Millennial Bulk Terminal Draft EIS Comments

My name is Ron Lindsay and I am a climatologist, recently retired. I worked much of my career at the University of Washington in an office called the Polar Science Center. I have worked on research about Arctic climate for over forty years doing field work, using a wide variety of satellite data, and performing numerical modeling to analyze and understand the changes that are occurring at high latitudes. When I started my career I had no idea that in my lifetime we would see such dramatic changes in Arctic climate and the coverage of sea ice. We now see that late summer sea ice extent has diminished by 40% since 1980 over an area comparable to that of the entire United States. This is a vast and unprecedented change not seen before in human history. I personally have no doubt that this long-term trend in summer ice extent is primarily caused by the burning of fossil fuels and deforestation. While there are large uncertainties in projecting sea ice decline due to unpredictable natural variability and model uncertainties, I believe the summer ice will be essentially gone by 2040 +/- 20 years. Exactly when it will be gone is uncertain but there is little doubt it will be gone later this century unless we drastically reduce the burning of fossil fuels.

The export terminal would have a maximum annual throughput capacity of up to 44 million metric tons of coal per year. The Union of Concerned Scientists report a typical (500 megawatt) coal plant burns 1.4 million tons of coal each year. As of 2012, there are 572 operational coal plants in the U.S. with an average capacity of 547 megawatts. The new terminal would process enough coal to supply over thirty-one 500-megawatt plants!

The project is presented in the draft EIS as an isolated bulk terminal for the processing of coal shipments but in fact the real project is to transship large amounts of coal from mines in Wyoming, Utah, Colorado, and Montana to power plants in Asia. The proposed new bulk terminal is the single largest new facility required to enable this project. As such, it presents a good opportunity to evaluate all of the environmental impacts of the whole project, from mines to power plants, and to determine all the impacts of shipping and burning the coal on our environment. Indeed it is required by the National Environmental Policy Act (NEPA) and the State Environmental Policy Act (SEPA) that the EIS fully address all the impacts for the State of Washington and for the nation. It is also an opportunity to carefully consider how the coal from all of these projects together over their entire life times will fit within global, national, and regional carbon budgets for <u>new</u> sources of fossil carbon. As the lead agency for this evaluation, the Army Corps of Engineers has the responsibility under NEPA to greatly expand the scope of the EIS. There is no other opportunity for the entire project to be evaluated nor any other agency that will perform this evaluation.

It is not easy to think about such long time scales and to consider global impacts. But it is in the interests of the people of the State of Washington and of the United States to carefully and fully consider all of the large-scale and long-term cumulative impacts of creating a massive new conduit for the extraction and burning of fossil carbon.

The name of the proposed terminal in Longview, the Millennium Bulk Terminal, is particularly apt. The cumulative climate impacts created by the export of coal from this

terminal as well as others will have significant environmental impacts that will persist for millennia not just the twenty years as stated in the Draft EIS.

In the following there are 7 separate groups of substantive comments on the draft EIS.

Ron Lindsay

Comment 1. The overall scope of the draft EIS is arbitrarily and improperly limited to the footprint of the Terminal and to just twenty years. The scope should be expanded to include the entire coal transshipment project, to other new coal and oil transshipment projects on the west coast, and to the entire lifetime of the coal and oil combustion by products in the atmosphere and ocean system.

The proposed bulk terminal is *the* key element of what is in fact a much larger project to transship large amounts of coal from Wyoming, Utah, Colorado, and Montana to Asia. No other agency is looking comprehensively at the whole project, start to finish, in both geographical and temporal extent. As the NEPA lead agency, the Corps is responsible for ensuring the respective federal environmental rules and regulations are followed thoroughly and without bias during the NEPA process. The EPA states that under NEPA all of the actions that may contribute to cumulative impacts must be considered along with the project direct effects:

> Geographic boundaries and time periods used in cumulative impact analysis should be based on all resources of concern and all of the actions that may contribute, along with the project effects, to cumulative impacts. ***Generally, the scope of analysis will be broader than the scope of analysis used in assessing direct or indirect effects.*** To avoid extending data and analytical requirements beyond those relevant to decision making, a practical delineation of the spatial and temporal scales is needed. ***The selection of geographic boundaries and time period should be, whenever possible, based on the natural boundaries of resources of concern and the period of time that the proposed action's impacts will persist, even beyond the project life.*** EPA reviewers should determine whether the NEPA analysis has used geographic and time boundaries large enough to include all potentially significant effects on the resources of concern. The NEPA document should delineate appropriate geographic areas including natural ecological boundaries, whenever possible, and should evaluate the time period of the project's effects.
> [Consideration of Cumulative Impacts In EPA Review of NEPA Documents, U.S. Environmental Protection Agency, Office of Federal Activities (2252A) EPA 315-R-99-002/May 1999. Italics added for emphasis]

