

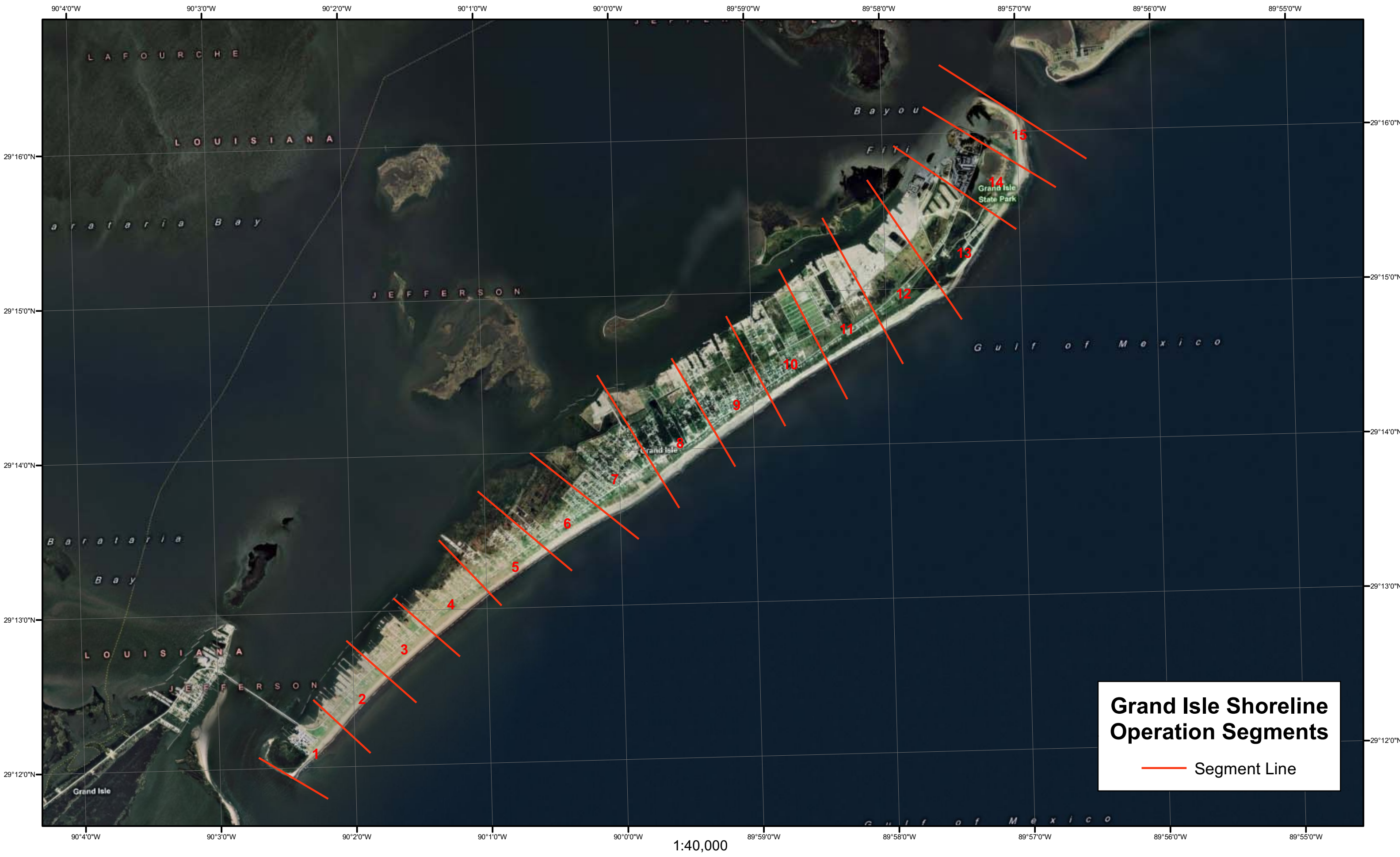
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**Subject:** Request for Emergency Authorization (MVN 2010-02064 EKK)  
**Date:** Monday, August 23, 2010 1:41:00 PM  
**Attachments:** [EUA 10-103 - Grand Isle Operation Areas.pdf](#)  
[EUA 10-103 - DEMONSTRATION PROPOSAL FOR SURF WASHING ON GRAND ISLE.pdf](#)  
**Importance:** High

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Please review the attached request for emergency authorization and provide comments by 10:00am, Wednesday, August 25, 2010. Lack of reply will be construed as indicating no objection.

Angie D. Lacoste  
USACE, Regulatory Branch  
504.862.2281

In order to assist us in improving our service to you, please complete the survey found at:  
<http://per2.nwp.usace.army.mil/survey.html>



**Grand Isle Shoreline  
Operation Segments**  
— Segment Line

1:40,000

# SEDIMENT RELOCATION (SURF WASHING)

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## DEMONSTRATION PROPOSAL

8/13/2010



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# SEDIMENT RELOCATION (SURF WASHING)

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### 1. Introduction

This document aims to describe the merits of sediment relocation (or *surf washing*) as a Stage III beach cleaning strategy and outline the approach for a new demonstrative trial. Sediment relocation is a standard treatment technique that has been used in previous spill responses and is detailed in the NOAA, Shoreline Assessment Manual and Environment Canada. The technique aims to minimize the loss of sediment from the beach.

**Sediment relocation** is a treatment technique that is used to remove traces of oil from stained sands in the final stages of an overall shoreline treatment strategy. The objective of sediment relocation is to move stained sand from one location to another where there is increased wave energy to accelerate natural oil removal processes.

### 2. Overview of Sandy Shore Treatment Strategies


A number of treatment options are available for sandy shorelines relevant to the degree of oiling. A short description of each strategy that can be or are being used at Grand Isle along with their relative merits is described below:

TECHNIQUE		DESCRIPTION
MANUAL REMOVAL		<p>Manual removal, for example using rakes and shovels, is suitable for small areas of oil contamination where oil has not significantly penetrated the sediments. It is preferred for medium-heavy oils, but is less effective where oil is buried or mixed into sediments. Care must be taken to remove as little as possible of the clean sediments and surviving animals and plants. Oiled material is collected in bags, drums or containers and handled with protocols commensurate with State and Federal regulations. Natural recovery of manually cleaned areas tends to be more rapid, due to less physical disturbance. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MECHANICAL REMOVAL		<p>Mechanical removal is a method most commonly used on sandy shores where the oil contamination may be extensive but has not penetrated deeply. Graders are used to skim the surface layer of oiled sand, no deeper than the oil penetration depth. Oily sand may be collected using front-end loaders. Front-end loaders can also be used alone but this may result in more sand being removed than necessary, which increases the disposal volume and reduces the sediment protection of beach habitat. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MOBILE BEACH CLEANERS ("Cherringtons")	 <p style="text-align: center;"><i>Grand Isle, 2010</i></p>	<p>Beach cleaners are highly effective and efficient at removing minimal surface layers of oiled sand and tar balls. Minimal labor is required and large areas can be covered per day with multiple units. In addition, less material is removed than when using bulldozers and front-end loaders via the adjustable digging depth of the units. On Grand Isle, the sand collected is subsequently processed through the MI SWACO Sand Treatment Plant to remove residual oil. Alternative processing can be via sediment relocation.</p>
SAND TREATMENT PLANTS		<p>Sand treatment plants (STP) of the type used at Grand Isle are designed to remove coats and stains from oiled sands prior to relocation onto the source beach. It is a treatment process that minimizes removal of sand as a waste, treated sands are returned to the beach. The MISWACO system in current use at Grand Isle is capable of processing around 50 tons of sand/hour. The system is static with a relatively large footprint and involves multiple</p>



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TECHNIQUE	DESCRIPTION	
	<i>MISWACO, Grand Isle, 2010</i>	transfers.
MIXING	<i>Mixing (MIX)</i> accelerates degradation and natural removal of light oils by breaking up oily sediments and surface oil deposits which increasing the surface area. This may involve the use of farm-type equipment, such as disc systems, harrows, ploughs, rakes or tines. One disadvantage is that it may disturb surface substrate and shallow-burrowing organisms. This technique can be used on wet or dry sediments.	
SEDIMENT RELOCATION	 <p data-bbox="402 625 646 653"><i>Grand Terre 2 Trial, 2010</i></p>	Sediment relocation (SR) or surf washing is a technique used to accelerate natural degradation of lightly contaminated sands by moving these into the lower intertidal zone/surf zone using mechanical equipment. It is generally used for recreational beaches that require re-opening sooner than natural recovery could achieve and it could also be used for beaches that has specific sensitivities. It is particularly useful on beaches where sediment removal must be minimized due to erosion or disposal issues. Sediment relocation can be the final stage in beach cleanup following treatment using a combination of the above techniques e.g. manual followed by mechanical/beach cleaners, and then treatment with sediment relocation for a final “polish”.

### 3. Sediment Relocation Benefit Analysis

The objective of sediment relocation is to accelerate the natural weathering and microbial degradation of oil-stained sands.

#### 3.1. Advantages of the Sediment Relocation Technique

- Increased acceleration of natural recovery for lightly oiled/contaminated sands
- Oiling reduced to “non-detect” levels and sands pass the “white towel test”
- Effective on stained sediments that are relocated from above the high tide mark to the intertidal zone, the area of beach which receives higher energy wave action
- Effective at high use amenity locations (e.g. tourist beaches) where natural recovery time needs to be accelerated
- Combined physical and biological processes lead to more rapid oil removal and degradation compared to slower natural processes
- Proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- No ecological effects detected in toxicity tests in field trials (e.g. Svalbard, Norway)
- No loss of sand results from implementation of this technique, this technique is preferred to options that result in removal of oiled sands as waste
- Does not impact beach stability

#### 3.2. Disadvantages of the Sediment Relocation Technique

- Unsuitable where there are buried oil residues heavier than a stain that could be unearthed and relocated during this treatment.
- Unsuitable where there are oil residues on sand heavier than a stain (<0.01cm thickness)
- Entails cost and generates an operational ‘footprint’ as compared to taking no action



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### 4. Sediment Relocation Demonstration

The following section describes the sediment relocation demonstration that has been undertaken in July and the proposed sediment relocation demonstration and monitoring for efficacy that is proposed to be conducted in August.

#### 4.1. July 2010 Grand Terre 2 Sediment Relocation Demonstration

A demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2. This demonstration successfully demonstrated that the process accelerated the natural physical removal of oil staining from the beach sediment and sampling results showed no significant oil impact to water column and sediments.

The following photos demonstrate the method of sediment relocation step by step:

		
<p>1 Stained oil is identified above the intertidal zone, a low energy wave zone.</p>	<p>2 Stained oil is scraped from the beach sediment using a <i>Cherrington</i> beach cleaner. Depth of 10-20cm sediment.</p>	<p>3 The sediment is relocated to the lower intertidal zone, a higher energy environment.</p>
		
<p>4 The physical wave energy acts upon the relocated sediment.</p>	<p>5 The effectiveness of the technique is observed.</p>	<p>6 The technique is repeated along the stretch of beach in Grand Terre 2.</p>

#### Sampling Procedure

Four water samples and sediment samples were gathered on July 15<sup>th</sup> and July 17<sup>th</sup> analyzed for PAHs by 8270C-SIM, TPH-DRO, TPH-ORO, LA EPH, LA VPH, and TPH-GRO. The water and sediment samples were taken approximately 15-20m off the shoreline.

#### Water samples

For the water samples collected on July 15, 2010, no analytes were detected in all but one sample. In that sample, TPH-DRO was detected just above the reporting limit at 0.1 3 mg/L and LA EPH was detected at 0.34 mg/L. For the water samples collected on July 17, 2010, no analytes were detected in any sample.

#### Sediment samples

The results for the two sets of solid samples were similar to each other. For PAHs by 8270C-SIN1, two of the 4 samples each day had detections of chrysene, fluoranthene, and phenanthrene. One sample from the July 17<sup>th</sup> sample also had a detection of benzo(b)fluoranthene. The concentrations for these PAHs ranged from 1.8 vg/kg to 23 vg/kg. No



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other PAHs were detected. For TPH-ORO and TPH-DRO, one sample from the 15<sup>th</sup> July and two samples from 17<sup>th</sup> July had detections for these analytes. The concentrations for TPH-ORO ranged from 14 mg/kg to 33 mg/kg. The concentrations for TPH-DRO ranged from 25 mg/kg to 68 mg/kg. For LA EPH, there was a detection of Aliphatics (C16-C35) in one sample from each day at concentrations of 14 mg/kg and 87 mg/kg. For LA VPH and TPH-GRO, no analytes were detected in any of the soil samples.

**Table 1 Sediment and Water Sample Results**

Matrix Collection Date	WATER (4 samples) 7/15/2010	WATER (4 samples) 7/17/2010	SOLID (4 samples) 7/15/2010	SOLID (4 samples) 7/17/2010
Analysis	PAH-SIM	PAH-SIM	PAH-SIM	PAH-SIM
Reporting Limits (Units)	<0.052-<0.056 ug/l	<0.050-<0.052 ug/l	<1.7 ug/kg	<1.7 ug/kg
Number of Detections	0 detections out of a possible 64	0 detections out of a possible 64	5 detections out of a possible 64	6 detections out of a possible 64
Range of Detections (Units)	NA	NA	1.6-11 ug/kg	2.6-23 ug/kg
Analysis	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	NA	NA	19 mg/kg	14-33 mg/kg
Analysis	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	0.13 mg/l	NA	34 mg/kg	25-68 mg/kg
Analysis	LA EPH	LA EPH	LA EPH	LA EPH
Reporting Limits (Units)	<0.055-<0.056 mg/l	<0.052 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 28	0 detection out of a possible 28	1 detection out of a possible 28	1 detection out of a possible 28
Range of Detections (Units)	Aliphatics (C16-C35) 0.34 mg/l	NA	Aliphatics (C16-C35) 14 mg/kg	Aliphatics (C16-C35) 87 mg/kg
Analysis	LA VPH	LA VPH	LA VPH	LA VPH
Reporting Limits (Units)	<100 ug/l	<100 ug/l	<5.89-<6.11 mg/kg	<6.00-<6.11 mg/kg
Number of Detections	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12
Range of Detections (Units)	NA	NA	NA	NA
Analysis	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO
Reporting Limits (Units)	<50 ug/l	<50 ug/l	<0.99-<1.00 mg/kg	<0.98-<1.00 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4
Range of Detections (Units)	NA	NA	NA	NA

### Summary

This demonstration was successful in terms of showing the technique's applicability to the sand oiling conditions observed on the Louisiana coast. The demonstration sampling also provided evidence that hydrocarbons did not become distributed in the water or sediment following the implementation of this technique. However, concerns from several stakeholders precluded its approval for wider spread use under an 'Emergency Use' authorization. They have requested additional information for review.

**Refer to:** Section 5, Sediment Relocation Technique Concerns



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### 4.2. Proposed Grand Isle Sediment Relocation Demonstration

A larger scale demonstration of the technique is proposed for Grand Isle in late August to a wider stakeholder audience to assess the viability for its application to future Stage III shoreline operations. The demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone*. It is proposed that this demonstration be undertaken at Grand Isle on August 22 or 23. A sampling program has been developed to gather sediment and water samples, including sentinel snare arrays in the water column, for analysis that will assess the oil fate and technique efficacy.

#### Sediment Relocation Method

The method for implementing the sediment relocation technique in the Grand Isle demonstration in August will follow the same process as the July demonstration. The technique will be applied as the tidal flooding begins. Earth moving equipment, such as *Cherringtons*, small bulldozers or front-end loaders will be used to move stained sand from the surface of the beach at locations above the intertidal zone, which is a low energy environment. An assessment as to the depth of sand that will require relocation will be made based on the extent of staining. This is likely to be in the range of 5 to 40cm in depth. Above this zone the sand is protected from physical abrasion from wave energy and natural physical processes. The sand will be relocated to the intertidal zone, where the stained sand is exposed to a increased wave energy for an increased length of time. The effectiveness of sediment relocation is a result of the effects of the physical processes that abrade oil from the sediment and oil mineral aggregate formation processes. Oil mineral aggregate formation increases the surface area of the oil that is exposed and thereby stimulates physical and chemical weathering and biological degradation.

The natural physical processes described will not only remove the oil staining from the beach sediment but will also redistribute the relocated sediment back into the beach system over time. The preservation of sand on the beach where this technique is applied will ensure that the natural process of longshore drift and shoreline erosion are not disturbed. In contrast, sand removal can result in adverse and unnatural processes of erosion and movement that may have implications for sediment transfer along the stretch of coastline where sand is removed.

#### Expected Outcomes

- To demonstrate that sediment relocation is a viable and an effective Stage III treatment technique for sandy beach restoration in Louisiana
- To develop understanding amongst stakeholders of sediment relocation technique implementation
- To engage a wider audience base in a physical demonstration of the technique in use
- To apply a structured sampling program to monitor sediment relocation effectiveness

## 5. Sediment Relocation Monitoring

### 5.1. Introduction

The aim of the monitoring component within the demonstration proposal is to:

- Evaluate the potential for unanticipated consequences (e.g., bulk oil release) from use of the method; and
- Provide information on oil fate that resource agencies and stakeholders can use during consideration of its potential wider operational use.

More specifically, the monitoring will provide insights into the fate of oil adhered to sand moved into the lower intertidal zone following removal of staining (i.e., surf-washed). Oil fate will be characterized in several ways:

- Through assessment of visual fouling of sorbent or snare boom deployed offshore from the designated cleanup beach and designated un-surf-washed beach;
- Through water sampling and subsequent gas chromatography/mass spectrometry (GC/MS) chemistry performed immediately offshore from the surf-washed area and reference area;
- Through bottom sediment sampling and subsequent GC/MS chemistry performed immediately offshore from the surf-washed area and reference area;





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- Through deployment of “snare sentinel” arrays directly nearshore from both areas.

In addition, focused collections and laboratory studies independent of the demonstration project itself will provide detailed information about the fate of the oil and the underlying mechanisms driving oil removal and degradation are planned in support of the project. Each of these is discussed in greater detail below.

### Sorbent or snare boom

It is recommended, and likely to be required, that the surf-washed area be boomed in order to contain and/or capture floatable oil that might be released from relocated oiled sand. If this boom is standard white sorbent boom or snare boom, it can also serve as a qualitative visual measure of oil released from the sand during the operation, relative to the untreated (oiled) reference beach.

### Water sampling

We propose to collect three mid-column (approx. 1 m depth) seawater samples directly offshore from the treated and reference beaches at multiple time periods, as detailed below—subject to limitations of the sampling platforms (we are investigating the feasibility of using sea kayaks to permit shallow water access). Assuming that the actual relocation activity takes place at the end of the work day on Day 1, post-relocation water sampling would take place at the beginning of Day 2 after the relocated sand is tidally flooded. Water sampling would take place at the following times during the demonstration:

- Day 1 (pre-relocation & flooding)
- Day 2: During flooding
- Day 2: Flooding + 1 hr.
- Day 2: Flooding + 2 hr.
- Day 2: Flooding + 4 hr.
- Day 2: Flooding + 8 hr.
- Day 3: Flooding + 24 hr.

### Sediment sampling

Sediment/sand samples will be collected at several time intervals before and after the relocation of oiled sand to the lower intertidal zone. Variability in chemistry results from these samples is expected to be high; three samples from each time interval and sampling location will be collected to establish a range of hydrocarbon concentrations.

Sediment sampling will take place at the following times/locations:

#### Sediment relocation site

- Day 1 (pre-relocation & flooding)/relocated sand piles
- Day 2: Re-emergence/relocated sand pile locations
- Day 2: Re-emergence + (TBD time)/below relocated sand piles
- Day 3: Re-emergence/relocated sand pile locations
- Day 3: Re-emergence + (TBD time)/below relocated sand piles

#### Reference site

- Day 1 (pre-relocation & flooding)/approximate tidal elevation of relocation
- Day 2: Re-emergence/ approximate tidal elevation of relocation
- Day 2: Re-emergence + (TBD time)/below approximate tidal elevation of relocation
- Day 3: Re-emergence/ approximate tidal elevation of relocation
- Day 3: Re-emergence + (TBD time)/below approximate tidal elevation of relocation

### Sentinel snare sampling arrays

Sentinel snare arrays are simple indicators for subsurface oil based on attaching oleophilic "pom-poms" to a rope or a PVC pipe. These snare arrays monitor the nearshore water column for the presence of subsurface oil that could threaten sensitive shoreline and shallow subtidal habitats that are not oiled.



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These deployments provide a relatively simple and intuitive gauge for presence/absence of subsurface oil and they are also part of a separate and ongoing Unified Command activity. We will incorporate sentinel snares into this study plan as a means to evaluate oil potentially moving offshore from the relocated sand piles as the tide floods back in.

Three arrays will be deployed in 5-15' water depth directly off shore from the relocated sand piles; three others will be set off shore from the reference site. Deployment should around the same time as the sand relocation activity on the shoreline. Arrays will be checked for signs of oiling on Day 3, at initial flooding + 24 hrs, and on Day 4, at initial flooding + 48 hrs. After the 48-hr. check, the arrays will be removed.

### **Oil-Mineral Aggregate (OMA) sampling**

(To be supplied by Dr. Ken Lee, Fisheries & Oceans Canada)

### **Oiled sand biodegradation**

As part of the risk communication effort associated with this demonstration, we are also establishing a separate laboratory experiment in cooperation with the Test America Houma analytical chemistry unit to document temporal trends/rates in biodegradation of residual oil in beach sand. This is performed to answer the question: How do we know that oiled sand hydrocarbon concentrations decrease/degrade when placed in the surf zone?

This experiment will be conducted independently of the operational demonstration and the other monitoring activities, but will use oiled sand from Grand Isle and seawater collected there as the basis for characterizing degradation over time. Although this will not conclusively document degradation rates, it will serve to show that hydrocarbon concentrations in oiled sand overwashed by seawater do in fact decline with time.

For this experiment, a bulk (approximately 5 gal. volume) of oiled sand collected at Grand Isle will be thoroughly homogenized, and aliquots placed in glass jars with seawater (also collected off Grand Isle) and mixed periodically. Original hydrocarbon concentration in the sand will be measured and characterized by GC/MS. At specified time intervals, water will be drained and the sand extracted and analyzed to measure alkane and PAH concentrations over time.



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### 6. Sediment Relocation Technique Concerns

Concern	Explanation	Evidence
<b>Remobilization of oil</b>		
Will 'black oil' be remobilized into the Gulf.	Only stained sand will be relocated, <b>NOT</b> oiled sands. Stained sand is defined as "visible oil, which cannot be scraped off with a fingernail" (<0.01cm in thickness) in the NOAA, Shoreline Assessment Manual.	Shoreline Assessment Manual.p
The sediment relocation technique should not be used on heavily oiled areas.	Implementation of sediment relocation to stained sand will not result in black oil being remobilized in the Gulf. There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is <b>NOT</b> the intention for its implementation on the Louisiana coastline.	
Oil will be remobilized to other areas of the coastline, storms may assist this process.	Relocated sediment will likely be distributed on the same beach over a period of two to three tidal cycles under conditions where wave heights are less than 30cm, similar to the general wave height of the Louisiana coastline, (Owens et.al. 1995). Laboratory tests have been conducted where oiled sediment samples were submerged in seawater, within seconds' oil separated from the sediment, (Owens and Sergy 2004). Bragg and Owens (1994) have deduced that the formation of oil mineral aggregate is a key element in the removal of stain from sands after they are relocated into the intertidal zone.	Accelerating Natural Removal of Oil on Beaches  2008 Selendang Sed Reloc IOOSC.pdf
Oil will accumulate into benthic sediments at the site of sediment relocation and in nearby locations.	<p>The formation of the oil mineral aggregate reduces the ability of oil to adhere to shoreline materials, thereby facilitating removal by wave and tidal action, (Owens and Lee, 2003) . Field trials suggest that a significant fraction of the oil dispersed into nearshore waters and sediments by interaction with mineral fines will be biodegraded. There is conclusive evidence of oil biodegradation within the sub tidal sediments, (Sergy et. al. 2003).</p> <p>In previous studies little or no residual oil has been found to strand on the shore in areas adjacent to the area where the field trial has taken place. Only small amounts of oil were found in nearshore subtidal sediments and sediment trap samples suggests that a large fraction of the oil lost from the experimental plots will be dispersed in the form of relatively buoyant oil mineral aggregate.</p>	2003 OMA Review SSTB.PDF  2003 Svalbard Intro SSTB.pdf
Is the amount of oil that will be remobilized into the Gulf known?	Only stained oil will be relocated in implementation of this technique. Stained oil is defined as being <0.01cm thickness (NOAA, Shoreline Assessment Manual), this will equate to a volume of 0.0001 per square meter of sediment.	Shoreline Assessment Manual.p
Implementing this technique will produce a persistent sheen on the waters surface.	<p>A sheen is an oil film ranging from barely visible to dull colors. Sheening will only persist for short time periods. An oil sheen has a 0.04 to 0.30µm thickness, this equates to 0.04-0.3litres per m3. Natural weathering processes (spreading, evaporation and dispersion) will assist in the breakdown and removal of sheen from the marine environment. Sheens are not persistent and on completion of implementing this technique any sheening that occurs will evaporate and disperse readily.</p> <p>There was no visible sheen during the Grand Terre 2 trial on July 16<sup>th</sup>.</p>	<a href="http://www.itopf.com/marine-spills/fate/weathering-process/">http://www.itopf.com/marine-spills/fate/weathering-process/</a>



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Concern	Explanation	Evidence
It would be better to remove stained sand than implement this technique.	The removal of sand or sediment from a beach completely removes that substrate from that coastal system. Sediment removal on any scale will have implications for that system, this may include increasing erosion of the coastline and impact the coastal ecosystem on a local and broader scale. Sediment relocation accelerates the natural physical processes of oil removal from sediment.	See reference papers presented in evidence.
<b>Impact to marine organisms</b>		
Marine life will be impacted from sediment relocation	Sediment relocation, along with other <i>in situ</i> techniques accelerates the weathering of the subsurface oil and decreasing the amount of oil remaining on the beaches ostensibly reduced the residence time of the oil and, therefore, also reduced the exposure or risk to coastal birds and animals.	2008 Selendang Sed Reloc IOSC.pdf
The level of toxicity that may result in benthic sediments or suspended particulate material is not known.	Experimental oil spill demonstration sites were set up in Svalbard, Norway to assess the treatment technique of sediment relocation. The results showed that sediment relocation did not elevate the toxicity in the nearshore environment to unacceptable levels nor resulted in significant alongshore or offshore sediment oiling.	<a href="http://www.iosc.org/papers/02228.pdf">http://www.iosc.org/papers/02228.pdf</a>
<b>Other concerns</b>		
Approval to this technique will lead the way for expanded use of this approach when dealing with stained sediment.	This technique is a widely accepted and used method to clean lightly-oiled or stained sandy beaches. On some cases it is used for badly oiled coarse sediments on relatively exposed shores where wave action will eventually restore the normal shore profile	Refer to spill case studies in Section 6.1
This is a cost cutting measure.	Cost is not the main issue but more the appropriateness, effectiveness and efficiency of the method to clean the stained sandy beaches without further sediment removal. These benefits are offered by sediment	See reference papers presented in evidence.



