

OREGON CAFO INSPECTION REPORT

GENERAL INFORMATION

Facility ID #: Permit Number 06-IND-001 Facility Name: Sage Hollow Ranch Facility Owner: Brian and Jeff Bosma Facility Operator: Jeff Bosma Mailing Address: 3620 Independence Rd. Sunnyside, WA 98944 Physical Address: 74100 Poleline Rd. Boardman, OR 97818 County: Morrow Contact Person: Brian Bosma Phone: (office): 509-839-2756, (cell): (b) (6) E-mail: (b) (6) Persons Present During Inspection: Brian Bosma (Sage Hollow Ranch), Jon Bosma (Sage Hollow Ranch; participated in a portion of the records review only), Ben Krahn (Oregon Department of Agriculture [ODA]), Sirese Jacobson and Jennifer Ferrando (Eastern Research Group [ERG], EPA contractors)	Inspector: Jennifer Ferrando and Sirese Jacobson (ERG) Inspection Date: March 25, 2024 Time in: Approx. 11:30 AM* Time out: 3:50 PM Weather: Windy, approx. 57 °F GPS Coordinates North: 45.755319 West: -119.539572 Does the facility owner/operator own and/or operate any other animal feeding operations? Yes If yes provide name(s) and address(es) and indicate whether the facility is an AFO or a CAFO: The facility owners operate two permitted CAFOs in Sunnyside, WA and one permitted CAFO in South Dakota. The inspectors did not request the names and addresses of these facilities.
* Note: The inspectors initially arrived at the site with the ODA representative to perform an unannounced inspection at approx. 9:40 AM and met with Jon Bosma, who asked the inspectors to wait to conduct the inspection when his uncle Brian Bosma arrived. The inspectors departed at approximately 9:55 AM, returned at approximately 11:15 AM and waited to begin the inspection when Brian Bosma arrived at approximately 11:30 – 11:45 AM. Mr. Bosma provided requested records associated with winter pumping events via email on May 9, 2024, and discussed the records and several follow-up questions with Jennifer Ferrando via phone on May 10, 2024.	
Location and name of nearest surface water and description of flow path: The Columbia Improvement District (CID) canal is located approximately 0.5 miles south, and downgradient, of the production area. The CID canal receives water from the Columbia River. According to the ODA representative, there is no direct return flow from the canal to any waterbody; “the canal dead ends in a field and there are ponds adjacent to the canal to store water if a rainfall event takes place and pivots were shut off.” The ODA representative confirmed that the CID canal is a water of the state.	

General Information (cont.)**Max. Animals Confined per Month:** 8,700**Max. Capacity of Facility:** 8,700 (3,600 mature cows and 5,100 young stock)

The facility representative provided the number of mature dairy cows on site at the time of the inspection but did not know the exact number of youngstock at the facility. The facility representative stated that youngstock are regularly moved between Sage Hollow Ranch and a facility owned by the Bosma family in Sunnyside, WA. The facility representative stated that the numbers of heifers and calves in the facility's 2023 Annual Report are representative of the total number of youngstock associated with Sage Hollow Ranch throughout the year. Accordingly, the number of heifers and calves reported below were taken from the facility's 2023 annual report and represent the approximate maximum number of youngstock that might be housed at Sage Hollow Ranch or split between Sage Hollow Ranch and a CAFO in Sunnyside.

Number of animals today (all animals in production area):

	# confined		
Dairy mature	3,000 milking; 400 dry		
Dairy heifers	4,539		
Calves	700		
X	Presented credentials? (check if yes)		
X	Inspection photos attached? (check if yes)		
X	Potential compliance issues? (check if yes and summarize below)		

SUMMARY OF POTENTIAL COMPLIANCE ISSUES

- The facility's Animal Waste Management Plan (AWMP) does not address chemical disposal. See questions 6 and 41. The federal regulations at 40 CFR 122.42(e)(1)(v) require that permitted CAFOs implement a nutrient management plan (NMP) that "[e]nsure[s] that chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system unless specifically designed to treat such chemicals and other contaminants." The facility's individual permit contains the same requirement for the facility's waste management plan at condition S3.B.3(f).
- The facility's AWMP does not identify specific records that will be maintained to document implementation of all minimum NMP elements. See question 10. The federal regulations at 40 CFR 122.42(e)(1)(ix) require that permitted CAFOs implement an NMP that "[i]dentif[ies] specific records that will be maintained to document the implementation and management of the minimum elements described in paragraphs (e)(1)(i) through (e)(1)(viii) of this section." The facility's individual permit contains the same requirement for the facility's waste management plan at condition S3.B.3(l).

Summary of Potential Compliance Issues (cont.)

