

**Biosolids Management Plan
For
H2O&S, Inc. (aka Inn at Otter Crest)
May 2015**

Date: May20, 2015

H2O&S, Inc.
Otter Crest Loop Road
Otter Rock, OR 97369
Lincoln County
Treatment System Class: Level II
Collection System Class: Level II

EPA #: OR002635-2
File Number: 41740
Permit Number: 101269

Contact: John Wiegardt Treatment Operator II
Phone: 541.921.7377

I. Treatment Facility

Introduction:

The H2O&S, Inc. sewage treatment plant (STP) was built in 1972, and is owned and operated by H2O&S, Inc. under National Discharge Elimination System (NPDES) permit number 101269. Waste treated by the STP includes domestic wastewater from the Inn at Otter Crest, area residential connections, and domestic septage. Treated effluent from the treatment plant is discharged to the Pacific Ocean. The facility does not accept commercial, industrial wastewater / process waters or septage.

The H2O&S, Inc. business owner is David Hinterreiter.

A) Wastewater and Septage Processing:

Wastewater:

The major treatment process used is activated sludge. The plant consists of one extended aeration channel, one 41,000-gallon aerobic sludge digester, a 12,000-gallon aerobic batch tank, a 55,000-gallon clarifier, a chlorine contact chamber, and an ocean outfall. The annual inflow volume of municipal wastewater at this facility is 4,892,000 gallons. Influent enters the facility at a bar screen, flows through a primary settling channel, then to the aeration basin (41,000-gallon capacity). Flow moves from the aeration basin to the clarifier, and is returned to the aeration basin. Solids are target wasted to the sludge digester. Decantate at the clarifier flows to the chlorine contact chamber prior to outfall to the Pacific Ocean.

Septage:

The facility does not accept septage.

B) Solids Processing:

Scum is pumped off the top of the clarifier and sludge is wasted from the bottom of the clarifier to the aerobic digester (41,000 gal.). The digester design retention time and temperature is 60 days at 15 degrees C at 1% solids*. From the digester the sludge is transferred to a batch tank (12,000 gal.) for lime stabilization. A total of 2.2 dry tons of solids per year are produced (2001 values). * *Under the 40 CFR Part 503 vector attraction reduction for an aerobic digester would be 60 days at 20 C minimum time temperature.*

There are two potential end routes for biosolids from this facility:

- 1) Direct land application from the biosolids digester, provided one of the vector attraction reduction (VAR) and pathogen reduction requirements are met; or
- 2) Land application of biosolids after a 24-hour alkaline stabilization process to meet 40 CFR Part 503 pathogen reduction and vector attraction reduction requirements.

The facility currently uses the second option to meet 40 CFR Part 503 pathogen/vector attraction reduction requirements for Class B Biosolids.

C) Solids Storage Structure:

Solids are stored in the 41,000-gallon uncovered digester, and in the 12,000-gallon uncovered batch tank.

D) Pretreatment Program:

Not applicable.

II. Solids Treatment Processes

The EPA's 40 CFR parts 503 and the DEQ's Oregon Administrative Rules (OAR) 340-50 allow permittees to use EPA approved alternatives to satisfy Class B biosolids pathogen or vector attraction reduction criteria. The permittee must notify the Department in writing and get approval prior to any process change that would utilize pathogen reduction alternative or vector attraction reduction options other than their primary reduction alternatives and options contained in this management plan. The permittee must also certify that the alternatives used are EPA approved and that sampling and monitoring conforms to the 40 CFR 503 and OAR 340-050 regulations.

A. Pathogen Reduction

To meet the Part 503 regulatory requirements, pathogen reduction must be met before or at the same time vector attraction reduction is achieved. This management plan

lists the primary alternatives and options employed by the permittee to meet Class B biosolids criteria.

Class B Biosolids

Class B biosolids requirements can be met by using one of three pathogen reduction Alternatives. The two primary Alternatives used by this facility are:

Alt. 1) Monitor sewage sludge for fecal coliform [503.32(b)(2)]

This requires that seven samples of treated sewage sludge (biosolids) be collected and that the geometric mean fecal coliform density of these samples be less than 2 million CFU or MPN per dry gram biosolids (dry weight basis); and

Alt. 2) Use of a Process to Significantly Reduce Pathogen (PSRP) [503.32(b)(3)] This considers sludge treated in one of the PSRPs listed in appendix B of the Part 503 to meet Class B biosolids criteria for pathogen reduction.