As the lead agency the Corps of Engineers is required to analyze the entire project. There is a key concept articulated by the Council on Environmental Quality (CEQ) in the handbook entitled *Considering Cumulative Effects under the National Environmental Policy Act* (1997)

> The Council on Environmental Quality's (CEQ) regulations (40 CFR $$ 1500 - 1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. $$ 4321 et seq.), define cumulative effects as
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> > the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions ***regardless of what agency*** (Federal or non- Federal) or person undertakes such other actions (40 CFR ~ 1508.7). [italics added for emphasis]

Thus the claim that the Corps of Engineers has no authority over, for example the rail corridor from the mines, is not a valid reason for not considering the impact along the entire corridor. Furthermore the CEQ Handbook states

> Specifically, NEPA requires that ***all related actions be addressed in the same analysis***. For example, the expansion of an airport runway that will increase the number of passengers traveling must address not only the effects of the runway itself, but also the expansion of the terminal and the extension of roadways to provide access to the expanded terminal. If there are similar actions planned in the area that will also add traffic or require roadway extensions (even though they are nonfederal), they must be addressed in the same analysis. [page 1, italics added for emphasis]

and

> The purpose of cumulative effects analysis, therefore, is to ensure that ***federal decisions consider the full range of consequences of actions***. [page 3, italics added for emphasis]

and

> Many times there is a mismatch between the scale at which environmental effects occur and the level at which decisions are made. Such mismatches present an obstacle to cumulative effects analysis. … ***Cumulative effects analysis should be the tool for federal agencies to evaluate the implications of even project-level environmental assessments (EAs) on regional resources***. [page 4, italics added for emphasis]

The justifications for limiting the scope of the draft EIS are outlined in section 1.3.5 of the draft EIS (NEPA Scope of Analysis). There are four factors considered.

> **Factor 1. Whether or not the regulated activity comprises "merely a link" in a corridor-type project.**

The proposed bulk terminal is a key enabling aspect of a much larger project to transship coal to Asia. It is not "merely a link". This EIS is the only opportunity to evaluate the complete project in all of its aspects and as the lead agency the Corps of Engineers is obligated under NEPA to evaluate all of the impacts. While there may be "no other

proposed actions by the Applicant outside the project area" the proposed project will have significant impacts well outside the project area and will, if implemented, require significant actions on the part of others including mining activities, railway maintenance, local communities, tribes, and bulk carrier vessel traffic.

> **Factor 2. Whether there are aspects of the upland facility in the immediate vicinity of the regulated activity which affect the location and configuration of the regulated activity.**

As the lead agency for evaluating a project with very large spatial extent it is inadequate under NEPA to consider only aspects in the immediate vicinity.

> **Factor 3. The extent to which the entire project will be within the Corps' jurisdiction.**

This factor is irrelevant because the Corps is the lead agency for a project that actually extends from the mines to oceans. The Corps is obligated under NEPA to consider all of the environmental impacts, including those that are outside of the project footprint and that persist even after the end of the project. The CEQ regulations, as noted above, define cumulative effects as

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions ***regardless of what agency*** (Federal or non- Federal) or person undertakes such other actions [CEQ, italics added for emphasis]

So the analysis of the cumulative impact should not depend on the extent of Corps' jurisdiction.

> **Factor 4. The extent of cumulative federal control and responsibility.**

This factor is also irrelevant. Again, the CEQ regulations, as noted above, define cumulative effects as

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions ***regardless of what agency*** (Federal or non- Federal) or person undertakes such other actions. [CEQ, italics added for emphasis]

So the analysis of the cumulative impact should not depend on the extent of federal control. The scope of the EIS must include not only the construction and operating impacts but the impact of the primary purpose of the facility which is to facilitate the export large amounts of coal for burning in power plants or other industrial applications.

According to CFR-2012-title33-vol3-part230, page 317

> The initial broad or programmatic EIS must present sufficient information regarding ***overall impacts*** of the proposed action so that the decision-makers can make a reasoned judgment on the merits of the action …[italics added for emphasis]

Certainly the impacts of exporting and ultimately burning large amounts of coal is part of the overall impacts of the project. To limit the impacts to the construction and operation of just the terminal in isolation is arbitrary and unjustified.

