REGIONAL RESPONSE TEAM IX (RRT IX)
COASTAL AREA PLAN

ENCLOSURE 4800

CALIFORNIA ON-WATER *IN-SITU* BURN (ISB) PLAN

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ENCLOSURE 4800

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ENCLOSURE 4800a

LETTER OF AGREEMENT (LOA)

Among

US COAST GUARD (USCG),

US ENVIRONMENTAL PROTECTION AGENCY (USEPA),

US DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA),

And

US DEPARTMENT OF THE INTERIOR

CONCERNING THE USE of

***IN-SITU* BURNING**

AS A RESPONSE METHOD TO OIL POLLUTION

FOR THE AREA 35-200 NAUTICAL MILES OFF THE CALIFORNIA COAST

PURPOSE

The Region IX Mainland Regional Response Team (RRT-IX Mainland) recognizes that mechanical recovery, *in-situ* burning and chemical dispersants are the three primary means of dealing with oil discharges into the waters of the United States. While mechanical removal is the preferred method, the RRT-IX Mainland recognizes that *in-situ* burning is a viable option in conjunction with, or in lieu of mechanical or other types of recovery. The purpose of this Letter of Agreement is to provide concurrence of the US Environmental Protection Agency (USEPA) representative, the US Department of the Interior (DOI) representative, and the US Department of Commerce (DOC)-National Oceanic and Atmospheric Administration (NOAA) representative for the use of *in-situ* burning for oil discharges on the waters within the jurisdiction of the RRT-IX Mainland 35-200 nautical miles off the Coast of California within the geographical boundaries described in Geographical Boundaries, below. This concurrence is given to the federally pre-designated US Coast Guard Federal On-Scene Coordinators (FOSC). This agreement gives guidelines to allow the FOSC to use *in-situ* burning in a timely

manner to: (1) prevent or substantially reduce a hazard to human life; (2) minimize the adverse environmental impact of the spilled oil, and (3) reduce or eliminate, the economic or aesthetic losses of recreational areas.

This agreement for pre-approval is necessary due to the time constraints under which burning is a viable option. In developing this pre-approval agreement, the environmental impacts associated with an on-water oil burn have been evaluated in relationship to other mechanical and chemical alternatives. It is the view of the signatories that the overall environmental benefits of *in-situ* burning out weigh the relative environmental costs, except in those circumstances noted in this agreement.

If the conditions for pre-approval are not met, selected representatives in the RRT-IX Mainland must be involved prior to commencing with any *in-situ* burn. In accordance with the provisions of the National Contingency Plan, this means that the concurrence of the US EPA representative to the RRT, in consultation with the natural resource trustee Federal agencies, is required. If the burn is being considered within the area 0-35 nautical miles off the California Coast, consultation with the State of Califomia representative to the RRT-IX Mainland is also required. If the burn is being considered within State waters, the concurrence of the State of California representative is required.

AUTHORITY

Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan (the National Contingency Plan or NCP) provides that the Federal On-Scene Coordinator (FOSC) with the concurrence of the US Environmental Protection Agency (USEPA) representative to the Regional Response Team (RRT) and the concurrence of the State with jurisdiction over the navigable waters polluted by the oil discharge, may authorize the use of *in-situ* burning of oil spills. The Commandant of the US Coast Guard has predesignated the USCG Captains of the Port under his jurisdiction as On-Scene Coordinators for oil spills, and has delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act (FWPCA), as amended, to them. The Governor of the State of California has delegated responsibility to coordinate State approval for proper usage of *in-situ* burning for control of oil spills within State waters to the State of California Office of Oil Spill Prevention and Response (OSPR), within the Department of Fish and Game (DFG). The USEPA has been delegated authority under Subpart J of the NCP to authorize use of *in-situ* burning for control of oil spills.

SCOPE

The USCG, USEPA, NOAA, and DOI agree that the physical removal of discharged or spilled oil from the water surface is the primary method of control. Furthermore, it is recognized that the most effective response to an oil spill may include a combination of mechanical recovery, *in-situ* burning and dispersant or other chemical use. As such, this Letter of Agreement sets guidelines under which *in-situ* burning may be used by the

USCG Federal On-Scene Coordinator on or in Federal waters 35-200 nautical miles off the Coast of California - waters which are also within the boundaries of the Eleventh Coast Guard District.

GEOGRAPHICAL BOUNDARIES

The geographical area covered by this Agreement is the Pacific Ocean at a distance 35-200 nautical miles from the Mainland California Coast.

PROTOCOLS

As attested to by the signatures set forth below, the USEPA, the USDOC-NOAA, and the USDOI agree with the USCG that the pre-designated USCG FOSC may consider the use of *in-situ* burning of oil discharges, as defined in the NCP, in accordance with the following guidelines.

GUIDELINES

1. As per the NCP, 40 CFR Part 300.120, the authority to use *in-situ* burning of oil discharges in accordance with this Agreement is vested in the pre-designated USCG FOSC. The pre-designated USCG FOSCs along the California Coast are the Captain of the Port of San Francisco, the Captain of the Port of Los Angeles-Long Beach, and the Captain of the Port San Diego. This authority may not be delegated.

2. The USCG FOSC may authorize the use of *in-situ* burning without obtaining the concurrence of the USEPA representative or the Federal natural resource trustee representatives to the RRT-IX Mainland, when, in the FOSC's judgment, human life is threatened or when all of the following three conditions are met:

   A. *In-situ* burning is a viable option for oil removal; and

   B. The potential plume caused by the burn will not expose unprotected human populations to more than 150 ug/m3 of particulates less than 10 microns in diameter averaged over a one-hour period as determined by the FOSC (on-scene worker safety shall be addressed by the Site Safety Plan, meeting OSHA requirements); and

   C. The plume or heat from the burn will not result in greater impact to sensitive wildlife resources than would the spilled oil (*in-situ* Burning Checklist information shall be compiled by the FOSC in advance of the burn).

3. Mechanical recovery equipment shall be mobilized on scene, when feasible, as a backup capability should *in-situ* burning prove ineffective.

4. Wind patterns will be predicted by the NOAA SSC, and will be monitored in real time prior to and during the burn by the FOSC. If the prevailing wind direction is either parallel to the shore or away from the shore, it will be assumed that there is no unprotected human exposure above 150 µg/M^3 of particulates less than 10 microns in diameter averaged over a one-hour period as determined by the FOSC.

5. A designated Federal agency representative will be on scene to observe the burn and the prevailing wind direction. If practical, so as not to create an unnecessary delay, monitors from the DOI and DOC-NOAA will be provided to observe the burn and record results. Any of these observers/monitors has the authority to halt any burn if he observes that the conditions in Paragraph 2 are no longer true. The protocol for observing and halting a burn is described in the *In-situ* Burning Monitoring Plan (Attachment III).

6. In any case where the circumstances do not meet the criteria set forth in Paragraph 2, the pre-authorized use of *in-situ* burning is not authorized.

7. If the FOSC feels *in-situ* burning should be used in areas not met by Paragraphs 2.A, 2.B, 2.C, or in areas not part of the pre-authorized geographical boundaries, the FOSC must request approval from the pertinent RRT-IX Mainland member agencies, in accordance with the NCP requirements. The FOSC shall submit the request along with the required information listed in the provided *in-situ* Burning Checklist.

8. Burning will be conducted by trained professionals using recognized techniques and technology.

9. Burning will be conducted in a way that allows for rapid controlling and stopping of the burn to account for wind shifts. When a decision is made to conduct a burn operation, the FOSC shall notify the USCG Co-Chair for the RRT-IX Mainland. The Co-chair shall notify the signatories of this agreement immediately.

10. Contained burning is recognized as the preferred method of burning, using burn resistant boom or similar technology. The ignition of slicks is not permitted if there is a significant chance of igniting the source or if there is a significant hazard to adjacent structures or vessels.

DOCUMENTATION, MONITORING AND EVALUATION

1. NOTIFICATION AND REPORTING TO THE RRT. If the FOSC decides to conduct an *in-situ* burn, a description of the operation shall be documented and submitted to the RRT-IX Mainland as soon as possible following the burn. Typical information to be included is listed in Attachment II (an example of the *In-situ* Burning Plan from the Oceania RRT), Attachment III (an example of the *In-situ* Burning Monitoring Plan from the Oceania RRT), and Attachment IV (an example of the *In-situ* Burn Site

Safety and Health Plan from the Oceania RRT). These appendices must be modified as appropriate so that information provided is geographically pertinent to the given *in-situ* burn conditions. The evaluation noted in Paragraph 3 of this section will be completed as part of the FOSC Report. An FOSC Report shall be required whenever an *in-situ* burn is conducted.

2. DOCUMENTATION. The FOSC will ensure that all information described in the previous Paragraph 1 is documented.

3. MONITORING. The Federal natural resource agencies and the USCG will conduct monitoring of the *in-situ* burn in general accordance with the example *In-situ* Burning Monitoring Plan, attached as Attachment III. As part of the Monitoring Plan, oil samples shall be taken prior to the burn and samples of any floating residue shall be taken following the burn.

4. EVALUATION. The FOSC shall include a full evaluation of all *in-situ* burning applications in any FOSC report following an incident. The report should comment on burn (s), supported by visual record (video, photos) and parties. Data should include estimates of product and analysis of oil residue.

   Federal resource agencies shall evaluate the *in-situ* burning to assess environmental and endangered species impacts after ignition.

5. NOTIFICATION OF STATE AGENCIES. The State of Califomia representative to the RRT-IX Mainland (representative from OSPR, DFG) will be notified, along with the other RRT representatives in accordance with Paragraph 1. of this Section. The State representative will be responsible for notifying other appropriate State and, local agencies.

