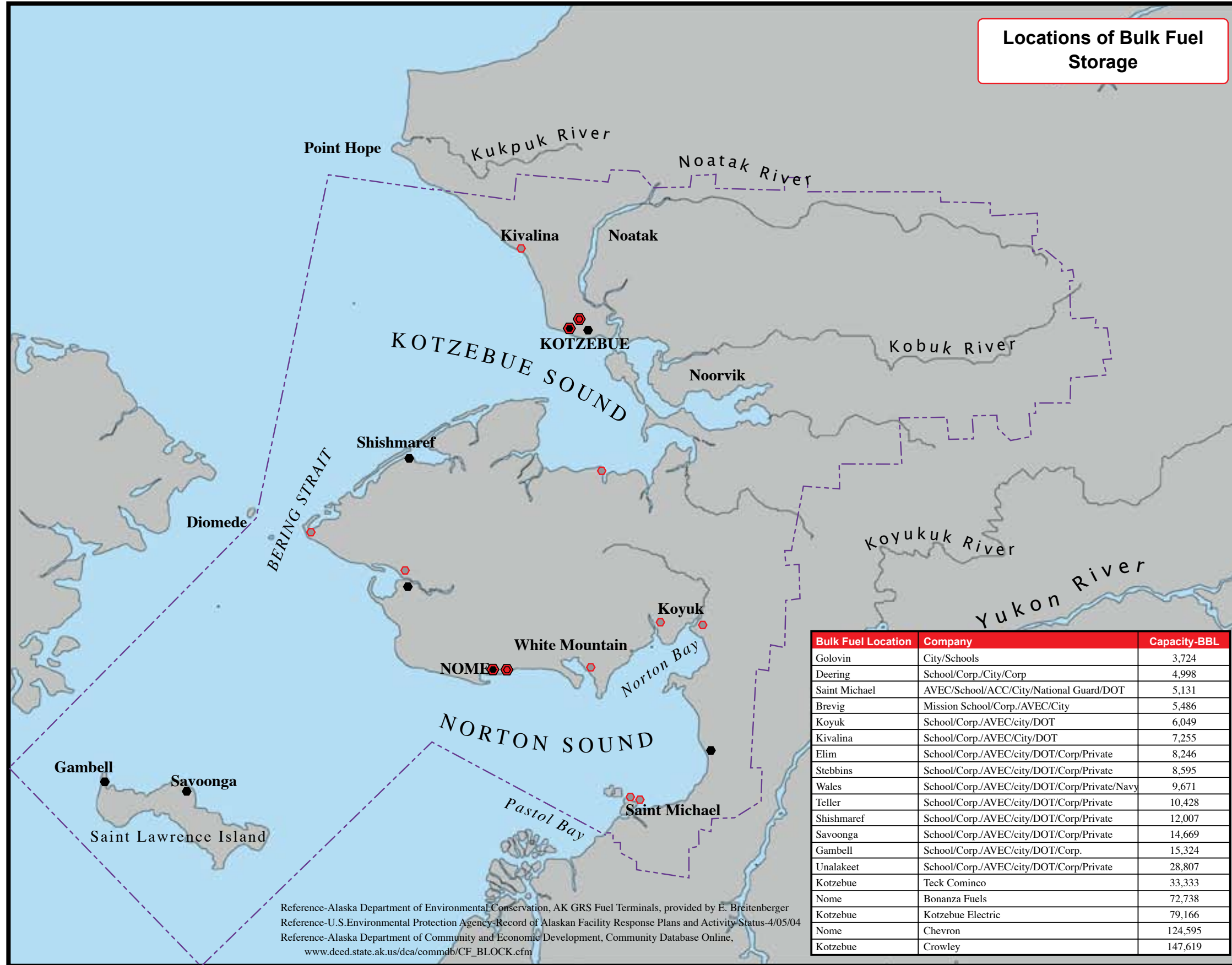


Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE

Locations of Bulk Fuel Storage



Reference-Alaska Department of Environmental Conservation, AK GRS Fuel Terminals, provided by E. Breitenberger
 Reference-U.S.Environmental Protection Agency-Record of Alaskan Facility Response Plans and Activity-Status-4/05/04
 Reference-Alaska Department of Community and Economic Development, Community Database Online,
 www.dced.state.ak.us/dca/commdb/CF_BLOCK.cfm

