

Ms. Chelsea Schnabel, Director  
City of North Bend Planning Department  
PO Box B  
835 California Avenue  
North Bend, OR 97459  
8 March 2019

Dear Ms. Schnabel

I submit additional comments regarding the Concurrent Land Use Applications for Pacific Connector Gas Pipeline commonly referred to as "Early Works Alignment" and referenced as City of North Bend File Nos. FP 2-18 and CBE 3-18.

The applicant has submitted information during the open record rebuttal period subsequent to the initial March 2019 public hearing. The following comments address information submitted to your office by the applicant that was not available at the time of the hearing.

Subsequent to submitting an initial application totaling over 200 pages, and following the March public hearing, the applicant submitted 2,926 additional pages of material in a transmittal dated 17 April 2019. Thus, the applicant submitted over ten times more material in rebuttal than was contained in the original application. This is overwhelming amount of material for a lay person to read and digest and comment on prior to an 8 May 2019 comment deadline! It is not clear to me when the 17 April submittal was made available for public review, but I can say that I was not aware of the additional material submitted by the applicant until May 7<sup>th</sup>, following a conversation I had with you. Needless to say, I have not had sufficient time to review the materials submitted by the applicant on 17 April. I would like to call your attention to the fact the multiple documents included in the 17 April submittal were dated prior to the hearing date and could have been included in the original application.

I believe the volume and extremely technical nature of the material submitted by the applicant to your office alone is beyond a reasonable standard for a public participation process. Further, the time provided to review these materials is likely to exceed the public participation goal outlined in Goal 1 of the Oregon Statewide land use planning framework. I ask you to also consider that the materials submitted to your office by this applicant are only a portion of the land use application materials presented for public comment by land use agencies in our area. Also at the eleventh hour, the same applicant has introduced thousands of pages of voluminous and highly technical documents into the public comment processes of numerous land use actions within the jurisdictions of the City of Coos Bay and Coos County planning departments. The hearings and public comment periods associated with each of these proposed land use actions involve deadlines that closely approximate and overlap the hearings schedules and comment deadlines issued by the City of North Bend. In aggregate, six or seven land use proposals associated with Jordan Cove Energy project are presently in review; The city of North Bend (two active requests) The City of Coos Bay (one active and one anticipated request), and Coos County (three active requests).

It is difficult for me to track the various stages of the City of North Bend Planning department's review schedule of this applicant's requests let alone the numerous other overlapping and changing schedules

ATTACHMENT AB

of the land use hearings and comment submittal/rebuttal/and surrebuttal processes in play with these other local jurisdictions. When the deadlines for public comment on the state and federal permit applications that are also in play for the Jordan Cove Project are also considered it is reasonable to say that the approach being used by this applicant to secure necessary authorizations and permits is responsible for a public participation miasma of legendary proportions that, in my view fails to acknowledge or honor the intent of Statewide land use planning Goal 1. I request that you call this to the attention of the applicant and to your peers in the land use departments at Coos County and the City of Coos Bay. I further request that you call this concern to the Oregon Department of Land Conservation and Development personnel involved in implementing and reviewing Goal 1 compliance as part of DLCD's Coastal Zone Management Program Federal Consistency review process.

I realize that your office has no control over the strategies or the actions of applicants seeking review and authorizations from your office and that you must confine your review to the ordinances and statutes that guide the operations of the City of North Bend. However, I contend that your office and the City of North Bend are compelled to uphold the intent of statewide land use planning Goal 1. I further contend that the volume, timing and technical nature of the materials submitted to your office by this applicant are not consistent with the intent of Statewide planning Goal 1 that you, as an agent of the city of North Bend, have an obligation to uphold. To that end, I request that the comment period be held open beyond the 8 May 2019 deadline in order for parties with standing to be given additional time to review the large volume of material submitted following the initial (March 2019) hearing related to this application.

