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A New Tool for the Evaluation of Shoreline Treatment Options in Remote Areas

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Many coastal regions throughout the world have limited infrastructure to support a shoreline response operation, so that remoteness frequently is a limiting logistics and operations factor. As response time is critical to minimize the potential for oil to be reworked, buried, or redistributed on the shoreline, knowing the air, land, or sea distances from spill response support centers, and understanding the environmental factors that potentially would constrain safe deployment to a site and accessibility at that location are critical to the planning and decision process. The Shoreline-Oil Spill Response Viability Analysis (S-OSRVA) web-based GIS tool was developed to provide decision support for planners and responders on the issue of shoreline remoteness and accessibility in the mobilization and deployment of response resources. The first application of the tool was for the Arctic Ocean and adjacent seas (S-COSRVA: see Brude et al., InterSpill 2025). This presentation describes two further applications for the Canadian North and Canadian Great Lakes regions as part of the Canadian Oceans Protection Plan (OPP) Multi-Partner Research Initiative (MPRI) programme.

S-OSRVA is a two-phase, five-component process that initially involves a Feasibility Analysis for Shoreline Treatment **(FAST**) and an Operational Systems Viability Analysis **(OSVA)** as described elsewhere (Brude et al., 2025).The second phase has three components which analyse distance and environmental parameters that limit or constrain access and deployment of the viable systems, determined by FAST and OSVA, to a shoreline (coastal cell). A Remote Viability Analysis **(RVA),** defines distances from national and/or regional oil spill support centers to existing potential forward operating base (FOB) locations, and from FOBs to a Forward Staging Area (FSA)(coastal cell). The FSAs are generally small communities with few, if any, support services. A Coastal Deployment Viability Analysis (**CDVA**), the fourth component, analyses the metocean environmental parameters within a coastal cell that constrain air-, land-, and water-based transport platforms to safely deploy the Operational Systems from an FOB to temporary FSAs. The fifth, the Shoreline Access Vi**a**bility Analysis **(SAVA**), identifies the environmental constraints within a cell that limit transfers of the shoreline treatment Operational Systems to a shoreline segment. The deployment to a shoreline site within a coastal cell in remote areas typically requires on-water operations for access.

The Canada North RVA uses ten (10) regions that cover the coast from southern Labrador to Alaska. Air access to FOBs is the only realistic viable option for most of Canada North as road access is limited to very few locations. The S-OSRVA for the five (5) Canadian Great Lakes has separate data bases for each lake, with Huron subdivided into the main body of the lake and Georgian Bay. The focus of the Great Lakes RVA varies regionally, for example, water access prevails in the northern areas of the system, whereas road access is viable in the more populated southern areas. Similarly, in the Arctic S-COSRVA, access to FOBs in the Faroe Islands, Iceland, Finland, Norway, and Sweden is dominantly by road, whereas air access prevails in Canada North, Greenland, and USA-Alaska.