Information Requirements Table for Solid Waste

Applicant Summary	
Application Tracking #	
Authorization #	
Applicant / Facility Name:	

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

The **Information Requirements Table (IRT) for Solid Waste** is a tool used by the Ministry of Environment and Climate Change Strategy (ENV) staff to document specific guidance and instructions given to an applicant pursuing authorization to discharge under the *Environmental Management Act*.

Applicants are instructed to review the 2016 Landfill Criteria for Municipal Solid Waste (Criteria) and other applicable guidance listed in the IRT when preparing the required items.

As part of the Preliminary Application Phase, ENV will discuss with the applicant the items listed in this table to determine what will be required in support of their final application. A tick mark in the "Required" box of the "Requirements" Column in 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" box and specific details in the Comments column. 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 in the "Comments" column 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 "Comments" column and/or a reference made to the document describing the Methods Package.

If an IRT is required, the Final IRT 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. The AID will also include specific instructions related to the signoff of Qualified Professionals for Declaration of Competency and Conflict of interest.

When submitting the final application, please ensure the IRT is also submitted with the "Location" Column filled out to identify where each of the required items is located in the final application for all information requirements identified.

The ENV will be screening and assessing this application against this table and it is expected that the applicant does the same prior to any preliminary meetings and/or prior to any final submissions. The Ministry will be screening the final received application against the requirements noted in the Final AID to ensure it is complete before resources are dedicated to a full, detailed review.

Please refer to the IRT Factsheet for further information.

Information	Required	Comments	Location in Final Application
1. PROJECT DESCRIPTION AND OVERVIEW This section is an introduction to the application and provides background information on the project			
1.1. Describe the proposed facilities and processes including ancillary facilities/activities such as storage, composting, laydown, sorting, segregation areas, etc.	Required ☐		
1.2. Identify the project location including site and surrounding land uses, watershed, and water uses	Required ☐		
1.3. Summarize the site/project history and related reports	Required ☐		
1.4. Describe the relevant regulatory processes within and outside of *Environmental Management Act* (Environmental Assessment, Solid Waste Management Plan, concurrent applications, etc.), their respective implications and status	Required ☐		
1.5. Describe the applicability of the Hazardous Waste Regulation (e.g. secure landfills, contaminated soils treatment facility, asbestos, etc.)	Required ☐		
1.6. Describe the applicability of Code of Practice for Industrial Non-hazardous Waste Landfills Incidental to the Wood Processing Industry	Required ☐		
1.7. Provide a summary of major activities, infrastructure and waste management related to: • Site preparation, construction, and development • Operations • Closure and post-closure	Required ☐		
1.8. Provide a summary of the landfill design and filling plan, outlining proposed waste disposal types and volumes, burning activities, including clean and contaminated soils	Required ☐		
1.9. Provide a location map of the project location, surrounding properties and land uses, including scale and key landmark references (see Figures/Site Plans)	Required ☐		
1.10. Provide a site plan (see Figures/Site Plans)	Required ☐		
1.11. Provide a Landfill Criteria Conformance Review and Upgrading Plan (see Section 2.2 of the Criteria)	Required ☐		
1.12. List of Qualified Professionals and signed Conflict of Interest & Declaration of Competency	Required ☐	Must have a combination of suitable education, training, experience acceptable to the Director and both forms signed	
2. SITE DESCRIPTION This section provides information regarding the environmental setting			
2.1. GENERAL SITE DESCRIPTION			
2.1.1. Describe the site location including legal description, civic address, and latitude/longitude to the fourth decimal place	Required ☐		
2.1.2. Describe land use and zoning on-site and within 1 km from site boundary	Required ☐		

Information	Required	Comments	Location in Final Application
2.1.3. Describe heritage and archaeological sites, subject to the requirements of the *BC Heritage Conservation Act*, on-site and within 1 km from site boundary	Required ☐		
2.1.4. Describe nearby airports, subject to requirements by Transport Canada and NAV CANADA	Required ☐		
2.1.5. Describe buffer zones, setbacks, and other land use restrictions	Required ☐		
2.1.6. Describe environmentally sensitive areas on-site and within 1 km from site boundary	Required ☐		
2.1.7. Develop and provide a Conceptual Site Model (following the March 2018 "Use of Conceptual Site Models to Support EMA Effluent Permit Applications"). Describe and illustrate pertinent features of the site including but not limited to: • contaminants of potential concern • transport and exposure pathways for contaminants of potential concern • surface water features • known or suspected aquifers • surface water management system • liners • leachate collection system • landfill gas management system • subsurface conditions • groundwater features • groundwater monitoring wells • water supply wells • cover and closure materials (see Figures/Site Plans)	Required ☐		
2.2. METEOROLOGY AND CLIMATE			
2.2.1. Provide relevant meteorological and climate information for parameters such as wind speed and direction, precipitation, temperature, and evaporation. Submit data in digital format (e.g., csv) and provide monthly and annual summaries	Required ☐		
2.2.2. Provide recurrence interval analyses of annual precipitation, short-term rainfall, and/or snowmelt events	Required ☐		
2.2.3. Provide a summary of meteorology and interpretation of general air quality (PM10 and PM2.5 for applicable airshed) available from existing monitoring data	Required ☐		
2.2.4. Identify information gaps and describe site-specific meteorological data collection methods proposed to augment regional data	Required ☐		
2.2.5. Identify the potential impacts of climate change on the project's operational, closure, and post-closure phases	Required ☐		