- The facility's AWMP does not specify manure, process wastewater, and soil sampling at the required frequencies and for the parameters specified in the permit. In addition, the facility is not sampling wastewater and soil for the parameters specified in the permit. See question 12. The federal regulations at 40 CFR 122.42(e)(1)(vii) require that permitted CAFOs implement an NMP that identifies protocols for testing manure, process wastewater, and soil that meet the requirements specified in 40 CFR Part 412. The federal regulations at 40 CFR 412.4(c)(3) specify manure and soil sampling requirements (sampling frequency and testing parameters) for large CAFOs that land apply manure or process wastewater. The facility's AWMP specifies manure and soil sampling at the frequencies and for the parameters required by the federal regulations but does not include the more specific conditions of the facility's individual permit for timing of wastewater samples, wastewater test parameters, soil sample depths, and soil test parameters. Specifically, the AWMP does not reflect the permit requirements that wastewater will be tested monthly when irrigating and tested for pH, total dissolved solids, or nitrate+nitrite (condition S5.A.1) or that post-harvest soil samples will be collected at the 60-inch depth and tested for total Kjeldahl nitrogen (TKN), organic matter, calcium, magnesium, and total bases (condition S5.A.2).
- The facility did not maintain a copy of its completed permit application as required by the federal regulations at 40 CFR 412.37(b). The facility had not applied for permit renewal prior to the permit expiration date as required by its individual permit (condition G9) and by the federal regulations at 40 CFR 122.21(d)(2). See question 15.
- The facility's records did not include documentation of daily water line inspections and the facility was not conducting daily inspections of the containment system. See question 19. The federal regulations at 40 CFR 412.37(b)(1) require large permitted CAFOs to maintain records documenting the inspections required under 40 CFR 412.37(a)(1), which include "daily inspections of water lines, including drinking water or cooling water lines." The facility's individual permit also requires the permittee to conduct daily inspection of water lines, and to record the date of the inspection and the condition of facilities (condition S5.B.2). In addition, the facility's permit requires inspections of the "containment system" (the permit does not define what is considered to be part of the containment system) at least "[d]aily when operating, weekly when not" (condition S5.B.2).
- The facility did not maintain records of the test methods used to sample and analyze manure, process wastewater, and soil, as required by the federal regulations at 40 CFR 412.37(c)(4).
- The facility was not maintaining records of land application equipment inspections. See question 32. The federal regulations at 40 CFR 412.4(c)(4) require the operator of a large permitted CAFO to periodically inspect equipment used for land application for leaks. The federal regulations at 40 CFR 412.37(c)(10) require the operator to keep records of the date(s) of manure application equipment inspection. The facility's individual permit (condition S5.B.2) requires the permittee to conduct leak inspections of equipment used for land application of manure daily when operating, and to record the date of inspection and condition of facilities.

Summary of Potential Compliance Issues (cont.)

- Raw materials (liquid feed additives) were stored in an area where it was not clear that any spills or leaks would flow to the lagoons. If uncontained spills or leaks can be carried by stormwater runoff to a surface water, the facility is at risk of discharging to a water of the state in violation of its permit. See question 36. The federal regulations at 40 CFR 412.33 prohibit the discharge of process wastewater pollutants from a large permitted CAFO except when precipitation causes an overflow of manure or process wastewater from a facility designed, constructed, operated, and maintained to contain all manure and process wastewater including the runoff and direct precipitation from a 25-year, 24-hour rainfall event. The facility's permit includes a similar discharge limitation at condition S2.B. The definition of process wastewater in the federal regulations (40 CFR 122.23(b)(7)) and in the facility's permit (definitions – S1.J) includes "... any water that comes into contact with any raw materials, products, or byproducts including... feed..."
- It was not clear that the depth markers were marked as required. See question 42. The federal regulations at 40 CFR 412.37(a)(2) and the facility's permit at condition S2.E.3 require that open surface liquid impoundments have a depth marker that clearly indicates the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event. At the time of the inspection, the facility representatives could not confirm that the facility's depth markers included this marking.

INSPECTION OBSERVATIONS**Nutrient Management Plan (NMP)**

Required NMP Element [40 CFR 122.42(e)(1)]

Note: The individual permit issued to Sage Hollow Ranch requires the facility to develop a waste management plan in lieu of a nutrient management plan (NMP). Responses to questions about the facility's NMP refer to the facility's Animal Waste Management Plan (AWMP).

