

ERA Dispersant Review Regional Response Team

Dispersant Preauthorization Review
& ERA Results

May 2007

Updated/Modified 4/2014

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Several Close Calls

- Fortuna Reefer
- Sergo Zachariadze
- Egorov

- Not a matter of IF, but WHEN.....

- Logistics are not likely to be very easy



COAST GUARD

HC-130H
1717

ADD5

CCC/MIRG

PACK

Biegert Aviation
ADD5



TURKS AND CAICOS ISLANDS

Grand Turk





Maryland Eastern Shore Risk Ranking Matrix

		RECOVERY			
		> 10 years (SLOW) (1)	5 to 10 years (2)	1 to 4 years (3)	< 1 year (RAPID) (4)
% of REEF CE AFFECTED	> 50% (LARGE) (A)	1A	2A	3A	4A
	30 to 50% (B)	1B	2B	3B	4B
	10 to 30% (C)	1C	2C	3C	4C
	0 to 10% (SMALL) (D)	1D	2D	3D	4D

Legend: Red cells represent a "high" level of concern, yellow cells represent a "moderate" level of concern, and green cells represent a "limited" level of concern.



Ecosystem Management & Associates, Inc.



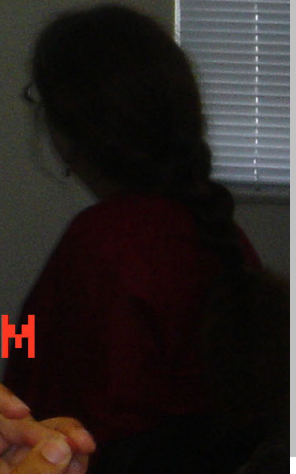
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Microsoft Excel - Response Comparison Sheet

AP21

Habitats	Water Surface										Terrestrial										Intertidal											
Subhabitats											Mangrove Forest					Rocky Shores					Sand Beach					Exposed Flats						
Response Option	Mammals	Birds	Fish	Mollusks	Plankton	Reptiles	Mammals	Birds	Reptiles	Vegetation	Mammals	Birds	Fish	Aquatic Arthropods	Mollusks	Epifauna	Vegetation	Birds	Aquatic Arthropods	Coelenterates	Mollusks	Epifauna	Birds	Flephas	Mollusks	Vegetation	Birds	Fish	Aquatic Arthropods	Coelenterates	Mollusks	
Habitat Scaling																																
Natural Recovery	1D	2B	4D	3D	4A	1C	4D	4D	3D	1A	4D	3B	2C	3D	3A	3A	4D	3D	3C	4D	2A	NA	3B	3B	3A	2A	2B	4D	3B	1A	3A	
On Water Mech. Recovery	1C	2B	4D	4D	4A	1C	4D	4D	3D	1A	4D	3B	2C	3D	3A	3A	4D	3D	3C	4D	2A	NA	3B	3B	3A	2A	2B	4D	3B	1A	3A	
Dispersant (80%)	1D	2D	4B	4D	4A	1D	4D	4D	3D	3C	4D	3D	3B	4C	3D	3D	4D	3D	3D	4D	3D	NA	3D	3D	3D	3D	3D	3B	3A	1A	3B	
Dispersant (30%)	1D	2C	4C	4D	4A	1D	4D	4D	4D	2C	4D	3C	3C	4C	3C	3C	4D	3D	3D	4D	3A	NA	3C	3C	3C	3C	3C	3C	3B	1A	3B	
On Shore Recovery	1D	2C	4D	4D	4A	1C	4D	3C	3D	1B	4D	3B	2C	3C	3A	3A	4D	3D	4C	4D	3A	NA	4B	4B	3A	3A	4D	4D	4B	1A	3A	

Habitats	Subtidal										Water Column																			
Subhabitats	Submerged Aquatic Vegetation					Shallow Coral Common (<5 m)					Deep Coral Common (>5 m)					Shallow (<5m)														
Response Option	Epifauna	Vegetation	Mollusks	Aquatic Arthropods	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	Epifauna	Invertebrates	