Information	Required	Comments	Location in Final Application
2.3. SURFACE WATER AND HYDROLOGY			
2.3.1. Describe topography and surface water drainage for existing conditions and proposed changes	Required ☐		
2.3.2. Detailed maps showing all drainage basins (local and regional) that will be potentially affected by the proposed activities including but not limited to: areas of groundwater discharge, wetlands and notable features (e.g., floodplains, shorelines)	Required ☐		
2.3.3. Surface water – current and planned future uses of surface water on-site and within watershed boundary	Required ☐		
2.3.4. Water supply sources, wells (municipal and residential) within watershed boundary (see Figures/Site Plans) Provide well information, where available, for each water well including but not limited to: well construction, well logs, pump testing results, water quality, etc.	Required ☐		
2.3.5. Detailed hydrologic analysis of key surface drainages within the project area, to define seasonal flow regimes of local drainages, including appropriate recurrence interval analyses. Provide monthly and annual stream flow/runoff summaries and critical low flow metrics	Required ☐		
2.3.6. Describe and justify baseline study design, methods of hydrometric station installation, sampling methods, Quality Assurance/Quality Control (QA/QC) procedures, and assignment of data grades as described in the Manual of British Columbia Hydrometric Standards[8]	Required ☐		
2.3.7. Include hydrological data in an appendix, including rating curves, manual measurements, plots of site-specific discharge, site photos, etc.	Required ☐		
2.3.8. Identify spatial or temporal gaps in the database, and provide record periods for all gauging stations (regional and project specific)	Required ☐		
2.3.9. Recurrence interval analyses of peak and low flow events (instantaneous, annual, etc., as appropriate)	Required ☐		
2.3.10. Summarize the predicted effects of climate change on the future climate and hydrology of the project area	Required ☐		
2.4. HYDROGEOLOGY			
2.4.1. Provide a baseline groundwater study report that describes the study design, monitoring, analysis, interpretations and quality control procedures based on requirements listed below	Required ☐		
2.4.2. Summary of groundwater information from the provincial databases related to aquifers, and their geology, demand and vulnerability	Required ☐		
2.4.3. Summary of faults, unstable areas, active or historical landslide, weak or collapsible soils, areas prone to debris movement, and risk of tsunami on-site and adjacent to site boundary	Required ☐		

Information	Required	Comments	Location in Final Application
2.4.4. Characterize aquifers and aquitards below and downgradient of the site, including their hydraulic gradients, conductivity, storativity, and groundwater flux	Required ☐		
2.4.5. Provide borehole logs, well installation details, hydraulic test results, core pictures, groundwater level contour maps and hydrostratigraphic cross sections	Required ☐		
2.4.6. Describe surface water groundwater interactions downgradient of the site	Required ☐		
2.4.7. Describe all groundwater users (e.g. aquatic life, drinking water, etc) within watershed boundary	Required ☐		
2.4.8. Develop a Conceptual Hydrogeological Model that synthesizes all relevant information to describe pathway and receptor linkages	Required ☐	https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/mining-smelt-energy/guidance-documents/csm_to_support_ema_permit_app.pdf	

