

**FIELD OPERATIONS AND COMPLIANCE REPORT**  
**for**  
**CALIFORNIA STATE LANDS COMMISSION**

**GEOPHYSICAL CABLE ROUTE SURVEY**

**HERMOSA BEACH, CALIFORNIA**

Revision	Date	Description	Prepared by	Revised by	Approved by
0	10/20/2015	Initial	EBR		EBR



---

**CONTENTS**

**1 SURVEY INFORMATION..... 1-2**  
**Project Description and Scope of Work..... 1-2**  
**Weather and Sea State ..... 1-2**  
**Chart of Area and Tracklines ..... 1-2**  
**GIS Trackline File..... 1-2**  
**Date and Times of Data Collection..... 1-3**  
**Environmental Hazards Encountered ..... 1-3**  
**Accident, Injury, Damage, or Loss to Property ..... 1-3**  
**2 BIOLOGICAL INFORMATION ..... 2-4**  
**EXHIBIT H - California State Lands Commission ..... 2-4**  
**Marine Wildlife Monitoring Report..... 2-4**

## 1 SURVEY INFORMATION

### Project Description and Scope of Work

A geophysical inshore corridor survey was completed for a proposed subsea telecommunications cable landing in the City of Hermosa Beach. The survey was conducted from the closest, safest working distance to shore out to the 3nm State boundary.

The route survey is required to provide information for engineering, installation, and subsequent maintenance of the cable. The survey objective was to complete the acquisition of inshore geophysical survey data including; bathymetric, sidescan, sub-bottom, and magnetometer data to safely position the cable within a surveyed corridor.

### Weather and Sea State

Weather and sea state during survey events are provided in table below:

Date	Weather	Sea State (Beaufort)
9/17/15	Clear – 1-10knts W	(2) - <1.0m
9/18/15	Clear – 1-8 knts N	(1-2) - <1.0m
9/19/15	Clear – 1-8 knts N	(1-2) - <1.0m
9/20/15	Partly Cloudy – 1-8 knts N	(1-2) - <1.0m
9/21/15	Partly Cloudy – 1-8 knts N	(1-2) - <1.0m
9/22/15	Sunny – 1-8 knts SW	(1-2) - <1.0m
9/23/15	Sunny – 1-8 knts SW	(1-2) - <1.0m
9/24/15	Sunny – 1-8 knts W	(2) - <1.0m

### Chart of Area and Tracklines

See figure below at end of section I:

### GIS Trackline File

An ESRI compatible trackline file accompanies this report. WGS84 Geodetic.

---

### **Date and Times of Data Collection**

The data collection summary was taken from the final survey Daily Progress Reports (DPRs). The following table gives the breakdown of dates and data collection times:

Date	Start Data Collection (Local)	End Data Collection
9/17/15	12:22	18:00
9/18/15	09:00	18:14
9/19/15	09:04	17:49
9/20/15	08:42	16:05
9/21/15	08:37	16:35
9/22/15	09:45	18:16
9/23/15	10:00	18:05
9/24/15	08:05	11:20

### **Environmental Hazards Encountered**

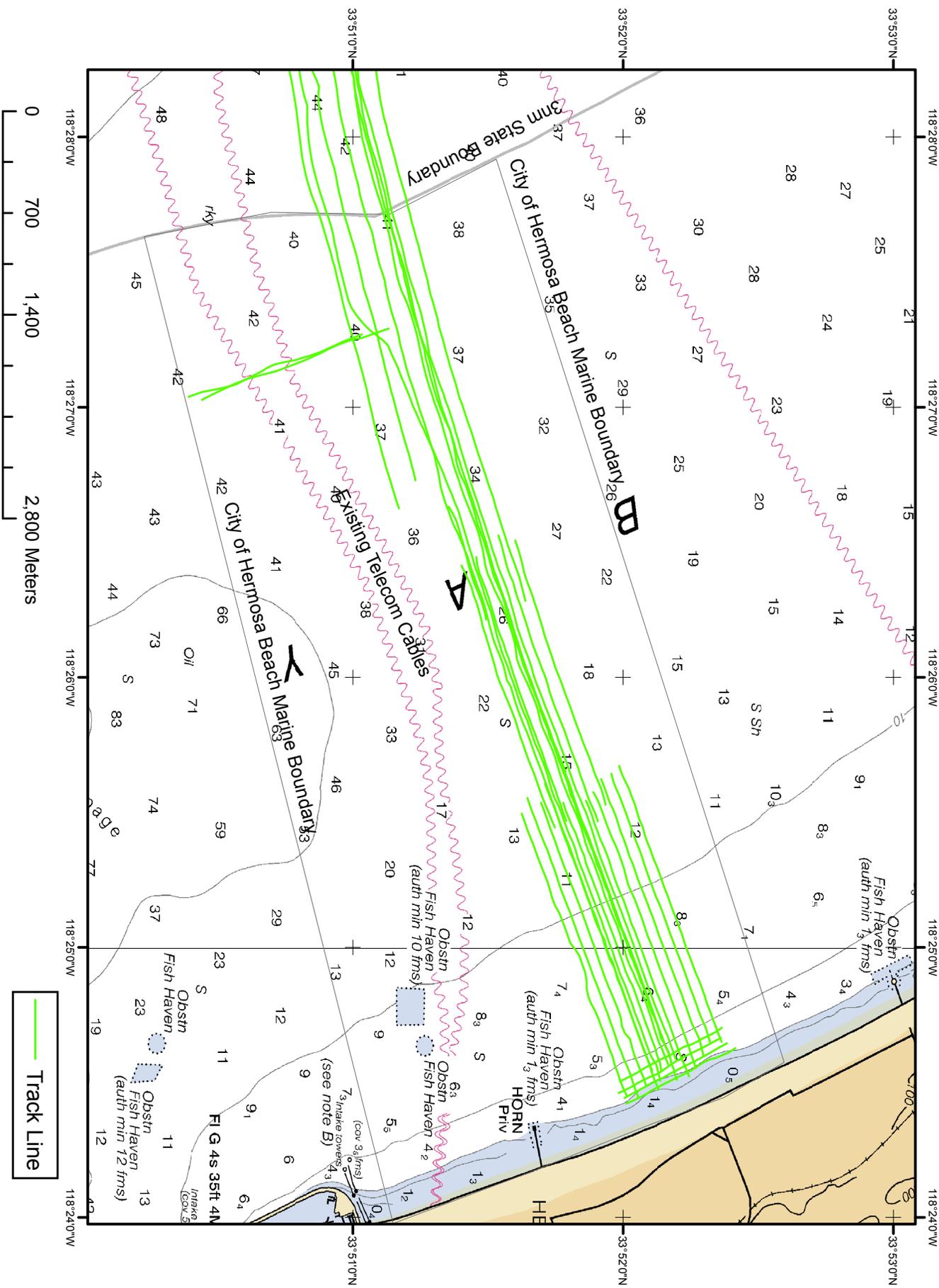
No environmental hazards were encountered.

### **Accident, Injury, Damage, or Loss to Property**

No accidents, injuries, damage, or loss to property was sustained.



# SURVEY TRACKPLOT HERMOSA BEACH COORDIDOR



## **2 BIOLOGICAL INFORMATION**

This section includes Marine Wildlife Monitoring Report with field operations summary including sonar equipment shut downs and start-ups, haul out behaviour, and number of collisions.

