I consider Whatcom County my home and my family's home. I do not live in faraway Seattle where SSA Marine I has its home, or far away in New York City where Goldman Sachs has its home. They are far removed from this place and do not live here day after day, so I am very concerned that they are blinded by the money they will make and will not see the risks they are taking with our home to make that money. So it is our responsibility to make sure that we analyze the project in the deepest way as it is only us who live here and know this place. There is no going back here once this project is done. Some pollution can never be undone.

I request these studies below out of a serious concern after learning about the special characteristics of PRB coal and researching other studies and articles on its characteristics .

PRB coal is unique in the coal world in that is has special ability to catch fire and explode much more than older coals. Because it is a very young coal, just taken from a mine where it was protected from oxygen for millions of years it is soft and tends to break up into particles even as it just sits on a table. Since it is young, it has a tendency to turn to dust. Then the oxygen that now surrounds each small particle allows it to heat up, and then if conditions are right the coal heat can build and turn into fire or even a sudden explosion as a sudden release of this built up heat. Putting water on this can be a problem too. (I submit articles to back up this claim.)

Coal does not need to be lit to catch on fire. It wants to burn from the moment it hits oxygen.

These are some of the areas that need intense review.

1. A study looking at the heat and fire danger surrounding the GPT port site as to the dangers of storing 80 acres in tall piles of 100% Powder River Basin Coal which is especially prone to heating, fire and explosion.

2. A study of the meteorological (weather) of the particular GPT site as to wind velocity and direction , heat, rain cold etc. and how this would interact with PRB coal and it's amazing propensity to heat.

3. A study of what would happen if the water source was not available to keep the coal cool, and what would happen to the pile heat and what is the time frame we would have until the piles started to erupt in fire. Provide a timeline of when the fire would overwhelm the facility and the possibility of it going as far as the refinery in all weather. This study would also take

into account all weather of the proposed site in normal and storms conditions with respect to unusual storms in the area.

4. What are the likely hood of increase severity of storms in climate change and the effect on the possibility of fire at the facility as wind and heat get more intense.

5. As for probability of this happening—most severe ramifications occur when it is the negative combination of several events acting on each other. These separate conditions come together and magnify the consequences. This is known as a perfect storm or the Fukushima Event. Looking back we can easily see that certain situations are indeed inevitable.

6. What is the timeframe needed to remove all the coal stored at the facility in case the port could no longer have access to water and the coal would heat up into a massive fire that was very difficult to put out.

7. What would happen if, as in Fukuyama, they were forced to get water from the ocean in case of fire and where would that leachate go and is the overspill areas large enough to accommodate that water to cool down an entire 80 site until the coal fire is put out. (If you do not put enough water on coal to overwhelm it, the water actually increases its ability to burn. At sea, they do not suggest putting water on a burning coal, but just release the chemical gasses enough and hope for the best. Therefore putting out a coal fire is especially difficult and requires more than normal water storage.)

8. I believe this is the first time that coal, especially PRB coal will be covered on the conveyor belt to keep the dust from escaping as it is sent to the hold of the ship. They do not want to admit it, but this is a grand experiment as PRB coal has given electric power producers grief in this area as the dust is so prone to explosion. This needs to be carefully studies as to if this will work at all and what are the risks as we will not know for sure until the first stage of the port is up and running with wharf and all.

I come to these requests as I have been searching the Internet for many months now in trying to understand Powder River basin Coal and its characteristics. I am very concerned as the public does not understand the serious and dangerous situations that can come about if this coal is not handled with the utmost care and respect.

Studies and articles to submit:

1. **Underground fires in the Powder River Basin from coal are impossible to put out.**

   "Three blistering fires are blazing through Wyoming's scenic Powder River Basin, but firefighters aren't paying any attention. Other than a faint hint of acrid odors and a single ribbon of smoke rising from a tiny crack beyond the nearby Tongue River, a long look across the region's serene grassland shows no sign of trouble.
   That's what makes the three infernos, and the toxins they spew, so sinister. Their flames are concealed deep underground, in coal seams and oxygen-rich fissures, which makes containment near impossible. Shielded from fire hoses and aerial assaults, the flames are chewing through coal seams 20 feet thick, spanning 22 acres. They're also belching greenhouse gases and contaminants, contributing to an out-of-sight, out-of-mind environmental hazard that extends far beyond Wyoming's borders."

