



Stantec Consulting Services Inc.  
3325 S. Timberline Road, 2<sup>nd</sup> Floor, Fort Collins, CO 80525

**CROOK COUNTY**  
**SEP 08 2021**  
**PLANNING DEPT**

September 8, 2021  
File: 227702185

## Exhibit

**33**

**Crook County Planning Commission  
Crook County Community Development  
300 NE 3<sup>rd</sup> Street, Room 12  
Prineville, OR 97754**

Dear Commissioners,

**Reference: In Support of Knife River’s Comprehensive Plan Amendment request and Conditional Use Permit request, Vanier Property  
Record #s 217-21-000436-PLNG & 217-21-000573-PLNG**

Wenck now part of Stantec (Stantec) offers the following comments in response to the rebuttals submitted by various opponents since the continuation hearing on August 25, 2021, regarding the hydrogeology, water quality, and agronomy of the Vanier Property. Please accept this rebuttal of testimony to address the issues raised by the opposition.

### **Hydrogeologic Considerations:**

- Knife River anticipates groundwater will be encountered when mining at Vanier and expects that the amount of groundwater will vary between mine cells. Mine cell dewatering is proposed to not only facilitate mining but also successful reclamation. The intent of using recharge trenches is to ensure that the groundwater removed from the mining cell (by dewatering) is returned to the aquifer downgradient from the mining site and therefore ensure no impact to surrounding springs and shallow wells.
- All recharge trenches will be constructed by stripping overburden to expose the underlying sand and gravel below; no new material will be brought into the recharge trenches. This approach to recharge trench construction is consistent with the approach mentioned on page 96 of the Conditional Use Permit application or page 9.1 of Stantec’s Hydrogeologic Characterization report.
- The recharge trenches will be completed above the water table and groundwater removed from the aquifer in an upgradient mine cell will be replaced into the aquifer downgradient.
- The aquifer downgradient of the active mining area and downgradient of the recharge trench will be monitored. Knife River will construct monitoring wells, which are completed in the shallow aquifer and monitor the effectiveness of the recharge trench. Knife River

**Reference:** In Support of Knife River's Comprehensive Plan Amendment request and Conditional Use Permit request, Vanier Property Record #s 217-21-000436-PLNG & 217-21-000573-PLNG

and several other aggregate companies within Oregon have successfully used recharge trenches and this is "known technology".

- Knife River accepts all of the conditions of their proposed "Groundwater Guaranty." They propose to modify Item C on page 3 of Exhibit 24 as follows: "The Operator does not make any representations as to the current or past quality or quantity of the water available to the wells or its suitability or legality for domestic or other use. The well owners or users retain responsibility for compliance with existing or future water standards or requirements except to the extent that the Operator's actions have caused those standards or requirements to be violated."
- The map illustrating recharge trench and monitoring well locations on page 1 of Exhibit 24 shall replace the map illustrating the same on page 41 (Figure 4 of the Stantec Hydrogeologic Characterization Report) of the Comprehensive Plan Amendment and on page 8 of Exhibit 14. Recharge trenches will be placed strategically to protect downgradient shallow aquifer wells and springs.
- As noted on page 2 of Exhibit 26, groundwater will continue to flow through the area once mining is complete. It is expected that unmined sand and gravel in the shallow aquifer adjacent to the mine will provide a preferred groundwater flow path. Groundwater will still flow through the overburden material backfilled at the mine, but at a reduced rate given its lower permeability.

### **Water Quality Considerations:**

- Knife River is committed to baseline testing of the five springs and wells identified on page 2 of Exhibit 24. The baseline data will be collected prior to mining the Vanier property. Baseline testing will consist of water level monitoring for the wells and discharge measurements of springflow as appropriate. Baseline water quality testing of these wells and springs will consist of GRO, DRO, turbidity, total dissolved solids, iron, manganese, pH, conductivity, and temperature.
- Groundwater removed from the mine cell and placed into the recharge trench will be "clean". Knife River will monitor water levels continuously and water quality quarterly in monitoring wells onsite to ensure compliance with their commitment to place groundwater back into the shallow aquifer. Water quality testing of these wells will consist of GRO, DRO, turbidity, total dissolved solids, iron, manganese, pH, conductivity, and temperature. No change to the quality of water filtration is expected.

