May 26, 2015

To: Federal On-Scene Coordinators (Refugio Santa Barbara Oil Spill-Coastal FOSC and Inland EPA FOSC),

Re: Formal Request to Refugio Spill FOSC's--EPA and Coast Guard; Use of Bioremediation Enzyme Additive Category for Complete Removal of Santa Barbara Oil Spill.

The Lawrence Anthony Earth Organization (LAEO) and its Science and Technology Committee are hereby submitting a formal request to Region 9 FOSC's overseeing the spill response to the Refugio Pipeline spill.

In brief, LAEO is a unique type of environmental/conservation organization in that we seek out collaborative partnerships with industry, government agencies and community stakeholders to help get best available science applied to solve environmental situations. We are currently focused on bringing improved oil removal technologies into broad use and have published several peer reviewed research papers on the subject.

LAEO's Science and Technology Committee has been working on alternative oil spill response systems research for several years now, and in particular have vetted numerous methods of oil spill response to find environmentally friendly and more effective primary spill response agents and tools to add to the FOSC's toolbox. Our committee has been sharing information with U.S. EPA, NOAA and US Coast Guard in various Regions and NRT level to raise understanding and develop clear-cut protocols for the NCP's Bioremediation Enzyme Category.

We have brought together a team of experts with oil spill research experience from EU, US and Canadian entities to collaborate on projects to demonstrate efficacy of this technology and conduct further research on open water use of this cleanup technology.

In Sept 2014 after an extensive peer review process, an LAEO task force completed research on a specific first response bioremediation technology for open water oil spill use. LAEO is very interested in getting this Enzyme Additive Bioremediation category (containing no live microbes) adopted as a first response tool because in simple terms, it acts as a duel agent, combining a natural, ***non-toxic*** bio surfactant mode of action that protects shorelines, sensitive ecosystems and marine life while quickly detoxifying the spill, with an added benefit of eliminating adhesive properties while keeping the oil floating vs. moving into the water column and sediment. It speeds up the natural degradation action by indigenous microbes already present

by many times. (White Paper-attached-see section: Enzyme Additive Category)

We most strongly advocate urgent action be taken to allocate and devote scientific resources and effort to identifying safe and non-toxic oil spill cleanup technologies to optimize our national oil spill response system. **Through a long vetting process, we have identified a type of agent already on the NCP Product Schedule that is appropriate for the Refugio spill.**

We have five years of experience in working in this field and, most recently, in our work with EPA and NOAA NRT officials, it has been agreed that 1) given that this specific EA biological agent has undergone NCP listing requirements and extensive in-the-lab efficacy and toxicity examination, more of the same need not be done, and 2) a constructive step to better understand efficacy and fate is to utilize a *Spill of Opportunity* to fill in the last of any possible data gaps regarding Enzyme Additive Bioremediation – data that can only be acquired in the field. Senior NOAA scientists have stated their interest in collaborating with us in this field-study and EPA NCP Managers have also expressed interest.

Our request is twofold:

1. We are requesting the FOSC designate locations to utilize sections of the Refugio spill as a *Spill of Opportunity* for this collaborative scientific research. While much time has now past and the spill has weathered considerably, there are still opportunities for examining and observing the efficacy of this technology. We have attached our experimental plan *outline* and propose to finalize details of experimental designs in coordination with Ellen Faurot-Daniels of RRT 9 and our Lead Science Advisor: Dr. Paul Sammarco with Louisiana Universities Marine Consortium (LUMCON) and other qualified members of our team. We also have certified Hazmat personnel who are trained in applying this particular type of clean up technology who can be utilized as part of this field demonstration and testing.

2. We further request the use of EA Type Bioremediation technology as a *polishing off tool*[1] on the Refugio spill.

a) That NCP listed Bioremediation Enzyme Additive Category oil spill clean up agent (non-microbial type) be utilized to remediate the inland Refugio spill site after the gross removal phase has been completed. We do not agree with hauling away and landfilling the oiled soil but better, utilizing this bioremediation technology to treat and restore the soil. Protocols exist for this and there are contractors such as EMR Inc. already trained and experienced in utilizing this methodology. Transferring pollution to land fills carry a risk of seepage into ground water.

b) That NCP listed Bioremediation Enzyme Additive Category oil spill clean up agent (non-microbial type) be utilized for select coastline locations where gross removal is not possible, i.e. cliff rock and sandy beach areas, for instance.

[1] Polishing off agent is a term in peer reviewed spill response science literature. And per this published literature, Bioremediation EA Type has already been deemed appropriate by NRT Science and Technology Members – authors of the NRT Fact Sheet Science Guidance)

Since we are outside the spill zone and unable to access more information about this spill, we are at a disadvantage, and request that a knowledgeable liaison within the Incident Command center be appointed to work with us to iron out further details or provide more data if need be.

The public expects complete removal of a spill per the Clean Water Act be enforced by our Natural Resource Trustee Agencies. LAEO wants to help ensure that happens to a win win for all.

Attached please find documentation supporting this request.

1. LAEO Science and Technology Biological Enzyme Category Review Summary
2. Literature Review, King Fahd University of Petroleum & Minerals, Research Institute, Center for Environment & Water.
3. Bioremediation for Oil Spill Response: Factsheet-Bioremediation Techniques, Category Definitions, and Modes of Action in Marine and Freshwater Environments.
4. Experimental Design Outline
5. Sill of Opportunity Experimental Design
6. LAEO Optimizing Oil Spill Response Systems, Assessment Criteria, Cooperative Ecology Pamphlet

Respectfully Submitted,

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