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November 29, 2012

VIA EMAIL - HARD COPY TO FOLLOW

Office of Environmental Assessment
Attention: Carol Harrison
U.S. EPA, Region 10
1200 Sixth Avenue, Suite 900
Mail Code: OEA-095
Seattle, WA 98101
R10YVNitrate@epa.gov

Re: Comments to EPA Document, *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington (September 2012)*

To Whom It May Concern:

Our clients, Cow Palace LLC, Bill Dolsen, Adam Dolsen, George DeRuyter and Son Dairy, LLC, D&A Dairy, George DeRuyter, Dan DeRuyter, Liberty Dairy, LLC, Henry Bosma Dairy, Henry Bosma, and Hank Bosma (collectively "the dairies") respectfully submit the following comments on the EPA document entitled, *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington (September 2012)* (the "EPA document").

Our review of the EPA document forces us to conclude that its significant shortcomings make it a particularly poor basis for making policy decisions. We caution EPA, and others, from drawing conclusions from work that has not been the subject of a rigorous scientific peer review or had the benefit of a transparent analysis. The remainder of our comments and exhibits describe in greater detail many our concerns with the EPA document.

The dairies remain fully committed to protecting drinking water. We wish to continue to work collaboratively with EPA to identify and implement strategies to protect drinking water in the Yakima Valley so that we, our neighbors, and the environment can all benefit.

The dairies are family farms in the Yakima Valley that have been in the dairy business for decades. All of the dairies have been passed down from generation to generation. They provide jobs and wages for hundreds of employees at a time when jobs are at a premium in the Yakima Valley. The income that the dairies' employees receive allows them to feed and care for

their families. These dairies provide revenue for many other businesses, vendors, and suppliers in the Yakima Valley. And, all of these dairies are active participants in the local community, regularly donating to charities and other community-sponsored events. Simply stated, these dairies are not run by mega-corporations from a distant location. These are family farms run by families who live and work in the Yakima Valley. They drink the same water as the other members of the community, which is why they are firmly committed to preserving and protecting the quality of the drinking water in the Yakima Valley.

All of the dairies operate with current Dairy Nutrient Management Plans that were prepared by the local Conservation District in accordance with Washington's Dairy Nutrient Management Act,[1] which was enacted to provide for management of dairy nutrients in a way that is protective of ground and surface waters.[2] All of the dairies have been regularly and rigorously inspected by the Washington State Department of Agriculture and are in compliance with their Nutrient Management Plans and the sampling requirements contained in those Plans. George DeRuyter & Sons Dairy has the only dairy digester in Eastern Washington and all of the dairies are currently involved in evaluating other digester projects. Both EPA and the USDA have publicly supported and promoted the use of dairy digester technology. All of these important facts are omitted from the EPA document.

As explained further in our comments below, EPA's document relies upon fundamentally flawed "science." As a result, it contains so many inaccuracies that it proffers fundamentally flawed conclusions.[3] Certainly, this is not a document from which policy should be made, and it is not a document that should form the basis for enforcement action.[4] Moreover, the document lacks transparency on a number of fronts. First, EPA failed to follow its own peer review policy. Second, the data was not shared with the public in any meaningful way before the document was "finalized." Third, the timeframe provided for comment is wholly inadequate. While EPA has characterized this as a "public input" period, we expect and request that our comments and the attached exhibits will become part of the administrative record. We also expect that these comments will be fully considered by the agency prior to taking any action based on the EPA document.

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[1] RCW 90.64

[2] RCW 90.64.005

[3] We understand other interested parties have expressed similar and serious concerns with EPA's document. For example, we note and share the concerns raised by the Yakama Nation in its comments on EPA's document. *See* Yakama Nation Letter and Technical Review (Nov. 21, 2012) (detailing, among other things, EPA's failure to collect well data, EPA's biased focus on the dairies, and the questionable results of EPA's testing for monensin.)

[4] "The degree of uncertainties raised in the report is limiting as to its use for regulatory purposes." (WSDA at p. 4)

The dairies remain fully committed to protecting drinking water. Their action in voluntarily providing reverse osmosis filters to residents in the Yakima Valley—despite the many infirmities in the EPA document—is evidence of this commitment. Our comments are offered to provide EPA with information that we trust will be valuable to the agency as we continue to work collaboratively to identify reasonable practices and actions to protect drinking water in the Yakima Valley.