1 2:43PM



0

1

10

100

1000

10000

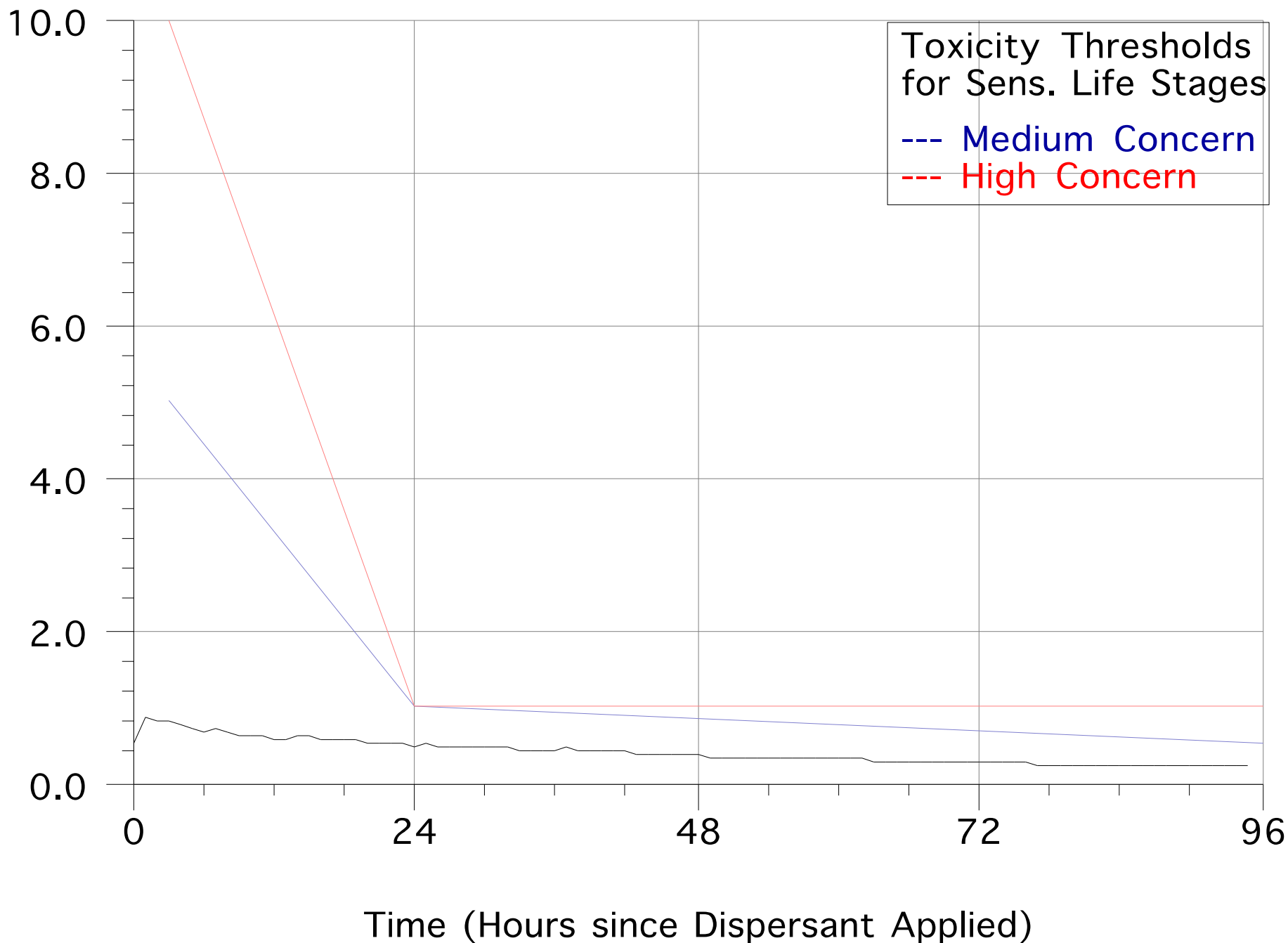
Concentration, PPM or mg/L

3/13/2003

Average Concentration Following Plume vs. Time

Depth range : 0 to 5 meters

Concentration (mg/L)

