# 4.12
SITE SPECIFIC LAND APPLICATION PLAN FOR BURNT RIDGE UNIT

This Plan is a component of Fire Mountain Farms, Inc. Application for Coverage Under the General Permit for Biosolids Management Permit No. BT9902

Location:

<table>
<thead>
<tr>
<th>Site Address (General Location):</th>
<th>874 Burnt Ridge Road Onalaska, WA 98570</th>
</tr>
</thead>
</table>
| GPS Coordinates of Site Entrances: | Lat 46° 35' 49.00" N, Long 122° 35' 31.89" W  
Lat 46° 35' 23.54" N, Long 122° 35' 00.83" W |
| Sec, Twp, Rge: | Sec 19, 20 & 29, Twp 13N, Rge 2E, WM |
| Water Resource Inventory Area: | 26 |
| County: | Lewis |
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1.0 Ownership, Management, and Landowner Agreements

Owners are as listed below.

<table>
<thead>
<tr>
<th>Owner</th>
<th>Parcel(s)</th>
<th>Zoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thode, Robert J.</td>
<td>033243002000 033259000000</td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td>856 Burnt Ridge Road</td>
<td></td>
<td>ARL – Agricultural Resource Lands</td>
</tr>
<tr>
<td>Onalaska, WA 98570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thode, Martha Ann</td>
<td>033243005000</td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td>856 Burnt Ridge Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onalaska, WA 98570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logan, Daniel J.</td>
<td>033243003000</td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td>1215 Chambers Street</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steilacoom, WA 98388-3845</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logan, William A.</td>
<td>033243004001 033243004002 033243004003 033243004004</td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td>788 Burnt Ridge Road</td>
<td></td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td>Onalaska, WA 98570</td>
<td></td>
<td>RDD-10 – Rural Development District</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The parcels on this site are owned as listed in the above table. Timber land is managed by the owners. Farming operations on this site are managed by Robert and Martha Thode.

This site is zoned as listed in the above table and conversion to other land uses is not allowed. There is no known conversion being planned.

See Appendix 1 for signed agreements from landowners (as distinguished from a lessee, farmer, or others entitled to use the land) that acknowledge the applicability and requirements of Chapter 173-308 WAC when their property is used for biosolids land application or storage.

2.0 Past Biosolids Use

Class A and B biosolids have been applied to this site. Class B biosolids were last applied in 2014 and class A biosolids were last applied in 2019. No biosolids have been applied to this site that did not meet WAC 173-308-160 (3) (Table 3) for
pollutants. The amount of biosolids applied to this site in the past may be found in the previous year’s Biosolids Annual Reports for Fire Mountain Farms, Inc.

3.0 Maps
Mapping units will designate Fire Mountain Farm’s area of biosolids land application. These maps denote both site and setback boundaries (road and property line) as well as anomalies (e.g. swales, slopes >25%, physical barriers, etc.). Fire Mountain Farms site application maps will show staging/stockpiling locations, site acreage, site name, common name for site, and other identifying characteristics for each site. Maps are located in Appendix 2 of this plan. There is no flood zone map included as the site does not lie in either the 100 or 500 year flood zone.

3.1 General Location Map
Appendix 2.A – General Location
Appendix 2.B – Haul Route Map not used
Appendix 2.C – Aerial Overview of Site, Field Identification Map
Appendix 2.D – Details (Residences, Wells, Roads, Rail Line, Accesses, Staging, Signage, Surface Water, Wells)
Appendix 2.E – Not Used For this Site
Appendix 2.F – Not Used For this Site
Appendix 2.G – Zoning Map
Appendix 2.H – Topographic Map