### **EXHIBIT H – California State Lands Commission**

Below see initialled and dated Exhibit H:

#### **Marine Wildlife Monitoring Report**

See Marine Wildlife Monitoring Post-Survey Report below prepared by Marine Mammal Consulting Group.

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<b>Air Quality and Greenhouse Gas (GHG) Emissions (MND Section 3.3.3)</b>						
<b>MM AIR-1: Engine Tuning, Engine Certification, and Fuels.</b> The following measures will be required to be implemented by all Permittees under the Offshore Geophysical Permit Program (OGPP), as applicable depending on the county offshore which a survey is being conducted. Pursuant to section 93118.5 of CARB's Airborne Toxic Control Measures, the Tier 2 engine requirement applies only to diesel-fueled vessels.	<u>All Counties:</u> Maintain all construction equipment in proper tune according to manufacturers' specifications; fuel all off-road and portable diesel-powered equipment with California Air Resources Board (CARB)-certified motor vehicle diesel fuel limiting sulfur content to 15 parts per million or less (CARB Diesel).	Daily emissions of criteria pollutants during survey activities are minimized.	Determine engine certification of vessel engines. ✓  Review engine emissions data to assess compliance, determine if changes in tuning or fuel are required.	OGPP permit holder and contract vessel operator; California State Lands Commission (CSLC) review of Final Monitoring Report.	Prior to, during, and after survey activities.  Submit Final Monitoring Report after completion of survey activities.	09/15/15 ER
	<u>Los Angeles and Orange Counties:</u> Use vessel engines meeting CARB's Tier 2-certified engines or cleaner; the survey shall be operated such that daily NO <sub>x</sub> emissions do not exceed 100 pounds based on engine certification emission factors. This can be accomplished with Tier 2 engines if daily fuel use is 585 gallons or less, and with Tier 3 engines if daily fuel use is 935 gallons or less.	Verify that Tier 2 or cleaner engines are being used. ✓  Calculate daily NO <sub>x</sub> emissions to verify compliance with limitations.	09/15/15 ER			
	<u>San Luis Obispo County:</u> Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 585 gallons or less; all diesel equipment shall not idle for more than 5 minutes; engine use needed to maintain position in the water is not considered idling; diesel idling within 300 meters (1,000 feet) of sensitive receptors is not permitted; use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.	Verify that Tier 2 or cleaner engines are being used.  Inform vessel operator(s) of idling limitation.  Investigate availability of alternative fuels.				
	<u>Santa Barbara County:</u> Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 790 gallons or less.	Verify that Tier 2 or cleaner engines are being used.  Investigate availability of alternative fuels.				
	<u>Ventura County:</u> Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.	Investigate availability of alternative fuels.				

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<b>MM BIO-1:</b> Marine Mammal and Sea Turtle Presence – Current Information.	All State waters; prior to commencement of survey operations, the geophysical operator shall: (1) contact the National Oceanic and Atmospheric Administration Long Beach office staff and local whale-watching operations and shall acquire information on the current composition and relative abundance of marine wildlife offshore, and (2) convey sightings data to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) prior to departure. This information will aid the MWMs by providing data on the approximate number and types of organisms that may be in the area.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document contact with appropriate sources.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; Inquiry to NOAA and local whale watching operators.	Prior to survey.	09-02-15 ER  10-20-15 ER
<b>MM BIO-2:</b> Marine Wildlife Monitors (MWMs).	Except as provided in section 7(h) of the General Permit, a minimum of two (2) qualified MWMs who are experienced in marine wildlife observations shall be onboard the survey vessel throughout both transit and data collection activities. The specific monitoring, observation, and data collection responsibilities shall be identified in the Marine Wildlife Contingency Plan required as part of all Offshore Geophysical Permit Program permits. Qualifications of proposed MWMs shall be submitted to the National Oceanic and Atmospheric Administration (NOAA) and CSLC at least twenty-one (21) days in advance of the survey for their approval by the agencies. Survey operations shall not commence until the CSLC approves the MWMs.	Competent and professional monitoring or marine mammals and sea turtles; compliance with established monitoring policies.	Document contact with and approval by appropriate agencies.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	09-02-15 ER  10-20-15 ER
<b>MM BIO-3:</b> Safety Zone Monitoring.	Onboard Marine Wildlife Monitors (MWMs) responsible for observations during vessel transit shall be responsible for monitoring during the survey equipment operations. All visual monitoring shall occur from the highest practical vantage point aboard the survey vessel; binoculars shall be used to observe the surrounding area, as appropriate. The MWMs will survey an area (i.e., safety or exclusion zone) based on the equipment used, centered on the sound source (i.e., vessel, towfish), throughout time that the survey equipment is operating. Safety zone radial distances, by equipment type, include:	No adverse effects to marine mammals or sea turtles due to survey activities are observed; compliance with established safety zones.	Compliance with permit requirements (observers); compliance with established safety zones.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	09-02-15 ER  10-20-15 ER

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials												
	<table border="1" data-bbox="474 306 980 508"> <thead> <tr> <th>Equipment Type</th> <th>Safety Zone (radius, m)</th> </tr> </thead> <tbody> <tr> <td>Single Beam Echosounder</td> <td>50</td> </tr> <tr> <td>Multibeam Echosounder</td> <td>500</td> </tr> <tr> <td>Side-Scan Sonar</td> <td>600</td> </tr> <tr> <td>Subbottom Profiler</td> <td>100</td> </tr> <tr> <td>Boomer System</td> <td>100</td> </tr> </tbody> </table> <p data-bbox="417 537 1035 1222">If the geophysical survey equipment is operated at or above a frequency of 200 kilohertz (kHz), safety zone monitoring and enforcement is not required; however, if geophysical survey equipment operated at a frequency at or above 200 kHz is used simultaneously with geophysical survey equipment less than 200 kHz, then the safety zone for the equipment less than 200 kHz must be monitored. The onboard MWMs shall have authority to stop operations if a mammal or turtle is observed within the specified safety zone and may be negatively affected by survey activities. The MWMs shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.</p> <p data-bbox="417 1252 1035 1442">For nearshore survey operations utilizing vessels that lack the personnel capacity to hold two (2) MWMs aboard during survey operations, at least twenty-one (21) days prior to the commencement of survey activities, the Permittee may petition the CSLC to conduct survey operations with one (1) MWM aboard. The CSLC will consider such authorization on a case-by-case basis and</p>	Equipment Type	Safety Zone (radius, m)	Single Beam Echosounder	50	Multibeam Echosounder	500	Side-Scan Sonar	600	Subbottom Profiler	100	Boomer System	100					<p data-bbox="1766 553 1906 656">09.02.15 EL</p>
Equipment Type	Safety Zone (radius, m)																	
Single Beam Echosounder	50																	
Multibeam Echosounder	500																	
Side-Scan Sonar	600																	
Subbottom Profiler	100																	
Boomer System	100																	