3. FIGURES / SITE PLANS This section is a summary of required figures and site plans			
3.1. Provide a location map of the general project location including scale, surrounding properties, land uses	Required ☐		
3.2. Provide a site plan(s) including: • Scale • Legal property boundaries, right-of-ways and other easements • Topographic contours (1.0 or 0.5 m) • Environmentally sensitive areas • Inferred direction of groundwater flow • Existing and/or planned structures and infrastructure • Existing and/or planned surface water, open water, and potential groundwater seepage areas • Existing and/or planned groundwater monitoring wells (lat/long to 4th decimal place) • Existing and/or planned discharge and monitoring locations (lat/long to 4th decimal place) • Existing and/or planned sampling locations (groundwater, surface water and leachate, lat/long to 4th decimal place) • Other applicable features	Required ☐		
3.3. Geologic map and geologic cross section of the landfill site	Required ☐		
3.4. Figure showing the location of all springs and groundwater discharge locations within 1 km of landfill footprint	Required ☐		
3.5. Figure showing location of all wells including monitoring wells and supply wells within 1 km of landfill footprint (lat/long to 4th decimal place) Include information including but not limited to: well construction, well logs, pump testing results, water quality, etc.	Required ☐		
4. PERFORMANCE CRITERIA This section describes water quality criteria to be considered as outlined in the Landfill Criteria for Municipal Solid Waste. Appropriate surface water and groundwater quality criteria must be satisfied at the landfill site boundary, or 150 m from the landfill footprint, whichever is closer			
4.1. A Qualified Professional must recommend the appropriate surface water and groundwater quality criteria, compliance locations, and provide related rationale and justification	Required ☐		
4.2. A Qualified Professional must provide a signed statement certifying that the facilities as designed and built are capable of meeting the proposed surface water and groundwater quality criteria	Required ☐		
4.3. Summarize landfill gas management – summary of how landfill gas management satisfies the Landfill Gas Management Regulation	Required ☐		
4.4. Summarize nuisance criteria used to assess that the landfill is operated so as not to create a "nuisance" including but not limited to dust, noise, litter, odour, vectors, and/or wildlife attraction	Required ☐		

5. DESIGN CRITERIA This section describes design objectives and minimum requirements for a landfill site and the environmental control systems to be implemented at the site			
5.1. Describe the service life and contaminating lifespan. Include contaminating lifespan assessment and relevant assumptions	Required ☐		
5.2. Describe the landfill base design	Required ☐		
5.3. Describe the landfill base liner	Required ☐		
5.4. Describe the leachate collection/treatment system	Required ☐		
5.5. Describe surface water management	Required ☐		
5.6. Describe landfill gas management	Required ☐		
5.7. Describe the final cover design	Required ☐		
5.8. Describe the final contours	Required ☐		
5.9. Describe site security and fencing	Required ☐		
5.10. Describe access roads	Required ☐		
5.11. Summarize the design for nuisance criteria including but not limited to dust, noise, litter, odour, and animal/vectors	Required ☐		
5.12. Summarize erosion and sediment control	Required ☐		
5.13. Summarize emergency preparedness and response	Required ☐		
5.14. Provide a Construction Report(s) (see Section 10.2 of the Criteria)	Required ☐		
5.15. Provide a Landfill Gas Generation Assessment (see Section 10.4 of the Criteria)	Required ☐		
5.16. Provide a Landfill Gas Management Facilities Design Plan (see Section 10.5 of the Criteria)	Required ☐		
6. ENVIRONMENTAL IMPACTS This section discusses potential environmental effects and evaluates the risks of the project on human health and water users including aquatic and aquatic dependent terrestrial receptors			
6.1. Identify the environmental values that may be at risk due to landfill related activities	Required ☐		
6.2. Identify and justify spatial and temporal boundaries for potentially affected environmental values	Required ☐		
6.3. Provide an assessment of potential groundwater impacts	Required ☐		
6.4. Provide an assessment of potential surface water impacts	Required ☐		
6.5. Provide an assessment of potential air quality impacts	Required ☐		

6.6. Provide an assessment of potential soil and/or vegetation impacts	Required ☐		
6.7. Provide an assessment of potential cumulative impacts related to proposed discharge(s)	Required ☐		
6.8. Provide an Groundwater and Surface Water Impact Assessment	Required ☐		
6.9. Provide an Environmental Impact Study	Required ☐		
6.10. Describe mitigation strategies for potential environmental impacts	Required ☐		
7. MONITORING CRITERIA This section describes proposed monitoring to take place prior to and during development, during project life, and during closure/post-closure activities			
7.1. Provide an Environmental Monitoring Plan (see Section 9.0 and Section 10.3 of the Criteria, and the Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills) including:	Required ☐		
7.2. Background/baseline monitoring	Required ☐		
7.3. Water quality monitoring results to date, including: upgradient and downgradient surface water and groundwater quality, known or predicted leachate quality and quantity, identification of parameters of concern, biota and contaminant loading surveys ,trends, and quality control procedures	Required ☐		
7.4. Mass loadings and assimilative capacity	Required ☐		
7.5. Proposed groundwater and surface water monitoring	Required ☐		
7.6. Proposed leachate monitoring	Required ☐		
7.7. Proposed landfill gas monitoring	Required ☐		
7.8. Proposed ambient air monitoring	Required ☐		
8. OPERATIONAL CRITERIA This section describes the objectives and minimum requirements for operation of landfill sites to ensure the landfill performance criteria are met			
8.1. Describe the authorized wastes	Required ☐		
8.2. Describe the filling plan	Required ☐		
8.3. Describe the cover placement	Required ☐		
8.4. Summarize nuisance management including but not limited to: dust, noise, litter, odour, and animal/vectors	Required ☐		
8.5. Summarize burning activities – open burning generally prohibited and only considered if it can be demonstrated that there is no viable alternative (see 2017 Factsheet on Burning Requirements)	Required☐		
8.6. Describe landfill fire management	Required ☐		