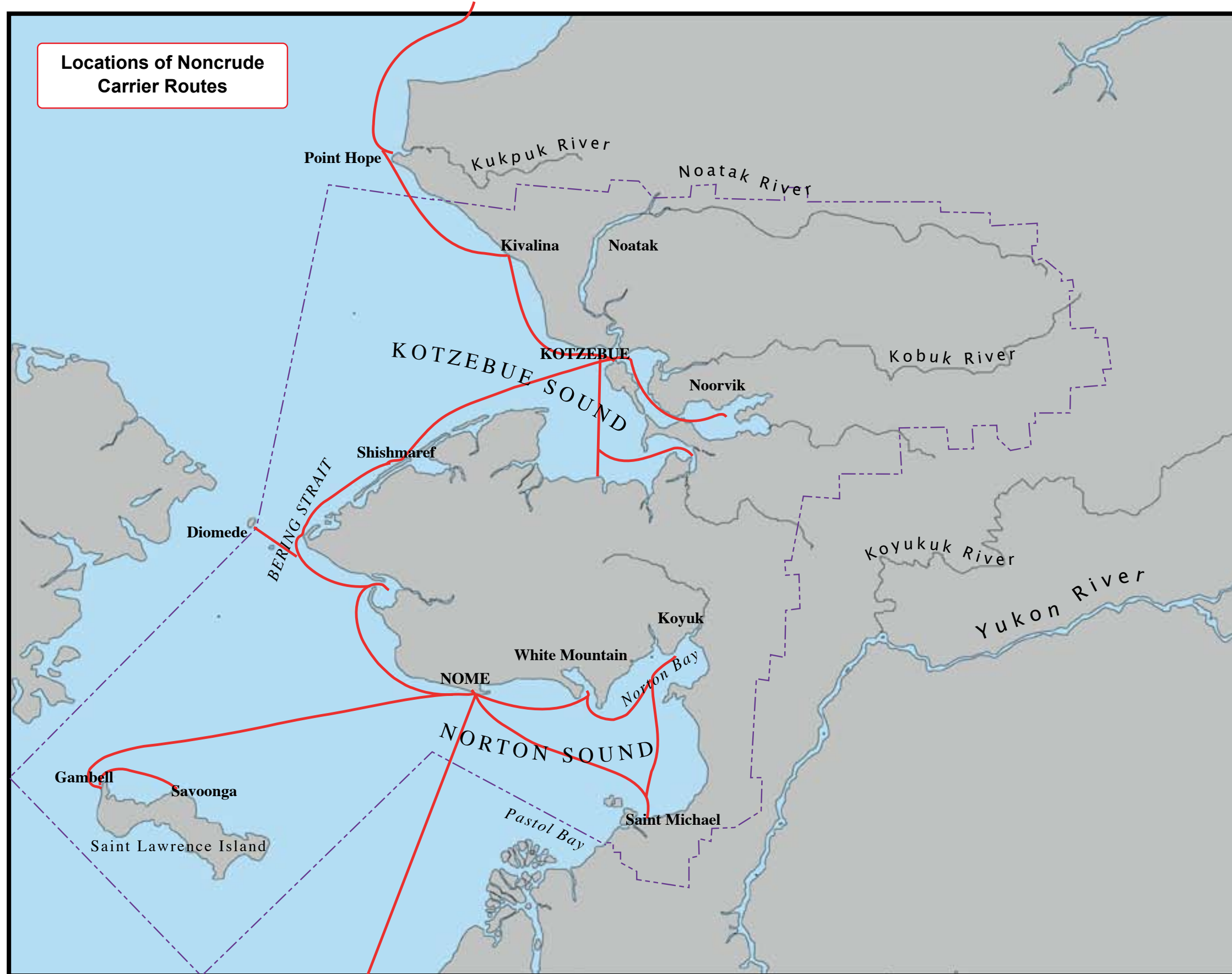
RISK SYMBOLS

- Response Equipment Depot
 - ★ Yellow Star
 - ★ Purple Star
 - ★ Green Star
- Airport
 - ✈ Airport
 - ✈ Airport, lighted
- Dock
 - ⚓ Dock
 - 🏗 Crane
 - 🚢 Abandoned Canneries
- Frequent Fishing Vessel
 - 🚤 Frequent Fishing Vessel
 - 🚢 Barge
- Tramper Offload Activities
 - 🚚 Primary (≥20 loads)
 - 🚚 Secondary (≥20 loads)
- Key Nearshore Fishing Grounds
 - 🌊 Key Nearshore Fishing Grounds
- NW Arctic Subarea Noncrude Carrier Routes
 - 🚢 Carrier route
- Bulk Fuel Storage Sites > 5,000 bbls
 - - 3k-9,999 bbl.
 - - 10k-39,999 bbl.
 - - 40k-99,999 bbl.
 - - 100k-299,999 bbl.
 - - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - = Persistent
 - = Non-Persistent
 - - 24-71 bbl.
 - - 72-142 bbl.
 - ▲ - 143-214 bbl.
 - ▲ - 215-285 bbl.
 - ◆ - 286-357 bbl.
 - ◆ - 358-428 bbl.
 - - 429-800 bbl.
 - - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
 - 🚢 Cruise and AMHS Ship Traffic
- Zone Boundary
 - Zone Boundary

Figure H-1. Locations of bulk fuel facilities and pipelines.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE