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
	factors the CSLC will consider will include the timing, type, and location of the survey, the size of the vessel, and the availability of alternate vessels for conducting the proposed survey. CSLC authorizations under this subsection will be limited to individual surveys and under any such authorization; the Permittee shall update the MWCP to reflect how survey operations will occur under the authorization.					
<b>MM BIO-4:</b> Limits on Nighttime OGPP Surveys.	All State waters; nighttime survey operations are prohibited under the OGPP, except as provided below. The CSLC will consider the use of single beam echosounders and passive equipment types at night on a case-by-case basis, taking into consideration the equipment specifications, location, timing, and duration of survey activity.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Presurvey request for nighttime operations, including equipment specifications and proposed use schedule.  Document equipment use.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Approval required before survey is initiated.  Monitoring Report following completion of survey.	09-02-15 ER  NO NIGHTTIME SURVEY 10-20-15
<b>MM BIO-5:</b> Soft Start.	All State waters; the survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not commence at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period. During ramp-up, the Marine Wildlife Monitors (MWMs) shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWMs be able to visually observe the full safety zone.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Compliance with permit requirements (observers); compliance with safe start procedures.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Immediately prior to survey.	09-02-15 ER

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<b>MM BIO-6:</b> Practical Limitations on Equipment Use and Adherence to Equipment Manufacturer's Routine Maintenance Schedule.	All State waters; geophysical operators shall follow, to the maximum extent possible, the guidelines of Zykov (2013) as they pertain to the use of subbottom profilers and side-scan sonar, including: <ul style="list-style-type: none"> <li>Using the highest frequency band possible for the subbottom profiler;</li> <li>Using the shortest possible pulse length; and</li> <li>Lowering the pulse rate (pings per second) as much as feasible.</li> </ul> Geophysical operators shall consider the potential applicability of these measures to other equipment types (e.g., boomer). Permit holders will conduct routine inspection and maintenance of acoustic-generating equipment to ensure that low energy geophysical equipment used during permitted survey activities remains in proper working order and within manufacturer's equipment specifications. Verification of the date and occurrence of such equipment inspection and maintenance shall be provided in the required presurvey notification to CSLC.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document initial and during survey equipment settings.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Immediately prior to and during survey.	09-02-15 ER
<b>MM BIO-7:</b> Avoidance of Pinniped Haul-Out Sites.	The Marine Wildlife Contingency Plan (MWCP) developed and implemented for each survey shall include identification of haul-out sites within or immediately adjacent to the proposed survey area. For surveys within 300 meters (m) of a haul-out site, the MWCP shall further require that: <ul style="list-style-type: none"> <li>The survey vessel shall not approach within 91 m of a haul-out site, consistent with National Marine Fisheries Service (NMFS) guidelines;</li> <li>Survey activity close to haul-out sites shall be conducted in an expedited manner to minimize the potential for disturbance of pinnipeds on land; and</li> <li>Marine Wildlife Monitors shall monitor pinniped activity onshore as the vessel approaches, observing and reporting on the number of pinnipeds potentially disturbed (e.g., via head lifting, flushing into the water). The purpose of such reporting is to provide CSLC and California Department of Fish and Wildlife (CDFW) with information regarding potential disturbance associated with OGPP surveys.</li> </ul>	No adverse effects to pinnipeds at haul outs are observed.	Document pinniped reactions to vessel presence and equipment use.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Monitoring Report following completion of survey.	09-02-15 ER 10-20-15 ER

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<p><b>MM BIO-8:</b> Reporting Requirements – Collision.</p>	<p>All State waters; if a collision with marine mammal or reptile occurs, the vessel operator shall document the conditions under which the accident occurred, including the following:</p> <ul style="list-style-type: none"> <li>• Vessel location (latitude, longitude) when the collision occurred;</li> <li>• Date and time of collision;</li> <li>• Speed and heading of the vessel at the time of collision;</li> <li>• Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog) at the time of collision;</li> <li>• Species of marine wildlife contacted (if known);</li> <li>• Whether an observer was monitoring marine wildlife at the time of collision; and,</li> <li>• Name of vessel, vessel owner/operator, and captain officer in charge of the vessel at time of collision.</li> </ul> <p>After a collision, the vessel shall stop, if safe to do so; however, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then immediately communicate by radio or telephone all details to the vessel's base of operations, and shall immediately report the incident. Consistent with Marine Mammal Protection Act requirements, the vessel's base of operations or, if an onboard telephone is available, the vessel captain him/herself, will then immediately call the National Oceanic and Atmospheric Administration (NOAA) Stranding Coordinator to report the collision and follow any subsequent instructions. From the report, the Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. From the vessel's base of operations, a telephone call will be placed to the Stranding Coordinator, NOAA National Marine Fisheries Service (NMFS), Southwest Region, Long Beach, to obtain instructions. Although NOAA has primary responsibility for marine mammals in both State and Federal waters, the California Department of Fish and Wildlife (CDFW) will also be advised that an incident has occurred in State waters affecting a protected species.</p>	<p>No adverse effects to marine mammals or sea turtles due to survey activities are observed.</p>	<p>Submit Final Monitoring Report after completion of survey activities.</p>	<p>OGPP permit holder.</p>	<p>Monitoring Report following completion of survey.</p>	<p>10.20.15 ER</p>

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<b>MM BIO-9:</b> Limitations on Survey Operations in Select Marine Protected Areas (MPAs).	All MPAs; prior to commencing survey activities, geophysical operators shall coordinate with the CLSC, California Department of Fish and Wildlife (CDFW), and any other appropriate permitting agency regarding proposed operations within MPAs. The scope and purpose of each survey proposed within a MPA shall be defined by the permit holder, and the applicability of the survey to the allowable MPA activities shall be delineated by the permit holder. If deemed necessary by CDFW, geophysical operators will pursue a scientific collecting permit, or other appropriate authorization, to secure approval to work within a MPA, and shall provide a copy of such authorization to the CSLC as part of the required presurvey notification to CSLC. CSLC, CDFW, and/or other permitting agencies may impose further restrictions on survey activities as conditions of approval.	No adverse effects to MPA resources due to survey activities are observed.	Monitor reactions of wildlife to survey operations; report on shutdown conditions and survey restart.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; survey permitted by CDFW.	Prior to survey.	09-02-15 ER
<b>MM HAZ-1:</b> Oil Spill Contingency Plan (OSCP) Required Information.	Permittees shall develop and submit to CSLC staff for review and approval an OSCP that addresses accidental releases of petroleum and/or non-petroleum products during survey operations. Permittees' OSCPs shall include the following information for each vessel to be involved with the survey: <ul style="list-style-type: none"> <li>• Specific steps to be taken in the event of a spill, including notification names, phone numbers, and locations of: (1) nearby emergency medical facilities, and (2) wildlife rescue/response organizations (e.g., Oiled Wildlife Care Network);</li> <li>• Description of crew training and equipment testing procedures; and</li> <li>• Description, quantities, and location of spill response equipment onboard the vessel.</li> </ul>	Reduction in the potential for an accidental spill. Proper and timely response and notification of responsible parties in the event of a spill.	Documentation of proper spill training.  Notification of responsible parties in the event of a spill.	OGPP permit holder and contract vessel operator.	Prior to survey.	09-02-15 ER
<b>MM HAZ-2:</b> Vessel fueling restrictions.	Vessel fueling shall only occur at an approved docking facility. No cross vessel fueling shall be allowed.	Reduction in the potential for an accidental spill.	Documentation of fueling activities.	Contract vessel operator.	Following survey.	10-20-15 ER
<b>MM HAZ-3:</b> OSCP equipment and supplies.	Onboard spill response equipment and supplies shall be sufficient to contain and recover the worst-case scenario spill of petroleum products as outlined in the OSCP.	Proper and timely response in the event of a spill.	Notification to CSLC of onboard spill response equipment/supplies inventory, verify	Contract vessel operator.	Prior to survey.	10-20-15 ER