### **Agricultural Management and Site Reclamation:**

During the August 25<sup>th</sup> Crook County P&Z hearing continuation followed by subsequent submittals, the public raised numerous concerns over the agricultural productivity of the land

**Reference: In Support of Knife River's Comprehensive Plan Amendment request and Conditional Use Permit request, Vanier Property Record #s 217-21-000436-PLNG & 217-21-000573-PLNG**

disturbed by Knife River's mining operation and reclaimed as part of the DOGAMI permit. There was discussion about the Woodward property and 30+ acres of "pig weed". Mr. Zimmerlee, the tenant farmer, has raised additional concerns over the Vanier property and has noted that the land can only be returned to productive use following a tremendous application of fertilizer. A number of misstatements were made over the course of the hearing and unsupported data has been presented with Mr. Zimmerlee's agronomic submittal.

Stantec has testified that successful mine land reclamation has taken place throughout Oregon and I, Mr. Lidstone, have personally testified that I have been involved in successful mine land reclamation in not only Oregon but throughout the United States. Such reclamation includes not only reclamation for wildlife habitat but also agriculture. The Oregon Department of Geology and Mineral Industries (DOGAMI) Mine Land Regulation and Reclamation (MLRR) governs aggregate mining throughout the State. MLRR employs talented and educated agronomists, geologists, soil scientists, biologists and those individuals are responsible for the regulation of the mining industry and even more important to this hearing, these same individuals regulate successful reclamation. When an applicant presents a mine permit application it includes a reclamation plan. When the mining company does not own the surface, that reclamation plan must be signed off and approved by the landowner. Mr. Woodward signed off on the Knife River reclamation plan that included his property. Mr. Vanier will have the same opportunity to review the Knife River reclamation plan. As part of the permit review and approval process, Mr. Vanier will need to approve the Knife River reclamation plan that will govern his property. DOGAMI will require that Knife River post a reclamation bond (surety bond) that will guarantee to the State of Oregon that there will be sufficient money available to completely reclaim the land surface should Knife River default on the property. Knife River has never defaulted on any reclamation bond in its history.

As Stantec testified on August 25<sup>th</sup> and with respect to the Vanier property, Knife River has committed to handle topsoil separately from overburden (or subsoil). Based on the seven test pit logs, Knife River will be removing approximately 10 to 15 feet of topsoil and overburden at the Vanier property. Within that 10 to 15 feet, the topsoil thickness will range from 2 to 4 feet and its average sitewide will be approximately 2 feet. The two agronomic materials (topsoil and subsoil/overburden) will be handled individually/discretely, both in stockpile and in placement.

The initial boxcut (mine cell) will be stripped and all surficial materials will be placed in berms. These berms will consist of overburden dressed with 12 to 15 inches of topsoil. After the topsoil is placed, it will be hydroseeded at the first seeding window (either Fall or Spring). Generally, Knife River utilizes a quick growing annual (rye, regreen or barley) balanced with a perennial seed mix to stabilize the surface. DOGAMI and the landowner generally direct the selection of the perennial seed mix. The berms will remain for the life of the mine and will be used in the reclamation of the final mining cell.

Following the construction of the berms, all remaining topsoil and overburden will be directly placed in a "mined out" cell and reclamation will be completed in a contemporaneous fashion.