I ask that you and the North Bend planning commission consider the comments that follow as an incomplete review of the portion of the applicant's materials that I was able to evaluate prior to the 8 May end of the open record/rebuttal period. I would like to have had an appropriate amount of time to review and comment on the entirety of the 2,926 pages of post hearing content provided by the applicant as well as the abundant comments provided by others who have taken the time to submit evidence in response to your department's public hearing of this application. However, in light of the 8 May deadline please accept the following incomplete comments in addition to those I have already provided.

I have focused my partial review on Exhibit 11 in the applicant's submittal dated 17 April 2019. Exhibit 11 is a 162 page technical document entitled "Revised Horizontal Directional Drilling Feasibility Evaluations for East and West Coos Bay" from GeoEngineers, Inc. dated April 12, 2019: This exhibit consists of feasibility reports for two HDD segments of the Pipeline under Coos Bay; the Coos Bay West HDD and the Coos Bay East HDD. Portions of both proposed HDD pipeline segments traverse properties within the jurisdiction of the City of North Bend.

At around a mile in length, the Coos Bay West HDD pipeline segment is the shortest of the two proposed under-bay HDD pipeline segments a portion of which falls within the boundaries of the City of North Bend. The proposed Coos Bay East HDD pipeline segment is nearly twice this length and a portion of it also falls within the NB city limits. I have previously submitted evidence to your agency and to other bodies reviewing this proposal to support a conclusion that installing the pipeline under the estuary

using the methods included in the permit request was unlikely to be feasible. Please consider the comments included in this transmittal in addition to comments I have previously provided to your office.

Oral testimony presented during the March 2019 public hearing held to discuss this application a number of commenters expressed concerns regarding water quality, soil erosion and turbidity. The Oregon Department of Environmental Quality recently made a ruling regarding the water quality conditions associated with the proposed Jordan Cove Energy project. I ask that this DEQ's permit decision letter and evaluation findings report be included in the record for this permit application. A copy of DEQ's decision letter can be accessed at the following location:

<https://www.oregon.gov/deq/FilterDocs/jcdeclearletter.pdf> A copy of the evaluation and findings report can be access at the following location: <https://www.oregon.gov/deq/FilterDocs/jcevalreport.pdf>

Thank you for this opportunity to comment. I hope that you will agree this project does not conform with the applicable land use ordinances and will reach a decision to deny this permit.

Sincerely

Michael Graybill  
63840 Fossil Point Road  
Coos Bay, OR 97420

Attachment: Comments of Michael Graybill regarding Exhibit 11

**Attachment # 1**

**8 March 2019**

**Comments of Michael Graybill regarding Exhibit 11 of a transmittal submitted to the North Bend Planning Commission dated 17 April 2019 by Mr. Seth J. King on behalf of Jordan Cove Energy LLC.**

**Comments related to the Coos Bay West HDD proposal**

As stated above an approximately half-mile long portion of the mile-long HDD pipeline route referred to as Coos Bay HDD West falls within the jurisdiction of the City of North Bend. The other (northerly) portion of this HDD segment falls within the jurisdiction of Coos County. I strongly encourage your office to coordinate with the Coos County Planning department so that this single construction element is treated in a consistent manner by both planning agencies. Similarly, only the westernmost portion of the HDD segment referred to as "Coos Bay HDD West" in this application falls within the city Limits of North Bend. The eastern portion of this 9,000 foot long HDD pipeline segment falls within the jurisdiction of Coos County. Please coordinate your evaluation and decision making process with the Coos County Planning department that is addressing the portions of the two HDD pipeline segments that lie outside of your jurisdiction but will be constructed as a single project.

Exhibit 11 indicates that a total of five sub surface sediment test borings were completed to support the conceptual feasibility analysis of the HDD west pipeline segment embodied by Exhibit 11. Three of the borings were completed within the City of North Bend and two of the borings were completed in Coos County.