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
			ability to respond to worst-case spill.			
<b>MM HAZ-1:</b> Oil Spill Contingency Plan (OSCP) Required Information.	Outlined under <b>Hazards and Hazardous Materials</b> (above)					
<b>MM HAZ-2:</b> Vessel fueling restrictions.	Outlined under <b>Hazards and Hazardous Materials</b> (above)					
<b>MM HAZ-3:</b> OSCP equipment and supplies.	Outlined under <b>Hazards and Hazardous Materials</b> (above)					
<b>MM BIO-9:</b> Limitations on Survey Operations in Select MPAs.	Outlined under <b>Biological Resources</b> (above)					
<b>MM REC-1:</b> U.S. Coast Guard (USCG), Harbormaster, and Dive Shop Operator Notification.	All California waters where recreational diving may occur; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to divers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall: (1) post such notices in the harbormasters' offices of regional harbors; and (2) notify operators of dive shops in coastal locations adjacent to the proposed offshore survey operations.	No adverse effects to recreational divers from survey operations.	Notify the USCG, local harbormasters, and local dive shops of planned survey activity.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	09-02-15 ER

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
<b>MM FISH-1:</b> U.S. Coast Guard (USCG) and Harbormaster Notification.	All California waters; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to mariners and fishers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall post such notices in the harbormasters' offices of regional harbors.	No adverse effects to commercial fishing gear in place.	Notify the USCG and local harbormasters of planned survey activity.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	09-02-15
<b>MM FISH-2:</b> Minimize Interaction with Fishing Gear.	To minimize interaction with fishing gear that may be present within a survey area: (1) the geophysical vessel (or designated vessel) shall traverse the proposed survey corridor prior to commencing survey operations to note and record the presence, type, and location of deployed fishing gear (i.e., buoys); (2) no survey lines within 30 m (100 feet) of observed fishing gear shall be conducted. The survey crew shall not remove or relocate any fishing gear; removal or relocation shall only be accomplished by the owner of the gear upon notification by the survey operator of the potential conflict.	No adverse effects to commercial fishing gear in place.	Visually observe the survey area for commercial fishing gear. Notify the gear owner and request relocation of gear outside survey area.  Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Immediately prior to survey (prior to each survey day).	9-16-15 ER
<b>MM FISH-1:</b> USCG and Harbormaster Notification.	Outlined under <b>Commercial and Recreational Fisheries</b> (above)					

Acronyms/Abbreviations: CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; CSLC = California State Lands Commission; dB = decibels; kHz = kilohertz; MPA = Marine Protected Area; MWCP = Marine Wildlife Contingency Plan; MWM = Marine Wildlife Monitor; m = meter(s); NOAA = National Oceanic and Atmospheric Administration; NO<sub>x</sub> = Nitrogen Oxide; OGPP = Offshore Geophysical Permit Program; OSCP = Oil Spill Contingency Plan; USCG = U.S. Coast Guard

**SUMMARY REPORT  
MARINE WILDLIFE MONITORING**

**Shallow Water Fiber-optic Cable Route Survey  
Hermosa Beach, California**

*prepared for*

**CALIFORNIA STATE LANDS COMMISSION  
Division of Environmental Planning and Management  
100 Howe Avenue, Suite 100 South  
Sacramento, California  
95825-8202**

*and*

**NOAA FISHERIES  
501 Ocean Boulevard, Suite 4200  
Long Beach, California  
90802**

*prepared by*



MARINE MAMMAL CONSULTING GROUP, INC.

**Peter Howorth  
MARINE MAMMAL CONSULTING GROUP  
1600 Clearview Road  
Santa Barbara, California  
93101**

**September 2015**

# Table of Contents

## Contents

1.0	Executive Summary	1
2.0	Introduction	1
3.0	Background	2
3.1	Fiber-optic Cable Route off Hermosa Beach, California	2
3.2	Schedule	3
4.0	Mitigation Monitoring Methods	3
4.1	Briefings	3
4.2	Watches	3
4.3	Equipment	3
4.4	Communications	4
4.5	Data Recording	4
4.6	Reporting	5
5.0	Results and Discussion	5
5.1	Marine Mammal Sightings	5
5.2	Avoidance of Marine Mammal – Cable Survey Vessel Interactions	6
5.2.1	20 September 2015: Off Hermosa Beach	6
5.2.2	23 September 2015: Off Hermosa Beach	7
5.3	Alerts Made but No Action Needed	7
5.4	Reactions of Marine Mammals to Operations	7
5.5	Turtle Sightings	7
5.6	Other Wildlife Sightings	7
5.7	Environmental Conditions	8
6.0	Conclusions and Recommendations	8
7.0	Acknowledgments	8
8.0	Literature Cited	8

## Tables

Table 1: Marine Mammal Sightings off Hermosa Beach by Survey Dates	6
--	---

## Figures

Figure 1: Cable Survey Route	2
------------------------------	---

## Appendices

Appendix 1: Equipment Specifications	9
Survey Vessel <i>JAB</i>	9
Sonar Equipment	9
Table 1A: Sonar Specifications	9
Appendix 2: Marine Wildlife Mitigation Measures	10
Measures for Crew to Avoid Potential Collisions (Ship Strikes)	10
Measures for Monitor to Avoid Potential Collisions (Ship Strikes)	10
Measures for Monitor to Avoid Potential Entanglements	12
Zones of Influence for Sonar Operations	12
Measures for Crew to Avoid Potential Sonar Impacts	13
Measures for Monitor to Avoid Potential Sonar Impacts	13
Measures to Avoid Potential Impacts from Oil or Fuel Releases	14
Avoidance of Pinniped Haul-outs and Rookeries	14

## 1.0 Executive Summary

This project involved a nearshore survey as part of a proposed submarine cable route. Once the entire cable is installed, it will connect Hermosa Beach, California, to Southeast Asia. Off the California coast, the cable route crosses submerged lands from mean high water to 3 nautical miles (nm) offshore, then stretches into federal waters and beyond into international waters. This survey identified the makeup of the ocean floor near shore, including hard bottom areas, so such areas can be avoided when the cable is actually laid. In general, the surveyed route will place the cable in soft bottom areas where maximum burial can be achieved. Low-energy sonar was used for this survey.

EGS Americas, Inc., an international group of survey firms, was selected to perform the survey. The Marine Mammal Consulting Group, Inc. (MMCG), of Santa Barbara, California, was selected to prepare and implement a Marine Wildlife Contingency Plan and to report on the results of the wildlife monitoring effort.

This project began on 17 September 2015 and required 8 days to complete. A total of five species of marine mammals was observed, plus one unidentified large cetacean that most likely was a humpback whale (*Megaptera novaeangliae*). The total number of animals seen during the course of 43 sightings was 181. No impacts were observed on any marine wildlife. The monitoring effort was effective.

## 2.0 Introduction

Regulatory agencies at state and federal level were concerned that survey operations might harm marine wildlife. In particular, a potential for collision between the survey vessel and marine mammals and turtles existed, as well as possible entanglement of marine wildlife in the sonar tow cable. The agencies were also concerned about potential impacts on marine wildlife from the sonar used during this project. Finally, they wanted to be assured that proper procedures were followed in the unlikely event of an oil or fuel release.

