Template for Site Specific Land Application Plans (A component of the Application for Coverage Under the General Permit for Biosolids Management)

Please Read This Page First

The Department of Ecology (Ecology) prepared this Template for developing Site Specific Land Application Plans (SSLAPs) to make it easier for applicants to write complete plans. Following the Template will help you provide all necessary plan content for Ecology to review.

The elements in this Template are drawn from the minimum content required for SSLAPs in [WAC 173-308-90003](http://apps.leg.wa.gov/wac/default.aspx?cite=173-308-90003) and additional elements needed to evaluate the appropriateness of a site for biosolids application.

Ecology will use this Template to evaluate all future submittals of SSLAPs. Facilities with approved SSLAPs do not need to revise them in order to fit this Template, but they should use it to develop future SSLAPs or significantly modify existing SSLAPs.

**Important Information**

This Template commonly uses singular terms such as, “site”, “field”, “County”, “Water Resource Inventory Area”, etc., but you’ll need to use plural terms where appropriate.

Throughout this Template you’ll see **black**, **red**, and **blue** text.

* **Black-** describes content you need to provide for each section.
* **Red-** provides guidance on things to consider as well as how/where to obtain information.
* **Blue-** provides examples that may help you complete a section.

Be sure to insert the plan title and version date in the document footer and the other requested information on the Cover Page.

Final SSLAPs should have a Cover Page, a Table of Contents, and contain or respond to all of the elements specified in this Template. Please complete each section; if something isn’t applicable, write, “Not applicable”.

**Submitting Draft and Final SSLAPs**

Draft SSLAPs should be submitted electronically to the Biosolids Coordinator responsible for reviewing the plan and to the local health jurisdiction where the site is located.

Final SSLAPs must be submitted in hardcopy form. You should also submit an electronic copy.

* Submit the hardcopy and an electronic copy to the Biosolids Coordinator responsible for reviewing the plan.
* Submit an electronic copy to Ecology headquarters and the local health jurisdiction where the site is located.

SITE SPECIFIC LAND APPLICATION PLAN

FOR INSERT SITE NAME

**This Plan is a component of Insert Permittee’s Name Application for Coverage Under the General Permit for Biosolids Management**

**The site described in this plan is located in: insert county where the site is located.**

**The area described in this plan is located in Water Resource Inventory Area: insert the WRIA where the site is located.**

**The physical address (or Public Land Survey System description) of this site is: insert the physical address or the Public Land Survey System description of the site; explain the address or description provided if needed – for example, state if it’s a general location or if it’s the address of the primary access point.**

**Insert Version Date**

Table of Contents

[1.0 Ownership, Management, and Landowner Agreements 1](#_Toc323131079)

[2.0 Past Biosolids Use 1](#_Toc323131080)

[3.0 Maps 1](#_Toc323131081)

[3.1 General Location Map 2](#_Toc323131082)

[3.2 Site Map or Field Map 2](#_Toc323131083)

[3.3 Soils Map 3](#_Toc323131084)

[4.0 Seasonal and Daily Timing of Biosolids Applications 4](#_Toc323131085)

[5.0 Biosolids Staging and Storage 4](#_Toc323131086)

[6.0 Cropping Practices and Livestock Management 5](#_Toc323131087)

[7.0 Other Nutrient Sources and Soil Amendments 5](#_Toc323131088)

[8.0 Methods of Application 5](#_Toc323131089)

[9.0 Determining and Validating Application Rates 6](#_Toc323131090)

[9.1 Determining the Plant Available Nitrogen Requirement 6](#_Toc323131091)

[9.2 Calculating the Application Rate 6](#_Toc323131092)

[9.3 Verifying the Application Rate 7](#_Toc323131093)

[10.0 Soil Sampling Plan 7](#_Toc323131094)

[11.0 Groundwater Protection Plan 8](#_Toc323131095)

[12.0 Erosion Control Plan 8](#_Toc323131096)

[13.0 Noxious Weed Plan 8](#_Toc323131097)

[14.0 Restricting Site Access 9](#_Toc323131098)

[15.0 Recordkeeping 9](#_Toc323131099)

[16.0 Additional Information 9](#_Toc323131100)

[Appendixes 10](#_Toc323131101)

# Ownership, Management, and Landowner Agreements

Briefly describe the ownership and management of the site. Provide the name and contact information of the responsible landowner. Provide the name and contact information of the person responsible for farming or managing the land.