Attached to this comment letter are the following Technical Memoranda, which are incorporated by reference:

- **Exhibit "A":** Intertox Technical Memorandum to U.S. EPA, Region 10, dated November 27, 2012 entitled, Comments on *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley,* released by U.S. EPA, September 2012 (hereafter Intertox);
- **Exhibit "B":** Arcadis Memorandum and Appendix dated November 28, 2012 entitled, Comments to EPA Report *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley* (EPA Report EPA-910-4-12-003) dated September 2012 (hereafter Arcadis);
- **Exhibit "C":** Glorieta Geoscience, Inc., *Preliminary Technical Evaluation of Three Reports by U.S. Environmental Protection Agency Region 10 on Nitrate in Water Wells, Yakima River Basin, Yakima County, Washington,* dated November 20, 2012 (hereafter Glorieta)
- **Exhibit "D":** HDR Memorandum to Hugh O'Riordan, dated November 23, 2012, entitled *Preliminary Review of EPA-910-R-12-003* (hereafter HDR)
- **Exhibit "E":** Letter from Washington State Department of Agriculture to Thomas Eaton dated November 9, 2012 (hereafter WSDA)

The following comments are offered to merely highlight some of the flaws and deficiencies in EPA's document – many more are explained in detail in Exhibits A-E.

I. EPA's Data Collection, Testing, and Analysis Were Fatally Flawed

The conclusions in EPA's document are based on data that EPA *admits* is flawed. Moreover, EPA failed to follow proper data collection methodology, comply with correct testing and analysis procedures, and conform to other critically important aspects of the scientific process. For instance:

- EPA concludes that the dairies are the source of nitrate in groundwater, based on groundwater flow. However, to justify these conclusions, EPA would be required to have in-depth and site-specific knowledge of aquifer properties, such as thickness, flow direction, and hydraulic conductivity. EPA would also need to know the localized effects of ditches, drains and production wells on groundwater flow. EPA collected none of this information. Consequently, the sampling that EPA conducted was not even adequate to

determine whether the upgradient and downgradient samples that it took are part of the same aquifer. In other words, EPA did not have the groundwater monitoring data it needed from which to draw its conclusions about nitrate contributions to the groundwater. Accordingly, EPA's conclusions on the source of groundwater nitrate are without merit. (Intertox at pp. 10-12; Glorieta. at p. 5; Arcadis at p. 5)

- Water well samples were collected from existing wells and information on the depths and screened intervals of the wells is only known for approximately one-third of the wells that were sampled. (Arcadis at p. 2 and Attachment A)
- The document states that certain samples show the dairies as a source of high nitrates. Yet, the samples were "grab" samples, not well-based samples monitored over a period of time pursuant to established protocols. This means that the results showed one snapshot in time, which is not a scientifically reliable basis upon which to reach conclusions about environmental conditions around the dairies. (Intertox at p. 13)
- The document contains an analysis of water quality, however, much of the analysis had to be extrapolated from the limited samples that even EPA acknowledges are unreliable. (Intertox at p. 17-21; Glorieta. at pp. 10-13. ; Arcadis at p. 4 and 6-7)
- EPA alleges that the dairies are the source of certain pharmaceutical contaminants, but the background samples taken were deficient. For instance, some of these background samples contained at least one of the pharmaceuticals for which EPA was testing. Moreover, no analysis was made regarding adsorption or degradation of organic compounds, particularly veterinary pharmaceuticals and hormones. (Intertox at pp. 35-36; Arcadis at p. 4)
- While EPA states that it examined septic sources of nitrates, it actually did no testing of septic tanks or drainfields, but instead relied on sewage treatment plant influent as a "surrogate." Composition of sewage treatment plant influent fluctuates from weekdays to weekends, seasonally in areas of specific tourism, and throughout a given day and is an inappropriate surrogate for sampling septic tanks and drainfields. (Intertox at pp. 40-42; Glorieta at p. 14)
- Significant limitations and uncertainties exist in the document regarding investigation and analysis of nitrate contribution from onsite septic tanks to drinking water wells. These uncertainties are related to lack of construction information for the drinking water wells, location and condition of the septic systems, and quantity and quality of the effluent produced by the septic systems. (Arcadis at p. 4)
- The dairies and other sites are located in a matrix of farming and septic systems, which makes source tracking impossible without detailed knowledge of the aquifer and well properties. (Glorieta at pp. 8, 14)
- EPA did not sample all of the sources in the study area, but instead focused almost exclusively on dairies. There are thousands of acres of irrigated agricultural fields upgradient from the dairies which are fertilized with synthetic fertilizer, yet few of these sources were sampled. Moreover, the document does not even mention the historical farming and fertilizer application that occurred for almost a century in the very area where the dairies and wells are located. Indeed, the Washington State Department of

Agriculture supplied EPA with its GIS layer containing accurate cropping information in the Yakima Valley, but EPA ignored that information. (WSDA at p. 3) Failing to account for these historical and current land uses results in inaccurate conclusions with regard to the sources of nitrate. (Intertox at pp. 37-40).