6. OTHER NOTIFICATIONS. The USCG is responsible for notification of neighboring regions (RRT-Region X) and Mexico - depending upon the location of the *in-situ* burn site.

AMENDMENTS

This Letter of Agreement will be reviewed annually and amended as appropriate.

This Letter of Agreement may be amended in writing in whole or in part as is mutually agreeable to all parties thereto.

This Letter of Agreement may be canceled by any party hereto upon thirty (30) days written notice to the other parties.

DATE

//s//
KATHLEEN G. SHIMMIN 4/10/97
USEPA REGION IX
CO-CHAIR, RRT-IX MAINLAND

//s//
WILLIAM H. BOLAND 4/10/97
CAPTAIN, US COAST GUARD
CO-CHAIR, RRT-IX MAINLAND

//s//
DAVID M. KENNEDY 4/10/97
US DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
REPRESENTATIVE TO THE RRT-IX MAINLAND

//s//
PATRICIA SANDERSON PORT 4/10/97
US DEPARTMENT OF THE INTERIOR
REPRESENTATIVE TO THE RRT-IX MAINLAND

Attachment I	Overview of *In-situ* Burning as an Oil Spill Response Tool
Attachment II	*In-situ* Burning Plan [this appendix is an example of the information pertinent to *in-situ* burning; it was developed for Oceania and must be adapted for the area off the California Coast]
Attachment III	*In-situ* Burning Monitoring Plan [this is an example from Oceania, and it must be adapted for the area off the California Coast]
Attachment IV	Site Safety Plan for *In-situ* Burning - [Oceania Site Safety Plan included as example; some language has been adapted for the area off the California Coast]
Attachment V	*In-situ* Burn Boom Operations Procedures [Oceania version included as example; Region IX-Mainland version to be developed by those involved in Unified Command Operations phase]
(Not included)	Resolution of 1997 Questions Re LOA

ENCLOSURE 4800b

IN-SITU BURN CASE-BY-CASE RRT APPROVAL REQUIRED ZONE

OVERVIEW AND CASE-BY-CASE DECISION PROCESS

BACKGROUND

There are presently two commonly recognized approaches to remove significant quantities of spilled petroleum from marine surface waters. The most common technique involves mechanical skimming devices which, for large spills, typically remove less than 20% of the spilled petroleum (National Research Council, 1989). The second and more controversial method is the use of chemical agents (*e.g*., dispersants) to disperse oil into the water column. The effectiveness of chemical dispersants has been reported to range from zero to 100% depending on the type of petroleum spilled, the dispersant used, and the approach employed to estimate effectiveness (National Research Council, 1989).

Burning has distinct advantages over other oil spill countermeasures. It offers the potential to rapidly convert large quantities of oil into its primary combustion products with a small percentage of other unburned and residue byproducts (Evans *et al*., 1992). This technique could be the most effective of all in dealing with a large spill at sea and in removing large quantities of oil from the water environment before it comes ashore (S.L. Ross Environmental, 1990). Until recently, this response technology has not been regularly used, due largely to the lack of understanding of the combustion products and the principles governing the combustibility of oil-on-water (Evans *et al*., 1992) as well as the lack of the equipment necessary to carry out a burn within the window of opportunity. Much of the renewed interest in *in-situ* burning has resulted from years of study of both the dynamics of burning oil on the water and the combustion products produced during an *in-situ* burn.

In-situ burning removes the surface oil by driving much of it into the atmosphere in the form of combustion gases and soot. As such, *in-situ* burning reduces the environmental threat and impacts posed by on-water spills but only at the cost of increasing the potential threat posed by the airborne plume. *In-situ* burning, however, does have the potential to accelerate cleanup of spilled petroleum on the surface of the water and at the same time reduce the risk of petroleum-related impacts on environmentally sensitive areas. In the case of California, environmentally sensitive areas include the productive intertidal regions, tidal inlets, tidal marshes and other wetland areas of the coastal islands and mainland, and the surface waters where endangered marine mammals and large concentrations of sea birds might exist. The problem for decision makers is to compare the effects of burning versus not burning and choose the option that provides the greatest net benefit to the environment, without causing undue public health

impacts. Every oil spill situation is unique. The weather and sea state conditions that are most favorable for mechanical cleanup (calm winds and sea state) are not favorable for dispersants. However, dispersants might be the best response option in remote off-coast areas with choppy seas. Although limited by the need to first contain the oil, *in-situ* burning might be the best option in areas where it is imperative to quickly remove large quantities of oil to protect on-water resources, such as within the sea otter range or the Farallon Islands. It is important that all response options be available for use at the time of a spill so that the best and most appropriate response can be used.

REGIONAL PHILOSOPHY

The primary object of oil spill abatement and cleanup is to reduce the adverse effect of spilled oil on the environment. Physical removal and subsequent disposal or recycling/re-use is the preferred method. However, mechanical recovery may be limited by equipment capability, weather and sea state, storage and disposal problems, and spill magnitude. Use of *in-situ* burning may be considered by the FOSC when the preferred recovery techniques are inadequate and *in-situ* burning will lessen the environmental impacts of the spill.

AUTHORITY

The National Contingency Plan, Section 300.910 authorizes the FOSC, with the concurrence of the EPA representative to the RRT and, as appropriate, the concurrence of the State representative to the RRT with jurisdiction over navigable waters threatened by the release of discharge (of oil) and in consultation with the DOC and DOI natural resource trustees, when practicable, to authorize the use of *in-situ* burning on a case-by-case basis. The Commandant of the USCG has predesignated the USCG Captains of the Port under his jurisdiction as Federal On-Scene Coordinators for oil spills, and has delegated authority and responsibility for compliance with Section 311 of the Federal Water Pollution Control Act to them. The USEPA has been delegated authority under Subpart J of the NCP to authorize use of *in-situ* burning for control of oil spills.

California Government Code Section 8670.7(f) delineates the Administrator of the Office of Spill Prevention and Response, Department of Fish and Wildlife as having the State authority over the use of all response methods, including, but not limited to, *in-situ* burning. The Governor of the State of California has delegated state representation on the RRT to the Administrator of the OSPR.

ANNUAL REVIEW

It will be the charge of the RRT ART Working Group to annually review the use of *in-situ* burning and report its findings to the RRT at a scheduled meeting. The group will be responsible for the administrative upkeep of the contact list as well as insuring that the

plan is updated to reflect any changes in regional polices (including those of Region X, the state of Oregon and Mexico), and technological advances.

CASE-BY-CASE AREAS

Case-by-case areas are defined as those areas not designated within the preapproval zones. This includes all marine waters within 35 miles off the California coast as well as areas of special jurisdiction as detailed above. The FOSC will obtain approval from the EPA representative to the RRT and the California Department of Fish and Wildlife (CDFW) representing the State of California. Whenever fish or wildlife resources may be affected, the EPA and State representative to the RRT may consult with the DOI and DOC natural resource trustee agencies.

CASE-BY-CASE PROCESS

If *in-situ* burning is to be successful it must typically be undertaken within a small window of opportunity following the release of oil, which often can be measured in hours. In order to accomplish such a task, the FOSC/UC must have a mechanism at its disposal to expedite the *in-situ* burning use decision. An accelerated review process will be conducted by the Planning Section (generally, the ART Technical Specialist(s) within the Environmental Unit) of the ICS and is designed to provide the FOSC/UC with sufficient information to determine if an *in-situ* burning use request should be made and to provide members of the RRT with sufficient information to approve or disapprove within the first two hours of its receipt. The Administrator of the OSPR is committed to ensuring that stakeholders, including State and Federal trustee agencies as well as local air districts, have input into any recommendation made for the use of *in-situ* burning. As the review process will be conducted by the Planning Unit, it is within this structure that the stakeholders will fit into the ICS. There is also a need for the petroleum industry to commit and stock necessary resources to successfully implement a timely *in-situ* burn response. These resources will be secured through the Operations Section of the ICS, with which the Planning Section will also coordinate on *in-situ* burn decision-making and operational approach.

AIR QUALITY STANDARDS

Since burning will almost always provide for the greatest degree of environmental protection for on-water and nearshore resources (given the ability to remove on-water oil so quickly), a key issue is for the FOSC/UC to ensure that substances from an *in-situ* burn do not have a significant adverse impact to human health. The primary substance of concern is PM_{10}, the small particulate matter contained in the smoke plume. It is generally accepted that other substances dissipate, reaching background levels well before PM_{10} does. An *in-situ* smoke plume usually stays well above ground level – hundreds to thousands of feet – but can reach the ground under certain atmospheric

conditions. An action level for PM_{10} has been established for these guidelines. It is recommended that *in-situ* burning should not be approved if there is significant risk that the standard would be exceeded where people could be exposed. As a general guideline, a decision to burn should not be made where humans would be exposed to concentrations greater than 50 $\mu g/m^3$, averaged over a 24-hour period. However, the FOSC/UC must also consider the risk to humans from the volatiles that evaporate since in some circumstances, the adverse impact to humans may be greater from the volatiles than from the particulate matter generated from a burn.

LOCAL AIR POLLUTION CONTROL DISTRICTS/AIR QUALITY MANAGEMENT DISTRICTS AND QUICK APPROVAL ZONES

Within California, local air districts bear the primary responsibility for control of air pollution from all sources except motor vehicles, which remain the responsibility of the Air Resources Board (California Health and Safety Code 4000, *et seq*.). Air districts are required to adopt and enforce rules and regulations and to prepare plans which make reasonable provisions to achieve and maintain State and Federal ambient air quality standards in all areas affected by emission sources under their jurisdiction, as well as enforcing all applicable provisions of State and Federal law. California has several different air basins within the State and each basin has an "attainment zone standard" that is to be attained and maintained within the air basin. If attainment zone standards are exceeded, districts can impose several different regulatory mechanisms aimed at reducing air emissions and bringing the air basin back into compliance.

