



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

1250 W Alder St • Union Gap, WA 98903-0009 • (509) 575-2490

April 21, 2020

Piper Roelen
Landau Associates
130 2nd Avenue South
Edmonds, WA 98020

RE: Change to Conceptual Landfill Gas Barrier Design:

- **Site Name:** Interstate 82 Exit 33A Yakima City Landfill
- **Site Address:** 805 North 7th Street, Yakima
- **Facility/Site ID No.:** 1927
- **Cleanup Site ID No.:** 3853
- **Agreed Order:** DE 15861

Dear Piper Roelen:

The Department of Ecology (Ecology) has received your letter dated April 1, 2020 RE: *Approval of Change to Conceptual Landfill Gas Barrier Design*. That letter followed up on email correspondence on March 9, 2020, regarding the City's plans to change the conceptual approach for a landfill gas barrier associated with the Interim Action planned for the above-referenced site.

Ecology's email reply stated:

"Ecology TCP does not expect the landfill gas mitigation approach change to re-open the Interim Action Work Plan. Rather, Ecology expects that all components of the interim action, including methane mitigation must be in compliance with all applicable laws and regulations, and appropriate regulatory approvals should be obtained. Ecology TCP does not have expertise on landfill gas mitigation and must defer to appropriate and applicable regulatory agencies on this subject (e.g., Yakima Regional Clean Air Agency). - Ecology TCP should be copied on critical regulatory submittals to ensure our files are complete."

The April 1, 2020 letter from Landau made the following request:

"Based on the constructability issues related to the original conceptual designed presented in the IAWP (LFG membrane barrier) and the identification of a much more feasible, comparable, and regulatorily compliant LFG conceptual design (low permeability soil LFG



barrier), we request Ecology's approval to the City's modified engineering approach to LFG mitigation. Ecology's approval to this request means that Ecology agrees that the City is proceeding to construction in compliance with the IAWP. With Ecology's approval, the City will proceed with preparing engineering designs and specifications for the roadway project for the new LFG barrier design in lieu of the conceptual design originally presented in the IAWP. We request this approval in writing to properly document that this change is acceptable to Ecology."

The change was from a relatively impermeable synthetic liner installed at a downward angle away from the road to a vertical barrier wall that would be constructed of lower permeability (i.e. higher clay content) geological material. The barrier is intended to prevent lateral migration of landfill gas to the proposed roadway. Conceptually, landfill gas will tend to migrate in higher permeability geological media, and the barrier wall should have a permeability significantly lower than native strata. Hence, the barrier system would need to have a permeability lower than other site strata that could affect landfill gas migration. Lateral migration of landfill gas will only occur if materials above result in a capping effect. Therefore, a lateral barrier should be of lower permeability than the capping material to ensure that lateral migration to the roadway cannot occur.

Our above email response still stands. However, we can state that the proposed conceptual approach is not inconsistent with the approved Interim Action Work Plan. The suitability of the new conceptual approach will be determined based on compliance with all potentially applicable regulations, and meeting performance objectives, that is, preventing lateral migration of landfill gas.

Some additional considerations are as follows:

- Geological media are commonly heterogeneous. Not only the lower permeability of the material used should be demonstrated, but the consistency of the permeability should also be demonstrated.
- A lower permeability barrier is a function of the permeability of the placed media, and the placement and compaction of the material. Improper construction can result in air pockets that could be landfill gas migration conduits.

In Ecology's opinion, there is nothing precluding the City/Landau from proceeding with the design of the vertical landfill gas barrier system in lieu of the barrier system that was proposed in the IAWP.

Piper Roelen
Landau Associates
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Please feel free to call me anytime with any questions or concerns.

Sincerely,



Frank P. Winslow, LHG
Cleanup Site Manager
Toxics Cleanup Program
Central Regional Office

cc: Joan Davenport, City of Yakima