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### 6.1. Sediment Relocation Implementation during Previous Oil Spills and Experimental Field Trials

Oil Spill	Date	Comments	Reference
Tampa Bay		<p>This coast is a high-value recreation shore and the objective of the cleanup was to restore the beaches to a prespill condition before the annual Labor Day vacation. After removal of the oiled sediments, either manually or mechanically, the sand retained a brown oil stain. Bulldozers and front-end loaders were used to push the surface layers of sediment into the surf zone with the anticipation that there would follow a natural cleaning of the sediment. This was successful and the transport of the cleaned sediment back up the beach occurred in conditions with wave heights generally less than 30 cm over a period of only one or two tidal cycles. This accelerated removal showed that the process could be used as a polishing tool for shoreline cleanup</p> <p><b>Note:</b> <i>the oil spilt was no.6 fuel oil, heavier in viscosity than the MC252 oil.</i></p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Exxon Valdez		<p>The shoreline treatment on the Exxon Valdez spill used large-scale beach washing, manual cleanup, raking and tilling the beaches, oily debris pickup, enhanced bioremediation and spot washing. In addition to this, mechanical relocation techniques methods were used on a few sites, including the use of bulldozers to relocate or remove the contaminated beach surfaces.</p>	<a href="http://www.eoerth.org/article/exxon_valdez_oil_spill">http://www.eoerth.org/article/exxon_valdez_oil_spill</a>
Sea Empress		<p>The <i>Sea Empress</i> spilled a cargo of Forties Blend and heavy fuel oil near Milford Haven, Wales, in February 1996. As a result of finding that clay-oil flocculation was taking place at this spill location, the planned operational response was modified so that beach sediments at Amroth were relocated to the lower intertidal zone to accelerate oil removal by surf washing (abrasion) and to expose subsurface oiled pebbles and cobbles. This action also exposed fine sediments so that the concentration of fines in the nearshore waters was increased, which promoted interaction between oil and sediment fines. After four days of this treatment, the concentrations of oil on the beach were reduced by more than an order of magnitude. Visual observations indicate that 50% of the removal could be attributed to abrasion and 50% to fine-particle interactions.</p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Selendang Ayu		<p>Sediment relocation and mechanical mixing was approved for use on 8 sites for the shoreline treatment. The results in this spill documented a net reduction in oiling, the return of beach profiles, and decline in biological availability of hydrocarbons over the course of the response and cleanup activities, and showed no unanticipated adverse impacts despite the large scale of sediment movement on several of the beaches.</p>	2008 Selendang Sed Reloc IOSC.pdf
Field Trials	Date	Comments	Reference
Svalbard, Norway		<p>The Svalbard Shoreline Field Trials quantified the effectiveness of sediment relocation as a viable <i>in situ</i> treatment option for oiled shorelines. The results of the monitoring confirmed that sediment relocation significantly accelerated the rate of oil removal and reduced oil persistence where oil was stranded on the beach face above the level of normal wave activity. Where the stranded oil was in the zone of wave action, sediment relocation accelerated the short-term (weeks) rate of oil loss from the intertidal sediments.</p>	2003 Svalbard Intro SSTB.pdf

**From:** [Farabee, Michael V MVN](#)  
**To:** [Lacoste, Angie D MVN](#); [Marino, Melissa L MVN](#)  
**Cc:** [Serio, Pete J MVN](#)  
**Subject:** FW: Surf Washing on Grand Isle  
**Date:** Monday, August 23, 2010 12:48:23 PM  
**Attachments:** [EUA 10-103 - Grand Isle Operation Areas.pdf](#)  
[EUA 10-103 - DEMONSTRATION PROPOSAL FOR SURF WASHING ON GRAND ISLE.pdf](#)  
**Importance:** High

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Please see attached a new deepwater horizon oil spill emergency request. Please make sure Pete gets the tracking number.

Angie, since we have received negative agency response on similar actions at Grand Terre, please give 36 hours to comment from your announcement.

Please make sure DEQ is in our agency mail out.

I have notified the agent and DNR that the demonstration projects of this technique they state are on-going on grand Isle are in violation of RHA and CWA and requested they stop immediately.

Michael V. Farabee  
New Orleans District  
Regulatory Branch  
Chief, Eastern Evaluation Section

(504) 862-2292  
(504) 862-2117 Fax

In order to assist us in improving our service to you,  
please complete the survey found at: <http://per2.nwp.usace.army.mil/survey.html>

-----Original Message-----

From: Sharon McCarthy [<mailto:Sharon.Trahan@LA.GOV>]  
Sent: Monday, August 23, 2010 11:59 AM  
To: 'Butler, Dave'; 'kbalkum@wlf.louisiana.gov'; 'mweigel@wlf.la.gov'; Frank Cole; George Boddie; Elizabeth Davoli; 'Melanie Jarrell'  
Cc: Farabee, Michael V MVN; 'Ettinger.john@epa.gov'; 'richard.hartman@noaa.gov'; 'Patti\_Holland@fws.gov'; Christine Charrier; 'ghayward@newfields.com'  
Subject: FW: Surf Washing on Grand Isle

To whom it may concern:

Please see the request email below, attached plats and demonstration proposal to provide feedback as to the possible impacts the proposed project may have upon the ecological/hydrological features in the vicinity as well as your opinion of the justification/need, and/or offer suggestions for alternatives to the proposed project.

Comments Needed: OCPR George Boddie; BA-01 Davis Pond Freshwater Diversion

OCPR Chris Williams; FTL-01 Fisheries Habitat Restoration on West Grand  
Terre Island

OCPR Elizabeth Davoli; Grand Isle and Vicinity Protection and Shoreline Stabilization and Barrier  
Shoreline Restoration: Barataria Basin

LDWF - LNHP

Please submit your comments by 12:00 noon Tuesday, 8/24/10. Thank You.

Sharon McCarthy

Coastal Resources Scientist

DNR/Office of Coastal Management

ph. [REDACTED]

fax [REDACTED]

From: Melanie Jarrell [<mailto:mel.jarrell@att.net>]

Sent: Thursday, August 19, 2010 10:57 AM

To: Christine Charrier; Karl Morgan

Subject: Surf Washing on Grand Isle

8/19/2010

Christine and Karl:

My apologies for the delay in responding to this request.

BP is requesting that the Surf Wash Project be reviewed for an EUA and immediate CUP as described in the attached "test" project. Bp realizes that this particular shoreline cleanup method is not conducive for every type of shoreline in Louisiana's sensitive coastline, and has been educated on the fine sediments that actually would be harmed by such a method, however Bp believes that this is a good fit to "polish" the sand particles at Grand Isle and we strongly believe we have a small window of opportunity to test, refine our method, and begin our project in order to provide the public clean beaches as soon as possible.

BP is willing to meet with DNR on this issue once we have tested our "method" on Monday, August 22. Feel free to contact Gary Hayward to set up a meeting on this after August 22, 2010.

We would like to receive the EUA as soon as possible in order to set up the necessary resources and manpower to perform this clean up method as soon as possible.

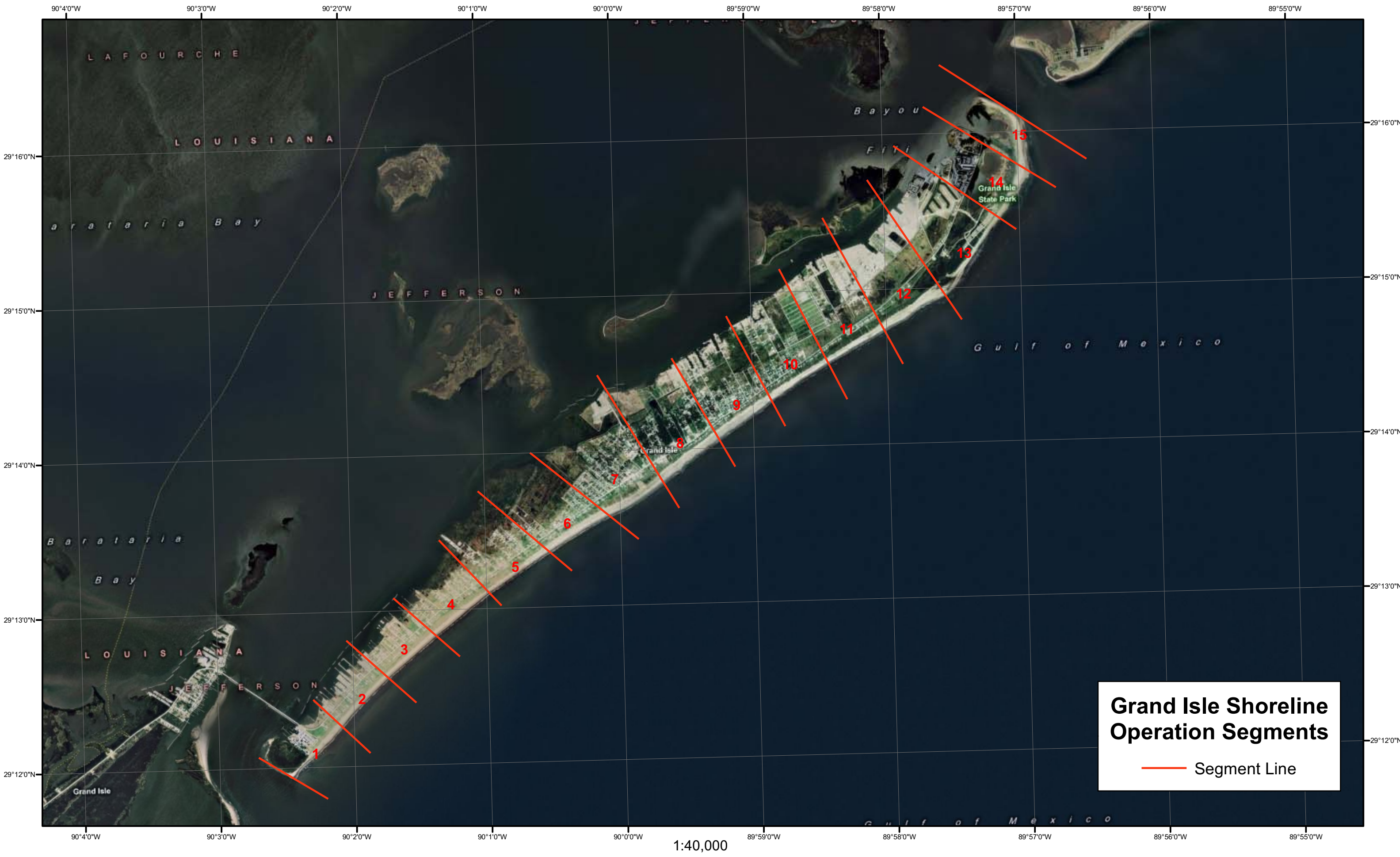
Sincerely,

Melanie Jarrell

Deepwater Horizon Response  
Houma Command Center  
Deputy Environmental Unit Leader

Environmental Strategies, LLC  
[REDACTED] - cellular





**Grand Isle Shoreline  
Operation Segments**  
— Segment Line

1:40,000

# SEDIMENT RELOCATION (SURF WASHING)

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## DEMONSTRATION PROPOSAL

8/13/2010



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# SEDIMENT RELOCATION (SURF WASHING)

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### 1. Introduction

This document aims to describe the merits of sediment relocation (or *surf washing*) as a Stage III beach cleaning strategy and outline the approach for a new demonstrative trial. Sediment relocation is a standard treatment technique that has been used in previous spill responses and is detailed in the NOAA, Shoreline Assessment Manual and Environment Canada. The technique aims to minimize the loss of sediment from the beach.

**Sediment relocation** is a treatment technique that is used to remove traces of oil from stained sands in the final stages of an overall shoreline treatment strategy. The objective of sediment relocation is to move stained sand from one location to another where there is increased wave energy to accelerate natural oil removal processes.

### 2. Overview of Sandy Shore Treatment Strategies


A number of treatment options are available for sandy shorelines relevant to the degree of oiling. A short description of each strategy that can be or are being used at Grand Isle along with their relative merits is described below:

TECHNIQUE		DESCRIPTION
MANUAL REMOVAL		<p>Manual removal, for example using rakes and shovels, is suitable for small areas of oil contamination where oil has not significantly penetrated the sediments. It is preferred for medium-heavy oils, but is less effective where oil is buried or mixed into sediments. Care must be taken to remove as little as possible of the clean sediments and surviving animals and plants. Oiled material is collected in bags, drums or containers and handled with protocols commensurate with State and Federal regulations. Natural recovery of manually cleaned areas tends to be more rapid, due to less physical disturbance. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MECHANICAL REMOVAL		<p>Mechanical removal is a method most commonly used on sandy shores where the oil contamination may be extensive but has not penetrated deeply. Graders are used to skim the surface layer of oiled sand, no deeper than the oil penetration depth. Oily sand may be collected using front-end loaders. Front-end loaders can also be used alone but this may result in more sand being removed than necessary, which increases the disposal volume and reduces the sediment protection of beach habitat. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MOBILE BEACH CLEANERS ("Cherringtons")	 <p style="text-align: center;"><i>Grand Isle, 2010</i></p>	<p>Beach cleaners are highly effective and efficient at removing minimal surface layers of oiled sand and tar balls. Minimal labor is required and large areas can be covered per day with multiple units. In addition, less material is removed than when using bulldozers and front-end loaders via the adjustable digging depth of the units. On Grand Isle, the sand collected is subsequently processed through the MI SWACO Sand Treatment Plant to remove residual oil. Alternative processing can be via sediment relocation.</p>
SAND TREATMENT PLANTS		<p>Sand treatment plants (STP) of the type used at Grand Isle are designed to remove coats and stains from oiled sands prior to relocation onto the source beach. It is a treatment process that minimizes removal of sand as a waste, treated sands are returned to the beach. The MISWACO system in current use at Grand Isle is capable of processing around 50 tons of sand/hour. The system is static with a relatively large footprint and involves multiple</p>



# SEDIMENT RELOCATION (SURF WASHING)

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TECHNIQUE	DESCRIPTION	
	<i>MISWACO, Grand Isle, 2010</i>	transfers.
MIXING	<i>Mixing (MIX)</i> accelerates degradation and natural removal of light oils by breaking up oily sediments and surface oil deposits which increasing the surface area. This may involve the use of farm-type equipment, such as disc systems, harrows, ploughs, rakes or tines. One disadvantage is that it may disturb surface substrate and shallow-burrowing organisms. This technique can be used on wet or dry sediments.	
SEDIMENT RELOCATION	 <p data-bbox="402 625 646 653"><i>Grand Terre 2 Trial, 2010</i></p>	Sediment relocation (SR) or surf washing is a technique used to accelerate natural degradation of lightly contaminated sands by moving these into the lower intertidal zone/surf zone using mechanical equipment. It is generally used for recreational beaches that require re-opening sooner than natural recovery could achieve and it could also be used for beaches that has specific sensitivities. It is particularly useful on beaches where sediment removal must be minimized due to erosion or disposal issues. Sediment relocation can be the final stage in beach cleanup following treatment using a combination of the above techniques e.g. manual followed by mechanical/beach cleaners, and then treatment with sediment relocation for a final “polish”.

### 3. Sediment Relocation Benefit Analysis

The objective of sediment relocation is to accelerate the natural weathering and microbial degradation of oil-stained sands.

#### 3.1. Advantages of the Sediment Relocation Technique

- Increased acceleration of natural recovery for lightly oiled/contaminated sands
- Oiling reduced to “non-detect” levels and sands pass the “white towel test”
- Effective on stained sediments that are relocated from above the high tide mark to the intertidal zone, the area of beach which receives higher energy wave action
- Effective at high use amenity locations (e.g. tourist beaches) where natural recovery time needs to be accelerated
- Combined physical and biological processes lead to more rapid oil removal and degradation compared to slower natural processes
- Proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- No ecological effects detected in toxicity tests in field trials (e.g. Svalbard, Norway)
- No loss of sand results from implementation of this technique, this technique is preferred to options that result in removal of oiled sands as waste
- Does not impact beach stability

#### 3.2. Disadvantages of the Sediment Relocation Technique

- Unsuitable where there are buried oil residues heavier than a stain that could be unearthed and relocated during this treatment.
- Unsuitable where there are oil residues on sand heavier than a stain (<0.01cm thickness)
- Entails cost and generates an operational ‘footprint’ as compared to taking no action



# SEDIMENT RELOCATION (SURF WASHING)

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### 4. Sediment Relocation Demonstration

The following section describes the sediment relocation demonstration that has been undertaken in July and the proposed sediment relocation demonstration and monitoring for efficacy that is proposed to be conducted in August.

#### 4.1. July 2010 Grand Terre 2 Sediment Relocation Demonstration

A demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2. This demonstration successfully demonstrated that the process accelerated the natural physical removal of oil staining from the beach sediment and sampling results showed no significant oil impact to water column and sediments.

The following photos demonstrate the method of sediment relocation step by step:

		
<p>1 Stained oil is identified above the intertidal zone, a low energy wave zone.</p>	<p>2 Stained oil is scraped from the beach sediment using a <i>Cherrington</i> beach cleaner. Depth of 10-20cm sediment.</p>	<p>3 The sediment is relocated to the lower intertidal zone, a higher energy environment.</p>
		
<p>4 The physical wave energy acts upon the relocated sediment.</p>	<p>5 The effectiveness of the technique is observed.</p>	<p>6 The technique is repeated along the stretch of beach in Grand Terre 2.</p>

#### Sampling Procedure

Four water samples and sediment samples were gathered on July 15<sup>th</sup> and July 17<sup>th</sup> analyzed for PAHs by 8270C-SIM, TPH-DRO, TPH-ORO, LA EPH, LA VPH, and TPH-GRO. The water and sediment samples were taken approximately 15-20m off the shoreline.

#### Water samples

For the water samples collected on July 15, 2010, no analytes were detected in all but one sample. In that sample, TPH-DRO was detected just above the reporting limit at 0.1 3 mg/L and LA EPH was detected at 0.34 mg/L. For the water samples collected on July 17, 2010, no analytes were detected in any sample.

#### Sediment samples

The results for the two sets of solid samples were similar to each other. For PAHs by 8270C-SIN1, two of the 4 samples each day had detections of chrysene, fluoranthene, and phenanthrene. One sample from the July 17<sup>th</sup> sample also had a detection of benzo(b)fluoranthene. The concentrations for these PAHs ranged from 1.8 vg/kg to 23 vg/kg. No



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other PAHs were detected. For TPH-ORO and TPH-DRO, one sample from the 15<sup>th</sup> July and two samples from 17<sup>th</sup> July had detections for these analytes. The concentrations for TPH-ORO ranged from 14 mg/kg to 33 mg/kg. The concentrations for TPH-DRO ranged from 25 mg/kg to 68 mg/kg. For LA EPH, there was a detection of Aliphatics (C16-C35) in one sample from each day at concentrations of 14 mg/kg and 87 mg/kg. For LA VPH and TPH-GRO, no analytes were detected in any of the soil samples.

**Table 1 Sediment and Water Sample Results**

Matrix Collection Date	WATER (4 samples) 7/15/2010	WATER (4 samples) 7/17/2010	SOLID (4 samples) 7/15/2010	SOLID (4 samples) 7/17/2010
Analysis	PAH-SIM	PAH-SIM	PAH-SIM	PAH-SIM
Reporting Limits (Units)	<0.052-<0.056 ug/l	<0.050-<0.052 ug/l	<1.7 ug/kg	<1.7 ug/kg
Number of Detections	0 detections out of a possible 64	0 detections out of a possible 64	5 detections out of a possible 64	6 detections out of a possible 64
Range of Detections (Units)	NA	NA	1.6-11 ug/kg	2.6-23 ug/kg
Analysis	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	NA	NA	19 mg/kg	14-33 mg/kg
Analysis	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	0.13 mg/l	NA	34 mg/kg	25-68 mg/kg
Analysis	LA EPH	LA EPH	LA EPH	LA EPH
Reporting Limits (Units)	<0.055-<0.056 mg/l	<0.052 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 28	0 detection out of a possible 28	1 detection out of a possible 28	1 detection out of a possible 28
Range of Detections (Units)	Aliphatics (C16- C35) 0.34 mg/l	NA	Aliphatics (C16- C35) 14 mg/kg	Aliphatics (C16- C35) 87 mg/kg
Analysis	LA VPH	LA VPH	LA VPH	LA VPH
Reporting Limits (Units)	<100 ug/l	<100 ug/l	<5.89-<6.11 mg/kg	<6.00-<6.11 mg/kg
Number of Detections	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12
Range of Detections (Units)	NA	NA	NA	NA
Analysis	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO
Reporting Limits (Units)	<50 ug/l	<50 ug/l	<0.99-<1.00 mg/kg	<0.98-<1.00 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4
Range of Detections (Units)	NA	NA	NA	NA

### Summary

This demonstration was successful in terms of showing the technique's applicability to the sand oiling conditions observed on the Louisiana coast. The demonstration sampling also provided evidence that hydrocarbons did not become distributed in the water or sediment following the implementation of this technique. However, concerns from several stakeholders precluded its approval for wider spread use under an 'Emergency Use' authorization. They have requested additional information for review.

**Refer to:** Section 5, Sediment Relocation Technique Concerns



# SEDIMENT RELOCATION (SURF WASHING)

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### 4.2. Proposed Grand Isle Sediment Relocation Demonstration

A larger scale demonstration of the technique is proposed for Grand Isle in late August to a wider stakeholder audience to assess the viability for its application to future Stage III shoreline operations. The demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone*. It is proposed that this demonstration be undertaken at Grand Isle on August 22 or 23. A sampling program has been developed to gather sediment and water samples, including sentinel snare arrays in the water column, for analysis that will assess the oil fate and technique efficacy.

#### Sediment Relocation Method

The method for implementing the sediment relocation technique in the Grand Isle demonstration in August will follow the same process as the July demonstration. The technique will be applied as the tidal flooding begins. Earth moving equipment, such as *Cherringtons*, small bulldozers or front-end loaders will be used to move stained sand from the surface of the beach at locations above the intertidal zone, which is a low energy environment. An assessment as to the depth of sand that will require relocation will be made based on the extent of staining. This is likely to be in the range of 5 to 40cm in depth. Above this zone the sand is protected from physical abrasion from wave energy and natural physical processes. The sand will be relocated to the intertidal zone, where the stained sand is exposed to a increased wave energy for an increased length of time. The effectiveness of sediment relocation is a result of the effects of the physical processes that abrade oil from the sediment and oil mineral aggregate formation processes. Oil mineral aggregate formation increases the surface area of the oil that is exposed and thereby stimulates physical and chemical weathering and biological degradation.

The natural physical processes described will not only remove the oil staining from the beach sediment but will also redistribute the relocated sediment back into the beach system over time. The preservation of sand on the beach where this technique is applied will ensure that the natural process of longshore drift and shoreline erosion are not disturbed. In contrast, sand removal can result in adverse and unnatural processes of erosion and movement that may have implications for sediment transfer along the stretch of coastline where sand is removed.

#### Expected Outcomes

- To demonstrate that sediment relocation is a viable and an effective Stage III treatment technique for sandy beach restoration in Louisiana
- To develop understanding amongst stakeholders of sediment relocation technique implementation
- To engage a wider audience base in a physical demonstration of the technique in use
- To apply a structured sampling program to monitor sediment relocation effectiveness

## 5. Sediment Relocation Monitoring

### 5.1. Introduction

The aim of the monitoring component within the demonstration proposal is to:

- Evaluate the potential for unanticipated consequences (e.g., bulk oil release) from use of the method; and
- Provide information on oil fate that resource agencies and stakeholders can use during consideration of its potential wider operational use.

More specifically, the monitoring will provide insights into the fate of oil adhered to sand moved into the lower intertidal zone following removal of staining (i.e., surf-washed). Oil fate will be characterized in several ways:

- Through assessment of visual fouling of sorbent or snare boom deployed offshore from the designated cleanup beach and designated un-surf-washed beach;
- Through water sampling and subsequent gas chromatography/mass spectrometry (GC/MS) chemistry performed immediately offshore from the surf-washed area and reference area;
- Through bottom sediment sampling and subsequent GC/MS chemistry performed immediately offshore from the surf-washed area and reference area;



# SEDIMENT RELOCATION (SURF WASHING)

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- Through deployment of “snare sentinel” arrays directly nearshore from both areas.

In addition, focused collections and laboratory studies independent of the demonstration project itself will provide detailed information about the fate of the oil and the underlying mechanisms driving oil removal and degradation are planned in support of the project. Each of these is discussed in greater detail below.

### Sorbent or snare boom

It is recommended, and likely to be required, that the surf-washed area be boomed in order to contain and/or capture floatable oil that might be released from relocated oiled sand. If this boom is standard white sorbent boom or snare boom, it can also serve as a qualitative visual measure of oil released from the sand during the operation, relative to the untreated (oiled) reference beach.

### Water sampling

We propose to collect three mid-column (approx. 1 m depth) seawater samples directly offshore from the treated and reference beaches at multiple time periods, as detailed below—subject to limitations of the sampling platforms (we are investigating the feasibility of using sea kayaks to permit shallow water access). Assuming that the actual relocation activity takes place at the end of the work day on Day 1, post-relocation water sampling would take place at the beginning of Day 2 after the relocated sand is tidally flooded. Water sampling would take place at the following times during the demonstration:

- Day 1 (pre-relocation & flooding)
- Day 2: During flooding
- Day 2: Flooding + 1 hr.
- Day 2: Flooding + 2 hr.
- Day 2: Flooding + 4 hr.
- Day 2: Flooding + 8 hr.
- Day 3: Flooding + 24 hr.

### Sediment sampling

Sediment/sand samples will be collected at several time intervals before and after the relocation of oiled sand to the lower intertidal zone. Variability in chemistry results from these samples is expected to be high; three samples from each time interval and sampling location will be collected to establish a range of hydrocarbon concentrations.

Sediment sampling will take place at the following times/locations:

#### Sediment relocation site

- Day 1 (pre-relocation & flooding)/relocated sand piles
- Day 2: Re-emergence/relocated sand pile locations
- Day 2: Re-emergence + (TBD time)/below relocated sand piles
- Day 3: Re-emergence/relocated sand pile locations
- Day 3: Re-emergence + (TBD time)/below relocated sand piles

#### Reference site

- Day 1 (pre-relocation & flooding)/approximate tidal elevation of relocation
- Day 2: Re-emergence/ approximate tidal elevation of relocation
- Day 2: Re-emergence + (TBD time)/below approximate tidal elevation of relocation
- Day 3: Re-emergence/ approximate tidal elevation of relocation
- Day 3: Re-emergence + (TBD time)/below approximate tidal elevation of relocation

### Sentinel snare sampling arrays

Sentinel snare arrays are simple indicators for subsurface oil based on attaching oleophilic "pom-poms" to a rope or a PVC pipe. These snare arrays monitor the nearshore water column for the presence of subsurface oil that could threaten sensitive shoreline and shallow subtidal habitats that are not oiled.





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These deployments provide a relatively simple and intuitive gauge for presence/absence of subsurface oil and they are also part of a separate and ongoing Unified Command activity. We will incorporate sentinel snares into this study plan as a means to evaluate oil potentially moving offshore from the relocated sand piles as the tide floods back in.

Three arrays will be deployed in 5-15' water depth directly off shore from the relocated sand piles; three others will be set off shore from the reference site. Deployment should around the same time as the sand relocation activity on the shoreline. Arrays will be checked for signs of oiling on Day 3, at initial flooding + 24 hrs, and on Day 4, at initial flooding + 48 hrs. After the 48-hr. check, the arrays will be removed.

### **Oil-Mineral Aggregate (OMA) sampling**

(To be supplied by Dr. Ken Lee, Fisheries & Oceans Canada)

### **Oiled sand biodegradation**

As part of the risk communication effort associated with this demonstration, we are also establishing a separate laboratory experiment in cooperation with the Test America Houma analytical chemistry unit to document temporal trends/rates in biodegradation of residual oil in beach sand. This is performed to answer the question: How do we know that oiled sand hydrocarbon concentrations decrease/degrade when placed in the surf zone?

This experiment will be conducted independently of the operational demonstration and the other monitoring activities, but will use oiled sand from Grand Isle and seawater collected there as the basis for characterizing degradation over time. Although this will not conclusively document degradation rates, it will serve to show that hydrocarbon concentrations in oiled sand overwashed by seawater do in fact decline with time.

