U.S. Department
of Transportation
**United States
Coast Guard**

Captain Of The Port
U. S. Coast Guard

Building 108
Governors Island, NY 10004-5098
Phone: (212)668-7917

16456
March 24, 1993

Ralph Pisapia
Assistant Regional Director, Region 5
U.S. Fish and Wildlife Service
Ecological Services
300 Westgate Center Drive
Hadley, MA 01035-9589

Dear Mr. Pisapia:

I am writing to request your view on the necessity for a biological assessment conducted pursuant to Section 7 of the Endangered Species Act (ESA). The United States Coast Guard (USCG), the United States Environmental Protection Agency (US EPA), the United States Department of Interior (US DOI), the United States Department of Commerce (US DOC), the State of New Jersey, and the State of New York plan to execute a Memorandum of Understanding (MOU) that provides the USCG Captain of the Port New York (COTPNY) pre-authorization to use chemical countermeasures against oil spills in a designated zone in the COTPNY area of responsibility. It is the opinion of the Federal agencies involved that this constitutes a Federal action in an area where endangered and threatened species may be known to occur. Consequently, we seek your opinion on whether such a consultation need be performed, and if so, whether it need be an informal or formal consultation as required under Section 7 of the ESA.

As acknowledged in the MOU, USCG is the lead agency for ESA Section 7 consultations.

Description of the Area
The subject area includes two zones, Zone 1 and Zone 2, that are depicted in Figure 1 of the subject draft MOU (enclosed). Zone 1 is an area within the New York Bight seaward of the Territorial Sea (3 miles off shore), bounded to the south by a line that runs southeast from Tom's River, NJ and bounded to the north by a line that runs southeast from East Rockaway Inlet, NY. Zone 2 is that area in the New York Bight that is east and north of Zone 1 and not otherwise prohibited.

Description of the Action
The MOU acknowledges that the primary method of controlling discharged oil shall be the physical removal of the oil from the environment. Under certain circumstances this may not be possible and the use of chemical agents may be the best means to reduce the threat to the public and the environment. The MOU acknowledges that the pre-designated Federal On Scene Coordinator (FOSC, the COTPNY for the subject area) has the authority to use US EPA-listed chemical countermeasures in his/her area of responsibility when their use will prevent or substantially reduce a hazard to human life and that the decision to use dispersants rests solely with him/her and cannot be further delegated.

The MOU further provides that when risk to human life is not a factor, the FOSC may use chemical agents in Zone 1 without further concurrence from the other parties to the MOU. In Zone 2, the FOSC can conduct a trial application of chemical agents without further concurrence from the other parties to the MOU. Such trial will take place only on an area of the spill covered by less than 1,000 gallons of oil. The anticipated quantity of chemical countermeasures to be utilized for the trial application should not exceed 110 gallons and shall not be applied from the shoreline, unless otherwise agreed upon. The purpose of this trial application is to determine the product's efficacy and the trial will be supervised by a trained observer. If the trial is positive, chemical countermeasures can only be used if pre-established decision/consultation protocols are followed.

If the decision to use chemical countermeasures is made, the other parties to the MOU will be notified immediately. If chemical agents are used, a post-incident debriefing will take place within 45 days to gather information on the effectiveness of the agent used and on whether any changes to the MOU are needed.

Dispersant Fates and Effects:
Dispersants are used on an oil slick because they reduce the energy needed to break the slick into droplets and they increase the number of droplets that are small enough to remain suspended in the water through turbulent diffusion. Advection and turbulent diffusion act to diffuse the oil. Dispersal of an oil slick initially increases subsurface concentrations of oil, which may be rapidly diminished by physical transport processes. The larger oil-water interfacial area of chemically dispersed oil may cause dissolution to be increased, and evaporation, which depends on oil-air surface, to diminish. Although dispersants act to drive the oil into the water column and the water-soluble components of oil are the most acutely toxic, turbulent diffusion "transports dispersed oil away from the surface and greatly dilutes its concentration". "Concentrations decrease quickly to levels too low to be reliably analyzed" (National Research Council, 1989, Using Oil Spill Dispersants on the Sea. National Academy Press).

