

**WASHINGTON  
BEST ACHIEVABLE PROTECTION**

# 2019 WORKSHOP



**MAY 14–15, 2019  
SEATTLE, WA**

**HENRY M. JACKSON FEDERAL BUILDING**  
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[WWW.ECOLOGY.WA.GOV/BAP2019](http://WWW.ECOLOGY.WA.GOV/BAP2019)



<b>TIME</b>	<b>TOPIC</b>
8:30 AM	<b>Workshop registration, coffee, and refreshments</b>
9:00 AM	<b>Opening remarks</b> RADM David Throop, Commander, 13th Coast Guard District
9:10 AM	<b>Instructions and safety briefing</b> Scott Knutson, 13th Coast Guard District; Sonja Larson, Ecology
9:20 AM	<b>Non-floating Oil Spill Response Considerations</b> Nancy Kinner, University Professor Civil/Environmental Engineering, University of New Hampshire Director, Coastal Response Research Center Director, Center for Spills and Environmental Hazards
10:20 AM	<b>BREAK</b>
10:30 AM	<b>The Dynamics of Non-floating Oil Response Capacity: A Contractor Perspective</b> Devon Grennan, Senior Vice President, Global Diving & Salvage
11:00 AM	<b>An Introduction to the Underwater Seabed Cleanup Assessment Technique Manual (uSCAT)</b> Lee Britton, Project Specialist, Coastal and Ocean Resources
11:30 AM	<b>Aqua-Guard RotoX Heavy Oil Skimming Technology</b> Nigel J. Bennett, Co-founder, Principal, Aqua-Guard Spill Response Inc.
12:00 PM	<b>LUNCH</b>
1:30 PM	<b>Overview of Recent Dispersant Research</b> Nancy Kinner, University Professor Civil/Environmental Engineering, University of New Hampshire Director, Coastal Response Research Center Director, Center for Spills and Environmental Hazards
2:30 PM	<b>BREAK</b>
2:40 PM	<b>Stop Spills Before They Spread and Avoid Devastating Consequences</b> Igor Kwiatkowski, Business Development Manager, Harbor Technologies
3:00 PM	<b>New Coastal 49 Skimmer</b> Ross Hendrick, Pollution Control Products Sales Manager, Vigor Kvichak LLC
3:20 PM	<b>Recent Advancements in Prince William Sound Open Water Response Capabilities</b> Mark Ploen, President, QualiTech Environmental
3:40 PM	<b>Three-Dimensional Hydrodynamic Modeling in support of Oil Spill and Tanker Drift Modelling in the Salish Sea</b> Jim Stronach, Senior Oceanographer (Ph.D., P.Eng.), Tetra Tech
4:00 PM	<b>Discussion and closing comments</b>
4:30 PM	<b>Adjournment</b>

<b>TIME</b>	<b>TOPIC</b>
8:30 AM	<b>Workshop registration, coffee, and refreshments</b>
9:00 AM	<b>Opening remarks</b> Dale Jensen, Spill Prevention, Preparedness, and Response Program Manager
9:10 AM	<b>Instructions and safety briefing</b> Scott Knutson, 13th Coast Guard District; Sonja Larson, Ecology
9:20 AM	<b>SCAT Reconnaissance Survey Techniques Using Unmanned Aerial Systems (UASs)</b> Ed Owens, President, Owens Coastal Consultants
9:50 AM	<b>Aerial Surveillance and Rapid Reporting of Oil Spills</b> Eddie Kisfaludy, Chief Executive Officer, SciFly
10:20 AM	<b>NOAA's Environmental Response Management Application and Response Data Management</b> Ben Schorr, Physical Scientist, National Oceanic and Atmospheric Administration (NOAA) Office of Response and Restoration and NOAA Co-director CRRC-UNH
10:50 AM	<b>BREAK</b>
11:00 AM	<b>Towards an Operational Forecast System for the Salish Sea to Support Maritime Emergency and Spill Response</b> Tarang Khangaonkar, Principal Program Manager, Coastal Ocean Modeling, Pacific NW National Laboratory
11:20 AM	<b>NOAA Trajectory Modeling for Oil Spill Response</b> Dylan Righi, Oceanographer, NOAA Office of Response and Restoration
11:40 AM	<b>Spill Response in Neah Bay: Makah Perspectives on Unique Challenges and Opportunities</b> Chad Bowechop, Manager, Makah Tribe Office of Marine Affairs Haley Kennard, Environmental Policy Analyst
12:00 PM	<b>LUNCH</b>
1:30 PM	<b>A Review of the Endangered Species Act (ESA) Consultation on the Northwest Area Contingency Plan (NWACP)</b> Elizabeth Petras, Regional Response Team Coordinator, USCG
1:50 PM	<b>Swinomish Indian Tribal Community Spill Modeling Needs for Risk Assessments</b> Tom Ehrlichman, Tribal Council, Swinomish Tribe
2:20 PM	<b>Best Achievable Wildlife Response in Washington</b> Jenny Schlieps, Program and Rehabilitation Manager, Focus Wildlife
2:40 PM	<b>BREAK</b>
2:50 PM	<b>Coastal Mapping: Geographic Response Strategies</b> Stefan Ostrowski and Michael Lowry, Western Canada Marine Response Corporation (WCMRC)
3:20 PM	<b>Evolution of the Worldwide Response Resource List (WRRL) and WRRLtrac Response Support Systems</b> Brianna Yearwood, Project Manager, Genwest Systems Inc.
3:50 PM	<b>Ecology's Equipment Grant Program</b> Laura Hayes, Response Grant Lead, Department of Ecology
4:10 PM	<b>Discussion and closing comments</b>
4:30 PM	<b>Adjournment</b>