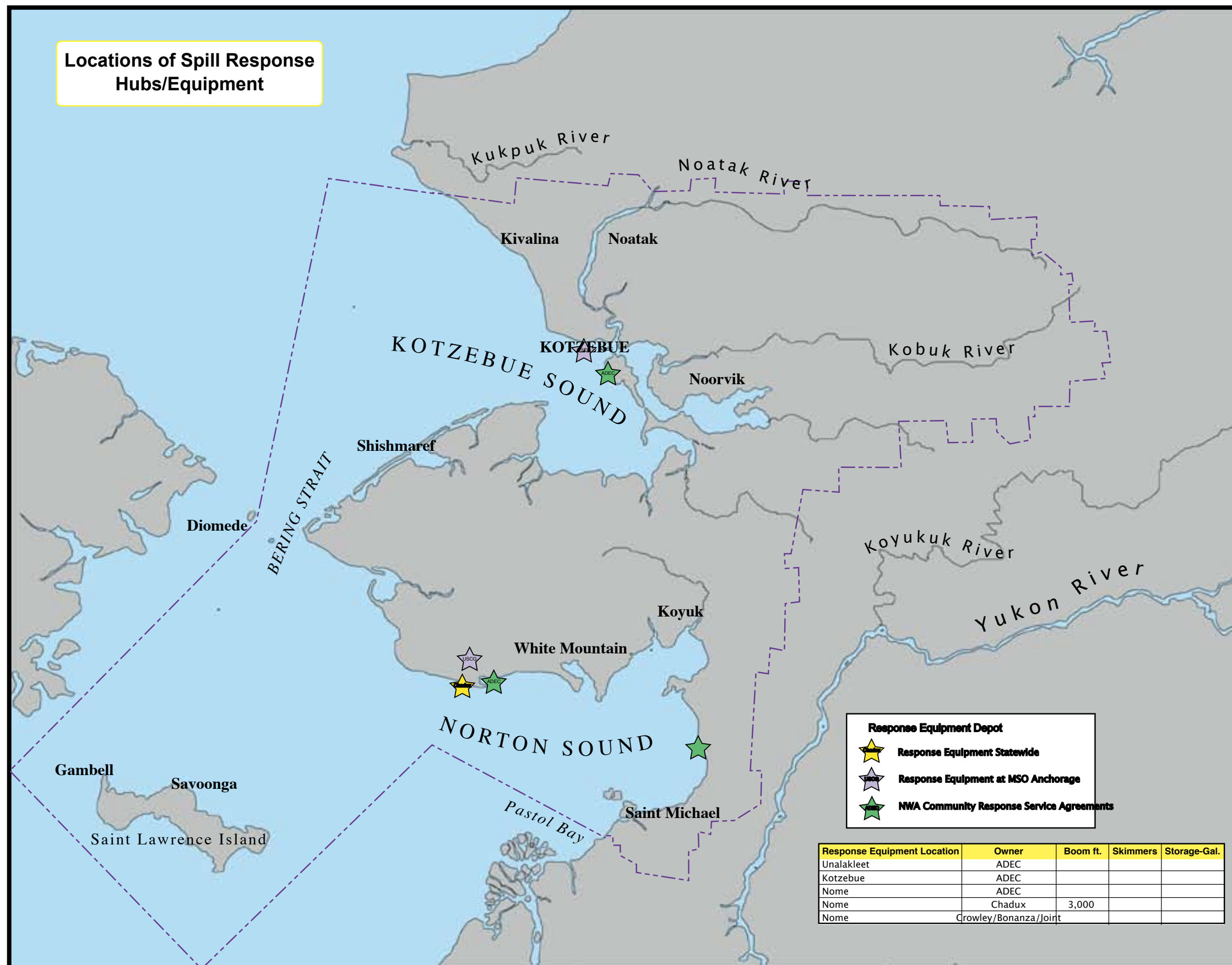
RISK SYMBOLS

- Response Equipment Depot
 -
 -
 -
- Airport Airport, lighted
- Dock Crane Abandoned Canneries
- Frequent Fishing Vessel Barge
- Tramper Offload Activities
 - Primary (□20 loads)
 - Secondary (□20 loads)
- Key Nearshore Fishing Grounds
- NW Arctic Subarea Noncrude Carrier Routes
 - Carrier route
- Bulk Fuel Storage Sites > 5,000 bbls
 - 3k-9,999 bbl.
 - 10k-39,999 bbl.
 - 40k-99,999 bbl.
 - 100k-299,999 bbl.
 - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - = Persistent = Non-Persistent
 - 24-71 bbl.
 - 72-142 bbl.
 - 143-214 bbl.
 - 215-285 bbl.
 - 286-357 bbl.
 - 358-428 bbl.
 - 429-800 bbl.
 - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
- Zone Boundary

Figure H-2. Location of noncrude carrier routes.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE



Locations of Spill Response Hubs/Equipment

RISK SYMBOLS

- Response Equipment Depot
 - ★ Response Equipment Statewide
 - ☆ Response Equipment at MSO Anchorage
 - ★ NWA Community Response Service Agreements
- Airport
 - ✈ Airport, lighted
- Dock
 - ⚓ Abandoned Canneries
- Frequent Fishing Vessel
 - 🚢 Barge
- Tramper Offload Activities
 - 🚛 Primary (120 loads)
 - 🚛 Secondary (120 loads)
- Key Nearshore Fishing Grounds
- NW Arctic Subarea Noncrude Carrier Routes
 - 🚢 Carrier route
- Bulk Fuel Storage Sites > 5,000 bbls
 - 🔴 - 3k-9,999 bbl.
 - 🔴 - 10k-39,999 bbl.
 - ⬛ - 40k-99,999 bbl.
 - 🔴 - 100k-299,999 bbl.
 - 🔴 - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - = Persistent ● = Non-Persistent
 - 🟩 - 24-71 bbl.
 - 🟩 - 72-142 bbl.
 - 🟩 - 143-214 bbl.
 - 🟩 - 215-285 bbl.
 - 🟩 - 286-357 bbl.
 - 🟩 - 358-428 bbl.
 - 🟩 - 429-800 bbl.
 - 🟩 - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
- Zone Boundary

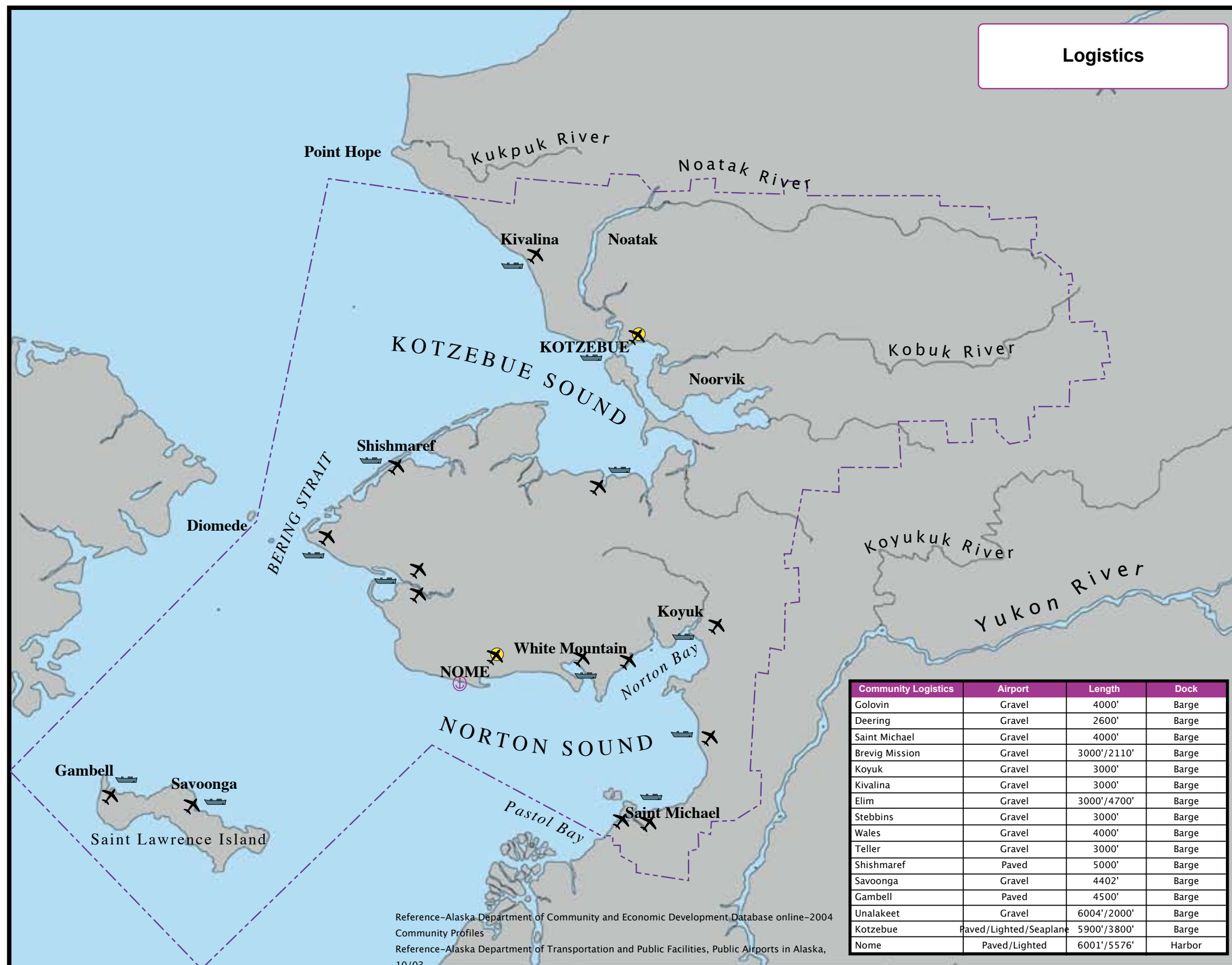
Response Equipment Location	Owner	Boom ft.	Skimmers	Storage-Gal.
Unalakleet	ADEC			
Kotzebue	ADEC			
Nome	ADEC			
Nome	Chadux	3,000		
Nome	Crowley/Bonanza/Joirt			