For this facility, PSRP #5 of Alternative 2 is used. Listed below are the processes the facility may choose from:

#1 Aerobic digestion, sludge is treated in the presence of air for a specified residence time at a specified temperature. Values of the digester mean cell residence time and temperature shall be between 40 days at 20 (68C) and 60 days at 15C (59F); and/or

#5 Sufficient alkaline stabilization agent is added to the sewage sludge to raise the pH of the sewage sludge to 12 for ≥ 2 hours of contact (mixed).

B) Vector Attraction Reduction

This facility uses vector attraction reduction Option 6. This Option, and other Options compatible for this facility, are:

Option 1) At Least 38% reduction in volatile solids during sewage sludge treatment [40CFR 503.33 (b)(1)]

The % volatile solids reduction calculation to use for an aerobic digester that is decanted and that does not have appreciable grit accumulation is the Van Kleeck or Approximate Mass Balance (AMB) equation depending upon the percent solids in the decantate (**Attachment A**).

To meet the biosolids vector attraction reduction requirements an aerobic digester must provide a 15-day detention time at 35 Celsius (C) to 55 C in a completely mixed high rate digester in order to achieve a volatile solids reduction of 38 % or more. There are alternative volatile solids reduction methods that are deemed equivalent to the 38% volatile solids reduction criteria under the EPA's and the DEQ's regulations.

Option 3) Additional Digestion of Aerobically Digested Sewage Sludge [503.33(b)(3)]

When the 38% volatile solids reduction cannot be met for aerobically digested sewage sludge, vector attraction can be demonstrated by digesting a portion of the previously digested sludge that has 2% solids or less, at 20C for an additional 30 days. If this reduces volatile solids by 15% or less, vector attraction reduction requirements are met.

Option 4) Specific Oxygen Uptake Rate (SOUR) [503.33(b)(4)]

The specific oxygen uptake rate (SOUR) for sewage sludge treated in an aerobic process shall be equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry weight basis) at a temperature of 20 degrees Celsius. (sample maximum, 2% total solids or less).

Option 6) Addition of Alkali [503.33(b)(6)]

Addition of sufficient alkali to raise the pH of the biosolids to at least 12 at 25 C and maintain a pH of ≥ 12 for 2 hours, and a pH of ≥ 11.5 for 22 more hours.

Option 7) Percent Solid of Secondary Treatment Sludge [503.33(b)(7)]

The percent solids of sewage sludge that does not contain unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.

Option 10) Incorporation Sewage Sludge [503.33(b)(10)](i)

Sewage sludge applied to the land surface or placed on an active sewage sludge unit shall be incorporated into the soil within six hours after application to or placement on the land, unless otherwise specified by the permitting authority.

III. Biosolids Characteristics

The H2O&S, Inc. treatment works utilizes an activated sludge process. The treatment facility wastes sludge from the clarifier to the aerobic digester. The sludge undergoes approximately two months of digestion at ambient temperatures prior to removal.

Monitoring Frequency [503.16(a&b) and 503.26(a&b)]

Based on reporting for 2013, H2O&S generates approximately 0.9 dry tons of biosolids. The required frequency of monitoring depends on the amount of bulk biosolids land applied or disposed of annually. The required monitoring frequency for both biosolids and domestic septage is once a year based on volumes produced by this facility (290 or less dry metric tons).

Annual Sampling

- 1) Alkaline Stabilization Batch Tank (if used)

Sampling location:

-Alkaline stabilization batch tank (tank complete mix).

Number and type of samples collected per day:

-A minimum of five random samples will be collected to demonstrate that an initial pH of ≥ 12 is reached.

-A minimum of five random samples will be collected after two hours of continuous (active) mixing to demonstrate that a pH of ≥ 12 is being maintained.

-A minimum of five random samples will be collected after 22 hours to demonstrate that a pH of ≥ 11.5 has been maintained.

The following correction factor will be used when determining actual pH:

Correction factor: $\frac{0.03(\text{pH})(\text{Temp}-25^{\circ}\text{C})}{1.0^{\circ}\text{C}}$

Actual pH=measured pH -/+ correction factor

It is planned to haul and land apply stabilized batches within 24 hours of stabilization. If stabilized batches are held for more than 24 hours (a maximum of 48 hours) prior to hauling and land applying, immediately prior to hauling it will be demonstrated that a pH of 11.5 or higher has been maintained. If this pH has not been maintained, the stabilization process will be repeated.

2) Aerobic Digester

Biosolid sampling of digester must be a representative sample the digester sludge comprised of more than 7 discrete samples of equal volume composited and thoroughly mixed. Samples must be pulled from the bottom middle and top of the digester; care should be taken not to sample the near the waste active sludge inlet to the digester.

3) Sample storage and transport:

Samples will be stored at 4 degrees C in an ice chest or refrigerator. Samples will be transported in an ice chest to maintain temperature during delivery to laboratory. Pathogen samples will be delivered to lab within one hour of sample collection.

