

Information Requirements Table for Fish Processing Facilities

Application Tracking Number: To be assigned
 Authorization Number: To be assigned
 [insert company / project name]

Permittee Summary	
Amendment Tracking #	
Authorization #	
Permittee / Facility Name	

Ministry of Environment and Climate Change Strategy	
Prepared by:	
Title	
Date	

This *Information Requirements Table (IRT)* is a tool used by Ministry of Environment and Climate Change Strategy staff to document specific guidance and instructions given to a permittee in order to inform the Fish Processing Permit Amendment Project. IRTs are typically used by the Ministry to provide guidance to applicants pursuing authorization to discharge under the *Environmental Management Act*.

Note - this document was developed to capture all the items and complexities concerning fish processing effluent. Accordingly, for any given application, not all the items will apply and not all required items will warrant detailed discussion of methods and other concerns. As part of information gathering, the Ministry of Environment and Climate Change Strategy (ENV) will discuss with the permittee the items listed in this table to determine what will be required in support of their final information package.

A tick mark in the “Required” column of the table indicates an information item to be included into the application package as agreed to by both parties or as directed by ENV. Should it be determined that specific methods will be used to derive this information, this will be specified with a tick mark in the “Methods” column. Specific methods may not be necessary for applications that will not require a subject matter expert review. In cases where complex impact assessments are to be undertaken, agreement on the methods used will be required. For simple methods, the methods used could be discussed with the applicant in a meeting and noted as agreed to in the table. For more complex methods, the applicant may be required to submit a “Methods Package” by an agreed date for ENV review, comment and acceptance. Once methods are accepted by ENV they should be either described in the “Methods” column or a reference made to the document describing the Methods Package.

If required, this document will form part of an Application Instruction Document (AID) which documents application submission requirements for the applicant. The AID is issued by the Director after a preliminary application meeting has occurred.

ENV will be assessing the information submitted against this table and it is expected that the permittee does the same prior to any preliminary meetings and/or prior to any final submissions.

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1. PROJECT DESCRIPTION			
1.1 Describe the project including facilities and processes.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Indicate whether the effluent is process water only or if it is combined with sewage.	
1.2 Describe the products processed including species and whether they are farmed or wild.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
1.3 Identify the project location including site, surrounding land and water uses, and potential environmental receptors. Include a description of any other point or non-point sources that may impact the receiving environment in the vicinity of the fish processing plant.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Information regarding other discharge locations can be found on the BC iMAP website: <ul style="list-style-type: none"> • B.C. iMap Website Activate the 'water permits' layer on iMap following these instructions: <ul style="list-style-type: none"> • launch iMapBC, data sources, add Provincial layers, waste, environmental monitoring stations – water sites, select EMS sites (Water Permits), click 'OK' • zoom into your area of interest to show the location of nearby discharge authorizations • use the 'identify' icon on the home tab to find information about individual discharge authorizations 	
1.4 Provide a detailed map of the project location and potential environmental receptors, including any migratory pathways for fish.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
1.5 Provide a detailed Site Plan with all proposed discharge and monitoring points.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
1.6 List the qualified professionals and their related qualifications who developed the information package.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
2. ENVIRONMENTAL SETTING			
2.1 Provide a detailed analysis of key factors that may influence mixing and dispersion of the discharge in the environment. The analysis may include: <ul style="list-style-type: none"> • Topographic features and the degree of embayment • Identification of estuaries and inflows and delineation of their zone of influence • Map and analysis of bathymetric features • Drogue studies, • Tidal flux, currents, and flushing rates • Seasonal water temperature, salinity, pH and dissolved oxygen gradients, • Other seasonal influences 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	There are online resources which can be used if site specific monitoring data or/and site characterization has not been completed. Some oceanographic features can be discovered by searching literature using the water body name. Common sources of information can include: <ul style="list-style-type: none"> - Navigational maps - DFO reports - Academic articles Please note that the suggestions provided here may not include all available resources.	
2.2 Describe existing receiving environment data that has been collected to date. Summarize the data in tables and provide interpretation of the data by a Qualified Professional. <ul style="list-style-type: none"> • Existing surface water and sediment quality • Biological characteristics – marine vegetation, benthic community, fish and fish habitat, marine mammals and birds, species at risk. • Physical characteristics – tides, currents, bathymetry, seabed composition, wind and waves. • Figure showing the locations of sensitive marine habitats in relation to the discharge location. Sensitive marine habitats may include fish spawning or rearing habitats, kelp and eelgrass beds, coral reefs, shellfish harvesting areas and estuaries. <ul style="list-style-type: none"> • Include a gap analysis to indicate what information is needed in order to fully characterize the receiving environment quality. ENV's <i>Water and Air Baseline Guidance Document for Mine Proponents and Operators</i> may be used as a reference. 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	This section is asking for information and data that has been collected in the receiving environment near the location of your discharge. If you have multiple years of data please collate and summarize this information as requested. Additionally, receiving environment data may be available on the BC Environmental Monitoring System website: https://governmentofbc.maps.arcgis.com/apps/webappviewer/index.html?id=0ecd608e27ec45cd923bdcfeefba00a7	
2.3 Provide a plan to fully characterize the receiving environment. This must include surface water quality sediment quality and biota. The plan may include reference to existing data if available. The plan must at a	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		

