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MONITORING SURVEY, VISUAL

MPS/CAR/X/

FOR

LICENCE REFERENCE NUMBER: CAR/X/

ADDRESS OF PREMISES: Premises address
Premises address
Premises address
Premises address

The responsible person, as named in the licence, shall carry out monitoring at the premises as specified in the protocol below.

The Monitoring Protocol Specification may be modified annually only with the written agreement of SEPA. The modified Monitoring Protocol Specification must be dated and shall clearly state that it replaces and supersedes the previous version.

Version: X[This version supercedes Version X-1, dated YYYYYY]

Dated: XX Month 20YY

Introduction

As stated in SEPA's policy and in the Fish Farm Manual (1998), scientific data are required by SEPA in order to assess the existing condition on the site or leased area.

SEPA reserves the right to request more detailed information and/or further work if required. The information asked for by SEPA may be subject to change and any requirements should be checked prior to any fieldwork and laboratory analysis.

The protocols below shall be followed. The completed survey report using the Data templates obtainable from the SEPA website shall be returned in duplicate to the local SEPA office.

SCOPE OF SURVEY

Self-monitoring to be carried out by or on behalf of the responsible person in accordance with relevant Schedules of the licence; either for:

Farms of biomass <500 tonnes, and/or

For sites whose substrates make soft-sediment sampling techniques impractical.

Sampling Strategy and Protocol

Where sites are stocked on a rotational basis with other sites and/or have extended stocking or fallowing regimes, additional monitoring may be required, as stated in the licence.

1. Timing

The responsible person shall carry out the following monitoring programme during the period defined as: from the date that maximum biomass for the production cycle is first reached until one month after maximum biomass. Ideally surveys should be conducted between May 1st and October 31st.

The results should be reported in accordance with SEPA's requirements.

2. Survey location

The transect shall be along the line of the predominant current direction (that is XXX degrees from the centre of the cage group). A 50m weighted line is laid on the seabed, in a straight line, outwards from the cage edge at right angles. The transect rope is marked at 5m intervals by plastic tags on which the station number is clearly and indelibly marked.

3. Survey protocol

3.1 Video

The following details should appear at the start of each survey recording:

- name of site and receiving water (loch, voe, coastline),
- name of fish farm company,
- date of survey,
- the two end co-ordinates of the transect rope, either in decimal lat-long or 8-figure NGR, and
- direction of transect and the starting station tag number (ie. cage edge).

3.1.1 Diver or remotely operated system

A weighted transect rope of sufficient length, is laid on the seabed and shall be marked at 5m intervals by plastic tags on which the station number is clearly and indelibly marked. The survey shall start at one end of the transect rope and progress towards the end of the rope, after which the view should pan up to the surface to show the surrounding land topography. It should follow the course of the transect line, at a moderate speed and should pause at each tag so the station number can be read. It should also be taken at a suitable height off the seabed, such that the illumination and focus are sufficient for features on the sea bed, including epifauna and habitat type to be discerned. Both distance views and close ups of seabed habitats and epifauna should be obtained. Where habitats or species of natural heritage interest are observed, visual sampling should be modified to determine the extent of such features to help assessment.

3.1.2 Drop down/towed video

Drop down or towed video systems are acceptable provided the following are adhered to;

The pre-determined 'notional' transect route should be planned using mapping techniques (preferably using Geographic Information Systems - GIS) such that the skipper can identify the route to be followed using an onboard Global Positioning System (GPS). Vessels will drift (unless in very light winds and current free) and it will be almost impossible to follow the proposed route precisely (see Figure below).

Where conditions (tidal, weather etc.) prevent the capture of continuous footage it is acceptable to collect a series of discrete video samples along the transect route (this alternative approach is also shown in the figure below). Whether a single 'power' assisted drop/tow or multiple drops are completed it is essential that the transect area is surveyed in full. Continuous positional information of the camera position or boat (provided umbilical is relatively vertical) is necessary for assessment.

Long tows with the camera dragging on seabed are not acceptable; rather the camera should be towed just above the seabed (still clearly visible) and set down periodically to give clear images. Effort should be taken (careful placement of camera etc.) to obtain good footage in particularly difficult habitats e.g. dense kelp, maerl, brittlestar beds, in order to assist assessment. If conditions are such that the camera cannot be controlled adequately, assess whether to abandon survey and return during slack water or when conditions improve.

Where habitats or species of natural heritage interest (e.g. Scottish Biodiversity List habitats/ species) are observed, visual sampling should be modified to determine the extent of such features to help assessment.

Still photographs from drop down video should all be geo-referenced.