Provide a copy of a Land Owner Agreement signed by the landowner (as distinguished from a lessee, farmer, or others entitled to use the land) that acknowledges the applicability and requirements of Chapter 173-308 WAC when biosolids are applied to or stored on their land. Submit your Land Owner Agreement as an Appendix.

Guidance

Ecology is preparing guidance on Landowner Agreements. The guidance will be available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/forms.html>.

Be sure you verify land ownership. There may be more than one person who has a right of ownership. In many cases this can be done online by accessing the website for the county assessor. Ecology will not review your proposal until landowner consent is resolved.

# Past Biosolids Use

Discuss whether it is known or can be determined that biosolids containing pollutants in excess of the values in [WAC 173-308-160 Table 3](http://apps.leg.wa.gov/wac/default.aspx?cite=173-308-160) have ever been applied to any portion of the site. If biosolids containing pollutants in excess of the Table 3 values have been applied in the past, include the following:

* The date when the biosolids were applied.
* The amount of biosolids applied.
* The concentration of the pollutants in the biosolids.
* The area of the site where the biosolids were applied.

Regardless of the pollutant limits, if biosolids have been applied to the site, briefly discuss the history of biosolids use, including the following:

* When did use first begin?
* How extensively and regularly were biosolids applied?
* The source of the biosolids.

# Maps

You’ll most likely need to submit at least 3 maps. Address each map in a separate subsection. Submit the following:

* A General Location Map.
* A Site Map and, if necessary, individual Field Maps, including a topographic map.
* A Soils Map.

All maps must be clear and legible and include the following information:

* A title clearly identifying the map and its purpose.
* The name of the applicant and the project.
* A version date.
* A compass rose or directional north arrow.
* A legend that defines all map symbols.
* A scale adequate to make general interpretations.

## General Location Map

Include a General Location Map to give context to the site in a larger geographic setting. Submit your General Location Map as an Appendix along with the other maps. Include the following on your General Location Map:

* The location of the site relative to common local political and geographic reference points such as cities, towns, and villages and federal, state or county roads.
* The primary routes of access from the nearest major state or federal highways.
* Expected haul routes, where possible.

Guidance

A scale of ½ inch per mile or 1 inch per mile is recommended.

## Site Map or Field Map

Include a Site Map or Field Map to show details pertinent to operations and management. Submit your Site Map or Field Map as an Appendix along with the other maps. Include the following on your Site Map or Field Map:

* The section, township, and range.
* Latitude and longitude (degrees and minutes) for the approximate center of the site or field.
* Topographic relief showing contour lines with elevations (see further Guidance below).
* Site or field boundaries.
* The name of the site or field and/or a designation number.
* Total number of acres, and acres available for application.
* Location and means of access.
* Staging and storage locations.
* Location of any type of well listed in public records or otherwise known to the applicant, landowner, or their agents which are within ¼ mile (1,320 feet).
	+ Wells within 200 feet must be shown on the map.
	+ Wells in excess of 200 feet can be listed in a supplement to the map as long as the physical address or location is provided.
* Location and extent of any wetlands on or immediately adjacent to the site or field.
* Surface waters (perennial or seasonal) on the site or field.
* Perennial surface waters within ¼ mile (1,320 feet).
* The presence and extent of any threatened or endangered species or related critical habitat.
* The location of any critical areas, as required to be identified under [Chapter 36.70A RCW](http://apps.leg.wa.gov/rcw/default.aspx?cite=36.70a) in the county's growth management plan.
* Areas within the 100-year flood plain.
* Buffers, including the width, to the following features:
	+ Surface waters.
	+ Wells.
	+ Sensitive areas such as wetlands and steep slopes.
	+ Property boundaries.
	+ Roadways.
	+ Residences.
* Adjacent properties and their use and zoning classification.
* Roads on and adjacent to the site or field.
* Locations where informational signs will be posted.

Guidance

A scale no smaller than 8 inches per mile (roughly one section per page) is usually necessary to show critical features and operational details. A larger scale (and possibly more maps) may be necessary if there are a lot of features to show.

For large sites with multiple fields where a lot of detail is required, it may be necessary to provide one map per field. On a smaller site with fewer fields, a single map may suffice.

Site Maps or Field Maps should be on a consistent background. In most cases a topographic map will be the best option, although for some purposes other map forms may be appropriate. If desired, topography can be shown on a separate map showing only the site or field boundaries and hydrographic features, but it should be at the same scale as other site or field maps.