   Source: Dan Cray, Deep Underground, Miles of Hidden Wildfires Rage," Time Magazine, July 23, 2010 found online Jan. 22, 2013

http://www.time.com/time/health/article/0,8599,2006195,00.html

2. **Coals that are subbituminous, like Powder River Basin (PRB) coal are handled very cautiously at sea because of risk of fire and explosion. You can see from the quote from the brochure below as to the strict international requirements for such coal at sea and the problems at ports with these coals. New international rules on this began on Jan 1, 2011.**

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Introduction

"Self-heating incidents involving coal cargoes loaded at Indonesian Ports have become increasingly frequent in recent years. The problem appears to be primarily related to the nature of the coals, and may be exacerbated by the way they are handled prior to and during loading.

Recommendations for the safe carriage of coal are contained in Appendix 1 of the IMSBC Code (the Code), which became mandatory worldwide on 1 January 2011. This checklist is intended as an 'aide memoire' for the guidance of shippers, shipowners, charterers, surveyors, ships' crews and other parties involved in the loading and carriage of cargoes of coal. It is not intended as a substitute for the full recommendations as presented in the Code and rather considers the potential hazard of self-heating. The Code of Safe Practice for the Safe Loading and Unloading of Bulk Carriers is included as a supplement in the IMSBC Code."

Source: Brochure: UK P& I Club (Property and Insurance), "How to Monitor coal Cargoes from Indonesia, A Checklist to help reduce the risk of self-heating Indonesian coal cargos. Online on Jan 22, 2013 at

http://www.ukpandi.com/fileadmin/uploads/ukpi/LP%20Documents/LP_Bulletins/How%20to%20monitor%20coal%20cargoes%20from%20Indonesia.pdf

3. **Underground coal fires are all over the world and cannot be extinguished bringing the problem of burning coal and gasses into the atmosphere a problem we cannot solve. However it shows again how coal is self-heating.**

Source: Kevin Krajik, "Fire in the Hole," Smithsonian.com, May, 2005.

Found online Jan 22, 2013 at

http://www.smithsonianmag.com/travel/firehole.html

4. **PRB coal is extremely dangerous in regards to fire and explosion. There is a group called "The Powder River Users Group "composed of engineers from all the energy companies that try to educate each other about the dangers of this coal and how to cope with it. I have taken a quote from the article here, "Spontaneous combustion of coal is a well-known phenomenon, especially with PRB coal. This high-moisture, highly volatile sub-bituminous coal will not only smolder and catch fire while in storage piles at power plants and coal terminals, but has been known to be delivered to a power plant with the rail car or barge partially on fire." Some of the article is below. Find the source online with the link below.**

"PRB coal is extremely friable and will break down into smaller particles virtually independent of how the coal is transported or handled. PRB represents the extremes of handling problems: *dust* is an issue when the coal is fine and dry; *plugging* in bunkers and chutes is an issue when the same fine coal is wet. Once PRB coal is exposed by mining, the degradation process begins – the majority of the damage can occur in a very short time, even as short as a few days. The extent of the degradation that occurs depends in large part on the distance to the plant from the mine, i.e., how long the coal is exposed to the atmosphere during transportation. Additional factors such as crushed run of mine (CROM) size, and specific handling procedures also impact the degradation process. Additional decomposition occurs during handling and storage in a pile and bunker, bin or silo. We believe the root cause of the degradation is loss of moisture that impacts the coal both mechanically and chemically, through the generation of additional surface reaction area. The combination of the two is what makes PRB coal so difficult to handle.