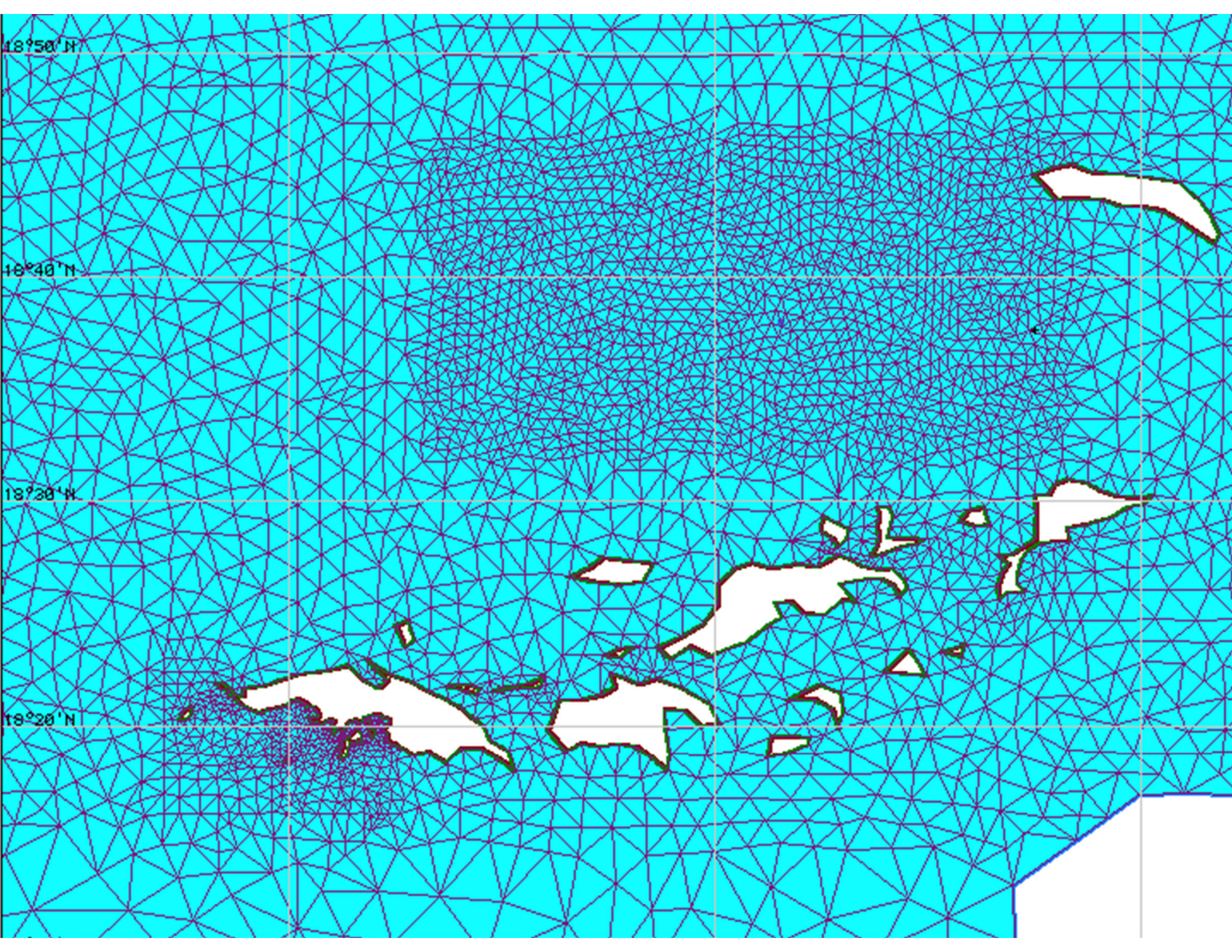


18°50' N

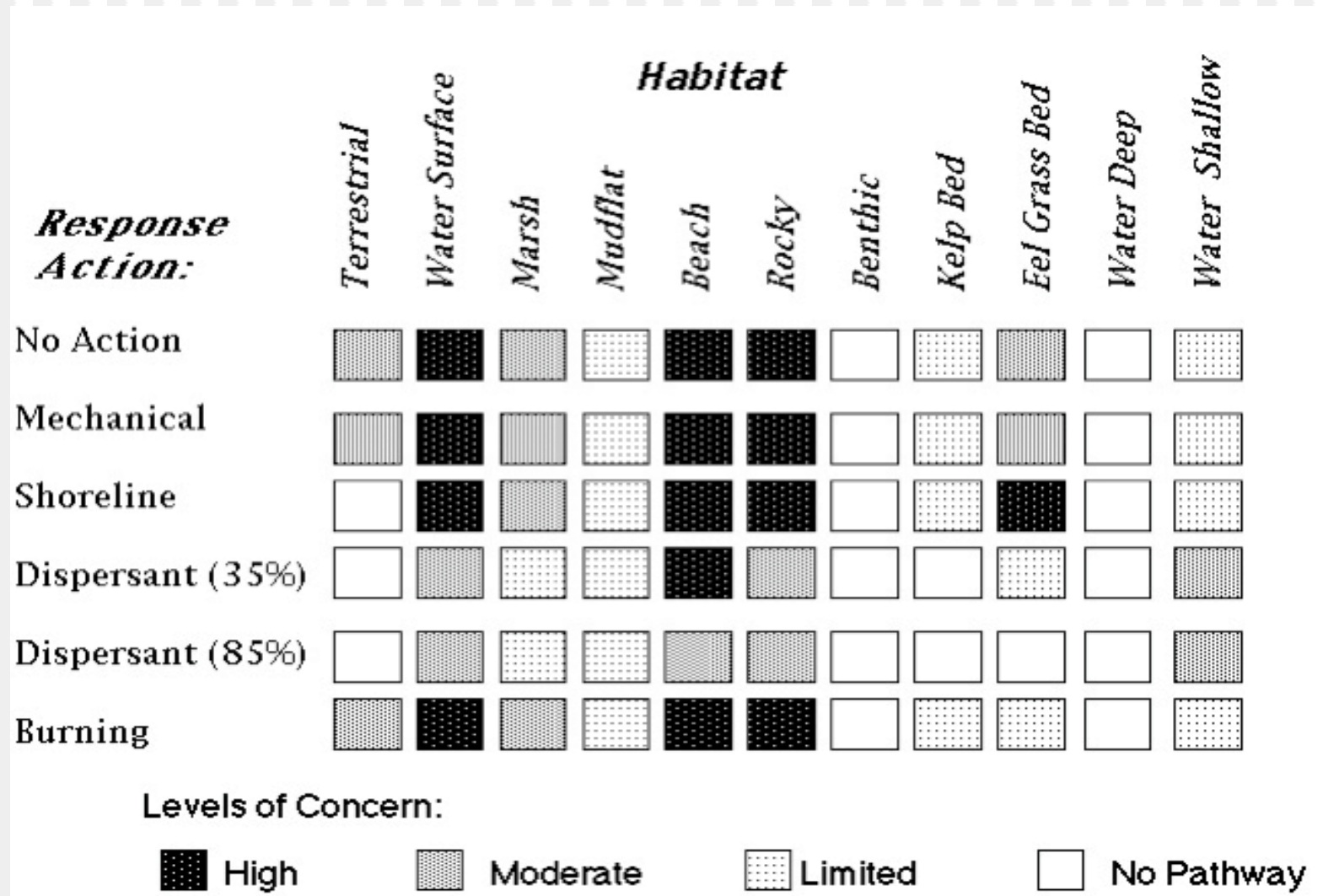
18°40' N

18°30' N

18°20' N



ERA: Compare the Concerns



Current Dispersant Policy

- PRE-Authorization:
- **Caribbean:** 60 ft water depth
- 1/2 mi from land for PR, 1 mi for USVI
- **RRT4:** 3 mi from land 30 ft of water
- All Exclude NPS, NMS, reserves, refuges, critical habitats, other special managed area

History

- **Caribbean:** Originally signed 1991
- Reformated and updated in 1995
- SECTION 7 Consultation and reformatted in 1997
- 1999 the plan was updated to include a comprehensive operations plan with guidance and checklists, Safety documents to comply with OSHA regulations. Included site safety forms. SMART monitoring protocols
- **RRT4:** In effect Oct 1996-Signed and included ESA Section 7 consultation

ERA Workshops

Since the approval of the plan in 1991/1996, boundaries to units of the National Park Service and other managed areas have changed. Additional areas of withdrawal affecting protection of natural resources may have occurred as well.

The plan needs to address these changes to protect these sensitive natural resources potentially at risk from a future spill.

ERA Workshops