Comment 2. The scoping analysis of the draft EIS has so clearly ignored the basic principles of cumulative effects analysis required by NEPA that it seems instructive to include here the complete table of these principles given in the CEQ handbook [page 8]. The revised EIS should outline how the scope of the cumulative impacts analysis conforms with each one of these principles.

Table 1-2. Principles of cumulative effects analysis

1.	**Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.** The effects of a proposed action on a given resource, ecosystem, and human community include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to effects (past, present, and future) caused by all other actions that affect the same resource.
2.	**Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, nonfederal, or private) has taken the actions.** Individual effects from disparate activities may add up or interact to cause additional effects not apparent when looking at the individual effects one at a time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.
3.	**Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.** Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resource, ecosystem, and human community that may be affected and developing an adequate understanding of how the resources are susceptible to effects.
4.	**It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.** For cumulative effects analysis to help the decisionmaker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties.
5.	**Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.** Resources typically are demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.
6.	**Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.** Repeated actions may cause effects to build up through simple addition (more and more of the same type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.
7.	**Cumulative effects may last for many years beyond the life of the action that caused the effects.** Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine drainage, radioactive waste contamination, species extinctions). Cumulative effects analysis needs to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.
8.	**Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.** Analysts tend to think in terms of how the resource, ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

Comment 3. The cumulative impacts analysis scope must include all potential coal terminals on the west coast as well as all potential crude oil transshipment facilities.

The proposed terminal may be just one of several on the west coast that will contribute to the transshipment of coal and oil to Asia. Under NEPA this EIS must consider the total impact of all of these related projects, from California to Washington. Different scenarios for project completions should be considered and the consequences analyzed. Under NEPA the cumulative impacts on the rail corridors, the rivers and wetlands, the vessel traffic, and of the greenhouse gases emitted by burning the oil or coal must be considered in their entirety, not just project by project. As the lead agency it is the Corps responsibility to conduct these comprehensive analyses within the EIS.

Comment 4. The spatial scope of the EIS must include the entire rail corridor from the mines to the terminal and of the vessel traffic out over the bar to the ocean.

To limit the analysis to just the land encompassed by the terminal is arbitrary and is not consistent with the CEQ. According to CFR-2012-title33-vol3-part230, page 317

> The initial broad or programmatic EIS must present sufficient information regarding ***overall impacts*** of the proposed action so that the decision-makers can make a reasoned judgment on the merits of the action …[italics added for emphasis]

No mention is made in this mandate for limiting the impacts to the site of the terminal only. In fact the draft EIS already considers some impacts beyond the site, but limits these in an arbitrary and unjustified manner.

- The cumulative impact of toxic coal dust on the human and natural environment, including all adjacent wetlands and the Columbia River, should be analyzed over the life of all of potential coal transshipment projects.
- The cumulative impacts regarding safety, economics, and convenience of the increased rail traffic on communities in the rail corridor must be considered for all potential projects. How much additional tonnage will be transported as a percent of the current rail usage for different segments of the rail corridor? How many additional trains will there be as a fraction of current usage?
- Will there be additional delays of passenger train units because of the additional coal or oil transport trains and additional track maintenance? How will this impact travelers? Will coal or oil trains have priority over passenger trains?
- How much additional maintenance of rail lines and bridges will be required because of the additional traffic and tonnage? Will this cause delays for passengers?
- What are the likelihood and consequences of train derailments and the spilling of coal or oil into waterways over the entire lifetime of the projects, not just annually?

- Will heavy train traffic exacerbate the severe landslide problem that already exists on regional rail corridors and what will be the economic costs of the additional disruptions?

- Will the additional rail traffic over the draw bridge in Ballard impact boat traffic through the Ballard Locks (operated by the Corps of Engineers) or impact boat traffic through other draw bridges in the region?

- The draft EIS mentions increased gate closings at one location, Dike Rd. Limiting this analysis to a single crossing is arbitrary and unjustified. Increased gate closings will occur all along the rail corridor from the mines to the terminal. All gate closings in the entire corridor should be evaluated individually. Some communities may see substantial impacts on safety and first-responder response times from the increased rail traffic and the increased number of long coal trains in the corridor. If no communities will be harmfully impacted this should be soundly demonstrated.