8.7. Summarize scavenging management	Required ☐		
8.8. Summarize site health and safety plan	Required ☐		
8.9. Describe signage	Required ☐		
8.10. Describe weigh scales	Required ☐		
8.11. Describe record keeping	Required ☐		
8.12. Summarize operator training	Required ☐		
8.13. Describe erosion and sediment controls	Required ☐		
8.14. Provide a Trigger-Response Plan that describes monitoring triggers and responses, including confirmatory monitoring, investigations and mitigation strategies, in the event that environmental benchmarks (water guidelines and standards, or toxicology requirements) are exceeded	Required ☐		
8.15. Summarize regular submissions to ENV (i.e., quarterly monitoring data, Annual Report, see Section 10.6 of the Criteria)	Required ☐		

8.16. Provide a Design, Operations and Closure Plan (DOCP, see Section 10.3 of the Criteria) including but not limited to the following sections:
• Physical summary – topography, drainage, geology, hydrogeology, hydrology and climatic conditions of the site
• Geotechnical and seismic assessment
• Groundwater and surface water impact assessment
• Site plan
• Site layout plan
• Filling plan taking into account:
  • Generation and collection of leachate
  • Control of storm water
  • Control of litter during various seasonal conditions
  • Interim slope stability and safety
  • Vehicle access to active disposal area
• Minimization of nuisance impacts such as dust, nuisance weeds, etc.
• Progressive closure plan
• Lifespan analysis
• Contaminating lifespan analysis
• Surface water management plan
• Leachate management plan
• Landfill gas management plan
• Environmental monitoring plan
• Facility operations plan
• Closure plan
• Fire safety plan
• Emergency response plan
• Financial security plan
• Contingency plan
• Land survey
	Required ☐		

9. CLOSURE AND POST-CLOSURE CRITERIA This section discusses closure and post-closure requirements. Legal provisions in the Contaminated Sites Regulation and Part 4 of the *Environmental Management Act* may apply			
9.1. Provide a Closure Plan (see Section 10.3.4 of the Criteria)	Required ☐		
9.2. Summarize post-closure operation and maintenance	Required ☐		
9.3. Summarize post-closure monitoring activities	Required ☐		
9.4. Describe the contaminating lifespan	Required ☐		
10. FINANCIAL SECURITY This section discusses financial security. Financial security is required for all privately-owned landfills			
10.1. Provide a summary of financial security as outlined in the Criteria and as presented in the Financial Security Plan (see Section 8.0 of the Criteria)	Required ☐		

Guidance Documents to be considered when determining information items required and appropriate methods to be used:

- BC Landfill Criteria for Municipal Solid Waste
- British Columbia Field Sampling Manual, BC Ministry of Environment and Climate Change Strategy
- Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators, Version 2, BC Ministry of Environment, June 2016
- Technical Guidance 3: Developing a Mining Sediment and Erosion Control Plan, Version 1, BC Ministry of Environment, December 2014
- Technical Guidance 7: Assessing the Design, Size and Operation of Sedimentation Ponds Used in Mining, Version 1, BC Ministry of Environment, December 2015
- Guidelines for Groundwater Modelling to Assess Impacts of Proposed Natural Resource Development Activities, BC Ministry of Environment
- Manual of British Columbia Hydrometric Standards, Version 1.0, Ministry of Environment
- Protocol 21 for Contaminated Sites, Water Use Determination, Version 2.0, BC Ministry of Environment and Climate Change Strategy, October 2017
- Technical Guidance 1, Environmental Management Act Applications, Terms of Reference, Environmental Impact Assessment and Technical Assessment Report, Version 1.0, BC Ministry of Environment, December 2014[1]
- BC Code of Practice for Industrial Non-Hazardous Waste Landfills Incidental to the Wood Processing Industry
- BC Hazardous Waste Regulation
- Use of Conceptual Site Models to Support EMA Effluent Permit Applications, Version 1.2, BC Ministry of Environment and Climate Change Strategy, March 2018
- Guidance for Environmental Monitoring at Municipal Solid Waste Landfills, BC Ministry of Environment
- Factsheet on Burning Requirements, BC Ministry of Environment, April 2017

[1] https://www2.gov.bc.ca/assets/gov/environment/waste-management/industrial-waste/industrial-waste/mining-smelt-energy/eia__ta_tor.pdf