Figure H-3. Locations of communities with spill response agreements, spill response hubs and equipment depots.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE

Logistics



RISK SYMBOLS

- Response Equipment Depot: Yellow star, Purple star, Green star
- Airport: Black airplane icon; Airport, lighted: Yellow airplane icon
- Dock: Anchor icon; Crane: Crane icon; Abandoned Canneries: Fish icon
- Frequent Fishing Vessel: Circle with fish icon; Barge: Barge icon
- Tramper Offload Activities: Primary (□20 loads) and Secondary (□20 loads) icons
- Key Nearshore Fishing Grounds: Circle with dots icon
- NW Arctic Subarea Noncrude Carrier Routes: Red line icon; Carrier route: Red line with arrow icon
- Bulk Fuel Storage Sites > 5,000 bbls:
 - Red circle: - 3k-9,999 bbl.
 - Red circle with dot: - 10k-39,999 bbl.
 - Black circle: - 40k-99,999 bbl.
 - Red circle with cross: - 100k-299,999 bbl.
 - Red circle with star: - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004:
 - Green circle: = Persistent; Yellow circle: = Non-Persistent
 - Green square: - 24-71 bbl.
 - Yellow square: - 72-142 bbl.
 - Green triangle: - 143-214 bbl.
 - Yellow triangle: - 215-285 bbl.
 - Green diamond: - 286-357 bbl.
 - Yellow diamond: - 358-428 bbl.
 - Green circle with cross: - 429-800 bbl.
 - Yellow circle with cross: - 801-2619 bbl.
- Cruise and AMHS Ship Traffic: Blue line icon
- Zone Boundary: Dashed purple line icon

Community Logistics	Airport	Length	Dock
Golovin	Gravel	4000'	Barge
Deering	Gravel	2600'	Barge
Saint Michael	Gravel	4000'	Barge
Brevig Mission	Gravel	3000'/2110'	Barge
Koyuk	Gravel	3000'	Barge
Kivalina	Gravel	3000'	Barge
Elim	Gravel	3000'/4700'	Barge
Stebbins	Gravel	3000'	Barge
Wales	Gravel	4000'	Barge
Teller	Gravel	3000'	Barge
Shishmaref	Paved	5000'	Barge
Savoonga	Gravel	4402'	Barge
Gambell	Paved	4500'	Barge
Unalakeet	Gravel	6004'/2000'	Barge
Kotzebue	Paved/Lighted/Seaplane	5900'/3800'	Barge
Nome	Paved/Lighted	6001'/5576'	Harbor

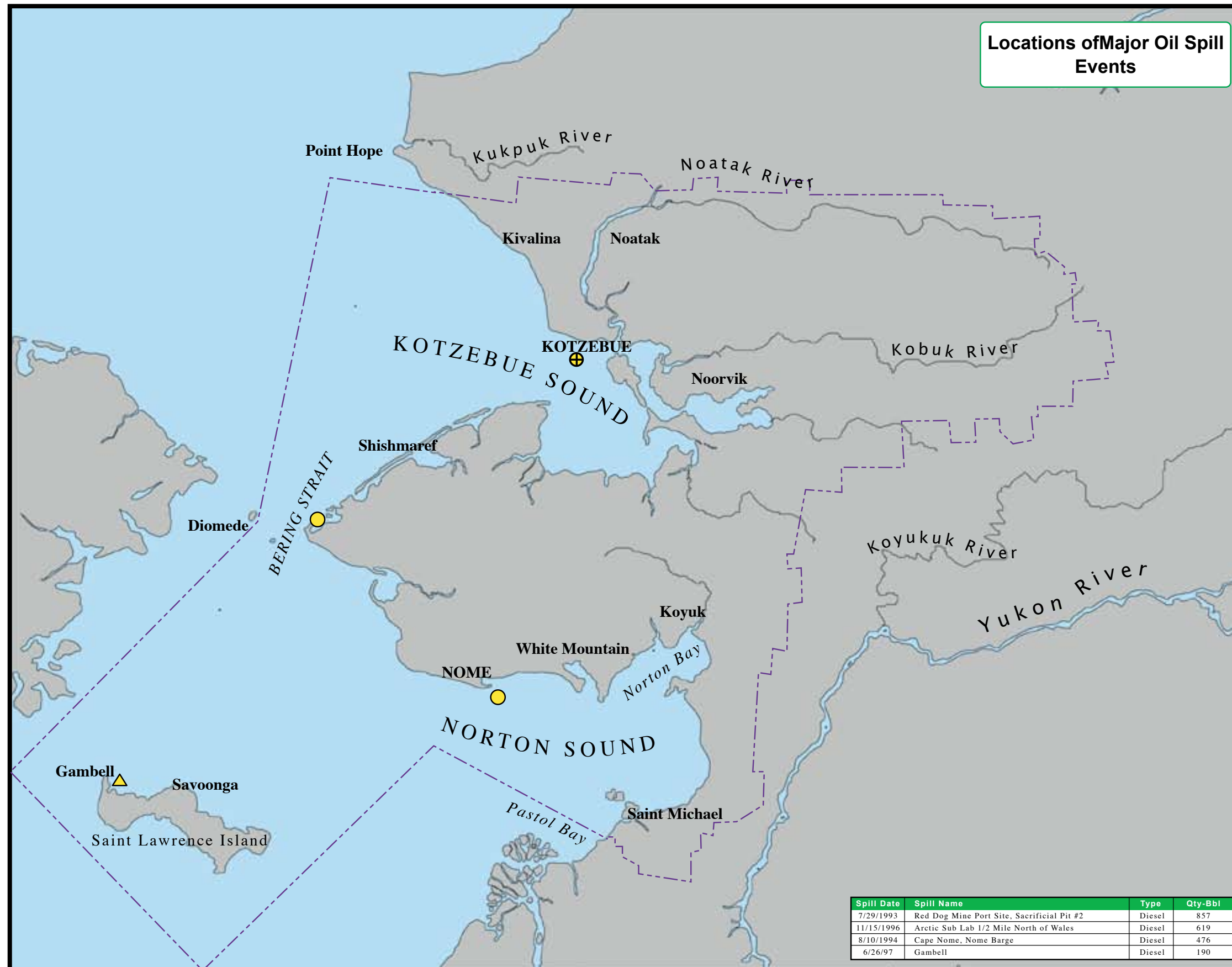
Reference-Alaska Department of Community and Economic Development Database online-2004 Community Profiles
 Reference-Alaska Department of Transportation and Public Facilities, Public Airports in Alaska, 10/03

