

Geophysical Survey Screening Guidance

California State Lands Commission (CSLC) staff has prepared this guidance document to help permittees and the public understand how CSLC staff will review proposed geophysical surveys under the Low Energy Offshore Geophysical Permit Program (OGPP). In accordance with OGPP General Permit Exhibit E, permittees must submit a Presurvey Notification, including all of the items specified in Exhibits F and G, to CSLC staff at least 21 calendar days prior to each survey.¹ The goal of this guidance is to improve the transparency of the OGPP for the public and help permittees ensure that their surveys are not denied or delayed due to missing information or inappropriate survey conditions/equipment.

Geophysical Survey Equipment

A list of the specific make and model of all acoustic-generating geophysical equipment, including specifications regarding equipment source levels (dB re 1 μ Pa [rms]) and frequencies (Hz, kHz), are required in the permittee's Marine Wildlife Contingency Plan (MWCP) and on the Presurvey Notification Form (General Permit Exhibit F). Note that during survey operations, permittees are required to follow, to the maximum extent possible, the guidelines of Zykov (2013) as they pertain to the use of subbottom profilers and side-scan sonar (operators must also consider the potential applicability of these measures to other equipment types [e.g., boomer]), including:

- Using the highest frequency band possible for the subbottom profiler;
- Using the shortest possible pulse length (operators should not use pulse lengths with rise times shorter than 20 ms, whenever possible); and
- Lowering the pulse rate (pings per second) as much as feasible.

Why is this important?

The OGPP is based on several common equipment-based factors that were determined to be less harmful to the marine environment. When equipment types or operational factors are not consistent with the OGPP, surveys cannot be performed under the General Permit. The types of equipment authorized² under the OGPP include:

1. Echosounders (i.e., single beam and multibeam echosounders, fathometers);
2. Side-scan sonars;
3. Subbottom profilers (i.e., mini-sparkers, boomers, chirp, general subbottom profiler systems), excepting boomers proposed for harbor porpoise habitat from

¹ Permittees conducting geophysical surveys associated with dredging activities (in ports, harbors, and marinas) must notify CSLC staff at least 24 hours in advance of survey activity or before the survey commences if given a less than 24-hour notice. Please see Exhibit E (Part II of the General Permit for more information.

² High energy surveys using airguns, water compression devices, or explosives are prohibited under the OGPP.

Point Conception to the Oregon border;

4. Multi-component systems; and
5. Passive equipment (e.g., magnetometers, gravity meters).

Permittees may choose different brands of equipment or use slightly different operational specifications than the equipment used in the OGPP's acoustic modeling study (**Appendix A**); however, permittees should review their proposed survey equipment and operational specifications for consistency with, or for characteristics substantially similar to, those identified in Appendix A.

The key to CSLC staff's review is whether the specific variables of the proposed survey equipment (e.g., sound output, frequency, pulse rate, beam width), when combined, produce an operational scenario that is consistent with the "typical survey scenario" described in the OGPP Mitigated Negative Declaration (MND) (See *Safety Zones* on page 3 for additional information on the "typical survey scenario"). With this flexibility, it is expected that the majority of surveys proposed by permittees would still fall under the analysis of the "typical survey scenario." This means that the proposed survey would not cause environmental impacts greater than what was analyzed by the CSLC, and that the mitigation measures would be effective and appropriate for the proposed survey. If a permittee proposes to use equipment or proposes to conduct a survey under conditions that are not represented under the "typical survey scenario," additional information and/or analysis, including modeling of that specific equipment, will need to be provided to CSLC staff to review for compliance with the OGPP MND.

The more information the permittee provides CSLC staff in the Presurvey Notification regarding proposed geophysical survey equipment specifications and planned operational parameters, the easier it will be for CSLC staff to determine whether the survey can move forward as planned.

Verification of Equipment Service and/or Maintenance

Permittees are required to perform routine inspection and maintenance of the equipment to ensure that it remains in proper working order (see General Permit Exhibit H, Mitigation Measure [MM] BIO-6). Permittees should brief CSLC staff regarding their internal QA/QC procedures to make sure that requirements under MM BIO-6 are met. QA/QC procedures may include: checking cables for leaks or damage; conducting board level signal and voltage checks; and running equipment through an internal systems check. Verification of the date and occurrence of such equipment inspection and maintenance must be provided as part of the required Presurvey Notification to the CSLC.

Why is this important?