As the permit process continued, ICF International, environmental consultants for this project, contracted with MMCG, an independent firm based in Santa Barbara, California, to help with planning and implementing the marine wildlife monitoring. MMCG prepared a Marine Wildlife Contingency Plan specifically for CSLC (MMCG 2015a). This report was prepared to fulfill agency reporting requirements for marine wildlife monitoring during the shallow water survey.

This report provides background on the cable route survey and survey schedule. It describes the mitigation monitoring methods, including briefings, watch schedules, equipment used by the monitor, communications, data recording, and reporting procedures.

In the results and discussion section, the marine wildlife sightings are listed by species and include numbers of animals observed, location, behavior, and other relevant information. This section also describes how actions were taken to avoid adverse interactions between the survey vessel and marine mammals, and the effectiveness of such actions. Anecdotal sightings of other wildlife are also discussed.

The conclusions and recommendations section summarizes the effectiveness of the monitoring and makes recommendations for similar future projects. The report includes literature citations.

To make this a stand-alone document, yet avoid repetition of subjects already covered in the Marine Wildlife Contingency Plan (MMCG 2015a), an appendix is provided that describes the survey vessel and sonar specifications. A second appendix reiterates mitigation measures discussed in the plan and employed for the protection of marine wildlife.

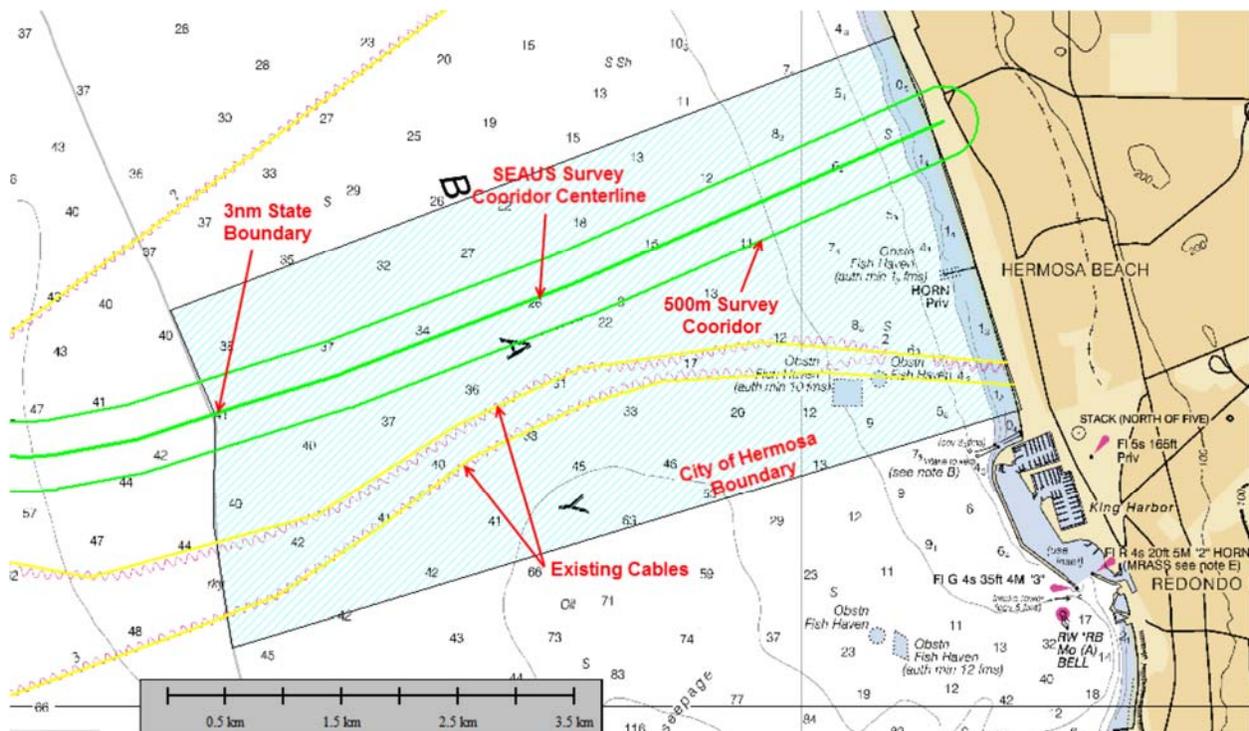
### 3.0 Background

#### 3.1 Fiber-optic Cable Route off Hermosa Beach, California

Unlike many geophysical surveys, which canvas the sea floor over broad geographic areas, this survey headed from shore west-southwest approximately 2.6 nm, then gently veered slightly more to the west as it entered federal waters. The start of the survey was at 33 52.187 North, 118 24.542 West. The survey reached the limits of California State waters at 33 51.134 North, 118 27.712 West.

Rather than a box, the survey area was more like a long corridor about 500 m wide. When obstructions such as areas of high relief or existing submarine cables were encountered, the survey was widened slightly to minimize exposure to such spots. Based on the results, the in-field routing engineer decided during the survey if the Route Position List (RPL), which

**Figure 1: Cable Survey Route**



Source: EGS

represented the center of the cable route, needed to be adjusted within the survey corridor. Once the engineer was satisfied no cable hazards existed, a new RPL, called the In-Field Engineered Route, was created.

### **3.2 Schedule**

The survey vessel *JAB* was berthed in King Harbor, Redondo Beach, for this project. The vessel transited to the survey site and back each day. The project started on 17 September and ended on 24 September. Surveys were conducted during daylight hours only. The vessel left the dock each day at about 0800 or later and returned well before dark.

## **4.0 Mitigation Monitoring Methods**

### **4.1 Briefings**

The Marine Wildlife Contingency Plan (MMCG 2015a) and numerous supporting documents, including data sheets, were provided to the MMCG monitor for review and familiarization well before the project began. Briefings were held between MMCG's principal scientist and the monitor to discuss mitigation monitoring methods. MMCG's principal scientist also provided the survey crew in advance with the Marine Wildlife Contingency Plan, along with lists of methods to be employed by them to avoid adverse impacts on marine wildlife. Consultations were held in advance between MMCG and EGS to review sonar ramp-up procedures. Before the vessel left port for the first time, the monitor met in person with the crew. The meeting(s) included the following topics:

- Legal aspects pertaining to marine wildlife protection;
- Responsibilities of crew and monitor to protect wildlife;
- Procedures for crew to follow to avoid potential impacts;
- Marine wildlife most likely to be encountered during the survey, based on NOAA data and reports from local whale watch boats;
- Copies of the Marine Wildlife Contingency Plan were always available to all crew members.

### **4.2 Watches**

A continuous watch was kept from port en route to the survey area, within the survey area, and from the survey area back to port. Watches were generally held on the bow, which afforded the most unobstructed view.

### **4.3 Equipment**

The monitor was required to wear a life vest and steel-toed boots. He was equipped with 7X50 waterproof, low-light, binoculars with a compass and range-finding reticule for establishing relative bearings and distances of animals from the vessel. These binoculars were calibrated for range prior to departure from port. The monitor also had a high resolution laser rangefinder. He was equipped with a handheld GPS unit as well as with a portable weather measuring device. This device recorded wind speed and direction as well as temperature. He also had a digital camera.

### **4.4 Communications**

The monitor was equipped with a standard digital cellular telephone with voice mail and text capabilities. He also carried a handheld marine VHF radio for communications with other

vessels if necessary. The handheld VHF radio also had ship-to-shore capabilities (telephone links). As a backup, the *JAB* crew also had cellular telephones and a VHF marine radio with ship-to-shore capabilities. With these extensive communications capabilities, reliable means of communications were maintained throughout the project. Reliable communications with many backups are essential for offshore operations.

