



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

November 10, 2011

Ron Walton
Clariant Corporation
4000 Monroe Rd
Charlotte, NC 28205-7706

Re: Variance request to Chapter 173-160 Washington Administrative Code (WAC) to construct 4 resource protection wells at the Clariant Corporation Facility, 404 Hendrickson Drive, Kalama, Washington within NW ¼ NW¼ Section 20, Township 06 North, Range 01 West W.M., Tax Parcel No. 6005401

Dear Mr. Walton:

This letter is in response to your request for a variance (dated October 28, 2011) from the *Minimum Standards for the Construction and Maintenance of Wells*, Chapter 173-160 WAC. Specifically, your request is to construct 6 resource protection wells at the Clariant facility using drilling materials that do not meet requirements of WAC 173-160-442 and also using a polymer that does not meet the requirements of WAC 173-160-444.

After an investigation, interview, and review of information available, a variance is hereby **granted** to Chapter 173-160 WAC.

The Clariant Corporation Facility (Clariant) is working within the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) and is remediating, including solid zinc compounds (zinc carbonate), in shallow groundwater. Drilling 6 horizontal wells will allow Clariant to comply with requirements from Ecology's VCP and recommendations from their environmental consultant for removal of zinc carbonate from groundwater. The use of a biodegradable polymer (CleanDrill) as a drilling fluid while installing the horizontal remediation well will allow Clariant to use air sparge cleanup techniques in attempting to remove zinc carbonate from groundwater. The alternative, using a bentonite-based drilling fluid while installing the horizontal wells, is impractical because those fluids may cause formation damage and reduced well efficiency.

In addition, as provided in the additional information of the variance request; recent studies show horizontal remediation systems are a "green" remediation technology, using less fuel than vertical systems to clean up sites. This factor is important to the sustainable development goals for the state. Additionally, horizontal wells will provide a greater level of effectiveness, compared to vertical wells.



Ecology's VCP site manager also agrees that the use of CleanDrill product in horizontal remediation wells will not further degrade water quality at the cleanup site. The VCP would rather allow the use of CleanDrill instead of using a bentonite-based drilling fluid, in order for air sparge remediation techniques to be effective in attempting to remove zinc carbonate from groundwater. Horizontal wells can uniformly distribute the calcium polysulfate solution in the large area requiring treatment. Additional rationales for using CleanDrill product are provided in your variance request.

The following are additional points for allowing the CleanDrill product while drilling the remediation wells at the Clariant facility:

- Six horizontal wells will only be drilled to 13 feet deep (vertically) and approximately 140 to 210 feet horizontally in the vadose zone (see attached site map).
- CleanDrill is biodegradable and non-toxic, compared to zinc carbonate or heavy metals that contaminate the shallow aquifer beneath the Clariant facility.
- There are no drinking water wells completed in the immediate vicinity of the Clariant site, within shallow aquifer along the Columbia River. All drinking water wells are upgradient of the Clariant facility.

Ecology will allow the 6 horizontal wells to be constructed with the CleanDrill product as soon as workers and equipment are available and using the method you have proposed. This variance is granted under the following conditions:

1. This variance is only valid for a period of 1 year after the date of mailing from Ecology. After that time you must apply for a new variance, there may be additional requirements at that time.
2. All well construction shall be performed by a licensed driller as set forth by WAC 173-162 and RCW 18.104.
3. A notice of intent to construct all 6 resource protection wells must be filed and appropriate fees paid in accordance with WAC 173-160-420.
4. During the drilling of the 6 remediation horizontal wells all drilling fluids must be managed to prevent the spread of contamination throughout the site. Drilling fluids must be contained within an approved area. Contact the Ecology's VCP site manager for details.
5. The horizontal wells (remediation wells) must be completed within only the uppermost water bearing zone (shallow aquifer).
6. The horizontal wells (remediation wells) shall not penetrate any low-permeability layer (i.e. silt or clay confining unit).
7. The use of CleanDrill is allowed while constructing 6 horizontal remediation at the Clariant facility. Considerations of any other remediation wells or vapor extraction wells that require the use CleanDrill product at the Clariant facility require a separate variance request.

8. Groundwater from the nearby existing vertical groundwater monitoring wells must be sampled upon completion of all 6 wells. Groundwater samples must be collected in accordance with the Model Toxics Control Act (MTCA) and all ongoing site characterization standards. The results will be provided to Ecology. Contact the Ecology's VCP site manager for a list of analytes required. At any point after each remediation wells are completed, any changes in groundwater flow direction or groundwater chemistry must be reported immediately to the Ecology's VCP site manager for further evaluation.
9. Disposal of all drilling fluids, bentonite-based or Clean-Drill based, must be at an approved disposal facility, contact the Ecology's VCP site manager for details. Receipts for disposal must be submitted to Ecology at the completion of the drilling operations.
10. All resource protection wells must be tagged in accordance with WAC 173-160-420 (5) (a).
11. The driller must submit *Resource Protection Well Reports* describing the construction of the wells to Ecology (Southwest Regional office) within 30 days after completion of the work. **Attach a copy of this variance to each well report.**
12. When each remediation wells are no longer necessary for project work at this site, the property owner must decommission the wells using a method approved, in advance, by Ecology. If decommissioning cannot meet the minimum requirements (WAC 173-160-460), a separate variance is required.
13. With the exception of the provisions set forth (above) in this variance, all federal, state, and local requirements shall apply.
14. The driller must inform Ecology (John Pearch, 360-407-0297) two business days before any construction work begins. The driller must make the site accessible to Mr. Pearch to inspect any and/or all construction work.

YOUR RIGHT TO APPEAL

You have a right to appeal this Variance to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Variance. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Variance:

- File your appeal and a copy of this Variance with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Variance on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

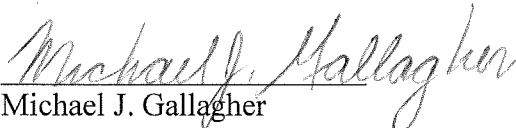
You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

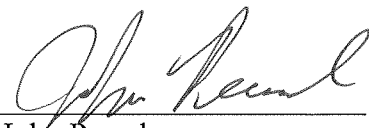
Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501	Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903

For additional information visit the Environmental Hearings Office Website:
<http://www.eho.wa.gov>. To find laws and agency rules visit the Washington State Legislature
Website: <http://www.l.leg.wa.gov/CodeReviser>.

SIGNATURE


Michael J. Gallagher
Section Manager
Water Resources Program

11/10/11
Date


John Pearch
Licensed Hydrogeologist (#1410)
Well Construction Coordinator
jope461@ecy.wa.gov

11-10-11
Date

BY CERTIFIED MAIL: 7010 1670 0002 4158 2392

cc: William E. Lum, II (Ecology)
Eugene Radcliff, (TCP-Ecology)
James Doesburg, Directed Technologies Drilling
Steven Hart, PG, Hart & Hickman, PC