4) Sample analysis method: EPA 9045; EPA 160.3;EPA 160.4; SM 4500-NH3B; EPA 353.2; EPA 365.3; EPA 351.3; SW-846 7060; SW-846 6010; SW-846; SW-846 7481; SW-847 7471; SW-846 7740; SM 18th, 9221E.1; SM 18:9260D.1; ASTM D 4994-89; EPA 600/1-87/014; EPA 8240; EPA 1613; EPA 8270; EPA 1613B; EPA 1668 (may include one or more of the referenced methods).

Biosolids Sampling and Analysis: One biosolids sample was collected in 2013. The lab report is included with this document (**Attachment B**). Analytical results are

summarized in tables below. Metals concentrations are compared with Table 3 Pollutant Concentration Limit Criteria for bulk biosolids land applied on farm land.

Chemical Analysis

Solids Content, and pH	
Total Solids	0.89%
Volatile Solids	78.4%
pH	7.2

Metals Concentrations		
Constituent	Result	Pollutant Concentration Limit Criteria (mg/kg) [Part 503, Table 3]
As, mg/kg	5.0	41
Cd, mg/kg	1.0	39
Cr, mg/kg	16.7	NA ¹
Cu, mg/kg	162	1500
Pb, mg/kg	17.2	300
Hg, mg/kg	0.6	17
Mo, mg/kg	4.5	75 ²
Ni, mg/kg	16	420
Se, mg/kg	6.1	100
Zn, mg/kg	578	2800

¹No chromium Pollutant Concentration Limit is available for comparison. ²No Pollutant Concentration Limit is available, Ceiling Concentration is listed instead.

Based on the 2013 biosolids analysis, the source needs 1 acre to beneficially use the nutrients in its biosolids. The most limiting biosolids metal concentration is that of zinc. This zinc concentration indicates it would take more than 40,000 years to accumulate from land applying this sources biosolids.

Nutrient Analysis:

Based on the 2013 analysis the biosolids contain approximately 23 pounds of nitrogen (N), of which approximately two pounds are in an available form (NO3-NO2, and NH3). The following table lists available nitrogen, and other nutrients results:

Nutrients Results		
	% dry weight	lbs. / yr.
NH4	0.05	0.4
NO3	0.11	2.0
TKN	5.63	20.9
Phosphorus	1.25	23.2
Potassium	0.43	7.9

IV. Biosolids Beneficial Reuse Program

Transportation and Land Application:

Biosolids are off-loaded into septage type pumper truck. When biosolids are pumped into the truck for transport for land application, the truck will be within the bermed area that drains back to the digester. The outside of the pumper truck must be clean of all digester solids prior to leave the wastewater facility.

H2O&S's biosolids are land applied on a DEQ authorized site (**Attachment C**). Five acres of an approved 137-acre site are applied to when solids holding capacity is reached at the treatment works. The current application site authorization does not have seasonal restrictions. The perennial agronomic biosolids land application rate for pasture grass grown at the approved site is 100 lb. available N per acre-yr.

H2O&S land applies on farmlands in the State of Oregon to beneficially use their biosolids. The following table contains biosolids site management information for the approved land application site. This is based on the 2013 Annual Biosolids Annual Report for H2O&S.

Site Name	Site No.	Net Acres	Site Capacity lbs. PAN-N/ac	Site PAN-N lbs. Loading Capacity
Wyscaver, 7373 Logsdan Rd.	Sec 4, 33 T10S, R9W Site # 1	5	100	500

Long term biosolids application rates and site restrictions are contained in the biosolids site authorization letter. References to the OAR 34-50, The EPA 40 CFR Part 503, site setbacks, site agronomic loading rates, land application restrictions and site restrictions are also detailed out in the site authorization letter.

Section V: Biosolids Beneficial Reuse Program

Transportation and Land Application:

H2O&S contracts with a contractor who is competent in the pumping, hauling, and application of biosolids. The work is done under the H2O&S's direction and proceeds in the following manner:

The biosolids are loaded into individual tanker trucks of approximately 3000 gallon capacity are loaded to legal road limits.

All loading is done in the fenced area of the WWTP and all material associated with truck loading is confined in the plant.

H2O&S's biosolids are suitable for land applied on future of DEQ approved sites in Lincoln, Benton and Polk Counties. H2O&S land applies on farmlands in the State of Oregon to beneficially use our biosolids.

Prior to applying the biosolids the fields should be staked to mark all set-backs necessary to meet all restrictions stated in each fields DEQ application approval letter.

Application rates can be initially determined using the Worksheet for Calculation Biosolids Application Rates in Agriculture by Craig Cogger, WSU and Dan Sullivan, OSU, or some other equivalent agronomic loading method.