- EPA's lagoon leakage estimates are inaccurate and misleading. Numerous studies have demonstrated that seal formation occurs in dairy lagoons. Further, EPA failed to even acknowledge a condition known as coupled nitrification-denitrification (CND) that occurs under lagoons and results in a significant removal of nitrogen. (HDR at p. 1).

II. EPA Failed to Comply with Applicable Policies, Procedures, and Guidance

EPA's document does not comply with scientifically accepted standards, protocols, procedures, and guidance, including EPA's own policies.

A. EPA's Document Goes Beyond the Study Design Presented in the Phase I Quality Assurance Protect Plan (QAPP)

The stated purpose of EPA's document extends beyond and is not supported by the study design as presented in the project's Quality Assurance Project Plans. Any conclusions regarding contribution of nitrate from various human practices/land uses to groundwater are not supported by the study design and lead to untenable assertions regarding contribution of nitrate to groundwater from specific sources. (Arcadis at p. 2 and Attachment A at pp. 1-2; WSDA at p. 2)

B. Data Collection and Assessment Was Procedurally Defective

- Well sampling locations were selected in a biased manner because only those with the highest nitrate concentrations measured during the Phase 2 investigation were selected for monitoring in Phase 3. This bias towards higher concentrations can result in invalid conclusions about the extent of contamination. (Intertox at p. 7)
- Water samples were grab samples reflecting concentrations at a single point in time, which failed to account for fluctuating groundwater conditions and seasonal variations in some of the analytes such as soil fertilizer and pesticides. (Intertox at p. 13)
- EPA's soil sampling methodology of collecting samples from only 1" below the surface does not follow any accepted NRCS or land grant university soil sampling standard for either agronomic or environmental investigations. (Glorieta at p. 6; Intertox at p. 15; Arcadis at p. 3)
- A substantial percentage of the analytical data are "J qualified" – i.e., reported concentrations are estimated, which is not appropriate without case-by-case evaluation. (Intertox at pp. 17-21)

- EPA had difficulty analyzing both trace organics and wastewater pharmaceuticals and indicated that the results of these analyses should only be considered screening level and not fully usable for quantitative evaluations. The lack of quality data for these parameters significantly limits the utility of the investigation. (Intertox at pp. 17-21)
- EPA's Water Science lab reported that monensin and lincomycin were detected in the well water field blank sample, such that any detects of these analytes in well water samples should be qualified. (Intertox at p. 35)
- EPA did not meet preservation requirements for approximately one-third of the nitrate analyses, which could bias sample results. (Intertox at pp. 35-36)
- EPA did not collect field duplicate samples for well water or lagoon samples, so it could not document the reproducibility (precision) of the sampling and analytical methods applied to the samples. This reduces confidence in the quality of the well water data. (Intertox at pp. 21-22)
- Detection limits for some analytes, especially wastewater pharmaceuticals, appear elevated. Consequently, it is inappropriate to conclude that human waste did not contribute to concentrations in corresponding wells, because lack of detection in the human waste samples could be due simply to elevated detection limits. (Intertox at p. 22)
- Nitrate isotopic ratios for synthetic fertilizer and animal waste sources can vary beyond the ranges assumed by EPA, and the isotopic methodology used cannot distinguish between human and other animal sources. (Intertox at pp. 24-31)

C. EPA's Peer Review Process Was Unsound

Regarding the peer review process, EPA did not conduct an appropriately rigorous peer review in accordance with the spirit of the peer review process as described in EPA's own guidance. Specifically:

- EPA's election of peer reviewers was not transparent.
- All peer reviewers were U.S. Government employees.
- Three of the five peer reviewers work for EPA.
- One of the reviewers actually works in Region 10.
- Aside from one peer reviewer, most of the peer review comments were extremely brief and not adequately rigorous to provide EPA with sufficient information on the quality of the science presented in the document. (Intertox at pp. 42-48).

D. EPA's Public Comment Process Is Inappropriate

EPA has curiously characterized this is a "public input" period, although it has stated that it will accept public comments. Given this unusual ambiguity, we are concerned that there is no guarantee that EPA will even review these comments. There is no docket number to be able to

review the Administrative Record. The short comment period, along with EPA's lack of commitment as to how or whether EPA will even consider the "input," is at odds with EPA's purported goals of making sure the document is scientifically supported and defensible.