Figure H-4. Locations of major airports.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE

Locations of Major Oil Spill Events



RISK SYMBOLS

- Response Equipment Depot
 - ★ USCG
 - ★ USCG
 - ★ USCG
- Airport
 - ✈ Airport
 - ✈ Airport, lighted
- Dock
 - ⚓ Dock
 - 🏗 Crane
 - 🐟 Abandoned Canneries
- Frequent Fishing Vessel
 - 🚤 Frequent Fishing Vessel
 - 🚢 Barge
- Tramper Offload Activities
 - 🚛 Primary (□20 loads)
 - 🚛 Secondary (□20 loads)
- Key Nearshore Fishing Grounds
 - 🌊 Key Nearshore Fishing Grounds
- NW Arctic Subarea Noncrude Carrier Routes
 - 🚢 Carrier route
- Bulk Fuel Storage Sites > 5,000 bbls
 - 🔴 - 3k-9,999 bbl.
 - 🔴 - 10k-39,999 bbl.
 - ⬛ - 40k-99,999 bbl.
 - 🔴 - 100k-299,999 bbl.
 - 🔴 - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - = Persistent ● = Non-Persistent
 - 🟩 - 24-71 bbl.
 - 🟩 - 72-142 bbl.
 - 🟩 - 143-214 bbl.
 - 🟩 - 215-285 bbl.
 - 🟩 - 286-357 bbl.
 - 🟩 - 358-428 bbl.
 - 🟩 - 429-800 bbl.
 - 🟩 - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
 - 🚢 Cruise and AMHS Ship Traffic
- Zone Boundary
 - Zone Boundary

Figure H-5. Locations of marine casualty events.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE

RISK SYMBOLS

- Response Equipment Depot
- Airport Airport, lighted
- Dock Crane Abandoned Canneries
- Frequent Fishing Vessel Barge
- Tramper Offload Activities
 Primary (□20 loads) Secondary (□20 loads)
- Key Nearshore Fishing Grounds
- NW Arctic Subarea Noncrude Carrier Routes
 Carrier route
- Bulk Fuel Storage Sites > 5,000 bbls
 - 3k-9,999 bbl.
 - 10k-39,999 bbl.
 - 40k-99,999 bbl.
 - 100k-299,999 bbl.
 - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - = Persistent = Non-Persistent
 - 24-71 bbl.
 - 72-142 bbl.
 - 143-214 bbl.
 - 215-285 bbl.
 - 286-357 bbl.
 - 358-428 bbl.
 - 429-800 bbl.
 - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
- Zone Boundary