For this experiment, a bulk (approximately 5 gal. volume) of oiled sand collected at Grand Isle will be thoroughly homogenized, and aliquots placed in glass jars with seawater (also collected off Grand Isle) and mixed periodically. Original hydrocarbon concentration in the sand will be measured and characterized by GC/MS. At specified time intervals, water will be drained and the sand extracted and analyzed to measure alkane and PAH concentrations over time.



## SEDIMENT RELOCATION (SURF WASHING) DEMONSTRATION PROPOSAL

### 6. Sediment Relocation Technique Concerns

Concern	Explanation	Evidence
<b>Remobilization of oil</b>		
Will 'black oil' be remobilized into the Gulf.	Only stained sand will be relocated, <b>NOT</b> oiled sands. Stained sand is defined as "visible oil, which cannot be scraped off with a fingernail" (<0.01cm in thickness) in the NOAA, Shoreline Assessment Manual.	Shoreline Assessment Manual.p
The sediment relocation technique should not be used on heavily oiled areas.	Implementation of sediment relocation to stained sand will not result in black oil being remobilized in the Gulf. There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is <b>NOT</b> the intention for its implementation on the Louisiana coastline.	
Oil will be remobilized to other areas of the coastline, storms may assist this process.	Relocated sediment will likely be distributed on the same beach over a period of two to three tidal cycles under conditions where wave heights are less than 30cm, similar to the general wave height of the Louisiana coastline, (Owens et.al. 1995). Laboratory tests have been conducted where oiled sediment samples were submerged in seawater, within seconds' oil separated from the sediment, (Owens and Sergy 2004). Bragg and Owens (1994) have deduced that the formation of oil mineral aggregate is a key element in the removal of stain from sands after they are relocated into the intertidal zone.	Accelerating Natural Removal of Oil on Beaches  2008 Selendang Sed Reloc IOOSC.pdf
Oil will accumulate into benthic sediments at the site of sediment relocation and in nearby locations.	<p>The formation of the oil mineral aggregate reduces the ability of oil to adhere to shoreline materials, thereby facilitating removal by wave and tidal action, (Owens and Lee, 2003) . Field trials suggest that a significant fraction of the oil dispersed into nearshore waters and sediments by interaction with mineral fines will be biodegraded. There is conclusive evidence of oil biodegradation within the sub tidal sediments, (Sergy et. al. 2003).</p> <p>In previous studies little or no residual oil has been found to strand on the shore in areas adjacent to the area where the field trial has taken place. Only small amounts of oil were found in nearshore subtidal sediments and sediment trap samples suggests that a large fraction of the oil lost from the experimental plots will be dispersed in the form of relatively buoyant oil mineral aggregate.</p>	2003 OMA Review SSTB.PDF  2003 Svalbard Intro SSTB.pdf
Is the amount of oil that will be remobilized into the Gulf known?	Only stained oil will be relocated in implementation of this technique. Stained oil is defined as being <0.01cm thickness (NOAA, Shoreline Assessment Manual), this will equate to a volume of 0.0001 per square meter of sediment.	Shoreline Assessment Manual.p
Implementing this technique will produce a persistent sheen on the waters surface.	<p>A sheen is an oil film ranging from barely visible to dull colors. Sheening will only persist for short time periods. An oil sheen has a 0.04 to 0.30µm thickness, this equates to 0.04-0.3litres per m3. Natural weathering processes (spreading, evaporation and dispersion) will assist in the breakdown and removal of sheen from the marine environment. Sheens are not persistent and on completion of implementing this technique any sheening that occurs will evaporate and disperse readily.</p> <p>There was no visible sheen during the Grand Terre 2 trial on July 16<sup>th</sup>.</p>	<a href="http://www.itopf.com/marine-spills/fate/weathering-process/">http://www.itopf.com/marine-spills/fate/weathering-process/</a>



## SEDIMENT RELOCATION (SURF WASHING)

### DEMONSTRATION PROPOSAL

Concern	Explanation	Evidence
It would be better to remove stained sand than implement this technique.	The removal of sand or sediment from a beach completely removes that substrate from that coastal system. Sediment removal on any scale will have implications for that system, this may include increasing erosion of the coastline and impact the coastal ecosystem on a local and broader scale. Sediment relocation accelerates the natural physical processes of oil removal from sediment.	See reference papers presented in evidence.
<b>Impact to marine organisms</b>		
Marine life will be impacted from sediment relocation	Sediment relocation, along with other <i>in situ</i> techniques accelerates the weathering of the subsurface oil and decreasing the amount of oil remaining on the beaches ostensibly reduced the residence time of the oil and, therefore, also reduced the exposure or risk to coastal birds and animals.	2008 Selendang Sed Reloc IOSC.pdf
The level of toxicity that may result in benthic sediments or suspended particulate material is not known.	Experimental oil spill demonstration sites were set up in Svalbard, Norway to assess the treatment technique of sediment relocation. The results showed that sediment relocation did not elevate the toxicity in the nearshore environment to unacceptable levels nor resulted in significant alongshore or offshore sediment oiling.	<a href="http://www.iosc.org/papers/02228.pdf">http://www.iosc.org/papers/02228.pdf</a>
<b>Other concerns</b>		
Approval to this technique will lead the way for expanded use of this approach when dealing with stained sediment.	This technique is a widely accepted and used method to clean lightly-oiled or stained sandy beaches. On some cases it is used for badly oiled coarse sediments on relatively exposed shores where wave action will eventually restore the normal shore profile	Refer to spill case studies in Section 6.1
This is a cost cutting measure.	Cost is not the main issue but more the appropriateness, effectiveness and efficiency of the method to clean the stained sandy beaches without further sediment removal. These benefits are offered by sediment	See reference papers presented in evidence.



## SEDIMENT RELOCATION (SURF WASHING) DEMONSTRATION PROPOSAL

### 6.1. Sediment Relocation Implementation during Previous Oil Spills and Experimental Field Trials

Oil Spill	Date	Comments	Reference
Tampa Bay		<p>This coast is a high-value recreation shore and the objective of the cleanup was to restore the beaches to a prespill condition before the annual Labor Day vacation. After removal of the oiled sediments, either manually or mechanically, the sand retained a brown oil stain. Bulldozers and front-end loaders were used to push the surface layers of sediment into the surf zone with the anticipation that there would follow a natural cleaning of the sediment. This was successful and the transport of the cleaned sediment back up the beach occurred in conditions with wave heights generally less than 30 cm over a period of only one or two tidal cycles. This accelerated removal showed that the process could be used as a polishing tool for shoreline cleanup</p> <p><b>Note:</b> <i>the oil spilt was no.6 fuel oil, heavier in viscosity than the MC252 oil.</i></p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Exxon Valdez		<p>The shoreline treatment on the Exxon Valdez spill used large-scale beach washing, manual cleanup, raking and tilling the beaches, oily debris pickup, enhanced bioremediation and spot washing. In addition to this, mechanical relocation techniques methods were used on a few sites, including the use of bulldozers to relocate or remove the contaminated beach surfaces.</p>	<a href="http://www.eoerth.org/article/exxon_valdez_oil_spill">http://www.eoerth.org/article/exxon_valdez_oil_spill</a>
Sea Empress		<p>The <i>Sea Empress</i> spilled a cargo of Forties Blend and heavy fuel oil near Milford Haven, Wales, in February 1996. As a result of finding that clay-oil flocculation was taking place at this spill location, the planned operational response was modified so that beach sediments at Amroth were relocated to the lower intertidal zone to accelerate oil removal by surf washing (abrasion) and to expose subsurface oiled pebbles and cobbles. This action also exposed fine sediments so that the concentration of fines in the nearshore waters was increased, which promoted interaction between oil and sediment fines. After four days of this treatment, the concentrations of oil on the beach were reduced by more than an order of magnitude. Visual observations indicate that 50% of the removal could be attributed to abrasion and 50% to fine-particle interactions.</p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Selendang Ayu		<p>Sediment relocation and mechanical mixing was approved for use on 8 sites for the shoreline treatment. The results in this spill documented a net reduction in oiling, the return of beach profiles, and decline in biological availability of hydrocarbons over the course of the response and cleanup activities, and showed no unanticipated adverse impacts despite the large scale of sediment movement on several of the beaches.</p>	2008 Selendang Sed Reloc IOSC.pdf
Field Trials	Date	Comments	Reference
Svalbard, Norway		<p>The Svalbard Shoreline Field Trials quantified the effectiveness of sediment relocation as a viable <i>in situ</i> treatment option for oiled shorelines. The results of the monitoring confirmed that sediment relocation significantly accelerated the rate of oil removal and reduced oil persistence where oil was stranded on the beach face above the level of normal wave activity. Where the stranded oil was in the zone of wave action, sediment relocation accelerated the short-term (weeks) rate of oil loss from the intertidal sediments.</p>	2003 Svalbard Intro SSTB.pdf

**U.S. Environmental Protection Agency  
Comments on Corps of Engineers (Corps) Emergency Authorization Request  
Surf Washing on Grand Isle, Louisiana (MVN 2010-02064 EKK)**

**August 25, 2010**

This is in response to the New Orleans District Corps of Engineers request on August 23, 2010, for EPA review of a proposal to “surf wash” oiled sands on Grand Terre Island, Louisiana. According to materials included with the application, this technique would involve the relocation of oiled sands from above the limit of normal wave action to a lower elevation, where the oiled sediment is exposed to a higher amount of physical action from water and waves for a longer amount of time. We appreciate the opportunity to review and provide comments on this proposal.

EPA is concerned that as proposed the surf washing project would essentially reintroduce pollutants into the aquatic environment. Such an action would appear contrary to a basic goal of this oil spill response (i.e., minimize the amount of oil in the aquatic environment). The proposed project would result in increased pollutants entering waters in the sensitive and ecologically important tidal zone on Grand Terre Island, possibly increasing exposure of aquatic organisms to hydrocarbons. It is also unclear from the materials provided with this emergency authorization request whether we are being asked to review a demonstration proposal or a larger project spanning the entire length of the island. The request provides no estimate of the amount of oiled sands the applicant would reintroduce into the aquatic environment, nor has any limit been set in that regard.

We understand the intent of the project is to surf wash “stained” sands. However, there appears to be no way to guarantee that more heavily oiled sands would not be re-discharged into waters of the United States, either intentionally or unintentionally. In the absence of an implementation protocol, there is not enough information to assess whether the proposed project could have substantial cumulative effects with respect to re-discharging hydrocarbons into the aquatic environment. Therefore, there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of such an action.

The materials provided with this emergency authorization request also indicate that this technique is not suitable where there are buried oil residues and/or where residues are heavier than a stain (less than 0.01 cm thickness). Here again, there is no information to assure us that there are adequate controls in place to ensure that this technique would not be used in situations in which the oil residues are heavier than a stain. We understand that extensive sand cleaning continues on Grand Isle, and that the beaches there currently appear to be relatively clean. However, it is unclear from the application materials whether there remains a significant risk of buried oils or continued oiling of beach sands.

There also appear to be alternatives that might be less environmentally damaging. Specifically, mobile beach cleaners and closed loop sand treatment plants (both of which are currently being used at Grand Isle) appear to be effective alternatives. Neither of

these two techniques would involve putting oil back into water. In the absence of limits on the cumulative amount of oil that would be surf washed, we can only conclude that there is some risk that unacceptable amounts could be put back into the aquatic environment. Sand cleaning techniques that do not involve such risks would, therefore, appear to be a less damaging option.

Finally, approval of this proposal could set an adverse precedent, clearing the way for expanded use of this approach to dealing with oiled sands. Oil has impacted many miles of sandy beach and barrier shoreline across the northern Gulf of Mexico. Expanded use of this technique across the affected region could have untold cumulative adverse impacts on the aquatic environment. We would question whether the Federal government wishes to endorse the deposition of oiled sands into tidal zones across the affected region. Yet, approval of a permit in this case could have just such an effect.

We appreciate the applicant's efforts to thoroughly clean the beach at Grand Isle. However, given the uncertainties discussed above regarding the cumulative amount of oil that could be put back into the aquatic environment, we cannot support this proposal at this time. If the applicant remains interested in this technique, we would request an estimate of the cumulative amount of oil that would be put back into coastal waters, an estimate of the amount of contaminated sands that would require "sediment relocation", along with a plan to ensure that only stained sands would be surf washed (as opposed to heavier concentrations of oil). Additionally, the applicant should provide information to explain why surf washing is an environmentally superior alternative to mobile beach cleaners and/or sand treatment plants.

Thanks in advance for your consideration of these comments. If you wish to discuss this matter further, please contact John Ettinger at (504) 862-1119.

National Marine Fisheries Service (NMFS)  
Comments Pertaining to Proposed Emergency Authorization of Surf Washing of Sand  
on Grand Isle in Jefferson Parish (MVN 2010-02064- EKK)

August 25, 2010

By electronic mail dated August 23, 2010, the New Orleans District requested natural resource agency review of the application by BP Exploration and Production Company Incorporated for emergency authorization to conduct a demonstration of the effectiveness of “surf washing” of oiled beach sediments on Grand Isle in Jefferson Parish, Louisiana. The New Orleans District is considering emergency authorization for these activities under provisions of General Permit NOD-20. Based on information provided, oiled beach sediment would be relocated from its present location somewhere on Grand Isle into the surf zone as a demonstration of the ability of this type of effort to remediate lightly oiled sediment. NMFS is aware that an attempted demonstration of this technique was undertaken on Grand Isle on August 23, 2010; that effort was limited to the movement of approximately 1 cubic yard of sand from the upper beach face into the surf zone.

NMFS appreciates the need to employ as many viable spill countermeasures as possible; however, such measures must avoid, minimize, or mitigate adverse environmental impacts. Based on our review of the information transmitted with the application for emergency authorization, NMFS has the following comments and recommendations:

1. No exact site for the demonstration has been identified, nor is there information as to the areal or volumetric extent of the effort. Lacking that information, NMFS is unable to determine if the proposed effort would have the potential for causing adverse impacts to NMFS-trust resources. To ensure the proposed effort does not result in a significant loss of sediment from the beach, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration to not exceed 20 cubic yards or 200 linear feet of shoreline. Such an authorization should also disallow the movement of tracked or other vehicles in any area categorized as a jurisdictional wetland.
2. NMFS is aware that surf washing is appropriate as a response action only when sand is lightly oiled. Surf washing in heavily oiled areas would tend to remobilize oil back into the aquatic environment, reducing the opportunity to capture and remove the oil. As such, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration project to areas that would be categorized as “stained sand” in the National Oceanic and Atmospheric Administration’s Shoreline Assessment Manual. In that manual, stained sand is defined as “visible oil, which cannot be scraped off with a fingernail” and having less than 0.01 cm thickness.



BOBBY JINDAL  
GOVERNOR

## State of Louisiana

ROBERT J. BARHAM  
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES  
OFFICE OF WILDLIFE

JIMMY L. ANTHONY  
ASSISTANT SECRETARY

August 24, 2010

Mr. Pete J. Serio, Chief  
Regulatory Branch  
United States Army Corps of Engineers  
P. O. Box 60267  
New Orleans, LA 70160-0267

RE: *Application Number: MVN-2010-02064-EKK*  
*Applicant: British Petroleum*  
*Notice Date: August 23, 2010*

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced notice. Based upon this review, the following has been determined:

This treatment technique may be justifiable on barrier islands/shorelines that receive high use or are frequently visited by the public (e.g., Grand Isle, Fourchon). However, we are concerned about the broad application of this technique on other barrier islands/shorelines that receive little public use and are important water bird nesting areas. As you know, many of Louisiana's barrier islands are eroding. That is, they are narrowing and migrating landward, likely due to a lack of sediment supply and wave-induced erosion. For example, a quick comparison of aerial photography from 1998 to 2008 indicates that East Grand Terre has migrated northward 600-650 feet in that 10 year period. Will this technique, which requires heavy mechanical equipment, result in a net loss of sand volume on these islands as beach sand is excavated, transported and deposited in the surf zone? Will longshore currents carry the deposited sediments in the downdrift direction resulting in increased beach erosion?

The beach face and lower intertidal is home to numerous species which despite oil staining still use it as a habitat. Large scale placement of contaminated sediment within the intertidal zone will result in re-suspension of hydrocarbons and disruption of the normal habitats of these organisms. These organisms include larval fish, crustaceans and other ecologically important invertebrates.



August 24, 2010

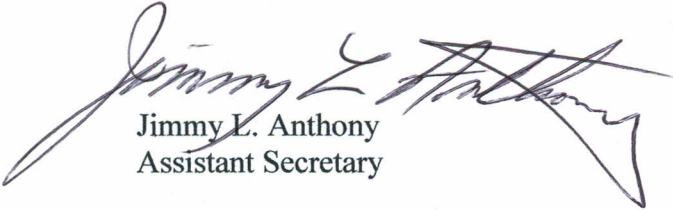
This response activity may be subject to possible NRDA action as injuries accrued as a result of response. Please contact Heather Finley at 225-765-2956 or [hfinley@wlf.la.gov](mailto:hfinley@wlf.la.gov) at least 5 days prior to commencement of activities authorized under this permit.

The Louisiana Natural Heritage Database indicates the presence of bird nesting colonies within one mile of this proposed project. If the project will be occurring during the nesting season (Feb. 16<sup>th</sup>-Sept. 15<sup>th</sup>) please consult with Michael Seymour, the Louisiana Natural Heritage Program Ornithologist, at 225-763-3554.

The database also indicates the presence of critical Piping Plover habitat within the proposed project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: <http://endangered.fws.gov>.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,



Jimmy L. Anthony  
Assistant Secretary

kb/hf/cm

c: Carolyn Michon, Biologist  
Heather Finley, Biologist Program Manager  
EPA, Marine & Wetlands Section  
USFWS Ecological Services

**From:** [Jamie Phillippe](#)  
**To:** [Lacoste, Angie D MVN](#); [Chris Piehler](#); [Melvin "Mitch" Mitchell](#); [Tom Killeen](#); [\\_DEQ-BP Deepwater Horizon Oil Spill](#)  
**Cc:** [Betty Brousseau](#); [Cheryl Nolan](#); [Sanford Phillips](#); [Rodney Mallett](#)  
**Subject:** RE: Request for Emergency Authorization (MVN 2010-02064 EKK)  
**Date:** Wednesday, August 25, 2010 7:23:37 AM

---

Angie,

DEQ has no objection to this project. I'd also like to add that the Department would like to know where & when post-sampling data analysis will be made available.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Jamie Phillippe  
Sent: Monday, August 23, 2010 1:51 PM  
To: Chris Piehler; Melvin "Mitch" Mitchell; Tom Killeen; \_DEQ-BP Deepwater Horizon Oil Spill  
Cc: Betty Brousseau; Cheryl Nolan; Sanford Phillips; Rodney Mallett  
Subject: FW: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

All,

I've received an emergency request to conduct "surf washing" on Grand Isle. This project is similar to the one for surf washing Grand Terre Island.

Please acknowledge whether you have objections to this project or not by 10:00AM Wednesday, August 25, 2010.

Please let me know if you have any questions or comments.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Lacoste, Angie D MVN [<mailto:Angie.D.Lacoste@usace.army.mil>]  
Sent: Monday, August 23, 2010 1:42 PM  
To: kbalkum@wlf.louisiana.gov; rcd@wlf.louisiana.gov; Richard Hartman; ettinger.john@epa.gov; patrick.williams@noaa.gov; Joseph "Jay" Pecot; Christine Charrier; Walther, David; Karl Morgan; Schindler, Paige P MVN; Jamie Phillippe; Butler, Dave; Seth\_Bordelon@fws.gov; patti\_holland@fws.gov; houmasitl@uscg.mil; Sharon McCarthy  
Cc: Mujica, Joaquin MVN; Daigle, Michelle C MVN; Clark, Karl J MVN; Serio, Pete J MVN; Mayer, Martin S MVN  
Subject: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

Please review the attached request for emergency authorization and provide comments by 10:00am, Wednesday, August 25, 2010. Lack of reply will be construed as indicating no objection.

Angie D. Lacoste  
USACE, Regulatory Branch

504.862.2281

In order to assist us in improving our service to you, please complete the survey found at:  
<http://per2.nwp.usace.army.mil/survey.html>



## UNITED FOR A HEALTHY GULF

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338 Baronne St., Suite 200, New Orleans, LA 70112  
Mailing Address: P.O. Box 2245, New Orleans, LA 70176  
Phone: (504) 525-1528 Fax: (504) 525-0833  
[www.healthygulf.org](http://www.healthygulf.org)

August 24, 2010

Angie Lacoste  
Regulatory Branch  
U.S. Army Corps of Engineers  
7400 Leake Avenue  
New Orleans, LA 70118  
Via email: [Angie.D.Lacoste@usace.army.mil](mailto:Angie.D.Lacoste@usace.army.mil)

RE: Emergency Permit: MVN-2010-02064-EKK; Deepwater Horizon Oil Spill - Surf Washing on Grand Isle - Jefferson Parish

Dear Ms. Lacoste,

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Please consider the following comments regarding the emergency permit for the Emergency Use Authorization (EUA) Request for "Surf Washing on Grand Isle" submitted by BP Exploration & Production Co. Inc. on August 23, 2010. Given the information supplied on the Corps website, we object to the issuance of this EUA. Some of our concerns are as follows:

1. Information regarding this project was not made available to the public. As of 3:00 PM Central, the announcement for this emergency permit on the Corps website <http://www.mvn.usace.army.mil/pao/mvnoilspill.asp> did not have an active link. Therefore, the public was not able to adequately review this proposal. Through other sources, we were able to acquire 2 documents, a document entitled "Sediment Relocation (Surf Washing) Demonstration Proposal, 8/13/2010," and a PDF map entitled "EUA 10-103 – Grand Isle Operation Areas.pdf." These two documents are what we will be commenting on, but this does not excuse the lack of information on the website, as no information was formally given the public.

Further, several of the "evidence" documents on pages 9-10 were not hyperlinked, and therefore not available to the public.

2. Responses to previous public comment were wholly inadequate. Apparently one of the reasons BP submitted this proposal was to answer questions from the public, but many of the questions we asked in previous comments were not addressed. Many of these concerns are below.
3. There is no justification for this to be covered an Emergency Permit. Even if this surf washing were justified, it makes no sense to perform this activity while there is still oil in the Gulf. It seems that the claim is that surf washing is primarily cosmetic as it only addresses “stained” sand. Why move forward with this project while there is still a chance for oil to wash up and once again stain/oil the sand? Further during a flyover this past Sunday (August 23, 2010) we observed an oily sheen off the beaches of Fourchon (see attached photo). Given the proximity to Grand Isle, it makes no sense to perform surf washing, if there is a chance for oil to wash back onto the beach. If it is deemed that surf washing is necessary, it should not be done until the threat of more oil washing ashore is gone; at that time, BP should apply for a regular permit.
4. BP’s proposal states that “a demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2.” We appreciate that the current demonstration proposal released the scant data from this project. However, four water and sediment samples does not constitute a scientific justification for the surf washing that is proposed. Further in previous comments submitted by GRN, we request the permit or other authorization given to BP by the Corps and other Agencies for this demonstration on July 16, 2010 be released to the public. We have received no such authorizations. If no such authorizations were given, we request that Corps Enforcement initiate investigations as to why no permissions were sought.
5. Both the testing from the “demonstration” project and the proposed sampling/monitoring are not adequate to allow this project to move forward at this time. Simply sampling in the same place a few times in a 48 hour period does not show that the oil is being degraded. If you mix oiled sand into the surf, it will obviously be dispersed across a larger area, reducing its concentration. This, however, is not the same as reducing the amount of oil. Further, despite previous requests, no significant scientific data was produced to document that the proposed procedure would have no impact on the organisms and microorganisms that reside in the tidal zone. Again, the four water and soil samples to not give enough evidence to show that this is not harmful to these organisms, given that apparently only PAH’s were tested for. Also, did they test for migration off-shore? What would be the *physical* damage (from crushing and entombment via heavy machinery) to benthic organisms as well as organisms that reside on and under the beach?
6. What are the assurances that only “stained” areas will be surf washed? BP’s proposal gives no way to assure that only stained areas will be subject to surf washing. When

using heavy machinery, it would be difficult to determine how much oil there is under the sand, and measure if the oil is less than 0.01 cm thick.

7. The proposal states that “the demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone.*” We respectfully submit that this proposal does not address the fate of the oil. It will only show whether or not oiled sand stays in the same place once it is mechanically moved back into the Gulf. For example, we question the effectiveness of the sentinel snare arrays of picking up oil that is bound to sand particles. Further, less than three days of monitoring and sampling is not adequate.
8. The request gives no information as to the quantity of oil that will be put back into the ecosystem. Will this amount be quantified? How much would be allowed under the General Permit? Page 9 of the proposal states that the “stained oil...will equate to a volume of 0.0001 per square meter of sediment.” There are no units associated with the volume claimed, giving this calculation no frame of reference or meaning.
9. There is inadequate information regarding direct, indirect, secondary, and cumulative impacts of this proposal.
10. Are there any threatened or endangered species in the area? In the documents we were able to acquire, there was no mention of endangered, threatened, or otherwise sensitive animals, such as fish, birds, turtles, and mammals. There must be a thorough analysis to analyze existence and impacts to any sensitive species.
11. We are concerned that BP is proposing a potentially harmful and controversial project to be covered under a general permit (NOD 20). General permits are intended to have negligible impacts individually and cumulatively, however this project could have impacts that would normally require an Environmental Assessment or full Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). While we acknowledge that this disaster requires regulatory flexibility, general permits were never intended to address projects with potentially significant environmental impacts. We are deeply troubled by the precedent that would be set by this action.

We would like to be clear that we are very concerned about the impacts of the BP oil drilling disaster; however, hastily moving forward with this effort that would re-introduce contaminants into the Gulf and impact wildlife habitat is not the best approach. For the above reasons, we request that the Corps deny BP’s request for the General Permit.

Thank you for reviewing our concerns. I would be happy to explore these ideas further if you have any questions.

For a healthy Gulf,

Matt Rota  
Water Resources Program Director

CC: Host Greczmiel, CEQ  
Garret Graves, State of Louisiana  
Al Armendariz, EPA Region 6  
Lawrence Starfield, EPA Region 6  
John Ettinger, EPA Region 6  
Jane Lubchenco, NOAA  
Pete Serio, USACE New Orleans District



Oily Sheen off of Fourchon, August 22, 2010



**Louisiana Audubon Council  
Louisiana Environmental Action Network  
Atchafalaya Riverkeeper  
Mississippi Riverkeeper  
Sierra Club, Delta Chapter**

1522 Lowerline St.  
New Orleans, LA 70118  
August 25, 2010

Mr. Pete Serio  
Chief, Regulatory Branch  
USACE  
P.O. Box 60267  
New Orleans Louisiana 70160

Re: Emergency Permit: MVN-2010-02064-EKK Deepwater Horizon Oil Spill - Surf  
Washing on Grand Isle - Jefferson Ph.; Applicant: British Petroleum

Dear Mr. Serio,

We have read the material posted on the Corps' emergency website for the above permit. British Petroleum wants to use "surf-washing" of oil-contaminated sand on Grand Island, Jefferson Parish, LA. This process takes oil-contaminated sand from the beach and dumps it back into Gulf waters for cleansing. The applicant is essentially seeking authorization to reintroduce pollutants into the aquatic environment.

We object to the issuance of this emergency permit for the following reasons:

This is no longer an emergency situation. BP should go through a public reviewed permit process with the full 30 day comment period and adequate time to for agencies and academics to investigate all the research that has been done in the past. The applicant should be required to respond to questions raised by agencies and individuals before any permit decision is made. As part of this procedure a comprehensive Environmental Impact Statement must be prepared. BP applied for and withdrew a request for surf washing on Grand Terre Island. How many additional "emergency" permits will BP apply for if this one is issued?

**Demonstration Project:**

This project is touted as a demonstration project. It is an experiment not a demonstration. BP will use the entire Grand Isle beach in their experiment which they have divided into 15 segments. Who is going to monitor it? Was there a pre-"demonstration" baseline study documenting the abundance of organisms in the tidal zone and a post-project monitoring plan to show whether there are adverse impacts? What scientific protocols will be used to measure the fate of the oil once it is returned to the Gulf?

