15 March 2017

Attention: **Scott Boettcher**

Via email: scottb@sbgh-partners.com

Re: Chehalis River Basin Flood Authority OCB Board

Dear Mr. Boettcher,

I would like to be considered to be appointed to serve as a member on the Chehalis Board. I grew up in the State of Washington with a passion for our watersheds and the communities and the environment within them. I previously served as the WSDOT State Hydraulic Engineer and was accountable for professional engineering work in the field of hydrology, hydraulics, river engineering, fish passage and stormwater. Managerial duties included development of statewide policy, legislative issues, tort cases, and training related to hydraulics, flooding and restoration for aquatic species. I would like to continue to share my knowledge and experience with others and assist in the development of solutions which will balance flood risk reduction while being good stewards of the environment. I was actively involved with the Chehalis Flood Authority while serving as the State Hydraulic Engineer and would like to continue to provide technical expertise to develop flood solutions in the Chehalis Basin.

I believe my experience, expertise and passion for developing quantifiable solutions to flood damage and improving aquatic species habitat will be a large asset to the board and the State of Washington. Attached is a copy of my resume, demonstrating my extensive knowledge of government processes and function in addition to my vast experience understanding issues related to reducing flood damages and restoring aquatic species.

Please feel free to contact me if you have any questions or need any additional information.

Sincerely,

Casey Kramer, P.E.
ckramer@nhcweb.com
(360)-584-9810 Office
(360) 628-0053 Cell

ENCLOSURE

CASEY M. KRAMER, P.E.

Principal

Education

M.S., Civil Engineering, IIHR Hydroscience and Engineering, University of Iowa

B.S., Civil Engineering, Math and Anthropology Minor, Washington State University

License/Affiliations

Professional Engineer, Washington, California and Alaska

AASHTO Technical Committee of Hydrology and Hydraulics, Former Member

Associate Member, American Society of Civil Engineers

14 Years Experience

Areas of Expertise

Extensive experience with government processes and functions

Extensive experience with understanding issues relevant to reducing flood damages and restoring aquatic species, specifically in the Chehalis Basin

Extensive experience developing budget recommendations to OFM and the governor office for hydraulic and flood projects

Extensive experience working with the public and multiple stakeholders on flood projects (Resource Agencies, Tribes, Landowners, etc)

Casey Kramer is a nationally recognized expert in the fields of river engineering, hydrology, hydraulics, flooding and fish passage while specializing in hydraulic design of infrastructure facilities. Casey has been involved with over 200 water and infrastructure projects throughout Washington State. Casey was formerly the Supervisor for the WSDOT Headquarters (HQ) Hydraulics and Stormwater offices and served as the Chief Hydraulic Engineer which is accountable for professional engineering work in the field of hydrology, hydraulics, river engineering, fish passage and stormwater.

Managerial duties included development of statewide policy, legislative issues, tort cases, and training. Casey has extensive experience supervising inter-disciplinary teams of water resources and transportation specialists and collaborating with vegetation ecologists, aquatic biologists, geomorphologists, geotechnical specialists, and structural specialists to develop environmentally beneficial solutions for highway infrastructure, flood control, stormwater, erosion control, channel stabilization, and environmental restoration projects. Casey has served on multiple NCHRP panels in the fields of hydrology, hydraulic engineering and river engineering in addition to the AASHTO Technical Committee of Hydrology and Hydraulics to assist in the development of new and innovative procedures for determining scour for transportation infrastructure.

PROFESSIONAL EXPERIENCE

Managerial Experience Includes:

- Managing teams of specialists in hydrology, hydraulics, sediment transport and stormwater for projects in a variety of riverine and geomorphic settings including steep mountainous streams, alluvial fans, low gradient large and small rivers, estuaries, and wetlands.
- Managing inter-disciplinary teams of water resources specialists and collaborating with vegetation ecologists, aquatic biologists, geomorphologists, geotechnical specialists and structural specialists to develop environmentally beneficial solutions on highway infrastructure, flood control, stormwater, erosion control, channel stabilization, and environmental restoration projects.
- Preparation of plans, specifications and construction estimates for water resources projects, as well as permitting, project implementation, and construction management.
- Developing scopes of work and budgets.
- Developing methods for tracking workload and delegating to appropriate staff.

Technical Experience Includes:

- **Bridge and Hydraulic Structure Scour** - Serves as a scour expert for complex and unique scour issues.
  - Performs appropriate design guidelines to predict scour depths at bridges, intermediate pier locations and bridge span lengths.
  - Identifies scour critical bridges on existing highways and makes recommendations for repairs or monitoring of these structures during times of flooding.
  - Implementation of monitoring software to help ensure the public is safe in times of flooding.