3.2 Soils Map
Appendix 3 – Soils Report (includes site soils map)

4.0 Seasonal and Daily Timing of Biosolids Applications
Biosolids applications at this site are limited yearly from March 1st until October 31st. Fire Mountain Farms may request approval from Ecology to proceed with land application activities outside of these dates. An extension may be granted by Ecology for application at no greater than one-week intervals. (Requests will be sent to Ecology 7 calendar days ahead of application outside of dates. Ecology will respond within 7 calendar days. Application to the site outside of the above dates will be at the discretion of Ecology personnel.) Depth to ground water may also effect delay the application window (see section 12). From a practical standpoint, applications will normally occur during daylight hours and operations usually do not occur on weekends or holidays. There may be occasions where deviation from the normal schedule will be required, such as the need to apply biosolids so that a subsequent crop may be planted in a timely manner prior to rain or adaption to neighbor’s requests. FMF will consult Manure Spreading Advisory (MSA) and Northwest River Forecast Center (NRF) through NOAA to mitigate risk of surface runoff. FMF will only spread biosolids if the MSA rating = Low Risk and the NRF shows no chances of flooding within 10 days of application.
Fire Mountain Farms will consider and consult on written requests from neighbors if biosolids application procedures pose a likelihood of conflicting with planned activities. There are no known special events in this area that biosolids activities could impact.

### 4.1 Buffers

Buffers will be marked so they are easily visible during application. Surface water buffers will be increased to 150% of what is reported in the table below when the potential for run off is heightened in early spring applications, (March 1st to April 1st), and late fall after October 1st.

<table>
<thead>
<tr>
<th>Type</th>
<th>Buffer in Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well</td>
<td>30.5</td>
</tr>
<tr>
<td>Residence</td>
<td>30.5</td>
</tr>
<tr>
<td>Wetland/ Creek</td>
<td>10</td>
</tr>
<tr>
<td>Un-delineated Wetland</td>
<td>30.5</td>
</tr>
<tr>
<td>Public roadways</td>
<td>2</td>
</tr>
<tr>
<td>Property boundary</td>
<td>2</td>
</tr>
</tbody>
</table>

### 5.0 Biosolids Staging and Storage

There is a concrete staging area and 2 covered storage buildings. Storage will be addressed through a storage plan, when a storage plan is approved. Permanent staging areas are marked on the map (Appendix 2D).

Primary access to the site is near an onsite residence, through a lockable gate and will be restricted by informational signs that are shown in Appendix 5 of this plan. Secondary access points are further down Burnt Ridge road through a locked gate. To ensure that drivers, follow procedures, Fire Mountain Farms has printed instruction sheets describing biosolids offloading procedures. These instruction sheets are sent to all biosolids suppliers. New drivers to the site are walked through these procedures. A triple check system is in place to assure all loads are accounted for: First, all loads are to be scheduled with the Operations Office prior to delivery. Second, all sources have been supplied numbered Delivery Tickets (these are numbered sequentially and if a number is missing, Fire Mountain Farms investigates what happened to it). See Appendix 6.C for an example. Third, all deliveries are recorded on “Delivery Record Sheet” at sites. See Appendix 6.D for an example.

Permanent staging areas are designed so any rainfall is held within and does not run off into the field. Staging is done during dry times so runoff is not typically an issue. Biosolids sources will be kept separate unless they are mixed and tested as a new biosolids product.

### 6.0 Cropping Practices and Livestock Management
### Acreage and Number of Fields:

#### Field Acreage:

<table>
<thead>
<tr>
<th>Field Name/No.</th>
<th>Acreage</th>
<th>Crop/Use</th>
<th>Alternative Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRT-1</td>
<td>14.85</td>
<td>Timber</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRT-2</td>
<td>37.09</td>
<td>Timber</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRT-3</td>
<td>60.77</td>
<td>Timber</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRT-4</td>
<td>25.84</td>
<td>Timber</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRT-5</td>
<td>3.11</td>
<td>Timber</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRO-1</td>
<td>0.25</td>
<td>FRUIT TREES</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRO-2</td>
<td>2.81</td>
<td>NUT TREES, PASTURE</td>
<td>Small grains, pasture, hay</td>
</tr>
<tr>
<td>BRP-1</td>
<td>2.1</td>
<td>Pasture</td>
<td>Small grains, hay</td>
</tr>
<tr>
<td>BRP-2</td>
<td>0.66</td>
<td>Pasture</td>
<td>Small grains, hay</td>
</tr>
<tr>
<td>BR-1</td>
<td>3.23</td>
<td>Pasture</td>
<td>Timber</td>
</tr>
<tr>
<td>BR-2</td>
<td>2.2</td>
<td>Pasture</td>
<td>Timber</td>
</tr>
<tr>
<td>BR-3</td>
<td>14.78</td>
<td>Pasture</td>
<td>Small grains, timber</td>
</tr>
<tr>
<td>BR-4</td>
<td>2.98</td>
<td>Pasture</td>
<td>Timber</td>
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<tr>
<td>BR-5</td>
<td>3.72</td>
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<td>Timber</td>
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<tr>
<td>BR-6</td>
<td>1.62</td>
<td>Pasture/Hay</td>
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<tr>
<td>BR-7</td>
<td>5.79</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
</tr>
<tr>
<td>BR-8</td>
<td>12.06</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
</tr>
<tr>
<td>BR-9</td>
<td>4.99</td>
<td>Pasture/Hay</td>
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<tr>
<td>BR-10</td>
<td>8.38</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
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<tr>
<td>BR-11</td>
<td>19.27</td>
<td>Pasture</td>
<td>Small grains, timber</td>
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<tr>
<td>BR-12</td>
<td>13.52</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
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<tr>
<td>BR-13</td>
<td>11.7</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
</tr>
<tr>
<td>BR-14</td>
<td>9.75</td>
<td>Grass Hay</td>
<td>Small grains, timber</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>261.47</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Crops may change to any food, feed, fiber or fuel crop as markets and other factors change.

