January 12, 2022

To Alaska Department of Environmental Conservation,

This is a written comment concerning the (27) Repeal and readopt **18 AAC 75.495 - Regional master discharge prevention and contingency plan boundaries** to update regional planning boundaries and current place name designations.

Safeguard Marine (SGM) submitted a report on July 15, 2019, to Prince William Sound Regional Citizens Advisory Committee (PWSRCAC), depicting a maritime analysis of eight Potential Places of Refuge (PPOR) within Prince William Sound. The scope of this study focused on the PPOR closest to the ship traffic lanes as previously determined in the Prince William Sound Subarea Contingency Plan to be capable of providing for deep draft vessels – specifically crude oil tanker vessels in distress. The PPOR analyzed were: Outside Bay Anchorage (60 38.26 N 147 29.48 W); North Jack Bay Anchorage (61 02.41 N 146 37.30 W); South Jack Bay Anchorage (61 01.98 N 146 37.49 W); Port Etches Moorage Depicted Buoy Position (60 20.39 N 146 33.20 W) as well as the Port Etches Moorage Actual Buoy Position (60 20.52 N 146 33.50 W).

SGM utilized scientific empirical analysis of the PPOR using ship simulations. The ship simulations were performed at the Alaska Maritime Training Center, AVTEC in Seward, Alaska. The simulators used are state of the art 300-degree Kongsberg ship bridge simulators and are US Coast Guard approved for maritime training. The ship simulations were conducted using ship pilot vetted models that were accurate representations of the oil tanker vessels in Prince William Sound, and the simulations were performed by active State of Alaska licensed Southwest Alaska Pilots. The environmental conditions used came from PWSRCAC and represent realistic wind and sea states for PWS.

The simulations used tankers in distress in real time to anchor at the PPOR. The ship was then swung 360-degrees to determine a safe swing radius of the anchored vessels at each PPOR. The results found that none of the eight prescribed latitude and longitude anchor or mooring positions were safe for an oil tanker in distress. However, alternative latitude and longitude anchor and mooring positions at several PPOR were also identified and analyzed.

The cover page including the executive summary of the report is below. A link to the full report can be accessed at https://www.pwsrcac.org.

Ship Simulation Modeling and Mariner Study of the Maritime Implications for Tank Vessels Utilizing Potential Places of Refuge, Prince William Sound Alaska

Captain Jeff Pierce, President
Jonathan J. Pierce, Ph.D. Vice President
Safeguard Marine, LLC
July 15, 2019

Prepared for: Prince William Sound Regional Citizens' Advisory Council (PWSRCAC)

Purpose: The purpose of this research is to evaluate the safety of Potential Places of Refuge (PPOR) in Prince William Sound (PWS) for decision-making concerning oil tankers in distress. The Alaska Regional Response Team (ARRT) has identified PPOR for a vessel in distress throughout the state of Alaska. The Prince William Sound Subarea Contingency Plan (August 2018) identifies 21 PPOR as suitable for deep draft vessels including tank vessels (e.g. oil tankers). Six of these PPOR are too far west from the Traffic Separation Scheme in PWS to be utilized by an oil tanker. Seven of these PPOR are already utilized by oil tankers for anchoring or docking (e.g. Valdez Marine Terminal Berths, Knowles Head Anchorage) so there is sufficient information about their safety. However, there is a lack of empirical information about the safety of the eight remaining PPOR in PWS for oil tankers in distress.

Methods: The safety of these eight PPOR was evaluated using interviews with local subject matter experts as well as stakeholders (n=16), and using ship simulated maneuvers (n=72). The simulated maneuvers were conducted by Southwest Alaska Pilots Association members using models representing Trans-Alaska Pipeline System oil tankers in distress to varying degrees. The simulated maneuver began 0.5 miles from the prescribed latitude and longitude of the PPOR position. The oil tanker then proceeded based on its own headway (3 knots) and two tugboats assisting under extreme weather conditions. Determining whether the PPOR is safe for the oil tanker in distress is primarily a function of whether the tanker grounded or potentially could run aground and insufficient swing room when anchoring or mooring.

Results: The results found that none of prescribed latitude and longitude anchor or mooring positions at the eight PPOR are safe for an oil tanker in distress. However, alternative latitude and longitude anchor and mooring positions at several PPOR were also identified and analyzed. Alternative latitude and longitude anchor positions at Port Etches Anchorage and Zaikof Bay Anchorage were found to be safe for oil tankers in distress. In addition, McPherson Bay Anchorage and an alternative anchor location at North Smith Island Anchorage could also be used with caution as a PPOR for an oil tanker in distress.

Conclusions: Decisions about the use of PPOR come down to the best available information and best professional judgment. The empirical research in this report provides information about the safety of eight PPOR in Prince William Sound for oil tankers in distress and should be utilized to inform professional judgements about the identification and utilization of these PPOR.

Recommendations:

PPOR Decision-Making

1. An oil tanker in distress should seek a PPOR based on an incident-specific basis. Above all else, the best professional judgement should be used based on the best information available and understand that no PPOR is pre-approved.
2. Given that utilizing a PPOR should be incident-specific, and none are pre-approved, an oil tanker in distress should seek to maneuver to the closest pre-identified PPOR. In Northern-PWS that means various locations in Port Valdez, in Mid-PWS that is Knowles Head Anchorage, and in South-PWS either Port Etches Anchorage (60 19.91 N 146 36.05 W) or Zaikof Bay Anchorage (60 19.05 N 146 59.03 W).

Updating the Prince William Sound Subarea Contingency Plan (August 2018) and Charts

3. The Prince William Sound Subarea Contingency Plan (August 2018) should remove the following PPOR locations from those listed as safe for deep draft vessels: Outside Bay Anchorage (60 38.26 N 147 29.48 W); North Jack Bay Anchorage (61 02.41 N 146 37.30 W); South Jack Bay Anchorage (61 01.98 N 146 37.49 W); Port Etches Moorage Depicted Buoy Position (60 20.39 N 146 33.20 W) as well as the Port Etches Moorage Actual Buoy Position (60 20.52 N 146 33.50 W).

4. The Prince William Sound Subarea Contingency Plan (August 2018) should revise the latitude and longitude anchor locations for the following PPOR concerning deep draft vessels: North Smith Island Anchorage (60 31.31 N 147 24.22 W); Port Etches Anchorage (60 19.91 N 146 36.05 W); and Zaikof Bay Anchorage (60 19.05 N 146 59.03 W).

5. The Port Etches Moorage buoy position should be updated to the actual buoy position. Furthermore, the safe working load of the buoy ground tackle should be reported in the Prince William Sound Subarea Contingency Plan (August 2018).

6. PPOR should be identified on nautical charts with an associated symbol such as an anchor and the label “PPOR”. This would assist pilots and shipmasters to quickly identify the closest PPOR in case of a vessel being disabled or otherwise in distress.

Additional Research

7. Additional research should evaluate the safety of deep draft vessels utilizing the remaining PPOR locations within PWS, in particular cruise ships using the following PPOR locations: Pigot Bay Anchorage, South College Fjord Anchorage, and North College Fjord Anchorage.

8. Additional research should evaluate the safety of various deep draft vessels such as oil tankers, LNG carriers, cruise ships, container ships and cargo ships utilizing pre-identified PPOR in the eight other subareas in Alaska: Aleutians, Bristol Bay, Cook Inlet, Kodiak, North Slope, Northwest Arctic, Southeast, and Western.