Additional species are included on the Federal threatened and endangered species list.

The plan must address protection strategies for these listed species.

ERA Workshops

Lessons learned from ERA workshops have increased the knowledge base about the use and effectiveness of dispersants on spilled oil and the affects of dispersed oil to natural resources.

The plan should address these lessons learned to have a more useful document that will increase the confidence in decisions made.

ERA Workshops

The goal of the workshop is to produce a revised dispersant usage plan that will be ready for final review by the signatory agencies.

The appropriate agencies will receive the revised plan and additional documentation to meet the requirements for compliance with the Endangered Species Act.

What has Changed? What Needs Updating?

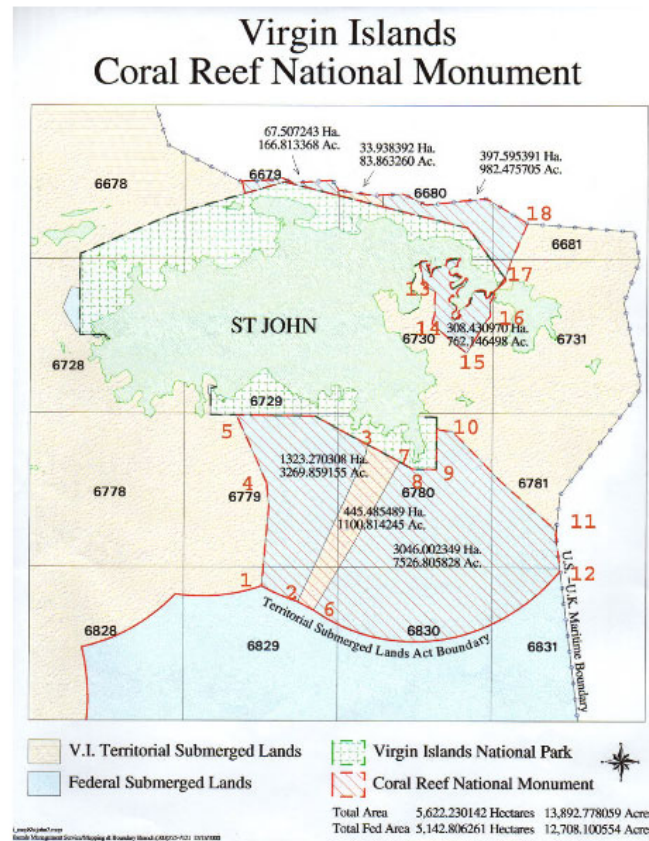
- Species Lists and Sect 7 consultations need updating.
- EFH consultations need to be done; this didn't exist as a requirement when the current plan was developed.
- Pre-approval exclusion zones have changed and need updating.
- ERA recommendations need to be factored into an update.
- Boundary Changes.
- NHPA, THPO
- Incorporation of Best Management Practices.