- | | |
|------|--|
| Yes | <p>1. <u>Is the facility's NMP available on-site? Does it reflect the current operational characteristics and practices? [40 CFR 122.42(e)(2)(ii)]</u></p> <p><u>Date developed or last revised:</u> November 24, 2015</p> <p>The facility's AWMP was available on site; the facility representative stated that a copy is kept in the facility truck for reference. The most recent AWMP was developed in May 2013 and revised in October 2013 and November 2015.</p> |
| TBD* | <p>2. <u>Ensure adequate storage of manure and process wastewater, including operation and maintenance procedures. [40 CFR 122.42(e)(1)(i)]</u></p> <p>To be evaluated as part of the detailed AWMP review that will be provided to EPA separately.</p> |
| Yes | <p>3. <u>Ensure proper management of animal mortalities. [40 CFR 122.42(e)(1)(ii)]</u></p> <p>The AWMP reflects the facility's current mortality management practice, which is to compost dead animals in a designated area next to the Settling Pond. Runoff from this area drains to the Settling Pond.</p> |

*Throughout, TBD = To Be Determined and refers to items that will be evaluated as part of the detailed AWMP review that will be provided to EPA separately on or before September 20, 2024

Nutrient Management Plan (NMP) (continued)

N/A*	4. <u>Ensure that clean water is diverted, as appropriate, from the production area. [40 CFR 122.42(e)(1)(iii)]</u> The facility sits on a slight rise with local topography preventing run-on to the facility from surrounding areas.
N/A	5. <u>Prevent direct contact of confined animals with surface waters. [40 CFR 122.42(e)(1)(iv)]</u> There are no surface waters within the production area at Sage Hollow Ranch.
No	6. <u>Ensure proper disposal of chemicals and other contaminants. [40 CFR 122.42(e)(1)(v)]</u> The AWMP does not address chemical disposal. See question 41.
Yes	7. <u>Identify site-specific conservation practices to control runoff of pollutants. [40 CFR 122.42(e)(1)(vi)]</u> The AWMP identifies land application limitations that include a 100-foot land application setback from any irrigation or drainage ditch, and prohibitions of manure application to saturated or frozen soil or during precipitation events sufficient to cause ponded water. The AWMP does not specify setbacks from other down-gradient surface waters or conduits to surface water. The facility representatives stated that there are no down gradient surface waters within 100 feet of any of the land application areas and the facilities fields are not tile drained. This information is consistent with the land application maps and descriptions in the facility's AWMP.
Yes	8. <u>Identify protocols for manure, process wastewater, and soil sampling and testing. [40 CFR 122.42(e)(1)(vii)]</u> The AWMP specifies the frequency and parameters for manure and soil sampling and includes protocols for collecting the samples. As detailed in question 12, the protocols in the AWMP are not consistent with the requirements of the facility's individual permit.
TBD	9. <u>Establish protocols to land apply manure or process wastewater in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater. [40 CFR 122.42(e)(1)(viii)]</u> To be evaluated as part of the detailed AWMP review that will be provided to EPA separately.
No	10. <u>Identify specific records that will be maintained to document the implementation and management of the minimum NMP elements (#2-#9 above). [40 CFR 122.42(e)(1)(ix)]</u> The AWMP specifies that records will be kept to document production area visual inspections land application, and manure transfers. The facility representatives use ODA's CAFO Calendar to document production area visual inspections. The AWMP does not identify specific records that will be maintained to document the implementation of the other minimum NMP elements (mortality management, chemical disposal, and manure and soil sampling).
Additional NMP Requirements for Large Dairy Cow, Cattle, Swine, Poultry, and Veal Calf CAFOs	
TBD	11. <u>Application rates are calculated as required by 40 CFR 412.4(c)(2).</u> To be evaluated as part of the detailed AWMP review that will be provided to EPA separately.

*Throughout, N/A = Not Applicable

Nutrient Management Plan (NMP) (continued)

- No 12. Specifies the manure, process wastewater, and soil sampling at the required frequencies and for the required parameters? [40 CFR 412.4(c)(3)]

The AWMP states that liquid and solid manure will be sampled “at least once during the time it is to be used,” and “[i]n the case of daily or frequent spreading of slurries or solid manure, samples will be taken over a representative period.” The AWMP does not specify that wastewater will be tested monthly when irrigating, as required by the facility’s permit.

The facility’s permit requires wastewater monitoring for pH, total dissolved solids (TDS), TKN, and nitrate + nitrite (NO_3+NO_2), but does not require monitoring for phosphorus. The AWMP states that liquid manure will be tested for TKN, phosphorus (P), and potassium (K), but does not specify pH, TDS, or NO_3+NO_2 .

The facility’s permit specifies post-harvest soil sampling, at the 12-inch depth and 60-inch depth, for nitrate ($\text{NO}_3\text{-N}$), TKN, P, K, pH, organic matter, calcium, magnesium, and Total Bases. The AWMP includes soil sampling at the required frequency (fall of each year) but does not include the depths and parameters specified by the permit. The AWMP states that soil samples will be collected at 12 and 24 inches and will be tested for pH, $\text{NO}_3\text{-N}$, ammonium nitrogen ($\text{NH}_4\text{-N}$), P, K, and moisture content.