III. EPA's Conclusions are Flawed

After conducting a technical review of the EPA document, Intertox concludes that there is insufficient information to determine with scientific certainty whether and how much any of the sources could have contributed to contamination in downgradient wells -- no particular location can be implicated as a source of any of the contaminants measured. (Intertox at p. 4). The dairies could not agree more. The EPA document contains significant and serious uncertainties and limitations as noted above and in the attached Exhibits, yet the document presents definitive conclusions regarding nitrate contributions from the dairies, some of which are highlighted below:

- The selection of wells and thus the areal and vertical limits of the hydrogeological investigation were "targets of opportunity" and not selected based on hydraulic, geologic, or hydrogeologic conditions of the study area. Limited information regarding well construction or completion depth does not allow for consistent or accurate comparison of groundwater quality or chemistry data within the underlying aquifer or aquifers. While it is acceptable to use regional groundwater flow directions to evaluate and describe general conditions, this information cannot be used to evaluate or assign contribution from potential specific sources, particularly when local groundwater conditions can be affected by specific conditions such as canal infiltration, irrigation, and withdrawal from groundwater wells. (Arcadis at p. 3)
- Water well samples were collected only from existing wells and well head and surrounding conditions were not fully evaluated. Also, water samples were collected from taps within residences. However, there can be significant changes in water quality between the groundwater-bearing formation and the tap in a residential water system. (Arcadis at p. 7)
- Unknown groundwater flow and direction in the local vicinity of a well and potential source areas results in a confounding condition when attempting to ascribe sources of contamination and their associated contribution. This is a significant issue and has an impact on all conclusions that have been developed based on data interpretations and inferences included in the EPA report. (Arcadis at p. 8)
- Significant limitations exist with respect to the nitrate budget determined via soil sampling from dairy fields. The collection depth of the samples is more indicative of field application amounts than nitrate concentrations passing through and beyond the root/uptake zone. These concentrations should not be used to calculate or extrapolate a nitrate application infiltration budget for the area as they are still subject to uptake by seasonal cropping. (Arcadis at p. 3)

- EPA's assertion that the dairies are the source of downgradient pesticides cannot be supported, because EPA could only estimate the results of testing for pesticides in the samples, and at least one pesticide was detected upgradient from the dairies. (Intertox at 34.)
- EPA's attribution of a trace organic (DEHP) in downgradient samples to the dairies is misplaced—the trace organic was also detected in upgradient samples, and the downgradient testing results are simply "screen" values. Moreover, this trace organic is commonly detected in human wastewater, which likely would be found in the septic systems located near EPA's sampling locations. (Intertox at p. 35)
- EPA's conclusion that the dairies are the source of veterinary pharmaceuticals is erroneous.
    - There are multiple sources of veterinary pharmaceuticals in the area for which EPA fails to account, and thus, the detections in EPA's samples cannot be attributed to the dairies. For instance, EPA neglects to mention that tetracycline is used on deciduous tree fruits, which surround the dairies. According to the annually revised WSU Tree Fruit Spray Guide, tetracycline is the recommended pesticide to control fire blight on apple and pear trees and to control bacterial spot on peach and nectarine trees. (Intertox at p. 33)
    - Specifically, the conclusion that the dairies are the source of monensin is questionable. Previously published work has indicated rapid degradation and a relatively short half-life for this veterinary pharmaceutical. *See* Carlson, J.C. and S.A. Mabury, 2006. Dissipation lenetics and mobility of chlortetracycline, tylosin, and monensin in an agricultural soil in Northumberland County, Ontario, Canada. Enviro. Toxicol. Chem. 25:1-10; Sassman, SA and L.S. Lee, 2007. Sorption and degradation in soils of veterinary ionophore antibiotics: Monensin and lasalocid. Environ. Toxicol. Chem. 26:1614-1621.
    - EPA's own laboratory notes many problems with the data it analyzed on veterinary pharmaceuticals, including that there is no established method for the compounds it was testing, and that it could not duplicate its results so as to satisfy EPA's own Information Quality Guidelines. (Glorieta at p. 13). Even if these poor quality pharmaceutical sample results are analyzed, no consistent trends were observed and, therefore, they do not identify the source(s) of nitrate in downgradient wells.
- The hormones detected in samples downgradient from the dairies cannot be attributed to the dairies—even EPA acknowledges that there is another source for testosterone, and the other samples were estimated. (Intertox at pp. 36-37)
- EPA's conclusion that the dairies contribute to barium concentrations downgradient is invalid—there is no evidence that barium is even used at the dairies. (Intertox at p. 37)
- The upgradient well at the dairies was the only well that had detectable levels of total coliform, suggesting that the aquifer in which it is screened is receiving bacteria from non-dairy sources. Put another way, the dairies cannot be the source of contaminants

found upgradient from their farms, but the EPA document fails to reconcile this fact with its other conclusions. (Glorieta at p. 10; Arcadis Attachment A at p. 15)

