JOSEPH T. BRASCHER
Hydrologist
AQUA TERRA Consultants
Olympia, WA

EXPERTISE

Hydrology
Surface Water Modeling
Computer Programming
Web Development

EXPERIENCE

Mr. Brascher has a broad range of experience from surface and groundwater modeling to software development and database design using a number of different hydrologic software packages and programming languages. His experience with hydrologic modeling software packages includes HSPF, SWMM, GENSCN, HEC-RAS, HYDRA, WATERWORKS, HYDRAIN, HY8, and MODFLOW. Mr. Brascher also has a thorough understanding of the following software languages: Visual Basic, SQL, C++, Java, HTML, Cold Fusion and Access VBA among others. In 1993 Mr. Brascher joined AQUA TERRA Consultants, where he has been involved in the application of computer models and the development of software applications to provide services to a wide range of clients.

PROFESSIONAL DATA

The Evergreen State College - BS, Physics and Computer Science

REPRESENTATIVE ASSIGNMENTS

Green Cove Creek Low Impact Development Study, City of Olympia, WA – Mr. Brascher Updated a previous calibration of the Green Cove Creek watershed using a new high groundwater module recently added to HSPF. The enhanced calibration allowed for a more detailed study of the impacts of future development on Green Cove Creek. Several experimental low impact development scenarios were studied in an effort to minimize impacts to the Green Cove Creek.

Tambark Creek GENSCN Modeling Study, Snohomish County, WA - Mr. Brascher constructed both an EPA SWMM surface and backwater model and an HSPF version 12 model for the Tambark Creek watershed for the Mill Creek Urban Growth Area Overlay Plan. The models were then connected together using a software package GENSCN, originally developed by AQUA TERRA Consultants for the U.S.G.S. Detailed analysis of surface and groundwater was used to determine impacts of future development and changes in zoning.

Ronald Bog GENSCN Modeling Study, City of Shoreline, WA - Mr. Brascher constructed both an EPA SWMM surface and backwater model and an HSPF version 12 model for the Ronald Bog watershed. The models were then connected together using the software package GENSCN, originally developed by AQUA TERRA Consultants for the U.S.G.S. Detailed analysis of surface and groundwater was used to determine impacts of future development and changes in zoning.

Miller and Walker Creek Calibration , Port of SeaTac, WA – Mr. Brascher, in conjunction with Parametrix, calibrated HSPF models for both Miller and Walker creeks. These calibrated models were then used by Mr. Brascher, Parametrix, and other sub-consultants to evaluate the impacts of the addition of a third runway for SeaTac Airport. This included the sizing of many large detention/retention facilities. Further, the models were used to conduct an extremely detailed analysis of impacts to low flow potentially caused by the construction of the third runway.

Snoqualmie Ridge Master Drainage Plan, WA - The Snoqualmie Ridge Master Drainage Plan was produced for Weyerhauser/Quadrant for a 1500-acre development, located west of the Town of Snoqualmie. The purpose of the Snoqualmie Ridge Master Drainage Plan was to evaluate the effectiveness of the proposed mitigation efforts for the project site. The modeling effort included assembly and calibration of four separate HSPF subbasin models. The calibrated HSPF models were then used to create dozens of future condition scenarios. The future scenarios were evaluated by the Town of Snoqualmie based on King County Master Drainage Plan requirements for impacts to the onsite and off site streams and wetlands. All modeling results were reviewed by the Town of Snoqualmie and their consultants.

Black Hills Village, Tumwater, WA – Black Hills Village is a 300-acre Urban village low impact designed development. Mr. Brascher is constructing HSPF models to determine storm water facility sizes and locations as well as impacts to several large on-site wetlands. The goal of the project is to develop the site using an Urban Village concept that minimizes development impacts.

Western Washington Hydrology Model Development(WWHM), Washington State Department of Ecology(DOE) – Mr. Brascher was the project manager for the development of the WWHM. This model will be distributed by DOE as part of the 2001 DOE development manual. This is a state of the art windows based model that uses HSPF to size detention/retention facilities for developers. The model runs HSPF version 12 and can be used to size any manor of facility.

North Creek Flood Hazard Management Plan, Snohomish County, WA – Mr. Brascher reviewed and updated existing HSPF model of watershed. He evaluated future land use impacts on flood frequency and proposed structural and non-structural solutions to minimize future flood hazards.

HSPF Model of the French Creek Watershed, Snohomish County, WA - Mr. Brascher calibrated an HSPF version 11 model for the French Creek watershed. Identified drainage problem areas and the impacts of future development. This required the implementation of all relevant stormwater regulations and ordinances.

HSPF Model of the Lake Stevens Watershed, Snohomish County, WA - Mr. Brascher calibrated an HSPF version 11 model for the Lake Stevens watershed area. Identified problem areas and the impacts of future development.