In addition, based on review of the analytical results from manure and soil testing provided to ODA in the facility’s annual reports, the facility is not sampling manure and soil for the parameters specified in the permit. The table below compares the permit requirements with the parameters included in the analytical results for wastewater and soil testing based on review of 2020 – 2023 annual reports:

Parameter(s) required by permit	Parameter(s) included in analytical results
<i>Wastewater</i>	
pH	Not included
TDS	Solids
TKN and NO_3+NO_2	Total N, organic N, and $\text{NH}_4\text{-N}$
<i>Soil</i>	
TKN and $\text{NO}_3\text{-N}$	$\text{NO}_3\text{-N}$ and $\text{NH}_4\text{-N}$
P	P
K, pH, organic matter, calcium, magnesium, and total bases	Not included in 2022 and 2023 sampling

- Yes 13. Includes periodic inspection of land application equipment? [40 CFR 412.4(c)(4)]

- Yes 14. Includes 100-foot setback or 35-foot vegetated buffer, or approved alternative? [40 CFR 412.4(c)(5)]

Monitoring, Documentation and Recordkeeping

Does the facility maintain the following records?

- No 15. The completed permit application? [40 CFR 412.37(b)]
The facility's individual NPDES permit expired on October 31, 2011, and has been administratively extended. The facility does not maintain a copy of the 2006 permit application on site and has not submitted a renewal application. The facility's individual permit requires the permittee to submit a permit application before the permit expiration date. Note that an administrative extension of the NPDES permit does not change the permit expiration date.
- Yes 16. The current design of manure storage structures, including volume of solids accumulation, design treatment volume, total design volume, and approximate number of days of storage capacity? [40 CFR 412.37(b)(5)]
The facility files included a facility site plan with design information for the lagoons. Additional design information and storage capacity calculations are included in the AWMP. This information will be evaluated as part of the detailed AWMP review to be provided to EPA separately.
- N/A 17. The date, time, and estimated volume of any overflow? [40 CFR 412.37(b)(6)]
The facility representative stated there have been no overflows from the impoundments.
- Yes 18. Manure and process wastewater transfers, including the most current nutrient analysis of the manure or wastewater that was provided to the recipient, the date and approximate amount transferred, and the name and address of the recipient? [40 CFR 122.42(e)(3)]
- Yes a. Name of recipient
- Yes b. Address of recipient
- Yes c. Date of transfer
- Yes d. Approximate amount transferred (tons/gallons)
- Yes e. Recent (12 months or less) manure nutrient analysis provided
The facility transfers process wastewater from the Slurry Pond to a single recipient. The recipient removes the manure from the Slurry Pond, hauls it offsite, and spreads it on his own fields. At the end of each year, the manure recipient provides Sage Hollow Ranch with documentation of the amount of manure received, including the dates of transfer, which is maintained in the facility's files. Note that this information was clarified by Brian Bosma during a telephone conversation with the inspector (Jennifer Ferrando) on May 10, 2024.
During the inspection, the facility representative stated that some of the manure from the pens and composted bedding and manure from the calf hutches is also exported. The inspector and facility representative did not discuss or review manure transfer records for the manure from the pens and composted bedding and manure from the calf hutches; however, the inspector notes that the permit and regulatory record keeping requirements for manure transfers also apply to solid manure and composted calf bedding. Note that the definition of "manure" in the permit (definitions S1.F) includes manure, bedding, compost, and materials commingled with manure.

Monitoring, Documentation and Recordkeeping (continued)*Additional Production Area Records for Large Dairy Cow, Cattle, Swine, Poultry, and Veal Calf CAFOs*

No 19. Documentation of daily and weekly visual inspections of the production area, including:

- Yes a. Weekly inspection of stormwater diversions, waste storage structures, and process wastewater channeling devices? [40 CFR 412.37(b)(1)]
- No b. Daily inspection of water lines? [40 CFR 412.37(b)(1)]
- Yes c. Weekly inspection of impoundments and tanks? [40 CFR 412.37(b)(1)]
- No d. Containment system inspections, daily when operating, weekly when not [Permit No. 06-IND-001, condition S5.B.2]

The facility maintains records of weekly production area visual inspections using ODA's CAFO Calendar.

The facility was not documenting daily water line inspections, though the facility representatives stated that the inspections were being conducted.

The facility's permit requires the permittee to conduct daily inspections of the containment system when operating and weekly when not operating. The facility had not been conducting daily inspections of the containment system and were not aware of the requirement to do so.

Yes 20. Weekly records of the depth of manure and process wastewater in liquid impoundments and terminal tanks? [40 CFR 412.37(b)(2)]

The facility records included weekly documentation of the wastewater levels in the Big Lagoon and the Heifer Lagoon.