This paper focuses on the mechanisms, both inherent and external, that cause this rapid degradation of the coal particles. Some of the questions are posed that could lead to preventing, or at least retarding the degradation of the particles, thus avoiding the results of the associated problems with handling and storage, such as dust, perceived loss of inventory, bunker hang-ups and especially spontaneous combustion.
...Additionally, its friability results in fines and, when dry, the dust (Fig. 1) increases the explosion hazard potential. On the other hand, this same fine coal can be high in moisture content (Fig. 2), which increases its handling difficulty in equipment. Most of the plants currently burning or converting to burn PRB coal have difficulty with these characteristics.

…**Self-heating characteristics**

Spontaneous combustion of coal is a well-known phenomenon, especially with PRB coal. This high-moisture, highly volatile sub-bituminous coal will not only smolder and catch fire while in storage piles at power plants and coal terminals, but has been known to be delivered to a power plant with the rail car or barge partially on fire. An "explosive" case study [11] was presented at the PRBCUG (Powder River Basin Coal Users Group) Annual Meeting in Houston, March 2003 that is a case in point. The dust in a tripper room ignited, causing a major explosion (Figure 3) at Wisconsin Public Service J.P. Pulliam Generating Station in Green Bay Wisconsin in June 1991. At the time, the plant was burning a

50/50 blend of PRB coal and bituminous coal, and a fire existed in one of the coal bunkers. Dust within the Atmosphere of the tripper room was ignited by a minor explosion, or *puff*, within the bunker, which triggered a massive explosion in the tripper room, blowing out the outer building walls and roof. While fires prior to this were not uncommon with bituminous coal in the bunker, this was the first serious dust explosion."

Source: Online Jan 22, 2013 at the Power River Basin Coals website at

Roderick J. Hossfeld, Rod Hatt, "Coal Degradation-Causes and Cures,

Hoddfeld of Jenike & Johanson, Inc.,Rod Hatt of Coal Combustion Inc.

http://www.prbcoals.com/pdf/paper_archives/56538.pdf

5. **The article below talks about the heat and explosion capabilities of Powder River Coal. Putting this coal inside a covered conveyor is a problem. At GPT it will be the first time this is done, according to Craig Cole who represents GPT. However, this is going to be an experiment and should not be taken lightly. Read this article to get a feel for how explosive and difficult it is to work with this coal. Here is a quote from the article.**

"Operators familiar with the unique requirements of burning PRB coal will tell you that it's not a case of "if" you will have a PRB coal fire, it's "when."

Source: Edward B. Douberly, "Fire Protection guidelines for Handling and Storing of PRB Coal,"

Power Magazine, Oct. 3003, p 70-73

Online at http://www.prbcoals.com/pdf/PRBCoalInformation/Power-Oct03-Fireprotection.pdf

6. **Article on the propensity of coal to self –heat. Coal and especially Powder River coal is very tricky when it comes to storage and heat and water etc. Although this article is directed to power companies who store piles for a longer time than transport companies you still get a very good understanding of the risks. Here is a quote from the article…it also says it is not known how many fires occur in col piles as no information is published on this topic.**

"The temperature of coal increases due to self-heating until a plateau is reached, at which the temperature is temporarily stabilised. At this point, heat generated by oxidation is used to vaporise the moisture in the coal. Once all the moisture has been vaporised, the temperature increases rapidly. On the other hand, dry material can readily ignite following the sorption of water. Thus, dry coal in storage should not be kept in a damp place because this can promote self-heating. Therefore, it is recommended that dry and wet coal be stored separately.

…Spontaneous combustion in stockpiles poses significant safety, environmental, economic and handling problems. As well as the economic loss of coal due to fires, the heat-affected coal may become partially or totally unsuitable for its intended use. Thus prevention and early detection of spontaneous combustion is of paramount importance. It is not always clear how frequently fires occur as there is a lack of information published on this topic."

Source: Hemine Nalbandian, "Propensity of Coal to Self-Heat," Profiles Magazine, London, Dec. 2010 PF 10-14

Publisher, IEA Clean Coal Center

Online on Jan 22, 2013 at

http://www.iea-coal.org.uk/documents/82476/7685/Propensity-of-coal-to-self-heat-(CCC/172)