Under California law, the Administrator is responsible for the use of all ARTs in response to an oil spill in marine waters, and he or she serves as the State representative on the RRT. During an oil spill, the Air Pollution Control Officer and/or staff members will be requested to take part in *in-situ* burn use decision through their participation in the ICS Planning Unit's ART section. The air districts can provide meteorological data and insight to air/flow dynamics and dispersion patterns that are necessary for the FOSC/UC to make appropriate *in-situ* burn decisions in a timely manner.

VIOLATION OF CONTAINMENT ZONE STANDARDS

Local air districts will be concerned if an *in-situ* burn results in the exceeding of local ambient air quality standards, as this could jeopardize their attainment status. The USEPA issued a letter indicating that *in-situ* burning as an emergency response would be exempt from the general conformity requirements and may be considered as an exceptional event when considering the area's overall compliance status. A copy of this letter can be found in Appendix 1. This letter simply makes clear that there is a mechanism to exclude the *in-situ* burning air quality impacts from the data used to determine an area's ambient quality standard attainment status.

TRUSTEE AGENCY COORDINATION

Marine Sanctuaries

Marine Sanctuaries comprise a significant portion of the coastal waters off California. The use of *in-situ* burning in the Sanctuaries will require coordination with the Sanctuary Managers and their staff. Though Sanctuaries are represented by the Department of Commerce delegate on the RRT, the Sanctuary Manager and/or staff members will be requested to take part in the *In-situ* Burning Decision-Making process through their participation in the ICS Planning Unit's Alternative Response Technology (ART) section. The Sanctuaries can provide resource data and insight necessary to make decisions that may otherwise not be available to the UC in a timely manner.

OBSERVATION AND MONITORING

Air quality monitoring is not a requisite for the approval of an *in-situ* burn use. However, a case-by-case approval of *in-situ* burning should be done in a manner that fully considers any potential impact to public health and safety. Monitoring will be instituted as quickly as feasible after the approval to burn. Lack of a monitoring program will not delay a burn after the RRT gives approval.

Until recently, there has not been a standardized approach to monitoring alternative response technology use. A working group of federal scientist and oil spill responders has recently developed the Special Monitoring of Advanced Response Technologies (SMART) program to monitor the effectiveness of alternative response technologies including dispersants. The *in-situ* SMART program provides a process to rapidly gather information on the emissions from an *in-situ* burn and provide the information to the UC in a timely manner. Once this program is finalized, it will provide a practical and cost effective approach to monitoring and should be incorporated into the *in-situ* burn policy.

PROCEDURES FOR A CASE-BY-CASE REQUEST

1. The FOSC (via the ART group within the Planning Section of the ICS) contacts the proper agency representatives on the RRT (Attachment VIII) and informs them that a request to use *in-situ* burning may be forthcoming. The FOSC will have the RRT remain on standby for the conference call in step 3.

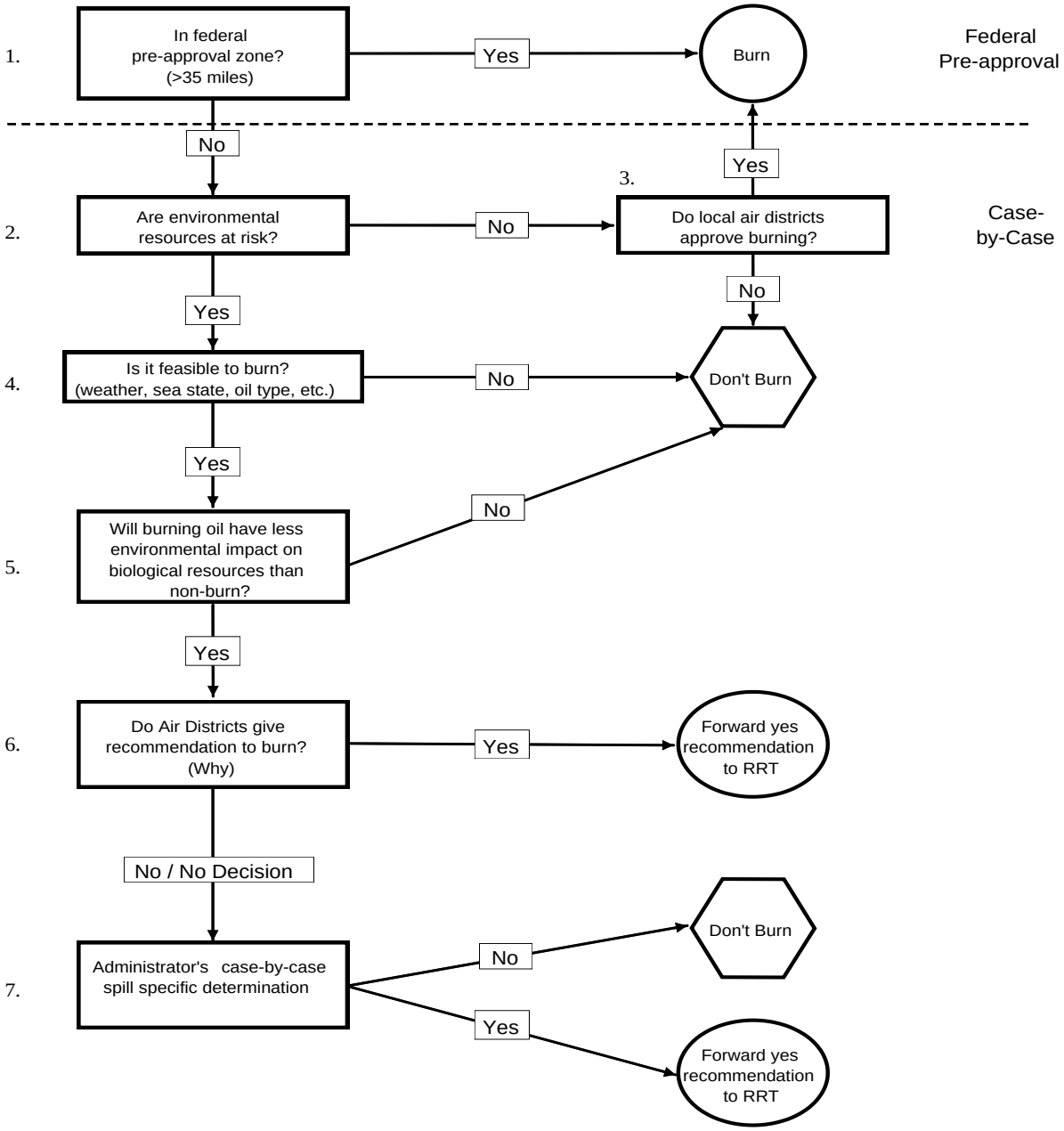
2. The ART group of the Planning Section completes the *In-situ* Burning Decision-Making Process submits summary of findings and information to FOSC/UC on Case-by-Case Checklist Form and Supplemental Information Form.

3. If the FOSC, based on information submitted by the ARTgroup, decides that a request for *in-situ* burning is appropriate, the FOSC schedules conference call with RRT representatives or alternates at first reasonable opportunity.

4. The FOSC/UC/RRT conference call is conducted and a Yes/No decision made based on information provided on FOSC Checklist, Supplemental Information Form or any other sources requested by the RRT, including information from the local air district.

5. The ART group of the Planning Section will communicate the RRT decision to the Operations Section and continue coordinating with Operations if a YES Decision has been reached.

Figure 1
Proposed In-Situ Burning Decision-Making Process
Decision Tree



Explanation of Figure 1 Decision-Making Points

The following discussion addresses the seven decision-making points that are a part of the approval process for the use of *in-situ* burning in marine waters. The discussion briefly identifies the nature of each point and also provides the rationale for each decision point. The number points correspond to the numbers aside the boxes in the *In-situ* Burning Decision Tree (previous page).

1. If the proposed zone of *in-situ* burn is 35 miles off-shore and falls within the criteria of the Federal pre-approval zone, then an *in-situ* burn has already been federally authorized by the RRT. State and local jurisdictions will be notified consistent with the provisions outlined in the LOA.

2. Most of the marine waters off California must be considered environmentally sensitive areas due primarily to the presence of foraging seabirds, migrating marine mammals, offshore islands (with bird colonies and marine mammal rookeries and haul outs), and the productive rocky intertidal and subtidal regions and associated kelp forests.

3. This specific path of the decision-making process would be rarely taken but it is included for purposes of completeness. There are no foreseeable situations under which an oil spill would not pose a threat to environmental resources. If the unlikely situation occurred where environmental resources were not threatened, the FOSC/UC would rely heavily on the recommendation of the local air districts for a burn/no burn decision.

Local Air District Quick Approval Zones

Local Air Districts may have stipulated areas of their offshore air jurisdiction where they will consider that area as falling into a "Quick Approval Zone" <u>if prevailing winds during a proposed *in-situ* burn operation are blowing offshore or parallel to shore</u>. These distances from shore for each Air District are shown below:

Air District	Quick Approval Zone (minimum distance from shore)
North Coast AQMD	≥ .5 miles from shore
Mendocino AQMD	≥ .5 miles from shore
Bay Area AQMD	≥ .5 miles from shore
Northern Sonoma AQMD	≥ .5 miles from shore
Monterey Bay Unified	No Quick Approval Zone
San Luis Obispo County	≥ 3 miles from shore
Santa Barbara County	≥ 3 miles from shore
Ventura County APCD	≥ .5 miles from shore
South Coast AQMD	≥ 8 miles from shore
San Diego AQMD	≥ .5 miles from shore

4. Weather and sea state conditions can greatly affect the ability to burn oil on water. A minimum burn thickness is necessary to sustain combustion, so containment is always an issue. As this will mostly likely be accomplished by booming operations, those weather and sea state conditions that limit booming operations will operationally limit the ability to burn. As a general guideline, wave heights above 4-5 feet and wind speeds between 15-20 knots are generally the upper limits for boom operations.