## *Non-floating Oil Spill Response Considerations*

### **ABSTRACT**

Discussion of non-floating oil spill risks in Washington and response considerations. Current oil movement patterns in Washington State have heightened public concerns with risks of spills from non-floating oils. This concern is related to uncertainty associated with some oils that may submerge or sink, depending on their chemical properties, environmental factors (weathering), and method of discharge. The presentation will address oil weathering processes which lead to oil sinking, environmental impacts, and the complexities of a non-floating oils response.

### **SPEAKER BIOGRAPHY**

**Nancy Kinner** is a professor of civil and environmental engineering at the University of New Hampshire (UNH). Since 2004, she has been co-director of the Coastal Response Research Center (CRRC), a partnership between UNH and the National Oceanic and Atmospheric Administration (NOAA). The Center brings together the resources of a research-oriented university and the field expertise of NOAA's Office of Response and Restoration to conduct and oversee basic and applied research, conduct outreach, and encourage strategic partnerships in spill response, assessment, and restoration. Kinner's research explores the role of bacteria and protists in the biodegradation of petroleum compounds and chlorinated solvents. In addition, she teaches courses on environmental microbiology, marine pollution and control, the fundamentals of environmental engineering, and environmental sampling and analysis. Kinner received an A.B. from Cornell University in biology (ecology and systematics) and an M.S. and Ph.D. in civil engineering from the University of New Hampshire, where she joined the faculty. She has conducted funded research projects for agencies and research organizations including US EPA, National Science Foundation (NSF), the American Water Works Association Research Foundation (AwwaRF), the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), and the NH Department of Environmental Services.

### **CONTACT**

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## *The Dynamics of Non-floating Oil Response Capacity: A Contractor Perspective*

### **ABSTRACT**

The presentation will cover the challenges associated with the current non-floating oil (NFO) response structure, a discussion of expectation management for stakeholders, and recommendations on continual improvement to a system approach.

### **SPEAKER BIOGRAPHY**

**Devon Grennan** is Senior Vice President of Global Diving & Salvage, Inc. and Moran Environmental Recovery. He has served as the lead executive role of Global since 2009. He joined Global in 1995 and has served many functions, starting as Marine Environmental Supervisor and eventually President and CEO. Mr. Grennan's primary role is to implement Global's strategic plan, including development of partners along the West Coast and abroad, and the expansion and growth of Global's core strategic service lines. His passion is looking for ways to introduce younger generations to the maritime industry, and he is proud to continue his family's history of working on the water. Mr. Grennan graduated from the University of Washington with a Bachelor's in Political Science.

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## ***An Introduction to the Underwater Seabed Cleanup Assessment Technique Manual (uSCAT)***

### **ABSTRACT**

Recently, the Canadian Federal Government and private industry jointly funded the Underwater Seabed Cleanup Assessment Technique (uSCAT) Manual. The *uSCAT Manual: Underwater Seabed Cleanup Assessment Technique for Sunken Oil* outlines the first edition of a standardized procedure and process for the detection, assessment and documentation of sunken oil. The manual assumes that uSCAT will be managed as a component of SCAT. As such, the uSCAT manual is consistent with the SCAT process and procedures that would be applied in Canada, and should be considered as a companion document to the SCAT Manual 3rd edition (Environment and Climate Change Canada, 2018). We recognize that this uSCAT manual is the first version of its kind, without the history, studies and experience that supports SCAT. It can be expected that uSCAT will develop and evolve with experiences and learning from use at an actual spill.

### **SPEAKER BIOGRAPHY**

**Lee Britton** has been working in the environmental construction and consulting industry for approximately 10 years at varying capacities. During his undergraduate degree and upon its completion, he worked on numerous remediation, demolition, abatement, and oil spill response projects in British Columbia, Nunavut, Northwest Territories, and in the Southern United States. Desiring continual growth and personal development, he pursued a Master of Science in Physical Geography at the University of Victoria. His thesis research focused on predicting the retention of diluted bitumen on marine shorelines through the use of standard hydrological models and sediment statistics which initiated his involvement with emergency planning and response. Lee's current position involves him in a range of initiatives, including assessing new and novel techniques for oil spill detection and mapping, applied science, coastal geomorphology, oil spill response and planning, writing and reviewing technical documents, community engagement, and business development.