The effectiveness of the surf washing process appears to be dependent on grain size and is related to the proportion of various grain sizes including the presence of silt and clay. In the Gulf of Mexico proportion of sand, silt and clay changes from beach to beach. Thus the effectiveness would vary from beach to beach.

The short time allowed to review this application and lack of scientific documentation provided by the applicant does not allow the proper environmental review by marine biologists.

### **The "Process":**

Most "surf-washing" references, submitted by BP, are from bodies of water other than the Gulf of Mexico. The other areas have different types of beaches, with a wide range of tides, currents, and some have cobble beaches. The one primary reference, which cites a project in Tampa Bay (Owens, 1999), raises additional questions about the physical processes essential to the project:

"Many aspects of OFI [Oil and Fine-particle Interaction] have yet to be explored and investigated. The scale of the processes and the size of the particles are very small, less than 100 mm, and the formation of aggregates is very evident when viewed under the microscope. **However, no standard accepted measurement technique has been developed for use in operations to enable immediate identification of the process, or the potential for the process to occur. Of greater importance is that the factors that control or affect the rates of natural oil removal by this process are not well understood.** Laboratory tests and field observations show that, even after many (> 22) years, very viscous oils can be continuously weathered by this process, albeit at relatively slow rates. Tests also show that the processes can occur in freshwater samples (such as the Great Lakes), but not in distilled water. **However, we do not know the role or significance of a wide range of surface interaction processes, nor the effect on rates and the extent of OFI in terms of varying characteristics of the oils, particles, or the carrying medium.**" (Owens, 1999, p. 90-91) Bold added for emphasis.

BP's own expert has concerns about how to measure whether surf-washing is successful or not. The Grand Isle project will be an experiment to test whether the process works, not the use of a proven method which has been successful in other parts of the Gulf. What happens if the experiment fails? Will BP have to dredge out the oil laden sand and place it back on the beach?

### **Environmental Impacts:**

BP would be reintroducing contaminated oiled sands into the surf zone for "surf-washing" and it will move down-drift to other parts of the beach. It would be the antithesis of a clean-up.

No scientific data were produced to document that the process would have no adverse impact on the tidal-zone infauna. They don't compare the levels of toxicity to any known standard. No reference supplied by the applicant provides the environmental impacts of the processes on the biota along the Gulf of Mexico beaches.

Beach studies by Dr. J. W. Tunnell, after the Ixtoc spill, showed that the infaunal population of marine worms and amphipods, along the South Texas oil-contaminated barrier-islands, were reduced by 80 percent in the inter-tidal zone and 50 percent in the sub-tidal zone. What affect will the continued oil contamination have on the infauna of Grand Isle?

How will the oil affect the repopulation of benthic organisms? Re-oiling the beach could delay the recovery of benthic communities.

### **Adverse Precedent:**

Issuance of this permit would set a precedent for future oil spills and could be used along every oil contaminated beach, once the technique is accepted and permitted. This would be a very bad precedent to set given the major environmental questions that still need to be answered.

It appears to be a ploy by BP to avoid having to clean-up all the oil on the beach and disposing it at an EPA approved disposal site. It also appears to be a cost-cutting measure. The alternatives are more expensive but have been proven to work.

### **Monitoring:**

What quantity of oil will be reintroduced into the environment as a result of this issuance of the permit? Will it be quantified? If not, what is the upper limit on the amount of oil that will be discharged by BP into our coastal waters? What quantities of oil-contaminated sand will EPA allow to be dumped into the Gulf under the Clean Water Act? What thresholds are required? Will EPA be responsible for the monitoring to assure that the CWA is not violated?

BP has publicly pledged to clean up the oil - not re-disperse it into the nearshore environment. BP might think that the amount they are going to dump from Grand Isle beaches is very small, compared to the millions of barrels that they recently discharged into the Gulf. We disagree, any amount dumped into the Gulf is too much.

BP states: "There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is **NOT** the intention for its implementation on the Louisiana coastline" (BP, 2010). How do we know that this is not their intention. BP has not been the most trustworthy party in the Oil Spill tragedy. They have not proposed a monitoring plan and the QA/QC methods that would be used to establish compliance.

**EPA comments:**

EPA commented on the previous BP application to use sand-washing on Grand Terre. They stated: "Moreover, less environmentally damaging alternatives are available and currently in use. Alternatives such as bagging and removal would be clearly preferable environmentally. **For these reasons, EPA opposes the proposed project and recommends the Corps deny authorization for it.**" (USEPA, 2010)

**Conclusion:**

BP has shown that there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of surf-washing. Therefore, we request that the Corps deny authorization for this emergency permit. We thank you for considering our comments.

Sincerely,

Marylee Orr, Executive Dir.  
LEAN

Dr. Barry Kohl, President,  
La Audubon Council

Dean Wilson  
Atchafalaya Basinkeeper

Paul Orr  
Mississippi Riverkeeper

Haywood Martin, Chair  
Sierra Club, Delta Chapter

cc: EPA  
Gulf Restoration Network  
Coalition to Restore Coastal La  
National Audubon Society

**References:**

Owens, E.H. 1999. The interaction of fine particles with stranded oil. Pure Appl. Chem., Vol. 71, No. 1, pp. 83–93, IUPAC, Printed in Great Britain.

USEPA, 2010. Comments on Corps of Engineers Emergency Authorization Request Surf Washing of Oiled Sands on Grand Terre Island, Louisiana. July 20, 2010.

BP, 2010. Sediment Relocation (Surf Washing): Demonstration Proposal. Dated August 13, 2010.

**U.S. Environmental Protection Agency  
Comments on Corps of Engineers (Corps) Emergency Authorization Request  
Surf Washing on Grand Isle, Louisiana (MVN 2010-02064 EKK)**

**August 25, 2010**

This is in response to the New Orleans District Corps of Engineers request on August 23, 2010, for EPA review of a proposal to “surf wash” oiled sands on Grand Terre Island, Louisiana. According to materials included with the application, this technique would involve the relocation of oiled sands from above the limit of normal wave action to a lower elevation, where the oiled sediment is exposed to a higher amount of physical action from water and waves for a longer amount of time. We appreciate the opportunity to review and provide comments on this proposal.

EPA is concerned that as proposed the surf washing project would essentially reintroduce pollutants into the aquatic environment. Such an action would appear contrary to a basic goal of this oil spill response (i.e., minimize the amount of oil in the aquatic environment). The proposed project would result in increased pollutants entering waters in the sensitive and ecologically important tidal zone on Grand Terre Island, possibly increasing exposure of aquatic organisms to hydrocarbons. It is also unclear from the materials provided with this emergency authorization request whether we are being asked to review a demonstration proposal or a larger project spanning the entire length of the island. The request provides no estimate of the amount of oiled sands the applicant would reintroduce into the aquatic environment, nor has any limit been set in that regard.

We understand the intent of the project is to surf wash “stained” sands. However, there appears to be no way to guarantee that more heavily oiled sands would not be re-discharged into waters of the United States, either intentionally or unintentionally. In the absence of an implementation protocol, there is not enough information to assess whether the proposed project could have substantial cumulative effects with respect to re-discharging hydrocarbons into the aquatic environment. Therefore, there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of such an action.

The materials provided with this emergency authorization request also indicate that this technique is not suitable where there are buried oil residues and/or where residues are heavier than a stain (less than 0.01 cm thickness). Here again, there is no information to assure us that there are adequate controls in place to ensure that this technique would not be used in situations in which the oil residues are heavier than a stain. We understand that extensive sand cleaning continues on Grand Isle, and that the beaches there currently appear to be relatively clean. However, it is unclear from the application materials whether there remains a significant risk of buried oils or continued oiling of beach sands.

There also appear to be alternatives that might be less environmentally damaging. Specifically, mobile beach cleaners and closed loop sand treatment plants (both of which are currently being used at Grand Isle) appear to be effective alternatives. Neither of

these two techniques would involve putting oil back into water. In the absence of limits on the cumulative amount of oil that would be surf washed, we can only conclude that there is some risk that unacceptable amounts could be put back into the aquatic environment. Sand cleaning techniques that do not involve such risks would, therefore, appear to be a less damaging option.

Finally, approval of this proposal could set an adverse precedent, clearing the way for expanded use of this approach to dealing with oiled sands. Oil has impacted many miles of sandy beach and barrier shoreline across the northern Gulf of Mexico. Expanded use of this technique across the affected region could have untold cumulative adverse impacts on the aquatic environment. We would question whether the Federal government wishes to endorse the deposition of oiled sands into tidal zones across the affected region. Yet, approval of a permit in this case could have just such an effect.

We appreciate the applicant's efforts to thoroughly clean the beach at Grand Isle. However, given the uncertainties discussed above regarding the cumulative amount of oil that could be put back into the aquatic environment, we cannot support this proposal at this time. If the applicant remains interested in this technique, we would request an estimate of the cumulative amount of oil that would be put back into coastal waters, an estimate of the amount of contaminated sands that would require "sediment relocation", along with a plan to ensure that only stained sands would be surf washed (as opposed to heavier concentrations of oil). Additionally, the applicant should provide information to explain why surf washing is an environmentally superior alternative to mobile beach cleaners and/or sand treatment plants.

Thanks in advance for your consideration of these comments. If you wish to discuss this matter further, please contact John Ettinger at (504) 862-1119.

National Marine Fisheries Service (NMFS)  
Comments Pertaining to Proposed Emergency Authorization of Surf Washing of Sand  
on Grand Isle in Jefferson Parish (MVN 2010-02064- EKK)

August 25, 2010

By electronic mail dated August 23, 2010, the New Orleans District requested natural resource agency review of the application by BP Exploration and Production Company Incorporated for emergency authorization to conduct a demonstration of the effectiveness of “surf washing” of oiled beach sediments on Grand Isle in Jefferson Parish, Louisiana. The New Orleans District is considering emergency authorization for these activities under provisions of General Permit NOD-20. Based on information provided, oiled beach sediment would be relocated from its present location somewhere on Grand Isle into the surf zone as a demonstration of the ability of this type of effort to remediate lightly oiled sediment. NMFS is aware that an attempted demonstration of this technique was undertaken on Grand Isle on August 23, 2010; that effort was limited to the movement of approximately 1 cubic yard of sand from the upper beach face into the surf zone.

NMFS appreciates the need to employ as many viable spill countermeasures as possible; however, such measures must avoid, minimize, or mitigate adverse environmental impacts. Based on our review of the information transmitted with the application for emergency authorization, NMFS has the following comments and recommendations:

1. No exact site for the demonstration has been identified, nor is there information as to the areal or volumetric extent of the effort. Lacking that information, NMFS is unable to determine if the proposed effort would have the potential for causing adverse impacts to NMFS-trust resources. To ensure the proposed effort does not result in a significant loss of sediment from the beach, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration to not exceed 20 cubic yards or 200 linear feet of shoreline. Such an authorization should also disallow the movement of tracked or other vehicles in any area categorized as a jurisdictional wetland.
2. NMFS is aware that surf washing is appropriate as a response action only when sand is lightly oiled. Surf washing in heavily oiled areas would tend to remobilize oil back into the aquatic environment, reducing the opportunity to capture and remove the oil. As such, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration project to areas that would be categorized as “stained sand” in the National Oceanic and Atmospheric Administration’s Shoreline Assessment Manual. In that manual, stained sand is defined as “visible oil, which cannot be scraped off with a fingernail” and having less than 0.01 cm thickness.



BOBBY JINDAL  
GOVERNOR

## State of Louisiana

ROBERT J. BARHAM  
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES  
OFFICE OF WILDLIFE

JIMMY L. ANTHONY  
ASSISTANT SECRETARY

August 24, 2010

Mr. Pete J. Serio, Chief  
Regulatory Branch  
United States Army Corps of Engineers  
P. O. Box 60267  
New Orleans, LA 70160-0267

RE: *Application Number: MVN-2010-02064-EKK*  
*Applicant: British Petroleum*  
*Notice Date: August 23, 2010*

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced notice. Based upon this review, the following has been determined:

This treatment technique may be justifiable on barrier islands/shorelines that receive high use or are frequently visited by the public (e.g., Grand Isle, Fourchon). However, we are concerned about the broad application of this technique on other barrier islands/shorelines that receive little public use and are important water bird nesting areas. As you know, many of Louisiana's barrier islands are eroding. That is, they are narrowing and migrating landward, likely due to a lack of sediment supply and wave-induced erosion. For example, a quick comparison of aerial photography from 1998 to 2008 indicates that East Grand Terre has migrated northward 600-650 feet in that 10 year period. Will this technique, which requires heavy mechanical equipment, result in a net loss of sand volume on these islands as beach sand is excavated, transported and deposited in the surf zone? Will longshore currents carry the deposited sediments in the downdrift direction resulting in increased beach erosion?

The beach face and lower intertidal is home to numerous species which despite oil staining still use it as a habitat. Large scale placement of contaminated sediment within the intertidal zone will result in re-suspension of hydrocarbons and disruption of the normal habitats of these organisms. These organisms include larval fish, crustaceans and other ecologically important invertebrates.

August 24, 2010

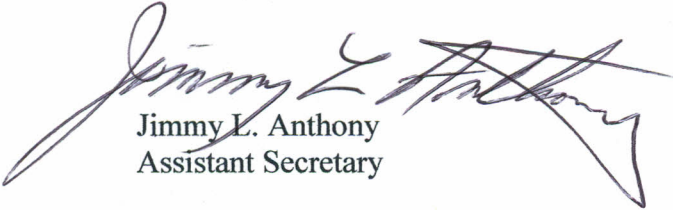
This response activity may be subject to possible NRDA action as injuries accrued as a result of response. Please contact Heather Finley at 225-765-2956 or [hfinley@wlf.la.gov](mailto:hfinley@wlf.la.gov) at least 5 days prior to commencement of activities authorized under this permit.

The Louisiana Natural Heritage Database indicates the presence of bird nesting colonies within one mile of this proposed project. If the project will be occurring during the nesting season (Feb. 16<sup>th</sup>-Sept. 15<sup>th</sup>) please consult with Michael Seymour, the Louisiana Natural Heritage Program Ornithologist, at 225-763-3554.

The database also indicates the presence of critical Piping Plover habitat within the proposed project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: <http://endangered.fws.gov>.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,



Jimmy L. Anthony  
Assistant Secretary

kb/hf/cm

c: Carolyn Michon, Biologist  
Heather Finley, Biologist Program Manager  
EPA, Marine & Wetlands Section  
USFWS Ecological Services



**From:** [Jamie Phillippe](#)  
**To:** [Lacoste, Angie D MVN](#); [Chris Piehler](#); [Melvin "Mitch" Mitchell](#); [Tom Killeen](#); [\\_DEQ-BP Deepwater Horizon Oil Spill](#)  
**Cc:** [Betty Brousseau](#); [Cheryl Nolan](#); [Sanford Phillips](#); [Rodney Mallett](#)  
**Subject:** RE: Request for Emergency Authorization (MVN 2010-02064 EKK)  
**Date:** Wednesday, August 25, 2010 7:23:37 AM

---

Angie,

DEQ has no objection to this project. I'd also like to add that the Department would like to know where & when post-sampling data analysis will be made available.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Jamie Phillippe  
Sent: Monday, August 23, 2010 1:51 PM  
To: Chris Piehler; Melvin "Mitch" Mitchell; Tom Killeen; \_DEQ-BP Deepwater Horizon Oil Spill  
Cc: Betty Brousseau; Cheryl Nolan; Sanford Phillips; Rodney Mallett  
Subject: FW: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

All,

I've received an emergency request to conduct "surf washing" on Grand Isle. This project is similar to the one for surf washing Grand Terre Island.

Please acknowledge whether you have objections to this project or not by 10:00AM Wednesday, August 25, 2010.

Please let me know if you have any questions or comments.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Lacoste, Angie D MVN [<mailto:Angie.D.Lacoste@usace.army.mil>]  
Sent: Monday, August 23, 2010 1:42 PM  
To: kbalkum@wlf.louisiana.gov; rcd@wlf.louisiana.gov; Richard Hartman; ettinger.john@epa.gov; patrick.williams@noaa.gov; Joseph "Jay" Pecot; Christine Charrier; Walther, David; Karl Morgan; Schindler, Paige P MVN; Jamie Phillippe; Butler, Dave; Seth\_Bordelon@fws.gov; patti\_holland@fws.gov; houmasitl@uscg.mil; Sharon McCarthy  
Cc: Mujica, Joaquin MVN; Daigle, Michelle C MVN; Clark, Karl J MVN; Serio, Pete J MVN; Mayer, Martin S MVN  
Subject: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

Please review the attached request for emergency authorization and provide comments by 10:00am, Wednesday, August 25, 2010. Lack of reply will be construed as indicating no objection.

Angie D. Lacoste  
USACE, Regulatory Branch

504.862.2281

In order to assist us in improving our service to you, please complete the survey found at:  
<http://per2.nwp.usace.army.mil/survey.html>



## UNITED FOR A HEALTHY GULF

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338 Baronne St., Suite 200, New Orleans, LA 70112  
Mailing Address: P.O. Box 2245, New Orleans, LA 70176  
Phone: (504) 525-1528 Fax: (504) 525-0833  
[www.healthygulf.org](http://www.healthygulf.org)

August 24, 2010

Angie Lacoste  
Regulatory Branch  
U.S. Army Corps of Engineers  
7400 Leake Avenue  
New Orleans, LA 70118  
Via email: [Angie.D.Lacoste@usace.army.mil](mailto:Angie.D.Lacoste@usace.army.mil)

RE: Emergency Permit: MVN-2010-02064-EKK; Deepwater Horizon Oil Spill - Surf Washing on Grand Isle - Jefferson Parish

Dear Ms. Lacoste,

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Please consider the following comments regarding the emergency permit for the Emergency Use Authorization (EUA) Request for "Surf Washing on Grand Isle" submitted by BP Exploration & Production Co. Inc. on August 23, 2010. Given the information supplied on the Corps website, we object to the issuance of this EUA. Some of our concerns are as follows:

1. Information regarding this project was not made available to the public. As of 3:00 PM Central, the announcement for this emergency permit on the Corps website <http://www.mvn.usace.army.mil/pao/mvnoilspill.asp> did not have an active link. Therefore, the public was not able to adequately review this proposal. Through other sources, we were able to acquire 2 documents, a document entitled "Sediment Relocation (Surf Washing) Demonstration Proposal, 8/13/2010," and a PDF map entitled "EUA 10-103 – Grand Isle Operation Areas.pdf." These two documents are what we will be commenting on, but this does not excuse the lack of information on the website, as no information was formally given the public.

Further, several of the "evidence" documents on pages 9-10 were not hyperlinked, and therefore not available to the public.

2. Responses to previous public comment were wholly inadequate. Apparently one of the reasons BP submitted this proposal was to answer questions from the public, but many of the questions we asked in previous comments were not addressed. Many of these concerns are below.
3. There is no justification for this to be covered an Emergency Permit. Even if this surf washing were justified, it makes no sense to perform this activity while there is still oil in the Gulf. It seems that the claim is that surf washing is primarily cosmetic as it only addresses “stained” sand. Why move forward with this project while there is still a chance for oil to wash up and once again stain/oil the sand? Further during a flyover this past Sunday (August 23, 2010) we observed an oily sheen off the beaches of Fourchon (see attached photo). Given the proximity to Grand Isle, it makes no sense to perform surf washing, if there is a chance for oil to wash back onto the beach. If it is deemed that surf washing is necessary, it should not be done until the threat of more oil washing ashore is gone; at that time, BP should apply for a regular permit.
4. BP’s proposal states that “a demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2.” We appreciate that the current demonstration proposal released the scant data from this project. However, four water and sediment samples does not constitute a scientific justification for the surf washing that is proposed. Further in previous comments submitted by GRN, we request the permit or other authorization given to BP by the Corps and other Agencies for this demonstration on July 16, 2010 be released to the public. We have received no such authorizations. If no such authorizations were given, we request that Corps Enforcement initiate investigations as to why no permissions were sought.
5. Both the testing from the “demonstration” project and the proposed sampling/monitoring are not adequate to allow this project to move forward at this time. Simply sampling in the same place a few times in a 48 hour period does not show that the oil is being degraded. If you mix oiled sand into the surf, it will obviously be dispersed across a larger area, reducing its concentration. This, however, is not the same as reducing the amount of oil. Further, despite previous requests, no significant scientific data was produced to document that the proposed procedure would have no impact on the organisms and microorganisms that reside in the tidal zone. Again, the four water and soil samples to not give enough evidence to show that this is not harmful to these organisms, given that apparently only PAH’s were tested for. Also, did they test for migration off-shore? What would be the *physical* damage (from crushing and entombment via heavy machinery) to benthic organisms as well as organisms that reside on and under the beach?
6. What are the assurances that only “stained” areas will be surf washed? BP’s proposal gives no way to assure that only stained areas will be subject to surf washing. When

using heavy machinery, it would be difficult to determine how much oil there is under the sand, and measure if the oil is less than 0.01 cm thick.

7. The proposal states that “the demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone.*” We respectfully submit that this proposal does not address the fate of the oil. It will only show whether or not oiled sand stays in the same place once it is mechanically moved back into the Gulf. For example, we question the effectiveness of the sentinel snare arrays of picking up oil that is bound to sand particles. Further, less than three days of monitoring and sampling is not adequate.
8. The request gives no information as to the quantity of oil that will be put back into the ecosystem. Will this amount be quantified? How much would be allowed under the General Permit? Page 9 of the proposal states that the “stained oil...will equate to a volume of 0.0001 per square meter of sediment.” There are no units associated with the volume claimed, giving this calculation no frame of reference or meaning.
9. There is inadequate information regarding direct, indirect, secondary, and cumulative impacts of this proposal.
10. Are there any threatened or endangered species in the area? In the documents we were able to acquire, there was no mention of endangered, threatened, or otherwise sensitive animals, such as fish, birds, turtles, and mammals. There must be a thorough analysis to analyze existence and impacts to any sensitive species.
11. We are concerned that BP is proposing a potentially harmful and controversial project to be covered under a general permit (NOD 20). General permits are intended to have negligible impacts individually and cumulatively, however this project could have impacts that would normally require an Environmental Assessment or full Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). While we acknowledge that this disaster requires regulatory flexibility, general permits were never intended to address projects with potentially significant environmental impacts. We are deeply troubled by the precedent that would be set by this action.

We would like to be clear that we are very concerned about the impacts of the BP oil drilling disaster; however, hastily moving forward with this effort that would re-introduce contaminants into the Gulf and impact wildlife habitat is not the best approach. For the above reasons, we request that the Corps deny BP’s request for the General Permit.

Thank you for reviewing our concerns. I would be happy to explore these ideas further if you have any questions.

For a healthy Gulf,

Matt Rota  
Water Resources Program Director

CC: Host Greczmiel, CEQ  
Garret Graves, State of Louisiana  
Al Armendariz, EPA Region 6  
Lawrence Starfield, EPA Region 6  
John Ettinger, EPA Region 6  
Jane Lubchenco, NOAA  
Pete Serio, USACE New Orleans District



Oily Sheen off of Fourchon, August 22, 2010

**Louisiana Audubon Council  
Louisiana Environmental Action Network  
Atchafalaya Riverkeeper  
Mississippi Riverkeeper  
Sierra Club, Delta Chapter**

1522 Lowerline St.  
New Orleans, LA 70118  
August 25, 2010

Mr. Pete Serio  
Chief, Regulatory Branch  
USACE  
P.O. Box 60267  
New Orleans Louisiana 70160

Re: Emergency Permit: MVN-2010-02064-EKK Deepwater Horizon Oil Spill - Surf  
Washing on Grand Isle - Jefferson Ph.; Applicant: British Petroleum

Dear Mr. Serio,

We have read the material posted on the Corps' emergency website for the above permit. British Petroleum wants to use "surf-washing" of oil-contaminated sand on Grand Island, Jefferson Parish, LA. This process takes oil-contaminated sand from the beach and dumps it back into Gulf waters for cleansing. The applicant is essentially seeking authorization to reintroduce pollutants into the aquatic environment.

We object to the issuance of this emergency permit for the following reasons:

This is no longer an emergency situation. BP should go through a public reviewed permit process with the full 30 day comment period and adequate time to for agencies and academics to investigate all the research that has been done in the past. The applicant should be required to respond to questions raised by agencies and individuals before any permit decision is made. As part of this procedure a comprehensive Environmental Impact Statement must be prepared. BP applied for and withdrew a request for surf washing on Grand Terre Island. How many additional "emergency" permits will BP apply for if this one is issued?

**Demonstration Project:**

This project is touted as a demonstration project. It is an experiment not a demonstration. BP will use the entire Grand Isle beach in their experiment which they have divided into 15 segments. Who is going to monitor it? Was there a pre-"demonstration" baseline study documenting the abundance of organisms in the tidal zone and a post-project monitoring plan to show whether there are adverse impacts? What scientific protocols will be used to measure the fate of the oil once it is returned to the Gulf?

The effectiveness of the surf washing process appears to be dependent on grain size and is related to the proportion of various grain sizes including the presence of silt and clay. In the Gulf of Mexico proportion of sand, silt and clay changes from beach to beach. Thus the effectiveness would vary from beach to beach.

The short time allowed to review this application and lack of scientific documentation provided by the applicant does not allow the proper environmental review by marine biologists.



### **The "Process":**

Most "surf-washing" references, submitted by BP, are from bodies of water other than the Gulf of Mexico. The other areas have different types of beaches, with a wide range of tides, currents, and some have cobble beaches. The one primary reference, which cites a project in Tampa Bay (Owens, 1999), raises additional questions about the physical processes essential to the project:

"Many aspects of OFI [Oil and Fine-particle Interaction] have yet to be explored and investigated. The scale of the processes and the size of the particles are very small, less than 100 mm, and the formation of aggregates is very evident when viewed under the microscope. **However, no standard accepted measurement technique has been developed for use in operations to enable immediate identification of the process, or the potential for the process to occur. Of greater importance is that the factors that control or affect the rates of natural oil removal by this process are not well understood.** Laboratory tests and field observations show that, even after many (> 22) years, very viscous oils can be continuously weathered by this process, albeit at relatively slow rates. Tests also show that the processes can occur in freshwater samples (such as the Great Lakes), but not in distilled water. **However, we do not know the role or significance of a wide range of surface interaction processes, nor the effect on rates and the extent of OFI in terms of varying characteristics of the oils, particles, or the carrying medium.**" (Owens, 1999, p. 90-91) Bold added for emphasis.

BP's own expert has concerns about how to measure whether surf-washing is successful or not. The Grand Isle project will be an experiment to test whether the process works, not the use of a proven method which has been successful in other parts of the Gulf. What happens if the experiment fails? Will BP have to dredge out the oil laden sand and place it back on the beach?

### **Environmental Impacts:**

BP would be reintroducing contaminated oiled sands into the surf zone for "surf-washing" and it will move down-drift to other parts of the beach. It would be the antithesis of a clean-up.

No scientific data were produced to document that the process would have no adverse impact on the tidal-zone infauna. They don't compare the levels of toxicity to any known standard. No reference supplied by the applicant provides the environmental impacts of the processes on the biota along the Gulf of Mexico beaches.

Beach studies by Dr. J. W. Tunnell, after the Ixtoc spill, showed that the infaunal population of marine worms and amphipods, along the South Texas oil-contaminated barrier-islands, were reduced by 80 percent in the inter-tidal zone and 50 percent in the sub-tidal zone. What affect will the continued oil contamination have on the infauna of Grand Isle?

How will the oil affect the repopulation of benthic organisms? Re-oiling the beach could delay the recovery of benthic communities.