5. The selection of *in-situ* burning as a cleanup/response tool would consider whether the spilled petroleum on the surface of the water (and eventually on the shoreline), and/or dispersal into the water column, would pose greater threats to natural resources than would ISB combustion products in the airstream. This consideration includes evaluation of the resources at risk both on the surface of the water and within the surface microlayer and airstreams, by season, and evaluates how exposure to oil might affect the exposed species at a population level. All local, state and federal trustee agencies will work within the UC to determine if an *in-situ* burn will provide a net environmental benefit and result in the overall greater protection of highly sensitive environmental resources.

6. Meteorological and other air dispersion characteristics will be an important component in the local APCD recommendations and decisions regarding an incident-specific *in-situ* burn. Although vertical mixing is not usually a concern on the open water, plume dynamics can change if the wind direction changes and the plume contacts land. For purposes of a case-by-case determination, the local air districts will provide their best professional judgment with respect to potential public health concerns and assist the ART group in forwarding a recommendation to the FOSC/UC.

7. There may be times when *in-situ* burning may be considered when local air districts are not in full support of the operation. Such circumstances would include the following:

    a) If onshore contact with human populations is expected to be small enough to limit the level of concern; or

    b) The FOSC/UC needs to take advantage of the rapid elimination of oil that *in-situ* burning affords, and before weather conditions change in a manner that leads to very difficult cleanup and extensive environmental damage.

    If the local air districts do not recommend the use of *in-situ* burning, they must document their reasons and provide those for review by the FOSC/UC and possibly the RRT. This documentation (the supplemental case-by-case form can be used) should include projected air mixing capability, any modeling and/or air

quality exposure information and if concerns can be alleviated by means other than a non-burn decision (*e.g*., having people stay in houses for duration of burn, burning at night, burning at non-peak hours).

8. Once the RRT IX Case-by-Case Checklist is completed and a decision for *in-situ* burning use is generated, the FOSC/UC will forward their request, along with any requested data, to the RRT via a phone conference call. (The ART Technical Specialists within the Planning Section can assist with briefings, before-and-after documentation, communications with trustee agencies and local air districts, and any necessary coordination with the Operations Section). Based on the information provided, the RRT will provide an approval/disapproval decision (Appendix IX) to the FOSC regarding the incident-specific use of *in-situ* burning.

ENCLOSURE 4800 – ATTACHMENT I

OVERVIEW OF *IN-SITU* BURNING AS AN OIL SPILL RESPONSE TOOL

Burning has distinct advantages over other spill response tools. First, it offers the potential to rapidly remove large quantities of oil from the environment. *In-situ* burning could potentially remove as much oil in one day as mechanical methods could in one month. In addition, *in-situ* burning could prevent a large amount of shoreline contamination and injury to biota by removing oil before it spreads and moves to other areas. Second, *in-situ* burning requires less equipment and personnel than do other response tools. It can be used in areas where other methods cannot because of distances and lack of infrastructure. Third, compared to mechanical recovery, burning significantly reduces the volume of material requiring disposal. Mechanically recovered oil still requires transport, storage, and proper disposal. This involves equipment, personnel, time, money, and an approved Resource Conservation and Recovery Act (RCRA) disposal site. Often, these resources are not available in sufficient quantities when large spills occur.

Burning also has disadvantages. The most obvious is the large black smoke plume that is produced by burning oil and concerns about potential associated health effects. Additionally, oil must be a minimum thickness of 2 to 3 millimeters (mm) to burn efficiently; thin slicks will not burn. This can be partially countered with the use of fire booms to concentrate oils into thicker slicks before burning. However, as oil spreading and dispersion take place over time, the ability to achieve this minimum thickness becomes increasingly difficult.

In-situ burning is considered a trade-off between the ability to remove large amounts of spilled oil from the water surface in a short period of time and the human health effects and ecological impacts of burn by-products. Preliminary data from test burns and actual spills indicate that airborne emissions are not a serious concern at distances greater than a few miles, given the proper atmospheric conditions.

OPERATIONAL LIMITATIONS

1. FIRE BOOM. The application of *in-situ* burning requires the physical collection and containment of oil to maximize the efficiency of the burning process and to provide a means to control the burn. Generally, this is accomplished by the use of a fire boom or some other type of boom.

2. IGNITION. Heavy oils require longer heating times and a hotter flame to ignite compared to lighter oils. Many ignition sources can supply sufficient heat. These include pyrotechnic igniters, laser ignition systems, and aerial ignition systems. Each has pros and cons to their use. Whichever method is used, considerations of safety and efficiency must enter into the decision process.

3. OIL THICKNESS. The rule of thumb of *in-situ* burning is that oils can be effectively burned if they are consistently 2 to 3 mm thick.

4. GATHERING. Igniting weathered oil is generally not a problem with most ignition sources because they have sufficient temperature and burn time to ignite most oils. Weathered oil requires a longer ignition time and higher ignition temperatures.

5. EMULSIFICATION. The effect of water content on oil ignition is thought to be similar to that of weathering. It is certain that oil containing some water can be ignited and burned. It is suspected that burning may break down the water-in-oil emulsion. If a burn can be started, then water content is likely not a problem.

SAFETY CONCERNS

1. FIRE HAZARD. Care must be taken that the burn be controlled at all times to ensure the safety of personnel and property. This precludes burning at sources such as tankers, ships, or tank farms unless means are taken to ensure that the flame cannot propagate from the burn location to the source.

2. IGNITION HAZARD. Personnel and equipment involved in ignition of the oil slick must be well coordinated. Weather and sea conditions need to be kept in mind and adequate safety distances be kept at all times. Specialized ignition equipment, unknown fire behavior and uncertain flask-points introduce safety risks.

3. VESSEL SAFETY. Burning at sea may involve the use of several vessels operating in close proximity, perhaps at night or in conditions of poor visibility. These conditions are hazardous by nature and generally require training and close coordination. Maneuverability while towing boom or positioning other containment equipment will require skilled personnel.

4. TRAINING. Training of personnel to operate equipment for *in-situ* burning should be developed to minimize the risk of injury and accident. Training should meet all applicable OSHA regulations and guidelines. Workers may require respiratory protection and protective clothing, based on risk evaluations by trained site safety or industrial hygiene personnel.

Other hazards can include the exposure of personnel to extreme heat conditions, smoke and fumes; working under time constraints or extended periods of time. Personnel involved with burning operations must be well briefed on the plan of operations, with site safety stressed, and must be notified of all changes from the approved burn plan. The need for burning could be questioned and should be reconsidered if conditions (*e.g*., weather, operations, equipment) pose a threat or danger to human health and safety, or facilities. This section is not inclusive of all safety concerns. As more knowledge is gained from burning, it is most likely that additional safety concerns will be identified. The site safety plan shall specify worker safety practices and equipment requirements.

HUMAN HEALTH/TOXICITY CONCERNS

Many experts believe that the human health risk from oil fire smoke is relatively small, particularly when compared to health and safety risks associated with mechanical remediation. This assessment, coupled with the likelihood that the lighter fraction of a spill will evaporate unless burned (thereby imposing its own set of health concerns) suggests that the risk is worth considering.

Burning oil produces a visible smoke plume containing smoke particulates, combustion gases, unburned hydrocarbons, residue left at the burn site and other products of combustion. It also results in the evaporation and release of volatile compounds from the oil. There will be public health concerns related to the chemical content of the smoke plume and the downwind deposition of particulates. It should be noted that not burning an oil spill also introduces its own air quality concerns. Analysis of the physical behavior of spilled oil has shown that 50 percent of a light crude oil spill can evaporate fairly readily, and it is the acutely-toxic lighter fractions of a crude oil mix that quickly move into the atmosphere.

Results of recent burn tests indicate that burning *in-situ* does not yield significant emissions above that expected for similar types of combustion, such as forest fires. Many human health experts feel that the most significant human health risk resulting from *in-situ* burning is inhalation of the fine particulate material that is a major constituent of the smoke produced. The extent to which these particles present a health risk during an *in-situ* burn depends on the concentration and duration of exposure. It is important to remember that particulates in these concentrations are so small that they do not settle readily. They will be carried by the prevailing wind over large distances, over which their concentrations will rapidly decline.

Polynuclear aromatic hydrocarbons (PAHS) are a group of hydrocarbons produced during *in-situ* burning. They are found in oil and oil smoke, where their relative concentrations in the latter tend to be higher than in the oil itself. Possible carcinogenicity of some members make this group a serious health concern, although it is generally long-term exposure to the higher molecular-weight PAHs that is the basis for concern. Sulfur dioxide (SO_2) and nitrogen dioxide (NO_2) are eye-and-respiratory-tract irritants that are produced by oil combustion. Concentration of PAHs decline downwind as smoke from the fire is diluted by clean air. The concentrations of other by-products of burning oil (*i.e.*, combustible gases) also decline downwind.

ECOLOGICAL EFFECTS

Potential ecological impacts resulting from the use of *in-situ* burning have not been extensively studied. Whether *in-situ* burning does result in ecological impacts cannot be directly determined based on existing information. Potential biological impacts are the subject of planned field and laboratory tests.