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## ***Aqua-Guard RotoX Heavy Oil Skimming Technology***

### **ABSTRACT**

Aqua-Guard's RBS TRITON™ (interchangeable brush/drum/disc) skimming technology has been successfully used in hundreds of spills around the globe since the mid 1990's. By leveraging this existing technology, the ROTOX ultra heavy oil skimmer was born. The ROTOX works in conjunction with the RBS TRITON™ skimming technology by macerating large oil solids into a slurry. The slurry is then pumped away for processing. Aqua-Guard's clients are now able to process and potentially reuse much of this recovered ultra-heavy oil, which has been a burden to the industry and the environment for years. The ROTOX skimming system has been successfully used in situ in areas such as large, open, ultra-heavy oil

pits in Venezuela and deployed in broken ice by the USCG from the *CGC Healy* in the high arctic, where the ROTOX system was specifically tested for its maneuverability in broken ice.

Nigel Bennett, Co-Founder of Aqua-Guard Spill Response Inc. of Vancouver, B.C. will show photo and video excerpts of the ROTOX operating in both these scenarios and discuss the future of the ROTOX technology in the market place. RBS TRITON™ skimming technology is patented both in Canada and the USA (US Patent 7,303,688). Testing is certified by DNV (Det Norske Veritas) and ABS (American Bureau Services) and witnessed to ASTM Standard F631-99 for oil recovery volume and efficiency and heavy oil recovery capability.

### ***SPEAKER BIOGRAPHY***

Nigel Bennett is an award-winning entrepreneur, author and a founder of Aqua-Guard Spill Response Inc. ([www.aquaguard.com](http://www.aquaguard.com)). His company, a global leader in oil spill control, protects water, the world's most precious resource. Both Nigel and Aqua-Guard have received multiple awards for their innovation, business excellence, and entrepreneurialism. Nigel received the British Columbia Institute of Technology's 2018 Distinguished Alumni of the Year Award. Nigel has devoted his life to environmental and social responsibility and boldly advocates for "risking it all for what really matters" among the entrepreneurial tribes to which he belongs. Nigel speaks and consults with entrepreneurs and young people worldwide about bringing their talents to solving some of our planet's most pressing challenges. An active philanthropist, Nigel donates all profit from his book sales (*Take That Leap: Risking It All for What Really Matters*) and speaking engagements to organizations that support poverty alleviation, human rights, social services, and the environment.

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## ***Overview of Recent Dispersant Research***

### ***ABSTRACT***

Chemical dispersants were employed on an unprecedented scale during the Deepwater Horizon oil spill in the Gulf of Mexico and could be a response option should a large spill occur. The presentation will provide an overview of the Arctic Sons project conducted to research the state of science of dispersants. The presentation will highlight major findings of five subject matter work groups, including efficacy and effectiveness, physical transport and chemical behavior, degradation and fate, eco-toxicity and sub-lethal effects, and public health and food safety.

### ***SPEAKER***

Nancy Kinner, University Professor Civil/Environmental Engineering, UNH Director, Coastal Response Research Center Director, Center for Spills and Environmental Hazards

## ***Stop Spills Before They Spread and Avoid Devastating Consequences***

### ***ABSTRACT***

The T-FENCE is an oil spill first response system that contains oil 6-10 times faster than traditional response methods, drastically reducing consequences. Spills turn into major disasters because there is nothing onsite or close by to stop oil from spreading once the spill occurs. By the time oil spill responders arrive with their equipment, 3-24 hours after the spill, the damage is already done. This

leads to costly pipeline and infrastructure shutdowns, negative public relations, and regulatory backlash. The T-FENCE is a portable and lightweight containment system that can be deployed by two non-specialized people and a small boat, or from a pier. It revolutionizes oil spill response because it stops the oil from spreading immediately after the spill and can be kept onsite or easily transported to the spill site.

#### ***SPEAKER BIOGRAPHY***

**Igor Kwiatkowski** joined Harbo Technologies in 2018 as the Business Development Manager. He has a background in the industrial sector with 20 years of experience providing technical specialty solutions to his customers with a concentration on the oil and gas market vertical.