HSPF Model of Mallard Pond and the Pacific Avenue Wetland, Thurston County, WA - Mr. Brascher calibrated an HSPF version 12 model for both the Mallard Pond and Pacific Avenue wetlands. Mr. Brascher then used the model to determine the hydroperiod of the Pacific Avenue wetland to aid in the design of a control structure that would lesson impacts of future development on the Little Mcallister Creek. The Mallard Pond model was used to aid in the retrofitting of Mallard pond to decrease downstream erosion.

HSPF Model of the Thurston County Landfill, Thurston County, WA - Mr. Brascher calibrated an HSPF version 12 model for the Thurston County Landfill. Mr. Brascher then used the model to determine the necessary increase in volume of an existing infiltration facility based on the capping of the landfill.

HSPF Model of the Evergreen Hills Development, Thurston County, WA - Mr. Brascher calibrated an HSPF version 12 model for the Evergreen Hills development. Since the development is located inside the sensitive Green Cove Creek watershed. The HSPF model was used to determine impacts of various development approaches. This helped achieve the goal of creating a low impact development and thus maintain the historic hydrologic conditions in Green Cove Creek.

Issaquah Highlands Wetland Mitigation, Issaquah, WA - Mr. Brascher calibrated an HSPF version 12 model for a 3-acre wetland. This model was used to determine the impacts of development on the wetland as well as the creation of 2 new acres of wetland. A detailed wetland Hydro-period analysis was conduction to determine future operation of the wetland.

GENSCN Development, U.S.G.S., Reston, VA - Mr. Brascher assisted in the development and implementation of the software package GENSCN 1.1. This package is written in Visual Basic and designed to work with several different database formats as well as GIS .SHP files for full data integration. GENSCN also allows data transfer between many different computer models. GENSCN uses a data-grid and a graphing grid developed by AQUA TERRA Consultants as well as several .DLLs developed for data transfer with the WDM database management package.

Snohomish County VIDS - Mr. Brascher customized the VIDS software to meet the needs of the Snohomish County Surface Water Management. This incorporated county-wide mapping and data access to all previously complete computer modeling work.

Hydrologic Model Data Maintenance and Management, King County, WA - Mr. Brascher reviewed, modified, and upgraded King County's HSPF models and hydrometeorologic data for Soos Creek, Bear Creek, East Lake Sammamish tributaries, Issaquah Creek, and Cedar River tributaries. He created a Visual Basic interactive data system (VIDS) to provide King County SWM staff with easy and convenient access to the HSPF models and model results. VIDS allows the user to access maps, HSPF input files and parameter value tables, and model results for each watershed. VIDS is a Windows interactive program that is simple and easy to use; it requires no knowledge of HSPF or programming.

King County Data Management, King County, WA - Mr. Brascher designed and implemented two Visual Basic application and one ACCESS application which when working together allow instant conversion and Web posting of all newly collected hydrometeorlogic data.

HSPF Model of the Des Moines Creek Watershed, King County, WA - Mr. Brascher calibrated an HSPF version 11 model for the French Creek watershed. Evaluated the impacts of runoff from SeaTac Airport on current and future streamflows.

HSPF Model of the Miller Creek Watershed, King County, WA - Mr. Brascher converted an HSPF Version 10 model to HSPF Version 11. The Version 11 model was used to track runoff from the SeaTac Airport as it traveled downstream though the Miller Creek stream system.

May Creek Basin Plan, King County, WA - Mr. Brascher assisted in modeling the May Creek Basin for King County and the City of Renton using HEC-2 and HSPF. Identified drainage problems and solutions in the watershed including the placement of stormwater control facilities.

Chesapeake Bay Watershed Study - Mr. Brascher was a member of the EPA-funded AQUA TERRA simulation team that calibrated streamflows at 38 locations in watersheds draining to the Chesapeake Bay. Using HSPF Version 10 and ANNIE, Mr. Brascher reviewed, updated, and input to WDM files eight years of hydrometeorologic data at 38 locations in four states.

HSPF Calibration of the Chesapeake Bay Watershed Model Phase III - Mr. Brascher assisted in the verification and calibration of the Chesapeake Bay HSPF model, including snow melt parameter adjustments and data preparation.

King County Web Development, King County, WA - Mr. Brascher designed and implemented a data intensive Web application which allows dynamic access to all hydrometeorlogic data available from King County. The application uses SQL, Cold Fusion, IIS, and HTML to deliver super fast data access to the general public for nearly a gigabyte of data.

King County VIDS - Mr. Brascher customized the VIDS software to meet the needs of the King County Surface Water Division. This incorporated county-wide mapping and data access to all previously complete computer modeling work.