Locations of Key Nearshore Fishing Grounds & Subsistence Activity

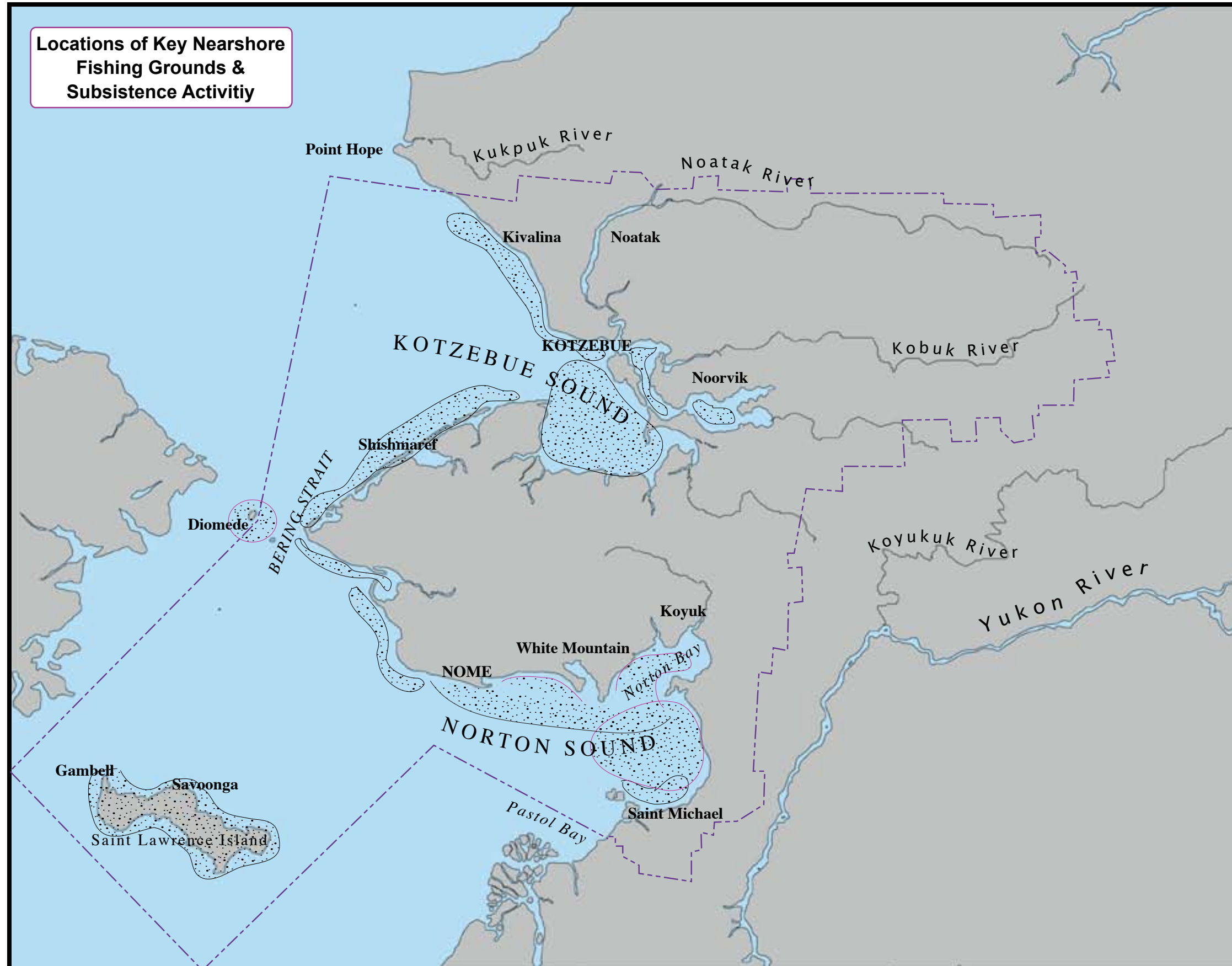
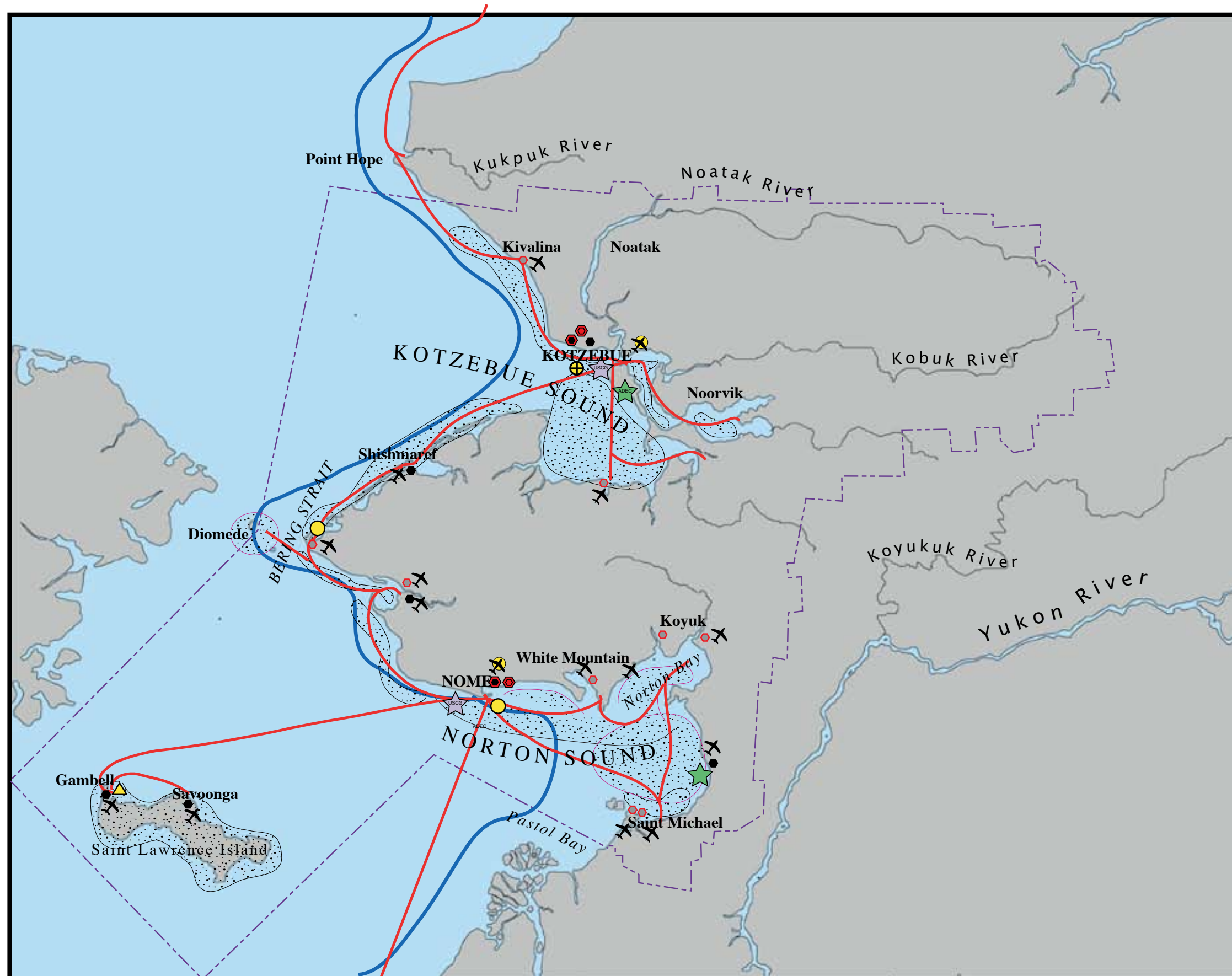


Figure H-6. Locations of subsistence and nearshore fisheries.