The biosolids gravity out of the tank through a splash-plate, which evenly applies biosolids on the fields. The tanker truck speed is adjusted so the amount of material land applied per acre is at or below the approved agronomic loading rate in the DEQ site authorization.

Site Selection

H2O&S may select application sites mainly in Lincoln, Benton and Polk Counties based upon this criteria:

1. Location of farmland as travel distance between H2O&S and the field
2. Slope of land
3. Distance to water bodies
4. Suitability of soil map units (i.e. well drained)
5. Crop types (N uptake rates)
6. Access roads into and out of filed for tanker trucks
7. Farm management practices

All adjacent landowners will be notified by H2O&S's intent to apply biosolids to any new fields as part of DEQ's application site authorization and approval.

The following table contains H2O&S's biosolids sites which are currently in use and management information for the approved land application sites based on the 2010 H2O&S's Annual Biosolids Report. All fields have a 100 lb. available N per acre per year limitation.

Long term biosolids application rates and site restrictions are contained in the biosolids site authorization letters. References to the OAR 340-50, The EPA 40 CFR Part 503, site setbacks, site agronomic loading rates, land application restrictions and site restrictions are also detailed out in the site authorization letters. Any field which receives an annual agronomic loading for the crop grown and that is used two out three consecutive years must be soil tested for carry over nutrients build-up. Representative soil samples must be taken from 0-12 inches and 12 -24 inches; a minimum of seven discrete samples must be taken from each depth. There should be two soil samples (0-12 and 12-24) which must be analyzed for soil pH, P, TKN, NH3 and NO2+NO3.

VI. Contingency Options

In event biosolids are spilled between the treatment facility and the land application site H2O&S shall contain the spill, lime, absorb (via sand) and remove spilled sludge solids spills with a front end loader or shoves and dispose of the spillage at a DEQ authorized application or disposal site. All spills into waters of the state or spills on the ground surface that are like to enter waters of the state shall be reported to immediately to Oregon Emergency Response System (OERS) at 1-800-452-0311 and your regional biosolids coordinator at (503) 378-8240, Ext. 282. All other spills, of 25 gallons or more, on the ground surface shall be report to the regional biosolids coordinator at (503) 378-8240, Ext. 282.

VII. Reporting

Daily Reporting and Recordkeeping:

Each year prior to land application of biosolids the source operators shall check to see if contiguous property owners have changed. The operators shall keep a record of contact (date, and/or written log of phone call w/ name and number, and/or a photocopy of postcard w/ name and address, etc..) with contiguous property owners, which notifies them of the biosolids land application practice. Operator shall provide this documentation in the annual biosolids report.

Annual Reporting

The Annual Biosolids Report is due February 19th of each year for the previous years land applied biosolids. Part of this report is the submittal of the daily site logs, which have the date, time, and quantity gal-lb. N/acre land applied for each day-tank-batch land applied. Site logs shall have a scaled map showing the site and the land application location that coincides with the daily site loading methods (truck spreader bar, irrigation cannon). Daily records should clearly show the location of daily biosolids loading site log.

Annual Report shall have a signed copy of the certification statements for pathogen reduction, vector attraction reduction and biosolids has been land applied at approved agronomic loading. Person signing statements should be the operator of record at the treatment plant. The operator shall shown how the vector attraction reduction was met i.e., volatile solids reduction was achieved by time and temperature, the Van Kleeck equation filled out with digester records (MCRT), bench scale test, sour test or any other EPA approved alternative method appropriated for biosolids generated at your facility. Certification of pathogen reduction is required and is satisfied by submittal of test results in the Annual Biosolids Report. All of the previous year's biosolids sampling and analysis that is required by the permit shall be included in H2O&S's Annual Biosolids Report in the appendix of each year's report.

VIII. Certification Statement

H2O&S is capable of meeting their primary alternatives for achieving Class B biosolids pathogen and vector attraction reduction criteria. Signed Class B biosolids and vector attraction certification statements shall accompany all biosolids that are land applied (**Attachment D**). For Class B biosolids annual biosolids analysis must

be provided upon request. Certification statements must also show conformance with nutrient and land application loading rates where applicable.

Attachment A:

Calculation of the % volatile solids reduction is to be based on comparison of a representative grab sample of total and volatile solids entering each digester (a weighted blend of the primary and secondary clarifier solids) and a representative composite sample of the solids existing each digester withdrawal line. Composite samples of the influent shall consist of at least four samples; each collected at approximately even intervals over an eight- (8) hour period.