Yes 21. Documentation of actions taken to correct deficiencies found as a result of production area inspections? [40 CFR 412.37(b)(3)]

The facility representative stated that all deficiencies noted in the production area inspection records are corrected immediately. The records provided by the facility representative via email on May 9, 2024, included notes on water line deficiencies (leaks) and repairs.

Yes 22. Documentation of mortalities management? [40 CFR 412.37(b)(4)]

The facility composts dead animals with manure on the east side of the impoundments (Photograph 3), as described in the AWMP. The facility representative indicated that composting records are maintained; the inspectors observed the mortality composting area but did not review the composting records.

Land Application Area Records for Large Dairy Cow, Cattle, Swine, Poultry, and Veal Calf CAFOs

Yes 23. Expected crop yields? [40 CFR 412.37(c)(1)]

The facility records include actual crop yields. Expected yields, used for planning purposes, are in the AWMP and are based on long-term averages of actual yields.

Yes 24. Date(s) manure or process wastewater is applied to each land application site? [40 CFR 412.37(c)(2)]

Monitoring, Documentation and Recordkeeping (continued)

- Yes 25. Weather conditions at the time of, and for 24 hours prior to and following, land application? [40 CFR 412.37(c)(3)]
The facility maintains records of historical weather data that can be correlated with land application dates. Based on records provided to the inspector via email on May 9, 2024, the weather records include daily temperatures, precipitation amounts, and snow depth for Boardman, OR.
- No 26. Test methods used to sample and analyze manure, process wastewater, and soil? [40 CFR 412.37(c)(4)]
The facility maintains records of the analytical results for manure and soil samples, but the lab reports did not identify the analytical methods. In a follow-up telephone conversation with the inspector (Jennifer Ferrando) on May 10, 2024, Brian Bosma indicated that the analytical method information had been obtained from the labs.
- Yes 27. Results from manure, process wastewater, and soil analyses? [40 CFR 412.37(c)(5)]
The facility maintains a spreadsheet used to track land applications for all fields and calculate nutrients applied. The results from manure and soil analyses are entered into the spreadsheet and maintained electronically. In addition the facility submits the analytical lab reports to ODA in its annual reports. Note, however, that although the facility maintains documentation of the manure and soil testing results, the facility is not testing for the parameters specified in its permit. See question 12.
- TBD 28. Manure and process wastewater application rates determined in accordance with the technical standards? [40 CFR 412.37(c)(6)]
- No 29. Calculations showing the total N and P to be applied to each land application site, including sources other than manure or process wastewater? [40 CFR 412.37(c)(7)]
The nutrient management protocols used by the facility do not include calculation of the total N and P to be applied to each site prior to land application. According to the facility representatives, Sage Hollow Ranch does not apply manure to satisfy the entire crop nutrient need for any of the fields. The facility operators determine the expected annual crop nutrient removal for each field based on the planned crop(s), historic yields, and published crop removal rates. Starting in the spring, manure is spread on the fields at relatively low rates that the operators know will provide much less nitrogen than the calculated crop removal. The operators stated that they avoid spreading manure on fields that have elevated soil nitrate based on the previous year's post-harvest soil testing. Then the land application tracking spreadsheet is used to calculate the amount of nutrients supplied from the manure that has been spread. That information is used, along with the soil test results and crop tissue testing, to determine the amount of additional nitrogen and phosphorus that must be applied to meet the crop yield goal. That additional nitrogen and phosphorus is supplied using commercial fertilizer.
- Yes 30. Total amount of N and P actually applied to each land application site, including calculations? [40 CFR 412.37(c)(8)]

Monitoring, Documentation and Recordkeeping (continued)

- Yes 31. *Method used to apply manure and process wastewater? [40 CFR 412.37(c)(9)]*
 The facility representatives stated that all wastewater is applied through the center pivot irrigation systems and solid manure is spread using a spreader truck. Manure slurry is spread by a third-party hauler using a tank spreader. This is consistent with the manure application methods described in the AWMP.
- No 32. *Date(s) of manure application equipment inspections for leaks? [40 CFR 412.37(c)(10)]*
 The facility's individual permit (condition S5.B.2) requires the permittee to conduct "[l]eak inspections of equipment used for land application of manure, litter, or process wastewater" daily when operating, and to record the date of the inspection and the condition of the facilities. The facility representatives stated that the equipment inspections are performed, but records are not maintained.