Comment 5. The temporal scope of the EIS must include the full life of the project and the full time for which the greenhouse gases emitted by burning the coal impact the climate system (ocean and atmosphere)

According to CFR-2012-title33-vol3-part230, page 317

> The initial broad or programmatic EIS must present sufficient information regarding ***overall impacts*** of the proposed action so that the decision-makers can make a reasoned judgment on the merits of the action …[italics added for emphasis]

Twenty years is entirely inadequate and arbitrary. A scientific justification for this time period is required based on peer-reviewed publications. The time for cumulative toxic coal dust to degrade in wet lands could be much longer. Proof must be given if it is thought to be much less. Greenhouse gases, specifically CO_2, have a time scale in the atmosphere and oceans on the order of centuries. Much of the CO_2 emitted to the atmosphere is dissolved in the oceans forming a large reservoir of available CO_2 and from which it can reenter the atmosphere if atmospheric levels are lowered over time. The 2007 IPCC report states "About 50% of a CO_2 increase will be removed from the atmosphere within 30 years, and a further 30% will be removed within a few centuries. The remaining 20% may stay in the atmosphere for many thousands of years."

The cumulative impacts must be considered for the entire life of this project and for any related coal export terminals that may be proposed on the west coast, at least 50 years. The impacts far into the future are of course much less certain, but that does not mean they are minimal. In all cases a worse-case scenario should be considered and the consequences outlined in the EIS so that decision makers can know what is a possible outcome if the terminals were to be built.

Comment 6. Analysis of greenhouse gases emitted by the burned coal or oil and the resultant global climate change must be included in the cumulative impacts analysis.

First note that the CEQ Handbook on cumulative effects gives a specific example that includes global climate change in Table 1-3 [page 9] so global climate change is clearly within the responsibility of an EIS.

Carbon dioxide created by burning fossil fuels stays in the atmosphere and ocean for many centuries. Carbon dioxide flows into and out of the ocean and biosphere in the natural breathing of the planet and CO_2 that is dissolved in the ocean, contributing to ocean acidification, can be easily released back to the atmosphere. The atmospheric concentration of CO_2 cannot markedly decline until the CO_2 in the ocean has once again been captured by living organisms and sunk to form deposits on the ocean floor or incorporated in swamps to create new rich coal and oil deposits for a civilization many millions of years hence.

This means that climate changes caused by carbon dioxide are expected to persist for many centuries even if emissions were to be halted now. It does not greatly matter much how rapidly we burn the fossil fuels. What really matters is the total carbon released. The world has entered a new geologic epoch, the Anthropocene, in which human activities will control the future evolution of Earth's environment in substantial ways. Carbon emissions during this century will essentially determine the magnitude of eventual impacts and whether the Anthropocene climate impact is a short-term, relatively minor change from the current climate or an extreme deviation that lasts thousands of years. The higher the cumulative carbon dioxide emitted and the higher the resulting atmospheric concentration, the higher the peak warming that will be experienced and the longer the duration of that warming will last.

This fact has been highlighted in the recent IPCC 5th Assessment Report:

> A large fraction of anthropogenic climate change resulting from CO_2 emissions is irreversible on a multi-century to millennial time scale, except in the case of a large net removal of CO_2 from the atmosphere over a sustained period. Surface temperatures will remain approximately constant at elevated levels for many centuries after a complete cessation of net anthropogenic CO_2 emissions. Due to the long time scales of heat transfer from the ocean surface to depth, ocean warming will continue for centuries. Depending on the scenario, about 15 to 40% of emitted CO_2 will remain in the atmosphere longer than 1,000 years.

But to be clear, the total carbon export from the proposed Pacific terminals, perhaps 100 million tons per year for 50 years, or 5 trillion tons, is a small fraction of total global carbon emissions and global coal production. But the impact will be far from negligible. Think not only of the specific impact but the manner in which the coal from these terminals must fit within fixed regional, national and global total carbon emission budgets and the efforts to reduce these emissions.

The IPCC has called for a cap of about 1000 trillion tons of cumulative carbon emissions for the entire globe and we have already emitted about half of that quantity. These terminals alone could contribute a full 1% of the 500 trillion tons the entire globe can emit in all future years. The carbon budget for the United States must be just a fraction of that 500 trillion tons and we know there are very large portions of that fraction that are already committed. Should a few coal companies be responsible for a large portion of the increases in global and US carbon budgets?

The scope of the EIS must include an accounting of exactly how the proposed maximum total cumulative coal exports from all Pacific Coast terminals will fit within regional, national and international carbon budgets and the efforts to reduce these emissions. Consider what parts of these budgets are committed (not subject to reduction) and discretionary (what has not yet been committed to). The distinction is important. What fraction of the US commitment under international agreements to reduce carbon emissions, such as the Paris Climate accord, would the new carbon emissions made possible by these terminals be responsible for? Much of our current carbon emissions are very difficult to reduce and our best bet is to try and stop any new massive sources of fossil carbon emissions. How exactly do these terminals fit within likely US budgets for *new* carbon emissions? If the emissions are to be included in the carbon budgets of other countries (which might make sense within an international agreement), how will this be implemented and enforced? It is in the national interest to know now what our carbon budget is before committing to massive new carbon expenditures.