The acoustic fields (both sound level and frequency) created by operating equipment is the primary tool used to analyze the level of impacts to the marine environment. Verification of the maintenance and testing of acoustic equipment will facilitate the CSLC staff's review of the proposed survey for consistency with the OGPP because it

demonstrates that the equipment is working properly and operating, in the field, as indicated on the manufacturer's equipment specifications sheet.

Safety Zones

One of the most important measures a permittee can implement to avoid acoustic-related effects on marine wildlife is the identification and enforcement of safety zones. Presurvey Notification requirements (General Permit Exhibit G) require the permittee to report the expected or estimated distances to the received sound pressure levels (SPLs) established by the National Oceanic and Atmospheric Administration (NOAA) for injury (190 dB for pinnipeds, 180 dB for cetaceans and sea turtles) and behavioral modification (160 dB for all marine mammals and sea turtles) to verify that the received SPLs fall within the equipment-specific safety zones as defined in **Table 1** (also see General Permit Exhibit H, MM BIO-3).³

Table 1. Safety Zone Monitoring by Equipment Type

Equipment Type	Safety Zone (radius, m)
Single Beam Echosounder	50
Multibeam Echosounder	500
Side-Scan Sonar	600
Subbottom Profiler	100
Boomer	100

Why is this important?

As discussed above, the acoustic modeling study performed for the OGPP MND defined a "typical survey scenario" for geophysical surveys in State waters; this scenario was developed from a variety of sources, including a review of past surveys and consultation with industry regarding representative geophysical equipment and operating parameters. Based on the results of the acoustic modeling study, the CSLC developed the safety zone distances necessary to ensure that even in varying environmental conditions (e.g., depth, substrate, water temperature), sound levels received by marine wildlife would not exceed the NOAA thresholds. Therefore, if a permittee proposes to use equipment or conduct a survey under conditions that CSLC staff cannot verify is represented under the "typical survey scenario" described in the MND, additional information and/or analysis, including modeling of that specific equipment, would need to be provided before the survey could begin. If the proposed equipment or survey details (e.g., length of the survey or sensitive habitat areas) clearly do not fall within the scope of the analysis in the MND, permittees would be required to prepare a survey-specific California Environmental Quality Act (CEQA) document prior to conducting such a survey.

³ Modeled distances to the 190 dB, 180 dB, and 160 dB isopleths must also be reported in the MWCP; permittees are encouraged to provide distances to the 140 dB and 120 dB isopleths to assist the CSLC staff's ongoing scientific effectiveness monitoring and adaptive management programs for the OGPP.

Survey Location and Track Lines

Permittees are required to submit, as part of the Presurvey Notification, a navigation chart showing the survey area (including area necessary for turning) and GPS coordinates or plot lines for each proposed survey track line and turning point.

Why is this important?

CSLC staff needs to be able to review the survey location and the details of the proposed survey route as part of its assessment of the proposed survey's consistency with the OGPP. Survey maps and GPS coordinates will help CSLC staff determine whether the survey would cross or affect any sensitive/protected areas (e.g., Marine Protected Areas, National Marine Sanctuaries, or sensitive species habitat), review the location for water depth and seafloor substrate type, and review the number, orientation, and spacing of track lines.

Harbor Porpoise Habitat

The use of boomers is restricted in harbor porpoise habitat, ranging from Point Conception to the Oregon border. Requests to use boomers from Point Conception to the Oregon border may be proposed, but would be evaluated on a case-by-case basis and may require additional analysis and/or justification. *Permittees should plan well in advance and communicate early with CSLC staff when planning surveys for boomer use in the restricted regions.*

Track Line Orientation

Geophysical operators should, to the maximum extent possible, design track lines that progress from shore outward to sea to avoid driving marine wildlife toward the shore, thus minimizing the potential for strandings or embayments.

Notifications

Permittees are required to notify a number of other entities prior to survey operations and provide CSLC staff with verification as part of the Presurvey Notification (see General Permit Exhibits G and H) at least 21 days prior to proposed survey operations. Permittees are required to provide the U.S. Coast Guard (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 fishermen so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas (see General Permit Exhibit H, MM REC-1 and MM FISH-1). Additionally, permittees are required to post such notices in the harbormasters' offices of regional harbors, including marinas and dive shops. Permittees are required to confirm in the Presurvey Notification how relevant dive shops and harbors/marinas were identified and notified (including a copy of the notice sent out to harbormasters and dive shops), and any other outreach that was performed.

