical sheet pile wall alternative. For the rubble-mound alternative, Mr. Osting developed rock size, weights and gradations for the 50-foot high rubble mound structure that would resist surge and wave attack under extreme surge and wave conditions; he also developed conceptual cross-sections, overbank toe-scour protection and performed hydraulic conductivity analysis of the proposed structure. Construction plans and specifications were developed by others for the rubble-mound structure based upon Mr. Osting's analysis.

Matagorda Bay Health Evaluation, Bay Salinity Analysis – Matagorda Bay, TX. LCRA
Technical Consultant. As part of development of freshwater inflow criteria for Matagorda Bay, Mr. Osting was responsible for an extensive analysis of salinity gradients and trends in the eastern arm of west Matagorda Bay. The analysis included comparison of salinity time-series sonde observation data, point observation data and model predictions (RMA-2 and RMA-4). Relationships between salinity and freshwater inflow from the Colorado River were developed and evaluated. The ultimate use of the analysis was to develop and increase confidence in bay environmental inflow criteria.

Representative Publications Reports and Proceedings

2018

BULLOCK, P, OSTING, T. **Emergency spillway 2D modeling renovation options – Lake Cypress Springs**. Texas Water Conservation Association Mid-year 2018.

2014

PETERSEN, C, OSTING, T, ROWNEY, C, BRASHEAR, B, FROSSARD, W. **Linking watershed and receiving water quality models to protect and enhance water quality in the Trinity River in Fort Worth, TX**. EPA Region 6 Stormwater MS4 Conference 2014

2012

MORGAN, T and OSTING, T. **Lake Granbury Watershed Protection Plan – Accepted by stakeholders, TCEQ and EPA**. Texas Water Water Conservation Association (TWCA).

2011

OSTING, T. **Approach for water quality evaluation for instream flows in Texas**. EWRI 2011, Palm Springs, CA.

2010

OSTING, T. **Environmental Flow Studies: Linking ecosystem indicators with hydrological metrics**.
Invited Guest Lecture at Spatial Sciences Laboratory (SSL) – Texas A&M University.

OSTING, T. **Blending biology and engineering: linking ecosystem indicators with hydrological metrics**. Invited lecture, 46th Annual Meeting Texas Section, American Society of Agricultural and Biological Engineers (ASABE).

CHOWDHURY, A, OSTING, T, FURNANS, J, MATTHEWS, R. **Groundwater-surface water interaction in the Brazos River Basin: Evidence from lake connection history and chemical and isotopic compositions**. Texas Water Development Board Report R-375.

2009

OSTING, T. **Expanded method for identifying submerged objects in single-beam echosounder data**. Proceedings of the EWRI 2009, Kansas City, MO.

2007

OSTING, T, HODGES, B. **Estimating uncertainty of 2D hydraulic models used for aquatic habitat modeling studies**. University of Texas at Austin; Center for Research in Water Resources (UT-CRWR) Online Report 07-03.

2006

WHITE, L., HODGES, B.R., AUSTIN, B.N., and OSTING, T. **Identification of submerged large woody debris from single-beam echo soundings**. Journal of Hydroinformatics, Vol. 7, pp.1-12.

OSTING, T. **Spatial Data for Habitat Modeling**. Symposium on Emerging Technologies for Research on Rivers and Reservoirs, invited session, Texas River and Reservoir Management Society.

2004

OSTING, T. **An improved anisotropic scheme for interpolating scattered bathymetric data points in sinuous river channels**. CRWR Online Report 04-01, UT Austin Center for Research in Water Resources, 21 pages.

2003

OSTING, T. and AUSTIN, B.N. **Instream flow study of the Sulphur River**. Report prepared for the US Army Corps of Engineers. 214pp.

OSTING, T., AUSTIN, B.N. and MATTHEWS, R. **Instream flow study of the Lower Brazos River**. Report prepared for the US Army Corps of Engineers. 178pp.