- EPA's isotopic data provides no ability to distinguish between human and dairy sources. (Glorieta at pp. 9-10; Arcadis at p. 9 and Attachment A at pp. 15, 24, 25). EPA's assumptions about isotopic ratios appear to be well outside of most of the recognized literature on the subject. (Intertox at pp. 25-31; Arcadis Attachment A at p. 25; Glorieta at pp. 9-10). There is insufficient information to justify the isotopic data break points and interpretation used for attributing source types. (Arcadis at p. 9) In addition, perchlorate data collected to augment the isotopic data does not appear to have been taken into consideration. (Arcadis Attachment A at p. 12) Moreover, atmospheric contributions can also vary outside of the range EPA assumed. (Intertox at p. 30). Additionally, the isotopic samples were taken from wells in an area where human waste is disposed (via septic). In other words, there is no way to determine whether the dairies or the septic are the source of nitrate in the well samples that were isotopically analyzed. (Glorieta at pp. 9-10). Perhaps as much as any other problem, the EPA document's treatment of this issue reflects an apparent desire to ignore scientific standards and reach a desired, pre-ordained, result.
- EPA acknowledges that the dairies' application of manure to its crop fields may be agronomically beneficial at proper rates, yet it never explains or accounts for the significant reduction of nitrogen that occurs as a result of application, due to volatilization, crop uptake, and exporting manure off-site. Instead, the document alleges without support that the dairies have over-applied nutrients to their crop fields. EPA provides no historical land use, nutrient application, soils, tissue samples, or crop production data to indicate that such over-application has occurred. (Intertox at pp. 37-40; Glorieta at p. 14).
- EPA's lagoon leakage estimates are inaccurate and misleading. Numerous studies have demonstrated that seal formation occurs in dairy lagoons. (HDR at pp. 1-2; WSDA at p. 3). Rather than rely upon the numerous studies that have documented seal formation, EPA exclusively relies on a single report by J.M. Ham (Trans ASAE Vol. 45(4): 983-992) to conclude that the dairies' lagoons are leaking. The Ham report is not only 10 years old but it is limited to data from Kansas. Indeed, Ham himself notes that his findings should only extend to the Great Plains. Moreover, of the 20 storage basins that Ham examined in his report, only one was a dairy lagoon, which was relatively new and had not yet had time to properly seal.

IV. Conclusion

The dairies remain fully committed to protecting drinking water in the Yakima Valley. The dairies also respect and share EPA's goal of protecting the environment. As evidenced by these comments, however, EPA's document contains too many fundamentally flawed conclusions based on too many scientific inaccuracies and false assumptions. Simply stated, the EPA document does not meet acceptable scientific standards, and should not serve as a

foundation for policy, let alone enforcement. We trust EPA will find these comments useful to the agency as we continue to work together to identify reasonable practices and actions to protect drinking water.

Very truly yours,

FOSTER PEPPER PLLC

Lori Terry Gregory
John Ray Nelson

Very truly yours,

PERKINS COIE

Patrick W. Ryan
Meredith Weinberg

Enclosures:
Exhibits A-E

cc: Dennis McClerran, Regional Administrator, Region 10, U.S. EPA (w/ enclosures)
U.S. Senator Patty Murray (w/ enclosures)
U.S. Senator Maria Cantwell (w/ enclosures)
U.S. Representative Doc Hastings (w/ enclosures)
Dan Newhouse, Director, Washington State Department of Agriculture (w/ enclosures)
Ted Sturdevant, Director, Washington State Department of Ecology (w/ enclosures)
Larry Elworth, U.S. EPA Chief Agricultural Counselor (w/ enclosures)
Steven P. Rowe, Senior Vice President and General Counsel, Darigold, Inc. (w/ enclosures)
Hugh O'Reardon, Givens Pursley, LLP (w/ enclosures)
Bill Dolsen (w/ enclosures)
Adam Dolsen (w/ enclosures)
George DeRuyter (w/ enclosures)
Dan DeRuyter (w/ enclosures)
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