### **Adverse Precedent:**

Issuance of this permit would set a precedent for future oil spills and could be used along every oil contaminated beach, once the technique is accepted and permitted. This would be a very bad precedent to set given the major environmental questions that still need to be answered.

It appears to be a ploy by BP to avoid having to clean-up all the oil on the beach and disposing it at an EPA approved disposal site. It also appears to be a cost-cutting measure. The alternatives are more expensive but have been proven to work.

### **Monitoring:**

What quantity of oil will be reintroduced into the environment as a result of this issuance of the permit? Will it be quantified? If not, what is the upper limit on the amount of oil that will be discharged by BP into our coastal waters? What quantities of oil-contaminated sand will EPA allow to be dumped into the Gulf under the Clean Water Act? What thresholds are required? Will EPA be responsible for the monitoring to assure that the CWA is not violated?

BP has publicly pledged to clean up the oil - not re-disperse it into the nearshore environment. BP might think that the amount they are going to dump from Grand Isle beaches is very small, compared to the millions of barrels that they recently discharged into the Gulf. We disagree, any amount dumped into the Gulf is too much.

BP states: "There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is **NOT** the intention for its implementation on the Louisiana coastline" (BP, 2010). How do we know that this is not their intention. BP has not been the most trustworthy party in the Oil Spill tragedy. They have not proposed a monitoring plan and the QA/QC methods that would be used to establish compliance.

**EPA comments:**

EPA commented on the previous BP application to use sand-washing on Grand Terre. They stated: "Moreover, less environmentally damaging alternatives are available and currently in use. Alternatives such as bagging and removal would be clearly preferable environmentally. **For these reasons, EPA opposes the proposed project and recommends the Corps deny authorization for it.**" (USEPA, 2010)

**Conclusion:**

BP has shown that there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of surf-washing. Therefore, we request that the Corps deny authorization for this emergency permit. We thank you for considering our comments.

Sincerely,

Marylee Orr, Executive Dir.  
LEAN

Dr. Barry Kohl, President,  
La Audubon Council

Dean Wilson  
Atchafalaya Basinkeeper

Paul Orr  
Mississippi Riverkeeper

Haywood Martin, Chair  
Sierra Club, Delta Chapter

cc: EPA  
Gulf Restoration Network  
Coalition to Restore Coastal La  
National Audubon Society

**References:**

Owens, E.H. 1999. The interaction of fine particles with stranded oil. Pure Appl. Chem., Vol. 71, No. 1, pp. 83–93, IUPAC, Printed in Great Britain.

USEPA, 2010. Comments on Corps of Engineers Emergency Authorization Request Surf Washing of Oiled Sands on Grand Terre Island, Louisiana. July 20, 2010.

BP, 2010. Sediment Relocation (Surf Washing): Demonstration Proposal. Dated August 13, 2010.

## Grand Isle Surf Washing

The U.S. Fish and Wildlife Service (Service) has received your August 23, 2010, electronic mail notification (MVN-2010-02064-EKK) requesting our review of an emergency authorization for sediment relocation (surf washing) on Grand Isle, in Jefferson Parish, Louisiana. Environmental Stategies, LLC, on behalf of BP Exploration and Production Company, Inc., proposes to relocate oiled sediment from the upper section of the intertidal zone (above normal wave action) to a lower elevation where wave action can “wash” the oil from the sediment. The sediment would then be moved back in place along the shoreline with small soil moving equipment (backhoe, etc.). The proposed work is intended to protect fish and wildlife resources from the oil spill associated with the Deepwater Horizon (i.e., Mississippi Canyon 252) blowout. The comments below are submitted in accordance with the technical assistance provisions of the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). In addition, these comments provide emergency informal consultation information under the authority of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) in anticipation of emergency consultation.

The Service is committed to the protection of Louisiana’s fish and wildlife resources that have been/may be impacted by the oil spill. We also remain committed to working closely with all agencies involved in spill response efforts to further explore alternatives and alternative features in order to reduce the current degree of risk and uncertainty associated with any oil spill response activities.

Grand Isle is within Unit LA-5 of designated critical habitat for the threatened piping plover. Piping plovers winter in Louisiana, and may be present for 8 to 10 months annually. They arrive from the breeding grounds as early as late July and remain until late March or April. Piping plovers feed extensively on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation; they also require unvegetated or sparsely vegetated areas for roosting. Critical habitat on Grand Isle is restricted to those areas that are used for feeding and roosting habitat which includes the surf zone down to mean low, low water (MLLW).

The benthic fauna, phytoplankton, and floating vegetation occurring in the surf zone of barrier islands are important food sources for piping plovers and other shorebirds. The Service is concerned that the surf washing technique could result in long-term adverse impacts to the intertidal zone by re-oiling and disturbance which could further delay the recovery of benthic species and communities upon which the threatened piping plover and other shorebird species prey. The surf zone on Grand Isle has been repeatedly affected by oil spill response operations for several months. Much of that work was justifiable as there was oil washing ashore. Currently, there is very little visible oil on the island. Measures that will prolong the natural recovery of the surf zone should be avoided at this time. Therefore, we suggest you consider the timing and any potential long-term impacts in your permitting decision for this project.

Other clean-up methods (i.e., minimal scraping and removal of oiled sediment) would permanently remove the oil from the ecosystem without disturbing the surf zone would be preferable. We also recommend that the attached recommendations (specifically, BMP-1, -3, -4, -5, -8, -10, -11, -12, -25, -26, -27, -31), which have been signed by the Houma Incident Command, be considered as additional ways to minimize impacts to piping plovers and their critical habitat, including the benthic fauna of Grand Isle during clean-up activities. We also request that the Service's Louisiana Ecological Services Office (337/291-3108, [brigitte\\_firmin@fws.gov](mailto:brigitte_firmin@fws.gov)) be notified if this technique (and BMPs) is implemented so that we may best keep record of such methods being used (and possible future effects) within designated critical habitat.

Nesting shorebirds also occur on Grand Isle. To minimize disturbance to nesting gulls, terns, and/or black skimmers, the Service typically recommends that all activity occurring within 650 feet of a colonial nest site be restricted to the non-nesting period (i.e., September 16 through April 1). The Service should be notified when colonial bird nest sites are identified, and no activity should occur on the beach within the recommended buffer zones during the nesting season. A trained observer should monitor each colonial nest site and a restrictive buffer zone should be identified. If the recommended buffer restrictions are not feasible for construction purposes, the Service should be consulted to determine if alternative measures can be applied.

Thank you for the opportunity to provide these comments.

204 Group



Date:

Segment:

STR #:



## SECTION 7 FEDERAL AGENCY ACTION - ENDANGERED SPECIES ACT COMPLIANCE CHECKLIST

	targets	completed	BMP description
BMP 1			Watch for and avoid collisions with wildlife and report all distressed or dead birds/marine mammals/turtle sightings/whale sharks/rays to Wildlife (866-557-1401)
BMP 2			Retrieve injured/dead/oiled sea turtles using the sea turtle At-Sea Retrieval Protocol
BMP 3			Avoid disturbing vegetation, marsh soils, or peat with foot traffic/boats/equipment or consult a qualified biologist to minimize impact. Involve appropriate Federal/State agency personnel for specific instructions e.g. to enter public lands or a marsh
BMP 4			Manage waste in compliance with the Waste Management Plan
BMP 5			Maintain compliance with the Decontamination Plan where applicable
BMP 6			All onshore work should be conducted during daylight hours except within 24 hours of projected oil landfall. If nights operations are necessary, confine operations to landward of the intertidal zone and follow ENV0009: Minimizing Impacts to Wildlife during Nighttime Cleanup Operations
BMP 7			Observe a 10 foot buffer from marked sea turtle nests. If a nest area is contaminated/oiled, contact the onsite Wildlife Observer immediately. Follow the Wildlife Observer's direction for removing contaminated/oiled sand from within the nesting area.
BMP 8			Utilize existing access/egress areas and roadways
BMP 9			Verify turtle nesting activities with agency experts and begin onshore work after turtle nesting surveys/conservation activities are completed
BMP 10			Use low-pressure tire vehicles (e.g. ATVs, Gaters) or consult with a qualified biologist to minimize impact
BMP 11			If feasible and per appropriate guidance, restore beach topography, if altered, to natural beach profile by 2000 hours each day
BMP 12			Minimize removal of clean sediments
BMP 13			Avoid hovering or landing of aircraft near posted bird sites
BMP 14			If skimming, avoid skimming sargassum that is not oiled or is only very lightly oiled

**Provide complete explanation for not implementing BMPs (list why each BMP is not applicable, possible, or otherwise executable)**

204 Group



Date:

Segment:

STR #:



## SECTION 7 FEDERAL AGENCY ACTION - ENDANGERED SPECIES ACT COMPLIANCE CHECKLIST

	targets	completed	BMP description
BMP 15			If a sea turtle or marine mammal is observed trapped or entangled in a boom(s), open the boom carefully until the animal leaves on its own
BMP 16			Install and monitor under water equipment/booms to prevent fish/wildlife entrapment
BMP 17			Do not block major egress points in channels, rivers, passes, and bays
BMP 18			A trained sea turtle observer is required for all operations
BMP 19			Sea turtle observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the trawlers, oil concentrated in the boom, and any oil trailing behind the boom)
BMP 20			A survey should be conducted in the burn area after the burn is complete and all dead sea turtles should be counted and if possible collected
BMP 21			Avoid burning unoiled/lightly oiled sargassum
BMP 22			No flights below 500 feet over wildlife refuges/management areas
BMP 23			No dispersant application within 2 nautical miles of sighted marine mammals/sea turtles
BMP 24			Turtle excluder devices (TEDS) should be installed in all trawl nets
BMP 25			Staging areas and waste collection areas should be examined prior to set up and should be located off beaches, dunes, scrub and other vegetated areas. Contact Env. Unit: 985-859-0552
BMP 26			All heavy equipment should be as low on the beach as possible and avoid the high tide/wrack line while conducting clean-up activities. Keep heavy equipment away from wrack line unless oiled
BMP 27			Activities that may require removal of forested and shrub or scrub habitat should be minimized
BMP 28			If bears are observed during staging activities, contact Env. Unit: 985-859-0552
BMP 29			Remove all trash or anything that would attract wildlife from work areas daily
BMP 30			If a sea turtle is spotted, maintain at least 200 feet between the turtle and any beach cleanup activities
BMP 31			Stakes or flagging should not be removed or destroyed anywhere on the beach or dune

**Provide complete explanation for not implementing BMPs (list why each BMP is not applicable, possible, or otherwise executable)**

FILE

*all*

AUG 31 2010

A. Lacoste-X2281

Operations Division  
Eastern Evaluation Section

**SUBJECT:** MVN 2010-02064 EKK

BP Exploration and Production Company, Inc.  
c/o Environmental Strategies, LLC  
412 Breeman Circle  
Lafayette, Louisiana 70508

Dear Gentlemen:

This concerns your request for an emergency authorization to perform surf washing on Grand Isle, in Jefferson Parish, Louisiana, in order to mitigate effects of oil from the MC252 (Deepwater Horizon) oil spill.

By electronic mail on August 25, 2010, it was requested you respond to comments received in response to the notice. The time frame to provide the requested information has expired. At this time, we are returning your correspondence and withdrawing your permit request from our active files. If you decide at a future date to perform this work, you will be required to submit a new request.

If you have any questions, please contact Angie D. Lacoste with this office, at (504) 862-2281.

Sincerely,

Pete J. Serio  
Chief, Regulatory Branch

  
Farabee  
OD-SE

  
Serio  
OD-S

Enclosure  
Copy w/encl.  
BP Exploration and Production Company, Inc

**From:** [Farabee, Michael V MVN](#)  
**To:** [Lacoste, Angie D MVN](#); [Marino, Melissa L MVN](#)  
**Cc:** [Serio, Pete J MVN](#)  
**Subject:** FW: Surf Washing on Grand Isle  
**Date:** Monday, August 23, 2010 12:48:23 PM  
**Attachments:** [EUA 10-103 - Grand Isle Operation Areas.pdf](#)  
[EUA 10-103 - DEMONSTRATION PROPOSAL FOR SURF WASHING ON GRAND ISLE.pdf](#)  
**Importance:** High

---

Please see attached a new deepwater horizon oil spill emergency request. Please make sure Pete gets the tracking number.

Angie, since we have received negative agency response on similar actions at Grand Terre, please give 36 hours to comment from your announcement.

Please make sure DEQ is in our agency mail out.

I have notified the agent and DNR that the demonstration projects of this technique they state are on-going on grand Isle are in violation of RHA and CWA and requested they stop immediately.

Michael V. Farabee  
New Orleans District  
Regulatory Branch  
Chief, Eastern Evaluation Section

(504) 862-2292  
(504) 862-2117 Fax

In order to assist us in improving our service to you,  
please complete the survey found at: <http://per2.nwp.usace.army.mil/survey.html>

-----Original Message-----

From: Sharon McCarthy [<mailto:Sharon.Trahan@LA.GOV>]  
Sent: Monday, August 23, 2010 11:59 AM  
To: 'Butler, Dave'; 'kbalkum@wlf.louisiana.gov'; 'mweigel@wlf.la.gov'; Frank Cole; George Boddie; Elizabeth Davoli; 'Melanie Jarrell'  
Cc: Farabee, Michael V MVN; 'Ettinger.john@epa.gov'; 'richard.hartman@noaa.gov'; 'Patti\_Holland@fws.gov'; Christine Charrier; 'ghayward@newfields.com'  
Subject: FW: Surf Washing on Grand Isle

To whom it may concern:

Please see the request email below, attached plats and demonstration proposal to provide feedback as to the possible impacts the proposed project may have upon the ecological/hydrological features in the vicinity as well as your opinion of the justification/need, and/or offer suggestions for alternatives to the proposed project.

Comments Needed: OCPR George Boddie; BA-01 Davis Pond Freshwater Diversion

OCPR Chris Williams; FTL-01 Fisheries Habitat Restoration on West Grand  
Terre Island

OCPR Elizabeth Davoli; Grand Isle and Vicinity Protection and Shoreline Stabilization and Barrier  
Shoreline Restoration: Barataria Basin



LDWF - LNHP

Please submit your comments by 12:00 noon Tuesday, 8/24/10. Thank You.

Sharon McCarthy

Coastal Resources Scientist

DNR/Office of Coastal Management

ph. 225-342-6140

fax 225-342-9439

From: Melanie Jarrell [<mailto:mel.jarrell@att.net>]

Sent: Thursday, August 19, 2010 10:57 AM

To: Christine Charrier; Karl Morgan

Subject: Surf Washing on Grand Isle

8/19/2010

Christine and Karl:

My apologies for the delay in responding to this request.

BP is requesting that the Surf Wash Project be reviewed for an EUA and immediate CUP as described in the attached "test" project. Bp realizes that this particular shoreline cleanup method is not conducive for every type of shoreline in Louisiana's sensitive coastline, and has been educated on the fine sediments that actually would be harmed by such a method, however Bp believes that this is a good fit to "polish" the sand particles at Grand Isle and we strongly believe we have a small window of opportunity to test, refine our method, and begin our project in order to provide the public clean beaches as soon as possible.

BP is willing to meet with DNR on this issue once we have tested our "method" on Monday, August 22. Feel free to contact Gary Hayward to set up a meeting on this after August 22, 2010.

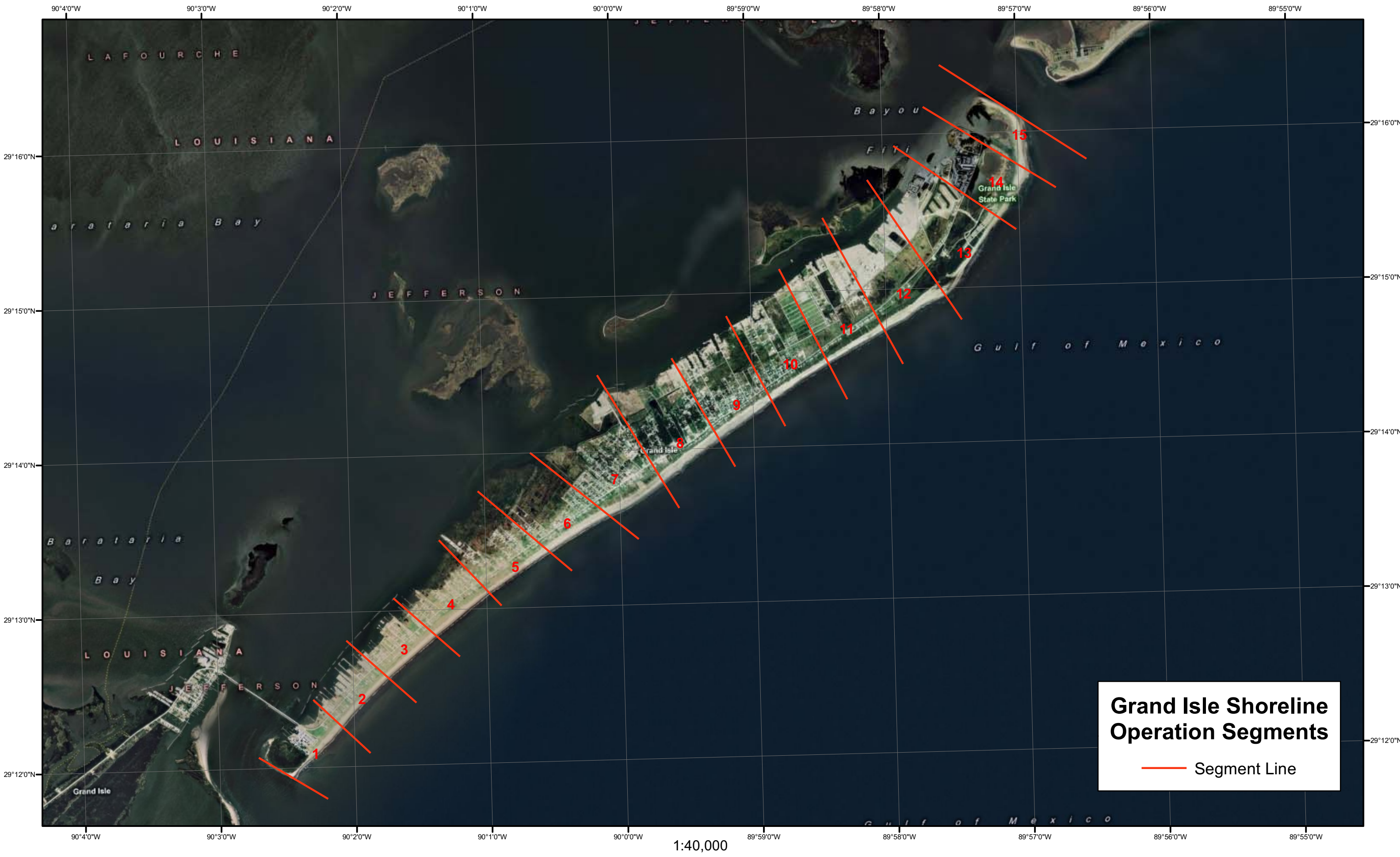
We would like to receive the EUA as soon as possible in order to set up the necessary resources and manpower to perform this clean up method as soon as possible.

Sincerely,

Melanie Jarrell

Deepwater Horizon Response  
Houma Command Center  
Deputy Environmental Unit Leader

Environmental Strategies, LLC  
(904) 537-3507 - cellular



**Grand Isle Shoreline  
Operation Segments**  
— Segment Line

1:40,000

# SEDIMENT RELOCATION (SURF WASHING)

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## DEMONSTRATION PROPOSAL

8/13/2010



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# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL





### 1. Introduction

This document aims to describe the merits of sediment relocation (or *surf washing*) as a Stage III beach cleaning strategy and outline the approach for a new demonstrative trial. Sediment relocation is a standard treatment technique that has been used in previous spill responses and is detailed in the NOAA, Shoreline Assessment Manual and Environment Canada. The technique aims to minimize the loss of sediment from the beach.

**Sediment relocation** is a treatment technique that is used to remove traces of oil from stained sands in the final stages of an overall shoreline treatment strategy. The objective of sediment relocation is to move stained sand from one location to another where there is increased wave energy to accelerate natural oil removal processes.

### 2. Overview of Sandy Shore Treatment Strategies


A number of treatment options are available for sandy shorelines relevant to the degree of oiling. A short description of each strategy that can be or are being used at Grand Isle along with their relative merits is described below:

TECHNIQUE		DESCRIPTION
MANUAL REMOVAL		<p>Manual removal, for example using rakes and shovels, is suitable for small areas of oil contamination where oil has not significantly penetrated the sediments. It is preferred for medium-heavy oils, but is less effective where oil is buried or mixed into sediments. Care must be taken to remove as little as possible of the clean sediments and surviving animals and plants. Oiled material is collected in bags, drums or containers and handled with protocols commensurate with State and Federal regulations. Natural recovery of manually cleaned areas tends to be more rapid, due to less physical disturbance. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MECHANICAL REMOVAL		<p>Mechanical removal is a method most commonly used on sandy shores where the oil contamination may be extensive but has not penetrated deeply. Graders are used to skim the surface layer of oiled sand, no deeper than the oil penetration depth. Oily sand may be collected using front-end loaders. Front-end loaders can also be used alone but this may result in more sand being removed than necessary, which increases the disposal volume and reduces the sediment protection of beach habitat. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
MOBILE BEACH CLEANERS ("Cherringtons")	 <p style="text-align: center;"><i>Grand Isle, 2010</i></p>	<p>Beach cleaners are highly effective and efficient at removing minimal surface layers of oiled sand and tar balls. Minimal labor is required and large areas can be covered per day with multiple units. In addition, less material is removed than when using bulldozers and front-end loaders via the adjustable digging depth of the units. On Grand Isle, the sand collected is subsequently processed through the MI SWACO Sand Treatment Plant to remove residual oil. Alternative processing can be via sediment relocation.</p>
SAND TREATMENT PLANTS		<p>Sand treatment plants (STP) of the type used at Grand Isle are designed to remove coats and stains from oiled sands prior to relocation onto the source beach. It is a treatment process that minimizes removal of sand as a waste, treated sands are returned to the beach. The MISWACO system in current use at Grand Isle is capable of processing around 50 tons of sand/hour. The system is static with a relatively large footprint and involves multiple</p>



# SEDIMENT RELOCATION (SURF WASHING)

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TECHNIQUE	DESCRIPTION	
	<i>MISWACO, Grand Isle, 2010</i>	transfers.
MIXING	<i>Mixing (MIX)</i> accelerates degradation and natural removal of light oils by breaking up oily sediments and surface oil deposits which increasing the surface area. This may involve the use of farm-type equipment, such as disc systems, harrows, ploughs, rakes or tines. One disadvantage is that it may disturb surface substrate and shallow-burrowing organisms. This technique can be used on wet or dry sediments.	
SEDIMENT RELOCATION	 <p data-bbox="399 625 646 653"><i>Grand Terre 2 Trial, 2010</i></p>	Sediment relocation (SR) or surf washing is a technique used to accelerate natural degradation of lightly contaminated sands by moving these into the lower intertidal zone/surf zone using mechanical equipment. It is generally used for recreational beaches that require re-opening sooner than natural recovery could achieve and it could also be used for beaches that has specific sensitivities. It is particularly useful on beaches where sediment removal must be minimized due to erosion or disposal issues. Sediment relocation can be the final stage in beach cleanup following treatment using a combination of the above techniques e.g. manual followed by mechanical/beach cleaners, and then treatment with sediment relocation for a final “polish”.

### 3. Sediment Relocation Benefit Analysis

The objective of sediment relocation is to accelerate the natural weathering and microbial degradation of oil-stained sands.

#### 3.1. Advantages of the Sediment Relocation Technique

- Increased acceleration of natural recovery for lightly oiled/contaminated sands
- Oiling reduced to “non-detect” levels and sands pass the “white towel test”
- Effective on stained sediments that are relocated from above the high tide mark to the intertidal zone, the area of beach which receives higher energy wave action
- Effective at high use amenity locations (e.g. tourist beaches) where natural recovery time needs to be accelerated
- Combined physical and biological processes lead to more rapid oil removal and degradation compared to slower natural processes
- Proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- No ecological effects detected in toxicity tests in field trials (e.g. Svalbard, Norway)
- No loss of sand results from implementation of this technique, this technique is preferred to options that result in removal of oiled sands as waste
- Does not impact beach stability

#### 3.2. Disadvantages of the Sediment Relocation Technique

- Unsuitable where there are buried oil residues heavier than a stain that could be unearthed and relocated during this treatment.
- Unsuitable where there are oil residues on sand heavier than a stain (<0.01cm thickness)
- Entails cost and generates an operational ‘footprint’ as compared to taking no action



# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL







### 4. Sediment Relocation Demonstration

The following section describes the sediment relocation demonstration that has been undertaken in July and the proposed sediment relocation demonstration and monitoring for efficacy that is proposed to be conducted in August.

#### 4.1. July 2010 Grand Terre 2 Sediment Relocation Demonstration

A demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2. This demonstration successfully demonstrated that the process accelerated the natural physical removal of oil staining from the beach sediment and sampling results showed no significant oil impact to water column and sediments.

The following photos demonstrate the method of sediment relocation step by step:

		
<p>1 Stained oil is identified above the intertidal zone, a low energy wave zone.</p>	<p>2 Stained oil is scraped from the beach sediment using a <i>Cherrington</i> beach cleaner. Depth of 10-20cm sediment.</p>	<p>3 The sediment is relocated to the lower intertidal zone, a higher energy environment.</p>
		
<p>4 The physical wave energy acts upon the relocated sediment.</p>	<p>5 The effectiveness of the technique is observed.</p>	<p>6 The technique is repeated along the stretch of beach in Grand Terre 2.</p>

#### Sampling Procedure

Four water samples and sediment samples were gathered on July 15<sup>th</sup> and July 17<sup>th</sup> analyzed for PAHs by 8270C-SIM, TPH-DRO, TPH-ORO, LA EPH, LA VPH, and TPH-GRO. The water and sediment samples were taken approximately 15-20m off the shoreline.

#### Water samples

For the water samples collected on July 15, 2010, no analytes were detected in all but one sample. In that sample, TPH-DRO was detected just above the reporting limit at 0.13 mg/L and LA EPH was detected at 0.34 mg/L. For the water samples collected on July 17, 2010, no analytes were detected in any sample.

#### Sediment samples

The results for the two sets of solid samples were similar to each other. For PAHs by 8270C-SIN1, two of the 4 samples each day had detections of chrysene, fluoranthene, and phenanthrene. One sample from the July 17<sup>th</sup> sample also had a detection of benzo(b)fluoranthene. The concentrations for these PAHs ranged from 1.8  $\mu\text{g/kg}$  to 23  $\mu\text{g/kg}$ . No



# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL

other PAHs were detected. For TPH-ORO and TPH-DRO, one sample from the 15<sup>th</sup> July and two samples from 17<sup>th</sup> July had detections for these analytes. The concentrations for TPH-ORO ranged from 14 mg/kg to 33 mg/kg. The concentrations for TPH-DRO ranged from 25 mg/kg to 68 mg/kg. For LA EPH, there was a detection of Aliphatics (C16-C35) in one sample from each day at concentrations of 14 mg/kg and 87 mg/kg. For LA VPH and TPH-GRO, no analytes were detected in any of the soil samples.