Additional Monitoring, Documentation, and Recordkeeping Comments

The facility's annual reports show several periods when manure was applied during the winter months (1/1/21 – 1/29/21, 12/28/21, 1/19/22 – 2/16/22, 12/29/2022). The facility's individual permit allows land application of manure to frozen or snow-covered ground in accordance with ODA guidance and only during weather conditions that allow for agronomic application of the nutrients (conditions S2.C.5 and S2.E.1). The facility representatives provided documentation of the weather conditions and wastewater levels in the impoundments for the time periods corresponding to the land application events listed above, except 12/29/2022 (note, the inspector did not send a follow-up request to the facility for the December 2022 information). For the land application events in January and December 2021, and January and February 2022, the daily climatological data for Boardman OR provided by the facility representative show average and high temperatures above freezing, no precipitation to minimal precipitation (maximum 0.08 inches), and where the data are available, no snow on the ground (for the 2021 dates, the snow depth column indicates "M" which appears to signify missing data). The facility representative stated, in a telephone conversation with the inspector (Jennifer Ferrando) on May 10, 2024, that the facility has not applied to frozen or snow-covered ground.

Land Application Sites

Yes 33. Does the facility apply manure or wastewater to land owned by or under the operational control of the CAFO?

- Number of land application sites: 15 (941 acres, as reported in the facility's 2023 annual report)f
- Irrigation type(s): center pivot
- Furrow/flood irrigation sites – what is fate of applied wastewater and tailwater? N/A

Yes 34. Was manure/wastewater applied in accordance with the procedures and protocols identified in the NMP? If no, describe: The information in the table below is for calendar year 2023, based on the facility's AWMP and facility land application records reviewed during the inspection. The facility's permit requires annual reporting on a calendar year basis and the facility accordingly maintains its annual nutrient balance/summary information based on a calendar year. As explained by the facility representatives, because the fields are managed consistently from year to year and based on the facility's practice of spreading manure at low rates relative to the crop removal requirement, summarizing and reporting nutrient balance information on a calendar year basis is reflective of nutrient balances over a crop year. Provided this assumption is accurate, the information reviewed appears to indicate that manure was applied to field B3 at rates that were generally consistent with the AWMP.

Field ID: B3 (Bulow 3) Acreage: 125 Crop: Corn/Triticale Crop nitrogen removal: 513 lb/ac		Phosphorus Index: Low		Calculations based on:	
				☒ N or ☐ P	
		Calculated^b		Applied	
		Gal./acre	PAN lbs/acre	Gal./acre	PAN lbs/acre
Rates of application:	Liquid/Slurry	-	-	36,330	88
	Solid	-	-	0	0
	Commercial	-	-	0	385
Total Lbs. N or P that may be applied and that were applied:			513 (crop removal)		473

Additional Land application Site Comments

- The AWMP provides crop removal rates for planned crops but does not include calculations for the amount of nutrients to be applied from specific sources. The AWMP will be evaluated as part of a detailed review that will be provided to EPA separately.
- The facility records document that liquid manure was applied to field B3 from the Big Lagoon in 2023. The 2023 annual report provides manure analysis results for the Big Lagoon: TN 6.1 lbs/1000 gal, Organic N 3.17 lbs/1000 gallons, ammonium (NH₄-N) 2.93 lbs/1000 gal.
- The facility representatives stated that their nutrient management calculations assume 50% loss of NH₄-N and 30% availability of organic N.
- Based on the above data, the PAN in the liquid manure applied was 2.416 lbs/1000 gal.
- 2023 fall soil nitrate test for field B3: 65 lb/ac NO₃-N in the top foot. While this would be considered excessive in areas west of the Cascade Mountains (per OSU Extension Publication EM 8832), the inspectors were unable to identify a resource that provides a basis for interpreting fall soil nitrate tests east of the Cascades where the risk of leaching is lower.

Production Area						
35. <u>List impoundments (attach additional sheet(s), if needed)</u>						
Impoundment ID (AWMP name)¹	Wastewater Type	Wastewater Source(s)	Pumping level²	Wastewater below pumping level?	Max. recorded level³	Date of max. recorded level³
Slurry Pond (storage cell)	☒ process generated ☒ runoff	Leachate and runoff from silage pad, vacuumed slurry from freestall barns	Unknown	Unknown	Not recorded	Not recorded
Settling Pond (settling cell)	☒ process generated ☒ runoff	Manure/bedding scraped from freestall barns, runoff from pens east of the lagoons, milking parlor wash water (via collection pit/screen separator); runoff from manure/mortality composting area	N/A; overflows to Big Lagoon	N/A	N/A	N/A
Heifer Lagoon or Feedlot Lagoon (storage cell)	☐ process generated ☒ runoff	Runoff from heifer pens, calf hutches, and feed/commodity storage areas south and west of the Heifer Lagoon.	Unknown	Unknown	11' 3"	3/12/24
Big Lagoon (lagoon, or storage lagoon)	☒ process generated ☒ runoff	Settling Pond (via pipe overflow); Heifer Lagoon (pumped)	Unknown	Unknown	11' 3"	2/13/24

¹ Table lists impoundment names used by facility representatives with parenthetical impoundment IDs corresponding to those listed in the AWMP.