Why is this important?

Providing notice to the USCG, harbormasters, and dive shops will help ensure

navigational safety, diver safety, and reduce the potential for conflicts with fishermen. CSLC staff strongly encourages permittees to develop and implement an outreach or communication plan for surveys that may affect fishing or recreational activities.

Marine Wildlife Contingency Plan

Permittees must submit a MWCP at least 21 calendar days prior to each OGPP survey.

Why is this important?

The goal of the MWCP is to ensure that interactions with marine wildlife are minimized by following operational protocols and implementing protective measures identified in Exhibit H (Mitigation Monitoring Program) of the General Permit. CSLC staff needs to review the MWCP to ensure the survey will be conducted using the protocols and protections required by the General Permit and that the Exhibit H mitigation measures will be properly carried out. Guidance regarding the development of a MWCP can be found in **Guidance for Developing a Marine Wildlife Contingency Plan**.

Oil Spill Contingency Plan

Permittees must submit an Oil Spill Contingency Plan (OSCP) at least 21 calendar days prior to each OGPP survey.

Why is this important?

The goal of the OSCP is to ensure that the potential for accidental release of petroleum and/or non-petroleum products during survey operations is minimized. The OSCP shows CSLC staff how the operational protocols and protective measures identified in Exhibit H (Mitigation Monitoring Program) of the General Permit will be implemented and complied with. Guidance regarding the development of an OSCP can be found in **Guidance for Developing an Oil Spill Contingency Plan**.

California Air Resources Control Board's Tier 2-Certified Engine Requirement

Permittees must submit verification of compliance with California Air Resources Board's (CARBs) Tier 2-certified engine requirement for marine vessels with diesel engines. According to Section 93118.5 of the Airborne Toxic Control Measure for Commercial Harbor Craft, under Subchapter 7.5 of the Airborne Toxic Control Measures of the California Air Resources Board, only diesel engines are required to comply with the CARB Tier 2 Certification (www.arb.ca.gov/regact/2010/chc10/frochc931185.pdf). Section (b), "Applicability," states the following:

- (1) Except as provided in subsections (b) and (c), this section applies to any person who sells, supplies, offers for sale, purchases, owns, operates, leases, charters, or rents any new or in-use **diesel fueled** harbor craft that is operated in any of the Regulated California Waters. (Emphasis added.)

CSLC staff is aware that in some cases permittees may have difficulty procuring a vessel meeting this requirement; if a permittee suspects that this may be the case, they should contact the CSLC as early in survey planning as possible, per the discussion in the OGPP MND:

Mitigation measures prescribed below are generally based on policies set by individual air districts, which can be more stringent than requirements set by the USEPA. To the extent that some measures may be impractical (such as a requirement to use Tier 2 engines when none of the available geophysical survey vessels are so equipped), operators, in consultation with CSLC, may petition the applicable onshore air agency to modify these mitigation measures on a case-by-case basis.

Why is this important?

The CARB is responsible for monitoring and reducing greenhouse gas (GHG) emissions in the State, in addition to establishing statewide ambient air quality standards. Since OGPP surveys generate emissions through the operation of marine vessels, they are subject to CARB's Tier 2-certified engine requirement to reduce survey-related air quality impacts. For additional air quality standards set forth by individual counties, please refer to Exhibit D of the General Permit.

Agency Permits/Authorizations

Marine Protected Areas and National Marine Sanctuaries

If a survey is planned for locations that may cross or affect Marine Protected Areas (MPAs) or National Marine Sanctuaries, permittees must coordinate with the CSLC, California Department of Fish and Wildlife (CDFW), and any other appropriate permitting agency (see General Permit Exhibit H, MM BIO-9). *Permittees should plan well ahead when seeking permits from other agencies*; for example, it may take up to three months to acquire a Scientific Collecting Permit (SCP) from CDFW. Consultation should occur early enough to be able to provide documentation to the CSLC 21 days in advance of survey activities. The scope and purpose of each survey proposed within a MPA must 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, permittees will pursue a SCP, or other appropriate authorization, to secure approval to work within a MPA, and provide a copy of such authorization to the CSLC as part of the Presurvey Notification Requirements. Note that the CSLC, CDFW, and/or other permitting agencies may impose further restrictions on survey activities as conditions of approval.

Why is this important?