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### ***New Coastal 49 Skimmer***

#### ***ABSTRACT***

For over 45 years, skimming boats equipped with Marco Filterbelt skimmers have been on the front line, protecting coastlines, bays, rivers, and harbors around the world. Based in the Pacific Northwest, Vigor is now the premier builder of advanced oil skimming boats worldwide. Two hundred eighty-seven Filterbelt-equipped skimmers have been delivered to date, and we are currently in process on seven new-build skimmers at our Seattle based shipyard. Vigor's product line includes Marco Filterbelt equipped Skimmers, Fast Response Vessel (FRV) Boom Boats, Push Boats, Oil Storage Barges, and other specialty vessels which are in the inventory of all major Oil Spill Removal Organizations (OSROs) in the US and around the world. Extensively proven in real-world response operations, these highly adaptable skimming vessels effectively handle the full range of surface oil types, from very light to very thick, weathered oils contaminated with debris. We are proud to have been selected by Prince William Sound Oil Spill Response Corporation to construct a new Coastal Class 49' skimmer equipped with a 3' wide Marco Filterbelt to be stationed in Valdez, AK. This new state of the art vessel will replace the "Fort Liscum," a 48' Marco Filterbelt skimmer that was delivered to Alyeska in 1977 and which, upon delivery of the new skimmer in late 2019, will be retired after 42 years of service.

#### ***SPEAKER BIOGRAPHY***

**Ross Hendrick** is the Pollution Control and Marco Filterbelt Sales Manager for Vigor's aluminum specialty boat division, Vigor Kvichak LLC, formerly Kvichak Marine Industries, Inc. He joined the company in 1996 and has a background in business development, production management, planning, and logistics.

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## *Recent Advancements in Prince William Sound Open Water Response Capabilities*

### **ABSTRACT**

In 2007, the Response Planning Group, consisting of Prince William Sound oil contingency plan holders, initiated a project to explore the potential of enhancing existing open water skimming capabilities for Prince William Sound. Several years of skimmer performance testing at Ohmsett, independent endurance testing, cold weather testing, sea trials and “proof of concept” modifications, and deployments coupled with lessons learned on actual open water responses, resulted in the development and implementation of four new purpose built open water skimmer barges for Prince William Sound. Transparency and stakeholder involvement throughout the process were critical in managing expectations and keeping all parties informed of planned activities and schedule. In July of 2018, four new barges went into service in Prince William Sound, improving the capability, flexibility, and reliability of open water response.

### **SPEAKER BIOGRAPHY**

**Mark Ploen** has been involved with virtually every aspect of the oil spill planning and response industry. He has worked on 6 continents in over 40 countries, assisting with projects ranging from drill site remediation in the Arctic to sunken oil recovery in the Caribbean. He has responded to numerous major events, including the *Exxon Valdez*, Komi Pipeline in Russia, and Hurricane Katrina. He acted as Offshore Operations Section Chief and Deputy Incident Commander during the Deepwater Horizon incident response. Mark has a unique and comprehensive working knowledge of oil spill response equipment and techniques.

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## *SCAT Reconnaissance Survey Techniques Using Unmanned Aerial Systems (UASs)*

### **ABSTRACT**

The acceptance of new technologies involves investigation and evaluation to understand how to appropriately incorporate potential advancements into existing best practices. Recommendations on the use of Unmanned Aerial Systems (UAS) to support Shoreline Cleanup Assessment Technique (SCAT) programs are based on lessons learned from the opportunistic deployment of small Unmanned Aerial Systems (sUASs) during two river spill responses (August 2016 and April 2019) in Canada and on planned shoreline field trials of a variety of UAS platforms in northern San Francisco Bay CA, (October 2016) and at Gaviota, CA (October 2017). The 2017 field trials successfully tested near real time reconnaissance data acquisition from a large, long-endurance, hybrid multirotor/fixed-wing UAS that was flown Beyond Visual Line of Sight (BVLOS) with prior approval from the Federal Aviation Administration (FAA). Analysis of aerial photography from this platform was used to rapidly generate a new “SOAR” (Shoreline Oiling Aerial Reconnaissance) SCAT form and a Rapid Response Treatment Recommendation (RRTR) form to describe heavy and moderate “oiled” locations for high priority, first response shoreline cleanup operations. The two primary areas for immediate potential applications are aerial reconnaissance surveys during the initial response phase, and more localized overflights to support SCAT missions during systematic surveys or for planning and supporting operations activities.

### ***SPEAKER BIOGRAPHY***

**Dr. Ed Owens** has many years of experience in marine and inland oil spill response and training worldwide. He was the Technical Advisor to Exxon USA for the Shoreline Response to the *T/V Exxon Valdez*, during which he developed the Shoreline Cleanup Assessment Technique (SCAT) concept, and for BP's shoreline response to the Deepwater Horizon incident. Dr. Owens has lived in the Seattle area and worked on West Coast oils spills in Canada and the US for the past 30 years.

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## ***Aerial Surveillance and Rapid Reporting of Oil Spills***

### ***ABSTRACT***

The ability of oil spill prevention and response stakeholders to rapidly detect, characterize, and report incidents in the marine domain is critical to limiting economic and environmental impacts. Visual observation, electro optical, infrared, ultra violet, and synthetic aperture radar-based techniques are all useful tools, but they are limited by the availability of sensors on rapid deployment platforms, tactics employed by pilots and onboard operators, capabilities to disseminate data in real time, and an understanding of the unique behavior of oil on the surface of the ocean. Operational tactics used for military and law enforcement missions can be applied effectively in an oil spill scenario, significantly increasing the ability of local, state, and federal organizations to act quickly and effectively to mitigate the impacts to the economy and the environment.