Sub surface sediment Boring CBW-2 lies within the City of North Bend. It is described in a narrative form on page 2552 and is graphically depicted in figure 3 on page 2565 of the applicants 17 April submittal. The narrative description references sediment conditions at depths encountered below the ground surface. The ground surface elevation of the CBW-2 borehole appears to be approximately 25' below the reference datum (Figure 3 pg. 2565). Figure 3 also indicates the elevation (depth) of the HDD alignment for the Pacific Connector Pipeline nearest to the location of CBW-2 will be approximately 100' below reference datum. Thus, the proposed pipeline will have approximately 75 feet of sediment overlying it in the vicinity of CBW-2. The narrative description of CBW-2 on page 2552 suggests that sediments overlying the PCP in this vicinity might be expected to include a 15' thick layer of "medium dense, poorly graded sand and silt" and a 60' layer of "very dense sand and silt".

It is not clear to me how the applicant calculated the formation limit pressures outlined on Figure 3. Figure 3 suggests the formation limit pressures in the vicinity of CBW-2 are something between 300 and 400 psi. The estimated drilling pressure for the pilot hole in this vicinity is something between 110 and 125 psi. While a factor of 3-4 may seem like a reasonable margin of safety but I have no basis to understand the physical characteristics of the soils in the area to resist hydraulic loads. I encourage the City to consult with an engineer to confirm the findings presented by the applicant's geotechnical consultant.

The estimates of formation limit pressures vary erratically toward the southeastern (entry point) of the HDD East borehole (figure 3 pg. 2565). The highly variable estimates of the formation limit pressures

may be influenced in part by the presence of data from two sediment sample boreholes in this vicinity (GRI B-1 and GRI B-3) the It is not clear to me why the

GRI B-1 and GRI B-3 are situated approximately 500' apart from one another on the site referenced elsewhere by the applicant as the "APCO 1" (See Figure 2A Page 2563) Of the five test borings used to analyze the feasibility of the HDD east pipeline alignment, GRI B-1 and GRI B-3 are the closest together. GRI B-1 is situated approximately 400 feet south of the conceptual HDD alignment evaluated in Exhibit 11 and GRI B-3 is situated very close to the conceptual HDD alignment (see page 2594). It is reasonable then to compare the subsurface conditions between these borings to try to understand the nature of finer scale variability of the sub surface sediment environment.

GRI B-3 includes fill soils to a depth of 30' Recent alluvium from 30'-37' older alluvium consisting of medium dense to dense sand with silt from 37 to 55'.

Because the HDD profile is rapidly descending between stations 62+00 and 50+00, and because the sub surface sediment test boring GRI B-1 is situated 400' from the proposed pipeline route it is difficult to determine with confidence what the formation limit pressures are likely to be in the vicinity of the borehole as it descends through the mix of soil types to the horizontal tangent depth.

Appendix B of Exhibit 11 is entitled "HDD design methodology and conceptual drawing." Under a heading entitled "Hydraulic Fracture Calculations" (page 2592) the following qualifying statements are presented:

*"In order to evaluate the hydraulic fracture and drilling fluid surface releases potential for a horizontal directional drilling (HDD) installation, assumptions must be made when selecting the input parameters. The assumptions used in the model include the extent and uniformity of soil layers, hydrostatic groundwater pressures, drilling fluid properties, penetration rates and drilling fluid flow rates. The soil strength properties are estimated based on interpretations of the boring logs and laboratory test results. The drilling fluid properties, penetration rates and pump rates are estimated based on generally accepted, best management practices (BMPs) of the HDD industry. **Consequently, the results of the evaluation are only estimates of the potential for hydraulic fracture and drilling fluid surface releases.**"* (emphasis added)

*"In addition, the drilling fluid properties are dependent on the field conditions and the construction practices of the HDD contractor and drilling fluid engineer. Changes in these properties can significantly affect the potential for hydraulic fracture and drilling fluid surface releases."*

***"...The evaluation considers only the hydraulic fracture potential during pilot hole operations assuming the drilling fluid returns are continuously maintained to the entry point."*** (emphasis added)

However, on page 2.694 the applicant's consultant provides the following statement;