The Marine Life Protection Act and CDFW regulations place many restrictions and prohibitions on the use of MPAs and the taking of living organisms within MPAs. In addition, National Marine Sanctuaries provide certain protections from disturbance and harm to marine life. Consulting with CDFW or other appropriate State or federal agency

and obtaining the proper authorizations can protect the permittee from violating these laws. The CSLC General Permit only authorizes surveys as they relate to the CSLC's responsibilities; compliance with other laws may also be necessary. CSLC staff needs to verify that if a survey will cross or affect a MPA that the permittee consulted CDFW as part of ensuring that the MPA and Marine Life Protection Act regulations are not violated.

Season

Permittees are required to identify the dates and duration of proposed survey activities as part of the Presurvey Notification. In addition, permittees are required to contact the NOAA Long Beach office staff and local whale watching operations to acquire information on the current composition and relative abundance of marine wildlife offshore, which they are then required to convey to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) prior to commencement of survey activities (see General Permit Exhibit H, MM BIO-1). This will provide near real time information for those onboard the survey vessel about the spatial distribution of marine wildlife in the survey region.

Why is this important?

Because of migration patterns and seasonal variations in species presence/density, survey activities may have more, or less, effect on marine wildlife depending on the time of year and location of the survey. This means that at certain times of year, a survey may not be able to be conducted in a given area but that at other times of year it would. In the environmental analysis and acoustic modeling study, the CSLC generally used density estimates for marine mammals that reflected the highest seasonal densities of the year. Nonetheless, when reviewing a Presurvey Notification, CSLC staff will seek to verify that there are no unusual densities of marine wildlife in the proposed survey area and that the survey will not overlap an important migration period. Developing a MWCP that identifies all marine mammals and reptiles that could be expected within the survey vicinity, including the most likely periods of occurrence for each species/stock, will allow permittees to plan their survey, to the greatest extent practicable, to avoid times of year when sensitive species could be present and/or engaged in important seasonal life functions (e.g., calving).

Appendix A. Characteristics of Equipment Used for Representative Noise Modeling

Equipment type, model and manufacturer	Dominant Frequency or Frequencies	Deployment Depth	Tow Speed	Maximum Output (dB re 1 µPa @ 1 m)	Beam Width	Signal Duration
SUBBOTTOM PROFILERS						
Boomers						
AP3000 triple plate boomer system	100-800 Hz	Surface towed	Variable	219 (peak) @ 1.5 kJ; 205.9 (modeled)	H: 8°–105° @ >1 kHz	60 msec; 0.2 msec (modeled)
Subbottom Profilers (general)						
Edgetech X-Star full spectrum digital subbottom profiler	400 Hz–24 kHz; 9 kHz (modeled)	300–6,000 m maximum	3-4 kn, optional at 6 kn	212 (peak); 210 (rms, modeled)	10°-30°	20–40 msec; 20 msec (modeled)
SIDE-SCAN SONARS						
Klein System 3000 side-scan sonar	100 kHz (125 ±1%); 500 kHz (445 ±1%); 132 kHz (modeled)	1.5, 3, 6 km (max); Maximum ¹ : 600 m (105 kHz); 150 m (500 kHz);	Variable	220 (estimated; p-p); 234 (rms; modeled)	H: 1° (100 kHz); H: 0.2° (500 kHz); V: 40°	25–400 µsec; 0.4 msec (modeled)
ECHOSOUNDERS						
Single Beam Echosounders						
Teledyne Odom CV-100 digital single beam echosounder	Low: 10–50 kHz; High: 100–750 kHz; 1 kHz adjustable steps	Hull mounted or over the side; 0-15 m	Variable	230 (p-p); 227 (rms; modeled)	5°	0.1 ms
Multibeam Echosounders						
R2Sonic 2022 multibeam echosounder	200–400 kHz, or 700 kHz	Hull mounted	Variable	221 (rms); 1-221 (rms; modeled)	0.3° x 0.6° (700 kHz); 15° x 1° (400 kHz); 2° x 2° (200 kHz)	15–500 µsec

¹ Maximum = maximum water depth below transducers.

Abbreviations: dB = decibel(s); H = horizontal; Hz = Hertz (cycles per second); kHz = kilohertz; kn = knots; m = meter(s); msec = millisecond(s); p-p = peak-to-peak; rms = root mean square; V = vertical; µPa = microPascal(s); µsec = microsecond(s).