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February 7, 2019

Washington State Department of Ecology
PO Box 47600
Olympia, Washington 98504

Attention: Peter Lyon
Solid Waste Management – Southwest Regional Office Section Manager

Subject: Geotechnical Review of November 1, 2016 WAC 197-11-960 Supplement
Proposed Amendment to Statewide General Permit No. BT9902
19724 128th Avenue S.E.
Yelm, Washington 98597
P/Ns 22602130200, 22602130100, 22602130000, 2260212000, 22602110100,
22602140100, 22601230000, 22602140000

Dear Mr. Lyon:

This letter provides engineering review comments related to the WAC 197-11-960 State Environmental Policy Act (SEPA) Supplemental Application, dated November 1, 2016, submitted by Fire Mountain Farms of Onalaska, Washington as a proposed amendment to Statewide General Permit No. BT9902. Although this document was apparently submitted for your consideration over two years ago, it has only been publicized recently on a very short timeline for public comment.

This application was discussed publicly at a meeting at the Yelm Senior Center on the evening of January 24, 2019. The meeting consisted of around 1½ hours of presentation and questions answered by Department of Ecology (DOE) and the applicant with seemingly 100% support and favorable comments from your evaluation team. This was followed by 3 minutes of sound bite testimony allowed from each concerned citizen, who each had around one week to prepare, despite your team having over TWO YEARS to prepare your own presentations and to obtain citizen input for consideration in a decision that appears you have already made.

The Supplemental Application appears to be predominately generic in nature, likely because the limited public response period and small size of the notice does not provide enough time for many concerned citizens to contribute meaningful input. If, as presented, this material is so benign, why are the various Municipal generators not applying it to THEIR watersheds? And if

they were, there would be no need to export it to other geographical areas populated by innocent citizens who had NOTHING to do with the generation of this material.

According to the Fire Mountain Farms' *General Land Application Plan 2) Site Selection Criteria*, "Sites are evaluated on a case by case basis for suitability based on a number of factors including:

- Topography/slopes
- Soils
- Depth to Groundwater
- Precipitation
- Zoning
- Neighboring Land Use
- Access and Storage"

Following is an engineering commentary of the November 1, 2016 *State Environmental Policy Act SEPA Checklist (SEPA)*, January 2016 *General Land Application Plan (GLAP)*, and December 17, 2018 Version of the *Site Specific Land Application Plan (SSLAP)*. Note, I am a registered Geotechnical and Civil Engineer who has engaged in practice full time for over 40 years, and have been continuously registered in the State of Washington since 1982.

SSLAP, GLAP, and SEPA Items 1 through 7:

Obvious generic boilerplate.

"Standard Farming Practice":

GLAP 8. Land and Shoreline Use L. states that application of biosolids is a "normal and customary agricultural practice" and *3. Water a. Surface Water 2)*: a "standard farming practice." **IT IS NOT.** Spreading of animal manure is "normal and customary agricultural practice" but spreading of municipal sludge/"biosolids" (marketing term) is not widely practiced because of the pathogen, disease vectors typically present in these materials, as well as heavy metals, etc.

According to the Washington State University *Guide to Biosolids Quality*:

Biosolids Quality: Contaminants

Municipal wastewater treatment facilitates treat wastewater from industrial and household sources that may contain various contaminants. Those contaminants that bind to organic or inorganic particles and are not degraded normally remain in the wastewater solids, which are eventually converted into biosolids, (Girovich 1996; Epstein 2003). Contaminants can include metals, pathogen, **antibiotics**, some industrial and household chemicals, **odorants**, and **aerosols**. (Washington State University Extension, *Guide to Biosolids Quality, FS192E*, p.6.)