Typically in the past we've used the Van Kleeck equation for digesters. The assumption that there is no grit accumulation in the digester. This volatile solids equation assumes the fixed solids input equals the fixed solids output. The Van Kleeck equation is appropriate if the digester decantate is low in total solids. The Van Kleeck equation can be used to calculate the volatile solids reduction for a digester that decants provided VS_b equal VS_d.

FVSR: Fractional Volatile Solids Reduction

$$FVSR = 1 - VS_b * (1-VS_f) / VS_f (1- VS_b)$$

VS_f Feed Sludge Fractional Volatile Solid, (kg/kg)

VS_b Digested Sludge (digester bottom) Fractional Volatile Solids, (kg/kg)

VS_d Decantate Fractional Volatile Solids

For this equation to be valid VS_b must equal VS_d.

For digesters with decant withdrawal (decant high in solids) and no grit accumulation, where the volatile and fixed concentrations are known for all streams as well as the volumetric flow rates for the decant and digester sludge then the Approximate Mass Balance equation should be used.

FVSR: Fractional Volatile Solids Reduction

$$FVSR = F_{yb} - B_{yb} - D_{yd} / F_{yb}$$

F_{yb} (F) Feed Sludge Volumetric Flow Rate (m³/d)

(y_b) Feed Sludge Volatile Solids Concentration (kg/ m³)

B_{yb} (B) Digester Sludge (bottom) Volumetric Flow Rate (m³/d)

(B_b) Digester Sludge (bottom) Volatile Solids Concentration (kg/ m³)

D_{yd} (D) Decantate Volumetric Flow Rate (m³/d)

(y_d) Decantate Volumetric Solids Concentration (kg/ m³)

Because the Aerobic digester is cleaned every year the assumption is there is no grit accumulation in the digestive process.

Assumptions: Fixed Solids and Volatile Flows Streams.

Attachment B - 2103 Biosolid Analysis

Attachment C

Inn at Otter Crest Biosolid Site Authorization Letter

May 20, 2015

John Wiegardt III, Principal Operator
Inn at Otter Crest-H2O&S Wastewater
Treatment Plant
Otter Crest Loop Road
Otter Rock, OR 97369



Figure 1. Site Authorization Map
Wyscaver property 7373 Logsden rd. Logsden OR.

RE: Inn at Otter Crest-H2O WWTF Contact Number 541.921.7377
NPDES Permit No. 101269; File No. 414740
Wyscaver site located at 7373 Logsden Rd. Logsden OR
Site ID: Wyscaver WR-2015-02-BS
T10S R9W, Sec 4, 33 TL 100, 500
5 acres total approximately 5 acres for land application
Lincoln County

Dear Mr. Wiegardt III:

The Oregon Department of Environmental Quality (DEQ or “the Department”) received a request to review two biosolid land applications sites for the Inn at Otter Crest. On July 14, 2014 I met with you and we reviewed this proposed land application site.

The Inn at Otter Crest (Otter Crest) has an activated sludge facility and produces an aerobically digested Class B biosolids. The Otter Crest wastewater treatment facility (WWTF) hauls Class B biosolids to the Wyscaver property located off Logsden Road, Logsden Oregon (see Table 1 and attached site map). Included with the request were data characterizing the liquid biosolids from the Otter Crest WWTF.

Site Description. The property owned Wyscaver is zoned as Exclusive Farm Use (EFU). The site is managed for grass pasture. Adjacent properties are also in agriculture or residential properties.

Table 1. The property reviewed for biosolids land application, located in Lincoln Co., Oregon.

Township, Range, Section	Tax Lot(s)	Total Area (acres)	Spreadable Area [†] (approx. acres)	Map* and DEQ No.
Wyscaver T10S R9W, Sec 4	100, 500	100	5	WR-2015-02-BS
Total Spreadable Acres		about	5	
137ac				

[†]**Spreadable acres are based upon attached maps and do not reflect site-specific setback requirements. Actual acres spread may also vary slightly based upon site conditions at time of application.**

***Site Authorization Map figure 1.**

DEQ did visit of the property to evaluate the suitability of the site for biosolids land application, I reviewed site hydrology, topography and soil conditions, considered current and proposed land use and agricultural practices, and noted the locations of residences, wells and other sensitive site features. Appropriate setbacks for land application areas were also considered. There is a church to the west of this site which is over 400' from this site.

The site is located on the north side of the 7373 Logsdan Road, which is dissected by small drainages. The topography is variable with slopes ranging from 0% to 3%. Soils on the farmed portions of the site are composed primarily Logsdan silt loam 0-3 percent slope, Meda loam and Quillamook silty loam (approx. 5 acres), which are consistent with the NRCS soil maps for the area (**See Attachment 1**). Soils are derived from alluvium derived from mixed sources these soils are generally deep and moderately well drained.