#### **4.5 Data Recording**

All marine wildlife observations were recorded. Data sheets designed for this project included the date and time of each sighting, the monitor's name, and the vessel name. The location of each sighting was noted, using the monitor's handheld GPS. The genus and species of each animal was mentioned, along with the number of animals. Their behavior was noted, along with their heading if they were moving. Age categories and sex were noted when possible. Additional information, such as the direction, range and bearing of the animal(s) from the observer, along with its heading, was included. The remarks section included notes as to when each operation began and ended, and the nature of each operation (e.g., in transit, on station, ramping up, survey start and end, etc.). Anecdotal information was recorded on other wildlife, particularly sea birds, along with any association such wildlife had with marine mammals or with project operations.

Weather data were also recorded and updated periodically throughout each day. These included date, time, monitor's name, vessel's name, and location. Percentage and type of cloud cover were noted, along with visibility in meters and nautical miles. Swell direction and height were recorded, along with wind direction and velocity in knots.

Each time an alert was made or action had to be taken to prevent a potentially adverse impact, a detailed report was filled out. This both ensured that the effectiveness of such actions could be analyzed later, but also served as a record of essential information that would be needed in case an impact actually did occur. These incident reports included:

- Date;
- Monitor's name;
- Vessel's position at time of incident;
- Time animal sighted;
- Species;
- Number of animals;
- Animal's behavior;
- Closest distance of animal to vessel;
- Type of hazard (e.g., collision, sonar noise, etc.);
- Time crew notified;
- Time all-stop implemented;
- Time animal definitely clear of hazard;
- Time all-stop lifted;
- Effectiveness of all-stop;
- Crew's names and titles;
- Time MMCG and/or NOAA Fisheries notified (if impact occurred);
- Description of action taken;
- Names and titles of responding parties;
- Photographs taken? Photographer's name(s);

- Descriptive narrative of action taken (as many pages as needed).

Other details needed in the event of an adverse impact, such as weather conditions on site, and vessel name and contact numbers, were included on other forms.

## 4.6 Reporting

Marine mammal sighting reports, weather reports, and incident reports were transmitted daily to MMCG. Verbal communications were made by telephone daily as well.

## 5.0 Results and Discussion

### 5.1 Marine Mammal Sightings

A total of five species of marine mammals was observed, plus one unidentified large cetacean that most likely was a humpback whale (*Megaptera novaeangliae*). The total number of animals seen during the course of 43 sightings was 181. Each sighting represented anywhere from 1 to 25 animals. The total number of marine mammals seen was tallied and came to 181.

Whenever possible, resightings of animals were noted. Resightings of animals were excluded from the totals presented below. In many cases, however, it was impossible to determine whether an animal or group of animals had been seen previously because both the vessel and the animals usually moved constantly. Unless individuals had distinctive markings, it was not possible to distinguish one individual from the next. Thus the total numbers of some species are likely somewhat higher than the actual number of animals present at any one time. This was particularly true of four to seven California sea lions (*Zalophus californianus*) that were hauled out on or swimming next to one of the King Harbor entrance buoys. These animals were seen every time the vessel left and returned to port.

The main purpose of the observations was detection with the goal of avoiding impacts. Counting the animals observed served only to provide an idea of the relative abundance of each species present at any one time rather than to estimate local numbers. The abundance and diversity of species was extremely low. This was not unexpected because most of the important feeding grounds, migratory routes, and pinniped rookeries are found farther offshore rather than along the mainland coast of Southern California.

Identifying species during the survey, particularly threatened and endangered species, was considered important since any impacts to these populations or stocks would have been serious. However, only two large cetaceans were identified to species level during this project. Both were humpbacks, which remain endangered at this time although they have been proposed for delisting. One large cetacean seen in the distance could not be identified, but it was observed soon before the two humpbacks were noted, so it was most likely a humpback as well. On four occasions, common dolphins in the distance could not be identified as to species. These were recorded as *Delphinus* species (*D. sp.*). No listed species of pinnipeds were seen during this project, nor were any turtles or sea otters noted.

In the table below, “in transit” refers to animals seen while en route from King Harbor to the start of each day’s survey operation. “On site” refers to animals seen while surveying, no matter how far away the animals were from the survey vessel; in other words although such animals were visible during the surveys, they were not necessarily in the survey area, the hazard zone, or the

warning zone (see Appendix 2). Also, some animals were on site—in the survey area—when no sonar was deployed.

**Table 1:**  
**Marine Mammal Abundance off Hermosa Beach by Survey Dates**

Species	17 Sept.	18 Sept.	19 Sept.	20 Sept.	21 Sept.	22 Sept.	23 Sept.	24 Sept.
Humpback whale	0	0	0	2 on site	0	0	0	0
Unknown large cetacean	0	0	0	1 on site	0	0	0	0
Common dolphin (no species ID)	0	0	4 on site	0	0	0	0	15 on site
Short-beaked common dolphin	0	0	0	9 in transit 6 on site	0	21 on site	2 on site	0
Bottlenose dolphin; coastal stock	0	0	0	25 in transit	2 on site	0	0	0
California sea lion	4 in transit	9 in transit	11 in transit 4 on site	11 in transit 4 on site (plus 2 dead*)	8 in transit plus 2 dead*)	5 in transit 6 on site	18 in transit	13 in transit 1 on site

\*From the state of decomposition, it was evident that these animals had died well before the project started and had simply drifted into the area.

The total number of animals of each species follows:

Humpback whales	2
Unidentified large cetacean	1
Unidentified common dolphins	19
Short-beaked common dolphins	38
Bottlenose dolphins	27
<u>California sea lions</u>	<u>94</u>
Total seen	181

## 5.2 Avoidance of Marine Mammal – Cable Survey Vessel Interactions

### 5.2.1 20 September 2015: Off Hermosa Beach

At 1108 hours, eight short-beaked common dolphins (*Delphinus delphis*) were seen about 800 m out approaching *JAB* on an intersect course from the northwest. The sonar was immediately shut down. The dolphins continued on their course, passing within 5 meters (m) of the boat. They continued on their same course without pause. Once they were well clear of the hazard zone and after waiting 15 minutes, the sonar was ramped up again.

At 1213 hours, a smaller group of short-beaked common dolphins, possibly from the same pod, were seen approaching the hazard zone from the southeast. The sonar was again stopped immediately. The dolphins passed about 100 m south of *JAB* and continued on the same course. After waiting to make certain the dolphins had left the area, the sonar was ramped up again, starting at 1228. No further interruptions occurred that day.

### **5.2.2 23 September 2015: Off Hermosa Beach**

At 1650 hours, two short-beaked common dolphins were seen approaching *JAB* on an intersect course from the northwest. The sonar was immediately shut down. The dolphins continued on their course, passing within 200 m of the boat. They continued on their same course without pause. Once they were well clear of the hazard zone, the sonar was ramped up again.

### **5.3 Alerts Made but No Action Needed**

On one occasion, the crew was alerted that two bottlenose dolphins (*Tursiops truncatus*) were swiftly approaching the hazard zone. The dolphins continued on their way without pause, however.

### **5.4 Reactions of Marine Mammals to Operations**

In general, the vast majority of animals appeared to be indifferent to *JAB*. Short-beaked common dolphins passed fairly close to *JAB* during surveys on two occasions but did not linger (see Section 5.2).