#### Total Acreage:

<table>
<thead>
<tr>
<th>Parcel Number</th>
<th>Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>033243002000</td>
<td>19.54</td>
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<tr>
<td>033243005000</td>
<td>59.54</td>
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<td>033243004002</td>
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<td>033243004004</td>
<td>10.04</td>
</tr>
<tr>
<td>033259000000</td>
<td>118.49</td>
</tr>
</tbody>
</table>
Pasture and Hay

Livestock are managed on the site in an intensive pasture management system. This management system requires a higher density of livestock during the optimum growing season and allows for most of the livestock (cattle) to be removed during the winter months. This livestock management system requires many small fields with available livestock water and frequent movement of cattle to new pasture fields. The application of biosolids is performed after cattle are moved out of a field. The livestock are not allowed grazing access to the field for a minimum of 30 days from last date of biosolids application. When pasture grasses are growing optimally, there are generally 45 days between the periods when cattle are removed from a field until the crop is ready to be grazed again.

In addition to livestock grazing, fields may be used for hay production. The goal is to graze a pasture field at least once prior to letting it grow for hay. Ideally, biosolids applications will occur after the field has been grazed by livestock at least one time. If not initially grazed, then land application may occur after the first cutting for hay or silage. The construction of an approved biosolids storage structure would allow for a livestock grazing rotational system that is preferred by Fire Mountain Farms. It is considered the most agronomic and effective management strategy for growing pasture grass as a crop for livestock management.

Typical Production of grass crops runs 3 to 5 ton per ac unirrigated. Grazing window for intense grazing. Typically run March to November typically 50 to 240 animal units. Hay season runs May to September heavily dependent on weather.

Timber

- Douglas fir planted this timber was planted 1978
- This timber has been thinned 1992, 2000, 2014
- This timber is currently on a 45 to 60 yr
- Current undergrowth is light to moderate brush & grass that is grazed by Bulls during the winter
7.0 Other Nutrient Sources and Soil Amendments
Pasturing cattle does return some nutrients to the soil. This addition of nutrients is taken into account when determining biosolids application rates and records will be kept. Additional Nutrients are added in to Pacific Northwest Extension Publication PNW0511e (aka The Cogger/Sullivan Worksheet) when calculating application rates. Livestock nitrogen return from grazing is figured using Animal month units (AMU). Average nitrogen return was determined after discussions with Lewis County Conservation District and WSU.

Lime may be applied to this site as a soil amendment. This addition of lime acts to bring the soil-pH into a range that supports optimal pasture growth. Other products may be used to supplement biosolids application when needed. For example, biosolids is low in potassium and cobalt or soil may need supplements to adjust soil pH for optimal plant growth. This is further addressed in Section 9.2 on calculating application rates where all nutrient and soil amendments will be accounted for. Additional organic or inorganic Nitrogen applications, including pasture application from the cattle will be submitted with agronomic rate biosolids application request.