SPECIES

- Acropora coral is now on the threatened species list
 - Elkhorn and Staghorn; “branching corals”
 - More to be listed

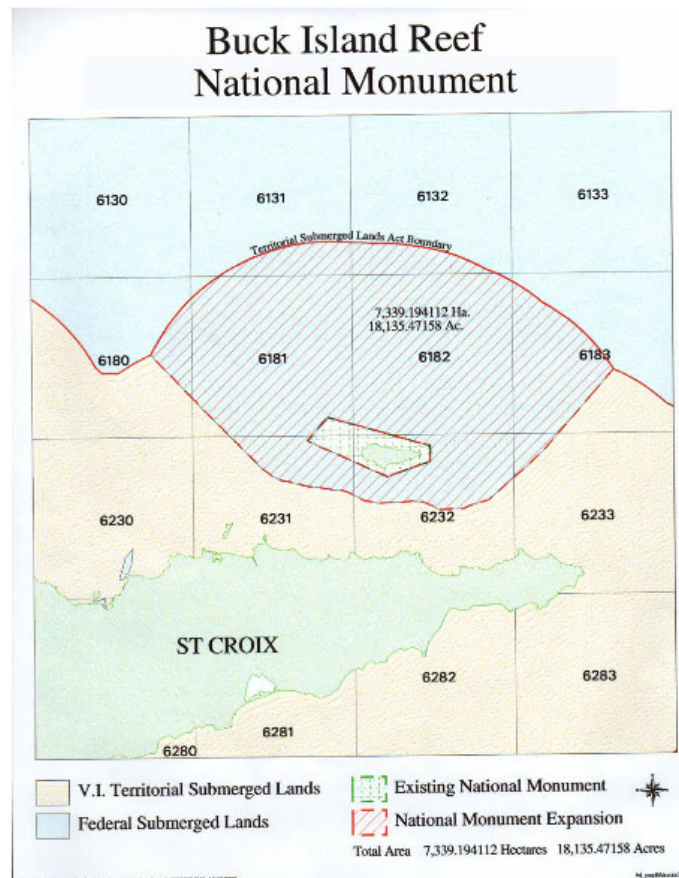


Boundaries



EXAMPLE

Boundaries



EXAMPLE

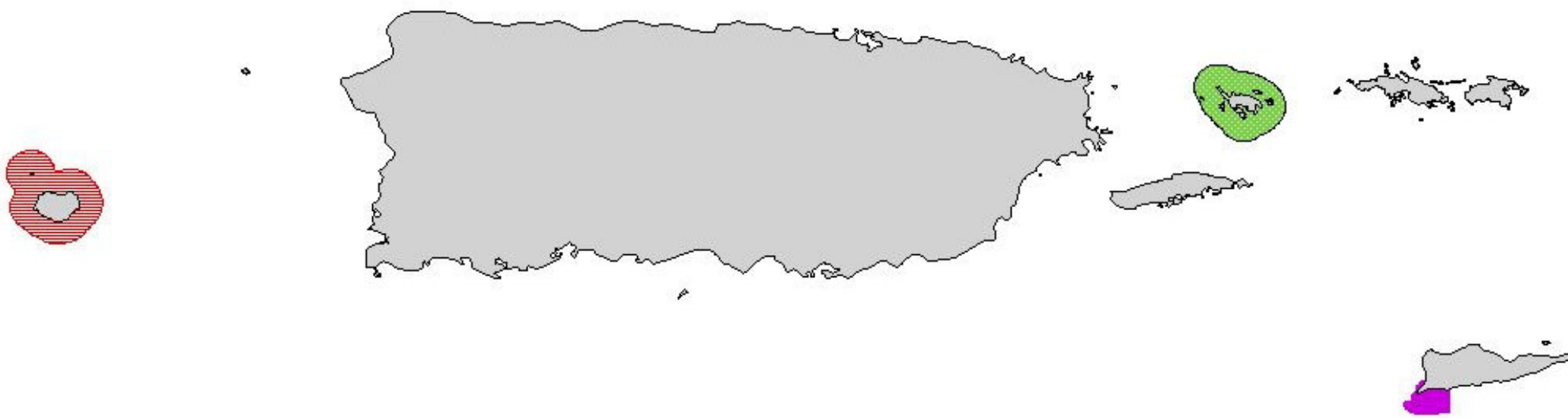
Boundary coordinates for VI Coral Reef National Monument