Based upon the site visit and supplemental information provided by the Inn at Otter Crest, the property is approved for the land application of aerobically-digested biosolids produced by Otter Crest WWTF provided the following conditions are satisfied:

1. Regulations, Rules, and Permit Requirements. Biosolids processing and handling will comply with:
 - a. Oregon biosolids and septage rules and guidelines (OAR 340-050);
 - b. federal biosolids and septage regulations (40 CFR Part 503);
 - c. the DEQ-issued permit to the Otter Crest WWTF (NPDES Permit No. 101269; File No. 41740)
 - d. the most recent DEQ-approved Biosolids Management Plan, including all subsequent amendments; and
 - e. all other applicable federal and state statutes and rules.
2. **Treatment Processes.**
 - a. Biosolids volatile solids content must be reduced by 38% or more (or EPA 40 CFR Part 503 equivalent) via aerobic digestion prior to land application.

3. Transportation.

- a. Transportation of the biosolids to the land application site must be done in accordance with Otter Crest’s approved Biosolids Management Plan.

4. Land Application Activities.

- a. The site is approved for the land application of biosolids by spreader trucks or other similar application equipment.
- b. Biosolids must be applied evenly and thinly in a manner that will prevent ponding and runoff during and after precipitation events.
- c. When more than one operator conducts biosolids land application or when completion of the biosolids application on a site is interrupted for more than one week, areas where biosolids have been applied must be clearly marked by flag pins or stakes which note the date when biosolids were last applied. This tracking method may be replaced by use of GPS equipment if it provides as accurate tracking. Written and mapped daily land application records must be maintained as described under Condition 9.b.
- d. Immediately following land application, the biosolids equipment operator must clean off (at the application site) any equipment coated with biosolids to prevent biosolids from spilling onto public roadways.
- e. Land application site must be signed, “no trespassing / biosolid land application site” **(See Attachment 2 for example)**.

5. Application Rates and Timing.

- a. **Effective Date.** Date of authorization issuance.
- b. **Application Period.** The site is approved for land application of biosolids from May 1st through October 1st of each year when field conditions allow for uniform application that will not result in ponding or runoff. Land application timing must be appropriate to the site’s land management practices and must be managed to provide maximum benefit to crops grown on the site and minimize potential adverse environmental impacts.
- c. **Application Rate.** Biosolids must be applied at rates up to but not exceeding, an agronomic loading limit appropriate to the crop being grown on the fields (Table 2), after accounting for supplemental sources of nitrogen and losses as described under Conditions 5.e. and 5.g.

Table 2. Crops and Plant Available Nitrogen (PAN) approved for this land application site.

Non Food Crops	Irrigated	PAN (lbs/ac/yr)
Hay mix	No	100
Alfalfa or Clover	No	100

- d. **Agonomic Rate Calculations.** Biosolids application rates will be calculated using one of the following: (i) the method approved in Otter Crest’s approved Biosolids Management Plan; (ii) the method described in *Worksheet for Calculating Biosolids Application Rates in Agriculture*,

published by the Oregon State University Extension Service, Publication No. PNW0511e (March 2007); or (iii) a more robust method such as that described in *Managing Nitrogen from Biosolids*, published by Washington State Department of Ecology and the Northwest Biosolids Management Association (April 1999). Any deviations from the methods and/or assumptions described in these publications must be pre-approved in writing by the DEQ Northwest Region. (Updated versions of the aforementioned documents may be used at any time.)

- e. **Routine Applications.** If biosolids applications exceed 2 out of 3 successive years at agronomic rates, the site will be evaluated for carry over nitrate-nitrogen (TKN-N, NH₄-N, NO₃-N) before the next application. Agronomic application rates are to be adjusted for carry over nitrogen in the soil.
- f. **Supplemental N.** If other sources of nitrogen are applied to the fields (e.g., commercial, animal manure or green chop), the biosolids application rate must be reduced so that the supplemental nitrogen plus biosolids nitrogen does not exceed the agronomic application rate approved for this site.
- g. **Changes.** Changes in biosolids characteristics, cropping practices, or general land management will necessitate appropriate adjustments in the application rate to maintain nitrogen applications consistent with crop demands. Major changes in any of the above must be communicated to the DEQ's Western Region in writing before the changes are implemented.