Please consider postponing all the transshipment projects until the US can establish a legally binding national and international carbon budget and a binding mechanism to adhere to it. There is absolutely no reason to rush…the coal or oil will be there. It is clearly within the purview of the regulatory agencies to postpone projects until the required regulatory framework is established. This is particularly true when there is a fixed total allowable expenditure of a resource.

Fossil carbon combustion also has a significant impact on sea ice. The sea ice extent at the end of the melt season in September has been steadily declining as CO_2 emissions have increased. A new study in *Science* has estimated that for each metric ton of CO_2 emitted to the atmosphere a long-term average of 3 m^2 of sea ice is lost (D. Notz and J. Stroeve, *Science* 10.1126/science.aag2345, 2016). To estimate the annual loss of sea ice caused by one year of exports (44 million tons) from the proposed terminal we compute

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44.e6 metric tons C emitted / year
   * 3.67 tons CO² / ton C
   * 3 m² sea ice loss / metric ton CO₂
   = 484 km² sea ice loss / year
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so each year the terminal is in operation it will be responsible for melting about 484 km^2 of sea ice.

Comment 7. Specific shortcomings in Chapter 7, Cumulative Impacts

7.2.2 Methods. All eight of the Principles of Cumulative Effects Analysis sited in Comment 2 should be considered in detail. In particular no real justification for limiting the temporal analysis to 20 years is given, so the time period is clearly arbitrary.

Table 7-1. Why is ground water excluded from cumulative effects analysis? Clearly coal dust will accumulate in waterways adjacent to the tracks and the impacts will be cumulative.

7.2.2.1 Study Area. The area impacted by the operation of the terminal clearly extends from the mines to the ocean. There is no reason to confine the analysis to the footprint of the terminal. Here it is admitted in the draft EIS that "activities beyond the scope of the project areas, such as rail and vessel transportation, to the extent these activities are within the NEPA scope of analysis" must be considered yet such a broad analysis is lacking the this draft.

7.2.2.3 Reasonably Foreseeable Future Actions. This section only considers local actions in an arbitrary manner. Under NEPA there is no justification for such a limitation. All coal and oil terminals proposed for the west coast and all rail corridors used for the coal and oil trains should be considered. All of these projects will have a significant cumulative impact and as such NEPA requires their joint evaluation. Also, please include the annual number of trains and number of rail cars that will be added by each project in Table 7-2. What is the cumulative impact of all of this additional rail traffic on communities, wetlands, rivers, and public safety?

7.3.1.2 Social and Community Resources. Here the increased rail traffic is considered only on the BNSF Spur while in fact the coal trains will impact communities along the entire rail corridor from the mines to the terminal. The limitation is arbitrary. What are the safety and economic impacts of the additional rail traffic of all new projects for the entire corridor?

7.3.2.4 Water Quality. What is the scientific justification for the following statement?

> Operation of the export terminal, including discharge of treated storm water, is not expected to cause a measureable increase in chemical indicators in the Columbia River. Operations would not cause a measurable impact on water quality or biological indicators or affect designated beneficial uses due to contaminants from storm water runoff. Therefore, the export terminal would not contribute to cumulative impacts on water quality related to storm water.

7.3.3.1 Rail Transportation Operations. There is no justification for limiting the scope to just the project area. Rail traffic will increase substantially in the entire rail corridor.

7.3.3.7 Coal Dust. The cumulative impacts of coal lost from rail cars in transit from the mines and coal and dust blown off site from the holding piles and other operations must also be considered.

7.3.3.8 Greenhouse Gas Emissions. There is no doubt that that the project will contribute greenhouse gases emitted to the atmosphere through the burning of the coal that is transshipped. These effects must be addressed in the EIS. According to CFR-2012-title33-vol3-part230, page 317

> The initial broad or programmatic EIS must present sufficient information regarding ***overall impacts*** of the proposed action so that the decision-makers can make a reasoned judgment on the merits of the action …[italics added for emphasis]

Certainly the impacts of exporting and ultimately burning massive amounts of coal is part of the overall impacts of the project. To limit the impacts considered to the construction and operation of the terminal in isolation is arbitrary and unjustified.