8.0 Methods of Application
Fire Mountain Farms has a wide variety of application equipment and methods for field applying biosolids. Some of the equipment is very specialized (such as the timber application setup liquid nozzle controlled by an operator at the gun) and others are more common in typical agricultural production. Land application of biosolids will be conducted with equipment that is suitable for the site and also for the material being land applied. Land incorporation of blended de-watered biosolids will be conducted with equipment that is suitable for the land and material being utilized. Land application methods will provide for an even and consistent distribution in accordance with the calculated application rate (see Subsection 9.2). Quality management of biosolids requires the flexibility to adjust to various site-conditions (such as crop conditions, soil conditions, type of biosolids, weather, time frame).

Equipment that may be used includes:
- Rear- and side-discharge manure spreaders for dewatered biosolids.
- Liquid tank spreaders
- Spray irrigation equipment for liquid biosolids.
- Drag hose systems for liquid biosolids.
- Other equipment as approved by Ecology.

Specific buffers may be larger than minimums if deemed necessary and are shown on attached map. These buffers will not generally change with application method. However, from a practical standpoint, some methods of application will require increased setbacks (setbacks are an area outside the
buffer that may receive some biosolids but not a full application to ensure that no biosolids enters into the buffer area). Setbacks are variable to conditions and will be set by operator at time of application. For example, using a “big gun” (a sprinkler-type system designed to apply liquid materials) could require the setback of an additional distance if wind is determined to be an operational concern. Compliance may also be met on a calm day by stationing a crew member in the field to closely monitor the operations and maintenance of setbacks. Additionally, vegetated areas may also be used to protect sensitive areas from biosolids. Fire Mountain Farms considers the method of application to be less of a factor in the setting of buffers than other aspects such as field slope, type of vegetation, permeability of soil and sensitivity of buffered areas.

Currently Fire Mountain Farms has the following equipment:

For de-watered biosolids:
- Knight side slingers (5)
- Meyers rear discharge
- Big A with FarmCo box
- John Deere hydro push

For liquid applications:
- Truck spread with splash plates
- Houle 7300-gallon tank spreader
- Nuhn 5000-gallon tank spreader
- Terragator 4000-gallon tank spreader
- Hard hose reel (2)
  - With big gun
  - With 120ft spray bar
- Drag hose system
  - With airway aerator
  - With sod injector
  - With 7-shank injector
  - With splash plate

The preferred method of land application on this site is to use tank spreaders or drag hose for liquid and the Knight or Meyer spreaders for de-watered material. The method of application will be matched with the type of biosolids being delivered, crop and soil conditions. For example, the 7-shank injector is only usable with liquid biosolids being applied to annual crops, whereas the Meyer works best for very dry biosolids (40% +). Another example is a Terragator can be accurate with application to get in to areas and apply where as a big gun covers 300ft. For cake material the rear discharge spreaders are a much tighter spread pattern for than the side discharge to spread smaller areas.
When biosolids must be incorporated to meet the vector attraction reduction (VAR) standard for Class B biosolids, one of the following methods will be used:

- Injection with drag-hose system
- Incorporation with tillage tool such as a disk harrow

## 9.0 Determining and Validating Application Rates

The subsections below detail the process to set desired nitrogen levels for a given crop, determine how much nitrogen is available in biosolids being applied, and how to calculate volume of biosolids to apply to a given field.

Ecology reserves the right to exercise professional judgment when evaluating proposed application rates and the site suitability so as to ensure biosolids rule requirements and the goals and objectives of this plan are met.

### 9.0.1 Timber Area

Timber application area will be calculated using road length multiplied by spread width of the used application method. Example 1000 ft. road Knight side slinger and 90 ft. coverage

\[ 1,000 \times 90 = 90,000 / 43560 = 2.07 \text{ acres}. \]

## 9.1 Determining the Plant Available Nitrogen Requirement

Agronomic rates for biosolids application will be determined using one or a combination of the following methods:

- Recommendation of professional agronomist or forester.
- As prescribed in farm plans on file with Lewis County Conservation Districts.
- As recommended by Washington State University (WSU) Cooperative Extension guidance.
- Production estimate based on potential of soil as determined by NRCS Soils Surveys, WSU or other Cooperative Extension guidance.
- As determined by actual production data using WSU rates per production unit or the following formula. Calculation of nitrogen requirement for crop production such as hay or pasture will be as follows:

\[
\text{Dry matter yield (DmY) } \times \text{ (\%N) } = \text{ N-uptake}
\]

\[
(\%N) = \frac{\text{Crude Protein}}{6.25}
\]