### ***SPEAKER BIOGRAPHY***

**Eddie Kisfaludy** has 19 years and 7000 flight hours piloting airplanes and helicopters equipped with optical, radar, and signal collecting sensors that process unique information for a multitude of private and government customers. He has led hundreds of aeronautical excursions, flight testing experimental systems that support commercial and government contract requirements. He's the CEO and co-founder of SciFly, LLC, a San Diego based aeronautical company that specializes in the flight test of unique equipment and aerial photographic missions. Kisfaludy holds an Airline Transport Pilot certificate with a Certified Flight Instructor rating. He is an active test pilot for General Atomics Aeronautical and was the senior Curator of Field Operations at the Scripps Institution of Oceanography at UC San Diego for 10 years. Kisfaludy specializes in marine, terrestrial, and aerial techniques supporting oceanographic and government sponsored intelligence, surveillance, reconnaissance, aerial cinematography, and UAS surrogate aircraft missions. As a National Geographic Explorer, he was the first to fly a Robinson news helicopter from London to California across the North Atlantic via Faroe Islands, Iceland, and Greenland. He recently flew a small single engine piston airplane from California to Hawaii (and back) and is a seasoned specialist in aviation safety operations. Kisfaludy is known throughout the aerospace community for making seemingly impossible information collection missions become reality.

### ***CONTACT***

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## *NOAA's Environmental Response Management Application and Response Data Management*

### **ABSTRACT**

NOAA's Environmental Response Management Application (ERMA) is an online mapping tool that integrates spatial data in a centralized application for response planners, responders, decision makers, and for collaboration. As a Common Operational Platform (COP), ERMA provides a central location for data integration and data sharing that supports drills and training, on-scene and remote data sharing, and display during an actual incident. The regional ERMA applications (including the Pacific Northwest ERMA) have secure access for both data layers and users, and they cover the coastal US and territories and Great Lakes. The NOAA team works year-round with regional partners on outreach and training to ensure that data are as current as possible, and that data exchange and sharing protocols are established. A central focus of the NOAA team's approach to spill preparedness and response is on cooperative data management through data management standards and data sharing. NOAA has also developed and uses a newer application for data exchange, data integration and query. The Data Integration Visualization Exploration and Reporting (DIVER) application is a data warehouse and query tool that supports data submittal, data management and data exchange through a secure user based online platform. The DIVER application is specifically designed to support critical response data exchange, and integrates with ERMA for display and visualization.

### **SPEAKER BIOGRAPHY**

**Ben Shorr** is a scientist with NOAA's Office of Response and Restoration and has expertise at the nexus of data and information management, ecologic risk science and GIS principles applied to response and restoration of oil spills and contaminants in the environment. Ben is the regional lead for NW ERMA, project lead for the DIVER data warehouse and query tools, and continues working on the long-term restoration efforts in the Gulf of Mexico in the aftermath of the Deepwater Horizon Oil Spill. Ben is currently appointed as the co-Director of the Coastal Response Research Center at UNH, a cooperative effort between NOAA and the University of New Hampshire. Ben has a BS in Civil and Environmental Engineering from UW-Madison and 20 years of professional experience.

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## *Towards an Operational Forecast System for the Salish Sea to Support Maritime Emergency and Spill Response*

### **ABSTRACT**

In recent years, there has been an increasing community interest in an Operational Forecast System (OFS) for the Salish Sea. Of utmost importance is the need for real time hydrodynamic information in support of maritime emergencies such as an oil spill or search and rescue. This has been identified as a major data gap by NOAA Office of Response and Restoration, which is tasked with supporting emergency responders (U.S. Coast Guard, e.g.). In this talk, we present an overview of the Salish Sea Model (SSM) developed by Pacific Northwest National Laboratory (PNNL) highlighting the model skill in reproducing stratification, lateral tidal movement and vertical circulation cells that have been documented through past oceanographic studies. The model includes freshwater loads from 99 wastewater sources and 161 watersheds and is driven by ocean states and meteorological inputs from

HYbrid Coordinate Ocean Model (HYCOM) and Weather Research and Forecasting (WRF) models respectively. The model is routinely calibrated using tides and monthly monitoring data collected by the Washington State Department of Ecology. Qualitative demonstration of the model's ability to simulate oil spills has been completed through an application to the historic Pt. Wells spill in the Salish Sea using the NOAA General NOAA Operational Modeling Environment (GNOME) model linked to Salish Sea Model hydrodynamics. PNNL has recently initiated extensive model refinement and robust testing using currents data collected by NOAA from over 130 stations in Puget Sound. Following demonstration of the model skill per National Ocean Service (NOS) standards, the Salish Sea Model – Operational Forecast System will be transitioned to NOAA for operational use and maintenance. A progress report from the first year of this three-year effort will be presented.