## Soils Map

Include a map showing the distribution of soil types on the site or field. Submit your Soils Map as an Appendix along with the other maps. Include the following on your Soils Map:

* The approximate acres and/or percentage of each soil type.
* The soil name or an identifier for each soil name with a key.

Provide a discussion of the basic characteristics of the types of soils found and any limitations that may affect soil sampling, farming, or land application of biosolids such as pH, texture, hard pans/impermeable layers, depth to groundwater, and propensity for ponding or flooding.

Guidance

The Soils Map should be at approximately the same scale as the site or field map.

Excellent soils maps and reports are available at no cost from the Web Soil Survey maintained by the USDA’s Natural Resource Conservation Service (NRCS); see: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. You can generate a report showing the number of acres and percent of each type of soil. NRCS data include information on flooding, proximity of groundwater, infiltration and ponding, crop productivity, and many other soil-related characteristics. There is also a specific evaluation tool for the land application of biosolids, but this tool should be used with caution because it tends to be conservative and may discourage the use of viable sites.

# Seasonal and Daily Timing of Biosolids Applications

Describe the expected seasonal and daily timing of biosolids applications. Include the hours of operation and any limits on seasonal, weekend, or holiday uses.

Guidance

Be sure to address any local events where conflict may arise. For example, if there is an annual corn maze or pumpkin patch immediately adjacent to the site, it may be desirable to restrict applications during those times.

Example

Biosolids will be applied only during daylight hours and when weather and site conditions allow for proper application and management.

Biosolids will not be applied if the soil is saturated, frozen, covered with snow, or other conditions exist that could result in soil damage, off-site movement of biosolids, or significantly limit percolation or incorporation.

# Biosolids Staging and Storage

Discuss how staging and storage will be managed on the site and at any related offsite storage. Include the following:

* Explain who will have access for deliveries and how deliveries will be recorded.
* Describe how biosolids from different sources will be kept separate and identified.
* Describe how run-on and runoff will be controlled.

Guidance

If you mix different sources of biosolids you must sample the mixture to ensure compliance with the biosolids quality standards. Ecology prepared a policy on Mixing Different Non-exceptional Quality Biosolids available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/pdf/MixingNonEQ.pdf> If you plan to mix different sources of biosolids you must be approved by Ecology to mix, and you must address sampling of the mixture in a Biosolids Sampling Plan.

Example

Typically biosolids are staged for a few days or stored for a few weeks, except during the winter when storage can occur for several months. This allows for the accumulation of biosolids on fields scheduled for application the following spring.

Biosolids products from different generators will be stored separately at the site. We will submit supplemental information to this SSLAP each Spring and Fall to show where biosolids deliveries are planned. The biosolids storage locations will be approved in advance by Ecology and clearly identified on maps.

Where biosolids from different generators are stored at the same location, each storage pile will be clearly marked with signs indicating the source of the biosolids. These signs will remain legible and be maintained during the entire period of storage.

Delivery drivers will unload biosolids into the areas marked for the particular products. Each driver will complete and submit a form for each delivery and place it into a locked, weather-proof box located at the storage site.

Potential run-on and runoff of precipitation is mitigated by selecting locations in each field that are generally level and well-buffered from any significant features such as surface waters and wells.

# Cropping Practices and Livestock Management

Discuss cropping practices at the site and livestock management if appropriate. Include the following:

* The types of crops grown or expected to be grown (for example, pasture grasses, wheat, corn, Douglas-fir trees, tree seedlings, cherries, rangeland grasses).
* The distribution of crops on the site and typical yields.
* The expected end use of each crop (for example, pasture grass for grazing, corn as a food crop, Douglas-fir for timber).
* Rotations for different crops that may be grown.
* Whether the site is irrigated.
* The typical times for seeding and harvest, including the number of cuttings if appropriate.
* Any other factors that may affect biosolids management on the site.
* If the site is used as pasture or rangeland discuss grazing use, include the kind and number of animals typically grazed on the site.

Guidance

The information requested in this section is intended to help ensure compliance and avoid significant management conflicts, not to limit specific practices or crops.

# Other Nutrient Sources and Soil Amendments

Discuss, in general terms, the use of any other nutrients and soil amendments during the past 5 years, including, but not limited to, commercial fertilizers and manures. Also state whether the landowner intends to apply nutrient sources other than biosolids to the site.

Guidance

The use of other nutrient sources or soil amendments doesn’t disqualify a site from application of biosolids, but it must be taken into consideration. For example, if the landowner plans to apply manure to a field in the coming year, the biosolids application rate will have to be adjusted. Similarly, if a site has a long history of heavy manure applications, it may not need additional nutrients.