**Table 1 Sediment and Water Sample Results**

Matrix Collection Date	WATER (4 samples) 7/15/2010	WATER (4 samples) 7/17/2010	SOLID (4 samples) 7/15/2010	SOLID (4 samples) 7/17/2010
Analysis	PAH-SIM	PAH-SIM	PAH-SIM	PAH-SIM
Reporting Limits (Units)	<0.052-<0.056 ug/l	<0.050-<0.052 ug/l	<1.7 ug/kg	<1.7 ug/kg
Number of Detections	0 detections out of a possible 64	0 detections out of a possible 64	5 detections out of a possible 64	6 detections out of a possible 64
Range of Detections (Units)	NA	NA	1.6-11 ug/kg	2.6-23 ug/kg
Analysis	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	NA	NA	19 mg/kg	14-33 mg/kg
Analysis	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	0.13 mg/l	NA	34 mg/kg	25-68 mg/kg
Analysis	LA EPH	LA EPH	LA EPH	LA EPH
Reporting Limits (Units)	<0.055-<0.056 mg/l	<0.052 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 28	0 detection out of a possible 28	1 detection out of a possible 28	1 detection out of a possible 28
Range of Detections (Units)	Aliphatics (C16-C35) 0.34 mg/l	NA	Aliphatics (C16-C35) 14 mg/kg	Aliphatics (C16-C35) 87 mg/kg
Analysis	LA VPH	LA VPH	LA VPH	LA VPH
Reporting Limits (Units)	<100 ug/l	<100 ug/l	<5.89-<6.11 mg/kg	<6.00-<6.11 mg/kg
Number of Detections	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12
Range of Detections (Units)	NA	NA	NA	NA
Analysis	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO
Reporting Limits (Units)	<50 ug/l	<50 ug/l	<0.99-<1.00 mg/kg	<0.98-<1.00 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4
Range of Detections (Units)	NA	NA	NA	NA

### Summary

This demonstration was successful in terms of showing the technique's applicability to the sand oiling conditions observed on the Louisiana coast. The demonstration sampling also provided evidence that hydrocarbons did not become distributed in the water or sediment following the implementation of this technique. However, concerns from several stakeholders precluded its approval for wider spread use under an 'Emergency Use' authorization. They have requested additional information for review.

**Refer to:** Section 5, Sediment Relocation Technique Concerns





# SEDIMENT RELOCATION (SURF WASHING)

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### 4.2. Proposed Grand Isle Sediment Relocation Demonstration

A larger scale demonstration of the technique is proposed for Grand Isle in late August to a wider stakeholder audience to assess the viability for its application to future Stage III shoreline operations. The demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone*. It is proposed that this demonstration be undertaken at Grand Isle on August 22 or 23. A sampling program has been developed to gather sediment and water samples, including sentinel snare arrays in the water column, for analysis that will assess the oil fate and technique efficacy.

#### Sediment Relocation Method

The method for implementing the sediment relocation technique in the Grand Isle demonstration in August will follow the same process as the July demonstration. The technique will be applied as the tidal flooding begins. Earth moving equipment, such as *Cherringtons*, small bulldozers or front-end loaders will be used to move stained sand from the surface of the beach at locations above the intertidal zone, which is a low energy environment. An assessment as to the depth of sand that will require relocation will be made based on the extent of staining. This is likely to be in the range of 5 to 40cm in depth. Above this zone the sand is protected from physical abrasion from wave energy and natural physical processes. The sand will be relocated to the intertidal zone, where the stained sand is exposed to a increased wave energy for an increased length of time. The effectiveness of sediment relocation is a result of the effects of the physical processes that abrade oil from the sediment and oil mineral aggregate formation processes. Oil mineral aggregate formation increases the surface area of the oil that is exposed and thereby stimulates physical and chemical weathering and biological degradation.

The natural physical processes described will not only remove the oil staining from the beach sediment but will also redistribute the relocated sediment back into the beach system over time. The preservation of sand on the beach where this technique is applied will ensure that the natural process of longshore drift and shoreline erosion are not disturbed. In contrast, sand removal can result in adverse and unnatural processes of erosion and movement that may have implications for sediment transfer along the stretch of coastline where sand is removed.

#### Expected Outcomes

- To demonstrate that sediment relocation is a viable and an effective Stage III treatment technique for sandy beach restoration in Louisiana
- To develop understanding amongst stakeholders of sediment relocation technique implementation
- To engage a wider audience base in a physical demonstration of the technique in use
- To apply a structured sampling program to monitor sediment relocation effectiveness

## 5. Sediment Relocation Monitoring

### 5.1. Introduction

The aim of the monitoring component within the demonstration proposal is to:

- Evaluate the potential for unanticipated consequences (e.g., bulk oil release) from use of the method; and
- Provide information on oil fate that resource agencies and stakeholders can use during consideration of its potential wider operational use.

More specifically, the monitoring will provide insights into the fate of oil adhered to sand moved into the lower intertidal zone following removal of staining (i.e., surf-washed). Oil fate will be characterized in several ways:

- Through assessment of visual fouling of sorbent or snare boom deployed offshore from the designated cleanup beach and designated un-surf-washed beach;
- Through water sampling and subsequent gas chromatography/mass spectrometry (GC/MS) chemistry performed immediately offshore from the surf-washed area and reference area;
- Through bottom sediment sampling and subsequent GC/MS chemistry performed immediately offshore from the surf-washed area and reference area;



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- Through deployment of “snare sentinel” arrays directly nearshore from both areas.

In addition, focused collections and laboratory studies independent of the demonstration project itself will provide detailed information about the fate of the oil and the underlying mechanisms driving oil removal and degradation are planned in support of the project. Each of these is discussed in greater detail below.

### Sorbent or snare boom

It is recommended, and likely to be required, that the surf-washed area be boomed in order to contain and/or capture floatable oil that might be released from relocated oiled sand. If this boom is standard white sorbent boom or snare boom, it can also serve as a qualitative visual measure of oil released from the sand during the operation, relative to the untreated (oiled) reference beach.

### Water sampling

We propose to collect three mid-column (approx. 1 m depth) seawater samples directly offshore from the treated and reference beaches at multiple time periods, as detailed below—subject to limitations of the sampling platforms (we are investigating the feasibility of using sea kayaks to permit shallow water access). Assuming that the actual relocation activity takes place at the end of the work day on Day 1, post-relocation water sampling would take place at the beginning of Day 2 after the relocated sand is tidally flooded. Water sampling would take place at the following times during the demonstration:

- Day 1 (pre-relocation & flooding)
- Day 2: During flooding
- Day 2: Flooding + 1 hr.
- Day 2: Flooding + 2 hr.
- Day 2: Flooding + 4 hr.
- Day 2: Flooding + 8 hr.
- Day 3: Flooding + 24 hr.

### Sediment sampling

Sediment/sand samples will be collected at several time intervals before and after the relocation of oiled sand to the lower intertidal zone. Variability in chemistry results from these samples is expected to be high; three samples from each time interval and sampling location will be collected to establish a range of hydrocarbon concentrations.

Sediment sampling will take place at the following times/locations:

#### Sediment relocation site

- Day 1 (pre-relocation & flooding)/relocated sand piles
- Day 2: Re-emergence/relocated sand pile locations
- Day 2: Re-emergence + (TBD time)/below relocated sand piles
- Day 3: Re-emergence/relocated sand pile locations
- Day 3: Re-emergence + (TBD time)/below relocated sand piles

#### Reference site

- Day 1 (pre-relocation & flooding)/approximate tidal elevation of relocation
- Day 2: Re-emergence/ approximate tidal elevation of relocation
- Day 2: Re-emergence + (TBD time)/below approximate tidal elevation of relocation
- Day 3: Re-emergence/ approximate tidal elevation of relocation
- Day 3: Re-emergence + (TBD time)/below approximate tidal elevation of relocation

### Sentinel snare sampling arrays

Sentinel snare arrays are simple indicators for subsurface oil based on attaching oleophilic "pom-poms" to a rope or a PVC pipe. These snare arrays monitor the nearshore water column for the presence of subsurface oil that could threaten sensitive shoreline and shallow subtidal habitats that are not oiled.



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These deployments provide a relatively simple and intuitive gauge for presence/absence of subsurface oil and they are also part of a separate and ongoing Unified Command activity. We will incorporate sentinel snares into this study plan as a means to evaluate oil potentially moving offshore from the relocated sand piles as the tide floods back in.

Three arrays will be deployed in 5-15' water depth directly off shore from the relocated sand piles; three others will be set off shore from the reference site. Deployment should around the same time as the sand relocation activity on the shoreline. Arrays will be checked for signs of oiling on Day 3, at initial flooding + 24 hrs, and on Day 4, at initial flooding + 48 hrs. After the 48-hr. check, the arrays will be removed.

### **Oil-Mineral Aggregate (OMA) sampling**

(To be supplied by Dr. Ken Lee, Fisheries & Oceans Canada)

### **Oiled sand biodegradation**

As part of the risk communication effort associated with this demonstration, we are also establishing a separate laboratory experiment in cooperation with the Test America Houma analytical chemistry unit to document temporal trends/rates in biodegradation of residual oil in beach sand. This is performed to answer the question: How do we know that oiled sand hydrocarbon concentrations decrease/degrade when placed in the surf zone?

This experiment will be conducted independently of the operational demonstration and the other monitoring activities, but will use oiled sand from Grand Isle and seawater collected there as the basis for characterizing degradation over time. Although this will not conclusively document degradation rates, it will serve to show that hydrocarbon concentrations in oiled sand overwashed by seawater do in fact decline with time.

For this experiment, a bulk (approximately 5 gal. volume) of oiled sand collected at Grand Isle will be thoroughly homogenized, and aliquots placed in glass jars with seawater (also collected off Grand Isle) and mixed periodically. Original hydrocarbon concentration in the sand will be measured and characterized by GC/MS. At specified time intervals, water will be drained and the sand extracted and analyzed to measure alkane and PAH concentrations over time.



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### 6. Sediment Relocation Technique Concerns

Concern	Explanation	Evidence
<b>Remobilization of oil</b>		
Will 'black oil' be remobilized into the Gulf.	Only stained sand will be relocated, <b>NOT</b> oiled sands. Stained sand is defined as "visible oil, which cannot be scraped off with a fingernail" (<0.01cm in thickness) in the NOAA, Shoreline Assessment Manual.	Shoreline Assessment Manual.p
The sediment relocation technique should not be used on heavily oiled areas.	Implementation of sediment relocation to stained sand will not result in black oil being remobilized in the Gulf. There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is <b>NOT</b> the intention for its implementation on the Louisiana coastline.	
Oil will be remobilized to other areas of the coastline, storms may assist this process.	Relocated sediment will likely be distributed on the same beach over a period of two to three tidal cycles under conditions where wave heights are less than 30cm, similar to the general wave height of the Louisiana coastline, (Owens et.al. 1995). Laboratory tests have been conducted where oiled sediment samples were submerged in seawater, within seconds' oil separated from the sediment, (Owens and Sergy 2004). Bragg and Owens (1994) have deduced that the formation of oil mineral aggregate is a key element in the removal of stain from sands after they are relocated into the intertidal zone.	Accelerating Natural Removal of Oil on Beaches  2008 Selendang Sed Reloc IOOSC.pdf
Oil will accumulate into benthic sediments at the site of sediment relocation and in nearby locations.	The formation of the oil mineral aggregate reduces the ability of oil to adhere to shoreline materials, thereby facilitating removal by wave and tidal action, (Owens and Lee, 2003) . Field trials suggest that a significant fraction of the oil dispersed into nearshore waters and sediments by interaction with mineral fines will be biodegraded. There is conclusive evidence of oil biodegradation within the sub tidal sediments, (Sergy et. al. 2003).  In previous studies little or no residual oil has been found to strand on the shore in areas adjacent to the area where the field trial has taken place. Only small amounts of oil were found in nearshore subtidal sediments and sediment trap samples suggests that a large fraction of the oil lost from the experimental plots will be dispersed in the form of relatively buoyant oil mineral aggregate.	2003 OMA Review SSTB.PDF  2003 Svalbard Intro SSTB.pdf
Is the amount of oil that will be remobilized into the Gulf known?	Only stained oil will be relocated in implementation of this technique. Stained oil is defined as being <0.01cm thickness (NOAA, Shoreline Assessment Manual), this will equate to a volume of 0.0001 per square meter of sediment.	Shoreline Assessment Manual.p
Implementing this technique will produce a persistent sheen on the waters surface.	A sheen is an oil film ranging from barely visible to dull colors. Sheening will only persist for short time periods. An oil sheen has a 0.04 to 0.30µm thickness, this equates to 0.04-0.3litres per m3. Natural weathering processes (spreading, evaporation and dispersion) will assist in the breakdown and removal of sheen from the marine environment. Sheens are not persistent and on completion of implementing this technique any sheening that occurs will evaporate and disperse readily.  There was no visible sheen during the Grand Terre 2 trial on July 16 <sup>th</sup> .	<a href="http://www.itopf.com/marine-spills/fate/weathering-process/">http://www.itopf.com/marine-spills/fate/weathering-process/</a>



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Concern	Explanation	Evidence
It would be better to remove stained sand than implement this technique.	The removal of sand or sediment from a beach completely removes that substrate from that coastal system. Sediment removal on any scale will have implications for that system, this may include increasing erosion of the coastline and impact the coastal ecosystem on a local and broader scale. Sediment relocation accelerates the natural physical processes of oil removal from sediment.	See reference papers presented in evidence.
<b>Impact to marine organisms</b>		
Marine life will be impacted from sediment relocation	Sediment relocation, along with other <i>in situ</i> techniques accelerates the weathering of the subsurface oil and decreasing the amount of oil remaining on the beaches ostensibly reduced the residence time of the oil and, therefore, also reduced the exposure or risk to coastal birds and animals.	2008 Selendang Sed Reloc IOSC.pdf
The level of toxicity that may result in benthic sediments or suspended particulate material is not known.	Experimental oil spill demonstration sites were set up in Svalbard, Norway to assess the treatment technique of sediment relocation. The results showed that sediment relocation did not elevate the toxicity in the nearshore environment to unacceptable levels nor resulted in significant alongshore or offshore sediment oiling.	<a href="http://www.iosc.org/papers/02228.pdf">http://www.iosc.org/papers/02228.pdf</a>
<b>Other concerns</b>		
Approval to this technique will lead the way for expanded use of this approach when dealing with stained sediment.	This technique is a widely accepted and used method to clean lightly-oiled or stained sandy beaches. On some cases it is used for badly oiled coarse sediments on relatively exposed shores where wave action will eventually restore the normal shore profile	Refer to spill case studies in Section 6.1
This is a cost cutting measure.	Cost is not the main issue but more the appropriateness, effectiveness and efficiency of the method to clean the stained sandy beaches without further sediment removal. These benefits are offered by sediment	See reference papers presented in evidence.



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### 6.1. Sediment Relocation Implementation during Previous Oil Spills and Experimental Field Trials

Oil Spill	Date	Comments	Reference
Tampa Bay		<p>This coast is a high-value recreation shore and the objective of the cleanup was to restore the beaches to a prespill condition before the annual Labor Day vacation. After removal of the oiled sediments, either manually or mechanically, the sand retained a brown oil stain. Bulldozers and front-end loaders were used to push the surface layers of sediment into the surf zone with the anticipation that there would follow a natural cleaning of the sediment. This was successful and the transport of the cleaned sediment back up the beach occurred in conditions with wave heights generally less than 30 cm over a period of only one or two tidal cycles. This accelerated removal showed that the process could be used as a polishing tool for shoreline cleanup</p> <p><b>Note:</b> <i>the oil spilt was no.6 fuel oil, heavier in viscosity than the MC252 oil.</i></p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Exxon Valdez		<p>The shoreline treatment on the Exxon Valdez spill used large-scale beach washing, manual cleanup, raking and tilling the beaches, oily debris pickup, enhanced bioremediation and spot washing. In addition to this, mechanical relocation techniques methods were used on a few sites, including the use of bulldozers to relocate or remove the contaminated beach surfaces.</p>	<a href="http://www.eoerth.org/article/exxon_valdez_oil_spill">http://www.eoerth.org/article/exxon_valdez_oil_spill</a>
Sea Empress		<p>The <i>Sea Empress</i> spilled a cargo of Forties Blend and heavy fuel oil near Milford Haven, Wales, in February 1996. As a result of finding that clay-oil flocculation was taking place at this spill location, the planned operational response was modified so that beach sediments at Amroth were relocated to the lower intertidal zone to accelerate oil removal by surf washing (abrasion) and to expose subsurface oiled pebbles and cobbles. This action also exposed fine sediments so that the concentration of fines in the nearshore waters was increased, which promoted interaction between oil and sediment fines. After four days of this treatment, the concentrations of oil on the beach were reduced by more than an order of magnitude. Visual observations indicate that 50% of the removal could be attributed to abrasion and 50% to fine-particle interactions.</p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Selendang Ayu		<p>Sediment relocation and mechanical mixing was approved for use on 8 sites for the shoreline treatment. The results in this spill documented a net reduction in oiling, the return of beach profiles, and decline in biological availability of hydrocarbons over the course of the response and cleanup activities, and showed no unanticipated adverse impacts despite the large scale of sediment movement on several of the beaches.</p>	2008 Selendang Sed Reloc IOSC.pdf
Field Trials	Date	Comments	Reference
Svalbard, Norway		<p>The Svalbard Shoreline Field Trials quantified the effectiveness of sediment relocation as a viable <i>in situ</i> treatment option for oiled shorelines. The results of the monitoring confirmed that sediment relocation significantly accelerated the rate of oil removal and reduced oil persistence where oil was stranded on the beach face above the level of normal wave activity. Where the stranded oil was in the zone of wave action, sediment relocation accelerated the short-term (weeks) rate of oil loss from the intertidal sediments.</p>	2003 Svalbard Intro SSTB.pdf

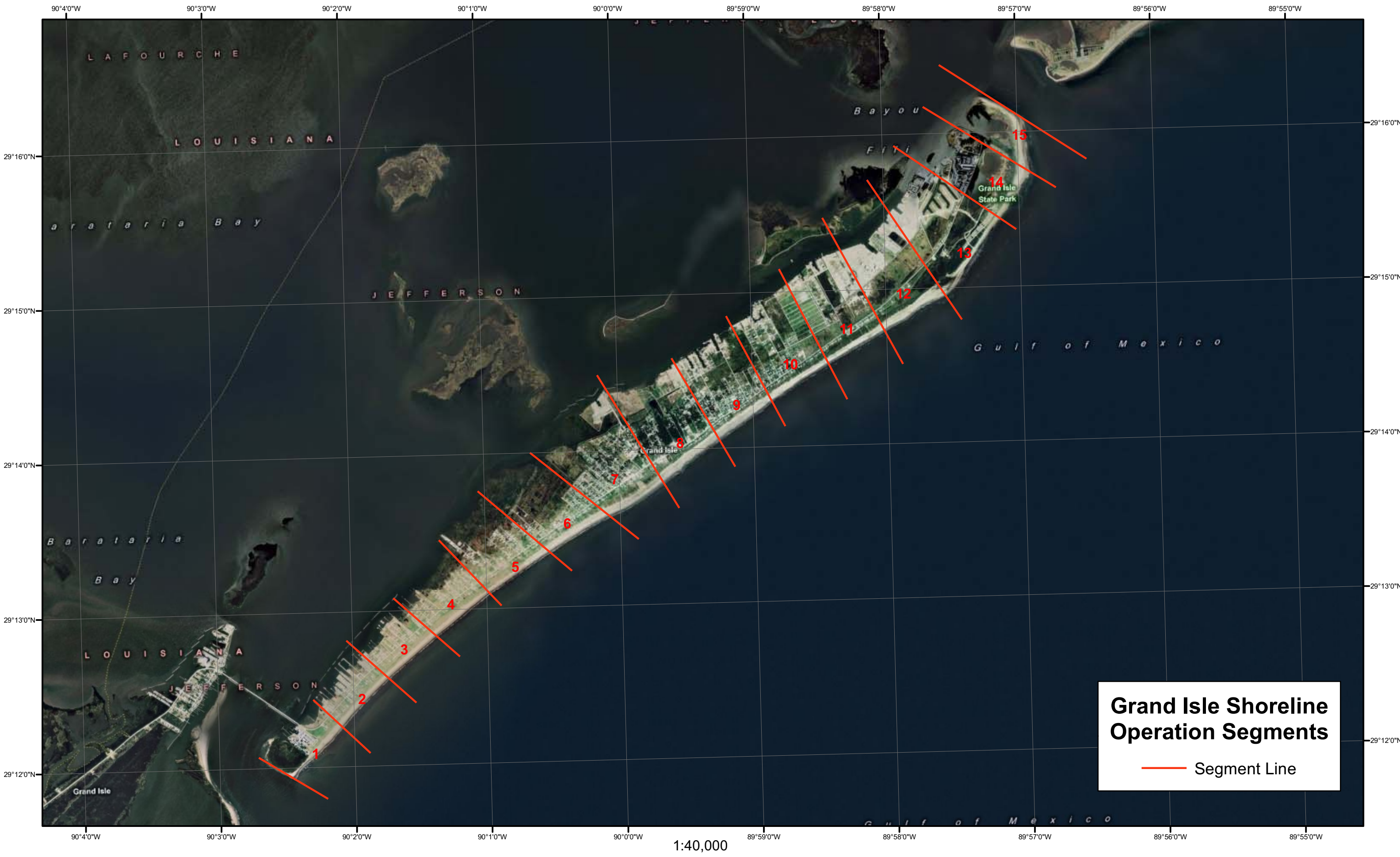
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**To:** "[kbalkum@wlf.louisiana.gov](mailto:kbalkum@wlf.louisiana.gov)"; "[rcd@wlf.louisiana.gov](mailto:rcd@wlf.louisiana.gov)"; "Richard Hartman"; [ettinger.john@epa.gov](mailto:ettinger.john@epa.gov); "[patrick.williams@noaa.gov](mailto:patrick.williams@noaa.gov)"; "[jay.pecot@la.gov](mailto:jay.pecot@la.gov)"; "[christine.charrier@la.gov](mailto:christine.charrier@la.gov)"; [Walther, David](#); [Karl Morgan](#); [Schindler, Paige P MVN](#); "[Jamie Phillippe](#)"; "[Butler, Dave](#)"; "[Seth.Bordelon@fws.gov](mailto:Seth.Bordelon@fws.gov)"; "[patti.holland@fws.gov](mailto:patti.holland@fws.gov)"; "[houmasitl@uscg.mil](mailto:houmasitl@uscg.mil)"; "[sharon.trahan@la.gov](mailto:sharon.trahan@la.gov)"  
**Cc:** [Mujica, Joaquin MVN](#); [Daigle, Michelle C MVN](#); [Clark, Karl J MVN](#); [Serio, Pete J MVN](#); [Mayer, Martin S MVN](#)  
**Subject:** Request for Emergency Authorization (MVN 2010-02064 EKK)  
**Date:** Monday, August 23, 2010 1:41:00 PM  
**Attachments:** [EUA 10-103 - Grand Isle Operation Areas.pdf](#)  
[EUA 10-103 - DEMONSTRATION PROPOSAL FOR SURF WASHING ON GRAND ISLE.pdf](#)  
**Importance:** High

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Please review the attached request for emergency authorization and provide comments by 10:00am, Wednesday, August 25, 2010. Lack of reply will be construed as indicating no objection.

Angie D. Lacoste  
USACE, Regulatory Branch  
504.862.2281

In order to assist us in improving our service to you, please complete the survey found at:  
<http://per2.nwp.usace.army.mil/survey.html>



**Grand Isle Shoreline  
Operation Segments**  
— Segment Line



# SEDIMENT RELOCATION (SURF WASHING)

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8/13/2010



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### 1. Introduction

This document aims to describe the merits of sediment relocation (or *surf washing*) as a Stage III beach cleaning strategy and outline the approach for a new demonstrative trial. Sediment relocation is a standard treatment technique that has been used in previous spill responses and is detailed in the NOAA, Shoreline Assessment Manual and Environment Canada. The technique aims to minimize the loss of sediment from the beach.

**Sediment relocation** is a treatment technique that is used to remove traces of oil from stained sands in the final stages of an overall shoreline treatment strategy. The objective of sediment relocation is to move stained sand from one location to another where there is increased wave energy to accelerate natural oil removal processes.

### 2. Overview of Sandy Shore Treatment Strategies


A number of treatment options are available for sandy shorelines relevant to the degree of oiling. A short description of each strategy that can be or are being used at Grand Isle along with their relative merits is described below:

TECHNIQUE		DESCRIPTION
<p>MANUAL REMOVAL</p>		<p>Manual removal, for example using rakes and shovels, is suitable for small areas of oil contamination where oil has not significantly penetrated the sediments. It is preferred for medium-heavy oils, but is less effective where oil is buried or mixed into sediments. Care must be taken to remove as little as possible of the clean sediments and surviving animals and plants. Oiled material is collected in bags, drums or containers and handled with protocols commensurate with State and Federal regulations. Natural recovery of manually cleaned areas tends to be more rapid, due to less physical disturbance. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
<p>MECHANICAL REMOVAL</p>		<p>Mechanical removal is a method most commonly used on sandy shores where the oil contamination may be extensive but has not penetrated deeply. Graders are used to skim the surface layer of oiled sand, no deeper than the oil penetration depth. Oily sand may be collected using front-end loaders. Front-end loaders can also be used alone but this may result in more sand being removed than necessary, which increases the disposal volume and reduces the sediment protection of beach habitat. Sediment removal is best justified when there are overriding short-term considerations, e.g. the need to clean a fishing or tourist beach where activities of socio-economic importance need to continue.</p>
<p>MOBILE BEACH CLEANERS ("Cherringtons")</p>	 <p style="text-align: center;"><i>Grand Isle, 2010</i></p>	<p>Beach cleaners are highly effective and efficient at removing minimal surface layers of oiled sand and tar balls. Minimal labor is required and large areas can be covered per day with multiple units. In addition, less material is removed than when using bulldozers and front-end loaders via the adjustable digging depth of the units. On Grand Isle, the sand collected is subsequently processed through the MI SWACO Sand Treatment Plant to remove residual oil. Alternative processing can be via sediment relocation.</p>
<p>SAND TREATMENT PLANTS</p>		<p>Sand treatment plants (STP) of the type used at Grand Isle are designed to remove coats and stains from oiled sands prior to relocation onto the source beach. It is a treatment process that minimizes removal of sand as a waste, treated sands are returned to the beach. The MISWACO system in current use at Grand Isle is capable of processing around 50 tons of sand/hour. The system is static with a relatively large footprint and involves multiple</p>



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TECHNIQUE	DESCRIPTION	
	<i>MISWACO, Grand Isle, 2010</i>	transfers.
MIXING	<i>Mixing (MIX)</i> accelerates degradation and natural removal of light oils by breaking up oily sediments and surface oil deposits which increasing the surface area. This may involve the use of farm-type equipment, such as disc systems, harrows, ploughs, rakes or tines. One disadvantage is that it may disturb surface substrate and shallow-burrowing organisms. This technique can be used on wet or dry sediments.	
SEDIMENT RELOCATION	 <p data-bbox="402 625 646 653"><i>Grand Terre 2 Trial, 2010</i></p>	Sediment relocation (SR) or surf washing is a technique used to accelerate natural degradation of lightly contaminated sands by moving these into the lower intertidal zone/surf zone using mechanical equipment. It is generally used for recreational beaches that require re-opening sooner than natural recovery could achieve and it could also be used for beaches that has specific sensitivities. It is particularly useful on beaches where sediment removal must be minimized due to erosion or disposal issues. Sediment relocation can be the final stage in beach cleanup following treatment using a combination of the above techniques e.g. manual followed by mechanical/beach cleaners, and then treatment with sediment relocation for a final “polish”.

### 3. Sediment Relocation Benefit Analysis

The objective of sediment relocation is to accelerate the natural weathering and microbial degradation of oil-stained sands.