POINT	LAT	LONG	UTMX	UTMY
1	18.26333	-64.74798	315181.7658	2020199.954
2	18.25887	-64.73725	316391.1998	2019686.861
3	18.30296	-64.71727	318498.5468	2024597.896
4	18.29173	-64.74699	315328.3639	2023388.462
5	18.31154	-64.7559	314467.1003	2025422.51
6	18.25689	-64.73246	316885.9682	2019430.315
7	18.29833	-64.70753	319488.0837	2024029.829
8	18.29635	-64.70406	319836.254	2023773.282
9	18.29652	-64.6968	320734.1671	2023828.256
10	18.30791	-64.69234	321137.3118	2025019.366
11	18.27984	-64.6613	324435.768	2021940.806
12	18.26829	-64.65965	324490.7423	2020676.398
13	18.34621	-64.69795	320624.2186	2029398.982
14	18.33812	-64.69861	320569.2443	2028446.095
15	18.32937	-64.68821	321558.7812	2027511.532
16	18.33977	-64.68128	322273.4467	2028629.343
17	18.35117	-64.67715	322786.5399	2029857.101
18	18.36603	-64.67071	323446.2311	2031488.005

EXAMPLE

Other Boundary Issues That Will Need to be Addressed

- Critical habitat for sea turtles
- National Preserves extensions or changes
- NMFS EFH boundaries-EEZ



Hawksbill Sea Turtle Critical Habitat

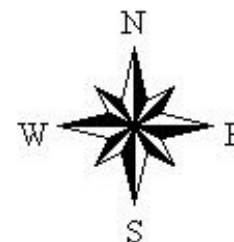


Leatherback Sea Turtle Critical Habitat



Green Sea Turtle Critical Habitat

EXAMPLE



Review of D7 ERA Recommendations

- FL KEYS ERA- 2002
- USVI/BVI (ST Thomas) ERA- 2003
- Puerto Rico ERA- 2007
- USVI/NPS (ST Croix) – 2008
- 4 workshops, 7 years of work, appx 150 participants, 1 month of workshops, over 50 recommendations for updating/revision of pre-authorized dispersant plans in USCG D7

Additional ERA Workshops

- Additional ERA workshops had been anticipated prior to the USCG funding ended.
- One for South Carolina/Georgia for dispersants
- Another for South Carolina/Georgia to focus on response in wetlands to consider drivers and methods for various response options in wetlands.

Rank and Prioritize Recommendations

- How important and vital is recommendation?
 - A - very important pursue recommendation
 - B - somewhat important - prioritize after A' s
 - C - less important than A' s and B' s
 - D - eliminate from recommendations-no action

Rank and Prioritize Recommendations

- Something we can do through the Area Committee or RRT?
 - 1 YES
 - 2 Work to encourage support from outside
 - CRC
 - Academia
 - Industry
 - Government R&D
 - Other
 - 3 Not likely obtainable

Rank and Prioritize Recommendations

- To update current existing RRT dispersant policy in a realistic timeframe recommendation needs addressing?
- Y; yes recommendation must be considered for plan update
- N; no this recommendation, although perhaps important should not impede the updating of the plan
- Example A1 Y= very important, can be accomplished by APC or RRT, must be considered during update

Summary of Recommendations

- 53 total recommendations
- 22 A priority recommendations
- 16 B priority recommendations
- 8 C priority recommendations
- 7 D priority recommendations
- 7 recommendations judged critical and required for updating plan-*

ERA Recommendations: Upper FL Keys 2002

- More detailed information on local resources is needed if a risk-based approach is to be successfully implemented. Once this is available, there needs to be a more effective way to overlay the trajectory on the habitat maps.
- Priority A

ERA Recommendations: Upper FL Keys 2002

- NOAA should continue to improve their ability to model dispersed oil plumes, with particular attention to showing cross sectional areas and the water volume affected above critical thresholds.
- Priority D

ERA Recommendations: Upper FL Keys 2002

- The results suggest that the current water depth restrictions for dispersant use should be reexamined with the goal of determining if 5 meters would provide sufficient protection for sensitive benthic resources.
- Priority A*

ERA Recommendations: Upper FL Keys 2002

- The results also suggest that a 3-mile setback for the pre-approval zone for dispersant use may be excessive, and the limit could be moved shoreward.
- Priority A*

ERA Recommendations: Upper FL Keys 2002

- More information is needed on the impacts of oil exposure on the key resources of concern, namely the relationship between oil loading and impact in mangrove forests, current toxicity data for corals using spiked bioassays, and the actual risks of oil exposure on adult sea turtles. It was suggested that gathering these data should be conducted by a committee convened under RRT sponsorship.
- **Priority C**

ERA Recommendations: Upper FL Keys 2002

- Consideration should be given to streamlining the information needed for the existing dispersant use decision process.
- Priority **D**

ERA Recommendations: Upper FL Keys 2002

- In future ERAs try to ensure that all stakeholders are fully represented.
- Priority C*

ERA Recommendations: US & British VI 2003

- Now that participants are more educated on dispersant effects, organizations may want to consider dispersants as more of an “option” in the wider Caribbean.
- Priority C