Dispersants include surfactants and a solvent. The weathering processes on dispersants include evaporation, dissolution, diffusion, biodegradation, and possibly bioaccumulation. Surfactants are readily degraded by marine bacteria and fungi. A variety of aquatic organisms readily accumulate and metabolize surfactants, metabolism is rapid enough that there is little likelihood of food chain transfer from marine invertebrates and fish to consumers, including marine mammals (Neff, J. M., 1990, Composition and Fate of petroleum and spill- treating agents in the marine environment. In Sea Mammals and Oil, Confronting the Risks" (J. R. Geraci and D. J. St. Aubin, eds.) pp. 21-22 Academic Press, Inc., San Diego). Additional studies also indicate that the metabolic breakdown of surfactants is rapid (NRC, 1989).

Although any US EPA-listed chemical agent may be used, the practical reality is that only one dispersant, Corexit 9527, is available for use in the area as a chemical countermeasure. The manufacturer of this agent confirms that for Corexit 9527 the fate of the solvent is evaporation and fate of surfactant is biodegradation into non-toxic products (Fiocco, 1992, personal communication). By the time biodegradations occurs the surfactant concentration in the water column is below any harmful levels.

With regard to the fate of dispersed oil, "some laboratory and all mesocosm (pond and mesoscale) studies have shown increased oil biodegradation rates when dispersants are used." "Data from pond and mesocosm studies strongly indicate that effective use of dispersants would enhance the biodegradation rate of spilled oil." Furthermore, dispersed oil is less likely to deposit in the sediments; results suggest "that chemical dispersion of oil leads to reduced interaction with suspended particulate matter or sedimentation" (NRC, 1989).

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The fate of undispersed oil includes evaporation, biodegradation, and sedimentation. Of relevance here is the fact that undispersed oil can be much more persistent in benthic and nearshore environments than dispersed oil, particularly if it washes ashore and infiltrates the sediment where tidal flushing can re-introduce contamination to nearshore waters on every tidal cycle. Also of significance is the fact that "during the first 24 to 48 hr of an oil spill, evaporation is the single most important weathering process affecting mass transfer and removal of toxic lower molecular weight components from the slick." Furthermore, some oil droplets will adsorb to particulate matter and deposit on the bottom (NRC, 1989).

With regard to the toxicity of dispersants, lethal concentrations of dispersants average three orders of magnitude higher than expected initial concentrations in the water column. Corexit 9527 is in the middle range of toxicity for dispersants. "The acute lethal toxicity of most dispersants currently considered for use in the United States and Canada is low compared to the constituents and fractions of crude oils and refined products." The toxicity of dispersed oil is principally from the oil component. "There is seldom evidence for synergism (i.e., greater than additive toxicity) between oil and dispersant components, validating the general conclusion that oil is as acutely toxic as dispersed oil." (NRC, 1989). However, sensitivities to dispersant toxicity tend to be greater for early life stages. Some planktonic life stages of marine organisms are sufficiently sensitive to Corexit 9527 that even the low concentrations (<10 ppm) expected in the field can be lethal (Singer, M. M., Smalheer, D. L., Tjeerdema, R. S, and Martin, M., 1990, Toxicity of an Oil Dispersant to the Early Life Stages of Four California Marine Species. Environmental Toxicology and Chemistry, Vol 9. pp. 1387-1395).

We acknowledge that more research and better data are desirable. To that end a monitoring plan is being developed to obtain more information on the effectiveness and effects of dispersants when and if they are used. We also acknowledge that the MOU authorizes use of any chemical countermeasure and that we have only addressed the use of Corexit 9527. Should any other chemical countermeasures become likely to be used, they will be evaluated for the need for further consultation before they are used in the field.

My staff has been working on this issue with your Regional Pollution Response Coordinator and the Regional Environmental Officers for the Northeast and Mid-Atlantic. We look forward to your reply.

Sincerely,

R. M. Larrabee
Captain, U.S. Coast Guard
Captain Of The Port, New York

Enclosure: MOU