### ***SPEAKER BIOGRAPHY***

**Dr. Tarang Khangaonkar** is a Principal Program Manager at the PNNL Marine Sciences Laboratory. He provides senior leadership for numerical modeling studies related to coastal ocean hydrodynamics, water quality, biogeochemistry, sediment transport, and pollutant fate and transport analysis. He has over 28 years of experience and has been involved with numerous water quality management and coastal restoration feasibility assessments. In response to a growing demand by the statewide community for a practical oceanographic modeling tool for water quality and ecosystem management, Dr. Khangaonkar and his team have led the development of a 3-D finite volume hydrodynamic and transport model for the Salish Sea. Numerous applications of the Salish Sea Model (SSM) have already been completed to assist with nearshore habitat restoration planning and design, analysis in support of re-establishment of fish migration pathways, and assessment of basin-wide water quality impacts. Dr. Khangaonkar currently serves on a steering committee for the Puget Sound Ecosystem Monitoring Program – Modeling work group and is helping shape the region's ecosystem modeling and analysis activities.

### ***CONTACT***

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## ***NOAA Trajectory Modeling for Oil Spill Response***

### ***ABSTRACT***

NOAA's Office of Response and Restoration (OR&R) is charged with responding to oil spills, chemical accidents, and other emergencies in US coastal areas. OR&R is responsible for providing scientific support for Federal On-Scene Coordinators (usually the Coast Guard). One of the main tools used is the GNOME (General NOAA Operational Modeling Environment) Suite — a set of modeling tools for predicting the transport and fate of pollutants (such as oil) spilled in water. These modeling tools, while mainly used for NOAA's spill response support, are also publicly available for use by the broader academic, response, and oil spill planning communities. Operational spill response is a fast moving target, so to be useful, GNOME is designed to be fast to set up and flexible in what data sources it can ingest to drive transport. We will discuss the input needs of the model, modeling limitations, and describe typical model output. A demonstration will be shown using a simulated spill in the Salish Sea.

### ***SPEAKER BIOGRAPHY***

**Dylan Righi** is a physical oceanographer working for NOAA's Emergency Response Division in Seattle. He graduated from Oregon State University with an M.S. focusing on coastal and satellite oceanography and has been with NOAA since. He currently works for the Office of Response and

Restoration/Emergency Response Division as a response oceanographer and developer. He previously worked for NOAA's Pacific Marine Environmental Laboratory, first in the Ecosystems & Fisheries – Oceanography Coordinated Investigations (EcoFOCI) group studying Bering Sea and Gulf of Alaska dynamics and transports, and then for the NOAA Center for Tsunami Research (NCTR) developing tsunami warning and inundation models.

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## ***Spill Response in Neah Bay: Makah Perspectives on Unique Challenges and Opportunities***

### **ABSTRACT**

The Makah Tribe is indigenous to the greater Cape Flattery region on the West Coast of Washington State. The Makah people depend on the ocean and its resources to support their culture, wellbeing, subsistence and economy, as they have since time immemorial. Since the 1970s, over 2 million gallons of oil have been spilled in the marine and coastal Treaty Areas of the Makah Tribe. It is not a question of if, but when another spill will occur, putting these culturally and economically important resources at risk. The first part of this presentation will outline the unique challenges of oil spill response on the Makah Reservation and adjacent parts of Washington's Outer Coast, including a suite of logistical obstacles associated with the remoteness and limited nature of local resources in Neah Bay, ocean conditions that can complicate response, and the difficulty of achieving sufficient protection of the incredibly rich ecological and cultural resources of the region upon which the Makah people depend. In recognition of these challenges and our experience with the devastating impacts of oil spills to our treaty resources and way of life, the Makah Tribe has prioritized engagement in vessel traffic safety and planning, preparedness, response, and natural resource damage assessment (NRDA) work to ensure that we are prepared to participate in all aspects of a spill in an effective and sovereign manner. The second part of this presentation will describe the approaches the Makah Tribe is taking to address these challenges and protect our resources. These approaches include engagement in policy, planning, and rule-making forums, investment in local capacity and planning, strategic partnerships, and a transboundary and inclusive understanding of threats and opportunities within our waters. We conclude by offering some lessons learned and our perspective on needs and opportunities moving forward.

### **SPEAKER BIOGRAPHIES**

**Chad Bowechop** is an ocean policy advisor for the Makah Tribal Council located in Neah Bay, Washington, and is the manager of the Tribe's Office of Marine Affairs. Chad has been involved in helping Washington create a safer marine environment by emphasizing oil spill prevention and enhancing marine domain awareness off the coast of Washington and within the waters of Puget Sound. The son of the late Makah Chairman George Bowechop, Chad learned first-hand from his father and grandfather the importance of the 1855 Treaty of Neah Bay. The Makah Tribal Council's efforts in protecting the Washington Coast from oil spills reflect tribal dedication to protecting the rights that the Makah reserved in that treaty. Chad Bowechop contributed in the placement of both the state-sponsored and later the industry-sponsored rescue tug in Neah Bay, represented the Makah Tribal Council in the State's Vessel Traffic Risk Assessment, facilitated the Makah Tribe becoming the first tribal member of the Regional Response Team, and has assisted with state and federal legislation for both important spill prevention and vessel traffic safety measures.