ERA Recommendations: US & British VI 2003

- A “combination” of response tools should be considered rather than any single method. Organizations need to accept the reality that mechanical recovery is the primary response strategy, however, the limitations of effectiveness must be considered when revising response plans and integrating its use with other response options.
- Priority A*

ERA Recommendations: US & British VI 2003

- More studies on oil/dispersed oil effects on local organisms and unique environments of special concern (e.g., coral reefs, sea turtles) are needed.
- Priority C

ERA Recommendations: US & British VI 2003

- The NOAA trajectory model is useful tool for ERA, however, there is a need to link the output to GIS sources or environmental sensitivity data.
- Priority C

ERA Recommendations: US & British VI 2003

- Organizations should consider use of stochastic models and overall value of resources in lower probability events.
- Priority **D**

ERA Recommendations: US & British VI 2003

- The group endorses the further development and improvement of real-time oil/dispersed oil models.
- **Priority D**

ERA Recommendations: US & British VI 2003

- Scaling of the risk matrix needs to be flexible to suit the specific region (e.g., 10-30% was a broad range in which to resolve subtle changes in levels of concern for this scenario). The group recommends that we develop the risk matrix scaling “after” the scenario is presented. It is important to capture the basis for the rankings.
- Priority **D**

ERA Recommendations: US & British VI 2003

- The oil industry should consider more research trials in tropical waters, in order to resolve some of the resource manager concerns; there may be suitable sites available within Caribbean waters.
- **Priority D**

ERA Recommendations: US & British VI 2003

- Toxicity of dispersants is still a big concern for many; this can be addressed in part through “education” processes; this outreach process needs to be coordinated within the wider Caribbean region and Latin America (not just U.S. territories); IMO or UNEP could possibly take the lead on this effort.
- Priority **B**

ERA Recommendations: US & British VI 2003

- In this region, multi-national agreements need to be prepared “in advance” of an actual spill, in order to facilitate an integrated response during a real spill.
- Priority **B**

ERA Recommendations: US & British VI 2003

- In the USVI and Puerto Rico, where dispersant use pre-approval plans currently have depth and distance offshore restrictions, the RRT should discuss if depths or distances should be revised.
- Priority A*

ERA Recommendations: US & British VI 2003

- Participants identified a need to challenge the environmental/scientific community to defend current concerns over dispersed oil impacts.
- Priority A*

ERA Recommendations: US & British VI 2003

- Toxicity testing thresholds that were utilized for this workshop should be more closely examined to determine applicability to species of concern in this region; consider further scientific peer-review of this data.
- Priority **B**

ERA Recommendations: US & British VI 2003

- Sea turtles were a significant issue in this workshop, and there is a need for additional information on dispersed oil and oil impacts to sea turtles since they are protected species; the lack of data forced participants to rank sea turtles very conservatively.
- Priority **B**

ERA Recommendations: US & British VI 2003

- Because of trade-offs involved in the sensitive habitats in this region, near-shore dispersant use should be accompanied by detailed monitoring to ensure that the associated impacts can be clearly documented and evaluated “post-spill.”
- **Priority A**

ERA Recommendations: US & British VI 2003

- There is a need to establish education programs and appropriate regulations to encourage the use of environmentally safe boat cleaner products.
- Priority **D**

ERA Recommendations: Puerto Rico 2007

- Through existing research programs such as Coastal Response Research Center, encourage universities, industry and other agencies to conduct research on impacts of oil, dispersants and dispersed oil in tropical ecosystems, especially nearshore. This would include toxicity tests using realistic exposures on corals, sea grass (not just turtle grass), sea turtles and other tropical marine organisms (e.g., queen conch, spiny lobster, whelk, seahorses, and long-spined black sea urchin).
- **Priority B**

ERA Recommendations: Puerto Rico 2007

- Redo threshold table for toxicity values (used in the ERA workshop) compiling and analyzing data for tropical studies and oil spill case histories.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- There needs to be a focus on long-term recovery through appropriate studies at sites around spills of opportunity, including long-term consequences of dispersant use on fecundity, reproductive success, mutation, etc. Information should be available to response planners through appropriate government websites.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Through the local Area Committees, implement an outreach program to increase participation by NGOs, local agencies and industry in the planning process and ensure the results from this ERA workshop are distributed for review and discussion.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Compile information on impacts to organisms and fate and effects of surfactants in the water column (e.g., what is the effect for filter feeders, photosynthesis, nutrient absorption through skin, opening of coral polyp, etc).
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Review and update planning and policy documents for dispersant use and in-situ burning. This includes pre-approval zones, letters of agreement and necessary consultations. They need to be updated to comply with current regulations (i.e., EFH, etc.) and to incorporate currently available information.
- Priority A*