### **5.5 Turtle Sightings**

No turtles were seen during this project.

### **5.6 Other Wildlife Sightings**

The following bird species were recorded in the field notes:

- California brown pelican (*Pelecanus occidentalis californicus*)
- Western gull (*Larus occidentalis*)
- Heermann's gull (*L. heermanni*)
- Sooty shearwater (*Puffinus griseus*)
- Buller's shearwater (*P. bulleri*)
- Least storm petrel (*Halocptena microsoma*)
- Elegant tern (*Thalasseus elegans*)
- Caspian tern (*Hydroprogne caspia*)
- Red Phalarope (*Phalaropes fulicarius*)
- Western grebe (*Aechmophorus occidentalis*)
- Eared grebe (*Podiceps nigricollis*)
- Double-crested cormorant (*Phalacrocorax auritus*)
- Brandt's cormorant (*P. pencillatus*)

On one occasion, western gulls and double-crested cormorants appeared to be feeding near four California sea lions, but the distance was too great to be certain. On another occasion, sooty shearwaters, red phalaropes, brown pelicans, and western gulls were circling and diving near four common dolphins (*D. sp.*) in the distance.

In addition to birds, three hammerhead sharks were noted, along with one marlin, which was leaping out of the water.

## 5.7 Environmental Conditions

Environmental conditions were quite moderate, with visibility from 0.5 to 2.0 nm. Since operations didn't begin until well after sunrise and ended before sunset, glare was minimal. Swell ranged from 0.25 to 2.0 m, with an average of about 1 m. Wind ranged from calm to a maximum of 13.3 knots. Skies were generally clear or nearly so, but on 21 September, the sky was completely overcast in the afternoon. Temperatures ranged from 23.0 to 30.1° Celsius (74 to 86° Fahrenheit). Worth noting is that the sea surface temperature was as high as 27.8° Celsius (82° Fahrenheit).

## 6.0 Conclusions and Recommendations

No adverse impacts or reports of such impacts occurred during this project. On three occasions, the monitor took action to avoid potentially adverse impacts to marine mammals. On one occasion, an alert was made but no action proved necessary. The mitigation measures proved to be effective.

MMCG recommends that the mitigation measures employed during this project be continued in similar future projects. MMCG further recommends that spotters aboard survey vessels report any marine mammals in distress, whether related to their operations or not.

## 7.0 Acknowledgments

MMCG sincerely thanks Chris Brungardt of ICF International for his sage advice throughout this project. MMCG also thanks EGS who were universally cooperative and helpful during this project. Finally, Tom Sturk, operator of the survey vessel *JAB*, was very helpful as well as being very safety conscious.

## 8.0 Literature Cited

- CSLC. 2008. General Permit to Conduct Geophysical Surveys. Blank form showing permit conditions, 18 July 2008.
- CSLC. 2014. Exhibit H, Mitigation Monitoring Program, updated 23 April 2014.
- MMCG. 2015a. Marine Wildlife Contingency Plan, Fiber-optic Cable Survey off Hermosa Beach, California. Prepared for CSLC.
- MMCG. 2015b. Marine Wildlife Protection Plan, MC Global BP4 Fiber-optic Cable Installations off Hermosa Beach, California. Prepared for City of Hermosa Beach and NOAA Fisheries Service.

## Appendix 1: Equipment Specifications

### Survey Vessel *JAB*

The 44 ft. (13.4 m) catamaran *JAB* (below) was used for this survey. *JAB* was powered by twin Cummins diesels. It had a draft of 2.5 ft. (0.75 m). It was propelled by twin jet drives and had no propellers or other exposed moving parts beneath the waterline.

### Sonar Equipment

**Table A1: Sonar Specifications**

Hull-mounted System	Rms Source Level (dB re. 1µPa – m)	Frequency (kHz)	Max. Ping Rate (Hz)	Pulse Length	Distances to Isoleths in Meters (dB re. 1µPa – rms)
R2Sonics 2024 (160°swath)	221	200-400	60	15-1000 us	190 dB: 26 and 19 180 dB: 57 and 35 160 dB: 164 and 80
<b>Sub-bottom Profiler Towed System</b>					
Edgetech DSS2000 Chirp (24°cone)	202	2-16	10	20ms	190 dB: 6 180 dB: 10 160 dB: 130
<b>Sidescan Sonar Towed System</b>					
Edgetech DSS2000 LF (100°swath)	213	120	25	N/A	190 dB: 13 180 dB: 51 160 dB: 210
Edgetech DSS2000HF (100°swath)	219	410	50	N/A	190 dB: 9 180 dB: 39 160 dB: 160
Sonardyne 8071 Ultra Short Baseline (USBL; cone)	188	19-36	14	N/A	190 dB: 14 180 dB: 24 160 dB: 115

Source: EGS

## Appendix 2: Marine Wildlife Mitigation Measures

### Measures for Crew to Avoid Potential Collisions (Ship Strikes)

The captain and crew were given hard copies of the following procedures to be employed while in transit or during surveys:

- Maintain a watch for marine mammals and turtles at all times while vessel is underway;
- Do not approach any whales closer than 100 m;
- Do not cut in front of a whale;
- Do not separate a whale mother and calf pair;
- If a whale is observed on an intersect course, reduce speed or alter course until the whale has safely passed;
- If a whale is moving on a parallel course, maintain a steady speed and course but do not go faster than the whale;
- If a whale becomes evasive or defensive, stop the vessel until the whale has left the area;

- Maintain a cruising speed of not more than 10 knots when whales are within 1 nm ahead;
- If concentrations of whales are seen less than 1 nm ahead, reduce transit speed further or alter course while maintaining watch on the whales;
- While under way at cruising speed, provide a wide berth from any pinnipeds or turtles;
- If dolphins begin riding the bow wave of the boat less than 1 nm from the project site, slow down or stop until the animals have left. It is understood that dolphins often ride bow and stern wakes, so no action is necessary while transiting from port up to within 1 nm from the project site.

### **Measures for Monitor to Avoid Potential Collisions (Ship Strikes)**

The methods employed by the monitor to avoid ship strikes during transits included:

- A NOAA Fisheries-approved monitor shall be on watch during all transits and surveys;
- The monitor shall have a 360-degree view of the water;
- If environmental conditions (e.g., high sea state) preclude the monitor from seeing out at least 1 nm, the monitor shall require available personnel to maintain heightened vigilance for any approaching marine mammals or turtles;
- All crew members shall be briefed so they know to report any whale sightings to the monitor immediately;
- Such personnel shall have means of immediately communicating any sightings to the monitor;
- If environmental conditions preclude the monitor from seeing at least 100 m from the vessel, the vessel shall slow to 10 knots or less until visual conditions improve;
- The monitor shall maintain verbal communications with the crew at all times;
- The monitor shall have the authority to stop all project activities if, in his sole opinion, project operations have the potential to threaten or “take” a marine mammal;
- The monitor has sole responsibility for determining whether a collision appears imminent, to request that steps be taken to prevent any collision, to determine when any chance of an collision has passed, and to request that the vessel be returned to normal operations following a potential collision;
- If a marine mammal or turtle appears to be approaching the boat while underway, the monitor shall make the crew aware that actions to reduce the possibility of collision may be necessary;
- It is understood that smaller marine mammals, such as dolphins, routinely approach vessels closely and may even ride the bow wake. The approach of such animals will not require taking action to avoid them unless, in the opinion of the monitor, action is necessary to prevent adverse impacts;
- If a collision appears imminent, the monitor shall request that the speed of the vessel, if it is underway, be reduced as quickly and as much as possible;
- If a collision appears imminent, the monitor shall position himself in the best possible vantage point for helping the crew avoid the collision while still maintaining communications with the crew;
- If a collision is likely, the monitor shall request that available crew members take up observation positions to help report sightings to the monitor so that appropriate actions may be taken to avoid any impact. Such crew members shall have means of immediately communicating with the monitor;
- In the unlikely event that a collision does occur, the monitor or captain shall *immediately* notify appropriate regulatory agencies. The date, time, and place of collision, vessel

name, owner and operator, immediate contact information, species involved, status of animal, heading of animal if animal is moving, and onsite weather, sea conditions, and visibility shall be provided. Digital photographs of animal shall be taken, showing as much detail as possible, and immediately sent to the regulatory agencies;