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minimum: <ul style="list-style-type: none"> Describe and justify study design, methods, sampling sites and periods, analysed parameters and QA/QC procedures. Include the rationale. Provide data summaries (using appropriate statistics) that characterize spatial and temporal variations and identify location, frequency, duration and magnitude of applicable standards, environmental quality guideline exceedances, or of effects on aquatic resources. Identify certified laboratories that conducted sample analysis Demonstrate that the aquatic life monitoring program is sufficiently robust to assist future monitoring in detecting a biologically significant predetermined change. Outline all data collection methods used in operations to meet regulatory requirements in a table format Provide raw data in tables, including applicable method detection limits (in appendices – and excel compatible electronic files). Provide a detailed, scaled map with sampling locations in relation to the discharge location(s), areas of disturbance and distribution of receptors. Identify and discuss QA/QC concerns related to the data, following the procedures in the current BC Field Sampling Manual. 			
3. EFFLUENT DISCHARGES AND TREATMENT			
3.1 Provide an overview of each contaminant source on site, and where and how they will be contained, collected, stored and treated. <ul style="list-style-type: none"> This should include the water components (e.g. wash water, flume water, bloodwater, storm water, sewage, etc) and any chemical inputs (e.g. cleaning solutions, disinfectants, etc). Include material safety data sheets for all chemicals or products added to the process. 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.2 Provide a description of the current and any proposed pollution control works (effluent treatment system) and management practices.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.3 Specify the treatment design criteria.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.4 Provide a construction and commissioning schedule for any newly proposed treatment works or modifications to existing works, and propose dates to notify the Ministry of construction and commissioning milestones.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Required if new treatment works or modifications to existing works are proposed.	
3.5 Indicate whether there is a disinfection system currently or proposed at the facility. <ul style="list-style-type: none"> If there's no disinfection system currently or proposed, provide rationale as to why one is not needed If there is disinfection currently or proposed: <ul style="list-style-type: none"> Describe the system and the rationale for selecting the specific disinfection method Describe the effectiveness of the disinfection system for pathogens that may be present in the effluent. Provide details of any tests conducted to prove the effectiveness of the disinfection system. This must include: <ul style="list-style-type: none"> References to any previously published studies, or For unpublished studies, a detailed description of study design, results (data), data interpretation, and sign-off by a qualified professional 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.6 Provide full characterization of all discharges from the site. Indicate their source, quality and quantity. Describe the methodology used for characterization.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.7 Indicate what tests, monitoring, and treatments for infectious diseases, such as Piscine Orthoreovirus (PRV), are being conducted at your facility	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		