Grass Lakes Wetland Study, Olympia, WA - Mr. Brascher used the Green Cove Creek HSPF model to evaluate surface and groundwater impacts on hydroperiod fluctuations of the Grass Lakes Wetland.

Quilceda-Allen Watershed Plan, Snohomish County, WA - Assisted county staff in the use of HSPF for watershed planning in Snohomish County. Investigated the impacts of future conditions alternatives and proposed mitigation on streamflow.

Hylebos Creek Study, City of Federal Way, WA - The Hylebos Creek study involved the joint use of the EPA SWMM and HSPF models to determine the extent of the existing flooding problems and to determine the proper location and size of future stormwater detention facilities. This included culvert removal and replacement at several locations throughout the watershed.

Chambers Creek Study, Thurston County, WA - Modeled Chambers Creek streamflow and surface water/groundwater interactions in Thurston County. Evaluated the effects of Chambers Lake outflow to augment downstream streamflow and seasonal groundwater inflow to lake and stream channel.

HSPF Application to the Woodland and Woodard Creek Basins, Thurston County, WA - Mr. Brascher adapted the calibrated Woodland and Woodard Creek HSPF models to represent future full-development conditions. This included the assimilation of all future zoning regulations and any local requirements pertaining to stormwater retention and detention as well as the implementation of regional projects intended to control stream flows.

College Ditch Stormwater Facility, Lacey, WA - Mr. Brascher adapted the Woodland Creek HSPF model to represent the College Ditch area in more detail. This included analysis of several new stormwater and water quality treatment facilities. Hydroperiod analysis was performed to determine the impacts to a ten-acre wetland.

Surface Water Modeling of the Percival Creek Basin, Olympia, WA - Mr. Brascher prepared and calibrated surface water models which represent all developed portions of the Percival Creek Basin. This included analysis of all conveyance systems and existing detention/retention facilities. Identified drainage problems and solutions in the watershed including the placement of regional stormwater control facilities.

SWMM Modeling of the Indian/Moxlie Creek Basin, Olympia, WA - Mr. Brascher applied the EPA SWMM surface and backwater model to the Indian and Moxlie Creek basins. The model was used to assess the impacts of rerouting a section of Indian/Moxlie

Creek to improve fish habitat. Analysis included tidal impacts on current and future flood flows, implementation of local ordinances and regulations and solutions to future drainage problems.

Woodard and Green Cove Creek Development Impacts, Thurston County, WA - Mr. Brascher developed a modeling tool using data generated by the existing HSPF version 12 models for both the Green Cove and Woodard Creek watersheds. This tool can be used to evaluate changes in land use and development strategies.

Log Cabin and Cain Engineering Report, Olympia, WA - Mr. Brascher developed and calibrated a surface water model for the Log Cabin and Cain flood mitigation and engineering report. This included development and analysis of alternative solutions and stormwater facility designs.

HSPF Calibration of the Umatilla River - Mr. Brascher constructed and calibrated an HSFP version 12 model of the Umatilla River. This included use of the irrigation module to determine application rates for croplands. Groundwater interaction with streamflow played a key role in the calibration of the model.

Port of Chelan Regional Water Quality Facility - Mr. Brascher acted as an advisor to Forsgren and Associates in the construction and application of an EPA SWMM model to determine current and future flood flows for the Port of Chelan property. These flows were then used to size a water quality sedimentation facility before discharging into the Wenatchee River.

City of Wenatchee Stormwater Study - Mr. Brascher constructed an EPA SWMM model to determine current and future flood flows for the City of Wenatchee. These flows were then used to size future stormwater improvements.

Burien Depression Analysis, Burien, WA - Modeled flood elevations and groundwater impacts in natural depression draining neighborhood of 200 acres. Evaluated alternative and proposed solutions including pumping and diversion of inflows.

Mystic Lake Court Case, King County, WA - Provided hydrologic analysis of lake elevation changes due to development in a 1200 acre upstream basin. Developed HSPF computer model of lake with and without development and analyzed impacts due to future development.

Southeast Olympia Drainage Basin Study, Olympia, WA - Mr. Brascher developed and calibrated a surface water model for the Southeast Olympia area, including detailed analysis of stormwater facilities, stormwater drainage systems and impacts on wetlands.

CH13 Drainage Basin Study, Thurston County, WA - Mr. Brascher calibrated a surface water model for subbasin CH13 located in the Chambers Creek watershed. Identifying

alternative solutions to current flooding problems and designing stormwater facilities to mitigate the impacts of future development.

Thurston County VIDS - Mr. Brascher customized the VIDS software to meet the needs of the Thurston County Water and Waste Management Division. This incorporated county wide mapping and data access to all previously complete computer modeling work.

City of Kent VIDS - Mr. Brascher customized the VIDS software to meet the needs of the City of Kent Surface Water Division. This incorporated city-wide mapping and data access to all previously complete computer modeling work.