² The pumping level represents the minimum capacity necessary to contain runoff and direct precipitation from the 25-year, 24-hour rainfall event (40 CFR 40 CFR 412.37(a)(2)).

³ Based on review of 2024 records.

Production Area (continued)

36. Impoundment(s) collect all runoff from:

Yes Animal confinement areas?⁴Yes Manure storage areas?⁵Unknown Raw material storage areas?⁶

Liquid feed additives were stored in tanks near the south facility boundary, on the west (Photograph 17) and south sides of the building located immediately west of the main silage pad. It was not clear whether leaks or accidental spills from these tanks would flow to the lagoons. The facility representatives and ODA discussed the possibility of constructing a berm or other structure that would contain or divert any leaks or spills from these tanks.

Yes Waste containment areas?⁷N/A Egg washing or egg processing facility?Yes Mortality storage, handling, treatment or disposal area?N/A Other?No 37. Was manure or wastewater observed in a waterway? If yes, describe: N/A

⁴ Animal confinement area includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milkrooms, milking centers, cowyards, barnyards, medication pens, walkers, animal walkways, and stables (40 CFR 40 CFR 122.23(b)(8)).

⁵ Manure storage area includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storages, liquid impoundments, static piles, and composting piles (40 CFR 40 CFR 122.23(b)(8)).

⁶ Raw materials storage area includes but is not limited to feed silos, silage bunkers, and bedding materials (40 CFR 40 CFR 122.23(b)(8)).

⁷ The waste containment area includes but is not limited to settling basins, and areas within berms and diversions which separate uncontaminated storm water (40 CFR 40 CFR 122.23(b)(8)).

Production Area (continued)

TBD 38. Adequate storage available for manure, litter, and process wastewater, and procedures are in place to ensure proper operation and maintenance of the storage facilities? [40 CFR 122.42(e)(1)(i)]

The inspectors did not identify evidence of overflows or insufficient storage capacity during the inspection. All solid manure, compost, and separated solids were stockpiled in areas that drain to the lagoons and the lagoons appeared to have ample available storage capacity (Photographs 2, 4, 8, 9, 10, 26, and 27) although the 25-year, 24-hour storm storage level was not clear to the inspectors (see question 42).

The records reviewed during the inspection included a proposed site plan that listed the planned capacity for each impoundment, as follows:

- Big Lagoon: 27.9 acre-feet
- Slurry Pond: 7.7 acre-feet
- Settling Pond: 5.7 acre-feet
- Heifer Lagoon: 8.8 acre-feet

Additional information on manure and waste volumes, stormwater runoff volumes, and design volume of the impoundments is provided in the AWMP. This information will be evaluated as part of the detailed AWMP review to be provided separately to EPA.

Yes 39. Confined animals do not have direct contact with waters of the United States? [40 CFR 122.42(e)(1)(iv)]

There are no surface waters within the confinement areas at Sage Hollow Ranch.

N/A 40. Clean water is diverted from the production area? [40 CFR 122.42(e)(1)(iii)]

The facility sits on a slight rise with local topography preventing run-on to the facility from surrounding areas.

Yes 41. Chemicals and other contaminants handled on-site are not disposed of in any manure, litter, process wastewater, or storm water storage or treatment system? [40 CFR 122.42(e)(1)(v)]

According to the facility representatives, chemicals are not disposed of in the lagoon system. Foot bath chemicals are fully used with no excess for disposal. Crop chemicals are not stored on site; a custom applicator is used for any necessary crop chemicals. The inspectors did not observe the chemical storage area.

Production Area (continued)**Additional Production Area Requirements for Large Dairy Cow, Cattle, Swine, Poultry, and Veal Calf CAFOs (Subparts C and D)**

No 42. All open surface impoundments and terminal storage tanks have depth markers which clearly indicate the minimum capacity necessary to contain the runoff and direct precipitation of the 25-year, 24-hour rainfall event? [40 CFR 412.37(a)(2)]

A depth marker is installed in the Big Lagoon (Photograph 9). For the Heifer Lagoon and the Slurry Pond, the facility operator uses a pipe, marked in 1-foot increments based on the side slope of each impoundment, to measure the distance from a marked reference point to the top of the wastewater.

It was not clear whether the depth markers included a marking for the 25-year, 24-hour storm storage capacity (pumping level). The Big Lagoon depth marker, for example, included an orange marking that the facility representatives speculated might be the pumping level, but they were not certain.