Northwest Arctic, Alaska

RISK LAYERS for CANDIDATE SITES for GEOGRAPHIC RESPONSE STRATEGIES and POTENTIAL PLACES OF REFUGE



RISK SYMBOLS

- Response Equipment Depot
 - ★ (Yellow)
 - ★ (Purple)
 - ★ (Green)
- Airport
 - ✈ (Black)
 - ✈ (Yellow)
- Dock
 - ⚓ (Black)
- Crane
 - 🏗 (Black)
- Abandoned Canneries
 - 🐟 (Blue)
- Frequent Fishing Vessel
 - 🚤 (Black)
- Barge
 - 🚢 (Blue)
- Tramper Offload Activities
 - 🚛 (Black)
 - 🚛 (Black)
- Key Nearshore Fishing Grounds
 - 🌊 (Dotted)
- NW Arctic Subarea Noncrude Carrier Routes
 - (Red)
- Bulk Fuel Storage Sites > 5,000 bbls
 - (Red) - 3k-9,999 bbl.
 - (Red) - 10k-39,999 bbl.
 - (Black) - 40k-99,999 bbl.
 - (Red) - 100k-299,999 bbl.
 - (Red) - 300K-500,000 bbl.
- NW Arctic Subarea Spills >24 barrels 1994-2004
 - (Green) = Persistent
 - (Yellow) = Non-Persistent
 - (Green) - 24-71 bbl.
 - (Yellow) - 72-142 bbl.
 - ▲ (Green) - 143-214 bbl.
 - ▲ (Yellow) - 215-285 bbl.
 - ◆ (Green) - 286-357 bbl.
 - ◆ (Yellow) - 358-428 bbl.
 - (Green) - 429-800 bbl.
 - (Yellow) - 801-2619 bbl.
- Cruise and AMHS Ship Traffic
 - (Blue)
- Zone Boundary
 - - - (Purple)

Figure H-7. Composite map of all risk factors combined.

PPOR ID#- Vessel Size	Type of berth	Swing Room	Bottom Type	Exposure	Conflicting Uses	Ability to Boom	Sensitive Resources	Distance via Water to Population Center
<p>DII = Deep Draft Vessels lengths up to 1000 feet, 40-60 feet of draft, greater than 10,000 GT</p> <p>DI = Deep Draft Vessels lengths up to 1000 feet, 20-40 feet of draft, greater than 10,000 GT</p> <p>L= Light Draft Vessel up to 450 feet in length, draft up to 20 feet</p> <p>S = A shallow draft vessel less than 300 Gross Tons, has a draft less than 15 ft., LOA less than 200 ft.,</p>	<p>A= Anchorage</p> <p>D/P= Dock or Pier</p> <p>M=Mooring</p>	<p>Distance measured to nearest shoal waters or hazard</p> <p>NR=Not restricted/open anchorage where vessel can be moored based on draft.</p>	<p>M= Mud</p> <p>Rky= Rocky</p> <p>G= Gravel</p> <p>Cl= Clay</p> <p>S= Sand</p> <p>SH=Shells</p> <p>H= Hard</p> <p>stk=Sticky</p> <p>sft=Soft</p> <p>St=silt</p> <p>Sl=Shale</p> <p>N/A=Not Applicable</p> <p>NI=No Information</p>	Exposed to winds/seas from the direction noted	<p>CF=Commercial Fishing</p> <p>SF=Sport fishing</p> <p>AQ= Aquaculture</p> <p>R=Recreational</p> <p>CI=Commercial/Industrial</p> <p>A= Anchorage</p> <p>S=Subsistence Activities</p> <p>WV=Wildlife Viewing</p> <p>H=Hunting</p>	<p>WD=Weather Dependent</p> <p>Y=Yes</p> <p>N=No</p>	<p>E= Threatened or Endangered Species present</p> <p>H=Highly Sensitive as designated by the NWA Subarea GRS Workgroup</p> <p>CH=Critical Habitat for endangered species</p>	<p>B = Barrow</p> <p>K = Kaktovik</p> <p>N = Nuiqsut</p> <p>P = Prudhoe</p> <p>W= Wainwright</p> <p>PL = Point Lay</p> <p>PH = Point Hope</p> <p>SM = St. Michaels</p> <p>KZ = Kotzebue</p> <p>RD= Red Dog Mine</p> <p>SH = Shishmaref</p> <p>WA = Wales</p> <p>BM = Brevig Mission</p> <p>NM = Nome</p> <p>G = Golovnin</p> <p>GB = Gambell</p> <p>SV = Savoonga</p> <p>T=Tuktoyaktuk</p>

Table H-1. Key to Site Assessment Matrix.