The surface area affected by burning oil is usually small relative to the total surface area of a given body of water, relative to the total depth of the water body, and is less than the area impacted by the oil slick. This does not preclude adverse ecological effects. Contamination at the sea surface could possibly affect certain unique populations as well as organisms that use surface layers of the water column at certain times to spawn or feed. However, because the distribution of these populations is patchy, these impacts would most likely be localized. The same populations would also be adversely affected to some degree by an oil slick. The plume or heat from the burn will not result in greater overall impact to populations.

The residual material of an *in-situ* burn is a hydrocarbon compound with little structural change other than the loss of the more volatile groups. It resembles weathered oil of the same source type.

Burn residues could be ingested by fish, birds, mammals, etc., and could be a source of fouling of wildlife. However, it should be noted that the water surface is already adversely affected by oil, and any additional adverse effects from burning would be comparatively small. The extent of these spatial and temporal effects would be expected to be much less severe than those from a large oil spill being addressed only by traditional mechanical methods. Burn residue should be removed as soon as possible, and this could be accomplished using traditional spill containment and cleanup equipment and techniques.

Measurements conducted during test burns show that water temperature is not raised significantly, even in shallow confined test tanks. Thermal transfer to the water is limited by the insulating oil layer and is actually the mechanism by which the combustion of oil slicks is extinguished.

Except where conditions of pre-approval are met, the appropriate State and the Federal trustees (*e.g*., NOAA, DOI) are to be consulted before using *in-situ* burning on oil spills. They can identify resources of concern in the area that could be potentially adversely affected by burning *in-situ*. Interests include but are not limited to:

- The proximity of occurrence of the proposed burn in coastal marshes and estuaries and inland marsh/wetland environments;

- The occurrence and location of threatened and endangered species in relation to the proposed burn site;

- The occurrence and location of sensitive/critical habitat or resources (*e.g*., land) in relation to the proposed burn site; and

- The benefits to sensitive habitats of burning versus the effects resulting from the land fall of oil.

ENCLOSURE 4800 – ATTACHMENT II

IN-SITU BURN PLAN – On-Water ISB General Checklist

This checklist is provided as a summary of important information to be considered by the FOSC/Unified Command/RRT in reviewing any request to conduct *in-situ* burning in response to an oil spill in California waters. This burning plan is divided into several sections of information about the spill, weather, oil behavior and proposed burning plan. It is intended that this burning plan be filled in to the degree possible to assist with a feasibility assessment of *in-situ* burning for the immediate situation. This burning plan, in conjunction with monitoring plan, will serve as the post-burn operations report.		
ISB Plan of:	**This ISB Plan completed by:**	
Date:	Printed name:	Organization/Agency:
Time:	Contact phone and email:	
SPILL DATA		
Date/time of incident:	Responsible party:	
Incident location:		Latitude: Longitude:
Incident type:	☐ Grounding ☐ Collision ☐ Transfer Operation ☐ Pipeline ☐ Explosion ☐ Other (specify):	
Vessel, facility or pipeline involved:		
Nearest coastal county:	Distance to it (in miles):	Compass direction to it:
Name of nearest population center:	Distance to it (in miles):	Compass direction to it:
Type and quantity/volume (give units) of oil spilled:		
Release status:	☐ Continuous, at estimated rate of: ☐ Intermittent, at estimated rate of: ☐ One time only, flow now stopped. Estimated quantity (give units):	
Emulsification status:	Product easily emulsified? ☐ Yes ☐ No ☐ Uncertain	Emulsified on release? ☐ Yes ☐ No ☐ Uncertain
Degree emulsified: (if known)	☐ Light (0-20%) ☐ Moderate (21-50%) ☐ Heavy (>50%)	As of (date/time):
ADIOS prediction of emulsification rate:	_____% emulsified within _____ hours of incident start _____% emulsified within _____ hours of incident start	
Surface area of spill:	Square miles:	As of: (date/time):
Source burning now?	☐ Yes ☐ No	
FEASIBILITY (based on spilled oil type)	☐ Yes ☐ No Oil less than 60% emulsified? ☐ Yes ☐ No Oil thickness > 1/10 inch?	

Any additional comments/questions/issues at this point in the checklist:

WEATHER AND WATER CONDITIONS				
Current weather: 24-hr weather forecast: 48-hr weather forecast:	☐ Sunny ☐ Fog ☐ High overcast	☐ Partly cloudy ☐ Cloudy	☐ Intermittent showers ☐ Steady showers ☐ Heavy offshore squalls	
Current winds: 24-hr winds forecast: 48-hr winds forecast:	☐ Winds onshore ☐ Winds offshore ☐ Winds parallel to shore	Knots: Knots: Knots:	From direction: From direction: From direction:	
	Speed and direction:			
	Speed and direction:			
Sea state: 24-hr sea state forecast: 48-hr sea state forecast:	☐ Calm ☐ Choppy	Swell or waves ☐ < 1 ft ☐ 1-3 ft ☐ > 3 ft		
Surface currents:	Speed (knots):	(To) direction:		
Water depth (give units):				
Tides: (relevant for nearshore or inland ISB)	Date:	Time:	☐ Low ☐ High Feet (+/-):	
	Date:	Time:	☐ Low ☐ High Feet (+/-):	
	Date:	Time:	☐ Low ☐ High Feet (+/-):	
	Date:	Time:	☐ Low ☐ High Feet (+/-):	
Daylight hours:	Day 1:	Sunrise at:	Sunset at:	
	Day 2:	Sunrise at:	Sunset at:	

ESTIMATED SMOKE TRAJECTORY		
Describe plume: (e.g., trajectory, height, size)		
If wind trajectory toward human populations:	Primary impact location:	
	Date/time plume arrives:	
	Particulate matter (PM) size in most concentrated part of plume: ☐ < 2.5 microns ☐ 2.6-10 microns ☐ >10 microns	
	Expected duration of exposure (minutes/hours):	
If wind trajectory toward environmentally sensitive populations:	Primary impact location:	
	Location used by/for (*e.g.*, pinniped haul out):	
	Date/time plume arrives:	
	Particulate matter (PM) size in most concentrated part of plume: ☐ < 2.5 microns ☐ 2.6-10 microns ☐ >10 microns	
	Expected duration of exposure (minutes/hours):	
FEASIBILITY (based on physical factors)	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	Wind speed < 25 knots Wave height < 2-3 feet Visibility > 500 feet vertical, > ½ mile horizontal Rain forecasts favorable for ignition

Any additional comments/questions/issues at this point in the checklist:

ADDITIONAL BURN CONSIDERATIONS			
Location of proposed burn relative to:			
Spill source:			
Nearest uncontrolled ignitable slick(s):			
Nearest sizable downwind human population:			
Nearest downwind concentrated wildlife population:			
Potential for reducing visibility at nearby airport(s) or freeway(s): ☐ Low ☐ Medium ☐ High Which ones:			
Public broadcast notifications to human populations required: ☐ Yes ☐ No If "Yes", describe how/by whom this will be coordinated:			
Will fire boom to be used:	☐ Yes ☐ No	Has it been ordered:	☐ Yes ☐ No
Boom source location:		Expected boom arrival time at burn location:	Date: Time:
Will air monitoring occur:	☐ Yes ☐ No	Monitoring team ordered:	☐ Yes ☐ No
Monitoring team location:		Expected team arrival time at burn location:	Date: Time:
Proposed ignition method:			
Will burn promoters be used:	☐ Yes ☐ No	If "yes", describe type and whether RRT approval given:	
Will de-emulsifiers be used:	☐ Yes ☐ No	If "yes", describe type and whether RRT approval given:	
Will another other OSCA (herders, solidifiers) be used to manage the ISB:	☐ Yes ☐ No	If "yes", describe type and whether RRT approval given:	
Proposed burning strategy:	☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No ☐ Yes ☐ No	ISB in fire boom under tow ISB of static oil within fire boom Burning of derelict or hazardous vessel Burning of static oil in natural collection site on/near shore Burning of oiled debris at remote areas Other (specify):	
Methods for controlling the burn:			
Estimated amount oil to be burned (give units):		Estimated burn duration:	
Method for collecting residue:		Storage/disposal of collected residue:	
Feasibility (operational factors)	☐ Yes ☐ No	Burn at safe distance from other response operations, public, recreational and commercial activities	
	☐ Yes ☐ No	Smoke plume unlikely to impact large concentrations of people or wildlife	
	☐ Yes ☐ No	Adequate fire boom, tow boats, igniter resources	
	☐ Yes ☐ No	Adequate notice possible for mariners, pilots, public	
	☐ Yes ☐ No	ISB resources and personnel w/i window of opportunity	

(Can use above materials for FOSC briefings. FOSC Plan Sign-Off Form is in Attachment IX).

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ENCLOSURE 4800 – ATTACHMENT III

RRT IX CASE-BY-CASE APPROVAL CHECKLIST

The Case-by-Case Checklist is used by the FOSC/Unified Command to determine whether a request should be forwarded to the RRT IX for their incident-specific review and approval of *in-situ* burning. If the answer to any of the questions below is NO, further information must be gathered and summarized to support the position that an *in-situ* burn should be considered. This information, as well as all other information, should be forwarded as possible to the RRT IX in advance of the conference call.