Example:

\[
\text{DmY} = 4500 \text{ lb, Crude Protein} = 18.75\%, \%N = 18.75 / 6.25 = 3\%
\]

\[
\text{N-uptake} = 4500 \times .03 = 135 \text{ lb nitrogen utilization}
\]

- Rates will be adjusted as indicated by biosolids nutrient data, soil sampling and post-harvest soil nitrate testing. Record of past production is the preferred method, but when that is not available (i.e., new site or new
crop), Fire Mountain Farms will base application rate on the best available recommendation. Fire Mountain Farms, Inc. will use the Department of Ecology document, Biosolids Management Guidelines for Washington State, to assist with the calculations of appropriate. The Fire Mountain Farms Application Report (see Appendix 6.A of this plan) will be used to record and document application rates.

9.2 Calculating the Application Rate

Biosolids application rates are calculated using Worksheet for Calculation Biosolids Application Rates in Agriculture (PNW0511e). Excel spreadsheet based off of PNW0511e (aka Cogger/Sullivan Worksheet). See Appendix 7.A of this plan for an example. This spreadsheet allows input values for previous applications of biosolids, ammonium retention, and mineralization rate.

Septage application rates will be calculated using excel sheet in Appendix #7.D

The formula used is:

\[
\text{Plant requirement} - \text{soil residual nitrogen} = \text{needed nitrogen divided by 0.0026} = \text{gallons of septage to apply.}
\]

Ecology shall have 14 calendar days for review of information regarding agronomic rate recommendations. The 14-day review period shall begin after all necessary information to calculate the recommendation is received in writing by the designated Ecology staff member. Ecology will respond within 14 days of receiving all necessary information upon which a recommendation is based.

➢ Information that maybe needed to support application rates
   - Cogger-Sullivan Spreadsheet
   - What crop grown, harvested as,
   - Other inputs, Irrigation, commercial products, lime
   - Previous yields and expected yields
   - Animals: type, size, time on field
   - Soil test results
   - Biosolids analytical data and type
Proposed application rates with anticipated application after September 15th shall not exceed application rates recommended per an appropriate fertilizer guideline.

### 9.3 Verifying the Application Rate

When applying biosolids, application rates are calculated in gallons per acre for both dewatered and liquid applications. For dewatered biosolids, each application unit is assigned a volume, and the number of loads per field is determined. Depending on which applicator is being used, the correct area will be covered by varying speed and width of spread. The typical application rate procedure works like this: the supervisor determines rate and maximum number of loads for a field. This is entered on the “Application Report” and the report is given to the operator. For liquid applications, a determination of the number of dry tons required is calculated. Then, using the percent total solids of the biosolids, the gallons per acre can be determined. The percent total solids will be checked periodically (example Sartorius MA35), it can also be done with a microwave and a scale) and an adjustment to the agronomic rate will be made if needed. When using the drag-hose system, flow rate & speed + implement width is used to calculate actual application rate. Speed and flow rate can be adjusted to hit target application rate. Flow rate will be determined using a flow meter. In the event the flow meter fails we will calculate application rate using line pressure and hose size. All this information is recorded on the “Liquid Application Report” located in Appendix 6.B of this plan.

### 10.0 Sampling Plan

Sections below describe soil sampling and biosolids sampling procedures. All sampling procedures will have an approved plan before sampling is done.

#### 10.1 Soil Sampling

The collection of soil samples and observation of crop response will assist with the determination of correct biosolids application rates. The fall post-harvest soil nitrate test helps to gauge the effectiveness of the biosolids application rates by measuring the concentration of Nitrate-N remaining in the top one foot of soil at the end of the growing season and before soils become saturated. We will follow Oregon State University/ Washington State University guidance #EM 8832-E “Post-harvest Soil Nitrate Testing, for Manured Cropping Systems west of the Cascades” by D.M. Sullivan & C.G. Cogger for sampling Protocol and analyzing sampling results. Results will be provided to Dept. of ecology within 14 days of receiving results.
Post-harvest soil nitrate testing is performed by collecting soil cores at multiple locations throughout the field, and combining the cores together to form a composite sample. The depth of each core will be labeled. These samples will be dried or refrigerated to stop biological activity that could change results before shipping to laboratory for analysis (See Appendix 8A).