- **River Engineering and Fish Passage** – Serves as a subject matter expert in the field of river engineering and fish passage design.
  - Analysis of drainage basins using various techniques to calculate streamflow.
  - Analysis of riverine systems using various one- and two-dimensional computer flow models.
  - Design of hydraulic structures that act as habitat restoration or include habitat restoration components.
  - Design of streambank erosion control and stabilization countermeasures.
  - Restoration of riparian corridors, floodplains and floodways and their corresponding components (i.e. levees, woody material, etc.).
  - Design of fish passage culverts and terrestrial wildlife passage structures.
  - Development of new standard specifications, design guidelines, and policies relating to river engineering and fish passage.
  - On-site field inspections of drainage, bridge and erosions sites.
  - On-site assistance during times of flooding and construction management of bank and habitat restoration projects.
  - Serves as a statewide expert to assist Emergency Operations during times of flooding.

- **Major Highway Drainage Systems and Stormwater Treatment** - Designs and reviews complex and unique storm drain systems, culverts, box culverts, large span arches, fish passage structures, open channel flow, energy dissipators and Stormwater Best Management Practices (BMP). Responsible for formal training and project support for water quantity and water quality design throughout Washington State.

- **Numerical Modeling/River Backwater Analysis** - Perform numerical hydrodynamic and sediment transport model simulations to assess effects of proposed designs.
  - Perform backwater analyses with various one and/or two dimensional numerical models such as HEC-RAS or SRH-2D for determining regulatory flood elevations for river channels and bridge openings.
  - Serves as a statewide expert on various floodplain regulations.

EMPLOYMENT HISTORY

5/2015 – Present **northwest hydraulic consultants**
Olympia, WA

Principal Engineer – Manage Olympia office and perform senior level professional engineering work in the fields of hydrology, hydraulics, river engineering and stormwater.

2/2008 – 4/2015 **WSDOT Headquarters Hydraulics**
Olympia, WA

State Hydraulic Engineer – Manage Headquarters Hydraulics office and perform senior level professional engineering work in the field of hydrology, hydraulics, river engineering and stormwater. Managerial duties include policy, legislative issues, tort cases, hiring and training. Assignments involve independent responsibility for organizing, directing and coordinating professional engineering activities of considerable scope and complexity. Responsible for providing guidance to headquarter and region hydraulic engineers and serve as a consultant for complex and unique hydrologic, hydraulic, river engineering and stormwater issues throughout Washington State. Served as a hydraulics and flooding technical expert for the Chehalis Flood Authority.

12/2004 – 2/2008 **northwest hydraulic consultants**
West Sacramento, CA

Water Resources Engineering Consultant - Performed research and consulting in river mechanics, flow hydraulics, fluvial geomorphology, sedimentation, flood risk assessment, and river modeling. Experience in conducting complex river process investigations including field measurements and physical and numerical modeling. Recruited, managed and mentored engineers in the field of hydrology, hydraulics and river engineering.

PROFESSIONAL AND SCHOLARLY AFFILIATIONS

- Professional Engineer (Washington) #44535
- Professional Engineer (California) #C71093
- Professional Engineer (Alaska) #101116
- Washington State Highway Runoff Manual Certificate #1189
- American Society of Civil Engineers (ASCE), Member
- International Association of Hydraulic Engineering and Research (IAHR), Member
- Radiation Safety Certificate for Washington State

SELECTED PUBLICATIONS

Kramer, C. M. and Papanicolaou, A. N, Flow Features around an Array of Isolated Spheres for High and Low Relative Submergences, Water Resources Research (In Preparation)

Papanicolaou, A. N, Kramer, C. M., Tsakiris, A.G., Stoesser, T., Bomminnayuni, S., Chen, Z, Effects of a Fully Submerged Boulder Within a Boulder Array on the Mean and Turbulent Flow Fields: Implications to Bedload Transport, Acta Geophysica, 2012.

Kramer, C. M. and Papanicolaou, A. N, The Effects of Relative Submergence on Flow Patterns Around Large Particles in a Gravel Bed River, EWRI-ASCE National Annual Conference, Omaha NE, May 21-25, 2006

Papanicolaou, A. N and Kramer, C. M., Flow and Sediment Laboratory Measurements Over Unsubmerged Roughness Elements, EWRI-ASCE National Annual Conference, Omaha NE, May 21-25, 2006

Papanicolaou, A. N and Kramer, C. M., The Role of Relative Submergence On Cluster Microtopography and Bedload Predictions in Mountain Streams. Published at the International Symposium, IAHR, River, Coastal, and Estuarine Morphodynamics, October, 2005, Illinois.

Fox, J. F., Papanicolaou, A. N., Hobbs, B., Kramer, C., Kjos, L. Fluid-Sediment Dynamics Around a Barb: Experimental Case Study of a Hydraulic Structure for the Pacific Northwest. *Canadian Journal of Civil Engineering*. October, 2005.

Kramer, C. M. and Papanicolaou, A. N., The Effects of Relative Submergence on Cluster Formation in Gravel Bed Streams, EWRI-ASCE National Annual Conference, Anchorage, AK, May 15-19, 2005

Kramer, C. M. and Papanicolaou, A. N., The Role of Relative Submergence on Cluster Formation, The Geological Society of America, Boise, Idaho, May 3-5 2004.