*"During pilot hole operations, hydraulic fracture of the formation and drilling fluid surface releases may occur as a result of high annular pressures in the hole. Causes of high annular pressures include insufficient removal of cuttings, hole collapse and excessive penetration rates. The annular pressures should be closely monitored during the pilot hole process to help identify when the potential for drilling fluid surface releases may be possible. Annular pressures can be monitored through the use of a downhole annular pressure tool as part of the BHA and compared with the anticipated drilling fluid pressures."*

Further, on page 2,696 the applicant's consultant states the following:

*"Drilling fluid circulation may be reduced or lost during HDD operations by drilling fluid loss to the surrounding formation or by the accumulation of cuttings downhole that create a blockage which may result in hydraulic fracture."*

Using the evidence provided here it is reasonable to conclude that the physical characteristics of the sediments in the vicinity of the HDD operations, the length, diameter, and path of the bore hole, and the conditions at the entry points present considerable challenges for the HDD operations to succeed. The report provided by the applicant identifies multiple conditions leading to the likely failure and infeasibility of the HDD operations. The applicant's consultant's conclusion that the proposed "conceptual" HDD under bay pipeline installations are "technically feasible" is based on numerous assumptions and is framed with multiple qualifications. I assert that the HDD operations are likely to fail for numerous factors identified by the applicant's own consultant. The City should not issue a permit for work that is not likely to be feasible.

In an earlier HDD feasibility report prepared in 2017 by GeoEngineers, the same consultant that provided the HDD analysis for the application to the City of North Bend, the sub surface conditions at the depth proposed for the horizontal tangent of the HDD pipelines had not been described. Additional boring work conducted subsequent to the 2017 report reached depths as deep as the proposed HDD horizontal tangents for the East and West under bay pipeline crossing routes.

I attach for your review and analysis an excerpt from the HDD feasibility analysis conducted by Geoengineers dated 6 September 2017 included as attachment C.13 in Oregon Fill and Removal application APP0060697 submitted by Jordan Cove LLC to the Oregon Department of State Lands (pages 2804 and 2805). A copy of the full HDD evaluation can be found here.

[https://www.dropbox.com/sh/0jkzo8933hvh257/AAAiXroKTQZPGnGbpsD4Bx\\_1a/APP0060697?dl=0&subfolder\\_nav\\_tracking=1](https://www.dropbox.com/sh/0jkzo8933hvh257/AAAiXroKTQZPGnGbpsD4Bx_1a/APP0060697?dl=0&subfolder_nav_tracking=1)

*"Single HDD Option*

*We developed a conceptual HDD alignment and profile for the Coos Bay East 36-inch diameter HDD as shown in Figure 2A, with a horizontal design length of approximately 8,972 feet. Due to the substantial length of the HDD, we anticipate that it will be completed using pilot hole intersect methods. The conceptual HDD alignment extends eastward from North Point in North Bend, Oregon, crosses the Coos Bay navigation channel and terminates at the mouth of Kentuck Slough east of East Bay Road. For this conceptual design, the carrier pipe would be strung and fabricated along the Kentuck Slough valley floor on the east end of the crossing as shown in Figure 2B. The bottom tangent was designed with a 25.62-degree horizontal curve, in order to accomplish the necessary alignment to facilitate the pipe string laydown area along Kentuck Slough. Because this crossing would be completed using pilot hole intersect methods, both ends are identified as entry points. We chose a 12-degree entry angle on the west end in order to achieve a suitable depth below the navigation channel. A typical angle of 10 degrees was selected for the east side entry angle, and a radius of curvature of 4,000 feet was*

*selected for both vertical curves and the horizontal curve. **The bottom tangent was placed at an elevation of -190 feet, with the assumption that the bottom tangent and horizontal curve will be within bedrock at that depth. This assumption is critical for the feasibility of this option.*** (Emphasis added)