- A verbal report shall be followed by a written report;
- Reports shall be communicated to the federal and state agencies listed below:

**Federal:**

Justin Viezbicke  
California Stranding Network Coordinator  
NOAA Fisheries  
Long Beach, CA 90802  
(562) 980-3230 office  
(562) 506-4317 cell  
(808) 313-2803 alternate cell  
justin.viezbicke@noaa.gov

Justin Greenman  
Assistant Stranding Network Coordinator  
NOAA Fisheries  
(562) 980-3264 office  
(562) 506-4315 cell  
justin.greenman@noaa.gov

**State:**

California Department of Fish & Wildlife  
Long Beach, CA 90802  
(562) 590-5132

California State Lands Commission  
Division of Environmental Planning and Management  
Sacramento, CA  
(916) 574-0748  
slc.ogpp@slc.ca.gov

In some instances, the survey vessel may be engaged in operations at the survey site that do *not* involve sonar, such as performing conductivity – temperature – depth (CTD) casts to measure sound propagation properties of the water at various depths and locations, or to obtain sediment samples from the sea floor. During such operations, the above measures used to avoid collisions, and the measures discussed below to avoid entanglements, shall be employed.

**Measures for Monitor to Avoid Potential Entanglements**

Though not stipulated as a CSLC requirement, NOAA Fisheries had the following requirements to avoid potential entanglements of marine wildlife in the tow cable for the sonar:

- During surveys, the scope in the tow cable shall be reduced as much as practicable;
- If essential to avoid a possible entanglement, the towed sonar shall be retrieved;

- In the unlikely event that a marine mammal does become entangled in the cable, the monitor shall request that power to the cable be shut down as soon as possible;
- The monitor and crew shall take digital still and video photographs of the entangled animal, showing as much detail as possible;
- In the event of an entanglement, NOAA Fisheries shall be *immediately* notified as described above. Digital or still photographs of the entanglement shall be sent electronically to the Stranding Coordinator;
- Based on the report and photography, the Stranding Coordinator may dispatch a marine mammal rescue team to the scene in an independent vessel;
- The officer in charge of survey operations shall be consulted for advice as to what actions would be safe or possible for his personnel to perform (e.g., slacking or cutting the cable) in the event of a disentanglement effort;
- It is understood that personnel safety concerns or weather and sea conditions may prevent any action; nonetheless, every reasonable effort shall be made to safely disentangle any animal;
- Immediately following completion of the disentanglement effort, an additional verbal report shall be made to the regulatory agencies, followed by a written report.

As a professional courtesy, the monitors shall report any marine mammals or turtles that are observed tangled in fishing gear, mooring lines, and other materials *not* connected with this project, following the above notification procedures. If possible, the monitor should take photos of the entangled animal and immediately relay them to NOAA Fisheries.

### **Zones of Influence for Sonar Operations**

MMCG found in numerous past projects that “safety zone” was often misinterpreted to mean that anything within a safety zone was not in danger (e.g., “The whale is in the safety zone, so it must be safe.”). To avoid confusion and misunderstandings, we used “hazard zone,” meaning that anything within the hazard zone was in danger. For this survey, CSLC’s recommendations were adopted, establishing a 600 m hazard zone for the survey (not to be confused with the 100 m hazard zone for transits, above).

A 1000 m buffer or warning zone was also implemented for the surveys. This allowed the monitor to warn survey personnel that marine wildlife were near or approaching the hazard zone, placing the crew on alert that measures might have to be implemented to protect wildlife (see below).

### **Measures for Crew to Avoid Potential Sonar Impacts**

- Inspect and maintain equipment to ensure proper working order and adherence to manufacturer’s specifications;
- When using the sub-bottom profiler, use the highest frequency band possible;
- When using either the sidescan sonar or the sub-bottom profiler, use the shortest possible pulse length and the lowest possible pulse rate;
- Apply these measures to other equipment (e.g., boomers) when feasible;
- Each piece of equipment shall be started at the lowest possible sound level, increasing power in increments of no greater than 6 dB every five minutes so that any undetected marine mammals in the area can leave before full power is attained.

## Measures for Monitor to Avoid Potential Sonar Impacts

- Monitoring shall be conducted during the surveys from the highest possible vantage point, using range-finding binoculars to ensure that the hazard zone is maintained;
- The monitor shall observe the warning and hazard zones for at least 15 minutes prior to ramping up power to the equipment;
- The monitor shall request that operations be stopped if marine mammals or turtles are about to enter or have entered the 600 m hazard zone and may be negatively affected by survey operations;
- If an animal's behavior is irregular, the monitor shall request that operations be stopped until the animal has left the area or has not been seen for 15 minutes;
- Whenever the equipment is restarted, the ramp-up period described above must again be initiated.

## Measures to Avoid Potential Impacts from Oil or Fuel Releases

The EGS survey vessel *JAB* was equipped with oil spill containment equipment and had an established, approved oil spill contingency plan in place for dealing with any releases of fuel, lubricants, or chemicals. In order to respond in the unlikely event of an oil or fuel release, the following measures shall be taken:

- In the event a marine mammal or turtle becomes oiled, the monitor shall immediately notify NOAA Fisheries, listed above, the U.S. Coast Guard, the Office of Spill Prevention and Response (OSPR), and the Oiled Wildlife Care Network (OWCN), listed below;
- In the event a sea bird becomes oiled, the monitor shall immediately contact the U.S. Coast Guard, OSPR, and OWCN so that a rescue procedure can be worked out. If requested and if feasible, crew members may be allowed to rescue oiled sea birds and arrange for swift transport to the nearest authorized care center;
- The regulatory agencies shall be kept apprised of any such rescue efforts and provided with verbal and written reports once such efforts are complete.

U.S. Coast Guard  
Eleventh Coast Guard District  
(562) 499-5330

California Department of Fish and Wildlife  
Office of Spill Prevention and Response (OSPR)  
(800) 852-7550

University of California, Davis  
School of Veterinary Medicine  
Oiled Wildlife Care Network (OWCN)  
(877) 823-6926

## Avoidance of Pinniped Haul-outs and Rookeries

CSLC requires various mitigation measures to ensure that pinniped haul-out and rookery sites within or immediately adjacent to survey operations are protected from project activities. No such sites existed anywhere near the area of operation for this project. CSLC Mitigation

Measure BIO-7, Avoidance of Pinniped Haul-out Sites, did not apply to this project (CSLC 2008 and 2014).