**North Slope and Northwest Arctic
Potential Places of Refuge
Site Assessment Matrix**

PPOR ID# (size-zone-number)	Response Zone #	Type of berth	Location Name	Lat.	Lon.	Max Vessel Depth	Anchoring SwingRoom or Dock Face(w/ Dolphins) in ft.	Depth at dock face in FEET (MLLW)	Depth at anchorage in FATHOMS	Bottom Type	Exposure to	Conflicting uses	Ability to Boom	Sensitive Resources	Dist. to Population Center(nm)	Dist. To the next Alternative PPOR (nm)
Northwest Arctic Potential Places of Refuge																
Zone-01 Saint Lawrence Island																
DII-01-01	1	Anchorage	Gambell Anchorage	63°40.57'N	171°33.62'W	60	NR		8	Rky	N-E / S-N	S	N	E	7 to GB	25 to DII-01-02
DII-01-02	1	Anchorage	Savoonga Anchorage	63°42.80'N	171°34.27'W	60	NR		13	NI	W-E	S	N	E	1.3 to SV	25 to DII-01-01
DII-01-03	1	Anchorage	Powooliak Bay	63°13.07'N	170°49.88'W	60	NR		13	M,Rky	S-W	S	N	CH	50 to GB	60 to DII-01-04
DII-01-04	1	Anchorage	Manik Lagoon	62°59.42'N	169°14.27'W	60	NR		12	S,Sh	E-S	S	N	CH	70 to SV	60 to DII-01-03
Zone-02 Norton Sound																
DII-02-01	2	Anchorage	Nome Anchorage	64°26.48'N	165°27.10'W	60	5000		10	S,G	E-W	CF	N		3 to NM	20 to DI-02-02
DI-02-01	2	Anchorage	St. Michael Bay	63°30.73'N	161°49.71'W	40	NR		5	Hrd	N-NW	CF, S	WD	CH	6 to SM	110 to DII-02-01
DI-02-02	2	Anchorage	Sledge Island	64°31.94'N	166°11.30'W	40	3800		3	Rky	WD		N	CH	20 to NM	20 to DII-02-01
L-02-01	2	Anchorage	Golovnin Bay	64°32.99'N	163°06.96'W	20	2100		4 (2-approach)	Hrd,Stky	S	CF, S	WD	CH	1 to G	110 to DI-02-01
L-02-02	2	Dock	City Dock-Port of Nome	64°29.65'N	165°26.33'W	20	200	22.5	N/A	NA	S	CI	Y		.75 to NM	3.8 to DII-02-01
L-02-03	2	Dock	Westgold Dock-Port of Nome	64°29.76'N	165°26.24'W	20	190	22.5	N/A	NA	S	CI	Y		.75 to NM	3.8 to DII-02-01
Zone-03 Seward Peninsula																
DII-03-01	3	Anchorage	Cape York	65°29.10'N	167°43.27'W	60	4000		12	M,G,Rky	SE-W	S	WD	CH	14 to WH, 32 to BM	7.5 to DII-03-02
DII-03-02	3	Anchorage	Tin City	65°32.59'N	167°57.86'W	60	6000		14	S	SE-W	S	WD	CH	6 to WH, 39 BM	7.5 to DII-03-01
DII-03-03	3	Anchorage	Little Diomede	65°47.41'N	168°54.11'W	60	NR		20	Rky	WD	S	N	CH	75 to SH, 22 to WH	27 to DII-03-02
DI-03-01	3	Anchorage	Port Clarence	65°14.62'N	166°40.28'W	35	6000		6	M,Stky	Sheltered	S	WD	CH	8 to BM	28 to DII-03-02
DI-03-02	3	Anchorage	Shishmaref Anchorage	66°16.43'N	166°18.01'W	40	NR		6	M	N-E	S	N	CH	6 to SH	70 to DII-03-03
Zone-04 Kotzebue Sound																
DI-04-01	4	Anchorage	Goodhope Bay	66°13.12'N	168°54.11'W	40	1800		6	M	N-E	S	WD	CH	46 to KZ	36 to DI-04-02
DI-04-02	4	Anchorage	Sea Buoy Anchorage	66°48.08'N	163°14.90'W	40	NR		8	M,S	W	S	WD	CH	17 to KZ	36 to DI-04-02
L-04-01	4	Dock	Red Dog Mine Port	67°36.17'N	164°04.06'W	15	350	15	NA	M,S	S-W	CI	WD	CH	3 to RD	60 to DI-04-02
North Slope Potential Places of Refuge																
Zone-01 Pt. Hope to Wainwright																
DII-01-01	1	Anchorage	Pt Hope	68°26.14'N	166°38.89'W	60	12000		6	M	N-W	S	Y	CH	.8 to PH	98 to DII-01-02
DII-01-02	1	Anchorage	Point Lay Anchorage	69°46.06'N	163°21.88'W	60	24000		6	M	N-W-SW	S	Y	CH	1.3 to PL	54 to DII-01-03
DII-01-03	1	Anchorage	Icy Cape Anchorage	70°22.47'N	161°28.28'W	60	24000		8	M	N-W	S	N	CH	31 to W	30.5 to DII-01-4
DII-01-04	1	Anchorage	Wainwright Anchorage	70°39.26'N	160°14.27'W	60	7500		9	M	N-W	S	N	CH	7 to W	6 to S-01-01
S-01-01	1	Anchorage	Wainwright Inlet	70°35.84'N	160°02.94'W	8	4500		?	M	NW	S	Y	CH	4 to W	6 to DII-01-04
Zone-02 Peard Bay to Harrison Bay																
DII-02-01	2	Anchorage	Barrow	71°19.97'N	156°50.30'W	60	6500		8	M	N-W	S	N	CH	2 to P	12 to DI-02-02
DI-02-01	2	Anchorage	Peard Bay	70°53.99'N	158°25.10'W	40	15700		6	M, CI	N	S	N	CH	35 to W	38 to DII-02-01
DI-02-02	2	Anchorage	Point Barrow	71°24.10'N	156°17.61'W	40	17300		5.5	M	N-E-W	S	N	CH	11 to B	12 to DII-02-01
L-02-01	2	Anchorage	Dease Inlet	71°13.83'N	155°53.35'W	20	3000		1	M	N-E-W	S	WD	CH	16 to B	15 to DI-02-02
L-02-02	2	Anchorage	Harrison Bay	70°37.52'N	151°26.88'W	20	12150		5.5	M,S	N-E	S	WD	CH	105 to B	64 to DI-03-01
Zone-03 North Slope																
DII-03-01	3	Anchorage	Camden Bay	70°10.88'N	144°38.67'W	60	12000		10	M,S	N-E-W	S	N	CH	20 to K	66 to DI-03-02
DI-03-01	3	Anchorage	Midway Island Anchorage	70°35.62'N	148°13.13'W	40	20000		8	M	N-E-W	S	N	CH	16 to P	7.5 to DI-03-02
DI-03-02	3	Anchorage	Cross Island Anchorage	70°31.96'N	147°52.56'W	40	7590		6.5	G - reef	N-E-W	S	N	CH	17 to P	7.5 to DI-03-01
S-03-01	3	Dock	Oliktok Dock	70°30.21'N	149°53.50'W	4	18225	4	N/A	N/A	N-W	CI	WD	CH	30 to P	32 to L-02-02
S-03-02	3	Dock	West Dock	70°23.52'N	148°29.86'W	4	10600	4	N/A	N/A	N-W	CI	WD	CH	3 to P	13.5 to DI-03-01
S-03-03	3	Dock	Badami-Runway/Dock	70°09.19'N	146°53.73'W	4	6000	4	N/A	N/A	N-W	CI	Y	CH	30 to p	30 to DI-03-02
Canada																
	Canada	Anchorage	Herschel Island	69°31.18'N	138°57.10'W	50	5000		9	M	W	S	WD	CH	130 to K	150 to Tuktoyaktuk
	Canada	Anchorage	Tuktoyaktuk	69°27.82'N	133°14.16'W	20	3000		5	M	N	CI	N	CH	2 to T	10 to the Tuktoyaktuk Dock
	Canada	Dock	Tuktoyaktuk	69°25.66'N	133°59.15'W	15	200	16	N/A		Sheltered	CI	Y	CH	0 to T	10 to the Tuktoyaktuk Anch.

Table H-2. Aleutian Subarea Site Assessment Matrix (Page 1 of 4).