6. Site Restrictions.

- a. **Wet Soils.** Care should be taken to avoid wet soil conditions, particularly in concave areas, at the time of application.
- b. **Precipitation.** Biosolids land application must cease when precipitation exceeds ¼ inch per hour or when one inch or more of precipitation occurs in a 24-hour period. Land application must be withheld from the site for at least 48 hours following such a precipitation event and for every consecutive day of precipitation where a ¼ inch or one-inch per 24-hour precipitation event occurs.
- c. **General Public Access.** Access to the site by the general public must be restricted for at least 12 months after biosolids land application has ceased.
- d. **Grazing.** A 30-day interval must follow the application of biosolids prior to grazing livestock on any field or prior to the harvesting of crops that are to be fed to animals.
- e. **Wind.** Land application must cease if wind speed is (10 mph or more irrigation cannon) such that biosolids cannot be applied uniformly or would be thrown into buffer strips, waterways, roads, trails, or onto the application vehicle itself. Application may resume after wind speeds have decreased such that no significant blowing or drifting occurs.
- f. **Nuisance Conditions.** Biosolids land application must cease when the potential exists for nuisance conditions. In the event an odor problem is

reported to Otter Crest, its representative, or the DEQ after biosolids have been land applied at the site, Otter Crest and the DEQ will jointly determine the best method to mitigate the odor concern.

7. **Setbacks and Buffers.** Setbacks and buffers on the sites are listed in Table 3 and have also been identified in the attached site map(s).

Table 3. Site-specific setbacks for biosolids land application.

Feature	Setback[†] (ft.)
Property boundaries & private, unpaved roadways	10
Paved or graveled roadways & wind turbine access roads, neighbors driveways	25
Residences & occupied buildings	50
All wells and Siletz River (drinking water source)	200
Intermittent surface waters & drainage swales	50

[†]The setback is determined from the edge of the feature.

8. **Remedial Procedures.**

- a. Otter Crest’s biosolids hauler must clean up any spillage of biosolids. Otter Crest must consult with the DEQ for appropriate methods of protecting public health and the environment for spills that cannot be completely cleaned up.
- b. The DEQ must be notified within one hour, through the Oregon Emergency Response System (OERS), of any spills of more than 50 gallons or other threats to the environment that may occur. All spills adjacent to drainage ditches or drainage ways should be reported. Failure to provide prompt notification may be considered cause for taking enforcement action against Otter Crest. The telephone number for OERS is 1.800.452.0311 (24-hr service).

9. **Monitoring and Reporting.**

- a. **Soil Testing.** Soil testing for carry over nitrate-nitrogen (TKN-N, NH4-N, NO₃-N) will occur as described under Condition 5.e. The DEQ recommends routine soil testing for soil nutrients as well as the trace pollutants listed in Table 1 of 40 CFR §503.13 for fields receiving annual biosolids applications. The Department may require soil testing if adverse environmental impacts are suspected at the site.
- b. **Site Records.** Daily site records of accumulated land applied biosolids will be maintained. Site records must be recorded on field grid map or other readable system. Records must indicate the date, location and quantity of biosolids applied; segments of each field that received biosolids; target plant available nitrogen (PAN) loading rate of the area receiving biosolids; and the type of crop grown. These records must be available to the DEQ for review upon request. Regardless of the format in which written and mapped records are kept, they must be readily available in hardcopy format
- c. **Annual Report.** By 19 February of each year, Otter Crest must provide the DEQ with an annual report of the previous year’s biosolids processing

and application activities, as required under the DEQ rules (OAR 340-050-0035(6)). For major facilities the annual report must also be submitted to the appropriate United States Environmental Protection Agency (USEPA) Region Office.

10. Notification.

- a. Otter Crest or its representatives must promptly notify DEQ of any major changes it intends to make to its biosolids processing activities that could influence biosolids quality or quantity before anticipated modifications are initiated, as described under Condition 11.c.

11. Additional Conditions.

- a. The DEQ must have the right to: (i) enter (at reasonable times) Otter Crest's (or its representatives') places of biosolids land application and record keeping to review biosolids management operations and records; (ii) obtain copies of any records required under the terms of this authorization and Otter Crest's approved Biosolids Management Plan; (iii) inspect any monitoring equipment required under this authorization; (iv) inspect any collection, transport, or land application vehicle; and (v) obtain any photographic documentation or evidence deemed appropriate.
- b. This authorization is subject to revocation should health hazards, environmental degradation, or nuisance conditions develop as a result of inadequate biosolids treatment or site management.
- c. Any variations from Otter Crest approved Biosolids Management Plan and this authorization letter must receive prior written approval from the DEQ Northwest Region Office.
- d. The DEQ may amend this Site Authorization and impose any additional restrictions or conditions deemed necessary to protect environmental and human health.

This authorization is considered to be part of your approved Biosolids Management Plan and is enforceable as part of your NPDES permit. Therefore, if operations are not conducted in accordance with terms specified under this authorization, the Department will initiate an enforcement action, which may lead to the assessment of a civil penalty. Should you have any questions about the content of this letter, please feel free to contact me in writing or by phone at 541.687.7439 or via email at kennedy.paul@deq.state.or.us.