ERA Recommendations: Puerto Rico 2007

- Update ESI maps to include more specific information on time of year for bird species nesting, sea turtle nesting, turtle concentrations in areas, and land crab species. Future updates at regular intervals are an important component of response planning.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Compile data on local surface and subsurface currents and bathymetry data to ensure best available information is used in the GNOME model and is available to on-scene spill responders.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Encourage use of NOAA 3-D model for actual spill response when dispersant use is under consideration, rather than just for planning and exercises.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Have information available on residence time of particles of different grain sizes on beaches, to assist prediction of impacts from different response options. This could be added to the NOAA shoreline assessment manual.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- Translate the NOAA shoreline assessment manual into Spanish.
- Priority **B**

ERA Recommendations: Puerto Rico 2007

- The Area Planning Committee should establish a local technical forum (agency, industry, academia, NGO reps etc.) to develop a science plan that would determine the fate and effect of oil and/or dispersed oil that is ready to be implemented in the event of a spill. We need a compilation of baseline data from marine studies conducted around Puerto Rico.
- **Priority B**

ERA Recommendations: Puerto Rico 2007

- Once plans and policies are updated, conduct a dispersant use exercise (encouraging good participation from local partners) to test the plan.
- **Priority A**

ERA Recommendations: Puerto Rico 2007

- Provide more information to users of GNOME model output on model assumptions, equations, data, etc. (i.e., Technical Reference Manual).
- Priority C

ERA Recommendations: Puerto Rico 2007

- Review where spill response equipment, including dispersants, is presently stockpiled (availability, quantities and types) and whether it should be distributed or stocked differently. Develop a cadre of local dispersant applicators such as operators of agricultural aircraft.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Update the ESI maps.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Provide better data on winds and currents to improve oil spill trajectory model results.
- Offshore buoys are needed to provide real-time wind and current data.
- Studies are needed to better understand inshore currents.
- Drift card studies in the region date the ESI maps for the USVI.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Review the Geographic Response Plan and determine the response resources needed to meet the protection priorities and response needs, including.
- Dispersant stockpiles.
- Amount of boom and other response resources.
- Ground-truth response strategies.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Conduct a good scientific review of the existing literature on dispersed oil toxicity (start with the recent NRC report) and then identify data gaps for tropical resources, including oil and dispersed oil effects on all life stages of sea turtles, seagrass as an ingestion pathway of exposure, conch, etc.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Develop a plan and funding for a monitoring program to be implemented following actual spills, to include water sampling to document actual oil exposure in the water column.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Seek out partnerships with academic and other researchers to fill data gaps on effects of oil and dispersed oil.
- Priority **B**

ERA Recommendations: USVI ST Croix 2008

- Develop a “job-aid” that provides short summaries of the likely effects of oil on key resources, including marine mammals, birds, fish, shellfish, and reptiles. This information would be very useful to participants in future ERA workshops. NOAA/RPI produced a series in the mid-1908s that could be the basis for an update.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Conduct shoreline surveys to document background rates of tarball accumulations on beaches and to evaluate risks.
- Priority C

ERA Recommendations: USVI ST Croix 2008

- Establish a mutual-aid agreement for dispersant availability and application in the USVI.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Have each natural resource agency develop a plan for emergency notification and response in the event of spills; with such limited staff resources in the Caribbean, an Incident Management Team concept is needed. Keep the CRRT apprised of the Volunteer Guidance currently under development from USCG and cooperating agencies.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Provide GIS data on the boundaries of NPS and other important marine areas to response groups.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Improve the NOAA 3D GNOME model to include the ability to use the model results in GIS overlays with resources.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Identify shipping routes and the risks to high sensitivity areas; evaluate potential mitigation measures and/or posting information on high sensitivity areas on navigation charts, coast pilots, notice to mariners, etc. Private aids to navigation were identified as a specific issue.
- Priority C

ERA Recommendations: USVI ST Croix 2008

- Finalize recommended guidance on case-by-case evaluation of dispersant use in waters managed by the NPS.
- **Priority A**

ERA Recommendations: USVI ST Croix 2008

- Finalize recommended guidance on case-by-case evaluation of dispersant use in USVI territorial waters.
- **Priority A**

ANY ADDITIONAL
RECOMMENDATIONS



Proposal for Accomplishing Update to Current Policy

Key representatives to meet in a 3-5 day workshop to jointly draft an updated policy.

- Must include USCG, EPA, PR, USVI, DOI, NOAA, FWS, NPS, NMFS, BVI?, Others?
- Revised Plan will then go forward with **FULL** concurrence from all stakeholders and signatory agencies for section 7, EFH, NHPA (SHPO), THPO consultations.
- Once Consultations are concluded, Policy will be amended as necessary and signed by all representatives to the RRT
- Possible Glitches: funding, consultations, lawyers, HDQRTS; decision makers operating outside the process or who did not participate.
- Other Ideas/Solutions??—Enter Matt Huyser & JCPSC