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3.8 Provide process flow diagrams with waste streams	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.9 Propose maximum discharge limits for: <ul style="list-style-type: none"> Discharge rate (m3/d) The following parameters in mg/L: TSS, BOD, ammonia and nitrate. <p>Also propose discharge limits for site specific parameters as applicable (for example nitrite, total organic nitrogen, cBOD, COD, oil and grease, total coliform, fecal coliforms, E. coli, enterococci, pH, temperature and salinity)</p> <ul style="list-style-type: none"> A rationale for the proposed parameters and limits must be included. Indicate the maximum intended operating durations (i.e. hours per day and days or months per year) 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	All permittees are expected to propose discharge limits. If your permit already contains the limits requested in this section, indicate whether you wish to retain or modify the existing limits.	
3.10 Describe the outfall design and location. Specify the discharge point in decimal degrees, to the fourth decimal place.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.11 Describe and characterize process residuals, including offal, screenings, etc. Specify the disposal and/or reuse plan for residuals.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.12 Describe the best management practices (BMPs) used to limit discharge rates and contaminant concentrations.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Include a description of any BMP audits conducted at the facility, references to BMP guidance documents implemented, and training and documentation procedures used to ensure BMPs are followed.	
3.13 Indicate whether a Best Achievable Technology (BAT) assessment has been conducted for the facility, and the degree to which treatment at the facility meets the identified BAT. <ul style="list-style-type: none"> If a BAT assessment has been conducted, provide the assessment signed by a QP If a BAT assessment has not been conducted, provide the rationale If proposing an Initial Dilution Zone (IDZ) provide additional requirements listed in the attached, Initial Dilution Zone Information Requirements Checklist . <p>Waste Discharge Factsheet – Best Achievable Technology (PDF)</p>	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Assess alternative options for effluent disposal, such as discharge to a sewer.	
3.14 Provide manufacturer specifications for newly proposed pollution control works.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.15 Describe the proposed sampling and flow measuring facilities at discharge points for the fish processing effluent (and sewage effluent, if relevant). Indicate the range that the flow meter can accurately measure, and compare this with the flows that are expected from the facility.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	Please note ENV's expectation that flow measurement devices be capable of measuring the total flow per day, and that sampling devices are able to collect composite samples. ENV also expects that multiple discharges from the same facility (i.e. from fish processing and sewage) be metered and sampled independently prior to combination.	
3.16 Indicate whether storm water has potential to influence the effluent flows at the facility.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.17 For open air treatment system components, storage tanks, lagoons and ponds, specify and justify the design flood events for structural integrity and for removal of suspended solids.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
3.18 Certification by Qualified Professionals – Provide QP sign-off certifying that the wastewater facility as designed and/or as-constructed is capable of meeting the discharge limits proposed in section 3.9.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4. IMPACT ASSESSMENT			
4.1 Identify the receptors and/or environmental values that may be at risk due to project related activities.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.2 Identify and justify spatial and temporal boundaries for effects predictions.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.3 Perform water quality modelling to show predicted concentrations in the receiving environment at the edge of the initial dilution zone using the discharge limits in effluent proposed in section 3.9 above. If the modelling predicts water quality guideline exceedances at the edge of the IDZ, extend the modelling farther afield.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		