# Methods of Application

Describe the methods of application that may be used at the site. Discuss incorporation of biosolids if incorporation may be used.

Guidance

If you cite multiple methods of application, you’ll need to define the buffer for each method. For example, the buffer from a river when you use a “big gun” sprayer will probably need to be greater than when you use an injector. Your site or field map must show the buffers. Usually buffers are shown via boundary markers on the map; however, if you have different buffers for different equipment you can show them via a table on the map.

Example

Land application of biosolids will be conducted with any equipment suitable for the purpose and the material being land applied. Land application methods will be even and consistent in accordance with the calculated application rate (see Subsection 10.3).

Equipment that may be used includes:

* Rear- and side-discharge manure spreaders for dewatered biosolids.
* Spray irrigation equipment for liquid biosolids.
* Injectors for liquid biosolids.
* Other equipment as approved by Ecology.

Our biosolids have met the vector attraction reduction requirements in WAC 173-308-180 and may be surface-applied without a requirement for incorporation. However, where possible, we will incorporate our biosolids within 72 hours of application to reduce the potential for odor and to conserve nitrogen. Incorporation will be accomplished with a tractor and the type of plow (or harrow) most appropriate for site conditions.

# Determining and Validating Application Rates

In the subsections below describe how you will determine and validate the biosolids application rates.

## Determining the Plant Available Nitrogen Requirement

Explain how you will determine the plant available nitrogen (PAN) requirement. Submit an Appendix with any references or calculations for determining PAN for the crop currently being grown.

Guidance

The recommendations of professional agronomists, soil scientists, or other authoritative and defensible sources form the basis for evaluating PAN. Commonly consulted sources are the Cooperative Extension Service or other university guidance, recommendations of the NRCS, and specialists employed by agricultural consulting services.

## Calculating the Application Rate

Describe the methods or tools you will use to calculate the biosolids application rate. Submit an Appendix containing any calculations for the crop currently being grown.

Guidance

Application rates are specific to each crop and site. Calculating application rates includes an evaluation of crop needs, determination of biosolids nitrogen, evaluation of soil nitrogen and other nitrogen sources, and knowledge of farming practices.

The most commonly used tool for calculating the biosolids application rate is “Worksheet for Calculating Biosolids Application Rates in Agriculture” (aka “the Cogger-Sullivan worksheet”) available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/reglinks.html#tools>. Ecology’s condensed version of the Cogger-Sullivan worksheet is on the same webpage.

All rates must be approved by Ecology prior to application unless a permit condition allows otherwise. Submit your proposed rates at least 14 days prior to your desired application time.

If your methods or tools change, if the crop changes, or if site conditions change you’ll need to submit amendments to your SSLAP. Amendments may be required frequently. For example, pre-application soil sampling is usually required East of the Cascades; your application rate will change based on the results, so you’ll need to submit a new rate proposal after each soil sampling event. Similarly, post-harvest nitrate testing is typically required West of the Cascades; if results show you’ve significantly over- or under-applied, you’ll need to submit a new rate proposal. In many cases, an email exchange will suffice as an amendment.

## Verifying the Application Rate

Describe how you will verify that the rate of application matches the target.

Guidance

There are various means of verifying application rates. For example, if you use manure spreaders you can use tarps placed at intervals across the site to collect and then determine the weight of dewatered biosolids applied per unit area. Or if you use a sprinkler system you can use buckets or pans placed at intervals across the site to collect and then determine the volume of liquid biosolids applied per unit area. Verification of application rates also includes comparing the truckloads, spreader loads, or gallons actually applied with the overall target amount for the site.

Example

Applications will be uniform across the application area and as close as possible to the target application rate.

The uniformity of distribution will be evaluated qualitatively. Each application will be evaluated for uniformity by visually observing the distribution of the biosolids. If applications are not uniform, we will adjust our application methods and/or speeds.

Application rates will be verified quantitatively. Applications will be evaluated daily by comparing the amount applied and the area applied-to with the targeted application rate. In addition, we will conduct monthly quantitative evaluations by using tarps and the following formula to determine the application rate:

* wet tons/acre applied = 43,560 ÷ ft2 of the tarp used \* pounds of biosolids on tarp ÷ 2000.

Achievement of a successful application rate will defined as being +/- 15% of the target rate. Re-calibration of the application equipment and/or adjustment to our application methods will be made when rates are not within the defined range.

