Year Round Land Treatment

A Site Assessment for AKART Equivalency

Introduction

The state's water quality law and regulations require all facilities that discharge wastewater to apply AKART (all known, available, and reasonable methods of treatment) to their wastewater as a condition to be issued a discharge permit from the Department of Ecology (Ecology). The permit's goal is to protect ground and surface waters from pollution.

Winter spray application of wastewater has the potential to impact groundwater

Ecology's permits allow for land treatment systems. Land treatment of wastewater means that wastewater can be applied to croplands where the crop and soil micro-organisms "treat" the wastewater before it becomes a potential pollution problem.

Ecology defines AKART for land treatment systems, in part, to include providing lined storage impoundment to contain the wastewater during the non-growing season. During the non-growing season, land treatment of wastewater is diminished by the effect of low temperatures on soil biology and reduced crop uptake. For this reason, wastewater applied to the land in the non-growing season has a high potential to impact groundwater quality.

However, the Water Quality Program will consider, on a case-by-case basis, innovative alternatives to storage. To be approved, these approaches must demonstrate that the alternative treatment method provides the same level of protection to groundwater quality during the non-growing season as a lined storage impoundment.

The issue

Basic American Foods (BAF) is a potato processing facility located near Moses Lake. It has produced dehydrated potato products since 1966. This facility produces approximately 1.4 million gallons of process wastewater each day. The facility uses center pivots to apply wastewater to sprayfields year-round for final land treatment. The treatment acreage has increased from the original 206 to the present 2,300 acres. Many of the fields were developed by leveling sand dunes. When more wastewater is applied to the land than the crop can use, the sandy nature of the soils allows for the percolation and transport of process wastewater pollutants (nitrate and dissolved salts) to the groundwater. Because this facility land applies wastewater year-round, Ecology's permit required BAF to collect groundwater data to demonstrate that its treatment methods were as protective of groundwater during the non-growing season as AKART.

Potato harvesting

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The project

BAF collected hydrogeologic and groundwater data between 2001 and 2009. Based on their analysis of the data, they concluded their alternative land treatment method provides treatment equivalent to AKART. To verify this conclusion, Ecology's permit manager requested its Environmental Assessment Program (EAP) provide a technically defensible and independent review of all BAF reports. EAP concluded that BAF's year-around treatment system is not protective of groundwater, so its alternative method cannot be considered equivalent to AKART (providing non-growing season storage). Therefore, BAF should limit their spray irrigation of wastewater to only the growing season (Report: https://fortress.wa.gov/ecy/publications/summarypages/1203019.html).

Milestones and outcomes

Ecology reissued BAF's State Waste Discharge Permit (ST-5213) in December 2011. Based on the findings of the EAP report, the permit requires BAF to submit engineering plans that include the design and implementation timeline for the non-growing season management of process wastewater that does not include spray irrigation. BAF accepted the new conditions in the permit.

Spray irrigation of process wastewater during the growing season allows crops to help treat water.

Project highlights

Ecology acknowledges BAF's efforts to collect groundwater data to show their year around system provides AKART, and its willingness to change when results showed further water quality protection was needed. Eliminating the irrigation of process wastewater during the non-growing season onto the predominately sandy-soil fields should result in a timely improvement to the groundwater beneath the site.

Partners

Don Nichols of the Eastern Regional Office's Water Quality Program is BAF's permit manager. Melanie Redding of Ecology's Environmental Assessment Program provided the data review and analysis, and authored the final report. Bruce Wright from BAF compiled and sent comments on the report before finalization.

Funding

BAF provided the funding to collect groundwater data. The analysis was funded through EAP's staff time operating budget.

For more information

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