May use the "*IN-SITU* BURNING PLAN – ON-WATER GENERAL CHECKLIST" (ATTACHMENT II) as much as possible to assist in answering the following:

1. Is the spilled petroleum burnable? Y/N
   Comments:

2. Can the appropriate equipment be made available in a timely manner to effectively conduct an *in-situ* burn? Y/N
   Comments:

3. Are weather and oceanographic conditions favorable for an *in-situ* burn? Y/N
   Comments:

4. Does the *in-situ* burn pose less of an environmental risk than leaving the petroleum on the water surface? (*Use the consultation information captured on the following page to assist with this answer*). Y/N
   Comments:

5. If required, have state and international boundary considerations been addressed? Y/N
   Comments:

6. Has the local air district recommended the use of *in-situ* burning? (*Use the consultation information captured on the following page to assist with this answer*). Y/N
   Comments:

7. Has the ART group within the Planning Section recommended the use of *in-situ* burning? Y/N
   Comments:

SUMMARY OF OTHER AGENCY CONCERNS

Use the Contact List in Attachment VIII to contact and confer with trustee agencies and local air districts, as needed, before and during the RRT conference call.

Detail any issues, concerns, or reservations that may exist on the part of the local air district or any other trustee agencies, response agencies, or technical specialists with respect to a proposed *in-situ* burn, and any suggested monitoring, mitigations or best management practices that can be used to address those concerns.

Nature of the Objections and Organization Raising a Concern or Objection:

Ways to Address these Concerns:

(Can use above materials to assist in RRT Conference call. RRT Informal Record of Decision is in Attachment IX)

ENCLOSURE 4800 – ATTACHMENT IV

FIELD SITE CHARACTERIZATION CHECKLIST
(Could also be considered part of overall Site Safety and Health Plan, Attachment V)

Date:	**Time:**	**Location**:
Type of petroleum involved:		

SPECIAL *IN-SITU* BURN CONSIDERATIONS

The objective is to avoid the smoke by-products of *in-situ* burning. Keep vessels and personnel upwind of the smoke plume. This is also the basic precaution required for emitted gases. Studies show that the danger from gases emitted during *in-situ* burning remains significantly below exposure limits. It is intended that by avoiding the smoke these possible emissions will not be a problem. Emissions can include:

- Sulfur dioxide (SO_2, with PEL = 0.2 ppm)
- Nitrogen dioxide (NO_2, PEL = 0.1 ppm)
- Carbon monoxide (CO, PEL = 35 ppm)

PERSONAL PROTECTIVE EQUIPMENT

During active *in-situ* burning operations:

1. APRs suitable for both organic vapors and particulates shall be worn by all persons on vessels in proximity to the smoke.
2. Check additional equipment that will need to be provided:

☐ Outer gloves ☐ Inner gloves ☐ 2/3 body cover ☐ Full body cover ☐ Safety glasses	☐ Face shield ☐ Hard hat ☐ Rubber boots ☐ Taped leg joints ☐ Taped glove gauntlets	☐ Air Purifying Respirator ☐ Supplied Air Respirator ☐ Outer gloves ☐ Outer gloves ☐ Outer gloves	☐ Sun hat ☐ Sun screen ☐ Benzene monitors ☐ ☐

MONITORING EQUIPMENT

☐ Industrial Scientific Model MX 251 Gas Detector for LEL and O
☐ Aim Model 3350 Gas Detector for H_2S
☐ Photobac “Snap Shot” portable Gas Chromatograph (for benzene)
☐
☐
☐

LEL reading: (must be < 10%)		**H_2S reading**:		**Benzene reading:**	

Additional observations or comments:

This page provided for spacing purposes.

ENCLOSURE 4800 – ATTACHMENT V

IN-SITU BURN SITE SAFETY AND HEALTH PLAN

Responsible Party:		Plan # (optional): Plan Status: ☐ New ☐ Revised	
Incident Facts:	Name: Location: Date: Time:	Operational Period:	From Date: Time: To Date: Time:

CHAIN OF COMMAND	
Division:	Group:

ON-SCENE COMMANDER / BURN SUPERVISOR			
Name (print)	Organization	Phone/Radio Info	Operational Area

SITE SAFETY OFFICER(s)			
Name (print)	Organization	Phone/Radio Info	Operational Area

ON-VESSEL SAFETY SUPERVISORS			
Name (print)	Organization	Phone/Radio Info	Operational Area

SITE OPERATING COMPANIES			
Name (print) & Address	Vessel Name	Phone/Radio Info	Operational Area

HEALTH AND PPE REQUIREMENTS			
Gear		**Training**	**Site**
☐ Outer gloves	☐ Hard hat	☐ 24-hr Hazwoper	☐ Site characterization
☐ Inner gloves	☐ USCG life vest	☐ 40-hr Hazwoper	☐ Zone control
☐ Rubber boots	☐ Air purifying respirator	☐ Pre-work medical	☐ Enclosed space entry permit
☐ 2/3 body cover	☐ Supplied air respirator	☐ Heat stress program	☐ First aid station
☐ Full body cover	☐ Sun hat	☐	☐ Shade station
☐ Taped leg joints	☐ Sun screen	☐	☐ Personnel department
☐ Safety glasses	☐ Rain gear	☐	☐ Security
☐ Face shield	☐	☐	☐

SITE DESCRIPTION		
Location:	Lat:	Long:
Description of site:		
Description of surrounding area:		
Description of surrounding population:		

COMMUNICATIONS

Routine:
The Command vessel will provide general command functions for burn operations, and it will serve as the primary communications post. All radio frequencies will be continuously monitored by Command, personnel aboard the Command vessel, and safety personnel.

Emergency:
An emergency can be communicated or declared using any assigned communications method. All working frequencies will be monitored throughout the response effort by the Command and safety vessel(s).

CONTACT LIST

Function	Name	Phone	Radio
FOSC			
SOSC			
Burn Supervisor			
Site Safety Officer			
Comms Officer			
SSC			
Trustees	From:		
	From:		
Local Govt.	From:		

VESSEL LIST		
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:
Name (print): Position:	Vessel Name	Phone: Radio:

COMMUNICATION METHODS

Command and Control:

The primary method of communications for the Command and trustees group is assigned cell phones The Burn Supervisor and Communications post shall also have cell phones.

Burn and Vessel Operations:

The primary method of communications will be assigned Marine VHF channels/frequencies.

- Aviation communications between vessel and aircraft will be on marine channel 18A, which is 156.900 MHz.

- The working marine VHF channel for the Lead Burn Boat and the second boom towing vessel shall be determined prior to operations. In addition, all vessels shall monitor marine VHF channel 6, the designated spill response hailing channel.

In the event of communications equipment failure:

1. A whistle will be used to indicate a need for assistance.

2. Three (3) short repeated blasts form a vessel horn shall indicate an emergency.

GO / NO-GO POLICY	
• Each vessel commander (CDR), Operational CDR, or trustee agency representative can stop the commencement or continuation of the burn based on the safety concerns within each area of responsibility. • Immediately prior to igniting the burn, the following personnel shall be polled to determine GO / NO-GO status: FOSC, SOSC, Burn Supervisor, Site Safety Officer and participating trustees. • Any of these identified personnel may request the FOSC terminate the burn if the initial conditions supporting the burn decision have changed and are no longer being met.	
PERSONNEL RESPONSIBILITIES	
Burn Supervisor	• Reports directly to the FOSC. • Is responsible for the overall burn operation, including but not limited to ignition and termination, pre-ignition checklist, GO/NO GO polling of designated personnel, sample taking and record keeping. • Is the designated boom Commander.
Site Safety Officer	• Reports directly to the Burn Supervisor. • Charged with the overall responsibility of ensuring worker health and safety during burn operations. • Conducts pre-burn safety briefing on operational procedures and goals. • Identifies potential emergencies. • Coordinates implementation of this Plan. • Assigns and monitors all associated safety personnel.
VESSEL RESPONSIBILITIES	
Command Vessel	• Shall serve as the On-Site Command and Communications Post. • Burn Supervisor and FOSC shall conduct burn operations from this vessel Command Post. • Shall be appropriate in size and manning to serve as Operations Communications and Command platform. • Shall serve as the lead boom towing vessel.
Safety Boat	• Monitors and maintains fire-free zones. • Tasked with fire watch and maintaining a limited fire-fighting capability. • Assists with burn observation and effectiveness monitoring. • Tasked with debris recovery.

OPERATIONAL OBJECTIVES	
1. Work with the combined ICS to coordinate burning activities with all other offshore/nearshore response operations. 2. Perform on-water *in-situ* burning operations in accordance with the *In-situ* Burning Plan. 3. On-water response vessels are to avoid the smoke plume during burning operations.	
SITE CONTROL	
• The main work decks of the vessel(s) are in the Exclusion Zone during active oil spill operations. • The other sections and decks of the vessel(s) are support areas.	
SITE SECURITY	
• The Captain of each ISB vessel is responsible for vessel security on his vessel. • On-water burn zone security will be imposed and controlled by the US Coast Guard	
SITE CHARACTERIZATION AND MONITORING	
Exposure Potential:	• Zone control will be established prior to entering a response area, dependent on the spill exposure potentials, including TBX (benzene) and H_2S (hydrogen sulfide) and LEL (Lower Explosive Limit). • No entry into an excessive TBX or H_2S environment. • Entry into an excessive benzene environment may be considered or special purposed in compliance with APR/SAR regulations. • During ISB activities, all personnel will have APRs available.
Required Characterization Testing:	• Testing for TBX, H_2S and LEL are minimum requirements. • See also Field Characterization Checklist (pg.)
Exposure Limits:	• Benzene: Occupational carcinogen. Limit exposures to lowest feasible concentration. • H_2S: OSHA PEL = 10 ppm, IDLH = 300 ppm • O_2: PEL = 10%, STEL = __, IDLH = __
Required Monitoring:	After site characterization, benzene, H_2S and LEL will be measured once per hour unless: 1. Any measurement reflects a reasonable possibility that an STEL will be reached. At this point, continuous monitoring will take effect. 2. The Site Safety Officer and FOSC decide that monitoring intervals should be altered based on their judgment from prior reading and continuous job site assessment.