Site Topography:

The applications state that the site “is a generally flat area with some rolling areas (*SEPA Checklist B. ENVIRONMENTAL ELEMENTS 1. EARTH a.*) Yet the attached United States Geological Survey (USGS) topo map of this area indicates that site elevations are 460-490 ft. on the site and then drop off to around 330 ft. at the surface of the adjacent Nisqually River located to the east. The supplemental application, under *SEPA Checklist B. ENVIRONMENTAL ELEMENTS 3. WATER a. Surface* states: “This site is 1,000 feet from the Nisqually River”.

The USGS map also indicates a downhill gradient to several manmade lakes that flow into Wheeler Creek to the west. The surface elevation of Wheeler Creek is about 400 ft. within a distance of about a ½ mile. This creek also passes through a large wetland area. So the site is basically a topographic hilltop for the area with elevations dropping significantly only a short distance off site.

Soils:

SEPA Checklist B. ENVIRONMENTAL ELEMENTS 1. EARTH c.: Soils for proposed site Baldhill very stony sandy loam 11.6%, Baldhill very stony sandy loam 0.4%, Baldhill very stony sandy loam, 3.4%, Baldhill very stony sandy loam, 0.2%, Cagey loamy sand 11.0 2.6%, Everett very gravelly sandy loam, 1.3%, Kapowsin silt loam, 0 to 3 percent slopes 67.2%, Kapowsin silt loam, 9.6%, McKenna gravelly silt loam, 0.2%, Norma silt loam 2.3%, Tisch silt loam 1.0%

SEPA Checklist B. ENVIRONMENTAL ELEMENTS 1. EARTH d. states that “No indication of unstable soils has been found onsite during our investigations. Very stable and rocky soils.”

The above soils listing comprises an agronomy listing of the surficial topsoils in the vicinity, as determined by the United States Department of Agriculture (USDA). The Washington State Department of Natural Resources (DNR) geologic map of the area (portion attached) indicates that the site soils at depth may be expected to be **glacial till** at the higher elevations (475 ft.) overlying **glacial outwash** at the lower elevations.

Glacial till generally consists of sand, silt, and gravel mixtures deposited below glacial advance and then compressed by ice to a very dense condition. The density of this material can approach that of concrete. The surface of this material has weathered over the past 7,000 years or so after the glacier retreated. This weathered zone typically consists of topsoil and water softened soils. However, due to the density of the underlying unweathered soils, surface water typically perches at the weathered/unweathered interface and runs laterally down gradient during the wetter portion of the year, which typically runs from October through May or June in Western Washington.

Typically, this weathered/unweathered interface is located within three feet of the ground surface.

The *SSLAP, 10.0 Groundwater Protection Plan* states: "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 near three feet and rising." Biosolids **cannot** be sprayed if perched groundwater is present within this depth, so this part of the site is largely unusable for most of the year. Lacking a comprehensive soil investigation, the mapped size of this area alone is sufficient to render this site as unsuitable for biosolids applications.

Glacial outwash typically consists of sand, gravel, and cobble-sized soils deposited by meltwater runoff during glacial advance or retreat. This material is widely used as an aggregate resource in the Pacific Northwest and has recently been mapped by the Thurston County Resource Inventory. **Glacial outwash** is typically highly permeable and can be expected to infiltrate surface water to the regional water table with minimal filtering. As outwash deposits are also a source of water for many domestic wells, the introduction of sludge/"biosolids" to the aquifer recharge surface area is short sighted at best, and potentially introduces pathogens, heavy metals, etc. (see list above) to the groundwater in this area.

As this groundwater resource is used domestically by the surrounding residents it seems hardly fair or prudent to introduce a known source of pathogens to the regional water supply aquifer, potentially risking the health of the entire area for the benefit of one land owner. As said earlier, if this material is so benign, why are the municipal generators of this sludge/"biosolids" not spreading it over their own watershed areas?

Water:

SEPA Checklist B. ENVIRONMENTAL ELEMENTS 3. WATER b. Ground 2):

"No waste material will be discharged into the ground."