Post-harvest, report-card, trends will be compared to threshold goals to determine biosolids application rates for the following year. Additional biosolids land application will be determined by considering the following: the trend of soil nitrate results, previous agronomic rate of N applied, weather conditions for the growing season, and other farming practice that could affect current trend point. Oregon State University/ Washington State University guidance #EM 8832-E “Post-harvest Soil Nitrate Testing, for Manured Cropping Systems west of the Cascades” by D.M. Sullivan & C.G. Cogger recommendations for Nitrate-N within the top foot will be used for residual goal. Fields with a 10 year history of Biosolids application will have percent organic matter checked. Resampling intervals will depend on organic material levels. Fields with substantial lime stabilized biosolids application will have soil pH tested.

Due to the complicated nature of soil nitrogen processes, an alternate secondary sampling could be performed in the spring to verify inconsistent data from fall sampling. Spring soil sampling is required for could be used bringing a new site online. An alternate method of determining biosolids land application rates may be used with Dept. of Ecology’s concurrence. That method would include conducting spring pre-application sampling for soil Nitrate-N and Ammonium-N prior to biosolids application, with those results subsequently used to determine appropriate application rates using the PNW0511e spreadsheet or similar. Once those calculations are complete and the results submitted, Ecology will consider allowing land application rates on a field by field basis.

See the Sampling and Analysis Plan for more detailed soil collection and testing information. A sampling and analysis plan detailing the procedures for the collection of soil samples may be found in Appendix 8 of this plan.

10.2 Biosolids Sampling and Analysis
Documenting that biosolids meet the standards for land application in WAC 173-308 is performed by either the biosolids generator (e.g. wastewater treatment plant) or by Fire Mountain Farms, Inc. If biosolids quality is changed by Fire Mountain Farms after receipt through the process of blending multiple biosolids sources, Fire Mountain Farms will follow Ecology’s Policy on Mixing Different Non-Exceptional Quality Biosolids-2008. For a detailed description of sampling procedures, please see the Sampling and Analysis Plan (May be submitted later if
approved to mix biosolids sources in the future) located in Appendix 8B of this plan.

10.3 Pathogen Reduction

Pathogens are organisms, such as certain types of bacteria that have the potential to cause disease in humans. Biosolids must be processed to meet certain pathogen reduction standards. The pathogen reduction requirement for biosolids received at this site shall be met before being received by one of the alternatives listed in WAC 173-308-170 (5) through (7).

When biosolids from multiple sources are mixed on-site, documentation of pathogen reduction will be provided through the collection of seven samples that are representative of the blended biosolids and analyzed for fecal coliform. These samples will be delivered to a State of Washington accredited laboratory following a chain-of-custody protocol. Pathogen reduction shall be considered to have been accomplished if the geometric mean of the seven fecal coliform samples is less than 2,000,000 MPN/g-total solids (dry weight basis).

10.4 Trace Elements

At a minimum, biosolids land applied at the site, must meet the Ceiling Concentration Limits for pollutants found in Table 1 of WAC 173-308-160 (1). It is a policy of Fire Mountain Farms to only accept biosolids that meet the more restrictive Pollutant Concentration Limit found in Table 3 of WAC 173-308-160 (3).

10.5 Vector Attraction Reduction Standard

Vector attraction is the characteristic of biosolids that may attract insects and animals (vectors) capable of transmitting disease. In general, biosolids meeting vector attraction prior to arriving at the site will have gone through a process to reduce volatile solids or has physical properties such as high pH that reduces vector attraction. To meet vector attraction reduction (VAR) after biosolids arrive at the site, a physical process such as injection or incorporation of the biosolids will be performed as part of the application procedure.

Most biosolids, prior to being received at the site, shall meet one of the vector attraction reduction (VAR) requirements in WAC 173-308-180 (1) through (6). If the VAR requirement has not been met prior to the biosolids arriving at the site, one of the VAR requirements in WAC 173-308-210 (4) (a) injection or (4) (b) incorporation shall be met at the time of biosolids application and WWTP will be provided with confirmation documentation that VARs was met.