EMERGENCY PRODECURES	
Emergency Fire Procedure:	A fire emergency shall include any non-controlled burning within the burn operation area. The Site Safety Officer or other qualified personnel must: 1. Take charge of the situation. 2. Notify Burn Supervisor of the emergency. 3. Notify Fire Department and Safety Boat of type of assistance needed. 4. Sound appropriate fire signal (three short blasts of vessel horn). The Burn Supervisor will ensure that the fire is extinguished prior to re-starting the controlled ISB.
Emergency Termination Of Burn:	In the event that the fundamental safety conditions change or an emergency situation arises after initiation of the burn, the following methods may be used to terminate the burn: 1. Releasing the tow line from one of the tow vessels while the other tow vessel moves ahead at several knots. 2. Move both vessels ahead at several knots, forcing the oil beneath the boom and removing it from the combustion zone. Although the FOSC has overall burn termination authority, any designated Safety Supervisor may request the burn be terminated.
Emergency Medical Procedures:	When a person is injured, the Site Safety Officer or other qualified personnel must: 1. Take charge of the situation. 2. Provide necessary decontamination. 3. Administer first aid. 4. Arrange for additional medical assistance as necessary. 5. If a serious injury of life-threatening condition exists, notify the USCG Operations Center at: MSO SF Bay (510-437-3073), MSO LALB (562-980-4444 or MSO San Diego (619-683-6470.
Reporting an Emergency:	Provide the following information when calling for help: Your name, location, telephone number at your location, name of person(s) exposed or injured, actions already taken.

EMERGENCY RESPONSE RESOURCES	
Ambulance:	In an offshore emergency, either a local water taxi company or the USCG Search and Rescue Center will provide transportation to the nearest ambulance/medical facility. Due to the transient nature of this operation, the Site Safety Office will need to conduct incident-specific inquiries to locate the nearest ambulance service. Ambulance service to be used:
Fire Department:	Depending on the site location, **Dialing 911** may suffice for Fire Department contact. A fire boat can respond if within their service area. Describe this area: If the emergency is outside this area, call the USCG at: _____.
Oil Spill Response:	For additional response assistance, call: _____
Hospital/Emergency Medical:	Due to the transient nature of oil spill response operations, the Site Safety Office will need to conduct incident-specific inquiries to locate the nearest hospital/emergency medical service.
EMERGENCY PHONE NUMBERS	
USCG:	
USCG Search and Rescue:	
Local Police Department:	
Local Fire Department:	
California EOC:	
NRC Spill Report Hotline:	
Poison Control Center:	
Chemtrec:	

THERMAL STRESS REDUCTION PROGRAM	
Operational Requirements:	• To reduce the effects of heat stress, 2/3 slicker bottoms are a standard requirement. • Upper torso exposure is minimal during normal operations, but during overhead operations with dripping oil, or when splashing occurs, full PPE will be worn. • If necessary to reduce heat stress, shade hats may be required to be worn when on the vessel's work deck, except during lifting operations when hard hats must be worn. • Hard hats colors that reflect level of HAZWOPER training (*e.g.*, Green = 24-48 hr training, Yellow = 4-23 hr training, White = no training or not current). • Use of cooling vests and/or work time limits will be implemented if temperatures exceed 85° F.
HAZARD REDUCTION PROCEDURES	
Prior to the vessel dispatching from the pier, the ship's Captain (or designate) will give on-board personnel a pre-departure vessel operations safety briefing. Prior to beginning any on-site ISB work, the Site Safety Officer will give a Site & Job Specific Safety Briefing to all workers on board the vessel.	

ENCLOSURE 4800 – ATTACHMENT VI

IN-SITU BURN BOOM OPERATIONS PROCEDURES

PRE-IGNITION CHECKLIST	
Communications Officer:	☐ Perform radio check with each vessel and participating trustee ☐ Verify each vessel is aware of burn trajectory and time of ignition ☐ ☐
Burn Supervisor:	☐ Verify clear burn path to aircraft is clear ☐ Ensure boats and booms are pointed upwind ☐ Designate oil-free safe area for vessels to use in emergency ☐ Obtain final burn approval from FOSC ☐ ☐

BOOM TOWING SAFETY INSTRUCTIONS

1. Contained oil should be ignited only after the requirements of the on-water *In-situ* Burn Pre-Approval and/or Case-by-Case RRT Approval have been met, and confirmed by all key participants via radio link.
2. All vessels must remain at least (5) fire diameters from the flame perimeter.
3. When using 660 feet or less of boom, use tow lines equal to the length of the boom. For longer boom, tow lines may be shorter than the length of the boom.
4. Prior to ignition, ensure that all personnel on-site are positioned upwind or cross-wind form the target slick.

FIRE CONTROL

The Burn Supervisor will be positioned on the Command vessel. He/she will:

☐ Control the burn rate by coordinating the forward speed of boom towing vessels
☐
☐

BURN EFFECTIVENESS MONITORING

The Site Safety Officer will be positioned aboard a dedicated Safety vessel. He/she will:

☐ Assist the Command vessel with monitoring the burn's effectiveness.
☐ Monitor the status of the burn in relation to the proximity of the burn to towing vessels and other response vessels.
☐ Monitor and maintain pre-designated "fire-free" zones between response vessels or between the burn and specified sensitive areas.
☐ Provide back-up support for deployment and containment operations.
☐ Provide extra personnel and equipment, where needed.
☐
☐

TERMINATIN OF BURN AND EMERGENCY TERMINATION OF BURN	
In most circumstances, the FOSC should plan to allow an oil slick to burn to completion once it has ignited. However, premature termination of a burn may be necessary if the wind or weather shifts unexpectedly, or if secondary ignition of another slick is a possibility. As part of the GO/NO GO policy, the Burn Supervisor, Site Safety Officer, participating trustee agency representatives or designated safety personnel may stop the ISB response effort by declaring an emergency. **If an emergency is declared, the person declaring the emergency will:** ☐ Provide a description of the problem to the Burn Supervisor and FOSC. **The FOSC will determine the course of action. If the burn is terminated, the Burn Supervisor will:**	
Primary method:	☐ Order one of the towing vessels to release the tow line form the vessel ☐ Order the other towing vessel to move ahead at several knots. This forces oil to spread to a thickness that cannot support combustion.
Secondary Method:	☐ Order both vessels to move ahead at several knots. This forces oil under the boom, removing it from the combustion zone.

Additional observations or comments:

ENCLOSURE 4800 – ATTACHMENT VII

IN-SITU BURN MONITORING PLAN

The primary operational purpose in monitoring in-situ burning of spilled oil is to determine if burning requirements and objectives are met. Each operational use provides an opportunity to gather data. The FOSC/UC/RRT will be able to use these data to refine *in-situ* burning practices for both this and future spill responses.

It is intended that this form should be completed after every *in-situ* burn episode. There is a form for the burn supervisors and another for the casually trained observers to complete. Accumulated data are to be submitted together, with the in-situ burn plan, to form the post-burn operations report.

BURN SUPERVISOR REPORT FORM			
Name (printed) of Burn Supervisor:			
Organization:		Contact info:	
Date and time of report:		Report for: Burn(s) _____ of _____ today	
One oil sample taken before first burn at start of this operational period:	☐ Yes ☐ No	Ignition method:	
Time at start of burn:		Wind speed (give units) during burn:	
Time at end of burn:		Wind (from) direction during burn:	
Smoke plume avoided large human or wildlife concentrations:	☐ Yes ☐ No	Describe variation from expected:	
Describe smoke plume: (*e.g.*, dimensions of outer and concentrated areas of plume, general dispersion effects, general heading of plume, upper air layer height where greater dispersion began to be seen)			
Describe whether wildlife monitoring occurred, and whether wildlife effects avoidance measures were needed and/or used:			
Describe if/whether/what air monitoring occurred:			
Observation of burn effectiveness:			
Observation of effectiveness of burn residue collection:			

SUPPLEMENTAL *IN-SITU* BURN OBSERVERS MONITORING REPORT FORM **Provide one form per observer per observation day**			
(Printed) Observer Name:		Date:	Time:
Agency/Organization:		Contact info:	
Burn episode(s) observed: Burn(s) _____ of _____ today			
(Printed name) Burn Supervisor:			
Vantage point:	☐ Yes ☐ No On board one of the burn vessels ☐ Yes ☐ No From another vessel within the general burn area ☐ Yes ☐ No From land (give location): ☐ Yes ☐ No From air (state aircraft type): ☐ Yes ☐ No Other (specify):		
Vantage point quality:	☐ High Mostly unobstructed ☐ Medium Sometimes obstructed ☐ Low Mostly obstructed		
Estimated average observation distance or altitude (give units):		Your estimated total burn observation time today:	
Smoke plume avoided large human or wildlife concentrations:	☐ Yes ☐ No	Comments on this:	
Describe whether you observed wildlife in the area, whether wildlife monitoring occurred, or whether wildlife effects avoidance measures were taken:			
Your observation of whether the burning appeared effective:			
Other general observations and comments:			