SEPA Checklist B. ENVIRONMENTAL ELEMENTS 3. WATER a. Surface 1):

"Yelm Ditch impoundment (20 acres) south southwest of the site is a manmade impoundment which was part of a now abandoned irrigation district water delivery system. Discharge from this impoundment is into the old Yelm Ditch which is blocked at several points so it is not known if flow seeps into the ground or finds its way to the Nisqually River. Four stock-water impoundments are on the ranch at ½ acre each. The Nisqually River is to the north and east and over 1000 feet from site. Centralia canal is over 1000 ft."

GLAP B. ENVIRONMENTAL ELEMENTS, 3. Water c. Water runoff 1) and 2) states that there will be no runoff from the site other than "normal rainfall on agricultural and timber ground."

As mentioned above, the Nisqually River runs below the site a short distance to the east. Several manmade lakes, the Yelm Ditch Conservation Area, Centralia Canal, and Wheeler Creek run below the site a short distance to the east and west. Biosolid runoff has a high potential to impact all of these waterways. Wheeler Creek runs into Yelm Creek and then eventually into the

Nisqually River as well. Is it at all prudent to be placing municipal sludge/"biosolids" uphill of major waterways and streams? How will this impact salmon? (This is also directly applicable to the "approved" Eatonville Unit site mentioned below.)

GLAP B. ENVIRONMENTAL ELEMENTS, 1. Earth f. also states that biosolid "organic matter increases water retention" thereby "increasing infiltration rates" (3. *Water c. 2.*) in the areas applied. This would only further exacerbate the issues cited above. As the remaining site area not underlain by **glacial till** is mapped as **glacial outwash**, this issue is sufficient to disqualify the remaining areas of the site from application of sludge/"biosolids."

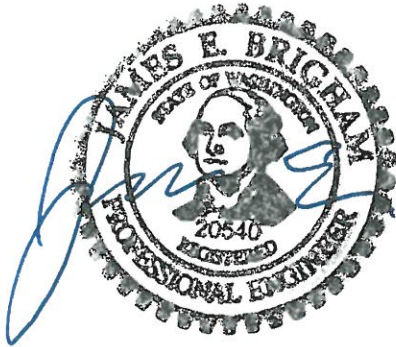
Hopefully the above information will allow a more careful consideration of the **November 1, 2016 WAC 197-11-960 Supplement Proposed Amendment to Statewide General Permit No. BT9902.**

As a professional engineer licensed in the State of Washington, I hereby formally request that you withdraw your Determination of Non-significance.

Generation of a comprehensive soil study, a comprehensive hydrogeology study showing the site and offsite hydrogeologic characteristics of the area, and a site specific environmental impact statement (EIS) should be a **MINIMUM REQUIREMENT** for application of sewage/sludge/"biosolids" on areas neighboring rural residential and municipal sites, especially those located at topographic elevations with potential runoff to surrounding areas and infiltration into underlying aquifers.

Note: I also own land on the Little Mashel River directly adjacent to Fire Mountain Farms' previously approved sludge/"biosolid" site in Eatonville and somehow missed the hearing notice and your subsequent approval despite similarities in topography, drainage, and paucity of information provided to evaluate this site. This is likely due to the fact that I am not in the habit of cruising that neighborhood in hopes of somehow seeing your small notice in time to respond to spraying sludge/"biosolids" beside my DOWN HILL property. Does the mail system not work in these matters? Or are such applications done this way on purpose in order to quickly approve a site and bypass any meaningful public input?