**Haley Kennard** is an Environmental Policy Analyst consultant to the Makah Tribe's Office of Marine Affairs. She previously completed the Washington Sea Grant Marc Hershman Marine Policy Fellow with the Makah Tribe, focusing on oil spill response and climate change adaptation planning. Her work focuses on the priorities of the interdepartmental Makah Tribe Oil Spill Working Group and on engagement in policy and planning forums relevant to the marine environment and the protection of treaty marine resources. She holds a Master's of Marine and Environmental Affairs from the University of Washington.

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### ***A Review of the Endangered Species Act (ESA) Consultation on the Northwest Area Contingency Plan (NWACP)***

#### **ABSTRACT**

For the past several years, the USCG and EPA have been preparing analyses. We are now waiting for the ESA consultations to be completed and for the biological opinions from the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) to arrive. We anticipate that the consultations will bring changes that must be implemented to limit risks to endangered species. This presentation will go over the analyses and help prepare responders to adapt.

#### **SPEAKER BIOGRAPHY**

**Elizabeth Petras** is the Regional Response Team coordinator for the USCG, District 13. She has been in the position for two and a half years and previously worked as a marine biologist and policy analyst for NOAA's National Marine Fisheries Service. Elizabeth first got involved in spill response during the Deepwater Horizon spill and was part of NOAA's response to the Refugio incident in California. Her background includes many years working on whale watch boats in the San Juan Islands. Elizabeth has lived all over the country and four years ago returned to her adopted home town of Seattle.

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### ***Swinomish Indian Tribal Community Spill Modeling Needs for Risk Assessments***

#### **ABSTRACT**

Oil spill modeling in the Salish Sea is of primary importance to federally recognized treaty fishing tribes. The Swinomish Indian Tribal Community and several other treaty fishing tribes are signatories to the Treaty of Point Elliot of 1855. For Swinomish, the areas of emphasis for spill modeling should include their reserved treaty fishing areas in a large portion of the Skagit River and in marine waters of the Salish Sea from the U.S.–Canada border south to the northern environs of Seattle. We encourage scientists creating new or refined oil spill models to prioritize allocation of modeling resources for good predictive judgments affecting these treaty fishing grounds and beaches. They are the economic and cultural sources for Swinomish tribal members, since time immemorial.

### ***SPEAKER BIOGRAPHY***

**The Swinomish Indian Tribal Community** is a sovereign Indian tribe recognized by the United States government. It governs a reservation located adjacent to the mouth of the Skagit River on the Salish Sea. The ancestors of the Swinomish entered into the Treaty of Point Elliot with the United States in 1855 in which the Swinomish reserved treaty fishing rights in a large portion of the Skagit River and in marine waters of the Salish Sea from the U.S.–Canada border south to the northern environs of Seattle. Today the treaty fishery is a crucial economic and subsistence activity of the tribe, which manages and regulates the exercise of treaty fishing rights by its members. It is also the cultural touchstone for Swinomish life today.

**Tom Ehrlichman** is lead partner at Dykes Ehrlichman Law Firm, a northwest land use and environmental law firm. For the past seven years, Dykes Ehrlichman has served as special counsel to the Swinomish Legal Department on matters related to vessel traffic and protection of reserved treaty fishing rights in the Salish Sea. For 27 years, Tom has been heavily engaged in the policy, regulatory, and legislative land use work of tribes and federal, state and local agencies, primarily in Washington State. Tom is a Washington native, raised a family here, roves Washington beaches with his wife, Barbara, and reads Northwest history.

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## ***Best Achievable Wildlife Response in Washington***

### ***ABSTRACT***

Oiled wildlife rehabilitation is frequently considered the principal component in oiled wildlife response. This presentation discusses wildlife response phasing and best practices for determining the scope and scale of a response. Wildlife planning components and animal care standards critical to a successful response are discussed, as well as challenges specific to Washington State.

### ***SPEAKER BIOGRAPHY***

**Jenny Schlieps** has been a wildlife rehabilitator for 25 years and has specialized in oiled wildlife response and preparedness since 2008. She has responded to spills throughout North America and in Europe. She serves on the board of the National Wildlife Rehabilitators Association and the Washington Wildlife Rehabilitation Association.