3.2 Still Photographs

These should be taken at each station along the transect, with the number on the tag clearly visible in each photograph. The photographs must be in focus and be correctly illuminated (exposure by natural light is not adequate), such that features on the sea bed, including epifauna and habitat type can be clearly discerned.

Divers should make a written record of what is seen along the transect to supplement the video footage or photographs (see survey report below).

4. Survey Format

4.1 The video should be in colour and on DVD format.

4.2 Still photographs should be in colour and on CD/DVD format.

5. Survey Report

The video or photographic survey and accompanying text shall be reported in the Visual Monitoring template. The details of this system can be found in Attachment XII. These are spreadsheet-based

templates and are the preferred format for submission to SEPA shall be CD or DVD. If the operator has difficulties in completing this survey template then they should contact SEPA to seek advice. It is not recommended that operators submit paper records as an alternative without prior discussion.

The completed survey shall be submitted, in duplicate, to the local SEPA Environmental Protection and Improvement team, clearly stating the licence reference number and site name. The survey should be accompanied by a completed Survey Cover Sheet printed from the survey data template.

Visual surveys (video or photographic) shall be submitted to SEPA within 12 weeks of survey. If difficulty in achieving this is experienced, then the local SEPA team must be notified as soon as possible.

6. Evaluation of survey by SEPA

SEPA staff will assess the condition of the seabed by evaluating the video or photographs according to Marine Science quality work methods. Although some visual impacts within the allowable zone of effects will be accepted, feed pellets and bacterial mats should not extend beyond the 25m AZE.

A note will also be made of any fauna that are listed on the UK Biodiversity Action Plan list, which may be found on JNCC's website (www.ukbap.org.uk).

Any surveys submitted that do not permit (particularly if inadequately illuminated, or out of focus) a clear assessment of seabed conditions by SEPA staff, will have to be repeated by the company within 2 months of notification.

The survey report shall be evaluated by SEPA with reference to the environmental standards set out in Annex A of the Fish Farm Manual. Normally reports will be classified either as: Satisfactory, Borderline or Unsatisfactory. Borderline evaluations are nominally a satisfactory classification but indicate stress on the sea bed.

Auditing of Results

SEPA may require (at any time) evidence of quality assurance and control on any procedures or processes being undertaken by the responsible person, or their agents, or require independent audit of any resulting data.

Appendix 1

Notes to Aid Position Fixing

Position Fixing

The position of any point on a surface can be fixed using a two-dimensional co-ordinate system (X and Y). Two principle systems of X and Y co-ordinates are used within the UK:

- **National Grid References (NGR).** A full NGR consists of two six-digit numbers, an Easting and a Northing and is accurate to 1m. In practice many locations are not known (or required) this accurately and a position is more usually given by an alphanumeric, e.g. NS 300 710. Such an NGR is only accurate to 100m; where possible SEPA will record a 10-digit alphanumeric NGR that is accurate to 10m.
- **Latitude/longitude position fixing** is routinely used for navigational purposes and is usually invoked as a marine/coastal site descriptor once the location is identified by other means, e.g. GPS, Range Position Fixing. The angle west or east from the meridian is given in degrees, minutes and seconds.

There are several reference systems against which the three-dimensional position in space may be recorded. Although these may use the same reference units, i.e. degrees of latitude and longitude, there are differences between datums and the idealised reference shapes (geoids) used to approximate the surface of the earth. Thus any one location may have significantly different co-ordinates under different systems or conversely one co-ordinate pair may refer to positions that may be up to 1km apart when different datums are used. So, it is important to include the name of the reference datum or co-ordinate system when quoting positions.

GPS receivers are commonly set to WGS84 (equivalent to ETRS89) as a default. Positions on OS maps and Admiralty charts for British waters, and National Grid References are specified with respect to OSGB36, which is often provided as an alternative datum option on GPS receivers sold in the UK. A software tool for conversion between the WGS84 and OSGB36 and further information about geodesy is available from www.gps.gov.uk.

Methods of position fixing

- **GPS (Global Position System) and DGPS (Differential GPS)** are satellite navigation systems. Transmissions from satellites are detected by a receiver and calculated into positional data. GPS accuracy is around 10m, depending on the receiver, the number of satellites in view and other factors. High accuracy (<1m) may be achieved by using a differential correction system. It is important to be aware of the datum against which a receiver is referencing the positions it produces (see above).
- **Range Position Fixing Systems.** These are normally microwave devices that display the distance from a master transmitter to a set of onshore 'slaves' at precisely known locations. The accuracy depends on the accuracy of the position of these slaves. Accuracy of 25m - <1m can be achieved.