Respectfully submitted,

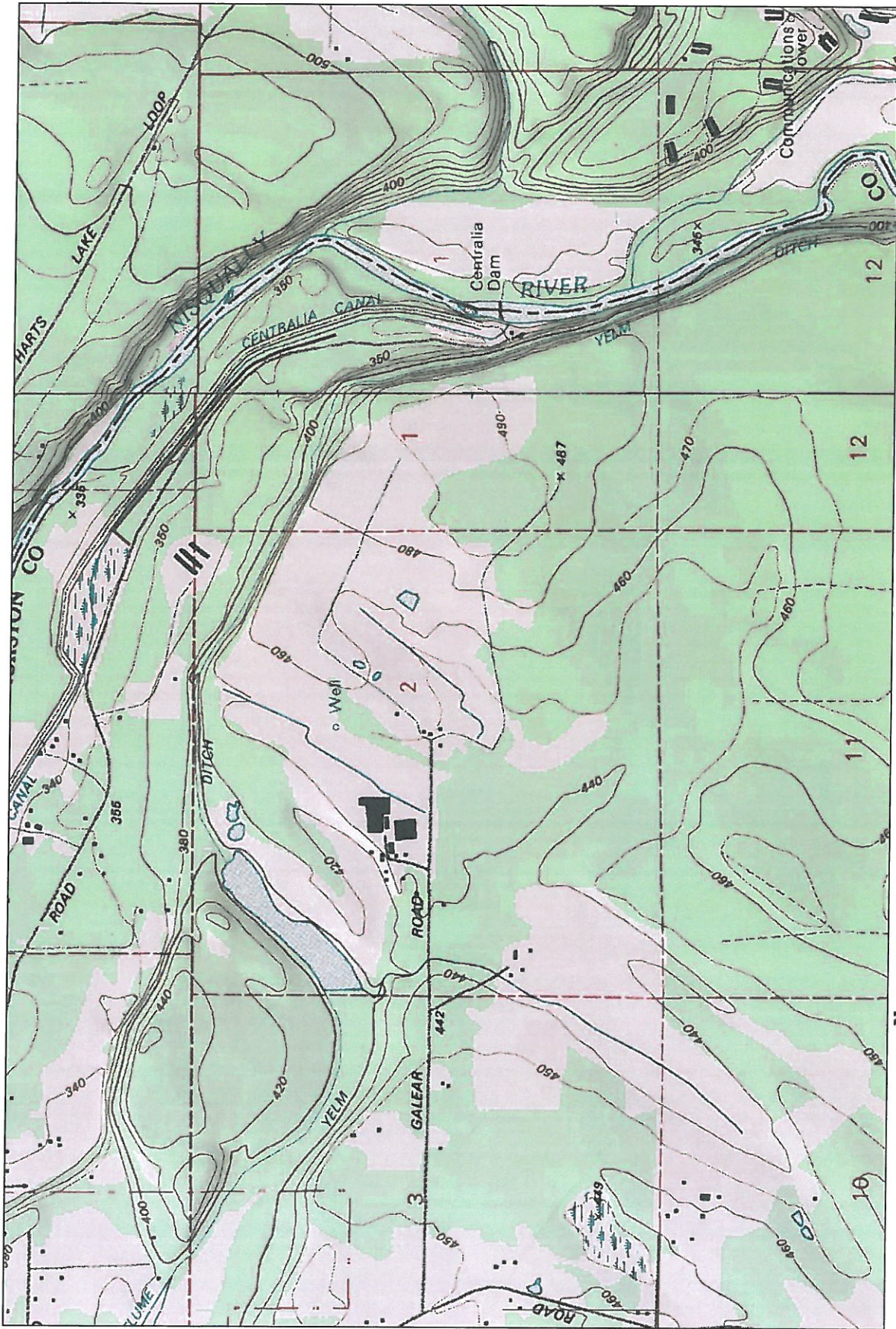


A handwritten signature in blue ink, appearing to read "James E. Brigham".