#### 3.1. Advantages of the Sediment Relocation Technique

- Increased acceleration of natural recovery for lightly oiled/contaminated sands
- Oiling reduced to “non-detect” levels and sands pass the “white towel test”
- Effective on stained sediments that are relocated from above the high tide mark to the intertidal zone, the area of beach which receives higher energy wave action
- Effective at high use amenity locations (e.g. tourist beaches) where natural recovery time needs to be accelerated
- Combined physical and biological processes lead to more rapid oil removal and degradation compared to slower natural processes
- Proven effective even in low-energy areas (e.g. Tampa Bay, August 1993)
- No ecological effects detected in toxicity tests in field trials (e.g. Svalbard, Norway)
- No loss of sand results from implementation of this technique, this technique is preferred to options that result in removal of oiled sands as waste
- Does not impact beach stability

#### 3.2. Disadvantages of the Sediment Relocation Technique

- Unsuitable where there are buried oil residues heavier than a stain that could be unearthed and relocated during this treatment.
- Unsuitable where there are oil residues on sand heavier than a stain (<0.01cm thickness)
- Entails cost and generates an operational ‘footprint’ as compared to taking no action



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### 4. Sediment Relocation Demonstration

The following section describes the sediment relocation demonstration that has been undertaken in July and the proposed sediment relocation demonstration and monitoring for efficacy that is proposed to be conducted in August.

#### 4.1. July 2010 Grand Terre 2 Sediment Relocation Demonstration

A demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2. This demonstration successfully demonstrated that the process accelerated the natural physical removal of oil staining from the beach sediment and sampling results showed no significant oil impact to water column and sediments.

The following photos demonstrate the method of sediment relocation step by step:

		
<p>1 Stained oil is identified above the intertidal zone, a low energy wave zone.</p>	<p>2 Stained oil is scraped from the beach sediment using a <i>Cherrington</i> beach cleaner. Depth of 10-20cm sediment.</p>	<p>3 The sediment is relocated to the lower intertidal zone, a higher energy environment.</p>
		
<p>4 The physical wave energy acts upon the relocated sediment.</p>	<p>5 The effectiveness of the technique is observed.</p>	<p>6 The technique is repeated along the stretch of beach in Grand Terre 2.</p>

#### Sampling Procedure

Four water samples and sediment samples were gathered on July 15<sup>th</sup> and July 17<sup>th</sup> analyzed for PAHs by 8270C-SIM, TPH-DRO, TPH-ORO, LA EPH, LA VPH, and TPH-GRO. The water and sediment samples were taken approximately 15-20m off the shoreline.

#### Water samples

For the water samples collected on July 15, 2010, no analytes were detected in all but one sample. In that sample, TPH-DRO was detected just above the reporting limit at 0.1 3 mg/L and LA EPH was detected at 0.34 mg/L. For the water samples collected on July 17, 2010, no analytes were detected in any sample.

#### Sediment samples

The results for the two sets of solid samples were similar to each other. For PAHs by 8270C-SIN1, two of the 4 samples each day had detections of chrysene, fluoranthene, and phenanthrene. One sample from the July 17<sup>th</sup> sample also had a detection of benzo(b)fluoranthene. The concentrations for these PAHs ranged from 1.8 vg/kg to 23 vg/kg. No



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other PAHs were detected. For TPH-ORO and TPH-DRO, one sample from the 15<sup>th</sup> July and two samples from 17<sup>th</sup> July had detections for these analytes. The concentrations for TPH-ORO ranged from 14 mg/kg to 33 mg/kg. The concentrations for TPH-DRO ranged from 25 mg/kg to 68 mg/kg. For LA EPH, there was a detection of Aliphatics (C16-C35) in one sample from each day at concentrations of 14 mg/kg and 87 mg/kg. For LA VPH and TPH-GRO, no analytes were detected in any of the soil samples.

**Table 1 Sediment and Water Sample Results**

Matrix Collection Date	WATER (4 samples) 7/15/2010	WATER (4 samples) 7/17/2010	SOLID (4 samples) 7/15/2010	SOLID (4 samples) 7/17/2010
Analysis	PAH-SIM	PAH-SIM	PAH-SIM	PAH-SIM
Reporting Limits (Units)	<0.052-<0.056 ug/l	<0.050-<0.052 ug/l	<1.7 ug/kg	<1.7 ug/kg
Number of Detections	0 detections out of a possible 64	0 detections out of a possible 64	5 detections out of a possible 64	6 detections out of a possible 64
Range of Detections (Units)	NA	NA	1.6-11 ug/kg	2.6-23 ug/kg
Analysis	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO	LA TPH-ORO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	NA	NA	19 mg/kg	14-33 mg/kg
Analysis	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO	LA TPH-DRO
Reporting Limits (Units)	<0.10-<0.12 mg/l	<0.10 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 4	0 detections out of a possible 4	1 detection out of a possible 4	2 detections out of a possible 4
Range of Detections (Units)	0.13 mg/l	NA	34 mg/kg	25-68 mg/kg
Analysis	LA EPH	LA EPH	LA EPH	LA EPH
Reporting Limits (Units)	<0.055-<0.056 mg/l	<0.052 mg/l	<12 mg/kg	<12 mg/kg
Number of Detections	1 detection out of a possible 28	0 detection out of a possible 28	1 detection out of a possible 28	1 detection out of a possible 28
Range of Detections (Units)	Aliphatics (C16-C35) 0.34 mg/l	NA	Aliphatics (C16-C35) 14 mg/kg	Aliphatics (C16-C35) 87 mg/kg
Analysis	LA VPH	LA VPH	LA VPH	LA VPH
Reporting Limits (Units)	<100 ug/l	<100 ug/l	<5.89-<6.11 mg/kg	<6.00-<6.11 mg/kg
Number of Detections	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12	0 detections out of a possible 12
Range of Detections (Units)	NA	NA	NA	NA
Analysis	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO	LA TPH-GRO
Reporting Limits (Units)	<50 ug/l	<50 ug/l	<0.99-<1.00 mg/kg	<0.98-<1.00 mg/kg
Number of Detections	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4	0 detections out of a possible 4
Range of Detections (Units)	NA	NA	NA	NA

### Summary

This demonstration was successful in terms of showing the technique's applicability to the sand oiling conditions observed on the Louisiana coast. The demonstration sampling also provided evidence that hydrocarbons did not become distributed in the water or sediment following the implementation of this technique. However, concerns from several stakeholders precluded its approval for wider spread use under an 'Emergency Use' authorization. They have requested additional information for review.

**Refer to:** Section 5, Sediment Relocation Technique Concerns



# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL

### 4.2. Proposed Grand Isle Sediment Relocation Demonstration

A larger scale demonstration of the technique is proposed for Grand Isle in late August to a wider stakeholder audience to assess the viability for its application to future Stage III shoreline operations. The demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone*. It is proposed that this demonstration be undertaken at Grand Isle on August 22 or 23. A sampling program has been developed to gather sediment and water samples, including sentinel snare arrays in the water column, for analysis that will assess the oil fate and technique efficacy.

#### Sediment Relocation Method

The method for implementing the sediment relocation technique in the Grand Isle demonstration in August will follow the same process as the July demonstration. The technique will be applied as the tidal flooding begins. Earth moving equipment, such as *Cherringtons*, small bulldozers or front-end loaders will be used to move stained sand from the surface of the beach at locations above the intertidal zone, which is a low energy environment. An assessment as to the depth of sand that will require relocation will be made based on the extent of staining. This is likely to be in the range of 5 to 40cm in depth. Above this zone the sand is protected from physical abrasion from wave energy and natural physical processes. The sand will be relocated to the intertidal zone, where the stained sand is exposed to a increased wave energy for an increased length of time. The effectiveness of sediment relocation is a result of the effects of the physical processes that abrade oil from the sediment and oil mineral aggregate formation processes. Oil mineral aggregate formation increases the surface area of the oil that is exposed and thereby stimulates physical and chemical weathering and biological degradation.

The natural physical processes described will not only remove the oil staining from the beach sediment but will also redistribute the relocated sediment back into the beach system over time. The preservation of sand on the beach where this technique is applied will ensure that the natural process of longshore drift and shoreline erosion are not disturbed. In contrast, sand removal can result in adverse and unnatural processes of erosion and movement that may have implications for sediment transfer along the stretch of coastline where sand is removed.

#### Expected Outcomes

- To demonstrate that sediment relocation is a viable and an effective Stage III treatment technique for sandy beach restoration in Louisiana
- To develop understanding amongst stakeholders of sediment relocation technique implementation
- To engage a wider audience base in a physical demonstration of the technique in use
- To apply a structured sampling program to monitor sediment relocation effectiveness

## 5. Sediment Relocation Monitoring

### 5.1. Introduction

The aim of the monitoring component within the demonstration proposal is to:

- Evaluate the potential for unanticipated consequences (e.g., bulk oil release) from use of the method; and
- Provide information on oil fate that resource agencies and stakeholders can use during consideration of its potential wider operational use.

More specifically, the monitoring will provide insights into the fate of oil adhered to sand moved into the lower intertidal zone following removal of staining (i.e., surf-washed). Oil fate will be characterized in several ways:

- Through assessment of visual fouling of sorbent or snare boom deployed offshore from the designated cleanup beach and designated un-surf-washed beach;
- Through water sampling and subsequent gas chromatography/mass spectrometry (GC/MS) chemistry performed immediately offshore from the surf-washed area and reference area;
- Through bottom sediment sampling and subsequent GC/MS chemistry performed immediately offshore from the surf-washed area and reference area;



# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL

- Through deployment of “snare sentinel” arrays directly nearshore from both areas.

In addition, focused collections and laboratory studies independent of the demonstration project itself will provide detailed information about the fate of the oil and the underlying mechanisms driving oil removal and degradation are planned in support of the project. Each of these is discussed in greater detail below.

### Sorbent or snare boom

It is recommended, and likely to be required, that the surf-washed area be boomed in order to contain and/or capture floatable oil that might be released from relocated oiled sand. If this boom is standard white sorbent boom or snare boom, it can also serve as a qualitative visual measure of oil released from the sand during the operation, relative to the untreated (oiled) reference beach.

### Water sampling

We propose to collect three mid-column (approx. 1 m depth) seawater samples directly offshore from the treated and reference beaches at multiple time periods, as detailed below—subject to limitations of the sampling platforms (we are investigating the feasibility of using sea kayaks to permit shallow water access). Assuming that the actual relocation activity takes place at the end of the work day on Day 1, post-relocation water sampling would take place at the beginning of Day 2 after the relocated sand is tidally flooded. Water sampling would take place at the following times during the demonstration:

- Day 1 (pre-relocation & flooding)
- Day 2: During flooding
- Day 2: Flooding + 1 hr.
- Day 2: Flooding + 2 hr.
- Day 2: Flooding + 4 hr.
- Day 2: Flooding + 8 hr.
- Day 3: Flooding + 24 hr.

### Sediment sampling

Sediment/sand samples will be collected at several time intervals before and after the relocation of oiled sand to the lower intertidal zone. Variability in chemistry results from these samples is expected to be high; three samples from each time interval and sampling location will be collected to establish a range of hydrocarbon concentrations.

Sediment sampling will take place at the following times/locations:

#### Sediment relocation site

- Day 1 (pre-relocation & flooding)/relocated sand piles
- Day 2: Re-emergence/relocated sand pile locations
- Day 2: Re-emergence + (TBD time)/below relocated sand piles
- Day 3: Re-emergence/relocated sand pile locations
- Day 3: Re-emergence + (TBD time)/below relocated sand piles

#### Reference site

- Day 1 (pre-relocation & flooding)/approximate tidal elevation of relocation
- Day 2: Re-emergence/ approximate tidal elevation of relocation
- Day 2: Re-emergence + (TBD time)/below approximate tidal elevation of relocation
- Day 3: Re-emergence/ approximate tidal elevation of relocation
- Day 3: Re-emergence + (TBD time)/below approximate tidal elevation of relocation

### Sentinel snare sampling arrays

Sentinel snare arrays are simple indicators for subsurface oil based on attaching oleophilic "pom-poms" to a rope or a PVC pipe. These snare arrays monitor the nearshore water column for the presence of subsurface oil that could threaten sensitive shoreline and shallow subtidal habitats that are not oiled.



# SEDIMENT RELOCATION (SURF WASHING)

## DEMONSTRATION PROPOSAL

These deployments provide a relatively simple and intuitive gauge for presence/absence of subsurface oil and they are also part of a separate and ongoing Unified Command activity. We will incorporate sentinel snares into this study plan as a means to evaluate oil potentially moving offshore from the relocated sand piles as the tide floods back in.

Three arrays will be deployed in 5-15' water depth directly off shore from the relocated sand piles; three others will be set off shore from the reference site. Deployment should around the same time as the sand relocation activity on the shoreline. Arrays will be checked for signs of oiling on Day 3, at initial flooding + 24 hrs, and on Day 4, at initial flooding + 48 hrs. After the 48-hr. check, the arrays will be removed.

### **Oil-Mineral Aggregate (OMA) sampling**

(To be supplied by Dr. Ken Lee, Fisheries & Oceans Canada)

### **Oiled sand biodegradation**

As part of the risk communication effort associated with this demonstration, we are also establishing a separate laboratory experiment in cooperation with the Test America Houma analytical chemistry unit to document temporal trends/rates in biodegradation of residual oil in beach sand. This is performed to answer the question: How do we know that oiled sand hydrocarbon concentrations decrease/degrade when placed in the surf zone?

This experiment will be conducted independently of the operational demonstration and the other monitoring activities, but will use oiled sand from Grand Isle and seawater collected there as the basis for characterizing degradation over time. Although this will not conclusively document degradation rates, it will serve to show that hydrocarbon concentrations in oiled sand overwashed by seawater do in fact decline with time.

For this experiment, a bulk (approximately 5 gal. volume) of oiled sand collected at Grand Isle will be thoroughly homogenized, and aliquots placed in glass jars with seawater (also collected off Grand Isle) and mixed periodically. Original hydrocarbon concentration in the sand will be measured and characterized by GC/MS. At specified time intervals, water will be drained and the sand extracted and analyzed to measure alkane and PAH concentrations over time.





## SEDIMENT RELOCATION (SURF WASHING) DEMONSTRATION PROPOSAL

### 6. Sediment Relocation Technique Concerns

Concern	Explanation	Evidence
<b>Remobilization of oil</b>		
Will 'black oil' be remobilized into the Gulf.	Only stained sand will be relocated, <b>NOT</b> oiled sands. Stained sand is defined as "visible oil, which cannot be scraped off with a fingernail" (<0.01cm in thickness) in the NOAA, Shoreline Assessment Manual.	Shoreline Assessment Manual.p
The sediment relocation technique should not be used on heavily oiled areas.	Implementation of sediment relocation to stained sand will not result in black oil being remobilized in the Gulf. There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is <b>NOT</b> the intention for its implementation on the Louisiana coastline.	
Oil will be remobilized to other areas of the coastline, storms may assist this process.	Relocated sediment will likely be distributed on the same beach over a period of two to three tidal cycles under conditions where wave heights are less than 30cm, similar to the general wave height of the Louisiana coastline, (Owens et.al. 1995). Laboratory tests have been conducted where oiled sediment samples were submerged in seawater, within seconds' oil separated from the sediment, (Owens and Sergy 2004). Bragg and Owens (1994) have deduced that the formation of oil mineral aggregate is a key element in the removal of stain from sands after they are relocated into the intertidal zone.	Accelerating Natural Removal of Oil on Beaches  2008 Selendang Sed Reloc IOOSC.pdf
Oil will accumulate into benthic sediments at the site of sediment relocation and in nearby locations.	<p>The formation of the oil mineral aggregate reduces the ability of oil to adhere to shoreline materials, thereby facilitating removal by wave and tidal action, (Owens and Lee, 2003) . Field trials suggest that a significant fraction of the oil dispersed into nearshore waters and sediments by interaction with mineral fines will be biodegraded. There is conclusive evidence of oil biodegradation within the sub tidal sediments, (Sergy et. al. 2003).</p> <p>In previous studies little or no residual oil has been found to strand on the shore in areas adjacent to the area where the field trial has taken place. Only small amounts of oil were found in nearshore subtidal sediments and sediment trap samples suggests that a large fraction of the oil lost from the experimental plots will be dispersed in the form of relatively buoyant oil mineral aggregate.</p>	2003 OMA Review SSTB.PDF  2003 Svalbard Intro SSTB.pdf
Is the amount of oil that will be remobilized into the Gulf known?	Only stained oil will be relocated in implementation of this technique. Stained oil is defined as being <0.01cm thickness (NOAA, Shoreline Assessment Manual), this will equate to a volume of 0.0001 per square meter of sediment.	Shoreline Assessment Manual.p
Implementing this technique will produce a persistent sheen on the waters surface.	<p>A sheen is an oil film ranging from barely visible to dull colors. Sheening will only persist for short time periods. An oil sheen has a 0.04 to 0.30µm thickness, this equates to 0.04-0.3litres per m3. Natural weathering processes (spreading, evaporation and dispersion) will assist in the breakdown and removal of sheen from the marine environment. Sheens are not persistent and on completion of implementing this technique any sheening that occurs will evaporate and disperse readily.</p> <p>There was no visible sheen during the Grand Terre 2 trial on July 16<sup>th</sup>.</p>	<a href="http://www.itopf.com/marine-spills/fate/weathering-process/">http://www.itopf.com/marine-spills/fate/weathering-process/</a>



## SEDIMENT RELOCATION (SURF WASHING)

### DEMONSTRATION PROPOSAL

Concern	Explanation	Evidence
It would be better to remove stained sand than implement this technique.	The removal of sand or sediment from a beach completely removes that substrate from that coastal system. Sediment removal on any scale will have implications for that system, this may include increasing erosion of the coastline and impact the coastal ecosystem on a local and broader scale. Sediment relocation accelerates the natural physical processes of oil removal from sediment.	See reference papers presented in evidence.
<b>Impact to marine organisms</b>		
Marine life will be impacted from sediment relocation	Sediment relocation, along with other <i>in situ</i> techniques accelerates the weathering of the subsurface oil and decreasing the amount of oil remaining on the beaches ostensibly reduced the residence time of the oil and, therefore, also reduced the exposure or risk to coastal birds and animals.	2008 Selendang Sed Reloc IOSC.pdf
The level of toxicity that may result in benthic sediments or suspended particulate material is not known.	Experimental oil spill demonstration sites were set up in Svalbard, Norway to assess the treatment technique of sediment relocation. The results showed that sediment relocation did not elevate the toxicity in the nearshore environment to unacceptable levels nor resulted in significant alongshore or offshore sediment oiling.	<a href="http://www.iosc.org/papers/02228.pdf">http://www.iosc.org/papers/02228.pdf</a>
<b>Other concerns</b>		
Approval to this technique will lead the way for expanded use of this approach when dealing with stained sediment.	This technique is a widely accepted and used method to clean lightly-oiled or stained sandy beaches. On some cases it is used for badly oiled coarse sediments on relatively exposed shores where wave action will eventually restore the normal shore profile	Refer to spill case studies in Section 6.1
This is a cost cutting measure.	Cost is not the main issue but more the appropriateness, effectiveness and efficiency of the method to clean the stained sandy beaches without further sediment removal. These benefits are offered by sediment	See reference papers presented in evidence.



## SEDIMENT RELOCATION (SURF WASHING) DEMONSTRATION PROPOSAL

### 6.1. Sediment Relocation Implementation during Previous Oil Spills and Experimental Field Trials

Oil Spill	Date	Comments	Reference
Tampa Bay		<p>This coast is a high-value recreation shore and the objective of the cleanup was to restore the beaches to a prespill condition before the annual Labor Day vacation. After removal of the oiled sediments, either manually or mechanically, the sand retained a brown oil stain. Bulldozers and front-end loaders were used to push the surface layers of sediment into the surf zone with the anticipation that there would follow a natural cleaning of the sediment. This was successful and the transport of the cleaned sediment back up the beach occurred in conditions with wave heights generally less than 30 cm over a period of only one or two tidal cycles. This accelerated removal showed that the process could be used as a polishing tool for shoreline cleanup</p> <p><b>Note:</b> <i>the oil spilt was no.6 fuel oil, heavier in viscosity than the MC252 oil.</i></p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Exxon Valdez		<p>The shoreline treatment on the Exxon Valdez spill used large-scale beach washing, manual cleanup, raking and tilling the beaches, oily debris pickup, enhanced bioremediation and spot washing. In addition to this, mechanical relocation techniques methods were used on a few sites, including the use of bulldozers to relocate or remove the contaminated beach surfaces.</p>	<a href="http://www.eoerth.org/article/exxon_valdez_oil_spill">http://www.eoerth.org/article/exxon_valdez_oil_spill</a>
Sea Empress		<p>The <i>Sea Empress</i> spilled a cargo of Forties Blend and heavy fuel oil near Milford Haven, Wales, in February 1996. As a result of finding that clay-oil flocculation was taking place at this spill location, the planned operational response was modified so that beach sediments at Amroth were relocated to the lower intertidal zone to accelerate oil removal by surf washing (abrasion) and to expose subsurface oiled pebbles and cobbles. This action also exposed fine sediments so that the concentration of fines in the nearshore waters was increased, which promoted interaction between oil and sediment fines. After four days of this treatment, the concentrations of oil on the beach were reduced by more than an order of magnitude. Visual observations indicate that 50% of the removal could be attributed to abrasion and 50% to fine-particle interactions.</p>	<a href="http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf">http://www.iupac.org/publications/pac/special/0199/pdfs/owens.pdf</a>
Selendang Ayu		<p>Sediment relocation and mechanical mixing was approved for use on 8 sites for the shoreline treatment. The results in this spill documented a net reduction in oiling, the return of beach profiles, and decline in biological availability of hydrocarbons over the course of the response and cleanup activities, and showed no unanticipated adverse impacts despite the large scale of sediment movement on several of the beaches.</p>	2008 Selendang Sed Reloc IOSC.pdf
Field Trials	Date	Comments	Reference
Svalbard, Norway		<p>The Svalbard Shoreline Field Trials quantified the effectiveness of sediment relocation as a viable <i>in situ</i> treatment option for oiled shorelines. The results of the monitoring confirmed that sediment relocation significantly accelerated the rate of oil removal and reduced oil persistence where oil was stranded on the beach face above the level of normal wave activity. Where the stranded oil was in the zone of wave action, sediment relocation accelerated the short-term (weeks) rate of oil loss from the intertidal sediments.</p>	2003 Svalbard Intro SSTB.pdf

**U.S. Environmental Protection Agency  
Comments on Corps of Engineers (Corps) Emergency Authorization Request  
Surf Washing on Grand Isle, Louisiana (MVN 2010-02064 EKK)**

**August 25, 2010**

This is in response to the New Orleans District Corps of Engineers request on August 23, 2010, for EPA review of a proposal to “surf wash” oiled sands on Grand Terre Island, Louisiana. According to materials included with the application, this technique would involve the relocation of oiled sands from above the limit of normal wave action to a lower elevation, where the oiled sediment is exposed to a higher amount of physical action from water and waves for a longer amount of time. We appreciate the opportunity to review and provide comments on this proposal.

EPA is concerned that as proposed the surf washing project would essentially reintroduce pollutants into the aquatic environment. Such an action would appear contrary to a basic goal of this oil spill response (i.e., minimize the amount of oil in the aquatic environment). The proposed project would result in increased pollutants entering waters in the sensitive and ecologically important tidal zone on Grand Terre Island, possibly increasing exposure of aquatic organisms to hydrocarbons. It is also unclear from the materials provided with this emergency authorization request whether we are being asked to review a demonstration proposal or a larger project spanning the entire length of the island. The request provides no estimate of the amount of oiled sands the applicant would reintroduce into the aquatic environment, nor has any limit been set in that regard.

We understand the intent of the project is to surf wash “stained” sands. However, there appears to be no way to guarantee that more heavily oiled sands would not be re-discharged into waters of the United States, either intentionally or unintentionally. In the absence of an implementation protocol, there is not enough information to assess whether the proposed project could have substantial cumulative effects with respect to re-discharging hydrocarbons into the aquatic environment. Therefore, there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of such an action.

The materials provided with this emergency authorization request also indicate that this technique is not suitable where there are buried oil residues and/or where residues are heavier than a stain (less than 0.01 cm thickness). Here again, there is no information to assure us that there are adequate controls in place to ensure that this technique would not be used in situations in which the oil residues are heavier than a stain. We understand that extensive sand cleaning continues on Grand Isle, and that the beaches there currently appear to be relatively clean. However, it is unclear from the application materials whether there remains a significant risk of buried oils or continued oiling of beach sands.

There also appear to be alternatives that might be less environmentally damaging. Specifically, mobile beach cleaners and closed loop sand treatment plants (both of which are currently being used at Grand Isle) appear to be effective alternatives. Neither of

these two techniques would involve putting oil back into water. In the absence of limits on the cumulative amount of oil that would be surf washed, we can only conclude that there is some risk that unacceptable amounts could be put back into the aquatic environment. Sand cleaning techniques that do not involve such risks would, therefore, appear to be a less damaging option.

Finally, approval of this proposal could set an adverse precedent, clearing the way for expanded use of this approach to dealing with oiled sands. Oil has impacted many miles of sandy beach and barrier shoreline across the northern Gulf of Mexico. Expanded use of this technique across the affected region could have untold cumulative adverse impacts on the aquatic environment. We would question whether the Federal government wishes to endorse the deposition of oiled sands into tidal zones across the affected region. Yet, approval of a permit in this case could have just such an effect.

We appreciate the applicant's efforts to thoroughly clean the beach at Grand Isle. However, given the uncertainties discussed above regarding the cumulative amount of oil that could be put back into the aquatic environment, we cannot support this proposal at this time. If the applicant remains interested in this technique, we would request an estimate of the cumulative amount of oil that would be put back into coastal waters, an estimate of the amount of contaminated sands that would require "sediment relocation", along with a plan to ensure that only stained sands would be surf washed (as opposed to heavier concentrations of oil). Additionally, the applicant should provide information to explain why surf washing is an environmentally superior alternative to mobile beach cleaners and/or sand treatment plants.

Thanks in advance for your consideration of these comments. If you wish to discuss this matter further, please contact John Ettinger at (504) 862-1119.

National Marine Fisheries Service (NMFS)  
Comments Pertaining to Proposed Emergency Authorization of Surf Washing of Sand  
on Grand Isle in Jefferson Parish (MVN 2010-02064- EKK)

August 25, 2010

By electronic mail dated August 23, 2010, the New Orleans District requested natural resource agency review of the application by BP Exploration and Production Company Incorporated for emergency authorization to conduct a demonstration of the effectiveness of “surf washing” of oiled beach sediments on Grand Isle in Jefferson Parish, Louisiana. The New Orleans District is considering emergency authorization for these activities under provisions of General Permit NOD-20. Based on information provided, oiled beach sediment would be relocated from its present location somewhere on Grand Isle into the surf zone as a demonstration of the ability of this type of effort to remediate lightly oiled sediment. NMFS is aware that an attempted demonstration of this technique was undertaken on Grand Isle on August 23, 2010; that effort was limited to the movement of approximately 1 cubic yard of sand from the upper beach face into the surf zone.

NMFS appreciates the need to employ as many viable spill countermeasures as possible; however, such measures must avoid, minimize, or mitigate adverse environmental impacts. Based on our review of the information transmitted with the application for emergency authorization, NMFS has the following comments and recommendations:

1. No exact site for the demonstration has been identified, nor is there information as to the areal or volumetric extent of the effort. Lacking that information, NMFS is unable to determine if the proposed effort would have the potential for causing adverse impacts to NMFS-trust resources. To ensure the proposed effort does not result in a significant loss of sediment from the beach, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration to not exceed 20 cubic yards or 200 linear feet of shoreline. Such an authorization should also disallow the movement of tracked or other vehicles in any area categorized as a jurisdictional wetland.
2. NMFS is aware that surf washing is appropriate as a response action only when sand is lightly oiled. Surf washing in heavily oiled areas would tend to remobilize oil back into the aquatic environment, reducing the opportunity to capture and remove the oil. As such, NMFS recommends any emergency authorization of this demonstration effort be special conditioned to limit the demonstration project to areas that would be categorized as “stained sand” in the National Oceanic and Atmospheric Administration’s Shoreline Assessment Manual. In that manual, stained sand is defined as “visible oil, which cannot be scraped off with a fingernail” and having less than 0.01 cm thickness.