ENCLOSURE 4800 – ATTACHMENT VIII

Contact List

Agency	Function	Web and/or email	Phone
Air Districts	North Coast AQMD Rick Martin, Jr.	rmartin@ncuaqmd.org	707-443-3093 707-443-3099 (fax)
	Mendocino AQMD Christopher Brown	browncd@co.mendocino.ca.us	707-463-4354 707-272-3572 (cell) 707-463-5707 (fax)
	N. Sonoma AQMD Barbara Lee	barbara.lee@sonoma-county.org	707-433-5911 707-953-1634 (cell) 707-433-4823 (fax)
	Bay Area AQMD Wayne Kino	wkino@baaqmd.gov	415-749-4789 415-928-8560 (fax)
	Monterey Bay Unified Richard Stedman	rstedman@mbuapcd.org	831-647-9411 (x206) 831-647-8501 (fax)
	San Luis Obispo County Karen Brooks	kbrooks_apcd@co.slo.ca.us	805-781-5912 805-781-1002 (fax)
	Santa Barbara County Ron Tan	tanr@sbcapcd.org	805-961-8800 805-961-8801 (fax)
	Ventura County APCD Kent Field	kent@vcapcd.org	805-662-6960 805-645-1444 (fax)
	South Coast AQMD Mohsen Nazemi	mnazemi1@aqmd.gov	909-396-2000 909-396-3340 (fax)
	San Diego AQMD Jon Adams	jon.adams@adcounty.ca.gov	858-586-2653 858-586-2701 (fax)
National Response Center (NRC)	Spill Reporting (National); SMART call-out	http://www.nrc.uscg.mil/nrchp.html	800-424-8802
California Emergency Management Agency (Cal-EMA)	Spill Reporting (State): Incident reports:	http://www.calema.ca.gov/hazardousmaterials/pages/hazardous-materials.aspx# http://w3.calema.ca.gov/operational/malhaz.nsf/$defaultview	800-852-7550
USCG	San Francisco Sector	http://homeport.uscg.mil/sanfrancisco	415-399-3547/ 415-399-3300
	Los Angeles-Long Beach Sector	http://homeport.uscg.mil/lalb	310-521-3600/ 800-221-8724
	San Diego Sector	http://homeport.uscg.mil/sandiego	619-278-7033/ 619-295-3121
	District 11	http://www.uscg.mil/d11/	510-437-3701
	Pacific Strike Team (for SMART team request)	http://www.uscg.mil/hq/nsfweb/docs/foscguadfold2077.pdf	415-883-3311 Can also contact NRC: 800-424-8802

Contact List , continued

Agency	Function	Web and/or email	Phone
NOAA	Scientific Support Coordinator (Jordan Stout)	jordan.stout@noaa.gov	510-437-5344 206-321-3320 (cell) 510-437-3247 (fax)
	Ocean Prediction Center	http://www.opc.ncep.noaa.gov/pac_tab.shtml	
	Tide Predictions	http://www.co-ops.nos.noaa/gov/tides11/tpred2.html#CA	
	Coastal Water Temperature Guide	http://www.nodc.noaa.gov/dsdt/wtg12/html	
	Nautical Charts	http://www.nauticalcharts.noaa.gov/mcd/onlineviewer.html	
	Physical, chemical and geological ocean data	http://www.nodc.noaa/gov	
	Trajectories, ESI maps, job aids, etc.	http://response.restoration.noaa.gov/	
	National Weather Service Eureka SF/Monterey Oxnard/Los Angeles San Diego Sacramento (CA HQ)	 http://www.wrh.noaa.gov/eka http://www.wrh.noaa.gov/mtr http://www.wrh.noaa.gov/lox http://www.wrh.noaa.gov/sgx http://www.wrh.noaa.gov/sto	 707-443-6484 831-656-1725 805-988-6610 858-675-8700 916-979-3051
	National Marine Fisheries Service Southwest Region Elizabeth Petras Santa Rosa Field Office Joe Dillon	 http://swr.ucsd.edu elizabeth.petras@noaa.gov http://swr.nmfs.noaa.gov/sroprd.htm joseph.j.dillon@noaa.gov	 562-980-4000 562-980-3238 206-619-1547 (cell) 562-980-4027 (fax) 707-575-6050 707-480-3496 (cell) 707-578-3435 (fax)
	National Marine Sanctuaries Headquarters Lisa Symons Cordell Bank Dan Howard Gulf of Farallones Maria Brown Monterey Paul Michel Channel Islands Chris Mobley	 http://sanctuaries.noaa.gov lisa.symons@noaa.gov http://cordellbank.noaa.gov dan.howard@noaa.gov http://farallones.noaa.gov maria.brown@noaa.gov http://montereybay.noaa.gov paul.michel@noaa.gov http://channelislands.noaa.gov chris.mobley@noaa.gov	 301-713-3125 415-663-0314 415-561-6622 831-647-4201 805-966-7107
Other Key Federal Agency Contacts	USFWS Damian Higgins (Sacramento) John Henderson (Sacramento) Randy Brown (Arcata) Nancy Finley (Arcata) Jenny Marek (Ventura) Judy Gibson (Carlsbad) Nancy Ferguson (Carlsbad)	 damian_higgins@fws.gov john_henderson@fws.gov randy_brown@fws.gov nancy_finley@fws.gov Jenny_marek@fws.gov judy_gibson@fws.gov nancy_ferguson@fws.gov	 916-414-6548 916-414-6595 707-882-7201 707-825-5100 805-644-1766x325 760-431-9440x260 760-431-9440x244

Contact Information, continued

Agency	Function	Web and/or email	Phone
Regional Response Team (RRT) IX	USCG Command Center (to convene incident-specific RRT)		510-437-3701
	USCG RRT Co-chair: USCG RRT Alt. Co-chair: USCG RRT Coordinator: Susan Krala	timothy.p.holmes@uscg.mil arthur.j.snyder@uscg.mil susan.e.krala@uscg.mil	510-437-2949 510-437-3316 510-437-2794
	USEPA RRT Co-chair: Dan Meer USEPA RRT Alt. Co-chair: Kathryn Lawrence USEPA RRT Coordinator: Lance Richman	meer.dan@epa.gov lawrence.kathryn@epa.gov richman.lance@epamail.epa.gov	415-972-3132 415-971-6792 (cell) 415-972-3022
	CA DFW-OSPR Primary: Yvonne Addassi CA DFW-OSPR Alternate: Ellen Faurot-Daniels Cal-EMA Primary: Brian Abeel Cal-EMA Alternate: Trevor Anderson	yvonne.addassi@wildlife.ca.gov ellen.faurot-daniels@wildlife.ca.gov brian.abeel@calema.ca.gov trevor.anderson@calema.ca.gov	916-445-9326 916-798-2158 (cell) 916-324-8829 (fax) 831-649-2888 831-233-0723 (cell) 831-649-2894 (fax)
	DOC/NOAA Primary: Jordan Stout DOC/NOAA Alternate: Doug Helton	jordan.stout@noaa.gov doug.helton@noaa.gov	510-437-5344
	DOI Primary: Patricia Port DOI Alternate: Susmita Pendurthi	oepcsfn@aol.com patricia_port@ios.doi.gov susmita_pendurthi@ios.doi.gov	415-296-3355 415-420-0524 (cell) 415-773-8334 (fax)

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ENCLOSURE 4800 – ATTACHMENT IX

IN-SITU BURN DECISION FORMS

***IN-SITU* BURN PRE-APPROVAL ZONE:** **PLAN SIGN-OFF AND COMMENTS** (2 Pages)

Plan Number:

Date/Time of Decision: Date: Time:

Operational Period: From Date: To Date:
Time: Time:

Operational Sub-Plan Development and Sign-Off Status:

Sub-Plan:	Site Safety and Health	Burn Boom Operations	Burn Monitoring
Status:	☐ Draft pending ☐ Draft completed ☐ Signed off by Planning ☐ Signed off by Operations ☐ Signed off by Safety	☐ Draft pending ☐ Draft completed ☐ Signed off by Planning ☐ Signed off by Operations ☐ Signed off by Safety	☐ Draft pending ☐ Draft completed ☐ Signed off by Planning ☐ Signed off by Operations ☐ Signed off by Safety

Comments or Additional Actions Needed Before Sign-Off:

Comment or Action	**Person Tasked with any Action**

FOSC has: ☐ Approved ☐ Not Approved

PLAN APPROVALS (if in ISB Pre-Approval Zone)				
Agency	Role	Printed Name:	Date	Time
USCG	FOSC	Signature:		
ADDITIONAL UC & TRUSTEE AGENCY CONSULTATION/SUPPORT SIGNATURES				
Agency	Role	Printed Name:	Date	Time
	RP	Signature:		
Agency	Role	Printed Name:	Date	Time
		Signature:		
Agency	Role	Printed Name:	Date	Time
		Signature:		
Agency	Role	Printed Name:	Date	Time
		Signature:		

NOTIFICATION AND DISTRIBUTION		
ISB Plan Distribution: (list those receiving copies)	☐ Operations	☐ RRT
	☐ Documentation	☐
	☐ Planning	☐
	☐ ART Lead Technical Specialist	☐

Person distributing copies (printed name):

ICS Role/Section:

***IN-SITU* RRT CASE-BY-CASE APPROVAL ZONE:**

INFORMAL RRT RECORD OF DECISION AND COMMENTS
(1 Page)

RRT IX CONFERENCE CALL AND INFORMAL RECORD OF DECISION

Use the Contact List in Attachment VIII to contact and confer with the following entities as needed before and during the RRT conference call.

The ART Lead Technical Specialist or NOAA SSC can assist the FOSC/UC in briefing the RRT IX and also convey results and recommendations of trustee agency and air district consultations and/or coordination efforts to date with the Operations Section.

Summary of RRT IX conference call:

Informal Record of Decision (*CG or EPA Coordinators to RRT IX may follow with formal ROD*)

Agency	Representative (print name)	Contact Information (phone or email)	Decision
EPA			Y/N
USCG			Y/N
DOC			Y/N
DOI			Y/N
OSPR			Y/N
Air District(s)			Y/N
			Y/N
Bordering entity:			Y/N
			Y/N

Follow-up Actions

Action	Person Responsible

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