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<ul style="list-style-type: none"> This should be conducted by a QP using a mass balance approach. Provide the methods used including rationale, results, comparison of results to chronic and acute water quality guidelines, and interpretation of potential effects on the receiving environment. 			
4.4 Summarize potential impacts by media and receptor location, using tables.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.5 Illustrate graphically a conceptual site model that shows the pathways from contaminant sources to receptors.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.6 Determine the extent of the initial dilution zone (IDZ) for all proposed discharges. <ul style="list-style-type: none"> Describe the methodology and rationale used to delineate the IDZ. Illustrate the IDZ on a figure, in relation to the point of discharge and any critical areas for water users (e.g. critical habitat, fish migration pathways, etc.) Describe the processes assisting effluent mixing and the extent to which the effluent will be mixed with receiving waters at the edge of the IDZ. Considering the range of variability in the mixing processes in this assessment (e.g. summer/winter conditions, currents and tides). 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>	The initial dilution zone is the 3-dimensional zone around the point of discharge where mixing of effluent and the receiving water occurs. WQGs must be met that the edge of the initial dilution zone.	
4.7 Provide predicted incremental changes over existing receiving environment water and sediment quality at critical points in the receiving environment and during critical time periods.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.8 Identify sites, parameters and time periods, when water or sediment quality is expected to exceed B.C. Water Quality Guidelines, existing Water Quality Objectives, or provincial or federal Sediment Quality Guidelines.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.9 Identify data gaps and uncertainties and describe how they would be addressed in adaptive management and environmental monitoring programs.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.10 Describe and discuss the potential for bioaccumulation or bio-concentration of contaminants, and the associated risk to assessment endpoints (i.e., fish health, fish reproduction, consumers of fish, etc.).	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.11 Predict changes in aquatic resources at species, community and/or ecosystem levels as appropriate due to water quality and sediment quality changes.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.12 Demonstrate through a weight of evidence approach that effluents will not cause toxicity within the IDZ (acute) and outside of the IDZ (acute or chronic) <ul style="list-style-type: none"> Things to consider include: <ul style="list-style-type: none"> Treated or untreated effluent discharge Toxicity test on treated effluent prior to entering the receiving environment. Toxicity test on effluent discharge at end of pipe in the receiving environment. Calculation of theoretical receiving effluent quality in the IDZ using maximum discharge limits and dilution ratios, compared to acute and chronic WQGs. Comparison of existing receiving environment data to acute and chronic WQGs. Provide a rationale for the lines of evidence used in the toxicity assessment 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.13 Estimate probabilities of occurrence of each pathway/exposure combination and develop a risk assessment matrix or other process to prioritize and manage risk.	Required <input checked="" type="checkbox"/> Methods <input checked="" type="checkbox"/>		
4.14 Identify risks to other receptors, including wildlife, livestock, human health.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.15 Summarize risk to surface water, sediment, aquatic resources and general water users.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.16 Discuss risk reduction options and adaptive management strategies to be employed.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.17 Consider the potential cumulative effects of the discharge on the receiving environment when combined with other local activities and conditions.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
4.18 Identify the potential impacts of projected climate change scenarios on the projects operations, closure and post-closure phases.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		

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5. MONITORING PLANS			
5.1 Discharge Monitoring (source)	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
5.2 Continuous Process Monitoring	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
5.3 Receiving Environment Monitoring Plan <ul style="list-style-type: none"> • Include a plan to validate effluent plume model predictions. • Identify the objectives and describe and justify the proposed receiving environment monitoring program. 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
5.4 Aquatic / Environmental Effects Monitoring Plan <ul style="list-style-type: none"> • Identify the objectives and describe and justify the proposed aquatic effects monitoring program and weight of evidence assessment. Include cumulative effects monitoring in areas that may potentially be affected by industrial or commercial activities as well as other anthropogenic activities. 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
5.5 Describe proposed data assessment techniques and reporting, including reporting frequency and content.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
5.6 Describe and justify proposed quality assurance/quality control procedures.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
6. OTHER REQUIREMENTS			
6.1 Describe the disposal plan for sewage generated on-site (e.g. septic tank, sewer connection, combined discharge, etc). Specify if there is a Municipal Wastewater Regulation registration for the facility.	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		
6.2 For those facilities with combined fish processing and sewage discharges: <ul style="list-style-type: none"> • Compare the fish processing discharge flow rates with the sewage discharge flow rates • Specify whether the maximum sewage flow is <10% of the flow from the fish processing operation 	Required <input checked="" type="checkbox"/> Methods <input type="checkbox"/>		

Guidance Documents:

- [Fish Processing Permit Amendment Project web page](#)
- [Fish Processing Plant Sector Compliance Audit web page](#)
- [Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities, April 2012 \(PDF\)](#)
- [Manual of British Columbia Hydrometric Standards, March 12, 2009](#)
- [Terms of Reference Environmental Impact Assessment And Technical Assessment Report for Effluent Permit Applications under the Environmental Management Act, 2014 \(PDF\)](#)
- [Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators, October 9, 2012 \(PDF\)](#)
- [B.C. Field Sampling Manual web page](#)

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Information Initial Dilution Zone Requirements Checklist

INFORMATION	REQUIREMENTS	COMMENTS	Location in Final Application
1. IDZ DESCRIPTION AND OVERVIEW			
Description of why an IDZ is necessary	Required <input type="checkbox"/>		
Proposed dimensions of IDZ - percentage of stream flow and stream width encompassed by the proposed IDZ or percentage of the lake surface area or marine environment encompassed by the proposed IDZ	Required <input type="checkbox"/>		
2. RECEIVING WATER CHARACTERISTICS			
Type of water body – lake, marine environment or river/stream	Required <input type="checkbox"/>		
Volume of receiving water available for dilution – seasonal, low flows	Required <input type="checkbox"/>		
Seasonal water temperature/density ranges or vertical temperature/density profile information for deeper lakes or marine environments	Required <input type="checkbox"/>		
Background receiving water quality	Required <input type="checkbox"/>		
Assessment of critical habitat, sensitive receptors and designated water uses (e.g. use by Indigenous peoples, drinking water, domestic use, recreation, irrigation, livestock watering, wildlife, and/or aquatic life)	Required <input type="checkbox"/>		
Applicable WQGs and/or site-specific water quality benchmarks for the receiving environment (e.g. Site Performance Objectives (SPOs), Science-Based Environmental Benchmarks (SBEs), Water Quality Objectives (WQOs)), if applicable	Required <input type="checkbox"/>		
3. EFFLUENT DISCHARGE CHARACTERISTICS			
Effluent flow rate and description of whether discharge will occur on a continuous, temporary or seasonal basis	Required <input type="checkbox"/>		
Seasonal effluent water temperature/density ranges	Required <input type="checkbox"/>		
Expected buoyancy of effluent relative to receiving water	Required <input type="checkbox"/>		
Concentration of substances in effluent	Required <input type="checkbox"/>		
Comparison of predicted or actual substance concentrations in effluent to water quality guidelines or site specific benchmarks for the protection of the	Required <input type="checkbox"/>		

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designated uses in the area and/or acute or chronic effluent toxicity test results			
EFFLUENT DISCHARGE CHARACTERISTICS (con't)			
Evidence that discharge design and discharge plan has been optimized to minimize the size of the IDZ within practical limits.	Required <input type="checkbox"/>		
Description of potential for substances to bio-accumulate	Required <input type="checkbox"/>		
Design and expected performance of outfall, diffuser type during best- case, worst-case and expected-case conditions	Required <input type="checkbox"/>		
Clear identification of where end of pipe is located	Required <input type="checkbox"/>		
Results from toxicity testing of effluent	Required <input type="checkbox"/>		
4. RECEPTORS, MIXING, AND MONITORING			
Physical and aquatic life receptors effluent discharge to receiving waters	Required <input type="checkbox"/>		
Environmental impact assessment of effluent discharge to receiving environment that explains how proposed IDZ will not adversely affect the identified receptors and designated water uses	Required <input type="checkbox"/>		
Methodology for physical mixing analyses – mixing model software and/or field dilution studies, and list of model inputs including a description of the source data for each input and a description of the data suitability and/or limitations	Required <input type="checkbox"/>		
Results of physical mixing analyses: dilution achieved within the receiving environment under a range of flow scenarios and plume mixing characteristics with supporting rationale	Required <input type="checkbox"/>		
Proposed monitoring program	Required <input type="checkbox"/>		