The initial 2017 geotechnical report prepared in by GeoEngineers was based on limited sub surface information. The the assessment of feasibility was based on assumptions of conditions that had not yet been described including a critical assumption that the horizontal tangent depth of the borehole would be in bedrock at the proposed depth. The geotechnical report of HDD Feasibility submitted as Exhibit 11 in this application includes borings and sediment characterizations to the depths of the horizontal tangent of the HDD pipeline route. The sediment analysis included in Exhibit 11 indicates that for the Coos Bay HDD East pipeline alignment, sediments are not bedrock suggesting that the initial assumptions used by the GeoEngineers were not supported by additional sub surface test bore findings. (for example see photograph on page 2,677). The emphatic statement of the importance of encountering bedrock contained in the 2017 geotechnical report when combined with the finding that segments of the HDD tangent will not be placed in bedrock raise additional questions regarding the overall feasibility of the proposed work. Instability of the borehole and Collapse of material into the completed borehole are recognized reasons why HDD operations can fail.

The deeper test bore data included in the more recent 17 April 2019 HDD feasibility evaluation included as Exhibit 11 in the Land use request submitted to the North Bend Planning department suggest that sub surface sediments likely to be encountered by the HDD operations also include materials such as gravel that the consultant has identified as increasing the risk that the carrier pipe will jamb in the borehole during pullback operations or increasing the likelihood that the protective coating on the carrier pipe will be damaged during pullback. (e.g. Figure A-4 of Attachment X Exhibit 11 of this application pages 2,651 and 2.652) least some of the horizontal tangent depth of the Coos Bay HDD East will not be bored in bedrock and the bedrock encountered was classified as soft.

The applicant used cavity expansion theory to evaluate hydraulic fracture of soils. On page 2621 the applicant states *“Note that the analysis method does not calculate the formation limit pressure where the HDD path is expected to be within bedrock.”* This method does not address the potential hydraulic fracture and drilling fluid loss from pre-existing fractures and jointing in the rock mass (See page 2620 Exhibit 11 this application). The western end of the Coos Bay East HDD pipe section is located in the City of North Bend The borehole near the shoreline of Ferry road park encountered bedrock at a relatively shallow depth. The City should carefully evaluate the possibility of hydraulic fluid surface releases in the vicinity of the Western entry point of the Coos Bay East HDD pipeline segment.

the hydraulic fracture analysis report calculated of fracture potentials based on unobstructed returns of drilling fluids through the pilot hole annulus. The tables that form the basis of the analysis are based on a 12.5" diameter pilot borehole (see pages 2,633 – 2,636). The borehole will need to be reamed to a diameter of approximately 48' -54" in order to accommodate pullback of the 36" diameter carrier pipe. In the discussion of reaming considerations on page 2626, the consultant states the following: *"Because of the length of the HDD, there is an increased risk of drilling fluid surface release during reaming operations."*

In order to address the high risk of hydraulic fracture during pilot hole and reaming operations, the consultant has recommended installation of steel casings to line the bore hole in soils with high potential of hydraulic fracture (see page 2,626). I was not able to find a statement from the applicant to determine if it is the applicant's intent to follow the recommendations included in the geotechnical report thus it is not possible to determine if the applicant intends to adopt the recommendations should a permit be issued for the work.

In the case of the recommendation to install a large diameter casing to protect the borehole during reaming and pullback operations, the applicant's consultant has recommended that a 700 foot long 58' diameter steel casing pipe be installed at the East entry point (see page 2,626). The consultant suggested it would not be feasible to install a casing pipe of this length and diameter using conventional HDD methods and suggested it may be feasible to use a proprietary pipe installation method called "Direct Pipe" The applicant's consultant states *"The use of Direct Pipe™ would require additional study to determine the feasibility of the application."*

The applicants consultant recommends that because of the very large forces required to pull the 9,008 foot long 36" diameter carrier pipe through the HDD bore hole (700,000 lbs. – 1,700,000 lbs.) it may be necessary to it may be necessary to employ a drill rig on the west entry point as well as a pipe thruster on the east entry point (see page 2,623 and