Sincerely,

Paul Kennedy EHS
Soils/Land Application Specialist
Western Region-Eugene DEQ

Cc: Mr. Wycaver, 7373 Logsdan Rd., Logsdan OR 97 (w/encl.)
Lincoln County Environmental Health 36 S Nye Rd., Newport OR 97365
DEQ Biosolids Coordinator, DEQ-HQ Portland (w/encl.)
Bob Dicksa, Water Quality File, Salem DEQ (w/encl.)

File copy (w/encl.)

Attachment 1 Soil Report

May 20, 2015

Inn at Otter Crest-H2O WWTF
Contact Number 541.921.7377
NPDES Permit No. 101269; File No. 414740
Wyscaver Biosolid Land application Site 7373 Logsdan Rd., Logsdan OR



Figure 1. Wyscaver land application site.



Figure 2. Soil map units Wascavor land application site.

Lincoln County Area, Oregon (OR638)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
36A	Logsdensilt loam, 0 to 3 percent slopes	5.0	47.6%
38C	Meda loam, 3 to 12 percent slopes	2.8	27.0%
51A	Quillamook silt loam, 0 to 3 percent slopes	2.2	20.7%
56G	Tolovana-Reedsport complex, 35 to 60 percent slopes	0.5	4.7%
Totals for Area of Interest		10.4	100.0

Lincoln County Area, Oregon

36A—Logsdensilt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2596

Elevation: 40 to 300 feet

Mean annual precipitation: 70 to 100 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 160 to 210 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Logsdens and similar soils: 80 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Logsdens

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified silty and loamy alluvium derived from mixed sources
Typical profile
O_i - 0 to 1 inches: slightly decomposed plant material
H₁ - 1 to 20 inches: silt loam
H₂ - 20 to 43 inches: silty clay loam
H₃ - 43 to 61 inches: stratified loamy sand to fine sandy loam
Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: High (about 11.3 inches)
Interpretive groups
Land capability classification (irrigated): 2c
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: B
Other vegetative classification: Well Drained <15% Slopes (G004AY014OR)
Minor Components
Aquepts, poorly drained
Percent of map unit: 2 percent
Landform: Depressions

Lincoln County Area, Oregon

38C—Meda loam, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: 259b

Elevation: 30 to 500 feet

Mean annual precipitation: 60 to 100 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 145 to 220 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Meda and similar soils: 80 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Meda

Setting

Landform: Alluvial fans

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave, linear

Parent material: Loamy alluvium derived from mixed sources

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 30 inches: gravelly loam
H3 - 30 to 60 inches: very gravelly loam
Properties and qualities
Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.5 inches)
Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Other vegetative classification: Well Drained < 15% Slopes (G001XY004OR)
Minor Components

Report — Map Unit Description

Lincoln County Area, Oregon

51A—Quillamook silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 25bq
Elevation: 30 to 300 feet
Mean annual precipitation: 70 to 100 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 245 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Quillamook and similar soils: 85 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quillamook

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium derived from mixed sources

Typical profile

H1 - 0 to 34 inches: silt loam
H2 - 34 to 58 inches: silt loam
H3 - 58 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Very high (about 22.1 inches)

Interpretive groups

Land capability classification (irrigated): 2c

Land capability classification (nonirrigated): 2c

Hydrologic Soil Group: B

Other vegetative classification: Well Drained <15% Slopes (G004AY014OR)

Minor Components

Hebo

Percent of map unit: 3 percent

Landform: Stream terraces

Attachment 2

CAUTION
Private Property No Trespassing
No Public Access

**THIS FIELD HAS RECEIVED BENEFICIAL
LAND APPLICATION OF CLASS B BIOSOLID.**

**THE STATE OF OREGON DEPARTMENT OF
ENVIRONMENTAL QUALITY (ODEQ) AND THE EPA
REGULATE THIS PRACTICE**

**(OREGON ADMINISTRATIVE RULE 340-50).
IF YOU HAVE QUESTIONS OR CONCERNS PLEASE
CALL
PAUL KENNEDY, EUGENE ODEQ
AT (541) 687-7439
OR
FACILITY CONTACT PERSON AT:**

Attachment D:

“I certify, under penalty of law, that the pathogen requirements in 503.32(b)(2) alternative 1, the management practices in 503.14 and the vector attraction reduction requirements in 503.33(b)(1) have been met. This determination has been made under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements and vector attraction reduction requirements have been met. I also certify that all biosolids were land applied at the approved agronomic loading rate noted in the respective Department site authorization letter. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.”

Signature..... Date.....