11 Septage

All septage will be screened before application either by Fire Mountain Farms or the septage pumper. Screenings removed by Fire Mountain farms will be
handled as solid waste and disposed of within those regulations. Application of septage will be done by Fire mountain farms or Agents supervised and instructed by Fire Mountain Farms Inc.

11.1 Septage Pathogen and Vector Attraction Reduction options
11.2 The septage will be injected so that no significant amount of the septage on the surface within 1 hour injection
11.3 The septage will be surface applied then incorporated into the soil within 6 hours
11.4 The septage will be stabilized by raising the PH to ≥12 and held for at least ≥12 for 30 min (If this plan is used a Sampling and Analyses plan will be submitted)

12.0 Groundwater Protection Plan
Fire Mountain Farms will not apply to fields where depth to the water table is less than three feet, or during a time when water table is within 36 inches of the soil surface.

Determining depth to the water table:

1. Review Natural Resource Conservation Service, (NRCS), soil surveys for depths to water table
2. Those soil types that have water table that comes within 36 inches of the surface will have depth monitored prior to application.
3. Monitoring will be with temporary bore holes or permanent monitoring wells.
   a. Temporary bore holes will be drilled, observation made, then refilled.
   b. Permanent monitoring wells will have perforated PVC pipe installed with removable caps.
4. Locations of monitoring points will be proposed after consultation with Ecology hydrogeologist.
5. Locations of monitoring points will be submitted to Ecology for approval.
6. Field log will be kept on observations made at monitoring points. Copy of this log will be submitted to Ecology as part of Annual Report and will include at a minimum field conditions and weather, date, location information, and depth to water.
7. After five years of observation and water table has not been observed at a monitoring point Fire Mountain Farms may close that monitoring point after conferring with Ecology.

13.0 Erosion Control Plan
NRCS has not classed this land as “highly erodible”. There are permanently vegetated strips next to streams and ditches. The current agricultural activities do
not deem it necessary for an erosion control plan. Some steep areas could create an erosion problem if tilled and not planted. Biosolids will be applied at agronomic rates and managed consistent with established farming practices. Typical farming practices designed to reduce erosion potential will be in place.

14.0 Noxious Weed Plan
Sites are managed for specific crops with standard farming practices in place to control noxious weeds. The Noxious weeds of concern on this site are Tansy Ragwort and Canadian Thistle. Both have difficulty competing with desirable vegetation when adequate fertility is maintained in the soil. Our primary concern with noxious weeds is getting other property owners, including the State of Washington, to control noxious weeds on land which is adjacent to fields we farm.

15.0 Restricting Site Access
A copy of Fire Mountain Farms’ informational sign can be found in Appendix 5 of this plan. Signs will be placed as noted on the map listed as Appendix 2.D. Signs will be placed at all normal points of access and at least every quarter mile along roadways that border application areas. Signs will also be placed at other points along the boundary where it is deemed appropriate by Fire Mountain Farms or as requested by DOE. Entering improved property without permission of land owner or person who has right of possession (lease holder) is a violation of state law. The posting of signs noting the site is restricted adds an additional measure for public protection and also signals to all that the land is not open for public access.

16.0 Recordkeeping
Fire Mountain Farms shall keep specific records of land application activities. These records shall be available for inspection by Ecology upon request. As a minimum, the following information shall be included in the land application site records:

Fire Mountain Farms will maintain the following information as required. Forms for maintaining this information are located in Appendices 6 and 7 of this plan.

- Sampling and analysis data obtained or used to make decisions on land application.
- The source of biosolids/septage delivered.
- The amount of biosolids/septage delivered.
- The amount of biosolids/septage applied.
- The number of acres on which biosolids/septage were applied.
- The rate of application.
• The date biosolids/septage were applied.
• The amount in storage.

17.0 Additional Information
See the following appendices of this Site-Specific Land Application Plan for more information.

Appendices

1. Land Owners Agreement
2. Site Maps
3. Soils Report (includes site soils map)
4. Well Logs
5. Informational Sign add sign
6. Forms add forms
7. Spreadsheets/Charts add spreadsheet
8. Sampling and Analysis Plan
9. Not used
10. Spill Plan Example
11. Public Notice