**Reference:** In Support of Knife River's Comprehensive Plan Amendment request and Conditional Use Permit request, Vanier Property Record #s 217-21-000436-PLNG & 217-21-000573-PLNG

Mine Cell 1 will be backfilled with (in order) overburden stripped from Mine Cell 2, followed by the placement of approximately 2 feet of topsoil, which has also been removed from Mine Cell 2. Dewatering will continue during backfilling, and unlike Mr. Zimmerlee's photos, backfill will not be placed in deep or standing water. Once the overburden is placed, the uppermost overburden lift will be ripped and disked before placement of the topsoil. This will eliminate compaction. Topsoil will then be placed directly on the overburden and disked. If outside the seeding window this roughened surface will be left unseeded for up to two months but will be protected from wind erosion by its topographic position. Once the seeding window is achieved, the previously placed topsoil will be ripped, disked and seeded in that order and over a 36-hour period. Generally, the reclamation site will be drill seeded, whereas other disturbed areas may be hydroseeded. The topsoil that will be used in reclamation will be the same topsoil that was stripped from the adjacent cell and directly placed on the reclamation surface. This topsoil will not lose its organic matter or fertility since it will be handled in one operation-stripping and direct placement.

Knife River will formalize their agreement with the landowner. Knife River proposes to complete all reclamation as described above and in a contemporaneous fashion. They will seed all reclamation surfaces with an annual quick growing cover crop (rye, barley or regreen) and thereby protect the reclamation surface. The farmer (Mr. Vanier's assign) will then disk in the cover crop during the next year and plant with hay or alfalfa or the crop of the landowner's choice. With respect to all other "barren surfaces", the DOGAMI permit conditions will require that all barren surfaces (unreclaimed areas), shall be hydroseeded in the Fall of the year.

As noted in the March 2021 Stantec Hydrogeologic Characterization report, which was submitted as part of Knife River's Conditional Use Application to Crook County, reclamation scheduling is important such that the land surface is backfilled and topsoiled in time to take advantage of either fall or spring seeding window. Because sodium and SAR levels are low, Knife River is not concerned with the upward movement of salts. Knife River is not importing any materials and is only using topsoil and subsoil generated from the Vanier property itself. With that said, Knife River disagrees with the contention that these soils require large volumes of fertilizer to be productive. The Knife River reclamation goal is to achieve equal or better hayland production. The final ground surface will be close to the recovery elevation of the groundwater and there will be a certain degree of subirrigation. Clearly because of the nature of the subsoil, these soils will require less irrigation than before, and should be acceptable for growing hay and similar forage crops.

### **Summary:**

In summary, Stantec anticipates there will be no impact to groundwater quantity or quality from Knife River's operation during or following the completion of mining and reclamation. This expectation is based on the following: (1) during mining, groundwater pulled from the shallow aquifer of a mined cell will be placed into a downgradient recharge trench; this will ensure groundwater availability to neighboring wells and springs; (2) groundwater quality will be

Reference: In Support of Knife River's Comprehensive Plan Amendment request and Conditional Use Permit request, Vanier Property Record #s 217-21-000436-PLNG & 217-21-000573-PLNG

monitored for mining related impacts; and (3) the natural filtering characteristics of the un-mined gravels will provide additional protection to all users. Following the completion of mining, groundwater movement may exhibit local changes in the area where sand and gravel was removed, but local area shallow water wells will not be affected. Knife River has proposed a practical and transparent monitoring program to ensure that no impact will occur. Furthermore, Knife River is also offering a "Groundwater Guarantee" so that neighboring residents can continue to operate their homes and businesses without interruption.

Knife River has proposed a mine and reclamation plan that will return Mr. Vanier's property to productive hay meadow. Knife River has proposed contemporaneous reclamation such that nearly all topsoil is directly replaced into the cell previously mined. The only exception to contemporaneous reclamation will be the construction of berms, which will consist of overburden and topsoil. These berms will remain in place for the life of the mine and will serve as backfill and reclamation materials for the final mine cell.

The above conclusions are based on extensive scientific analysis contained in the record. These are exactly the kind of "reasonable and practicable measures" encouraged by the Goal 5 rule.

For Stantec Consulting Services Inc.

Sincerely,

Mark E. Stacy  
Senior Hydrogeologist  
Phone: 970-893-4812  
Mark.stacy@stantec.com



Christopher D. Lidstone  
Principal  
Phone: 970-420-5257  
Christopher.lidstone@stantec.com