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## ***Coastal Mapping: Geographic Response Strategies***

### ***ABSTRACT***

Since 2012, the Western Canada Marine Response Corporation (WCMRC) has been developing coastline site specific shoreline protection strategies, known as Geographic Response Strategies (GRS), for the entire British Columbia coast. The project started in Vancouver Harbour and has since spread along the southern shipping lane and into Prince Rupert Harbour. Recognizing that BC has 27,000 km of coastline, and with 450 strategies already developed, WCMRC saw a need to semi-automate the GRS development

process from data collection all the way to the final GRS output. Along with Hemmera, WCMRC has developed a new sensitivity model to quickly assess intertidal sensitivity to oiling based on shoreline type, biological, archaeological, cultural and socio-economic value of the shoreline. Additionally, the model assessed the shoreline based on operational protection feasibility. After the model was developed, run, and verified in the field, the GRS development process was automated. Now, using ESRI GIS web tools, a GRS can be developed automatically with the geo-referenced PDF GRS easily exported to field tablets for operational use. Overall, the enhancements have provided WCMRC with the tools necessary to manage the GRS program for BC's entire 27,000 km of shoreline. WCMRC would like to give an update on the program and how these GRS are used by operations teams in the field.

### ***SPEAKER BIOGRAPHIES***

**Michael Lowry** is the communication manager for WCMRC. He is a strategic communications and public relations consultant with more than 15 years' experience in domestic and international settings across the private, public, and not-for-profit sectors. He has designed and developed successful communication campaigns for some of BC's most influential organizations, including Harbour Air, Pacific Blue Cross, and Columbia Power. Michael has a BA in Communications from the University of Calgary and a B.Sc. in Politics and International Relations from the London School of Economics.

**Stefan Ostrowski** is the Response Readiness Supervisor for WCMRC. Stefan works as part of a team responsible for maintaining WCMRC's certification with Transport Canada, planning and executing exercises, managing incidents, developing response plans, and conducting community engagement. Stefan has a BA in Geography and History from McGill University and joined WCMRC in 2014.

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## ***Evolution of the Worldwide Response Resource List (WRRL) and WRRLtrac Response Support Systems***

### ***ABSTRACT***

Working in conjunction with state and federal regulators, members of the Northwest Area Planning Committee, and regional response organizations, Genwest Systems designed and implemented the original Western Response Resource List (WRRL). With additional response resources being added from other states, Canada, and Norway, and expanding domestic and international interest, WRRL has now been renamed the *Worldwide* Response Resource List. Additionally, Genwest has developed and deployed a compatible response resource tracking system called WRRLtrac. Both WRRL and WRRLtrac are available for free use at the WRRL web site ([www.wrri.world](http://www.wrri.world)), which is maintained by Genwest. This presentation will provide descriptions and updates on both of these planning and response support systems.

### ***SPEAKER BIOGRAPHY***

Genwest Systems staff have been responding to oil spills and designing and using response information systems for over 40 years. **Brianna Yearwood** is the Project Manager for all of Genwest's commercial response work, including the WRRL systems. Brianna works closely with Al Hielscher, the original designer and developer of both WRRL and WRRLtrac, on the maintenance and continuing evolution of WRRL products, with Al maintaining these systems from his new base in California.

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## ***Ecology's Equipment Grant Program***

### **ABSTRACT**

Washington has seen a dramatic shift in oil transportation recently, both in the types of oil and in the locations where large quantities of oil are transported. These changes affect the risks associated with oil transportation. Many communities don't have response resources for spills of oil or hazardous materials. To help solve this problem, we provide equipment and training grants to emergency responders. These grants help local communities effectively prepare for and respond to spills.

### **SPEAKER BIOGRAPHY**

**Laura Hayes** has over 10 years of oil spill response experience with the United States Coast Guard and Washington State Department of Ecology. She has a Bachelor of Science in Environmental Chemistry and is currently working on her Masters of Science in Industrial Hygiene. She grew up in Washington State and enjoys spending time with family and friends in her free time.

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## ***About the BAP 2019 Workshop***

The Washington State Department of Ecology and the United States Coast Guard are co-hosting this Best Achievable Protection (BAP) workshop to build on the Northwest Area Contingency Plan ad hoc equipment review meetings. The BAP workshop allows the spill response community, tribal governments, and interested public to share lessons learned from spills and planning efforts, and to review new technologies before spills occur. BAP is achieved through requiring best achievable technology, staffing levels, training procedures, and operational methods in oil spill contingency plans. BAP uses a collaborative approach to address response issues and remove technical or regulatory barriers to the implementation of new technologies. The Department of Ecology calculated that a major marine oil spill could cost Washington's economy billions of dollars and adversely affect over 100,000 jobs due to disruptions to maritime shipping and public port activities, recreation, tourism, and injuries to state fish, shellfish, and wildlife resources. Preparedness helps to minimize impacts to sensitive environmental, cultural, and economic resources by having appropriate training equipment and personnel ready to respond when spills occur. For more information on BAP, visit <https://ecology.wa.gov/Regulations-Permits/Plans-policies/Contingency-planning-for-oil-industry/Best-Achievable-Protection>.

For ADA accommodation for disabilities, or printed materials in a format for the visually impaired, call Ecology at (360) 407-7211 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at (877) 833-6341.