BOBBY JINDAL  
GOVERNOR

## State of Louisiana

ROBERT J. BARHAM  
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES  
OFFICE OF WILDLIFE

JIMMY L. ANTHONY  
ASSISTANT SECRETARY

August 24, 2010

Mr. Pete J. Serio, Chief  
Regulatory Branch  
United States Army Corps of Engineers  
P. O. Box 60267  
New Orleans, LA 70160-0267

RE: *Application Number: MVN-2010-02064-EKK*  
*Applicant: British Petroleum*  
*Notice Date: August 23, 2010*

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced notice. Based upon this review, the following has been determined:

This treatment technique may be justifiable on barrier islands/shorelines that receive high use or are frequently visited by the public (e.g., Grand Isle, Fourchon). However, we are concerned about the broad application of this technique on other barrier islands/shorelines that receive little public use and are important water bird nesting areas. As you know, many of Louisiana's barrier islands are eroding. That is, they are narrowing and migrating landward, likely due to a lack of sediment supply and wave-induced erosion. For example, a quick comparison of aerial photography from 1998 to 2008 indicates that East Grand Terre has migrated northward 600-650 feet in that 10 year period. Will this technique, which requires heavy mechanical equipment, result in a net loss of sand volume on these islands as beach sand is excavated, transported and deposited in the surf zone? Will longshore currents carry the deposited sediments in the downdrift direction resulting in increased beach erosion?

The beach face and lower intertidal is home to numerous species which despite oil staining still use it as a habitat. Large scale placement of contaminated sediment within the intertidal zone will result in re-suspension of hydrocarbons and disruption of the normal habitats of these organisms. These organisms include larval fish, crustaceans and other ecologically important invertebrates.

August 24, 2010

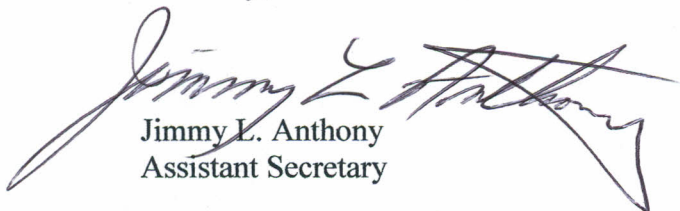
This response activity may be subject to possible NRDA action as injuries accrued as a result of response. Please contact Heather Finley at 225-765-2956 or [hfinley@wlf.la.gov](mailto:hfinley@wlf.la.gov) at least 5 days prior to commencement of activities authorized under this permit.

The Louisiana Natural Heritage Database indicates the presence of bird nesting colonies within one mile of this proposed project. If the project will be occurring during the nesting season (Feb. 16<sup>th</sup>-Sept. 15<sup>th</sup>) please consult with Michael Seymour, the Louisiana Natural Heritage Program Ornithologist, at 225-763-3554.

The database also indicates the presence of critical Piping Plover habitat within the proposed project area. This species is federally listed as threatened with its critical habitat designated along the Louisiana coast. Primary threats to this species are destruction and degradation of winter habitat, habitat alteration through shoreline erosion, woody species encroachment of lake shorelines and riverbanks, and human disturbance of foraging birds. For more information on piping plover critical habitat, visit the U.S. Fish and Wildlife website: <http://endangered.fws.gov>.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,



Jimmy L. Anthony  
Assistant Secretary

kb/hf/cm

c: Carolyn Michon, Biologist  
Heather Finley, Biologist Program Manager  
EPA, Marine & Wetlands Section  
USFWS Ecological Services



**From:** [Jamie Phillippe](#)  
**To:** [Lacoste, Angie D MVN](#); [Chris Piehler](#); [Melvin "Mitch" Mitchell](#); [Tom Killeen](#); [\\_DEQ-BP Deepwater Horizon Oil Spill](#)  
**Cc:** [Betty Brousseau](#); [Cheryl Nolan](#); [Sanford Phillips](#); [Rodney Mallett](#)  
**Subject:** RE: Request for Emergency Authorization (MVN 2010-02064 EKK)  
**Date:** Wednesday, August 25, 2010 7:23:37 AM

---

Angie,

DEQ has no objection to this project. I'd also like to add that the Department would like to know where & when post-sampling data analysis will be made available.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Jamie Phillippe  
Sent: Monday, August 23, 2010 1:51 PM  
To: Chris Piehler; Melvin "Mitch" Mitchell; Tom Killeen; \_DEQ-BP Deepwater Horizon Oil Spill  
Cc: Betty Brousseau; Cheryl Nolan; Sanford Phillips; Rodney Mallett  
Subject: FW: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

All,

I've received an emergency request to conduct "surf washing" on Grand Isle. This project is similar to the one for surf washing Grand Terre Island.

Please acknowledge whether you have objections to this project or not by 10:00AM Wednesday, August 25, 2010.

Please let me know if you have any questions or comments.

Thanks,  
Jamie Phillippe  
Louisiana Department of Environmental Quality  
401 Water Quality Certifications

-----Original Message-----

From: Lacoste, Angie D MVN [<mailto:Angie.D.Lacoste@usace.army.mil>]  
Sent: Monday, August 23, 2010 1:42 PM  
To: kbalkum@wlf.louisiana.gov; rcd@wlf.louisiana.gov; Richard Hartman; ettinger.john@epa.gov; patrick.williams@noaa.gov; Joseph "Jay" Pecot; Christine Charrier; Walther, David; Karl Morgan; Schindler, Paige P MVN; Jamie Phillippe; Butler, Dave; Seth\_Bordelon@fws.gov; patti\_holland@fws.gov; houmasitl@uscg.mil; Sharon McCarthy  
Cc: Mujica, Joaquin MVN; Daigle, Michelle C MVN; Clark, Karl J MVN; Serio, Pete J MVN; Mayer, Martin S MVN  
Subject: Request for Emergency Authorization (MVN 2010-02064 EKK)  
Importance: High

Please review the attached request for emergency authorization and provide comments by 10:00am, Wednesday, August 25, 2010. Lack of reply will be construed as indicating no objection.

Angie D. Lacoste  
USACE, Regulatory Branch

504.862.2281

In order to assist us in improving our service to you, please complete the survey found at:  
<http://per2.nwp.usace.army.mil/survey.html>



## UNITED FOR A HEALTHY GULF

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338 Baronne St., Suite 200, New Orleans, LA 70112  
Mailing Address: P.O. Box 2245, New Orleans, LA 70176  
Phone: (504) 525-1528 Fax: (504) 525-0833  
[www.healthygulf.org](http://www.healthygulf.org)

August 24, 2010

Angie Lacoste  
Regulatory Branch  
U.S. Army Corps of Engineers  
7400 Leake Avenue  
New Orleans, LA 70118  
Via email: [Angie.D.Lacoste@usace.army.mil](mailto:Angie.D.Lacoste@usace.army.mil)

RE: Emergency Permit: MVN-2010-02064-EKK; Deepwater Horizon Oil Spill - Surf Washing on Grand Isle - Jefferson Parish

Dear Ms. Lacoste,

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Please consider the following comments regarding the emergency permit for the Emergency Use Authorization (EUA) Request for "Surf Washing on Grand Isle" submitted by BP Exploration & Production Co. Inc. on August 23, 2010. Given the information supplied on the Corps website, we object to the issuance of this EUA. Some of our concerns are as follows:

1. Information regarding this project was not made available to the public. As of 3:00 PM Central, the announcement for this emergency permit on the Corps website <http://www.mvn.usace.army.mil/pao/mvnoilspill.asp> did not have an active link. Therefore, the public was not able to adequately review this proposal. Through other sources, we were able to acquire 2 documents, a document entitled "Sediment Relocation (Surf Washing) Demonstration Proposal, 8/13/2010," and a PDF map entitled "EUA 10-103 – Grand Isle Operation Areas.pdf." These two documents are what we will be commenting on, but this does not excuse the lack of information on the website, as no information was formally given the public.

Further, several of the "evidence" documents on pages 9-10 were not hyperlinked, and therefore not available to the public.

2. Responses to previous public comment were wholly inadequate. Apparently one of the reasons BP submitted this proposal was to answer questions from the public, but many of the questions we asked in previous comments were not addressed. Many of these concerns are below.
3. There is no justification for this to be covered an Emergency Permit. Even if this surf washing were justified, it makes no sense to perform this activity while there is still oil in the Gulf. It seems that the claim is that surf washing is primarily cosmetic as it only addresses “stained” sand. Why move forward with this project while there is still a chance for oil to wash up and once again stain/oil the sand? Further during a flyover this past Sunday (August 23, 2010) we observed an oily sheen off the beaches of Fourchon (see attached photo). Given the proximity to Grand Isle, it makes no sense to perform surf washing, if there is a chance for oil to wash back onto the beach. If it is deemed that surf washing is necessary, it should not be done until the threat of more oil washing ashore is gone; at that time, BP should apply for a regular permit.
4. BP’s proposal states that “a demonstration of sediment relocation was previously undertaken on July 16<sup>th</sup> 2010 on Grand Terre 2.” We appreciate that the current demonstration proposal released the scant data from this project. However, four water and sediment samples does not constitute a scientific justification for the surf washing that is proposed. Further in previous comments submitted by GRN, we request the permit or other authorization given to BP by the Corps and other Agencies for this demonstration on July 16, 2010 be released to the public. We have received no such authorizations. If no such authorizations were given, we request that Corps Enforcement initiate investigations as to why no permissions were sought.
5. Both the testing from the “demonstration” project and the proposed sampling/monitoring are not adequate to allow this project to move forward at this time. Simply sampling in the same place a few times in a 48 hour period does not show that the oil is being degraded. If you mix oiled sand into the surf, it will obviously be dispersed across a larger area, reducing its concentration. This, however, is not the same as reducing the amount of oil. Further, despite previous requests, no significant scientific data was produced to document that the proposed procedure would have no impact on the organisms and microorganisms that reside in the tidal zone. Again, the four water and soil samples to not give enough evidence to show that this is not harmful to these organisms, given that apparently only PAH’s were tested for. Also, did they test for migration off-shore? What would be the *physical* damage (from crushing and entombment via heavy machinery) to benthic organisms as well as organisms that reside on and under the beach?
6. What are the assurances that only “stained” areas will be surf washed? BP’s proposal gives no way to assure that only stained areas will be subject to surf washing. When

using heavy machinery, it would be difficult to determine how much oil there is under the sand, and measure if the oil is less than 0.01 cm thick.

7. The proposal states that “the demonstration will aim to show the efficacy of the technique and address some of the previous comments and concerns e.g. *the fate of oil in sands related to the lower intertidal zone.*” We respectfully submit that this proposal does not address the fate of the oil. It will only show whether or not oiled sand stays in the same place once it is mechanically moved back into the Gulf. For example, we question the effectiveness of the sentinel snare arrays of picking up oil that is bound to sand particles. Further, less than three days of monitoring and sampling is not adequate.
8. The request gives no information as to the quantity of oil that will be put back into the ecosystem. Will this amount be quantified? How much would be allowed under the General Permit? Page 9 of the proposal states that the “stained oil...will equate to a volume of 0.0001 per square meter of sediment.” There are no units associated with the volume claimed, giving this calculation no frame of reference or meaning.
9. There is inadequate information regarding direct, indirect, secondary, and cumulative impacts of this proposal.
10. Are there any threatened or endangered species in the area? In the documents we were able to acquire, there was no mention of endangered, threatened, or otherwise sensitive animals, such as fish, birds, turtles, and mammals. There must be a thorough analysis to analyze existence and impacts to any sensitive species.
11. We are concerned that BP is proposing a potentially harmful and controversial project to be covered under a general permit (NOD 20). General permits are intended to have negligible impacts individually and cumulatively, however this project could have impacts that would normally require an Environmental Assessment or full Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA). While we acknowledge that this disaster requires regulatory flexibility, general permits were never intended to address projects with potentially significant environmental impacts. We are deeply troubled by the precedent that would be set by this action.

We would like to be clear that we are very concerned about the impacts of the BP oil drilling disaster; however, hastily moving forward with this effort that would re-introduce contaminants into the Gulf and impact wildlife habitat is not the best approach. For the above reasons, we request that the Corps deny BP’s request for the General Permit.

Thank you for reviewing our concerns. I would be happy to explore these ideas further if you have any questions.

For a healthy Gulf,

Matt Rota  
Water Resources Program Director

CC: Host Greczmiel, CEQ  
Garret Graves, State of Louisiana  
Al Armendariz, EPA Region 6  
Lawrence Starfield, EPA Region 6  
John Ettinger, EPA Region 6  
Jane Lubchenco, NOAA  
Pete Serio, USACE New Orleans District



Oily Sheen off of Fourchon, August 22, 2010

**Louisiana Audubon Council  
Louisiana Environmental Action Network  
Atchafalaya Riverkeeper  
Mississippi Riverkeeper  
Sierra Club, Delta Chapter**

1522 Lowerline St.  
New Orleans, LA 70118  
August 25, 2010

Mr. Pete Serio  
Chief, Regulatory Branch  
USACE  
P.O. Box 60267  
New Orleans Louisiana 70160

Re: Emergency Permit: MVN-2010-02064-EKK Deepwater Horizon Oil Spill - Surf  
Washing on Grand Isle - Jefferson Ph.; Applicant: British Petroleum

Dear Mr. Serio,

We have read the material posted on the Corps' emergency website for the above permit. British Petroleum wants to use "surf-washing" of oil-contaminated sand on Grand Island, Jefferson Parish, LA. This process takes oil-contaminated sand from the beach and dumps it back into Gulf waters for cleansing. The applicant is essentially seeking authorization to reintroduce pollutants into the aquatic environment.

We object to the issuance of this emergency permit for the following reasons:

This is no longer an emergency situation. BP should go through a public reviewed permit process with the full 30 day comment period and adequate time to for agencies and academics to investigate all the research that has been done in the past. The applicant should be required to respond to questions raised by agencies and individuals before any permit decision is made. As part of this procedure a comprehensive Environmental Impact Statement must be prepared. BP applied for and withdrew a request for surf washing on Grand Terre Island. How many additional "emergency" permits will BP apply for if this one is issued?

**Demonstration Project:**

This project is touted as a demonstration project. It is an experiment not a demonstration. BP will use the entire Grand Isle beach in their experiment which they have divided into 15 segments. Who is going to monitor it? Was there a pre-"demonstration" baseline study documenting the abundance of organisms in the tidal zone and a post-project monitoring plan to show whether there are adverse impacts? What scientific protocols will be used to measure the fate of the oil once it is returned to the Gulf?

The effectiveness of the surf washing process appears to be dependent on grain size and is related to the proportion of various grain sizes including the presence of silt and clay. In the Gulf of Mexico proportion of sand, silt and clay changes from beach to beach. Thus the effectiveness would vary from beach to beach.

The short time allowed to review this application and lack of scientific documentation provided by the applicant does not allow the proper environmental review by marine biologists.



### **The "Process":**

Most "surf-washing" references, submitted by BP, are from bodies of water other than the Gulf of Mexico. The other areas have different types of beaches, with a wide range of tides, currents, and some have cobble beaches. The one primary reference, which cites a project in Tampa Bay (Owens, 1999), raises additional questions about the physical processes essential to the project:

"Many aspects of OFI [Oil and Fine-particle Interaction] have yet to be explored and investigated. The scale of the processes and the size of the particles are very small, less than 100 mm, and the formation of aggregates is very evident when viewed under the microscope. **However, no standard accepted measurement technique has been developed for use in operations to enable immediate identification of the process, or the potential for the process to occur. Of greater importance is that the factors that control or affect the rates of natural oil removal by this process are not well understood.** Laboratory tests and field observations show that, even after many (> 22) years, very viscous oils can be continuously weathered by this process, albeit at relatively slow rates. Tests also show that the processes can occur in freshwater samples (such as the Great Lakes), but not in distilled water. **However, we do not know the role or significance of a wide range of surface interaction processes, nor the effect on rates and the extent of OFI in terms of varying characteristics of the oils, particles, or the carrying medium.**" (Owens, 1999, p. 90-91) Bold added for emphasis.

BP's own expert has concerns about how to measure whether surf-washing is successful or not. The Grand Isle project will be an experiment to test whether the process works, not the use of a proven method which has been successful in other parts of the Gulf. What happens if the experiment fails? Will BP have to dredge out the oil laden sand and place it back on the beach?

### **Environmental Impacts:**

BP would be reintroducing contaminated oiled sands into the surf zone for "surf-washing" and it will move down-drift to other parts of the beach. It would be the antithesis of a clean-up.

No scientific data were produced to document that the process would have no adverse impact on the tidal-zone infauna. They don't compare the levels of toxicity to any known standard. No reference supplied by the applicant provides the environmental impacts of the processes on the biota along the Gulf of Mexico beaches.

Beach studies by Dr. J. W. Tunnell, after the Ixtoc spill, showed that the infaunal population of marine worms and amphipods, along the South Texas oil-contaminated barrier-islands, were reduced by 80 percent in the inter-tidal zone and 50 percent in the sub-tidal zone. What affect will the continued oil contamination have on the infauna of Grand Isle?

How will the oil affect the repopulation of benthic organisms? Re-oiling the beach could delay the recovery of benthic communities.

### **Adverse Precedent:**

Issuance of this permit would set a precedent for future oil spills and could be used along every oil contaminated beach, once the technique is accepted and permitted. This would be a very bad precedent to set given the major environmental questions that still need to be answered.

It appears to be a ploy by BP to avoid having to clean-up all the oil on the beach and disposing it at an EPA approved disposal site. It also appears to be a cost-cutting measure. The alternatives are more expensive but have been proven to work.

### **Monitoring:**

What quantity of oil will be reintroduced into the environment as a result of this issuance of the permit? Will it be quantified? If not, what is the upper limit on the amount of oil that will be discharged by BP into our coastal waters? What quantities of oil-contaminated sand will EPA allow to be dumped into the Gulf under the Clean Water Act? What thresholds are required? Will EPA be responsible for the monitoring to assure that the CWA is not violated?

BP has publicly pledged to clean up the oil - not re-disperse it into the nearshore environment. BP might think that the amount they are going to dump from Grand Isle beaches is very small, compared to the millions of barrels that they recently discharged into the Gulf. We disagree, any amount dumped into the Gulf is too much.

BP states: "There is evidence from field trials and previous spills that more thickly oiled sediment can be cleaned using this technique although that is **NOT** the intention for its implementation on the Louisiana coastline" (BP, 2010). How do we know that this is not their intention. BP has not been the most trustworthy party in the Oil Spill tragedy. They have not proposed a monitoring plan and the QA/QC methods that would be used to establish compliance.

**EPA comments:**

EPA commented on the previous BP application to use sand-washing on Grand Terre. They stated: "Moreover, less environmentally damaging alternatives are available and currently in use. Alternatives such as bagging and removal would be clearly preferable environmentally. **For these reasons, EPA opposes the proposed project and recommends the Corps deny authorization for it.**" (USEPA, 2010)

**Conclusion:**

BP has shown that there is inadequate information to evaluate the extent and duration of the direct, indirect, and cumulative adverse environmental impacts of surf-washing. Therefore, we request that the Corps deny authorization for this emergency permit. We thank you for considering our comments.

Sincerely,

Marylee Orr, Executive Dir.  
LEAN

Dr. Barry Kohl, President,  
La Audubon Council

Dean Wilson  
Atchafalaya Basinkeeper

Paul Orr  
Mississippi Riverkeeper

Haywood Martin, Chair  
Sierra Club, Delta Chapter

cc: EPA  
Gulf Restoration Network  
Coalition to Restore Coastal La  
National Audubon Society

**References:**

Owens, E.H. 1999. The interaction of fine particles with stranded oil. Pure Appl. Chem., Vol. 71, No. 1, pp. 83–93, IUPAC, Printed in Great Britain.

USEPA, 2010. Comments on Corps of Engineers Emergency Authorization Request Surf Washing of Oiled Sands on Grand Terre Island, Louisiana. July 20, 2010.

BP, 2010. Sediment Relocation (Surf Washing): Demonstration Proposal. Dated August 13, 2010.

## Grand Isle Surf Washing

The U.S. Fish and Wildlife Service (Service) has received your August 23, 2010, electronic mail notification (MVN-2010-02064-EKK) requesting our review of an emergency authorization for sediment relocation (surf washing) on Grand Isle, in Jefferson Parish, Louisiana. Environmental Stategies, LLC, on behalf of BP Exploration and Production Company, Inc., proposes to relocate oiled sediment from the upper section of the intertidal zone (above normal wave action) to a lower elevation where wave action can “wash” the oil from the sediment. The sediment would then be moved back in place along the shoreline with small soil moving equipment (backhoe, etc.). The proposed work is intended to protect fish and wildlife resources from the oil spill associated with the Deepwater Horizon (i.e., Mississippi Canyon 252) blowout. The comments below are submitted in accordance with the technical assistance provisions of the Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.). In addition, these comments provide emergency informal consultation information under the authority of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) in anticipation of emergency consultation.

The Service is committed to the protection of Louisiana’s fish and wildlife resources that have been/may be impacted by the oil spill. We also remain committed to working closely with all agencies involved in spill response efforts to further explore alternatives and alternative features in order to reduce the current degree of risk and uncertainty associated with any oil spill response activities.

Grand Isle is within Unit LA-5 of designated critical habitat for the threatened piping plover. Piping plovers winter in Louisiana, and may be present for 8 to 10 months annually. They arrive from the breeding grounds as early as late July and remain until late March or April. Piping plovers feed extensively on intertidal beaches, mudflats, sand flats, algal flats, and wash-over passes with no or very sparse emergent vegetation; they also require unvegetated or sparsely vegetated areas for roosting. Critical habitat on Grand Isle is restricted to those areas that are used for feeding and roosting habitat which includes the surf zone down to mean low, low water (MLLW).

The benthic fauna, phytoplankton, and floating vegetation occurring in the surf zone of barrier islands are important food sources for piping plovers and other shorebirds. The Service is concerned that the surf washing technique could result in long-term adverse impacts to the intertidal zone by re-oiling and disturbance which could further delay the recovery of benthic species and communities upon which the threatened piping plover and other shorebird species prey. The surf zone on Grand Isle has been repeatedly affected by oil spill response operations for several months. Much of that work was justifiable as there was oil washing ashore. Currently, there is very little visible oil on the island. Measures that will prolong the natural recovery of the surf zone should be avoided at this time. Therefore, we suggest you consider the timing and any potential long-term impacts in your permitting decision for this project.

Other clean-up methods (i.e., minimal scraping and removal of oiled sediment) would permanently remove the oil from the ecosystem without disturbing the surf zone would be preferable. We also recommend that the attached recommendations (specifically, BMP-1, -3, -4, -5, -8, -10, -11, -12, -25, -26, -27, -31), which have been signed by the Houma Incident Command, be considered as additional ways to minimize impacts to piping plovers and their critical habitat, including the benthic fauna of Grand Isle during clean-up activities. We also request that the Service's Louisiana Ecological Services Office (337/291-3108, [brigitte\\_firmin@fws.gov](mailto:brigitte_firmin@fws.gov)) be notified if this technique (and BMPs) is implemented so that we may best keep record of such methods being used (and possible future effects) within designated critical habitat.

Nesting shorebirds also occur on Grand Isle. To minimize disturbance to nesting gulls, terns, and/or black skimmers, the Service typically recommends that all activity occurring within 650 feet of a colonial nest site be restricted to the non-nesting period (i.e., September 16 through April 1). The Service should be notified when colonial bird nest sites are identified, and no activity should occur on the beach within the recommended buffer zones during the nesting season. A trained observer should monitor each colonial nest site and a restrictive buffer zone should be identified. If the recommended buffer restrictions are not feasible for construction purposes, the Service should be consulted to determine if alternative measures can be applied.

Thank you for the opportunity to provide these comments.

204 Group



Date:

Segment:

STR #:



## SECTION 7 FEDERAL AGENCY ACTION - ENDANGERED SPECIES ACT COMPLIANCE CHECKLIST

	targets	completed	BMP description
BMP 1			Watch for and avoid collisions with wildlife and report all distressed or dead birds/marine mammals/turtle sightings/whale sharks/rays to Wildlife (866-557-1401)
BMP 2			Retrieve injured/dead/oiled sea turtles using the sea turtle At-Sea Retrieval Protocol
BMP 3			Avoid disturbing vegetation, marsh soils, or peat with foot traffic/boats/equipment or consult a qualified biologist to minimize impact. Involve appropriate Federal/State agency personnel for specific instructions e.g. to enter public lands or a marsh
BMP 4			Manage waste in compliance with the Waste Management Plan
BMP 5			Maintain compliance with the Decontamination Plan where applicable
BMP 6			All onshore work should be conducted during daylight hours except within 24 hours of projected oil landfall. If nights operations are necessary, confine operations to landward of the intertidal zone and follow ENV0009: Minimizing Impacts to Wildlife during Nighttime Cleanup Operations
BMP 7			Observe a 10 foot buffer from marked sea turtle nests. If a nest area is contaminated/oiled, contact the onsite Wildlife Observer immediately. Follow the Wildlife Observer's direction for removing contaminated/oiled sand from within the nesting area.
BMP 8			Utilize existing access/egress areas and roadways
BMP 9			Verify turtle nesting activities with agency experts and begin onshore work after turtle nesting surveys/conservation activities are completed
BMP 10			Use low-pressure tire vehicles (e.g. ATVs, Gaters) or consult with a qualified biologist to minimize impact
BMP 11			If feasible and per appropriate guidance, restore beach topography, if altered, to natural beach profile by 2000 hours each day
BMP 12			Minimize removal of clean sediments
BMP 13			Avoid hovering or landing of aircraft near posted bird sites
BMP 14			If skimming, avoid skimming sargassum that is not oiled or is only very lightly oiled

**Provide complete explanation for not implementing BMPs (list why each BMP is not applicable, possible, or otherwise executable)**

204 Group



Date:

Segment:

STR #:



## SECTION 7 FEDERAL AGENCY ACTION - ENDANGERED SPECIES ACT COMPLIANCE CHECKLIST

	targets	completed	BMP description
BMP 15			If a sea turtle or marine mammal is observed trapped or entangled in a boom(s), open the boom carefully until the animal leaves on its own
BMP 16			Install and monitor under water equipment/booms to prevent fish/wildlife entrapment
BMP 17			Do not block major egress points in channels, rivers, passes, and bays
BMP 18			A trained sea turtle observer is required for all operations
BMP 19			Sea turtle observer on the ignition vessel will monitor 3 areas prior to the burn (the area in front of the trawlers, oil concentrated in the boom, and any oil trailing behind the boom)
BMP 20			A survey should be conducted in the burn area after the burn is complete and all dead sea turtles should be counted and if possible collected
BMP 21			Avoid burning unoiled/lightly oiled sargassum
BMP 22			No flights below 500 feet over wildlife refuges/management areas
BMP 23			No dispersant application within 2 nautical miles of sighted marine mammals/sea turtles
BMP 24			Turtle excluder devices (TEDS) should be installed in all trawl nets
BMP 25			Staging areas and waste collection areas should be examined prior to set up and should be located off beaches, dunes, scrub and other vegetated areas. Contact Env. Unit: 985-859-0552
BMP 26			All heavy equipment should be as low on the beach as possible and avoid the high tide/wrack line while conducting clean-up activities. Keep heavy equipment away from wrack line unless oiled
BMP 27			Activities that may require removal of forested and shrub or scrub habitat should be minimized
BMP 28			If bears are observed during staging activities, contact Env. Unit: 985-859-0552
BMP 29			Remove all trash or anything that would attract wildlife from work areas daily
BMP 30			If a sea turtle is spotted, maintain at least 200 feet between the turtle and any beach cleanup activities
BMP 31			Stakes or flagging should not be removed or destroyed anywhere on the beach or dune

**Provide complete explanation for not implementing BMPs (list why each BMP is not applicable, possible, or otherwise executable)**