02-07-19

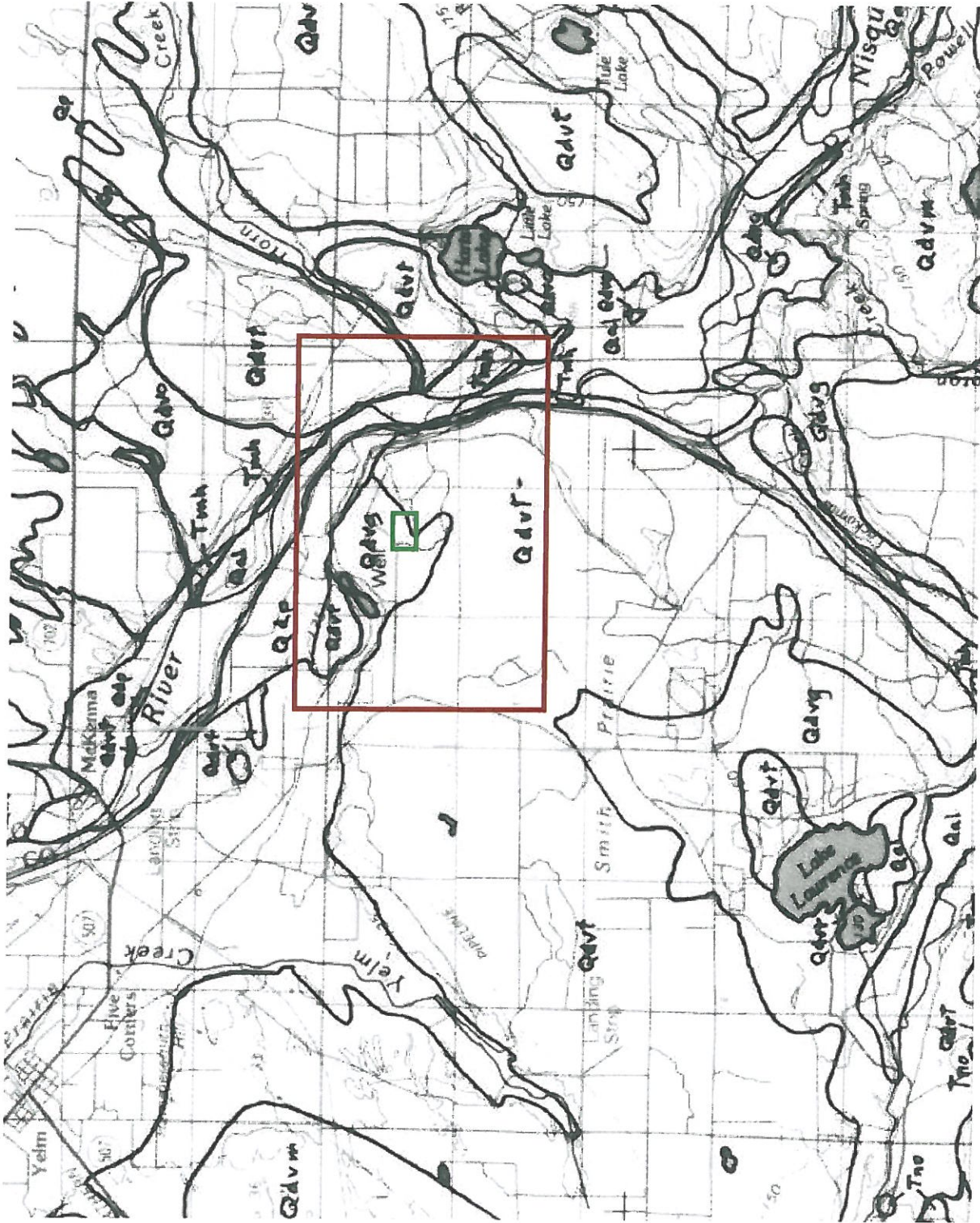
James E. Brigham, P.E. G.E.
Senior Principal Engineer

Attachments: *United States Geological Survey (USGS) Topo Map*
Portion of Washington State Department of Natural Resources (DNR) Geologic Map of
the Area



Map provided by MyTopo.com





- Qdvg – Vashon outwash gravel
- Qdvt – Vashon till
- Tmh – Mashel Formation
- Qdp – Pre-Fraser Drift, undifferentiated
- Qal - Alluvium
- Topo boundary
- Site boundary