The depth of wastewater in the Settling Pond is regulated by an overflow pipe to the Big Lagoon (Photograph 8). The Slurry Pond was originally designed and constructed with an overflow pipe to the Big Lagoon. At the time of the inspection, the overflow pipe was capped and the Slurry Pond was being operated independently from the Big Lagoon. The facility operator described the method used to measure the wastewater level in the Slurry Pond, but the facility records did not include wastewater level records for the Slurry Pond.

Yes 43. Mortalities remain in the production area until disposal, are not disposed in liquid manure or process wastewater treatment systems, and are handled to prevent discharge of pollutants to surface waters? [40 CFR 412.37(a)(4)]

Dead animals are composted with manure in the composting area immediately east of the Settling Pond (Photograph 3). The finished compost is spread on the facility's land application areas. The facility representatives stated that they plan to construct a concrete slab in this area for the manure and mortality composting.

Additional Production Area Comments:

- Wastewater from the Settling Pond overflows to the Big Lagoon via a pipe between the two impoundments. Wastewater from the Heifer Pond is pumped to the Big Lagoon. All land-applied wastewater is pumped from the Big Lagoon to the facility's pivot irrigation system. Slurry is removed directly from the Slurry Pond for export or land application.
- The Heifer Lagoon and the Big Lagoon are lined with HDPE. The Slurry Pond and Settling Pond each have a concrete bottom and HDPE-lined side slopes.

Inspector: Sam Jordan

Date: 8/09/2024

Site Map



Figure 1. Aerial image of the Sage Hollow Ranch production area.

Photo Log



Photograph 1. Silage leachate drains to a manhole (pictured) near the northwest corner of the concrete silage slab; leachate flows through underground piping to the Slurry Lagoon.



Photograph 2. View looking northwest at the Slurry Lagoon. The pipe in the south berm (yellow circle) is the inlet for silage leachate. The capped pipe in the north berm (blue circle) is the overflow to the Big Lagoon.



Photograph 3. View looking north across the mortality composting area, located east of the Settling Pond.



Photograph 4. View looking northwest across the Settling Pond. The pipe in the foreground is the inlet from the manure separator.



Photograph 5. View looking north at the Collection Pit.



Photograph 6. The north end of the east wall in the Collection Pit. The red arrow indicates the inlet for runoff from building roofs, pen alleys, and feed lanes; the yellow arrow indicates the inlet for wastewater from the milking parlor.



Photograph 7. View looking northeast from the north end of the Collection Pit toward the separator screen and separated solids stockpile.



Photograph 8. View looking northwest across the Settling Pond and the overflow pipe (circled) to the Big Lagoon.



Photograph 9. View looking north at the depth marker located near the southeast corner of the Big Lagoon. The Settling Basin is visible on the right side of the photo (east of the Big Lagoon).



Photograph 10. View looking southeast across the Slurry Pit toward the freestall barns and silage storage area.



Photograph 11. View looking west from the northeast corner of the pens, along the northern boundary of the east side of the production area.



Photograph 12. View looking south from approximately the same location as Photograph 11.



Photograph 13. View looking west from the easternmost end of the production area.



Photograph 14. View looking south, from the same location as Photograph 13, along the southern portion of the east facility boundary.



Photograph 15. View looking north from the southeast corner of the production area. The barn in the background is the same barn shown in Photograph 14.



Photograph 16. View looking west, from the same location as Photograph 15, along the southern boundary of the east side of the production area. The arrow indicates the milking barn.



Photograph 17. Liquid feed supplements (whey and a molasses-based supplement) are stored in tanks on the west side of the building located immediately west of the main silage pad.



Photograph 18. View looking west at the calf hutches and the north side of the commodities storage area (left side of photo).



Photograph 19. View looking east from the same location as Photograph 18.



Photograph 20. View looking north at the compost area located east of the calf hutches.



Photograph 21. View looking east from the southwest corner of the cattle pens.



Photograph 22. View looking north, from the same location as Photograph 21, along the western boundary of the production area.



Photograph 23. View looking south from the northwest corner of the cattle pens area along the western boundary of the production area (toward the location of Photographs 21 and 22).



Photograph 24. View looking east, from the same location as Photograph 23, along the northern boundary of the production area.



Photograph 25. View looking south from the west end of the Heifer Lagoon along the lane that directs runoff from the heifer and calf pens toward the Heifer Lagoon.



Photograph 26. View looking east, from the same location as Photograph 25, across the Heifer Lagoon.



Photograph 27. View looking west from the northeast corner of the Heifer Lagoon.



Photograph 28. View looking south from the same location as Photograph 27. The Big Lagoon is visible on the left side of the photo.



Photograph 29. View looking southwest from the same location as Photographs 27 and 28. The Big Lagoon is visible on the right side of the photo. The red arrow marks the location of the screen separator and separated solids stockpile; the yellow arrow marks the location of the silage bunk.