# Soil Sampling Plan

Describe how you will conduct sampling and analysis of site soils and, where appropriate, groundwaters and/or surface waters. Submit your Soil Sampling Plan as an Appendix.

Guidance

Guidance on soil sampling is available online, including at: <http://www.ecy.wa.gov/programs/swfa/biosolids/reglinks.html#tools>.

Class B biosolids certified by the “7 Samples Alternative” in [WAC 173-308-170(5)](http://apps.leg.wa.gov/wac/default.aspx?cite=173-308-170) are considered Class B only for approximately 30 days. When such biosolids are stored for longer periods, they must be re-sampled prior to application and shown to meet the Class B standards before they can be applied. If you plan to store such biosolids for longer than approximately 30 days, you’ll need to address re-sampling in a Biosolids Sampling Plan.

If you mix different sources of biosolids you must sample the mixture to ensure compliance with the biosolids quality standards. Ecology prepared a policy on Mixing Different Non-exceptional Quality Biosolids available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/pdf/MixingNonEQ.pdf>. If you plan to mix different sources of biosolids you must be approved by Ecology to mix, and you must address sampling of the mixture in a Biosolids Sampling Plan.

# Groundwater Protection Plan

If groundwater comes within 3 feet of the soil surface during any part of the year you must include a Groundwater Protection Plan. Your plan must describe how you will evaluate groundwater depth and the steps you’ll take to protect groundwater. Include your Groundwater Protection Plan in this section or as an Appendix.

Guidance

Ecology is preparing guidance on Assessing Seasonal High Groundwater. The guidance will be available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/reglinks.html#tools>.

The details of the Groundwater Protection Plan are site specific and may be as simple as restricting application to times of the year when the groundwater is more than 3 feet below the soil surface.

# Erosion Control Plan

Depending upon the site and details of land application activities, an Erosion Control Plan may be needed. For example, if the project involves land reclamation, or if erosion or runoff is expected or known to be a problem, you’ll need to include an Erosion Control Plan. Your Erosion Control Plan should address both wind and water erosion and discuss measures that will be taken to preserve soils and protect surface waters. Include your Erosion Control Plan in this section or as an Appendix.

Guidance

Forest and agricultural sites are typically managed to control erosion and usually will not be subject to this requirement.

# Noxious Weed Plan

Depending upon the site and details of land application activities, a Noxious Weed Plan may be needed. Include your Noxious Weed Plan in this section or as an Appendix.

Guidance

Landowners are required to control the spread of noxious weeds in accordance with [RCW 17.10.140](http://apps.leg.wa.gov/rcw/default.aspx?cite=17.10.140), Owners Duty to Control Spread of Noxious Weeds.

Land application procedures that result in the spread of noxious weeds will be interpreted by Ecology as not meeting the Beneficial Use requirements of [WAC 173-308-080](http://apps.leg.wa.gov/wac/default.aspx?cite=173-308-080).

Forest and agricultural sites are typically managed to control weeds and usually will not be subject to this requirement.

# Restricting Site Access

Describe how access to the site will be restricted, including where signs will be posted and how you will assure they are maintained. Include a copy of your sign (or the language it will include) in this section or as an Appendix.

Guidance

Ecology is preparing guidance on Signs and Site Posting. The guidance will be available at: <http://www.ecy.wa.gov/programs/swfa/biosolids/pdf/GuidanceforPostingSigns.pdf>.

You must place signs at least every ½ mile around the perimeter of the site and at all major access points. Additional signs may be required, depending on the site. Informational signs should be posted at the major access points. Upon approval by Ecology, ‘No Trespassing’ signs may be used.

Do not print your signs until the language and format have been approved by Ecology.

# Recordkeeping

Explain how you will keep records on land application activities. You’ll need to have a Records Form. Submit your Records Form as an Appendix. For each site or field you’ll need to keep records on the following:

* Sampling and analysis data you were responsible to obtain or that you used to make decisions on land application.
* The source of biosolids delivered.
* The amount of biosolids delivered.
* The amount of biosolids applied.
* The number of acres on which biosolids were applied.
* The rate of application.
* The date biosolids were applied.
* The targeted vegetation and its nitrogen requirement.
* Information on how site management and access restrictions were met, including for livestock.
* Information on how vector attraction reduction requirements were met if biosolids were required to be tilled or injected.
* The amount in storage.

# Additional Information

Provide any additional information requested by Ecology or that you believe will be important in assessing the appropriateness of the site for biosolids application.

# Appendixes

Include all Appendixes you cited above.